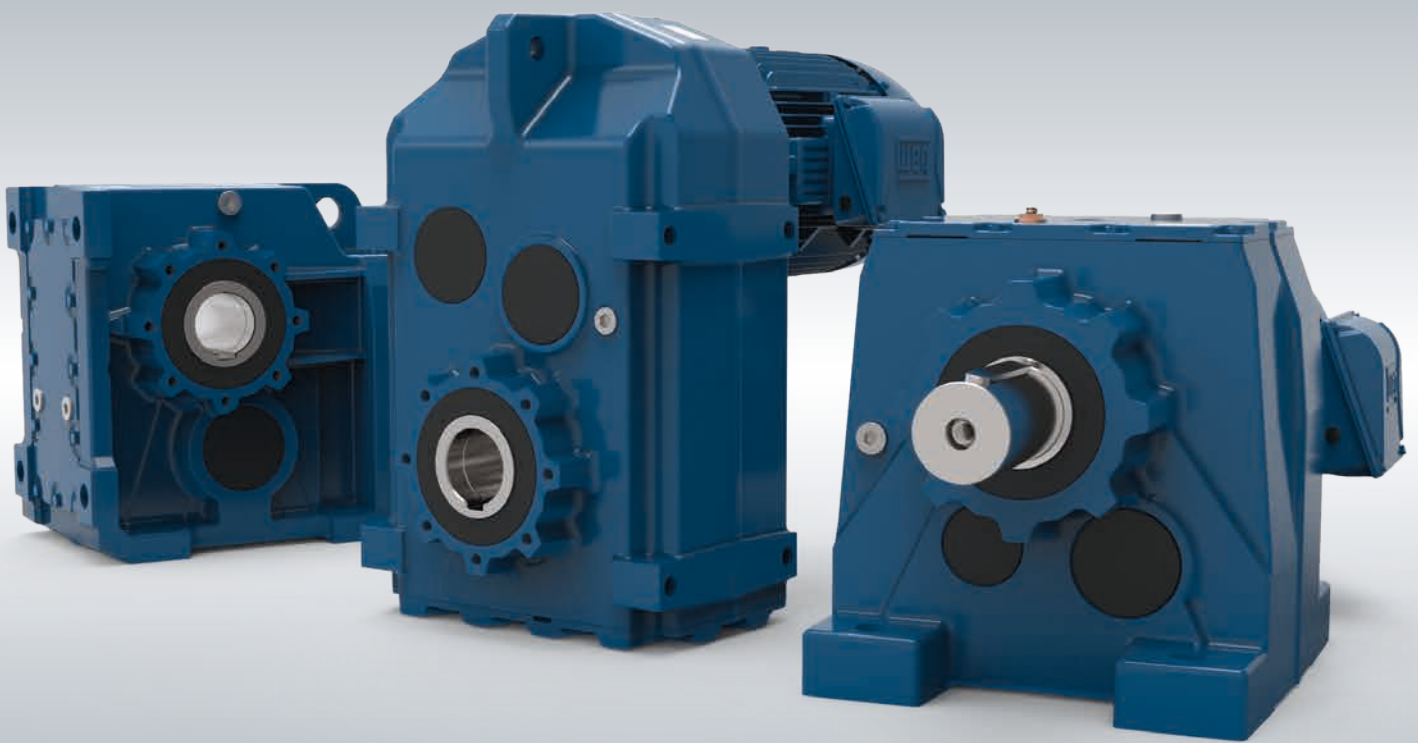


# WG20

Gear Units and Geared Motors up to 18000 Nm

TECHNICAL CATALOGUE



Motors | Automation | Energy | Transmission & Distribution | Coatings



## WEG Group - Transforming energy into solutions.

WEG is a leading global manufacturer and solutions provider of drive technology, energy production and distribution, and automation systems and switchgear construction. Founded in Brazil in 1961 by three entrepreneurs, WEG has grown to become one of the most important global manufacturers of electric motors. WEG has more than 31,000 employees around the world. The annual turnover of around 3 billion euro reflects its increasing success. The company's global presence is supported by branches in 34 countries, production facilities, and a network of authorised dealers on all five continents.



# Your requirements - our expertise

As one of the leading global manufacturers and solutions providers of drive technology, WEG's aim was to expand its extensive range of products by gear units produced in its own facilities. Perfect coordination of products throughout the drive train has put WEG in a position to offer customers even more superior and efficient solutions.

Under the leadership of Watt Drive, the challenge was to develop a program which not only meets the current demands of the market, but also satisfied WEG's high quality requirements. The Group's own centre of excellence for geared motors in Austria, part of the WEG Group since 2011, can draw on more than 40 years of experience in development, production and sales of gear units and geared motors.

In order to satisfy the requirements of state-of-the-art geared motors the following market requirements were taken into account during the development phase:

### Standard mounting dimensions

For users, the aim was to make the new range of geared motors as easy and effortless to use as possible. To ensure installation in an existing system or production line worked effortlessly without incurring unnecessary costs for conversions, the developers decided to adapt the

mounting dimensions of the new gear units to products already established on the market. The objective: worldwide, easy and cost-effective interchangeability.

### Torque transmission

The gear units needed to be compact, efficient, robust and reliable. In order to achieve this goal a transmission had to be designed which allows large ratio ranges in a two-stage model while being able to integrate easily into the new design gear housing.

### Efficiency

Energy efficiency has always been of paramount importance to WEG. The aim here was to live up to this demand when designing the new WG20 geared motors. This requires the perfect interaction of sophisticated technology and exclusive use of high quality components.

### Worldwide use

To meet the requirements of global mechanical and plant engineering, it was vital that the new geared motors can be used worldwide, whilst maintaining a high level of flexibility for applications.

The solution is **WG20**.





[www.cat4cad.com](http://www.cat4cad.com)

## Easy product selection

The “cat4CAD®” product configuration tool makes it easy to interactively select products. Comprehensive wizards, user-friendly navigation and many other extra features allow quick configuration of the required drive.

### Advantages

- Extensive product library
- Fast configuration of motors and geared motors
- Creation of project files with comprehensive technical documentation
- Easy modification of generated product data by means of the project file
- Quick request times

### Features

- The entire menu is available in many languages.
- To-scale 2D/3D drawings and PDF and DXF dimension sheet drawings of the previously selected drive.
- The 2D/3D data can be exported for use in standard CAD programs.
- Comprehensive technical data sheets of the configured gear unit and motor at the click of a button.
- The project file allows complete management of previously selected drives on one screen.  
At the click of a button one can save or print this project file, create PDF and DXF dimension drawings, and send enquiries directly to our sales team.

Online version available at [www.cat4cad.com](http://www.cat4cad.com)

Offline version for download at [www.wattdrive.com](http://www.wattdrive.com)



# WG20 - Gear units and Geared motors up to 18000 Nm

WG20 is the first geared motor range to be completely developed in-house at WEG. It comprises helical, parallel shaft and helical bevel gear units with torques between 50 and 18000 Nm. Already the two-stage units excel with their large ratio range, as well as being exceptionally efficient thanks to the sophisticated design. The light aluminium housings of the gear units up to 600 Nm and the robust cast iron housings from 800 Nm provide a highly versatile and reliable product, with a wide range of possible applications.

**C**

## Helical gear units

Nominal torque: 50 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 2.44 - 375.71

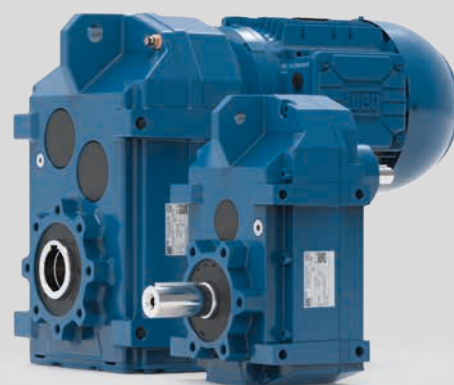
**F**

## Parallel shaft gear units

Nominal torque: 130 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 3.85 - 487.67

**K**

## Helical bevel gear units

Nominal torque: 110 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 3.82 - 277.79





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## Disclaimer

This catalogue contains information (descriptions and characteristics), which do not always apply as described in case of actual use. Data can also change due to product development. Characteristics are only binding if explicitly agreed to in the contract. Delivery opportunities and technical modifications subject to change without notice.

# Drive calculation

## 1. Drive power

The required total power is divided into static and dynamic components. The static power is the component at constant speed (friction and lifting force). The dynamic component is the power for accelerating and decelerating of masses.

The selected rated motor power ( $P_N$ ) must be bigger than the required static drive power. The required total power can be bigger than the rated motor power but it must be smaller than the maximum motor power.

	Formula	Unit
Output speed of the gear unit	$n_2 = \frac{v \cdot 30}{\pi \cdot r}$	[min <sup>-1</sup> ]

Static drive power		
Linear movement Horizontal movement (conveyor, travel drive)	$P_{\text{stat}} = \frac{m \cdot g \cdot \mu \cdot v}{1000 \cdot \eta}$	[kW]
Inclined movement (inclined conveyor, travel drive with inclination)	$P_{\text{stat}} = \frac{m \cdot g \cdot v \cdot (\sin\alpha + \mu \cdot \cos\alpha)}{1000 \cdot \eta}$	[kW]
Vertical movement (lifting drive, hoist, bucket elevator)	$P_{\text{stat}} = \frac{m \cdot g \cdot v}{1000 \cdot \eta}$	[kW]
Static output torque	$M_{2\text{stat}} = \frac{P_{\text{stat}} \cdot 9550}{n_2}$	[Nm]

Dynamic drive power (acceleration/deceleration power)		
Horizontal movement	$P_{\text{dyn,A,(B)}} = \frac{m \cdot v^2}{1000 \cdot t_{\text{A,(B)}} \cdot \eta}$	[kW]
Rotary motion	$P_{\text{dyn,A,(B)}} = \frac{\Sigma J_{\text{red.}} \cdot n_1^2}{9,12 \cdot 10^4 \cdot t_{\text{A,(B)}} \cdot \eta}$	[kW]
Starting resp. braking time	$t_{\text{A,(B)}} = \frac{\Sigma J_{\text{red.}} \cdot n_1}{9,55 \cdot (M_{\text{A,(B)}} \pm M_L)}$	[s]
Minimum starting time against slipping	$t_{\text{Amin}} = \frac{v}{\mu_0 \cdot g}$	[s]
Load torque of motor	$M_L = \frac{M_{2\text{stat}}}{i}$	[Nm]
Starting power	$P_A = P_{\text{dyn,A}} + P_{\text{stat}}$	[kW]
Braking power	$P_B = P_{\text{dyn,B}} \pm P_{\text{stat}}$	[kW]
Starting / braking torque	$M_{2,\text{A,(B)}} = \frac{P_{\text{A,(B)}} \cdot 9550}{n_2}$	[Nm]

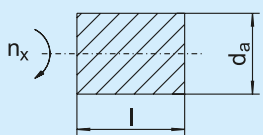
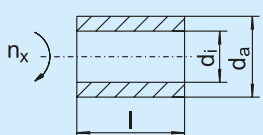
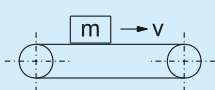
+ $M_L$  for braking when the load acts braking (e.g. lifts when going up)

- $M_L$  for starting or for braking when the load acts accelerative (e.g. lifts when going down)



### Mass moments of inertia

External load moments of inertia have to be reduced onto the motor shaft by squared ratios.

Reduced mass moment of inertia	$J_{ex.red.} = \frac{J_{ex}}{i^2}$	[kgm <sup>2</sup> ]
<b>Solid cylinder</b> 	$J_{ex.red.} = 98,2 \cdot \rho \cdot l \cdot d_a^4 \cdot \left(\frac{n_x}{n_1}\right)^2$	[kgm <sup>2</sup> ]
<b>Hollow cylinder</b> 	$J_{ex.red.} = 98,2 \cdot \rho \cdot l \cdot (d_a^4 - d_i^4) \cdot \left(\frac{n_x}{n_1}\right)^2$	[kgm <sup>2</sup> ]
<b>Linear movement</b> 	$J_{ex.red.} = 91,2 \cdot m \cdot \left(\frac{v}{n_1}\right)^2$	[kgm <sup>2</sup> ]

#### Approximate values for friction coefficients:

Rolling friction:  $\mu_r = 0.005 - 0.02$  steel/steel  
 $\mu_r = 0.02 - 0.06$  plastic/steel  
 $\mu_r = 0.06 - 0.2$  rubber/steel

Friction coefficient for conveyors:

$\mu_r = 0.13$  10 m conveyor length  
 $\mu_r = 0.08$  25 m conveyor length  
 $\mu_r = 0.06$  50 m conveyor length  
 $\mu_r = 0.05$  100 m conveyor length

Static friction:  $\mu_0 = 0.15$  steel/steel

Designation	Unit	Description
$d_a$	[m]	Outside diameter
$d_i$	[m]	Inside diameter
$f_B$		Service factor
$F_I$		Inertial factor
$g$	[m/s <sup>2</sup> ]	Acceleration due to gravity
$i$		Gear ratio
$J_{ex.red.}$	[kgm <sup>2</sup> ]	All external mass moments of inertia corrected to motor input
$J_{ex}$	[kgm <sup>2</sup> ]	All external mass moments of inertia
$J_{mot}$	[kgm <sup>2</sup> ]	Mass moment of inertia of the motor
$\Sigma J_{red.}$	[kgm <sup>2</sup> ]	Sum of all $J_{red.}$ values
$l$	[m]	Length
$m$	[kg]	Mass
$M_{2,A}$	[Nm]	Output torque of gear unit for starting
$M_{2,B}$	[Nm]	Output torque of gear unit for braking
$M_{2Nenn}$	[Nm]	Permissible output torque
$M_{2stat}$	[Nm]	Static output torque
$M_A$	[Nm]	Starting torque of the motor (see motor electric data sheets from page 371)
$M_B$	[Nm]	Brake torque

Designation	Unit	Description
$M_L$	[Nm]	Load torque of motor
$n_1$	[min <sup>-1</sup> ]	Input speed (motor speed)
$n_2$	[min <sup>-1</sup> ]	Output speed (gear unit)
$n_x$	[min <sup>-1</sup> ]	Speed of calculated components
$P_A$	[kW]	Power of gear unit at start
$P_B$	[kW]	Power of gear unit at stop
$P_{stat}$	[kW]	Static power
$P_{dyn,A}$	[kW]	Dynamic acceleration power
$P_{dyn,B}$	[kW]	Dynamic deceleration power
$r$	[m]	Sprocket / roller radius
$t_{Amin}$	[s]	Minimum starting time with risk of slip
$t_A$	[s]	Starting time
$t_B$	[s]	Braking time
$v$	[m/s]	Linear velocity
$\alpha$	[°]	Angle of inclination
$\eta$		Efficiency of the gear unit, system
$\mu$		Coefficient of friction
$\mu_0$		Coefficient of static friction
$\mu_r$		Coefficient of rolling friction
$\rho$	[kg/dm <sup>3</sup> ]	Density (steel=7.85 kg/dm <sup>3</sup> )

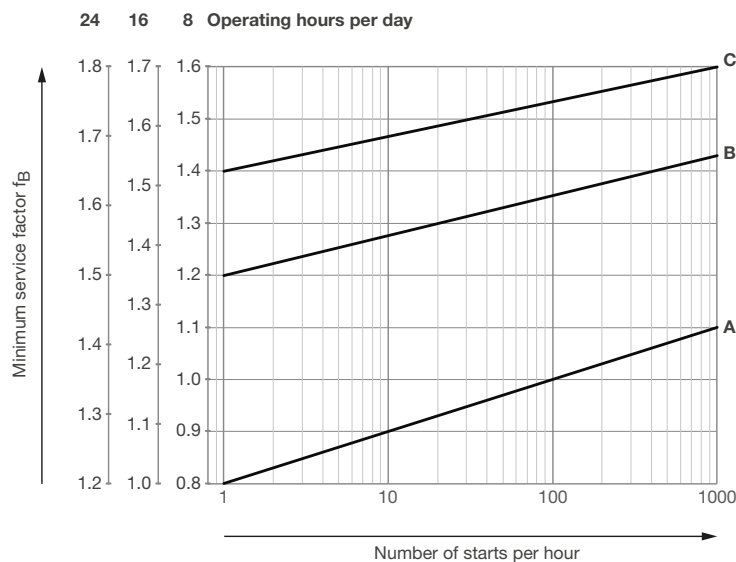
## 2. Load types

Load type A	Load type B	Load type C
Uniform load, small masses to be accelerated, no shocks	Non-uniform load, medium masses to be accelerated, medium shocks	Extremely rough conditions, high masses to be accelerated, heavy shocks and alternating load
Examples: Continuous conveyor for bulk goods, light conveyors, blowers, centrifugal pumps, light elevators, screw conveyors, fluid agitators	Examples: Bucket conveyors, rotary furnaces, printing and dyeing machines, conveyor drums, centrifugal pumps and semi-fluid good agitators, wood working machines, elevators, screw conveyors, concrete mixers	Examples: Ramming machines, calenders, duty rolling mills, presses, heavy mixer, stone crushers, shredders, heavy winches and lifts

## 3. Service factor

The gear unit required can be selected from the following tables showing the power, torque and output speed options. All our gear units are adequately dimensioned for long-life industrial applications and are designed for continuous loading under uniform operating conditions with small masses to be accelerated. Operating times of 8-10 hours a day are considered standard. No drive can be built to withstand all possible conditions, therefore the load conditions at the site have to be determined accurately and the proper load type identified. After determining the daily operating hours, selecting the type and establishing the number of starts (c/h), see the following diagram to find out the necessary service factor  $f_B$ . The inertial factor  $F_I$  assists in evaluating and attributing the masses to be accelerated. The service factor given in the tables indicates the reserve load in the rated torque for the specific gear unit.

In the tables you can usually choose between two types of gear units with the same or similar speeds, but different service factors. When you select the correct gear unit, the  $f_B$  from the diagram below should always be less than or equal to the available  $f_B$  (from the selection tables) for the chosen type. For short time operation, you can sometimes select a smaller gear unit, while for peak operation, a large number of starts or 24-hour continuous operation, a larger type is necessary. The output speed figures shown in the selection tables have been rounded up or rounded off. They may however vary due to the motor size and are valid for nominal load. Deviations of +/- 3 % are permissible.



	Formula	Unit
Service factor	$f_B = \frac{M_{2Nenn}}{M_{2stat}}$	
Inertial factor	$F_I = \frac{\sum J_{ex.red} + J_{mot}}{J_{mot}}$	[min <sup>-1</sup> ]

Modes of operation DIN EN 60034-1 see page 366.

Legend see page 9.

## Thermal power limit

The thermal power limit  $P_t$  must always be taken into account when designing a drive. It represents the maximum input power which can be transmitted by the gear unit at the given ambient temperature in a continuous operation mode (S1).

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20 °C. Thermal power limits for other temperatures can be seen in the table below.

Parameters to be considered:

- Higher / lower temperatures
- Vertical mounting positions (M2 or M4)
- Higher speed (> 1800 min<sup>-1</sup>) due to e.g. use of frequency inverter
- Small ratios
- Little mounting space

For such conditions we recommend consulting WEG. The geared motors can be adapted according to customer requirements by using e.g. lubricant expansion, optimised oil quantities, synthetic oils or Viton seal rings.

Gear unit size	Ambient temperature								
	-20 °C	-10 °C	0 °C	+10 °C	+20 °C	+30 °C	+40 °C	+50 °C	+60 °C
C002	2.5	2.1	1.8	1.5	1.2	1.0	0.7	0.5	0.3
C012	5.0	4.3	3.6	3.0	2.5	2.0	1.5	1.1	0.7
C032	10	8.7	7.4	6.2	5.0	4.0	3.0	2.1	1.3
C033	6.1	5.2	4.5	3.7	3.0	2.4	1.8	1.3	0.8
C052	19	16	14	12	9.5	7.5	5.7	4.0	2.5
C053	11	9.8	8.4	7.0	5.7	4.5	3.4	2.4	1.5
C062	26	22	19	16	13	10	7.8	5.5	3.5
C063	16	14	11	9.6	7.8	6.2	4.7	3.3	2.1
C072	34	29	25	21	17	13	10	7.2	4.5
C073	20	17	15	12	10	8.1	6.1	4.3	2.7
C082	58	50	42	35	29	23	17	12	7.7
C083	35	30	26	21	17	14	11	7.4	4.7
C092	82	71	60	50	41	32	25	17	11
C093	49	43	36	30	25	20	15	11	6.6
C102	103	89	75	63	51	41	31	22	14
C103	62	54	46	38	31	25	19	13	8.3
C132	142	123	105	87	71	57	43	30	19
C133	86	74	63	53	43	34	26	18	12
C142	191	165	140	117	96	76	57	41	26
C143	115	99	85	71	58	46	35	25	15
C162	271	234	199	167	136	108	82	58	36
C163	164	141	120	101	82	65	49	35	22
F022	8.4	7.2	6.1	5.1	4.2	3.3	2.5	1.8	1.1
F032	11	9.7	8.3	6.9	5.7	4.5	3.4	2.4	1.5
F042	18	15	13	11	8.9	7.1	5.4	3.8	2.4
F043	11	9.3	7.9	6.6	5.4	4.3	3.2	2.3	1.4
F052	24	21	18	15	12	9.7	7.3	5.2	3.3
F053	15	13	11	9.0	7.4	5.8	4.4	3.1	2.0
F062	31	27	23	19	15	12	9.3	6.6	4.1
F063	19	16	14	11	9.3	7.4	5.6	4.0	2.5
F072	51	44	37	31	25	20	15	11	6.8
F073	31	26	23	19	15	12	9.2	6.6	4.1
F082	73	63	54	45	37	29	22	16	9.8
F083	44	38	32	27	22	18	13	9	5.9
F092	107	92	78	65	53	42	32	23	14
F093	64	56	47	40	32	26	19	14	8.6
F102	157	136	115	96	79	62	47	34	21
F103	95	82	70	58	48	38	29	20	13
F122	220	190	162	135	110	87	66	47	30
F123	133	115	98	82	67	53	40	28	18
F152	337	291	247	207	169	134	101	72	45
F153	203	176	149	125	102	81	61	43	27



Gear unit size	Ambient temperature								
	-20 °C	-10 °C	0 °C	+10 °C	+20 °C	+30 °C	+40 °C	+50 °C	+60 °C
K022	10	8.8	7.4	6.2	5.1	4.0	3.1	2.2	1.4
K033	10	8.6	7.3	6.1	5.0	4.0	3.0	2.1	1.3
K043	16	14	12	9.8	8.0	6.3	4.8	3.4	2.1
K053	21	18	15	13	10	8.3	6.3	4.5	2.8
K063	23	20	17	14	12	9.3	7.0	5.0	3.1
K073	37	32	27	23	19	15	11	8.0	5.0
K083	44	38	32	27	22	17	13	9.4	5.9
K093	62	54	46	38	31	25	19	13	8.3
K103	95	82	69	58	47	38	29	20	13
K123	131	113	96	80	66	52	39	28	18
K153	185	160	136	114	93	74	56	40	25

Thermal power limit  $P_t$  [kW]

## Input types

### 1. IEC Adapter I

Standard motors complying with DIN EN 50347 IM B5 can be mounted on WG20 gear units with IEC adapters. The adapters are oil-tight. The motors are attached using different couplings, depending on the adapter size:

- **I63 to I100: Plug-in adapter**

The connecting coupling is one part; the motor shaft is inserted directly into the coupling shaft. Before mounting, the motor shaft is to be cleaned and coated with lubricating paste (e.g. Klüberpaste 46 MR 401). This makes it easier to disassemble the shaft when servicing is required and protects the connection against frictional corrosion.

- **I112 to I132: Curved teeth coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of the internally toothed coupling sleeve.

- **I160 to I280: Claw coupling**

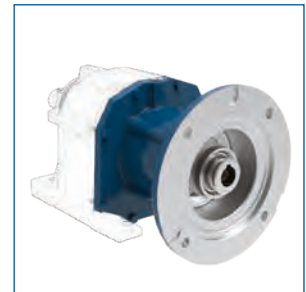
The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of a flexible coupling star.

#### Complete drive systems with WEG IEC motors:

By mounting, for example, WEG W22 IEC motors or WEG roller table motors, complete packages can be supplied for a wide range of applications.



Plug-in adapter



Adapter with coupling

### 2. NEMA Adapter N

Standard motors complying with NEMA C-face standard can be mounted on WG20 gear units with NEMA adapters. The adapters are oil-tight. The motors are attached using different couplings, depending on the adapter size:

- **N56 to N182: Plug-in adapter**

The connecting coupling is one part; the motor shaft is inserted directly into the coupling shaft. Before mounting, the motor shaft is to be cleaned and coated with lubricating paste (e.g. Klüberpaste 46 MR 401). This makes it easier to disassemble the shaft when servicing is required and protects the connection against frictional corrosion.



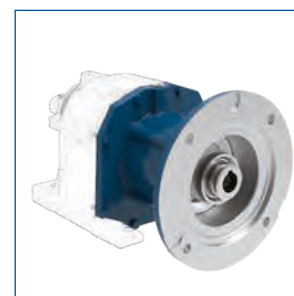
Plug-in adapter

▪ **N184 to N215: Curved teeth coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of the internally toothed coupling sleeve.

▪ **N254 to N364: Claw coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of a flexible coupling star.



Adapter with coupling

**Complete drive systems with WEG NEMA motors:**

By mounting, for example, WEG W22 NEMA motors, complete packages can be supplied for a wide range of applications.

It is recommended that the motors are sealed with a sealant (e.g. Loctite 510) when IEC and NEMA adapters are mounted to the flange to prevent water or dust ingress. Use screws of strength class 8.8 (or higher) to fasten the motors to the flanges. Observe the corresponding tightening torques according to the mounting instruction.

**3. SERVO Adapter S**

WG20 gear units with SERVO adapters can be fitted with servomotors from different manufacturers. The adapters are oil-tight, and the motors are mounted using flexible servo couplings. The backlash-free connection between the motor shaft and the adapter shaft is made by means of a clamp connection. Both servo motors with smooth shaft and servo motors with feather key can be mounted. The mounting clearance between the motor shaft and coupling is reduced to 0 by means of a clamp ring.



Servo coupling

▪ **S92 to S190: Servo coupling**

**4. Input Unit U**

Gear unit versions with input unit enable the WG20 gear units to be operated by attaching drive elements such as couplings or belt drives. Permissible shear forces or thermal power limits must be checked accordingly.

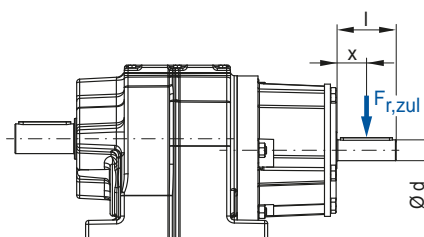


Input unit U2 and U3

▪ **Input unit sizes: U2, U3, U5, U6, U7**

Size	U2	U3	U5			U6	U7
Input shaft [mm]	19x40	24x50	28x60	38x80	42x110	48x110	55x110

The shear forces given in the following table (Permissible shear forces - Input unit on page 14) apply to input units with force applied to the shaft centre  $x = l/2$ . When determining the permissible shear forces, the unfavourable rotating direction and the most unfavourable force direction is assumed, as well as an input speed  $n_1 = 1400 \text{ min}^{-1}$  at a given rated power  $P_N$ . The calculation was made with a standard shaft and standard bearing. For exact determination of the permissible shear force  $F_{r,zul}$ , the direction of force and the rotating direction must be specified.



Input unit U5 to U7

Input shaft unit [mm]	M <sub>max</sub> [Nm] at F <sub>r</sub> = 0		Nominal power P <sub>N</sub> [kW]												
	Ø d	l	0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	
U2	19	40	18	2600	2500	2400	2300	2000	1800	1600	1300	700	-	-	-
U3	24	50	100	5000	5000	5000	5000	5000	5000	4600	4200	3400	2500	2200	1700
U5	28	60	100	6500	6500	6500	6500	6500	6500	6500	6400	6400	6400	6300	6300
	38	80	170	11000	11000	11000	11000	11000	11000	11000	11000	10500	10500	10000	9500
	42	110	240	11000	11000	11000	11000	11000	11000	11000	11000	10500	10500	10000	9500
U6	48	110	490	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	14500	14500
U7	55	110	970	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000

Input shaft unit [mm]	M <sub>max</sub> [Nm] at F <sub>r</sub> = 0		Nominal power P <sub>N</sub> [kW]											
	Ø d	l	7.5	9.2	11	15	22	30	37	45	55	75	90	
U2	19	40	18	-	-	-	-	-	-	-	-	-	-	-
U3	24	50	100	1000	500	-	-	-	-	-	-	-	-	-
U5	28	60	100	6200	6100	6000	-	-	-	-	-	-	-	-
	38	80	170	9000	8000	7500	6000	-	-	-	-	-	-	-
	42	110	240	9000	8000	7500	6000	3000	-	-	-	-	-	-
U6	48	110	490	14000	13500	13000	11500	9500	7500	5500	3000	-	-	-
U7	55	110	970	25000	25000	25000	25000	25000	25000	25000	24000	23000	21000	20000

Permissible shear force - Input unit F<sub>r,zul</sub> at x = l/2

## Explosion-proof gear units and geared motors

WG20 type series gear units meet the requirements of Directive 2014/34/EU on equipment for use in potentially hazardous areas. Both gear units and geared motors can be used.



WG20 geared motor for application in zones 2 + 22



WG20 geared motor for application in zones 1 + 21

### General information

The operation of systems requires special measures in areas with explosive air/gas mixtures or air/dust mixtures. The Directive governs the possible uses of equipment within the existing danger zones, whereby both electrical and mechanical equipment, such as gear units, must meet the minimum requirements specified in the standard.

### Zoning

Zoning takes into account whether the Ex atmosphere is a mixture of air with gas or with dust.

### Relevant areas

- **Category 2G/2D and EPL Gb/Db units**

are intended for use in areas in which there is *occasionally* an explosive atmosphere. They are permitted for use in zone 1 (category 2G) and zone 21 (category 2D), and zone 2 (3G) and 22 (3D).

- **Category 3G/3D and EPL Gc/Dc units**

are intended for use in areas in which an explosive atmosphere caused by gases, vapours, mists or suspended dust is unlikely to occur. However, if this does occur, it will occur only *rarely or for a short period of time*. These units are permitted for use in zone 2 (category 3G) or zone 22 (category 3D).



## Marking according to standards

Category	Equipment group I		Equipment group II					
	Mines		Other areas with dust or gas explosive atmosphere					
	M1	M2	1		2		3	
Presence of explosive atmospheres			continuous, frequent or for long periods		likely in normal operation		not likely in normal operation, only for short period of time	
Surrounding atmosphere			G	D	G	D	G	D
Zone			0	20	1	21	2	22
Equipment Protection Level	Ma	Mb	Ga	Da	Gb	Db	Gc	Dc
Type of protection (not electric)					h (c, k)	h (c, k)	h (c, k)	h (c, k)
Type of protection (electric)					d, eb	tb	ec	tc
Ex-marking gear unit					II 2G Ex h IIC T4 Gb	II 2D Ex h IIIC T125°C Db	II 3G Ex h IIC T4 Gc	II 3D Ex h IIIC T125°C Dc
Ex-marking motor					II 2G Ex d IIC T4 Gb	II 2D Ex tb IIIC T125 °C Db	II 3G Ex ec IIC T3 Gc	II 3D Ex tc IIIC T125°C Dc

Possible range of application for WG20 products

### Types of ignition protection used

The ignition of an explosive mixture in the classified zones is to be prevented by the various types of ignition protection used for the equipment.

- Types of ignition protection for non-electrical equipment: according to EN ISO 80079-36 and -37

„c“: Protection by means of structural safety

„k“: Protection by means of fluid coupling

- Types of ignition protection for electrical equipment: according to EN ISO 60079-07 and -31

„ec“ and „eb“: Protection by means of increased safety

„tc“ and „tb“: Protection by means of housing

„d“: flameproof enclosure

### Applicable explosive atmospheres

For the types of ignition protection used, parts which can be exposed to an explosive atmosphere without restriction must not reach excessively high temperatures.

- Temperature classes for gas explosion protection (G)

Flammable gases and vapours are divided into temperature classes according to their flammability. The influence of ambient temperature and self-heating of the equipment must also be taken into account.

The maximum surface temperature of the equipment may only assume values that correspond to the temperature class for gases. In fact, the ignition temperature represents the lowest temperature value at which a hot surface can ignite the corresponding explosive atmosphere.

In addition, gases and vapours are classified in explosion groups IIA, IIB and IIC. The hazardousness of gases increases from explosion group IIA to IIC.

**WG20 geared motors can be used in temperature class T3 (max. surface temperature 200 °C).**

**WG20 gear units with input types can be used in temperature class T4 (max. surface temperature 135 °C).**

Temperature class	T1	T2	T3	T4	T5	T6
Max. permissible surface temperature	450 °C	300 °C	200 °C	135 °C	100 °C	85 °C

Possible range of application for WG20 products

- Surface temperature for dust explosion protection (D)

Dusts are not divided into temperature classes, but the value of the minimum ignition temperature is specified.

**WG20 gear units and geared motors are classified with a max. surface temperature of 125 °C.**

Dust group	Description	Degree of protection	
		tb	tc
IIIA	Combustible flyings	IP5X	IP5X
IIIB	Non-conductive dust	IP6X	IP5X
IIIC	Conductive dust	IP6X	IP6X

Necessary degree of protection for dust explosive atmospheres

## Table of lubricants

Recommended ambient temperatures	-10 °C ... +60 °C	-20 °C ... +80 °C	-25 °C ... +60 °C	-40 °C ... +80 °C	-20 °C ... +40 °C
DIN (ISO)	CLP (mineral oil) <sup>1)</sup>	CLP PG (polyglycol oil)	CLP PG (polyglycol oil)	CLP-HC (polyalphaolefin oil) <sup>2)</sup>	food grade
ISO VG	220	460	220	220	220
ARAL	Degol BG 220	Degol GS 460	Degol GS 220	Degol PAS 220	-
BP	Energol GR-XP 220	Energol SG-XP 460	Energol SG-XP 220	Energol HTX 220	-
Castrol	Alpha SP 220	Alphasyn PG 460	Alphasyn PG 220	Alphasyn HTX 220	Optileb GT 220
Klüber	Klüberoil GEM 1-220 N	Klübersynth GH 6-460	Klübersynth GH 6-220	Klübersynth GEM 4-220 N	Klüberoil 4UH1 220 N
Mobil	Mobilgear 600 XP 220	Glygoyle 460	Glygoyle 220	SHC 630	SHC Cibus 220
Shell	Omala S2 G 220	Omala S4 WE 460	Omala S4 WE 220	Omala S4 GX 220	-
Addinol	Gear Oil 220 F	Poly Gear PG 460	Poly Gear PG 220	Eco Gear 220 S	Ecoleb 220 FG

1) standard lubricant acc. to DIN 51517 part 3 - CLP ISO VG 220

2) note critical starting behaviour at low temperatures

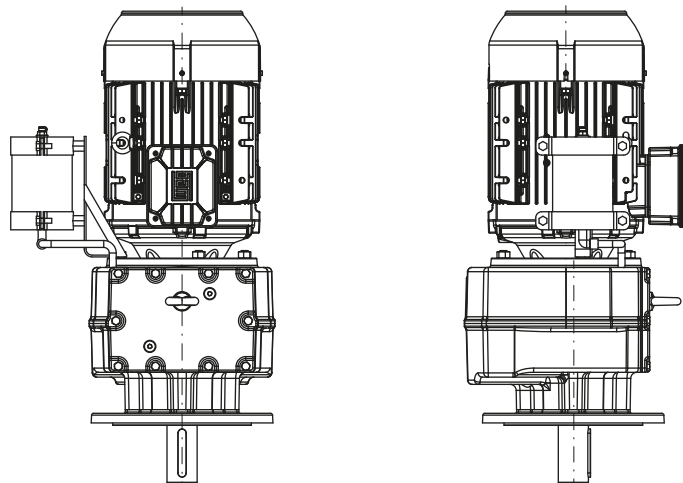
## Lubricant expansion unit

For gear units and geared motors in M4 design, high oil levels are required for lubrication of the first gear stage.

To prevent oil leaking from the gear unit during operation, expansion units are to be used at reductions  $i < 20$  or at higher motor speeds (e.g. frequency drives operation  $> 2000 \text{ min}^{-1}$ ).

The use of lubricant expansion units is recommended for gear unit sizes from C07 (helical gear unit), F06 (parallel shaft gear unit) and K06 (helical bevel gear unit) and for the conditions described above.

Example: CF082-11P-132S-04E-TH-TF



## Painting

Standard colour geared motors: RAL 7011 (RAL 5009, RAL 9005 without additional costs)

In addition to the standard high-grade polyurethane-based surface finish other special finishes for applications that are subject to specific environmental conditions are offered. Paintwork is basically categorised according to the composition of the applied surface finish. The standard program contains 6 painting systems categorised from LA0 to LC5. Special colours are possible.

Painting system	Application	Layering	NDFT Nominal dry film thickness	Temperature range	Corrosion category DIN EN ISO 12944-5
not painted					
LA0	Primer	Dip primer Base coat (2 pack PUR)		-40 °C - +120 °C	
<b>LC1 (Standard)</b>	<b>Indoor installation, neutral atmosphere</b>	<b>Dip primer Varnish (1K-AY-PUR*) or (2 pack PUR**)</b>	<b>40 µm</b>	<b>-40 °C - +120 °C</b>	<b>C1</b>
LC2	Protected outdoor installation, neutral atmosphere	Dip primer 2x Varnish (2 pack PUR)	140 µm	-40 °C - +120 °C	C2
LC3	Outdoor installation, industrial atmosphere	Dip primer Base coat (2 pack PUR) Varnish (2 pack PUR)	160 µm	-40 °C - +120 °C	C3
LC4	Outdoor installation, aggressive atmosphere	Dip primer Base coat (2 pack PUR) Intermediate base coat (2 pack PUR) Varnish (2 pack PUR)	240 µm	-40 °C - +120 °C	C4
LC5	Coast or offshore, very aggressive atmosphere, under water	Dip primer Base coat (2 pack PUR) Intermediate base coat (2 pack PUR) 2x Varnish (2 pack PUR)	320 µm	-40 °C - +120 °C	C5

\*) Colours RAL 7011, RAL 5009, RAL 9005, RAL 9007

\*\*) All other colours

## Degrees of protection

Degree of protection according to DIN EN 60034-5.

The designation to indicate the degrees of protection consists of the characteristic letters IP followed by two numerals.

**Code figure 1:** degree of protection against contact with live or moving parts and against ingress of solid foreign objects

**Code figure 2:** degree of protection against harm for ingress of water

Code figure 1	
	Description
0	No protection
1	Protected against solid foreign objects of 50 mm diameter and larger: the probe (50 mm ball) may not fully penetrate.
2	Protected against solid foreign objects of 12.5 mm diameter and larger: the probe (ball 12.5 mm) shall not fully penetrate.
3	Protected against solid foreign objects of 2.5 mm diameter: the probe (ball 2.5 mm) must not penetrate at all.
4	Protected against solid foreign objects of 1 mm and larger: the probe (1 mm ball) must not penetrate at all.
5	Dust protected: ingress of dust is not totally prevented, but dust shall not penetrate in a quantity that the operation of the device is affected or to impair safety.
6	Dustproof: no ingress of dust at underpressure of 20 mbar in the housing

Code figure 2	
	Description
0	No protection
1	Protected against dripping water: vertically falling drops may not have any harmful effects.
2	Protected against dripping water when the housing is inclined up to 15°: vertically falling drops may not have any harmful effects when the housing is inclined up to 15° from the vertical.
3	Protected against water spray: water sprayed at an angle up to 60° on both sides of the vertical may not have any harmful effects.
4	Protected against splash water: water splashed against the housing from any direction may not have any harmful effects.
5	Protected against water jets: water that is from any direction in jets against the housing may not have any harmful effects.
6	Protected against strong water jets: water that is from any direction in powerful jets against the housing may not have any harmful effects.
7	Protected against the effects of temporary (1m for 30 min) immersion in water: water must not enter in quantities causing harmful effects, if the housing is under standardised conditions of pressure and time temporarily submerged in water.
8	Protected against the effects of continuous immersion in water: water must not enter in quantities causing harmful effects when the enclosure is permanently submerged in water under conditions to be agreed between manufacturer and user. The conditions must be more stringent than for index 7.

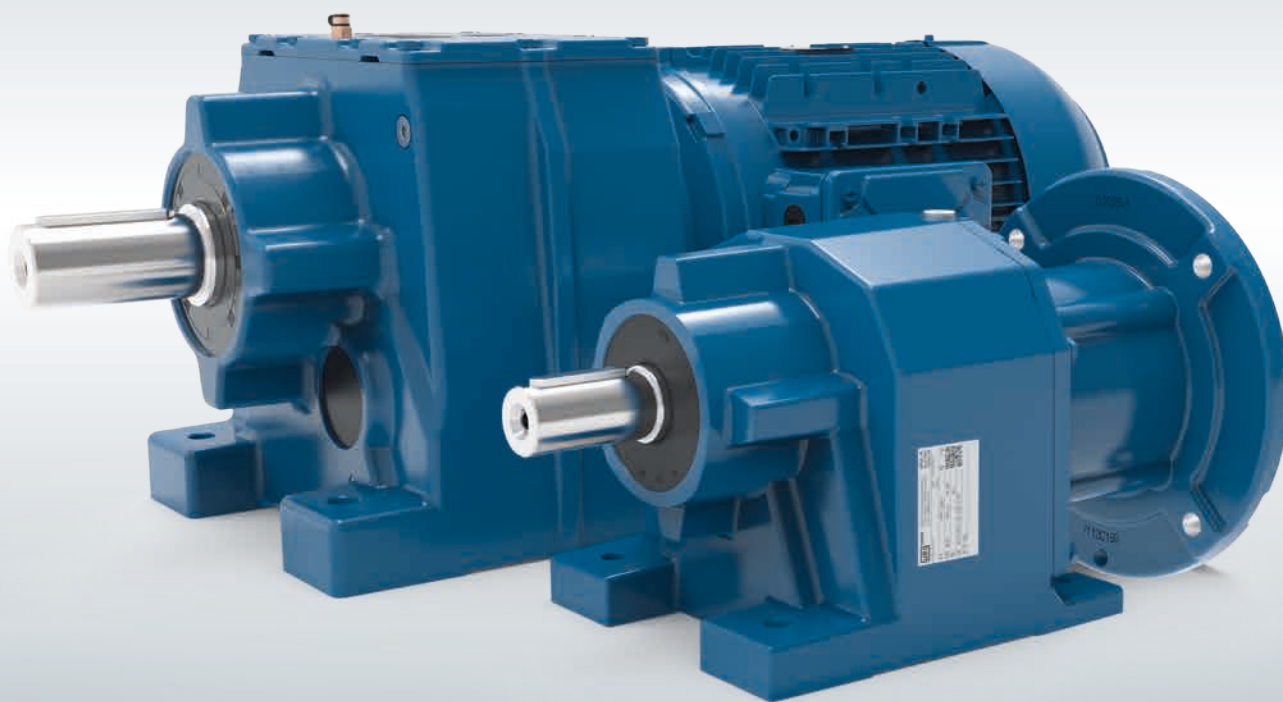
### Degree of protection:

Modular system motor: IP55 (standard) to IP67

Brake: IP55 (standard) to IP66

Gear unit: IP65 (standard) to IP68





## Helical gear units and Helical geared motors C

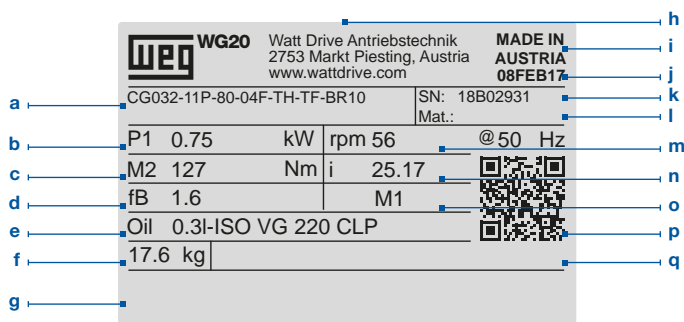


# Technical Data

Size	C00	C01	C03	C05	C06	C07	C08	C09	C10	C13	C14	C16
Power [kW]	0.12 - 0.75	0.12 - 1.5	0.12 - 3	0.12 - 7.5	0.12 - 9.2	0.12 - 15	0.18 - 22	0.55 - 30	1.1 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]	50	85	200	400	600	820	1550	3000	4500	8000	13000	18000
Ratio	2.44-47.44	3.09-66.5	3.34-286.32	3.83-328.43	3.73-375.71	5.30-351.33	5.12-368.94	4.22-306.73	4.19-246.43	4.00-204.88	5.17-206.88	5.96-234.67
Number of stages	2	2	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3
Housing material	aluminium						cast iron					
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2										
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6										
	Material	standard: C45E (1.1191) / stainless steel on request										
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347										
	Material	cast iron										
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7										
	Material	16MnCr5 (1.7131) case hardened - minimum 58HRC										
Shaft seals	Type	type AS acc. to DIN 3760										
	Material	standard NBR / special FKM										
Bearing	standard / reinforced											
Lubricants	Type	standard CLP 220 / special CLP HC 220										
	Quantity	depending on mounting position										
Axle height	acc. to DIN 747: ≤ 50: -0.4; > 50 to ≤ 250: -0.5; > 250: -1 for foot-mounted gear motors, the motor may extend below the mounting surface											

## General information

### 1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		



**2. Type code**

CG083-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

CG083-EX-I112

1 2 3 4 5 11

- 1** Type: C = Helical gear unit
- 2** Design: A = Foot mounted and B5 flange execution with output shaft  
C = B14 flange execution with output shaft  
F = Flange execution with output shaft  
G = Foot mounted with output shaft  
W = Foot mounted and B14 flange execution with output shaft
- 3** Size:
 

00	05	08	13
01	06	09	14
03	07	10	16
- 4** Number of stages: 2 = 2 gear stages  
3 = 3 gear stages
- 5** ATEX execution: when operated in explosive atmospheres, see page 14
- 6** Motor type: 11N = Integral motor aluminium IE1  
11P = Integral motor aluminium IE3  
22P = Integral motor cast iron IE3
- 7** Motor frame size:
 

63	90S/L	112M	L132M	180M	225S/M
71	100L	132S	160M	180L	250S/M
80	L100L	132M	160L	200L	
- 8** Number of poles: 04 = 4 poles  
06 = 6 poles
- 9** Power indicator: D  
E  
F  
G
- 10** Motor modules: see from page 385
- 11** Adapters, Input unit:
 

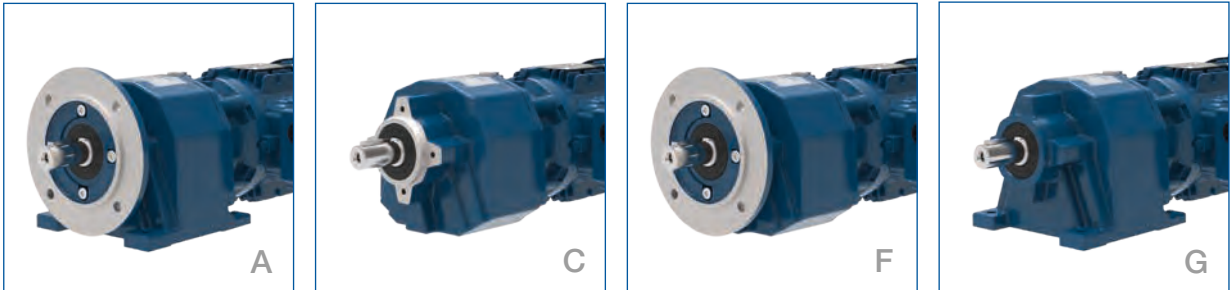
IEC Adapter	NEMA Adapter	SERVO Adapter	Input unit
I63 I160	N56 N254	S92 S141	U2
I71 I180	N143 N284	S105 S142	U3
I80 I200	N182 N324	S114 S180	U5
I90 I225	N184 N364	S115 S189	U6
I100 I250	N213	S130 S190	U7
I112 I280			
I132			

Type code Motor see page 361

### 3. Range

Size	C00	C01	C03	C05	C06	C07	C08	C09	C10	C13	C14	C16
Housing material	Aluminium					Cast iron						

### 4. Design



<b>A</b>	Foot mounted and B5 flange execution with output shaft
<b>C</b>	B14 flange execution with output shaft
<b>F</b>	Flange execution with output shaft
<b>G</b>	Foot mounted with output shaft
<b>W</b>	Foot mounted and B14 flange execution with output shaft

### 5. Venting the gear unit

The helical gear unit sizes C00 to C06 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.

By default, the helical gear units from C07 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 26).



### 6. Overhung and axial loads

The overhung loads ( $F_{H1}$ ) indicated in the respective selection tables apply to gear units with the force acting on the shaft center ( $x=l/2$ ). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor ( $f_z$ ) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
$f_z=1.1$ ( $z \leq 17$ )	$f_z=1.2$ ( $z \leq 13$ )	$f_z=1.1$ ( $z > 13$ )	$f_z=1.8$	$f_z=2.5$

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

<b>Q1</b>	$F_{zL} = F_{rN} \cdot a_1$
<b>Q2</b>	$F_{zW} = F_W \cdot a_2$
<b>Q3</b>	$F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$
<b>Q4</b>	$F_{Qvorh} \leq F_{zL}$
	$F_{Qvorh} \leq F_{zW}$

Variable	Unit	Description
a1		Load action factor - output shaft bearing from Table 1
a2		Load action factor - output shaft from Table 1
d0	[m]	Effective diameter of the transmission element
M2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
FzL	[N]	Permissible overhung load for output shaft bearings
FzW	[N]	Permissible overhung load for output shaft
FrN	[N]	Permissible overhung load from selection tables
FW	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
FQvorh	[N]	Existing overhung load at gear shaft
fz		Factor for transmission element
Mmax	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

x / l						
0	0.25	0.5	0.75	1	1.5	2
a1 → Equation Q1						
1.39	1.18	1.00	0.85	0.73	0.52	0.38
a2 → Equation Q2						
2.00	2.00	1.00	0.55	0.38	0.23	0.17

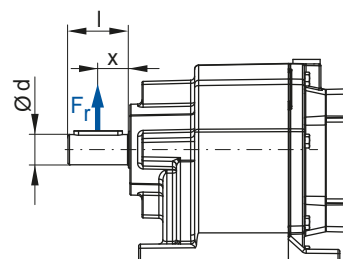


Table 1: Load action factors a1, a2

Intermediate values can be interpolated linearly. Combined load ( $F_r \neq 0$ ;  $F_a = 0$ ) on request.

Output shaft [mm]		Mmax at Fr = 0	Output torque M2 [Nm]														
			50	85	200	400	600	820	1550	3000	4500	8000	13000	18000			
Ø d	l		Fw [kN] at x/l = 0.5 → Equation Q2														
20	40	160	3.4	3.1													
25	50	300	5.9	5.7	4.8												
30	60	500		7.6	7.1	5.0											
35	70	800			11.0	10.0	8.3										
40	80	1170				13.0	12.0	10.7									
50	100	2250				24.0	24.0	23.0	20.0								
60	120	3740						31.0	30.0	23.0							
70	140	5850							44.0	41.0	36.0						
90	170	11700								72.0	70.0	61.0					
110	210	20800									106.0	103.0	93.0				
120	210	26700										129.0	121.0	109.0			

Table 2: Permissible overhung load - output shaft x = l/2

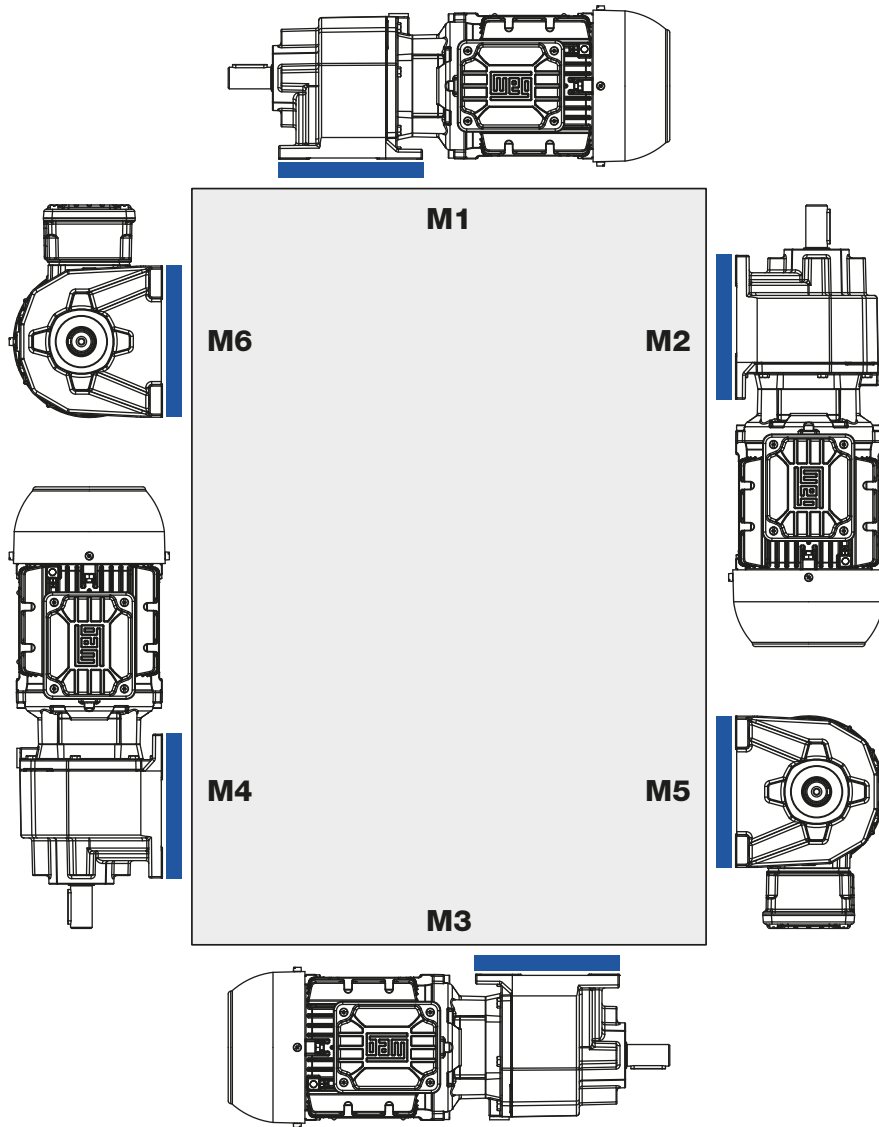
The axial loads ( $F_{aN}$ ) for execution with output shaft, given in the following selection tables, are valid at radial force  $F_{rN} = 0$ . If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.

## 7. Mounting positions, Position of the terminal box and Cable entry

### Mounting positions foot type - Sizes C00 to C06

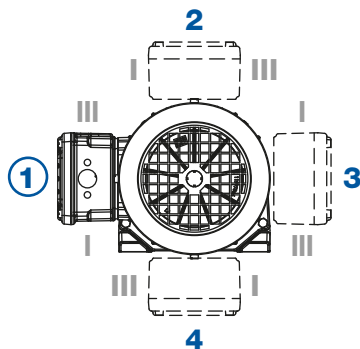
Gear units C00 to C06 are not ventilated and supplied with lifetime lubrication.

■ Reference area



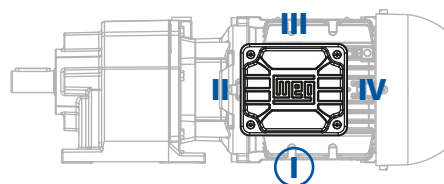
### Position of the terminal box

Standard: Position 1



### Cable entry

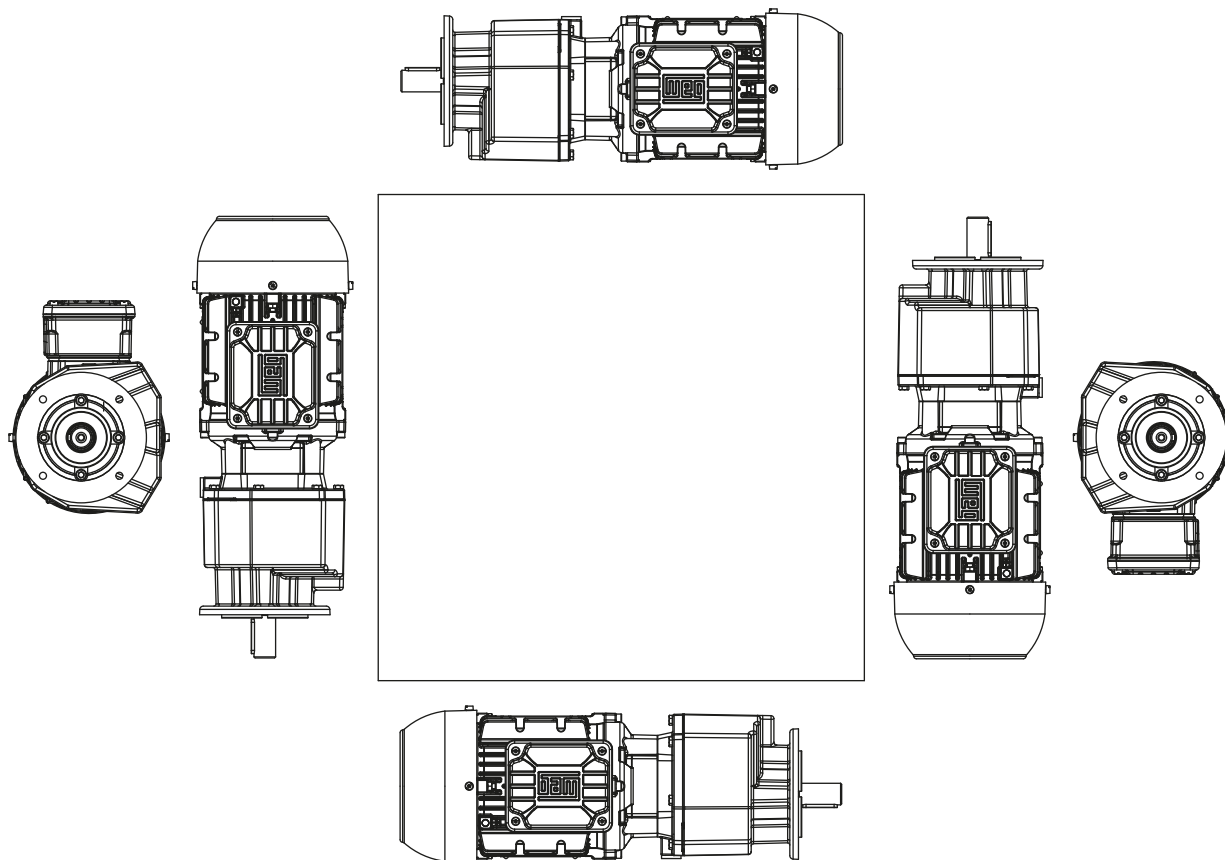
Standard: Position I



### Mounting positions flange type - Sizes C00 to C06

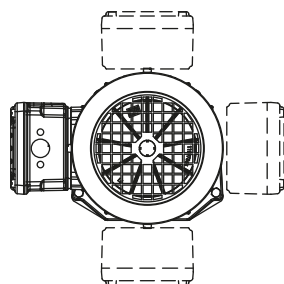
Gear units C00 to C06 are not ventilated and supplied with lifetime lubrication.

■ Reference area



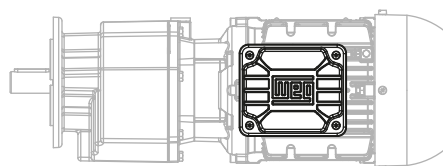
### Position of the terminal box

Standard: Position 1






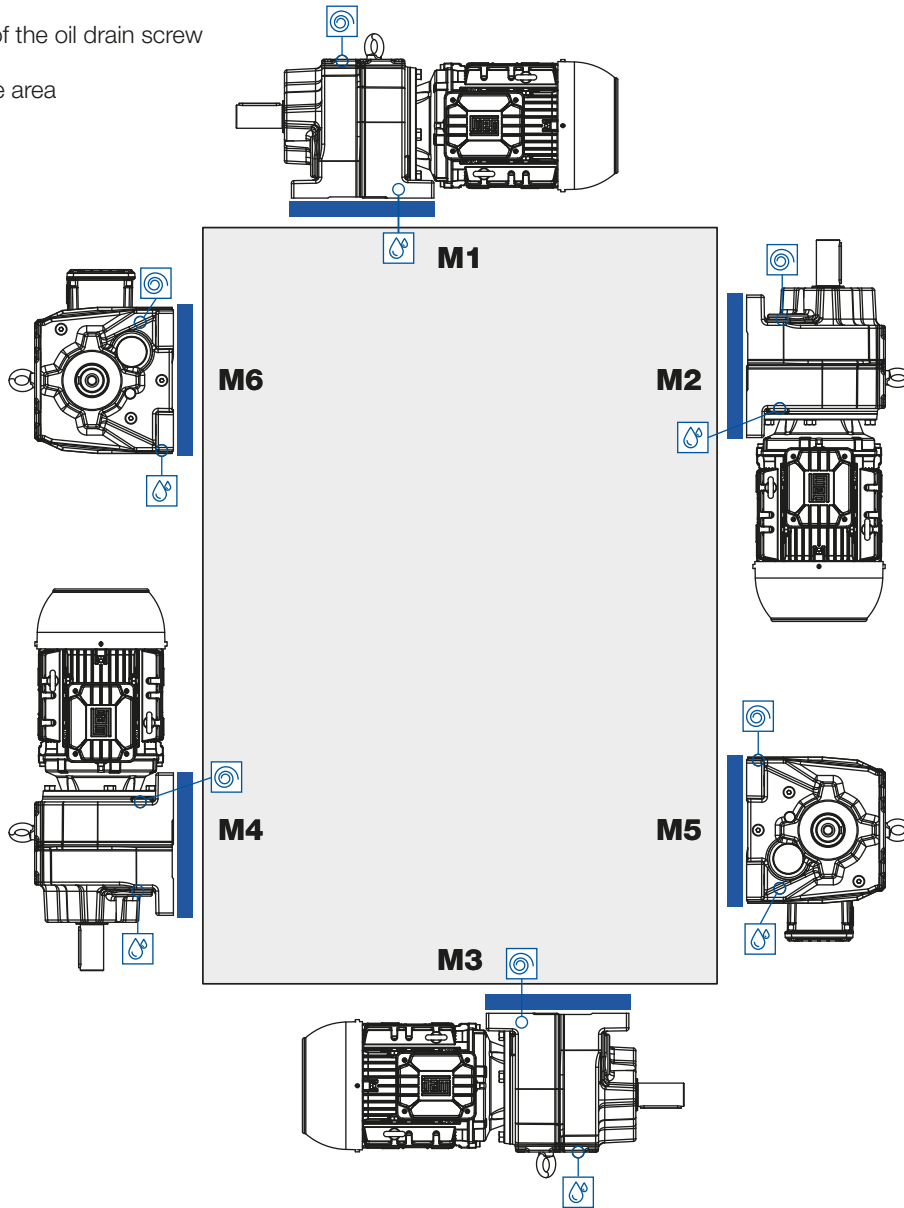
### Cable entry

Standard: Position I



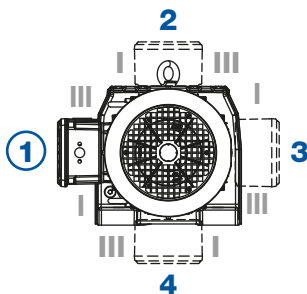
### Mounting positions foot type - Sizes C07 to C16

-  Position of the venting screw
-  Position of the oil drain screw
-  Reference area



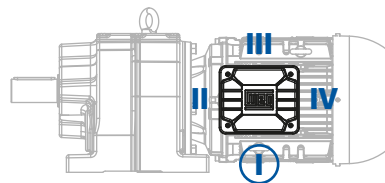
#### Position of the terminal box

Standard: Position 1



#### Cable entry

Standard: Position I



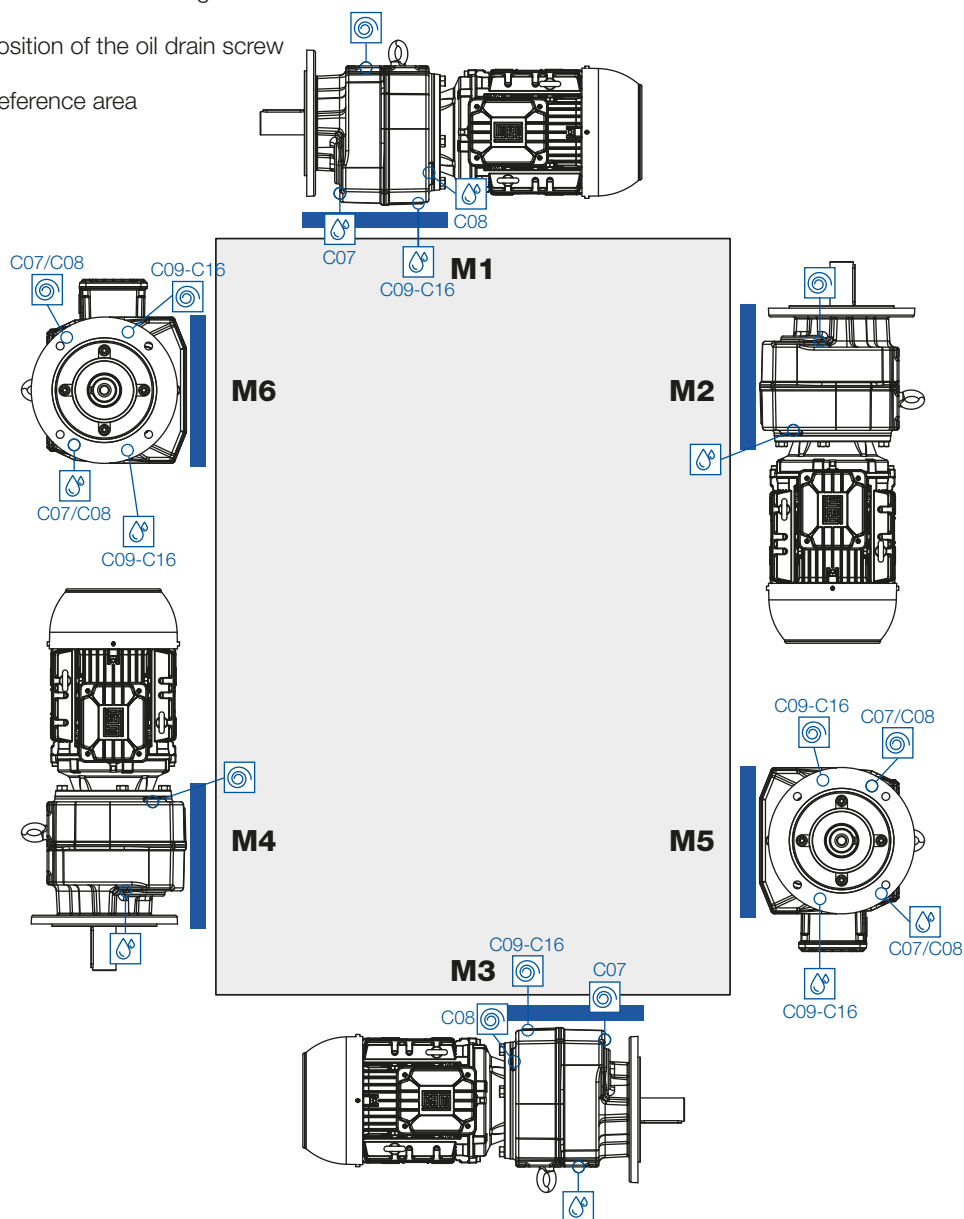


### Mounting positions flange type - Sizes C07 to C16

Position of the venting screw

Position of the oil drain screw

Reference area

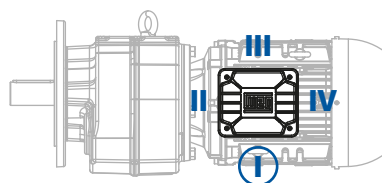
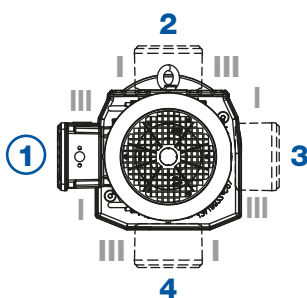


### Position of the terminal box

Standard: Position 1

### Cable entry

Standard: Position I





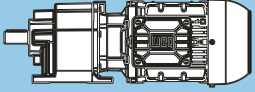
## Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20°C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up to 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

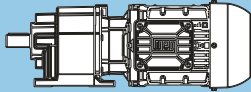
### Structure of the selection tables

1										2	
P <sub>N</sub> = 0.12 kW										IE1	
50 Hz		60 Hz				at 50 Hz				m kg	Dimension sheet see page
0.12 kW		0.14 kW									
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN					
3	4	5	6	7	8	9	10		11	12	

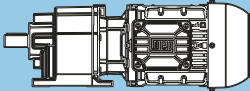
- 1 Rated power of the motor
- 2 Given values are based on the respective efficiency class
- 3 Output speed at 50 Hz
- 4 Output speed at 60 Hz
- 5 Output torque
- 6 Service factor
- 7 Total ratio
- 8 Permissible radial load at midpoint of the output shaft extension (standard bearing) at axial load=0
- 9 Permissible axial load (standard bearing) at radial load=0
- 10 Geared motor type
- 11 Weight
- 12 Page reference for dimension sheet

\*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

Increased rated power
1.2 x P <sub>N</sub>

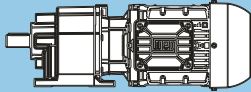
P <sub>N</sub> = 0.12 kW								IE1	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.12 kW		0.14 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
2.5	3.1	452	1.85	351.33	13.1	14.1	CG073-11N-63-06F CF073-11N-63-06F	37 41	120
2.8	3.5	412	2.00	319.60	13.3	14.1			
3.2	4.0	359	2.30	278.44	13.5	14.4			
3.5	4.4	326	2.55	253.30	13.6	14.4			
4.1	5.1	278	2.95	216.20	13.7	14.6			
3.9	4.8	293	2.85	351.33	13.7	14.6	CG073-11N-63-04E CF073-11N-63-04E	37 41	120
2.4	2.9	484	1.25	375.71	9.4	6.7	CG063-11N-63-06F CF063-11N-63-06F	21 26	118
2.6	3.2	444	1.40	344.51	9.7	6.8			
2.9	3.6	396	1.55	307.24	10.1	7.0			
3.2	3.9	363	1.70	281.73	10.3	7.0			
3.7	4.6	312	1.95	242.60	10.5	7.2			
4.0	5.0	286	2.10	222.46	10.6	7.3			
4.7	5.9	242	2.50	188.11	10.8	7.4			
5.2	6.4	222	2.75	172.49	10.9	7.4			
3.7	4.5	313	1.95	375.71	10.5	7.2	CG063-11N-63-04E CF063-11N-63-04E	21 26	118
4.0	4.9	287	2.10	344.51	10.6	7.3			
4.5	5.5	256	2.35	307.24	10.8	7.4			
4.9	6.0	235	2.60	281.73	10.8	7.4			
5.7	7.0	202	3.00	242.60	10.9	7.5			
2.7	3.4	423	0.95	328.43	4.5	6.2	CG053-11N-63-06F CF053-11N-63-06F	16 21	116
3.0	3.7	384	1.05	298.57	5.2	6.3			
3.3	4.1	345	1.20	267.93	5.8	6.5			
3.7	4.5	314	1.30	243.57	6.2	6.7			
4.2	5.2	275	1.50	213.71	6.6	6.9			
4.6	5.7	250	1.60	194.29	6.8	6.9			
5.4	6.7	213	1.90	165.45	7.0	7.1			
5.9	7.3	194	2.10	150.41	7.2	7.2			
6.7	8.3	171	2.35	132.97	7.3	7.3			
7.4	9.1	156	2.60	120.88	7.4	7.4			
4.2	5.2	274	1.50	328.43	6.6	6.9	CG053-11N-63-04E CF053-11N-63-04E	16 21	116
4.6	5.7	249	1.65	298.57	6.8	7.0			
5.1	6.3	223	1.80	267.93	7.0	7.1			
5.6	7.0	203	2.00	243.57	7.1	7.2			
6.4	7.9	178	2.25	213.71	7.3	7.3			
7.1	8.7	162	2.50	194.29	7.3	7.4			
8.3	10	138	2.95	165.45	7.4	7.5			
4.4	5.5	261	0.80	202.55	3.7	2.9	CG033-11N-63-06F CF033-11N-63-06F	12 14	114
4.9	6.1	233	0.90	180.83	4.3	3.1			
5.4	6.7	211	0.95	164.23	4.6	3.3			
6.2	7.8	183	1.10	142.47	5.0	3.5			
6.9	8.5	167	1.25	129.39	5.1	3.5			
8.1	10	141	1.45	109.79	5.4	3.7			
8.9	11	128	1.60	99.71	5.5	3.8			
10	13	110	1.85	85.78	5.6	3.9			
11	14	100	2.00	77.90	5.7	4.0			
14	17	82	2.45	64.05	5.7	4.1			
15	19	75	2.70	58.17	5.8	4.1			
4.8	5.9	239	0.85	286.32	4.1	3.1	CG033-11N-63-04E CF033-11N-63-04E	11 13	114
5.3	6.5	217	0.95	260.03	4.5	3.2			
6.2	7.6	186	1.10	223.03	4.9	3.4			
6.8	8.4	169	1.20	202.55	5.1	3.5			
7.6	9.4	151	1.35	180.83	5.3	3.7			
8.4	10	137	1.50	164.23	5.4	3.7			
9.7	12	119	1.70	142.47	5.5	3.9			
11	13	108	1.90	129.39	5.6	3.9			
13	15	92	2.20	109.79	5.7	4.0			
14	17	83	2.45	99.71	5.7	4.1			
16	20	71	2.80	85.78	5.8	4.2			

Legend see page 29

<b>P<sub>N</sub> = 0.12 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.12 kW</b>		<b>0.14 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
13	17	86	1.00	66.50	3.1	1.1	<b>CG012-11N-63-06F</b> <b>CF012-11N-63-06F</b>	9.1 10	112
15	19	77	1.15	59.59	3.2	1.1			
17	21	67	1.30	51.80	3.3	1.2			
19	24	60	1.45	46.42	3.3	1.2			
21	26	54	1.60	42.00	3.4	1.3			
24	29	48	1.80	37.64	3.4	1.3			
27	33	43	2.00	33.09	3.5	1.4			
30	37	38	2.25	29.65	3.5	1.4			
35	43	33	2.60	25.50	3.5	1.4			
36	44	32	1.30	25.05	3.5	1.3			
39	48	29	2.90	22.85	3.5	1.4			
46	57	25	2.65	19.51	3.6	1.4			
21	25	55	1.55	66.50	3.4	1.3	<b>CG012-11N-63-04E</b> <b>CF012-11N-63-04E</b>	8.7 10	112
23	28	50	1.75	59.59	3.4	1.3			
27	33	43	2.00	51.80	3.5	1.3			
30	37	39	2.20	46.42	3.5	1.4			
33	40	35	2.45	42.00	3.5	1.4			
37	45	31	2.75	37.64	3.5	1.4			
55	68	21	2.00	25.05	3.6	1.4			
19	23	61	0.85	47.44	3.6	1.1	<b>CG002-11N-63-06F</b> <b>CF002-11N-63-06F</b>	8.0 9.3	110
21	26	55	0.95	42.34	3.6	1.2			
24	30	47	1.10	36.85	3.7	1.2			
27	34	42	1.20	32.89	3.7	1.3			
30	38	38	1.35	29.33	3.7	1.3			
34	42	34	1.50	26.18	3.7	1.3			
39	48	30	1.70	23.00	3.8	1.4			
43	54	26	1.90	20.53	3.8	1.4			
51	64	22	2.25	17.29	3.8	1.4			
53	66	22	1.45	16.86	3.7	1.4			
58	72	20	2.55	15.43	3.6	1.5			
66	82	17	2.90	13.54	3.5	1.5			
68	84	17	2.60	13.10	3.4	1.4			
29	36	40	1.30	47.44	3.7	1.3	<b>CG002-11N-63-04E</b> <b>CF002-11N-63-04E</b>	7.6 8.9	110
32	40	35	1.45	42.34	3.7	1.3			
37	46	31	1.65	36.85	3.8	1.4			
42	52	27	1.85	32.89	3.8	1.4			
47	58	24	2.05	29.33	3.8	1.4			
53	65	22	2.30	26.18	3.7	1.4			
60	74	19	2.65	23.00	3.6	1.5			
67	83	17	2.95	20.53	3.5	1.5			
80	98	14	3.50	17.29	3.3	1.5			
82	101	14	2.25	16.86	3.3	1.5			
89	110	13	3.90	15.43	3.2	1.5			
102	125	11	4.45	13.54	3.1	1.5			
105	129	11	3.95	13.10	3.0	1.5			
114	140	10	5.00	12.08	3.0	1.5			
132	163	9	5.20	10.42	2.8	1.5			
138	170	8	6.05	9.97	2.8	1.6			
155	190	7	6.75	8.90	2.7	1.6			
168	207	7	6.65	8.17	2.6	1.5			
200	247	6	8.60	6.88	2.5	1.6			
224	276	5	9.80	6.14	2.4	1.6			
286	352	4	9.75	4.81	2.2	1.6			
388	478	3	11.90	3.54	2.0	1.6			

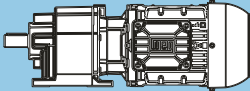


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P <sub>N</sub> = 0.18 kW								IE1	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.18 kW		0.22 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
2.4	3.0	709	2.20	368.94	23.7	21.1	CG083-11N-71-06E CF083-11N-71-06E	63	122
3.1	3.9	547	2.85	284.84	24.0	21.4			
2.5	3.1	675	1.25	351.33	11.9	13.5	CG073-11N-71-06E CF073-11N-71-06E	39 43	120
2.8	3.5	614	1.35	319.60	12.3	13.5			
3.2	4.0	535	1.55	278.44	12.7	13.9			
3.5	4.4	486	1.70	253.30	13.0	13.9			
4.1	5.1	415	2.00	216.20	13.3	14.3			
4.6	5.6	378	2.20	196.68	13.4	14.2			
5.0	6.2	341	2.45	177.39	13.5	14.5			
5.5	6.8	310	2.65	161.38	13.6	14.5			
3.9	4.8	441	1.90	351.33	13.2	14.2	CG073-11N-63-04F CF073-11N-63-04F	37 41	120
4.3	5.3	401	2.05	319.60	13.3	14.2			
4.9	6.1	349	2.35	278.44	13.5	14.4			
5.4	6.7	318	2.60	253.30	13.6	14.4			
2.4	2.9	722	0.85	375.71	6.5	6.0	CG063-11N-71-06E CF063-11N-71-06E	23 28	118
2.6	3.2	662	0.95	344.51	7.5	6.2			
2.9	3.6	590	1.05	307.24	8.4	6.4			
3.2	3.9	541	1.15	281.73	8.9	6.5			
3.7	4.6	466	1.30	242.60	9.6	6.8			
4.0	5.0	427	1.45	222.46	9.9	6.8			
4.8	5.9	361	1.70	188.11	10.3	7.1			
5.2	6.4	331	1.85	172.49	10.4	7.1			
5.8	7.2	296	2.05	153.96	10.6	7.2			
6.3	7.8	271	2.25	141.17	10.7	7.3			
7.6	9.3	228	2.65	118.51	10.9	7.4			
8.2	10	209	2.90	108.67	10.9	7.5			
3.6	4.5	471	1.30	375.71	9.5	6.7	CG063-11N-63-04F CF063-11N-63-04F	21 26	118
4.0	4.9	432	1.40	344.51	9.8	6.8			
4.5	5.5	386	1.60	307.24	10.1	7.0			
4.9	6.0	353	1.70	281.73	10.3	7.1			
5.6	7.0	304	2.00	242.60	10.6	7.2			
6.2	7.6	279	2.15	222.46	10.7	7.3			
7.3	9.0	236	2.55	188.11	10.8	7.4			
7.9	9.9	216	2.80	172.49	10.9	7.5			
3.3	4.1	515	0.80	267.93	1.3	5.8	CG053-11N-71-06E CF053-11N-71-06E	18 23	116
3.7	4.5	468	0.90	243.57	3.4	5.9			
4.2	5.2	410	1.00	213.71	4.8	6.2			
4.6	5.7	373	1.10	194.29	5.4	6.4			
5.4	6.7	318	1.30	165.45	6.1	6.7			
6.0	7.3	289	1.40	150.41	6.4	6.8			
6.7	8.3	255	1.60	132.97	6.7	6.9			
7.4	9.1	232	1.75	120.88	6.9	7.0			
8.8	11	195	2.10	101.55	7.2	7.2			
9.7	12	177	2.30	92.32	7.3	7.3			
12	14	149	2.70	77.79	7.4	7.4			
13	16	136	2.95	70.71	7.5	7.5			
4.2	5.2	412	1.00	328.43	4.7	6.2	CG053-11N-63-04F CF053-11N-63-04F	16 21	116
4.6	5.7	375	1.10	298.57	5.4	6.4			
5.1	6.3	336	1.20	267.93	5.9	6.6			
5.6	7.0	306	1.35	243.57	6.3	6.7			
6.4	8.0	268	1.50	213.71	6.6	6.9			
7.1	8.8	244	1.65	194.29	6.8	7.0			
8.3	10	208	1.95	165.45	7.1	7.2			
9.1	11	189	2.15	150.41	7.2	7.2			
10	13	167	2.40	132.97	7.3	7.3			
11	14	152	2.65	120.88	7.4	7.4			
15	19	113	2.25	58.85	7.5	7.6			
17	21	103	2.25	53.50	7.6	7.6			
25	31	69	2.25	35.67	7.7	7.7			

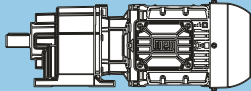
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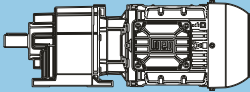
<b>P<sub>N</sub> = 0.18 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.18 kW</b>		<b>0.22 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
6.9	8.5	249	0.85	129.39	4.0	3.0	<b>CG033-11N-71-06E</b> <b>CF033-11N-71-06E</b>	14 16	114
8.2	10	211	0.95	109.79	4.6	3.3			
9.0	11	192	1.05	99.71	4.9	3.4			
10	13	165	1.25	85.78	5.2	3.6			
11	14	150	1.35	77.90	5.3	3.7			
14	17	123	1.65	64.05	5.5	3.8			
15	19	112	1.80	58.17	5.6	3.9			
19	23	93	2.20	48.22	5.7	4.0			
20	25	84	2.40	43.79	5.7	4.1			
25	31	68	2.95	35.38	5.8	4.2			
6.8	8.4	254	0.80	202.55	3.8	3.0	<b>CG033-11N-63-04F</b> <b>CF033-11N-63-04F</b>	12 14	114
7.6	9.4	227	0.90	180.83	4.4	3.2			
8.3	10	206	1.00	164.23	4.7	3.3			
9.6	12	179	1.15	142.47	5.0	3.5			
11	13	162	1.25	129.39	5.2	3.6			
12	15	138	1.50	109.79	5.4	3.7			
14	17	125	1.60	99.71	5.5	3.8			
16	20	108	1.90	85.78	5.6	3.9			
18	22	98	2.05	77.90	5.7	4.0			
21	27	80	2.50	64.05	5.8	4.1			
24	29	73	2.75	58.17	5.8	4.1			
21	26	82	2.25	42.88	5.7	4.1	<b>CG032-11N-71-06E</b> <b>CF032-11N-71-06E</b>	13 15	114
23	28	75	2.25	38.95	5.8	4.1			
26	32	67	3.00	34.88	5.8	4.2			
37	46	46	2.25	24.03	5.9	4.3			
17	21	99	0.90	51.80	2.8	1.0	<b>CG012-11N-71-06E</b> <b>CF012-11N-71-06E</b>	11 12	112
19	24	89	1.00	46.42	3.0	1.0			
21	26	81	1.10	42.00	3.1	1.1			
24	29	72	1.20	37.64	3.2	1.2			
27	33	64	1.35	33.09	3.3	1.2			
30	37	57	1.50	29.65	3.4	1.3			
35	43	49	1.75	25.50	3.4	1.3			
36	44	48	0.90	25.05	3.4	1.2			
39	48	44	1.95	22.85	3.5	1.3			
45	55	38	2.25	19.92	3.5	1.4			
46	57	37	1.80	19.51	3.5	1.3			
50	62	34	2.50	17.85	3.5	1.4			
57	70	30	2.20	15.82	3.5	1.4			
60	74	29	3.00	14.88	3.5	1.4			
72	89	24	2.80	12.46	3.5	1.4			
21	26	83	1.05	66.50	3.1	1.1	<b>CG012-11N-63-04F</b> <b>CF012-11N-63-04F</b>	8.9 10	112
23	29	75	1.15	59.59	3.2	1.1			
26	33	65	1.35	51.80	3.3	1.2			
30	37	58	1.50	46.42	3.4	1.2			
33	40	53	1.65	42.00	3.4	1.3			
36	45	47	1.80	37.64	3.4	1.3			
41	51	42	2.05	33.09	3.5	1.4			
46	57	37	2.30	29.65	3.5	1.4			
54	67	32	2.70	25.50	3.5	1.4			
55	68	31	1.35	25.05	3.5	1.3			
60	74	29	3.00	22.85	3.5	1.4			
70	87	24	2.70	19.51	3.6	1.4			



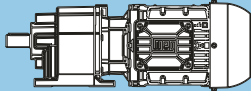
Legend see page 29

P <sub>N</sub> = 0.18 kW							IE1		
50 Hz 0.18 kW		60 Hz 0.22 kW		i	at 50 Hz			m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
27	34	63	0.80	32.89	3.5	1.1	CG002-11N-71-06E CF002-11N-71-06E	10 11	110
31	38	56	0.90	29.33	3.6	1.2			
34	42	50	1.00	26.18	3.6	1.2			
39	48	44	1.15	23.00	3.7	1.3			
44	54	39	1.30	20.53	3.7	1.3			
52	64	33	1.55	17.29	3.7	1.4			
53	66	32	1.00	16.86	3.6	1.2			
58	72	30	1.70	15.43	3.6	1.4			
66	82	26	1.95	13.54	3.4	1.4			
68	84	25	1.75	13.10	3.4	1.3			
74	91	23	2.20	12.08	3.3	1.4			
86	106	20	2.25	10.42	3.1	1.4			
90	111	19	2.65	9.97	3.1	1.5			
101	124	17	2.95	8.90	3.0	1.5			
109	135	16	2.90	8.17	2.9	1.4			
29	36	60	0.85	47.44	3.6	1.1	CG002-11N-63-04F CF002-11N-63-04F	7.8 9.1	110
32	40	53	0.95	42.34	3.6	1.2			
37	46	46	1.10	36.85	3.7	1.2			
42	52	41	1.25	32.89	3.7	1.3			
47	58	37	1.40	29.33	3.7	1.3			
52	65	33	1.55	26.18	3.7	1.4			
60	74	29	1.75	23.00	3.5	1.4			
67	83	26	1.95	20.53	3.4	1.4			
79	98	22	2.35	17.29	3.3	1.4			
81	101	21	1.50	16.86	3.2	1.4			
89	110	19	2.60	15.43	3.1	1.5			
101	126	17	2.95	13.54	3.0	1.5			
105	130	16	2.65	13.10	3.0	1.4			
113	141	15	3.30	12.08	2.9	1.5			
131	163	13	3.45	10.42	2.8	1.5			
137	171	13	4.00	9.97	2.8	1.5			
154	191	11	4.50	8.90	2.7	1.5			
168	208	10	4.40	8.17	2.6	1.5			
199	247	9	5.70	6.88	2.5	1.6			
223	277	8	6.50	6.14	2.4	1.6			
285	353	6	6.50	4.81	2.2	1.6			
387	480	4	7.90	3.54	2.0	1.6			

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<b>P<sub>N</sub> = 0.25 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.25 kW</b>		<b>0.30 kW</b>			<b>F<sub>rH</sub></b> kN	<b>F<sub>aH</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
2.4	3.0	979	1.60	368.94	22.9	20.5	<b>CG083-11N-71-06F</b> <b>CF083-11N-71-06F</b>	64 68	122
3.2	3.9	756	2.10	284.84	23.6	21.0			
3.8	4.6	634	2.45	238.89	23.9	21.2			
3.7	4.6	643	2.45	368.94	23.9	21.2	<b>CG083-11N-71-04E</b> <b>CF083-11N-71-04E</b>	62 66	122
2.6	3.2	932	0.90	351.33	9.5	12.8	<b>CG073-11N-71-06F</b> <b>CF073-11N-71-06F</b>	40 44	120
2.8	3.5	848	1.00	319.60	10.4	12.8			
3.2	4.0	739	1.15	278.44	11.4	13.4			
3.6	4.4	672	1.25	253.30	11.9	13.3			
4.2	5.1	574	1.45	216.20	12.5	13.8			
4.6	5.6	522	1.60	196.68	12.8	13.8			
5.1	6.3	471	1.75	177.39	13.0	14.1			
5.6	6.9	428	1.95	161.38	13.2	14.1			
6.6	8.1	364	2.30	137.38	13.4	14.4			
7.2	8.9	332	2.50	124.97	13.6	14.4			
8.6	11	277	3.00	104.50	13.7	14.6			
3.9	4.8	612	1.35	351.33	12.3	13.7	<b>CG073-11N-71-04E</b> <b>CF073-11N-71-04E</b>	38 42	120
4.3	5.3	557	1.50	319.60	12.6	13.7			
4.9	6.1	485	1.70	278.44	13.0	14.1			
5.4	6.7	441	1.90	253.30	13.2	14.1			
6.3	7.9	377	2.20	216.20	13.4	14.4			
7.0	8.6	343	2.40	196.68	13.5	14.4			
7.7	9.6	309	2.70	177.39	13.6	14.5			
8.5	11	281	2.95	161.38	13.7	14.5			
3.2	3.9	747	0.85	281.73	6.1	5.9	<b>CG063-11N-71-06F</b> <b>CF063-11N-71-06F</b>	24 29	118
3.7	4.6	644	0.95	242.60	7.7	6.2			
4.0	5.0	590	1.05	222.46	8.4	6.4			
4.8	5.9	499	1.25	188.11	9.3	6.7			
5.2	6.4	458	1.35	172.49	9.6	6.8			
5.8	7.2	408	1.50	153.96	10.0	6.9			
6.4	7.9	375	1.65	141.17	10.2	7.0			
7.6	9.4	314	1.95	118.51	10.5	7.2			
8.3	10	288	2.10	108.67	10.6	7.3			
10	12	238	2.55	89.54	10.8	7.4			
11	14	218	2.80	82.10	10.9	7.5			
3.6	4.5	655	0.95	375.71	7.6	6.2	<b>CG063-11N-71-04E</b> <b>CF063-11N-71-04E</b>	22 27	118
4.0	4.9	600	1.00	344.51	8.3	6.3			
4.5	5.5	535	1.15	307.24	9.0	6.6			
4.9	6.0	491	1.25	281.73	9.4	6.7			
5.6	7.0	423	1.45	242.60	9.9	6.9			
6.2	7.6	388	1.55	222.46	10.1	7.0			
7.3	9.0	328	1.85	188.11	10.5	7.2			
7.9	9.9	301	2.00	172.49	10.6	7.2			
8.9	11	268	2.25	153.96	10.7	7.3			
9.7	12	246	2.45	141.17	10.8	7.4			
12	14	207	2.95	118.51	10.9	7.5			
15	19	159	2.65	60.00	11.1	7.6			
16	20	146	2.65	55.02	11.1	7.7			
27	33	89	2.65	33.43	11.2	7.7			
4.6	5.7	515	0.80	194.29	1.2	5.7	<b>CG053-11N-71-06F</b> <b>CF053-11N-71-06F</b>	19 24	116
5.4	6.7	439	0.95	165.45	4.2	6.1			
6.0	7.4	399	1.05	150.41	5.0	6.3			
6.8	8.3	353	1.15	132.97	5.7	6.5			
7.4	9.2	321	1.25	120.88	6.1	6.6			
8.9	11	269	1.50	101.55	6.6	6.9			
9.7	12	245	1.65	92.32	6.8	7.0			
12	14	206	1.95	77.79	7.1	7.2			
13	16	188	2.15	70.71	7.2	7.2			
15	18	163	2.45	61.63	7.3	7.4			
16	20	149	2.70	56.02	7.4	7.4			

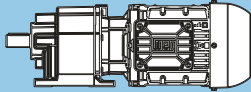
Legend see page 29

P <sub>N</sub> = 0.25 kW								IE1	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.25 kW		0.30 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
4.6	5.7	520	0.80	298.57	0.7	5.7	CG053-11N-71-04E CF053-11N-71-04E	17 22	116
5.1	6.3	467	0.90	267.93	3.5	6.0			
5.6	7.0	424	0.95	243.57	4.5	6.1			
6.4	8.0	372	1.10	213.71	5.4	6.4			
7.1	8.8	339	1.20	194.29	5.9	6.5			
8.3	10	288	1.40	165.45	6.4	6.8			
9.1	11	262	1.55	150.41	6.7	6.9			
10	13	232	1.75	132.97	6.9	7.0			
11	14	211	1.90	120.88	7.1	7.1			
13	17	177	2.30	101.55	7.3	7.3			
15	18	161	2.50	92.32	7.3	7.4			
18	22	136	3.00	77.79	7.5	7.5			
15	19	156	1.65	58.85	7.4	7.4	CG052-11N-71-06F CF052-11N-71-06F	18 23	116
17	21	142	1.60	53.50	7.4	7.4			
19	23	128	2.65	48.13	7.5	7.5			
21	25	116	2.65	43.75	7.5	7.6			
25	31	95	1.60	35.67	7.6	7.6			
31	38	77	2.65	29.17	7.6	7.7			
23	29	103	2.45	58.85	7.6	7.6	CG052-11N-71-04E CF052-11N-71-04E	16 21	116
26	32	93	2.45	53.50	7.6	7.7			
38	48	62	2.45	35.67	7.7	7.7			
9.0	11	265	0.80	99.71	3.6	2.9	CG033-11N-71-06F CF033-11N-71-06F	14 16	114
10	13	228	0.90	85.78	4.3	3.2			
12	14	207	1.00	77.90	4.7	3.3			
14	17	170	1.20	64.05	5.1	3.5			
15	19	154	1.30	58.17	5.3	3.6			
19	23	128	1.60	48.22	5.5	3.8			
21	25	116	1.75	43.79	5.6	3.9			
25	31	94	2.15	35.38	5.7	4.0			
28	35	85	2.35	32.13	5.7	4.1			
9.6	12	248	0.85	142.47	4.0	3.1	CG033-11N-71-04E CF033-11N-71-04E	12 14	114
11	13	225	0.90	129.39	4.4	3.2			
12	15	191	1.05	109.79	4.9	3.4			
14	17	174	1.20	99.71	5.1	3.5			
16	20	149	1.35	85.78	5.3	3.7			
18	22	136	1.50	77.90	5.4	3.7			
21	27	112	1.80	64.05	5.6	3.9			
24	29	101	2.00	58.17	5.6	4.0			
28	35	84	2.40	48.22	5.7	4.1			
31	39	76	2.65	43.79	5.8	4.1			
21	26	114	1.65	42.88	5.6	3.9	CG032-11N-71-06F CF032-11N-71-06F	14 16	114
23	29	103	1.65	38.95	5.6	3.9			
26	32	93	2.20	34.88	5.7	4.0			
28	35	84	2.40	31.67	5.7	4.1			
32	40	74	2.75	27.71	5.8	4.1			
36	44	67	3.00	25.17	5.8	4.2			
37	46	64	1.65	24.03	5.8	4.1			
46	57	52	2.50	19.54	5.7	4.2			
32	40	75	2.50	42.88	5.8	4.1	CG032-11N-71-04E CF032-11N-71-04E	12 14	114
35	44	68	2.50	38.95	5.8	4.2			
57	71	42	2.50	24.03	5.3	4.3			

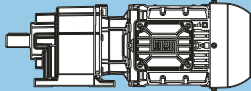
Legend see page 29

<b>P<sub>N</sub> = 0.25 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.25 kW</b>		<b>0.30 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
21	26	111	0.80	42.00	2.6	0.9	<b>CG012-11N-71-06F</b> <b>CF012-11N-71-06F</b>	12 13	112
24	29	100	0.90	37.64	2.8	1.0			
27	34	88	1.00	33.09	3.0	1.1			
30	37	79	1.10	29.65	3.1	1.1			
35	44	68	1.30	25.50	3.3	1.2			
39	49	61	1.45	22.85	3.3	1.2			
45	56	53	1.65	19.92	3.4	1.3			
46	57	52	1.30	19.51	3.4	1.2			
50	62	47	1.80	17.85	3.4	1.3			
57	70	42	1.60	15.82	3.5	1.3			
61	75	39	2.20	14.88	3.5	1.4			
68	83	35	2.45	13.33	3.5	1.4			
72	89	33	2.00	12.46	3.5	1.3			
80	99	30	2.85	11.20	3.4	1.4			
94	116	25	2.60	9.60	3.2	1.4			
23	29	104	0.85	59.59	2.8	0.9	<b>CG012-11N-71-04E</b> <b>CF012-11N-71-04E</b>	9.7 11	112
26	33	90	0.95	51.80	3.0	1.0			
30	37	81	1.10	46.42	3.1	1.1			
33	40	73	1.20	42.00	3.2	1.2			
36	45	66	1.30	37.64	3.3	1.2			
41	51	58	1.50	33.09	3.4	1.3			
46	57	52	1.65	29.65	3.4	1.3			
54	67	44	1.95	25.50	3.5	1.3			
55	68	44	0.95	25.05	3.5	1.2			
60	74	40	2.15	22.85	3.5	1.4			
69	85	35	2.45	19.92	3.5	1.4			
70	87	34	1.95	19.51	3.5	1.3			
77	95	31	2.75	17.85	3.4	1.4			
87	107	28	2.40	15.82	3.3	1.4			
39	48	61	0.85	23.00	3.6	1.1	<b>CG002-11N-71-06F</b> <b>CF002-11N-71-06F</b>	11 12	110
44	54	54	0.95	20.53	3.6	1.2			
52	64	46	1.10	17.29	3.6	1.3			
58	72	41	1.25	15.43	3.5	1.3			
66	82	36	1.40	13.54	3.4	1.3			
69	85	35	1.25	13.10	3.3	1.2			
74	92	32	1.60	12.08	3.3	1.4			
86	106	28	1.65	10.42	3.1	1.3			
90	111	26	1.90	9.97	3.1	1.4			
101	125	24	2.15	8.90	3.0	1.4			
110	136	22	2.10	8.17	2.9	1.4			
131	161	18	2.70	6.88	2.8	1.5			
147	181	16	2.60	6.14	2.6	1.4			
37	46	64	0.80	36.85	3.5	1.1			
42	52	57	0.90	32.89	3.6	1.1			
47	58	51	1.00	29.33	3.6	1.2			
52	65	46	1.10	26.18	3.6	1.2			
60	74	40	1.25	23.00	3.5	1.3			
67	83	36	1.40	20.53	3.4	1.3			
79	98	30	1.70	17.29	3.2	1.4			
81	101	29	1.10	16.86	3.1	1.3			
89	110	27	1.90	15.43	3.1	1.4			
101	126	24	2.15	13.54	3.0	1.4			
105	130	23	1.90	13.10	2.9	1.4			
113	141	21	2.40	12.08	2.9	1.5			
131	163	18	2.50	10.42	2.7	1.4			
137	171	17	2.90	9.97	2.7	1.5			
154	191	16	3.25	8.90	2.6	1.5			
168	208	14	3.20	8.17	2.5	1.5			
199	247	12	4.10	6.88	2.4	1.5			
223	277	11	4.70	6.14	2.3	1.5			
285	353	8	4.70	4.81	2.2	1.5			
387	480	6	5.55	3.54	2.0	1.6			

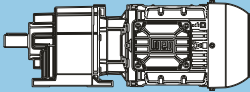


P <sub>N</sub> = 0.37 kW								IE1	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.37 kW	0.44 kW	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>								
3.0	3.7	1178	2.55	306.73	30.7	28.3	CG093-11N-80-06E CF093-11N-80-06E	118 116	124
2.5	3.1	1417	1.10	368.94	21.1	19.6	CG083-11N-80-06E CF083-11N-80-06E	66 70	122
3.2	4.0	1094	1.45	284.84	22.5	20.3			
3.9	4.7	918	1.70	238.89	23.1	20.6			
4.9	6.0	720	2.20	187.48	23.7	21.0			
6.4	7.8	556	2.80	144.69	24.0	21.4			
3.7	4.6	955	1.65	368.94	23.0	20.5	CG083-11N-71-04F CF083-11N-71-04F	63 67	122
4.8	5.9	737	2.15	284.84	23.6	21.0			
5.7	7.1	618	2.55	238.89	23.9	21.2			
3.3	4.1	1069	0.80	278.44	7.5	12.4	CG073-11N-80-06E CF073-11N-80-06E	42 46	120
3.6	4.5	973	0.85	253.30	9.0	12.4			
4.3	5.2	830	1.00	216.20	10.6	13.1			
4.7	5.7	755	1.10	196.68	11.3	13.1			
5.2	6.4	681	1.25	177.39	11.8	13.5			
5.7	7.0	620	1.35	161.38	12.2	13.5			
6.7	8.2	528	1.60	137.38	12.8	13.9			
7.4	9.0	480	1.75	124.97	13.0	13.9			
8.8	11	401	2.05	104.50	13.3	14.3			
9.7	12	365	2.25	95.06	13.4	14.3			
11	13	331	2.50	86.17	13.6	14.5			
12	14	301	2.75	78.39	13.6	14.5			
3.9	4.8	909	0.95	351.33	9.8	12.9	CG073-11N-71-04F CF073-11N-71-04F	39 43	120
4.3	5.3	827	1.00	319.60	10.6	12.9			
4.9	6.1	721	1.15	278.44	11.5	13.4			
5.4	6.7	656	1.30	253.30	12.0	13.4			
6.3	7.8	560	1.50	216.20	12.6	13.9			
6.9	8.6	509	1.65	196.68	12.9	13.8			
7.7	9.5	459	1.80	177.39	13.1	14.1			
8.5	10	418	2.00	161.38	13.3	14.1			
9.9	12	356	2.35	137.38	13.5	14.4			
11	13	324	2.55	124.97	13.6	14.4			
4.9	6.0	722	0.85	188.11	6.5	6.0	CG063-11N-80-06E CF063-11N-80-06E	25 30	118
5.3	6.6	662	0.95	172.49	7.5	6.2			
6.0	7.3	591	1.05	153.96	8.4	6.4			
6.5	8.0	542	1.15	141.17	8.9	6.5			
7.8	9.5	455	1.35	118.51	9.7	6.8			
8.5	10	417	1.45	108.67	9.9	6.9			
10	13	344	1.75	89.54	10.4	7.1			
11	14	315	1.95	82.10	10.5	7.2			
13	15	281	2.15	73.28	10.7	7.3			
14	17	258	2.35	67.19	10.8	7.3			
15	19	228	2.65	59.42	10.9	7.4			
17	21	209	2.90	54.49	10.9	7.5			
4.4	5.5	795	0.80	307.24	5.0	5.8	CG063-11N-71-04F CF063-11N-71-04F	22 27	118
4.8	6.0	729	0.85	281.73	6.4	6.0			
5.6	6.9	628	1.00	242.60	7.9	6.3			
6.1	7.6	576	1.05	222.46	8.6	6.4			
7.3	9.0	487	1.25	188.11	9.4	6.7			
7.9	9.8	447	1.35	172.49	9.7	6.8			
8.9	11	399	1.55	153.96	10.0	6.9			
9.7	12	365	1.65	141.17	10.2	7.0			
12	14	307	2.00	118.51	10.6	7.2			
13	16	281	2.15	108.67	10.7	7.3			
15	19	232	2.60	89.54	10.9	7.4			
17	21	213	2.85	82.10	10.9	7.5			
15	19	230	1.85	60.00	10.9	7.4	CG062-11N-80-06E CF062-11N-80-06E	25 30	118
17	21	211	1.85	55.02	10.9	7.5			
28	34	128	1.85	33.43	11.1	7.6			
23	28	155	2.75	60.00	11.1	7.7	CG062-11N-71-04F CF062-11N-71-04F	22 27	118
25	31	142	2.75	55.02	11.1	7.7			
41	50	87	2.75	33.43	11.2	7.7			

<b>P<sub>N</sub> = 0.37 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.37 kW</b>		<b>0.44 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
6.9	8.5	511	0.80	132.97	1.6	5.8	<b>CG053-11N-80-06E</b> <b>CF053-11N-80-06E</b>	21 26	116
7.6	9.3	464	0.90	120.88	3.5	6.0			
9.1	11	390	1.05	101.55	5.1	6.3			
10	12	355	1.15	92.32	5.7	6.5			
12	15	299	1.35	77.79	6.3	6.7			
13	16	272	1.50	70.71	6.6	6.8			
15	18	237	1.70	61.63	6.9	7.0			
16	20	215	1.90	56.02	7.0	7.1			
19	23	189	2.15	49.20	7.2	7.2			
21	25	172	2.35	44.73	7.3	7.3			
7.0	8.7	503	0.80	194.29	2.1	5.8	<b>CG053-11N-71-04F</b> <b>CF053-11N-71-04F</b>	18 23	116
8.3	10	428	0.95	165.45	4.4	6.2			
9.1	11	389	1.05	150.41	5.1	6.3			
10	13	344	1.20	132.97	5.8	6.5			
11	14	313	1.30	120.88	6.2	6.7			
13	17	263	1.55	101.55	6.7	6.9			
15	18	239	1.70	92.32	6.9	7.0			
18	22	201	2.00	77.79	7.1	7.2			
19	24	183	2.20	70.71	7.2	7.3			
22	27	160	2.55	61.63	7.3	7.4			
24	30	145	2.80	56.02	7.4	7.4			
16	19	226	1.15	58.85	7.0	7.1	<b>CG052-11N-80-06E</b> <b>CF052-11N-80-06E</b>	20 25	116
17	21	205	1.15	53.50	7.1	7.2			
19	23	185	1.85	48.13	7.2	7.3			
21	26	168	1.85	43.75	7.3	7.3			
24	30	146	2.75	38.00	7.4	7.4			
26	32	137	1.15	35.67	7.4	7.3			
32	39	112	1.85	29.17	7.5	7.5			
23	29	152	1.65	58.85	7.4	7.4	<b>CG052-11N-71-04F</b> <b>CF052-11N-71-04F</b>	17 22	116
26	31	138	1.65	53.50	7.4	7.5			
28	35	125	2.75	48.13	7.5	7.5			
31	39	113	2.75	43.75	7.5	7.6			
38	47	92	1.65	35.67	7.6	7.6			
47	58	76	2.75	29.17	7.6	7.7			
14	18	246	0.85	64.05	4.0	3.1	<b>CG033-11N-80-06E</b> <b>CF033-11N-80-06E</b>	16 18	114
16	19	223	0.90	58.17	4.4	3.2			
17	20	212	0.95	55.25	4.6	3.3			
18	23	193	1.05	50.18	4.8	3.4			
19	23	185	1.10	48.22	4.9	3.4			
21	26	168	1.20	43.79	5.1	3.5			
26	32	136	1.50	35.38	5.4	3.8			
29	35	123	1.65	32.13	5.5	3.8			
14	17	258	0.80	99.71	3.8	3.0	<b>CG033-11N-71-04F</b> <b>CF033-11N-71-04F</b>	13 15	114
16	20	222	0.95	85.78	4.4	3.2			
18	22	202	1.00	77.90	4.7	3.3			
21	26	166	1.25	64.05	5.1	3.6			
23	29	151	1.35	58.17	5.3	3.6			
28	35	125	1.65	48.22	5.5	3.8			
31	38	113	1.80	43.79	5.6	3.9			
39	48	92	2.20	35.38	5.7	4.0			
42	52	83	2.45	32.13	5.7	4.1			
21	26	165	1.15	42.88	5.2	3.6	<b>CG032-11N-80-06E</b> <b>CF032-11N-80-06E</b>	16 18	114
24	29	150	1.15	38.95	5.3	3.7			
26	32	134	1.50	34.88	5.4	3.8			
29	36	122	1.65	31.67	5.5	3.8			
33	41	106	1.90	27.71	5.6	3.9			
37	45	97	2.10	25.17	5.7	4.0			
38	47	92	1.15	24.03	5.7	3.9			
43	53	82	2.45	21.40	5.7	4.1			
47	58	75	2.70	19.44	5.5	4.1			
59	73	60	2.20	15.53	5.2	4.2			
77	94	46	2.85	11.99	4.8	4.3			

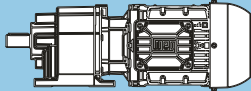
P <sub>N</sub> = 0.37 kW								IE1	
50 Hz 0.37 kW		60 Hz 0.44 kW		i	at 50 Hz			m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
32	39	111	1.70	42.88	5.6	3.9	CG032-11N-71-04F CF032-11N-71-04F	13 15	114
35	43	101	1.70	38.95	5.6	4.0			
39	48	90	2.25	34.88	5.7	4.0			
43	53	82	2.45	31.67	5.7	4.1			
49	61	72	2.80	27.71	5.5	4.2			
57	70	62	1.70	24.03	5.2	4.1			
70	86	51	2.55	19.54	4.9	4.2			
36	44	98	0.90	25.50	2.9	1.0	CG012-11N-80-06E CF012-11N-80-06E	13 14	112
40	49	88	1.00	22.85	3.0	1.1			
46	57	77	1.15	19.92	3.2	1.1			
47	58	75	0.90	19.51	3.2	1.0			
52	63	69	1.25	17.85	3.3	1.2			
58	71	61	1.10	15.82	3.3	1.1			
62	76	57	1.50	14.88	3.4	1.3			
69	85	51	1.70	13.33	3.4	1.3			
72	88	49	1.75	12.83	3.4	1.3			
74	91	48	1.40	12.46	3.3	1.2			
80	98	44	1.95	11.50	3.3	1.3			
82	101	43	2.00	11.20	3.3	1.3			
92	113	39	2.15	10.04	3.2	1.4			
96	118	37	1.80	9.60	3.1	1.3			
112	138	32	2.45	8.22	3.0	1.4			
123	151	29	2.30	7.50	2.9	1.4			
125	153	28	2.65	7.36	2.9	1.4			
33	40	109	0.80	42.00	2.7	0.9	CG012-11N-71-04F CF012-11N-71-04F	11 12	112
36	45	97	0.90	37.64	2.9	1.0			
41	51	86	1.00	33.09	3.1	1.1			
46	57	77	1.15	29.65	3.2	1.1			
54	66	66	1.30	25.50	3.3	1.2			
60	74	59	1.45	22.85	3.3	1.2			
69	85	52	1.65	19.92	3.4	1.3			
70	86	51	1.35	19.51	3.4	1.2			
76	94	46	1.85	17.85	3.4	1.3			
86	107	41	1.65	15.82	3.2	1.3			
92	113	39	2.25	14.88	3.2	1.4			
102	126	35	2.50	13.33	3.1	1.4			
110	135	32	2.05	12.46	3.0	1.3			
122	150	29	2.90	11.20	2.9	1.4			
142	175	25	2.70	9.60	2.8	1.4			
53	65	66	0.80	17.29	3.4	1.1	CG002-11N-80-06E CF002-11N-80-06E	12 13	110
60	73	59	0.85	15.43	3.3	1.1			
68	83	52	1.00	13.54	3.2	1.2			
70	86	50	0.90	13.10	3.1	1.0			
76	94	46	1.10	12.08	3.1	1.2			
88	108	40	1.15	10.42	2.9	1.1			
92	113	38	1.35	9.97	3.0	1.3			
103	127	34	1.50	8.90	2.9	1.3			
113	138	31	1.45	8.17	2.8	1.2			
134	164	26	1.90	6.88	2.7	1.4			
150	184	24	2.15	6.14	2.6	1.4			
191	235	18	2.15	4.81	2.4	1.4			
260	319	14	2.60	3.54	2.2	1.5			

Legend see page 29

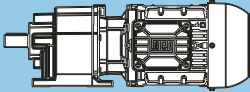
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<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	Dimension sheet see page
<b>0.37 kW</b>	<b>0.44 kW</b>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>								
<b>59</b>	73	60	0.85	23.00	3.3	1.1	<b>CG002-11N-71-04F</b> <b>CF002-11N-71-04F</b>	9.4 11	110
<b>66</b>	82	53	0.95	20.53	3.2	1.2			
<b>79</b>	97	45	1.15	17.29	3.1	1.3			
<b>88</b>	109	40	1.30	15.43	3.0	1.3			
<b>101</b>	124	35	1.45	13.54	2.9	1.3			
<b>104</b>	129	34	1.30	13.10	2.8	1.2			
<b>113</b>	139	31	1.60	12.08	2.8	1.4			
<b>131</b>	162	27	1.70	10.42	2.6	1.3			
<b>137</b>	169	26	1.95	9.97	2.7	1.4			
<b>153</b>	189	23	2.20	8.90	2.6	1.4			
<b>167</b>	206	21	2.15	8.17	2.5	1.4			
<b>199</b>	245	18	2.80	6.88	2.4	1.5			
<b>222</b>	275	16	3.15	6.14	2.3	1.5			
<b>284</b>	350	12	3.15	4.81	2.1	1.5			
<b>385</b>	476	9	3.85	3.54	1.9	1.5			



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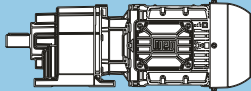
P <sub>N</sub> = 0.55 kW								IE1		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page	
0.55 kW		0.66 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>							
3.0	3.7	1732	1.75	306.73	29.2	27.4	CG093-11N-80-06F CF093-11N-80-06F	119 117	124	
3.8	4.7	1371	2.20	242.77	30.2	28.0				
4.4	5.4	1197	2.55	211.98	30.6	28.2				
5.0	6.1	1058	2.85	187.34	30.9	28.4				
4.6	5.6	1139	2.65	306.73	30.7	28.3				
								CG083-11N-80-04E CF083-11N-80-04E	117 115	124
3.3	4.0	1609	1.00	284.84	19.9	19.2				
3.9	4.8	1349	1.15	238.89	21.4	19.7				
5.0	6.1	1059	1.50	187.48	22.7	20.3				
6.4	7.9	817	1.90	144.69	23.4	20.8				
7.8	9.5	676	2.30	119.68	23.8	21.1				
9.1	11	575	2.70	101.80	24.0	21.3				
								CG083-11N-80-04E CF083-11N-80-04E	66 69	122
3.8	4.7	1370	1.15	368.94	21.3	19.7				
5.0	6.1	1057	1.50	284.84	22.7	20.3				
5.9	7.2	887	1.75	238.89	23.2	20.7				
7.5	9.2	696	2.25	187.48	23.7	21.1				
9.8	12	537	2.90	144.69	24.1	21.4				
								CG073-11N-80-06F CF073-11N-80-06F	43 47	120
5.2	6.4	1002	0.85	177.39	8.6	12.6				
5.8	7.1	911	0.90	161.38	9.8	12.6				
6.8	8.3	776	1.10	137.38	11.1	13.3				
7.4	9.1	706	1.20	124.97	11.7	13.2				
8.9	11	590	1.40	104.50	12.4	13.8				
9.8	12	537	1.55	95.06	12.7	13.8				
11	13	487	1.70	86.17	13.0	14.1				
12	15	443	1.90	78.39	13.2	14.0				
13	16	399	2.10	70.68	13.3	14.3				
14	18	363	2.30	64.30	13.5	14.3				
15	19	339	2.45	60.06	13.5	14.5				
17	21	309	2.70	54.63	13.6	14.5				
19	23	279	2.95	49.38	13.7	14.6				
5.1	6.2	1034	0.80	278.44	8.1	12.5				
5.6	6.8	940	0.90	253.30	9.4	12.5				
6.5	8.0	803	1.05	216.20	10.9	13.2				
7.2	8.8	730	1.15	196.68	11.5	13.2				
8.0	9.7	658	1.25	177.39	12.0	13.6				
8.8	11	599	1.40	161.38	12.4	13.6				
10	13	510	1.65	137.38	12.9	14.0				
11	14	464	1.80	124.97	13.1	14.0				
14	17	388	2.15	104.50	13.4	14.3				
15	18	353	2.35	95.06	13.5	14.3				
16	20	320	2.60	86.17	13.6	14.5				
18	22	291	2.85	78.39	13.7	14.5				
								CG063-11N-80-06F CF063-11N-80-06F	26 31	118
6.6	8.1	797	0.80	141.17	4.9	5.8				
7.8	9.6	669	0.90	118.51	7.4	6.2				
8.6	10	614	1.00	108.67	8.1	6.3				
10	13	506	1.20	89.54	9.2	6.6				
11	14	464	1.30	82.10	9.6	6.7				
13	16	414	1.45	73.28	9.9	6.9				
14	17	380	1.60	67.19	10.2	7.0				
16	19	336	1.80	59.42	10.4	7.1				
17	21	308	1.95	54.49	10.5	7.2				
19	23	281	2.15	49.74	10.7	7.3				
20	25	258	2.35	45.61	10.8	7.3				

Legend see page 29

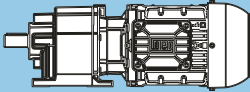
<b>P<sub>N</sub> = 0.55 kW</b>								<b>IE1</b>				
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page			
<b>0.55 kW</b>		<b>0.66 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN						
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>									
7.5	9.2	698	0.90	188.11	6.9	6.1	<b>CG063-11N-80-04E</b> <b>CF063-11N-80-04E</b>	24 29	118			
8.2	10	640	0.95	172.49	7.8	6.2						
9.2	11	571	1.05	153.96	8.6	6.4						
10	12	524	1.15	141.17	9.1	6.6						
12	15	440	1.40	118.51	9.8	6.8						
13	16	403	1.50	108.67	10.0	6.9						
16	19	332	1.85	89.54	10.4	7.1						
17	21	305	2.00	82.10	10.6	7.2						
19	24	272	2.25	73.28	10.7	7.3						
21	26	249	2.45	67.19	10.8	7.4						
24	29	221	2.75	59.42	10.9	7.5						
26	32	202	3.00	54.49	10.9	7.5						
16	19	339	1.25	60.00	10.4	7.1	<b>CG062-11N-80-06F</b> <b>CF062-11N-80-06F</b>	26 31	118			
17	21	311	1.25	55.02	10.5	7.2						
20	24	269	2.25	47.55	10.7	7.3						
21	26	246	2.30	43.60	10.8	7.4						
25	31	209	2.90	36.92	10.9	7.5						
28	34	189	1.25	33.43	11.0	7.3						
35	43	150	2.30	26.49	11.1	7.5						
24	29	223	1.90	60.00	10.9	7.5	<b>CG062-11N-80-04E</b> <b>CF062-11N-80-04E</b>	24 29	118			
26	31	204	1.90	55.02	10.9	7.5						
42	52	124	1.90	33.43	11.1	7.6						
10	12	521	0.80	92.32	0.4	5.7	<b>CG053-11N-80-06F</b> <b>CF053-11N-80-06F</b>	22 27	116			
12	15	439	0.95	77.79	4.2	6.1						
13	16	399	1.05	70.71	5.0	6.3						
15	18	348	1.15	61.63	5.8	6.5						
17	20	316	1.30	56.02	6.1	6.6						
19	23	278	1.45	49.20	6.5	6.8						
21	25	253	1.60	44.73	6.8	6.9						
11	13	494	0.85	132.97	2.5	5.9	<b>CG053-11N-80-04E</b> <b>CF053-11N-80-04E</b>	20 25	116			
12	14	449	0.90	120.88	3.9	6.0						
14	17	377	1.10	101.55	5.3	6.4						
15	19	343	1.20	92.32	5.8	6.5						
18	22	289	1.40	77.79	6.4	6.8						
20	24	262	1.55	70.71	6.7	6.9						
23	28	229	1.75	61.63	6.9	7.1						
25	31	208	1.95	56.02	7.1	7.1						
29	35	183	2.20	49.20	7.2	7.3						
32	39	166	2.45	44.73	7.3	7.3						
16	19	332	0.80	58.85	6.0	6.6				<b>CG052-11N-80-06F</b> <b>CF052-11N-80-06F</b>	21 26	116
17	21	302	0.80	53.50	6.3	6.7						
19	24	272	1.25	48.13	6.6	6.9						
21	26	247	1.25	43.75	6.8	7.0						
24	30	215	1.90	38.00	7.0	7.1						
27	33	195	2.10	34.55	7.2	7.2						
32	39	166	2.45	29.46	7.3	7.3						
35	43	151	2.65	26.79	7.4	7.4						
39	47	136	2.95	24.12	7.5	7.5						
40	50	130	2.10	23.03	7.5	7.4						
52	64	101	2.65	17.86	7.6	7.5						
24	29	218	1.15	58.85	7.0	7.1	<b>CG052-11N-80-04E</b> <b>CF052-11N-80-04E</b>	19 24	116			
26	32	199	1.15	53.50	7.1	7.2						
29	36	179	1.90	48.13	7.3	7.3						
32	39	162	1.90	43.75	7.3	7.4						
37	45	141	2.85	38.00	7.4	7.5						
40	48	132	1.15	35.67	7.5	7.3						
49	59	108	1.90	29.17	7.6	7.5						
21	26	247	0.85	43.79	4.0	3.0	<b>CG033-11N-80-06F</b> <b>CF033-11N-80-06F</b>	17 19	114			
26	32	200	1.05	35.38	4.7	3.4						
29	35	181	1.15	32.13	5.0	3.4						

Legend see page 29

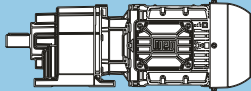


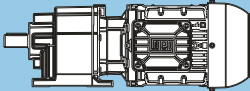
P <sub>N</sub> = 0.55 kW								IE1	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.55 kW		0.66 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
22	27	238	0.85	64.05	4.2	3.1	<b>CG033-11N-80-04E</b> <b>CF033-11N-80-04E</b>	15 17	114
24	30	216	0.95	58.17	4.5	3.2			
26	31	205	1.00	55.25	4.7	3.3			
28	34	186	1.10	50.18	4.9	3.4			
29	36	179	1.15	48.22	5.0	3.5			
32	39	163	1.25	43.79	5.2	3.6			
40	49	131	1.55	35.38	5.4	3.8			
44	54	119	1.70	32.13	5.4	3.8			
22	27	242	0.80	42.88	4.1	3.1	<b>CG032-11N-80-06F</b> <b>CF032-11N-80-06F</b>	17 19	114
24	29	220	0.80	38.95	4.5	3.2			
27	33	197	1.05	34.88	4.8	3.4			
29	36	179	1.15	31.67	5.0	3.5			
34	41	157	1.30	27.71	5.2	3.6			
37	45	142	1.45	25.17	5.4	3.7			
39	47	136	0.80	24.03	5.4	3.6			
43	53	121	1.70	21.40	5.5	3.8			
48	59	110	1.85	19.44	5.3	3.9			
54	67	97	2.10	17.09	5.2	4.0			
60	73	88	2.30	15.52	5.0	4.0			
72	88	73	2.70	12.92	4.8	4.1			
78	95	68	1.95	11.99	4.6	4.1			
79	97	66	3.00	11.73	4.6	4.2			
97	119	54	2.45	9.57	4.3	4.2			
33	40	159	1.20	42.88	5.2	3.6	<b>CG032-11N-80-04E</b> <b>CF032-11N-80-04E</b>	15 17	114
36	44	145	1.20	38.95	5.3	3.7			
41	49	129	1.55	34.88	5.5	3.8			
45	54	118	1.75	31.67	5.4	3.9			
51	62	103	1.95	27.71	5.2	4.0			
56	69	93	2.15	25.17	5.1	4.0			
59	72	89	1.20	24.03	5.0	3.9			
66	81	79	2.55	21.40	4.9	4.1			
72	88	73	1.80	19.54	4.7	4.1			
73	89	72	2.80	19.44	4.7	4.1			
91	111	58	2.30	15.53	4.4	4.2			
118	144	45	2.95	11.99	4.1	4.3			
47	57	113	0.80	19.92	2.6	0.9	<b>CG012-11N-80-06F</b> <b>CF012-11N-80-06F</b>	15 16	112
52	64	101	0.85	17.85	2.8	1.0			
63	77	84	1.05	14.88	3.1	1.1			
70	86	75	1.15	13.33	3.2	1.1			
72	89	72	1.20	12.83	3.2	1.2			
75	91	70	0.95	12.46	3.2	1.0			
81	99	65	1.35	11.50	3.2	1.2			
83	102	63	1.35	11.20	3.2	1.2			
93	114	57	1.45	10.04	3.1	1.3			
97	119	54	1.25	9.60	3.0	1.1			
113	139	46	1.65	8.22	2.9	1.3			
124	152	42	1.60	7.50	2.8	1.2			
126	155	42	1.80	7.36	2.8	1.4			
166	203	32	2.10	5.60	2.6	1.3			
192	236	27	2.45	4.83	2.5	1.4			
220	270	24	2.80	4.22	2.4	1.4			

Legend see page 29

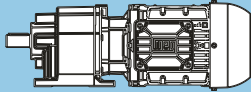
<b>P<sub>N</sub> = 0.55 kW</b>								<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.55 kW</b>		<b>0.66 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
48	58	110	0.80	29.65	2.6	0.9	<b>CG012-11N-80-04E</b> <b>CF012-11N-80-04E</b>	13 14	112
55	68	95	0.90	25.50	2.9	1.0			
62	75	85	1.05	22.85	3.1	1.1			
71	87	74	1.15	19.92	3.2	1.2			
73	88	72	0.95	19.51	3.2	1.0			
79	97	66	1.30	17.85	3.2	1.2			
89	109	59	1.15	15.82	3.0	1.1			
95	116	55	1.55	14.88	3.1	1.3			
106	129	49	1.75	13.33	3.0	1.3			
110	134	48	1.80	12.83	2.9	1.3			
114	138	46	1.45	12.46	2.9	1.2			
123	150	43	2.00	11.50	2.8	1.3			
126	154	42	2.05	11.20	2.8	1.4			
141	172	37	2.20	10.04	2.7	1.4			
147	180	36	1.90	9.60	2.7	1.3			
172	210	31	2.50	8.22	2.6	1.4			
189	230	28	2.40	7.50	2.5	1.4			
192	234	27	2.75	7.36	2.5	1.4			
89	109	59	0.80	10.42	2.8	0.9			
93	114	56	0.90	9.97	2.8	1.2			
105	128	50	1.00	8.90	2.7	1.2			
114	139	46	1.00	8.17	2.6	1.1			
135	166	39	1.30	6.88	2.6	1.3			
151	186	35	1.25	6.14	2.4	1.2			
152	186	35	1.45	6.14	2.5	1.3			
193	237	27	1.45	4.81	2.3	1.3			
263	322	20	1.75	3.54	2.1	1.4			
381	467	14	2.25	2.44	1.9	1.5			
82	100	64	0.80	17.29	2.9	1.1	<b>CG002-11N-80-04E</b> <b>CF002-11N-80-04E</b>	11 12	110
92	112	57	0.90	15.43	2.8	1.1			
105	127	50	1.00	13.54	2.8	1.2			
108	132	49	0.90	13.10	2.6	1.0			
117	143	45	1.15	12.08	2.7	1.3			
136	165	39	1.20	10.42	2.5	1.2			
142	173	37	1.40	9.97	2.5	1.3			
159	194	33	1.55	8.90	2.5	1.4			
173	211	30	1.50	8.17	2.4	1.3			
206	251	26	1.95	6.88	2.3	1.4			
230	281	23	1.85	6.14	2.2	1.4			
231	281	23	2.20	6.14	2.2	1.4			
294	359	18	2.20	4.81	2.0	1.4			
399	487	13	2.70	3.54	1.9	1.5			

Legend see page 29

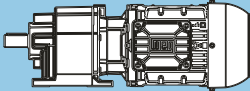
P <sub>N</sub> = 0.75 kW								IE3	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
0.75 kW	0.90 kW	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>								
3.8	4.6	1878	2.40	246.43	44.0	24.8	CG103-11P-90S/L-06E CF103-11P-90S/L-06E	169	126
4.5	5.5	1587	2.85	208.33	44.4	25.2		173	
3.1	3.7	2337	1.30	306.73	26.8	26.5	CG093-11P-90S/L-06E CF093-11P-90S/L-06E	126 124	124
3.9	4.7	1850	1.65	242.77	28.8	27.3			
4.4	5.4	1615	1.90	211.98	29.5	27.6			
5.0	6.1	1427	2.15	187.34	30.1	27.9			
5.9	7.2	1207	2.50	158.42	30.6	28.2			
6.1	7.4	1175	2.60	154.24	30.7	28.3			
6.9	8.4	1038	2.90	136.18	30.9	28.5			
4.7	5.7	1536	2.00	306.73	29.8	27.7	CG093-11P-80-04F CF093-11P-80-04F	120 118	124
5.9	7.2	1216	2.50	242.77	30.6	28.2			
6.7	8.2	1062	2.85	211.98	30.9	28.4			
3.9	4.8	1820	0.90	238.89	18.5	18.8	CG083-11P-90S/L-06E CF083-11P-90S/L-06E	74 78	122
5.0	6.1	1429	1.10	187.48	21.0	19.6			
6.5	7.9	1102	1.45	144.69	22.5	20.2			
7.9	9.6	912	1.70	119.68	23.2	20.6			
9.2	11	776	2.00	101.80	23.5	20.9			
11	13	672	2.35	88.23	23.8	21.1			
13	15	568	2.75	74.50	24.0	21.3			
3.9	4.7	1848	0.85	368.94	18.2	18.7	CG083-11P-80-04F CF083-11P-80-04F	68 72	122
5.0	6.1	1427	1.10	284.84	21.0	19.6			
6.0	7.3	1197	1.30	238.89	22.1	20.1			
7.6	9.3	939	1.70	187.48	23.1	20.6			
9.9	12	725	2.15	144.69	23.7	21.0			
12	15	599	2.60	119.68	23.9	21.3			
6.8	8.3	1047	0.80	137.38	7.9	12.5	CG073-11P-90S/L-06E CF073-11P-90S/L-06E	50 54	120
7.5	9.2	952	0.90	124.97	9.3	12.5			
9.0	11	796	1.05	104.50	10.9	13.2			
9.9	12	724	1.15	95.06	11.5	13.2			
11	13	657	1.25	86.17	12.0	13.6			
12	15	597	1.40	78.39	12.4	13.6			
13	16	539	1.55	70.68	12.7	13.9			
15	18	490	1.70	64.30	12.9	13.9			
16	19	458	1.80	60.06	13.1	14.1			
17	21	416	2.00	54.63	13.3	14.1			
19	23	376	2.20	49.38	13.4	14.4			
21	25	342	2.35	44.92	13.5	14.4			
24	29	298	2.60	39.17	13.6	14.6			
26	32	271	2.70	35.63	13.7	14.6			
6.6	8.0	1083	0.80	216.20	7.3	12.4	CG073-11P-80-04F CF073-11P-80-04F	44 48	120
7.3	8.8	985	0.85	196.68	8.8	12.4			
8.1	9.8	889	0.95	177.39	10.0	12.9			
8.9	11	808	1.05	161.38	10.8	12.9			
10	13	688	1.20	137.38	11.8	13.5			
11	14	626	1.35	124.97	12.2	13.5			
14	17	523	1.60	104.50	12.8	14.0			
15	18	476	1.75	95.06	13.0	13.9			
17	20	432	1.90	86.17	13.2	14.2			
18	22	393	2.10	78.39	13.4	14.2			
20	25	354	2.35	70.68	13.5	14.4			
22	27	322	2.55	64.30	13.6	14.4			
24	29	301	2.75	60.06	13.6	14.6			
26	32	274	3.00	54.63	13.7	14.6			
24	29	297	2.80	38.92	13.7	14.6	CG072-11P-90S/L-06E CF072-11P-90S/L-06E	49 53	120
10	13	682	0.90	89.54	7.2	6.1	CG063-11P-90S/L-06E CF063-11P-90S/L-06E	33 38	118
11	14	626	1.00	82.10	8.0	6.3			
13	16	558	1.10	73.28	8.7	6.5			
14	17	512	1.20	67.19	9.2	6.6			
16	19	453	1.35	59.42	9.7	6.8			
17	21	415	1.45	54.49	9.9	6.9			
19	23	379	1.60	49.74	10.2	7.0			
21	25	348	1.75	45.61	10.3	7.1			

<b>P<sub>N</sub> = 0.75 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
9.3	11	771	0.80	153.96	5.6	5.9	<b>CG063-11P-80-04F</b> <b>CF063-11P-80-04F</b>	27 32	118
10	12	707	0.85	141.17	6.8	6.0			
12	15	594	1.05	118.51	8.4	6.4			
13	16	544	1.15	108.67	8.9	6.5			
16	19	448	1.35	89.54	9.7	6.8			
17	21	411	1.50	82.10	10.0	6.9			
20	24	367	1.65	73.28	10.2	7.0			
21	26	337	1.80	67.19	10.4	7.1			
24	29	298	2.05	59.42	10.6	7.2			
26	32	273	2.20	54.49	10.7	7.3			
29	35	249	2.45	49.74	10.8	7.4			
31	38	228	2.65	45.61	10.9	7.4			
16	19	457	0.95	60.00	9.6	6.8	<b>CG062-11P-90S/L-06E</b> <b>CF062-11P-90S/L-06E</b>	33 38	118
17	21	419	0.95	55.02	9.9	6.9			
20	24	362	1.70	47.55	10.3	7.1			
22	26	332	1.70	43.60	10.4	7.1			
25	31	281	2.15	36.92	10.7	7.3			
28	34	258	2.35	33.86	10.8	7.3			
31	38	231	2.60	30.30	10.9	7.4			
34	41	212	2.85	27.78	10.9	7.5			
35	43	202	1.70	26.49	11.0	7.3			
46	56	157	2.45	20.57	11.1	7.4			
56	68	129	2.95	16.88	10.7	7.6			
24	29	301	1.40	60.00	10.6	7.2	<b>CG062-11P-80-04F</b> <b>CF062-11P-80-04F</b>	27 32	118
26	32	276	1.40	55.02	10.7	7.3			
30	37	238	2.55	47.55	10.8	7.4			
33	40	218	2.60	43.60	10.9	7.5			
43	52	167	1.40	33.43	11.0	7.4			
54	66	133	2.60	26.49	10.8	7.5			
15	19	470	0.90	61.63	3.4	6.0	<b>CG053-11P-90S/L-06E</b> <b>CF053-11P-90S/L-06E</b>	29 34	116
17	20	427	0.95	56.02	4.4	6.1			
19	23	375	1.10	49.20	5.4	6.4			
21	26	341	1.20	44.73	5.8	6.5			
14	17	509	0.80	101.55	1.7	5.8	<b>CG053-11P-80-04F</b> <b>CF053-11P-80-04F</b>	23 28	116
15	19	462	0.90	92.32	3.6	6.0			
18	22	390	1.05	77.79	5.1	6.3			
20	25	354	1.15	70.71	5.7	6.5			
23	28	309	1.30	61.63	6.2	6.7			
26	31	281	1.45	56.02	6.5	6.8			
29	35	246	1.65	49.20	6.8	7.0			
32	39	224	1.80	44.73	7.0	7.1			
20	24	367	0.95	48.13	5.5	6.4			
21	26	333	0.95	43.75	5.9	6.6			
25	30	290	1.40	38.00	6.4	6.8			
27	33	263	1.55	34.55	6.7	6.9			
32	39	225	1.80	29.46	7.0	7.1			
35	43	204	2.00	26.79	7.1	7.2			
39	47	184	2.20	24.12	7.2	7.3			
41	50	175	1.55	23.03	7.3	7.1			
43	52	167	2.40	21.92	7.3	7.3			
51	62	141	2.85	18.56	7.4	7.5			
53	64	136	2.00	17.86	7.5	7.3			
64	78	111	2.40	14.62	7.5	7.5			

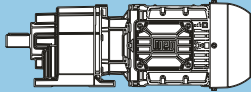
Legend see page 29

<b>P<sub>N</sub> = 0.75 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
24	30	295	0.85	58.85	6.4	6.8	<b>CG052-11P-80-04F</b> <b>CF052-11P-80-04F</b>	22 27	116
27	33	268	0.85	53.50	6.6	6.9			
30	36	241	1.40	48.13	6.8	7.0			
33	40	219	1.45	43.75	7.0	7.1			
38	46	190	2.15	38.00	7.2	7.2			
40	49	179	0.85	35.67	7.3	7.1			
41	50	173	2.35	34.55	7.3	7.3			
49	59	148	2.75	29.46	7.4	7.4			
53	65	134	3.00	26.79	7.5	7.5			
62	76	115	2.35	23.03	7.5	7.4			
80	97	89	3.00	17.86	7.5	7.6			
28	35	251	0.80	50.18	3.9	3.0	<b>CG033-11P-80-04F</b> <b>CF033-11P-80-04F</b>	18 20	114
30	36	242	0.85	48.22	4.1	3.1			
33	40	219	0.95	43.79	4.5	3.2			
40	49	177	1.15	35.38	5.0	3.5			
45	54	161	1.25	32.13	5.1	3.6			
27	33	266	0.80	34.88	3.6	2.9	<b>CG032-11P-90S/L-06E</b> <b>CF032-11P-90S/L-06E</b>	24 26	114
30	36	241	0.85	31.67	4.1	3.1			
34	41	211	0.95	27.71	4.6	3.3			
37	45	192	1.05	25.17	4.9	3.4			
44	53	163	1.25	21.40	5.2	3.6			
48	59	148	1.40	19.44	5.1	3.7			
55	67	130	1.55	17.09	4.9	3.8			
61	74	118	1.70	15.52	4.8	3.8			
73	89	98	2.00	12.92	4.6	4.0			
78	95	91	1.45	11.99	4.5	3.9			
80	98	89	2.25	11.73	4.5	4.0			
96	117	75	2.45	9.82	4.3	4.1			
98	120	73	1.80	9.57	4.2	4.1			
105	128	68	2.70	8.92	4.2	4.2			
123	150	58	2.95	7.64	4.0	4.2			
130	158	55	2.40	7.24	3.9	4.2			
33	41	215	0.90	42.88	4.5	3.3	<b>CG032-11P-80-04F</b> <b>CF032-11P-80-04F</b>	18 20	114
37	45	195	0.90	38.95	4.8	3.4			
41	50	175	1.15	34.88	5.1	3.5			
45	55	159	1.30	31.67	5.1	3.6			
52	63	139	1.45	27.71	5.0	3.7			
57	69	126	1.60	25.17	4.9	3.8			
60	72	120	0.90	24.03	4.7	3.7			
67	81	107	1.90	21.40	4.7	3.9			
73	89	98	1.35	19.54	4.5	3.9			
74	90	97	2.10	19.44	4.6	4.0			
84	102	86	2.35	17.09	4.4	4.1			
92	112	78	2.60	15.52	4.3	4.1			
111	135	65	3.00	12.92	4.1	4.2			
119	145	60	2.20	11.99	4.0	4.1			
149	182	48	2.75	9.57	3.8	4.2			
71	86	102	0.85	13.33	2.8	1.0	<b>CG012-11P-90S/L-06E</b> <b>CF012-11P-90S/L-06E</b>	22 23	112
73	89	98	0.90	12.83	2.9	1.0			
82	100	88	1.00	11.50	3.0	1.1			
84	102	85	1.00	11.20	3.0	1.1			
94	114	76	1.10	10.04	2.9	1.1			
98	119	73	0.95	9.60	2.8	1.0			
114	139	63	1.25	8.22	2.8	1.2			
125	153	57	1.20	7.50	2.7	1.1			
128	155	56	1.35	7.36	2.7	1.3			
168	204	43	1.55	5.60	2.5	1.2			
194	237	37	1.80	4.83	2.4	1.3			
223	271	32	2.10	4.22	2.3	1.3			
304	370	24	2.70	3.09	2.1	1.4			

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<b>P<sub>N</sub> = 0.75 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>72</b>	87	100	0.90	19.92	2.8	1.0	<b>CG012-11P-80-04F</b> <b>CF012-11P-80-04F</b>	15 16	112
<b>80</b>	97	89	1.00	17.85	3.0	1.0			
<b>90</b>	110	79	0.85	15.82	2.9	0.9			
<b>96</b>	117	75	1.15	14.88	2.9	1.1			
<b>107</b>	131	67	1.30	13.33	2.9	1.2			
<b>111</b>	136	64	1.35	12.83	2.8	1.2			
<b>115</b>	140	62	1.10	12.46	2.7	1.1			
<b>124</b>	151	58	1.50	11.50	2.8	1.2			
<b>128</b>	155	56	1.50	11.20	2.7	1.3			
<b>142</b>	173	50	1.65	10.04	2.7	1.3			
<b>149</b>	181	48	1.40	9.60	2.6	1.2			
<b>174</b>	212	41	1.85	8.22	2.5	1.4			
<b>191</b>	232	38	1.80	7.50	2.4	1.3			
<b>194</b>	236	37	2.05	7.36	2.4	1.4			
<b>255</b>	311	28	2.40	5.60	2.2	1.4			
<b>296</b>	360	24	2.75	4.83	2.1	1.4			
<b>118</b>	144	61	0.85	12.08	2.6	1.1	<b>CG002-11P-80-04F</b> <b>CF002-11P-80-04F</b>	14 15	110
<b>137</b>	167	52	0.90	10.42	2.4	1.0			
<b>143</b>	175	50	1.05	9.97	2.5	1.2			
<b>161</b>	196	45	1.15	8.90	2.4	1.3			
<b>175</b>	213	41	1.10	8.17	2.3	1.1			
<b>208</b>	253	34	1.45	6.88	2.2	1.3			
<b>233</b>	284	31	1.65	6.14	2.2	1.4			
<b>297</b>	362	24	1.65	4.81	2.0	1.3			
<b>404</b>	491	18	2.00	3.54	1.8	1.4			

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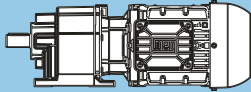
P <sub>N</sub> = 1.1 kW								IE3	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
1.1 kW		1.3 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
5.9	7.1	1779	2.55	246.43	44.1	24.9	CG103-11P-90S/L-04E CF103-11P-90S/L-04E	167	126
7.0	8.4	1504	3.00	208.33	44.5	25.3		171	
3.9	4.7	2697	1.70	246.43	42.2	23.8	CG103-11P-100L-06D CF103-11P-100L-06D	173 177	126
4.6	5.6	2280	2.00	208.33	43.2	24.3			
5.3	6.5	1973	2.30	180.35	43.8	24.7			
6.0	7.3	1748	2.60	159.72	44.2	25.0			
6.9	8.4	1512	3.00	138.17	44.5	25.3			
4.7	5.7	2215	1.40	306.73	27.3	26.7	CG093-11P-90S/L-04E CF093-11P-90S/L-04E	124 122	124
6.0	7.2	1753	1.75	242.77	29.1	27.4			
6.9	8.3	1530	2.00	211.98	29.8	27.7			
7.8	9.4	1353	2.25	187.34	30.3	28.0			
9.2	11	1144	2.65	158.42	30.7	28.3			
9.4	11	1114	2.70	154.24	30.8	28.4			
3.1	3.8	3356	0.90	306.73	20.0	25.0	CG093-11P-100L-06D CF093-11P-100L-06D	130 128	124
4.0	4.8	2657	1.15	242.77	25.1	26.1			
4.5	5.5	2320	1.30	211.98	26.9	26.6			
5.1	6.2	2050	1.50	187.34	28.0	27.0			
6.1	7.4	1734	1.75	158.42	29.2	27.4			
6.2	7.6	1688	1.80	154.24	29.3	27.5			
7.0	8.6	1490	2.05	136.18	29.9	27.8			
7.9	9.5	1336	2.25	122.08	30.3	28.0			
8.1	9.8	1301	2.35	118.88	30.4	28.1			
9.0	11	1166	2.60	106.60	30.7	28.3			
9.4	11	1115	2.70	101.85	30.8	28.4			
10	12	1031	2.95	94.21	30.9	28.5			
5.1	6.2	2057	0.80	284.84	16.4	18.3	CG083-11P-90S/L-04E CF083-11P-90S/L-04E	72 76	122
6.1	7.4	1725	0.90	238.89	19.2	19.0			
7.8	9.4	1354	1.15	187.48	21.4	19.7			
10	12	1045	1.50	144.69	22.7	20.4			
12	15	864	1.80	119.68	23.3	20.7			
14	17	735	2.15	101.80	23.6	21.0			
16	20	637	2.45	88.23	23.9	21.2			
20	24	538	2.90	74.50	24.1	21.4			
5.1	6.2	2052	0.80	187.48	16.4	18.3	CG083-11P-100L-06D CF083-11P-100L-06D	78 82	122
6.6	8.1	1583	1.00	144.69	20.1	19.3			
8.0	9.7	1310	1.20	119.68	21.6	19.8			
9.4	11	1114	1.40	101.80	22.4	20.2			
11	13	965	1.65	88.23	23.0	20.5			
13	16	815	1.95	74.50	23.4	20.8			
16	19	672	2.35	61.37	23.8	21.1			
18	22	593	2.65	54.18	24.0	21.3	CG082-11P-100L-06D CF082-11P-100L-06D	77 81	122
11	13	992	0.85	137.38	8.7	12.7	CG073-11P-90S/L-04E CF073-11P-90S/L-04E	48 52	120
12	14	902	0.95	124.97	9.9	12.6			
14	17	754	1.10	104.50	11.3	13.3			
15	19	686	1.20	95.06	11.8	13.3			
17	20	622	1.35	86.17	12.2	13.7			
19	22	566	1.45	78.39	12.6	13.7			
21	25	510	1.65	70.68	12.9	14.0			
23	27	464	1.80	64.30	13.1	14.0			
24	29	434	1.90	60.06	13.2	14.2			
27	32	394	2.10	54.63	13.3	14.2			
29	36	357	2.35	49.38	13.5	14.4			
32	39	324	2.45	44.92	13.6	14.4			
37	45	283	2.75	39.17	13.7	14.6			
41	49	257	2.85	35.63	13.7	14.6			

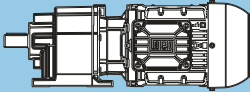
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<b>P<sub>N</sub> = 1.1 kW</b>								<b>IE3</b>				
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page			
<b>1.1 kW</b>		<b>1.3 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN						
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>									
10	12	1040	0.80	95.06	8.0	12.2	<b>CG073-11P-100L-06D</b> <b>CF073-11P-100L-06D</b>	54 58	120			
11	14	943	0.90	86.17	9.4	12.8						
12	15	858	1.00	78.39	10.3	12.8						
14	16	773	1.10	70.68	11.1	13.3						
15	18	704	1.20	64.30	11.7	13.2						
16	19	657	1.25	60.06	12.0	13.6						
18	21	598	1.40	54.63	12.4	13.6						
19	24	540	1.55	49.38	12.7	13.9						
21	26	492	1.65	44.92	12.9	13.9						
25	30	429	1.80	39.17	13.2	14.2						
27	33	390	1.90	35.63	13.4	14.2						
37	45	281	2.95	38.92	13.7	14.6	<b>CG072-11P-90S/L-04E</b> <b>CF072-11P-90S/L-04E</b>	47 51	120			
25	30	426	1.95	38.92	13.2	14.2	<b>CG072-11P-100L-06D</b> <b>CF072-11P-100L-06D</b>	53 57	120			
27	33	387	2.15	35.41	13.4	14.2						
31	38	334	2.50	30.55	13.5	14.5						
35	42	304	2.70	27.79	13.6	14.5						
13	16	785	0.80	108.67	5.3	5.8	<b>CG063-11P-90S/L-04E</b> <b>CF063-11P-90S/L-04E</b>	31 36	118			
16	20	646	0.95	89.54	7.7	6.2						
18	21	593	1.05	82.10	8.4	6.4						
20	24	529	1.15	73.28	9.0	6.6						
22	26	485	1.25	67.19	9.4	6.7						
24	30	429	1.40	59.42	9.8	6.9						
27	32	393	1.55	54.49	10.1	6.9						
29	35	359	1.70	49.74	10.3	7.1						
32	39	329	1.85	45.61	10.4	7.1						
14	17	735	0.85	67.19	6.3	5.9						
16	20	650	0.95	59.42	7.7	6.2	<b>CG063-11P-100L-06D</b> <b>CF063-11P-100L-06D</b>	37 42	118			
18	21	596	1.05	54.49	8.3	6.4						
19	23	544	1.15	49.74	8.9	6.5						
21	26	499	1.25	45.61	9.3	6.6						
24	29	433	1.00	60.00	9.8	6.8						
26	32	397	1.00	55.02	10.1	6.9	<b>CG062-11P-90S/L-04E</b> <b>CF062-11P-90S/L-04E</b>	31 36	118			
31	37	343	1.75	47.55	10.4	7.1						
33	40	315	1.80	43.60	10.5	7.2						
39	48	267	2.30	36.92	10.7	7.3						
43	52	244	2.50	33.86	10.8	7.4						
44	53	241	1.00	33.43	10.8	7.1						
48	58	219	2.75	30.30	10.9	7.5						
52	63	201	3.00	27.78	10.8	7.5						
55	66	191	1.80	26.49	10.6	7.3						
71	86	149	2.55	20.57	9.8	7.5						
20	24	520	1.20	47.55	9.1	6.6				<b>CG062-11P-100L-06D</b> <b>CF062-11P-100L-06D</b>	37 42	118
22	27	477	1.20	43.60	9.5	6.7						
26	32	404	1.50	36.92	10.0	6.9						
28	34	370	1.65	33.86	10.2	7.0						
32	38	332	1.85	30.30	10.4	7.1						
35	42	304	2.00	27.78	10.6	7.2						
36	44	290	1.20	26.49	10.6	6.9						
41	50	257	2.35	23.46	10.8	7.4						
45	54	235	2.55	21.51	10.8	7.4						
47	57	225	1.70	20.57	10.9	7.2						
57	69	185	2.05	16.88	10.4	7.3						
73	89	143	2.65	13.07	9.7	7.5						
21	25	511	0.80	70.71	1.6	5.7	<b>CG053-11P-90S/L-04E</b> <b>CF053-11P-90S/L-04E</b>	27 32	116			
24	29	445	0.90	61.63	4.0	6.1						
26	31	404	1.00	56.02	4.9	6.2						
30	36	355	1.15	49.20	5.7	6.5						
33	39	323	1.25	44.73	6.1	6.6						

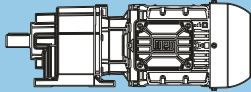
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P <sub>N</sub> = 1.1 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
1.1 kW	1.3 kW	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>								
30	37	347	1.00	48.13	5.8	6.5	CG052-11P-90S/L-04E CF052-11P-90S/L-04E	26 31	116
33	40	316	1.00	43.75	6.1	6.6			
38	46	274	1.50	38.00	6.6	6.9			
42	51	249	1.65	34.55	6.8	6.9			
49	60	213	1.90	29.46	7.0	7.1			
50	60	211	1.00	29.17	7.1	6.9			
54	66	193	2.10	26.79	7.2	7.2			
60	73	174	2.30	24.12	7.3	7.3			
63	76	166	1.65	23.03	7.3	7.1			
66	80	158	2.55	21.92	7.4	7.4			
78	95	134	3.00	18.56	7.5	7.5			
81	99	129	2.10	17.86	7.3	7.4			
100	120	106	2.55	14.62	6.9	7.5			
25	31	416	1.00	38.00	4.7	6.2	CG052-11P-100L-06D CF052-11P-100L-06D	32 37	116
28	34	378	1.10	34.55	5.3	6.4			
33	40	322	1.25	29.46	6.1	6.6			
36	43	293	1.40	26.79	6.4	6.7			
40	48	264	1.55	24.12	6.7	6.9			
42	51	252	1.10	23.03	6.8	6.7			
44	53	240	1.70	21.92	6.9	7.0			
52	63	203	2.00	18.56	7.1	7.2			
54	65	195	1.40	17.86	7.2	7.0			
57	69	185	2.20	16.88	7.2	7.2			
66	80	160	1.70	14.62	7.3	7.2			
68	83	153	2.65	14.03	7.4	7.4			
75	91	140	2.90	12.75	7.4	7.5			
85	104	123	2.20	11.25	7.2	7.4			
113	137	93	2.90	8.50	6.7	7.6			
42	50	252	0.80	34.88	3.9	3.0	CG032-11P-90S/L-04E CF032-11P-90S/L-04E	22 24	114
46	56	229	0.90	31.67	4.3	3.1			
53	64	200	1.00	27.71	4.6	3.4			
58	70	182	1.15	25.17	4.5	3.4			
68	82	155	1.30	21.40	4.4	3.6			
74	90	141	0.95	19.54	4.2	3.5			
75	91	140	1.45	19.44	4.3	3.7			
85	103	123	1.65	17.09	4.2	3.8			
94	113	112	1.80	15.52	4.1	3.9			
113	136	93	2.10	12.92	3.9	4.0			
121	147	87	1.55	11.99	3.8	3.9			
124	150	85	2.35	11.73	3.8	4.1			
148	179	71	2.55	9.82	3.7	4.2			
152	184	69	1.90	9.57	3.6	4.1			
163	197	64	2.85	8.92	3.6	4.2			
201	243	52	2.50	7.24	3.3	4.2			
45	54	234	0.90	21.40	4.2	3.1	CG032-11P-100L-06D CF032-11P-100L-06D	28 30	114
49	60	213	0.95	19.44	4.6	3.3			
56	68	187	1.10	17.09	4.6	3.4			
62	75	170	1.20	15.52	4.4	3.5			
74	90	141	1.40	12.92	4.3	3.7			
80	97	131	1.00	11.99	4.2	3.6			
82	99	128	1.55	11.73	4.2	3.8			
98	119	107	1.70	9.82	4.1	3.9			
100	122	105	1.25	9.57	4.0	3.8			
108	131	98	1.90	8.92	4.0	4.0			
126	153	84	2.05	7.64	3.8	4.1			
133	161	79	1.65	7.24	3.7	4.0			
138	168	76	2.30	6.94	3.7	4.1			
161	195	65	2.45	5.96	3.6	4.2			
175	212	60	2.20	5.50	3.5	4.1			
177	215	59	2.70	5.41	3.5	4.2			
224	272	47	2.80	4.28	3.3	4.2			

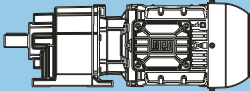
<b>P<sub>N</sub> = 1.1 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>1.1 kW</b>		<b>1.3 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>98</b>	118	107	0.80	14.88	2.7	0.9	<b>CG012-11P-90S/L-04E</b> <b>CF012-11P-90S/L-04E</b>	20 21	112
<b>109</b>	132	96	0.90	13.33	2.7	1.0			
<b>113</b>	137	93	0.95	12.83	2.6	1.0			
<b>127</b>	153	83	1.05	11.50	2.6	1.1			
<b>130</b>	157	81	1.05	11.20	2.6	1.1			
<b>145</b>	175	72	1.15	10.04	2.5	1.2			
<b>152</b>	183	69	1.00	9.60	2.4	1.0			
<b>177</b>	214	59	1.30	8.22	2.4	1.2			
<b>194</b>	235	54	1.25	7.50	2.3	1.1			
<b>198</b>	239	53	1.40	7.36	2.3	1.3			
<b>260</b>	314	40	1.65	5.60	2.1	1.3			
<b>301</b>	364	35	1.90	4.83	2.1	1.3			
<b>345</b>	417	30	2.20	4.22	2.0	1.4			
<b>470</b>	569	22	2.85	3.09	1.8	1.4			



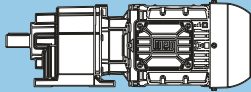
Legend see page 29

P <sub>N</sub> = 1.5 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
1.5 kW		1.8 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
5.9	7.1	2435	1.85	246.43	42.9	24.1	CG103-11P-90S/L-04F CF103-11P-90S/L-04F	168 172	126
7.0	8.4	2058	2.20	208.33	43.6	24.6			
8.0	9.7	1782	2.55	180.35	44.1	24.9			
9.1	11	1578	2.90	159.72	44.4	25.2			
4.7	5.7	3030	1.00	306.73	22.7	25.5	CG093-11P-90S/L-04F CF093-11P-90S/L-04F	126 124	124
6.0	7.2	2398	1.30	242.77	26.5	26.5			
6.8	8.3	2094	1.45	211.98	27.9	26.9			
7.7	9.4	1851	1.65	187.34	28.8	27.3			
9.2	11	1565	1.95	158.42	29.7	27.7			
9.4	11	1524	2.00	154.24	29.8	27.7			
11	13	1345	2.25	136.18	30.3	28.0			
12	15	1174	2.60	118.88	30.7	28.3			
14	17	1006	3.00	101.85	31.0	28.5			
7.7	9.4	1852	0.85	187.48	18.2	18.7	CG083-11P-90S/L-04F CF083-11P-90S/L-04F	73 77	122
10	12	1429	1.10	144.69	21.0	19.6			
12	15	1182	1.35	119.68	22.2	20.1			
14	17	1006	1.55	101.80	22.8	20.4			
16	20	872	1.80	88.23	23.3	20.7			
19	24	736	2.15	74.50	23.6	21.0			
24	29	606	2.60	61.37	23.9	21.3			
27	32	535	2.90	54.18	24.1	21.4	CG082-11P-90S/L-04F CF082-11P-90S/L-04F	72 76	122
14	17	1032	0.80	104.50	8.1	12.5	CG073-11P-90S/L-04F CF073-11P-90S/L-04F	49 53	120
15	18	939	0.90	95.06	9.4	12.5			
17	20	851	1.00	86.17	10.4	13.0			
18	22	774	1.10	78.39	11.1	13.0			
21	25	698	1.20	70.68	11.7	13.5			
23	27	635	1.30	64.30	12.1	13.5			
24	29	593	1.40	60.06	12.4	13.8			
27	32	540	1.55	54.63	12.7	13.8			
29	36	488	1.70	49.38	13.0	14.1			
32	39	444	1.80	44.92	13.2	14.0			
37	45	387	2.00	39.17	13.4	14.3			
41	49	352	2.10	35.63	13.5	14.3			
37	45	385	2.15	38.92	13.4	14.3	CG072-11P-90S/L-04F CF072-11P-90S/L-04F	48 52	120
41	50	350	2.35	35.41	13.5	14.3			
47	57	302	2.75	30.55	13.6	14.6			
52	63	275	3.00	27.79	13.7	14.6			
20	24	724	0.85	73.28	6.5	6.0	CG063-11P-90S/L-04F CF063-11P-90S/L-04F	33 38	118
22	26	664	0.95	67.19	7.5	6.2			
24	30	587	1.05	59.42	8.4	6.4			
27	32	538	1.15	54.49	8.9	6.5			
29	35	491	1.25	49.74	9.4	6.7			
32	38	451	1.35	45.61	9.7	6.8			
30	37	470	1.30	47.55	9.5	6.7	CG062-11P-90S/L-04F CF062-11P-90S/L-04F	33 38	118
33	40	431	1.35	43.60	9.8	6.8			
39	48	365	1.65	36.92	10.3	7.0			
43	52	334	1.80	33.86	10.4	7.1			
48	58	299	2.05	30.30	10.6	7.2			
52	63	274	2.20	27.78	10.5	7.3			
55	66	262	1.35	26.49	10.3	7.0			
62	75	232	2.60	23.46	10.0	7.4			
67	82	213	2.85	21.51	9.8	7.5			
70	85	203	1.90	20.57	9.6	7.3			
86	104	167	2.30	16.88	9.1	7.4			
111	134	129	2.95	13.07	8.4	7.6			
29	36	486	0.85	49.20	2.8	5.9	CG053-11P-90S/L-04F CF053-11P-90S/L-04F	28 33	116
32	39	442	0.95	44.73	4.1	6.1			

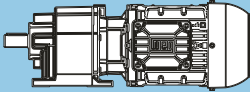
Legend see page 29

<b>P<sub>N</sub> = 1.5 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>1.5 kW</b>		<b>1.8 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>38</b>	46	375	1.10	38.00	5.4	6.4	<b>CG052-11P-90S/L-04F</b> <b>CF052-11P-90S/L-04F</b>	27 32	116
<b>42</b>	51	341	1.20	34.55	5.8	6.5			
<b>49</b>	60	291	1.40	29.46	6.4	6.8			
<b>54</b>	66	265	1.55	26.79	6.7	6.9			
<b>60</b>	73	238	1.70	24.12	6.9	7.0			
<b>63</b>	76	228	1.20	23.03	6.9	6.8			
<b>66</b>	80	217	1.85	21.92	7.0	7.1			
<b>78</b>	95	183	2.20	18.56	7.2	7.3			
<b>81</b>	98	176	1.55	17.86	7.1	7.1			
<b>86</b>	104	167	2.40	16.88	7.0	7.3			
<b>99</b>	120	144	1.85	14.62	6.7	7.3			
<b>103</b>	125	139	2.90	14.03	6.7	7.5			
<b>129</b>	156	111	2.45	11.25	6.3	7.5			
<b>58</b>	70	249	0.85	25.17	4.0	3.0	<b>CG032-11P-90S/L-04F</b> <b>CF032-11P-90S/L-04F</b>	23 25	114
<b>68</b>	82	211	0.95	21.40	4.1	3.3			
<b>75</b>	90	192	1.05	19.44	4.0	3.4			
<b>85</b>	103	169	1.20	17.09	3.9	3.5			
<b>93</b>	113	153	1.35	15.52	3.9	3.6			
<b>112</b>	136	128	1.55	12.92	3.7	3.8			
<b>121</b>	146	118	1.10	11.99	3.6	3.7			
<b>124</b>	150	116	1.75	11.73	3.6	3.9			
<b>148</b>	179	97	1.90	9.82	3.5	4.0			
<b>151</b>	183	95	1.40	9.57	3.4	3.9			
<b>163</b>	197	88	2.10	8.92	3.4	4.0			
<b>190</b>	230	75	2.25	7.64	3.3	4.1			
<b>200</b>	243	71	1.85	7.24	3.2	4.1			
<b>209</b>	253	69	2.50	6.94	3.2	4.2			
<b>243</b>	294	59	2.70	5.96	3.1	4.2			
<b>264</b>	319	54	2.40	5.50	3.0	4.2			
<b>268</b>	324	53	3.00	5.41	3.0	4.3			
<b>129</b>	157	111	0.80	11.20	2.4	0.9	<b>CG012-11P-90S/L-04F</b> <b>CF012-11P-90S/L-04F</b>	21 22	112
<b>144</b>	175	99	0.85	10.04	2.3	1.0			
<b>176</b>	214	81	0.95	8.22	2.3	1.1			
<b>193</b>	234	74	0.90	7.50	2.1	1.0			
<b>197</b>	238	73	1.05	7.36	2.2	1.2			
<b>259</b>	313	55	1.20	5.60	2.0	1.1			
<b>300</b>	363	48	1.40	4.83	2.0	1.2			
<b>344</b>	416	42	1.60	4.22	1.9	1.3			
<b>469</b>	567	31	2.10	3.09	1.8	1.4			

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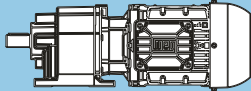
<b>P<sub>N</sub> = 2.2 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>2.2 kW</b>		<b>2.6 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
5.8	7.1	3608	1.25	246.43	39.4	22.6	<b>CG103-11P-100L-04E</b> <b>CF103-11P-100L-04E</b>	178	126
6.9	8.4	3050	1.50	208.33	41.2	23.3			
8.0	9.7	2640	1.75	180.35	42.4	23.8			
9.0	11	2339	1.95	159.72	43.1	24.2			
10	13	2023	2.25	138.17	43.7	24.6			
11	13	1951	2.35	133.24	43.8	24.7			
12	15	1721	2.65	117.56	44.2	25.0			
14	17	1510	3.00	103.15	44.5	25.3			
5.9	7.2	3554	0.85	242.77	18.0	24.7	<b>CG093-11P-100L-04E</b> <b>CF093-11P-100L-04E</b>	136	124
6.8	8.2	3104	1.00	211.98	22.1	25.4			
7.7	9.3	2743	1.10	187.34	24.6	25.9			
9.1	11	2320	1.30	158.42	26.9	26.6			
9.3	11	2258	1.35	154.24	27.1	26.7			
11	13	1994	1.55	136.18	28.3	27.1			
12	15	1741	1.75	118.88	29.2	27.4			
13	16	1561	1.95	106.60	29.7	27.7			
14	17	1491	2.05	101.85	29.9	27.8			
15	19	1379	2.20	94.21	30.2	28.0			
17	20	1269	2.40	86.68	30.5	28.1			
18	22	1166	2.60	79.66	30.7	28.3			
20	24	1065	2.85	72.72	30.9	28.4			
21	25	1003	3.00	68.48	31.0	28.5			
12	15	1752	0.90	119.68	19.0	18.9	<b>CG083-11P-100L-04E</b> <b>CF083-11P-100L-04E</b>	83	122
14	17	1490	1.05	101.80	20.7	19.5			
16	20	1292	1.20	88.23	21.7	19.9			
19	23	1091	1.45	74.50	22.5	20.3			
20	24	1052	1.50	71.84	22.7	20.4			
23	28	899	1.75	61.37	23.2	20.7			
26	32	793	2.00	54.18	23.5	20.9	<b>CG082-11P-100L-04E</b> <b>CF082-11P-100L-04E</b>	82	122
33	41	628	2.50	42.88	23.9	21.2			
38	47	548	2.85	37.44	23.4	21.4			
46	56	457	2.45	31.23	22.0	21.4			
20	25	1035	0.80	70.68	8.1	12.5	<b>CG073-11P-100L-04E</b> <b>CF073-11P-100L-04E</b>	59	120
22	27	941	0.90	64.30	9.4	12.5			
24	29	879	0.95	60.06	10.1	13.0			
26	32	800	1.05	54.63	10.9	13.0			
29	35	723	1.15	49.38	11.5	13.4			
30	37	697	1.20	47.62	11.7	13.5			
32	39	658	1.25	44.92	12.0	13.4			
33	40	634	1.25	43.32	12.2	13.5			
37	45	573	1.35	39.17	12.5	13.8			
40	49	522	1.40	35.63	12.8	13.8			
37	45	570	1.45	38.92	12.5	13.8	<b>CG072-11P-100L-04E</b> <b>CF072-11P-100L-04E</b>	58	120
41	49	518	1.60	35.41	12.8	13.8			
47	57	447	1.85	30.55	13.1	14.2			
52	63	407	2.05	27.79	13.3	14.2			
61	74	345	2.35	23.58	13.5	14.4			
67	81	314	2.50	21.45	13.6	14.4			
70	85	302	2.30	20.65	13.6	14.1			
74	89	286	2.70	19.50	13.7	14.6			
81	98	260	2.85	17.74	13.7	14.6			
87	105	243	3.00	16.59	13.8	14.7			
89	108	237	2.85	16.20	13.8	14.4			
26	32	798	0.80	54.49	4.9	5.8		<b>CG063-11P-100L-04E</b> <b>CF063-11P-100L-04E</b>	
29	35	728	0.85	49.74	6.4	6.0			
31	38	668	0.90	45.61	7.4	6.1			

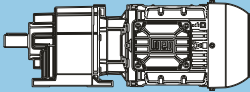
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<b>P<sub>N</sub> = 2.2 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>2.2 kW</b>		<b>2.6 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>39</b>	47	541	1.15	36.92	8.9	6.5	<b>CG062-11P-100L-04E</b> <b>CF062-11P-100L-04E</b>	42 47	118
<b>42</b>	52	496	1.25	33.86	9.3	6.6			
<b>47</b>	58	444	1.40	30.30	9.7	6.8			
<b>52</b>	63	407	1.50	27.78	10.0	6.9			
<b>61</b>	74	344	1.75	23.46	9.7	7.1			
<b>67</b>	81	315	1.95	21.51	9.5	7.2			
<b>70</b>	85	301	1.30	20.57	9.3	6.8			
<b>80</b>	98	261	2.30	17.85	9.1	7.3			
<b>85</b>	103	247	1.55	16.88	8.8	7.1			
<b>88</b>	107	240	2.55	16.36	8.8	7.4			
<b>98</b>	119	215	2.80	14.72	8.6	7.5			
<b>110</b>	133	191	2.00	13.07	8.2	7.3			
<b>144</b>	176	146	2.60	9.94	7.6	7.5			
<b>49</b>	59	431	0.95	29.46	4.3	6.1			
<b>54</b>	65	392	1.05	26.79	5.1	6.3			
<b>60</b>	72	353	1.15	24.12	5.7	6.5			
<b>65</b>	80	321	1.25	21.92	6.1	6.6			
<b>77</b>	94	272	1.50	18.56	6.6	6.9			
<b>80</b>	98	261	1.05	17.86	6.7	6.6			
<b>85</b>	103	247	1.65	16.88	6.7	7.0			
<b>98</b>	119	214	1.25	14.62	6.4	6.9			
<b>102</b>	124	205	1.95	14.03	6.5	7.2			
<b>113</b>	137	187	2.15	12.75	6.3	7.2			
<b>125</b>	152	168	2.40	11.48	6.1	7.3			
<b>128</b>	155	165	1.65	11.25	6.0	7.2			
<b>138</b>	167	153	2.65	10.43	6.0	7.4			
<b>154</b>	187	136	2.85	9.31	5.8	7.5			
<b>169</b>	205	124	2.15	8.50	5.6	7.4			
<b>170</b>	206	124	2.95	8.46	5.6	7.5			
<b>206</b>	251	102	2.65	6.96	5.3	7.5			
<b>84</b>	102	250	0.80	17.09	3.5	3.0	<b>CG032-11P-100L-04E</b> <b>CF032-11P-100L-04E</b>	33 35	114
<b>92</b>	112	227	0.90	15.52	3.4	3.2			
<b>111</b>	135	189	1.05	12.92	3.4	3.4			
<b>122</b>	149	172	1.20	11.73	3.3	3.5			
<b>146</b>	178	144	1.30	9.82	3.3	3.7			
<b>150</b>	182	140	0.95	9.57	3.1	3.5			
<b>161</b>	196	131	1.45	8.92	3.2	3.8			
<b>188</b>	228	112	1.55	7.64	3.1	3.9			
<b>198</b>	241	106	1.25	7.24	3.0	3.8			
<b>207</b>	252	102	1.70	6.94	3.0	4.0			
<b>241</b>	293	87	1.85	5.96	3.0	4.1			
<b>261</b>	317	81	1.65	5.50	2.9	4.0			
<b>265</b>	322	79	2.05	5.41	2.9	4.1			
<b>335</b>	408	63	2.10	4.28	2.7	4.1			
<b>430</b>	522	49	2.70	3.34	2.5	4.2			

Legend see page 29

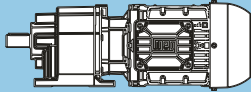


P <sub>N</sub> = 3.0 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
3.0 kW		3.6 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
5.8	7.1	4903	0.95	246.43	33.3	21.0	CG103-11P-L100L-04F CF103-11P-L100L-04F	185 189	126
6.9	8.4	4145	1.10	208.33	37.2	21.9			
8.0	9.6	3588	1.30	180.35	39.5	22.6			
9.0	11	3178	1.45	159.72	40.9	23.2			
10	13	2749	1.65	138.17	42.1	23.7			
11	13	2651	1.70	133.24	42.3	23.8			
12	15	2339	1.95	117.56	43.1	24.2			
14	17	1990	2.30	100.05	43.8	24.7			
16	19	1777	2.55	89.30	44.1	24.9			
17	20	1717	2.65	86.31	43.6	25.0			
18	22	1573	2.90	79.08	42.6	25.2			
7.7	9.3	3727	0.85	187.34	16.0	24.5	CG093-11P-L100L-04F CF093-11P-L100L-04F	142 140	124
9.1	11	3152	1.00	158.42	21.7	25.3			
9.3	11	3069	1.00	154.24	22.4	25.5			
11	13	2709	1.15	136.18	24.8	26.0			
12	15	2365	1.30	118.88	26.6	26.5			
14	17	2026	1.50	101.85	28.1	27.0			
15	18	1874	1.65	94.21	28.7	27.2			
17	20	1725	1.75	86.68	29.2	27.5			
18	22	1585	1.90	79.66	29.6	27.7			
20	24	1447	2.10	72.72	30.0	27.9			
14	17	2025	0.80	101.80	16.7	18.4	CG083-11P-L100L-04F CF083-11P-L100L-04F	90 94	122
16	20	1755	0.90	88.23	19.0	18.9			
19	23	1482	1.05	74.50	20.7	19.5			
20	24	1429	1.10	71.84	21.0	19.6			
27	32	1078	1.45	54.18	22.6	20.3	CG082-11P-L100L-04F CF082-11P-L100L-04F	89 93	122
34	41	853	1.85	42.88	23.3	20.8			
38	46	745	2.10	37.44	23.6	21.0			
44	53	658	2.40	33.09	22.6	21.2			
46	56	621	1.80	31.23	22.3	21.0			
51	62	557	2.80	27.98	21.4	21.4			
26	32	1087	0.80	54.63	7.2	12.1	CG073-11P-L100L-04F CF073-11P-L100L-04F	66 70	120
29	35	982	0.85	49.38	8.9	12.7			
30	37	947	0.90	47.62	9.3	12.8			
32	39	894	0.90	44.92	10.0	12.7			
33	40	862	0.95	43.32	10.3	12.8			
37	44	779	1.00	39.17	11.1	13.2			
37	45	774	1.10	38.92	11.1	13.3	CG072-11P-L100L-04F CF072-11P-L100L-04F	65 69	120
41	49	704	1.20	35.41	11.7	13.2			
47	57	608	1.35	30.55	12.3	13.7			
52	63	553	1.50	27.79	12.6	13.7			
61	74	469	1.75	23.58	13.0	14.1			
67	81	427	1.85	21.45	13.2	14.1			
70	84	411	1.70	20.65	13.3	13.7			
74	89	388	2.00	19.50	13.4	14.3			
81	98	353	2.10	17.74	13.5	14.3			
87	105	330	2.20	16.59	13.6	14.5			
89	107	322	2.10	16.20	13.4	14.0			
95	115	300	2.35	15.09	13.6	14.5			
100	121	286	2.45	14.38	13.7	14.6			
110	133	260	2.60	13.08	13.3	14.6			
115	139	249	2.50	12.51	13.1	14.3			
119	143	242	2.75	12.14	12.9	14.7			
123	149	233	2.80	11.71	12.8	14.8			
130	158	220	2.90	11.04	12.5	14.7			
135	163	212	3.00	10.65	12.3	14.8			
139	168	206	2.85	10.34	12.3	14.5			

P <sub>N</sub> = 3.0 kW								IE3	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
3.0 kW		3.6 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
39	47	735	0.85	36.92	6.3	6.0	CG062-11P-L100L-04F CF062-11P-L100L-04F	49 54	118
43	51	674	0.90	33.86	7.3	6.1			
48	57	603	1.00	30.30	8.3	6.4			
52	63	553	1.10	27.78	8.8	6.5			
61	74	467	1.30	23.46	9.3	6.7			
67	81	428	1.45	21.51	9.1	6.8			
70	85	409	0.95	20.57	8.9	6.4			
81	98	355	1.70	17.85	8.7	7.1			
85	103	336	1.15	16.88	8.5	6.7			
88	106	326	1.85	16.36	8.5	7.1			
98	118	293	2.05	14.72	8.3	7.3			
107	129	268	2.25	13.49	8.1	7.3			
110	133	260	1.45	13.07	8.0	7.0			
119	144	240	2.50	12.07	7.9	7.4			
130	157	220	2.75	11.07	7.7	7.5			
140	170	204	2.95	10.26	7.6	7.5			
145	175	198	1.95	9.94	7.4	7.3			
176	212	163	2.35	8.20	7.0	7.4			
214	259	134	2.85	6.73	6.7	7.5			
54	65	533	0.80	26.79	**	5.6	CG052-11P-L100L-04F CF052-11P-L100L-04F	44 49	116
60	72	480	0.85	24.12	3.0	5.9			
66	79	436	0.95	21.92	4.2	6.1			
78	94	369	1.10	18.56	5.5	6.4			
81	97	355	0.80	17.86	5.7	6.1			
85	103	336	1.20	16.88	5.9	6.6			
99	119	291	0.95	14.62	6.0	6.4			
103	124	279	1.45	14.03	6.1	6.8			
113	136	254	1.60	12.75	6.0	6.9			
125	152	228	1.80	11.48	5.9	7.1			
128	155	224	1.20	11.25	5.8	6.8			
138	167	208	1.95	10.43	5.7	7.1			
155	187	185	2.10	9.31	5.6	7.3			
169	205	169	1.60	8.50	5.4	7.1			
170	206	168	2.20	8.46	5.5	7.3			
185	223	155	2.25	7.79	5.4	7.4			
203	246	141	2.35	7.08	5.2	7.5			
207	250	138	1.95	6.96	5.1	7.3			
228	276	126	2.45	6.31	5.1	7.5			
236	286	121	2.50	6.09	5.0	7.5			
251	303	114	2.55	5.74	4.9	7.6			
255	308	112	2.35	5.64	4.9	7.5			
260	314	110	2.60	5.54	4.9	7.6			
305	368	94	2.45	4.72	4.7	7.6			
376	455	76	2.65	3.83	4.4	7.7			
390	471	73	2.70	3.69	4.3	7.7			
111	135	257	0.80	12.92	3.0	3.0	CG032-11P-L100L-04F CF032-11P-L100L-04F	40 42	114
123	148	233	0.85	11.73	3.0	3.1			
147	177	195	0.95	9.82	2.9	3.4			
162	195	177	1.05	8.92	2.9	3.5			
189	228	152	1.15	7.64	2.9	3.7			
199	240	144	0.95	7.24	2.8	3.5			
208	251	138	1.25	6.94	2.8	3.7			
242	292	119	1.35	5.96	2.8	3.9			
262	316	109	1.20	5.50	2.7	3.8			
266	321	108	1.50	5.41	2.7	3.9			
337	407	85	1.55	4.28	2.5	4.0			
431	521	66	2.00	3.34	2.4	4.1			

Legend see page 29

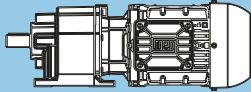
\*\* ... on request

P <sub>N</sub> = 4.0 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
4.0 kW		4.8 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
7.0	8.5	5450	2.40	206.88	109.0	22.0	CG143-11P-112M-04E CF143-11P-112M-04E	436	130
8.0	9.7	4752	2.75	180.38	109.6	22.7		454	
8.3	10	4582	2.85	173.94	109.7	22.9			
7.1	8.6	5397	1.50	204.88	69.9	23.3	CG133-11P-112M-04E CF133-11P-112M-04E	289 291	128
8.0	9.7	4767	1.70	180.95	71.1	24.1			
9.2	11	4138	1.95	157.08	72.2	24.8			
9.6	12	3990	2.05	151.47	72.4	24.9			
11	13	3575	2.25	135.71	73.0	25.4			
12	15	3060	2.65	116.14	73.7	26.0			
14	17	2683	3.00	101.85	74.1	26.4			
7.0	8.4	5488	0.85	208.33	29.4	20.2	CG103-11P-112M-04E CF103-11P-112M-04E	186 190	126
8.0	9.7	4751	0.95	180.35	34.2	21.2			
9.1	11	4208	1.10	159.72	36.9	21.8			
10	13	3640	1.25	138.17	39.3	22.6			
11	13	3510	1.30	133.24	39.7	22.7			
12	15	3097	1.50	117.56	41.1	23.3			
14	18	2636	1.75	100.05	42.4	23.8			
16	20	2352	1.95	89.30	43.0	24.2			
17	20	2274	2.00	86.31	43.2	24.3			
18	22	2083	2.20	79.08	43.4	24.6			
21	26	1802	2.50	68.41	40.9	24.9			
22	27	1738	2.60	65.97	40.3	25.0			
25	30	1533	2.95	58.21	38.4	25.3			
11	13	3588	0.85	136.18	17.7	24.7	CG093-11P-112M-04E CF093-11P-112M-04E	143 141	124
12	15	3132	1.00	118.88	21.9	25.4			
14	17	2683	1.15	101.85	24.9	26.0			
15	19	2482	1.25	94.21	26.1	26.3			
17	20	2284	1.35	86.68	27.0	26.6			
18	22	2099	1.45	79.66	27.8	26.9			
20	24	1916	1.60	72.72	28.5	27.2			
21	26	1804	1.70	68.48	28.9	27.3			
24	29	1575	1.95	59.78	29.7	27.7			
28	34	1349	2.25	51.22	30.3	28.0			
29	36	1301	2.35	49.39	30.4	28.1			
33	40	1148	2.50	43.59	30.7	28.3			
40	48	963	2.80	36.57	28.9	28.6			
37	44	1043	2.85	39.60	29.7	28.5	CG092-11P-112M-04E CF092-11P-112M-04E	141 139	124
64	78	595	2.85	22.58	24.4	28.8			
19	24	1963	0.80	74.50	17.3	18.5	CG083-11P-112M-04E CF083-11P-112M-04E	91 95	122
20	24	1893	0.85	71.84	17.9	18.6			
24	29	1617	1.00	61.37	19.9	19.2			
27	32	1427	1.10	54.18	21.0	19.6	CG082-11P-112M-04E CF082-11P-112M-04E	90 94	122
34	41	1130	1.40	42.88	22.4	20.2			
39	47	986	1.60	37.44	22.9	20.5			
44	53	872	1.80	33.09	23.0	20.7			
46	56	823	1.40	31.23	22.7	20.5			
52	63	737	2.15	27.98	21.6	21.0			
59	71	651	1.75	24.72	20.7	20.9			
60	73	634	2.35	24.05	20.4	21.2			
67	81	569	2.35	21.58	19.7	21.1			
69	84	553	2.60	21.00	19.4	21.4			
76	92	503	2.60	19.08	18.8	21.3			
81	98	474	2.90	17.99	18.3	21.5			
84	101	457	2.95	17.35	18.1	21.6			
41	49	939	0.80	35.63	9.4	12.5			

Legend see page 29

<b>P<sub>N</sub> = 4.0 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>4.0 kW</b>		<b>4.8 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
37	45	1025	0.80	38.92	8.2	12.6	<b>CG072-11P-112M-04E</b> <b>CF072-11P-112M-04E</b>	66 70	120
41	50	933	0.90	35.41	9.5	12.5			
47	57	805	1.05	30.55	10.8	13.2			
52	63	732	1.15	27.79	11.3	13.2			
62	74	621	1.30	23.58	11.9	13.7			
68	82	565	1.40	21.45	12.0	13.7			
70	85	544	1.30	20.65	11.2	13.1			
74	90	514	1.50	19.50	12.3	14.0			
82	99	467	1.60	17.74	12.2	14.0			
87	106	437	1.65	16.59	12.4	14.2			
89	108	427	1.60	16.20	11.6	13.6			
96	116	398	1.80	15.09	12.3	14.2			
101	122	379	1.85	14.38	12.3	14.4			
111	134	345	1.95	13.08	12.2	14.3			
116	140	329	1.90	12.51	11.7	14.0			
119	145	320	2.05	12.14	12.3	14.5			
124	150	308	2.10	11.71	12.2	14.5			
131	159	291	2.20	11.04	12.1	14.5			
136	165	281	2.25	10.65	12.1	14.5			
140	170	272	2.15	10.34	11.6	14.2			
145	176	263	2.35	10.00	12.0	14.7			
159	193	240	2.55	9.10	11.8	14.7			
165	199	232	2.40	8.80	11.4	14.4			
190	230	201	2.65	7.63	11.1	14.5			
225	273	170	2.95	6.44	10.4	14.7			
48	58	798	0.80	30.30	4.9	5.8	<b>CG062-11P-112M-04E</b> <b>CF062-11P-112M-04E</b>	50 55	118
52	63	732	0.85	27.78	6.4	6.0			
62	75	618	1.00	23.46	8.1	6.3			
67	82	567	1.10	21.51	8.6	6.4			
81	98	470	1.30	17.85	8.3	6.7			
86	104	445	0.85	16.88	8.0	6.2			
89	107	431	1.40	16.36	8.1	6.8			
99	119	388	1.55	14.72	7.9	7.0			
107	130	355	1.70	13.49	7.8	7.1			
111	134	344	1.10	13.07	7.6	6.7			
120	145	318	1.90	12.07	7.6	7.2			
131	159	292	2.10	11.07	7.4	7.2			
141	171	270	2.25	10.26	7.3	7.3			
146	177	262	1.45	9.94	7.2	7.0			
154	187	248	2.40	9.40	7.1	7.4			
172	208	222	2.50	8.43	7.0	7.5			
177	214	216	1.75	8.20	6.8	7.2			
178	216	214	2.50	8.13	6.9	7.5			
188	227	204	2.55	7.73	6.8	7.5			
194	235	196	2.60	7.46	6.7	7.5			
216	261	177	2.15	6.73	6.5	7.4			
217	262	176	2.70	6.69	6.5	7.6			
236	286	162	2.75	6.13	6.4	7.6			
254	307	151	2.50	5.71	6.2	7.5			
309	374	124	2.65	4.70	5.9	7.6			
320	387	119	2.70	4.53	5.8	7.6			
389	471	98	2.85	3.73	5.5	7.7			

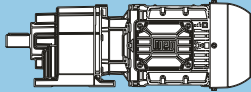
Legend see page 29

<b>P<sub>N</sub> = 4.0 kW</b>							<b>IE3</b>			
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page	
<b>4.0 kW</b>	<b>4.8 kW</b>	<b>M<sub>2</sub></b>	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b>	<b>F<sub>aN</sub></b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>Nm</b>			<b>kN</b>	<b>kN</b>				
<b>78</b>	95	489	0.85	18.56	2.7	5.9				
<b>86</b>	104	445	0.90	16.88	4.0	6.0				
<b>103</b>	125	369	1.10	14.03	5.5	6.4				
<b>114</b>	138	336	1.20	12.75	5.6	6.6				
<b>126</b>	153	302	1.35	11.48	5.5	6.7				
<b>129</b>	156	296	0.95	11.25	5.4	6.4				
<b>139</b>	168	275	1.50	10.43	5.4	6.8				
<b>156</b>	189	245	1.60	9.31	5.3	7.0				
<b>171</b>	207	223	1.65	8.46	5.2	7.1				
<b>186</b>	225	205	1.70	7.79	5.1	7.2				
<b>205</b>	248	187	1.80	7.08	5.0	7.2				
<b>208</b>	252	183	1.50	6.96	4.9	7.0				
<b>230</b>	278	166	1.85	6.31	4.9	7.3				
<b>238</b>	288	160	1.90	6.09	4.8	7.4				
<b>253</b>	306	151	1.95	5.74	4.8	7.4				
<b>257</b>	311	149	1.75	5.64	4.7	7.2				
<b>262</b>	317	146	1.95	5.54	4.7	7.4				
<b>307</b>	372	124	1.85	4.72	4.5	7.4				
<b>379</b>	459	101	2.00	3.83	4.3	7.5				
<b>393</b>	476	97	2.05	3.69	4.2	7.5				
							<b>CG052-11P-112M-04E</b> <b>CF052-11P-112M-04E</b>		45 50	116

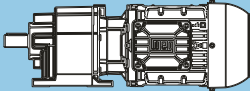
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<b>P<sub>N</sub> = 5.5 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>5.5 kW</b>		<b>6.6 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>7.1</b>	8.5	7417	1.80	206.88	106.9	20.1	<b>CG143-11P-132S-04E</b> <b>CF143-11P-132S-04E</b>	454 472	130
<b>8.1</b>	9.8	6467	2.05	180.38	108.0	21.0			
<b>8.4</b>	10	6236	2.10	173.94	108.2	21.2			
<b>9.4</b>	11	5571	2.35	155.38	108.9	21.9			
<b>11</b>	13	4797	2.75	133.80	109.5	22.7			
<b>7.2</b>	8.6	7345	1.10	204.88	64.9	21.1	<b>CG133-11P-132S-04E</b> <b>CF133-11P-132S-04E</b>	307 309	128
<b>8.1</b>	9.8	6488	1.25	180.95	67.3	22.1			
<b>9.3</b>	11	5632	1.45	157.08	69.4	23.1			
<b>9.7</b>	12	5431	1.50	151.47	69.8	23.3			
<b>11</b>	13	4866	1.65	135.71	71.0	23.9			
<b>13</b>	15	4164	1.95	116.14	72.2	24.7			
<b>14</b>	17	3652	2.20	101.85	72.9	25.3			
<b>15</b>	18	3596	2.25	100.31	73.0	25.4			
<b>16</b>	20	3225	2.50	89.96	73.5	25.8			
<b>19</b>	23	2700	3.00	75.30	74.0	26.4			
<b>9.2</b>	11	5727	0.80	159.72	27.5	19.9	<b>CG103-11P-132S-04E</b> <b>CF103-11P-132S-04E</b>	204 208	126
<b>11</b>	13	4954	0.95	138.17	33.0	20.9			
<b>12</b>	15	4215	1.10	117.56	36.9	21.8			
<b>14</b>	17	3698	1.25	103.15	39.1	22.5			
<b>15</b>	18	3587	1.30	100.05	39.5	22.6			
<b>16</b>	20	3202	1.45	89.30	40.8	23.1			
<b>17</b>	20	3094	1.50	86.31	41.1	23.3			
<b>19</b>	22	2835	1.60	79.08	41.9	23.6			
<b>21</b>	26	2453	1.85	68.41	41.9	24.1			
<b>22</b>	27	2365	1.95	65.97	41.2	24.2			
<b>25</b>	30	2087	2.20	58.21	39.2	24.5			
<b>30</b>	36	1776	2.55	49.54	36.6	24.9			
<b>34</b>	41	1532	2.95	42.74	34.9	25.3			
<b>14</b>	17	3652	0.85	101.85	16.9	24.6			
<b>15</b>	18	3521	0.90	98.21	18.4	24.8			
<b>16</b>	19	3378	0.90	94.21	19.8	25.0			
<b>17</b>	20	3108	1.00	86.68	22.1	25.4			
<b>18</b>	22	2856	1.10	79.66	23.9	25.8			
<b>20</b>	24	2607	1.20	72.72	25.4	26.1			
<b>21</b>	26	2455	1.25	68.48	26.2	26.4			
<b>24</b>	29	2197	1.40	61.28	27.4	26.8			
<b>25</b>	30	2143	1.40	59.78	27.7	26.8			
<b>29</b>	34	1836	1.65	51.22	28.8	27.3			
<b>30</b>	36	1771	1.70	49.39	29.1	27.4			
<b>34</b>	40	1563	1.85	43.59	29.7	27.7			
<b>40</b>	48	1311	2.05	36.57	29.5	28.1			
<b>48</b>	57	1105	2.30	30.81	27.5	28.4			
<b>37</b>	45	1420	2.10	39.60	30.1	27.9	<b>CG092-11P-132S-04E</b> <b>CF092-11P-132S-04E</b>	160 158	124
<b>44</b>	53	1200	2.50	33.48	28.4	28.2			
<b>51</b>	61	1039	2.90	28.98	26.9	28.5			
<b>65</b>	78	810	2.10	22.58	24.7	28.4			
<b>77</b>	92	684	2.50	19.09	23.2	28.6			
<b>89</b>	107	593	2.90	16.53	22.0	28.8			

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P <sub>N</sub> = 5.5 kW							IE3		
50 Hz	60 Hz				at 50 Hz			m kg	Dimension sheet see page
5.5 kW	6.6 kW								
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
27	33	1942	0.80	54.18	17.5	18.5	CG082-11P-132S-04E CF082-11P-132S-04E	108 112	122
34	41	1537	1.05	42.88	20.4	19.4			
39	47	1342	1.20	37.44	21.4	19.8			
44	53	1186	1.35	33.09	22.2	20.1			
47	57	1120	1.00	31.23	22.4	19.7			
52	63	1003	1.55	27.98	22.1	20.5			
59	71	886	1.30	24.72	21.2	20.3			
61	73	862	1.75	24.05	20.8	20.7			
68	82	774	1.75	21.58	20.1	20.6			
70	84	753	1.90	21.00	19.7	21.0			
77	93	684	1.95	19.08	19.1	20.8			
81	98	645	2.10	17.99	18.6	21.2			
84	102	622	2.20	17.35	18.4	21.2			
91	109	578	2.25	16.13	18.0	21.1			
96	115	549	2.35	15.31	17.5	21.4			
106	127	497	2.50	13.87	17.0	21.3			
114	137	460	2.65	12.84	16.4	21.6			
121	146	434	2.75	12.10	16.1	21.4			
135	163	388	3.00	10.82	15.4	21.7			
53	64	996	0.85	27.79	7.1	12.4	CG072-11P-132S-04E CF072-11P-132S-04E	84 88	120
62	75	845	0.95	23.58	8.5	13.1			
68	82	769	1.05	21.45	8.8	13.0			
71	85	740	0.95	20.65	7.8	12.3			
75	91	699	1.10	19.50	9.4	13.5			
83	99	636	1.20	17.74	9.5	13.5			
88	106	595	1.25	16.59	9.9	13.8			
90	109	581	1.20	16.20	9.0	12.9			
97	117	541	1.30	15.09	10.0	13.7			
102	123	515	1.35	14.38	10.2	14.0			
112	135	469	1.45	13.08	10.3	14.0			
117	141	448	1.40	12.51	9.6	13.5			
121	145	435	1.55	12.14	10.4	14.2			
125	151	420	1.55	11.71	10.5	14.2			
133	160	396	1.65	11.04	10.4	14.2			
138	166	382	1.70	10.65	10.4	14.2			
142	171	371	1.60	10.34	9.9	13.8			
147	177	359	1.75	10.00	10.5	14.4			
161	194	326	1.85	9.10	10.5	14.4			
167	201	315	1.75	8.80	10.0	14.1			
192	231	273	1.95	7.63	10.0	14.2			
228	274	231	2.20	6.44	9.9	14.4			
236	284	223	2.25	6.21	9.9	14.5			
276	333	190	2.50	5.30	9.7	14.6			

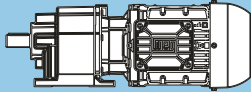
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<b>P<sub>N</sub> = 5.5 kW</b>								<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>5.5 kW</b>		<b>6.6 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
68	82	771	0.80	21.51	5.6	5.8	<b>CG062-11P-132S-04E</b> <b>CF062-11P-132S-04E</b>	69 74	118
82	99	640	0.95	17.85	7.7	6.2			
90	108	587	1.05	16.36	7.5	6.4			
100	120	528	1.15	14.72	7.4	6.6			
109	131	484	1.25	13.49	7.3	6.7			
112	135	469	0.85	13.07	7.1	6.1			
121	146	433	1.40	12.07	7.2	6.8			
132	159	397	1.55	11.07	7.1	6.9			
143	172	368	1.65	10.26	6.9	7.0			
147	178	356	1.10	9.94	6.8	6.6			
156	188	337	1.75	9.40	6.8	7.1			
174	209	302	1.85	8.43	6.7	7.2			
179	215	294	1.30	8.20	6.5	6.9			
180	217	292	1.85	8.13	6.6	7.3			
189	228	277	1.90	7.73	6.5	7.3			
196	237	267	1.90	7.46	6.5	7.3			
218	262	241	1.60	6.73	6.2	7.1			
219	264	240	2.00	6.69	6.3	7.4			
239	288	220	2.05	6.13	6.2	7.5			
256	309	205	1.85	5.71	6.0	7.2			
312	376	168	1.95	4.70	5.7	7.4			
323	390	162	2.00	4.53	5.6	7.4			
393	474	134	2.10	3.73	5.4	7.5			
104	126	503	0.80	14.03	2.1	5.8	<b>CG052-11P-132S-04E</b> <b>CF052-11P-132S-04E</b>	63 68	116
115	138	457	0.90	12.75	3.7	6.0			
128	154	412	1.00	11.48	4.8	6.2			
140	169	374	1.10	10.43	5.0	6.4			
157	190	334	1.20	9.31	4.9	6.6			
172	208	305	0.90	8.50	4.7	6.3			
173	209	303	1.25	8.46	4.8	6.7			
188	227	279	1.25	7.79	4.8	6.8			
207	249	254	1.30	7.08	4.7	6.9			
211	254	249	1.10	6.96	4.6	6.7			
232	280	226	1.40	6.31	4.6	7.1			
241	290	218	1.40	6.09	4.6	7.1			
255	307	206	1.45	5.74	4.5	7.2			
260	313	202	1.30	5.64	4.4	6.9			
265	319	198	1.45	5.54	4.5	7.2			
310	374	169	1.40	4.72	4.3	7.1			
383	461	137	1.50	3.83	4.1	7.3			
397	478	132	1.50	3.69	4.0	7.3			

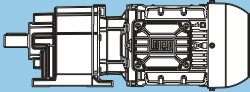


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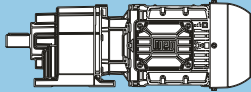


<b>P<sub>N</sub> = 7.5 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>7.5 kW</b>	<b>9.0 kW</b>	<b>M<sub>2</sub></b>	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b>	<b>F<sub>aN</sub></b>			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>Nm</b>			<b>kN</b>	<b>kN</b>			
<b>7.1</b>	8.6	10115	1.30	206.88	102.9	17.4	<b>CG143-11P-L132M-04F</b> <b>CF143-11P-L132M-04F</b>	468 486	130
<b>8.1</b>	9.8	8819	1.50	180.38	105.0	18.7			
<b>8.4</b>	10	8504	1.55	173.94	105.4	19.0			
<b>9.4</b>	11	7596	1.75	155.38	106.7	19.9			
<b>11</b>	13	6541	2.00	133.80	107.9	20.9			
<b>13</b>	16	5538	2.35	113.27	108.9	22.0			
<b>15</b>	18	4828	2.70	98.76	109.5	22.7			
<b>7.2</b>	8.6	10017	0.80	204.88	54.3	18.1	<b>CG133-11P-L132M-04F</b> <b>CF133-11P-L132M-04F</b>	321 323	128
<b>8.1</b>	9.8	8847	0.95	180.95	59.6	19.4			
<b>9.3</b>	11	7680	1.05	157.08	63.8	20.7			
<b>9.7</b>	12	7405	1.10	151.47	64.7	21.0			
<b>11</b>	13	6635	1.25	135.71	66.9	21.9			
<b>13</b>	15	5678	1.45	116.14	69.3	23.0			
<b>14</b>	17	4980	1.65	101.85	70.7	23.8			
<b>15</b>	18	4904	1.65	100.31	70.9	23.9			
<b>16</b>	20	4398	1.85	89.96	71.8	24.5			
<b>19</b>	24	3682	2.20	75.30	72.9	25.3			
<b>22</b>	26	3299	2.45	67.47	73.4	25.7			
<b>25</b>	31	2823	2.85	57.74	73.9	26.3			
<b>49</b>	59	1460	2.50	29.86	75.0	27.8	<b>CG132-11P-L132M-04F</b> <b>CF132-11P-L132M-04F</b>	312 314	128
<b>86</b>	104	831	2.50	17.00	75.2	28.3			
<b>12</b>	15	5965	0.80	122.02	25.4	19.6	<b>CG103-11P-L132M-04F</b> <b>CF103-11P-L132M-04F</b>	218 222	126
<b>14</b>	17	5043	0.90	103.15	32.5	20.8			
<b>15</b>	18	4891	0.95	100.05	33.4	21.0			
<b>16</b>	20	4366	1.05	89.30	36.2	21.6			
<b>17</b>	21	4220	1.10	86.31	36.9	21.8			
<b>19</b>	22	3867	1.20	79.08	38.4	22.3			
<b>21</b>	26	3345	1.35	68.41	40.3	22.9			
<b>22</b>	27	3225	1.40	65.97	40.7	23.1			
<b>25</b>	30	2846	1.60	58.21	40.3	23.6			
<b>30</b>	36	2422	1.90	49.54	37.6	24.1			
<b>34</b>	41	2089	2.20	42.74	35.7	24.5			
<b>44</b>	54	1614	2.30	33.01	32.3	25.1	<b>CG102-11P-L132M-04F</b> <b>CF102-11P-L132M-04F</b>	213 217	126
<b>60</b>	73	1193	2.50	24.40	28.7	25.7			
<b>76</b>	92	937	2.30	19.17	26.5	25.6			
<b>103</b>	125	693	2.50	14.17	23.7	26.0			
<b>18</b>	22	3895	0.80	79.66	13.7	24.2	<b>CG093-11P-L132M-04F</b> <b>CF093-11P-L132M-04F</b>	176 174	124
<b>20</b>	24	3555	0.85	72.72	18.0	24.7			
<b>21</b>	26	3348	0.90	68.48	20.1	25.1			
<b>24</b>	29	2996	1.05	61.28	22.9	25.6			
<b>25</b>	30	2923	1.05	59.78	23.4	25.7			
<b>29</b>	35	2504	1.20	51.22	25.9	26.3			
<b>30</b>	36	2415	1.25	49.39	26.4	26.4			
<b>34</b>	41	2131	1.35	43.59	27.7	26.9			
<b>40</b>	48	1788	1.50	36.57	29.0	27.4			
<b>48</b>	57	1507	1.70	30.81	28.2	27.8			
<b>37</b>	45	1936	1.55	39.60	28.5	27.1	<b>CG092-11P-L132M-04F</b> <b>CF092-11P-L132M-04F</b>	174 172	124
<b>44</b>	53	1637	1.85	33.48	29.2	27.6			
<b>51</b>	61	1417	2.15	28.98	27.6	27.9			
<b>57</b>	69	1255	2.40	25.67	26.4	28.1			
<b>65</b>	78	1104	1.55	22.58	25.3	27.8			
<b>66</b>	80	1086	2.80	22.20	24.9	28.4			
<b>68</b>	83	1047	2.50	21.41	24.6	28.5			
<b>77</b>	93	933	1.85	19.09	23.7	28.1			
<b>89</b>	107	808	2.15	16.53	22.4	28.4			
<b>100</b>	121	716	2.55	14.64	21.4	28.6			
<b>116</b>	140	619	2.95	12.66	20.3	28.8			
<b>120</b>	145	597	2.50	12.21	20.0	28.8			

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<b>P<sub>N</sub> = 7.5 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>7.5 kW</b>		<b>9.0 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
39	47	1830	0.85	37.44	18.4	18.8	<b>CG082-11P-L132M-04F</b> <b>CF082-11P-L132M-04F</b>	122 126	122
44	53	1618	1.00	33.09	19.9	19.2			
52	63	1368	1.15	27.98	21.3	19.7			
59	72	1209	0.95	24.72	21.9	19.5			
61	74	1176	1.30	24.05	21.4	20.1			
68	82	1055	1.25	21.58	20.7	19.9			
70	84	1027	1.40	21.00	20.2	20.4			
77	93	933	1.45	19.08	19.7	20.2			
81	98	880	1.55	17.99	19.1	20.7			
84	102	848	1.60	17.35	18.8	20.8			
91	110	789	1.65	16.13	18.4	20.5			
96	116	749	1.75	15.31	17.9	21.0			
106	128	678	1.85	13.87	17.3	20.8			
114	138	628	1.95	12.84	16.7	21.2			
121	146	592	2.00	12.10	16.5	21.0			
135	164	529	2.20	10.82	15.7	21.4			
141	171	507	2.25	10.37	15.5	21.2			
147	177	489	2.30	10.00	15.3	21.3			
166	201	432	2.45	8.83	14.6	21.4			
198	239	362	2.80	7.40	13.7	21.6			
75	91	953	0.80	19.50	5.5	12.8	<b>CG072-11P-L132M-04F</b> <b>CF072-11P-L132M-04F</b>	98 102	120
83	100	867	0.85	17.74	6.0	12.7			
88	107	811	0.90	16.59	6.6	13.2			
90	109	792	0.85	16.20	5.4	12.0			
97	117	738	0.95	15.09	7.0	13.1			
102	123	703	1.00	14.38	7.4	13.5			
112	135	639	1.05	13.08	7.7	13.4			
117	142	611	1.05	12.51	6.9	12.8			
121	146	593	1.15	12.14	8.0	13.8			
125	151	572	1.15	11.71	8.2	13.8			
133	160	540	1.20	11.04	8.2	13.7			
138	166	521	1.25	10.65	8.3	13.8			
142	171	506	1.20	10.34	7.6	13.3			
147	177	489	1.30	10.00	8.5	14.0			
161	195	445	1.35	9.10	8.7	14.0			
167	201	430	1.30	8.80	8.0	13.6			
192	232	373	1.45	7.63	8.3	13.8			
228	275	315	1.60	6.44	8.5	14.1			
236	285	304	1.65	6.21	8.5	14.1			
276	334	259	1.85	5.30	8.5	14.3			
100	120	719	0.85	14.72	6.6	6.0	<b>CG062-11P-L132M-04F</b> <b>CF062-11P-L132M-04F</b>	82 87	118
109	131	660	0.95	13.49	6.7	6.2			
121	147	590	1.05	12.07	6.7	6.4			
132	160	541	1.15	11.07	6.6	6.5			
143	173	501	1.20	10.26	6.5	6.6			
147	178	486	0.80	9.94	6.3	6.1			
156	188	460	1.30	9.40	6.4	6.8			
174	210	412	1.35	8.43	6.3	6.9			
179	216	401	0.95	8.20	6.1	6.4			
180	218	398	1.35	8.13	6.2	6.9			
189	229	378	1.40	7.73	6.2	7.0			
196	237	365	1.40	7.46	6.1	7.0			
218	263	329	1.15	6.73	5.9	6.7			
219	265	327	1.45	6.69	6.0	7.2			
239	289	300	1.50	6.13	5.9	7.2			
256	310	279	1.35	5.71	5.7	6.9			
312	377	230	1.45	4.70	5.5	7.1			
323	391	222	1.45	4.53	5.4	7.2			
393	475	182	1.55	3.73	5.2	7.3			

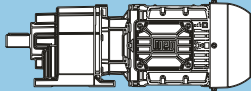
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P <sub>N</sub> = 7.5 kW							IE3		
50 Hz	60 Hz				at 50 Hz			m kg	Dimension sheet see page
7.5 kW	9.0 kW								
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
140	170	510	0.80	10.43	1.6	5.7	<b>CG052-11P-L132M-04F</b> <b>CF052-11P-L132M-04F</b>	77 82	116
157	190	455	0.85	9.31	3.8	6.0			
173	209	414	0.90	8.46	4.3	6.2			
188	227	381	0.95	7.79	4.3	6.4			
207	250	346	0.95	7.08	4.3	6.5			
211	254	340	0.80	6.96	4.2	6.1			
232	280	309	1.00	6.31	4.3	6.7			
241	291	298	1.05	6.09	4.2	6.7			
255	308	281	1.05	5.74	4.2	6.8			
260	314	276	0.95	5.64	4.1	6.5			
265	320	271	1.05	5.54	4.2	6.9			
310	375	231	1.00	4.72	4.0	6.8			
383	462	187	1.10	3.83	3.8	7.0			
397	480	180	1.10	3.69	3.8	7.1			

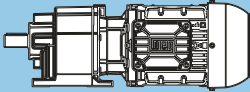
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<b>P<sub>N</sub> = 9.2 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>9.2 kW</b>		<b>11 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
7.1	8.5	12450	1.05	206.88	98.2	15.0	<b>CG143-11P-L132M-04G</b> <b>CF143-11P-L132M-04G</b>	473 491	130
8.1	9.8	10855	1.20	180.38	101.5	16.6			
8.4	10	10467	1.25	173.94	102.2	17.0			
9.4	11	9350	1.40	155.38	104.2	18.1			
11	13	8052	1.65	133.80	106.1	19.4			
12	15	7033	1.85	116.88	107.4	20.5			
13	16	6816	1.95	113.27	107.6	20.7			
15	18	5943	2.20	98.76	108.5	21.5			
17	21	5119	2.55	85.07	109.3	22.4			
20	24	4408	2.95	73.25	109.8	23.1			
9.3	11	9453	0.85	157.08	57.0	18.7	<b>CG133-11P-L132M-04G</b> <b>CF133-11P-L132M-04G</b>	326 328	128
9.6	12	9115	0.90	151.47	58.5	19.1			
11	13	8167	1.00	135.71	62.2	20.2			
13	15	6989	1.15	116.14	66.0	21.5			
14	17	6129	1.35	101.85	68.2	22.5			
15	18	6036	1.35	100.31	68.5	22.6			
16	20	5414	1.50	89.96	69.9	23.3			
19	23	4531	1.80	75.30	71.6	24.3			
22	26	4060	2.00	67.47	72.3	24.9			
25	31	3475	2.35	57.74	73.2	25.5			
29	35	3001	2.70	49.87	73.7	26.1			
41	50	2137	2.50	35.51	74.5	27.1	<b>CG132-11P-L132M-04G</b> <b>CF132-11P-L132M-04G</b>	317 319	128
49	59	1797	2.00	29.86	74.8	27.4			
72	87	1217	2.50	20.22	75.1	27.8			
86	104	1023	2.00	17.00	75.2	28.1			
16	20	5374	0.85	89.30	30.3	20.4	<b>CG103-11P-L132M-04G</b> <b>CF103-11P-L132M-04G</b>	223 227	126
17	20	5194	0.90	86.31	31.5	20.6			
18	22	4759	0.95	79.08	34.1	21.1			
21	26	4117	1.10	68.41	37.3	22.0			
22	27	3970	1.15	65.97	38.0	22.2			
25	30	3503	1.30	58.21	39.8	22.7			
29	36	2981	1.55	49.54	38.8	23.4			
34	41	2572	1.75	42.74	36.4	23.9			
44	53	1986	1.90	33.01	32.8	24.7	<b>CG102-11P-L132M-04G</b> <b>CF102-11P-L132M-04G</b>	218 222	126
50	61	1755	2.60	29.16	31.3	25.0			
58	70	1523	3.00	25.31	29.5	25.3			
60	72	1469	2.00	24.40	29.1	25.3			
76	92	1153	1.90	19.17	26.8	25.2			
86	104	1019	2.65	16.93	25.6	25.4			
103	125	853	2.00	14.17	23.9	25.7			
24	29	3688	0.85	61.28	16.5	24.6	<b>CG093-11P-L132M-04G</b> <b>CF093-11P-L132M-04G</b>	181 179	124
29	34	3082	1.00	51.22	22.3	25.4			
30	36	2972	1.05	49.39	23.1	25.6			
33	40	2623	1.10	43.59	25.3	26.1			
40	48	2200	1.25	36.57	27.4	26.7			
47	57	1854	1.40	30.81	28.8	27.3			
37	45	2383	1.25	39.60	26.6	26.5	<b>CG092-11P-L132M-04G</b> <b>CF092-11P-L132M-04G</b>	179 177	124
44	53	2015	1.50	33.48	28.2	27.0			
50	61	1744	1.75	28.98	28.3	27.4			
57	69	1545	1.95	25.67	26.9	27.7			
65	78	1359	1.25	22.58	25.8	27.3			
66	79	1336	2.25	22.20	25.3	28.0			
68	82	1288	2.00	21.41	25.0	28.1			
76	92	1149	1.50	19.09	24.2	27.7			
77	93	1137	2.65	18.89	23.8	28.3			
88	107	995	1.75	16.53	22.8	28.0			
100	121	881	2.10	14.64	21.7	28.2			
115	139	762	2.40	12.66	20.6	28.5			
120	145	735	2.00	12.21	20.3	28.5			
136	164	648	2.85	10.77	19.3	28.7			

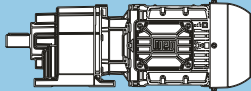
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P <sub>N</sub> = 9.2 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
9.2 kW		11 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
44	53	1991	0.80	33.09	17.0	18.4	CG082-11P-L132M-04G CF082-11P-L132M-04G	127 137	122
52	63	1684	0.95	27.98	19.5	19.1			
59	71	1488	0.80	24.72	20.7	18.8			
61	73	1447	1.05	24.05	20.9	19.5			
68	82	1299	1.05	21.58	21.2	19.3			
70	84	1264	1.15	21.00	20.7	19.9			
77	93	1148	1.15	19.08	20.1	19.7			
81	98	1083	1.25	17.99	19.5	20.3			
84	102	1044	1.30	17.35	19.2	20.4			
91	109	971	1.35	16.13	18.8	20.1			
95	115	921	1.40	15.31	18.3	20.6			
105	127	834	1.50	13.87	17.7	20.4			
114	137	773	1.60	12.84	17.0	20.9			
121	146	728	1.65	12.10	16.8	20.7			
135	163	651	1.80	10.82	15.9	21.2			
141	170	624	1.80	10.37	15.8	21.0			
146	177	602	1.85	10.00	15.6	21.0			
165	200	531	2.00	8.83	14.8	21.2			
197	238	446	2.25	7.40	13.9	21.4			
234	283	375	2.55	6.24	13.0	21.6			
97	117	908	0.80	15.09	4.4	12.6	CG072-11P-L132M-04G CF072-11P-L132M-04G	103 107	120
102	123	865	0.80	14.38	4.9	13.0			
112	135	787	0.90	13.08	5.4	13.0			
117	141	753	0.85	12.51	4.5	12.2			
120	145	730	0.90	12.14	6.0	13.4			
125	151	704	0.95	11.71	6.2	13.5			
132	160	665	1.00	11.04	6.3	13.4			
137	166	641	1.00	10.65	6.5	13.4			
141	171	622	0.95	10.34	5.7	12.8			
146	177	602	1.05	10.00	6.9	13.7			
160	194	547	1.10	9.10	7.1	13.7			
166	201	529	1.05	8.80	6.4	13.2			
191	231	459	1.20	7.63	6.9	13.5			
227	274	387	1.30	6.44	7.2	13.8			
235	284	374	1.35	6.21	7.3	13.8			
275	333	319	1.50	5.30	7.5	14.0			
121	146	726	0.85	12.07	6.2	6.0	CG062-11P-L132M-04G CF062-11P-L132M-04G	87 92	118
132	159	666	0.95	11.07	6.1	6.1			
142	172	617	1.00	10.26	6.1	6.3			
155	188	566	1.05	9.40	6.0	6.4			
173	209	507	1.10	8.43	6.0	6.6			
178	215	493	0.80	8.20	5.8	6.0			
180	217	489	1.10	8.13	5.9	6.7			
189	228	465	1.15	7.73	5.9	6.7			
196	237	449	1.15	7.46	5.8	6.8			
217	262	405	0.95	6.73	5.6	6.4			
218	264	403	1.20	6.69	5.8	6.9			
238	288	369	1.25	6.13	5.6	7.0			
255	309	344	1.10	5.71	5.5	6.7			
311	376	283	1.15	4.70	5.3	6.9			
322	390	273	1.20	4.53	5.2	7.0			
392	474	224	1.25	3.73	5.0	7.2			

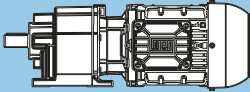
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<b>P<sub>N</sub> = 11 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>11 kW</b>		<b>13 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
6.3	7.6	16770	1.10	234.67	116.6	25.3	<b>CG163-22P-160M-04E</b> <b>CF163-22P-160M-04E</b>	764 787	132
7.3	8.8	14444	1.25	202.12	122.0	27.4			
8.4	10	12493	1.45	174.82	125.8	29.1			
9.5	12	11020	1.65	154.21	128.2	30.5			
11	13	9465	1.95	132.44	130.4	31.9			
13	16	7875	2.30	110.19	132.3	33.3			
15	18	6949	2.60	97.24	133.2	33.3			
16	19	6534	2.80	91.43	133.6	34.6			
17	21	6130	2.95	85.78	134.0	34.2			
7.1	8.6	14784	0.90	206.88	92.2	12.7	<b>CG143-22P-160M-04E</b> <b>CF143-22P-160M-04E</b>	535 553	130
8.1	9.8	12890	1.05	180.38	97.2	14.6			
9.5	11	11103	1.20	155.38	101.0	16.4			
11	13	9562	1.40	133.80	103.8	17.9			
13	16	8094	1.65	113.27	106.0	19.4			
15	18	7215	1.85	100.96	107.1	20.3			
17	21	6079	2.15	85.07	108.4	21.4			
18	21	5966	2.20	83.49	108.5	21.5			
20	24	5235	2.50	73.25	109.2	22.3			
21	26	4910	2.65	68.70	109.4	22.6			
23	28	4573	2.85	63.99	109.7	22.9			
39	47	2679	2.70	37.48	110.8	24.8	<b>CG142-22P-160M-04E</b> <b>CF142-22P-160M-04E</b>	521 539	130
69	83	1527	2.70	21.37	111.2	25.6			
11	13	9698	0.85	135.71	55.9	18.4	<b>CG133-22P-160M-04E</b> <b>CF133-22P-160M-04E</b>	388 390	128
13	15	8300	1.00	116.14	61.7	20.0			
15	18	7168	1.15	100.31	65.4	21.3			
16	20	6429	1.25	89.96	67.5	22.2			
17	21	6062	1.35	84.82	68.4	22.6			
19	23	5580	1.45	78.09	69.5	23.1			
21	26	4946	1.65	69.21	70.8	23.8			
22	26	4822	1.70	67.47	71.0	24.0			
25	31	4126	1.95	57.74	72.2	24.8			
26	32	4013	2.00	56.16	72.4	24.9			
29	36	3564	2.25	49.87	73.0	25.4			
35	42	3013	2.70	42.17	73.7	26.1			
41	50	2538	2.10	35.51	74.2	26.6			
47	57	2213	2.70	30.96	74.5	27.0			
73	88	1445	2.10	20.22	75.0	27.5			
83	101	1260	2.70	17.63	75.1	27.7			
19	22	5652	0.80	79.08	28.2	20.0	<b>CG103-22P-160M-04E</b> <b>CF103-22P-160M-04E</b>	285 289	126
20	25	5174	0.90	72.40	31.6	20.6			
21	26	4889	0.95	68.41	33.4	21.0			
25	30	4207	1.10	58.87	36.9	21.9			
30	36	3540	1.30	49.54	39.2	22.7			
32	39	3289	1.40	46.03	38.1	23.0			
34	42	3054	1.50	42.74	37.1	23.3			
41	50	2562	1.80	35.85	34.4	23.9			
50	61	2083	2.20	29.15	31.7	24.6			
65	78	1629	2.80	22.79	28.7	25.1			
50	61	2084	2.20	29.16	31.7	24.6			
58	70	1809	2.50	25.31	29.9	24.9			
67	81	1563	2.90	21.87	28.3	25.2			
87	105	1210	2.25	16.93	25.8	25.1			
100	121	1050	2.60	14.69	24.5	25.4			
116	140	907	3.00	12.70	23.2	25.6			
29	35	3660	0.85	51.22	16.8	24.6	<b>CG093-22P-160M-04E</b> <b>CF093-22P-160M-04E</b>	243 241	124
34	41	3115	0.95	43.59	22.0	25.4			
40	49	2613	1.05	36.57	25.3	26.1			
48	58	2202	1.15	30.81	27.4	26.7			
58	70	1805	1.30	25.26	27.2	27.3			

Legend see page 29

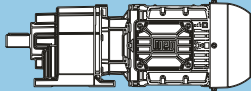
P <sub>N</sub> = 11 kW							IE3		
50 Hz	60 Hz				at 50 Hz			m kg	Dimension sheet see page
11 kW	13 kW	M <sub>2</sub>	f <sub>B</sub>	i	F <sub>rN</sub>	F <sub>aN</sub>			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	Nm			kN	kN			
57	69	1834	1.65	25.67	27.4	27.3	<b>CG092-22P-160M-04E</b> <b>CF092-22P-160M-04E</b>	241 239	124
66	80	1587	1.90	22.20	25.8	27.7			
78	94	1350	2.25	18.89	24.1	28.0			
91	110	1149	2.65	16.08	22.7	28.3			
100	121	1046	1.75	14.64	22.1	27.9			
116	140	905	2.05	12.66	20.8	28.2			
136	165	770	2.40	10.77	19.6	28.5			
160	194	655	2.80	9.17	18.4	28.7			
70	85	1501	0.95	21.00	20.6	19.4	<b>CG082-22P-160M-04E</b> <b>CF082-22P-160M-04E</b>	189 193	122
82	99	1286	1.10	17.99	19.8	19.9			
96	116	1094	1.20	15.31	18.5	20.3			
114	138	918	1.35	12.84	17.3	20.6			
121	147	865	1.40	12.10	17.0	20.4			
136	164	773	1.50	10.82	16.1	20.9			
142	171	741	1.55	10.37	16.0	20.7			
166	200	634	1.75	8.87	14.9	21.2			
167	201	631	1.70	8.83	15.0	20.9			
199	240	529	1.90	7.40	14.0	21.2			
236	284	446	2.15	6.24	13.1	21.4			
287	347	366	2.45	5.12	12.2	21.6			
121	146	867	0.80	12.14	3.9	13.0	<b>CG072-22P-160M-04E</b> <b>CF072-22P-160M-04E</b>	165 169	120
133	161	789	0.85	11.04	4.4	13.0			
147	178	715	0.90	10.00	5.1	13.4			
162	195	650	0.95	9.10	5.5	13.4			
193	233	545	1.00	7.63	5.4	13.1			
228	276	460	1.10	6.44	6.0	13.4			
277	335	379	1.25	5.30	6.5	13.8			

Legend see page 29

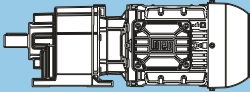
<b>P<sub>N</sub> = 15 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>15 kW</b>		<b>18 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
6.2	7.6	22946	0.80	234.67	96.0	19.7	<b>CG163-22P-160L-04F</b> <b>CF163-22P-160L-04F</b>	787 810	132
7.2	8.8	19763	0.95	202.12	107.9	22.5			
8.4	10	17094	1.10	174.82	115.8	25.0			
9.5	12	15079	1.20	154.21	120.7	26.8			
11	14	12763	1.45	130.53	125.3	27.3			
13	16	10775	1.70	110.19	128.6	30.7			
15	18	9509	1.90	97.24	130.4	30.7			
16	19	8940	2.05	91.43	131.1	32.4			
17	21	8387	2.15	85.78	131.8	31.8			
20	24	7203	2.50	73.67	133.0	33.1			
9.4	11	15193	0.90	155.38	91.0	12.3	<b>CG143-22P-160L-04F</b> <b>CF143-22P-160L-04F</b>	558 576	130
11	13	13083	1.00	133.80	96.7	14.4			
13	16	11075	1.20	113.27	101.1	16.4			
15	18	9872	1.35	100.96	103.3	17.6			
17	21	8318	1.60	85.07	105.7	19.2			
18	21	8164	1.60	83.49	105.9	19.3			
20	24	7163	1.85	73.25	107.2	20.3			
21	26	6718	1.95	68.70	107.7	20.8			
23	28	6257	2.10	63.99	108.2	21.2			
27	32	5405	2.45	55.27	109.0	22.1			
32	39	4470	2.95	45.71	109.8	23.0			
39	47	3665	1.95	37.48	110.3	23.8	<b>CG142-22P-160L-04F</b> <b>CF142-22P-160L-04F</b>	544 562	130
45	55	3157	3.00	32.28	110.6	24.3			
69	83	2090	1.95	21.37	111.0	24.9			
80	96	1800	3.00	18.41	111.1	25.3			
15	18	9809	0.85	100.31	55.3	18.3	<b>CG133-22P-160L-04F</b> <b>CF133-22P-160L-04F</b>	411 413	128
16	20	8796	0.95	89.96	59.8	19.5			
17	21	8294	1.00	84.82	61.7	20.0			
19	23	7636	1.05	78.09	64.0	20.8			
21	26	6768	1.20	69.21	66.6	21.8			
22	26	6597	1.25	67.47	67.0	22.0			
25	31	5646	1.45	57.74	69.4	23.1			
26	32	5491	1.50	56.16	69.7	23.2			
29	36	4876	1.65	49.87	70.9	23.9			
35	42	4123	1.95	42.17	72.2	24.8			
43	52	3365	2.40	34.41	73.3	25.7			
52	64	2730	2.95	27.92	74.0	26.4			
41	50	3472	1.55	35.51	73.2	25.5	<b>CG132-22P-160L-04F</b> <b>CF132-22P-160L-04F</b>	402 404	128
47	57	3028	1.95	30.96	73.7	26.0			
55	67	2608	3.00	26.67	74.1	26.5			
72	88	1977	1.55	20.22	74.7	26.7			
83	101	1724	1.95	17.63	74.8	27.1			
96	117	1485	3.00	15.19	75.0	27.4			
25	30	5756	0.80	58.87	27.3	19.9	<b>CG103-22P-160L-04F</b> <b>CF103-22P-160L-04F</b>	308 312	126
30	36	4844	0.95	49.54	33.7	21.0			
32	39	4501	1.00	46.03	35.5	21.5			
34	42	4179	1.10	42.74	37.1	21.9			
41	50	3505	1.30	35.85	35.8	22.7			
50	61	2850	1.60	29.15	32.9	23.6			
64	78	2228	2.05	22.79	29.7	24.4			
50	61	2851	1.60	29.16	32.9	23.6	<b>CG102-22P-160L-04F</b> <b>CF102-22P-160L-04F</b>	303 307	126
58	70	2475	1.85	25.31	30.9	24.1			
67	81	2138	2.15	21.87	29.1	24.5			
78	95	1830	2.50	18.71	27.4	24.9			
87	105	1655	1.65	16.93	26.6	24.3			
91	110	1580	2.85	16.16	25.8	25.2			
100	121	1437	1.90	14.69	25.1	24.7			
115	140	1241	2.20	12.70	23.8	25.0			
135	163	1062	2.55	10.86	22.3	25.3			
156	189	918	2.95	9.38	21.1	25.6			

Legend see page 29

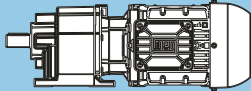


P <sub>N</sub> = 15 kW								IE3	
50 Hz 15 kW		60 Hz 18 kW		i	at 50 Hz			m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
48	58	3013	0.85	30.81	22.8	25.5	<b>CG093-22P-160L-04F</b> <b>CF093-22P-160L-04F</b>	266	124
58	70	2470	0.95	25.26	26.1	26.4		264	
57	69	2510	1.20	25.67	25.9	26.3	<b>CG092-22P-160L-04F</b> <b>CF092-22P-160L-04F</b>	264 262	124
66	80	2171	1.40	22.20	26.8	26.8			
78	94	1847	1.65	18.89	25.0	27.3			
91	110	1572	1.95	16.08	23.4	27.7			
100	121	1431	1.30	14.64	22.8	27.1			
106	128	1356	2.25	13.87	22.0	28.0			
116	140	1238	1.50	12.66	21.5	27.5			
126	153	1138	2.65	11.63	20.5	28.3			
136	165	1053	1.75	10.77	20.1	27.9			
160	194	896	2.05	9.17	18.9	28.2			
185	224	773	2.40	7.91	17.8	28.4			
221	268	649	2.85	6.63	16.6	28.7			
81	99	1759	0.80	17.99	18.9	18.9	<b>CG082-22P-160L-04F</b> <b>CF082-22P-160L-04F</b>	212 216	122
96	116	1497	0.90	15.31	19.3	19.4			
114	138	1256	1.00	12.84	17.9	19.9			
121	147	1184	1.00	12.10	17.7	19.6			
135	164	1058	1.10	10.82	16.7	20.3			
141	171	1014	1.15	10.37	16.6	20.0			
165	200	868	1.30	8.87	15.4	20.7			
166	201	863	1.25	8.83	15.5	20.4			
198	240	724	1.40	7.40	14.4	20.7			
235	284	610	1.55	6.24	13.5	21.0			
286	347	500	1.80	5.12	12.5	21.3			
228	276	630	0.80	6.44	3.1	12.7	<b>CG072-22P-160L-04F</b> <b>CF072-22P-160L-04F</b>	188	120
276	335	519	0.95	5.30	4.2	13.2		192	

Legend see page 29

<b>P<sub>N</sub> = 18.5 kW</b>							<b>IE3</b>					
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page			
<b>18.5 kW</b>		<b>22 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN						
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>									
8.4	10	21011	0.90	174.82	103.6	21.4	<b>CG163-22P-180M-04E</b> <b>CF163-22P-180M-04E</b>	801 824	132			
9.5	12	18534	1.00	154.21	111.7	23.7						
11	13	15918	1.15	132.44	118.7	26.0						
13	16	13244	1.40	110.19	124.4	28.5						
15	18	11687	1.55	97.24	127.2	28.4						
16	19	10989	1.65	91.43	128.3	30.5						
17	21	10309	1.75	85.78	129.3	29.9						
19	23	9164	2.00	76.25	130.8	32.2						
20	24	8854	2.05	73.67	131.2	31.4						
22	27	7877	2.30	65.54	132.3	33.3						
24	29	7367	2.45	61.29	132.8	32.9	<b>CG143-22P-180M-04E</b> <b>CF143-22P-180M-04E</b>	572 590	130			
29	35	6112	2.95	50.86	134.0	34.2						
11	13	16081	0.85	133.80	88.3	11.4						
13	15	14047	0.95	116.88	94.3	13.4						
15	18	12134	1.10	100.96	98.9	15.3						
17	21	10224	1.30	85.07	102.7	17.3						
18	21	10034	1.30	83.49	103.0	17.4						
20	24	8804	1.50	73.25	105.0	18.7						
21	26	8257	1.60	68.70	105.8	19.2						
23	28	7691	1.70	63.99	106.5	19.8						
26	31	6787	1.95	56.47	107.6	20.7	<b>CG142-22P-180M-04E</b> <b>CF142-22P-180M-04E</b>	558 576	130			
27	32	6643	2.00	55.27	107.8	20.8						
31	37	5763	2.30	47.95	108.7	21.7						
32	39	5494	2.40	45.71	108.9	22.0						
39	47	4521	2.90	37.61	109.7	23.0						
39	47	4505	1.60	37.48	109.7	23.0						
46	55	3880	2.45	32.28	110.2	23.6						
69	83	2569	1.60	21.37	110.9	24.3						
80	96	2213	2.45	18.41	111.0	24.8						
17	21	10194	0.80	84.82	53.4	17.9				<b>CG133-22P-180M-04E</b> <b>CF133-22P-180M-04E</b>	425 427	128
19	23	9385	0.90	78.09	57.3	18.8						
21	26	8319	1.00	69.21	61.6	20.0						
22	26	8109	1.00	67.47	62.4	20.2						
25	31	6939	1.20	57.74	66.1	21.6						
26	32	6749	1.20	56.16	66.6	21.8						
29	36	5994	1.35	49.87	68.6	22.7						
33	40	5388	1.50	44.83	69.9	23.3						
35	42	5068	1.60	42.17	70.6	23.7						
43	52	4136	1.95	34.41	72.2	24.8						
53	64	3355	2.40	27.92	73.3	25.7	<b>CG132-22P-180M-04E</b> <b>CF132-22P-180M-04E</b>	416 418	128			
66	80	2679	3.00	22.29	74.1	26.4						
47	57	3721	1.60	30.96	72.8	25.2						
55	67	3205	2.45	26.67	73.5	25.8						
64	77	2760	2.90	22.97	74.0	26.3						
83	101	2119	1.60	17.63	74.5	26.5						
97	117	1825	2.45	15.19	74.8	26.9						
58	70	3042	1.50	25.31	31.8	23.3				<b>CG102-22P-180M-04E</b> <b>CF102-22P-180M-04E</b>	317 321	126
67	81	2628	1.75	21.87	29.9	23.9						
79	95	2249	2.05	18.71	27.9	24.3						
91	110	1943	2.35	16.16	26.3	24.7						
100	121	1766	1.55	14.69	25.7	24.1						
108	130	1643	2.75	13.67	24.6	25.1						
116	140	1526	1.80	12.70	24.2	24.5						
135	163	1306	2.10	10.86	22.7	24.9						
157	189	1128	2.40	9.38	21.4	25.2						
185	224	954	2.85	7.93	20.1	25.5						

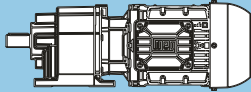
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P <sub>N</sub> = 18.5 kW								IE3	
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
18.5 kW		22 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
<b>66</b>	80	2669	1.15	22.20	25.0	26.1	<b>CG092-22P-180M-04E</b> <b>CF092-22P-180M-04E</b>	278 276	124
<b>78</b>	94	2270	1.35	18.89	25.7	26.6			
<b>91</b>	110	1932	1.60	16.08	24.0	27.1			
<b>106</b>	128	1667	1.80	13.87	22.6	27.5			
<b>116</b>	140	1522	1.20	12.66	22.0	26.9			
<b>126</b>	153	1398	2.15	11.63	21.0	27.9			
<b>136</b>	165	1295	1.45	10.77	20.6	27.4			
<b>155</b>	188	1137	2.50	9.46	19.3	28.3			
<b>160</b>	194	1102	1.70	9.17	19.3	27.8			
<b>186</b>	224	951	1.95	7.91	18.1	28.1			
<b>199</b>	240	889	2.95	7.40	17.5	28.7			
<b>222</b>	268	797	2.30	6.63	16.9	28.4			
<b>272</b>	329	648	2.85	5.39	15.6	28.7			
<b>114</b>	138	1544	0.80	12.84	18.5	19.3	<b>CG082-22P-180M-04E</b> <b>CF082-22P-180M-04E</b>	226 230	122
<b>136</b>	164	1301	0.90	10.82	17.1	19.8			
<b>142</b>	171	1246	0.90	10.37	17.1	19.4			
<b>166</b>	200	1066	1.05	8.87	15.7	20.3			
<b>167</b>	201	1061	1.00	8.83	15.9	19.9			
<b>199</b>	240	890	1.15	7.40	14.8	20.3			
<b>236</b>	284	750	1.30	6.24	13.8	20.6			
<b>287</b>	347	615	1.45	5.12	12.7	21.0			

Legend see page 29

<b>P<sub>N</sub> = 22 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>22 kW</b>		<b>26 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
9.5	12	22040	0.85	154.21	99.8	20.5	<b>CG163-22P-180L-04F</b> <b>CF163-22P-180L-04F</b>	822 845	132
11	13	18929	1.00	132.44	110.6	23.3			
13	16	16068	1.15	112.42	118.4	23.9			
15	18	13898	1.30	97.24	123.2	26.2			
16	19	13068	1.40	91.43	124.8	28.6			
17	21	12260	1.50	85.78	126.2	27.9			
19	23	10898	1.70	76.25	128.4	30.6			
20	24	10529	1.75	73.67	129.0	29.6			
22	27	9367	1.95	65.54	130.6	32.0			
24	29	8760	2.10	61.29	131.3	31.5			
29	35	7269	2.50	50.86	132.9	33.0			
35	42	6062	3.00	42.41	134.0	34.2			
45	54	4717	3.00	33.00	135.0	36.2	<b>CG162-22P-180L-04F</b> <b>CF162-22P-180L-04F</b>	797 820	132
83	100	2529	3.00	17.70	136.0	37.9			
13	15	16704	0.80	116.88	86.2	10.8	<b>CG143-22P-180L-04F</b> <b>CF143-22P-180L-04F</b>	593 611	130
15	18	14429	0.95	100.96	93.2	13.0			
17	21	12158	1.10	85.07	98.8	15.3			
18	21	11933	1.10	83.49	99.3	15.5			
20	24	10470	1.25	73.25	102.2	17.0			
21	26	9819	1.35	68.70	103.4	17.7			
23	28	9146	1.45	63.99	104.5	18.3			
26	31	8071	1.65	56.47	106.0	19.4			
27	32	7900	1.65	55.27	106.3	19.6			
31	37	6853	1.90	47.95	107.6	20.6			
32	39	6533	2.00	45.71	107.9	21.0			
39	47	5376	2.45	37.61	109.0	22.1			
48	57	4419	2.90	30.92	109.8	23.1			
39	47	5357	1.35	37.48	109.1	22.1	<b>CG142-22P-180L-04F</b> <b>CF142-22P-180L-04F</b>	579 597	130
46	55	4614	2.05	32.28	109.7	22.9			
53	64	3991	2.95	27.92	110.1	23.5			
69	83	3055	1.35	21.37	110.6	23.7			
80	96	2631	2.05	18.41	110.8	24.3			
92	111	2276	2.95	15.92	111.0	24.7			
21	26	9892	0.85	69.21	54.9	18.2	<b>CG133-22P-180L-04F</b> <b>CF133-22P-180L-04F</b>	446 448	128
22	26	9643	0.85	67.47	56.1	18.5			
25	31	8252	1.00	57.74	61.9	20.1			
26	32	8026	1.00	56.16	62.7	20.3			
29	36	7127	1.15	49.87	65.6	21.4			
33	40	6408	1.25	44.83	67.5	22.2			
35	42	6027	1.35	42.17	68.5	22.6			
43	52	4918	1.65	34.41	70.9	23.9			
53	64	3990	2.05	27.92	72.4	24.9			
66	80	3186	2.55	22.29	73.5	25.9			
47	57	4425	1.35	30.96	71.7	24.4	<b>CG132-22P-180L-04F</b> <b>CF132-22P-180L-04F</b>	437 439	128
55	67	3812	2.05	26.67	72.7	25.1			
64	77	3283	2.45	22.97	73.4	25.8			
73	88	2867	2.80	20.06	73.9	26.2			
83	101	2520	1.35	17.63	74.2	26.0			
97	117	2170	2.05	15.19	74.5	26.5			
112	136	1869	2.65	13.08	74.5	26.9			

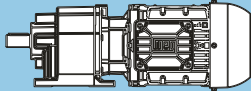
Legend see page 29

P <sub>N</sub> = 22 kW							IE3		
50 Hz 22 kW		60 Hz 26 kW		i	at 50 Hz			m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN			
58	70	3617	1.25	25.31	32.6	22.6	CG102-22P-180L-04F CF102-22P-180L-04F	338 342	126
67	81	3125	1.45	21.87	30.6	23.2			
79	95	2675	1.70	18.71	28.5	23.8			
91	110	2310	1.95	16.16	26.9	24.3			
100	121	2100	1.30	14.69	26.2	23.5			
108	130	1953	2.35	13.67	25.1	24.7			
116	140	1815	1.50	12.70	24.6	24.0			
132	159	1594	2.85	11.15	23.1	25.2			
135	163	1553	1.75	10.86	23.1	24.5			
157	189	1341	2.05	9.38	21.8	24.9			
185	224	1134	2.40	7.93	20.4	25.2			
227	274	925	2.95	6.47	18.8	25.6			
66	80	3173	0.95	22.20	21.6	25.3	CG092-22P-180L-04F CF092-22P-180L-04F	299 297	124
78	94	2700	1.15	18.89	24.8	26.0			
91	110	2298	1.35	16.08	24.7	26.6			
106	128	1982	1.55	13.87	23.1	27.1			
116	140	1810	1.05	12.66	22.6	26.4			
126	153	1663	1.80	11.63	21.5	27.5			
136	165	1540	1.20	10.77	21.1	26.9			
155	188	1352	2.10	9.46	19.7	28.0			
160	194	1310	1.40	9.17	19.7	27.4			
186	224	1130	1.65	7.91	18.5	27.7			
199	240	1057	2.50	7.40	17.8	28.4			
222	268	948	1.95	6.63	17.2	28.1			
272	329	771	2.40	5.39	15.8	28.4			
142	171	1482	0.80	10.37	17.5	18.8	CG082-22P-180L-04F CF082-22P-180L-04F	247 251	122
166	200	1268	0.90	8.87	16.1	19.9			
167	201	1261	0.85	8.83	16.3	19.4			
199	240	1058	0.95	7.40	15.1	19.9			
236	284	892	1.10	6.24	14.1	20.3			
287	347	731	1.25	5.12	13.0	20.7			

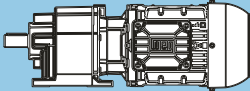
Legend see page 29

<b>P<sub>N</sub> = 30 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>30 kW</b>		<b>36 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
13	16	21763	0.85	112.42	100.8	18.1	CG163-22P-200L-04E CF163-22P-200L-04E	880 903	132
15	18	18824	1.00	97.24	110.9	21.1			
16	19	17699	1.05	91.43	114.1	24.4			
17	21	16605	1.10	85.78	117.0	23.4			
19	23	14760	1.25	76.25	121.4	27.1			
20	24	14261	1.30	73.67	122.4	25.8			
23	27	12687	1.45	65.54	125.5	29.0			
24	29	11865	1.55	61.29	126.9	28.3			
26	31	10979	1.65	56.72	128.3	30.5			
29	35	9845	1.85	50.86	129.9	30.3			
35	42	8210	2.20	42.41	132.0	32.0			
41	49	7057	2.60	36.45	133.1	33.2			
47	56	6107	2.90	31.55	134.0	34.2			
45	54	6388	2.20	33.00	133.7	34.7	CG162-22P-200L-04E CF162-22P-200L-04E	855 878	132
84	101	3426	2.20	17.70	135.7	37.0			
17	21	16468	0.80	85.07	87.0	11.0	CG143-22P-200L-04E CF143-22P-200L-04E	651 669	130
18	21	16162	0.85	83.49	88.0	11.3			
20	24	14181	0.95	73.25	93.9	13.3			
22	26	13300	1.00	68.70	96.2	14.2			
23	28	12387	1.05	63.99	98.3	15.1			
26	32	10932	1.20	56.47	101.4	16.5			
27	32	10700	1.25	55.27	101.8	16.8			
31	37	9282	1.45	47.95	104.3	18.2			
32	39	8849	1.50	45.71	104.9	18.6			
36	43	7923	1.65	40.93	106.2	19.6			
39	47	7282	1.80	37.61	107.1	20.2			
48	58	5985	2.15	30.92	108.5	21.5			
56	68	5082	2.40	26.25	109.3	22.4			
66	79	4338	2.70	22.41	109.9	23.2			
46	55	6249	1.50	32.28	108.2	21.2	CG142-22P-200L-04E CF142-22P-200L-04E	637 655	130
53	64	5405	2.20	27.92	109.0	22.1			
60	72	4768	2.75	24.63	109.5	22.7			
80	97	3564	1.50	18.41	110.4	23.1			
93	112	3082	2.20	15.92	110.6	23.7			
105	127	2719	3.00	14.05	110.8	24.2			
30	36	9654	0.85	49.87	56.1	18.5	CG133-22P-200L-04E CF133-22P-200L-04E	504 506	128
33	40	8679	0.95	44.83	60.2	19.6			
35	42	8163	1.00	42.17	62.2	20.2			
43	52	6661	1.25	34.41	66.9	21.9			
53	64	5404	1.50	27.92	69.9	23.3			
66	80	4315	1.90	22.29	71.9	24.6			
55	67	5163	1.50	26.67	70.4	23.6	CG132-22P-200L-04E CF132-22P-200L-04E	495 497	128
64	78	4446	1.80	22.97	71.7	24.4			
74	89	3884	2.10	20.06	72.6	25.1			
85	103	3355	2.40	17.33	73.3	25.7			
97	117	2940	1.50	15.19	70.4	25.4			
103	124	2774	2.90	14.33	72.1	26.3			
113	136	2531	1.95	13.08	69.3	25.9			
130	156	2211	2.25	11.42	68.1	26.4			
150	180	1910	2.60	9.87	66.8	26.8			

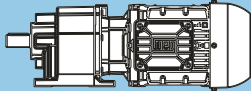
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<b>P<sub>N</sub> = 30 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>30 kW</b>		<b>36 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>68</b>	81	4233	1.10	21.87	32.1	21.8	<b>CG102-22P-200L-04E</b> <b>CF102-22P-200L-04E</b>	396 400	126
<b>79</b>	95	3622	1.25	18.71	29.9	22.6			
<b>92</b>	110	3129	1.45	16.16	28.0	23.2			
<b>108</b>	130	2646	1.75	13.67	26.1	23.8			
<b>117</b>	140	2458	1.10	12.70	25.6	22.9			
<b>133</b>	160	2159	2.10	11.15	23.9	24.5			
<b>136</b>	164	2103	1.30	10.86	24.0	23.5			
<b>158</b>	190	1817	1.50	9.38	22.5	24.0			
<b>164</b>	197	1752	2.60	9.05	21.9	25.0			
<b>187</b>	224	1536	1.80	7.93	21.0	24.5			
<b>229</b>	275	1253	2.20	6.47	19.3	25.0			
<b>282</b>	339	1017	2.70	5.25	17.8	25.4			
<b>78</b>	94	3657	0.85	18.89	16.9	24.6	<b>CG092-22P-200L-04E</b> <b>CF092-22P-200L-04E</b>	357 355	124
<b>92</b>	111	3112	1.00	16.08	22.1	25.4			
<b>107</b>	128	2685	1.15	13.87	24.3	26.0			
<b>127</b>	153	2252	1.35	11.63	22.4	26.7			
<b>137</b>	165	2085	0.90	10.77	22.1	25.8			
<b>156</b>	188	1831	1.55	9.46	20.5	27.3			
<b>161</b>	194	1775	1.05	9.17	20.5	26.4			
<b>187</b>	225	1531	1.20	7.91	19.2	26.9			
<b>200</b>	241	1432	1.85	7.40	18.4	27.9			
<b>223</b>	268	1284	1.45	6.63	17.8	27.4			
<b>274</b>	330	1044	1.75	5.39	16.3	27.9			
<b>351</b>	422	816	2.25	4.22	14.8	28.4			

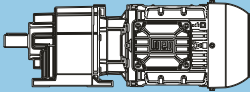
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<b>P<sub>N</sub> = 37 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>37 kW</b>		<b>44 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
15	18	23217	0.80	97.24	94.9	16.6	CG163-22P-200L-04F CF163-22P-200L-04F	907 930	132
16	19	21829	0.85	91.43	100.6	20.7			
17	21	20479	0.90	85.78	105.5	19.4			
19	23	18204	1.00	76.25	112.7	24.0			
20	24	17588	1.05	73.67	114.4	22.4			
23	27	15647	1.20	65.54	119.4	26.3			
24	29	14634	1.25	61.29	121.6	25.4			
26	31	13541	1.35	56.72	123.9	28.2			
29	35	12142	1.50	50.86	126.4	28.0			
35	42	10126	1.80	42.41	129.6	30.1			
41	49	8703	2.10	36.45	131.4	31.5			
47	56	7532	2.35	31.55	132.7	32.7			
45	54	7879	1.80	33.00	132.3	33.3	CG162-22P-200L-04F CF162-22P-200L-04F	882 905	132
59	71	6005	3.00	25.15	134.1	35.0			
84	101	4225	1.80	17.70	135.3	36.1			
22	26	16403	0.80	68.70	87.2	11.1	CG143-22P-200L-04F CF143-22P-200L-04F	678 696	130
23	28	15278	0.90	63.99	90.8	12.2			
26	32	13483	1.00	56.47	95.7	14.0			
27	32	13197	1.00	55.27	96.4	14.3			
31	37	11447	1.15	47.95	100.3	16.0			
32	39	10914	1.20	45.71	101.4	16.6			
36	44	9771	1.35	40.93	103.5	17.7			
39	47	8981	1.45	37.61	104.7	18.5			
48	58	7382	1.75	30.92	106.9	20.1			
56	68	6268	1.95	26.25	108.2	21.2			
66	80	5350	2.20	22.41	109.1	22.1			
46	55	7707	1.25	32.28	106.5	19.8	CG142-22P-200L-04F CF142-22P-200L-04F	664 682	130
53	64	6667	1.80	27.92	107.8	20.8			
60	72	5881	2.25	24.63	108.6	21.6			
70	84	5050	2.60	21.15	109.3	22.4			
80	97	4395	1.25	18.41	109.8	22.1			
93	112	3802	1.80	15.92	110.2	22.8			
105	127	3353	2.45	14.05	108.7	23.4			
123	148	2880	2.80	12.06	105.7	24.0			
35	42	10068	0.80	42.17	54.1	18.0	CG133-22P-200L-04F CF133-22P-200L-04F	531 533	128
43	52	8215	1.00	34.41	62.0	20.1			
53	64	6666	1.25	27.92	66.2	21.9			
66	80	5321	1.55	22.29	68.1	23.4			
55	67	6368	1.25	26.67	67.0	22.2	CG132-22P-200L-04F CF132-22P-200L-04F	522 524	128
64	78	5483	1.50	22.97	68.0	23.2			
74	89	4790	1.70	20.06	68.2	24.0			
85	103	4137	1.95	17.33	68.4	24.8			
97	117	3626	1.25	15.19	65.4	24.4			
103	124	3422	2.35	14.33	67.8	25.6			
113	136	3122	1.60	13.08	65.0	25.1			
125	151	2816	2.85	11.79	66.8	26.3			
130	156	2727	1.85	11.42	64.3	25.7			
150	181	2356	2.10	9.87	63.5	26.2			
181	218	1948	2.55	8.16	62.1	26.8			
68	81	5221	0.90	21.87	31.3	20.6	CG102-22P-200L-04F CF102-22P-200L-04F	423 427	126
79	95	4468	1.05	18.71	31.2	21.5			
92	110	3859	1.20	16.16	29.1	22.3			
108	130	3263	1.40	13.67	27.0	23.1			
117	140	3031	0.90	12.70	26.6	21.9			
133	160	2663	1.70	11.15	24.6	23.8			
136	164	2594	1.05	10.86	24.8	22.7			
158	190	2240	1.25	9.38	23.2	23.3			
164	197	2160	2.10	9.05	22.5	24.5			
187	225	1894	1.45	7.93	21.6	23.9			
205	247	1725	2.65	7.22	20.4	25.0			
229	275	1546	1.75	6.47	19.8	24.5			
282	339	1254	2.20	5.25	18.2	25.0			
353	425	1001	2.70	4.19	16.6	25.5			



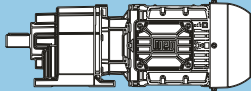
P <sub>N</sub> = 45 kW							IE3		
50 Hz		60 Hz		i	at 50 Hz			m kg	Dimension sheet see page
45 kW		55 kW			F <sub>rN</sub> kN	F <sub>aN</sub> kN			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>						
19	23	22140	0.85	76.25	99.4	20.4	CG163-22P-225S/M-04F CF163-22P-225S/M-04F	1044 1067	132
20	24	21391	0.85	73.67	102.2	18.4			
23	27	19030	0.95	65.54	110.3	23.2			
24	29	17798	1.05	61.29	113.9	22.1			
26	31	16469	1.10	56.72	117.4	25.5			
29	35	14767	1.25	50.86	121.3	25.3			
35	42	12315	1.50	42.41	126.1	27.8			
41	49	10585	1.75	36.45	128.9	29.6			
47	56	9161	1.95	31.55	130.8	31.1			
45	54	9582	1.50	33.00	130.3	31.8	CG162-22P-225S/M-04F CF162-22P-225S/M-04F	1019 1042	132
59	71	7304	2.50	25.15	132.9	33.9			
70	84	6133	2.95	21.12	134.0	34.9			
84	101	5138	1.50	17.70	134.7	35.2			
110	132	3917	2.60	13.49	135.4	36.5			
26	32	16398	0.80	56.47	87.2	11.1	CG143-22P-225S/M-04F CF143-22P-225S/M-04F	815 833	130
27	32	16050	0.85	55.27	88.4	11.4			
31	37	13923	0.95	47.95	94.6	13.5			
32	39	13273	1.00	45.71	96.3	14.2			
36	44	11884	1.10	40.93	99.4	15.6			
39	47	10922	1.20	37.61	101.4	16.6			
48	58	8978	1.45	30.92	104.7	18.5			
56	68	7623	1.60	26.25	106.6	19.9			
66	80	6506	1.80	22.41	107.9	21.0			
53	64	8108	1.50	27.92	106.0	19.4	CG142-22P-225S/M-04F CF142-22P-225S/M-04F	801 819	130
60	72	7152	1.85	24.63	107.2	20.3			
70	84	6142	2.15	21.15	108.3	21.3			
84	101	5111	2.55	17.60	109.3	22.4			
93	112	4624	1.50	15.92	105.4	21.8			
105	127	4078	2.00	14.05	104.1	22.5			
123	148	3503	2.30	12.06	101.7	23.2			
43	52	9992	0.85	34.41	51.2	18.1	CG133-22P-225S/M-04F CF133-22P-225S/M-04F	668 670	128
53	64	8107	1.00	27.92	56.6	20.2			
66	80	6472	1.25	22.29	60.5	22.1			
55	67	7744	1.00	26.67	57.8	20.7	CG132-22P-225S/M-04F CF132-22P-225S/M-04F	659 661	128
64	78	6669	1.20	22.97	60.1	21.9			
74	89	5825	1.40	20.06	61.3	22.8			
85	103	5032	1.60	17.33	62.5	23.8			
97	117	4410	1.00	15.19	59.5	23.3			
103	124	4161	1.95	14.33	62.9	24.7			
113	136	3797	1.30	13.08	59.9	24.2			
125	151	3424	2.35	11.79	62.7	25.6			
130	156	3317	1.50	11.42	59.9	24.8			
150	181	2865	1.75	9.87	59.7	25.5			
153	184	2815	2.85	9.69	61.7	26.3			
180	217	2390	3.35	8.23	60.7	26.8			
181	218	2369	2.10	8.16	58.9	26.2			
211	254	2040	3.95	7.03	59.5	27.2			
220	265	1950	2.55	6.71	57.7	26.8			
268	323	1603	3.10	5.52	56.1	27.3			
316	380	1361	3.65	4.69	54.6	27.6			
370	446	1161	4.30	4.00	53.1	27.9			

Legend see page 29

<b>P<sub>N</sub> = 55 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>55 kW</b>		<b>66 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>23</b>	27	23259	0.80	65.54	94.7	19.4	<b>CG163-22P-225S/M-04G</b> <b>CF163-22P-225S/M-04G</b>	1092 1115	132
<b>24</b>	29	21753	0.85	61.29	100.9	18.1			
<b>26</b>	31	20128	0.90	56.72	106.7	22.2			
<b>29</b>	35	18049	1.00	50.86	113.2	21.9			
<b>35</b>	42	15052	1.20	42.41	120.7	25.0			
<b>41</b>	49	12938	1.40	36.45	125.0	27.2			
<b>47</b>	57	11196	1.60	31.55	128.0	29.0			
<b>59</b>	71	8927	2.05	25.15	131.1	32.4	<b>CG162-22P-225S/M-04G</b> <b>CF162-22P-225S/M-04G</b>	1067 1090	132
<b>70</b>	85	7495	2.45	21.12	132.7	33.7			
<b>85</b>	103	6168	2.95	17.38	133.9	34.9			
<b>110</b>	132	4787	2.10	13.49	134.9	35.6			
<b>131</b>	158	4019	2.85	11.33	135.4	36.4			
<b>31</b>	37	17017	0.80	47.95	85.1	10.4	<b>CG143-22P-225S/M-04G</b> <b>CF143-22P-225S/M-04G</b>	863 881	130
<b>32</b>	39	16223	0.85	45.71	87.8	11.2			
<b>36</b>	44	14525	0.90	40.93	93.0	12.9			
<b>39</b>	47	13349	1.00	37.61	96.1	14.1			
<b>48</b>	58	10973	1.20	30.92	101.3	16.5			
<b>56</b>	68	9317	1.30	26.25	103.5	18.2			
<b>66</b>	80	7952	1.50	22.41	103.8	19.5			
<b>60</b>	72	8741	1.50	24.63	103.6	18.7	<b>CG142-22P-225S/M-04G</b> <b>CF142-22P-225S/M-04G</b>	849 867	130
<b>70</b>	84	7507	1.75	21.15	103.7	20.0			
<b>84</b>	101	6246	2.10	17.60	103.2	21.2			
<b>101</b>	122	5183	2.55	14.60	101.9	22.3			
<b>105</b>	127	4985	1.65	14.05	98.2	21.4			
<b>123</b>	148	4281	1.90	12.06	96.7	22.2			
<b>147</b>	178	3562	2.60	10.04	94.9	23.1			
<b>53</b>	64	9908	0.85	27.92	44.6	18.2	<b>CG133-22P-225S/M-04G</b> <b>CF133-22P-225S/M-04G</b>	716 718	128
<b>66</b>	80	7910	1.05	22.29	50.9	20.5			
<b>74</b>	89	7120	1.15	20.06	52.6	21.4	<b>CG132-22P-225S/M-04G</b> <b>CF132-22P-225S/M-04G</b>	707 709	128
<b>85</b>	103	6150	1.35	17.33	55.0	22.5			
<b>103</b>	125	5086	1.60	14.33	56.7	23.7			
<b>125</b>	151	4185	1.95	11.79	57.6	24.7			
<b>130</b>	156	4054	1.25	11.42	54.4	23.8			
<b>150</b>	181	3502	1.45	9.87	55.0	24.6			
<b>153</b>	184	3440	2.35	9.69	57.6	25.6			
<b>180</b>	217	2921	2.75	8.23	57.2	26.2			
<b>181</b>	219	2896	1.75	8.16	55.0	25.4			
<b>211</b>	254	2493	3.25	7.03	56.5	26.7			
<b>220</b>	266	2383	2.10	6.71	54.5	26.2			
<b>268</b>	323	1959	2.55	5.52	53.5	26.8			
<b>316</b>	381	1663	3.00	4.69	52.4	27.2			
<b>370</b>	446	1420	3.50	4.00	51.2	27.5			



Legend see page 29

<b>P<sub>N</sub> = 75 kW</b>							<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>			<b>m</b> kg	<b>Dimension sheet</b> see page
<b>75 kW</b>		<b>90 kW</b>			<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>						
<b>35</b>	42	20525	0.90	42.41	105.4	19.3	<b>CG163-22P-250S/M-04F</b> <b>CF163-22P-250S/M-04F</b>	1196	132
<b>41</b>	49	17642	1.05	36.45	114.3	22.3		1219	
<b>47</b>	56	15268	1.15	31.55	120.2	24.8			
<b>59</b>	71	12173	1.50	25.15	126.4	29.4	<b>CG162-22P-250S/M-04F</b> <b>CF162-22P-250S/M-04F</b>	1196 1194	132
<b>70</b>	84	10221	1.80	21.12	129.4	31.2			
<b>85</b>	102	8411	2.15	17.38	131.7	32.9			
<b>100</b>	120	7156	2.55	14.79	133.0	34.0			
<b>110</b>	132	6528	1.55	13.49	130.7	33.8			
<b>116</b>	139	6182	2.95	12.77	133.9	34.9			
<b>131</b>	157	5481	2.10	11.33	128.9	34.8			
<b>159</b>	191	4510	2.50	9.32	126.1	35.8			
<b>187</b>	225	3837	2.95	7.93	123.2	36.5			

Legend see page 29

# Selection tables - Gear units

## Structure of the selection tables

1 Type	2 $i_{ges.}$	3 $M_{2nenn}$	4 $n_2$	5 $i_{exakt}$	6 IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					7 IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
8 NEMA adapter																	
					N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
C002																	
2 stages	9																
$n_1=1400 \text{ min}^{-1}$	10																
Maximum torque 50 Nm	11																

1 Type	2 $i_{ges.}$	12 SERVO adapter										14 Input unit														
		3 $n_{1max}$	13 Adapter size										4 $n_{1max}$	15 Input shaft [mm]												
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110				

- 1 Type of gear unit
- 2 Total ratio
- 3 Permissible output torque at S1 operation ( $f_b = 1.0$ )
- 4 Output speed (gear unit) at  $n_1 = 1400 \text{ min}^{-1}$
- 5 Exact mathematical ratio
- 6 Possible motor frame sizes (Direct mounting)
- 7 Possible IEC adapter sizes
- 8 Possible NEMA adapter sizes
- 9 Number of gear stages
- 10 Motor speed
- 11 Maximum torque
- 12 Maximum input speed - SERVO adapter
- 13 Possible SERVO adapter sizes
- 14 Maximum input speed - direct mounting, IEC / NEMA adapter and input unit  
Higher input speeds on request
- 15 Possible input shafts of the input unit

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
C002	47.44	50	30	759/16														
	42.34	50	33	1863/44														
	36.85	50	38	737/20														
	32.89	50	43	1809/55														
	29.33	50	48	88/3														
	26.18	50	53	288/11														
	23.00	50	61	23/1														
	20.53	50	68	2484/121														
	17.29	50	81	121/7														
	16.86	31	83	2967/176														
	15.43	50	91	108/7														
	13.54	50	103	176/13														
	13.10	43	107	2881/220														
	12.08	50	116	1728/143														
	10.42	45	134	344/33														
	9.97	50	140	319/32														
	8.90	50	157	783/88														
	8.17	45	171	989/121														
	6.88	49	204	55/8														
	6.14	50	228	135/22														
4.81	39	291	688/143															
3.54	35	395	1247/352															
2.44	31	573	215/88															
C012	66.50	85	21	133/2														
	59.59	85	23	1311/22														
	51.80	85	27	259/5														
	46.42	85	30	2553/55														
	42.00	85	33	42/1														
	37.64	85	37	414/11														
	33.09	85	42	364/11														
	29.65	85	47	3588/121														
	25.50	85	55	51/2														
	25.05	41	56	551/22														
	22.85	85	61	3519/154														
	19.92	85	70	259/13														
	19.51	66	72	1073/55														
	17.85	85	78	2553/143														
	15.82	66	89	174/11														
	14.88	85	94	119/8														
	13.33	85	105	1173/88														
	12.83	85	109	77/6														
	12.46	66	112	1508/121														
	11.50	85	122	23/2														
11.20	84	125	56/5															
10.04	81	139	552/55															
9.60	66	146	1479/154															
8.22	76	170	189/23															
7.50	66	187	1073/143															
7.36	74	190	81/11															
5.60	66	250	493/88															
4.83	66	290	29/6															
4.22	66	332	232/55															
3.09	63	452	783/253															

Legend see page 85

Type	i <sub>ges.</sub>	SERVO adapter											Input unit												
		n <sub>1max</sub>	Adapter size											n <sub>1max</sub>	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>C002</b>	47.44	5000														-									
	42.34	5000														-									
	36.85	5000														3000									
	32.89	5000														3000									
	29.33	5000														3000									
	26.18	5000														3000									
	23.00	5000														3000									
	20.53	5000														3000									
	17.29	5000														3000									
	16.86	5000														-									
	15.43	5000														3000									
	13.54	5000														3000									
	13.10	5000														3000									
	12.08	5000														3000									
	10.42	5000														3000									
	9.97	4200														3000									
	8.90	4200														3000									
	8.17	5000														3000									
	6.88	3400														3000									
	6.14	5000														3000									
	6.14	3400														3000									
	4.81	5000														3000									
	3.54	4200														3000									
	2.44	3400														3000									
<b>C012</b>	66.50	5000														-									
	59.59	5000														-									
	51.80	5000														3000									
	46.42	5000														3000									
	42.00	5000														3000									
	37.64	5000														3000									
	33.09	5000														3000									
	29.65	5000														3000									
	25.50	5000														3000									
	25.05	5000														-									
	22.85	5000														3000									
	19.92	5000														3000									
	19.51	5000														3000									
	17.85	5000														3000									
	15.82	5000														3000									
	14.88	4700														3000									
	13.33	4700														3000									
	12.83	4200														3000									
	12.46	5000														3000									
	11.50	4200														3000									
	11.20	3800														3000									
	10.04	3800														3000									
	9.60	5000														3000									
	8.22	3300														3000									
	7.50	5000														3000									
	7.36	3300														3000									
	5.60	4700														3000									
	4.83	4200														3000									
	4.22	3800														3000									
	3.09	3300														3000									

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C032</b>	42.88	184	33	2573/60														
	38.95	168	36	5063/130														
	34.88	200	40	279/8														
	31.67	200	44	1647/52														
	27.71	200	51	1829/66														
	25.17	200	56	3599/143														
	24.03	103	58	913/38														
	21.40	200	65	899/42														
	19.54	128	72	1485/76														
	19.44	200	72	1769/91														
	17.09	200	82	1333/78														
	15.53	130	90	295/19														
	15.52	200	90	2623/169														
	12.92	194	108	155/12														
	11.99	130	117	1595/133														
	11.73	198	119	305/26														
	9.82	180	143	589/60														
	9.57	130	146	2365/247														
	8.92	183	157	1159/130														
	7.64	169	183	527/69														
7.24	130	193	275/38															
6.94	171	202	2074/299															
5.96	158	235	155/26															
5.50	130	255	11/2															
5.41	159	259	915/169															
4.28	130	327	1870/437															
3.34	130	419	419	2074/299														
<b>C033</b>	286.32	200	4.9	20615/72														
	260.03	200	5.4	40565/156														
	223.03	200	6.3	8029/36														
	202.55	200	6.9	15799/78														
	180.83	200	7.7	1085/6														
	164.23	200	8.5	2135/13														
	142.47	200	9.8	14105/99														
	129.39	200	11	4270/33														
	109.79	200	13	2635/24														
	99.71	200	14	5185/52														
	85.78	200	16	40145/468														
	77.90	200	18	78995/1014														
	64.05	200	22	18445/288														
	58.17	200	24	36295/624														
	55.25	200	25	11935/216														
	50.18	200	28	23485/468														
	48.22	200	29	434/9														
	43.79	200	32	1708/39														
	35.38	200	40	3255/92														
	32.13	200	44	19215/598														

Legend see page 85

Type	$i_{ges.}$	SERVO adapter											Input unit																
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]														
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110							
<b>C032</b>	42.88	5000														3000													
	38.95	5000															3000												
	34.88	5000															3000												
	31.67	5000															3000												
	27.71	5000															3000												
	25.17	5000															3000												
	24.03	5000															3000												
	21.40	5000															3000												
	19.54	5000															3000												
	19.44	5000															3000												
	17.09	5000															3000												
	15.53	5000															3000												
	15.52	5000															3000												
	12.92	5000															3000												
	11.99	5000															3000												
	11.73	5000															3000												
	9.82	4200															3000												
	9.57	5000															3000												
	8.92	4200															3000												
	7.64	3600															3000												
	7.24	5000															3000												
	6.94	3600															3000												
	5.96	3200															3000												
	5.50	4200															3000												
	5.41	3200															3000												
	4.28	3600															3000												
	3.34	3200															3000												
<b>C033</b>	286.32	5000														-													
	260.03	5000														-													
	223.03	5000														3000													
	202.55	5000														3000													
	180.83	5000														3000													
	164.23	5000														3000													
	142.47	5000														3000													
	129.39	5000														3000													
	109.79	5000														3000													
	99.71	5000														3000													
	85.78	5000														3000													
	77.90	5000														3000													
	64.05	5000														3000													
	58.17	5000														3000													
	55.25	4600														3000													
	50.18	4600														3000													
	48.22	4200														3000													
	43.79	4200														3000													
	35.38	3600														3000													
	32.13	3600														3000													

Legend see page 85



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
C052	58.85	250	24	1177/20														
	53.50	227	26	107/2														
	48.13	337	29	385/8														
	43.75	307	32	175/4														
	38.00	400	37	38/1														
	35.67	151	39	107/3														
	34.55	400	41	380/11														
	29.46	400	48	825/28														
	29.17	204	48	175/6														
	26.79	400	52	375/14														
	24.12	400	58	627/26														
	23.03	267	61	760/33														
	21.92	400	64	285/13														
	18.56	400	75	297/16														
	17.86	267	78	125/7														
	16.88	400	83	135/8														
	14.62	267	96	190/13														
	14.03	400	100	561/40														
	12.75	400	110	51/4														
	11.48	400	122	264/23														
	11.25	267	124	45/4														
	10.43	400	134	240/23														
	9.31	386	150	121/13														
	8.50	267	165	17/2														
	8.46	365	165	110/13														
	7.79	347	180	187/24														
	7.08	328	198	85/12														
	6.96	267	201	160/23														
	6.31	306	222	341/54														
	6.09	299	230	341/56														
	5.74	289	244	155/27														
	5.64	259	248	220/39														
5.54	283	253	155/28															
4.72	230	296	85/18															
3.83	200	366	310/81															
3.69	195	379	155/42															
C053	328.43	400	4.3	2299/7														
	298.57	400	4.7	2090/7														
	267.93	400	5.2	3751/14														
	243.57	400	5.7	1705/7														
	213.71	400	6.6	1496/7														
	194.29	400	7.2	1360/7														
	165.45	400	8.5	8107/49														
	150.41	400	9.3	7370/49														
	132.97	400	11	12100/91														
	120.88	400	12	11000/91														
	101.55	400	14	5687/56														
	92.32	400	15	2585/28														
	77.79	400	18	1089/14														
	70.71	400	20	495/7														
	61.63	400	23	9922/161														
	56.02	400	25	9020/161														
49.20	400	28	4477/91															
44.73	400	31	4070/91															

Legend see page 85

Type	$i_{ges.}$	SERVO adapter										Input unit											
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]									
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110	
<b>C052</b>	58.85	5000												3000									
	53.50	5000												3000									
	48.13	5000												3000									
	43.75	5000												3000									
	38.00	5000												3000									
	35.67	5000												3000									
	34.55	5000												3000									
	29.46	5000												3000									
	29.17	5000												3000									
	26.79	5000												3000									
	24.12	5000												3000									
	23.03	5000												3000									
	21.92	5000												3000									
	18.56	5000												3000									
	17.86	5000												3000									
	16.88	5000												3000									
	14.62	5000												3000									
	14.03	4800												3000									
	12.75	4800												3000									
	11.48	4200												3000									
	11.25	5000												3000									
	10.43	4200												3000									
	9.31	3700												3000									
	8.50	4800												3000									
	8.46	3700												3000									
	7.79	3300												3000									
	7.08	3300												3000									
	6.96	4200												3000									
	6.31	3000												3000									
	6.09	2900												2900									
	5.74	3000												3000									
	5.64	3700												3000									
	5.54	2900												2900									
	4.72	3300												3000									
	3.83	3000												3000									
	3.69	2900												2900									
<b>C053</b>	328.43	5000												3000									
	298.57	5000												3000									
	267.93	5000												3000									
	243.57	5000												3000									
	213.71	5000												3000									
	194.29	5000												3000									
	165.45	5000												3000									
	150.41	5000												3000									
	132.97	5000												3000									
	120.88	5000												3000									
	101.55	5000												3000									
	92.32	5000												3000									
	77.79	4800												3000									
	70.71	4800												3000									
	61.63	4200												3000									
	56.02	4200												3000									
	49.20	3700												3000									
	44.73	3700												3000									

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
C062	60.00	420	23	60/1														
	55.02	385	25	3081/56														
	47.55	600	29	6800/143														
	43.60	563	32	6715/154														
	36.92	600	38	480/13														
	33.86	600	41	237/7														
	33.43	234	42	234/7														
	30.30	600	46	5120/169														
	27.78	600	50	2528/91														
	26.49	342	53	2040/77														
	23.46	600	60	305/13														
	21.51	600	65	4819/224														
	20.57	377	68	144/7														
	17.85	600	78	232/13														
	16.88	377	83	1536/91														
	16.36	600	86	2291/140														
	14.72	600	95	4400/299														
	13.49	600	104	4345/322														
	13.07	377	107	183/14														
	12.07	600	116	2040/169														
	11.07	600	126	4029/364														
	10.26	600	137	400/39														
	9.94	377	141	348/35														
	9.40	589	149	395/42														
	8.43	547	166	2960/351														
	8.20	377	171	1320/161														
	8.13	534	172	740/91														
	7.73	517	181	2923/378														
	7.46	504	188	2923/392														
	6.73	377	208	612/91														
	6.69	469	209	2000/299														
	6.13	443	228	1975/322														
5.71	371	245	40/7															
4.70	325	298	296/63															
4.53	318	309	222/49															
3.73	279	376	600/161															
C063	375.71	600	3.7	83032/221														
	344.51	600	4.1	819941/2380														
	307.24	600	4.6	67900/221														
	281.73	600	5	38315/136														
	242.60	600	5.8	589760/2431														
	222.46	600	6.3	291194/1309														
	188.11	600	7.4	291000/1547														
	172.49	600	8.1	574725/3332														
	153.96	600	9.1	442320/2873														
	141.17	600	9.9	436791/3094														
	118.51	600	12	26190/221														
	108.67	600	13	206901/1904														
	89.54	600	16	1164/13														
	82.10	600	17	22989/280														
	73.28	600	19	372480/5083														
	67.19	600	21	183912/2737														
	59.42	600	24	170720/2873														
	54.49	600	26	84293/1547														
49.74	600	28	1940/39															
45.61	600	31	7663/168															

Legend see page 85

Type	$i_{ges.}$	SERVO adapter											Input unit									
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]							
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
<b>C062</b>	60.00	5000												3000								
	55.02	5000												3000								
	47.55	5000												3000								
	43.60	5000												3000								
	36.92	5000												3000								
	33.86	5000												3000								
	33.43	5000												3000								
	30.30	5000												3000								
	27.78	5000												3000								
	26.49	5000												3000								
	23.46	5000												3000								
	21.51	5000												3000								
	20.57	5000												3000								
	17.85	5000												3000								
	16.88	5000												3000								
	16.36	5000												3000								
	14.72	4500												3000								
	13.49	4500												3000								
	13.07	5000												3000								
	12.07	3900												3000								
	11.07	3900												3000								
	10.26	3600												3000								
	9.94	5000												3000								
	9.40	3600												3000								
	8.43	3200												3000								
	8.20	4500												3000								
	8.13	3100												3000								
	7.73	3200												3000								
	7.46	3100												3000								
	6.73	3900												3000								
	6.69	2800												2800								
	6.13	2800												2800								
	5.71	3600												3000								
	4.70	3200												3000								
	4.53	3100												3000								
	3.73	2800												2800								
<b>C063</b>	375.71	5000												3000								
	344.51	5000												3000								
	307.24	5000												3000								
	281.73	5000												3000								
	242.60	5000												3000								
	222.46	5000												3000								
	188.11	5000												3000								
	172.49	5000												3000								
	153.96	5000												3000								
	141.17	5000												3000								
	118.51	5000												3000								
	108.67	5000												3000								
	89.54	5000												3000								
	82.10	5000												3000								
	73.28	4500												3000								
	67.19	4500												3000								
	59.42	3900												3000								
	54.49	3900												3000								
	49.74	3600												3000								
	45.61	3600												3000								

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C072</b>	38.92	820	36	506/13														
	35.41	820	40	5984/169														
	30.55	820	46	1955/64														
	27.79	820	50	1445/52														
	23.58	802	59	943/40														
	21.45	780	65	1394/65														
	20.65	686	68	1342/65														
	19.50	757	72	39/2														
	17.74	736	79	408/23														
	16.59	720	84	1725/104														
	16.20	671	86	1037/64														
	15.09	700	93	2550/169														
	14.38	689	97	115/8														
	13.08	670	107	170/13														
	12.51	618	112	2501/200														
	12.14	654	115	437/36														
	11.71	647	120	1311/112														
	11.04	637	127	1292/117														
	10.65	630	131	969/91														
	10.34	582	135	2379/230														
10.00	617	140	10/1															
9.10	600	154	2720/299															
8.80	552	159	915/104															
7.63	528	184	61/8															
6.44	500	217	1159/180															
6.21	494	225	3477/560															
5.30	470	264	122/23															
<b>C073</b>	351.33	820	4	14053/40														
	319.60	820	4.4	1598/5														
	278.44	820	5	18377/66														
	253.30	820	5.5	108664/429														
	216.20	820	6.5	1081/5														
	196.68	820	7.1	12784/65														
	177.39	820	7.9	34592/195														
	161.38	820	8.7	409088/2535														
	137.38	820	10	65941/480														
	124.97	820	11	48739/390														
	104.50	820	13	31349/300														
	95.06	820	15	92684/975														
	86.17	820	16	517/6														
	78.39	820	18	70312/897														
	70.68	820	20	18377/260														
	64.30	820	22	54332/845														
	60.06	820	23	1081/18														
	54.63	820	26	6392/117														
	49.38	820	28	39997/810														
	47.62	819	29	39997/840														
44.92	794	31	236504/5265															
43.32	782	32	59126/1365															
39.17	765	36	235/6															
35.63	726	39	31960/897															

Legend see page 85

Type	$i_{ges.}$	SERVO adapter										Input unit													
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>C072</b>	38.92	5000													3000										
	35.41	5000													3000										
	30.55	5000													3000										
	27.79	5000													3000										
	23.58	5000													3000										
	21.45	5000													3000										
	20.65	5000													3000										
	19.50	4700													3000										
	17.74	4700													3000										
	16.59	4200													3000										
	16.20	5000													3000										
	15.09	4200													3000										
	14.38	3700													3000										
	13.08	3700													3000										
	12.51	5000													3000										
	12.14	3300													3000										
	11.71	3200													3000										
	11.04	3300													3000										
	10.65	3200													3000										
	10.34	4700													3000										
	10.00	2900													2900										
	9.10	2900													2900										
	8.80	4200													3000										
	7.63	3700													3000										
	6.44	3300													3000										
	6.21	3200													3000										
	5.30	2900													2900										
<b>C073</b>	351.33	5000													3000										
	319.60	5000													3000										
	278.44	5000													3000										
	253.30	5000													3000										
	216.20	5000													3000										
	196.68	5000													3000										
	177.39	5000													3000										
	161.38	5000													3000										
	137.38	5000													3000										
	124.97	5000													3000										
	104.50	5000													3000										
	95.06	5000													3000										
	86.17	4700													3000										
	78.39	4700													3000										
	70.68	4200													3000										
	64.30	4200													3000										
	60.06	3700													3000										
	54.63	3700													3000										
	49.38	3300													3000										
	47.62	3200													3000										
	44.92	3300													3000										
	43.32	3200													3000										
	39.17	2900													2900										
	35.63	2900													2900										

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C082</b>	54.18	1550	26	4930/91														
	42.88	1550	33	9605/224														
	37.44	1550	37	3145/84														
	33.09	1550	42	1853/56														
	31.23	1117	45	406/13														
	27.98	1549	50	4505/161														
	24.72	1120	57	791/32														
	24.05	1479	58	8755/364														
	21.58	1316	65	259/12														
	21.00	1418	67	7055/336														
	19.08	1306	73	763/40														
	17.99	1353	78	3400/189														
	17.35	1338	81	850/49														
	16.13	1298	87	371/23														
	15.31	1288	91	2465/161														
	13.87	1233	101	721/52														
	12.84	1220	109	4675/364														
	12.10	1177	116	581/48														
	10.82	1158	129	3485/322														
	10.37	1117	135	280/27														
10.00	1103	140	10/1															
8.87	1090	158	1615/182															
8.83	1057	159	203/23															
7.40	996	189	385/52															
6.24	939	224	287/46															
5.12	878	274	133/26															
<b>C083</b>	368.94	1550	3.8	909075/2464														
3 stages	284.84	1550	4.9	893265/3136														
	238.89	1550	5.9	86955/364														
	187.48	1550	7.5	671925/3584														
$n_1=1400\text{ min}^{-1}$	144.69	1550	9.7	64821/448														
	119.68	1550	12	308295/2576														
	101.80	1550	14	592875/5824														
Maximum torque 1550 Nm	88.23	1550	16	39525/448														
	74.50	1550	19	50065/672														
	71.84	1550	19	450585/6272														
	61.37	1550	23	39525/644														

Legend see page 85

Type	i <sub>ges.</sub>	SERVO adapter										Input unit									
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]							
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110
<b>C082</b>	54.18	5000											3000								
	42.88	5000											3000								
	37.44	5000											3000								
	33.09	5000											3000								
	31.23	5000											3000								
	27.98	5000											3000								
	24.72	5000											3000								
	24.05	4600											3000								
	21.58	5000											3000								
	21.00	4200											3000								
	19.08	5000											3000								
	17.99	3700											3000								
	17.35	3600											3000								
	16.13	5000											3000								
	15.31	3300											3000								
	13.87	4600											3000								
	12.84	2900											2900								
	12.10	4200											3000								
	10.82	2600											2600								
	10.37	3700											3000								
	10.00	3600											3000								
	8.87	-											2300								
	8.83	3300											3000								
	7.40	2900											2900								
	6.24	2600											2600								
	5.12	-											2300								
<b>C083</b>	368.94	5000											3000								
	284.84	5000											3000								
	238.89	5000											3000								
	187.48	5000											3000								
	144.69	5000											3000								
	119.68	5000											3000								
	101.80	4600											3000								
	88.23	4200											3000								
	74.50	3700											3000								
	71.84	3600											3000								
	61.37	3300											3000								

Legend see page 85



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C092</b>	39.60	2970	35	198/5														
	33.48	2992	42	770/23														
	28.98	2981	48	1507/52														
	25.67	3000	55	77/3														
	22.58	1694	62	1242/55														
	22.20	3000	63	1199/54														
	21.41	2569	65	1199/56														
	19.09	1706	73	210/11														
	18.89	3000	74	869/46														
	16.53	1700	85	9453/572														
	16.08	3000	87	209/13														
	14.64	1819	96	161/11														
	13.87	3000	101	319/23														
	12.66	1819	111	2507/198														
	12.21	1465	115	7521/616														
	11.63	2990	120	605/52														
	10.77	1819	130	237/22														
	9.46	2805	148	473/50														
	9.17	1819	153	1311/143														
	7.91	1819	177	87/11														
7.40	2600	189	429/58															
6.63	1819	211	345/52															
5.39	1819	260	2967/550															
4.22	1819	332	2691/638															
<b>C093</b>	306.73	3000	4.6	7975/26														
	242.77	3000	5.8	31075/128														
	211.98	3000	6.6	10175/48														
	187.34	3000	7.5	5995/32														
	158.42	3000	8.8	14575/92														
	154.24	3000	9.1	14036/91														
	136.18	3000	10	28325/208														
	122.08	3000	11	13673/112														
	118.88	3000	12	22825/192														
	106.60	3000	13	4477/42														
	101.85	3000	14	2750/27														
	98.21	3000	14	1375/14														
	94.21	3000	15	13189/140														
	86.68	3000	16	7975/92														
	79.66	3000	18	12826/161														
	72.72	3000	19	15125/208														
	68.48	3000	20	12463/182														
	61.28	3000	23	11275/184														
	59.78	3000	23	10043/168														
	51.22	3000	27	9680/189														
50.24	2923	28	5225/104															
49.39	2995	28	2420/49															
43.59	2859	32	7018/161															
36.57	2677	38	6655/182															
30.81	2510	45	4961/161															
25,26	2331	55	2299/91															

Legend see page 85

Type	i <sub>ges.</sub>	SERVO adapter										Input unit										
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]								
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
<b>C092</b>	39.60	5000												3000								
	33.48	5000												3000								
	28.98	5000												3000								
	25.67	4500												3000								
	22.58	5000												3000								
	22.20	4000												3000								
	21.41	3900												3000								
	19.09	5000												3000								
	18.89	3600												3000								
	16.53	5000												3000								
	16.08	3100												3000								
	14.64	4500												3000								
	13.87	2800												2800								
	12.66	4000												3000								
	12.21	3900												3000								
	11.63	-												2500								
	10.77	3600												3000								
	9.46	-												2200								
	9.17	3100												3000								
	7.91	2800												2800								
	7.40	-												1900								
	6.63	-												2500								
	5.39	-												2200								
	4.22	-												1900								
<b>C093</b>	306.73	5000												3000								
	242.77	5000												3000								
	211.98	5000												3000								
	187.34	5000												3000								
	158.42	5000												3000								
	154.24	5000												3000								
	136.18	5000												3000								
	122.08	5000												3000								
	118.88	4500												3000								
	106.60	5000												3000								
	101.85	4000												3000								
	98.21	3900												3000								
	94.21	5000												3000								
	86.68	3600												3000								
	79.66	5000												3000								
	72.72	3100												3000								
	68.48	5000												3000								
	61.28	2800												2800								
	59.78	4500												3000								
	51.22	4000												3000								
	50.24	-												2500								
	49.39	3900												3000								
	43.59	3600												3000								
	36.57	3100												3000								
	30.81	2800												2800								
	25.26	-												2500								

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
					NEMA adapter													
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C102</b>	33.01	3695	42	6437/195														
	29.16	4500	48	1312/45														
	25.31	4500	55	2050/81														
	24.40	2930	57	1025/42														
	21.87	4500	64	328/15														
	19.17	2146	73	11461/598														
	18.71	4500	75	3649/195														
	16.93	2698	83	1168/69														
	16.16	4500	87	5576/345														
	14.69	2698	95	9125/621														
	14.17	1701	99	9125/644														
	13.67	4500	102	41/3														
	12.70	2698	110	292/23														
	11.15	4500	126	1394/125														
	10.86	2698	129	6497/598														
	9.38	2698	149	4964/529														
	9.05	4500	155	1312/145														
	7.93	2698	176	365/46														
7.22	4500	194	1517/210															
6.47	2698	216	3723/575															
5.25	2698	266	3504/667															
4.19	2698	334	2701/644															
<b>C103</b>	246.43	4500	5.7	141696/575														
	208.33	4500	6.7	110208/529														
	180.35	4500	7.8	269616/1495														
	159.72	4500	8.8	18368/115														
	138.17	4500	10	143008/1035														
	133.24	4500	11	107256/805														
	122.02	4500	11	15252/125														
	117.56	4500	12	310944/2645														
	103.15	4500	14	35588/345														
	100.05	4500	14	149568/1495														
	89.30	4500	16	174127/1950														
	86.31	4500	16	228288/2645														
	79.08	4500	18	17794/225														
	72.40	4500	19	21648/299														
	68.41	4500	20	138539/2025														
	65.97	4500	21	138539/2100														
	58.87	4500	24	169248/2875														
	58.21	4500	24	100409/1725														
	49.54	4500	28	48298/975														
	46.03	4500	30	153504/3335														
	42.74	4500	33	73718/1725														
35.85	4500	39	13981/390															
29.15	4500	48	54653/1875															
22.79	4500	61	16523/725															

Legend see page 85

Type	i <sub>ges.</sub>	SERVO adapter										Input unit										
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]								
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
<b>C102</b>	33.01	5000												3000								
	29.16	4800												3000								
	25.31	4200												3000								
	24.40	4100												3000								
	21.87	3700												3000								
	19.17	5000												3000								
	18.71	3300												3000								
	16.93	4800												3000								
	16.16	3000												3000								
	14.69	4200												3000								
	14.17	4100												3000								
	13.67	-												2600								
	12.70	3700												3000								
	11.15	-												2300								
	10.86	3300												3000								
	9.38	3000												3000								
	9.05	-												2000								
	7.93	-												2600								
	7.22	-												1800								
	6.47	-												2300								
	5.25	-												2000								
	4.19	-												1800								
<b>C103</b>	246.43	5000												3000								
	208.33	5000												3000								
	180.35	5000												3000								
	159.72	4800												3000								
	138.17	4200												3000								
	133.24	4100												3000								
	122.02	5000												3000								
	117.56	3700												3000								
	103.15	5000												3000								
	100.05	3300												3000								
	89.30	5000												3000								
	86.31	3000												3000								
	79.08	4800												3000								
	72.40	-												2600								
	68.41	4200												3000								
	65.97	4100												3000								
	58.87	-												2300								
	58.21	3700												3000								
	49.54	3300												3000								
	46.03	-												2000								
	42.74	3000												3000								
	35.85	-												2600								
	29.15	-												2300								
	22.79	-												2000								



Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280
NEMA adapter																	
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
<b>C132</b>	35.51	5325	39	2983/84													
	30.96	5885	45	836/27													
	29.86	3583	47	209/7													
	26.67	7730	52	4294/161													
	22.97	8000	61	2090/91													
	20.22	3032	69	2669/132													
	20.06	8000	70	3230/161													
	17.63	3351	79	476/27													
	17.33	8000	81	1577/91													
	17.00	2040	82	17/1													
	15.19	4401	92	3842/253													
	14.33	8000	98	2508/175													
	13.08	4884	107	170/13													
	11.79	8000	119	342/29													
	Maximum torque 8000 Nm	11.42	4945	123	2890/253												
		9.87	4945	142	1411/143												
		9.69	8000	144	475/49												
		8.23	8000	170	1786/217												
		8.16	4945	172	204/25												
		7.03	8000	199	836/119												
6.71		4945	208	2142/319													
5.52		4945	254	425/77													
4.69	4945	299	1598/341														
4.00	4945	350	4/1														
<b>C133</b>	204.88	8000	6.8	74575/364													
	180.95	8000	7.7	3800/21													
	157.08	8000	8.9	59375/378													
	151.47	8000	9.2	59375/392													
	135.71	8000	10	950/7													
	116.14	8000	12	42275/364													
	101.85	8000	14	259521/2548													
	100.31	8000	14	16150/161													
	89.96	8000	16	4408/49													
	84.82	8000	17	2375/28													
	78.09	8000	18	68875/882													
	75.30	8000	19	206625/2744													
	69.21	8000	20	969/14													
	67.47	8000	21	3306/49													
	57.74	8000	24	147117/2548													
	56.16	8000	25	11400/203													
	49.87	8000	28	56202/1127													
	44.83	8000	31	17575/392													
	42.17	8000	33	8265/196													
	34.41	8000	41	84303/2450													
27.92	8000	50	1368/49														
22.29	8000	63	61161/2744														

Legend see page 85

Type	$i_{ges.}$	SERVO adapter											Input unit												
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>C132</b>	35.51	5000													3000										
	30.96	4500													3000										
	29.86	4400													3000										
	26.67	4000													3000										
	22.97	3500													3000										
	20.22	5000													3000										
	20.06	3200													3000										
	17.63	4500													3000										
	17.33	-													2800										
	17.00	4400													3000										
	15.19	4000													3000										
	14.33	-													2400										
	13.08	3500													3000										
	11.79	-													2100										
	11.42	3200													3000										
	9.87	-													2800										
	9.69	-													1900										
	8.23	-													1700										
	8.16	-													2400										
	7.03	-													1500										
	6.71	-													2100										
	5.52	-													1900										
	4.69	-													1700										
	4.00	-													1500										
<b>C133</b>	204.88	5000													3000										
	180.95	5000													3000										
	157.08	4500													3000										
	151.47	4400													3000										
	135.71	4000													3000										
	116.14	3500													3000										
	101.85	5000													3000										
	100.31	3200													3000										
	89.96	5000													3000										
	84.82	-													2800										
	78.09	4500													3000										
	75.30	4400													3000										
	69.21	-													2400										
	67.47	4000													3000										
	57.74	3500													3000										
	56.16	-													2100										
	49.87	3200													3000										
	44.83	-													1900										
	42.17	-													2800										
	34.41	-													2400										
	27.92	-													2100										
	22.29	-													1900										

Legend see page 85

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>C142</b>	37.48	7123	37	1012/27														
	32.28	9361	43	1485/46														
	27.92	11759	50	363/13														
	24.63	13000	57	1133/46														
	21.37	4062	66	2116/99														
	21.15	13000	66	275/13														
	18.41	5338	76	405/22														
	17.60	13000	80	88/5														
	15.92	6706	88	207/13														
	14.60	13000	96	847/58														
	14.05	8155	100	309/22														
	12.18	13000	115	341/28														
	12.06	8032	116	1725/143														
	10.47	13000	134	649/62														
	10.04	9095	139	552/55														
	9.06	13000	155	154/17														
	8.33	9017	168	483/58														
	6.94	9095	202	2139/308														
5.97	9095	235	4071/682															
5.17	8816	271	966/187															
<b>C143</b>	206.88	13000	6.8	39721/192														
	180.38	13000	7.8	19481/108														
	173.94	13000	8	2783/16														
	155.38	13000	9	1243/8														
	133.80	13000	10	13915/104														
	116.88	13000	12	935/8														
	113.27	13000	12	146795/1296														
	100.96	13000	14	20999/208														
	98.76	13000	14	71995/729														
	95.23	11428	15	10285/108														
	85.07	13000	16	105655/1242														
	83.49	13000	17	8349/100														
	73.25	13000	19	51425/702														
	68.70	13000	20	15939/232														
	63.99	13000	22	79475/1242														
	56.47	13000	25	6325/112														
	55.27	13000	25	77605/1404														
	47.95	13000	29	11891/248														
	45.71	13000	31	2057/45														
	40.93	13000	34	2783/68														
	37.61	13000	37	6545/174														
30.92	12705	45	23375/756															
26.25	12096	53	43945/1674															
22.41	11535	62	605/27															

Legend see page 85

Type	$i_{ges.}$	SERVO adapter										Input unit												
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110		
<b>C142</b>	37.48	4800												3000										
	32.28	4200												3000										
	27.92	3700												3000										
	24.63	3400												3000										
	21.37	4800												3000										
	21.15	-												3000										
	18.41	4200												3000										
	17.60	-												2600										
	15.92	3700												3000										
	14.60	-												2200										
	14.05	3400												3000										
	12.18	-												2000										
	12.06	-												3000										
	10.47	-												1800										
	10.04	-												2600										
	9.06	-												1600										
	8.33	-												2200										
	6.94	-												2000										
	5.97	-												1800										
	5.17	-												1600										
<b>C143</b>	206.88	5000												3000										
	180.38	4800												3000										
	173.94	4600												3000										
	155.38	4200												3000										
	133.80	3700												3000										
	116.88	3400												3000										
	113.27	5000												3000										
	100.96	-												3000										
	98.76	4800												3000										
	95.23	4600												3000										
	85.07	4200												3000										
	83.49	-												2600										
	73.25	3700												3000										
	68.70	-												2200										
	63.99	3400												3000										
	56.47	-												2000										
	55.27	-												3000										
	47.95	-												1800										
	45.71	-												2600										
	40.93	-												1600										
	37.61	-												2200										
	30.92	-												2000										
	26.25	-												1800										
	22.41	-												1600										

Legend see page 85



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280
					NEMA adapter												
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
<b>C162</b>	33.00	13926	42	33/1													
2 stages	25.15	18000	56	327/13													
	21.12	18000	66	528/25													
	17.70	7468	79	407/23													
	17.38	18000	81	504/29													
	14.79	18000	95	207/14													
	$n_1=1400 \text{ min}^{-1}$	13.49	10003	104	4033/299												
		12.77	18000	110	396/31												
	Maximum torque 18000 Nm	11.33	11261	124	6512/575												
		11.12	18000	126	189/17												
		9.32	11197	150	6216/667												
7.93		11261	177	111/14													
6.85		11261	204	4884/713													
5.96	11261	235	2331/391														
<b>C163</b>	234.67	18000	6	704/3													
3 stages	202.12	18000	6.9	106920/529													
	174.82	18000	8	52272/299													
	154.21	18000	9.1	81576/529													
	132.44	18000	11	39600/299													
	130.53	18000	11	15272/117													
	112.42	18000	12	33615/299													
	110.19	18000	13	12672/115													
	97.24	18000	14	16434/169													
	$n_1=1400 \text{ min}^{-1}$	91.43	18000	15	60984/667												
		85.78	18000	16	25647/299												
Maximum torque 18000 Nm	76.25	18000	18	12276/161													
	73.67	18000	19	12450/169													
	65.54	18000	21	46728/713													
	61.29	18000	23	3984/65													
	56.72	18000	25	22176/391													
	50.86	18000	28	19173/377													
	42.41	18000	33	7719/182													
36.45	18000	38	14691/403														
31.55	17437	44	6972/221														

C

Legend see page 85

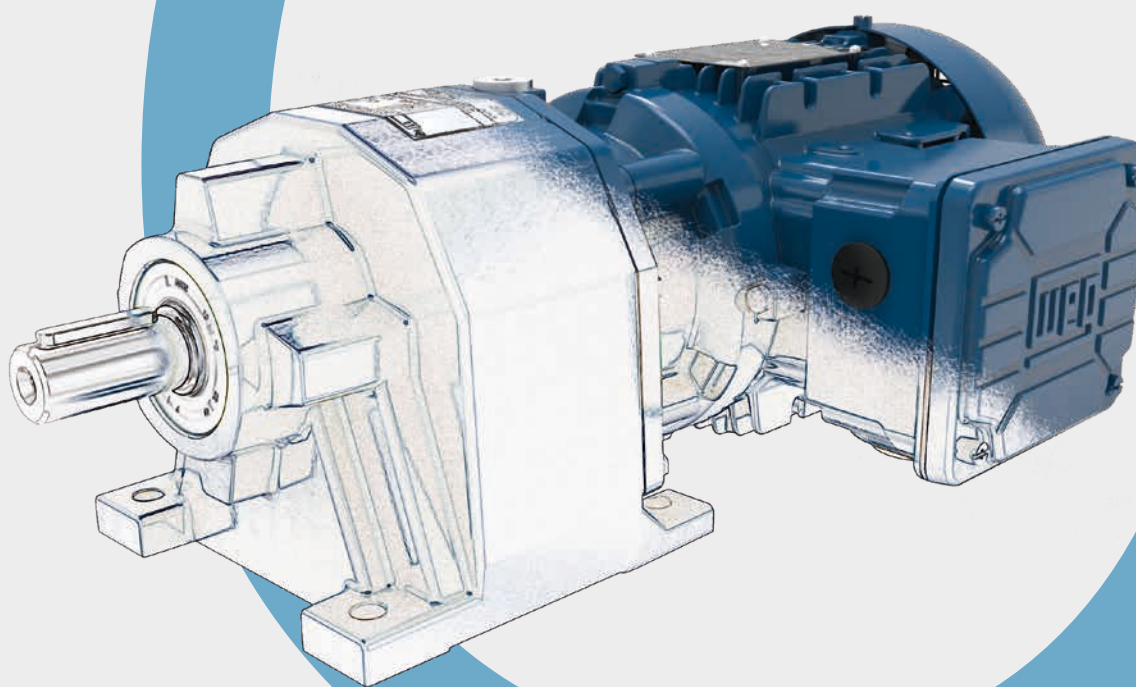
Type	$i_{ges.}$	SERVO adapter											Input unit												
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>C162</b>	33.00	-													3000										
	25.15	-													3000										
	21.12	-													2700										
	17.70	-													3000										
	17.38	-													2300										
	14.79	-													2000										
	13.49	-													3000										
	12.77	-													1800										
	11.33	-													2700										
	11.12	-													1700										
	9.32	-													2300										
	7.93	-													2000										
	6.85	-													1800										
	5.96	-													1700										
<b>C163</b>	234.67	-													3000										
	202.12	-													3000										
	174.82	-													3000										
	154.21	-													3000										
	132.44	-													3000										
	130.53	-													3000										
	112.42	-													3000										
	110.19	-													2700										
	97.24	-													3000										
	91.43	-													2300										
	85.78	-													3000										
	76.25	-													2000										
	73.67	-													3000										
	65.54	-													1800										
	61.29	-													2700										
	56.72	-													1700										
	50.86	-													2300										
	42.41	-													2000										
	36.45	-													1800										
	31.55	-													1700										



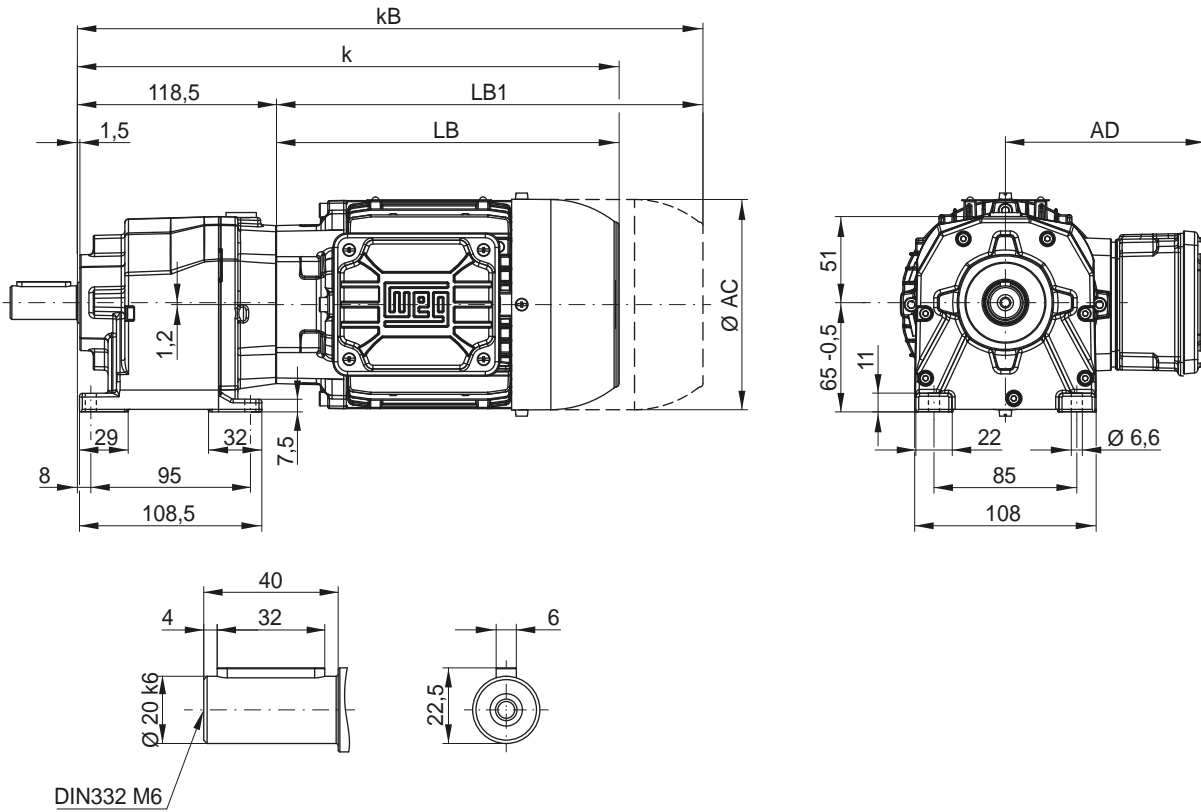
Legend see page 85



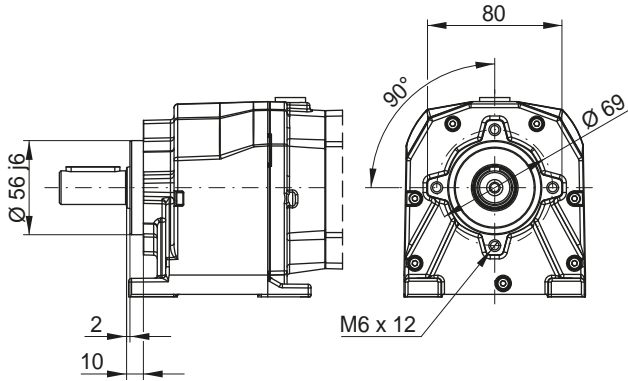
# Dimension sheets Geared Motors



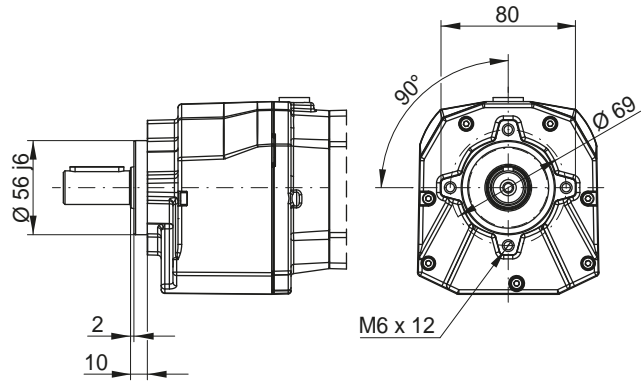
**CG00 - Foot mounted**



**CW00 - Foot mounted with B14 flange execution + centring and threaded hole**



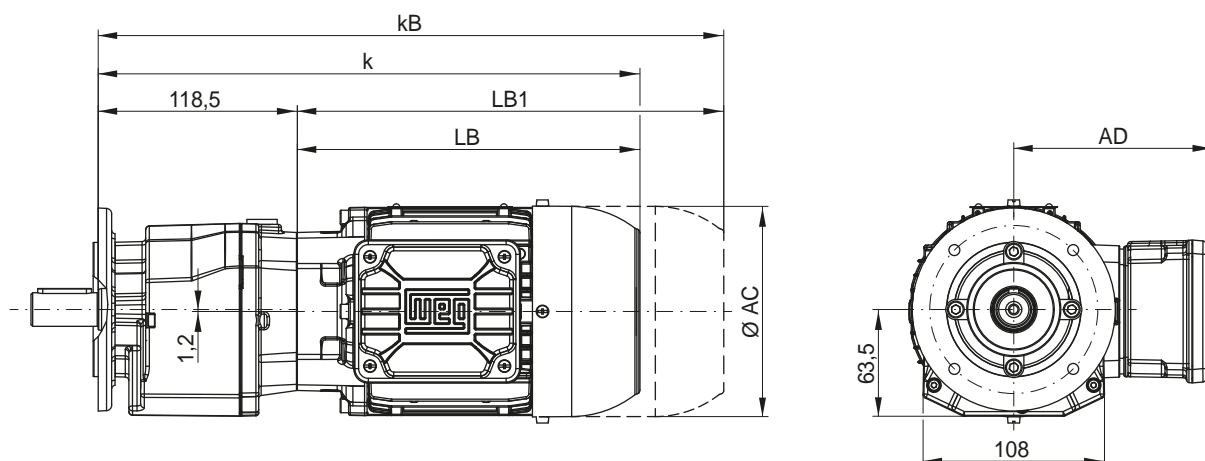
**CC00 - B14 flange execution + centring and threaded hole**



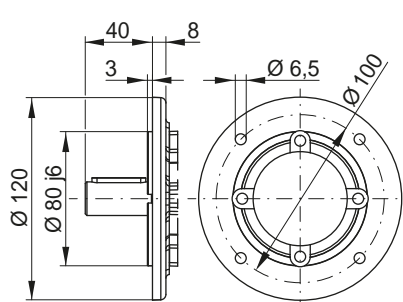
Motor fr.	63	71	80
Dimension			
AC	126	141	159
AD	125	133	142
k	323	357	365
kB	367	406	423
LB	204	238	246
LB1	248	287	304

Motor dimension sheets see page 380  
Description of motor lengths LB and LB1 see page 384

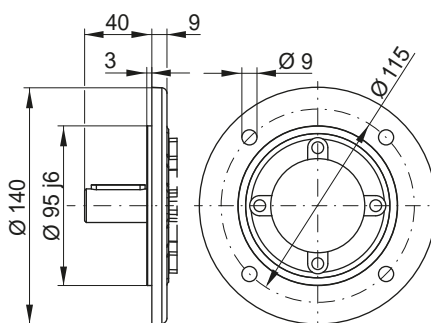
### CF00 - Flange execution



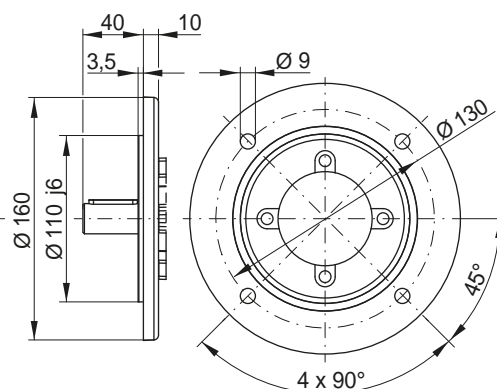
#### Flange $\varnothing 120$



#### Flange $\varnothing 140$

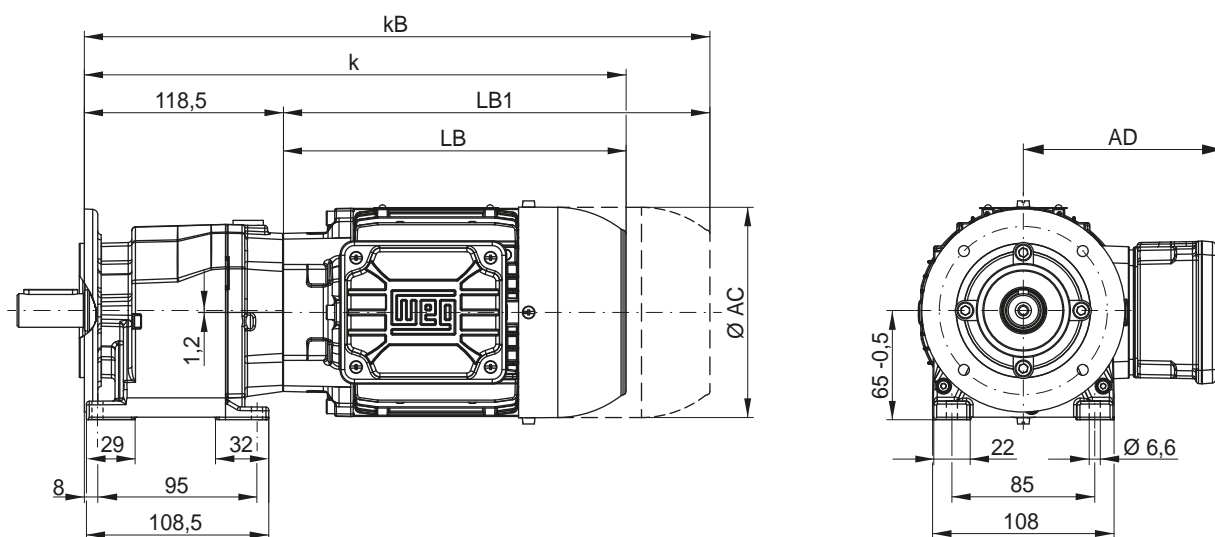


#### Flange $\varnothing 160$



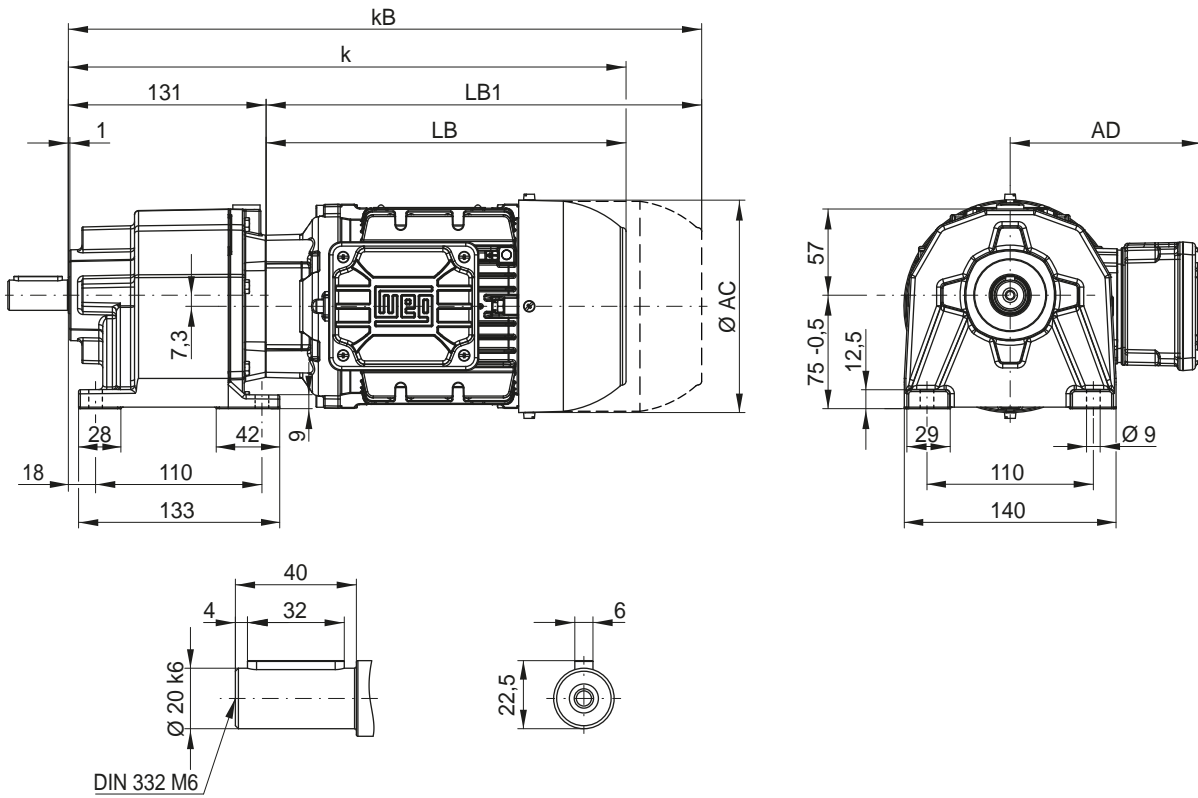
### CA00 - Foot mounted and B5 flange execution

mountable flange sizes on the housing:  $\varnothing 120$

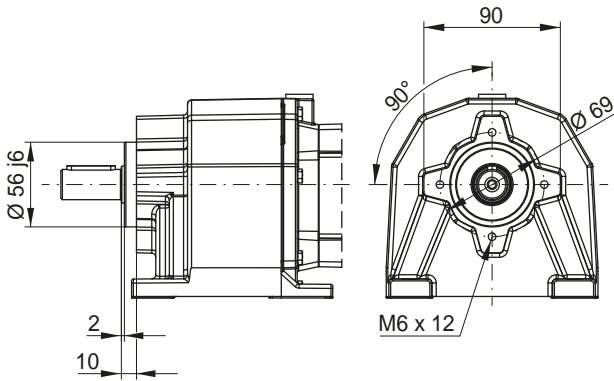


Dimensions in mm.

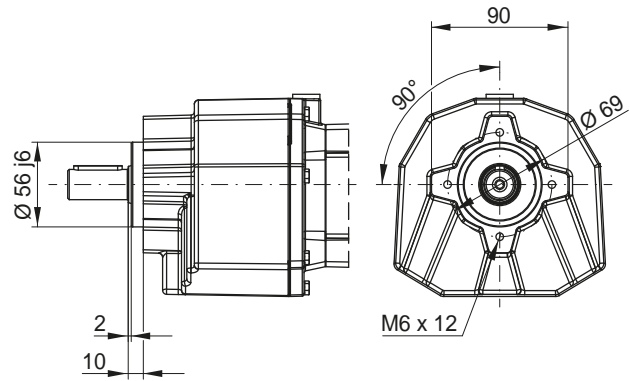
### CG01 - Foot mounted



### CW01 - Foot mounted with B14 flange execution + centring and threaded hole



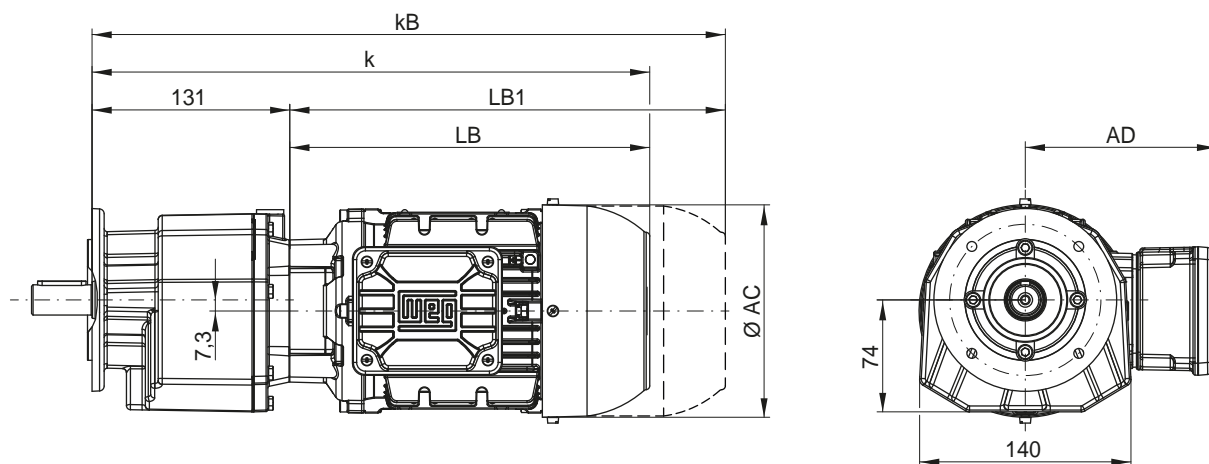
### CC01 - B14 flange execution + centring and threaded hole



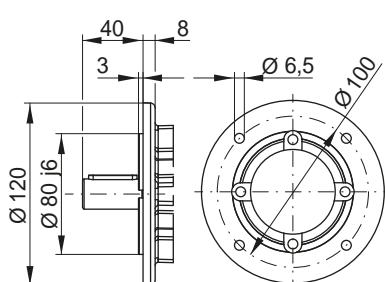
Motor fr.	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	335	369	377	419
kB	379	418	435	492
LB	204	238	246	288
LB1	248	287	304	361

Motor dimension sheets see page 380  
 Description of motor lengths LB and LB1 see page 384

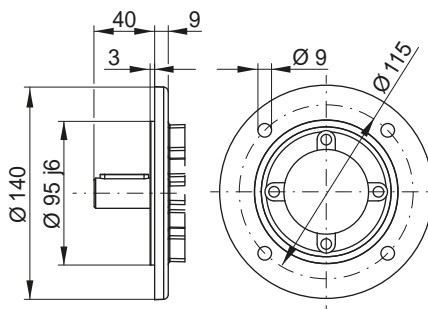
### CF01 - Flange execution



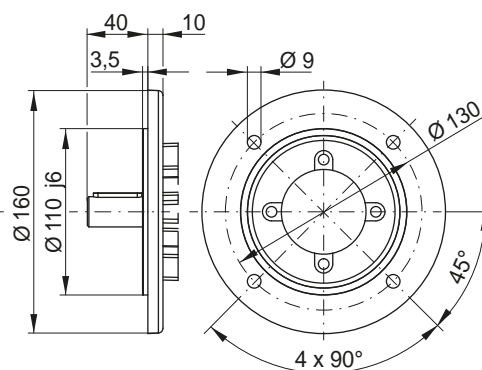
#### Flange $\varnothing 120$



#### Flange $\varnothing 140$

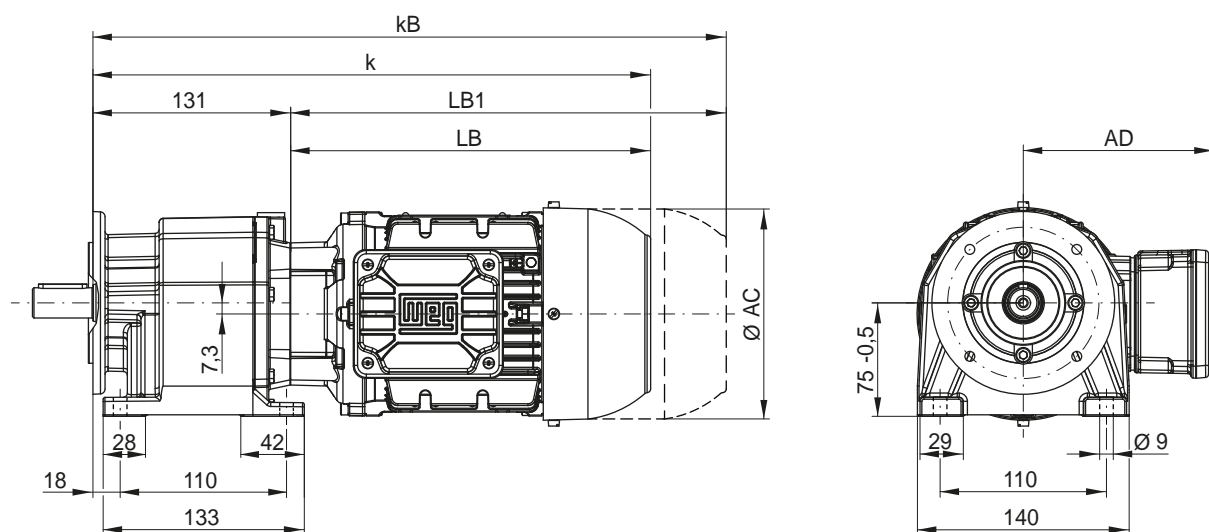


#### Flange $\varnothing 160$



### CA01 - Foot mounted and B5 flange execution

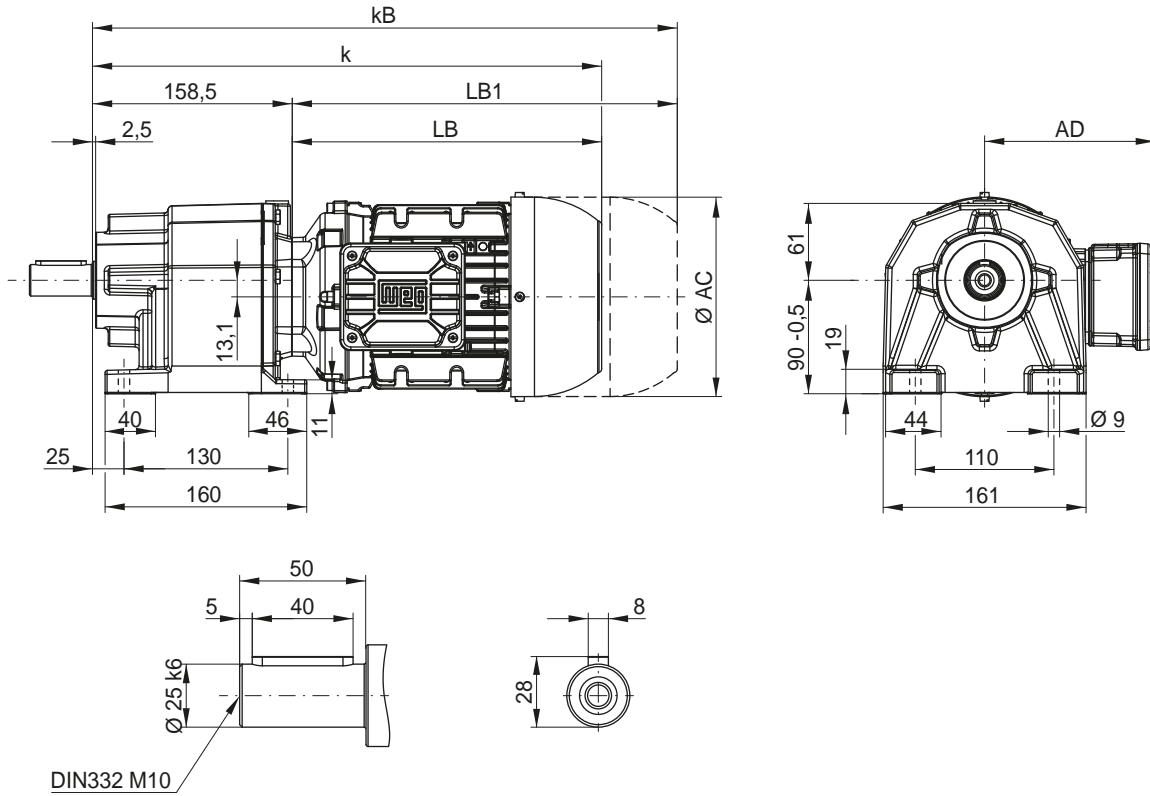
mountable flange sizes on the housing:  $\varnothing 120$  and  $\varnothing 140$



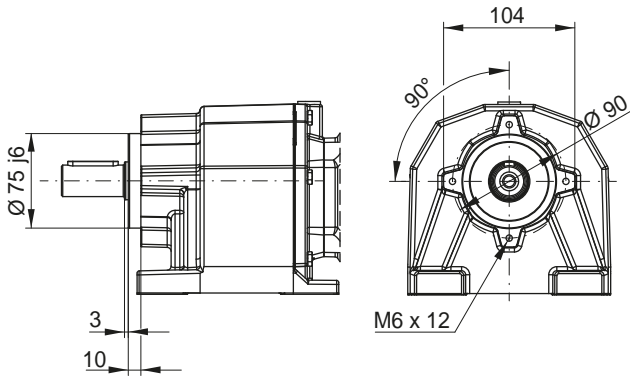
Dimensions in mm.



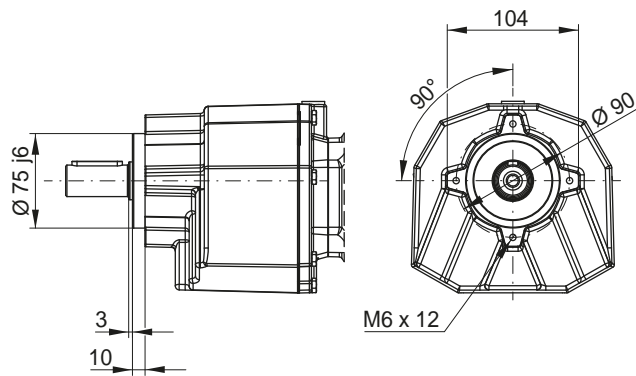
### CG03 - Foot mounted



### CW03 - Foot mounted with B14 flange execution + centring and threaded hole



### CC03 - B14 flange execution + centring and threaded hole

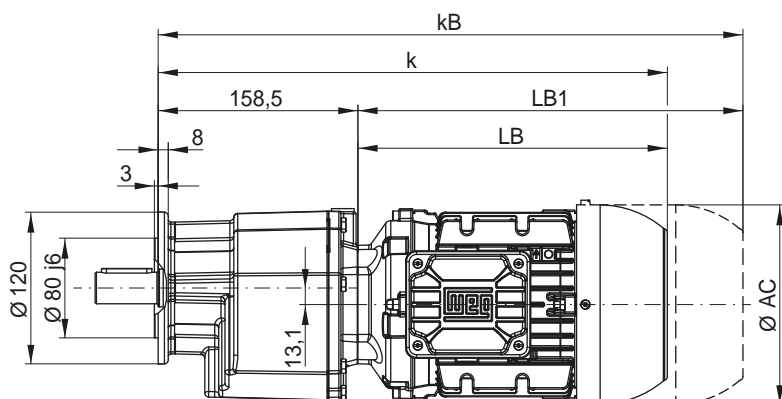


Motor fr.	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	363	397	405	447	497	535
kB	407	446	463	520	581	619
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

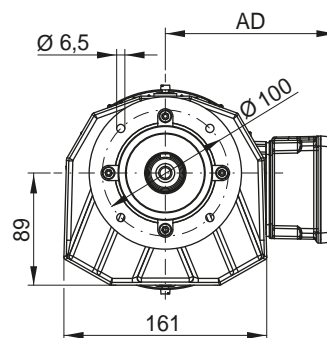
Motor dimension sheets see page 380

Description of motor lengths LB and LB1 see page 384

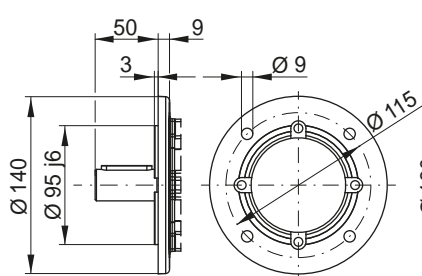
### CF03 - Flange execution



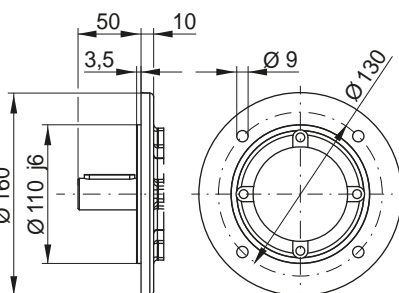
#### Flange Ø 120



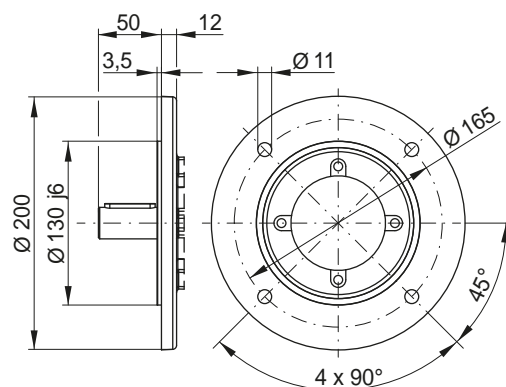
#### Flange Ø 140



#### Flange Ø 160

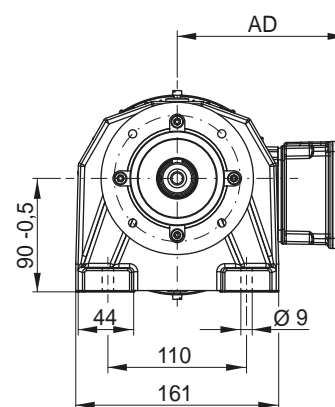
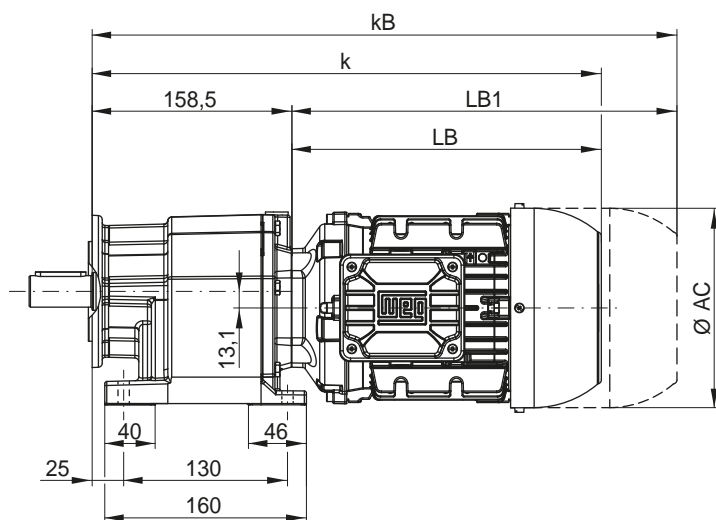


#### Flange Ø 200



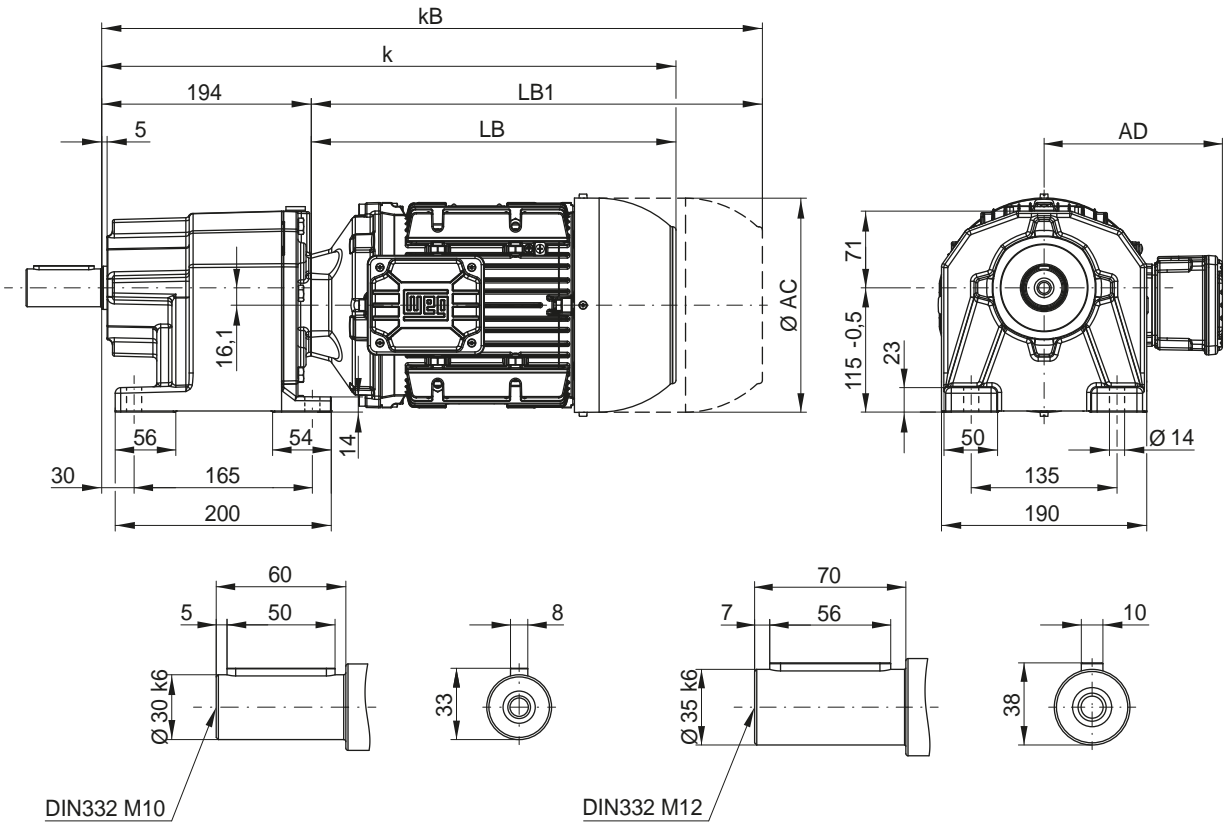
### CA03 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 120, Ø 140 and Ø 160



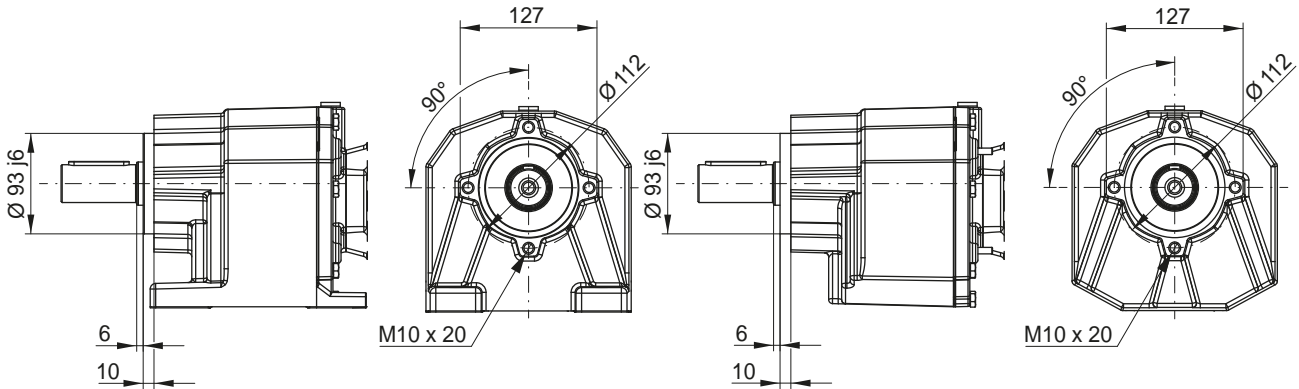
Dimensions in mm.

**CG05 - Foot mounted**



**CW05 - Foot mounted with B14 flange execution + centring and threaded hole**

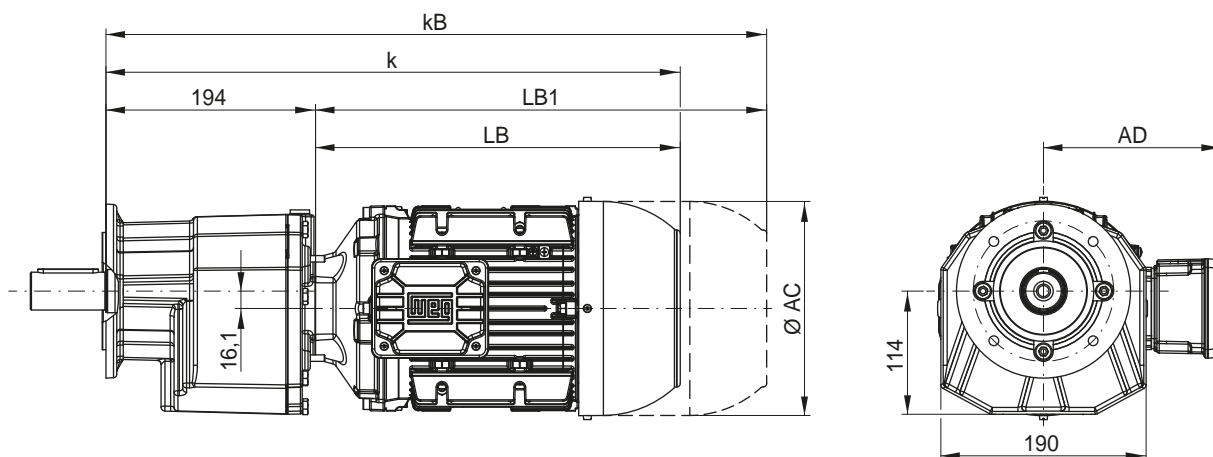
**CC05 - B14 flange execution + centring and threaded hole**



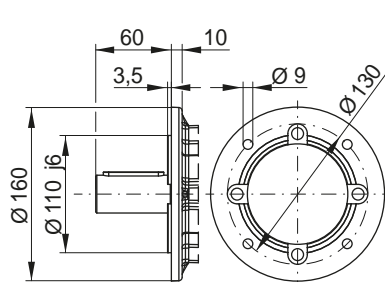
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	398	432	440	482	532	570	542	607	645
kB	442	481	498	555	616	654	629	725	763
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380  
Description of motor lengths LB and LB1 see page 384

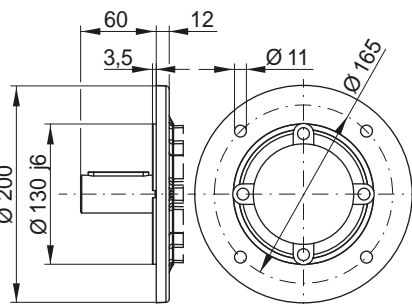
### CF05 - Flange execution



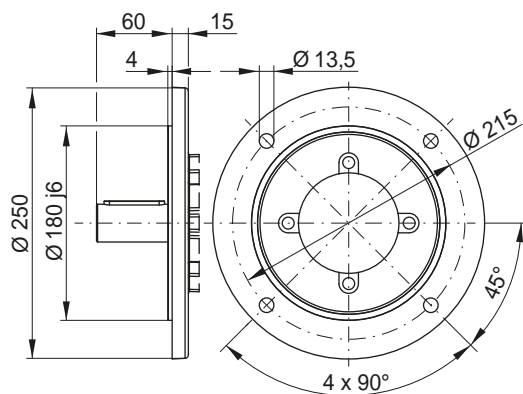
#### Flange $\text{Ø 160}$



#### Flange $\text{Ø 200}$

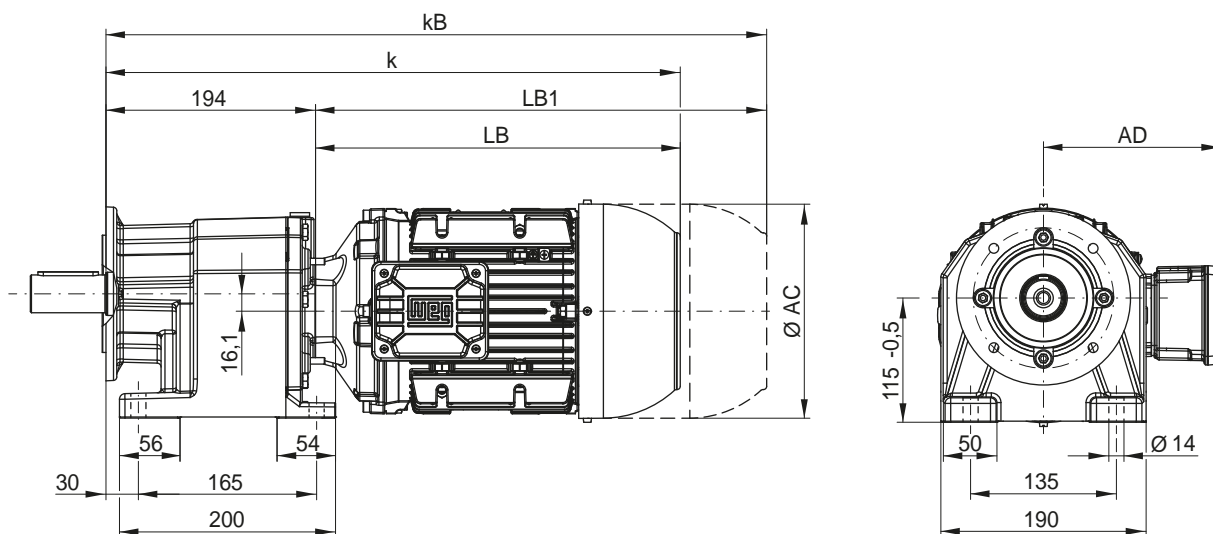


#### Flange $\text{Ø 250}$



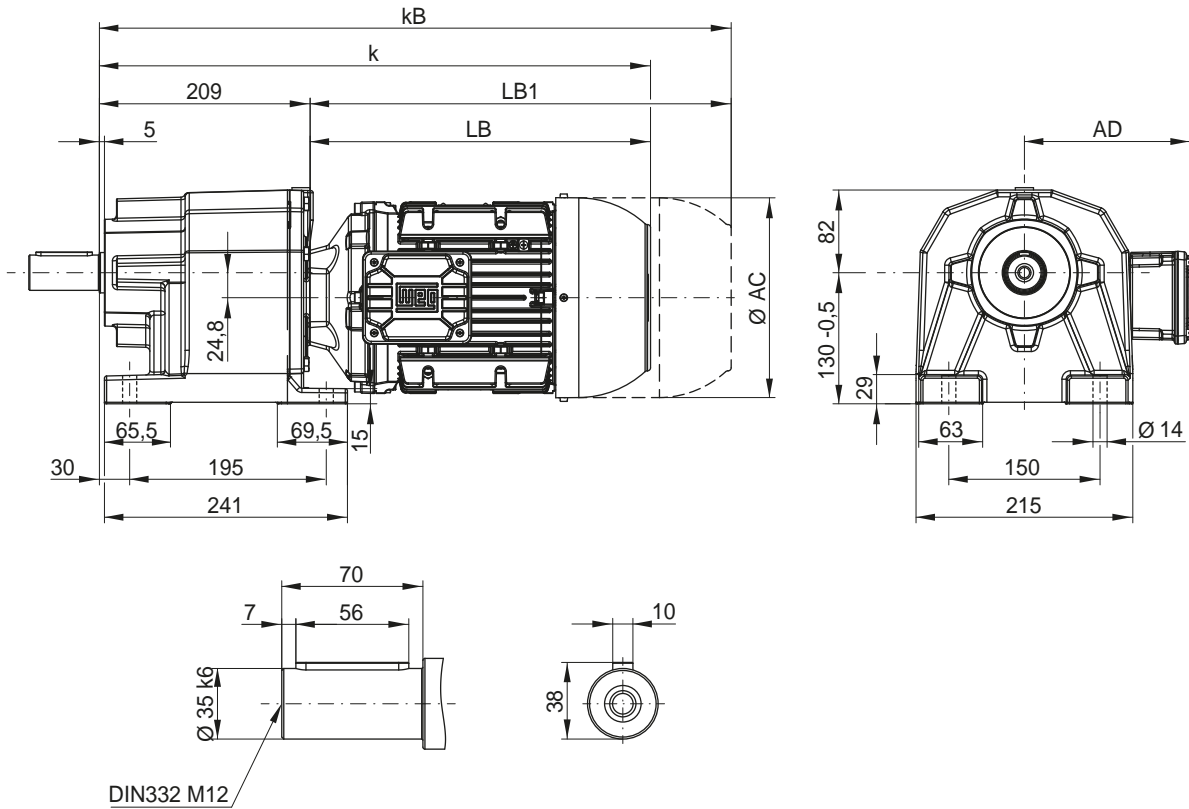
### CA05 - Foot mounted and B5 flange execution

mountable flange sizes on the housing:  $\text{Ø 160}$  and  $\text{Ø 200}$



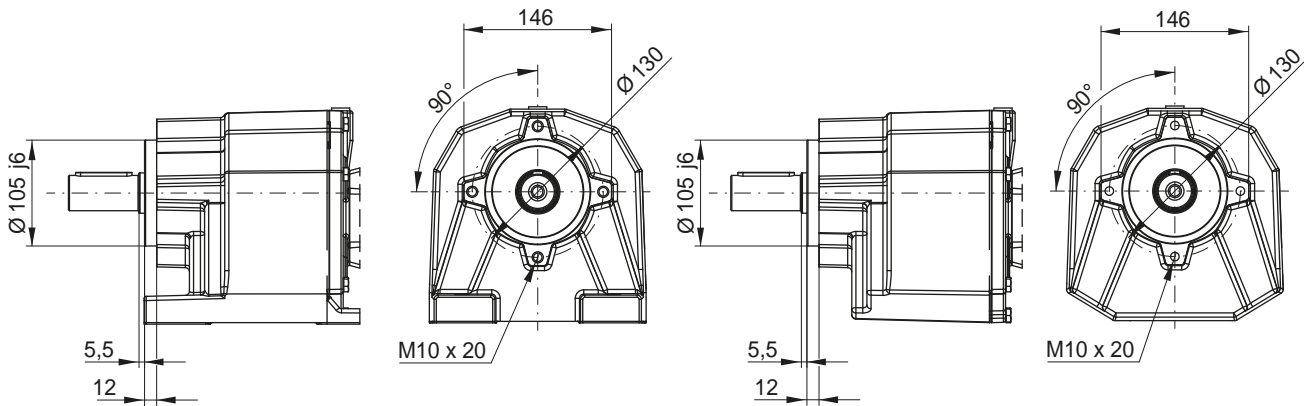
Dimensions in mm.

**CG06 - Foot mounted**



**CW06 - Foot mounted with B14 flange execution + centring and threaded hole**

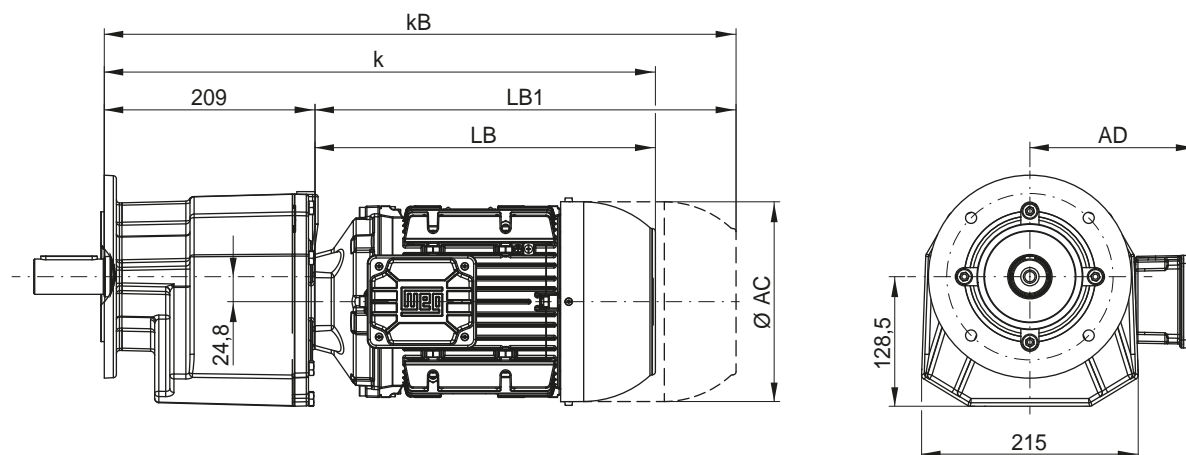
**CC06 - B14 flange execution + centring and threaded hole**



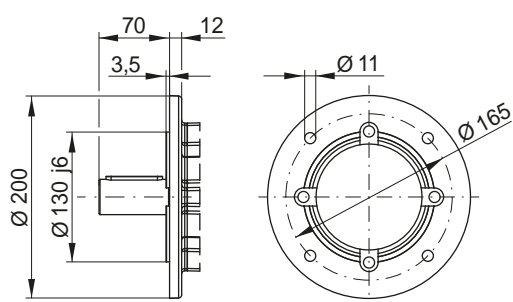
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	413	447	455	497	547	585	557	622	660
kB	457	496	513	570	631	669	644	740	778
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380  
 Description of motor lengths LB and LB1 see page 384

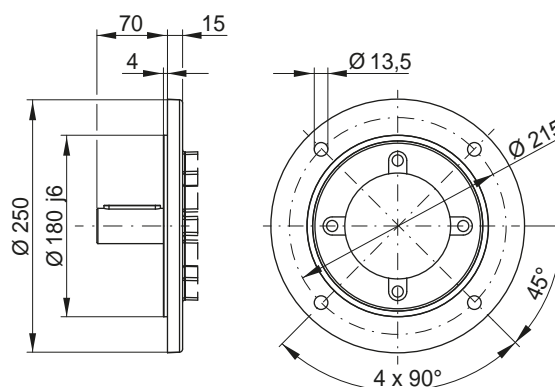
### CF06 - Flange execution



### Flange $\varnothing 200$

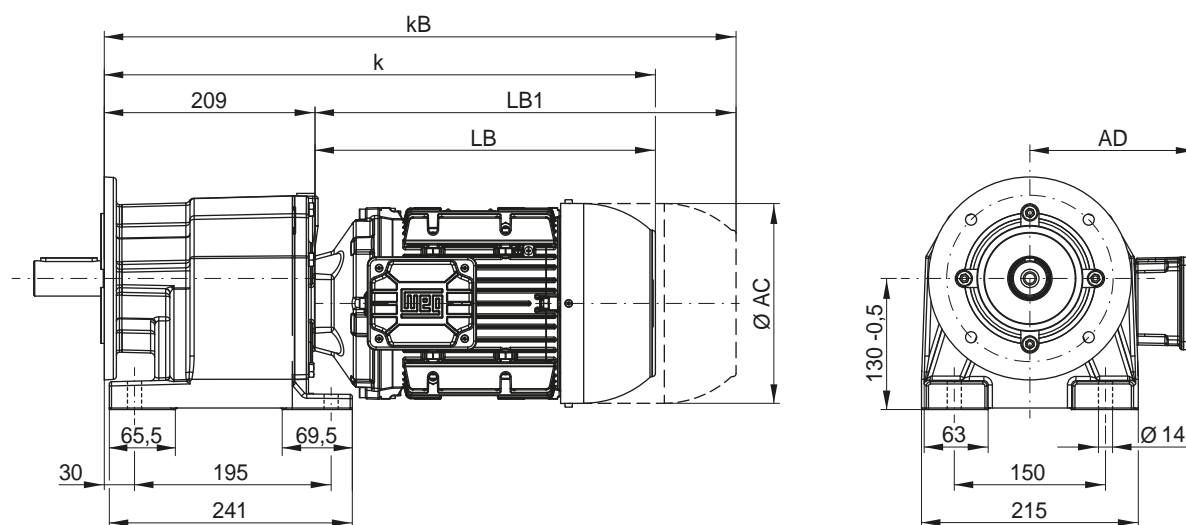


### Flange $\varnothing 250$



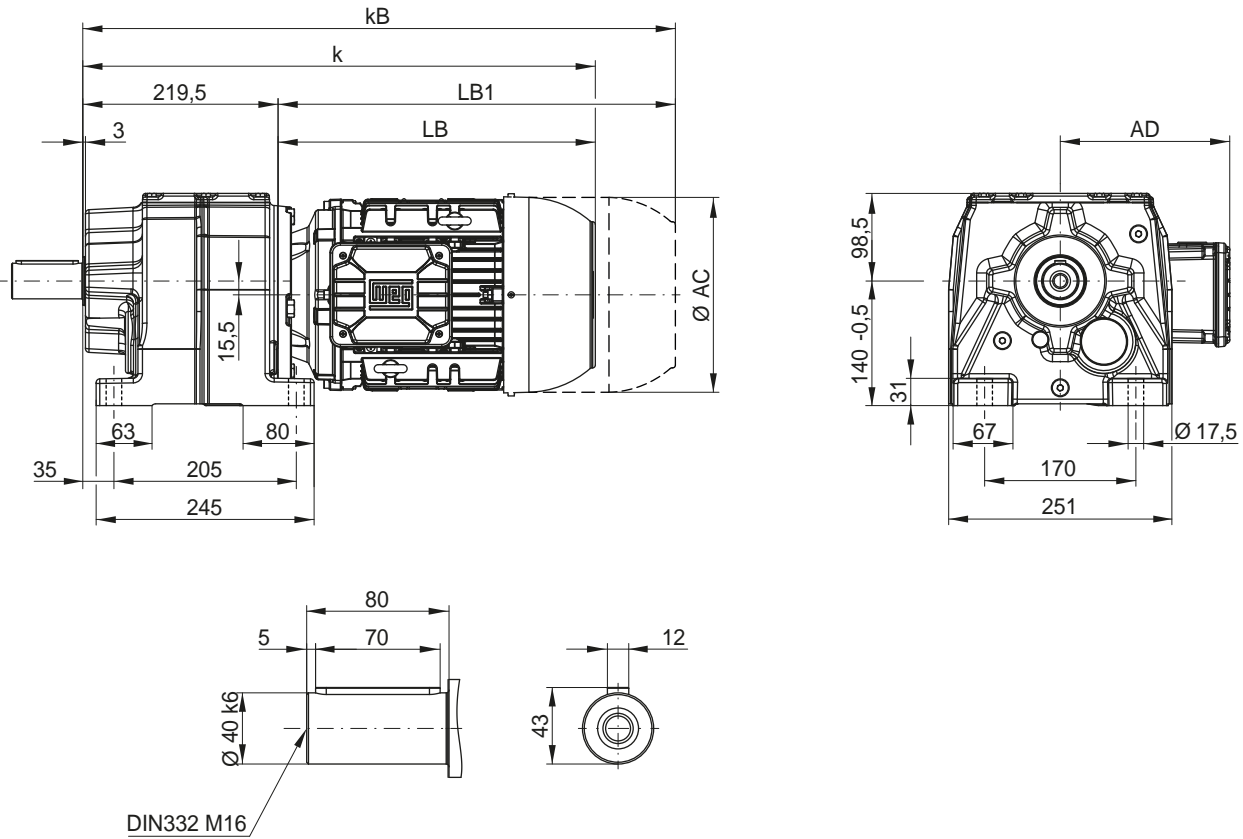
### CA06 - Foot mounted and B5 flange execution

mountable flange sizes on the housing:  $\varnothing 200$



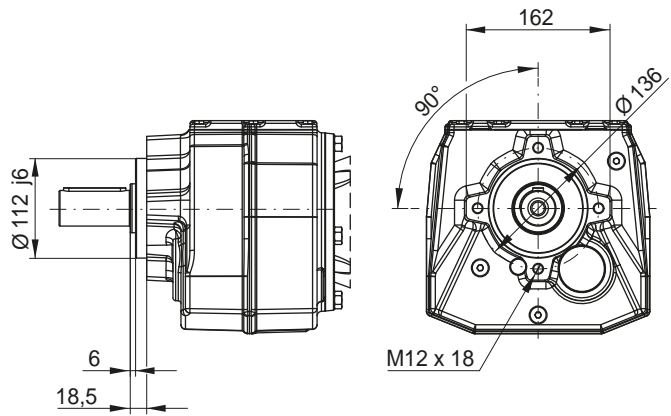
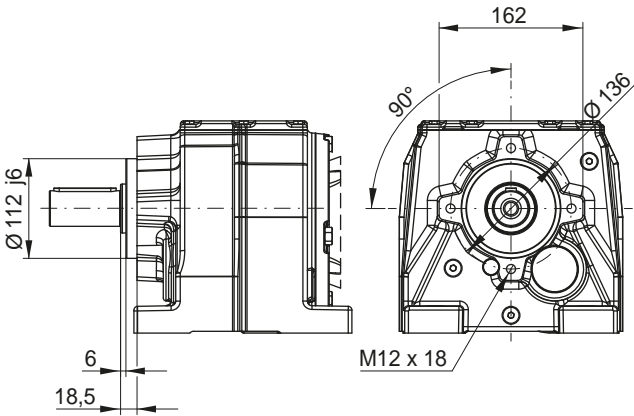
Dimensions in mm.

**CG07 - Foot mounted**



**CW07 - Foot mounted with B14 flange execution + centring and threaded hole**

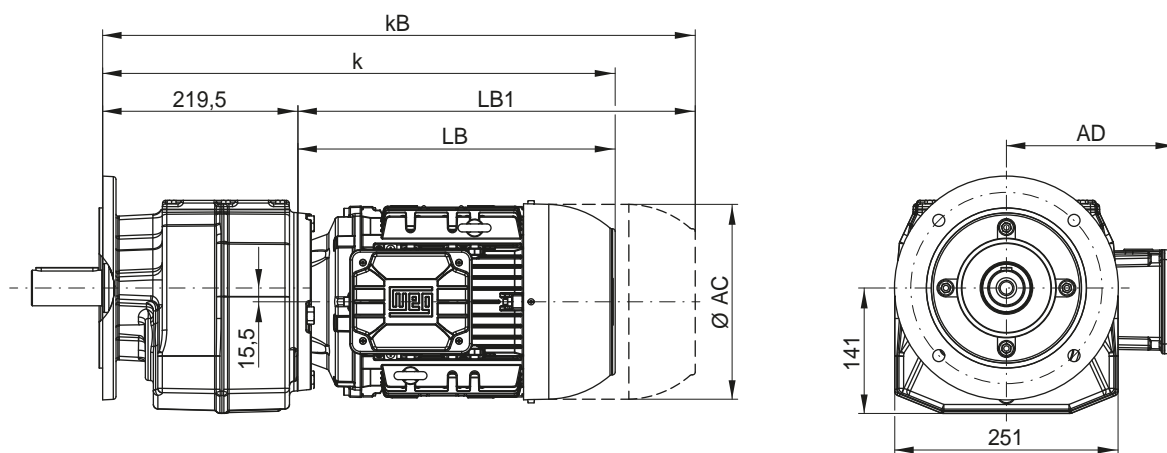
**CC07 - B14 flange execution + centring and threaded hole**



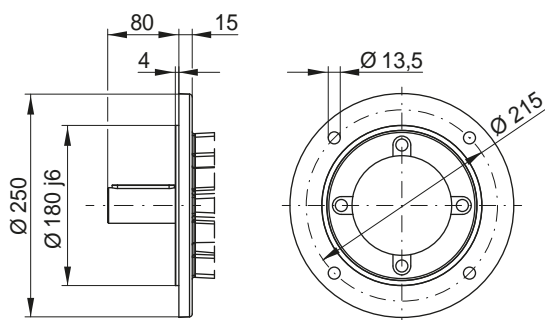
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	424	458	466	508	558	596	568	633	671	765	809
kB	468	507	524	581	642	680	655	751	789	889	933
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

Motor dimension sheets see page 380; Gear unit size C07 corresponds to motor flange FR-200.  
Description of motor lengths LB and LB1 see page 384

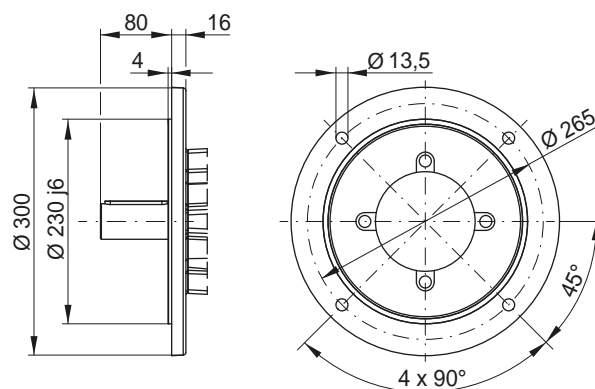
### CF07 - Flange execution



### Flange $\varnothing 250$

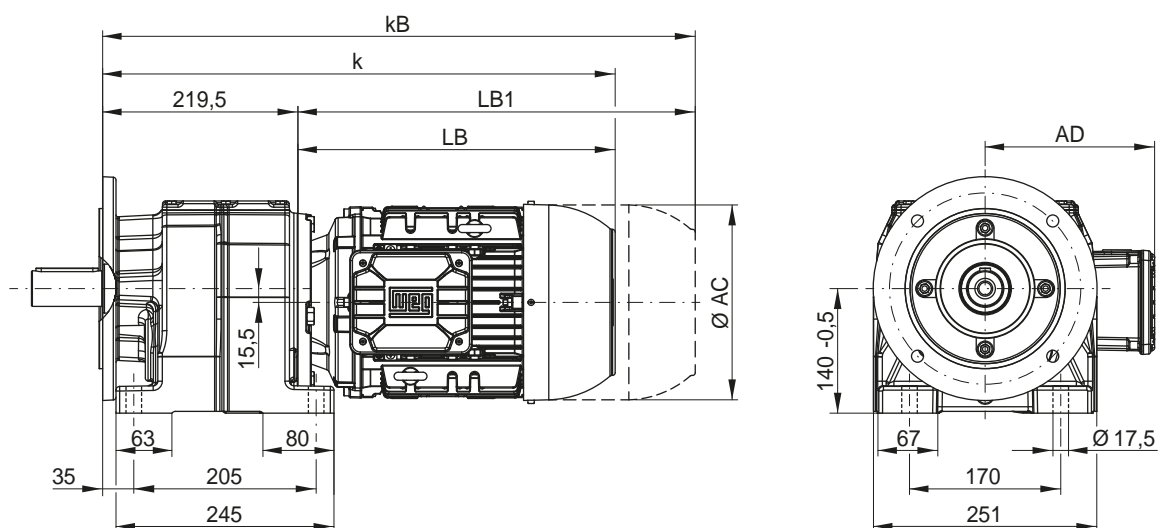


### Flange $\varnothing 300$



### CA07 - Foot mounted and B5 flange execution

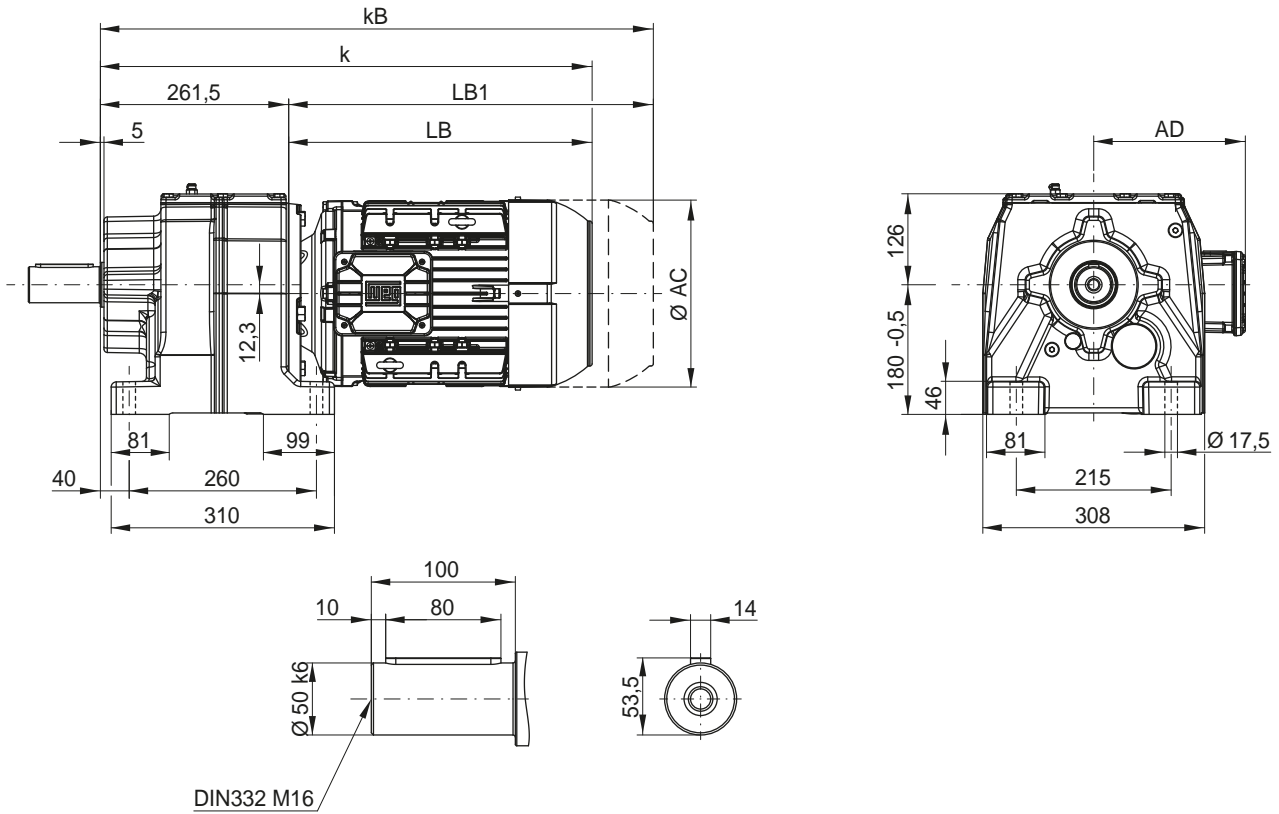
mountable flange sizes on the housing:  $\varnothing 250$



Dimensions in mm.

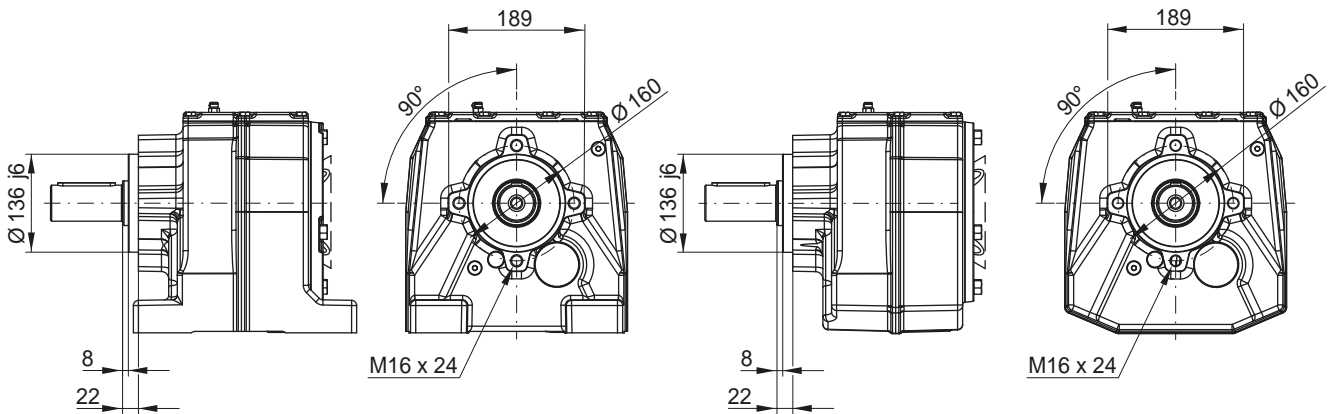


**CG08 - Foot mounted**



**CW08 - Foot mounted with B14 flange execution + centring and threaded hole**

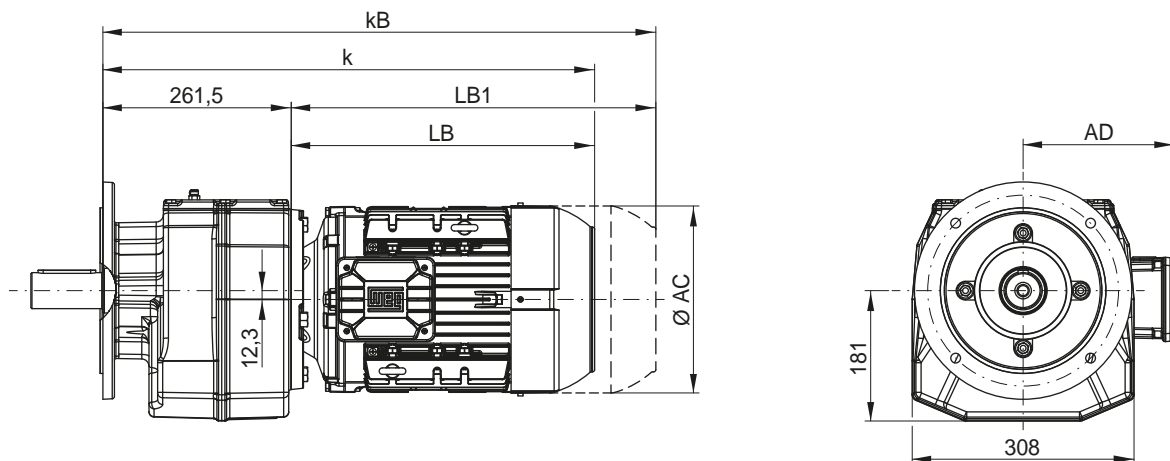
**CC08 - B14 flange execution + centring and threaded hole**



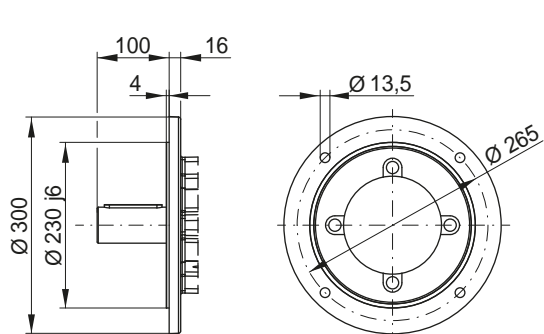
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	466	500	508	550	600	638	610	675	713	802	846	870	908
kB	510	549	566	623	684	722	697	793	831	926	970	988	1026
LB	204	238	246	288	338	376	348	413	451	540	584	608	646
LB1	248	287	304	361	422	460	435	531	569	664	708	726	764

Motor dimension sheets see page 380; Gear unit size C08 corresponds to motor flange FR-250.  
Description of motor lengths LB and LB1 see page 384

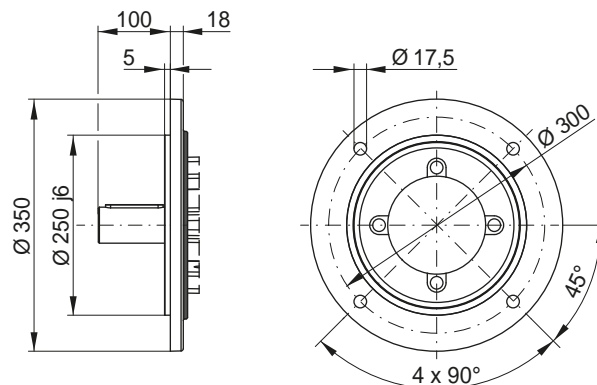
### CF08 - Flange execution



### Flange $\varnothing 300$

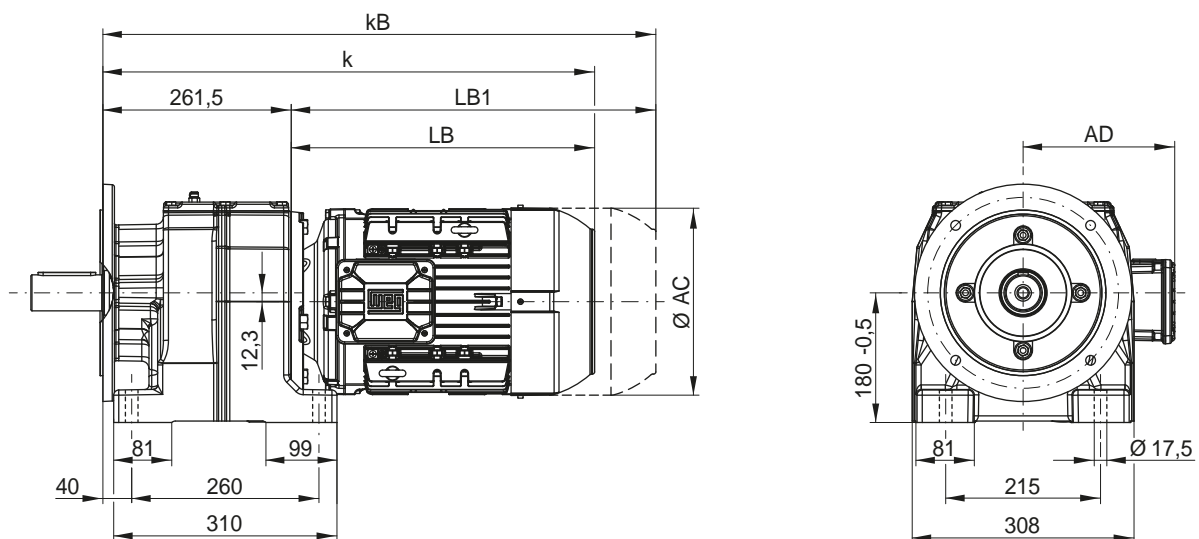


### Flange $\varnothing 350$



### CA08 - Foot mounted and B5 flange execution

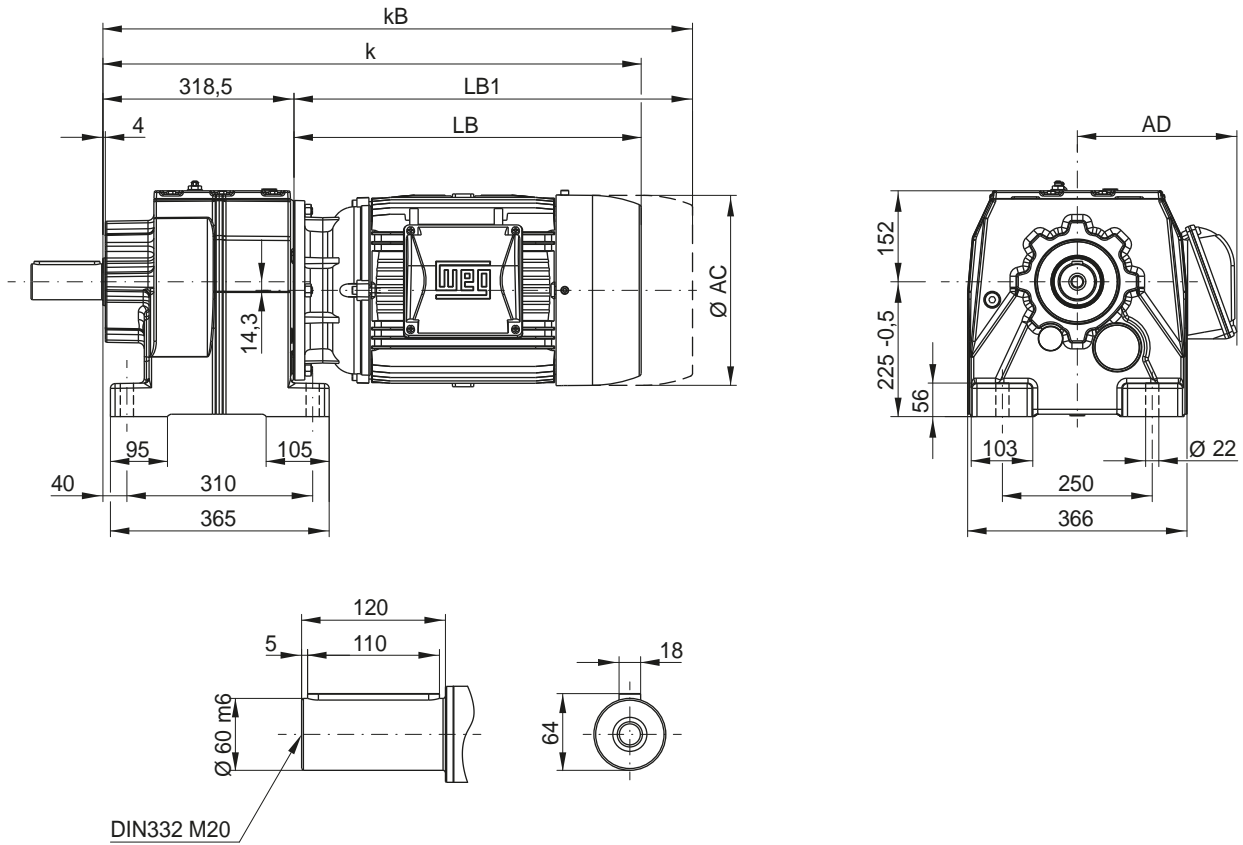
mountable flange sizes on the housing:  $\varnothing 300$



Dimensions in mm.

CG09 - Foot mounted

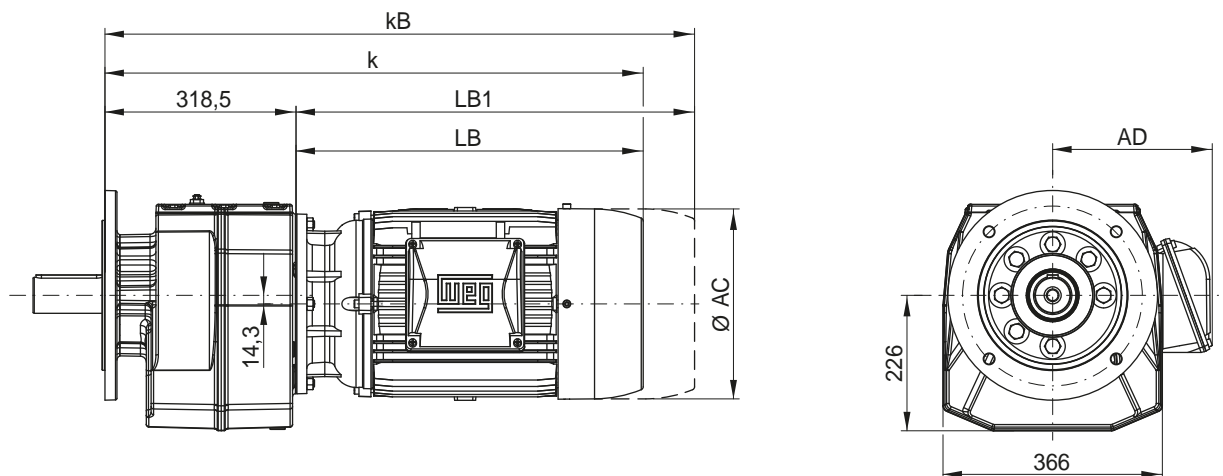
C



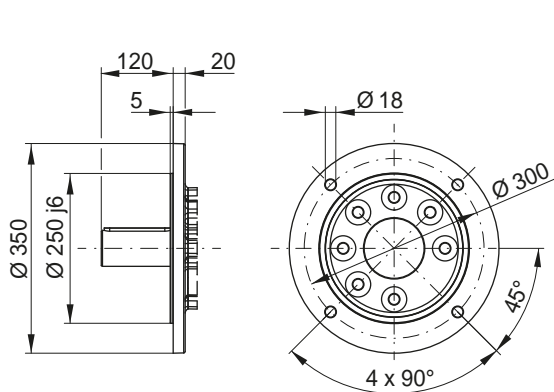
Motor fr. Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	523	557	565	607	657	695	667	732	770	854	898	922	960	1052
kB	567	606	623	680	741	779	754	850	888	978	1022	1040	1078	1178
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

Motor dimension sheets see page 380; Gear unit size C09 corresponds to motor flange FR-300.  
Description of motor lengths LB and LB1 see page 384

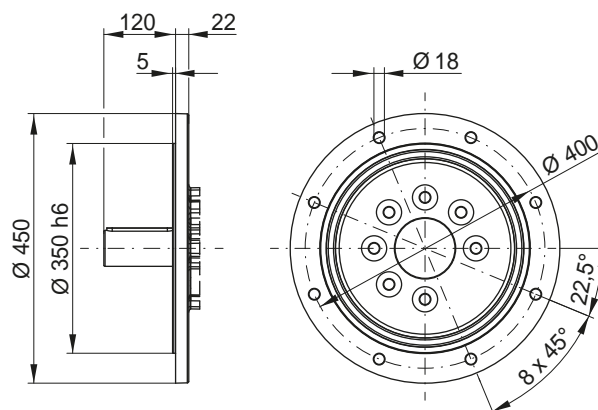
### CF09 - Flange execution



### Flange $\varnothing 350$

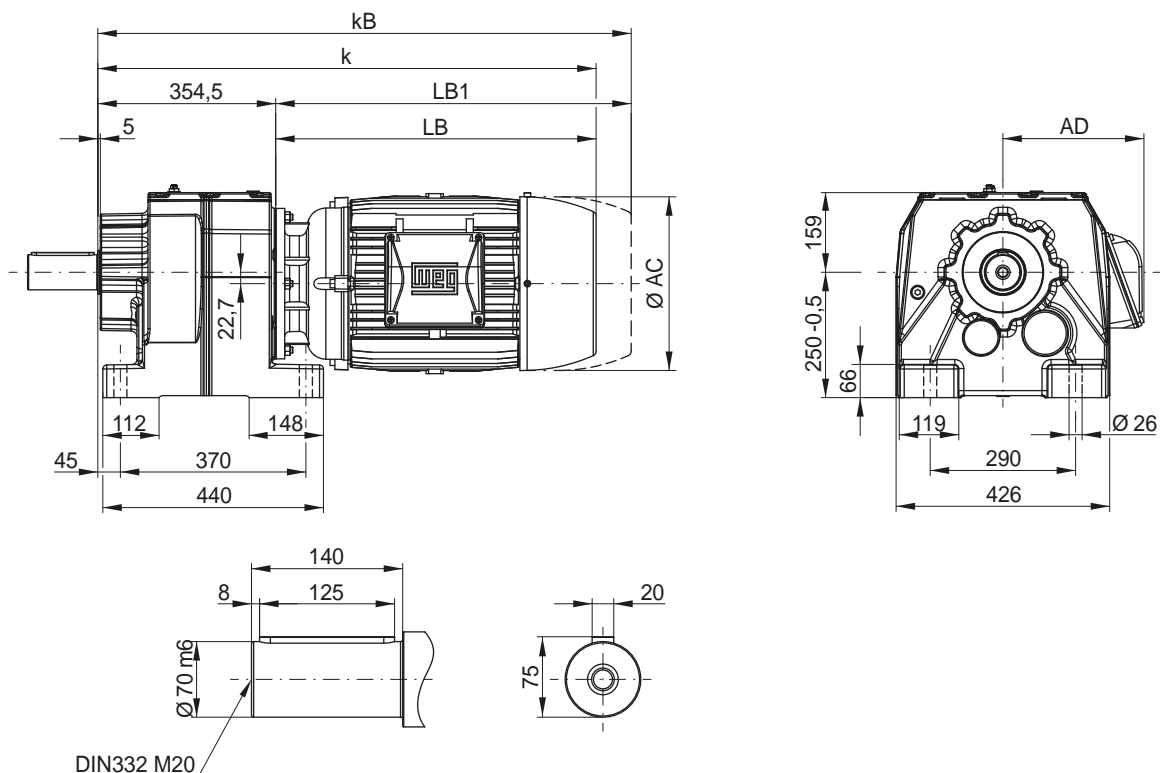


### Flange $\varnothing 450$



Dimensions in mm.

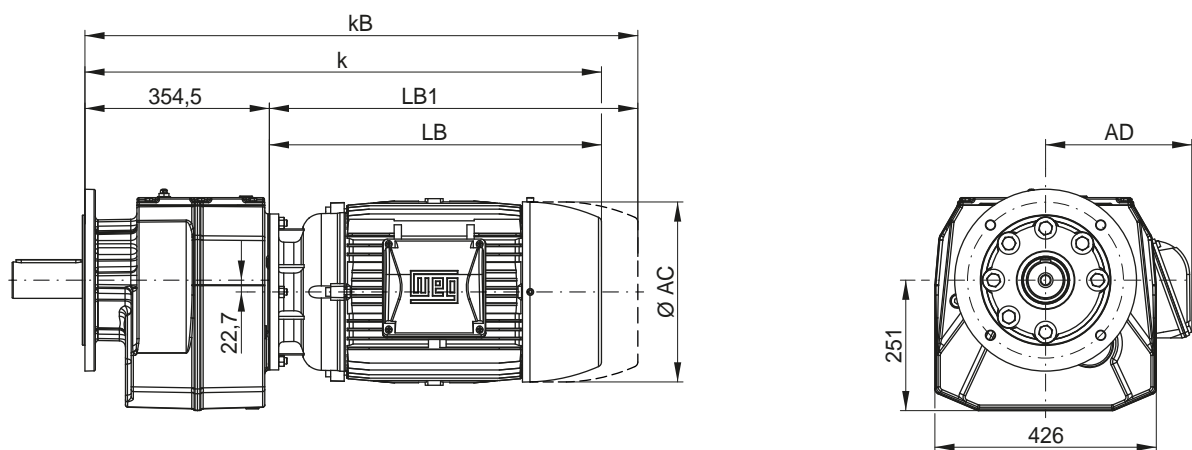
### CG10 - Foot mounted



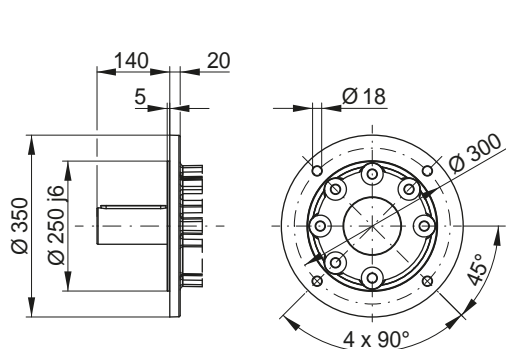
Motor fr. Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	559	593	601	643	693	731	703	768	806	890	934	958	996	1088
kB	603	642	659	716	777	815	790	886	924	1014	1058	1076	1114	1214
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

Motor dimension sheets see page 380; Gear unit size C10 corresponds to motor flange FR-300.  
Description of motor lengths LB and LB1 see page 384

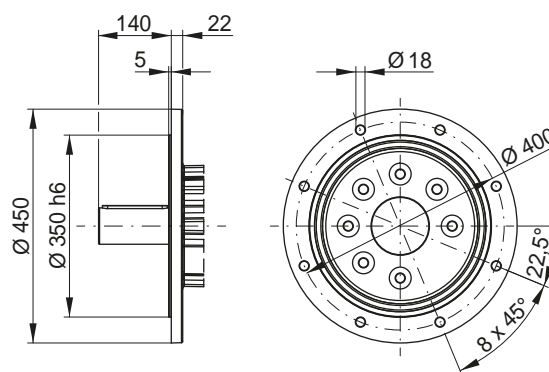
### CF10 - Flange execution



### Flange Ø 350



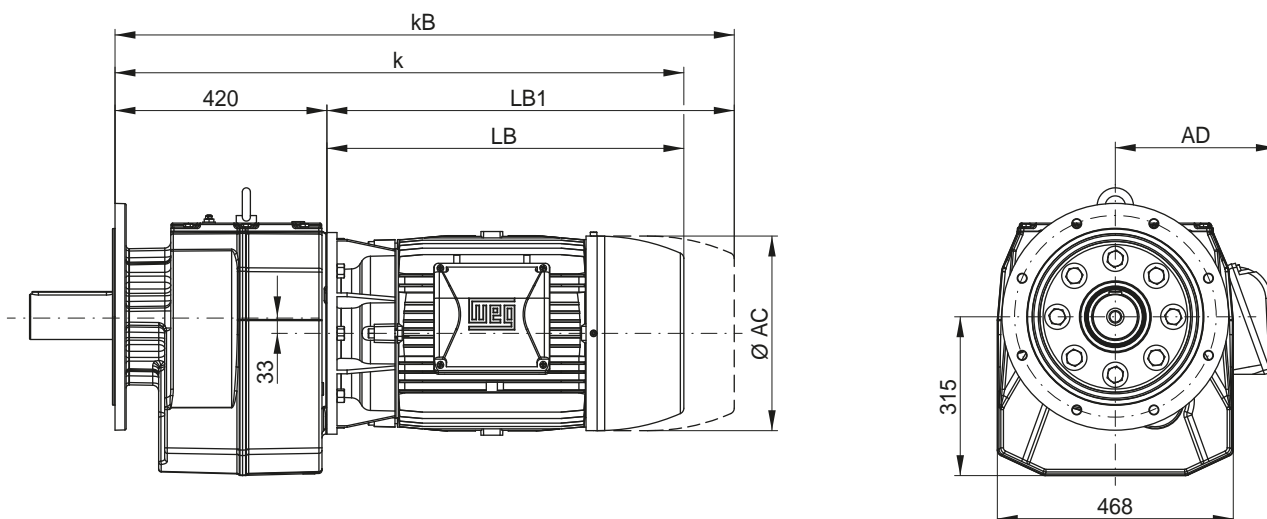
### Flange Ø 450



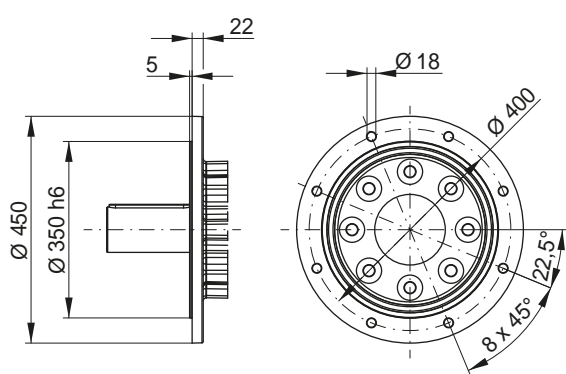
Dimensions in mm.



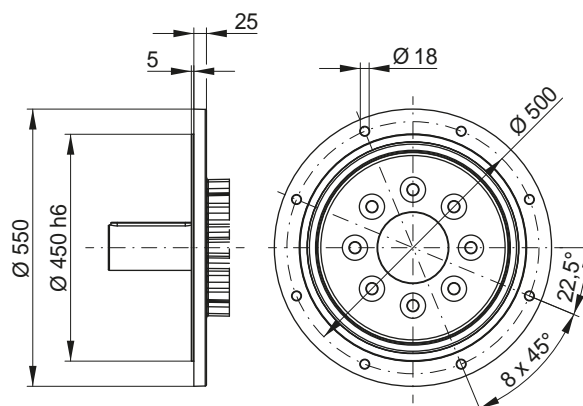
### CF13 - Flange execution



### Flange Ø 450



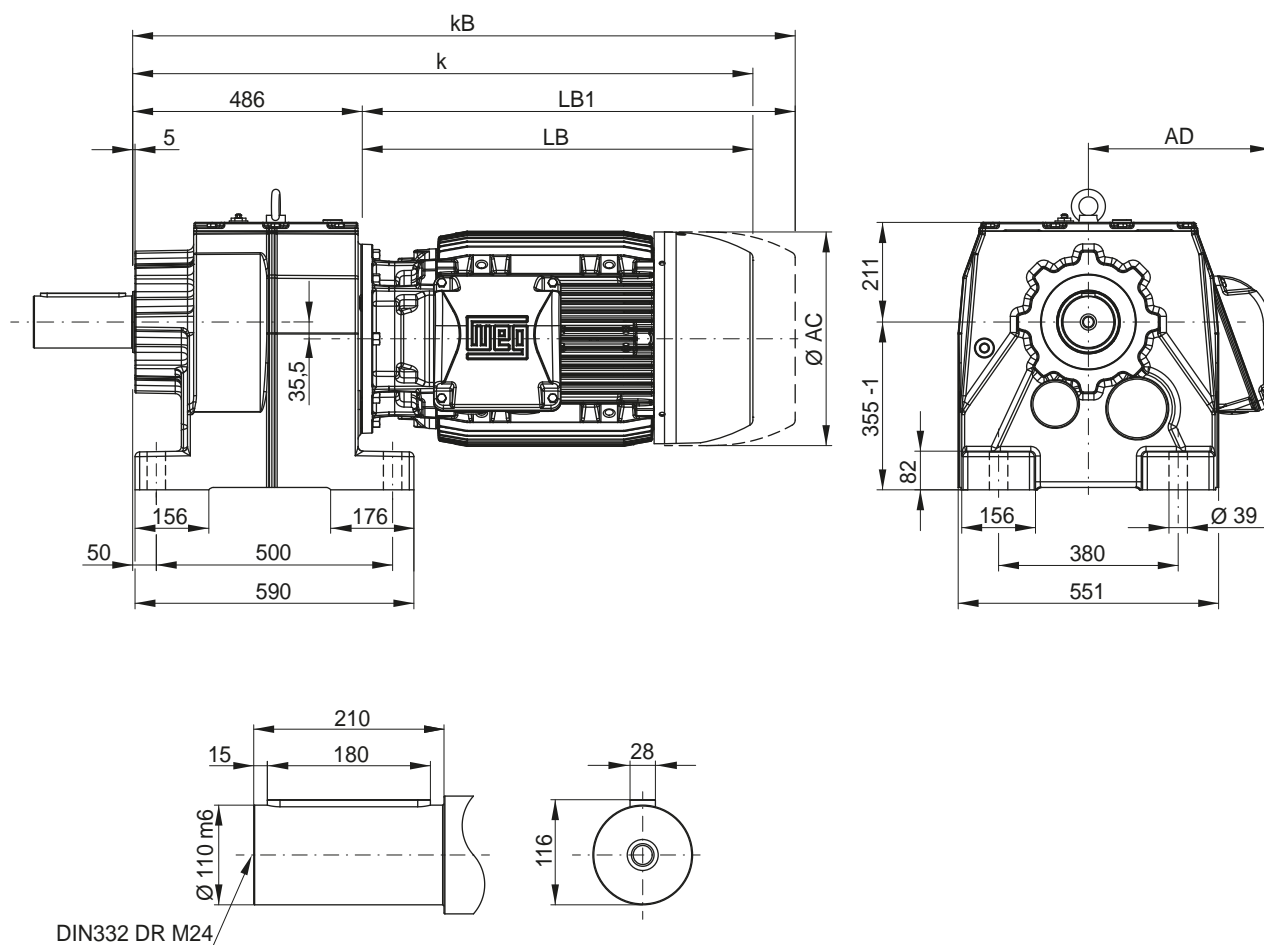
### Flange Ø 550



Dimensions in mm.



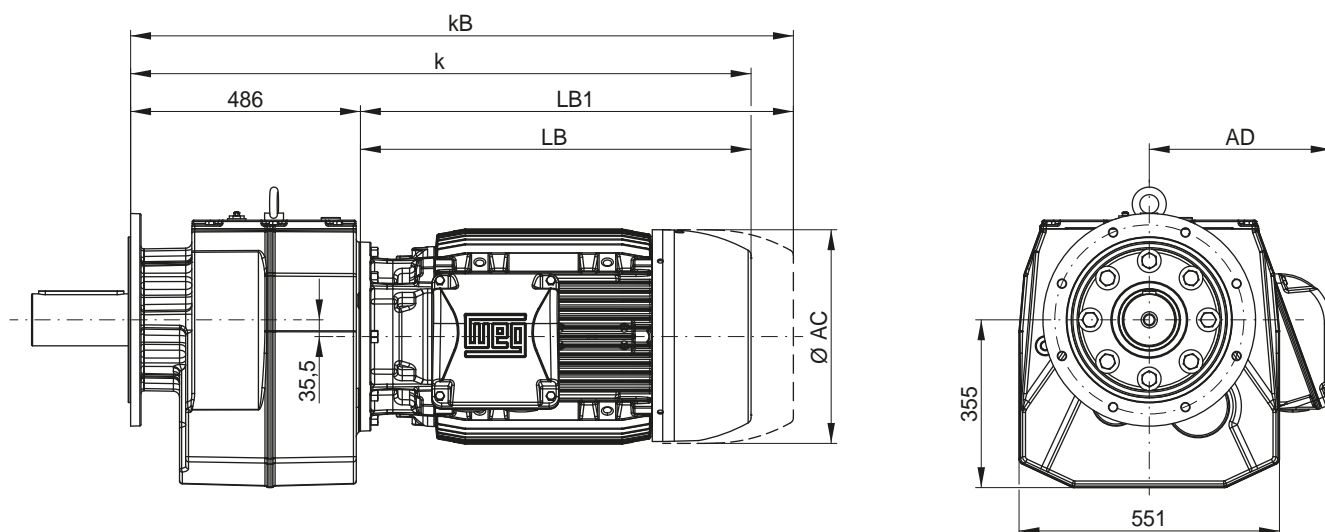
### CG14 - Foot mounted



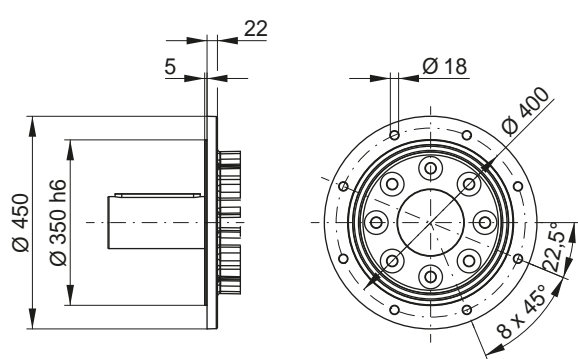
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	834	899	937	1008	1052	1076	1114	1206	1314
kB	-	-	-	-	-	-	921	1017	1055	1132	1176	1194	1232	1332	1432
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size C14 corresponds to motor flange FR-400.  
Description of motor lengths LB and LB1 see page 384

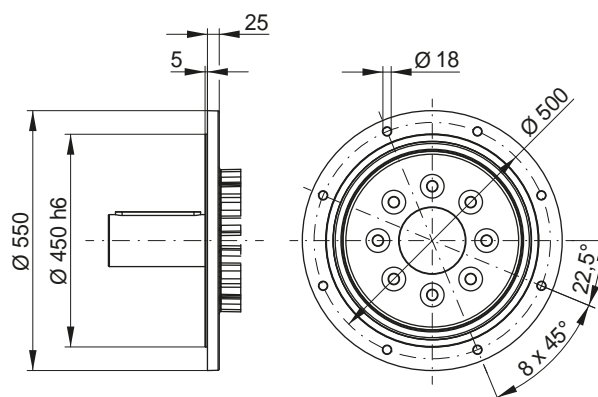
### CF14 - Flange execution



### Flange $\text{Ø 450}$

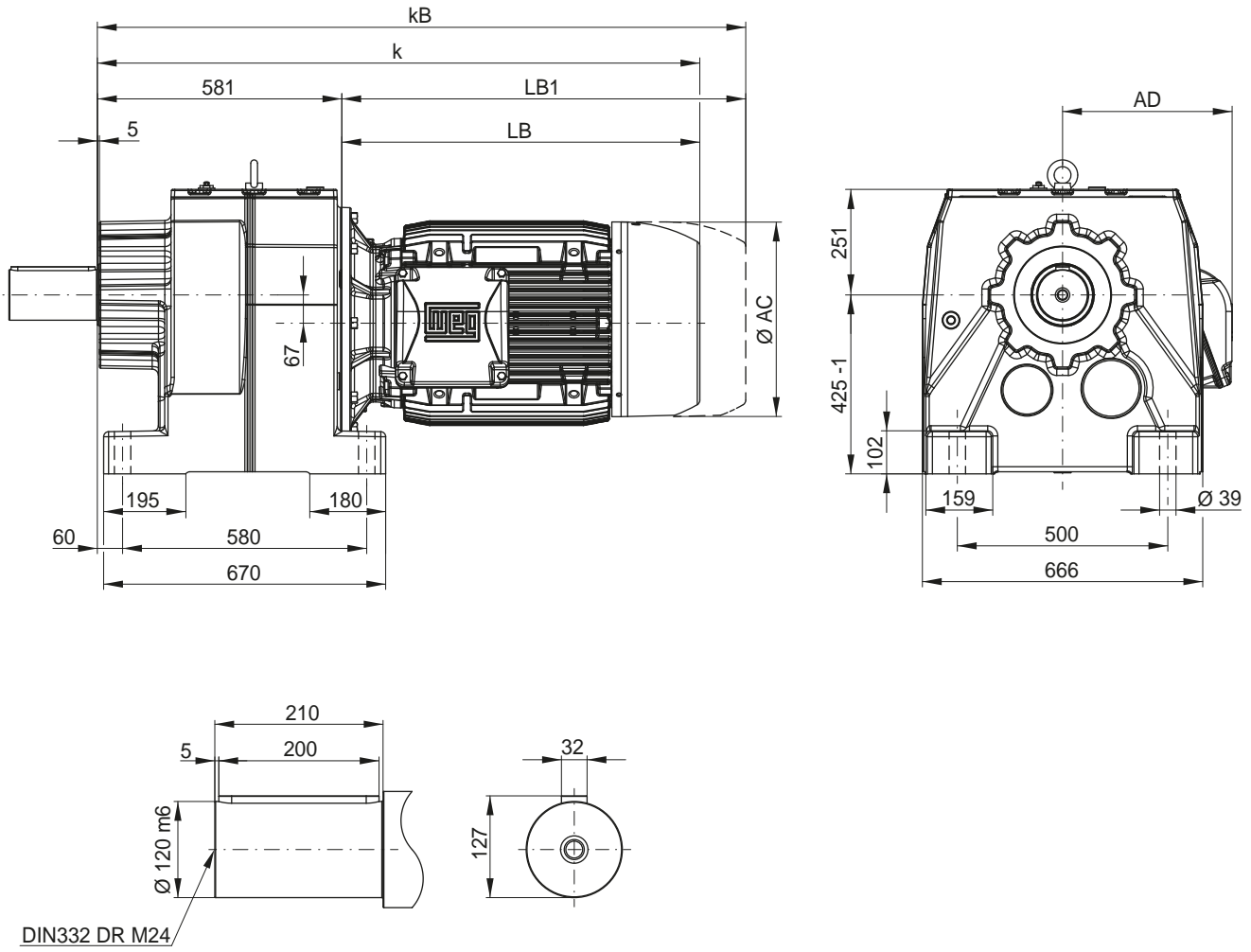


### Flange $\text{Ø 550}$



Dimensions in mm.

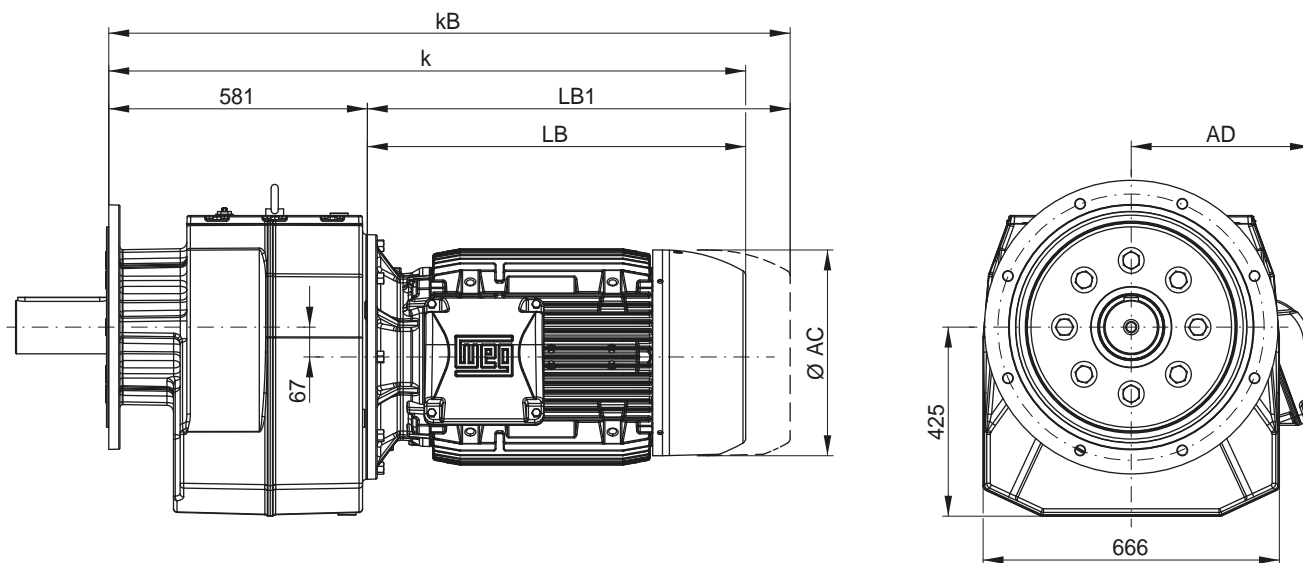
CG16 - Foot mounted



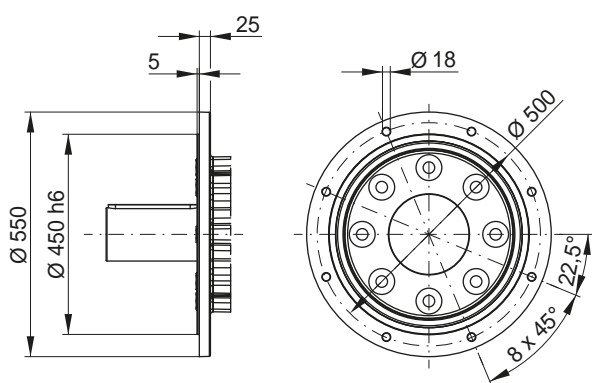
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	1087	1131	1155	1193	1285	1393	1432
kB	-	-	-	-	-	-	-	-	-	1211	1255	1273	1311	1411	1511	1550
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

Motor dimension sheets see page 380; Gear unit size C16 corresponds to motor flange FR-550.  
Description of motor lengths LB and LB1 see page 384

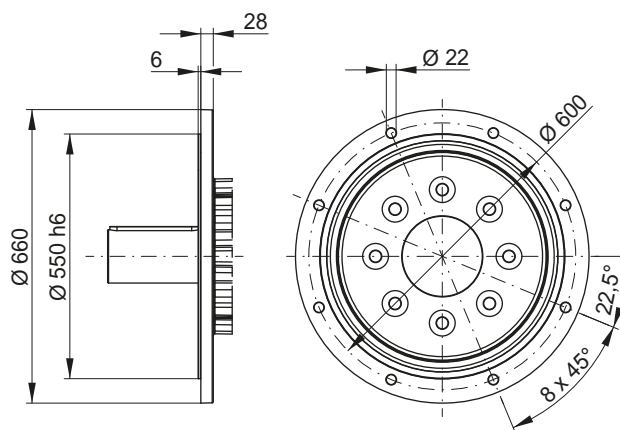
**CF16 - Flange execution**



**Flange  $\varnothing 550$**



**Flange  $\varnothing 660$**



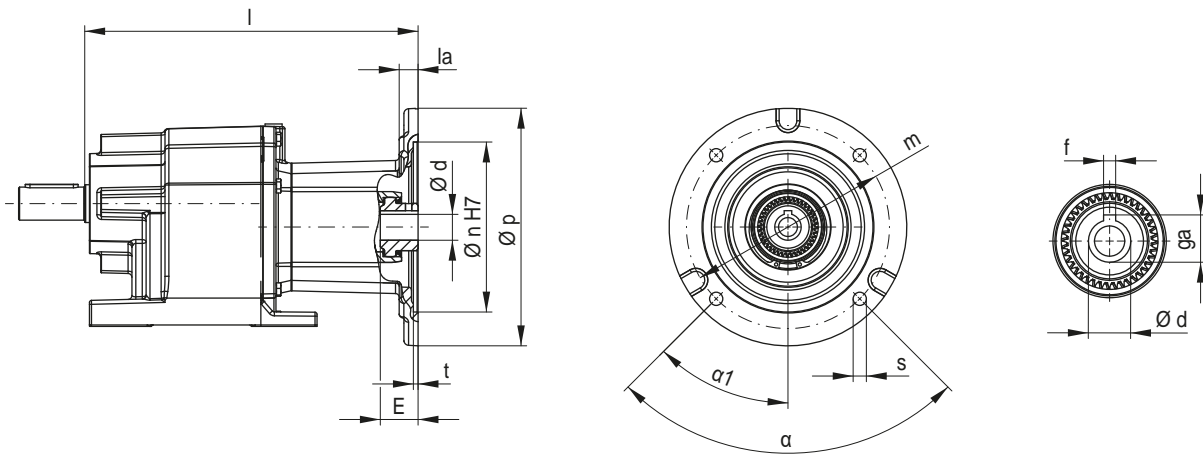
Dimensions in mm.



## Dimension sheets Input types



## IEC Adapter I63 to I280



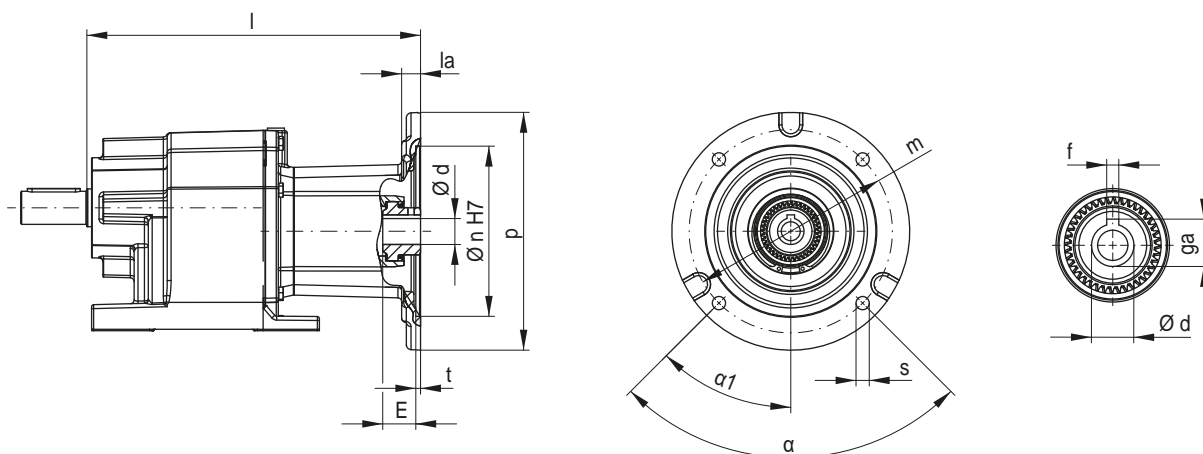
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280		
p	160	160	200	200	250	250	300	350	350	400	400	550	550		
n	95	110	130	130	180	180	230	250	250	300	350	450	450		
la	22.5	10	13	13	15	20	15	35	35	20	20	20	20		
m	115	130	165	165	215	215	265	300	300	350	400	500	500		
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5	5	5		
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19	19	19		
α	90	90	90	90	90	90	90	90	90	90	45	45	45		
α <sub>1</sub>	35	45	45	45	45	45	45	45	45	45	45	45	45		
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E <sup>1)</sup>	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	146

<sup>1)</sup> Maximum motor shaft length for motors with key

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
		l											
C00	150.5	150.5	178.5	-	-	-	-	-	-	-	-	-	-
C01	163	163	191	191	-	-	-	-	-	-	-	-	-
C03	190.5	190.5	218.5	218.5	249.5	-	-	-	-	-	-	-	-
C05	226	226	254	254	285	338	349	-	-	-	-	-	-
C06	241	241	269	269	300	353	364	-	-	-	-	-	-
C07	252.5	252.5	280.5	280.5	311.5	364.5	375.5	461.5	-	-	-	-	-
C08	293.5	293.5	321.5	321.5	352.5	405.5	416.5	498.5	498.5	-	-	-	-
C09	343	343	371	371	402	455	466	550.5	550.5	579	-	-	-
C10	379	379	407	407	438	491	502	586.5	586.5	615	-	-	-
C13	-	-	-	-	-	545.5	556.5	638.5	638.5	667	697	-	-
C14	-	-	-	-	-	611.5	622.5	704.5	704.5	733	763	852	-
C16	-	-	-	-	-	-	-	783.5	783.5	812	842	931	931

Dimensions in mm.

### NEMA Adapter N56 to N364

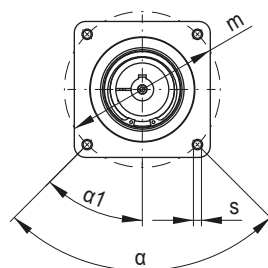
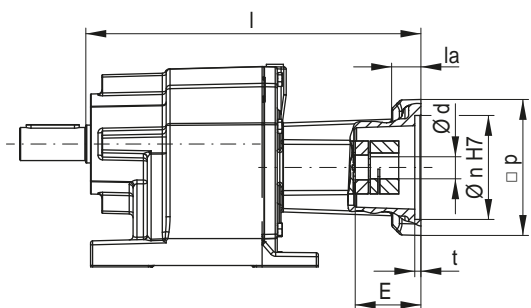


Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	19	19
$\alpha$	90	90	90	90	90	90	90	90	90
$\alpha_1$	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5

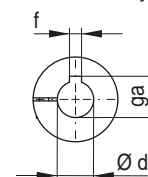
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
C00	178.5	178.5	-	-	-	-	-	-	-
C01	191	191	-	-	-	-	-	-	-
C03	218.5	218.5	249.5	-	-	-	-	-	-
C05	254	254	285	338	349	-	-	-	-
C06	269	269	300	353	364	-	-	-	-
C07	280.5	280.5	311.5	364.5	375.5	461.5	-	-	-
C08	321.5	321.5	352.5	405.5	416.5	498.5	501.5	-	-
C09	371	371	402	455	466	550.5	553.5	601	-
C10	407	407	438	491	502	586.5	589.5	637	-
C13	-	-	-	545.5	556.5	638.5	641.5	689	704.5
C14	-	-	-	611.5	622.5	704.5	707.5	755	770.5
C16	-	-	-	-	-	783.5	786.5	849.5	849.5



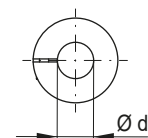
## SERVO Adapter S92 to S190



Shaft with key



Smooth shaft



Type	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190						
p	101	144	144	144	144	144	144	197	197	197						
n	80	95	95	110	110	110	130	114.3	130	180						
la	17.5	31	31	31	31	31	31	35	32	38						
m	100	115	130	130	145	165	165	200	215	215						
t	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5						
s	M6x12	M8x16	M8x16	M8x16	M8x16	M8x16	M8x16	13.5	15	15						
α	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°						
α <sub>1</sub>	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°						
d <sup>1)</sup>	14	16	19	19	19	22	24	28	24	24	32	35	32	38	38	
f	5	5	6	6	6	8	8	8	8	8	10	10	10	10	10	
ga	16.3	18.3	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	41.3
E <sup>2)</sup>	47.5	69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5
E <sup>3)</sup>	47.5	69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5

<sup>1)</sup> Other shaft diameters on request

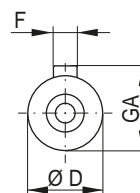
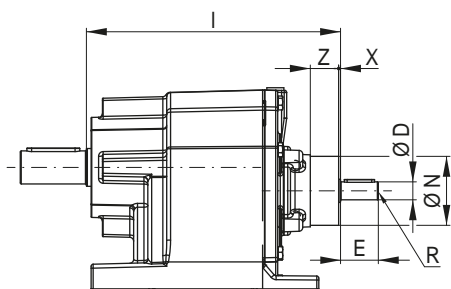
<sup>2)</sup> Maximum motor shaft length for motors with key

<sup>3)</sup> Maximum motor shaft length for motors with smooth shaft

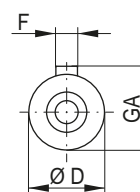
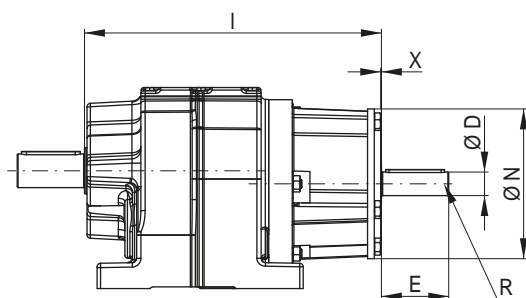
Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	I									
C00	216	264	264	264	264	264	264	-	-	-
C01	228.5	276.5	276.5	276.5	276.5	276.5	276.5	-	-	-
C03	256	304	304	304	304	304	304	-	-	-
C05	291.5	339.5	339.5	339.5	339.5	339.5	339.5	410	404	431
C06	306.5	354.5	354.5	354.5	354.5	354.5	354.5	425	419	446
C07	318	366	366	366	366	366	366	436.5	430.5	457.5
C08	359	407	407	407	407	407	407	477.5	471.5	498.5
C09	408.5	456.5	456.5	456.5	456.5	456.5	456.5	527	521	548
C10	444.5	492.5	492.5	492.5	492.5	492.5	492.5	563	557	584
C13	-	-	-	-	-	-	-	617.5	611.5	638.5
C14	-	-	-	-	-	-	-	683.5	677.5	704.5
C16	-	-	-	-	-	-	-	-	-	-

Dimensions in mm.

### Input Unit U2, U3



### Input Unit U5, U6, U7

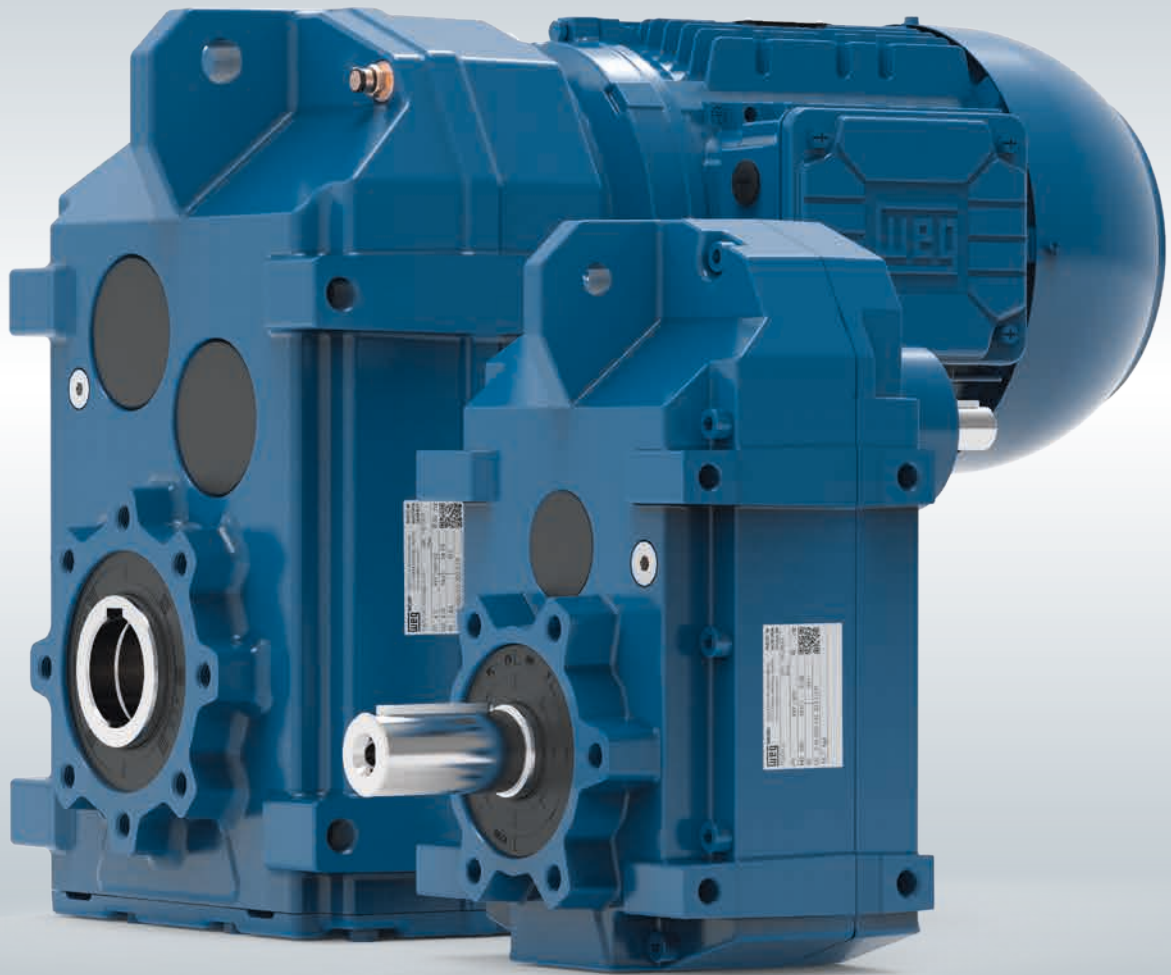


Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	I				
C00	178.5	-	-	-	-
C01	191	-	-	-	-
C03	218.5	-	-	-	-
C05	254	286	-	-	-
C06	269	301	-	-	-
C07	280.5	312.5	355	-	-
C08	321.5	353.5	392	-	-
C09	371	403	444	466	-
C10	407	439	480	502	-
C13	-	493.5	532	554	623
C14	-	559.5	598	620	689
C16	-	-	677	699	768





Parallel shaft gear units and  
Parallel shaft geared motors F

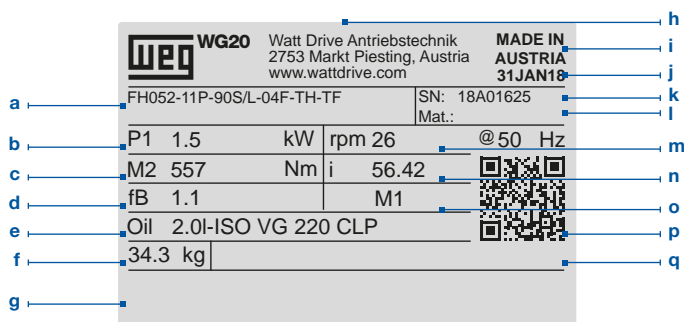


## Technical Data

Size	F02	F03	F04	F05	F06	F07	F08	F09	F10	F12	F15
Power [kW]	0.12 - 1.5	0.12 - 3	0.12 - 3	0.12 - 9.2	0.12 - 15	0.12 - 15	0.55 - 22	0.55 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]	130	220	400	600	820	1500	3000	4500	8000	13000	18000
Ratio	3.93-97.85	3.85-70.17	4.42-422.98	5.17-487.67	4.41-412.64	4.29-305.42	4.09-358.52	4.16-288.50	4.38-246.57	4.64-220.67	5.84-259.81
Number of stages	2	2	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3
Housing material	aluminium					cast iron					
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2									
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6									
	Material	standard: C45E (1.1191) / stainless steel on request									
Hollow shaft	Type	with key acc. to DIN 6885.1									
	Tolerance	H7									
	Material	standard: C45E (1.1191) / stainless steel on request									
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347									
	Material	cast iron									
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7									
	Material	16MnCr5 (1.7131) case hardened – minimum 58HRC									
Shaft seals	Type	type AS acc. to DIN 3760									
	Material	standard NBR / special FKM									
Bearing	standard / reinforced										
Lubricants	Type	standard CLP 220 / special CLP HC 220									
	Quantity	depending on mounting position									
Axle height	acc. to DIN 747: ≤ 50: -0.4; > 50 to ≤ 250: -0.5; > 250: -1										

## General information

### 1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		

## 2. Type code

FH073-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

FH073-EX-I112

1 2 3 4 5 11


<b>1</b>	Type:	F = Parallel shaft gear unit																																
<b>2</b>	Design:	B = Output shaft on both sides D = Hollow shaft with shrink disc F = B5 flange execution with output shaft H = Hollow shaft O = B5 flange execution with hollow shaft P = B5 flange execution with hollow shaft and shrink disc S = Output shaft T = Hollow shaft with rubber buffer U = Hollow shaft with shrink disc and rubber buffer																																
<b>3</b>	Size:	<table border="0"> <tr> <td>02</td><td>05</td><td>08</td><td>12</td></tr> <tr> <td>03</td><td>06</td><td>09</td><td>15</td></tr> <tr> <td>04</td><td>07</td><td>10</td><td></td></tr> </table>	02	05	08	12	03	06	09	15	04	07	10																					
02	05	08	12																															
03	06	09	15																															
04	07	10																																
<b>4</b>	Number of stages:	2 = 2 gear stages 3 = 3 gear stages																																
<b>5</b>	ATEX execution:	when operated in explosive atmospheres, see page 14																																
<b>6</b>	Motor type:	11N = Integral motor aluminium IE1 11P = Integral motor aluminium IE3 22P = Integral motor cast iron IE3																																
<b>7</b>	Motor frame size:	<table border="0"> <tr> <td>63</td><td>90S/L</td><td>112M</td><td>L132M</td><td>180M</td><td>225S/M</td></tr> <tr> <td>71</td><td>100L</td><td>132S</td><td>160M</td><td>180L</td><td>250S/M</td></tr> <tr> <td>80</td><td>L100L</td><td>132M</td><td>160L</td><td>200L</td><td></td></tr> </table>	63	90S/L	112M	L132M	180M	225S/M	71	100L	132S	160M	180L	250S/M	80	L100L	132M	160L	200L															
63	90S/L	112M	L132M	180M	225S/M																													
71	100L	132S	160M	180L	250S/M																													
80	L100L	132M	160L	200L																														
<b>8</b>	Number of poles:	04 = 4 poles 06 = 6 poles																																
<b>9</b>	Power indicator:	D E F G																																
<b>10</b>	Motor modules:	see from page 385																																
<b>11</b>	Adapters, Input unit:	<table border="0"> <thead> <tr> <th>IEC Adapter</th><th>NEMA Adapter</th><th>SERVO Adapter</th><th>Input unit</th></tr> </thead> <tbody> <tr> <td>I63 I160</td><td>N56 N254</td><td>S92 S141</td><td>U2</td></tr> <tr> <td>I71 I180</td><td>N143 N284</td><td>S105 S142</td><td>U3</td></tr> <tr> <td>I80 I200</td><td>N182 N324</td><td>S114 S180</td><td>U5</td></tr> <tr> <td>I90 I225</td><td>N184 N364</td><td>S115 S189</td><td>U6</td></tr> <tr> <td>I100 I250</td><td>N213</td><td>S130 S190</td><td>U7</td></tr> <tr> <td>I112 I280</td><td></td><td></td><td></td></tr> <tr> <td>I132</td><td></td><td></td><td></td></tr> </tbody> </table>	IEC Adapter	NEMA Adapter	SERVO Adapter	Input unit	I63 I160	N56 N254	S92 S141	U2	I71 I180	N143 N284	S105 S142	U3	I80 I200	N182 N324	S114 S180	U5	I90 I225	N184 N364	S115 S189	U6	I100 I250	N213	S130 S190	U7	I112 I280				I132			
IEC Adapter	NEMA Adapter	SERVO Adapter	Input unit																															
I63 I160	N56 N254	S92 S141	U2																															
I71 I180	N143 N284	S105 S142	U3																															
I80 I200	N182 N324	S114 S180	U5																															
I90 I225	N184 N364	S115 S189	U6																															
I100 I250	N213	S130 S190	U7																															
I112 I280																																		
I132																																		

Type code Motor see page 361


### 3. Range

Size	F02	F03	F04	F05	F06	F07	F08	F09	F10	F12	F15
Housing material	Aluminium					Cast iron					

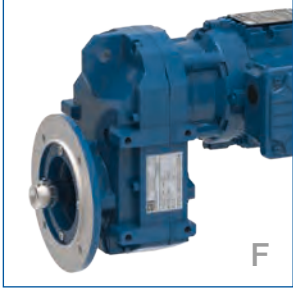
### 4. Design




**B**




**D**




**F**




**H**




**O**




**P**



**S**



**T**



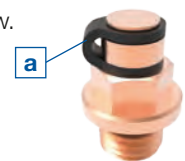
**U**

<b>B</b>	Output shaft on both sides	<b>P</b>	B5 flange execution with hollow shaft and shrink disc
<b>D</b>	Hollow shaft with shrink disc	<b>S</b>	Output shaft
<b>F</b>	B5 flange execution with output shaft	<b>T</b>	Hollow shaft with rubber buffer
<b>H</b>	Hollow shaft	<b>U</b>	Hollow shaft with shrink disc and rubber buffer
<b>O</b>	B5 flange execution with hollow shaft		

### 5. Venting the gear unit






The parallel shaft gear unit sizes F02 to F05 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.

By default, the parallel shaft gear units from F06 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 147)



### 6. Overhung and axial loads

The overhung loads ( $F_{RN}$ ) indicated in the respective selection tables apply to gear units with the force acting on the shaft center ( $x=l/2$ ). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor ( $f_z$ ) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
				
$f_z=1.1$ ( $z \leq 17$ )	$f_z=1.2$ ( $z \leq 13$ )	$f_z=1.1$ ( $z > 13$ )	$f_z=1.8$	$f_z=2.5$

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

**Q1**  $F_{zL} = F_{rN} \cdot a_1$

**Q2**  $F_{zW} = F_W \cdot a_2$

**Q3**  $F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$

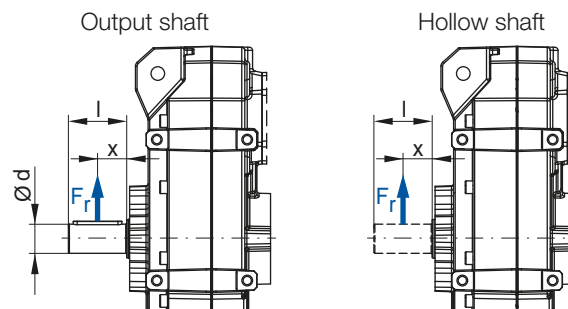
**Q4**  $F_{Qvorh} \leq F_{zL}$   
 $F_{Qvorh} \leq F_{zW}$

Variable	Unit	Description
a1		Load action factor - output shaft bearing from Table 1
a2		Load action factor - output shaft from Table 1
d0	[m]	Effective diameter of the transmission element
M2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
FzL	[N]	Permissible overhung load for output shaft bearings
FzW	[N]	Permissible overhung load for output shaft
FrN	[N]	Permissible overhung load from selection tables
FW	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
FQvorh	[N]	Existing overhung load at gear shaft
fz		Factor for transmission element
Mmax	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

		x / l						
		0	0.25	0.5	0.75	1	1.5	2
a1 → Equation Q1		1.39	1.18	1.00	0.85	0.73	0.52	0.38
a2 → Equation Q2		2.00	2.00	1.00	0.55	0.38	0.23	0.17

Table 1: Load action factors a1, a2



Intermediate values can be interpolated linearly. Combined load ( $F_r \neq 0$ ;  $F_a = 0$ ) on request.

Output shaft [mm]		Mmax at Fr = 0	Output torque M2 [Nm]														
			130	220	400	600	820	1500	3000	4500	8000	13000	18000				
Ø d	l		Fw [kN] at x/l = 0.5 → Equation Q2														
20	40	160	2.2														
25	50	300	5.5	4.5													
30	60	500	7.5	7.0	5.0												
35	70	800		11.0	10.0	8.3											
40	80	1170			13.0	12.0	10.7										
50	100	2250			24.0	24.0	23.0	21.0									
60	120	3740					31.0	30.0	23.0								
70	140	5850						45.0	41.0	36.0							
90	170	11700							72.0	70.0	61.0						
110	210	20800								106.0	103.0	93.0					
120	210	26700									129.0	121.0	109.0				

Table 2: Permissible overhung load - output shaft x = l/2

The axial loads ( $F_{aN}$ ) for the respective execution (output shaft or hollow shaft), given in the following selection tables, are valid at radial force  $F_{rN} = 0$ . If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.



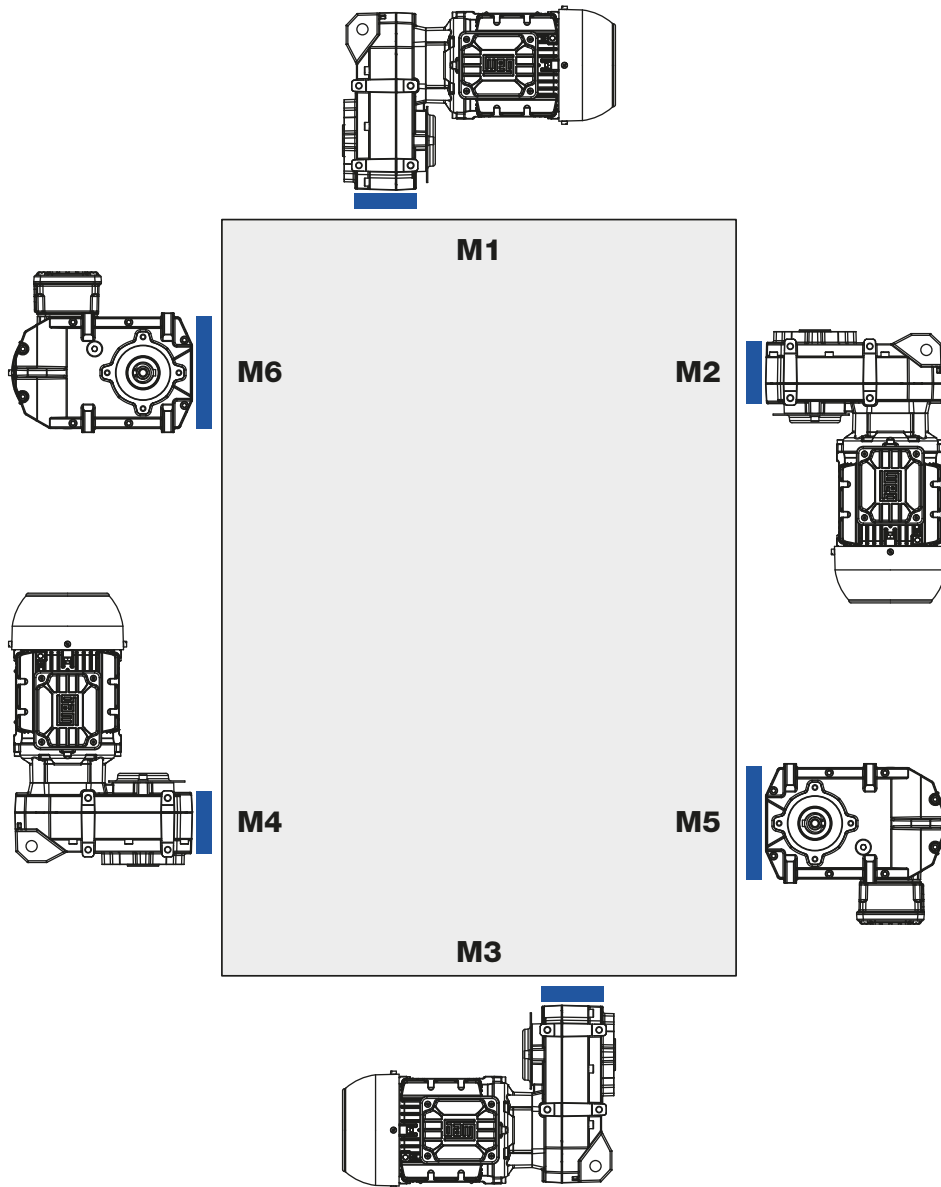
## 7. Mounting positions, Position of the terminal box and Cable entry

### Mounting positions - Sizes F02 to F05

Gear units F02 to F05 are not ventilated and supplied with lifetime lubrication.

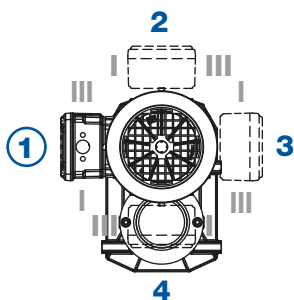
■ Reference area

F



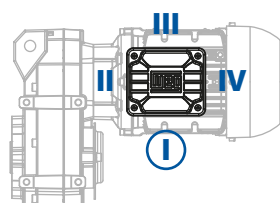
#### Position of the terminal box

Standard: Position 1

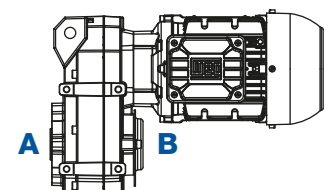


#### Cable entry

Standard: Position I



#### Side indication

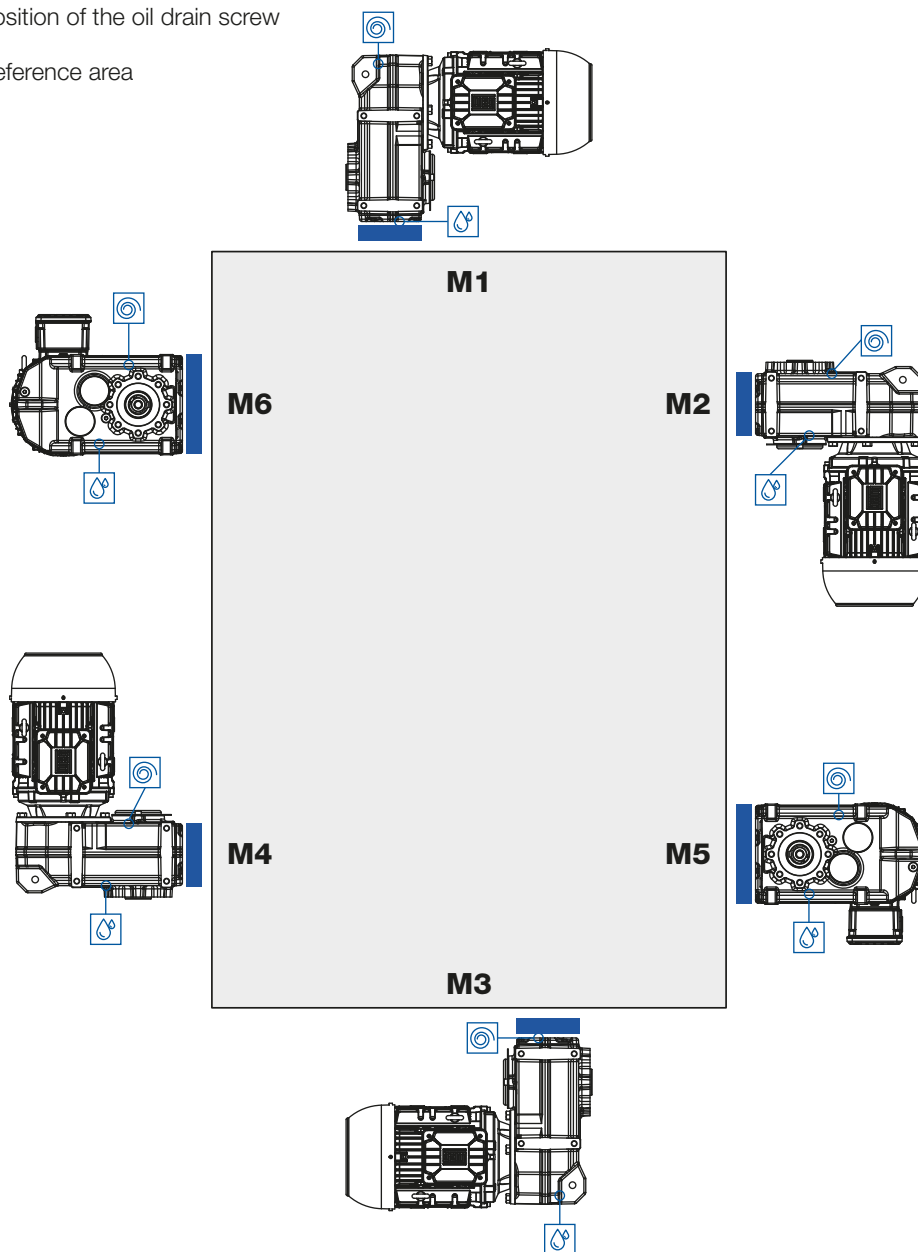


### Mounting positions - Sizes F06 to F15

Position of the venting screw

Position of the oil drain screw

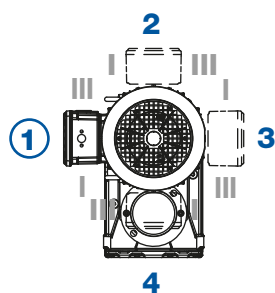
Reference area



F

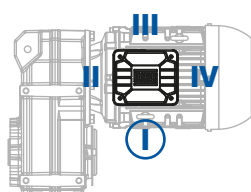
### Position of the terminal box

Standard: Position 1

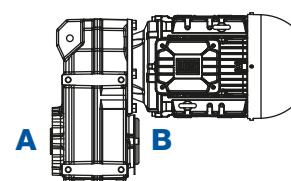


### Cable entry

Standard: Position I



### Side indication





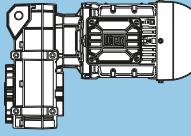
## Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20°C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up to 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

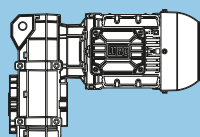
### Structure of the selection tables

1											2		
P <sub>N</sub> = 0.12 kW											IE1		
50 Hz		60 Hz		M <sub>2</sub> Nm	f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.12 kW		0.14 kW					Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	F <sub>rN</sub> kN	F <sub>aN</sub> kN				F <sub>rN</sub> kN	F <sub>aN</sub> kN					
3	4	5	6	7	8	9	10	11	12	13	14		

- 1 Rated power of the motor
- 2 Given values are based on the respective efficiency class
- 3 Output speed at 50 Hz
- 4 Output speed at 60 Hz
- 5 Output torque
- 6 Service factor
- 7 Total ratio
- 8 Permissible radial load - Execution with output shaft at midpoint of the shaft (standard bearing) at axial load=0
- 9 Permissible axial load - Execution with output shaft (standard bearing) at radial load=0
- 10 Permissible radial load - Execution with hollow shaft at x=l/2 (standard bearing) and axial load=0
- 11 Permissible axial load - Execution with hollow shaft (standard bearing) at radial load=0
- 12 Geared motor type
- 13 Weight
- 14 Page reference for dimension sheet

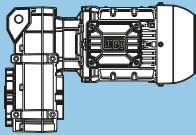
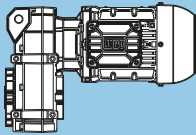
\*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

Increased rated power
1.2 x P <sub>N</sub>

P <sub>N</sub> = 0.12 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.12 kW		0.14 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
2.2	2.7	531	1.55	412.64	11.0	13.5	11.0	3.6	FH063-11N-63-06F	36	232
2.4	2.9	487	1.70	378.37	11.2	13.7	11.2	3.7			
2.6	3.3	435	1.90	337.44	11.5	13.8	11.5	3.9			
2.9	3.6	398	2.10	309.42	11.7	13.9	11.7	4.0			
3.3	4.1	343	2.40	266.44	11.9	14.1	11.9	4.2			
3.6	4.5	315	2.65	244.32	12.0	14.2	12.0	4.3			
3.3	4.1	344	2.40	412.64	11.9	14.1	11.9	4.2	FH063-11N-63-04E	36	232
3.6	4.5	315	2.65	378.37	12.0	14.2	12.0	4.3			
4.1	5.0	281	2.95	337.44	12.1	14.3	12.1	4.4			
1.8	2.3	628	1.00	487.67	5.6	9.3	5.6	3.4	FH053-11N-63-06F	20	230
2.0	2.5	574	1.05	445.56	6.5	10.2	6.5	3.5			
2.3	2.9	489	1.25	379.87	7.5	10.5	7.5	3.8			
2.6	3.2	447	1.35	347.07	7.9	10.6	7.9	3.9			
2.9	3.6	397	1.55	308.00	8.3	10.8	8.3	4.1			
3.2	3.9	362	1.65	281.41	8.6	10.9	8.6	4.2			
3.7	4.6	312	1.95	242.67	8.9	11.0	8.9	4.3			
4.0	5.0	285	2.10	221.71	9.0	11.1	9.0	4.4			
4.8	5.9	241	2.50	187.00	9.3	11.3	9.3	4.6			
5.2	6.5	220	2.75	170.85	9.3	11.3	9.3	4.6			
2.8	3.5	406	1.50	487.67	8.3	10.8	8.3	4.1	FH053-11N-63-04E	20	230
3.1	3.8	371	1.65	445.56	8.5	10.9	8.5	4.2			
3.6	4.5	317	1.90	379.87	8.9	11.0	8.9	4.3			
4.0	4.9	289	2.10	347.07	9.0	11.1	9.0	4.4			
4.5	5.5	257	2.35	308.00	9.2	11.2	9.2	4.5			
4.9	6.0	235	2.55	281.41	9.3	11.3	9.3	4.6			
5.7	7.0	202	3.00	242.67	9.4	11.4	9.4	4.7			
2.3	2.9	497	0.85	385.85	**	**	**	**	FH043-11N-63-06F	14	228
2.7	3.4	424	0.95	329.48	3.2	4.9	3.2	2.4			
3.0	3.7	387	1.05	300.55	4.1	6.8	4.1	2.5			
3.3	4.1	344	1.20	267.14	4.9	8.3	4.9	2.7			
3.7	4.5	314	1.30	243.69	5.3	8.4	5.3	2.8			
4.2	5.2	271	1.50	210.48	5.8	8.5	5.8	2.9			
4.6	5.8	247	1.65	192.00	6.0	8.6	6.0	3.0			
5.5	6.8	209	1.95	162.19	6.3	8.8	6.3	3.2			
6.0	7.5	191	2.10	147.96	6.4	8.8	6.4	3.2			
7.0	8.7	163	2.50	126.72	6.6	8.9	6.6	3.3			
7.7	9.6	149	2.70	115.60	6.7	9.0	6.7	3.4			
3.3	4.0	353	1.15	422.98	4.7	8.1	4.7	2.6	FH043-11N-63-04E	14	228
3.6	4.4	322	1.25	385.85	5.2	8.4	5.2	2.8			
4.2	5.1	275	1.50	329.48	5.7	8.5	5.7	2.9			
4.6	5.6	250	1.60	300.55	6.0	8.6	6.0	3.0			
5.1	6.3	223	1.80	267.14	6.2	8.7	6.2	3.1			
5.6	7.0	203	2.00	243.69	6.4	8.8	6.4	3.2			
6.5	8.1	175	2.30	210.48	6.5	8.9	6.5	3.3			
7.2	8.8	160	2.50	192.00	6.6	8.9	6.6	3.3			
8.5	10	135	3.00	162.19	6.7	9.0	6.7	3.4			
13	16	90	2.45	70.17	4.9	3.1	4.9	3.1	FH032-11N-63-06F	13	226
14	17	82	2.70	63.63	4.9	3.3	4.9	3.3			
16	19	73	3.00	57.07	5.0	3.2	5.0	3.2			
9.1	11	126	1.05	97.85	4.8	2.0	4.8	2.0	FH022-11N-63-06F	10	224
10	13	113	1.15	88.09	4.9	2.3	4.9	2.3			
12	14	98	1.35	76.22	5.0	2.2	5.0	2.2			
13	16	88	1.50	68.62	5.0	2.4	5.0	2.4			
14	18	80	1.65	61.80	5.1	2.3	5.1	2.3			
16	20	72	1.85	55.64	5.1	2.4	5.1	2.4			
18	23	63	2.10	48.69	5.1	2.4	5.1	2.4			
20	25	56	2.35	43.83	5.2	2.5	5.2	2.5			
24	29	48	2.70	37.52	5.2	2.5	5.2	2.5			
26	33	43	3.00	33.78	5.2	2.6	5.2	2.6			
28	35	41	1.30	31.79	5.2	2.6	5.2	2.6			
36	45	32	2.65	24.76	5.2	2.6	5.2	2.6			

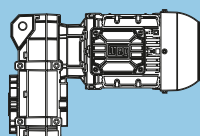
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\*\* ... on request

P <sub>N</sub> = 0.12 kW										IE1	
50 Hz 0.12 kW		60 Hz 0.14 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
14	17	82	1.60	97.85	5.1	2.3	5.1	2.3	 <b>FH022-11N-63-04E</b>	10	224
16	19	73	1.80	88.09	5.1	2.4	5.1	2.4			
18	22	64	2.05	76.22	5.1	2.4	5.1	2.4			
20	25	57	2.30	68.62	5.2	2.5	5.2	2.5			
22	27	52	2.55	61.80	5.2	2.4	5.2	2.4			
25	30	46	2.85	55.64	5.2	2.5	5.2	2.5			
28	35	41	3.25	48.69	5.2	2.5	5.2	2.5			
31	39	37	3.60	43.83	5.2	2.6	5.2	2.6			
37	45	31	4.20	37.52	5.2	2.6	5.2	2.6			
41	50	28	4.65	33.78	5.2	2.6	5.2	2.6			
43	53	26	2.05	31.79	5.2	2.6	5.2	2.6			
47	58	24	5.35	29.32	5.2	2.6	5.2	2.6			
52	64	22	5.95	26.39	5.2	2.7	5.2	2.7			
56	68	21	4.10	24.76	5.2	2.7	5.2	2.7			
63	77	18	7.15	21.89	5.2	2.6	5.2	2.6			
68	84	17	5.05	20.08	5.2	2.7	5.2	2.7			
70	86	16	7.95	19.70	5.3	2.7	5.3	2.7			
83	103	14	9.50	16.48	5.2	2.7	5.2	2.7			
87	107	13	6.40	15.82	5.1	2.7	5.1	2.7			
93	114	12	10.55	14.84	5.0	2.7	5.0	2.7			
113	139	10	8.30	12.19	4.7	2.7	4.7	2.7			
114	140	10	12.95	12.09	4.7	2.7	4.7	2.7			
126	156	9	14.35	10.89	4.5	2.7	4.5	2.7			
144	178	8	10.60	9.52	4.3	2.7	4.3	2.7			
193	238	6	14.20	7.11	3.9	2.7	3.9	2.7			
257	317	4	18.85	5.35	3.6	2.7	3.6	2.7			
350	431	3	22.00	3.93	3.2	2.7	3.2	2.7			

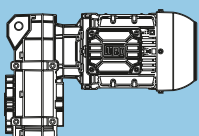
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P <sub>N</sub> = 0.18 kW										IE1		
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page	
0.18 kW		0.22 kW			Output shaft		Hollow shaft					
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN				
2.3	2.9	740	2.05	385.37	19.4	17.5	19.4	6.2	FH073-11N-71-06E	61	234	
2.9	3.6	587	2.60	305.42	19.8	17.8	19.8	6.6				
2.2	2.7	793	1.05	412.64	8.9	12.7	8.9	2.7	FH063-11N-71-06E	38	232	
2.4	2.9	727	1.15	378.37	9.5	12.9	9.5	2.9				
2.7	3.3	648	1.30	337.44	10.2	13.2	10.2	3.2				
2.9	3.6	594	1.40	309.42	10.6	13.3	10.6	3.4				
3.4	4.1	512	1.65	266.44	11.1	13.6	11.1	3.6				
3.7	4.5	469	1.75	244.32	11.3	13.7	11.3	3.8				
4.3	5.3	397	2.10	206.59	11.7	14.0	11.7	4.0				
4.7	5.8	364	2.30	189.44	11.8	14.1	11.8	4.1				
5.3	6.5	325	2.55	169.09	11.9	14.2	11.9	4.2				
5.8	7.1	298	2.80	155.05	12.0	14.3	12.0	4.3				
3.3	4.1	518	1.60	412.64	11.1	13.6	11.1	3.6	FH063-11N-63-04F	36	232	
3.6	4.5	475	1.75	378.37	11.3	13.7	11.3	3.7				
4.1	5.0	423	1.95	337.44	11.6	13.9	11.6	3.9				
4.4	5.5	388	2.15	309.42	11.7	14.0	11.7	4.0				
5.1	6.4	334	2.50	266.44	11.9	14.2	11.9	4.2				
5.6	7.0	307	2.70	244.32	12.0	14.2	12.0	4.3				
2.4	2.9	730	0.85	379.87	3.1	4.0	3.1	3.1				FH053-11N-71-06E
2.6	3.2	667	0.90	347.07	4.9	7.7	4.9	3.2				
2.9	3.6	592	1.05	308.00	6.2	10.2	6.2	3.5				
3.2	3.9	540	1.15	281.41	6.9	10.3	6.9	3.6				
3.7	4.6	466	1.30	242.67	7.8	10.6	7.8	3.9				
4.0	5.0	426	1.45	221.71	8.1	10.7	8.1	4.0				
4.8	5.9	359	1.70	187.00	8.6	10.9	8.6	4.2				
5.2	6.5	328	1.85	170.85	8.8	11.0	8.8	4.3				
6.1	7.6	281	2.15	146.10	9.1	11.1	9.1	4.4				
6.7	8.3	256	2.35	133.49	9.2	11.2	9.2	4.5				
8.2	10	210	2.90	109.08	9.4	11.4	9.4	4.7				
2.8	3.5	612	1.00	487.67	5.9	9.9	5.9	3.4	FH053-11N-63-04F	20	230	
3.1	3.8	559	1.10	445.56	6.7	10.3	6.7	3.6				
3.6	4.5	477	1.30	379.87	7.6	10.5	7.6	3.8				
3.9	4.9	435	1.40	347.07	8.0	10.7	8.0	4.0				
4.4	5.5	386	1.60	308.00	8.4	10.8	8.4	4.1				
4.9	6.0	353	1.70	281.41	8.7	10.9	8.7	4.2				
5.6	7.0	304	2.00	242.67	8.9	11.1	8.9	4.4				
6.2	7.7	278	2.15	221.71	9.1	11.1	9.1	4.4				
7.3	9.1	235	2.60	187.00	9.3	11.3	9.3	4.6				
8.0	10	214	2.80	170.85	9.4	11.3	9.4	4.6				
10	13	168	2.25	87.38	9.5	11.5	9.5	4.8	FH052-11N-71-06E	22	230	
11	14	153	2.25	79.84	9.5	11.5	9.5	4.8				
19	23	92	2.25	48.15	9.7	11.6	9.7	4.9				
3.4	4.1	513	0.80	267.14	**	**	**	**	FH043-11N-71-06E	16	228	
3.7	4.5	468	0.90	243.69	1.3	0.9	1.3	0.9				
4.3	5.2	404	1.00	210.48	3.7	6.0	3.7	2.5				
4.7	5.8	369	1.10	192.00	4.4	7.5	4.4	2.6				
5.5	6.8	312	1.30	162.19	5.3	8.4	5.3	2.8				
6.0	7.5	284	1.45	147.96	5.6	8.5	5.6	2.9				
7.1	8.7	243	1.65	126.72	6.0	8.6	6.0	3.0				
7.7	9.6	222	1.85	115.60	6.2	8.7	6.2	3.1				
9.5	12	182	2.25	94.61	6.5	8.9	6.5	3.3				
10	13	166	2.45	86.31	6.6	8.9	6.6	3.3				
13	16	137	2.95	71.24	6.7	9.0	6.7	3.4				

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<b>P<sub>N</sub> = 0.18 kW</b>										<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.18 kW</b>		<b>0.22 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
3.2	4.0	531	0.80	422.98	**	**	**	**	<b>FH043-11N-63-04F</b>	14	228
3.6	4.4	484	0.85	385.85	**	**	**	**			
4.2	5.2	413	1.00	329.48	3.5	5.5	3.5	2.4			
4.6	5.7	377	1.10	300.55	4.3	7.3	4.3	2.6			
5.1	6.4	335	1.20	267.14	5.0	8.3	5.0	2.7			
5.6	7.0	306	1.35	243.69	5.4	8.4	5.4	2.8			
6.5	8.1	264	1.55	210.48	5.9	8.6	5.9	3.0			
7.1	8.9	241	1.70	192.00	6.1	8.7	6.1	3.1			
8.4	10	204	2.00	162.19	6.4	8.8	6.4	3.2			
9.3	11	186	2.20	147.96	6.5	8.8	6.5	3.2			
11	13	159	2.55	126.72	6.6	8.9	6.6	3.3			
12	15	145	2.80	115.60	6.7	9.0	6.7	3.4			
12	15	146	2.25	75.79	6.7	9.0	6.7	3.4	<b>FH042-11N-71-06E</b>	16	228
13	16	133	2.25	69.14	6.8	9.0	6.8	3.4			
22	27	79	2.25	41.20	6.9	9.1	6.9	3.5			
13	16	135	1.65	70.17	4.6	2.8	4.6	2.8	<b>FH032-11N-71-06E</b>	15	226
14	17	122	1.85	63.63	4.7	3.1	4.7	3.1			
16	19	110	2.05	57.07	4.8	3.0	4.8	3.0			
17	21	99	2.25	51.75	4.8	3.2	4.8	3.2			
20	24	87	2.55	45.35	4.9	3.1	4.9	3.1			
22	27	79	2.80	41.12	5.0	3.3	5.0	3.3			
32	40	53	2.25	27.67	5.1	3.4	5.1	3.4			
20	24	88	2.50	70.17	4.9	3.1	4.9	3.1	<b>FH032-11N-63-04F</b>	13	226
22	27	80	2.80	63.63	4.9	3.3	4.9	3.3			
10	13	169	0.80	88.09	**	**	**	**	<b>FH022-11N-71-06E</b>	12	224
12	14	146	0.90	76.22	4.6	1.9	4.6	1.9			
13	16	132	1.00	68.62	4.7	2.2	4.7	2.2			
14	18	119	1.10	61.80	4.8	2.0	4.8	2.0			
16	20	107	1.25	55.64	4.9	2.3	4.9	2.3			
18	23	94	1.40	48.69	5.0	2.2	5.0	2.2			
20	25	84	1.55	43.83	5.0	2.4	5.0	2.4			
24	29	72	1.85	37.52	5.1	2.3	5.1	2.3			
26	33	65	2.05	33.78	5.1	2.5	5.1	2.5			
28	35	61	0.90	31.79	5.1	2.5	5.1	2.5			
31	38	56	2.35	29.32	5.2	2.4	5.2	2.4			
34	42	51	2.60	26.39	5.2	2.5	5.2	2.5			
36	45	48	1.80	24.76	5.2	2.5	5.2	2.5			
45	55	39	2.20	20.08	5.2	2.6	5.2	2.6			
57	70	30	2.80	15.82	5.2	2.6	5.2	2.6			

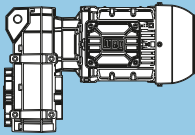
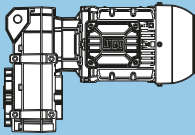
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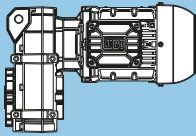


**P<sub>N</sub> = 0.18 kW**

**IE1**

50 Hz 0.18 kW		60 Hz 0.22 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
14	17	123	1.10	97.85	4.8	2.0	4.8	2.0	 <b>FH022-11N-63-04F</b>	10	224
16	19	111	1.20	88.09	4.9	2.3	4.9	2.3			
18	22	96	1.40	76.22	5.0	2.2	5.0	2.2			
20	25	86	1.55	68.62	5.0	2.4	5.0	2.4			
22	28	78	1.70	61.80	5.1	2.3	5.1	2.3			
25	31	70	1.90	55.64	5.1	2.4	5.1	2.4			
28	35	61	2.15	48.69	5.1	2.4	5.1	2.4			
31	39	55	2.40	43.83	5.2	2.5	5.2	2.5			
37	45	47	2.80	37.52	5.2	2.5	5.2	2.5			
41	50	42	3.10	33.78	5.2	2.6	5.2	2.6			
43	53	40	1.35	31.79	5.2	2.6	5.2	2.6			
47	58	37	3.55	29.32	5.2	2.5	5.2	2.5			
52	64	33	3.95	26.39	5.2	2.6	5.2	2.6			
55	69	31	2.75	24.76	5.2	2.6	5.2	2.6			
63	78	27	4.75	21.89	5.2	2.6	5.2	2.6			
68	85	25	3.35	20.08	5.2	2.6	5.2	2.6			
70	86	25	5.30	19.70	5.2	2.6	5.2	2.6			
83	103	21	6.30	16.48	5.2	2.6	5.2	2.6			
87	107	20	4.25	15.82	5.2	2.7	5.2	2.7			
92	115	19	7.00	14.84	5.1	2.7	5.1	2.7			
112	139	15	5.50	12.19	4.8	2.7	4.8	2.7			
113	141	15	8.60	12.09	4.8	2.7	4.8	2.7			
126	156	14	9.55	10.89	4.6	2.7	4.6	2.7			
144	179	12	7.05	9.52	4.4	2.7	4.4	2.7			
193	239	9	9.45	7.11	3.9	2.7	3.9	2.7			
256	318	7	12.55	5.35	3.6	2.7	3.6	2.7			
349	433	5	14.65	3.93	3.2	2.7	3.2	2.7			

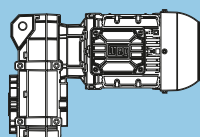
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<b>P<sub>N</sub> = 0.25 kW</b>										<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.25 kW</b>		<b>0.30 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
2.3	2.9	1022	1.50	385.37	18.4	16.9	18.4	5.7	<b>FH073-11N-71-06F</b>	62	234
2.9	3.6	810	1.90	305.42	19.2	17.3	19.2	6.1			
3.8	4.7	629	2.40	237.15	19.7	17.7	19.7	6.5			
4.6	5.7	516	2.95	194.58	20.0	17.9	20.0	6.7			
3.6	4.4	672	2.25	385.37	19.6	17.6	19.6	6.4	<b>FH073-11N-71-04E</b>	60	234
4.5	5.6	532	2.85	305.42	19.9	17.9	19.9	6.7			
2.4	2.9	1004	0.85	378.37	5.6	7.9	5.6	2.0	<b>FH063-11N-71-06F</b>	39	232
2.7	3.3	895	0.95	337.44	7.6	12.3	7.6	2.4			
2.9	3.6	821	1.00	309.42	8.5	12.6	8.5	2.6			
3.4	4.2	707	1.20	266.44	9.7	13.0	9.7	3.0			
3.7	4.5	648	1.30	244.32	10.2	13.1	10.2	3.2			
4.4	5.4	548	1.50	206.59	10.9	13.5	10.9	3.5			
4.8	5.9	503	1.65	189.44	11.2	13.6	11.2	3.7			
5.3	6.6	449	1.85	169.09	11.4	13.8	11.4	3.8			
5.8	7.2	411	2.00	155.05	11.6	13.9	11.6	4.0			
6.9	8.5	345	2.40	130.15	11.9	14.1	11.9	4.2			
7.5	9.3	317	2.60	119.35	12.0	14.2	12.0	4.3			
3.3	4.1	719	1.15	412.64	9.6	12.9	9.6	3.0	<b>FH063-11N-71-04E</b>	37	232
3.6	4.5	659	1.25	378.37	10.1	13.1	10.1	3.1			
4.1	5.0	588	1.40	337.44	10.6	13.3	10.6	3.4			
4.4	5.5	539	1.55	309.42	10.9	13.5	10.9	3.5			
5.1	6.4	464	1.80	266.44	11.4	13.7	11.4	3.8			
5.6	7.0	426	1.95	244.32	11.5	13.9	11.5	3.9			
6.6	8.2	360	2.30	206.59	11.8	14.1	11.8	4.1			
7.2	9.0	330	2.50	189.44	11.9	14.2	11.9	4.2			
8.1	10	295	2.80	169.09	12.0	14.3	12.0	4.3			
3.2	3.9	747	0.80	281.41	**	**	**	**	<b>FH053-11N-71-06F</b>	23	230
3.7	4.6	644	0.95	242.67	5.3	8.6	5.3	3.3			
4.1	5.0	588	1.05	221.71	6.3	10.2	6.3	3.5			
4.8	5.9	496	1.25	187.00	7.4	10.5	7.4	3.8			
5.3	6.5	453	1.35	170.85	7.9	10.6	7.9	3.9			
6.2	7.6	388	1.55	146.10	8.4	10.8	8.4	4.1			
6.7	8.3	354	1.70	133.49	8.7	10.9	8.7	4.2			
8.3	10	289	2.10	109.08	9.0	11.1	9.0	4.4			
9.0	11	264	2.30	99.66	9.2	11.2	9.2	4.5			
11	14	218	2.80	82.13	9.3	11.3	9.3	4.6			
12	15	199	3.00	75.04	9.4	11.4	9.4	4.7			
3.1	3.8	776	0.80	445.56	**	**	**	**	<b>FH053-11N-71-04E</b>	21	230
3.6	4.5	662	0.95	379.87	5.0	8.0	5.0	3.3			
3.9	4.9	605	1.00	347.07	6.0	10.1	6.0	3.4			
4.4	5.5	537	1.15	308.00	7.0	10.4	7.0	3.7			
4.9	6.0	490	1.25	281.41	7.5	10.5	7.5	3.8			
5.6	7.0	423	1.45	242.67	8.1	10.7	8.1	4.0			
6.2	7.7	386	1.55	221.71	8.4	10.8	8.4	4.1			
7.3	9.1	326	1.85	187.00	8.8	11.0	8.8	4.3			
8.0	10	298	2.05	170.85	9.0	11.1	9.0	4.4			
9.4	12	255	2.40	146.10	9.2	11.2	9.2	4.5			
10	13	233	2.60	133.49	9.3	11.3	9.3	4.6			
10	13	232	1.65	87.38	9.3	11.3	9.3	4.6	<b>FH052-11N-71-06F</b>	23	230
11	14	212	1.65	79.84	9.4	11.3	9.4	4.6			
13	16	190	2.65	71.46	9.4	11.4	9.4	4.7			
14	17	173	2.65	65.29	9.5	11.5	9.5	4.8			
19	23	128	1.60	48.15	9.6	11.4	9.6	4.7			
23	28	104	2.65	39.38	9.7	11.5	9.7	4.8			
16	19	152	2.45	87.38	9.6	11.5	9.6	4.8	<b>FH052-11N-71-04E</b>	21	230
17	21	139	2.45	79.84	9.6	11.6	9.6	4.9			
28	35	84	2.45	48.15	9.7	11.6	9.7	4.9			



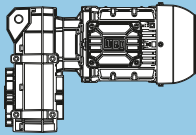
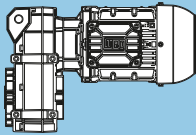
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P <sub>N</sub> = 0.25 kW										IE1		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
0.25 kW		0.30 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN				
4.7	5.8	509	0.80	192.00	**	**	**	**	FH043-11N-71-06F	17	228	
5.5	6.8	430	0.95	162.19	3.0	4.5	3.0	2.4				
6.1	7.5	393	1.05	147.96	4.0	6.6	4.0	2.5				
7.1	8.8	336	1.20	126.72	5.0	8.3	5.0	2.7				
7.8	9.6	307	1.35	115.60	5.4	8.4	5.4	2.8				
9.5	12	251	1.60	94.61	6.0	8.6	6.0	3.0				
10	13	229	1.75	86.31	6.2	8.7	6.2	3.1				
13	16	189	2.15	71.24	6.5	8.8	6.5	3.2				
14	17	172	2.35	64.98	6.6	8.9	6.6	3.3				
17	21	139	2.90	52.27	6.7	9.0	6.7	3.4				
4.6	5.7	524	0.80	300.55	**	**	**	**	FH043-11N-71-04E	15	228	
5.1	6.4	466	0.90	267.14	1.5	1.3	1.5	1.3				
5.6	7.0	425	0.95	243.69	3.2	4.9	3.2	2.4				
6.5	8.1	367	1.10	210.48	4.5	7.7	4.5	2.6				
7.1	8.9	335	1.20	192.00	5.0	8.3	5.0	2.7				
8.4	10	283	1.45	162.19	5.7	8.5	5.7	2.9				
9.3	11	258	1.60	147.96	5.9	8.6	5.9	3.0				
11	13	221	1.85	126.72	6.2	8.7	6.2	3.1				
12	15	201	2.00	115.60	6.4	8.8	6.4	3.2				
14	18	165	2.45	94.61	6.6	8.9	6.6	3.3				
16	20	150	2.70	86.31	6.7	9.0	6.7	3.4				
12	15	201	1.65	75.79	6.4	8.8	6.4	3.2	FH042-11N-71-06F	17	228	
13	16	183	1.60	69.14	6.5	8.9	6.5	3.3				
15	18	164	2.45	61.98	6.6	8.9	6.6	3.3				
16	20	150	2.65	56.54	6.7	9.0	6.7	3.4				
22	27	109	1.65	41.20	6.8	8.9	6.8	3.3				
27	33	89	2.65	33.69	6.9	9.0	6.9	3.4				
18	22	132	2.45	75.79	6.8	9.0	6.8	3.4	FH042-11N-71-04E	15	228	
20	25	120	2.45	69.14	6.8	9.1	6.8	3.5				
33	41	72	2.45	41.20	7.0	9.1	7.0	3.5				
13	16	186	1.20	70.17	3.9	2.5	3.9	2.5	FH032-11N-71-06F	16	226	
14	17	169	1.35	63.63	4.2	2.9	4.2	2.9				
16	19	151	1.50	57.07	4.4	2.7	4.4	2.7				
17	21	137	1.65	51.75	4.5	3.0	4.5	3.0				
20	24	120	1.85	45.35	4.7	2.9	4.7	2.9				
22	27	109	2.05	41.12	4.8	3.2	4.8	3.2				
26	32	93	2.40	35.03	4.9	3.1	4.9	3.1				
28	35	84	2.65	31.76	4.9	3.3	4.9	3.3				
32	40	74	3.00	27.97	5.0	3.2	5.0	3.2				
33	40	73	1.65	27.67	5.0	3.3	5.0	3.3				
40	49	60	2.50	22.50	5.0	3.3	5.0	3.3				
20	24	122	1.80	70.17	4.7	2.9	4.7	2.9	FH032-11N-71-04E	14	226	
22	27	111	2.00	63.63	4.8	3.2	4.8	3.2				
24	30	99	2.25	57.07	4.8	3.0	4.8	3.0				
26	33	90	2.45	51.75	4.9	3.2	4.9	3.2				
30	37	79	2.80	45.35	5.0	3.2	5.0	3.2				
50	61	48	2.50	27.67	5.1	3.4	5.1	3.4				
15	18	164	0.80	61.80	**	**	**	**	FH022-11N-71-06F	13	224	
16	20	148	0.90	55.64	4.6	2.1	4.6	2.1				
18	23	129	1.05	48.69	4.7	2.0	4.7	2.0				
21	25	116	1.15	43.83	4.8	2.2	4.8	2.2				
24	30	100	1.35	37.52	5.0	2.2	5.0	2.2				
27	33	90	1.50	33.78	5.0	2.4	5.0	2.4				
31	38	78	1.70	29.32	5.1	2.3	5.1	2.3				
34	42	70	1.90	26.39	5.1	2.4	5.1	2.4				
36	45	66	1.30	24.76	5.1	2.5	5.1	2.5				
41	51	58	2.25	21.89	5.2	2.4	5.2	2.4				
45	55	53	1.60	20.08	5.2	2.5	5.2	2.5				
46	56	52	2.50	19.70	5.2	2.5	5.2	2.5				
55	67	44	3.00	16.48	5.2	2.5	5.2	2.5				
57	70	42	2.05	15.82	5.2	2.6	5.2	2.6				
74	91	32	2.60	12.19	5.2	2.6	5.2	2.6				

Legend see page 149

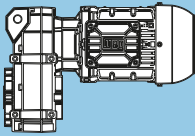
\*\* ... on request

P <sub>N</sub> = 0.25 kW										IE1		
50 Hz		60 Hz		f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.25 kW		0.30 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	F <sub>rN</sub> kN			F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN				
14	17	171	0.80	97.85	**	**	**	**				
16	19	154	0.85	88.09	4.5	2.1	4.5	2.1				
18	22	133	1.00	76.22	4.7	2.0	4.7	2.0				
20	25	120	1.10	68.62	4.8	2.2	4.8	2.2				
22	28	108	1.25	61.80	4.9	2.1	4.9	2.1				
25	31	97	1.35	55.64	5.0	2.3	5.0	2.3				
28	35	85	1.55	48.69	5.0	2.2	5.0	2.2				
31	39	76	1.75	43.83	5.1	2.4	5.1	2.4				
37	45	65	2.00	37.52	5.1	2.4	5.1	2.4				
41	50	59	2.25	33.78	5.2	2.5	5.2	2.5				
43	53	55	1.00	31.79	5.2	2.5	5.2	2.5				
47	58	51	2.55	29.32	5.2	2.4	5.2	2.4				
52	64	46	2.85	26.39	5.2	2.5	5.2	2.5				
55	69	43	1.95	24.76	5.2	2.6	5.2	2.6				
63	78	38	3.45	21.89	5.2	2.5	5.2	2.5				
68	85	35	2.45	20.08	5.2	2.6	5.2	2.6				
70	86	34	3.80	19.70	5.2	2.6	5.2	2.6				
83	103	29	4.55	16.48	5.2	2.6	5.2	2.6				
87	107	28	3.05	15.82	5.2	2.6	5.2	2.6				
92	115	26	5.05	14.84	5.1	2.6	5.1	2.6				
112	139	21	4.00	12.19	4.8	2.7	4.8	2.7				
113	141	21	6.20	12.09	4.8	2.6	4.8	2.6				
126	156	19	6.90	10.89	4.6	2.7	4.6	2.7				
144	179	17	5.10	9.52	4.4	2.7	4.4	2.7				
193	239	12	6.80	7.11	4.0	2.7	4.0	2.7				
256	318	9	9.05	5.35	3.6	2.7	3.6	2.7				
349	433	7	10.55	3.93	3.2	2.7	3.2	2.7				
												
									FH022-11N-71-04E	11	224	

F

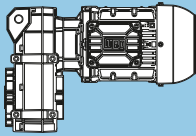
Legend see page 149

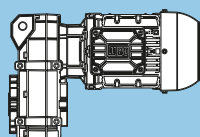
\*\* ... on request

P <sub>N</sub> = 0.37 kW										IE1	
50 Hz 0.37 kW		60 Hz 0.44 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
2.6	3.2	1377	2.20	358.52	27.6	42.9	27.6	10.4	FH083-11N-80-06E	111	236
3.2	4.0	1090	2.80	283.76	28.3	43.3	28.3	10.8			
2.4	2.9	1480	1.05	385.37	15.7	16.0	15.7	4.7	FH073-11N-80-06E	64	234
3.0	3.7	1173	1.30	305.42	17.6	16.6	17.6	5.4			
3.9	4.8	911	1.65	237.15	18.8	17.1	18.8	5.9			
4.7	5.8	747	2.05	194.58	19.4	17.5	19.4	6.2			
6.1	7.5	579	2.60	150.69	19.8	17.8	19.8	6.6			
3.5	4.4	998	1.55	385.37	18.5	17.0	18.5	5.7	FH073-11N-71-04F	61	234
4.5	5.5	791	1.90	305.42	19.2	17.4	19.2	6.1			
5.8	7.1	614	2.45	237.15	19.7	17.7	19.7	6.5			
7.0	8.7	504	3.00	194.58	20.0	18.0	20.0	6.7			
3.5	4.2	1023	0.85	266.44	5.2	7.1	5.2	2.0			
3.8	4.6	938	0.90	244.32	6.9	10.7	6.9	2.2			
4.5	5.5	793	1.05	206.59	8.8	12.7	8.8	2.7			
4.9	6.0	728	1.15	189.44	9.5	12.9	9.5	2.9			
5.4	6.7	649	1.30	169.09	10.2	13.1	10.2	3.2			
5.9	7.3	596	1.40	155.05	10.6	13.3	10.6	3.3			
7.1	8.7	500	1.65	130.15	11.2	13.6	11.2	3.7			
7.7	9.5	458	1.80	119.35	11.4	13.7	11.4	3.8			
9.4	11	378	2.20	98.34	11.8	14.0	11.8	4.1			
10	13	346	2.40	90.17	11.9	14.1	11.9	4.2			
11	14	309	2.70	80.48	12.0	14.3	12.0	4.3			
12	15	283	2.90	73.80	12.1	14.3	12.1	4.4			
3.3	4.1	1068	0.80	412.64	**	**	**	**	FH063-11N-71-04F	38	232
3.6	4.5	979	0.85	378.37	6.1	9.0	6.1	2.1			
4.0	5.0	874	0.95	337.44	7.9	12.4	7.9	2.5			
4.4	5.4	801	1.05	309.42	8.8	12.6	8.8	2.7			
5.1	6.3	690	1.20	266.44	9.9	13.0	9.9	3.1			
5.6	6.9	632	1.30	244.32	10.3	13.2	10.3	3.2			
6.6	8.2	535	1.55	206.59	11.0	13.5	11.0	3.6			
7.2	8.9	490	1.70	189.44	11.2	13.6	11.2	3.7			
8.1	10	438	1.90	169.09	11.5	13.8	11.5	3.9			
8.8	11	401	2.05	155.05	11.7	13.9	11.7	4.0			
10	13	337	2.45	130.15	11.9	14.2	11.9	4.2			
11	14	309	2.70	119.35	12.0	14.2	12.0	4.3			
4.9	6	718	0.85	187.00	3.5	4.8	3.5	3.1	FH053-11N-80-06E	24	230
5.4	6.6	656	0.95	170.85	5.1	8.2	5.1	3.3			
6.3	7.7	561	1.10	146.10	6.7	10.3	6.7	3.6			
6.9	8.5	513	1.20	133.49	7.3	10.4	7.3	3.7			
8.4	10	419	1.45	109.08	8.2	10.7	8.2	4.0			
9.2	11	383	1.60	99.66	8.5	10.8	8.5	4.1			
9.8	12	361	1.70	94.11	8.6	10.9	8.6	4.2			
11	14	315	1.95	82.13	8.9	11.0	8.9	4.3			
12	15	288	2.10	75.04	9.0	11.1	9.0	4.4			
15	19	231	2.60	60.26	9.3	11.3	9.3	4.6			
17	21	211	2.85	55.06	9.4	11.3	9.4	4.6			
4.4	5.5	797	0.80	308.00	**	**	**	**	FH053-11N-71-04F	22	230
4.9	6.0	728	0.85	281.41	3.1	3.9	3.1	3.0			
5.6	6.9	628	1.00	242.67	5.6	9.3	5.6	3.4			
6.2	7.6	574	1.05	221.71	6.5	10.2	6.5	3.5			
7.3	9.0	484	1.25	187.00	7.6	10.5	7.6	3.8			
8.0	9.9	442	1.35	170.85	8.0	10.6	8.0	3.9			
9.3	12	378	1.60	146.10	8.5	10.8	8.5	4.1			
10	13	346	1.75	133.49	8.7	10.9	8.7	4.2			
13	15	282	2.15	109.08	9.1	11.1	9.1	4.4			
14	17	258	2.35	99.66	9.2	11.2	9.2	4.5			
17	21	213	2.85	82.13	9.4	11.3	9.4	4.6			

Legend see page 149

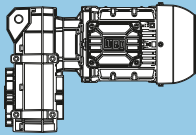
\*\* ... on request

<b>P<sub>N</sub> = 0.37 kW</b>										<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.37 kW</b>		<b>0.44 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>11</b>	13	336	1.15	87.38	8.8	11.0	8.8	4.3	<b>FH052-11N-80-06E</b>	24	230
<b>12</b>	14	307	1.15	79.84	8.9	11.1	8.9	4.4			
<b>13</b>	16	274	1.85	71.46	9.1	11.2	9.1	4.5			
<b>14</b>	17	251	1.85	65.29	9.2	11.2	9.2	4.5			
<b>16</b>	20	217	2.80	56.42	9.3	11.3	9.3	4.6			
<b>19</b>	23	185	1.15	48.15	9.5	11.2	9.5	4.5			
<b>23</b>	29	151	1.85	39.38	9.6	11.3	9.6	4.6	<b>FH052-11N-71-04F</b>	21	230
<b>16</b>	19	226	1.65	87.38	9.3	11.3	9.3	4.6			
<b>17</b>	21	207	1.65	79.84	9.4	11.4	9.4	4.7			
<b>19</b>	24	185	2.75	71.46	9.5	11.4	9.5	4.7			
<b>21</b>	26	169	2.75	65.29	9.5	11.5	9.5	4.8			
<b>28</b>	35	125	1.65	48.15	9.6	11.5	9.6	4.8			
<b>35</b>	43	102	2.75	39.38	9.7	11.6	9.7	4.9	<b>FH043-11N-80-06E</b>	19	228
<b>7.3</b>	8.9	487	0.85	126.72	**	**	**	**			
<b>8.0</b>	9.8	444	0.95	115.60	2.5	3.4	2.5	2.3			
<b>9.7</b>	12	363	1.15	94.61	4.5	7.7	4.5	2.6			
<b>11</b>	14	314	1.30	81.63	5.3	8.4	5.3	2.8			
<b>12</b>	15	286	1.40	74.46	5.6	8.5	5.6	2.9			
<b>13</b>	16	274	1.50	71.24	5.8	8.5	5.8	2.9			
<b>14</b>	17	250	1.65	64.98	6.0	8.6	6.0	3.0			
<b>18</b>	22	201	2.00	52.27	6.4	8.8	6.4	3.2			
<b>19</b>	24	183	2.20	47.68	6.5	8.9	6.5	3.3	<b>FH043-11N-71-04F</b>	16	228
<b>7.1</b>	8.8	497	0.85	192.00	**	**	**	**			
<b>8.4</b>	10	420	1.00	162.19	3.3	5.1	3.3	2.4			
<b>9.2</b>	11	383	1.05	147.96	4.2	7.0	4.2	2.5			
<b>11</b>	13	328	1.25	126.72	5.1	8.3	5.1	2.7			
<b>12</b>	15	299	1.35	115.60	5.5	8.4	5.5	2.8			
<b>14</b>	18	245	1.65	94.61	6.0	8.6	6.0	3.0			
<b>16</b>	20	223	1.80	86.31	6.2	8.7	6.2	3.1			
<b>19</b>	24	184	2.20	71.24	6.5	8.8	6.5	3.2			
<b>21</b>	26	168	2.40	64.98	6.6	8.9	6.6	3.3			
<b>26</b>	32	135	3.00	52.27	6.7	9.0	6.7	3.4	<b>FH042-11N-80-06E</b>	18	228
<b>12</b>	15	291	1.15	75.79	5.6	8.5	5.6	2.9			
<b>13</b>	16	266	1.15	69.14	5.8	8.6	5.8	3.0			
<b>15</b>	18	238	1.70	61.98	6.1	8.7	6.1	3.1			
<b>16</b>	20	217	1.85	56.54	6.3	8.7	6.3	3.1			
<b>19</b>	23	188	2.15	48.94	6.5	8.8	6.5	3.2			
<b>21</b>	25	171	2.35	44.64	6.6	8.9	6.6	3.3			
<b>22</b>	27	158	1.15	41.20	6.6	8.7	6.6	3.1			
<b>24</b>	30	146	2.75	37.95	6.7	9.0	6.7	3.4			
<b>27</b>	34	129	1.85	33.69	6.8	8.8	6.8	3.2	<b>FH042-11N-71-04F</b>	16	228
<b>18</b>	22	196	1.65	75.79	6.4	8.8	6.4	3.2			
<b>20</b>	24	179	1.65	69.14	6.5	8.9	6.5	3.3			
<b>22</b>	27	160	2.50	61.98	6.6	8.9	6.6	3.3			
<b>24</b>	30	146	2.75	56.54	6.7	9.0	6.7	3.4			
<b>33</b>	41	107	1.65	41.20	6.9	9.0	6.9	3.4			
<b>41</b>	50	87	2.75	33.69	6.9	9.1	6.9	3.5	<b>FH032-11N-80-06E</b>	17	226
<b>13</b>	16	270	0.85	70.17	1.9	2.0	1.9	2.0			
<b>14</b>	18	244	0.95	63.63	2.8	2.6	2.8	2.6			
<b>16</b>	20	219	1.05	57.07	3.4	2.3	3.4	2.3			
<b>18</b>	22	199	1.15	51.75	3.8	2.8	3.8	2.8			
<b>20</b>	25	174	1.30	45.35	4.1	2.6	4.1	2.6			
<b>22</b>	27	158	1.40	41.12	4.3	2.9	4.3	2.9			
<b>26</b>	32	135	1.65	35.03	4.6	2.8	4.6	2.8			
<b>29</b>	36	122	1.85	31.76	4.7	3.1	4.7	3.1			
<b>33</b>	40	107	2.05	27.97	4.8	3.0	4.8	3.0			
<b>36</b>	45	97	2.30	25.36	4.8	3.2	4.8	3.2			
<b>41</b>	50	86	1.75	22.50	4.9	3.2	4.9	3.2			
<b>44</b>	53	81	2.75	21.14	4.9	3.1	4.9	3.1			
<b>48</b>	59	74	3.00	19.17	5.0	3.3	5.0	3.3			
<b>51</b>	63	69	2.20	17.88	5.0	3.3	5.0	3.3			
<b>67</b>	82	53	2.85	13.81	5.1	3.4	5.1	3.4			

P <sub>N</sub> = 0.37 kW										IE1	
50 Hz 0.37 kW		60 Hz 0.44 kW		at 50 Hz						m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
19	24	182	1.25	70.17	4.0	2.5	4.0	2.5	FH032-11N-71-04F	14	226
21	26	165	1.35	63.63	4.2	2.9	4.2	2.9			
24	30	148	1.50	57.07	4.4	2.7	4.4	2.7			
26	33	134	1.65	51.75	4.6	3.1	4.6	3.1			
30	37	117	1.90	45.35	4.7	2.9	4.7	2.9			
33	41	106	2.10	41.12	4.8	3.2	4.8	3.2			
39	48	91	2.45	35.03	4.9	3.1	4.9	3.1			
43	53	82	2.70	31.76	4.9	3.3	4.9	3.3			
49	61	72	1.70	27.67	5.0	3.3	5.0	3.3			
61	75	58	2.55	22.50	5.0	3.4	5.0	3.4			
21	26	168	0.80	43.83	**	**	**	**	FH022-11N-80-06E	15	224
25	30	144	0.95	37.52	4.6	1.9	4.6	1.9			
27	33	130	1.05	33.78	4.7	2.2	4.7	2.2			
31	39	113	1.20	29.32	4.9	2.1	4.9	2.1			
35	43	101	1.30	26.39	4.9	2.3	4.9	2.3			
37	46	95	0.90	24.76	5.0	2.3	5.0	2.3			
42	52	84	1.55	21.89	5.0	2.3	5.0	2.3			
46	56	77	1.10	20.08	5.1	2.4	5.1	2.4			
47	57	76	1.75	19.70	5.1	2.4	5.1	2.4			
49	60	73	1.80	18.88	5.1	2.3	5.1	2.3			
54	66	65	2.00	17.00	5.1	2.5	5.1	2.5			
56	69	63	2.10	16.48	5.1	2.4	5.1	2.4			
58	71	61	1.40	15.82	5.1	2.5	5.1	2.5			
62	76	57	2.30	14.84	5.2	2.5	5.2	2.5			
75	93	47	1.80	12.19	5.2	2.5	5.2	2.5			
76	93	46	2.80	12.09	5.2	2.5	5.2	2.5			
97	119	37	2.30	9.52	5.1	2.6	5.1	2.6			
22	27	160	0.85	61.80	4.4	1.8	4.4	1.8	FH022-11N-71-04F	12	224
25	30	144	0.95	55.64	4.6	2.1	4.6	2.1			
28	35	126	1.05	48.69	4.8	2.0	4.8	2.0			
31	38	113	1.15	43.83	4.9	2.3	4.9	2.3			
36	45	97	1.35	37.52	5.0	2.2	5.0	2.2			
40	50	87	1.50	33.78	5.0	2.4	5.0	2.4			
47	57	76	1.75	29.32	5.1	2.3	5.1	2.3			
52	64	68	1.95	26.39	5.1	2.4	5.1	2.4			
55	68	64	1.35	24.76	5.1	2.5	5.1	2.5			
62	77	57	2.30	21.89	5.2	2.4	5.2	2.4			
68	84	52	1.65	20.08	5.2	2.5	5.2	2.5			
69	86	51	2.55	19.70	5.2	2.5	5.2	2.5			
83	102	43	3.05	16.48	5.2	2.5	5.2	2.5			
86	107	41	2.10	15.82	5.2	2.6	5.2	2.6			
92	114	38	3.40	14.84	5.2	2.6	5.2	2.6			
112	138	32	2.70	12.19	4.9	2.6	4.9	2.6			
113	139	31	4.20	12.09	4.9	2.6	4.9	2.6			
125	155	28	4.65	10.89	4.7	2.6	4.7	2.6			
143	177	25	3.45	9.52	4.4	2.6	4.4	2.6			
192	237	18	4.60	7.11	4.0	2.7	4.0	2.7			
255	315	14	6.10	5.35	3.6	2.7	3.6	2.7			
347	429	10	7.10	3.93	3.3	2.7	3.3	2.7			

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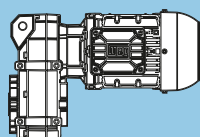
<b>P<sub>N</sub> = 0.55 kW</b>										<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.55 kW</b>		<b>0.66 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
3.2	4.0	1629	2.80	288.50	38.6	42.8	38.6	42.8	<b>FH093-11N-80-06F</b>	167	238
2.6	3.2	2025	1.50	358.52	25.4	41.9	25.4	9.4	<b>FH083-11N-80-06F</b>	112	236
3.3	4.0	1603	1.90	283.76	27.0	42.5	27.0	10.0			
3.8	4.6	1399	2.15	247.77	27.6	42.8	27.6	10.3			
4.2	5.2	1237	2.45	218.97	28.0	43.1	28.0	10.6			
5.0	6.2	1046	2.90	185.17	28.4	43.4	28.4	10.9			
5.2	6.3	1018	2.95	180.28	28.5	43.4	28.5	10.9			
3.9	4.8	1331	2.30	358.52	27.7	42.9	27.7	10.4	<b>FH083-11N-80-04E</b>	110	236
5.0	6.1	1053	2.85	283.76	28.4	43.4	28.4	10.9			
3.0	3.7	1725	0.90	305.42	13.6	15.5	13.6	4.2	<b>FH073-11N-80-06F</b>	65	234
3.9	4.8	1339	1.15	237.15	16.7	16.3	16.7	5.0			
4.8	5.9	1099	1.40	194.58	18.0	16.8	18.0	5.5			
6.2	7.6	851	1.80	150.69	19.0	17.3	19.0	6.0			
8.1	9.9	647	2.35	114.62	19.6	17.7	19.6	6.4			
9.8	12	534	2.85	94.52	19.9	17.9	18.7	6.7			
3.7	4.5	1430	1.05	385.37	16.1	16.1	16.1	4.8	<b>FH073-11N-80-04E</b>	63	234
4.6	5.6	1134	1.35	305.42	17.8	16.7	17.8	5.4			
6.0	7.3	880	1.75	237.15	18.9	17.2	18.9	6.0			
7.3	8.9	722	2.10	194.58	19.4	17.5	19.4	6.3			
9.4	11	559	2.70	150.69	19.9	17.9	19.0	6.6			
4.9	6.0	1070	0.80	189.44	**	**	**	**			
5.5	6.7	955	0.90	169.09	6.6	10.1	6.6	2.2	<b>FH063-11N-80-06F</b>	42	232
6.0	7.4	876	0.95	155.05	7.8	12.4	7.8	2.4			
7.1	8.8	735	1.15	130.15	9.4	12.9	9.4	2.9			
7.8	9.6	674	1.25	119.35	10.0	13.0	10.0	3.1			
9.5	12	555	1.50	98.34	10.8	13.5	10.8	3.5			
10	13	509	1.65	90.17	11.1	13.6	11.1	3.6			
12	14	455	1.85	80.48	11.4	13.8	11.4	3.8			
13	15	417	2.00	73.80	11.6	13.9	11.6	3.9			
14	17	369	2.25	65.26	11.8	14.1	11.8	4.1			
16	19	338	2.45	59.84	11.9	14.1	11.9	4.2			
17	21	309	2.70	54.63	12.0	14.3	12.0	4.3			
19	23	283	2.90	50.10	12.1	14.3	12.1	4.4			
5.3	6.5	989	0.85	266.44	5.9	8.6	5.9	2.1	<b>FH063-11N-80-04E</b>	40	232
5.8	7.1	907	0.95	244.32	7.4	11.8	7.4	2.3			
6.8	8.3	767	1.10	206.59	9.1	12.8	9.1	2.8			
7.5	9.1	703	1.20	189.44	9.7	12.9	9.7	3.0			
8.4	10	628	1.35	169.09	10.4	13.2	10.4	3.3			
9.1	11	576	1.45	155.05	10.7	13.4	10.7	3.4			
11	13	483	1.70	130.15	11.3	13.7	11.3	3.7			
12	14	443	1.90	119.35	11.5	13.8	11.5	3.8			
14	18	365	2.25	98.34	11.8	14.1	11.8	4.1			
16	19	335	2.45	90.17	11.9	14.2	11.9	4.2			
18	21	299	2.75	80.48	12.0	14.3	12.0	4.3			
19	23	274	3.00	73.80	12.1	14.4	12.1	4.4			
19	23	281	2.95	49.67	12.1	14.3	12.1	4.4	<b>FH062-11N-80-06F</b>	41	232
7.0	8.5	754	0.80	133.49	**	**	**	**	<b>FH053-11N-80-06F</b>	26	230
8.5	10	616	1.00	109.08	5.8	9.7	5.8	3.4			
9.3	11	563	1.10	99.66	6.6	10.3	6.6	3.6			
9.9	12	532	1.15	94.11	7.0	10.4	7.0	3.7			
11	14	464	1.30	82.13	7.8	10.6	7.8	3.9			
12	15	424	1.45	75.04	8.1	10.7	8.1	4.0			
15	19	340	1.80	60.26	8.7	11.0	8.7	4.3			
17	21	311	1.95	55.06	8.9	11.0	8.9	4.3			

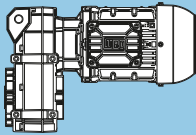


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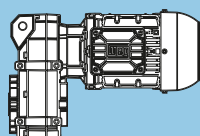


P <sub>N</sub> = 0.55 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.55 kW		0.66 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
7.6	9.2	694	0.90	187.00	4.2	6.3	4.2	3.2	FH053-11N-80-04E	24	230
8.3	10	634	0.95	170.85	5.5	9.0	5.5	3.3			
9.7	12	542	1.15	146.10	6.9	10.3	6.9	3.6			
11	13	496	1.25	133.49	7.5	10.5	7.5	3.8			
13	16	405	1.50	109.08	8.3	10.8	8.3	4.1			
14	17	370	1.65	99.66	8.5	10.9	8.5	4.2			
15	18	349	1.75	94.11	8.7	10.9	8.7	4.2			
16	20	319	1.90	85.99	8.9	11.0	8.9	4.3			
17	21	305	2.00	82.13	8.9	11.1	8.9	4.4			
19	23	279	2.15	75.04	9.1	11.1	9.1	4.4			
23	29	224	2.70	60.26	9.3	11.3	9.3	4.6			
26	31	204	2.95	55.06	9.4	11.4	9.4	4.7			
11	13	494	0.80	87.38	**	**	**	**	FH052-11N-80-06F	25	230
12	14	451	0.80	79.84	**	**	**	**			
13	16	404	1.25	71.46	8.3	10.8	8.3	4.1			
14	17	369	1.25	65.29	8.6	10.9	8.6	4.2			
16	20	319	1.90	56.42	8.9	11.0	8.9	4.3			
18	22	291	2.10	51.55	9.0	11.1	9.0	4.4			
19	24	272	0.80	48.15	**	**	**	**			
21	26	247	2.45	43.75	9.2	11.2	9.2	4.5			
23	29	226	2.65	39.97	9.3	11.3	9.3	4.6			
24	29	222	1.25	39.38	9.3	11.0	9.3	4.3			
26	32	202	3.00	35.81	9.4	11.4	9.4	4.7			
30	37	176	2.10	31.09	9.5	11.2	9.5	4.5			
39	47	136	2.65	24.11	9.6	11.4	9.6	4.7			
16	20	324	1.15	87.38	8.8	11.0	8.8	4.3	FH052-11N-80-04E	23	230
18	22	296	1.15	79.84	9.0	11.1	9.0	4.4			
20	24	265	1.90	71.46	9.1	11.2	9.1	4.5			
22	26	242	1.90	65.29	9.2	11.3	9.2	4.6			
25	31	209	2.90	56.42	9.4	11.4	9.4	4.7			
29	36	179	1.15	48.15	9.5	11.2	9.5	4.5			
36	44	146	1.90	39.38	9.6	11.4	9.6	4.7			
11	14	461	0.90	81.63	1.7	1.8	1.7	1.8	FH043-11N-80-06F	20	228
12	15	421	1.00	74.46	3.3	5.1	3.3	2.4			
13	16	402	1.00	71.24	3.8	6.2	3.8	2.5			
14	18	367	1.10	64.98	4.5	7.7	4.5	2.6			
18	22	295	1.40	52.27	5.5	8.4	5.5	2.8			
20	24	269	1.50	47.68	5.8	8.6	5.8	3.0			
11	14	470	0.90	126.72	1.1	0.5	1.1	0.5	FH043-11N-80-04E	18	228
12	15	429	0.95	115.60	3.0	4.5	3.0	2.4			
15	18	351	1.15	94.61	4.7	8.1	4.7	2.6			
16	20	320	1.25	86.31	5.2	8.4	5.2	2.8			
17	21	303	1.35	81.63	5.4	8.4	5.4	2.8			
19	23	276	1.45	74.46	5.7	8.5	5.7	2.9			
20	24	264	1.55	71.24	5.8	8.6	5.8	3.0			
22	27	241	1.70	64.98	6.1	8.6	6.1	3.0			
27	33	194	2.10	52.27	6.4	8.8	6.4	3.2			
30	36	177	2.30	47.68	6.5	8.9	6.5	3.3			
12	15	428	0.80	75.79	**	**	**	**	FH042-11N-80-06F	20	228
13	16	390	0.80	69.14	**	**	**	**			
15	18	350	1.15	61.98	4.8	8.3	4.8	2.7			
16	20	319	1.25	56.54	5.2	8.4	5.2	2.8			
19	23	276	1.45	48.94	5.7	8.5	5.7	2.9			
21	26	252	1.60	44.64	6.0	8.6	6.0	3.0			
23	28	233	0.80	41.20	**	**	**	**			
25	30	214	1.90	37.95	6.3	8.7	6.3	3.1			
27	33	196	2.05	34.62	6.4	8.8	6.4	3.2			
28	34	190	1.25	33.69	6.4	8.5	6.4	2.9			
30	37	175	2.30	31.06	6.5	8.9	6.5	3.3			
33	40	160	2.50	28.33	6.6	8.9	6.6	3.3			
35	43	150	2.10	26.60	6.7	8.7	6.7	3.1			
39	48	135	3.00	23.91	6.7	9.0	6.7	3.4			
45	55	117	2.65	20.63	6.8	8.9	6.8	3.3			

<b>P<sub>N</sub> = 0.55 kW</b>										<b>IE1</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.55 kW</b>		<b>0.66 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
19	23	281	1.15	75.79	5.7	8.5	5.7	2.9	<b>FH042-11N-80-04E</b>	18	228
20	25	257	1.15	69.14	5.9	8.6	5.9	3.0			
23	28	230	1.75	61.98	6.2	8.7	6.2	3.1			
25	31	210	1.90	56.54	6.3	8.8	6.3	3.2			
29	35	182	2.25	48.94	6.5	8.9	6.5	3.3			
32	39	166	2.45	44.64	6.6	8.9	6.6	3.3			
34	42	153	1.15	41.20	6.7	8.7	6.7	3.1			
37	45	141	2.85	37.95	6.7	9.0	6.7	3.4			
42	51	125	1.90	33.69	6.8	8.9	6.8	3.3			
18	22	292	0.80	51.75	**	**	**	**	<b>FH032-11N-80-06F</b>	18	226
21	25	256	0.90	45.35	2.4	2.1	2.4	2.1			
23	28	232	0.95	41.12	3.1	2.6	3.1	2.6			
27	33	198	1.15	35.03	3.8	2.4	3.8	2.4			
29	36	179	1.25	31.76	4.0	2.9	4.0	2.9			
33	41	158	1.40	27.97	4.3	2.7	4.3	2.7			
34	41	156	0.80	27.67	**	**	**	**			
37	45	143	1.55	25.36	4.5	3.0	4.5	3.0			
41	51	127	1.20	22.50	4.6	3.0	4.6	3.0			
44	54	119	1.85	21.14	4.7	2.9	4.7	2.9			
49	59	108	2.05	19.17	4.8	3.2	4.8	3.2			
52	64	101	1.50	17.88	4.8	3.1	4.8	3.1			
58	71	91	2.45	16.06	4.9	3.1	4.9	3.1			
64	78	82	2.70	14.57	4.9	3.3	4.9	3.3			
67	83	78	1.95	13.81	5.0	3.3	5.0	3.3			
84	103	62	2.45	11.03	5.0	3.3	5.0	3.3			
20	25	260	0.85	70.17	2.3	2.0	2.3	2.0	<b>FH032-11N-80-04E</b>	16	226
22	27	236	0.95	63.63	3.0	2.6	3.0	2.6			
25	30	212	1.05	57.07	3.5	2.3	3.5	2.3			
27	33	192	1.15	51.75	3.9	2.8	3.9	2.8			
31	38	168	1.35	45.35	4.2	2.6	4.2	2.6			
34	42	153	1.45	41.12	4.4	3.0	4.4	3.0			
40	49	130	1.70	35.03	4.6	2.8	4.6	2.8			
45	54	118	1.90	31.76	4.7	3.1	4.7	3.1			
51	62	104	2.15	27.97	4.8	3.0	4.8	3.0			
56	68	94	2.35	25.36	4.9	3.2	4.9	3.2			
63	77	84	1.80	22.50	4.9	3.2	4.9	3.2			
67	82	78	2.85	21.14	5.0	3.2	5.0	3.2			
79	96	66	2.30	17.88	5.0	3.3	5.0	3.3			
102	125	51	2.95	13.81	5.1	3.4	5.1	3.4			
32	39	166	0.80	29.32	**	**	**	**	<b>FH022-11N-80-06F</b>	16	224
35	43	149	0.90	26.39	4.5	2.1	4.5	2.1			
42	52	124	1.10	21.89	4.8	2.0	4.8	2.0			
47	58	111	1.20	19.70	4.9	2.3	4.9	2.3			
49	60	107	1.25	18.88	4.9	2.1	4.9	2.1			
55	67	96	1.40	17.00	5.0	2.3	5.0	2.3			
56	69	93	1.40	16.48	5.0	2.2	5.0	2.2			
59	72	89	0.95	15.82	5.0	2.4	5.0	2.4			
63	77	84	1.60	14.84	5.0	2.4	5.0	2.4			
76	94	69	1.25	12.19	5.1	2.4	5.1	2.4			
77	94	68	1.95	12.09	5.1	2.3	5.1	2.3			
85	105	62	2.15	10.89	5.1	2.5	5.1	2.5			
98	120	54	1.60	9.52	5.2	2.5	5.2	2.5			
131	160	40	2.10	7.11	4.7	2.6	4.7	2.6			
152	186	35	2.45	6.13	4.4	2.6	4.4	2.6			
174	213	30	2.80	5.35	4.2	2.6	4.2	2.6			

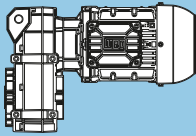
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\*\* ... on request

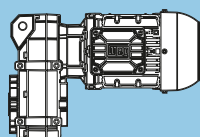
P <sub>N</sub> = 0.55 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.55 kW		0.66 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
32	39	163	0.80	43.83	**	**	**	**	FH022-11N-80-04E	14	224
38	46	139	0.95	37.52	4.6	1.9	4.6	1.9			
42	51	125	1.05	33.78	4.8	2.2	4.8	2.2			
48	59	109	1.20	29.32	4.9	2.1	4.9	2.1			
54	65	98	1.35	26.39	5.0	2.3	5.0	2.3			
57	70	92	0.95	24.76	5.0	2.3	5.0	2.3			
65	79	81	1.60	21.89	5.1	2.3	5.1	2.3			
70	86	75	1.15	20.08	5.1	2.4	5.1	2.4			
72	88	73	1.80	19.70	5.1	2.4	5.1	2.4			
75	91	70	1.90	18.88	5.1	2.3	5.1	2.3			
83	101	63	2.10	17.00	5.1	2.5	5.1	2.5			
86	105	61	2.15	16.48	5.1	2.4	5.1	2.4			
89	109	59	1.45	15.82	5.2	2.5	5.2	2.5			
95	116	55	2.40	14.84	5.2	2.5	5.2	2.5			
116	142	45	1.90	12.19	4.9	2.6	4.9	2.6			
117	143	45	2.90	12.09	4.9	2.5	4.9	2.5			
130	158	40	3.25	10.89	4.7	2.6	4.7	2.6			
149	181	35	2.40	9.52	4.5	2.6	4.5	2.6			
199	243	26	3.20	7.11	4.0	2.6	4.0	2.6			
231	281	23	3.70	6.13	3.8	2.7	3.8	2.7			
264	322	20	4.25	5.35	3.6	2.7	3.6	2.7			
360	439	15	4.95	3.93	3.2	2.7	3.2	2.7			

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\*\* ... on request

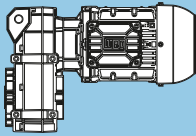
<b>P<sub>N</sub> = 0.75 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
3.3	4.0	2198	2.05	288.50	37.4	42.1	37.4	42.1	<b>FH093-11P-90S/L-06E</b>	174	238
3.9	4.7	1858	2.45	243.90	38.1	42.5	38.1	42.5			
4.5	5.4	1609	2.80	211.14	38.6	42.9	38.6	42.9			
2.6	3.2	2732	1.10	358.52	21.4	38.6	21.4	8.3	<b>FH083-11P-90S/L-06E</b>	119	236
3.3	4.0	2162	1.40	283.76	24.7	41.7	24.7	9.2			
3.8	4.6	1888	1.60	247.77	25.9	42.1	25.9	9.6			
4.3	5.2	1668	1.80	218.97	26.7	42.4	26.7	9.9			
5.1	6.2	1411	2.15	185.17	27.5	42.8	27.5	10.3			
5.2	6.4	1374	2.20	180.28	27.6	42.9	27.6	10.4			
5.9	7.2	1213	2.50	159.17	28.0	43.1	28.0	10.6			
6.6	8.0	1087	2.80	142.69	28.3	43.3	28.3	10.8			
6.8	8.2	1059	2.85	138.95	28.4	43.4	28.4	10.9			
4.0	4.9	1796	1.70	358.52	26.3	42.2	26.3	9.7	<b>FH083-11P-80-04F</b>	113	236
5.0	6.1	1421	2.15	283.76	27.5	42.8	27.5	10.3			
5.8	7.0	1241	2.45	247.77	28.0	43.1	28.0	10.6			
6.5	7.9	1097	2.75	218.97	28.3	43.3	28.3	10.8	<b>FH073-11P-90S/L-06E</b>	72	234
4.0	4.8	1807	0.85	237.15	12.7	15.3	12.7	4.1			
4.8	5.9	1483	1.05	194.58	15.7	16.0	15.7	4.7			
6.2	7.6	1148	1.35	150.69	17.8	16.7	17.8	5.4			
8.2	10	873	1.75	114.62	18.9	17.2	18.9	6.0			
9.9	12	720	2.10	94.52	19.4	17.5	19.3	6.3			
12	15	591	2.55	77.53	19.8	17.8	17.8	6.5			
14	17	502	3.00	65.88	20.0	18.0	16.7	6.7			
3.7	4.5	1930	0.80	385.37	**	**	**	**	<b>FH073-11P-80-04F</b>	66	234
4.7	5.7	1530	1.00	305.42	15.3	15.9	15.3	4.6			
6.0	7.3	1188	1.30	237.15	17.6	16.6	17.6	5.3			
7.3	8.9	975	1.55	194.58	18.6	17.0	18.6	5.8			
9.5	12	755	2.00	150.69	19.3	17.5	19.3	6.2			
12	15	574	2.65	114.62	19.8	17.8	17.7	6.6			
7.2	8.8	992	0.85	130.15	5.9	8.6	5.9	2.1	<b>FH063-11P-90S/L-06E</b>	49	232
7.9	9.6	909	0.95	119.35	7.3	11.6	7.3	2.3			
9.6	12	749	1.10	98.34	9.3	12.8	9.3	2.9			
10	13	687	1.20	90.17	9.9	13.0	9.9	3.0			
12	14	613	1.35	80.48	10.5	13.3	10.5	3.3			
13	16	562	1.50	73.80	10.8	13.4	10.8	3.5			
14	18	497	1.65	65.26	11.2	13.6	11.2	3.7			
16	19	456	1.80	59.84	11.4	13.8	11.4	3.8			
17	21	416	2.00	54.63	11.6	13.9	11.6	4.0			
19	23	382	2.15	50.10	11.7	14.0	11.7	4.0			
6.9	8.4	1035	0.80	206.59	**	**	**	**	<b>FH063-11P-80-04F</b>	43	232
7.5	9.2	949	0.90	189.44	6.7	10.3	6.7	2.2			
8.5	10	847	1.00	169.09	8.2	12.5	8.2	2.6			
9.2	11	777	1.10	155.05	9.0	12.7	9.0	2.8			
11	13	652	1.30	130.15	10.2	13.1	10.2	3.2			
12	15	598	1.40	119.35	10.6	13.3	10.6	3.3			
15	18	493	1.70	98.34	11.2	13.7	11.2	3.7			
16	19	452	1.85	90.17	11.4	13.8	11.4	3.8			
18	22	403	2.05	80.48	11.6	13.9	11.6	4.0			
19	24	370	2.25	73.80	11.8	14.0	11.8	4.1			
22	27	327	2.55	65.26	11.9	14.2	11.9	4.2			
24	29	300	2.75	59.84	12.0	14.3	11.7	4.3			
26	32	274	3.00	54.63	12.1	14.4	11.3	4.4			
19	23	378	2.20	49.67	11.7	14.0	11.7	4.1	<b>FH062-11P-90S/L-06E</b>	48	232
21	25	347	2.40	45.55	11.9	14.1	11.9	4.2			
23	27	317	2.60	41.66	12.0	14.2	11.9	4.3			
25	30	291	2.85	38.20	12.0	14.3	11.5	4.3			
46	56	156	2.75	20.49	12.4	14.6	9.2	4.6			
9.4	11	759	0.80	99.66	**	**	**	**	<b>FH053-11P-90S/L-06E</b>	33	230
10	12	717	0.85	94.11	3.5	4.8	3.5	3.1			
11	14	626	1.00	82.13	5.7	9.5	5.7	3.4			
13	15	572	1.05	75.04	6.5	10.2	6.5	3.5			
16	19	459	1.35	60.26	7.8	10.6	7.8	3.9			
17	21	420	1.45	55.06	8.2	10.7	8.2	4.0			

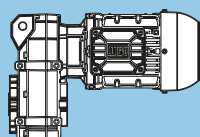


P <sub>N</sub> = 0.75 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.75 kW		0.90 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
9.8	12	732	0.85	146.10	3.0	3.8	3.0	3.1	FH053-11P-80-04F	26	230
11	13	669	0.90	133.49	4.8	7.5	4.8	3.2			
13	16	546	1.10	109.08	6.9	10.3	6.9	3.6			
14	17	499	1.20	99.66	7.4	10.5	7.4	3.8			
15	18	471	1.30	94.11	7.7	10.6	7.7	3.9			
17	21	411	1.50	82.13	8.2	10.7	8.2	4.0			
19	23	376	1.60	75.04	8.5	10.8	8.5	4.1			
24	29	302	2.00	60.26	9.0	11.1	9.0	4.4			
26	32	276	2.20	55.06	9.1	11.1	9.1	4.4			
13	16	545	0.95	71.46	6.9	10.3	6.9	3.6	FH052-11P-90S/L-06E	32	230
14	18	497	0.95	65.29	7.4	10.5	7.4	3.8			
17	20	430	1.40	56.42	8.1	10.7	8.1	4.0			
18	22	393	1.55	51.55	8.4	10.8	8.4	4.1			
21	26	333	1.80	43.75	8.8	11.0	8.8	4.3			
24	29	305	2.00	39.97	8.9	11.1	8.9	4.4			
26	32	273	2.20	35.81	9.1	11.2	9.1	4.5			
29	35	249	2.40	32.72	9.2	11.2	9.2	4.5			
30	37	237	1.55	31.09	9.3	11.0	9.3	4.3			
34	42	210	2.90	27.56	9.4	11.4	9.4	4.7			
39	47	184	2.00	24.11	9.5	11.2	9.5	4.5			
48	58	150	2.40	19.73	9.6	11.3	9.6	4.6			
16	20	438	0.85	87.38	8.0	10.7	8.0	4.0	FH052-11P-80-04F	26	230
18	22	400	0.85	79.84	8.3	10.8	8.3	4.1			
20	24	358	1.40	71.46	8.6	10.9	8.6	4.2			
22	27	327	1.40	65.29	8.8	11.0	8.8	4.3			
25	31	283	2.15	56.42	9.1	11.1	9.1	4.4			
28	34	258	2.35	51.55	9.2	11.2	9.2	4.5			
30	36	241	0.85	48.15	9.3	11.0	9.3	4.3			
33	40	219	2.75	43.75	9.3	11.3	9.3	4.6			
36	44	200	3.00	39.97	9.4	11.4	9.4	4.7			
46	56	156	2.35	31.09	9.5	11.3	9.5	4.6			
59	72	121	3.00	24.11	9.6	11.5	9.6	4.8			
14	18	495	0.85	64.98	**	**	**	**	FH043-11P-90S/L-06E	27	228
18	22	398	1.05	52.27	3.8	6.2	3.8	2.5			
20	24	363	1.15	47.68	4.5	7.7	4.5	2.6			
15	18	474	0.85	94.61	0.6	-0.5	0.6	-0.5	FH043-11P-80-04F	21	228
17	20	432	0.95	86.31	2.9	4.3	2.9	2.4			
18	21	409	1.00	81.63	3.6	5.7	3.6	2.4			
19	23	373	1.10	74.46	4.4	7.5	4.4	2.6			
20	24	357	1.15	71.24	4.7	8.1	4.7	2.6			
22	27	325	1.25	64.98	5.1	8.4	5.1	2.8			
27	33	262	1.55	52.27	5.9	8.6	5.9	3.0			
30	36	239	1.70	47.68	6.1	8.7	6.1	3.1			
15	18	472	0.85	61.98	0.9	0.1	0.9	0.1	FH042-11P-90S/L-06E	27	228
17	20	431	0.95	56.54	3.0	4.5	3.0	2.4			
19	23	373	1.10	48.94	4.4	7.5	4.4	2.6			
21	26	340	1.20	44.64	4.9	8.3	4.9	2.7			
25	30	289	1.40	37.95	5.6	8.5	5.6	2.9			
27	33	264	1.55	34.62	5.9	8.6	5.9	3.0			
28	34	257	0.95	33.69	5.9	8.2	5.9	2.6			
30	37	237	1.70	31.06	6.1	8.7	6.1	3.1			
33	40	216	1.90	28.33	6.3	8.7	6.3	3.1			
35	43	203	1.55	26.60	6.4	8.5	6.4	2.9			
39	48	182	2.20	23.91	6.5	8.8	6.5	3.2			
43	52	166	2.45	21.81	6.6	8.9	6.6	3.3			
46	56	157	2.00	20.63	6.6	8.7	6.6	3.1			
52	63	138	2.95	18.06	6.7	9.0	6.7	3.4			
56	68	129	2.40	16.88	6.8	8.8	6.8	3.2			

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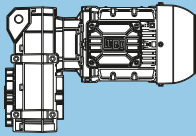
\*\* ... on request

<b>P<sub>N</sub> = 0.75 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
19	23	380	0.85	75.79	4.2	7.0	4.2	2.5	<b>FH042-11P-80-04F</b>	20	228
21	25	346	0.85	69.14	4.8	8.3	4.8	2.7			
23	28	310	1.30	61.98	5.3	8.4	5.3	2.8			
25	31	283	1.40	56.54	5.7	8.5	5.7	2.9			
29	36	245	1.65	48.94	6.0	8.6	6.0	3.0			
32	39	224	1.80	44.64	6.2	8.7	6.2	3.1			
35	42	206	0.85	41.20	6.3	8.5	6.3	2.9			
38	46	190	2.15	37.95	6.4	8.8	6.4	3.2			
41	50	173	2.35	34.62	6.5	8.9	6.5	3.3			
42	52	169	1.40	33.69	6.6	8.6	6.6	3.0			
46	56	156	2.60	31.06	6.6	8.9	6.6	3.3			
50	61	142	2.85	28.33	6.7	9.0	6.7	3.4			
54	65	133	2.35	26.60	6.8	8.8	6.8	3.2			
69	84	103	3.00	20.63	6.9	9.0	6.9	3.4			
27	33	267	0.85	35.03	2.0	2.0	2.0	2.0	<b>FH032-11P-90S/L-06E</b>	25	226
30	36	242	0.95	31.76	2.8	2.6	2.8	2.6			
34	41	213	1.05	27.97	3.5	2.3	3.5	2.3			
37	45	193	1.15	25.36	3.8	2.8	3.8	2.8			
42	51	171	0.90	22.50	4.2	2.8	4.2	2.8			
44	54	161	1.40	21.14	4.3	2.7	4.3	2.7			
49	60	146	1.55	19.17	4.4	3.0	4.4	3.0			
53	64	136	1.15	17.88	4.5	3.0	4.5	3.0			
59	71	122	1.80	16.06	4.7	2.9	4.7	2.9			
65	79	111	2.00	14.57	4.8	3.2	4.8	3.2			
68	83	105	1.45	13.81	4.8	3.1	4.8	3.1			
75	92	95	2.35	12.50	4.9	3.1	4.9	3.1			
83	101	86	2.55	11.33	4.9	3.3	4.9	3.3			
85	104	84	1.80	11.03	4.9	3.2	4.9	3.2			
96	117	74	2.90	9.76	5.0	3.2	5.0	3.2			
106	129	67	3.00	8.85	5.0	3.4	5.0	3.4			
113	137	63	2.40	8.33	5.0	3.3	5.0	3.3			
25	30	286	0.80	57.07	**	**	**	**	<b>FH032-11P-80-04F</b>	19	226
28	34	259	0.85	51.75	2.3	2.5	2.3	2.5			
32	38	227	1.00	45.35	3.2	2.2	3.2	2.2			
35	42	206	1.10	41.12	3.6	2.7	3.6	2.7			
41	50	175	1.30	35.03	4.1	2.6	4.1	2.6			
45	55	159	1.40	31.76	4.3	2.9	4.3	2.9			
51	62	140	1.60	27.97	4.5	2.8	4.5	2.8			
52	63	139	0.90	27.67	4.5	2.9	4.5	2.9			
56	69	127	1.75	25.36	4.6	3.1	4.6	3.1			
64	77	113	1.35	22.50	4.7	3.1	4.7	3.1			
68	82	106	2.10	21.14	4.8	3.0	4.8	3.0			
75	91	96	2.30	19.17	4.9	3.2	4.9	3.2			
80	97	90	1.70	17.88	4.9	3.2	4.9	3.2			
89	108	80	2.75	16.06	4.9	3.2	4.9	3.2			
104	126	69	2.20	13.81	5.0	3.3	5.0	3.3			
130	158	55	2.75	11.03	5.1	3.4	5.1	3.4			
43	52	167	0.80	21.89	**	**	**	**	<b>FH022-11P-90S/L-06E</b>	23	224
48	58	150	0.90	19.70	4.5	2.1	4.5	2.1			
50	61	144	0.95	18.88	4.6	1.9	4.6	1.9			
55	67	130	1.05	17.00	4.7	2.2	4.7	2.2			
57	69	126	1.05	16.48	4.8	2.0	4.8	2.0			
63	77	113	1.15	14.84	4.9	2.3	4.9	2.3			
77	94	93	0.95	12.19	5.0	2.3	5.0	2.3			
78	95	92	1.45	12.09	5.0	2.2	5.0	2.2			
86	105	83	1.60	10.89	5.0	2.4	5.0	2.4			
99	120	73	1.20	9.52	5.1	2.4	5.1	2.4			
132	161	54	1.60	7.11	4.8	2.5	4.8	2.5			
153	187	47	1.80	6.13	4.5	2.5	4.5	2.5			
176	214	41	2.10	5.35	4.3	2.6	4.3	2.6			
239	291	30	2.45	3.93	3.8	2.6	3.8	2.6			

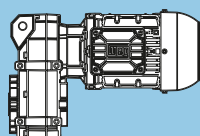
P <sub>N</sub> = 0.75 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.75 kW		0.90 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
42	52	169	0.80	33.78	**	**	**	**	FH022-11P-80-04F	17	224
49	59	147	0.90	29.32	4.6	1.9	4.6	1.9			
54	66	132	1.00	26.39	4.7	2.2	4.7	2.2			
65	79	110	1.20	21.89	4.9	2.1	4.9	2.1			
71	87	101	0.85	20.08	4.9	2.3	4.9	2.3			
73	88	99	1.35	19.70	5.0	2.3	5.0	2.3			
76	92	95	1.40	18.88	5.0	2.2	5.0	2.2			
84	102	85	1.55	17.00	5.0	2.4	5.0	2.4			
87	106	83	1.60	16.48	5.1	2.3	5.1	2.3			
90	110	79	1.10	15.82	5.1	2.4	5.1	2.4			
96	117	74	1.75	14.84	5.1	2.4	5.1	2.4			
117	143	61	1.40	12.19	5.0	2.5	5.0	2.5			
118	144	61	2.15	12.09	5.0	2.4	5.0	2.4			
131	160	55	2.40	10.89	4.8	2.5	4.8	2.5			
150	183	48	1.80	9.52	4.5	2.5	4.5	2.5			
201	245	36	2.40	7.11	4.1	2.6	4.1	2.6			
233	284	31	2.75	6.13	3.8	2.6	3.8	2.6			
267	325	27	3.15	5.35	3.7	2.6	3.7	2.6			
364	443	20	3.70	3.93	3.3	2.7	3.3	2.7			

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\*\* ... on request

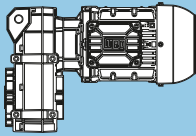
<b>P<sub>N</sub> = 1.1 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>1.1 kW</b>		<b>1.3 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
5.0	6.1	2083	2.20	288.50	37.7	42.2	37.7	42.2	<b>FH093-11P-90S/L-04E</b>	172	238
6.0	7.2	1761	2.60	243.90	38.3	42.7	38.3	42.7			
6.9	8.3	1524	3.00	211.14	38.7	43.0	38.7	43.0			
3.3	4.0	3157	1.45	288.50	34.6	40.8	34.6	40.8	<b>FH093-11P-100L-06D</b>	178	238
3.9	4.8	2669	1.70	243.90	36.2	41.5	36.2	41.5			
4.5	5.5	2310	1.95	211.14	37.1	41.9	37.1	41.9			
5.1	6.2	2046	2.20	186.99	37.8	42.3	37.8	42.3			
5.9	7.2	1770	2.55	161.76	38.3	42.7	38.3	42.7			
6.7	8.2	1563	2.90	142.85	38.7	42.9	38.7	42.9			
7.0	8.5	1506	3.00	137.63	38.8	43.0	38.8	43.0			
4.1	4.9	2588	1.20	358.52	22.4	40.8	22.4	8.5	<b>FH083-11P-90S/L-04E</b>	117	236
5.1	6.2	2049	1.50	283.76	25.2	41.8	25.2	9.3			
5.9	7.1	1789	1.70	247.77	26.3	42.2	26.3	9.7			
6.6	8.0	1581	1.90	218.97	27.0	42.6	27.0	10.1			
7.9	9.5	1337	2.25	185.17	27.7	42.9	27.7	10.4			
8.1	9.8	1302	2.35	180.28	27.8	43.0	27.8	10.5			
9.1	11	1149	2.65	159.17	28.2	43.2	28.2	10.7			
10	13	1003	3.00	138.95	28.5	43.5	27.4	11.0			
2.7	3.2	3923	0.80	358.52	**	**	**	**			
3.4	4.1	3105	1.00	283.76	18.4	32.0	18.4	7.7			
3.9	4.7	2711	1.15	247.77	21.6	39.0	21.6	8.3			
4.4	5.3	2396	1.30	218.97	23.5	41.3	23.5	8.8			
5.2	6.3	2026	1.50	185.17	25.3	41.9	25.3	9.4			
5.3	6.5	1973	1.55	180.28	25.6	42.0	25.6	9.5			
6.0	7.3	1742	1.75	159.17	26.5	42.3	26.5	9.8			
6.7	8.2	1561	1.95	142.69	27.1	42.6	27.1	10.1			
6.9	8.4	1520	2.00	138.95	27.2	42.7	27.2	10.2			
7.7	9.4	1363	2.25	124.59	27.7	42.9	27.7	10.4			
8.1	9.8	1303	2.35	119.05	27.8	43.0	27.8	10.5			
8.7	11	1205	2.50	110.11	28.1	43.1	28.1	10.6			
9.5	11	1109	2.75	101.32	28.3	43.3	28.1	10.8			
10	13	1019	2.95	93.11	28.5	43.4	27.4	10.9			
6.1	7.4	1712	0.90	237.15	13.7	15.5	13.7	4.3	<b>FH073-11P-90S/L-04E</b>	70	234
7.5	9.0	1405	1.10	194.58	16.2	16.1	16.2	4.9			
9.7	12	1088	1.40	150.69	18.1	16.8	18.1	5.5			
13	15	828	1.85	114.62	19.1	17.3	18.2	6.1			
15	19	682	2.20	94.52	19.6	17.6	17.0	6.4			
19	23	560	2.70	77.53	19.9	17.9	15.4	6.6			
6.4	7.7	1649	0.95	150.69	14.3	15.6	14.3	4.4	<b>FH073-11P-100L-06D</b>	76	234
8.4	10	1254	1.20	114.62	17.2	16.4	17.2	5.2			
10	12	1034	1.50	94.52	18.3	16.9	18.3	5.6			
12	15	848	1.80	77.53	19.0	17.3	18.7	6.0			
15	18	721	2.10	65.88	19.4	17.5	17.1	6.3			
18	22	593	2.55	54.16	19.8	17.8	15.8	6.5			
11	14	940	0.90	130.15	6.9	10.8	6.9	2.3	<b>FH063-11P-90S/L-04E</b>	47	232
12	15	862	1.00	119.35	8.0	12.4	8.0	2.5			
15	18	710	1.20	98.34	9.7	13.0	9.7	3.0			
16	20	651	1.30	90.17	10.2	13.1	10.2	3.2			
18	22	581	1.45	80.48	10.7	13.4	10.7	3.4			
20	24	533	1.55	73.80	11.0	13.5	11.0	3.6			
22	27	471	1.75	65.26	11.3	13.7	11.3	3.8			
24	29	432	1.90	59.84	11.5	13.8	11.5	3.9			
27	32	394	2.10	54.63	11.7	14.0	11.7	4.0			
29	35	362	2.30	50.10	11.8	14.1	11.4	4.1			
9.8	12	1076	0.80	98.34	**	**	**	**	<b>FH063-11P-100L-06D</b>	53	232
11	13	987	0.85	90.17	6.0	8.8	6.0	2.1			
12	14	881	0.95	80.48	7.8	12.4	7.8	2.5			
13	16	808	1.05	73.80	8.7	12.6	8.7	2.7			
15	18	714	1.15	65.26	9.6	12.9	9.6	3.0			
16	19	655	1.30	59.84	10.1	13.1	10.1	3.2			
18	21	598	1.40	54.63	10.6	13.3	10.6	3.4			
19	23	548	1.50	50.10	10.9	13.5	10.9	3.5			



P <sub>N</sub> = 1.1 kW										IE3		
50 Hz		60 Hz		f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
1.1 kW		1.3 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm				F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
29	35	359	2.30	49.67	11.8	14.1	11.3	4.1	FH062-11P-90S/L-04E	46	232	
32	39	329	2.50	45.55	11.9	14.2	10.9	4.2				
35	42	301	2.75	41.66	12.0	14.3	10.5	4.3				
38	46	276	3.00	38.20	12.1	14.3	10.1	4.4				
71	86	148	2.90	20.49	12.4	14.6	8.0	4.6				
19	23	544	1.55	49.67	10.9	13.5	10.9	3.5	FH062-11P-100L-06D	52	232	
21	26	498	1.65	45.55	11.2	13.6	11.2	3.7				
23	28	456	1.80	41.66	11.4	13.8	11.4	3.8				
25	30	418	2.00	38.20	11.6	13.9	11.6	3.9				
29	36	358	2.30	32.69	11.8	14.1	11.3	4.1				
32	39	328	2.50	29.98	11.9	14.2	10.9	4.2				
38	46	276	3.00	25.23	12.1	14.4	10.1	4.4				
47	57	224	1.90	20.49	12.2	14.3	9.5	4.3				
13	16	788	0.80	109.08	**	**	**	**	FH053-11P-90S/L-04E	31	230	
15	19	679	0.90	94.11	4.6	7.1	4.6	3.2				
17	20	621	1.00	85.99	5.8	9.7	5.8	3.4				
18	21	593	1.05	82.13	6.2	10.2	6.2	3.5				
19	23	542	1.15	75.04	6.9	10.3	6.9	3.6				
24	29	435	1.40	60.26	8.0	10.7	8.0	4.0				
26	32	398	1.55	55.06	8.3	10.8	8.3	4.1				
20	25	516	1.00	71.46	7.2	10.4	7.2	3.7	FH052-11P-90S/L-04E	30	230	
22	27	471	1.00	65.29	7.7	10.5	7.7	3.8				
26	31	407	1.50	56.42	8.3	10.8	8.3	4.1				
28	34	372	1.65	51.55	8.5	10.8	8.5	4.1				
33	40	316	1.90	43.75	8.9	11.0	8.9	4.3				
36	44	289	2.10	39.97	9.0	11.1	9.0	4.4				
37	45	284	1.00	39.38	9.1	10.8	9.1	4.1				
41	49	259	2.35	35.81	9.2	11.2	9.2	4.5				
44	54	236	2.55	32.72	9.3	11.3	9.3	4.6				
47	57	224	1.65	31.09	9.3	11.0	9.3	4.3				
60	73	174	2.10	24.11	9.5	11.2	9.5	4.5				
74	89	142	2.55	19.73	9.6	11.4	9.6	4.7				
17	21	617	1.00	56.42	5.8	9.7	5.8	3.4	FH052-11P-100L-06D	36	230	
19	23	564	1.10	51.55	6.6	10.3	6.6	3.6				
22	27	479	1.30	43.75	7.6	10.5	7.6	3.8				
24	29	437	1.40	39.97	8.0	10.6	8.0	3.9				
27	33	392	1.55	35.81	8.4	10.8	8.4	4.1				
29	36	358	1.70	32.72	8.6	10.9	8.6	4.2				
31	37	340	1.10	31.09	8.7	10.5	8.7	3.8				
35	42	302	2.00	27.56	9.0	11.1	9.0	4.4				
38	46	276	2.20	25.18	9.1	11.1	9.1	4.4				
40	48	264	1.40	24.11	9.2	10.9	9.2	4.2				
46	56	228	2.65	20.83	9.3	11.3	9.3	4.6				
49	59	216	1.70	19.73	9.4	11.1	9.4	4.4				
50	61	208	2.90	19.03	9.4	11.4	9.4	4.7				
63	77	166	2.20	15.19	9.5	11.3	9.5	4.6				
84	101	126	2.90	11.48	9.6	11.5	9.1	4.8				
20	25	514	0.80	71.24	**	**	**	**	FH043-11P-90S/L-04E	25	228	
22	27	469	0.90	64.98	1.2	0.7	1.2	0.7				
28	34	377	1.10	52.27	4.3	7.3	4.3	2.6				
31	37	344	1.20	47.68	4.9	8.3	4.9	2.7				
20	24	522	0.80	47.68	**	**	**	**	FH043-11P-100L-06D	31	228	

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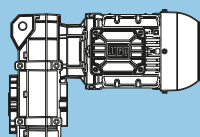
<b>P<sub>N</sub> = 1.1 kW</b>										<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>				<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>1.1 kW</b>		<b>1.3 kW</b>				<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN				
23	28	447	0.90	61.98	2.4	3.2	2.4	2.3	<b>FH042-11P-90S/L-04E</b>	25	228	
26	31	408	1.00	56.54	3.6	5.8	3.6	2.5				
30	36	353	1.15	48.94	4.7	8.1	4.7	2.6				
33	39	322	1.25	44.64	5.2	8.4	5.2	2.8				
38	46	274	1.50	37.95	5.8	8.5	5.8	2.9				
42	51	250	1.65	34.62	6.0	8.6	6.0	3.0				
43	52	243	1.00	33.69	6.0	8.3	6.0	2.7				
47	57	224	1.80	31.06	6.2	8.7	6.2	3.1				
51	62	205	2.00	28.33	6.4	8.8	6.4	3.2				
55	66	192	1.65	26.60	6.4	8.5	6.4	2.9				
61	74	173	2.35	23.91	6.6	8.9	6.6	3.3				
67	81	157	2.55	21.81	6.6	8.9	6.6	3.3				
71	85	149	2.10	20.63	6.7	8.7	6.7	3.1				
86	104	122	2.55	16.88	6.8	8.9	6.8	3.3				
22	26	488	0.85	44.64	**	**	**	**	<b>FH042-11P-100L-06D</b>	30	228	
25	31	415	1.00	37.95	3.4	5.3	3.4	2.4				
28	34	379	1.10	34.62	4.3	7.3	4.3	2.6				
31	38	340	1.20	31.06	4.9	8.3	4.9	2.7				
34	41	310	1.30	28.33	5.3	8.4	5.3	2.8				
36	44	291	1.10	26.60	5.6	8.0	5.6	2.4				
40	49	262	1.55	23.91	5.9	8.6	5.9	3.0				
44	53	239	1.70	21.81	6.1	8.7	6.1	3.1				
47	56	226	1.40	20.63	6.2	8.4	6.2	2.8				
53	65	198	2.05	18.06	6.4	8.8	6.4	3.2				
57	69	185	1.70	16.88	6.5	8.6	6.5	3.0				
58	71	180	2.25	16.48	6.5	8.9	6.5	3.3				
65	79	162	2.50	14.78	6.6	8.9	6.6	3.3				
71	86	148	2.75	13.48	6.7	9.0	6.7	3.4				
74	90	142	2.20	12.99	6.7	8.8	6.7	3.2				
80	97	131	2.95	11.99	6.8	9.0	6.8	3.4				
98	119	107	2.90	9.82	6.9	9.0	6.9	3.4				
42	50	253	0.90	35.03	2.5	2.1	2.5	2.1	<b>FH032-11P-90S/L-04E</b>	23	226	
46	55	229	1.00	31.76	3.2	2.6	3.2	2.6				
52	63	202	1.10	27.97	3.7	2.4	3.7	2.4				
57	69	183	1.25	25.36	4.0	2.8	4.0	2.8				
65	78	162	0.95	22.50	4.3	2.8	4.3	2.8				
69	83	153	1.45	21.14	4.4	2.7	4.4	2.7				
76	92	138	1.60	19.17	4.5	3.0	4.5	3.0				
81	98	129	1.20	17.88	4.6	3.0	4.6	3.0				
91	110	116	1.90	16.06	4.7	2.9	4.7	2.9				
100	121	105	2.10	14.57	4.8	3.2	4.8	3.2				
105	127	100	1.55	13.81	4.8	3.1	4.8	3.1				
116	141	90	2.45	12.50	4.9	3.1	4.9	3.1				
128	155	82	2.70	11.33	4.9	3.3	4.9	3.3				
132	160	80	1.90	11.03	5.0	3.2	5.0	3.2				
175	211	60	2.50	8.33	5.0	3.3	5.0	3.3				
38	46	278	0.80	25.36	**	**	**	**	<b>FH032-11P-100L-06D</b>	29	226	
45	55	231	1.00	21.14	3.1	2.2	3.1	2.2				
50	61	210	1.05	19.17	3.6	2.7	3.6	2.7				
54	65	196	0.80	17.88	**	**	**	**				
60	73	176	1.30	16.06	4.1	2.6	4.1	2.6				
66	80	159	1.40	14.57	4.3	2.9	4.3	2.9				
70	84	151	1.00	13.81	4.4	2.9	4.4	2.9				
77	93	137	1.65	12.50	4.5	2.8	4.5	2.8				
85	103	124	1.80	11.33	4.7	3.1	4.7	3.1				
87	106	121	1.25	11.03	4.7	3.0	4.7	3.0				
98	119	107	2.00	9.76	4.8	3.0	4.8	3.0				
108	132	97	2.10	8.85	4.9	3.2	4.9	3.2				
115	140	91	1.65	8.33	4.9	3.2	4.9	3.2				
152	184	69	2.10	6.33	5.0	3.3	5.0	3.3				
195	236	54	2.40	4.93	5.1	3.4	5.1	3.4				
249	303	42	2.65	3.85	4.9	3.4	4.9	3.4				

Legend see page 149

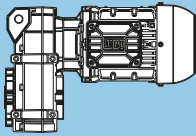
\*\* ... on request

$P_N = 1.1 \text{ kW}$

IE3

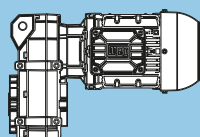
50 Hz 1.1 kW	60 Hz 1.3 kW	$M_2$ Nm	$f_B$	$i$	at 50 Hz					m kg	Dimension sheet see page
					Output shaft		Hollow shaft				
					$F_{rN}$ kN	$F_{aN}$ kN	$F_{rN}$ kN	$F_{aN}$ kN			
66	80	158	0.85	21.89	4.4	1.8	4.4	1.8	<b>FH022-11P-90S/L-04E</b>  21  224		
74	89	142	0.95	19.70	4.6	2.1	4.6	2.1			
77	93	136	1.00	18.88	4.7	1.9	4.7	1.9			
86	104	123	1.10	17.00	4.8	2.2	4.8	2.2			
88	107	119	1.10	16.48	4.8	2.0	4.8	2.0			
98	119	107	1.25	14.84	4.9	2.3	4.9	2.3			
119	144	88	1.00	12.19	5.0	2.4	5.0	2.4			
120	146	87	1.50	12.09	5.0	2.2	5.0	2.2			
134	162	79	1.70	10.89	4.9	2.4	4.9	2.4			
153	185	69	1.25	9.52	4.6	2.5	4.6	2.5			
205	248	51	1.65	7.11	4.1	2.5	4.1	2.5			
237	287	44	1.90	6.13	3.9	2.6	3.9	2.6			
272	329	39	2.20	5.35	3.7	2.6	3.7	2.6			
370	448	28	2.55	3.93	3.3	2.6	3.3	2.6			

Legend see page 149

<b>P<sub>N</sub> = 1.5 kW</b>										<b>IE3</b>				
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page			
<b>1.5 kW</b>		<b>1.8 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>							
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN						
5.0	6.1	2850	1.60	288.50	35.6	41.2	35.6	41.2	<b>FH093-11P-90S/L-04F</b>	173	238			
5.9	7.2	2410	1.90	243.90	36.9	41.8	36.9	41.8						
6.9	8.3	2086	2.20	211.14	37.7	42.2	37.7	42.2						
7.8	9.4	1847	2.45	186.99	38.2	42.6	38.2	42.6						
9.0	11	1598	2.85	161.76	38.6	42.9	38.6	42.9						
4.0	4.9	3542	0.85	358.52	13.5	21.5	13.5	7.0	<b>FH083-11P-90S/L-04F</b>	119	236			
5.1	6.2	2803	1.10	283.76	20.9	37.5	20.9	8.2						
5.9	7.1	2448	1.25	247.77	23.2	41.2	23.2	8.7						
6.6	8.0	2163	1.40	218.97	24.7	41.7	24.7	9.2						
7.8	9.5	1829	1.65	185.17	26.2	42.2	26.2	9.7						
8.0	9.7	1781	1.70	180.28	26.3	42.3	26.3	9.8						
9.1	11	1572	1.95	159.17	27.0	42.6	27.0	10.1						
10	13	1373	2.20	138.95	27.6	42.9	27.6	10.4						
12	15	1176	2.60	119.05	28.1	43.2	26.5	10.7						
13	16	1088	2.80	110.11	28.3	43.3	25.6	10.8						
14	17	1001	3.00	101.32	28.5	43.5	24.8	11.0						
7.5	9.0	1922	0.80	194.58	**	**	**	**	<b>FH073-11P-90S/L-04F</b>	71	234			
9.6	12	1489	1.05	150.69	15.6	16.0	15.6	4.7						
13	15	1132	1.35	114.62	17.8	16.7	17.8	5.4						
15	19	934	1.65	94.52	18.7	17.1	17.8	5.8						
19	23	766	2.00	77.53	19.3	17.4	16.1	6.2						
22	27	651	2.35	65.88	19.6	17.7	15.1	6.4						
27	32	535	2.85	54.16	19.9	17.9	13.9	6.7						
15	18	972	0.85	98.34	6.3	9.5	6.3	2.2	<b>FH063-11P-90S/L-04F</b>	48	232			
16	19	891	0.95	90.17	7.6	12.3	7.6	2.4						
18	22	795	1.05	80.48	8.8	12.7	8.8	2.7						
20	24	729	1.15	73.80	9.5	12.9	9.5	2.9						
22	27	645	1.30	65.26	10.2	13.2	10.2	3.2						
24	29	591	1.40	59.84	10.6	13.3	10.6	3.4						
27	32	540	1.55	54.63	10.9	13.5	10.9	3.6						
29	35	495	1.70	50.10	11.2	13.6	11.2	3.7						
29	35	491	1.70	49.67	11.2	13.7	11.2	3.7	<b>FH062-11P-90S/L-04F</b>	47	232			
32	39	450	1.85	45.55	11.4	13.8	11.4	3.8						
35	42	412	2.00	41.66	11.6	13.9	11.0	4.0						
38	46	377	2.20	38.20	11.8	14.0	10.6	4.1						
44	54	323	2.55	32.69	11.9	14.2	9.9	4.3						
48	59	296	2.80	29.98	12.0	14.3	9.6	4.3						
71	86	202	2.10	20.49	12.3	14.4	8.3	4.4						
19	23	741	0.85	75.04	2.6	2.9	2.6	2.9	<b>FH053-11P-90S/L-04F</b>	32	230			
24	29	595	1.05	60.26	6.2	10.2	6.2	3.5						
26	32	544	1.10	55.06	6.9	10.3	6.9	3.6						
26	31	557	1.10	56.42	6.7	10.3	6.7	3.6	<b>FH052-11P-90S/L-04F</b>	32	230			
28	34	509	1.20	51.55	7.3	10.4	7.3	3.7						
33	40	432	1.40	43.75	8.1	10.7	8.1	4.0						
36	44	395	1.55	39.97	8.4	10.8	8.4	4.1						
40	49	354	1.70	35.81	8.7	10.9	8.7	4.2						
44	54	323	1.85	32.72	8.8	11.0	8.8	4.3						
47	56	307	1.20	31.09	8.9	10.7	8.9	4.0						
53	64	272	2.25	27.56	9.1	11.2	9.1	4.5						
58	70	249	2.40	25.18	9.2	11.2	9.2	4.5						
60	73	238	1.55	24.11	9.3	11.0	9.3	4.3						
70	84	206	2.95	20.83	9.4	11.4	9.4	4.7						
73	89	195	1.85	19.73	9.4	11.2	9.4	4.5						
95	116	150	2.40	15.19	9.6	11.4	8.9	4.7						
28	34	516	0.80	52.27	**	**	**	**				<b>FH043-11P-90S/L-04F</b>	26	228
30	37	471	0.85	47.68	1.0	0.3	1.0	0.3						

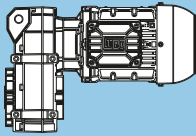
Legend see page 149

\*\* ... on request

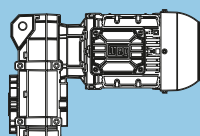
P <sub>N</sub> = 1.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
1.5 kW		1.8 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
30	36	483	0.85	48.94	**	**	**	**	FH042-11P-90S/L-04F	26	228
32	39	441	0.95	44.64	2.6	3.6	2.6	2.3			
38	46	375	1.10	37.95	4.3	7.3	4.3	2.6			
42	51	342	1.20	34.62	4.9	8.3	4.9	2.7			
47	57	307	1.35	31.06	5.4	8.4	5.4	2.8			
51	62	280	1.45	28.33	5.7	8.5	5.7	2.9			
55	66	263	1.20	26.60	5.9	8.2	5.9	2.6			
61	73	236	1.70	23.91	6.1	8.7	6.1	3.1			
66	80	215	1.90	21.81	6.3	8.7	6.3	3.1			
70	85	204	1.55	20.63	6.4	8.5	6.4	2.9			
80	97	178	2.25	18.06	6.5	8.9	6.5	3.3			
86	104	167	1.85	16.88	6.6	8.7	6.6	3.1			
88	106	163	2.50	16.48	6.6	8.9	6.6	3.3			
98	119	146	2.75	14.78	6.7	9.0	6.7	3.4			
112	135	128	2.45	12.99	6.8	8.9	6.8	3.3			
52	63	276	0.80	27.97	**	**	**	**	FH032-11P-90S/L-04F	25	226
57	69	251	0.90	25.36	2.6	2.5	2.6	2.5			
69	83	209	1.10	21.14	3.6	2.4	3.6	2.4			
76	92	189	1.20	19.17	3.9	2.8	3.9	2.8			
81	98	177	0.85	17.88	4.1	2.8	4.1	2.8			
90	109	159	1.40	16.06	4.3	2.7	4.3	2.7			
100	120	144	1.55	14.57	4.5	3.0	4.5	3.0			
105	127	136	1.10	13.81	4.5	3.0	4.5	3.0			
116	140	123	1.80	12.50	4.7	2.9	4.7	2.9			
128	155	112	2.00	11.33	4.7	3.2	4.7	3.2			
131	159	109	1.40	11.03	4.8	3.1	4.8	3.1			
149	180	96	2.20	9.76	4.9	3.1	4.9	3.1			
164	198	87	2.35	8.85	4.9	3.3	4.9	3.3			
174	211	82	1.85	8.33	4.9	3.2	4.9	3.2			
229	277	63	2.35	6.33	5.0	3.3	5.0	3.3			
294	356	49	2.65	4.93	4.7	3.4	4.7	3.4			
377	456	38	2.95	3.85	4.3	3.5	4.3	3.5			
85	103	168	0.80	17.00	**	**	**	**	FH022-11P-90S/L-04F	22	224
88	106	163	0.80	16.48	**	**	**	**			
98	118	147	0.90	14.84	4.6	2.1	4.6	2.1			
120	145	119	1.10	12.09	4.8	2.0	4.8	2.0			
133	161	108	1.25	10.89	4.9	2.3	4.9	2.3			
152	184	94	0.90	9.52	4.8	2.3	4.8	2.3			
204	247	70	1.20	7.11	4.3	2.4	4.3	2.4			
237	286	61	1.40	6.13	4.0	2.5	4.0	2.5			
271	328	53	1.60	5.35	3.8	2.5	3.8	2.5			
369	447	39	1.90	3.93	3.4	2.6	3.4	2.6			

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\*\* ... on request

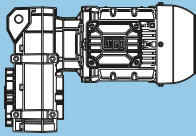
<b>P<sub>N</sub> = 2.2 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>2.2 kW</b>		<b>2.6 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
5.0	6.0	4224	1.10	288.50	29.6	39.4	29.6	39.4	<b>FH093-11P-100L-04E</b>	183	238
5.9	7.2	3571	1.30	243.90	32.9	40.3	32.9	40.3			
6.8	8.3	3091	1.50	211.14	34.8	40.9	34.8	40.9			
7.7	9.3	2738	1.65	186.99	36.0	41.4	36.0	41.4			
8.9	11	2368	1.95	161.76	37.0	41.9	37.0	41.9			
9.2	11	2284	2.00	155.99	37.2	42.0	37.2	42.0			
10	13	2015	2.25	137.63	37.8	42.3	37.8	42.3			
12	15	1715	2.65	117.13	38.4	42.7	38.4	42.7			
14	17	1531	2.95	104.54	38.7	43.0	38.7	43.0			
5.8	7.0	3628	0.85	247.77	12.2	18.8	12.2	6.9	<b>FH083-11P-100L-04E</b>	129	236
6.6	8.0	3206	0.95	218.97	17.5	30.1	17.5	7.6			
7.7	9.4	2711	1.15	185.17	21.6	39.0	21.6	8.3			
8.0	9.7	2640	1.15	180.28	22.1	40.1	22.1	8.4			
9.0	11	2330	1.30	159.17	23.9	41.4	23.9	8.9			
10	13	2034	1.50	138.95	25.3	41.9	25.3	9.4			
12	15	1743	1.75	119.05	26.5	42.3	26.5	9.8			
13	16	1612	1.90	110.11	26.9	42.5	26.9	10.0			
14	17	1483	2.05	101.32	27.3	42.7	26.3	10.2			
15	19	1363	2.25	93.11	27.7	42.9	25.4	10.4			
17	21	1244	2.45	84.99	28.0	43.1	24.2	10.6			
18	22	1172	2.60	80.04	28.1	43.2	23.6	10.7			
20	24	1049	2.85	71.62	28.4	43.4	22.5	10.9			
21	25	1023	2.85	69.87	28.5	43.4	22.1	10.9			
13	15	1678	0.90	114.62	14.1	15.6	14.1	4.3	<b>FH073-11P-100L-04E</b>	81	234
15	18	1384	1.10	94.52	16.4	16.2	16.4	4.9			
19	23	1135	1.35	77.53	17.8	16.7	17.4	5.4			
22	26	965	1.60	65.88	18.6	17.0	16.2	5.8			
26	32	793	1.90	54.16	19.2	17.4	14.9	6.1			
27	33	765	2.00	52.23	19.3	17.4	14.6	6.2			
32	39	659	2.30	45.02	19.6	17.7	13.6	6.4	<b>FH072-11P-100L-04E</b>	80	234
37	44	576	2.65	39.31	19.8	17.8	12.8	6.6			
41	50	509	2.95	34.74	20.0	18.0	12.2	6.7			
22	27	955	0.90	65.26	6.6	10.1	6.6	2.2	<b>FH063-11P-100L-04E</b>	58	232
24	29	876	0.95	59.84	7.8	12.4	7.8	2.4			
26	32	800	1.05	54.63	8.8	12.7	8.8	2.7			
29	35	734	1.15	50.10	9.5	12.8	9.5	2.9			
29	35	727	1.15	49.67	9.5	12.9	9.5	2.9	<b>FH062-11P-100L-04E</b>	57	232
32	38	667	1.25	45.55	10.0	13.1	10.0	3.1			
34	42	610	1.35	41.66	10.5	13.3	10.5	3.3			
38	46	559	1.50	38.20	10.8	13.4	10.8	3.5			
44	53	479	1.75	32.69	11.3	13.7	10.6	3.8			
48	58	439	1.90	29.98	11.5	13.8	10.2	3.9			
57	69	369	2.25	25.23	11.8	14.1	9.4	4.1			
62	75	339	2.45	23.14	11.9	14.1	9.1	4.2			
69	84	306	2.70	20.87	12.0	14.3	8.6	4.3			
70	85	300	1.45	20.49	12.0	13.9	8.9	4.0			
75	91	280	2.95	19.14	12.1	14.3	8.3	4.4			
84	102	252	2.30	17.18	12.2	14.1	8.2	4.2			
106	129	198	2.90	13.49	12.3	14.4	7.4	4.4			

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P <sub>N</sub> = 2.2 kW										IE3	
50 Hz 2.2 kW		60 Hz 2.6 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
33	40	641	0.95	43.75	5.4	8.8	5.4	3.3	FH052-11P-100L-04E	42	230
36	44	585	1.05	39.97	6.3	10.2	6.3	3.5			
40	49	524	1.15	35.81	7.1	10.4	7.1	3.7			
44	53	479	1.25	32.72	7.6	10.5	7.6	3.8			
52	63	404	1.50	27.56	8.3	10.8	8.3	4.1			
57	69	369	1.65	25.18	8.6	10.9	8.6	4.2			
60	72	353	1.05	24.11	8.7	10.5	8.7	3.8			
69	84	305	2.00	20.83	8.9	11.1	8.9	4.4			
73	88	289	1.25	19.73	9.0	10.7	9.0	4.0			
75	92	279	2.15	19.03	9.1	11.1	9.1	4.4			
84	102	249	2.45	17.04	9.2	11.2	9.2	4.5			
92	112	228	2.65	15.57	9.3	11.3	9.3	4.6			
94	115	222	1.65	15.19	9.3	11.0	9.3	4.3			
104	126	202	3.00	13.82	9.4	11.4	8.9	4.7			
125	152	168	2.15	11.48	9.5	11.3	8.3	4.6			
153	186	137	2.65	9.39	9.6	11.4	7.7	4.7			
41	50	507	0.80	34.62	**	**	**	**	FH042-11P-100L-04E	36	228
46	56	455	0.90	31.06	2.1	2.6	2.1	2.3			
51	62	415	1.00	28.33	3.4	5.3	3.4	2.4			
60	73	350	1.15	23.91	4.8	8.3	4.8	2.7			
66	80	319	1.30	21.81	5.2	8.4	5.2	2.8			
70	85	302	1.05	20.63	5.4	8.0	5.4	2.4			
79	97	264	1.55	18.06	5.8	8.6	5.8	3.0			
85	103	247	1.25	16.88	6.0	8.2	6.0	2.6			
87	106	241	1.70	16.48	6.1	8.6	6.1	3.0			
97	118	216	1.85	14.78	6.3	8.7	6.3	3.1			
106	129	197	2.05	13.48	6.4	8.8	6.4	3.2			
110	134	190	1.65	12.99	6.4	8.5	6.4	2.9			
120	146	176	2.20	11.99	6.5	8.9	6.5	3.3			
131	160	160	2.30	10.93	6.6	8.9	6.6	3.3			
143	174	147	2.40	10.03	6.7	9.0	6.5	3.4			
146	178	144	2.15	9.82	6.7	8.8	6.5	3.2			
157	191	134	2.45	9.15	6.7	9.0	6.3	3.4			
177	215	119	2.65	8.13	6.8	9.1	6.0	3.5			
179	217	118	2.40	8.03	6.8	8.9	6.0	3.3			
183	223	115	2.65	7.84	6.8	9.1	5.9	3.5			
193	235	109	2.70	7.42	6.8	9.1	5.7	3.5			
201	244	105	2.75	7.15	6.9	9.1	5.7	3.5			
220	268	95	2.60	6.52	6.9	9.0	5.5	3.4			
263	320	80	2.80	5.45	6.9	9.1	5.1	3.5			
75	91	281	0.80	19.17	**	**	**	**	FH032-11P-100L-04E	35	226
89	109	235	0.95	16.06	3.0	2.2	3.0	2.2			
98	120	213	1.05	14.57	3.5	2.7	3.5	2.7			
115	140	183	1.25	12.50	4.0	2.5	4.0	2.5			
127	154	166	1.35	11.33	4.2	2.9	4.2	2.9			
130	158	161	0.95	11.03	4.3	2.8	4.3	2.8			
147	179	143	1.50	9.76	4.5	2.8	4.5	2.8			
162	197	130	1.60	8.85	4.6	3.1	4.6	3.1			
172	209	122	1.25	8.33	4.7	3.0	4.7	3.0			
227	276	93	1.60	6.33	4.9	3.2	4.9	3.2			
291	354	72	1.80	4.93	4.8	3.3	4.8	3.3			
373	453	56	2.00	3.85	4.4	3.4	4.4	3.4			

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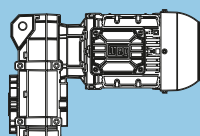
\*\* ... on request

<b>P<sub>N</sub> = 3.0 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>3.0 kW</b>		<b>3.6 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
5.0	6.0	5740	0.80	288.50	**	**	**	**	<b>FH093-11P-L100L-04F</b>	190	238
5.9	7.1	4853	0.95	243.90	25.5	38.6	25.5	38.6			
6.8	8.2	4201	1.10	211.14	29.8	39.4	29.8	39.4			
7.7	9.3	3720	1.25	186.99	32.2	40.1	32.2	40.1			
8.9	11	3218	1.40	161.76	34.3	40.7	34.3	40.7			
9.2	11	3104	1.45	155.99	34.7	40.9	34.7	40.9			
10	13	2738	1.65	137.63	36.0	41.4	36.0	41.4			
12	15	2330	1.95	117.13	37.1	41.9	37.1	41.9			
14	17	2010	2.25	101.04	37.8	42.3	37.8	42.3			
16	19	1842	2.45	92.59	38.2	42.6	38.2	42.6			
18	22	1593	2.85	80.09	38.6	42.9	38.6	42.9			
19	23	1537	2.95	77.23	38.7	43.0	38.7	43.0			
7.8	9.4	3684	0.85	185.17	11.2	16.7	11.2	6.8	<b>FH083-11P-L100L-04F</b>	135	236
8.0	9.7	3587	0.85	180.28	12.8	20.1	12.8	7.0			
9.0	11	3167	0.95	159.17	17.9	30.9	17.9	7.6			
10	12	2839	1.10	142.69	20.7	37.0	20.7	8.1			
12	15	2369	1.30	119.05	23.7	41.3	23.7	8.8			
13	16	2191	1.40	110.11	24.6	41.6	24.6	9.1			
14	17	2016	1.50	101.32	25.4	41.9	25.4	9.4			
15	19	1853	1.65	93.11	26.1	42.1	26.1	9.6			
17	20	1691	1.80	84.99	26.7	42.4	25.5	9.9			
18	22	1592	1.90	80.04	27.0	42.5	24.8	10.0			
20	24	1425	2.10	71.62	27.5	42.8	23.6	10.3			
21	25	1390	2.10	69.87	27.6	42.9	23.2	10.4			
24	29	1191	2.35	59.86	28.1	43.2	21.8	10.7			
25	30	1149	2.40	57.73	28.2	43.2	21.4	10.7			
28	34	1014	2.65	50.95	28.5	43.4	20.3	10.9			
34	41	850	2.95	42.74	28.8	43.7	18.8	11.2			
15	18	1881	0.80	94.52	**	**	**	**	<b>FH073-11P-L100L-04F</b>	88	234
19	22	1543	1.00	77.53	15.2	15.9	15.2	4.6			
22	26	1311	1.15	65.88	16.8	16.3	16.8	5.1			
27	32	1078	1.40	54.16	18.1	16.8	15.7	5.6			
28	33	1039	1.45	52.23	18.3	16.9	15.4	5.6			
32	39	896	1.70	45.02	18.9	17.2	14.4	5.9	<b>FH072-11P-L100L-04F</b>	87	234
37	44	782	1.95	39.31	19.3	17.4	13.5	6.2			
41	50	691	2.20	34.74	19.5	17.6	12.8	6.3			
49	59	585	2.60	29.38	19.8	17.8	11.9	6.6			
57	69	502	3.00	25.25	20.0	18.0	11.1	6.7			
69	84	412	2.30	20.72	20.1	17.8	10.4	6.5			
26	32	1087	0.80	54.63	**	**	**	**	<b>FH063-11P-L100L-04F</b>	65	232
29	35	997	0.85	50.10	5.8	8.3	5.8	2.0			
29	35	988	0.85	49.67	6.0	8.8	6.0	2.1	<b>FH062-11P-L100L-04F</b>	64	232
32	38	906	0.95	45.55	7.4	11.8	7.4	2.3			
35	42	829	1.00	41.66	8.4	12.6	8.4	2.6			
38	46	760	1.10	38.20	9.2	12.8	9.2	2.8			
44	53	650	1.30	32.69	10.2	13.1	10.2	3.2			
48	58	596	1.40	29.98	10.6	13.3	10.6	3.3			
57	69	502	1.65	25.23	11.2	13.6	10.0	3.7			
62	75	460	1.80	23.14	11.4	13.7	9.6	3.8			
69	83	415	2.00	20.87	11.6	13.9	9.1	4.0			
70	85	408	1.05	20.49	11.6	13.4	9.4	3.5			
75	91	381	2.20	19.14	11.7	14.0	8.8	4.1			
81	98	353	2.35	17.75	11.8	14.1	8.5	4.2			
84	101	342	1.70	17.18	11.9	13.7	8.6	3.8			
88	107	324	2.55	16.28	11.9	14.2	8.2	4.2			
94	113	306	2.70	15.38	12.0	14.3	7.9	4.3			
102	123	281	2.95	14.11	12.1	14.3	7.7	4.4			
107	129	268	2.15	13.49	12.1	14.1	7.7	4.1			
138	167	207	2.80	10.41	12.3	14.3	6.9	4.4			

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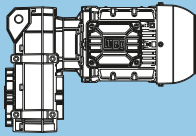
\*\* ... on request



P <sub>N</sub> = 3.0 kW										IE3	
50 Hz 3.0 kW		60 Hz 3.6 kW		at 50 Hz						m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
36	44	795	0.80	39.97	**	**	**	**	FH052-11P-L100L-04F	48	230
40	49	712	0.85	35.81	3.7	5.2	3.7	3.1			
44	53	651	0.95	32.72	5.2	8.4	5.2	3.3			
52	63	548	1.10	27.56	6.8	10.3	6.8	3.6			
57	69	501	1.20	25.18	7.4	10.5	7.4	3.8			
60	72	480	0.80	24.11	**	**	**	**			
69	84	414	1.45	20.83	8.2	10.7	8.2	4.0			
73	88	393	0.95	19.73	8.4	10.3	8.4	3.6			
76	91	379	1.60	19.03	8.5	10.8	8.5	4.1			
85	102	339	1.80	17.04	8.7	11.0	8.7	4.3			
92	112	310	1.95	15.57	8.9	11.0	8.9	4.3			
95	115	302	1.20	15.19	9.0	10.7	9.0	4.0			
104	126	275	2.20	13.82	9.1	11.2	9.1	4.5			
114	138	251	2.40	12.63	9.2	11.2	8.9	4.5			
124	150	230	2.65	11.57	9.3	11.3	8.6	4.6			
125	152	228	1.60	11.48	9.3	11.0	8.7	4.3			
136	165	210	2.80	10.57	9.4	11.4	8.3	4.7			
153	185	187	1.95	9.39	9.5	11.2	7.9	4.5			
189	228	152	2.40	7.62	9.6	11.3	7.3	4.6			
226	273	127	2.85	6.38	9.4	11.5	6.8	4.8			
60	73	476	0.85	23.91	0.2	-1.3	0.2	-1.3	FH042-11P-L100L-04F	42	228
66	80	434	0.95	21.81	2.9	4.3	2.9	2.4			
70	84	410	0.80	20.63	**	**	**	**			
80	96	359	1.15	18.06	4.6	7.9	4.6	2.6			
85	103	336	0.95	16.88	5.0	7.8	5.0	2.2			
87	106	328	1.25	16.48	5.1	8.3	5.1	2.7			
97	118	294	1.40	14.78	5.5	8.5	5.5	2.9			
107	129	268	1.50	13.48	5.8	8.6	5.8	3.0			
111	134	258	1.20	12.99	5.9	8.2	5.9	2.6			
120	145	239	1.65	11.99	6.1	8.6	6.1	3.0			
132	159	217	1.70	10.93	6.3	8.7	6.3	3.1			
144	173	200	1.75	10.03	6.4	8.8	6.4	3.2			
147	177	195	1.60	9.82	6.4	8.5	6.4	2.9			
157	190	182	1.80	9.15	6.5	8.9	6.5	3.3			
177	214	162	1.95	8.13	6.6	8.9	6.2	3.3			
179	217	160	1.80	8.03	6.6	8.7	6.3	3.1			
184	222	156	1.95	7.84	6.6	8.9	6.1	3.3			
194	235	148	2.00	7.42	6.7	9.0	6.0	3.4			
201	243	142	2.05	7.15	6.7	9.0	5.9	3.4			
221	267	130	1.95	6.52	6.8	8.8	5.7	3.2			
264	319	108	2.05	5.45	6.8	9.0	5.3	3.4			
326	394	88	2.25	4.42	6.6	9.1	4.9	3.5			
338	408	85	2.30	4.26	6.6	9.1	4.8	3.5			
99	119	290	0.80	14.57	**	**	**	**	FH032-11P-L100L-04F	41	226
115	139	249	0.90	12.50	2.7	2.1	2.7	2.1			
127	154	225	1.00	11.33	3.2	2.6	3.2	2.6			
148	178	194	1.10	9.76	3.8	2.5	3.8	2.5			
163	197	176	1.15	8.85	4.1	2.9	4.1	2.9			
173	209	166	0.95	8.33	4.2	2.8	4.2	2.8			
227	275	126	1.20	6.33	4.6	3.0	4.6	3.0			
292	353	98	1.30	4.93	4.8	3.2	4.8	3.2			
374	452	77	1.45	3.85	4.5	3.3	4.5	3.3			

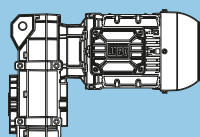
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\*\* ... on request

<b>P<sub>N</sub> = 4.0 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>4.0 kW</b>		<b>4.8 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
6.6	8.0	5814	2.25	220.67	85.9	91.9	85.9	91.9	<b>FH123-11P-112M-04E</b>	425	242
7.5	9.1	5069	2.60	192.40	86.7	92.6	86.7	92.6			
7.8	9.5	4888	2.70	185.53	86.9	92.8	86.9	92.8			
8.7	11	4366	3.00	165.73	87.4	93.3	87.4	93.3			
5.9	7.1	6496	1.25	246.57	51.8	61.9	51.8	61.9	<b>FH103-11P-112M-04E</b>	285	240
6.7	8.1	5737	1.40	217.78	54.2	62.8	54.2	62.8			
7.7	9.3	4980	1.65	189.04	56.2	63.6	56.2	63.6			
8.0	9.6	4802	1.70	182.29	56.6	63.8	56.6	63.8			
8.9	11	4303	1.90	163.33	57.7	64.4	57.7	64.4			
10	13	3682	2.20	139.78	58.9	65.1	58.9	65.1			
12	15	3180	2.55	120.72	59.7	65.6	59.7	65.6			
13	16	2852	2.85	108.27	60.1	66.0	60.1	66.0			
6.9	8.3	5562	0.85	211.14	18.8	30.2	18.8	30.2	<b>FH093-11P-112M-04E</b>	191	238
7.8	9.4	4926	0.95	186.99	24.9	38.5	24.9	38.5			
9.0	11	4262	1.10	161.76	29.4	39.4	29.4	39.4			
9.3	11	4110	1.10	155.99	30.3	39.6	30.3	39.6			
10	12	3763	1.20	142.85	32.0	40.0	32.0	40.0			
11	13	3626	1.25	137.63	32.7	40.2	32.7	40.2			
12	15	3086	1.50	117.13	34.8	40.9	34.8	40.9			
14	17	2662	1.70	101.04	36.2	41.5	36.2	41.5			
16	19	2439	1.85	92.59	36.8	41.8	36.8	41.8			
18	22	2110	2.15	80.09	37.6	42.2	37.6	42.2			
19	23	2035	2.25	77.23	37.8	42.3	37.8	42.3			
21	26	1795	2.55	68.15	38.3	42.6	38.3	42.6			
25	30	1528	2.95	57.99	38.7	43.0	38.7	43.0			
10	13	3661	0.85	138.95	11.6	17.6	11.6	6.9	<b>FH083-11P-112M-04E</b>	136	236
12	15	3136	1.00	119.05	18.2	31.6	18.2	7.7			
13	16	2901	1.05	110.11	20.2	35.9	20.2	8.0			
14	17	2669	1.15	101.32	21.9	39.7	21.9	8.4			
16	19	2453	1.25	93.11	23.2	41.2	23.2	8.7			
17	21	2239	1.35	84.99	24.4	41.5	24.4	9.0			
18	22	2109	1.45	80.04	25.0	41.7	25.0	9.2			
20	25	1887	1.60	71.62	25.9	42.1	25.0	9.6			
21	25	1841	1.60	69.87	26.1	42.2	24.6	9.7			
24	29	1577	1.80	59.86	27.0	42.6	23.0	10.1			
25	30	1521	1.85	57.73	27.2	42.7	22.6	10.2			
28	34	1342	2.00	50.95	27.7	42.9	21.3	10.4			
34	41	1126	2.25	42.74	28.2	43.3	19.6	10.8			
40	49	949	2.55	36.02	28.6	43.5	18.2	11.0			
22	27	1736	0.90	65.88	13.5	15.5	13.5	4.2	<b>FH073-11P-112M-04E</b>	89	234
27	32	1427	1.10	54.16	16.1	16.1	16.1	4.8			
28	34	1376	1.10	52.23	16.4	16.2	16.4	4.9			
32	39	1186	1.30	45.02	17.6	16.6	15.4	5.3	<b>FH072-11P-112M-04E</b>	88	234
37	45	1036	1.45	39.31	18.3	16.9	14.3	5.6			
42	51	915	1.65	34.74	18.8	17.1	13.5	5.9			
49	60	774	1.95	29.38	19.3	17.4	12.5	6.2			
57	70	665	2.30	25.25	19.6	17.6	11.6	6.4			
66	80	581	2.60	22.05	19.8	17.8	10.9	6.6			
70	85	546	1.75	20.72	19.9	17.4	10.9	6.1			
80	97	477	2.35	18.09	20.0	17.6	10.2	6.3			
91	110	421	2.60	15.99	20.1	17.8	9.7	6.5			

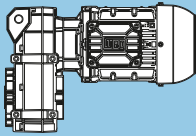
**F**

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P <sub>N</sub> = 4.0 kW										IE3	
50 Hz 4.0 kW		60 Hz 4.8 kW		at 50 Hz						m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
38	46	1006	0.85	38.20	5.6	7.9	5.6	2.0	FH062-11P-112M-04E	65	232
44	54	861	1.00	32.69	8.0	12.5	8.0	2.5			
48	59	790	1.05	29.98	8.9	12.7	8.9	2.7			
57	70	665	1.25	25.23	10.1	13.1	10.1	3.2			
63	76	610	1.35	23.14	10.5	13.3	10.2	3.3			
69	84	550	1.50	20.87	10.9	13.5	9.7	3.5			
71	86	540	0.80	20.49	**	**	**	**			
76	92	504	1.65	19.14	11.2	13.6	9.3	3.6			
82	99	468	1.80	17.75	11.3	13.7	8.9	3.8			
84	102	453	1.30	17.18	11.4	13.2	9.2	3.3			
89	108	429	1.95	16.28	11.5	13.8	8.6	3.9			
94	114	405	2.05	15.38	11.6	13.9	8.4	4.0			
103	124	372	2.25	14.11	11.8	14.0	8.0	4.1			
107	130	355	1.65	13.49	11.8	13.7	8.2	3.7			
112	135	342	2.40	12.99	11.9	14.1	7.7	4.2			
116	140	330	2.50	12.53	11.9	14.2	7.6	4.2			
122	147	314	2.65	11.91	12.0	14.2	7.4	4.3			
126	153	303	2.75	11.49	12.0	14.3	7.3	4.3			
136	164	282	2.95	10.70	12.1	14.3	7.1	4.4			
139	169	274	2.10	10.41	12.1	14.0	7.2	4.1			
168	204	227	2.55	8.61	12.2	14.2	6.6	4.3			
198	240	193	3.00	7.32	12.3	14.4	6.2	4.4			
53	64	726	0.85	27.56	3.2	4.2	3.2	3.1	FH052-11P-112M-04E	49	230
58	70	663	0.90	25.18	4.9	7.7	4.9	3.2			
70	84	549	1.10	20.83	6.8	10.3	6.8	3.6			
76	92	501	1.20	19.03	7.4	10.5	7.4	3.8			
85	103	449	1.35	17.04	7.9	10.6	7.9	3.9			
93	113	410	1.50	15.57	8.2	10.7	8.2	4.0			
95	116	400	0.90	15.19	8.3	10.3	8.3	3.6			
105	127	364	1.65	13.82	8.6	10.9	8.6	4.2			
115	139	333	1.80	12.63	8.8	11.0	8.8	4.3			
125	152	305	2.00	11.57	8.9	11.1	8.9	4.4			
126	153	302	1.20	11.48	9.0	10.7	9.0	4.0			
137	166	278	2.10	10.57	9.1	11.1	8.6	4.4			
154	187	247	1.50	9.39	9.2	10.9	8.3	4.2			
155	187	247	2.30	9.38	9.2	11.2	8.2	4.5			
160	194	238	2.35	9.04	9.3	11.3	8.0	4.6			
169	205	226	2.45	8.57	9.3	11.3	7.9	4.6			
176	212	218	2.50	8.26	9.3	11.3	7.7	4.6			
190	230	201	1.80	7.62	9.4	11.1	7.5	4.4			
227	275	168	2.15	6.38	9.5	11.3	7.0	4.6			
280	339	136	2.65	5.17	8.8	11.4	6.4	4.7			
291	352	131	2.75	4.98	8.7	11.4	6.3	4.7			

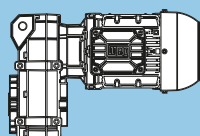
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\*\* ... on request

<b>P<sub>N</sub> = 5.5 kW</b>										<b>IE3</b>		
<b>50 Hz</b>		<b>60 Hz</b>				at 50 Hz					m kg	Dimension sheet see page
<b>5.5 kW</b>		<b>6.6 kW</b>				Output shaft		Hollow shaft				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN				
6.6	8.0	7912	1.65	220.67	82.8	89.9	82.8	89.9	<b>FH123-11P-132S-04E</b>	443	242	
7.6	9.2	6898	1.90	192.40	84.4	90.9	84.4	90.9				
7.9	9.5	6652	2.00	185.53	84.8	91.1	84.8	91.1				
8.8	11	5942	2.20	165.73	85.7	91.8	85.7	91.8				
10	12	5117	2.55	142.72	86.7	92.6	86.7	92.6				
12	14	4470	2.95	124.67	87.3	93.2	87.3	93.2				
5.9	7.2	8840	0.95	246.57	41.3	59.3	41.3	59.3	<b>FH103-11P-132S-04E</b>	303	240	
6.7	8.1	7808	1.05	217.78	46.7	60.5	46.7	60.5				
7.7	9.3	6778	1.20	189.04	50.9	61.6	50.9	61.6				
8.0	9.7	6536	1.25	182.29	51.7	61.9	51.7	61.9				
9.0	11	5856	1.40	163.33	53.9	62.7	53.9	62.7				
10	13	5012	1.60	139.78	56.1	63.6	56.1	63.6				
12	14	4395	1.85	122.58	57.5	64.3	57.5	64.3				
14	16	3882	2.10	108.27	58.5	64.8	58.5	64.8				
16	19	3249	2.50	90.63	59.6	65.6	59.6	65.6				
18	22	2911	2.75	81.20	60.0	65.9	60.0	65.9				
9.1	11	5800	0.80	161.76	**	**	**	**	<b>FH093-11P-132S-04E</b>	209	238	
9.4	11	5593	0.85	155.99	18.4	29.4	18.4	29.4				
10	12	5122	0.90	142.85	23.3	38.2	23.3	38.2				
11	13	4934	0.95	137.63	24.8	38.5	24.8	38.5				
12	15	4330	1.05	120.77	29.0	39.3	29.0	39.3				
13	15	4199	1.10	117.13	29.8	39.4	29.8	39.4				
14	17	3748	1.25	104.54	32.1	40.0	32.1	40.0				
16	19	3320	1.40	92.59	33.9	40.6	33.9	40.6				
18	22	2871	1.60	80.09	35.5	41.2	35.5	41.2				
19	23	2769	1.65	77.23	35.9	41.3	35.9	41.3				
21	26	2443	1.85	68.15	36.8	41.8	36.8	41.8				
25	30	2079	2.20	57.99	37.7	42.2	37.7	42.2				
29	35	1794	2.55	50.03	38.3	42.6	38.3	42.6				
13	16	3948	0.80	110.11	**	**	**	**	<b>FH083-11P-132S-04E</b>	155	236	
14	17	3633	0.85	101.32	12.1	18.6	12.1	18.6				
16	19	3338	0.90	93.11	16.1	27.1	16.1	27.1				
17	21	3047	1.00	84.99	19.0	33.3	19.0	33.3				
18	22	2870	1.05	80.04	20.4	36.4	20.4	36.4				
20	25	2568	1.15	71.62	22.5	41.0	22.5	41.0				
21	25	2505	1.20	69.87	22.9	41.1	22.9	41.1				
24	29	2146	1.30	59.86	24.8	41.7	24.7	41.7				
25	31	2070	1.35	57.73	25.2	41.8	24.2	41.8				
29	35	1827	1.45	50.95	26.2	42.2	22.6	42.2				
34	41	1532	1.65	42.74	27.2	42.6	20.8	42.6				
41	49	1291	1.85	36.02	27.9	43.0	19.1	43.0				
43	52	1214	2.30	33.87	28.0	43.1	18.7	43.1	<b>FH082-11P-132S-04E</b>	146	236	
49	59	1076	2.80	30.00	28.3	43.3	17.6	43.3				
27	33	1942	0.80	54.16	**	**	**	**	<b>FH073-11P-132S-04E</b>	107	234	
28	34	1873	0.85	52.23	12.0	15.2	12.0	15.2				
33	39	1614	0.95	45.02	14.6	15.7	14.6	15.7	<b>FH072-11P-132S-04E</b>	106	234	
37	45	1409	1.10	39.31	16.2	16.1	15.6	16.1				
42	51	1246	1.25	34.74	17.2	16.5	14.6	16.5				
50	60	1053	1.45	29.38	18.2	16.9	13.4	16.9				
58	70	905	1.70	25.25	18.8	17.2	12.4	17.2				
66	80	791	1.90	22.05	19.2	17.4	11.6	17.4				
71	85	743	1.30	20.72	19.4	16.8	11.6	16.8				
78	93	677	2.25	18.89	19.6	17.6	10.7	17.6				
80	97	653	2.30	18.21	19.6	17.7	10.6	17.7				
81	98	649	1.75	18.09	19.6	17.1	10.9	17.1				
91	110	577	2.65	16.08	19.8	17.8	10.0	17.8				
92	110	573	1.95	15.99	19.8	17.3	10.2	17.3				
108	131	485	2.30	13.52	20.0	17.6	9.5	17.6				
126	152	417	2.65	11.62	20.1	17.8	8.8	17.8				

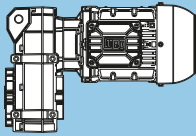
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P <sub>N</sub> = 5.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
5.5 kW		6.6 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
49	59	1075	0.80	29.98	**	**	**	**	FH062-11P-132S-04E	83	232
58	70	905	0.95	25.23	7.4	11.9	7.4	2.4			
63	76	830	1.00	23.14	8.4	12.5	8.4	2.6			
70	85	748	1.10	20.87	9.3	12.8	9.3	2.9			
77	92	686	1.20	19.14	9.9	13.0	9.9	3.1			
83	99	636	1.30	17.75	10.3	13.2	9.7	3.2			
85	103	616	0.95	17.18	10.4	12.5	10.1	2.6			
90	108	584	1.45	16.28	10.7	13.3	9.3	3.4			
95	115	551	1.50	15.38	10.9	13.5	9.0	3.5			
104	125	506	1.65	14.11	11.1	13.6	8.6	3.6			
109	131	484	1.20	13.49	11.3	13.1	8.8	3.2			
113	136	466	1.80	12.99	11.4	13.7	8.2	3.8			
117	141	449	1.85	12.53	11.4	13.8	8.1	3.8			
123	148	427	1.95	11.91	11.5	13.9	7.9	3.9			
128	154	412	2.00	11.49	11.6	13.9	7.8	4.0			
137	165	384	2.15	10.70	11.7	14.0	7.5	4.1			
141	170	373	1.55	10.41	11.8	13.6	7.7	3.6			
149	180	352	2.35	9.81	11.8	14.1	7.2	4.1			
170	205	309	1.85	8.61	12.0	13.9	7.0	3.9			
200	241	262	2.20	7.32	12.1	14.1	6.5	4.1			
231	278	228	2.55	6.35	12.2	14.2	6.1	4.3			
273	329	192	3.00	5.36	12.3	14.4	5.6	4.4			
70	85	747	0.85	20.83	2.3	2.3	2.3	2.3	FH052-11P-132S-04E	68	230
77	93	682	0.90	19.03	4.5	6.9	4.5	3.2			
86	104	611	1.00	17.04	5.9	9.9	5.9	3.4			
94	113	558	1.10	15.57	6.7	10.3	6.7	3.6			
106	128	495	1.25	13.82	7.5	10.5	7.5	3.8			
116	140	453	1.35	12.63	7.9	10.6	7.9	3.9			
127	153	415	1.45	11.57	8.2	10.7	8.2	4.0			
128	154	412	0.90	11.48	8.2	10.2	8.2	3.5			
139	167	379	1.55	10.57	8.5	10.8	8.5	4.1			
156	188	336	1.70	9.38	8.8	11.0	8.6	4.3			
162	195	324	1.75	9.04	8.8	11.0	8.5	4.3			
171	206	307	1.80	8.57	8.9	11.1	8.3	4.4			
177	214	296	1.85	8.26	9.0	11.1	8.1	4.4			
192	232	273	1.35	7.62	9.1	10.8	7.9	4.1			
230	277	229	1.60	6.38	9.3	11.0	7.3	4.3			
283	341	185	1.95	5.17	9.1	11.2	6.7	4.5			
294	354	179	2.05	4.98	8.9	11.2	6.5	4.5			

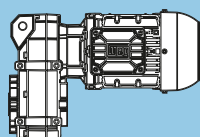
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<b>P<sub>N</sub> = 7.5 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>at 50 Hz</b>						<b>m</b> kg	<b>Dimension sheet</b> see page
<b>7.5 kW</b>		<b>9.0 kW</b>		<b>Output shaft</b>		<b>Hollow shaft</b>					
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>	<b>i</b>	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>6.6</b>	8.0	10789	1.25	220.67	76.8	87.1	76.8	87.1	<b>FH123-11P-L132M-04F</b>	457	242
<b>7.6</b>	9.2	9407	1.40	192.40	80.0	88.4	80.0	88.4			
<b>7.9</b>	9.5	9071	1.45	185.53	80.7	88.8	80.7	88.8			
<b>8.8</b>	11	8103	1.65	165.73	82.5	89.7	82.5	89.7			
<b>10</b>	12	6978	1.90	142.72	84.3	90.8	84.3	90.8			
<b>12</b>	15	5907	2.25	120.82	85.8	91.8	85.8	91.8			
<b>14</b>	17	5150	2.55	105.34	86.6	92.5	86.6	92.5			
<b>16</b>	20	4436	2.95	90.74	87.3	93.2	87.3	93.2			
<b>6.7</b>	8.1	10647	0.80	217.78	**	**	**	**	<b>FH103-11P-L132M-04F</b>	317	240
<b>7.7</b>	9.4	9242	0.90	189.04	38.9	58.9	38.9	58.9			
<b>8.0</b>	9.7	8912	0.90	182.29	40.9	59.3	40.9	59.3			
<b>9.0</b>	11	7985	1.05	163.33	45.8	60.3	45.8	60.3			
<b>10</b>	13	6834	1.20	139.78	50.6	61.6	50.6	61.6			
<b>12</b>	15	5902	1.40	120.72	53.7	62.6	53.7	62.6			
<b>14</b>	16	5293	1.55	108.27	55.4	63.3	55.4	63.3			
<b>16</b>	20	4431	1.85	90.63	57.5	64.2	57.5	64.2			
<b>18</b>	22	3970	2.05	81.20	58.4	64.7	58.4	64.7			
<b>21</b>	25	3397	2.40	69.49	59.3	65.4	59.3	65.4			
<b>24</b>	29	2934	2.75	60.02	60.0	65.9	60.0	65.9			
<b>41</b>	49	1757	2.50	35.93	61.3	67.2	61.3	67.2	<b>FH102-11P-L132M-04F</b>	291	240
<b>79</b>	95	910	2.50	18.62	51.4	68.0	51.4	68.0			
<b>12</b>	15	5905	0.80	120.77	**	**	**	**	<b>FH093-11P-L132M-04F</b>	223	238
<b>13</b>	15	5727	0.80	117.13	**	**	**	**			
<b>14</b>	18	4940	0.95	101.04	24.8	38.5	24.8	38.5			
<b>16</b>	19	4527	1.00	92.59	27.8	39.0	27.8	39.0			
<b>18</b>	22	3916	1.15	80.09	31.3	39.8	31.3	39.8			
<b>19</b>	23	3776	1.20	77.23	32.0	40.0	32.0	40.0			
<b>21</b>	26	3332	1.40	68.15	33.9	40.6	33.9	40.6			
<b>25</b>	31	2835	1.60	57.99	35.7	41.2	35.7	41.2			
<b>29</b>	35	2446	1.85	50.03	36.8	41.8	36.8	41.8			
<b>38</b>	46	1890	2.30	38.65	38.1	42.5	38.1	42.5			
<b>43</b>	52	1669	2.70	34.13	38.5	42.8	38.5	42.8			
<b>51</b>	62	1397	2.50	28.57	38.9	43.1	38.9	43.1	<b>FH092-11P-L132M-04F</b>	209	238
<b>77</b>	93	929	2.30	19.01	39.5	43.6	39.5	43.6			
<b>104</b>	126	687	2.50	14.05	37.6	44.0	37.6	44.0			
<b>18</b>	22	3913	0.80	80.04	**	**	**	**			
<b>20</b>	25	3502	0.85	71.62	14.0	22.6	14.0	7.1	<b>FH083-11P-L132M-04F</b>	169	236
<b>21</b>	25	3416	0.85	69.87	15.1	24.9	15.1	7.2			
<b>24</b>	30	2927	0.95	59.86	20.0	35.5	20.0	8.0			
<b>25</b>	31	2822	1.00	57.73	20.8	37.2	20.8	8.1			
<b>29</b>	35	2491	1.10	50.95	23.0	41.2	23.0	8.7			
<b>34</b>	41	2090	1.20	42.74	25.1	41.8	22.5	9.3			
<b>41</b>	49	1761	1.40	36.02	26.4	42.3	20.6	9.8			
<b>43</b>	52	1656	1.70	33.87	26.8	42.4	20.0	9.9			
<b>49</b>	59	1467	2.05	30.00	27.4	42.7	18.8	10.2			
<b>56</b>	68	1269	2.40	25.95	27.9	43.0	17.6	10.5			
<b>66</b>	80	1080	2.80	22.08	28.3	43.3	16.3	10.8			
<b>103</b>	125	693	2.55	14.18	29.0	43.8	13.6	11.3			
<b>119</b>	144	600	2.95	12.27	29.1	43.9	12.7	11.4			

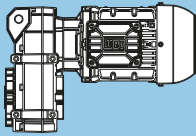
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P <sub>N</sub> = 7.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
7.5 kW		9.0 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
37	45	1922	0.80	39.31	**	**	**	**	FH072-11P-L132M-04F	120	234
42	51	1698	0.90	34.74	13.9	15.5	13.9	4.3			
50	60	1436	1.05	29.38	16.0	16.1	14.6	4.8			
58	70	1234	1.25	25.25	17.3	16.5	13.5	5.2			
66	80	1078	1.40	22.05	18.1	16.8	12.6	5.6			
71	85	1013	0.95	20.72	18.4	16.0	12.7	4.8			
78	94	924	1.65	18.89	18.8	17.1	11.6	5.9			
80	97	890	1.70	18.21	18.9	17.2	11.4	5.9			
81	98	884	1.25	18.09	18.9	16.4	11.8	5.1			
91	110	786	1.95	16.08	19.2	17.4	10.7	6.1			
92	111	782	1.40	15.99	19.3	16.7	11.0	5.5			
108	131	661	1.70	13.52	19.6	17.1	10.2	5.8			
109	131	660	2.30	13.49	19.6	17.7	9.8	6.4			
126	152	568	1.95	11.62	19.8	17.3	9.4	6.1			
129	156	555	2.75	11.36	19.9	17.9	9.0	6.6			
144	175	496	2.25	10.14	20.0	17.5	8.8	6.3			
169	204	425	2.65	8.69	20.1	17.8	8.2	6.5			
175	211	410	2.50	8.38	20.1	17.8	8.1	6.5			
70	85	1020	0.85	20.87	5.3	7.3	5.3	2.0	FH062-11P-L132M-04F	97	232
77	92	936	0.90	19.14	6.9	10.7	6.9	2.2			
83	100	868	0.95	17.75	7.9	12.4	7.9	2.5			
90	109	796	1.05	16.28	8.8	12.6	8.8	2.7			
95	115	752	1.10	15.38	9.3	12.8	9.3	2.9			
104	125	690	1.20	14.11	9.9	13.0	9.4	3.0			
109	131	660	0.90	13.49	10.1	12.3	9.2	2.4			
113	136	635	1.30	12.99	10.3	13.2	9.0	3.2			
117	141	613	1.35	12.53	10.5	13.3	8.8	3.3			
123	149	582	1.45	11.91	10.7	13.3	8.6	3.4			
128	154	562	1.50	11.49	10.8	13.4	8.4	3.5			
137	165	523	1.60	10.70	11.0	13.6	8.1	3.6			
141	170	509	1.15	10.41	11.1	13.0	8.4	3.0			
149	180	480	1.75	9.81	11.3	13.7	7.8	3.7			
170	206	421	1.40	8.61	11.6	13.4	7.6	3.4			
200	242	358	1.60	7.32	11.8	13.7	7.0	3.7			
231	279	310	1.85	6.35	12.0	13.9	6.5	3.9			
273	330	262	2.20	5.36	12.1	14.1	6.0	4.1			
283	342	253	2.30	5.17	12.2	14.1	5.9	4.2			
332	401	216	2.65	4.41	12.2	14.3	5.5	4.3			
94	114	761	0.80	15.57	**	**	**	**	FH052-11P-L132M-04F	82	230
106	128	676	0.90	13.82	4.7	7.3	4.7	3.2			
116	140	617	1.00	12.63	5.8	9.7	5.8	3.4			
127	153	566	1.10	11.57	6.6	10.3	6.6	3.6			
139	167	517	1.15	10.57	7.2	10.4	7.2	3.7			
156	189	459	1.25	9.38	7.8	10.6	7.8	3.9			
162	196	442	1.30	9.04	8.0	10.6	8.0	3.9			
171	207	419	1.35	8.57	8.2	10.7	8.2	4.0			
177	214	404	1.35	8.26	8.3	10.8	8.3	4.1			
192	232	373	1.00	7.62	8.5	10.4	8.5	3.7			
230	277	312	1.20	6.38	8.9	10.6	7.8	3.9			
283	342	253	1.45	5.17	9.2	10.9	7.0	4.2			
294	355	243	1.50	4.98	9.2	10.9	6.9	4.2			

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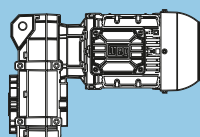
<b>P<sub>N</sub> = 9.2 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>9.2 kW</b>		<b>11 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
6.6	8.0	13279	1.00	220.67	69.5	84.7	69.5	84.7	<b>FH123-11P-L132M-04G</b>	462	242
7.6	9.2	11578	1.15	192.40	74.7	86.3	74.7	86.3			
7.9	9.5	11165	1.20	185.53	75.9	86.7	75.9	86.7			
8.8	11	9973	1.35	165.73	78.8	87.9	78.8	87.9			
10	12	8589	1.55	142.72	81.6	89.2	81.6	89.2			
12	15	7271	1.80	120.82	83.9	90.5	83.9	90.5			
14	17	6339	2.10	105.34	85.2	91.4	85.2	91.4			
16	19	5461	2.40	90.74	86.3	92.2	86.3	92.2			
19	23	4702	2.80	78.14	87.1	93.0	87.1	93.0			
8.9	11	9829	0.85	163.33	34.7	58.2	34.7	58.2	<b>FH103-11P-L132M-04G</b>	322	240
10	13	8412	1.00	139.78	43.7	59.8	43.7	59.8			
12	15	7265	1.15	120.72	49.0	61.1	49.0	61.1			
13	16	6515	1.25	108.27	51.8	61.9	51.8	61.9			
16	19	5454	1.50	90.63	55.0	63.1	55.0	63.1			
18	22	4886	1.65	81.20	56.4	63.7	56.4	63.7			
21	25	4182	1.95	69.49	58.0	64.5	58.0	64.5			
24	29	3612	2.25	60.02	59.0	65.1	59.0	65.1			
34	41	2572	2.50	42.74	60.5	66.3	60.5	66.3	<b>FH102-11P-L132M-04G</b>	296	240
41	49	2162	2.00	35.93	60.9	66.8	60.9	66.8			
66	80	1332	2.50	22.14	55.1	67.5	55.1	67.5			
78	95	1121	2.00	18.62	52.1	67.8	52.1	67.8			
16	19	5572	0.85	92.59	18.7	30.0	18.7	30.0	<b>FH093-11P-L132M-04G</b>	228	238
18	22	4820	0.95	80.09	25.7	38.6	25.7	38.6			
19	23	4648	1.00	77.23	27.0	38.8	27.0	38.8			
21	26	4101	1.10	68.15	30.3	39.6	30.3	39.6			
25	30	3490	1.30	57.99	33.2	40.4	33.2	40.4			
29	35	3011	1.50	50.03	35.1	41.0	35.1	41.0			
38	46	2326	1.90	38.65	37.1	41.9	37.1	41.9	<b>FH092-11P-L132M-04G</b>	214	238
43	52	2054	2.20	34.13	37.7	42.3	37.7	42.3			
49	60	1783	2.55	29.63	38.3	42.6	38.3	42.6			
51	62	1719	2.00	28.57	38.4	42.7	38.4	42.7			
57	69	1541	2.95	25.60	38.7	43.0	38.7	43.0			
77	93	1144	1.90	19.01	39.3	43.3	39.3	43.3			
87	105	1010	2.65	16.79	39.4	43.5	39.4	43.5			
104	126	846	2.00	14.05	38.2	43.7	38.2	43.7			
24	29	3602	0.80	59.86	**	**	**	**	<b>FH083-11P-L132M-04G</b>	174	236
25	31	3474	0.80	57.73	**	**	**	**			
29	35	3066	0.90	50.95	18.8	32.9	18.8	7.8			
34	41	2572	1.00	42.74	22.5	41.0	22.5	8.5			
41	49	2168	1.10	36.02	24.7	41.7	21.8	9.2			
43	52	2038	1.40	33.87	25.3	41.9	21.2	9.4	<b>FH082-11P-L132M-04G</b>	165	236
49	59	1805	1.70	30.00	26.2	42.2	19.8	9.7			
56	68	1562	1.95	25.95	27.1	42.6	18.5	10.1			
66	80	1329	2.30	22.08	27.8	43.0	17.0	10.5			
78	94	1131	2.70	18.79	28.2	43.3	15.7	10.8			
103	124	853	2.10	14.18	28.8	43.5	14.1	11.0			
119	144	738	2.40	12.27	28.9	43.7	13.2	11.2			
140	169	628	2.85	10.44	29.1	43.9	12.3	11.4			

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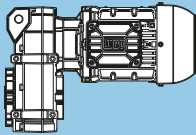
\*\* ... on request



P <sub>N</sub> = 9.2 kW										IE3	
50 Hz		60 Hz		at 50 Hz						m kg	Dimension sheet see page
9.2 kW		11 kW		Output shaft		Hollow shaft					
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
50	60	1768	0.85	29.38	13.2	15.4	13.2	4.1	FH072-11P-L132M-04G	125	234
58	70	1519	1.00	25.25	15.4	15.9	13.3	4.7			
66	80	1327	1.15	22.05	16.8	16.3	13.3	5.0			
70	85	1247	0.80	20.72	**	**	**	**			
77	93	1137	1.35	18.89	17.8	16.7	12.3	5.4			
80	97	1096	1.40	18.21	18.0	16.8	12.1	5.5			
81	98	1089	1.05	18.09	18.1	15.8	12.4	4.5			
91	110	968	1.60	16.08	18.6	17.0	11.3	5.8			
108	131	812	1.85	13.49	19.2	17.3	10.3	6.1			
126	152	699	1.60	11.62	19.5	16.9	9.9	5.7			
129	155	684	2.20	11.36	19.6	17.6	9.5	6.4			
144	174	610	1.85	10.14	19.7	17.2	9.3	6.0			
168	203	523	2.15	8.69	19.9	17.5	8.6	6.2			
174	211	504	2.00	8.38	20.0	17.5	8.4	6.3			
197	239	445	2.55	7.40	20.1	17.7	7.9	6.4			
235	284	374	3.00	6.21	20.2	17.9	7.3	6.7			
82	99	1068	0.80	17.75	**	**	**	**	FH062-11P-L132M-04G	102	232
90	108	980	0.85	16.28	6.1	9.0	6.1	2.1			
95	115	926	0.90	15.38	7.1	11.2	7.1	2.3			
103	125	849	1.00	14.11	8.2	12.5	8.2	2.5			
112	136	782	1.05	12.99	9.0	12.7	9.0	2.8			
117	141	754	1.10	12.53	9.3	12.8	9.1	2.9			
123	148	717	1.15	11.91	9.6	12.9	9.0	3.0			
127	154	691	1.20	11.49	9.8	13.0	9.0	3.0			
136	165	644	1.30	10.70	10.2	13.2	8.7	3.2			
140	170	626	0.95	10.41	10.4	12.5	8.4	2.5			
149	180	590	1.40	9.81	10.6	13.3	8.3	3.4			
170	205	518	1.15	8.61	11.1	13.0	8.1	3.0			
199	241	441	1.30	7.32	11.5	13.3	7.5	3.3			
230	278	382	1.50	6.35	11.7	13.6	6.9	3.6			
272	329	323	1.80	5.36	12.0	13.8	6.3	3.9			
282	341	311	1.85	5.17	12.0	13.9	6.2	3.9			
331	400	265	2.20	4.41	12.1	14.1	5.7	4.1			
116	140	760	0.80	12.63	**	**	**	**	FH052-11P-L132M-04G	87	230
126	153	696	0.90	11.57	4.1	6.1	4.1	3.2			
138	167	636	0.95	10.57	5.5	9.0	5.5	3.3			
156	188	564	1.00	9.38	6.6	10.3	6.6	3.6			
162	195	544	1.05	9.04	6.9	10.3	6.9	3.6			
170	206	516	1.10	8.57	7.2	10.4	7.2	3.7			
177	214	497	1.10	8.26	7.4	10.5	7.4	3.8			
192	232	459	0.80	7.62	**	**	**	**			
229	277	384	0.95	6.38	8.4	10.3	8.2	3.6			
282	341	311	1.20	5.17	8.9	10.7	7.4	4.0			
293	354	300	1.25	4.98	9.0	10.7	7.2	4.0			

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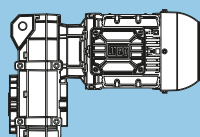
\*\* ... on request

P <sub>N</sub> = 11 kW										IE3		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
11 kW		13 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>			i	F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN			
5.7	6.8	18567	1.00	259.81	75.8	114.8	75.8	114.8	FH153-22P-160M-04E	754	244	
6.6	7.9	15991	1.15	223.77	85.6	116.9	85.6	116.9				
7.6	9.2	13832	1.35	193.55	92.1	118.6	92.1	118.6				
8.6	10	12201	1.50	170.73	96.1	120.0	96.1	120.0				
10	12	10479	1.75	146.63	99.6	121.4	99.6	121.4				
12	15	8718	2.10	122.00	102.6	122.8	102.6	122.8				
14	16	7694	2.35	107.66	104.1	122.8	104.1	122.8				
15	19	6787	2.70	94.97	105.2	123.7	105.2	123.7				
6.7	8.0	15770	0.85	220.67	59.5	82.3	59.5	82.3	FH123-22P-160M-04E	524	242	
7.6	9.2	13749	0.95	192.40	67.9	84.3	67.9	84.3				
8.9	11	11843	1.10	165.73	74.0	86.1	74.0	86.1				
10	12	10199	1.30	142.72	78.2	87.7	78.2	87.7				
12	15	8634	1.55	120.82	81.5	89.2	81.5	89.2				
14	17	7528	1.75	105.34	83.5	90.2	83.5	90.2				
16	20	6485	2.05	90.74	85.0	91.3	85.0	91.3				
17	20	6364	2.05	89.06	85.2	91.4	85.2	91.4				
19	23	5584	2.35	78.14	86.2	92.1	86.2	92.1				
20	24	5237	2.50	73.28	86.5	92.5	86.5	92.5				
22	26	4878	2.70	68.26	86.9	92.8	86.9	92.8				
37	44	2857	2.70	39.98	88.5	94.7	88.5	94.7	FH122-22P-160M-04E	483	242	
77	93	1371	2.70	19.18	77.8	96.0	77.8	96.0				
11	13	9989	0.85	139.78	33.5	55.9	33.5	55.9	FH103-22P-160M-04E	384	240	
12	15	8627	0.95	120.72	42.6	59.6	42.6	59.6				
14	17	7295	1.10	102.08	48.9	61.1	48.9	61.1				
16	19	6716	1.20	93.98	51.1	61.7	51.1	61.7				
18	22	5803	1.40	81.20	54.0	62.7	54.0	62.7				
21	26	4966	1.65	69.49	56.3	63.6	56.3	63.6				
22	26	4830	1.70	67.59	56.6	63.8	56.6	63.8				
24	30	4289	1.90	60.02	57.8	64.4	57.8	64.4				
29	35	3627	2.25	50.75	59.0	65.1	59.0	65.1				
35	43	2959	2.75	41.41	60.0	65.9	60.0	65.9				
34	42	3054	2.10	42.74	59.9	65.8	59.9	65.8	FH102-22P-160M-04E	358	240	
39	48	2663	2.70	37.26	60.4	66.2	60.4	66.2				
66	80	1582	2.10	22.14	55.8	67.2	55.8	67.2				
76	92	1379	2.70	19.30	53.1	67.5	53.1	67.5				
18	22	5723	0.80	80.09	**	**	**	**	FH093-22P-160M-04E	290	238	
21	26	4925	0.95	68.92	24.9	38.5	24.9	38.5				
22	26	4870	0.95	68.15	25.3	38.5	25.3	38.5				
25	31	4144	1.10	57.99	30.1	39.5	30.1	39.5				
27	33	3851	1.20	53.89	31.6	39.9	31.6	39.9				
29	35	3575	1.30	50.03	32.9	40.3	32.9	40.3				
35	42	2999	1.50	41.97	35.1	41.0	35.1	41.0				
43	52	2438	1.75	34.12	36.8	41.8	36.8	41.8				
55	67	1907	2.05	26.68	38.1	42.5	38.1	42.5				
43	52	2439	1.85	34.13	36.8	41.8	36.8	41.8	FH092-22P-160M-04E	276	238	
50	60	2117	2.15	29.63	37.6	42.2	37.6	42.2				
57	69	1829	2.50	25.60	38.2	42.6	38.2	42.6				
67	81	1566	2.90	21.91	38.7	42.9	38.7	42.9				
88	106	1200	2.25	16.79	39.2	43.2	39.2	43.2				
101	122	1041	2.60	14.57	39.1	43.4	39.1	43.4				
117	141	900	3.00	12.59	37.1	43.7	37.1	43.7				
34	42	3054	0.85	42.74	18.9	33.1	18.9	7.8	FH083-22P-160M-04E	236	236	
41	49	2574	0.95	36.02	22.5	41.0	22.5	8.5				
50	60	2110	1.10	29.53	25.0	41.7	20.7	9.2				

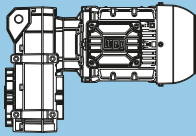
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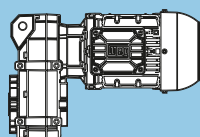
P <sub>N</sub> = 11 kW										IE3	
50 Hz 11 kW		60 Hz 13 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
<b>49</b>	59	2144	1.40	30.00	24.8	41.7	20.8	9.2	<b>FH082-22P-160M-04E</b>	227	236
<b>57</b>	68	1854	1.65	25.95	26.1	42.1	19.3	9.6			
<b>67</b>	80	1578	1.95	22.08	27.0	42.6	17.7	10.1			
<b>78</b>	94	1343	2.25	18.79	27.7	42.9	16.4	10.4			
<b>91</b>	110	1158	2.60	16.21	28.2	43.2	15.2	10.7			
<b>104</b>	125	1013	1.75	14.18	28.5	43.2	14.7	10.7			
<b>120</b>	145	877	2.05	12.27	28.7	43.5	13.7	11.0			
<b>141</b>	170	746	2.40	10.44	28.9	43.7	12.7	11.2			
<b>166</b>	200	635	2.80	8.88	29.1	43.9	11.7	11.4			
<b>67</b>	80	1576	1.00	22.05	15.0	15.8	12.1	4.5	<b>FH072-22P-160M-04E</b>	187	234
<b>78</b>	94	1350	1.15	18.89	16.6	16.2	12.2	5.0			
<b>91</b>	110	1149	1.35	16.08	17.8	16.7	11.9	5.4			
<b>109</b>	132	964	1.60	13.49	18.6	17.0	10.8	5.8			
<b>129</b>	156	812	1.85	11.36	19.2	17.3	9.9	6.1			
<b>145</b>	175	725	1.55	10.14	19.4	16.9	9.7	5.6			
<b>158</b>	190	666	2.30	9.32	19.6	17.6	8.9	6.4			
<b>169</b>	204	621	1.80	8.69	19.7	17.2	8.9	5.9			
<b>199</b>	240	529	2.15	7.40	19.9	17.4	8.2	6.2			
<b>237</b>	286	444	2.55	6.21	20.1	17.7	7.6	6.4			
<b>281</b>	339	374	3.00	5.23	19.2	17.9	7.0	6.7			
<b>104</b>	126	1008	0.85	14.11	5.5	7.7	5.5	2.0	<b>FH062-22P-160M-04E</b>	164	232
<b>113</b>	137	928	0.90	12.99	7.1	11.2	7.1	2.3			
<b>123</b>	149	851	1.00	11.91	8.2	12.5	8.2	2.5			
<b>137</b>	166	765	1.10	10.70	9.2	12.8	8.4	2.8			
<b>150</b>	181	701	1.20	9.81	9.8	13.0	8.3	3.0			
<b>231</b>	280	454	1.30	6.35	11.4	13.2	7.3	3.3			
<b>274</b>	331	383	1.50	5.36	11.7	13.6	6.6	3.6			
<b>333</b>	402	315	1.85	4.41	12.0	13.9	6.0	3.9			

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<b>P<sub>N</sub> = 15 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>15 kW</b>		<b>18 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
6.5	7.9	21881	0.85	223.77	57.9	97.8	57.9	97.8	<b>FH153-22P-160L-04F</b>	777	244
7.6	9.2	18926	1.00	193.55	74.2	114.5	74.2	114.5			
8.6	10	16694	1.10	170.73	83.2	116.3	83.2	116.3			
10	12	14338	1.30	146.63	90.7	118.2	90.7	118.2			
12	15	11929	1.55	122.00	96.7	120.2	96.7	120.2			
14	18	9898	1.85	101.23	100.7	121.9	100.7	121.9			
15	19	9286	1.95	94.97	101.7	121.4	101.7	121.4			
18	22	7975	2.30	81.56	103.7	122.6	103.7	122.6			
22	26	6635	2.75	67.86	105.4	123.8	105.4	123.8			
8.8	11	16205	0.85	165.73	57.4	81.9	57.4	81.9	<b>FH123-22P-160L-04F</b>	547	242
10	12	13955	0.95	142.72	67.1	84.1	67.1	84.1			
12	15	11814	1.15	120.82	74.1	86.1	74.1	86.1			
14	17	10300	1.30	105.34	78.0	87.6	78.0	87.6			
16	20	8873	1.50	90.74	81.1	88.9	81.1	88.9			
19	23	7641	1.75	78.14	83.3	90.1	83.3	90.1			
20	24	7165	1.85	73.28	84.0	90.6	84.0	90.6			
21	26	6675	1.95	68.26	84.8	91.1	84.8	91.1			
25	30	5765	2.25	58.96	85.9	91.9	85.9	91.9			
30	36	4768	2.60	48.76	87.0	92.9	87.0	92.9			
37	44	3923	2.95	40.12	87.8	93.7	87.8	93.7			
37	44	3909	1.95	39.98	87.8	93.7	87.8	93.7	<b>FH122-22P-160L-04F</b>	506	242
43	52	3367	3.00	34.43	88.2	94.3	88.2	94.3			
76	93	1875	1.95	19.18	79.2	95.4	79.2	95.4			
89	107	1615	3.00	16.52	75.2	95.7	75.2	95.7			
14	17	9982	0.85	102.08	33.5	55.9	33.5	55.9	<b>FH103-22P-160L-04F</b>	407	240
16	19	9190	0.90	93.98	39.2	58.9	39.2	58.9			
18	22	7940	1.05	81.20	46.1	60.3	46.1	60.3			
21	26	6795	1.20	69.49	50.8	61.6	50.8	61.6			
22	26	6609	1.25	67.59	51.5	61.8	51.5	61.8			
24	30	5869	1.40	60.02	53.8	62.6	53.8	62.6			
29	35	4962	1.65	50.75	56.3	63.6	56.3	63.6			
35	43	4049	2.00	41.41	58.2	64.7	58.2	64.7			
44	53	3285	2.40	33.60	59.5	65.5	59.5	65.5			
34	42	4179	1.55	42.74	58.0	64.5	58.0	64.5	<b>FH102-22P-160L-04F</b>	381	240
39	48	3643	1.95	37.26	58.9	65.1	58.9	65.1			
46	55	3139	2.55	32.10	59.7	65.7	59.7	65.7			
53	64	2703	3.00	27.64	60.3	66.2	60.3	66.2			
66	80	2165	1.55	22.14	57.2	66.5	57.2	66.5			
76	92	1887	1.95	19.30	54.4	66.8	54.4	66.8			
88	107	1626	3.00	16.63	51.6	67.2	51.6	67.2			
25	31	5670	0.80	57.99	**	**	**	**	<b>FH093-22P-160L-04F</b>	313	238
27	33	5269	0.90	53.89	21.9	36.8	21.9	36.8			
29	35	4892	0.95	50.03	25.2	38.5	25.2	38.5			
35	42	4104	1.10	41.97	30.3	39.6	30.3	39.6			
43	52	3336	1.30	34.12	33.9	40.6	33.9	40.6			
55	67	2609	1.50	26.68	36.3	41.5	36.3	41.5			
43	52	3337	1.35	34.13	33.9	40.6	33.9	40.6	<b>FH092-22P-160L-04F</b>	299	238
49	60	2897	1.60	29.63	35.5	41.2	35.5	41.2			
57	69	2503	1.80	25.60	36.6	41.7	36.6	41.7			
67	81	2142	2.15	21.91	37.5	42.2	37.5	42.2			
77	94	1850	2.45	18.92	38.2	42.5	38.2	42.5			
87	106	1642	1.65	16.79	38.5	42.5	38.5	42.5			
92	111	1565	2.90	16.00	38.7	42.9	38.7	42.9			
101	122	1425	1.90	14.57	38.9	42.9	38.9	42.9			
116	141	1231	2.20	12.59	38.3	43.2	38.3	43.2			
136	165	1054	2.55	10.78	36.1	43.4	36.1	43.4			
157	191	910	2.95	9.31	34.3	43.6	34.3	43.6			

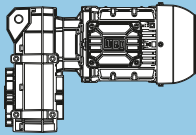
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P <sub>N</sub> = 15 kW										IE3	
50 Hz 15 kW		60 Hz 18 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
50	60	2887	0.80	29.53	**	**	**	**	FH083-22P-160L-04F	259	236
49	59	2933	1.05	30.00	19.9	35.3	19.9	8.0			
56	68	2537	1.20	25.95	22.7	41.1	21.4	8.6			
66	80	2159	1.40	22.08	24.7	41.7	19.5	9.2			
78	94	1837	1.65	18.79	26.1	42.2	17.9	9.7			
90	110	1585	1.90	16.21	27.0	42.6	16.5	10.1			
103	125	1387	1.30	14.18	27.6	42.6	16.0	10.1			
108	131	1330	2.30	13.60	27.8	43.0	15.1	10.5			
119	145	1200	1.50	12.27	28.1	42.9	14.8	10.4			
132	160	1081	2.80	11.06	28.3	43.3	13.6	10.8			
140	170	1021	1.75	10.44	28.5	43.2	13.6	10.7			
165	200	868	2.05	8.88	28.7	43.5	12.6	11.0			
191	232	749	2.40	7.66	28.9	43.7	11.7	11.2			
228	276	629	2.85	6.43	29.1	43.9	10.8	11.4			
78	94	1847	0.85	18.89	12.3	15.2	10.1	4.0	FH072-22P-160L-04F	210	234
91	110	1572	1.00	16.08	15.0	15.8	10.3	4.5			
109	132	1319	1.15	13.49	16.8	16.3	10.4	5.1			
129	156	1111	1.40	11.36	17.9	16.7	10.4	5.5			
144	175	992	1.15	10.14	18.5	16.1	9.8	4.8			
157	190	911	1.65	9.32	18.8	17.1	9.8	5.9			
169	204	850	1.35	8.69	19.0	16.5	9.7	5.3			
198	240	724	1.55	7.40	19.4	16.9	9.0	5.6			
236	286	607	1.85	6.21	19.7	17.2	8.2	6.0			
280	339	511	2.20	5.23	19.8	17.5	7.5	6.2			
341	414	419	2.60	4.29	18.4	17.8	6.8	6.5			
137	166	1046	0.80	10.70	**	**	**	**		FH062-22P-160L-04F	187
149	181	959	0.90	9.81	6.5	9.9	6.5	2.2			
231	280	621	0.95	6.35	10.4	12.5	6.5	2.6			
273	331	524	1.10	5.36	11.0	12.9	6.6	3.0			
332	402	431	1.35	4.41	11.5	13.3	6.5	3.4			

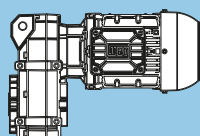
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<b>P<sub>N</sub> = 18.5 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>18.5 kW</b>		<b>22 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
7.6	9.2	23262	0.80	193.55	**	**	**	**	<b>FH153-22P-180M-04E</b>	791	244
8.6	10	20520	0.90	170.73	66.2	113.2	66.2	113.2			
10	12	17623	1.05	146.63	79.7	115.5	79.7	115.5			
12	14	14960	1.25	124.47	88.9	116.1	88.9	116.1			
14	16	12939	1.40	107.66	94.3	118.0	94.3	118.0			
15	18	12167	1.50	101.23	96.2	120.0	96.2	120.0			
17	21	10146	1.80	84.42	100.3	121.7	100.3	121.7			
18	22	9802	1.85	81.56	100.9	120.9	100.9	120.9			
20	24	8721	2.10	72.56	102.6	122.8	102.6	122.8			
22	26	8156	2.25	67.86	103.4	122.4	103.4	122.4			
26	32	6768	2.70	56.31	105.2	123.7	105.2	123.7			
10	12	17153	0.80	142.72	**	**	**	**	<b>FH123-22P-180M-04E</b>	561	242
12	14	14984	0.90	124.67	63.0	83.1	63.0	83.1			
14	16	12943	1.05	107.69	70.6	85.0	70.6	85.0			
16	20	10906	1.20	90.74	76.5	87.0	76.5	87.0			
17	20	10704	1.25	89.06	77.0	87.2	77.0	87.2			
19	23	9391	1.40	78.14	80.0	88.5	80.0	88.5			
20	24	8807	1.50	73.28	81.2	89.0	81.2	89.0			
22	26	8204	1.60	68.26	82.3	89.6	82.3	89.6			
24	29	7240	1.80	60.24	83.9	90.5	83.9	90.5			
25	30	7086	1.85	58.96	84.2	90.7	84.2	90.7			
29	35	6146	2.10	51.14	85.5	91.6	85.5	91.6			
30	36	5860	2.10	48.76	85.8	91.9	85.8	91.9			
37	44	4822	2.40	40.12	87.0	92.9	87.0	92.9			
45	54	3964	2.75	32.98	87.7	93.7	87.7	93.7			
37	44	4805	1.60	39.98	87.0	92.9	87.0	92.9	<b>FH122-22P-180M-04E</b>	520	242
43	52	4138	2.45	34.43	87.6	93.5	87.6	93.5			
77	93	2305	1.60	19.18	79.9	94.9	79.9	94.9			
89	107	1985	2.45	16.52	76.0	95.3	76.0	95.3			
18	22	9759	0.85	81.20	35.3	58.3	35.3	58.3	<b>FH103-22P-180M-04E</b>	421	240
21	26	8352	1.00	69.49	44.0	59.9	44.0	59.9			
22	26	8123	1.00	67.59	45.2	60.1	45.2	60.1			
24	30	7214	1.15	60.02	49.2	61.1	49.2	61.1			
27	33	6485	1.25	53.96	51.9	62.0	51.9	62.0			
29	35	6099	1.35	50.75	53.1	62.4	53.1	62.4			
35	43	4977	1.65	41.41	56.2	63.6	56.2	63.6			
44	53	4038	2.00	33.60	58.2	64.7	58.2	64.7			
55	66	3225	2.30	26.83	59.6	65.6	59.6	65.6			
39	48	4478	1.60	37.26	57.4	64.2	57.4	64.2	<b>FH102-22P-180M-04E</b>	395	240
46	55	3858	2.10	32.10	58.6	64.9	58.6	64.9			
53	64	3322	2.45	27.64	59.5	65.5	59.5	65.5			
61	74	2901	2.80	24.14	59.5	65.9	59.5	65.9			
76	92	2320	1.60	19.30	55.4	66.3	55.4	66.3			
88	107	1999	2.45	16.63	52.5	66.7	52.5	66.7			
50	60	3561	1.30	29.63	32.9	40.3	32.9	40.3	<b>FH092-22P-180M-04E</b>	313	238
57	69	3077	1.50	25.60	34.8	40.9	34.8	40.9			
67	81	2633	1.75	21.91	36.3	41.5	36.3	41.5			
78	94	2274	2.00	18.92	37.2	42.0	37.2	42.0			
92	111	1923	2.35	16.00	38.0	42.5	38.0	42.5			
101	122	1751	1.55	14.57	38.3	42.4	38.3	42.4			
113	136	1570	2.90	13.06	38.7	42.9	38.7	42.9			
117	141	1513	1.80	12.59	38.8	42.7	38.8	42.7			
136	165	1296	2.10	10.78	37.0	43.1	37.0	43.1			
158	191	1119	2.40	9.31	34.9	43.3	34.9	43.3			
187	226	946	2.85	7.87	32.8	43.6	32.8	43.6			

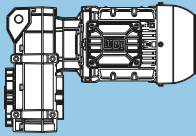
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P <sub>N</sub> = 18.5 kW										IE3	
50 Hz 18.5 kW		60 Hz 22 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
57	68	3119	1.00	25.95	18.3	31.8	18.3	7.7	FH082-22P-180M-04E	264	236
67	80	2654	1.15	22.08	22.0	39.9	19.3	8.4			
78	94	2258	1.35	18.79	24.3	41.5	19.1	9.0			
91	110	1948	1.55	16.21	25.7	42.0	17.6	9.5			
108	131	1635	1.85	13.60	26.8	42.5	16.0	10.0			
120	145	1475	1.20	12.27	27.3	42.4	15.7	9.9			
133	160	1329	2.30	11.06	27.8	43.0	14.3	10.5			
141	170	1255	1.45	10.44	27.9	42.8	14.4	10.3			
166	200	1067	1.70	8.88	28.4	43.1	13.2	10.6			
170	205	1040	2.90	8.65	28.4	43.4	12.6	10.9			
192	232	921	1.95	7.66	28.6	43.4	12.3	10.9			
229	276	773	2.30	6.43	28.9	43.6	11.2	11.1			
281	339	629	2.85	5.23	27.8	43.9	10.2	11.4			

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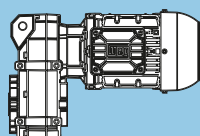
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<b>P<sub>N</sub> = 22 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>22 kW</b>		<b>26 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
10	12	20957	0.90	146.63	63.7	110.2	63.7	110.2	<b>FH153-22P-180L-04F</b>	812	244
12	14	17790	1.05	124.47	79.0	113.4	79.0	113.4			
14	16	15387	1.20	107.66	87.5	115.7	87.5	115.7			
15	19	13574	1.35	94.97	92.7	117.4	92.7	117.4			
17	21	12066	1.50	84.42	96.4	120.1	96.4	120.1			
18	22	11657	1.55	81.56	97.3	119.2	97.3	119.2			
20	24	10371	1.75	72.56	99.8	121.5	99.8	121.5			
22	26	9699	1.90	67.86	101.0	121.0	101.0	121.0			
26	32	8048	2.25	56.31	103.6	122.5	103.6	122.5			
31	38	6712	2.70	46.96	105.3	123.8	105.3	123.8			
40	49	5222	3.00	36.54	106.8	125.7	106.8	125.7	<b>FH152-22P-180L-04F</b>	774	244
85	102	2480	3.00	17.35	108.5	127.7	108.5	127.7			
14	17	15056	0.90	105.34	62.7	83.0	62.7	83.0	<b>FH123-22P-180L-04F</b>	582	242
16	20	12969	1.05	90.74	70.6	85.0	70.6	85.0			
17	20	12729	1.05	89.06	71.3	85.2	71.3	85.2			
19	23	11168	1.20	78.14	75.9	86.7	75.9	86.7			
20	24	10474	1.25	73.28	77.6	87.4	77.6	87.4			
22	26	9756	1.35	68.26	79.3	88.1	79.3	88.1			
24	29	8610	1.55	60.24	81.6	89.2	81.6	89.2			
25	30	8427	1.55	58.96	81.9	89.4	81.9	89.4			
29	35	7309	1.75	51.14	83.8	90.5	83.8	90.5			
30	36	6969	1.80	48.76	84.3	90.8	84.3	90.8			
37	44	5734	2.05	40.12	86.0	92.0	86.0	92.0			
45	54	4714	2.35	32.98	87.1	93.0	87.1	93.0			
53	63	4002	2.60	28.00	87.7	93.6	87.7	93.6			
37	44	5714	1.35	39.98	86.0	92.0	86.0	92.0	<b>FH122-22P-180L-04F</b>	541	242
43	52	4921	2.05	34.43	86.9	92.8	86.9	92.8			
49	60	4256	2.95	29.78	87.5	93.4	87.5	93.4			
77	93	2741	1.35	19.18	80.9	94.4	80.9	94.4			
89	107	2361	2.05	16.52	76.9	94.9	76.9	94.9			
103	124	2042	2.95	14.29	73.1	95.2	73.1	95.2			
21	26	9932	0.85	69.49	33.9	56.8	33.9	56.8	<b>FH103-22P-180L-04F</b>	442	240
22	26	9660	0.85	67.59	36.0	58.4	36.0	58.4			
24	30	8578	0.95	60.02	42.8	59.6	42.8	59.6			
27	33	7712	1.05	53.96	47.1	60.6	47.1	60.6			
29	35	7253	1.15	50.75	49.0	61.1	49.0	61.1			
35	43	5919	1.40	41.41	53.7	62.6	53.7	62.6			
44	53	4802	1.65	33.60	56.6	63.8	56.6	63.8			
55	66	3835	1.95	26.83	58.6	64.9	58.6	64.9			
39	48	5325	1.35	37.26	55.4	63.2	55.4	63.2	<b>FH102-22P-180L-04F</b>	416	240
46	55	4588	1.75	32.10	57.1	64.1	57.1	64.1			
53	64	3950	2.05	27.64	58.4	64.8	58.4	64.8			
61	74	3450	2.35	24.14	59.3	65.3	59.3	65.3			
70	85	2981	2.70	20.86	57.5	65.8	57.5	65.8			
76	92	2758	1.35	19.30	56.5	65.7	56.5	65.7			
88	107	2377	2.05	16.63	53.4	66.2	53.4	66.2			
103	124	2047	2.65	14.32	50.4	66.6	50.4	66.6			

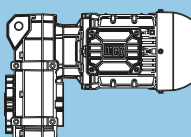


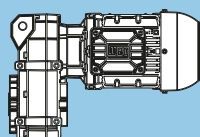
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P <sub>N</sub> = 22 kW										IE3	
50 Hz 22 kW		60 Hz 26 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
<b>50</b>	60	4235	1.10	29.63	29.6	39.4	29.6	39.4	<b>FH092-22P-180L-04F</b>	334	238
<b>57</b>	69	3659	1.25	25.60	32.5	40.2	32.5	40.2			
<b>67</b>	81	3131	1.45	21.91	34.6	40.9	34.6	40.9			
<b>78</b>	94	2704	1.70	18.92	36.1	41.4	36.1	41.4			
<b>92</b>	111	2287	2.00	16.00	37.2	42.0	37.2	42.0			
<b>101</b>	122	2082	1.30	14.57	37.7	41.9	37.7	41.9			
<b>113</b>	136	1867	2.45	13.06	38.1	42.5	38.1	42.5			
<b>117</b>	141	1799	1.50	12.59	38.3	42.3	38.3	42.3			
<b>136</b>	165	1541	1.75	10.78	37.8	42.7	37.8	42.7			
<b>139</b>	168	1514	3.00	10.59	36.9	43.0	36.9	43.0			
<b>158</b>	191	1331	2.05	9.31	35.6	43.0	35.6	43.0			
<b>187</b>	226	1125	2.40	7.87	33.4	43.3	33.4	43.3			
<b>229</b>	276	918	2.95	6.42	31.0	43.6	31.0	43.6			
<b>57</b>	68	3709	0.85	25.95	10.7	15.7	10.7	6.8	<b>FH082-22P-180L-04F</b>	285	236
<b>67</b>	80	3156	1.00	22.08	18.0	31.1	17.6	7.6			
<b>78</b>	94	2686	1.15	18.79	21.7	39.3	17.7	8.4			
<b>91</b>	110	2317	1.30	16.21	23.9	41.4	17.7	8.9			
<b>108</b>	131	1944	1.55	13.60	25.7	42.0	16.9	9.5			
<b>120</b>	145	1754	1.05	12.27	26.4	41.9	16.5	9.4			
<b>133</b>	160	1581	1.90	11.06	27.0	42.6	15.1	10.1			
<b>141</b>	170	1492	1.20	10.44	27.3	42.4	15.2	9.9			
<b>166</b>	200	1269	1.40	8.88	27.9	42.8	13.9	10.3			
<b>170</b>	205	1236	2.45	8.65	28.0	43.1	13.2	10.6			
<b>192</b>	232	1095	1.65	7.66	28.3	43.1	12.9	10.6			
<b>229</b>	276	919	1.95	6.43	28.6	43.4	11.8	10.9			
<b>281</b>	339	747	2.40	5.23	28.2	43.7	10.6	11.2			
<b>359</b>	434	585	2.70	4.09	25.8	44.0	9.4	11.5			

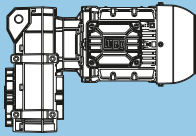
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<b>P<sub>N</sub> = 30 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>30 kW</b>		<b>36 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
12	15	23617	0.80	122.00	**	**	**	**	<b>FH153-22P-200L-04E</b>	870	244
14	17	20841	0.90	107.66	64.4	109.4	64.4	109.4			
15	18	19596	0.95	101.23	71.0	113.9	71.0	113.9			
16	19	18384	1.00	94.97	76.5	112.9	76.5	112.9			
18	21	16342	1.15	84.42	84.4	116.6	84.4	116.6			
20	25	14046	1.30	72.56	91.5	118.5	91.5	118.5			
22	26	13136	1.40	67.86	93.9	117.8	93.9	117.8			
24	28	12155	1.50	62.79	96.2	120.0	96.2	120.0			
26	32	10901	1.70	56.31	98.8	119.9	98.8	119.9			
32	38	9091	2.00	46.96	102.0	121.5	102.0	121.5			
37	44	7813	2.35	40.36	103.9	122.7	103.9	122.7			
42	51	6762	2.70	34.93	105.2	123.7	105.2	123.7			
41	49	7073	2.20	36.54	104.9	124.2	104.9	124.2	<b>FH152-22P-200L-04E</b>	832	244
85	103	3359	2.20	17.35	108.1	126.9	108.1	126.9			
17	20	17240	0.80	89.06	**	**	**	**	<b>FH123-22P-200L-04E</b>	640	242
19	23	15126	0.90	78.14	62.4	82.9	62.4	82.9			
20	24	14186	0.95	73.28	66.3	83.8	66.3	83.8			
22	26	13214	1.00	68.26	69.7	84.8	69.7	84.8			
25	30	11661	1.15	60.24	74.5	86.3	74.5	86.3			
29	35	9900	1.30	51.14	78.9	88.0	78.9	88.0			
30	37	9439	1.30	48.76	79.9	88.4	79.9	88.4			
34	41	8450	1.45	43.65	81.9	89.4	81.9	89.4			
37	44	7766	1.50	40.12	83.1	90.0	83.1	90.0			
45	54	6384	1.75	32.98	85.2	91.3	85.2	91.3			
53	64	5420	1.95	28.00	86.3	92.3	86.3	92.3			
62	74	4627	2.15	23.90	87.2	93.0	87.2	93.0			
43	52	6665	1.50	34.43	84.8	91.1	84.8	91.1	<b>FH122-22P-200L-04E</b>	599	242
50	60	5765	2.20	29.78	85.9	91.9	85.9	91.9			
56	68	5085	2.60	26.27	86.7	92.6	86.7	92.6			
66	79	4367	3.00	22.56	86.8	93.3	86.8	93.3			
90	108	3198	1.50	16.52	78.5	93.9	78.5	93.9			
104	125	2766	2.20	14.29	74.5	94.4	74.5	94.4			
117	141	2441	3.00	12.61	71.4	94.8	71.4	94.8			
27	33	10446	0.80	53.96	**	**	**	**	<b>FH103-22P-200L-04E</b>	500	240
29	35	9824	0.85	50.75	34.8	58.2	34.8	58.2			
36	43	8016	1.00	41.41	45.7	60.2	45.7	60.2			
44	53	6504	1.25	33.60	51.8	61.9	51.8	61.9			
55	66	5194	1.45	26.83	55.7	63.4	55.7	63.4			
46	55	6214	1.30	32.10	52.8	62.3	52.8	62.3	<b>FH102-22P-200L-04E</b>	474	240
54	64	5351	1.50	27.64	55.3	63.2	55.3	63.2			
61	74	4673	1.75	24.14	56.9	64.0	56.9	64.0			
71	85	4038	2.00	20.86	58.2	64.7	58.2	64.7			
86	103	3339	2.40	17.25	55.3	65.5	55.3	65.5			
89	107	3219	1.50	16.63	55.3	65.2	55.3	65.2			
103	124	2772	1.95	14.32	52.2	65.7	52.2	65.7			
104	125	2747	2.95	14.19	51.3	66.1	51.3	66.1			
118	142	2422	2.25	12.51	49.5	66.2	49.5	66.2			
137	165	2091	2.60	10.80	46.8	66.6	46.8	66.6			
58	70	4956	0.95	25.60	24.7	38.4	24.7	38.4	<b>FH092-22P-200L-04E</b>	392	238
68	81	4241	1.10	21.91	29.5	39.4	29.5	39.4			
78	94	3663	1.25	18.92	32.5	40.1	32.5	40.1			
93	111	3097	1.50	16.00	34.8	40.9	34.8	40.9			
113	136	2528	1.80	13.06	36.6	41.7	36.6	41.7			
118	141	2437	1.10	12.59	36.8	41.4	36.8	41.4			
137	165	2087	1.30	10.78	37.7	41.9	37.7	41.9			
140	168	2050	2.20	10.59	37.7	42.3	37.7	42.3			
159	191	1802	1.50	9.31	37.2	42.3	37.2	42.3			
175	210	1638	2.45	8.46	35.1	42.8	35.1	42.8			
188	226	1523	1.80	7.87	34.7	42.7	34.7	42.7			
231	277	1243	2.20	6.42	32.0	43.1	32.0	43.1			
284	342	1009	2.60	5.21	29.5	43.5	29.5	43.5			
356	428	805	2.85	4.16	27.1	43.8	27.1	43.8			

P <sub>N</sub> = 37 kW										IE3	
50 Hz 37 kW		60 Hz 44 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
16	19	22674	0.80	94.97	**	**	**	**	FH153-22P-200L-04F	897	244
18	22	19472	0.95	81.56	71.6	111.9	71.6	111.9			
20	25	17324	1.05	72.56	80.8	115.8	80.8	115.8			
22	26	16202	1.15	67.86	84.9	114.9	84.9	114.9			
24	28	14991	1.25	62.79	88.8	117.7	88.8	117.7			
26	32	13444	1.35	56.31	93.1	117.5	93.1	117.5			
32	38	11212	1.65	46.96	98.2	119.6	98.2	119.6			
37	44	9636	1.90	40.36	101.1	121.0	101.1	121.0			
42	51	8340	2.20	34.93	103.2	122.2	103.2	122.2			
41	49	8724	1.80	36.54	102.6	122.8	102.6	122.8	FH152-22P-200L-04F	859	244
53	64	6649	2.75	27.85	105.4	124.5	105.4	124.5			
85	103	4142	1.80	17.35	107.6	126.1	107.6	126.1			
22	26	16297	0.80	68.26	**	**	**	**	FH123-22P-200L-04F	667	242
25	30	14382	0.95	60.24	65.5	83.6	65.5	83.6			
29	35	12210	1.05	51.14	72.9	85.7	72.9	85.7			
30	37	11641	1.05	48.76	74.6	86.3	74.6	86.3			
34	41	10421	1.20	43.65	77.7	87.5	77.7	87.5			
37	44	9579	1.25	40.12	79.6	88.3	79.6	88.3			
45	54	7874	1.40	32.98	82.9	89.9	82.9	89.9			
53	64	6685	1.55	28.00	84.7	91.1	84.7	91.1			
62	75	5706	1.75	23.90	86.0	92.0	86.0	92.0			
43	52	8220	1.25	34.43	82.3	89.6	82.3	89.6			
50	60	7110	1.80	29.78	84.1	90.6	84.1	90.6			
56	68	6272	2.10	26.27	85.3	91.5	85.3	91.5			
66	79	5386	2.40	22.56	86.4	92.3	86.4	92.3			
79	95	4481	2.80	18.77	82.9	93.2	82.9	93.2			
90	108	3944	1.25	16.52	80.2	93.1	80.2	93.1			
104	125	3412	1.80	14.29	76.0	93.7	76.0	93.7			
117	141	3011	2.45	12.61	72.7	94.1	72.7	94.1			
137	165	2586	2.80	10.83	68.7	94.6	68.7	94.6			
46	56	7664	1.05	32.10	47.3	60.6	47.3	60.6	FH102-22P-200L-04F	501	240
54	64	6599	1.25	27.64	51.5	61.8	51.5	61.8			
61	74	5763	1.40	24.14	54.2	62.8	54.2	62.8			
71	85	4980	1.65	20.86	56.2	63.6	56.2	63.6			
86	103	4118	1.95	17.25	57.0	64.6	57.0	64.6			
89	107	3970	1.25	16.63	57.2	64.2	57.2	64.2			
103	124	3419	1.60	14.32	53.8	64.9	53.8	64.9			
104	126	3388	2.40	14.19	52.7	65.4	52.7	65.4			
118	142	2987	1.85	12.51	50.9	65.5	50.9	65.5			
127	153	2786	2.85	11.67	48.8	66.1	48.8	66.1			
137	165	2579	2.15	10.80	48.0	66.0	48.0	66.0			
149	180	2366	3.25	9.91	45.8	66.5	45.8	66.5			
166	199	2134	2.55	8.94	44.6	66.5	44.6	66.5			
175	211	2017	3.65	8.45	43.2	66.9	43.2	66.9			
201	242	1755	3.10	7.35	41.4	67.0	41.4	67.0			
245	295	1442	3.80	6.04	38.5	67.4	38.5	67.4			
288	347	1225	4.45	5.13	36.3	67.6	36.3	67.6			
338	407	1046	5.20	4.38	34.3	67.3	34.3	67.3			

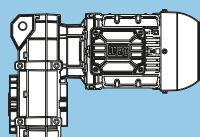
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<b>P<sub>N</sub> = 45 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>45 kW</b>		<b>55 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
18	22	23683	0.80	81.56	**	**	**	**	<b>FH153-22P-225S/M-04F</b>	1034	244
20	25	21069	0.90	72.56	63.0	108.7	63.0	108.7			
22	26	19705	0.95	67.86	70.4	111.7	70.4	111.7			
24	28	18232	1.00	62.79	77.2	115.0	77.2	115.0			
26	32	16351	1.15	56.31	84.4	114.8	84.4	114.8			
32	38	13636	1.35	46.96	92.6	117.3	92.6	117.3			
37	44	11719	1.55	40.36	97.1	119.1	97.1	119.1			
42	51	10143	1.80	34.93	100.3	120.6	100.3	120.6			
41	49	10610	1.50	36.54	99.4	121.3	99.4	121.3	<b>FH152-22P-225S/M-04F</b>	996	244
53	64	8087	2.25	27.85	103.5	123.4	103.5	123.4			
63	76	6789	2.70	23.38	105.2	124.4	105.2	124.4			
85	103	5038	1.50	17.35	106.9	125.3	106.9	125.3			
112	135	3839	2.60	13.22	107.8	126.4	107.8	126.4			
25	30	17120	0.80	58.96	**	**	**	**	<b>FH123-22P-225S/M-04F</b>	804	242
29	35	14850	0.85	51.14	63.6	83.2	63.6	83.2			
30	37	14159	0.90	48.76	66.4	83.9	66.4	83.9			
34	41	12675	0.95	43.65	71.5	85.3	71.5	85.3			
37	44	11650	1.00	40.12	74.6	86.3	74.6	86.3			
45	54	9576	1.15	32.98	79.6	88.3	79.6	88.3			
53	64	8130	1.30	28.00	82.5	89.7	82.5	89.7			
62	75	6940	1.45	23.90	84.4	90.8	84.4	90.8			
43	52	9997	1.00	34.43	78.7	87.9	78.7	87.9	<b>FH122-22P-225S/M-04F</b>	763	242
50	60	8647	1.50	29.78	81.5	89.2	81.5	89.2			
56	68	7628	1.75	26.27	83.3	90.1	83.3	90.1			
66	79	6551	2.00	22.56	84.9	91.2	84.9	91.2			
79	95	5450	2.30	18.77	84.8	92.2	84.8	92.2			
90	108	4797	1.00	16.52	82.2	92.1	82.2	92.1			
95	114	4524	2.65	15.58	79.0	93.1	79.0	93.1			
104	125	4149	1.50	14.29	77.7	92.9	77.7	92.9			
117	141	3662	2.00	12.61	74.2	93.4	74.2	93.4			
137	165	3145	2.30	10.83	70.0	94.0	70.0	94.0			
46	56	9321	0.90	32.10	38.4	58.8	38.4	58.8	<b>FH102-22P-225S/M-04F</b>	638	240
54	64	8026	1.00	27.64	45.6	60.2	45.6	60.2			
61	74	7010	1.15	24.14	50.0	61.4	50.0	61.4			
71	85	6057	1.35	20.86	53.3	62.4	53.3	62.4			
86	103	5009	1.60	17.25	56.2	63.6	56.2	63.6			
89	107	4829	1.00	16.63	56.6	63.2	56.6	63.2			
103	124	4158	1.30	14.32	55.6	64.0	55.6	64.0			
104	126	4120	1.95	14.19	54.3	64.6	54.3	64.6			
118	142	3633	1.50	12.51	52.5	64.7	52.5	64.7			
127	153	3389	2.35	11.67	50.1	65.4	50.1	65.4			
137	165	3136	1.75	10.80	49.4	65.3	49.4	65.3			
149	180	2878	2.65	9.91	47.0	66.0	47.0	66.0			
166	199	2596	2.10	8.94	45.7	66.0	45.7	66.0			
175	211	2454	3.00	8.45	44.1	66.4	44.1	66.4			
201	242	2134	2.55	7.35	42.4	66.5	42.4	66.5			
245	295	1754	3.10	6.04	39.3	67.0	39.3	67.0			
288	347	1490	3.65	5.13	37.0	67.3	37.0	67.3			
338	407	1272	4.30	4.38	34.9	67.6	34.9	67.6			

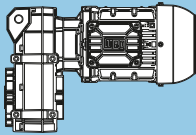
Legend see page 149

\*\* ... on request

P <sub>N</sub> = 55 kW										IE3	
50 Hz 55 kW		60 Hz 66 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
24	28	22284	0.85	62.79	55.1	91.9	55.1	91.9	FH153-22P-225S/M-04G	1082	244
26	32	19984	0.95	56.31	69.0	111.4	69.0	111.4			
32	38	16666	1.10	46.96	83.3	114.5	83.3	114.5			
37	44	14324	1.30	40.36	90.7	116.7	90.7	116.7			
42	51	12397	1.50	34.93	95.6	118.5	95.6	118.5	FH152-22P-225S/M-04G	1044	244
53	64	9884	1.85	27.85	100.7	121.9	100.7	121.9			
63	76	8298	2.20	23.38	103.2	123.2	103.2	123.2			
77	93	6828	2.65	19.24	105.1	124.4	105.1	124.4			
112	135	4692	2.10	13.22	107.2	125.6	107.2	125.6			
133	161	3939	2.85	11.10	106.4	126.3	106.4	126.3	FH123-22P-225S/M-04G	852	242
34	41	15491	0.80	43.65	**	**	**	**			
37	44	14239	0.85	40.12	66.1	83.8	66.1	83.8			
45	54	11705	0.95	32.98	74.4	86.2	74.4	86.2			
53	64	9937	1.05	28.00	78.8	87.9	78.8	87.9			
62	75	8482	1.20	23.90	81.8	89.3	81.8	89.3			
56	68	9323	1.40	26.27	80.2	88.5	80.2	88.5	FH122-22P-225S/M-04G	811	242
66	79	8007	1.65	22.56	82.7	89.8	82.7	89.8			
79	95	6661	1.90	18.77	84.8	91.1	84.8	91.1			
95	115	5529	2.15	15.58	81.0	92.2	81.0	92.2			
114	137	4610	2.50	12.99	75.4	93.1	75.4	93.1			
117	142	4475	1.65	12.61	76.1	92.5	76.1	92.5			
132	160	3964	2.80	11.17	71.3	93.7	71.3	93.7			
137	165	3844	1.90	10.83	71.6	93.2	71.6	93.2			
153	185	3428	3.10	9.66	67.5	94.2	67.5	94.2			
164	198	3198	2.60	9.01	66.8	93.9	66.8	93.9			
198	239	2651	3.10	7.47	62.3	94.5	62.3	94.5			
238	287	2211	3.70	6.23	58.2	95.0	58.2	95.0			
276	333	1902	4.30	5.36	55.2	95.4	55.2	95.4			
319	385	1647	4.65	4.64	52.5	95.7	52.5	95.7			

Legend see page 149

\*\* ... on request

<b>P<sub>N</sub> = 75 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>75 kW</b>		<b>90 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>32</b>	38	22726	0.80	46.96	**	**	**	**	<b>FH153-22P-250S/M-04F</b>	1186	244
<b>37</b>	44	19532	0.95	40.36	71.3	111.8	71.3	111.8			
<b>42</b>	51	16904	1.10	34.93	82.4	114.3	82.4	114.3			
<b>53</b>	64	13478	1.35	27.85	93.0	118.9	93.0	118.9	<b>FH152-22P-250S/M-04F</b>	1148	244
<b>63</b>	76	11315	1.60	23.38	98.0	120.7	98.0	120.7			
<b>77</b>	93	9311	1.95	19.24	101.7	122.4	101.7	122.4			
<b>90</b>	109	7922	2.30	16.37	103.8	123.5	103.8	123.5			
<b>105</b>	126	6843	2.65	14.14	105.1	124.4	105.1	124.4			
<b>112</b>	135	6398	1.55	13.22	105.6	124.0	105.6	124.0			
<b>133</b>	160	5372	2.10	11.10	106.6	125.0	106.6	125.0			
<b>162</b>	195	4423	2.50	9.14	101.7	125.9	101.7	125.9			
<b>190</b>	229	3760	2.95	7.77	96.0	126.5	96.0	126.5			



# Selection tables - Gear units

## Structure of the selection tables

1 Type	2 $i_{ges.}$	3 $M_{2nenn}$	4 $n_2$	5 $i_{exakt}$	6 IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					7 IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
8 NEMA adapter																	
						N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-	
F022		[Nm]	[min <sup>-1</sup> ]														
2 stages	9																
$n_1=1400 \text{ min}^{-1}$	10																
Maximum torque 130 Nm	11																

1 Type	2 $i_{ges.}$	12 SERVO adapter										14 Input unit									
		3 $n_{1max}$	Adapter size 13									4 $n_{1max}$	Input shaft 15 [mm]								
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180		S189	S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110

- 1 Type of gear unit
- 2 Total ratio
- 3 Permissible output torque at S1 operation ( $f_b = 1.0$ )
- 4 Output speed (gear unit) at  $n_1 = 1400 \text{ min}^{-1}$
- 5 Exact mathematical ratio
- 6 Possible motor frame sizes (Direct mounting)
- 7 Possible IEC adapter sizes
- 8 Possible NEMA adapter sizes
- 9 Number of gear stages
- 10 Motor speed
- 11 Maximum torque
- 12 Maximum input speed - SERVO adapter
- 13 Possible SERVO adapter sizes
- 14 Maximum input speed - direct mounting, IEC / NEMA adapter and input unit  
Higher input speeds on request
- 15 Possible input shafts of the input unit



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
					NEMA adapter													
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F022	97.85	130	14	1957/20														
	88.09	130	16	969/11														
	76.22	130	18	3811/50														
	68.62	130	20	3774/55														
	61.80	130	23	309/5														
	55.64	130	25	612/11														
	48.69	130	29	2678/55														
	43.83	130	32	5304/121														
	37.52	130	37	5253/140														
	33.78	130	41	2601/77														
	31.79	53	44	1653/52														
	29.32	130	48	3811/130														
	26.39	130	53	3774/143														
	24.76	84	57	3219/130														
	21.89	130	64	1751/80														
	20.08	84	70	261/13														
	19.70	130	71	867/44														
	18.88	130	74	1133/60														
	17.00	130	82	17/1														
	16.48	130	85	412/25														
	15.82	84	89	174/11														
	14.84	130	94	816/55														
	12.19	84	115	4437/364														
	12.09	130	116	2781/230														
	10.89	130	129	2754/253														
9.52	84	147	3219/338															
7.11	84	197	1479/208															
6.13	84	228	319/52															
5.35	84	261	348/65															
3.93	72	356	2349/598															
F032	70.17	220	20	7719/110														
	63.63	220	22	1909/30														
	57.07	220	25	2511/44														
	51.75	220	27	207/4														
	45.35	220	31	5487/121														
	41.12	220	34	1357/33														
	35.03	220	40	2697/77														
	31.76	220	44	667/21														
	27.97	220	50	3999/143														
	27.67	119	51	83/3														
	25.36	220	55	989/39														
	22.50	147	62	45/2														
	21.14	220	66	465/22														
	19.17	220	73	115/6														
	17.88	150	78	590/33														
	16.06	220	87	1767/110														
	14.57	220	96	437/30														
	13.81	150	101	290/21														
	12.50	220	112	3162/253														
	11.33	220	124	34/3														
	11.03	150	127	430/39														
	9.76	212	144	1395/143														
	8.85	202	158	115/13														
	8.33	150	168	25/3														
	6.33	145	221	19/3														
4.93	127	284	340/69															
3.85	111	364	50/13															

Legend see page 201

Type	$i_{ges.}$	SERVO adapter											Input unit									
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]							
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
<b>F022</b>	97.85	5000											-									
	88.09	5000											-									
	76.22	5000											3000									
	68.62	5000											3000									
	61.80	5000											3000									
	55.64	5000											3000									
	48.69	5000											3000									
	43.83	5000											3000									
	37.52	5000											3000									
	33.78	5000											3000									
	31.79	5000											-									
	29.32	5000											3000									
	26.39	5000											3000									
	24.76	5000											3000									
	21.89	5000											3000									
	20.08	5000											3000									
	19.70	5000											3000									
	18.88	4700											3000									
	17.00	4700											3000									
	16.48	4200											3000									
	15.82	5000											3000									
	14.84	4200											3000									
	12.19	5000											3000									
	12.09	3700											3000									
	10.89	3700											3000									
	9.52	5000											3000									
	7.11	5000											3000									
	6.13	4700											3000									
	5.35	4200											3000									
	3.93	3700											3000									
<b>F032</b>	70.17	5000											3000									
	63.63	5000											3000									
	57.07	5000											3000									
	51.75	5000											3000									
	45.35	5000											3000									
	41.12	5000											3000									
	35.03	5000											3000									
	31.76	5000											3000									
	27.97	5000											3000									
	27.67	5000											3000									
	25.36	5000											3000									
	22.50	5000											3000									
	21.14	5000											3000									
	19.17	5000											3000									
	17.88	5000											3000									
	16.06	4600											3000									
	14.57	4600											3000									
	13.81	5000											3000									
	12.50	4000											3000									
	11.33	4000											3000									
	11.03	5000											3000									
	9.76	3500											3000									
	8.85	3500											3000									
	8.33	5000											3000									
	6.33	4600											3000									
	4.93	4000											3000									
	3.85	3500											3000									

Legend see page 201

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F042	75.79	322	18	1819/24														
	69.14	293	20	4494/65														
	61.98	400	23	2975/48														
	56.54	396	25	735/13														
	48.94	400	29	1615/33														
	44.64	400	31	6384/143														
	41.20	175	34	8239/200														
	37.95	400	37	2125/56														
	34.62	400	40	450/13														
	33.69	236	42	539/16														
	31.06	400	45	1615/52														
	28.33	400	49	4788/169														
	26.60	308	53	133/5														
	23.91	400	59	765/32														
	21.81	400	64	567/26														
	20.63	308	68	165/8														
	18.06	400	78	289/16														
	16.88	308	83	4389/260														
	16.48	400	85	1071/65														
	14.78	400	95	340/23														
	Maximum torque 400 Nm	13.48	400	104	4032/299													
		12.99	308	108	2079/160													
		11.99	384	117	935/78													
		10.93	361	128	1848/169													
		10.03	348	140	1445/144													
		9.82	308	143	3927/400													
		9.15	327	153	119/13													
		8.13	310	172	2635/324													
		8.03	280	174	924/115													
		7.84	304	179	2635/336													
		7.42	291	189	868/117													
		7.15	285	196	93/13													
6.52		247	215	847/130														
5.45		222	257	1309/240														
4.42		196	317	2387/540														
4.26		192	328	341/80														
F043	422.98	400	3.3	17765/42														
	385.85	400	3.6	5016/13														
	329.48	400	4.2	6919/21														
	300.55	400	4.7	19536/65														
	267.14	400	5.2	1870/7														
	243.69	400	5.7	3168/13														
	210.48	400	6.7	4420/21														
	192.00	400	7.3	192/1														
	162.19	400	8.6	15895/98														
	147.96	400	9.5	13464/91														
	126.72	400	11	34595/273														
	115.60	400	12	19536/169														
	94.61	400	15	15895/168														
	86.31	400	16	1122/13														
	81.63	400	17	10285/126														
	74.46	400	19	968/13														
	71.24	400	20	1496/21														
64.98	400	22	4224/65															
52.27	400	27	8415/161															
47.68	400	29	14256/299															

Legend see page 201

Type	$i_{ges.}$	SERVO adapter											Input unit													
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110				
<b>F042</b>	75.79	5000													3000											
	69.14	5000													3000											
	61.98	5000													3000											
	56.54	5000													3000											
	48.94	5000													3000											
	44.64	5000													3000											
	41.20	5000													3000											
	37.95	5000													3000											
	34.62	5000													3000											
	33.69	5000													3000											
	31.06	5000													3000											
	28.33	5000													3000											
	26.60	5000													3000											
	23.91	5000													3000											
	21.81	5000													3000											
	20.63	5000													3000											
	18.06	4900													3000											
	16.88	5000													3000											
	16.48	4900													3000											
	14.78	4300													3000											
	13.48	4300													3000											
	12.99	5000													3000											
	11.99	3800													3000											
	10.93	3800													3000											
	10.03	3400													3000											
	9.82	4900													3000											
	9.15	3400													3000											
	8.13	3000													3000											
	8.03	4300													3000											
	7.84	2900													-											
	7.42	3000													3000											
	7.15	2900													-											
	6.52	3800													3000											
	5.45	3400													3000											
	4.42	3000													3000											
	4.26	2900													-											
<b>F043</b>	422.98	5000													-											
	385.85	5000													-											
	329.48	5000													3000											
	300.55	5000													3000											
	267.14	5000													3000											
	243.69	5000													3000											
	210.48	5000													3000											
	192.00	5000													3000											
	162.19	5000													3000											
	147.96	5000													3000											
	126.72	5000													3000											
	115.60	5000													3000											
	94.61	5000													3000											
	86.31	5000													3000											
	81.63	5000													3000											
	74.46	5000													3000											
	71.24	4900													3000											
	64.98	4900													3000											
	52.27	4300													3000											
	47.68	4300													3000											

Legend see page 201

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F052	87.38	371	16	5243/60														
	79.84	339	18	10379/130														
	71.46	501	20	1715/24														
	65.29	457	21	3395/52														
	56.42	600	25	1862/33														
	51.55	597	27	7372/143														
	48.15	204	29	963/20														
	43.75	600	32	175/4														
	39.97	597	35	7275/182														
	39.38	276	36	315/8														
	35.81	600	39	931/26														
	32.72	597	43	5529/169														
	31.09	360	45	342/11														
	27.56	600	51	441/16														
	25.18	597	56	2619/104														
	24.11	360	58	675/28														
	20.83	600	67	833/40														
	19.73	360	71	513/26														
	19.03	597	74	4947/260														
	17.04	600	82	392/23														
	15.57	597	90	4656/299														
	15.19	360	92	243/16														
	13.82	600	101	539/39														
	12.63	597	111	2134/169														
	11.57	600	121	833/72														
	11.48	360	122	459/40														
	10.57	584	132	1649/156														
	9.39	360	149	216/23														
	9.38	564	149	1519/162														
	9.04	558	155	217/24														
	8.57	549	163	3007/351														
	8.26	543	169	3007/364														
7.62	360	184	99/13															
6.38	360	220	51/8															
5.17	360	271	31/6															
4.98	360	281	279/56															
F053	487.67	600	2.9	1463/3														
	445.56	597	3.1	40546/91														
	379.87	600	3.7	5698/15														
	347.07	597	4.0	157916/455														
	308.00	600	4.5	308/1														
	281.41	597	5.0	25608/91														
	242.67	600	5.8	728/3														
	221.71	597	6.3	1552/7														
	187.00	600	7.5	187/1														
	170.85	597	8.2	108834/637														
	146.10	600	9.6	5698/39														
	133.49	597	10	157916/1183														
	109.08	600	13	1309/12														
	99.66	597	14	18139/182														
	94.11	600	15	847/9														
	85.99	597	16	23474/273														
	82.13	600	17	1232/15														
	75.04	597	19	34144/455														
60.26	600	23	1386/23															
55.06	597	25	115236/2093															

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Type	$i_{ges.}$	SERVO adapter											Input unit															
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]													
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110						
<b>F052</b>	87.38	5000													3000													
	79.84	5000													3000													
	71.46	5000													3000													
	65.29	5000													3000													
	56.42	5000													3000													
	51.55	5000													3000													
	48.15	5000													3000													
	43.75	5000													3000													
	39.97	5000													3000													
	39.38	5000													3000													
	35.81	5000													3000													
	32.72	5000													3000													
	31.09	5000													3000													
	27.56	5000													3000													
	25.18	5000													3000													
	24.11	5000													3000													
	20.83	5000													3000													
	19.73	5000													3000													
	19.03	5000													3000													
	17.04	4600													3000													
	15.57	4600													3000													
	15.19	5000													3000													
	13.82	4100													3000													
	12.63	4100													3000													
	11.57	3700													3000													
	11.48	5000													3000													
	10.57	3700													3000													
	9.39	4600													3000													
	9.38	3300													3000													
	9.04	3200													3000													
	8.57	3300													3000													
	8.26	3200													3000													
	7.62	4100													3000													
	6.38	3700													3000													
	5.17	3300													3000													
	4.98	3200													3000													
<b>F053</b>	487.67	5000													-													
	445.56	5000													-													
	379.87	5000													3000													
	347.07	5000													3000													
	308.00	5000													3000													
	281.41	5000													3000													
	242.67	5000													3000													
	221.71	5000													3000													
	187.00	5000													3000													
	170.85	5000													3000													
	146.10	5000													3000													
	133.49	5000													3000													
	109.08	5000													3000													
	99.66	5000													3000													
	94.11	5000													3000													
	85.99	5000													3000													
	82.13	5000													3000													
	75.04	5000													3000													
	60.26	4600													3000													
	55.06	4600													3000													

Legend see page 201

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F062	49.67	820	28	4520/91														
	45.55	820	31	8927/196														
	41.66	820	34	7040/169														
	38.20	820	37	3476/91														
	32.69	820	43	425/13														
	29.98	820	47	6715/224														
	25.23	820	55	328/13														
	23.14	820	61	3239/140														
	20.87	820	67	480/23														
	20.49	422	68	3729/182														
	19.14	820	73	3081/161														
	17.75	820	79	3000/169														
	17.18	571	81	2904/169														
	16.28	820	86	5925/364														
	15.38	820	91	200/13														
	14.11	820	99	395/28														
	13.49	571	104	2805/208														
	12.99	820	108	1520/117														
	12.53	820	112	1140/91														
	11.91	820	118	1501/126														
	11.49	820	122	4503/392														
	10.70	820	131	3200/299														
	10.41	571	135	1353/130														
	9.81	820	143	1580/161														
	8.61	571	163	198/23														
	7.32	571	191	2475/338														
	6.35	571	221	165/26														
5.36	571	261	209/39															
5.17	571	271	1881/364															
4.41	571	317	1320/299															
F063	412.64	820	3.4	80464/195														
	378.37	820	3.7	397291/1050														
	337.44	820	4.1	13160/39														
	309.42	820	4.5	3713/12														
	266.44	820	5.3	114304/429														
	244.32	820	5.7	282188/1155														
	206.59	820	6.8	18800/91														
	189.44	820	7.4	18565/98														
	169.09	820	8.3	28576/169														
	155.05	820	9	70547/455														
	130.15	820	11	1692/13														
	119.35	820	12	33417/280														
	98.34	820	14	6392/65														
	90.17	820	16	63121/700														
	80.48	820	17	24064/299														
	73.80	820	19	59408/805														
	65.26	820	21	33088/507														
	59.84	820	23	81686/1365														
	54.63	820	26	6392/117														
	50.10	820	28	63121/1260														

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Type	$i_{ges.}$	SERVO adapter										Input unit											
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]									
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110	
<b>F062</b>	49.67	5000												3000									
	45.55	5000												3000									
	41.66	5000												3000									
	38.20	5000												3000									
	32.69	5000												3000									
	29.98	5000												3000									
	25.23	5000												3000									
	23.14	5000												3000									
	20.87	4900												3000									
	20.49	5000												3000									
	19.14	4900												3000									
	17.75	4300												3000									
	17.18	5000												3000									
	16.28	4300												3000									
	15.38	3900												3000									
	14.11	3900												3000									
	13.49	5000												3000									
	12.99	3500												3000									
	12.53	3300												3000									
	11.91	3500												3000									
	11.49	3300												3000									
	10.70	3000												3000									
	10.41	5000												3000									
	9.81	3000												3000									
	8.61	4900												3000									
	7.32	4300												3000									
	6.35	3900												3000									
	5.36	3500												3000									
	5.17	3300												3000									
	4.41	3000												3000									
<b>F063</b>	412.64	5000												3000									
	378.37	5000												3000									
	337.44	5000												3000									
	309.42	5000												3000									
	266.44	5000												3000									
	244.32	5000												3000									
	206.59	5000												3000									
	189.44	5000												3000									
	169.09	5000												3000									
	155.05	5000												3000									
	130.15	5000												3000									
	119.35	5000												3000									
	98.34	5000												3000									
	90.17	5000												3000									
	80.48	4900												3000									
	73.80	4900												3000									
	65.26	4300												3000									
	59.84	4300												3000									
	54.63	3900												3000									
	50.10	3900												3000									

F

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Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
					NEMA adapter													
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F072	45.02	1500	31	5763/128														
	39.31	1500	36	629/16														
	34.74	1500	40	5559/160														
	29.38	1500	48	2703/92														
	25.25	1500	55	5253/208														
	22.05	1500	64	1411/64														
	20.72	939	68	1243/60														
	18.89	1500	74	170/9														
	18.21	1500	77	255/14														
	18.09	1103	77	814/45														
	16.08	1500	87	1479/92														
	15.99	1094	88	1199/75														
	13.52	1103	104	4664/345														
	13.49	1500	104	2805/208														
	11.62	1085	120	2266/195														
	11.36	1500	123	2091/184														
	10.14	1115	138	913/90														
	9.32	1500	150	969/104														
	8.69	1115	161	704/81														
	8.38	1006	167	176/21														
7.40	1115	189	2552/345															
6.21	1115	226	242/39															
5.23	1115	268	1804/345															
4.29	1081	327	836/195															
F073	385.37	1500	3.6	61659/160														
	305.42	1500	4.6	26877/88														
	237.15	1500	5.9	4743/20														
	194.58	1500	7.2	12648/65														
	150.69	1500	9.3	96441/640														
	114.62	1500	12	45849/400														
	94.52	1500	15	17391/184														
	77.53	1500	18	80631/1040														
	65.88	1500	21	527/8														
	54.16	1500	26	19499/360														
52.23	1500	27	58497/1120															

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Type	i <sub>ges.</sub>	SERVO adapter										Input unit													
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>F072</b>	45.02	5000													3000										
	39.31	5000													3000										
	34.74	5000													3000										
	29.38	5000													3000										
	25.25	4800													3000										
	22.05	4300													3000										
	20.72	5000													3000										
	18.89	3800													3000										
	18.21	3700													3000										
	18.09	5000													3000										
	16.08	3400													3000										
	15.99	5000													3000										
	13.52	5000													3000										
	13.49	3000													3000										
	11.62	4800													3000										
	11.36	2700													2700										
	10.14	4300													3000										
	9.32	-													2400										
	8.69	3800													3000										
	8.38	3700													3000										
	7.40	3400													3000										
	6.21	3000													3000										
	5.23	2700													2700										
	4.29	-													2400										
<b>F073</b>	385.37	5000													3000										
	305.42	5000													3000										
	237.15	5000													3000										
	194.58	5000													3000										
	150.69	5000													3000										
	114.62	5000													3000										
	94.52	5000													3000										
	77.53	4800													3000										
	65.88	4300													3000										
	54.16	3800													3000										
	52.23	3700													3000										

F

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Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
					NEMA adapter													
N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-								
	[Nm]	[min <sup>-1</sup> ]																
<b>F082</b>	33.87	2785	41	6165/182														
2 stages	30.00	3000	47	30/1														
	25.95	3000	54	545/21														
	22.08	3000	63	3555/161														
	18.79	3000	75	1710/91														
	16.21	3000	86	2610/161														
	16.01	1647	87	10823/676														
	14.18	1762	99	553/39														
	13.60	3000	103	2475/182														
	12.27	1762	114	8611/702														
	11.06	3000	127	387/35														
	Maximum torque 3000 Nm	10.44	1762	134	6241/598													
		8.88	1762	158	1501/169													
		8.65	3000	162	1755/203													
		7.66	1762	183	2291/299													
		6.43	1762	218	4345/676													
		5.23	1762	268	3397/650													
4.09	1564	343	237/58															
<b>F083</b>	358.52	3000	3.9	32625/91														
3 stages	283.76	3000	4.9	127125/448														
	247.77	3000	5.7	13875/56														
	218.97	3000	6.4	24525/112														
	185.17	3000	7.6	59625/322														
	180.28	3000	7.8	114840/637														
	159.17	3000	8.8	115875/728														
	142.69	3000	9.8	55935/392														
	138.95	3000	10	31125/224														
	124.59	3000	11	6105/49														
	119.05	3000	12	2500/21														
	114.80	3000	12	5625/49														
	110.11	3000	13	10791/98														
	101.32	3000	14	32625/322														
	93.11	3000	15	104940/1127														
	Maximum torque 3000 Nm	84.99	3000	16	61875/728													
		80.04	3000	17	50985/637													
71.62		2947	20	46125/644														
69.87		2903	20	13695/196														
59.86		2771	23	8800/147														
58.72		2777	24	21375/364														
57.73		2741	24	19800/343														
50.95		2640	27	57420/1127														
42.74		2505	33	27225/637														
36.02		2379	39	40590/1127														
29.53	2242	47	18810/637															

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Type	i <sub>ges.</sub>	SERVO adapter											Input unit												
		n <sub>1max</sub>	Adapter size											n <sub>1max</sub>	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>F082</b>	33.87	5000													3000										
	30.00	4500													3000										
	25.95	4000													3000										
	22.08	3600													3000										
	18.79	3100													3000										
	16.21	2800													2800										
	16.01	5000													3000										
	14.18	4500													3000										
	13.60	-													2500										
	12.27	4000													3000										
	11.06	-													2200										
	10.44	3600													3000										
	8.88	3100													3000										
	8.65	-													1900										
	7.66	2800													2800										
	6.43	-													2500										
	5.23	-													2200										
	4.09	-													1900										
<b>F083</b>	358.52	5000													3000										
	283.76	5000													3000										
	247.77	5000													3000										
	218.97	5000													3000										
	185.17	5000													3000										
	180.28	5000													3000										
	159.17	5000													3000										
	142.69	5000													3000										
	138.95	4500													3000										
	124.59	5000													3000										
	119.05	4000													3000										
	114.80	3900													3000										
	110.11	5000													3000										
	101.32	3600													3000										
	93.11	5000													3000										
	84.99	3100													3000										
	80.04	5000													3000										
	71.62	2800													2800										
	69.87	4500													3000										
	59.86	4000													3000										
	58.72	-													2500										
	57.73	3900													3000										
	50.95	3600													3000										
	42.74	3100													3000										
	36.02	2800													2800										
	29.53	-													2500										

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Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
F092	38.65	4326	36	2512/65													
	34.13	4500	41	512/15													
	29.63	4500	47	800/27													
	28.57	3430	49	200/7													
	25.60	4500	55	128/5													
	21.91	4500	64	1424/65													
	19.01	2128	74	13345/702													
	18.92	4500	74	2176/115													
	16.79	2676	83	1360/81													
	16.00	4500	88	16/1													
	14.57	2676	96	10625/729													
	14.05	1687	100	10625/756													
	13.06	4500	107	1632/125													
	12.59	2676	111	340/27													
	10.78	2676	130	7565/702													
	10.59	4500	132	1536/145													
	9.31	2676	150	5780/621													
	8.46	4006	166	296/35													
7.87	2676	178	425/54														
6.42	2676	218	289/45														
5.21	2577	269	1360/261														
4.16	2284	337	3145/756														
F093	288.50	4500	4.9	165888/575													
	243.90	4500	5.7	129024/529													
	211.14	4500	6.6	315648/1495													
	186.99	4500	7.5	21504/115													
	161.76	4500	8.7	55808/345													
	155.99	4500	9	125568/805													
	142.85	4500	9.8	17856/125													
	137.63	4500	10	364032/2645													
	120.77	4500	12	13888/115													
	117.13	4500	12	175104/1495													
	104.54	4500	13	33976/325													
	101.04	4500	14	267264/2645													
	92.59	4500	15	6944/75													
	84.76	4500	17	25344/299													
	80.09	4500	17	54064/675													
	77.23	4500	18	13516/175													
	68.92	4500	20	198144/2875													
	68.15	4500	21	39184/575													
57.99	4500	24	18848/325														
53.89	4500	26	179712/3335														
50.03	4500	28	28768/575														
41.97	4458	33	2728/65														
34.12	4189	41	21328/625														
26.68	3891	52	19344/725														

Legend see page 201

Type	$i_{ges.}$	SERVO adapter										Input unit										
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]								
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
<b>F092</b>	38.65	5000												3000								
	34.13	4800												3000								
	29.63	4200												3000								
	28.57	4100												3000								
	25.60	3700												3000								
	21.91	3300												3000								
	19.01	5000												3000								
	18.92	3000												3000								
	16.79	4800												3000								
	16.00	-												2600								
	14.57	4200												3000								
	14.05	4100												3000								
	13.06	-												2300								
	12.59	3700												3000								
	10.78	3300												3000								
	10.59	-												2000								
	9.31	3000												3000								
	8.46	-												1800								
	7.87	-												2600								
	6.42	-												2300								
	5.21	-												2000								
	4.16	-												1800								
<b>F093</b>	288.50	5000												3000								
	243.90	5000												3000								
	211.14	5000												3000								
	186.99	4800												3000								
	161.76	4200												3000								
	155.99	4100												3000								
	142.85	5000												3000								
	137.63	3700												3000								
	120.77	5000												3000								
	117.13	3300												3000								
	104.54	5000												3000								
	101.04	3000												3000								
	92.59	4800												3000								
	84.76	-												2600								
	80.09	4200												3000								
	77.23	4100												3000								
	68.92	-												2300								
	68.15	3700												3000								
	57.99	3300												3000								
	53.89	-												2000								
	50.03	3000												3000								
	41.97	-												2600								
	34.12	-												2300								
	26.68	-												2000								

F

Legend see page 201

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F102	42.74	6409	33	7693/180														
	37.26	7082	38	15092/405														
	35.93	4312	39	539/15														
	32.10	8000	44	11074/345														
	27.64	8000	51	1078/39														
	24.14	8000	58	1666/69														
	22.14	3320	63	1727/78														
	20.86	8000	67	4067/195														
	19.30	3669	73	6776/351														
	18.62	2234	75	242/13														
	17.25	8000	81	2156/125														
	16.63	4820	84	4972/299														
	14.32	5348	98	2420/169														
	14.19	8000	99	2058/145														
	12.51	5415	112	3740/299														
	11.67	7875	120	35/3														
	10.80	5415	130	1826/169														
	9.91	7609	141	4606/465														
	8.94	5415	157	2904/325														
	8.45	7361	166	2156/255														
7.35	5415	190	2772/377															
6.04	5415	232	550/91															
5.13	5415	273	2068/403															
4.38	5415	320	968/221															
F103	246.57	8000	5.7	38465/156														
	217.78	8000	6.4	1960/9														
	189.04	8000	7.4	30625/162														
	182.29	8000	7.7	4375/24														
	163.33	8000	8.6	490/3														
	139.78	8000	10	21805/156														
	122.58	8000	11	31871/260														
	120.72	8000	12	8330/69														
	108.27	8000	13	1624/15														
	102.08	8000	14	1225/12														
	93.98	8000	15	5075/54														
	90.63	8000	15	725/8														
	83.30	8000	17	833/10														
	81.20	8000	17	406/5														
	69.49	8000	20	18067/260														
	67.59	8000	21	1960/29														
	60.02	8000	23	6902/115														
	53.96	8000	26	1295/24														
	50.75	8000	28	203/4														
	41.41	8000	34	10353/250														
33.60	7876	42	168/5															
26.83	7361	52	1073/40															

Legend see page 201

Type	$i_{ges.}$	SERVO adapter											Input unit											
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110		
<b>F102</b>	42.74	5000												3000										
	37.26	4500												3000										
	35.93	4400												3000										
	32.10	4000												3000										
	27.64	3500												3000										
	24.14	3200												3000										
	22.14	5000												3000										
	20.86	-												2800										
	19.30	4500												3000										
	18.62	4400												3000										
	17.25	-												2400										
	16.63	4000												3000										
	14.32	3500												3000										
	14.19	-												2100										
	12.51	3200												3000										
	11.67	-												1900										
	10.80	-												2800										
	9.91	-												1700										
	8.94	-												2400										
	8.45	-												1500										
	7.35	-												2100										
	6.04	-												1900										
	5.13	-												1700										
	4.38	-												1500										
<b>F103</b>	246.57	5000												3000										
	217.78	5000												3000										
	189.04	4500												3000										
	182.29	4400												3000										
	163.33	4000												3000										
	139.78	3500												3000										
	122.58	5000												3000										
	120.72	3200												3000										
	108.27	5000												3000										
	102.08	-												2800										
	93.98	4500												3000										
	90.63	4400												3000										
	83.30	-												2400										
	81.20	4000												3000										
	69.49	3500												3000										
	67.59	-												2100										
	60.02	3200												3000										
	53.96	-												1900										
	50.75	-												2800										
	41.41	-												2400										
	33.60	-												2100										
	26.83	-												1900										



Legend see page 201



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
F122	39.98	7597	35	16192/405														
	34.43	9985	41	792/23														
	29.78	12543	47	1936/65														
	26.27	13000	53	9064/345														
	22.56	12916	62	880/39														
	19.18	3645	73	13984/729														
	18.77	12365	75	1408/75														
	16.52	4791	85	380/23														
	15.58	11830	90	6776/435														
	14.29	6018	98	1672/117														
	12.99	11332	108	1364/105														
	12.61	7319	111	7828/621														
	11.17	10933	125	5192/465														
	10.83	7209	129	3800/351														
	9.66	10565	145	2464/255														
	9.01	8163	155	1216/135														
	7.47	8093	187	5852/783														
	6.23	8163	225	1178/189														
5.36	8163	261	4484/837															
4.64	7647	302	2128/459															
F123	220.67	13000	6.3	39721/180														
	192.40	13000	7.3	77924/405														
	185.53	13000	7.5	2783/15														
	165.73	13000	8.4	2486/15														
	142.72	13000	9.8	5566/39														
	124.67	13000	11	374/3														
	120.82	13000	12	29359/243														
	107.69	13000	13	20999/195														
	105.34	13000	13	230384/2187														
	101.58	12190	14	8228/81														
	90.74	13000	15	169048/1863														
	89.06	13000	16	11132/125														
	78.14	13000	18	82280/1053														
	73.28	13000	19	10626/145														
	68.26	13000	21	127160/1863														
	60.24	13000	23	1265/21														
	58.96	12929	24	62084/1053														
	51.14	12609	27	23782/465														
	48.76	12213	29	32912/675														
	43.65	12024	32	11132/255														
	40.12	11519	35	10472/261														
	32.98	10861	42	18700/567														
28.00	10341	50	70312/2511															
23.90	9861	59	1936/81															

Legend see page 201

Type	$i_{ges.}$	SERVO adapter											Input unit															
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]													
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110						
<b>F122</b>	39.98	4800													3000													
	34.43	4200													3000													
	29.78	3700													3000													
	26.27	3400													3000													
	22.56	-													3000													
	19.18	4800													3000													
	18.77	-													2600													
	16.52	4200													3000													
	15.58	-													2200													
	14.29	3700													3000													
	12.99	-													2000													
	12.61	3400													3000													
	11.17	-													1800													
	10.83	-													3000													
	9.66	-													1600													
	9.01	-													2600													
	7.47	-													2200													
	6.23	-													2000													
	5.36	-													1800													
	4.64	-													1600													
<b>F123</b>	220.67	5000													3000													
	192.40	4800													3000													
	185.53	4600													3000													
	165.73	4200													3000													
	142.72	3700													3000													
	124.67	3400													3000													
	120.82	5000													3000													
	107.69	-													3000													
	105.34	4800													3000													
	101.58	4600													3000													
	90.74	4200													3000													
	89.06	-													2600													
	78.14	3700													3000													
	73.28	-													2200													
	68.26	3400													3000													
	60.24	-													2000													
	58.96	-													3000													
	51.14	-													1800													
	48.76	-													2600													
	43.65	-													1600													
	40.12	-													2200													
	32.98	-													2000													
	28.00	-													1800													
	23.90	-													1600													

Legend see page 201

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
<b>F152</b>	36.54	15418	38	1023/28													
2 stages	27.85	18000	50	10137/364													
	23.38	18000	60	4092/175													
	19.24	18000	73	558/29													
	17.35	7320	81	451/26													
	16.37	18000	86	6417/392													
	14.14	18000	99	99/7													
	13.22	9805	106	4469/338													
	12.31	18000	114	837/68													
	Maximum torque 18000 Nm	11.10	11038	126	3608/325												
		9.14	10975	153	3444/377												
7.77		11038	180	2829/364													
6.71		11038	208	2706/403													
5.84	11038	240	2583/442														
<b>F153</b>	259.81	18000	5.4	5456/21													
3 stages	223.77	18000	6.3	828630/3703													
	193.55	18000	7.2	405108/2093													
	170.73	18000	8.2	632214/3703													
	146.63	18000	9.5	306900/2093													
	144.52	18000	9.7	118358/819													
	124.47	18000	11	1042065/8372													
	122.00	18000	11	98208/805													
	107.66	18000	13	254727/2366													
	101.23	18000	14	67518/667													
	94.97	18000	15	795057/8372													
Maximum torque 18000 Nm	84.42	18000	17	95139/1127													
	81.56	18000	17	192975/2366													
	72.56	18000	19	11682/161													
	67.86	18000	21	30876/455													
	62.79	18000	22	24552/391													
	56.31	18000	25	84909/1508													
	46.96	18000	30	239289/5096													
	40.36	18000	35	14691/364													
34.93	18000	40	7719/221														

Legend see page 201

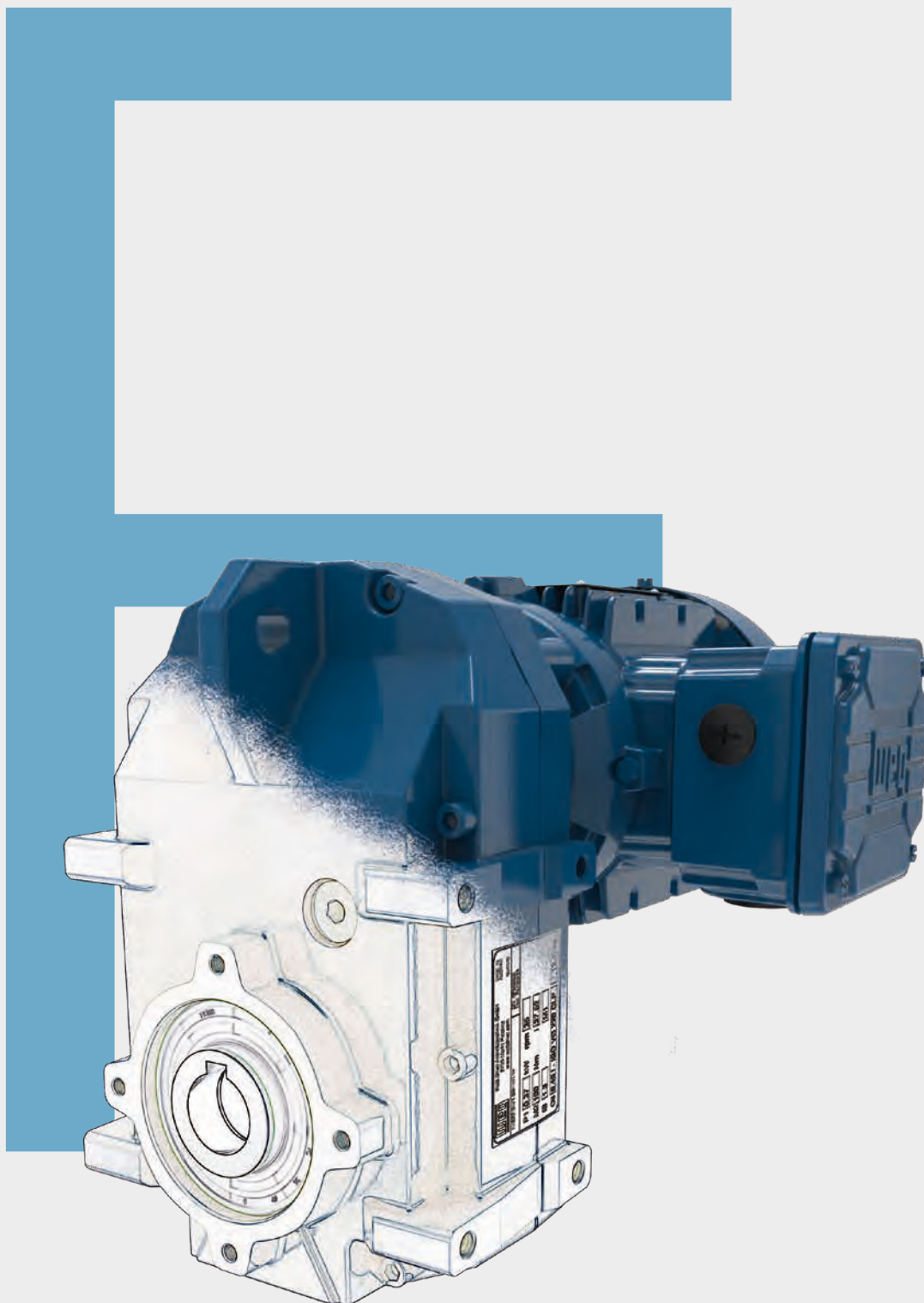
Type	i <sub>ges.</sub>	SERVO adapter										Input unit													
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>F152</b>	36.54	-													3000										
	27.85	-													3000										
	23.38	-													2700										
	19.24	-													2300										
	17.35	-													3000										
	16.37	-													2000										
	14.14	-													1800										
	13.22	-													3000										
	12.31	-													1700										
	11.10	-													2700										
	9.14	-													2300										
	7.77	-													2000										
	6.71	-													1800										
	5.84	-													1700										
<b>F153</b>	259.81	-													3000										
	223.77	-													3000										
	193.55	-													3000										
	170.73	-													3000										
	146.63	-													3000										
	144.52	-													3000										
	124.47	-													3000										
	122.00	-													2700										
	107.66	-													3000										
	101.23	-													2300										
	94.97	-													3000										
	84.42	-													2000										
	81.56	-													3000										
	72.56	-													1800										
	67.86	-													2700										
	62.79	-													1700										
	56.31	-													2300										
	46.96	-													2000										
	40.36	-													1800										
	34.93	-													1700										

F

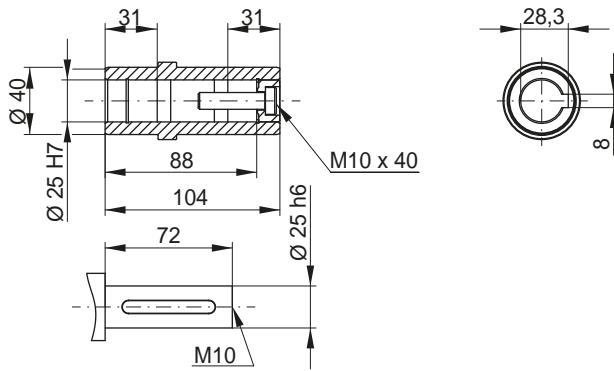
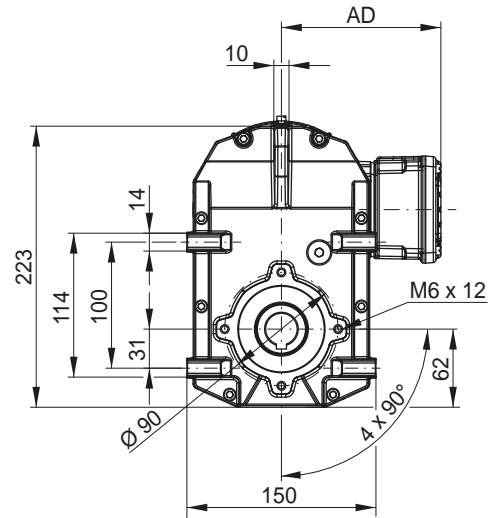
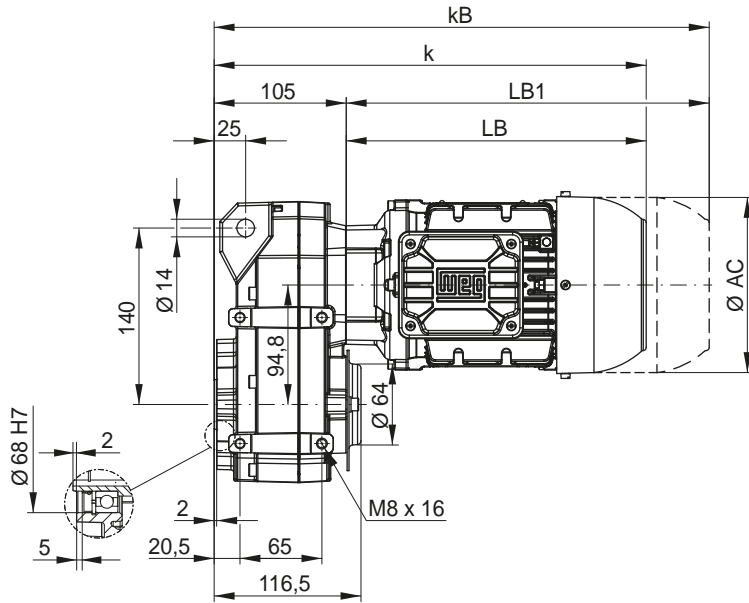
Legend see page 201



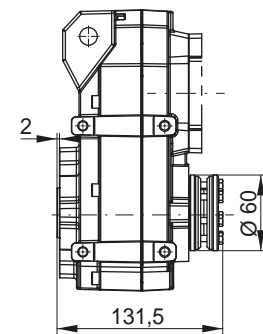
# Dimension sheets Geared Motors



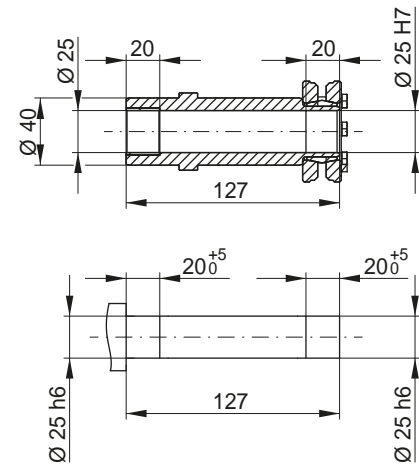
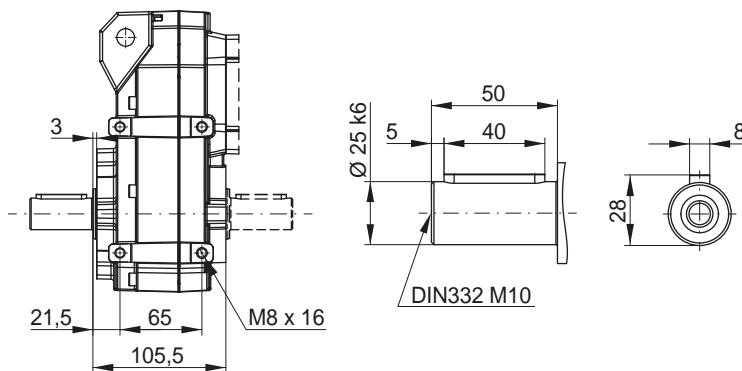
## FH02 - Hollow shaft



## FD02 - Shrink disc \*

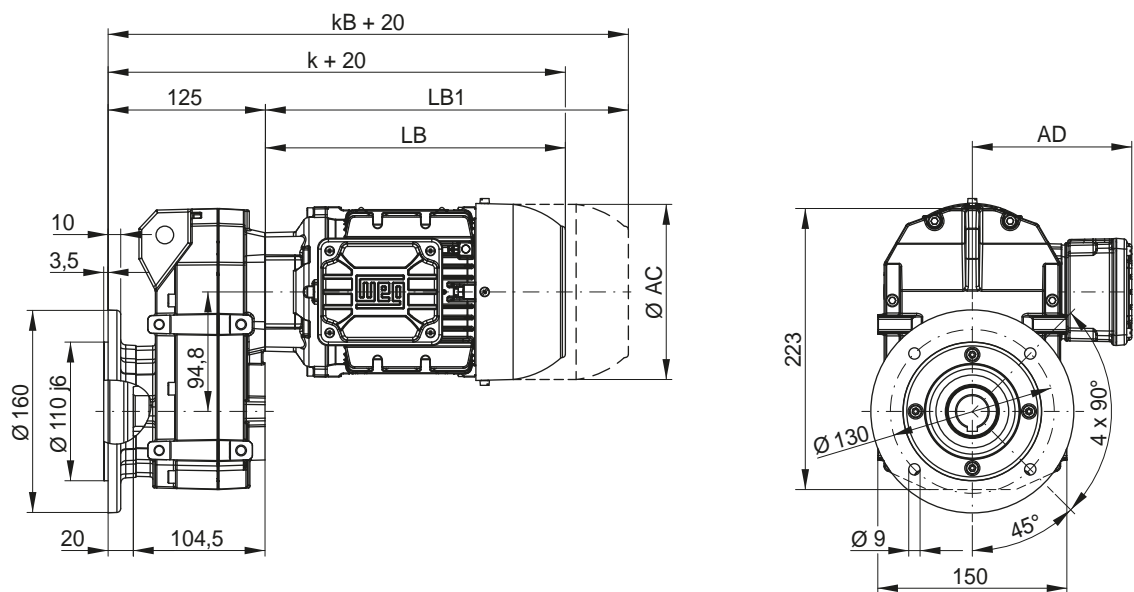
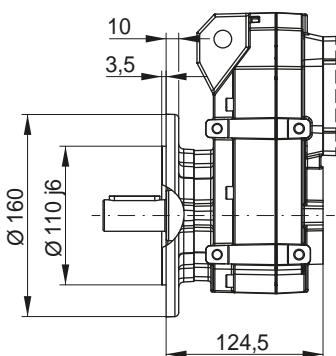
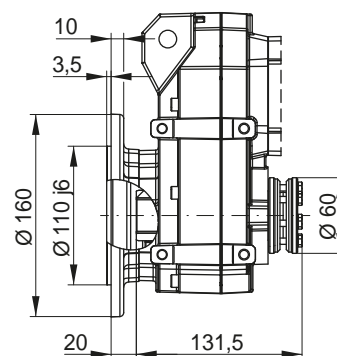
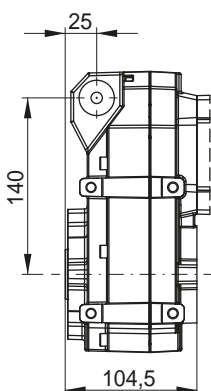
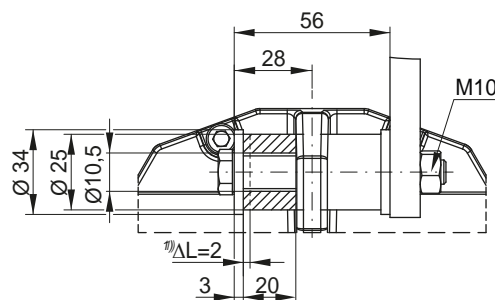
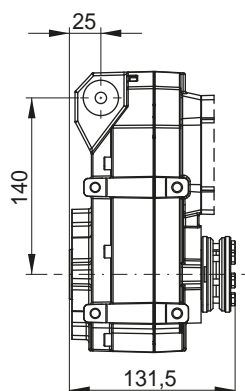


## FS02 - Output shaft FB02 - Output shaft on both sides



Motor fr.	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	309	343	351	393
kB	353	392	409	466
LB	204	238	246	288
LB1	248	287	304	361

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

**FO02 - B5 flange execution with hollow shaft**

**FP02 - B5 flange execution with output shaft**

**FP02 - B5 flange execution with hollow shaft and shrink disc \***

**FT02 - Hollow shaft with rubber buffer**

**FU02 - Hollow shaft with shrink disc \* and rubber buffer**


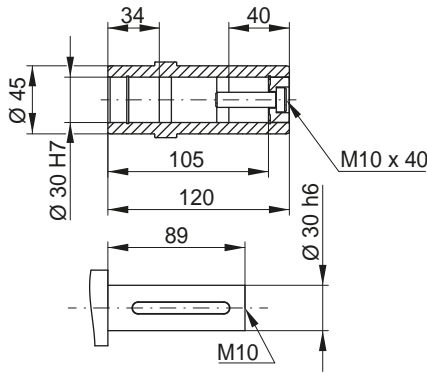
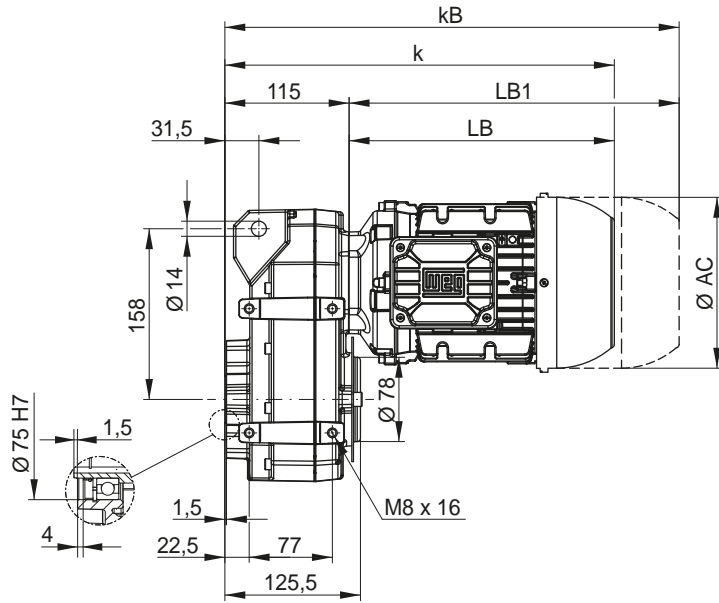
Dimensions in mm.

\* Shrink disc only in combination with motor frame sizes 63 and 71  
Protection cap for shrink disc never possible

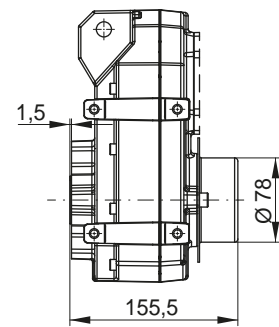
1)  $\Delta L$  = recommended preload



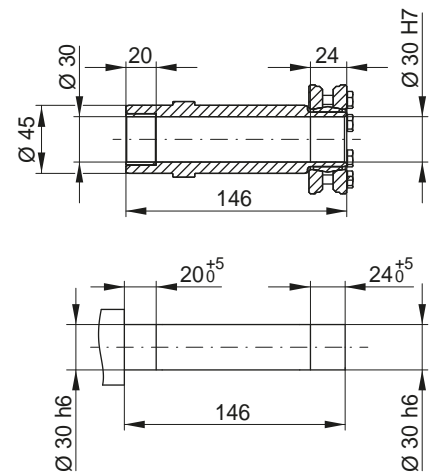
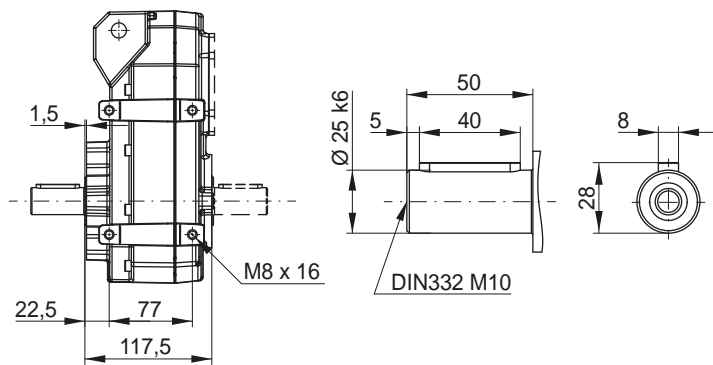
### FH03 - Hollow shaft



### FD03 - Shrink disc \*



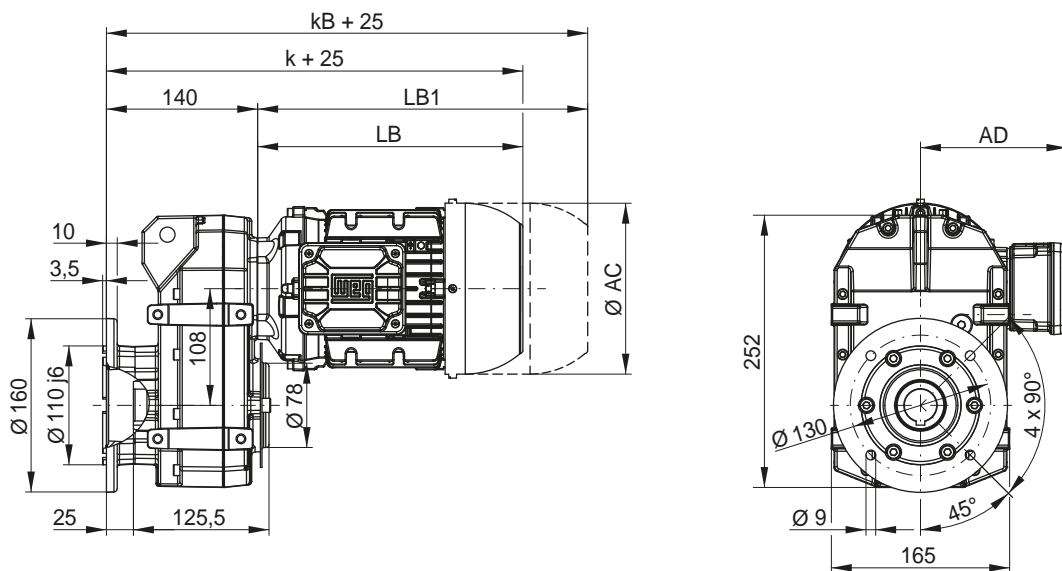
### FS03 - Output shaft FB03 - Output shaft on both sides



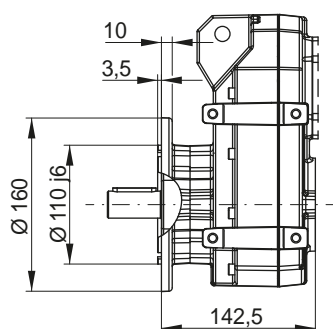
Motor fr.	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	319	353	361	403	453	491
kB	363	402	419	476	537	575
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

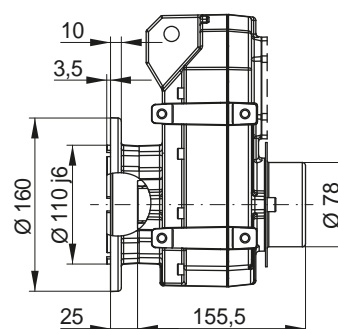
**FO03 - B5 flange execution with hollow shaft**



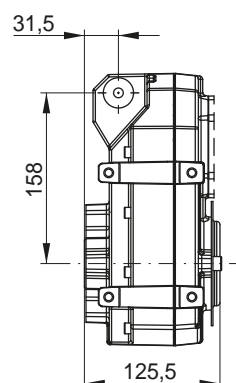
**FF03 - B5 flange execution with output shaft**



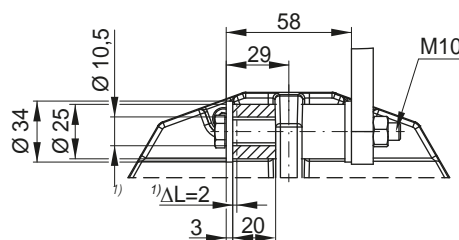
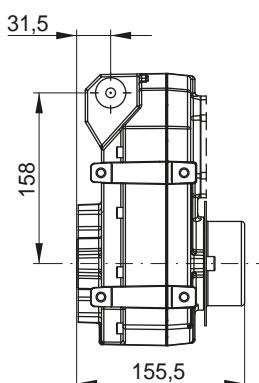
**FP03 - B5 flange execution with hollow shaft and shrink disc \***



**FT03 - Hollow shaft with rubber buffer**



**FU03 - Hollow shaft with shrink disc \* and rubber buffer**

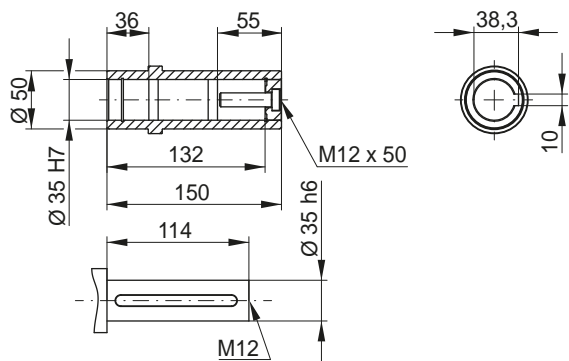
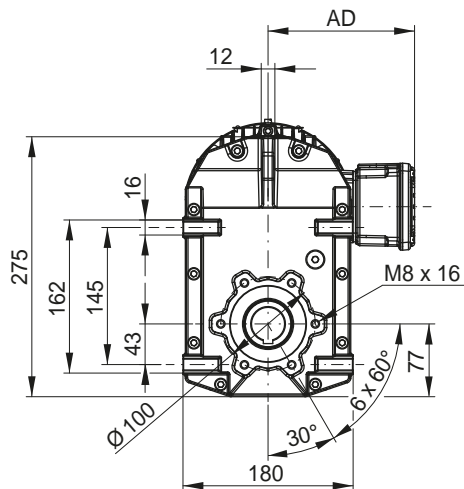
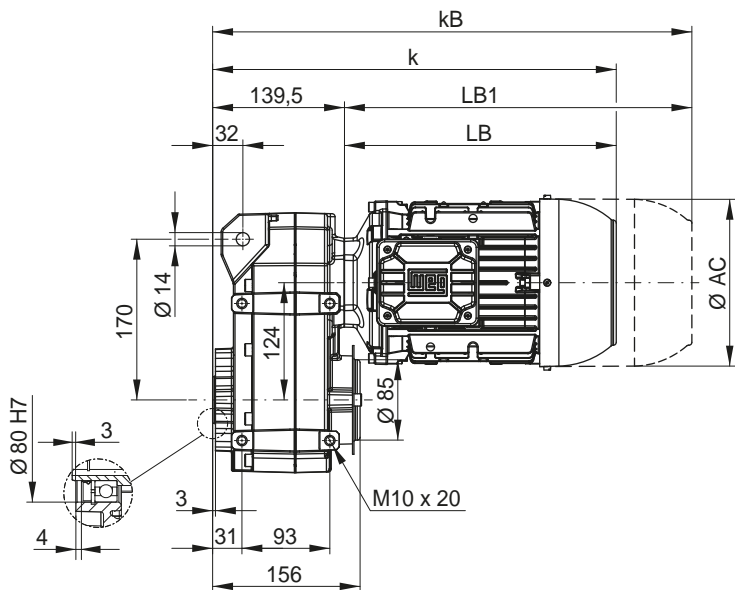


Dimensions in mm.

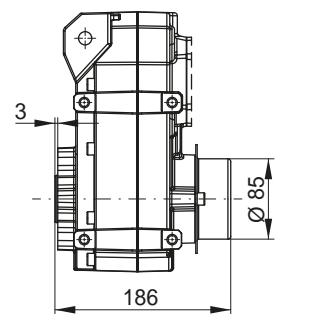
\* Shrink disc only in combination with motor frame sizes 63 and 71

1) ΔL = recommended preload

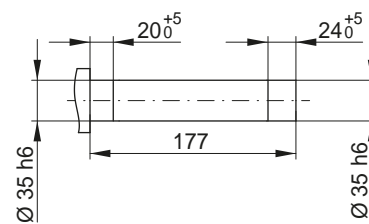
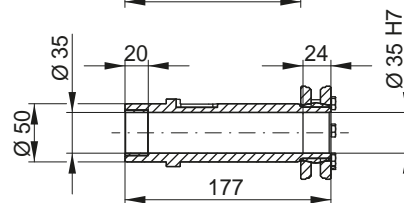
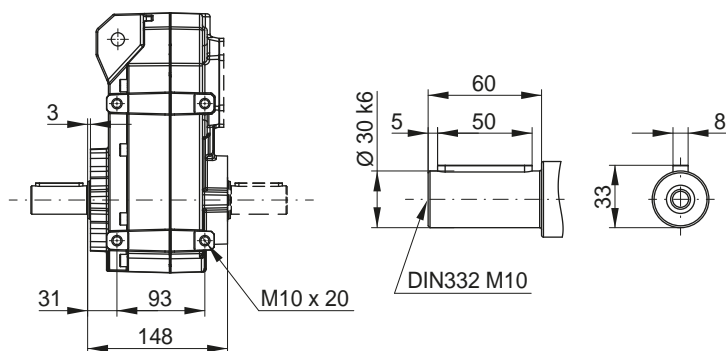
### FH04 - Hollow shaft



### FD04 - Shrink disc \*



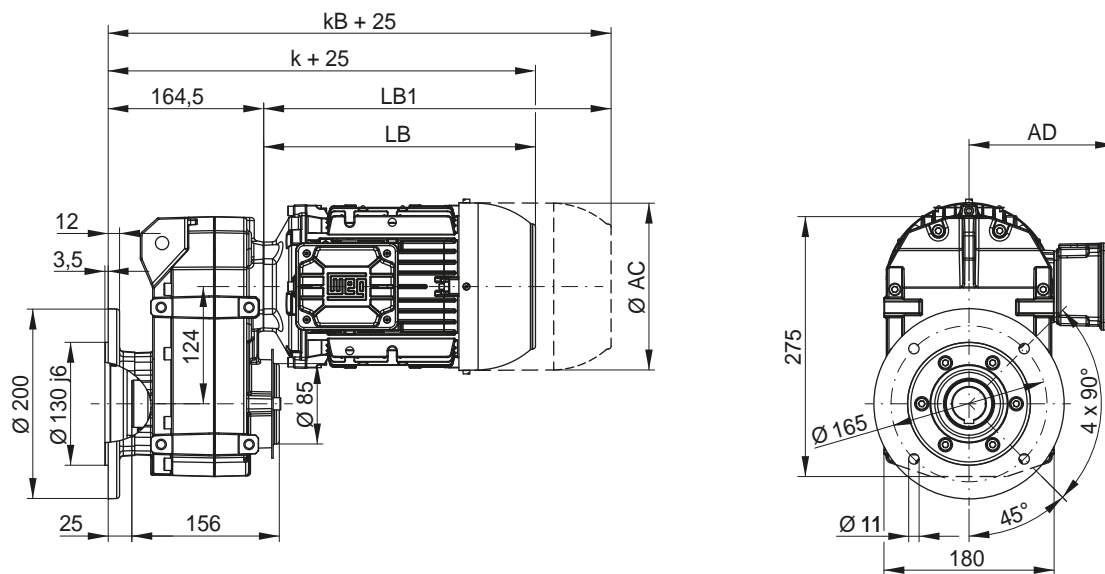
### FS04 - Output shaft FB04 - Output shaft on both sides



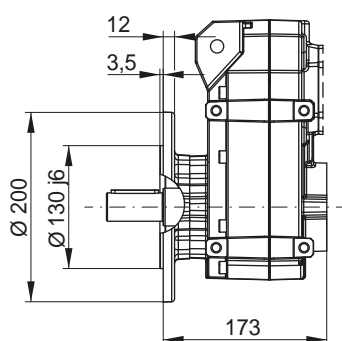
Motor fr.	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	344	378	386	428	478	516
kB	388	427	444	501	562	600
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

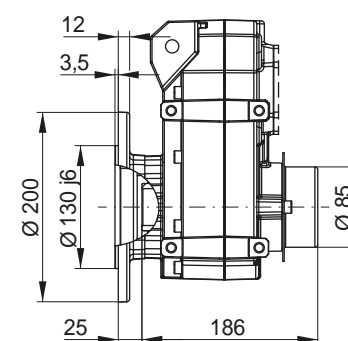
**F004 - B5 flange execution with hollow shaft**



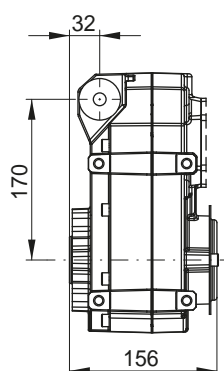
**FF04 - B5 flange execution with output shaft**



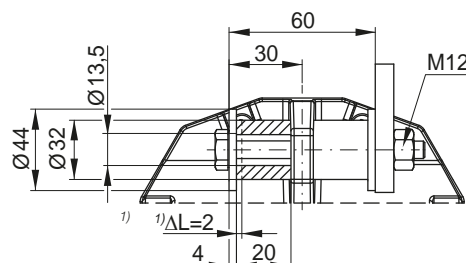
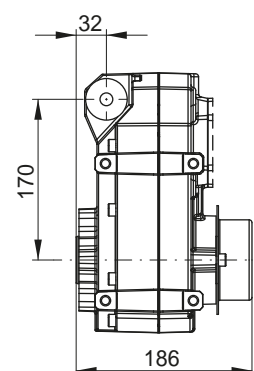
**FP04 - B5 flange execution with hollow shaft and shrink disc \***



**FT04 - Hollow shaft with rubber buffer**



**FU04 - Hollow shaft with shrink disc \* and rubber buffer**

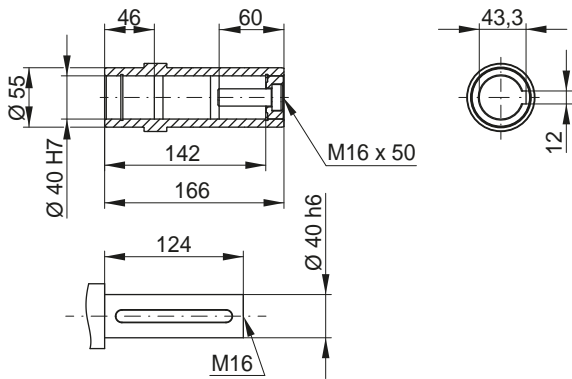
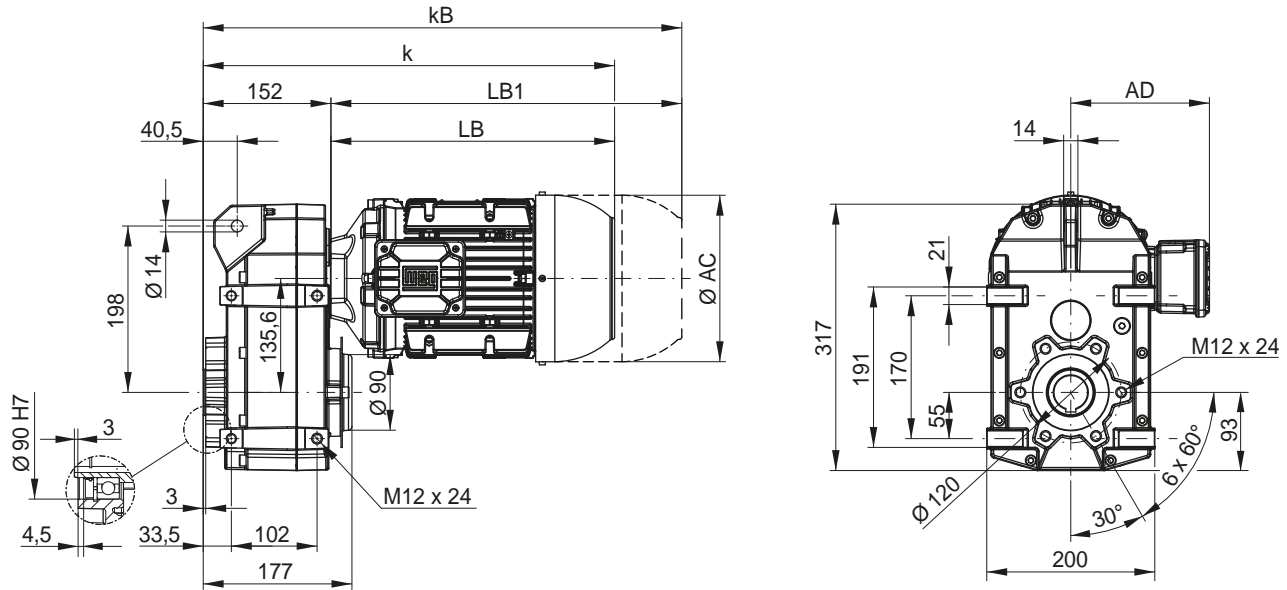


Dimensions in mm.

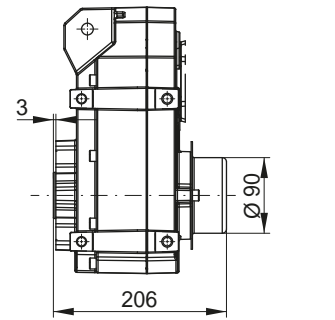
\* Shrink disc only in combination with motor frame sizes 63, 71 and 80

1)  $\Delta L$  = recommended preload

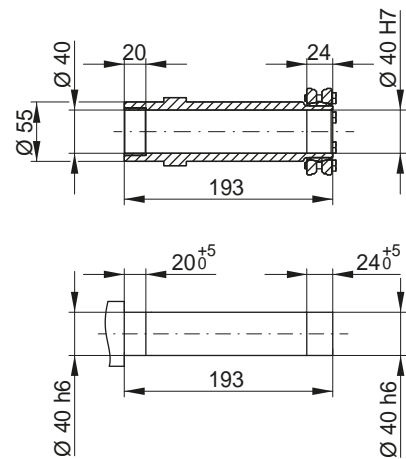
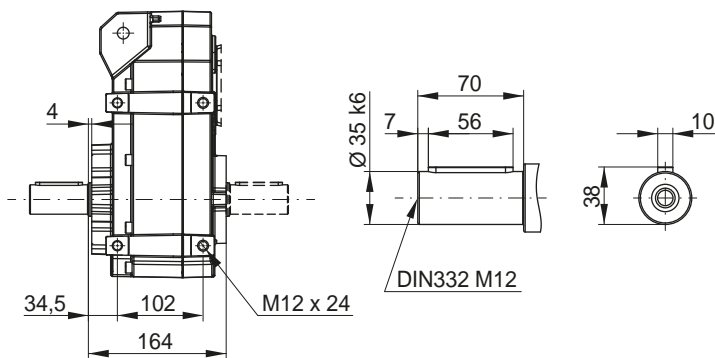
### FH05 - Hollow shaft



### FD05 - Shrink disc \*



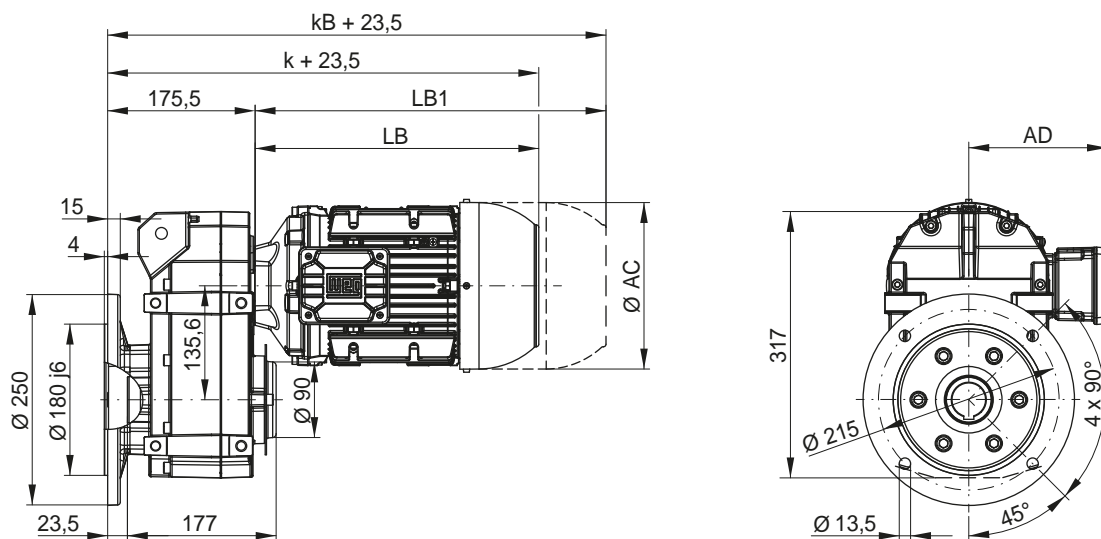
### FS05 - Output shaft FB05 - Output shaft on both sides



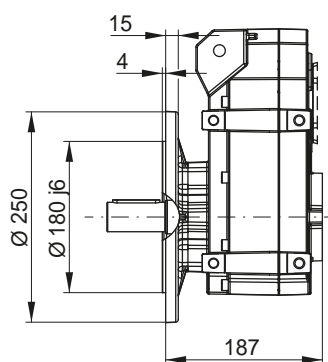
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	356	390	398	440	490	528	500	565	603
kB	400	439	456	513	574	612	587	683	721
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

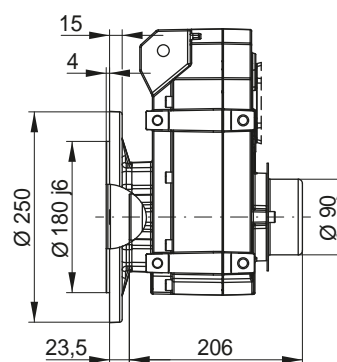
### FO05 - B5 flange execution with hollow shaft



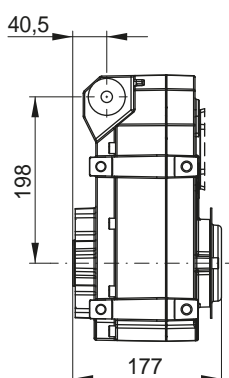
### FF05 - B5 flange execution with output shaft



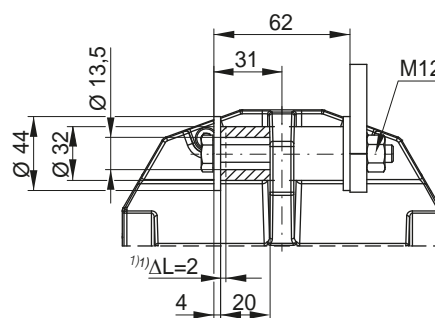
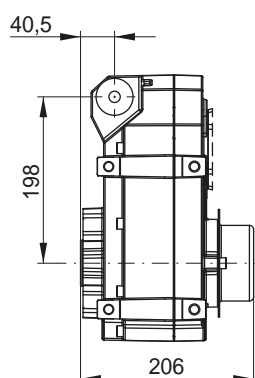
### FP05 - B5 flange execution with hollow shaft and shrink disc \*



### FT05 - Hollow shaft with rubber buffer



### FU05 - Hollow shaft with shrink disc \* and rubber buffer

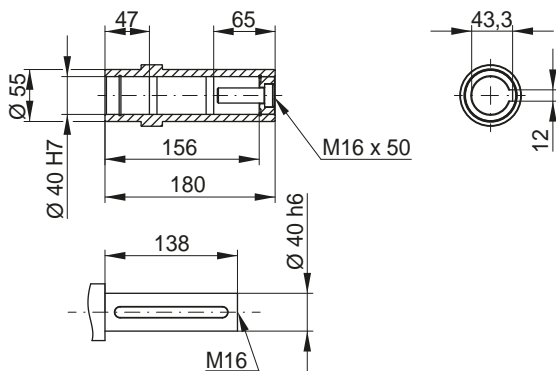
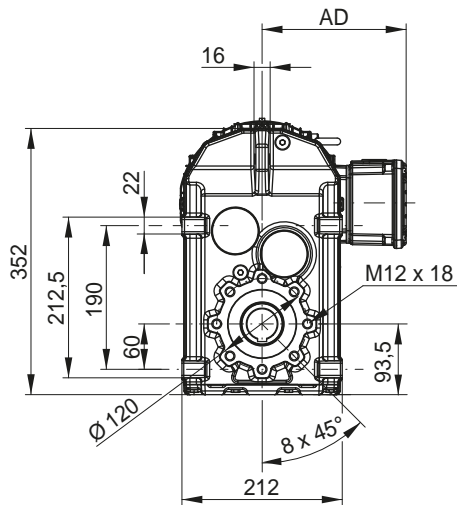
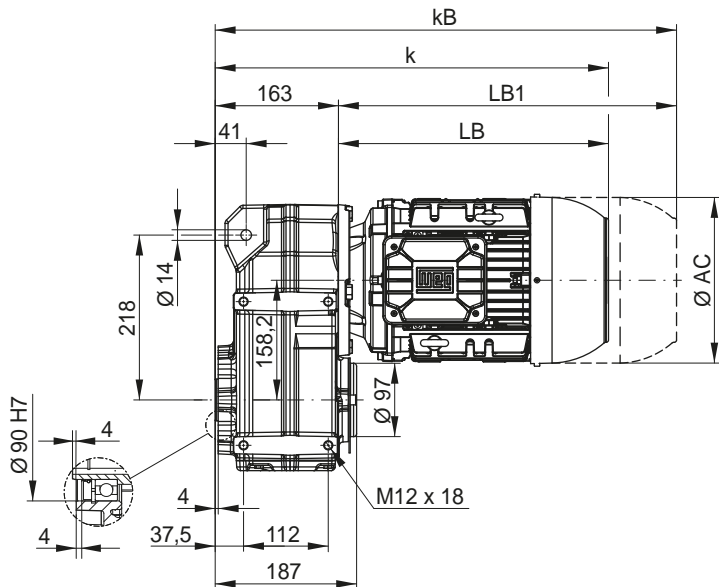


Dimensions in mm.

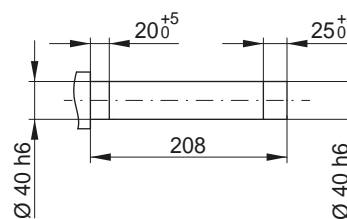
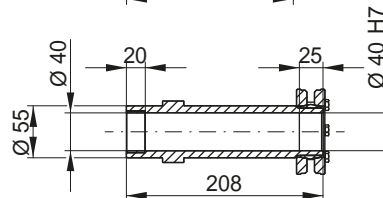
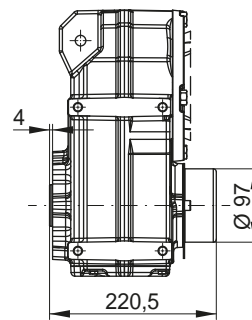
\* Shrink disc only in combination with motor frame sizes 63, 71, 80 and 90

1)  $\Delta L$  = recommended preload

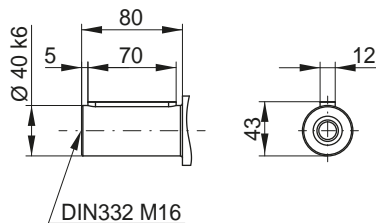
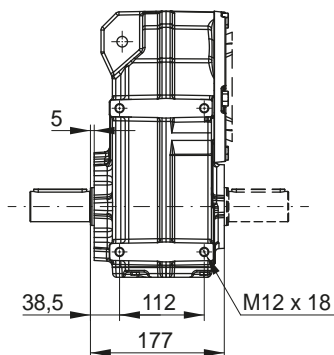
### FH06 - Hollow shaft



### FD06 - Shrink disc \*

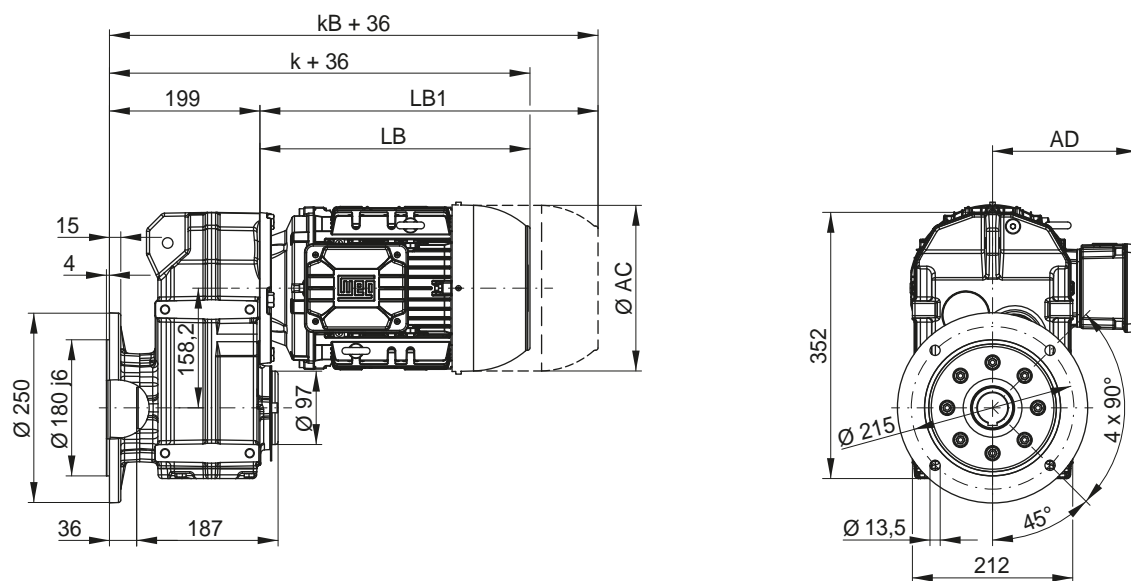
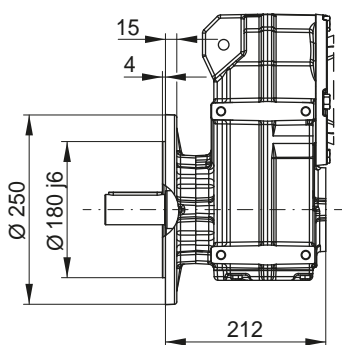
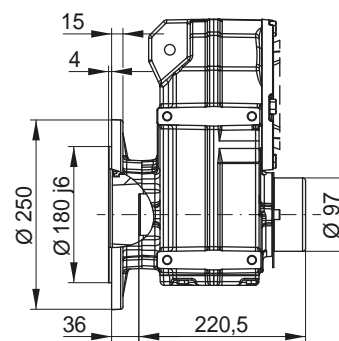
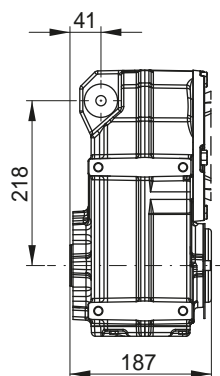
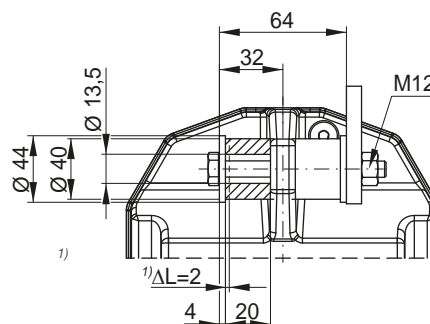
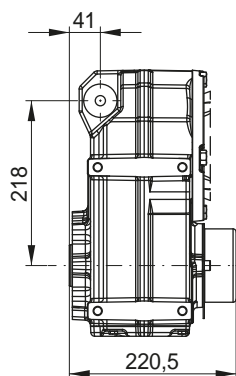


### FS06 - Output shaft FB06 - Output shaft on both sides



Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	367	401	409	451	501	539	511	576	614	708	752
kB	411	450	467	524	585	623	598	694	732	832	876
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

Motor dimension sheets see page 380; Gear unit size F06 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

**FO06 - B5 flange execution with hollow shaft**

**FF06 - B5 flange execution with output shaft**

**FP06 - B5 flange execution with hollow shaft and shrink disc \***

**FT06 - Hollow shaft with rubber buffer**

**FU06 - Hollow shaft with shrink disc \* and rubber buffer**


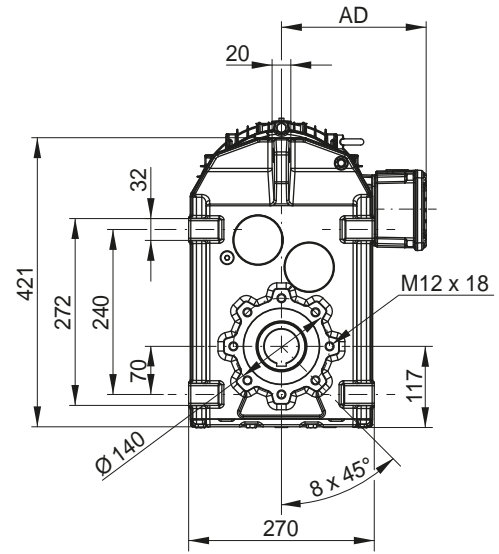
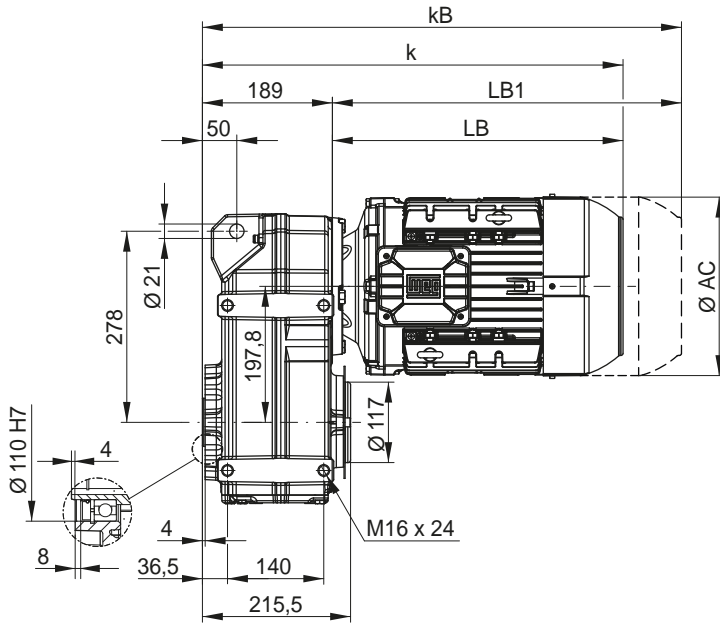
Dimensions in mm.

\* Shrink disc only in combination with motor frame sizes 63, 71, 80, 90, 100 and 112

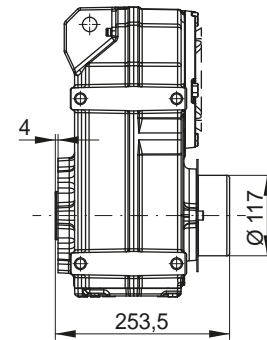
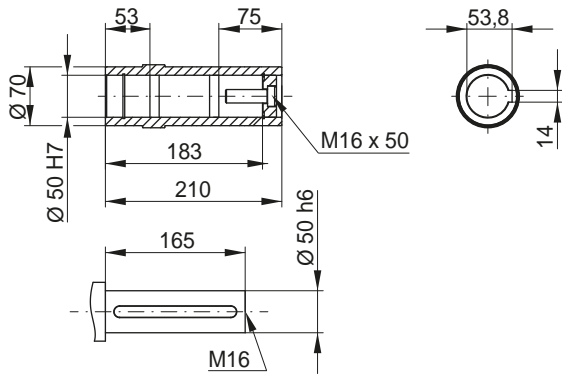
1) ΔL = recommended preload



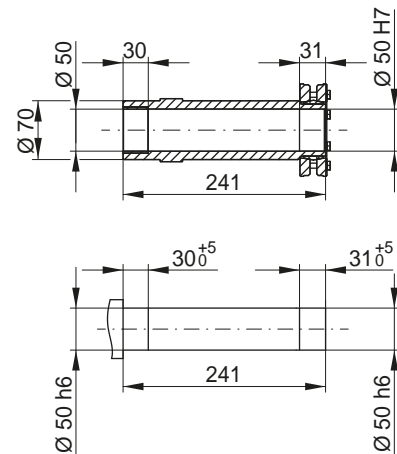
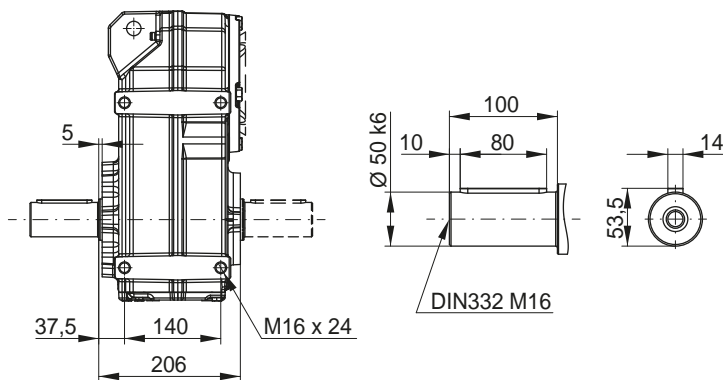
### FH07 - Hollow shaft



### FD07 - Shrink disc \*



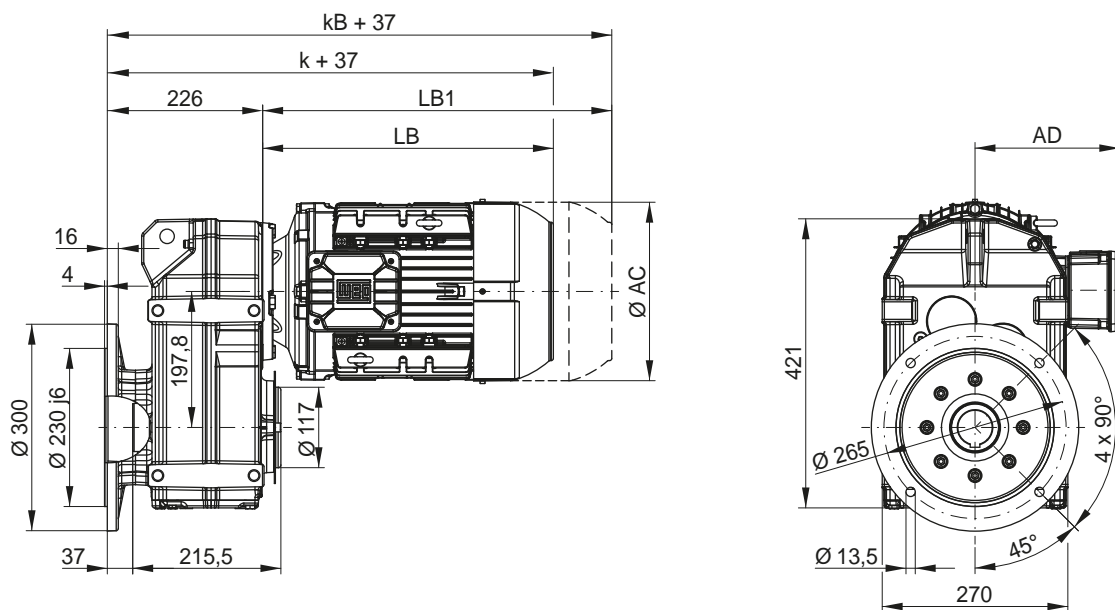
### FS07 - Output shaft FB07 - Output shaft on both sides



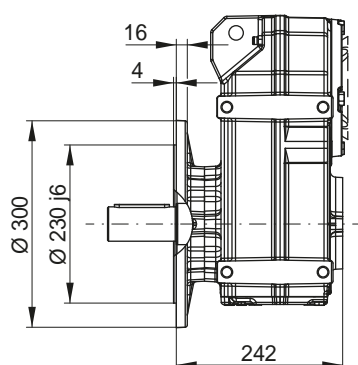
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	393	427	435	477	527	565	537	602	640	734	778
kB	437	476	493	550	611	649	624	720	758	858	902
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

Motor dimension sheets see page 380; Gear unit size F07 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

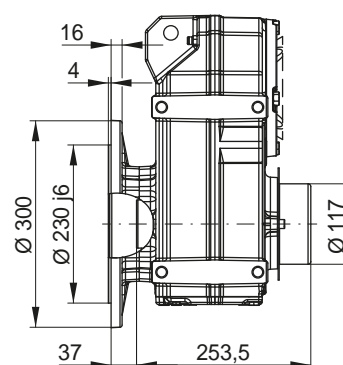
### FO07 - B5 flange execution with hollow shaft



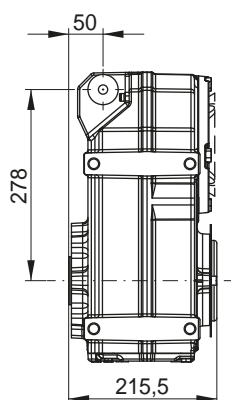
### FF07 - B5 flange execution with output shaft



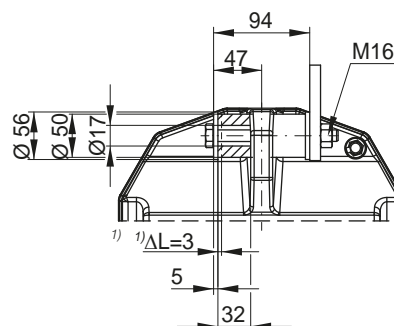
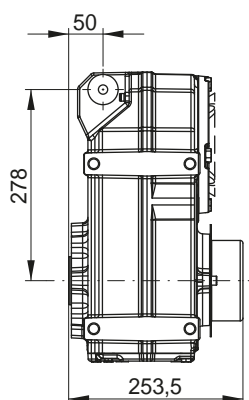
### FP07 - B5 flange execution with hollow shaft and shrink disc \*



### FT07 - Hollow shaft with rubber buffer



### FU07 - Hollow shaft with shrink disc \* and rubber buffer

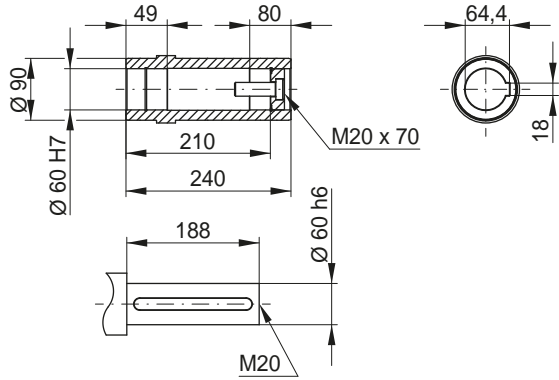
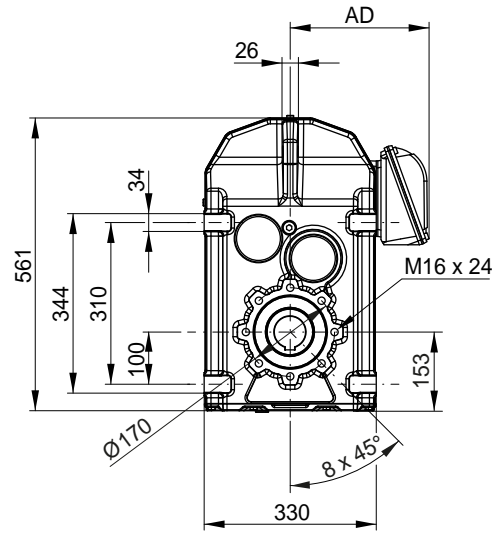
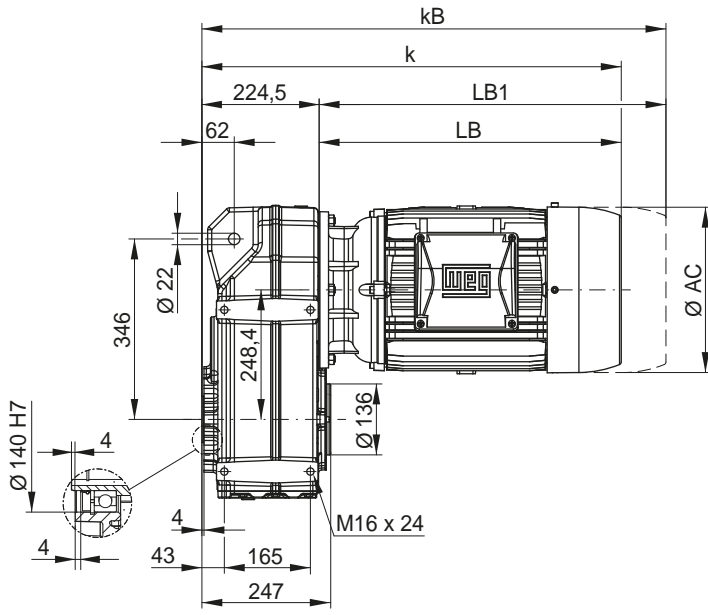


Dimensions in mm.

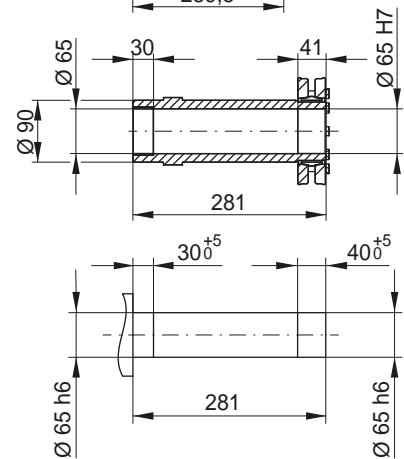
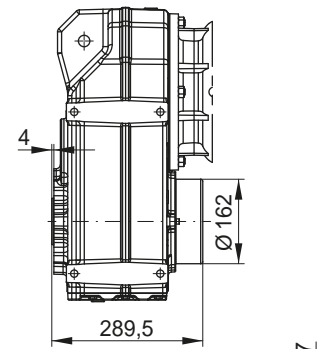
\* Shrink disc and protection cap possible with all mountable motors.

1)  $\Delta L$  = recommended preload

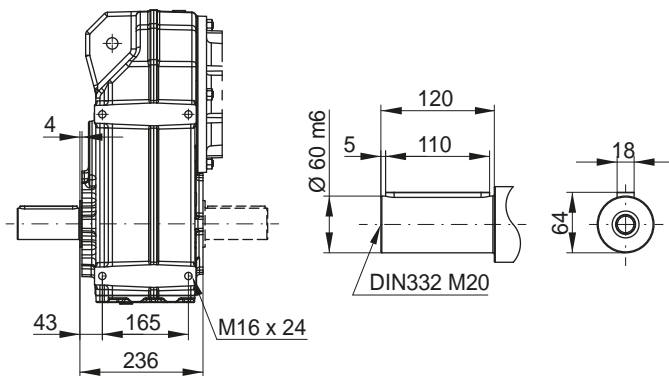
### FH08 - Hollow shaft



### FD08 - Shrink disc \*



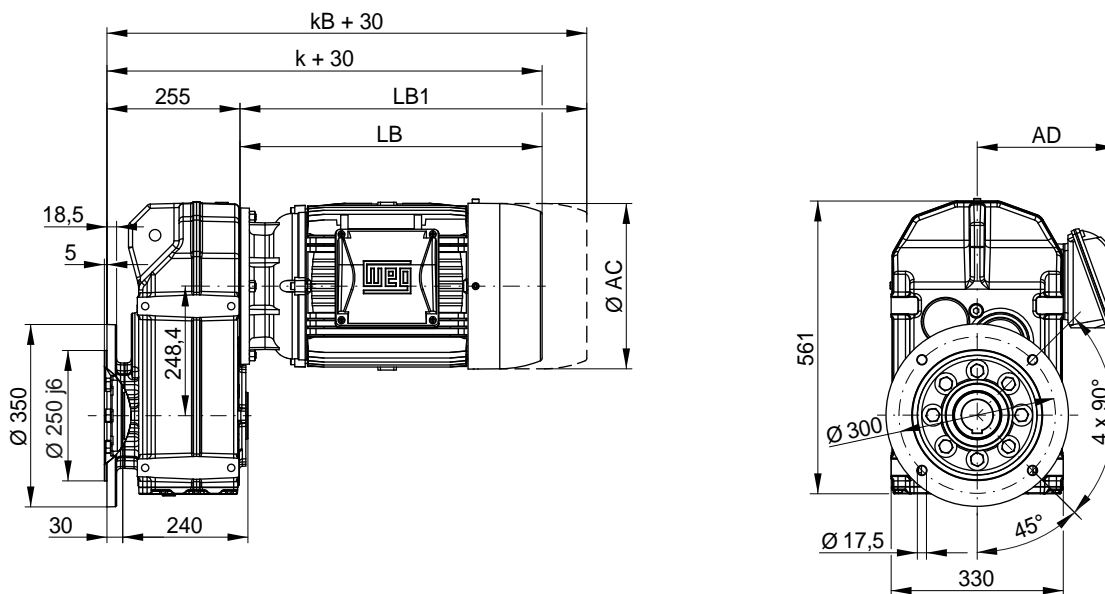
### FS08 - Output shaft FB08 - Output shaft on both sides



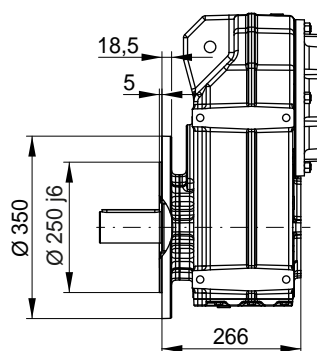
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	429	463	471	513	563	601	573	638	676	760	804	828	866
kB	473	512	529	586	647	685	660	756	794	884	928	946	984
LB	204	238	246	288	338	376	348	413	451	535	579	603	641
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759

Motor dimension sheets see page 380; Gear unit size F08 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

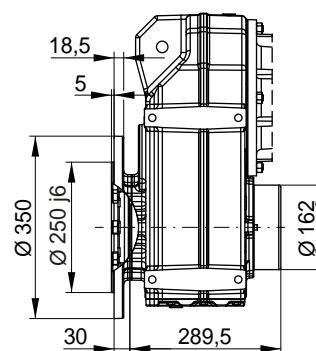
### FO08 - B5 flange execution with hollow shaft



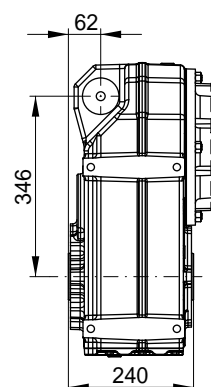
### FF08 - B5 flange execution with output shaft



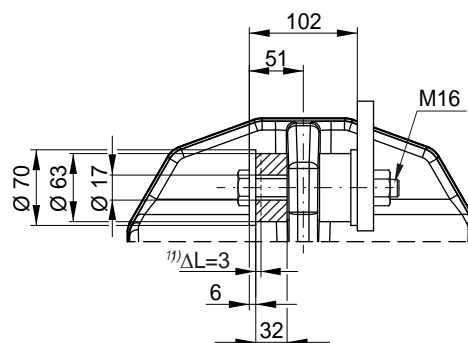
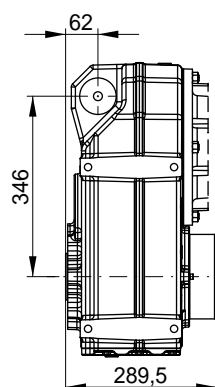
### FP08 - B5 flange execution with hollow shaft and shrink disc \*



### FT08 - Hollow shaft with rubber buffer



### FU08 - Hollow shaft with shrink disc \* and rubber buffer

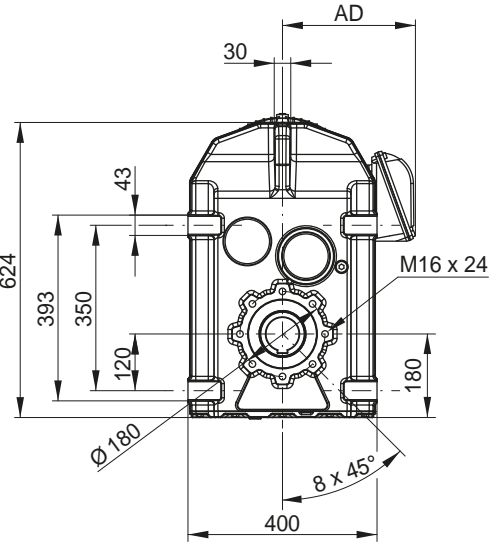
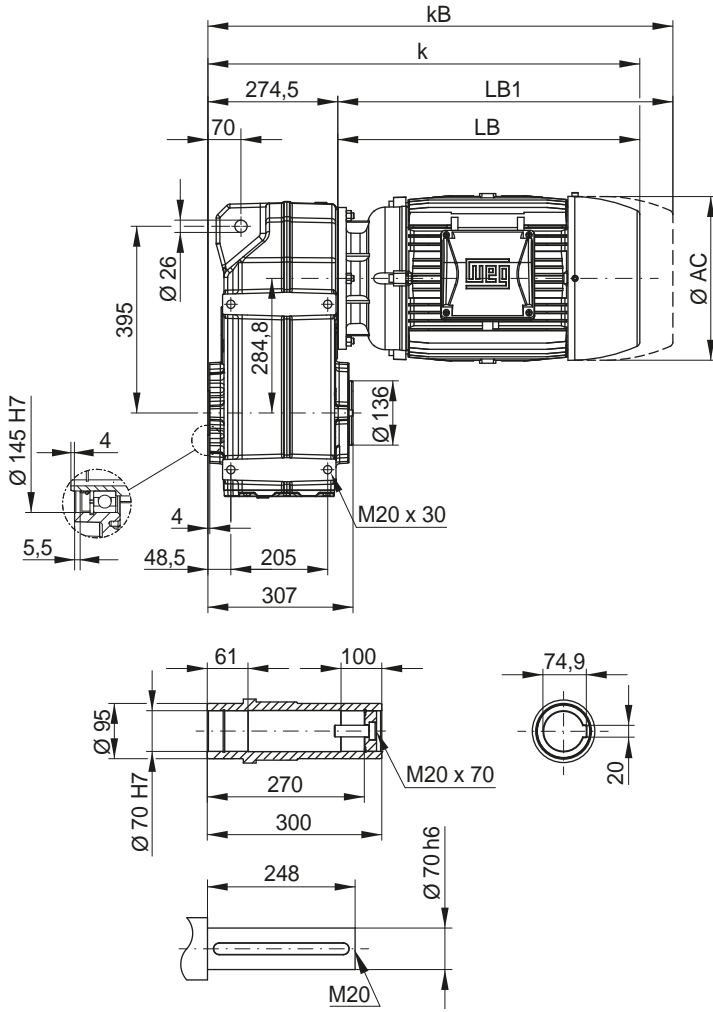


Dimensions in mm.

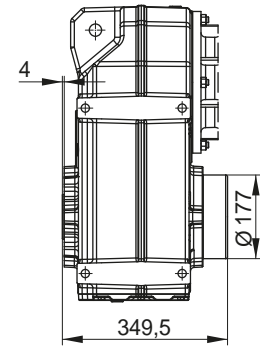
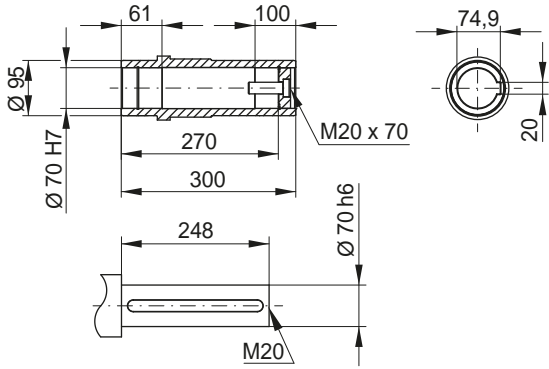
\* Shrink disc and protection cap possible with all mountable motors.

1)  $\Delta L$  = recommended preload

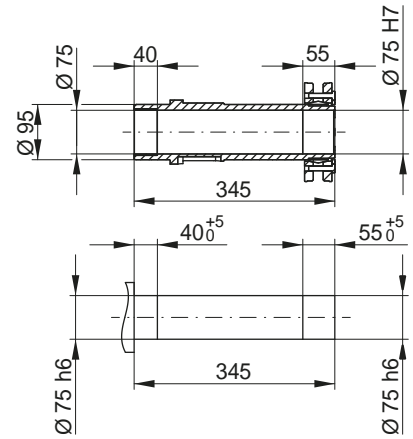
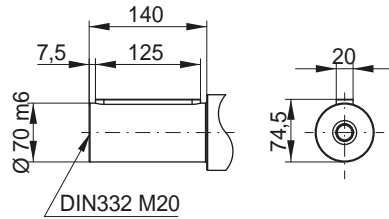
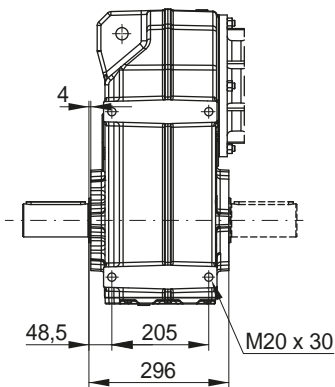
**FH09 - Hollow shaft**



**FD09 - Shrink disc \***



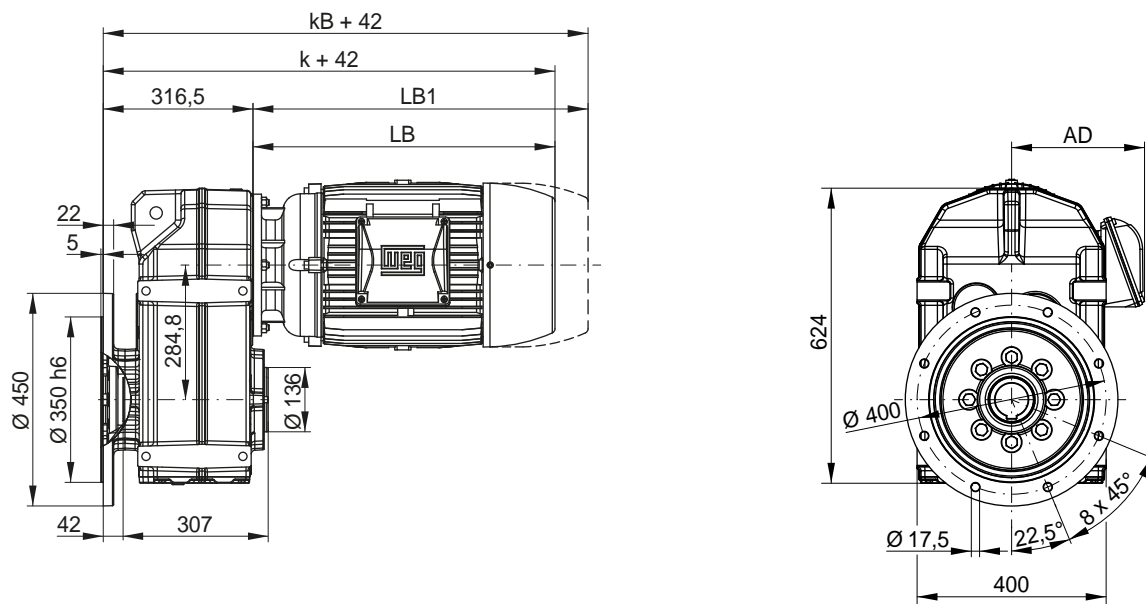
**FS09 - Output shaft  
FB09 - Output shaft on both sides**



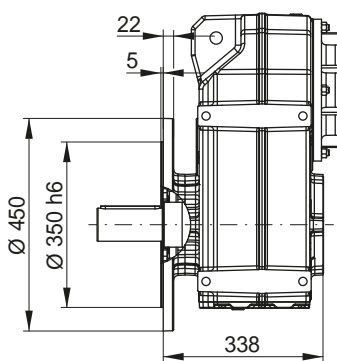
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	479	513	521	563	613	651	623	688	726	810	854	878	916	1008
kB	523	562	579	636	697	735	710	806	844	934	978	996	1034	1134
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

Motor dimension sheets see page 380; Gear unit size F09 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

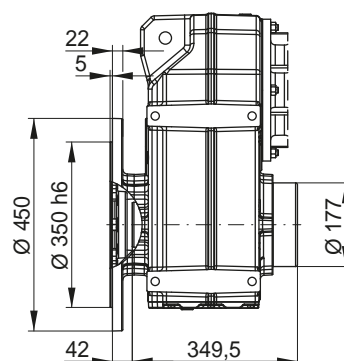
### FO09 - B5 flange execution with hollow shaft



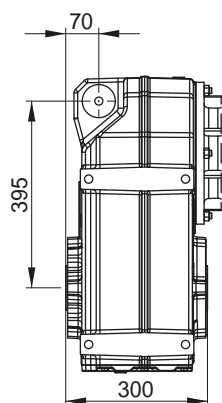
### FP09 - B5 flange execution with output shaft



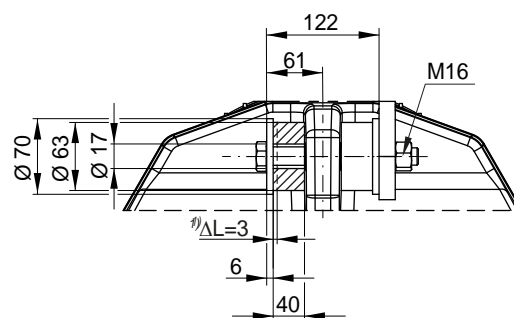
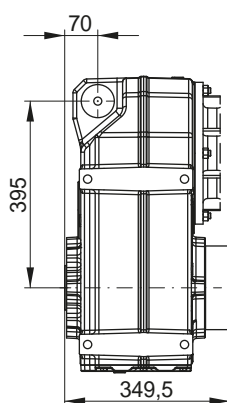
### FP09 - B5 flange execution with hollow shaft and shrink disc \*



### FT09 - Hollow shaft with rubber buffer



### FU09 - Hollow shaft with shrink disc \* and rubber buffer

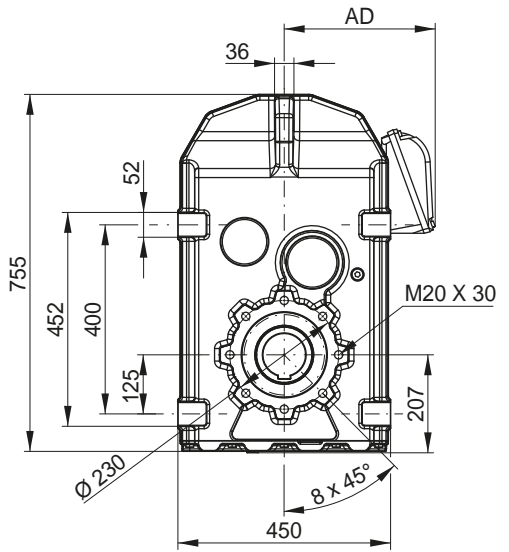
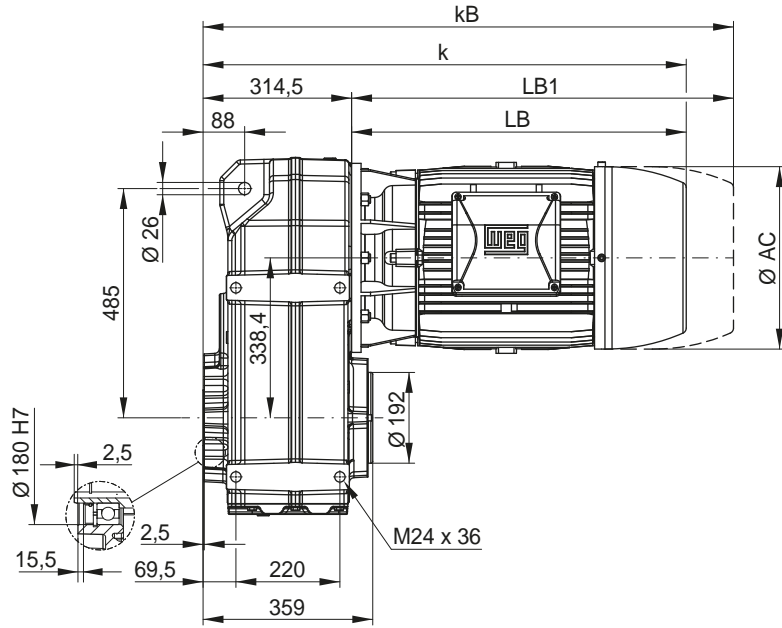


Dimensions in mm.

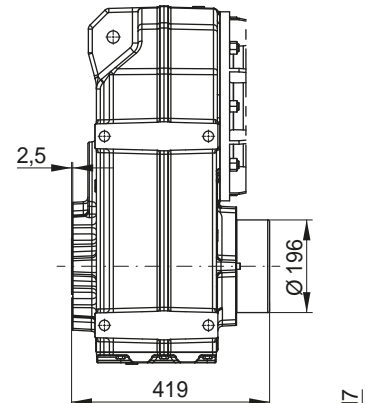
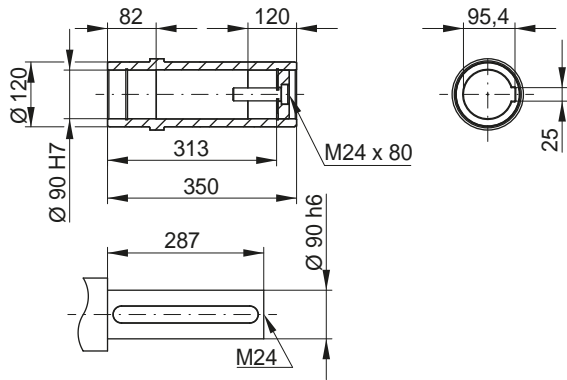
\* Shrink disc and protection cap possible with all mountable motors.

1)  $\Delta L$  = recommended preload

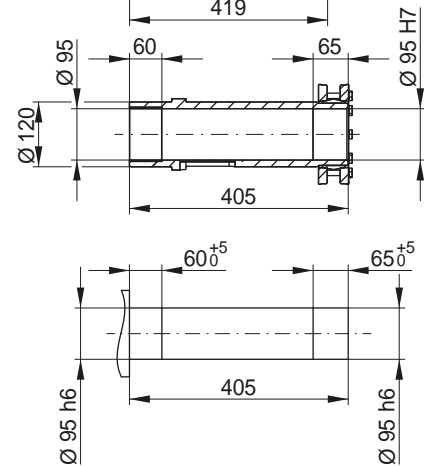
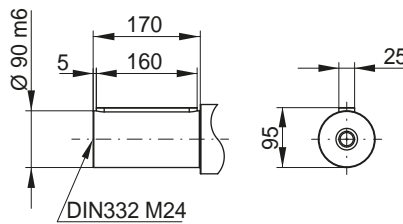
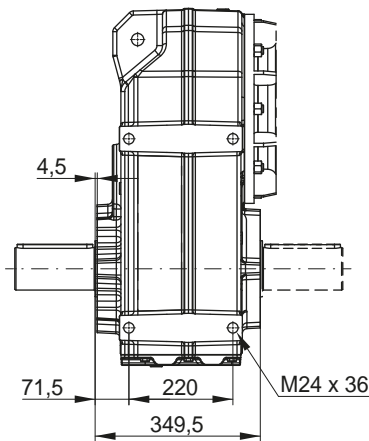
### FH10 - Hollow shaft



FD10 - Shrink disc \*



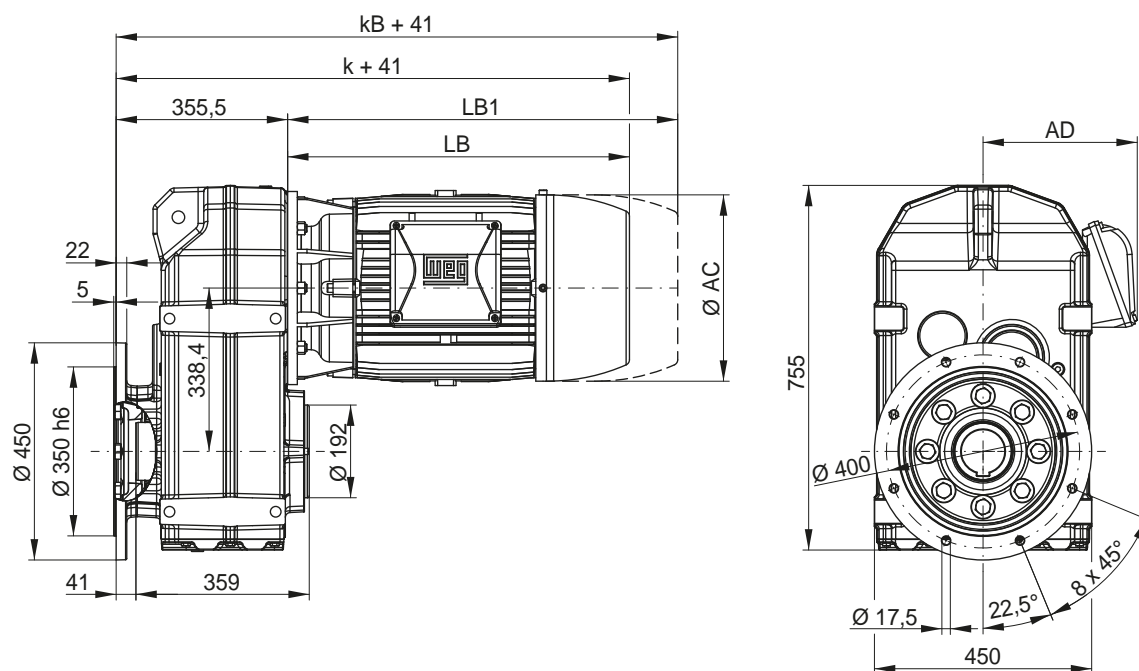
### FS10 - Output shaft FB10 - Output shaft on both sides



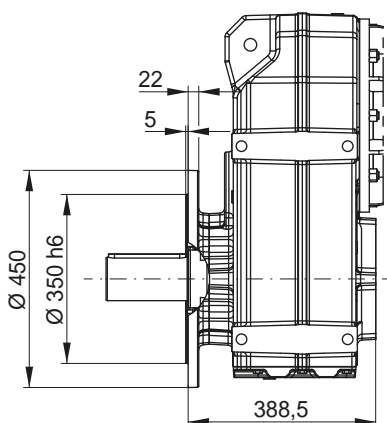
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	663	728	766	837	881	905	943	1035	1143
kB	-	-	-	-	-	-	750	846	884	961	1005	1023	1061	1161	1261
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size F10 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

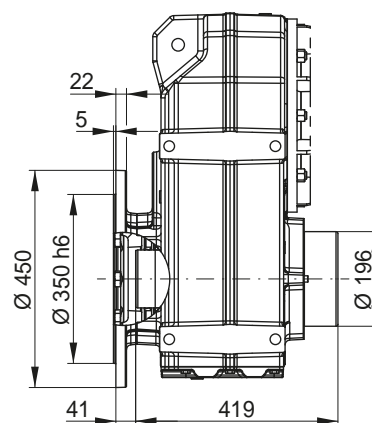
### FO10 - B5 flange execution with hollow shaft



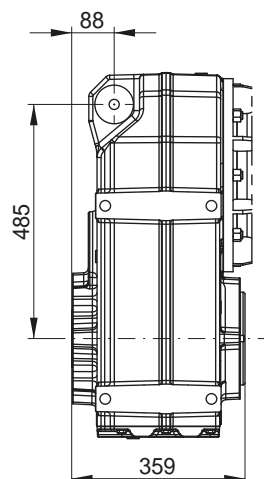
### FF10 - B5 flange execution with output shaft



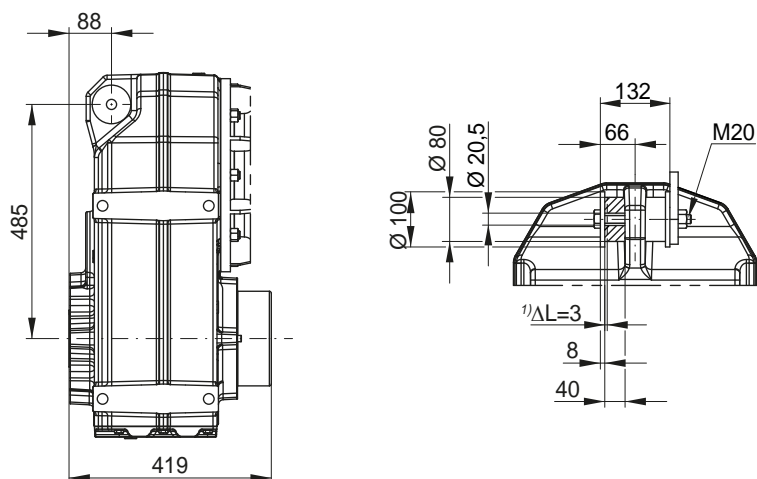
### FP10 - B5 flange execution with hollow shaft and shrink disc \*



### FT10 - Hollow shaft with rubber buffer



### FU10 - Hollow shaft with shrink disc \* and rubber buffer



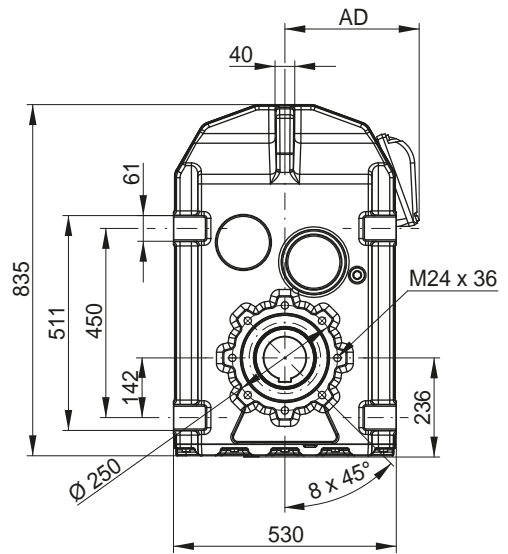
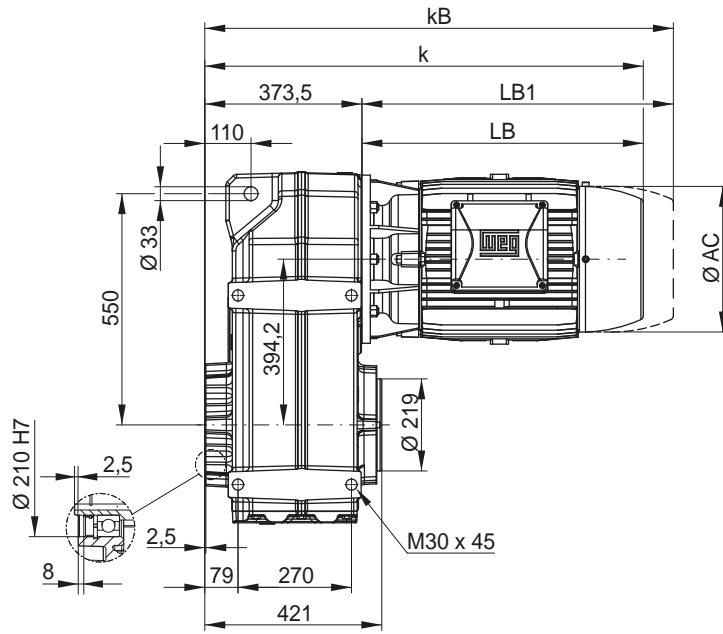
Dimensions in mm.

\* Shrink disc and protection cap possible with all mountable motors.

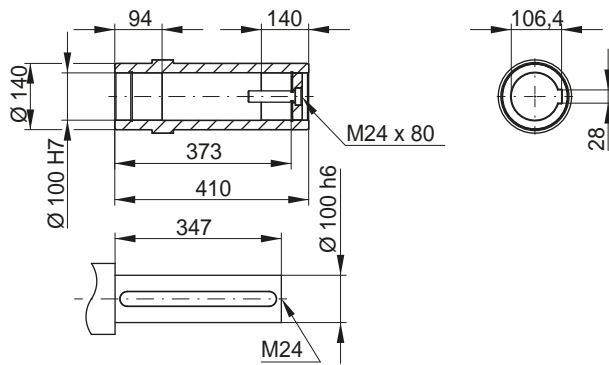
<sup>1)</sup>  $\Delta L$  = recommended preload



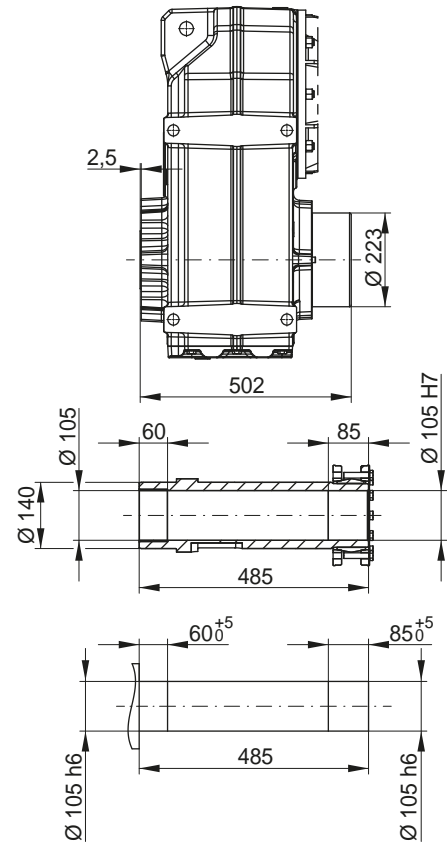
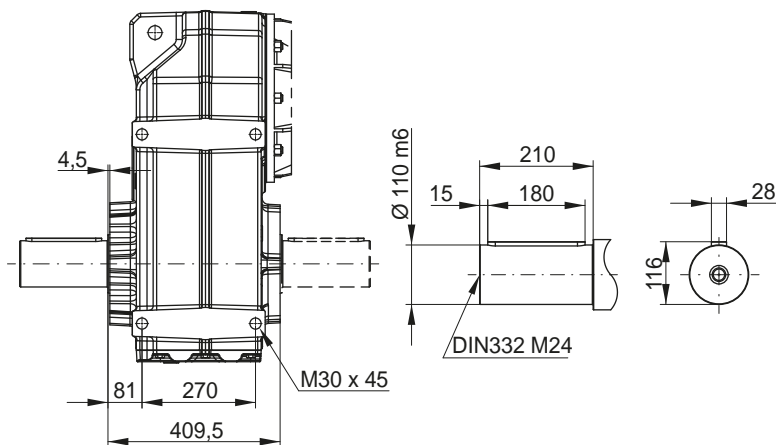
## FH12 - Hollow shaft



FD12 - Shrink disc \*

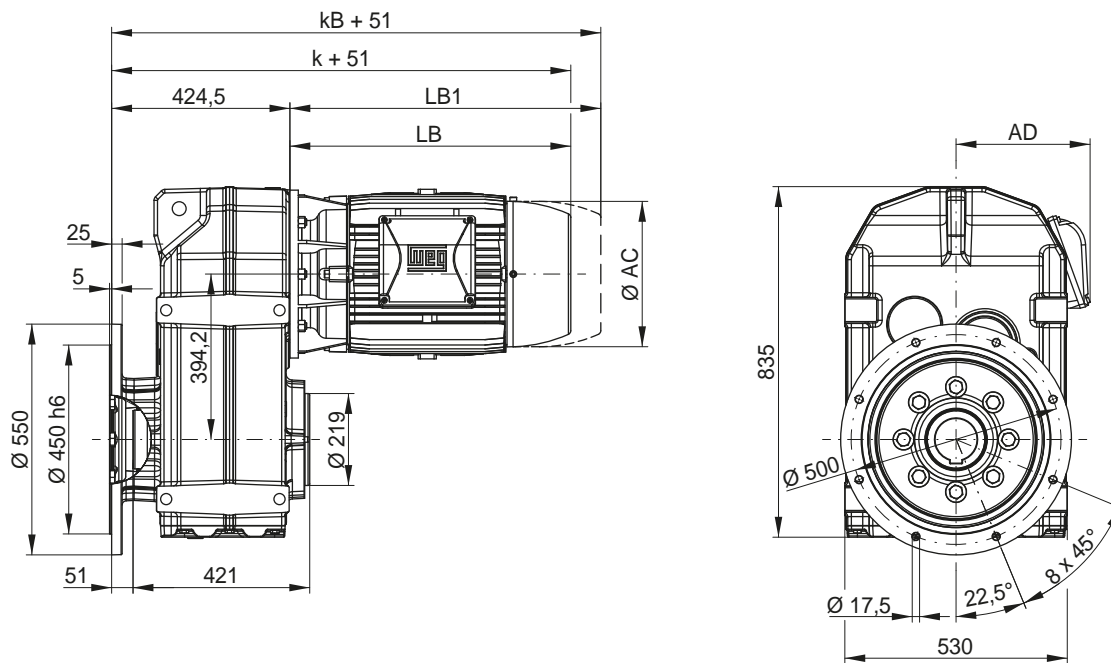
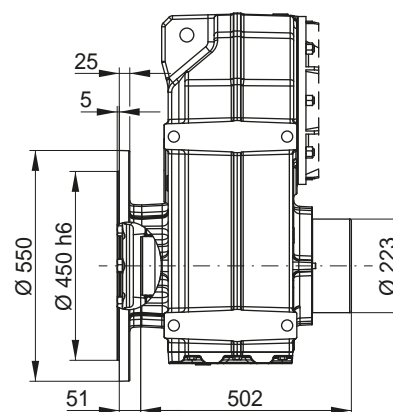
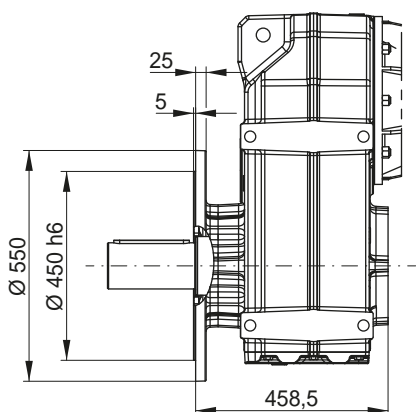
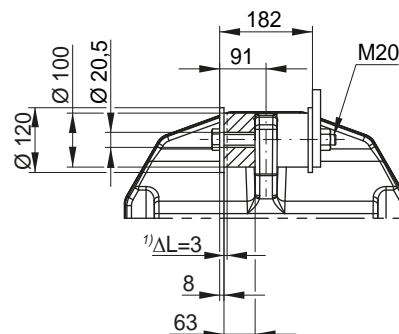
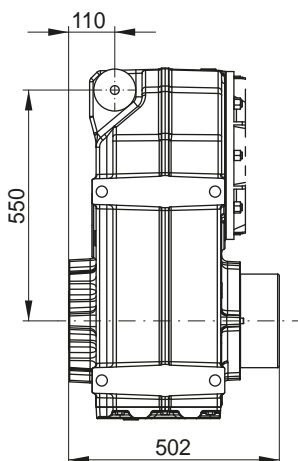
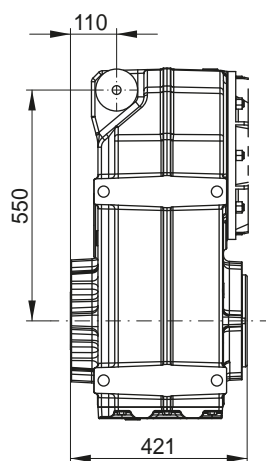


## FS12 - Output shaft FB12 - Output shaft on both sides



Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	722	787	825	896	940	964	1002	1094	1202
kB	-	-	-	-	-	-	809	905	943	1020	1064	1082	1120	1220	1320
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size F12 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

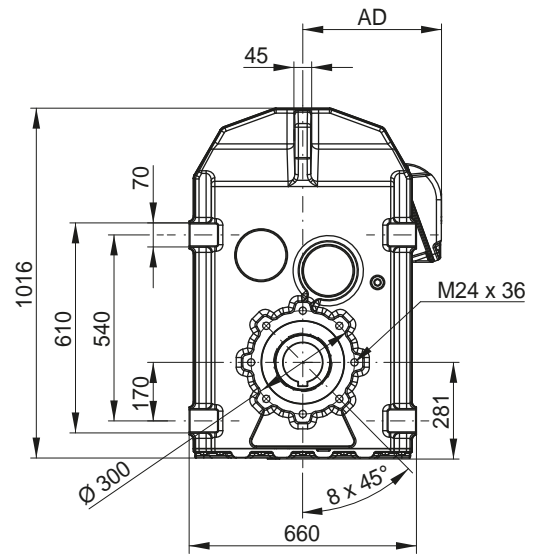
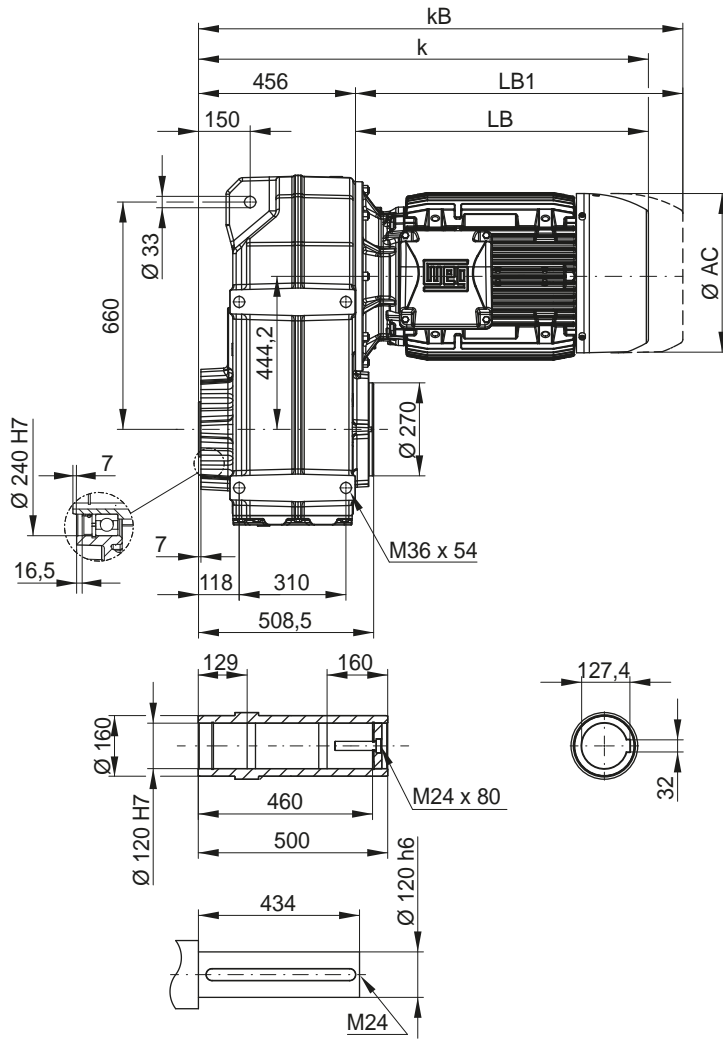
**FO12 - B5 flange execution with hollow shaft**

**FF12 - B5 flange execution with output shaft**
**FP12 - B5 flange execution with hollow shaft and shrink disc \***

**FT12 - Hollow shaft with rubber buffer**
**FU12 - Hollow shaft with shrink disc \* and rubber buffer**


Dimensions in mm.

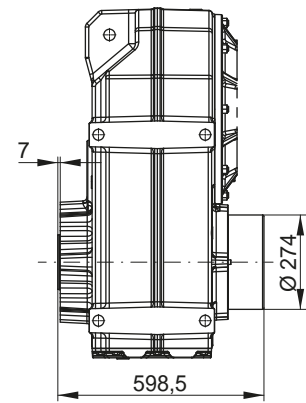
\* Shrink disc and protection cap possible with all mountable motors.

1)  $\Delta L$  = recommended preload

### FH15 - Hollow shaft

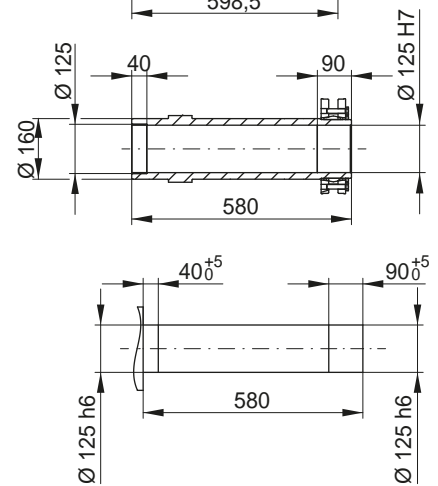
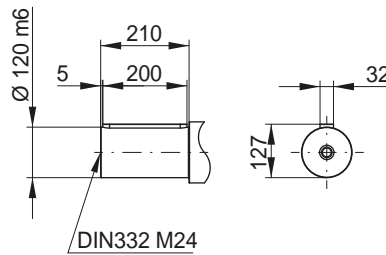
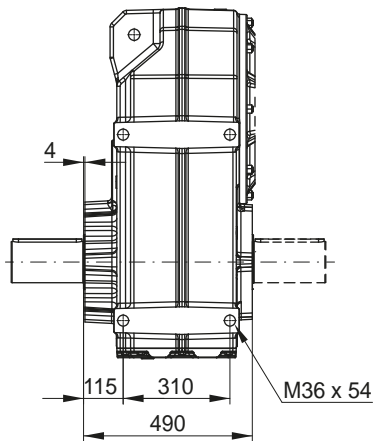


FD15 - Shrink disc \*



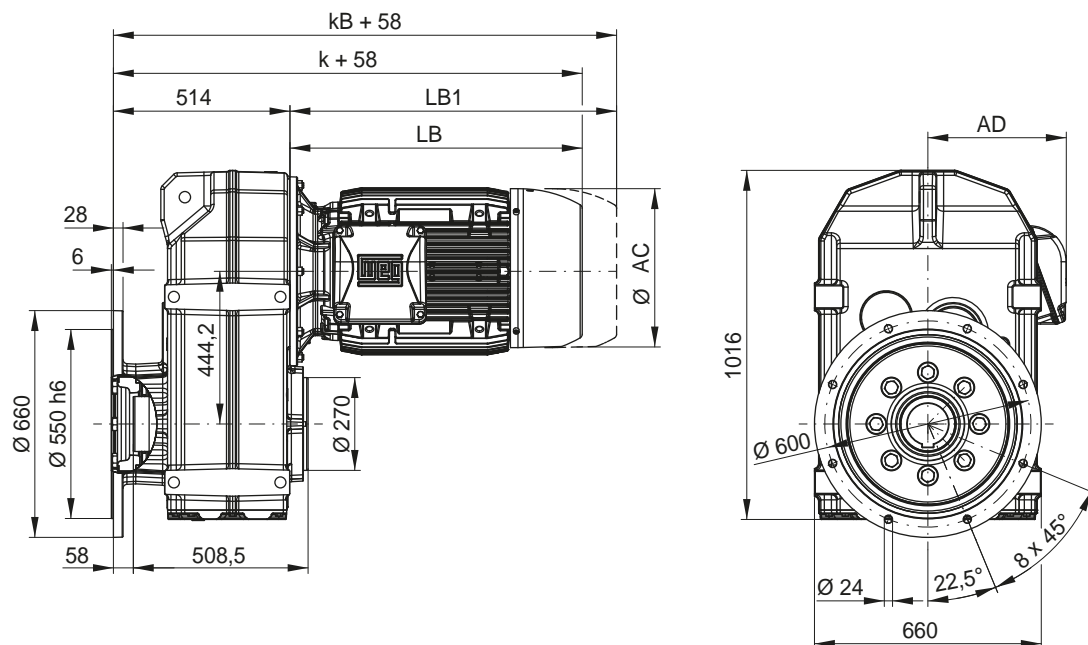
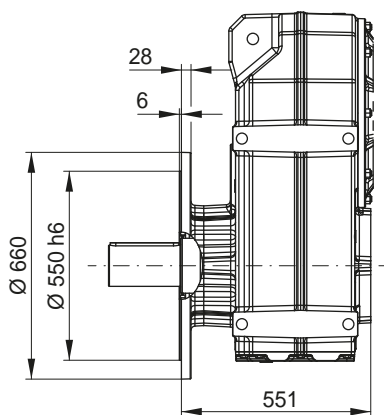
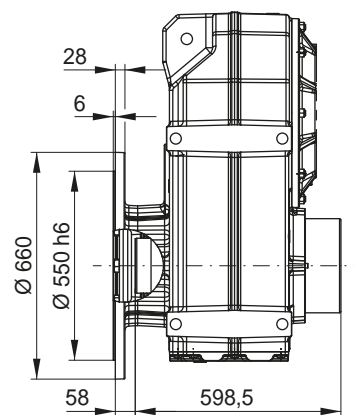
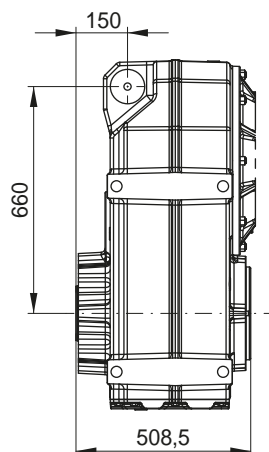
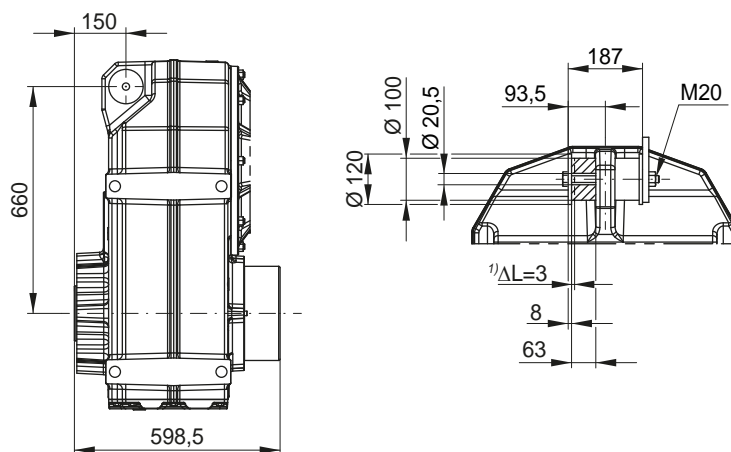
### FS15 - Output shaft

### FB15 - Output shaft on both sides



Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	962	1006	1030	1068	1160	1268	1307
kB	-	-	-	-	-	-	-	-	-	1086	1130	1148	1186	1286	1386	1425
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

Motor dimension sheets see page 380; Gear unit size F15 corresponds to motor flange FR-550. Description of motor lengths LB and LB1 see page 384.

**FO15 - B5 flange execution with hollow shaft**

**FF15 - B5 flange execution with output shaft**

**FP15 - B5 flange execution with hollow shaft and shrink disc \***

**FT15 - Hollow shaft with rubber buffer**

**FU15 - Hollow shaft with shrink disc \* and rubber buffer**


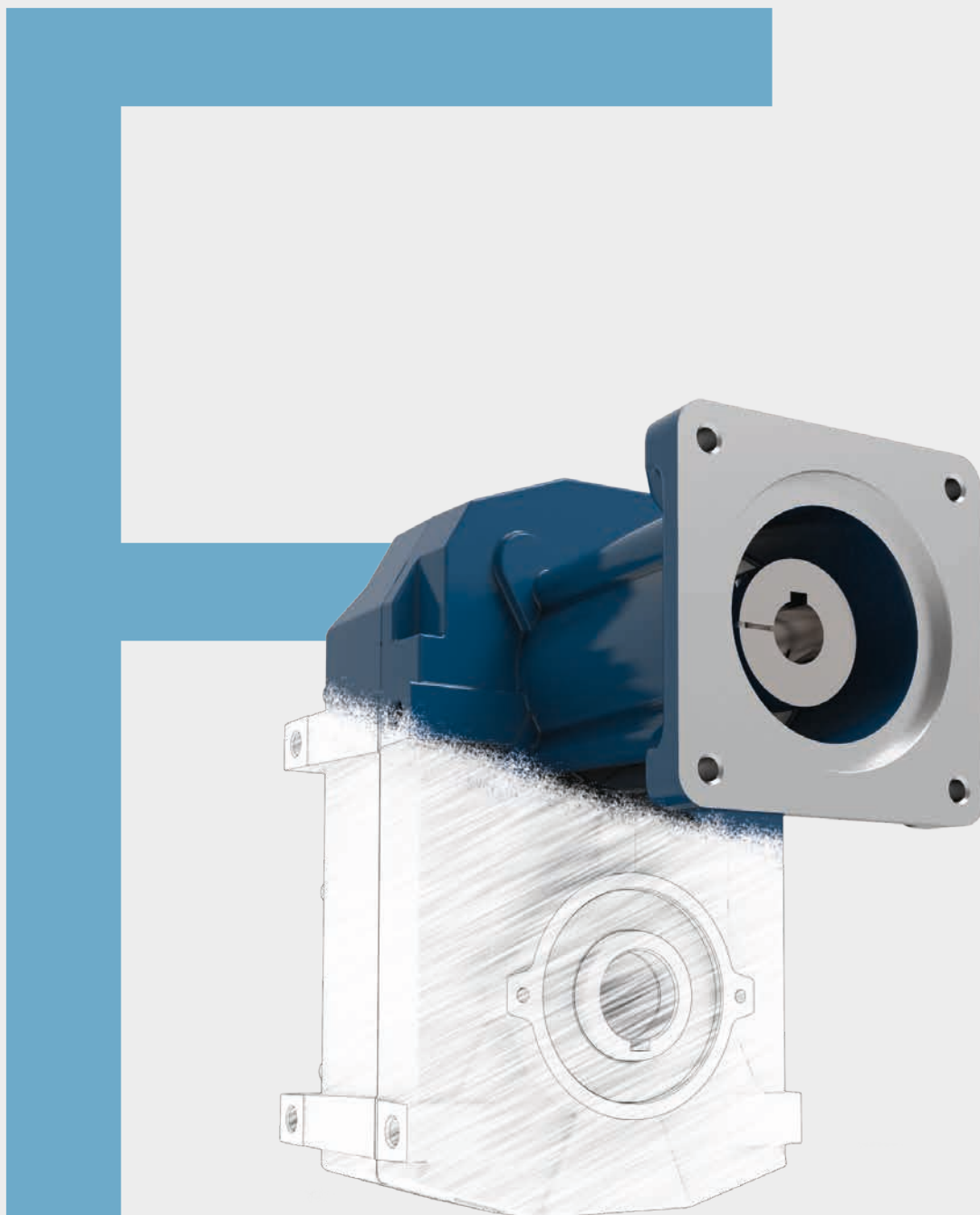
Dimensions in mm.

\* Shrink disc and protection cap possible with all mountable motors.

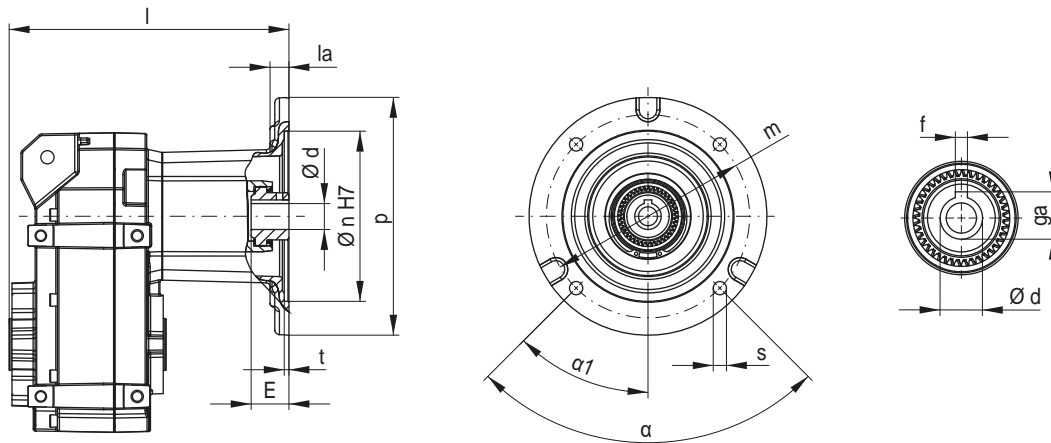
$^1)\Delta L$  = recommended preload



# Dimension sheets Input types



## IEC Adapter I63 to I280



F

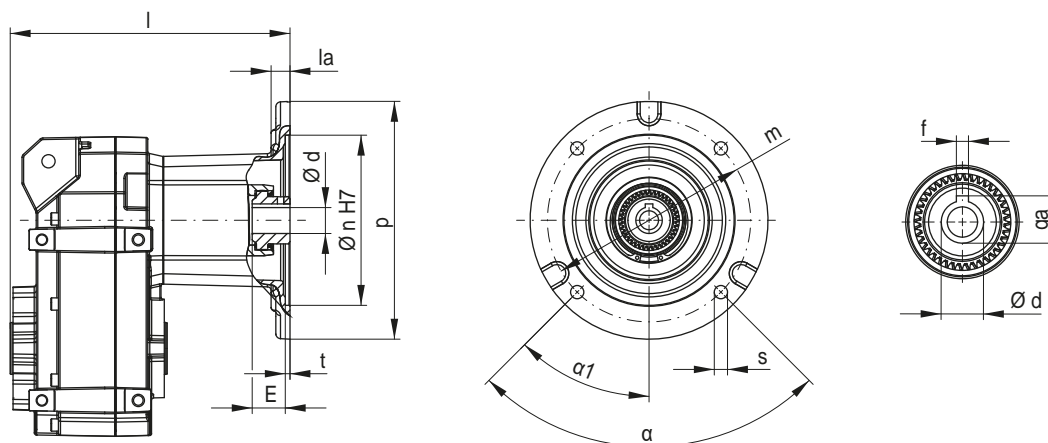
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225		I250	I280	
p	160	160	200	200	250	250	300	350	350	400	400	550	550	550	
n	95	110	130	130	180	180	230	250	250	300	350	450	450	450	
la	22.5	10	13	13	15	20	15	35	35	20	20	20	20	20	
m	115	130	165	165	215	215	265	300	300	350	400	500	500	500	
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5	5	5	5	
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19	19	19	19	
$\alpha$	90	90	90	90	90	90	90	90	90	90	45	45	45	45	
$\alpha_1$	35	45	45	45	45	45	45	45	45	45	45	45	45	45	
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E <sup>1)</sup>	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	

<sup>1)</sup> Maximum motor shaft length for motors with key

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
	l												
F02	137	137	165	165	-	-	-	-	-	-	-	-	-
F03	147	147	175	175	206	-	-	-	-	-	-	-	-
F04	171.5	171.5	199.5	199.5	230.5	-	-	-	-	-	-	-	-
F05	184	184	212	212	243	296	307	-	-	-	-	-	-
F06	195.5	195.5	223.5	223.5	254.5	307.5	318.5	404.5	-	-	-	-	-
F07	221.5	221.5	249.5	249.5	280.5	333.5	344.5	430.5	-	-	-	-	-
F08	248.5	248.5	276.5	276.5	307.5	360.5	371.5	456	456	-	-	-	-
F09	298.5	298.5	326.5	326.5	357.5	410.5	421.5	506	506	534.5	-	-	-
F10	-	-	-	-	-	440	451	533	533	561.5	591.5	-	-
F12	-	-	-	-	-	499.5	510.5	592.5	592.5	621	651	740	740
F15	-	-	-	-	-	-	-	659	659	687.5	717.5	806.5	806.5

Dimensions in mm.

### NEMA Adapter N56 to N364



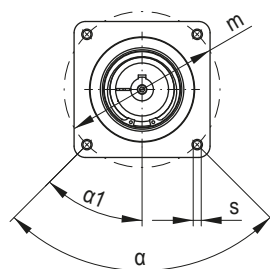
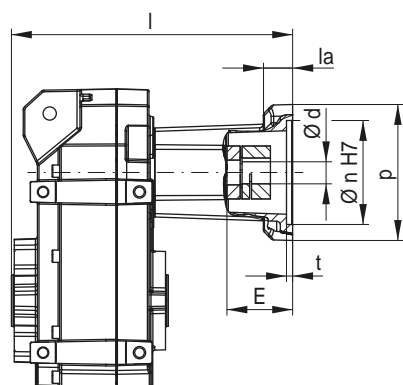
F

Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	16	16
α	90	90	90	90	90	90	90	90	90
α <sub>1</sub>	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5

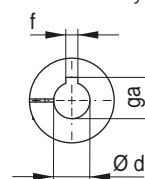
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
F02	165	165	-	-	-	-	-	-	-
F03	175	175	206	-	-	-	-	-	-
F04	199.5	199.5	230.5	-	-	-	-	-	-
F05	212	212	243	296	307	-	-	-	-
F06	223.5	223.5	254.5	307.5	318.5	404.5	-	-	-
F07	249.5	249.5	280.5	333.5	344.5	430.5	-	-	-
F08	276.5	276.5	307.5	360.5	371.5	456	459	-	-
F09	326.5	326.5	357.5	410.5	421.5	506	509	556.5	-
F10	-	-	-	440	451	533	536	583.5	599
F12	-	-	-	499.5	510.5	592.5	595.5	643	658.5
F15	-	-	-	-	-	659	662	725	725



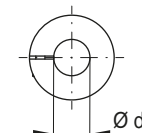
## SERVO Adapter S92 to S190



Shaft with key



Smooth shaft



Type	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190										
p	101	144	144	144	144	144	144	197	197	197										
n	80	95	95	110	110	110	130	114.3	130	180										
la	17.5	31	31	31	31	31	31	35	32	38										
m	100	115	130	130	145	165	165	200	215	215										
t	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5										
s	M6x12	M8x16	M8x16	M8x16	M8x16	M8x16	M8x16	13.5	15	15										
α	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°										
α <sub>1</sub>	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°										
d <sup>1)</sup>	14	16	19	19	19	22	24	28	19	22	24	28	24	24	32	35	32	38	38	
f	5	5	6	6	6	8	8	8	6	6	8	8	8	8	10	10	10	10	10	10
ga	16.3	18.3	21.8	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	35.3	35.3	41.3	
E <sup>2)</sup>	47.5		69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5			
E <sup>3)</sup>	47.5		69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5			

<sup>1)</sup> Other shaft diameters on request

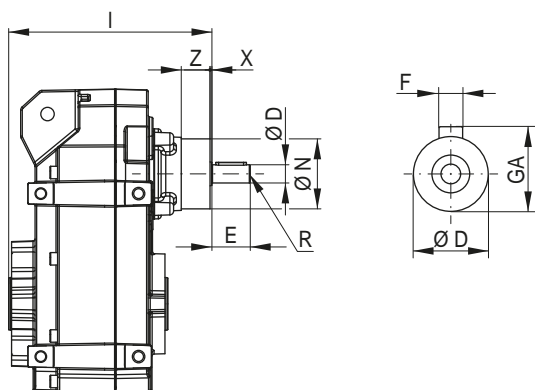
<sup>2)</sup> Maximum motor shaft length for motors with key

<sup>3)</sup> Maximum motor shaft length for motors with smooth shaft

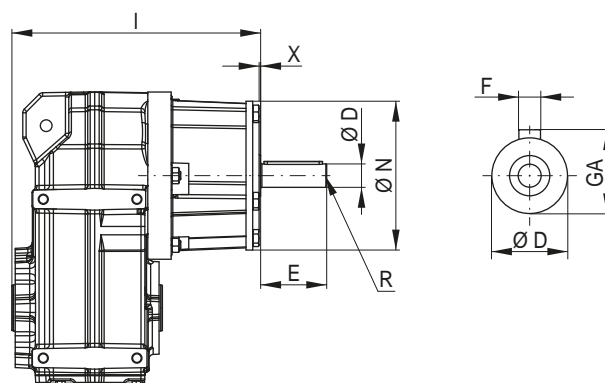
Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	l									
F02	202.5	250.5	250.5	250.5	250.5	250.5	250.5	-	-	-
F03	212.5	260.5	260.5	260.5	260.5	260.5	260.5	-	-	-
F04	237	285	285	285	285	285	285	-	-	-
F05	249.5	297.5	297.5	297.5	297.5	297.5	297.5	368	362	389
F06	261	309	309	309	309	309	309	379.5	373.5	400.5
F07	287	335	335	335	335	335	335	405.5	399.5	426.5
F08	314	362	362	362	362	362	362	432.5	426.5	453.5
F09	364	412	412	412	412	412	412	482.5	476.5	503.5
F10	-	-	-	-	-	-	-	512	506	533
F12	-	-	-	-	-	-	-	571.5	565.5	592.5
F15	-	-	-	-	-	-	-	-	-	-

Dimensions in mm.

### Input Unit U2, U3



### Input Unit U5, U6, U7



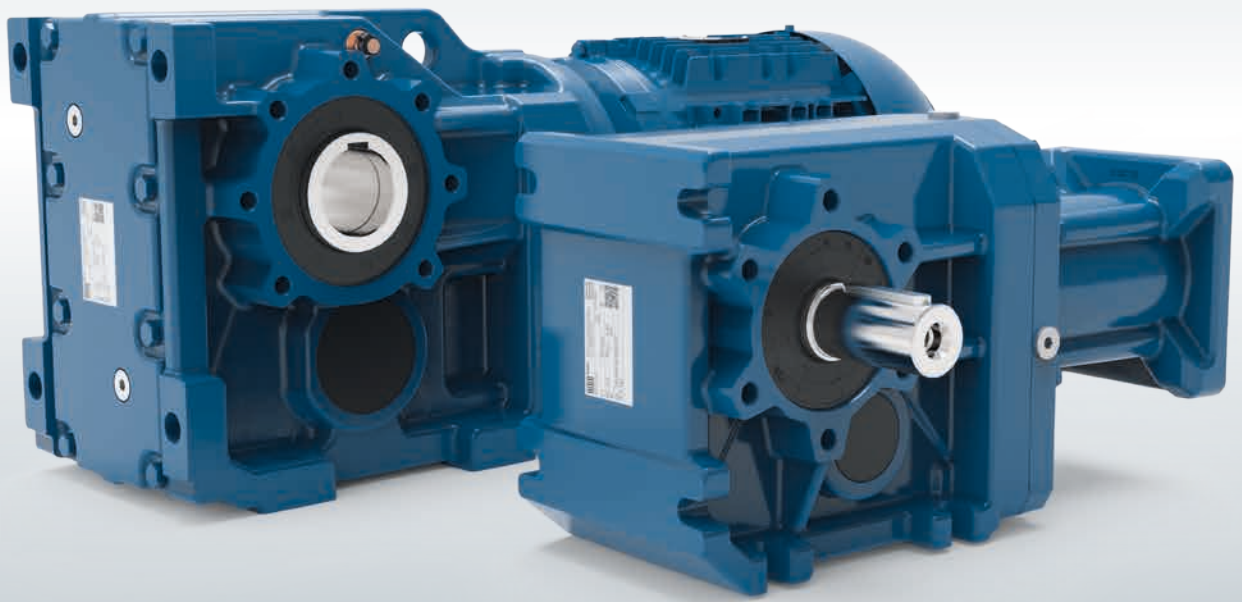
F

Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	I				
F02	165	-	-	-	-
F03	175	-	-	-	-
F04	199.5	-	-	-	-
F05	212	244	-	-	-
F06	223.5	255.5	298	-	-
F07	249.5	281.5	324	-	-
F08	276.5	308.5	349.5	371.5	-
F09	326.5	358.5	399.5	421.5	-
F10	-	388	426.5	448.5	517.5
F12	-	447.5	486	508	577
F15	-	-	552.5	574.5	643.5





Helical bevel gear units and  
Helical bevel geared motors K

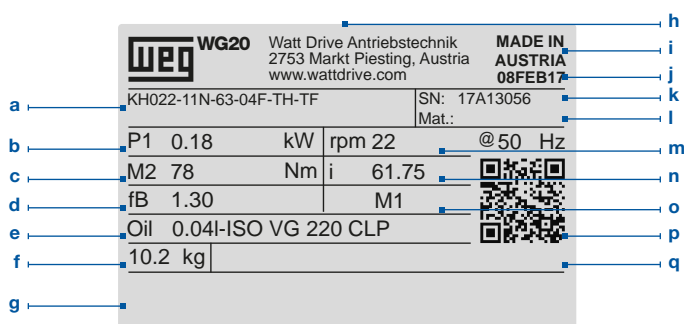


## Technical data

Size	K02	K03	K04	K05	K06	K07	K08	K09	K10	K12	K15
Power [kW]	0.12 - 1.5	0.12 - 3	0.12 - 4	0.12 - 9.2	0.18 - 9.2	0.25 - 15	0.55 - 22	1.1 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]	110	200	400	600	820	1550	3000	4500	8000	13000	18000
Ratio	3.82-68.88	4.17-217.88	5.05-277.79	4.27-245.7	4.94-198	7.91-256.14	7.45-206.12	6.94-169.25	6.64-140.95	6.60-151.11	8.61-146.69
Number of stages	2	3	3	3	3	3	3	3	3	3	3
Housing material	aluminium					cast iron					
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2									
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6									
	Material	standard: C45E (1.1191) / stainless steel on request									
Hollow shaft	Type	with key acc. to DIN 6885.1									
	Tolerance	H7									
	Material	standard: C45E (1.1191) / stainless steel on request									
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347									
	Material	cast iron									
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7									
	Material	16MnCr5 (1.7131) case hardened – minimum 58HRC									
Shaft seals	Type	type AS acc. to DIN 3760									
	Material	standard NBR / special FKM									
Bearing	standard / reinforced										
Lubricants	Type	standard CLP 220 / special CLP HC 220									
	Quantity	depending on mounting position									
Axle height	acc. to DIN 747: ≤ 50: -0.4; > 50 bis ≤ 250: -0.5; > 250: -1 for foot-mounted gear motors, the motor may extend below the mounting surface										

## General information

### 1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		

## 2. Type code

KH073-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

KH073-EX-I112

1 2 3 4 5 11

<b>1</b>	Type:	K = Helical bevel gear unit					
<b>2</b>	Design:	B = Output shaft on both sides D = Hollow shaft with shrink disc F = B5 flange type with output shaft H = Hollow shaft O = B5 flange type with hollow shaft P = B5 flange type with hollow shaft and shrink disc S = Output shaft T = Hollow shaft with torque arm U = Hollow shaft with shrink disc and torque arm					
<b>3</b>	Size:	02	05	08	12		
		03	06	09	15		
		04	07	10			
<b>4</b>	Number of stages:	2 = 2 gear stages 3 = 3 gear stages					
<b>5</b>	ATEX execution:	when operated in explosive atmospheres, see page 14					
<b>6</b>	Motor type:	11N = Integral motor aluminium IE1 11P = Integral motor aluminium IE3 22P = Integral motor cast iron IE3					
<b>7</b>	Motor frame size:	63	90S/L	112M	L132M	180M	225S/M
		71	100L	132S	160M	180L	250S/M
		80	L100L	132M	160L	200L	
<b>8</b>	Number of poles:	04 = 4 poles 06 = 6 poles					
<b>9</b>	Power indicator:	D E F G					
<b>10</b>	Motor modules:	see from page 385					
<b>11</b>	Adapters, Input unit:	IEC Adapter	NEMA Adapter		SERVO Adapter		Input unit
		I63 I160	N56	N254	S92	S141	U2
		I71 I180	N143	N284	S105	S142	U3
		I80 I200	N182	N324	S114	S180	U5
		I90 I225	N184	N364	S115	S189	U6
		I100 I250	N213		S130	S190	U7
		I112 I280					
		I132					

Type code Motor see page 361



### 3. Range

Size	K02	K03	K04	K05	K06	K07	K08	K09	K10	K12	K15
Housing material	Aluminium				Cast iron						

### 4. Design

	<b>B</b>	Output shaft on both sides		<b>P</b>	B5 flange type with hollow shaft and shrink disc
	<b>D</b>	Hollow shaft with shrink disc		<b>S</b>	Output shaft
	<b>F</b>	B5 flange type with output shaft		<b>T</b>	Hollow shaft with torque arm
	<b>H</b>	Hollow shaft		<b>U</b>	Hollow shaft with shrink disc and torque arm
	<b>O</b>	B5 flange type with hollow shaft			

### 5. Venting the gear unit

The helical bevel gear unit sizes K02 to K05 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.

By default, the helical bevel gear units from K06 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 259)



### 6. Overhung and axial loads

The overhung loads ( $F_{RN}$ ) indicated in the respective selection tables apply to gear units with the force acting on the shaft center ( $x=l/2$ ). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor ( $f_z$ ) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
$f_z=1.1$ ( $z \leq 17$ )	$f_z=1.2$ ( $z \leq 13$ )	$f_z=1.1$ ( $z > 13$ )	$f_z=1.8$	$f_z=2.5$

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

**Q1**  $F_{zL} = F_{rN} \cdot a_1$

**Q2**  $F_{zW} = F_W \cdot a_2$

**Q3**  $F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$

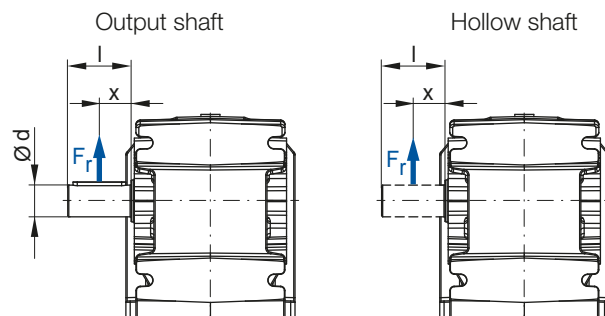
**Q4**  $F_{Qvorh} \leq F_{zL}$   
 $F_{Qvorh} \leq F_{zW}$

Variable	Unit	Description
a1		Load action factor - output shaft bearing from Table 1
a2		Load action factor - output shaft from Table 1
d0	[m]	Effective diameter of the transmission element
M2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
FzL	[N]	Permissible overhung load for output shaft bearings
FzW	[N]	Permissible overhung load for output shaft
FrN	[N]	Permissible overhung load from selection tables
Fw	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
FQvorh	[N]	Existing overhung load at gear shaft
fz		Factor for transmission element
Mmax	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

		x / l						
		0	0.25	0.5	0.75	1	1.5	2
a1 → Equation Q1		1.39	1.18	1.00	0.85	0.73	0.52	0.38
a2 → Equation Q2		2.00	2.00	1.00	0.55	0.38	0.23	0.17

Table 1: Load action factors a1, a2



Intermediate values can be interpolated linearly. Combined load ( $F_r \neq 0$ ;  $F_a = 0$ ) on request.

Output shaft [mm]		Mmax at Fr = 0	Output torque M2 [Nm]										
Ø d	l		110	200	400	600	820	1550	3000	4500	8000	13000	18000
			Fw [kN] at x/l = 0.5 → Equation Q2										
20	40	160	2.6										
25	50	300	5.6	4.8									
30	60	500	7.5	7.1	5.0								
35	70	800		11.0	10.0	8.3							
40	80	1170			13.0	12.0	10.7						
50	100	2250			24.0	24.0	23.0	20.0					
60	120	3740					31.0	30.0	23.0				
70	140	5850						44.0	41.0	36.0			
90	170	11700							72.0	70.0	61.0		
110	210	20800								106.0	103.0	93.0	
120	210	26700									129.0	121.0	109.0

Table 2: Permissible overhung load - output shaft x = l/2

The axial loads ( $F_{aN}$ ) for the respective execution (output shaft or hollow shaft), given in the following selection tables, are valid at radial force  $F_{rN} = 0$ . If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.



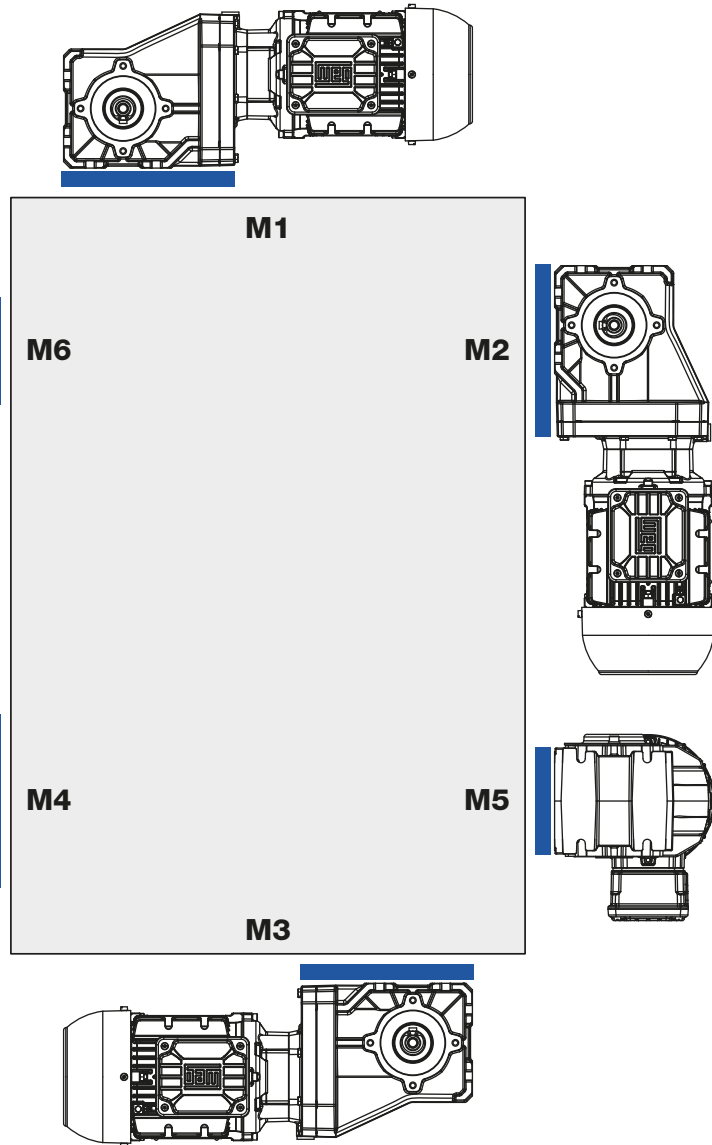
## 7. Mounting positions, Position of the terminal box and Cable entry

### Mounting positions - Sizes K02 to K05

Gear units K02 to K05 are not ventilated and supplied with lifetime lubrication.

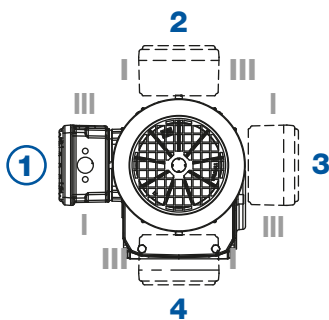
■ Reference area

K



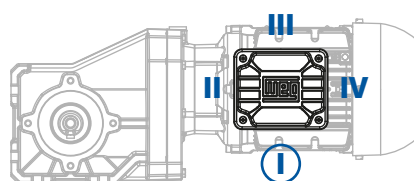
#### Position of the terminal box

Standard: Position 1

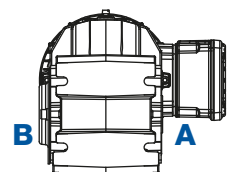


#### Cable entry

Standard: Position I



#### Side indication

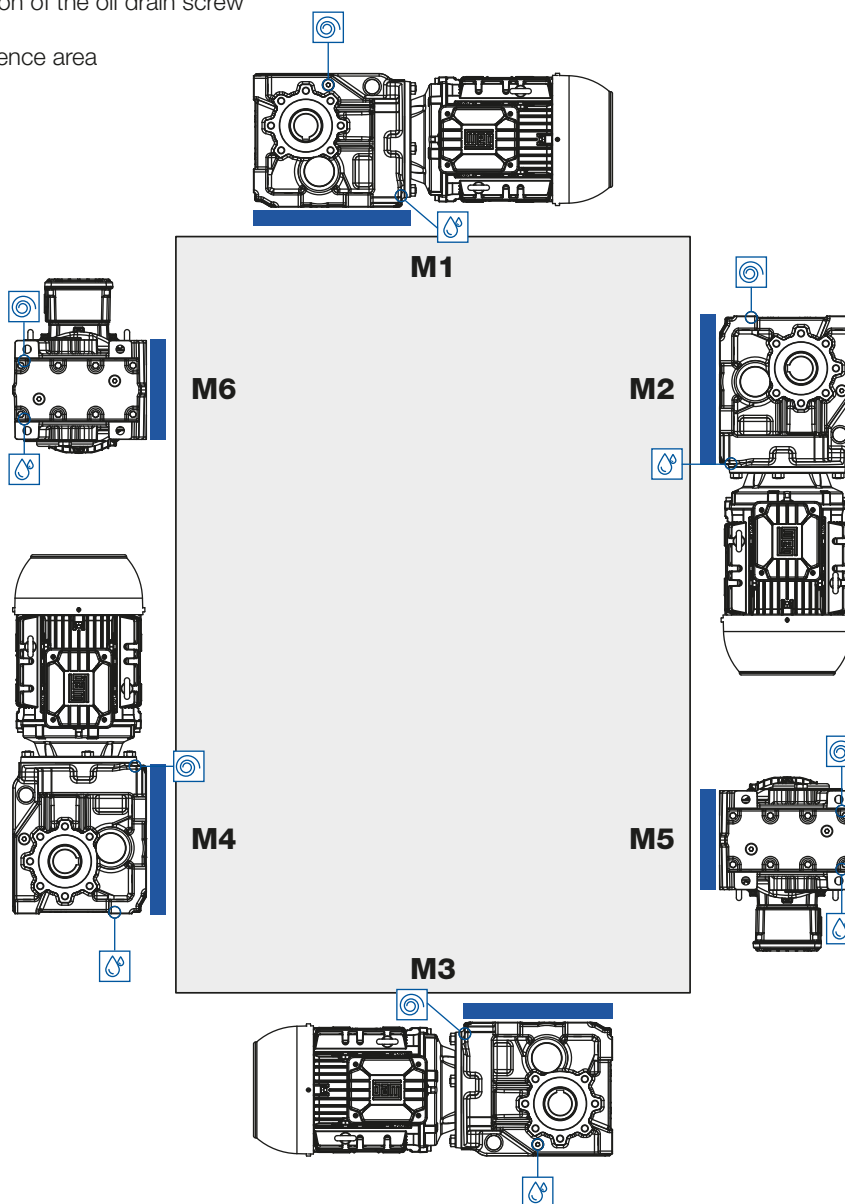


### Mounting positions - Sizes K06 to K15

Position of the venting screw

Position of the oil drain screw

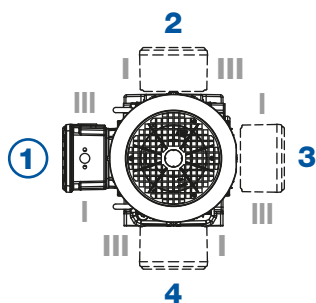
Reference area



**K**

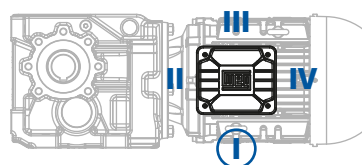
#### Position of the terminal box

Standard: Position 1

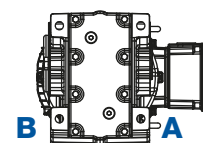


#### Cable entry

Standard: Position I



#### Side indication





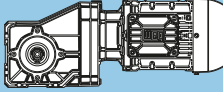
## Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20°C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up to 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

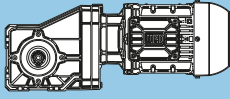
### Structure of the selection tables

1										2			
P <sub>N</sub> = 0.12 kW										IE1			
50 Hz		60 Hz		M <sub>2</sub> Nm	f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.12 kW		0.14 kW					Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	F <sub>rN</sub> kN	F <sub>aN</sub> kN				F <sub>rN</sub> kN	F <sub>aN</sub> kN					
3	4	5	6	7	8	9	10	11	12	13	14		

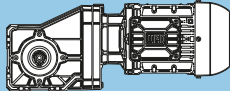
- 1 Rated power of the motor
- 2 Given values are based on the respective efficiency class
- 3 Output speed at 50 Hz
- 4 Output speed at 60 Hz
- 5 Output torque
- 6 Service factor
- 7 Total ratio
- 8 Permissible radial load - Execution with output shaft at midpoint of the shaft (standard bearing) at axial load=0
- 9 Permissible axial load - Execution with output shaft (standard bearing) at radial load=0
- 10 Permissible radial load - Execution with hollow shaft at x=l/2 (standard bearing) and axial load=0
- 11 Permissible axial load - Execution with hollow shaft (standard bearing) at radial load=0
- 12 Geared motor type
- 13 Weight
- 14 Page reference for dimension sheet

\*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

Increased rated power
1.2 x P <sub>N</sub>

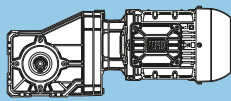
P <sub>N</sub> = 0.12 kW										IE1	
50 Hz 0.12 kW		60 Hz 0.14 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
3.6	4.5	316	1.90	245.70	8.9	11.0	8.9	4.3	KH053-11N-63-06F	20	334
4.6	5.7	251	2.40	194.73	9.2	11.2	9.2	4.5			
5.6	6.9	205	2.95	245.70	9.4	11.4	9.4	4.7	KH053-11N-63-04E	20	334
3.2	4.0	358	1.15	277.79	4.6	7.8	4.6	2.5			
3.9	4.9	293	1.40	227.16	5.5	8.3	5.5	2.7	KH043-11N-63-06F	17	332
5.0	6.2	231	1.75	179.37	6.1	8.6	6.1	3.0			
6.4	7.9	179	2.25	139.08	6.5	8.8	6.5	3.2			
7.8	9.7	147	2.75	113.83	6.7	8.9	6.7	3.3			
4.9	6.1	232	1.75	277.79	6.1	8.6	6.1	3.0	KH043-11N-63-04E	16	332
6.1	7.5	189	2.15	227.16	6.5	8.7	6.5	3.1			
7.7	9.4	149	2.70	179.37	6.7	8.9	6.7	3.3			
5.0	6.2	228	0.90	177.19	3.2	2.4	3.2	2.4	KH033-11N-63-06F	13	330
6.3	7.8	181	1.15	140.80	4.0	2.6	4.0	2.6			
8.2	10	140	1.45	108.75	4.5	2.9	4.5	2.9			
10	13	112	1.80	86.83	4.8	3.0	4.8	3.0			
12	15	93	2.20	71.93	4.9	3.1	4.9	3.1			
14	17	85	2.40	65.63	4.9	3.2	4.9	3.2			
15	19	75	2.70	58.50	5.0	3.2	5.0	3.2			
6.3	7.8	182	1.15	217.88	4.0	2.6	4.0	2.6	KH033-11N-63-04E	13	330
7.8	9.6	148	1.40	177.19	4.4	2.8	4.4	2.8			
9.8	12	117	1.75	140.80	4.7	3.0	4.7	3.0			
13	16	91	2.25	108.75	4.9	3.1	4.9	3.1			
16	20	72	2.80	86.83	5.0	3.2	5.0	3.2			
13	16	89	1.25	68.88	5.1	2.8	5.1	2.8	KH022-11N-63-06F	11	328
14	18	80	1.30	61.75	5.1	2.8	5.1	2.8			
17	21	69	1.60	53.65	5.2	2.8	5.2	2.8			
19	23	62	1.80	48.10	5.2	2.8	5.2	2.8			
20	25	56	2.00	43.50	5.2	2.8	5.2	2.8			
23	28	50	2.20	39.00	5.2	2.8	5.2	2.8			
26	32	44	2.50	34.27	5.2	2.8	5.2	2.8			
29	36	40	2.80	30.73	5.3	2.8	5.3	2.8			
37	46	31	2.65	24.05	5.3	2.8	5.3	2.8			
20	25	57	1.95	68.88	5.2	2.8	5.2	2.8			
22	27	51	2.00	61.75	5.2	2.8	5.2	2.8			
26	32	45	2.50	53.65	5.2	2.8	5.2	2.8			
29	35	40	2.75	48.10	5.3	2.8	5.3	2.8			
32	39	36	3.05	43.50	5.3	2.8	5.3	2.8			
35	43	33	3.40	39.00	5.3	2.8	5.3	2.8			
40	49	29	3.90	34.27	5.3	2.8	5.3	2.8			
45	55	26	4.30	30.73	5.3	2.8	5.3	2.8			
52	64	22	5.00	26.41	5.3	2.8	5.3	2.8			
57	70	20	4.05	24.05	5.3	2.8	5.3	2.8			
58	72	20	5.60	23.68	5.3	2.8	5.3	2.8			
67	82	17	6.00	20.63	5.3	2.8	5.3	2.8			
71	87	16	5.00	19.50	5.3	2.8	5.3	2.8			
74	92	15	6.65	18.50	5.3	2.8	5.3	2.8			
89	110	13	7.25	15.41	5.3	2.8	5.3	2.8			
90	110	13	6.35	15.36	5.3	2.8	5.3	2.8			
100	123	12	8.10	13.81	5.3	2.8	5.3	2.8			
116	143	10	8.25	11.84	5.1	2.8	5.1	2.8			
119	146	10	8.80	11.60	5.1	2.8	5.1	2.8			
132	163	9	9.85	10.40	4.9	2.8	4.9	2.8			
149	183	8	10.55	9.25	4.7	2.8	4.7	2.8			
162	199	7	10.90	8.51	4.6	2.8	4.6	2.8			
180	222	6	12.15	7.63	4.4	2.8	4.4	2.8			
199	245	6	12.85	6.91	4.2	2.8	4.2	2.8			
264	326	4	15.00	5.20	3.9	2.8	3.9	2.8			
360	444	3	17.95	3.82	3.5	2.8	3.5	2.8			

Legend see page 261

P <sub>N</sub> = 0.18 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.18 kW		0.22 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
4.5	5.6	380	2.20	198.00	11.7	14.1	11.7	4.1	KH063-11N-71-06E	35	336
5.7	7.0	301	2.75	156.92	12.0	14.3	12.0	4.4			
3.6	4.5	472	1.30	245.70	7.7	10.6	7.7	3.9	KH053-11N-71-06E	22	334
4.6	5.7	374	1.65	194.73	8.5	10.9	8.5	4.2			
5.9	7.3	290	2.10	151.20	9.0	11.1	9.0	4.4			
7.2	8.9	238	2.55	124.06	9.3	11.3	9.3	4.6			
5.6	6.9	308	1.95	245.70	8.9	11.1	8.9	4.4			
7.0	8.7	244	2.50	194.73	9.2	11.3	9.2	4.6	KH053-11N-63-04F	20	334
3.9	4.9	436	0.95	227.16	2.8	3.9	2.8	2.2	KH043-11N-71-06E	19	332
5.0	6.2	345	1.20	179.37	4.9	8.1	4.9	2.5			
6.4	7.9	267	1.50	139.08	5.8	8.4	5.8	2.8			
7.9	9.7	219	1.85	113.83	6.2	8.6	6.2	3.0			
10	13	168	2.40	87.62	6.6	8.8	6.6	3.2			
12	15	140	2.90	72.92	6.7	8.9	6.7	3.3			
19	23	90	2.25	47.07	6.9	9.0	6.9	3.4			
4.9	6.1	349	1.15	277.79	4.8	8.1	4.8	2.5	KH043-11N-63-04F	17	332
6.0	7.5	285	1.45	227.16	5.6	8.4	5.6	2.8			
7.6	9.5	225	1.80	179.37	6.2	8.6	6.2	3.0			
9.9	12	175	2.30	139.08	6.5	8.8	6.5	3.2			
12	15	143	2.85	113.83	6.7	8.9	6.7	3.3			
8.2	10	209	1.00	108.75	3.6	2.5	3.6	2.5	KH033-11N-71-06E	15	330
10	13	167	1.20	86.83	4.2	2.7	4.2	2.7			
12	15	138	1.45	71.93	4.5	2.9	4.5	2.9			
14	17	126	1.60	65.63	4.6	2.9	4.6	2.9			
15	19	112	1.80	58.50	4.7	3.0	4.7	3.0			
18	22	96	2.10	49.88	4.9	3.1	4.9	3.1			
19	24	89	2.25	46.48	4.9	3.1	4.9	3.1			
23	28	75	2.70	38.80	5.0	3.2	5.0	3.2			
25	31	69	2.95	35.90	5.0	3.3	5.0	3.3			
30	37	58	2.25	29.97	5.0	3.2	5.0	3.2			
7.7	9.6	222	0.90	177.19	3.3	2.4	3.3	2.4	KH033-11N-63-04F	13	330
9.7	12	177	1.15	140.80	4.1	2.7	4.1	2.7			
13	16	136	1.50	108.75	4.5	2.9	4.5	2.9			
16	20	109	1.85	86.83	4.8	3.0	4.8	3.0			
19	24	90	2.25	71.93	4.9	3.1	4.9	3.1			
21	26	82	2.45	65.63	4.9	3.2	4.9	3.2			
23	29	73	2.75	58.50	5.0	3.2	5.0	3.2			
13	16	132	0.85	68.88	4.8	2.8	4.8	2.8	KH022-11N-71-06E	13	328
14	18	119	0.90	61.75	4.9	2.8	4.9	2.8			
17	21	103	1.10	53.65	5.0	2.8	5.0	2.8			
19	23	92	1.20	48.10	5.0	2.8	5.0	2.8			
21	25	84	1.35	43.50	5.1	2.8	5.1	2.8			
23	28	75	1.50	39.00	5.1	2.8	5.1	2.8			
26	32	66	1.70	34.27	5.2	2.8	5.2	2.8			
29	36	59	1.90	30.73	5.2	2.8	5.2	2.8			
34	42	51	2.20	26.41	5.2	2.8	5.2	2.8			
37	46	46	1.80	24.05	5.2	2.8	5.2	2.8			
38	47	45	2.45	23.68	5.2	2.8	5.2	2.8			
43	54	40	2.60	20.63	5.3	2.8	5.3	2.8			
46	57	37	2.20	19.50	5.3	2.8	5.3	2.8			
48	60	36	2.90	18.50	5.3	2.8	5.3	2.8			
58	72	30	2.75	15.36	5.3	2.8	5.3	2.8			

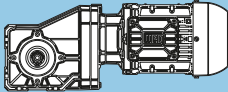


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P <sub>N</sub> = 0.18 kW										IE1	
50 Hz 0.18 kW		60 Hz 0.22 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
20	25	86	1.30	68.88	5.1	2.8	5.1	2.8	KH022-11N-63-04F	11	328
22	28	77	1.35	61.75	5.1	2.8	5.1	2.8			
26	32	67	1.65	53.65	5.2	2.8	5.2	2.8			
28	35	60	1.85	48.10	5.2	2.8	5.2	2.8			
31	39	55	2.05	43.50	5.2	2.8	5.2	2.8			
35	44	49	2.25	39.00	5.2	2.8	5.2	2.8			
40	50	43	2.60	34.27	5.2	2.8	5.2	2.8			
44	55	39	1.35	30.88	5.3	2.8	5.3	2.8			
45	55	39	2.90	30.73	5.3	2.8	5.3	2.8			
52	64	33	3.35	26.41	5.3	2.8	5.3	2.8			
57	71	30	2.70	24.05	5.3	2.8	5.3	2.8			
58	72	30	3.75	23.68	5.3	2.8	5.3	2.8			
66	82	26	4.00	20.63	5.3	2.8	5.3	2.8			
70	87	24	3.35	19.50	5.3	2.8	5.3	2.8			
74	92	23	4.40	18.50	5.3	2.8	5.3	2.8			
89	110	19	4.85	15.41	5.3	2.8	5.3	2.8			
99	123	17	5.40	13.81	5.3	2.8	5.3	2.8			
116	144	15	5.50	11.84	5.1	2.8	5.1	2.8			
118	147	15	5.85	11.60	5.1	2.8	5.1	2.8			
132	163	13	6.55	10.40	4.9	2.8	4.9	2.8			
148	184	12	7.00	9.25	4.7	2.8	4.7	2.8			
161	200	11	7.25	8.51	4.6	2.8	4.6	2.8			
180	223	10	8.05	7.63	4.4	2.8	4.4	2.8			
198	246	9	8.55	6.91	4.3	2.8	4.3	2.8			
263	327	7	10.00	5.20	3.9	2.8	3.9	2.8			
359	445	5	11.90	3.82	3.5	2.8	3.5	2.8			

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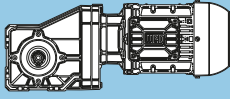
P <sub>N</sub> = 0.25 kW										IE1			
50 Hz		60 Hz		M <sub>2</sub>	f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.25 kW		0.30 kW					Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	F <sub>rN</sub> kN	F <sub>aN</sub> kN				F <sub>rN</sub> kN	F <sub>aN</sub> kN					
3.5	4.3	679	2.30	256.14	19.6	17.6	19.6	6.3	KH073-11N-71-06F	56	338		
4.6	5.6	525	3.00	197.75	19.9	17.9	19.9	6.7					
4.5	5.6	525	1.60	198.00	11.0	13.6	11.0	3.6	KH063-11N-71-06F	36	336		
5.7	7.1	416	2.00	156.92	11.6	13.9	11.6	4.0					
7.4	9.1	323	2.55	121.85	11.9	14.2	11.9	4.3					
11	14	216	2.65	81.53	12.2	14.6	12.2	4.6					
20	25	118	2.65	44.35	12.4	14.7	11.7	4.8					
6.9	8.6	345	2.40	198.00	11.9	14.2	11.9	4.2	KH063-11N-71-04E	34	336		
8.7	11	273	3.00	156.92	12.1	14.4	12.1	4.4					
3.7	4.5	652	0.95	245.70	5.2	8.4	5.2	3.3	KH053-11N-71-06F	23	334		
4.6	5.7	517	1.20	194.73	7.2	10.4	7.2	3.7					
6.0	7.3	401	1.50	151.20	8.3	10.8	8.3	4.1					
7.3	8.9	329	1.85	124.06	8.8	11.0	8.8	4.3					
9.4	12	255	2.40	96.08	9.2	11.2	9.2	4.5					
11	14	213	2.65	80.46	9.4	11.4	9.4	4.7					
23	29	102	2.65	38.32	9.7	11.5	9.7	4.8					
5.6	6.9	428	1.45	245.70	8.1	10.7	8.1	4.0	KH053-11N-71-04E	21	334		
7.0	8.7	339	1.80	194.73	8.7	11.0	8.7	4.3					
9.1	11	263	2.30	151.20	9.2	11.2	9.2	4.5					
11	14	216	2.80	124.06	9.4	11.3	9.4	4.6					
5.0	6.2	476	0.85	179.37	**	**	**	**	KH043-11N-71-06F	19	332		
6.5	8.0	369	1.10	139.08	4.4	7.3	4.4	2.4					
7.9	9.8	302	1.35	113.83	5.4	8.3	5.4	2.7					
10	13	232	1.75	87.62	6.1	8.6	6.1	3.0					
12	15	193	2.10	72.92	6.4	8.7	6.4	3.1					
14	17	176	2.30	66.20	6.5	8.8	6.5	3.2					
16	19	153	2.65	57.58	6.7	8.9	6.7	3.3					
17	20	144	2.80	54.18	6.7	8.9	6.7	3.3					
19	24	125	1.65	47.07	6.8	8.9	6.8	3.3					
23	29	102	2.65	38.49	6.9	9.0	6.9	3.4					
4.9	6.1	484	0.85	277.79	**	**	**	**	KH043-11N-71-04E	17	332		
6.0	7.5	396	1.05	227.16	3.9	6.2	3.9	2.3					
7.6	9.5	313	1.30	179.37	5.3	8.3	5.3	2.7					
9.9	12	242	1.70	139.08	6.1	8.5	6.1	2.9					
12	15	198	2.05	113.83	6.4	8.7	6.4	3.1					
15	19	155	2.45	89.17	6.6	8.9	6.6	3.3					
16	19	153	2.65	87.62	6.7	8.9	6.7	3.3					
29	36	82	2.45	47.07	6.9	9.1	6.9	3.5					
10	13	230	0.90	86.83	3.1	2.3	3.1	2.3	KH033-11N-71-06F	16	330		
13	15	191	1.05	71.93	3.9	2.6	3.9	2.6					
14	17	174	1.15	65.63	4.1	2.7	4.1	2.7					
15	19	155	1.30	58.50	4.4	2.8	4.4	2.8					
18	22	132	1.55	49.88	4.6	2.9	4.6	2.9					
19	24	123	1.65	46.48	4.7	3.0	4.7	3.0					
23	29	103	1.95	38.80	4.8	3.1	4.8	3.1					
25	31	95	2.15	35.90	4.9	3.1	4.9	3.1					
30	37	80	1.65	29.97	5.0	3.1	5.0	3.1					
31	39	76	2.65	28.67	5.0	3.2	5.0	3.2					
37	46	65	2.50	24.38	5.0	3.2	5.0	3.2					
9.7	12	245	0.85	140.80	2.7	2.3	2.7	2.3	KH033-11N-71-04E	14	330		
13	16	190	1.10	108.75	3.9	2.6	3.9	2.6					
16	20	151	1.35	86.83	4.4	2.8	4.4	2.8					
19	24	125	1.60	71.93	4.6	2.9	4.6	2.9					
21	26	114	1.75	65.63	4.7	3.0	4.7	3.0					
23	29	102	2.00	58.50	4.8	3.1	4.8	3.1					
27	34	87	2.35	49.88	4.9	3.2	4.9	3.2					
29	37	81	2.50	46.48	4.9	3.2	4.9	3.2					
35	44	68	3.00	38.80	5.0	3.3	5.0	3.3					
46	57	52	2.50	29.97	5.1	3.3	5.1	3.3					



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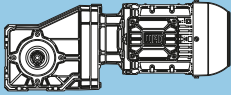
\*\* ... on request



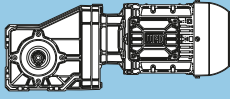
P <sub>N</sub> = 0.25 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.25 kW		0.33 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
17	21	142	0.80	53.65	**	**	**	**	KH022-11N-71-06F	14	328
19	23	128	0.90	48.10	4.8	2.8	4.8	2.8			
21	26	115	1.00	43.50	4.9	2.8	4.9	2.8			
23	28	103	1.10	39.00	5.0	2.8	5.0	2.8			
26	32	91	1.25	34.27	5.1	2.8	5.1	2.8			
29	36	82	1.35	30.73	5.1	2.8	5.1	2.8			
34	42	70	1.60	26.41	5.2	2.8	5.2	2.8			
37	46	64	1.30	24.05	5.2	2.8	5.2	2.8			
38	47	63	1.80	23.68	5.2	2.8	5.2	2.8			
44	54	55	1.90	20.63	5.2	2.8	5.2	2.8			
46	57	52	1.60	19.50	5.2	2.8	5.2	2.8			
49	60	49	2.10	18.50	5.2	2.8	5.2	2.8			
58	72	41	2.30	15.41	5.3	2.8	5.3	2.8			
59	72	41	2.00	15.36	5.3	2.8	5.3	2.8			
65	80	37	2.55	13.81	5.3	2.8	5.3	2.8			
76	94	31	2.60	11.84	5.3	2.8	5.3	2.8			
78	96	31	2.80	11.60	5.3	2.8	5.3	2.8			
20	25	120	0.95	68.88	4.9	2.8	4.9	2.8			
22	28	108	0.95	61.75	4.9	2.8	4.9	2.8			
26	32	93	1.20	53.65	5.0	2.8	5.0	2.8			
28	35	84	1.35	48.10	5.1	2.8	5.1	2.8			
31	39	76	1.50	43.50	5.1	2.8	5.1	2.8			
35	44	68	1.65	39.00	5.2	2.8	5.2	2.8			
40	50	60	1.85	34.27	5.2	2.8	5.2	2.8			
44	55	54	0.95	30.88	5.2	2.8	5.2	2.8			
45	55	54	2.10	30.73	5.2	2.8	5.2	2.8			
52	64	46	2.40	26.41	5.2	2.8	5.2	2.8			
57	71	42	1.95	24.05	5.3	2.8	5.3	2.8			
58	72	41	2.70	23.68	5.3	2.8	5.3	2.8			
66	82	36	2.90	20.63	5.3	2.8	5.3	2.8			
70	87	34	2.40	19.50	5.3	2.8	5.3	2.8			
74	92	32	3.20	18.50	5.3	2.8	5.3	2.8			
89	110	27	3.50	15.41	5.3	2.8	5.3	2.8			
99	123	24	3.90	13.81	5.3	2.8	5.3	2.8			
116	144	21	3.95	11.84	5.1	2.8	5.1	2.8			
118	147	20	4.25	11.60	5.1	2.8	5.1	2.8			
132	163	18	4.70	10.40	4.9	2.8	4.9	2.8			
148	184	16	5.05	9.25	4.7	2.8	4.7	2.8			
161	200	15	5.20	8.51	4.6	2.8	4.6	2.8			
180	223	13	5.80	7.63	4.4	2.8	4.4	2.8			
198	246	12	6.15	6.91	4.3	2.8	4.3	2.8			
263	327	9	7.20	5.20	3.9	2.8	3.9	2.8			
359	445	7	8.60	3.82	3.5	2.8	3.5	2.8			

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\*\* ... on request

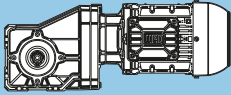
P <sub>N</sub> = 0.37 kW										IE1		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
0.37 kW		0.44 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>			F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
3.6	4.4	984	1.60	256.14	18.5	17.0	18.5	5.7	KH073-11N-80-06E	58	338	
4.7	5.7	760	2.05	197.75	19.3	17.4	19.3	6.2				
5.5	6.8	637	2.45	165.85	19.7	17.7	19.7	6.4				
5.3	6.6	663	2.35	256.14	19.6	17.6	19.6	6.4	KH073-11N-71-04F	55	338	
4.6	5.7	760	1.10	198.00	9.2	12.9	9.2	2.9	KH063-11N-80-06E	38	336	
5.9	7.2	603	1.40	156.92	10.5	13.4	10.5	3.4				
7.6	9.3	468	1.80	121.85	11.3	13.8	11.3	3.8				
9.2	11	384	2.15	99.98	11.7	14.0	11.7	4.1				
11	14	313	1.85	81.53	12.0	14.3	12.0	4.3				
12	15	297	2.80	77.42	12.0	14.3	12.0	4.4				
21	25	170	1.85	44.35	12.3	14.5	11.9	4.5				
6.9	8.5	513	1.60	198.00	11.1	13.6	11.1	3.7	KH063-11N-71-04F	35	336	
8.7	11	406	2.05	156.92	11.6	14.0	11.6	4.0				
11	14	315	2.60	121.85	12.0	14.3	12.0	4.3				
17	21	211	2.75	81.53	12.3	14.6	12.3	4.6				
31	38	115	2.75	44.35	12.4	14.7	10.2	4.8				
4.7	5.8	748	0.85	194.73	2.3	2.3	2.3	2.3	KH053-11N-80-06E	24	334	
6.1	7.5	581	1.05	151.20	6.4	10.2	6.4	3.5				
7.4	9.1	476	1.30	124.06	7.6	10.6	7.6	3.9				
9.6	12	369	1.65	96.08	8.5	10.9	8.5	4.2				
11	14	309	1.85	80.46	8.9	11.1	8.9	4.4				
13	15	281	2.15	73.08	9.1	11.2	9.1	4.5				
14	18	245	2.45	63.77	9.2	11.3	9.2	4.6				
15	19	231	2.60	60.26	9.3	11.3	9.3	4.6				
24	29	147	1.85	38.32	9.6	11.3	9.6	4.6				
5.6	6.9	636	0.95	245.70	5.5	9.1	5.5	3.4	KH053-11N-71-04F	22	334	
7.0	8.7	504	1.20	194.73	7.4	10.5	7.4	3.8				
9.0	11	391	1.55	151.20	8.4	10.8	8.4	4.1				
11	14	321	1.90	124.06	8.9	11.0	8.9	4.3				
14	18	249	2.45	96.08	9.2	11.2	9.2	4.5				
17	21	208	2.75	80.46	9.4	11.4	9.4	4.7				
36	44	99	2.75	38.32	9.7	11.6	9.7	4.9				
8.1	9.9	437	0.95	113.83	2.8	3.9	2.8	2.2	KH043-11N-80-06E	21	332	
10	13	337	1.20	87.62	5.0	8.2	5.0	2.6				
13	15	280	1.45	72.92	5.7	8.4	5.7	2.8				
14	17	254	1.60	66.20	5.9	8.5	5.9	2.9				
16	20	221	1.85	57.58	6.2	8.6	6.2	3.0				
17	21	208	1.95	54.18	6.3	8.7	6.3	3.1				
20	24	181	1.15	47.07	6.5	8.6	6.5	3.0				
21	26	169	2.40	43.93	6.6	8.8	6.6	3.2				
24	29	148	1.85	38.49	6.7	8.7	6.7	3.1				
25	31	141	2.75	36.78	6.7	8.9	6.7	3.3				
30	37	117	2.80	30.39	6.8	8.9	6.8	3.3				
7.6	9.4	464	0.90	179.37	1.5	1.1	1.5	1.1	KH043-11N-71-04F	18	332	
9.8	12	360	1.15	139.08	4.6	7.8	4.6	2.5				
12	15	295	1.40	113.83	5.5	8.3	5.5	2.7				
15	19	231	1.65	89.17	6.2	8.6	6.2	3.0				
16	19	227	1.80	87.62	6.2	8.6	6.2	3.0				
19	23	189	2.15	72.92	6.5	8.7	6.5	3.1				
21	25	171	2.35	66.20	6.6	8.8	6.6	3.2				
24	29	149	2.70	57.58	6.7	8.9	6.7	3.3				
25	31	140	2.90	54.18	6.7	8.9	6.7	3.3				
29	36	122	1.65	47.07	6.8	8.9	6.8	3.3				
35	44	100	2.75	38.49	6.9	9.0	6.9	3.4				

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P <sub>N</sub> = 0.37 kW										IE1	
50 Hz 0.37 kW		60 Hz 0.44 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
14	17	252	0.80	65.63	**	**	**	**	KH033-11N-80-06E	17	330
16	19	225	0.90	58.50	3.3	2.4	3.3	2.4			
18	23	192	1.05	49.88	3.9	2.6	3.9	2.6			
20	24	179	1.15	46.48	4.1	2.6	4.1	2.6			
24	29	149	1.35	38.80	4.4	2.8	4.4	2.8			
26	31	138	1.50	35.90	4.5	2.9	4.5	2.9			
30	37	116	1.75	30.29	4.7	3.0	4.7	3.0			
31	38	115	1.15	29.97	4.7	2.8	4.7	2.8			
32	39	110	1.85	28.67	4.8	3.0	4.8	3.0			
38	46	94	1.75	24.38	4.9	3.0	4.9	3.0			
42	52	83	2.45	21.67	4.9	3.2	4.9	3.2			
47	58	74	2.20	19.37	5.0	3.1	5.0	3.1			
61	76	57	2.85	14.96	5.0	3.2	5.0	3.2			
16	19	225	0.90	86.83	3.3	2.4	3.3	2.4	KH033-11N-71-04F	15	330
19	23	186	1.10	71.93	3.9	2.6	3.9	2.6			
21	26	170	1.20	65.63	4.2	2.7	4.2	2.7			
23	29	151	1.35	58.50	4.4	2.8	4.4	2.8			
27	34	129	1.55	49.88	4.6	2.9	4.6	2.9			
29	36	120	1.70	46.48	4.7	3.0	4.7	3.0			
35	43	100	2.00	38.80	4.8	3.1	4.8	3.1			
38	47	93	2.20	35.90	4.9	3.1	4.9	3.1			
46	56	78	1.70	29.97	5.0	3.1	5.0	3.1			
48	59	74	2.70	28.67	5.0	3.2	5.0	3.2			
56	69	63	2.55	24.38	5.0	3.2	5.0	3.2			
27	33	132	0.85	34.27	4.8	2.8	4.8	2.8			
30	37	118	0.95	30.73	4.9	2.8	4.9	2.8			
35	43	101	1.10	26.41	5.0	2.8	5.0	2.8			
38	47	92	0.90	24.05	5.0	2.8	5.0	2.8			
39	48	91	1.25	23.68	5.1	2.8	5.1	2.8			
45	55	79	1.30	20.63	5.1	2.8	5.1	2.8			
47	58	75	1.10	19.50	5.1	2.8	5.1	2.8			
50	61	71	1.45	18.50	5.2	2.8	5.2	2.8			
60	73	59	1.60	15.41	5.2	2.8	5.2	2.8			
67	82	53	1.80	13.81	5.2	2.8	5.2	2.8			
69	85	51	1.75	13.29	5.2	2.8	5.2	2.8			
77	95	46	1.95	11.92	5.2	2.8	5.2	2.8			
78	95	45	1.80	11.84	5.2	2.8	5.2	2.8			
79	97	45	1.95	11.60	5.2	2.8	5.2	2.8			
88	109	40	2.15	10.40	5.3	2.8	5.3	2.8			
99	122	36	2.30	9.25	5.3	2.8	5.3	2.8			
108	133	33	2.40	8.51	5.3	2.8	5.3	2.8			
121	148	29	2.65	7.63	5.1	2.8	5.1	2.8			
133	164	27	2.80	6.91	4.9	2.8	4.9	2.8			

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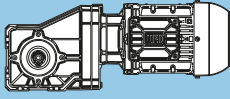
\*\* ... on request

P <sub>N</sub> = 0.37 kW										IE1		
50 Hz		60 Hz		f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.37 kW		0.44 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	F <sub>rN</sub> kN			F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN				
25	31	139	0.80	53.65	**	**	**	**	KH022-11N-71-04F	13	328	
28	35	125	0.90	48.10	4.8	2.8	4.8	2.8				
31	39	113	1.00	43.50	4.9	2.8	4.9	2.8				
35	43	101	1.10	39.00	5.0	2.8	5.0	2.8				
40	49	89	1.25	34.27	5.1	2.8	5.1	2.8				
44	55	80	1.40	30.73	5.1	2.8	5.1	2.8				
52	64	68	1.65	26.41	5.2	2.8	5.2	2.8				
57	70	62	1.35	24.05	5.2	2.8	5.2	2.8				
58	71	61	1.80	23.68	5.2	2.8	5.2	2.8				
66	82	53	1.95	20.63	5.2	2.8	5.2	2.8				
70	86	50	1.65	19.50	5.2	2.8	5.2	2.8				
74	91	48	2.15	18.50	5.2	2.8	5.2	2.8				
89	109	40	2.35	15.41	5.3	2.8	5.3	2.8				
99	122	36	2.65	13.81	5.3	2.8	5.3	2.8				
115	142	31	2.65	11.84	5.2	2.8	5.2	2.8				
118	145	30	2.85	11.60	5.2	2.8	5.2	2.8				
131	162	27	3.20	10.40	5.0	2.8	5.0	2.8				
148	182	24	3.40	9.25	4.8	2.8	4.8	2.8				
160	198	22	3.50	8.51	4.6	2.8	4.6	2.8				
179	221	20	3.90	7.63	4.5	2.8	4.5	2.8				
198	244	18	4.15	6.91	4.3	2.8	4.3	2.8				
263	324	13	4.85	5.20	3.9	2.8	3.9	2.8				
357	441	10	5.80	3.82	3.5	2.8	3.5	2.8				

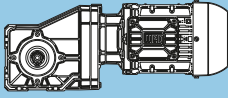


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\*\* ... on request

P <sub>N</sub> = 0.55 kW										IE1	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
0.55 kW		0.66 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
4.5	5.5	1164	2.60	206.12	28.2	43.3	28.2	10.8	KH083-11N-80-06F	100	340
3.6	4.5	1447	1.10	256.14	16.0	16.0	16.0	4.8			
4.7	5.8	1117	1.40	197.75	17.9	16.7	17.9	5.4			
5.6	6.9	937	1.70	165.85	18.7	17.1	18.7	5.8			
7.1	8.8	735	2.15	130.16	19.4	17.5	19.4	6.2			
9.3	11	567	2.75	100.45	19.8	17.8	19.5	6.6			
20	24	269	2.30	47.56	20.3	18.2	14.6	6.9			
5.5	6.7	951	1.65	256.14	18.7	17.0	18.7	5.8	KH073-11N-80-04E	57	338
7.2	8.7	734	2.15	197.75	19.4	17.5	19.4	6.2			
8.5	10	616	2.55	165.85	19.7	17.7	19.7	6.5			
5.9	7.3	886	0.95	156.92	7.7	12.5	7.7	2.5	KH063-11N-80-06F	39	336
7.6	9.4	688	1.20	121.85	9.9	13.1	9.9	3.1			
9.3	11	565	1.50	99.98	10.8	13.5	10.8	3.5			
11	14	460	1.25	81.53	11.4	13.8	11.4	3.9			
12	15	437	1.90	77.42	11.5	13.9	11.5	3.9			
14	18	365	2.25	64.62	11.8	14.1	11.8	4.2			
16	19	333	2.50	58.89	11.9	14.2	11.9	4.3			
19	23	274	3.00	48.56	12.1	14.4	12.1	4.4			
21	26	250	1.25	44.35	12.2	14.1	12.2	4.2			
26	32	199	2.30	35.15	12.3	14.4	11.3	4.4			
7.1	8.7	735	1.15	198.00	9.4	12.9	9.4	3.0	KH063-11N-80-04E	37	336
9.0	11	582	1.45	156.92	10.7	13.4	10.7	3.5			
12	14	452	1.85	121.85	11.4	13.8	11.4	3.9			
14	17	371	2.25	99.98	11.8	14.1	11.8	4.1			
17	21	303	1.90	81.53	12.0	14.3	12.0	4.3			
18	22	287	2.90	77.42	12.1	14.3	12.1	4.4			
32	39	165	1.90	44.35	12.3	14.5	10.4	4.6			
7.5	9.2	701	0.90	124.06	4.0	5.9	4.0	3.2	KH053-11N-80-06F	26	334
9.7	12	543	1.15	96.08	6.9	10.4	6.9	3.7			
12	14	454	1.25	80.46	7.9	10.6	7.9	3.9			
13	16	413	1.50	73.08	8.2	10.8	8.2	4.1			
15	19	340	1.80	60.26	8.7	11.0	8.7	4.3			
19	23	280	2.15	49.52	9.1	11.2	9.1	4.5			
22	27	237	2.55	42.00	9.3	11.3	9.3	4.6			
23	28	229	2.65	40.63	9.3	11.3	9.3	4.6			
24	30	216	1.25	38.32	9.4	11.0	9.4	4.3			
31	38	172	2.30	30.37	9.5	11.2	9.5	4.5			
7.3	8.9	723	0.85	194.73	3.3	4.4	3.3	3.1	KH053-11N-80-04E	24	334
9.4	11	561	1.10	151.20	6.7	10.3	6.7	3.6			
11	14	461	1.35	124.06	7.8	10.6	7.8	3.9			
15	18	357	1.70	96.08	8.6	10.9	8.6	4.2			
18	21	299	1.90	80.46	9.0	11.1	9.0	4.4			
19	24	271	2.25	73.08	9.1	11.2	9.1	4.5			
22	27	237	2.55	63.77	9.3	11.3	9.3	4.6			
23	29	224	2.70	60.26	9.3	11.3	9.3	4.6			
37	45	142	1.90	38.32	9.6	11.4	9.6	4.7			

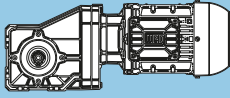
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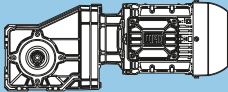
P <sub>N</sub> = 0.55 kW										IE1		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
0.55 kW		0.66 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>			i	F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN			
10	13	504	0.80	89.17	**	**	**	**	KH043-11N-80-06F	22	332	
11	13	495	0.85	87.62	**	**	**	**				
13	16	412	1.00	72.92	3.5	5.4	3.5	2.3				
14	17	374	1.10	66.20	4.4	7.3	4.4	2.4				
16	20	325	1.25	57.58	5.1	8.2	5.1	2.6				
17	21	306	1.35	54.18	5.4	8.3	5.4	2.7				
20	24	266	0.80	47.07	**	**	**	**				
21	26	248	1.65	43.93	6.0	8.5	6.0	2.9				
24	30	217	1.25	38.49	6.3	8.4	6.3	2.8				
25	31	208	1.85	36.78	6.3	8.7	6.3	3.1				
31	38	168	2.15	29.81	6.6	8.8	6.6	3.2				
33	41	159	2.55	28.13	6.6	8.9	6.6	3.3				
39	48	133	2.35	23.57	6.8	8.8	6.8	3.2				
48	59	109	2.70	19.29	6.8	8.9	6.8	3.3				
10	12	516	0.80	139.08	**	**	**	**	KH043-11N-80-04E	20	332	
12	15	423	0.95	113.83	3.2	4.7	3.2	2.2				
16	20	325	1.25	87.62	5.1	8.2	5.1	2.6				
19	24	271	1.50	72.92	5.8	8.4	5.8	2.8				
21	26	246	1.65	66.20	6.0	8.5	6.0	2.9				
25	30	214	1.90	57.58	6.3	8.6	6.3	3.0				
26	32	201	2.00	54.18	6.4	8.7	6.4	3.1				
30	37	175	1.15	47.07	6.5	8.6	6.5	3.0				
32	39	163	2.50	43.93	6.6	8.8	6.6	3.2				
37	45	143	1.90	38.49	6.7	8.8	6.7	3.2				
38	47	137	2.85	36.78	6.7	9.0	6.7	3.4				
39	47	136	2.95	36.54	6.7	9.0	6.7	3.4				
47	57	113	2.90	30.39	6.8	8.9	6.8	3.3				
20	25	263	0.80	46.48	**	**	**	**	KH033-11N-80-06F	19	330	
24	29	219	0.95	38.80	3.4	2.4	3.4	2.4				
26	32	203	1.00	35.90	3.7	2.5	3.7	2.5				
31	38	171	1.20	30.29	4.2	2.7	4.2	2.7				
32	40	162	1.25	28.67	4.3	2.7	4.3	2.7				
38	47	138	1.20	24.38	4.5	2.7	4.5	2.7				
43	53	122	1.65	21.67	4.7	3.0	4.7	3.0				
48	59	109	1.50	19.37	4.8	2.9	4.8	2.9				
56	69	93	2.20	16.47	4.9	3.1	4.9	3.1				
62	76	84	1.95	14.96	4.9	3.0	4.9	3.0				
73	89	72	2.80	12.81	5.0	3.2	5.0	3.2				
78	95	67	2.45	11.94	5.0	3.2	5.0	3.2				
22	26	244	0.85	65.63	2.8	2.3	2.8	2.3	KH033-11N-80-04E	17	330	
24	29	217	0.95	58.50	3.4	2.4	3.4	2.4				
28	35	185	1.10	49.88	4.0	2.6	4.0	2.6				
30	37	173	1.20	46.48	4.1	2.7	4.1	2.7				
36	44	144	1.40	38.80	4.5	2.8	4.5	2.8				
39	48	133	1.55	35.90	4.6	2.9	4.6	2.9				
47	57	112	1.80	30.29	4.7	3.0	4.7	3.0				
49	60	106	1.90	28.67	4.8	3.0	4.8	3.0				
58	71	90	1.80	24.38	4.9	3.0	4.9	3.0				
65	80	80	2.50	21.67	4.9	3.2	4.9	3.2				
73	89	72	2.30	19.37	5.0	3.1	5.0	3.1				
95	115	56	2.95	14.96	5.1	3.3	5.1	3.3				



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\*\* ... on request

P <sub>N</sub> = 0.55 kW										IE1				
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page			
0.55 kW		0.66 kW			Output shaft		Hollow shaft							
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN						
39	48	134	0.85	23.68	4.7	2.8	4.7	2.8	KH022-11N-80-06F	17	328			
45	55	117	0.90	20.63	4.9	2.8	4.9	2.8						
50	62	104	1.00	18.50	5.0	2.8	5.0	2.8						
60	74	87	1.10	15.41	5.1	2.8	5.1	2.8						
61	74	87	0.95	15.36	5.1	2.8	5.1	2.8						
67	83	78	1.20	13.81	5.1	2.8	5.1	2.8						
70	86	75	1.20	13.29	5.1	2.8	5.1	2.8						
78	96	67	1.35	11.92	5.2	2.8	5.2	2.8						
79	96	67	1.25	11.84	5.2	2.8	5.2	2.8						
80	98	66	1.30	11.60	5.2	2.8	5.2	2.8						
89	110	59	1.45	10.40	5.2	2.8	5.2	2.8						
101	123	52	1.60	9.25	5.2	2.8	5.2	2.8						
109	134	48	1.65	8.51	5.2	2.8	5.2	2.8						
122	149	43	1.80	7.63	5.2	2.8	5.2	2.8						
135	165	39	1.90	6.91	5.0	2.8	5.0	2.8						
156	191	34	2.05	5.96	4.7	2.8	4.7	2.8						
179	219	29	2.25	5.20	4.5	2.8	4.5	2.8						
243	298	22	2.65	3.82	4.0	2.8	4.0	2.8						
36	44	145	0.80	39.00	**	**	**	**				KH022-11N-80-04E	15	328
41	50	127	0.90	34.27	4.8	2.8	4.8	2.8						
46	56	114	1.00	30.73	4.9	2.8	4.9	2.8						
54	65	98	1.15	26.41	5.0	2.8	5.0	2.8						
59	72	89	0.95	24.05	5.1	2.8	5.1	2.8						
60	73	88	1.30	23.68	5.1	2.8	5.1	2.8						
69	84	77	1.35	20.63	5.1	2.8	5.1	2.8						
73	88	72	1.15	19.50	5.1	2.8	5.1	2.8						
76	93	69	1.50	18.50	5.2	2.8	5.2	2.8						
92	112	57	1.65	15.41	5.2	2.8	5.2	2.8						
102	125	51	1.85	13.81	5.2	2.8	5.2	2.8						
106	130	49	1.85	13.29	5.2	2.8	5.2	2.8						
119	145	44	2.05	11.92	5.2	2.8	5.2	2.8						
120	146	44	1.85	11.84	5.2	2.8	5.2	2.8						
122	149	43	2.00	11.60	5.2	2.8	5.2	2.8						
136	166	39	2.25	10.40	5.0	2.8	5.0	2.8						
153	186	34	2.40	9.25	4.8	2.8	4.8	2.8						
166	203	32	2.45	8.51	4.6	2.8	4.6	2.8						
185	226	28	2.75	7.63	4.4	2.8	4.4	2.8						
205	250	26	2.90	6.91	4.3	2.8	4.3	2.8						
237	289	22	3.15	5.96	4.1	2.8	4.1	2.8						
272	332	19	3.40	5.20	3.9	2.8	3.9	2.8						
370	452	14	4.05	3.82	3.5	2.8	3.5	2.8						

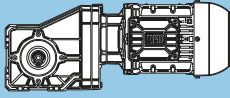
<b>P<sub>N</sub> = 0.75 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
4.6	5.6	1571	1.95	206.12	27.1	42.7	27.1	10.2	<b>KH083-11P-90S/L-06E</b>	107	340
5.8	7.0	1243	2.45	163.14	28.0	43.2	28.0	10.7			
6.6	8.0	1085	2.80	142.45	28.3	43.4	28.3	10.9			
6.9	8.4	1032	2.95	206.12	28.4	43.5	28.4	11.0	<b>KH083-11P-80-04F</b>	101	340
3.7	4.5	1952	0.80	256.14	**	**	**	**	<b>KH073-11P-90S/L-06E</b>	66	338
4.8	5.8	1507	1.05	197.75	15.5	15.9	15.5	4.6			
5.7	6.9	1264	1.25	165.85	17.1	16.4	17.1	5.1			
7.2	8.8	992	1.60	130.16	18.5	17.0	18.5	5.7			
9.4	11	765	2.05	100.45	19.3	17.4	19.3	6.2			
11	14	633	2.45	83.09	19.7	17.7	18.9	6.4			
12	15	588	2.65	77.11	19.8	17.8	18.2	6.5			
13	16	538	2.90	70.67	19.9	17.9	17.6	6.6			
20	24	362	1.70	47.56	20.2	17.9	15.0	6.6			
26	31	280	2.75	36.72	20.3	18.1	13.5	6.9			
5.6	6.8	1283	1.25	256.14	17.0	16.3	17.0	5.1	<b>KH073-11P-80-04F</b>	60	338
7.2	8.8	990	1.60	197.75	18.5	17.0	18.5	5.7			
8.6	10	831	1.90	165.85	19.1	17.3	19.1	6.0			
11	13	652	2.40	130.16	19.6	17.7	18.9	6.4			
14	17	500	2.60	99.87	20.0	18.0	17.1	6.7			
30	37	238	2.60	47.56	20.4	18.3	12.8	7.0			
7.7	9.4	928	0.90	121.85	7.0	11.1	7.0	2.4	<b>KH063-11P-90S/L-06E</b>	46	336
9.4	11	762	1.10	99.98	9.2	12.9	9.2	2.9			
12	15	590	1.40	77.42	10.6	13.4	10.6	3.4			
15	18	492	1.70	64.62	11.2	13.7	11.2	3.7			
16	19	449	1.85	58.89	11.4	13.8	11.4	3.9			
19	24	370	2.25	48.56	11.8	14.1	11.8	4.1			
21	26	338	0.95	44.35	11.9	13.7	11.9	3.8			
23	28	314	2.65	41.17	12.0	14.3	12.0	4.3			
24	29	303	2.65	39.83	12.0	14.3	12.0	4.3			
27	33	268	1.70	35.15	12.1	14.1	11.6	4.1			
28	34	258	2.95	33.85	12.1	14.4	11.2	4.5			
34	42	208	2.45	27.29	12.3	14.3	10.5	4.4			
42	51	171	2.95	22.40	12.3	14.5	9.6	4.5			
7.2	8.8	992	0.85	198.00	5.9	8.7	5.9	2.2	<b>KH063-11P-80-04F</b>	40	336
9.1	11	786	1.05	156.92	8.9	12.8	8.9	2.8			
12	14	610	1.35	121.85	10.5	13.3	10.5	3.4			
14	17	501	1.65	99.98	11.2	13.7	11.2	3.7			
18	22	388	2.15	77.42	11.7	14.0	11.7	4.1			
22	27	324	2.55	64.62	11.9	14.2	11.9	4.3			
24	30	295	2.80	58.89	12.0	14.3	12.0	4.4			
32	39	222	1.45	44.35	12.2	14.3	10.8	4.3			
41	50	176	2.60	35.15	12.3	14.5	9.7	4.5			
9.8	12	732	0.85	96.08	3.0	3.8	3.0	3.1	<b>KH053-11P-90S/L-06E</b>	33	334
12	14	613	0.95	80.46	5.9	9.9	5.9	3.4			
13	16	557	1.10	73.08	6.7	10.3	6.7	3.6			
15	18	486	1.25	63.77	7.6	10.5	7.6	3.8			
16	19	459	1.35	60.26	7.8	10.6	7.8	3.9			
19	23	377	1.60	49.52	8.5	10.9	8.5	4.2			
22	27	320	1.90	42.00	8.9	11.0	8.9	4.3			
23	28	310	1.95	40.63	8.9	11.1	8.9	4.4			
25	30	292	0.95	38.32	9.0	10.7	9.0	4.0			
27	33	263	2.30	34.53	9.2	11.2	9.2	4.5			
30	36	240	2.55	31.46	9.3	11.3	9.3	4.6			
31	38	231	1.70	30.37	9.3	11.0	9.3	4.3			
34	42	209	2.80	27.39	9.4	11.4	9.4	4.7			
40	49	180	2.30	23.58	9.5	11.2	9.5	4.5			
49	59	147	2.85	19.35	9.6	11.3	9.6	4.6			



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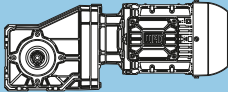
\*\* ... on request



P <sub>N</sub> = 0.75 kW										IE3		
50 Hz		60 Hz		f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
0.75 kW		0.90 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm				F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
9.5	12	757	0.80	151.20	**	**	**	**	KH053-11P-80-04F	26	334	
12	14	621	1.00	124.06	5.7	9.5	5.7	3.4				
15	18	481	1.25	96.08	7.6	10.5	7.6	3.8				
18	22	403	1.40	80.46	8.3	10.8	8.3	4.1				
20	24	366	1.65	73.08	8.6	10.9	8.6	4.2				
22	27	319	1.90	63.77	8.9	11.0	8.9	4.3				
24	29	302	2.00	60.26	9.0	11.1	9.0	4.4				
29	35	248	2.45	49.52	9.2	11.2	9.2	4.5				
34	41	210	2.90	42.00	9.4	11.4	9.4	4.7				
35	43	204	2.95	40.63	9.4	11.4	9.4	4.7				
37	45	192	1.40	38.32	9.4	11.1	9.4	4.4				
47	57	152	2.60	30.37	9.6	11.3	9.6	4.6				
14	17	504	0.80	66.20	**	**	**	**	KH043-11P-90S/L-06E	29	332	
16	20	439	0.95	57.58	2.7	3.6	2.7	2.1				
17	21	413	1.00	54.18	3.5	5.3	3.5	2.2				
21	26	340	1.20	44.64	4.9	8.1	4.9	2.5				
24	30	293	0.95	38.49	5.5	8.0	5.5	2.4				
26	31	280	1.40	36.78	5.7	8.4	5.7	2.8				
31	38	232	1.40	30.39	6.1	8.3	6.1	2.7				
32	38	227	1.60	29.81	6.2	8.6	6.2	3.0				
33	41	214	1.90	28.13	6.3	8.6	6.3	3.0				
40	49	180	1.75	23.57	6.5	8.6	6.5	3.0				
44	54	162	2.50	21.25	6.6	8.9	6.6	3.3				
49	59	147	2.05	19.29	6.7	8.7	6.7	3.1				
63	77	113	2.50	14.85	6.8	8.9	6.8	3.3				
16	20	439	0.95	87.62	2.7	3.6	2.7	2.1	KH043-11P-80-04F	23	332	
20	24	365	1.10	72.92	4.5	7.5	4.5	2.4				
22	26	332	1.25	66.20	5.0	8.2	5.0	2.6				
25	30	288	1.40	57.58	5.6	8.3	5.6	2.7				
26	32	271	1.50	54.18	5.8	8.4	5.8	2.8				
30	37	236	0.85	47.07	6.1	8.3	6.1	2.7				
32	39	224	1.80	44.64	6.2	8.6	6.2	3.0				
33	40	220	1.85	43.93	6.2	8.6	6.2	3.0				
37	45	193	1.45	38.49	6.4	8.5	6.4	2.9				
39	47	184	2.10	36.78	6.5	8.8	6.5	3.2				
47	57	152	2.15	30.39	6.7	8.7	6.7	3.1				
48	58	149	2.45	29.81	6.7	8.9	6.7	3.3				
51	62	141	2.85	28.13	6.7	8.9	6.7	3.3				
61	74	118	2.65	23.57	6.8	8.9	6.8	3.3				
31	38	231	0.90	30.29	3.1	2.3	3.1	2.3	KH033-11P-90S/L-06E	26	330	
33	40	218	0.95	28.67	3.4	2.4	3.4	2.4				
39	47	186	0.90	24.38	4.0	2.3	4.0	2.3				
43	53	165	1.25	21.67	4.2	2.7	4.2	2.7				
49	59	148	1.15	19.37	4.4	2.6	4.4	2.6				
57	70	125	1.60	16.47	4.6	2.9	4.6	2.9				
63	77	114	1.45	14.96	4.7	2.8	4.7	2.8				
73	89	98	2.05	12.81	4.8	3.1	4.8	3.1				
79	96	91	1.80	11.94	4.9	3.0	4.9	3.0				
94	115	76	2.65	10.00	5.0	3.2	5.0	3.2				
104	127	69	2.40	9.03	5.0	3.2	5.0	3.2				
137	167	52	2.90	6.86	5.1	3.3	5.1	3.3				

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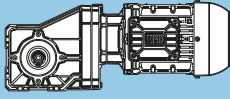
\*\* ... on request

<b>P<sub>N</sub> = 0.75 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>0.75 kW</b>		<b>0.90 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
29	35	250	0.85	49.88	2.6	2.2	2.6	2.2	<b>KH033-11P-80-04F</b>	19	330
31	37	233	0.90	46.48	3.1	2.3	3.1	2.3			
37	45	194	1.05	38.80	3.8	2.6	3.8	2.6			
40	48	180	1.15	35.90	4.0	2.6	4.0	2.6			
47	57	152	1.35	30.29	4.4	2.8	4.4	2.8			
48	58	150	0.90	29.97	4.4	2.6	4.4	2.6			
50	61	144	1.40	28.67	4.5	2.8	4.5	2.8			
59	71	122	1.35	24.38	4.7	2.8	4.7	2.8			
66	80	109	1.85	21.67	4.8	3.0	4.8	3.0			
74	90	97	1.70	19.37	4.9	3.0	4.9	3.0			
87	106	82	2.45	16.47	4.9	3.2	4.9	3.2			
96	116	75	2.20	14.96	5.0	3.1	5.0	3.1			
120	146	60	2.75	11.94	5.0	3.2	5.0	3.2			
61	74	117	0.80	15.41	**	**	**	**	<b>KH022-11P-90S/L-06E</b>	24	328
68	83	105	0.90	13.81	5.0	2.8	5.0	2.8			
71	86	101	0.90	13.29	5.0	2.8	5.0	2.8			
79	96	91	1.00	11.92	5.1	2.8	5.1	2.8			
81	99	88	1.00	11.60	5.1	2.8	5.1	2.8			
90	110	79	1.10	10.40	5.1	2.8	5.1	2.8			
102	124	70	1.15	9.25	5.2	2.8	5.2	2.8			
110	135	65	1.20	8.51	5.2	2.8	5.2	2.8			
123	150	58	1.35	7.63	5.2	2.8	5.2	2.8			
136	166	53	1.45	6.91	5.0	2.8	5.0	2.8			
158	192	45	1.55	5.96	4.8	2.8	4.8	2.8			
181	220	40	1.65	5.20	4.5	2.8	4.5	2.8			
246	300	29	2.00	3.82	4.1	2.8	4.1	2.8			
54	66	132	0.85	26.41	4.8	2.8	4.8	2.8	<b>KH022-11P-80-04F</b>	17	328
60	73	119	0.95	23.68	4.9	2.8	4.9	2.8			
69	84	103	1.00	20.63	5.0	2.8	5.0	2.8			
73	89	98	0.85	19.50	5.0	2.8	5.0	2.8			
77	94	93	1.15	18.50	5.0	2.8	5.0	2.8			
93	113	77	1.25	15.41	5.1	2.8	5.1	2.8			
104	126	69	1.35	13.81	5.2	2.8	5.2	2.8			
108	131	67	1.35	13.29	5.2	2.8	5.2	2.8			
120	146	60	1.50	11.92	5.2	2.8	5.2	2.8			
121	147	59	1.40	11.84	5.2	2.8	5.2	2.8			
123	150	58	1.50	11.60	5.2	2.8	5.2	2.8			
138	167	52	1.65	10.40	5.0	2.8	5.0	2.8			
155	188	46	1.75	9.25	4.8	2.8	4.8	2.8			
168	204	43	1.85	8.51	4.6	2.8	4.6	2.8			
187	228	38	2.05	7.63	4.5	2.8	4.5	2.8			
207	252	35	2.15	6.91	4.3	2.8	4.3	2.8			
240	292	30	2.35	5.96	4.1	2.8	4.1	2.8			
275	335	26	2.50	5.20	3.9	2.8	3.9	2.8			
374	455	19	3.00	3.82	3.5	2.8	3.5	2.8			

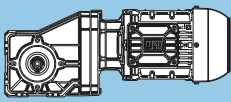


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\*\* ... on request

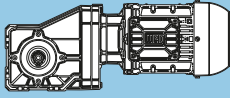
P <sub>N</sub> = 1.1 kW										IE3	
50 Hz 1.1 kW		60 Hz 1.3 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
5.7	6.9	1852	2.45	169.25	38.2	42.6	38.2	42.6	KH093-11P-100L-06D	161	342
6.7	8.1	1566	2.90	143.08	38.7	43.0	38.7	43.0			
7.1	8.5	1488	2.05	206.12	27.3	42.8	27.3	10.3	KH083-11P-90S/L-04E	105	340
8.9	11	1178	2.55	163.14	28.1	43.3	28.1	10.8			
10	12	1028	2.95	142.45	28.4	43.5	27.9	11.0			
4.7	5.7	2256	1.35	206.12	24.3	41.7	24.3	9.2	KH083-11P-100L-06D	111	340
5.9	7.1	1785	1.70	163.14	26.3	42.4	26.3	9.9			
6.7	8.2	1559	1.95	142.45	27.1	42.7	27.1	10.2			
7.6	9.3	1378	2.20	125.90	27.6	43.0	27.6	10.5			
9.0	11	1165	2.60	106.46	28.2	43.3	28.2	10.8			
10	13	1001	3.00	91.51	28.5	43.5	27.8	11.0			
5.7	6.9	1849	0.85	256.14	12.3	15.2	12.3	3.9	KH073-11P-90S/L-04E	64	338
7.4	8.9	1428	1.10	197.75	16.1	16.0	16.1	4.8			
8.8	11	1197	1.30	165.85	17.5	16.5	17.5	5.3			
11	14	940	1.65	130.16	18.7	17.1	18.7	5.8			
14	18	725	2.15	100.45	19.4	17.5	18.0	6.3			
15	18	721	1.80	99.87	19.4	17.5	17.6	6.3			
18	21	600	2.60	83.09	19.8	17.8	16.3	6.5			
19	23	557	2.80	77.11	19.9	17.8	15.8	6.6			
31	37	343	1.80	47.56	20.2	17.9	13.1	6.7			
40	48	265	2.90	36.72	20.3	18.2	11.8	6.9			
5.8	7.0	1815	0.90	165.85	12.6	15.2	12.6	4.0	KH073-11P-100L-06D	70	338
7.4	9.0	1424	1.10	130.16	16.1	16.1	16.1	4.8			
9.6	12	1099	1.45	100.45	18.0	16.7	18.0	5.5			
12	15	844	1.85	77.11	19.1	17.3	19.1	6.0			
14	16	773	2.05	70.67	19.3	17.4	18.2	6.2			
15	18	708	2.20	64.67	19.5	17.5	17.6	6.3			
16	19	670	2.35	61.25	19.6	17.6	17.1	6.4			
19	23	555	2.80	50.75	19.9	17.9	15.8	6.6			
20	24	520	1.20	47.56	19.9	17.4	15.8	6.1			
26	32	402	1.90	36.72	20.2	17.7	14.1	6.5			
31	38	337	2.75	30.79	20.3	17.9	13.1	6.7			
12	14	880	0.95	121.85	7.8	12.5	7.8	2.5	KH063-11P-90S/L-04E	44	336
15	18	722	1.15	99.98	9.6	13.0	9.6	3.0			
18	22	589	1.00	81.53	10.6	13.4	10.6	3.4			
19	23	559	1.50	77.42	10.8	13.5	10.8	3.5			
23	27	467	1.80	64.62	11.4	13.8	11.4	3.8			
25	30	425	1.95	58.89	11.5	13.9	11.5	4.0			
29	35	362	2.30	50.17	11.8	14.1	11.7	4.2			
30	36	351	2.35	48.56	11.9	14.1	11.5	4.2			
33	40	320	1.00	44.35	12.0	13.8	11.3	3.9			
35	43	297	2.80	41.17	12.0	14.3	10.8	4.4			
37	44	288	2.80	39.83	12.1	14.3	10.5	4.4			
41	50	254	1.80	35.15	12.2	14.1	10.2	4.2			
53	64	197	2.55	27.29	12.3	14.4	9.2	4.4			
12	15	847	1.00	77.42	8.2	12.6	8.2	2.6	KH063-11P-100L-06D	50	336
15	18	707	1.20	64.62	9.7	13.0	9.7	3.1			
16	20	644	1.30	58.89	10.2	13.2	10.2	3.3			
19	23	549	1.50	50.17	10.9	13.5	10.9	3.6			
20	24	531	1.55	48.56	11.0	13.6	11.0	3.6			
23	28	451	1.85	41.17	11.4	13.8	11.4	3.9			
24	29	436	1.85	39.83	11.5	13.9	11.5	3.9			
27	33	385	1.20	35.15	11.7	13.5	11.7	3.6			
28	34	370	2.05	33.85	11.8	14.1	11.8	4.1			
30	37	349	2.40	31.88	11.9	14.2	11.5	4.2			
34	42	305	2.35	27.83	12.0	14.3	10.9	4.3			
35	43	299	1.70	27.29	12.0	13.9	11.0	4.0			
40	48	265	2.95	24.25	12.1	14.4	10.2	4.5			
43	53	242	2.80	22.07	12.2	14.5	9.8	4.5			
55	67	190	2.65	17.34	12.3	14.4	9.0	4.5			

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P <sub>N</sub> = 1.1 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
1.1 kW		1.3 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
15	18	694	0.90	96.08	4.2	6.3	4.2	3.2	KH053-11P-90S/L-04E	31	334
18	22	581	1.00	80.46	6.4	10.2	6.4	3.5			
20	24	528	1.15	73.08	7.1	10.4	7.1	3.7			
23	28	460	1.35	63.77	7.8	10.6	7.8	3.9			
24	29	435	1.40	60.26	8.0	10.7	8.0	4.0			
29	36	358	1.70	49.52	8.6	10.9	8.6	4.2			
35	42	303	2.00	42.00	9.0	11.1	9.0	4.4			
36	43	293	2.05	40.63	9.0	11.1	9.0	4.4			
38	46	277	1.00	38.32	9.1	10.8	9.1	4.1			
42	51	249	2.45	34.53	9.2	11.2	9.2	4.5			
46	56	227	2.65	31.46	9.3	11.3	9.3	4.6			
48	58	219	1.80	30.37	9.3	11.0	9.3	4.3			
53	64	198	2.95	27.39	9.4	11.4	9.4	4.7			
62	75	170	2.45	23.58	9.5	11.2	9.5	4.5			
75	91	140	3.00	19.35	9.6	11.4	9.6	4.7			
13	16	800	0.80	73.08	**	**	**	**	KH053-11P-100L-06D	36	334
15	18	698	0.90	63.77	4.1	6.1	4.1	3.2			
16	19	659	0.95	60.26	5.0	8.0	5.0	3.3			
19	24	542	1.15	49.52	6.9	10.4	6.9	3.7			
23	28	460	1.35	42.00	7.8	10.6	7.8	3.9			
24	29	445	1.35	40.63	8.0	10.7	8.0	4.0			
28	34	378	1.60	34.53	8.5	10.9	8.5	4.2			
31	37	344	1.75	31.46	8.7	11.0	8.7	4.3			
32	38	332	1.20	30.37	8.8	10.5	8.8	3.8			
35	43	300	1.95	27.39	9.0	11.1	9.0	4.4			
40	49	262	2.30	23.93	9.2	11.2	9.2	4.5			
41	49	258	1.65	23.58	9.2	10.8	9.2	4.1			
49	59	216	2.80	19.73	9.4	11.3	9.4	4.6			
50	60	212	2.00	19.35	9.4	11.1	9.4	4.4			
64	78	164	2.55	14.98	9.5	11.3	9.5	4.6			
20	24	526	0.80	72.92	**	**	**	**	KH043-11P-90S/L-04E	27	332
22	27	478	0.85	66.20	**	**	**	**			
25	31	416	1.00	57.58	3.4	5.1	3.4	2.2			
27	32	391	1.05	54.18	4.0	6.4	4.0	2.3			
33	40	317	1.30	43.93	5.2	8.2	5.2	2.6			
38	46	278	1.00	38.49	5.7	8.1	5.7	2.5			
40	48	266	1.45	36.78	5.8	8.4	5.8	2.8			
48	58	219	1.50	30.39	6.2	8.4	6.2	2.8			
49	59	215	1.70	29.81	6.3	8.6	6.3	3.0			
52	63	203	2.00	28.13	6.4	8.7	6.4	3.1			
62	75	170	1.85	23.57	6.6	8.6	6.6	3.0			
68	83	153	2.65	21.25	6.7	8.9	6.7	3.3			
75	91	139	2.15	19.29	6.7	8.8	6.7	3.2			
98	119	107	2.60	14.85	6.9	8.9	6.9	3.3			

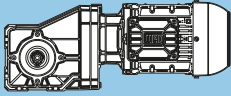
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\*\* ... on request

P <sub>N</sub> = 1.1 kW										IE3		
50 Hz		60 Hz		f <sub>B</sub>	i	at 50 Hz					m kg	Dimension sheet see page
1.1 kW		1.3 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm				F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
22	26	488	0.85	44.64	**	**	**	**	KH043-11P-100L-06D	33	332	
26	32	402	1.00	36.78	3.8	6.0	3.8	2.3				
32	39	326	1.15	29.81	5.1	8.2	5.1	2.6				
34	41	308	1.30	28.13	5.4	8.3	5.4	2.7				
41	49	258	1.20	23.57	5.9	8.2	5.9	2.6				
45	55	233	1.75	21.25	6.1	8.6	6.1	3.0				
50	60	211	1.40	19.29	6.3	8.4	6.3	2.8				
55	67	190	2.15	17.39	6.4	8.7	6.4	3.1				
65	78	162	1.75	14.85	6.6	8.7	6.6	3.1				
68	83	154	2.60	14.10	6.7	8.9	6.7	3.3				
86	104	123	2.15	11.22	6.8	8.9	6.8	3.3				
105	127	100	2.50	9.18	6.9	9.0	6.9	3.4				
129	157	81	2.95	7.44	6.9	9.1	6.4	3.5				
41	49	259	0.80	35.90	**	**	**	**	KH033-11P-90S/L-04E	24	330	
48	58	219	0.95	30.29	3.4	2.4	3.4	2.4				
51	61	207	1.00	28.67	3.6	2.5	3.6	2.5				
60	72	176	0.95	24.38	4.1	2.4	4.1	2.4				
67	81	156	1.30	21.67	4.3	2.8	4.3	2.8				
75	91	140	1.20	19.37	4.5	2.6	4.5	2.6				
88	107	119	1.70	16.47	4.7	3.0	4.7	3.0				
97	118	108	1.55	14.96	4.8	2.9	4.8	2.9				
114	137	92	2.20	12.81	4.9	3.1	4.9	3.1				
122	147	86	1.90	11.94	4.9	3.0	4.9	3.0				
146	176	72	2.80	10.00	5.0	3.2	5.0	3.2				
161	195	65	2.55	9.03	5.0	3.2	5.0	3.2				
44	54	237	0.85	21.67	3.0	2.3	3.0	2.3	KH033-11P-100L-06D	29	330	
50	60	212	0.80	19.37	**	**	**	**				
58	71	180	1.15	16.47	4.0	2.6	4.0	2.6				
64	78	164	1.00	14.96	4.3	2.5	4.3	2.5				
75	91	140	1.45	12.81	4.5	2.9	4.5	2.9				
80	98	131	1.25	11.94	4.6	2.7	4.6	2.7				
96	117	109	1.85	10.00	4.8	3.0	4.8	3.0				
106	129	99	1.65	9.03	4.8	2.9	4.8	2.9				
140	170	75	2.00	6.86	5.0	3.1	5.0	3.1				
180	218	58	2.35	5.34	5.0	3.2	5.0	3.2				
230	279	46	2.80	4.17	5.1	3.3	5.1	3.3				
79	95	134	0.80	18.50	**	**	**	**				KH022-11P-90S/L-04E
94	114	111	0.85	15.41	4.9	2.8	4.9	2.8				
105	127	100	0.95	13.81	5.0	2.8	5.0	2.8				
109	132	96	0.95	13.29	5.0	2.8	5.0	2.8				
122	148	86	1.05	11.92	5.1	2.8	5.1	2.8				
123	149	85	0.95	11.84	5.1	2.8	5.1	2.8				
125	152	84	1.05	11.60	5.1	2.8	5.1	2.8				
140	169	75	1.15	10.40	5.1	2.8	5.1	2.8				
157	190	67	1.25	9.25	4.9	2.8	4.9	2.8				
171	207	61	1.30	8.51	4.7	2.8	4.7	2.8				
191	231	55	1.40	7.63	4.5	2.8	4.5	2.8				
211	255	50	1.50	6.91	4.4	2.8	4.4	2.8				
244	295	43	1.65	5.96	4.1	2.8	4.1	2.8				
280	338	38	1.75	5.20	3.9	2.8	3.9	2.8				
381	461	28	2.10	3.82	3.5	2.8	3.5	2.8				

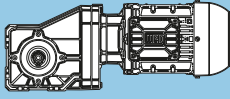
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\*\* ... on request

P <sub>N</sub> = 1.5 kW										IE3		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
1.5 kW		1.8 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>			F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
8.6	10	1672	2.70	169.25	38.5	42.9	38.5	42.9	KH093-11P-90S/L-04F	156	342	
7.0	8.5	2036	1.50	206.12	25.3	42.0	25.3	9.5				
8.9	11	1612	1.90	163.14	26.9	42.6	26.9	10.1	KH083-11P-90S/L-04F	106	340	
10	12	1407	2.15	142.45	27.5	42.9	27.5	10.4				
12	14	1244	2.45	125.90	28.0	43.2	27.2	10.7				
14	16	1052	2.90	106.46	28.4	43.4	25.4	10.9				
7.3	8.9	1954	0.80	197.75	**	**	**	**	KH073-11P-90S/L-04F	65	338	
8.7	11	1638	0.95	165.85	14.4	15.6	14.4	4.4				
11	13	1286	1.25	130.16	17.0	16.3	17.0	5.1				
14	17	992	1.60	100.45	18.5	16.9	18.5	5.7				
15	18	987	1.35	99.87	18.5	17.0	18.5	5.7				
17	21	821	1.90	83.09	19.1	17.3	17.4	6.1				
19	23	762	2.05	77.11	19.3	17.4	16.7	6.2				
21	25	698	2.25	70.67	19.5	17.6	16.0	6.3				
22	27	639	2.45	64.67	19.7	17.7	15.5	6.4				
24	29	605	2.60	61.25	19.8	17.7	15.0	6.5				
30	37	470	1.35	47.56	20.0	17.5	13.9	6.3				
39	48	363	2.10	36.72	20.2	17.9	12.4	6.6				
47	57	304	3.00	30.79	20.3	18.1	11.5	6.8				
15	18	988	0.85	99.98	6.0	8.9	6.0	2.2	KH063-11P-90S/L-04F	45	336	
19	23	765	1.10	77.42	9.1	12.8	9.1	2.9				
22	27	638	1.30	64.62	10.3	13.2	10.3	3.3				
25	30	582	1.45	58.89	10.7	13.4	10.7	3.5				
29	35	496	1.70	50.17	11.2	13.7	11.2	3.7				
30	36	480	1.75	48.56	11.3	13.7	11.3	3.8				
35	43	407	2.05	41.17	11.6	14.0	11.3	4.0				
36	44	393	2.05	39.83	11.7	14.0	11.2	4.1				
41	50	347	1.35	35.15	11.9	13.7	10.8	3.8				
43	52	334	2.30	33.85	11.9	14.2	10.3	4.2				
45	55	315	2.65	31.88	12.0	14.3	10.1	4.3				
52	63	275	2.60	27.83	12.1	14.4	9.5	4.4				
53	64	270	1.90	27.29	12.1	14.0	9.6	4.1				
65	78	221	2.30	22.40	12.2	14.3	8.8	4.3				
84	101	171	2.95	17.34	12.3	14.5	7.9	4.5				
20	24	722	0.85	73.08	3.4	4.6	3.4	3.1	KH053-11P-90S/L-04F	32	334	
23	28	630	1.00	63.77	5.6	9.3	5.6	3.4				
24	29	595	1.05	60.26	6.2	10.2	6.2	3.5				
29	35	489	1.25	49.52	7.5	10.5	7.5	3.8				
35	42	415	1.45	42.00	8.2	10.7	8.2	4.0				
36	43	401	1.50	40.63	8.3	10.8	8.3	4.1				
42	51	341	1.80	34.53	8.7	11.0	8.7	4.3				
46	56	311	1.95	31.46	8.9	11.1	8.9	4.4				
48	58	300	1.35	30.37	9.0	10.7	9.0	4.0				
53	64	271	2.15	27.39	9.1	11.2	9.1	4.5				
61	73	236	2.55	23.93	9.3	11.3	9.3	4.6				
75	91	191	2.20	19.35	9.4	11.1	9.4	4.4				
97	117	148	2.80	14.98	9.6	11.3	9.1	4.6				

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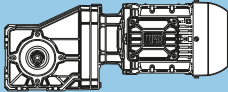
\*\* ... on request

P <sub>N</sub> = 1.5 kW										IE3	
50 Hz 1.5 kW		60 Hz 1.8 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
32	39	441	0.95	44.64	2.6	3.4	2.6	2.1	KH043-11P-90S/L-04F	29	332
33	40	434	0.95	43.93	2.9	4.1	2.9	2.2			
39	48	363	1.10	36.78	4.5	7.5	4.5	2.4			
40	48	361	1.15	36.54	4.6	7.8	4.6	2.5			
48	58	300	1.10	30.39	5.5	8.0	5.5	2.4			
49	59	295	1.25	29.81	5.5	8.3	5.5	2.7			
52	62	278	1.45	28.13	5.7	8.4	5.7	2.8			
62	74	233	1.35	23.57	6.1	8.3	6.1	2.7			
68	83	210	1.95	21.25	6.3	8.7	6.3	3.1			
75	91	191	1.55	19.29	6.4	8.5	6.4	2.9			
83	101	172	2.35	17.39	6.6	8.8	6.6	3.2			
98	118	147	1.90	14.85	6.7	8.7	6.7	3.1			
103	124	139	2.90	14.10	6.7	8.9	6.7	3.3			
129	156	111	2.40	11.22	6.8	8.9	6.7	3.3			
158	191	91	2.80	9.18	6.9	9.0	6.1	3.4			
67	81	214	0.95	21.67	3.5	2.4	3.5	2.4	KH033-11P-90S/L-04F	25	330
75	91	191	0.90	19.37	3.9	2.3	3.9	2.3			
88	107	163	1.25	16.47	4.3	2.7	4.3	2.7			
97	117	148	1.15	14.96	4.4	2.6	4.4	2.6			
113	137	127	1.60	12.81	4.6	2.9	4.6	2.9			
121	147	118	1.40	11.94	4.7	2.8	4.7	2.8			
145	176	99	2.05	10.00	4.8	3.1	4.8	3.1			
161	194	89	1.85	9.03	4.9	3.0	4.9	3.0			
211	256	68	2.20	6.86	5.0	3.2	5.0	3.2			
272	329	53	2.60	5.34	5.0	3.3	5.0	3.3			
122	147	118	0.80	11.92	**	**	**	**	KH022-11P-90S/L-04F	23	328
139	169	103	0.85	10.40	5.0	2.8	5.0	2.8			
157	190	91	0.90	9.25	5.0	2.8	5.0	2.8			
170	206	84	0.95	8.51	4.8	2.8	4.8	2.8			
190	230	75	1.05	7.63	4.6	2.8	4.6	2.8			
210	254	68	1.10	6.91	4.4	2.8	4.4	2.8			
243	294	59	1.20	5.96	4.2	2.8	4.2	2.8			
279	338	51	1.30	5.20	4.0	2.8	4.0	2.8			
380	459	38	1.55	3.82	3.6	2.8	3.6	2.8			

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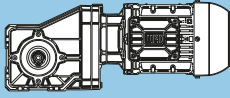
Legend see page 261

\*\* ... on request

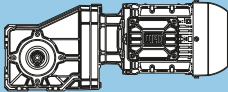
<b>P<sub>N</sub> = 2.2 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>2.2 kW</b>		<b>2.6 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>8.5</b>	10	2478	1.85	169.25	36.7	41.8	36.7	41.8	<b>KH093-11P-100L-04E</b>	166	342
<b>10</b>	12	2095	2.15	143.08	37.7	42.3	37.7	42.3			
<b>12</b>	14	1813	2.50	123.86	38.2	42.7	38.2	42.7			
<b>13</b>	16	1606	2.85	109.70	38.6	43.0	38.6	43.0			
<b>7.0</b>	8.5	3018	1.00	206.12	19.2	33.9	19.2	8.0	<b>KH083-11P-100L-04E</b>	116	340
<b>8.8</b>	11	2389	1.30	163.14	23.6	41.5	23.6	9.0			
<b>10</b>	12	2086	1.45	142.45	25.1	41.9	25.1	9.4			
<b>11</b>	14	1843	1.65	125.90	26.1	42.3	26.1	9.8			
<b>13</b>	16	1559	1.95	106.46	27.1	42.7	27.1	10.2			
<b>16</b>	19	1340	2.25	91.51	27.7	43.0	25.5	10.5			
<b>18</b>	22	1170	2.60	79.89	28.1	43.3	24.1	10.8			
<b>21</b>	25	1002	3.00	68.44	28.5	43.5	22.5	11.0			
<b>32</b>	38	666	2.45	45.48	29.0	43.7	19.1	11.2			
<b>11</b>	13	1906	0.85	130.16	11.6	15.1	11.6	3.8	<b>KH073-11P-100L-04E</b>	75	338
<b>14</b>	17	1471	1.10	100.45	15.8	16.0	15.8	4.7			
<b>17</b>	21	1217	1.30	83.09	17.4	16.5	17.4	5.2			
<b>19</b>	23	1129	1.40	77.11	17.9	16.7	17.9	5.4			
<b>20</b>	25	1035	1.50	70.67	18.3	16.9	17.6	5.6			
<b>22</b>	27	947	1.65	64.67	18.7	17.0	16.8	5.8			
<b>23</b>	28	897	1.75	61.25	18.9	17.1	16.4	5.9			
<b>28</b>	34	743	2.10	50.75	19.4	17.5	15.0	6.2			
<b>29</b>	35	730	2.15	49.88	19.4	17.5	14.8	6.2			
<b>34</b>	41	624	2.50	42.61	19.7	17.7	13.7	6.5			
<b>37</b>	45	573	2.75	39.17	19.8	17.8	13.2	6.6			
<b>39</b>	48	538	1.45	36.72	19.9	17.3	13.2	6.1			
<b>47</b>	57	451	2.05	30.79	20.1	17.6	12.2	6.3			
<b>59</b>	72	354	2.60	24.17	20.2	17.9	11.0	6.6			
<b>24</b>	30	862	1.00	58.89	8.0	12.5	8.0	2.6	<b>KH063-11P-100L-04E</b>	55	336
<b>29</b>	35	735	1.15	50.17	9.4	12.9	9.4	3.0			
<b>30</b>	36	711	1.20	48.56	9.7	13.0	9.7	3.1			
<b>35</b>	42	603	1.40	41.17	10.5	13.4	10.5	3.4			
<b>36</b>	44	583	1.40	39.83	10.7	13.4	10.7	3.5			
<b>42</b>	52	496	1.55	33.85	11.2	13.7	11.2	3.7			
<b>45</b>	55	467	1.80	31.88	11.4	13.8	10.9	3.8			
<b>52</b>	63	407	1.80	27.83	11.6	14.0	10.2	4.0			
<b>53</b>	65	393	1.80	26.84	11.7	14.0	10.1	4.1			
<b>59</b>	72	355	2.25	24.25	11.8	14.1	9.6	4.2			
<b>64</b>	78	328	1.55	22.40	11.9	13.8	9.5	3.8			
<b>65</b>	79	323	2.10	22.07	11.9	14.2	9.2	4.3			
<b>72</b>	87	293	2.55	20.00	12.0	14.3	8.8	4.4			
<b>83</b>	101	254	2.00	17.34	12.2	14.1	8.4	4.2			
<b>88</b>	106	240	2.90	16.40	12.2	14.5	8.0	4.5			
<b>109</b>	132	193	2.60	13.19	12.3	14.4	7.4	4.4			
<b>29</b>	35	725	0.85	49.52	3.3	4.4	3.3	3.1	<b>KH053-11P-100L-04E</b>	42	334
<b>34</b>	42	615	1.00	42.00	5.9	9.9	5.9	3.4			
<b>35</b>	43	595	1.05	40.63	6.2	10.2	6.2	3.5			
<b>42</b>	51	506	1.20	34.53	7.3	10.5	7.3	3.8			
<b>43</b>	52	488	1.25	33.30	7.5	10.5	7.5	3.8			
<b>46</b>	55	461	1.35	31.46	7.8	10.6	7.8	3.9			
<b>52</b>	64	401	1.45	27.39	8.3	10.8	8.3	4.1			
<b>60</b>	73	350	1.75	23.93	8.7	10.9	8.7	4.2			
<b>61</b>	74	345	1.20	23.58	8.7	10.5	8.7	3.8			
<b>73</b>	88	289	2.10	19.73	9.0	11.1	9.0	4.4			
<b>74</b>	90	283	1.50	19.35	9.1	10.7	9.1	4.0			
<b>89</b>	108	237	2.55	16.19	9.3	11.3	9.3	4.6			
<b>96</b>	116	219	1.90	14.98	9.3	11.0	9.3	4.3			
<b>104</b>	127	201	3.00	13.75	9.4	11.4	9.1	4.7			
<b>126</b>	153	167	2.50	11.40	9.5	11.3	8.5	4.6			

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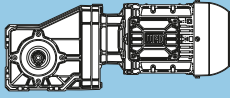
P <sub>N</sub> = 2.2 kW										IE3	
50 Hz 2.2 kW		60 Hz 2.6 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
48	59	436	0.85	29.81	2.8	3.9	2.8	2.2	KH043-11P-100L-04E	38	332
50	61	421	0.85	28.74	3.3	4.9	3.3	2.2			
51	62	412	1.00	28.13	3.5	5.4	3.5	2.3			
61	74	345	0.90	23.57	4.8	7.7	4.8	2.1			
68	82	311	1.30	21.25	5.3	8.3	5.3	2.7			
74	90	282	1.05	19.29	5.7	8.0	5.7	2.4			
83	100	255	1.60	17.39	5.9	8.5	5.9	2.9			
97	118	217	1.30	14.85	6.3	8.4	6.3	2.8			
102	124	206	1.95	14.10	6.3	8.7	6.3	3.1			
122	148	173	2.35	11.81	6.6	8.8	6.6	3.2			
128	156	164	1.60	11.22	6.6	8.7	6.6	3.1			
150	182	140	2.70	9.57	6.7	8.9	6.5	3.3			
155	189	135	2.75	9.23	6.7	9.0	6.4	3.4			
156	190	134	1.90	9.18	6.7	8.8	6.5	3.2			
193	235	109	2.25	7.44	6.8	8.9	5.9	3.3			
230	280	91	2.55	6.23	6.9	9.0	5.5	3.4			
284	346	74	3.00	5.05	6.9	9.1	5.0	3.5			
87	106	241	0.85	16.47	2.9	2.3	2.9	2.3	KH033-11P-100L-04E	35	330
112	136	188	1.10	12.81	3.9	2.6	3.9	2.6			
120	146	175	0.95	11.94	4.1	2.4	4.1	2.4			
144	175	146	1.40	10.00	4.4	2.8	4.4	2.8			
159	193	132	1.25	9.03	4.6	2.7	4.6	2.7			
209	254	100	1.50	6.86	4.8	2.9	4.8	2.9			
269	327	78	1.80	5.34	5.0	3.1	5.0	3.1			
344	418	61	2.10	4.17	4.7	3.2	4.7	3.2			

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<b>P<sub>N</sub> = 3.0 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>3.0 kW</b>		<b>3.6 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>8.5</b>	10	3367	1.35	169.25	33.7	40.7	33.7	40.7	<b>KH093-11P-L100L-04F</b>	173	342
<b>10</b>	12	2847	1.60	143.08	35.6	41.4	35.6	41.4			
<b>12</b>	14	2464	1.85	123.86	36.7	41.9	36.7	41.9			
<b>13</b>	16	2183	2.10	109.70	37.5	42.2	37.5	42.2			
<b>15</b>	18	1888	2.40	94.90	38.1	42.6	38.1	42.6			
<b>16</b>	19	1821	2.50	91.51	38.2	42.7	38.2	42.7			
<b>18</b>	22	1606	2.85	80.74	38.6	43.0	38.6	43.0			
<b>8.8</b>	11	3246	0.95	163.14	17.1	29.4	17.1	7.7	<b>KH083-11P-L100L-04F</b>	123	340
<b>10</b>	12	2834	1.10	142.45	20.7	37.2	20.7	8.3			
<b>11</b>	14	2505	1.20	125.90	22.9	41.3	22.9	8.8			
<b>14</b>	16	2118	1.45	106.46	24.9	41.9	24.9	9.4			
<b>16</b>	19	1821	1.65	91.51	26.2	42.3	26.2	9.8			
<b>18</b>	22	1589	1.90	79.89	27.0	42.7	25.5	10.2			
<b>21</b>	25	1362	2.25	68.44	27.7	43.0	23.7	10.5			
<b>22</b>	26	1313	2.30	66.00	27.8	43.1	23.3	10.6			
<b>23</b>	28	1256	2.30	63.12	27.9	43.1	22.8	10.6			
<b>25</b>	30	1159	2.60	58.25	28.2	43.3	21.9	10.8			
<b>26</b>	32	1096	2.75	55.11	28.3	43.4	21.5	10.9			
<b>32</b>	38	905	1.80	45.48	28.7	43.2	20.0	10.7			
<b>40</b>	48	716	2.30	35.99	29.0	43.6	18.1	11.1			
<b>14</b>	17	1999	0.80	100.45	**	**	**	**	<b>KH073-11P-L100L-04F</b>	82	338
<b>17</b>	21	1653	0.95	83.09	14.3	15.6	14.3	4.3			
<b>19</b>	23	1534	1.05	77.11	15.3	15.8	15.3	4.6			
<b>20</b>	25	1406	1.15	70.67	16.2	16.1	16.2	4.8			
<b>22</b>	27	1287	1.25	64.67	17.0	16.3	17.0	5.1			
<b>24</b>	28	1219	1.30	61.25	17.4	16.5	17.4	5.2			
<b>28</b>	34	1029	1.55	51.72	18.3	16.9	16.2	5.6			
<b>29</b>	35	992	1.60	49.88	18.5	16.9	15.9	5.7			
<b>34</b>	41	848	1.85	42.61	19.0	17.2	14.7	6.0			
<b>37</b>	44	779	2.00	39.17	19.3	17.4	14.1	6.1			
<b>39</b>	47	731	1.05	36.72	19.4	16.7	14.1	5.5			
<b>44</b>	54	645	2.45	32.40	19.7	17.7	12.9	6.4			
<b>47</b>	57	613	1.50	30.79	19.7	17.1	12.9	5.8			
<b>52</b>	63	548	2.85	27.56	19.9	17.9	11.9	6.6			
<b>60</b>	72	481	1.90	24.17	20.0	17.5	11.5	6.2			
<b>77</b>	93	371	2.50	18.65	20.2	17.8	10.3	6.6			
<b>93</b>	113	307	3.00	15.43	20.3	18.0	9.4	6.8			
<b>29</b>	35	998	0.85	50.17	5.8	8.5	5.8	2.2	<b>KH063-11P-L100L-04F</b>	62	336
<b>30</b>	36	966	0.85	48.56	6.4	9.8	6.4	2.3			
<b>35</b>	42	819	1.05	41.17	8.6	12.7	8.6	2.7			
<b>36</b>	44	792	1.05	39.83	8.9	12.8	8.9	2.8			
<b>43</b>	51	673	1.15	33.85	10.0	13.1	10.0	3.2			
<b>45</b>	55	634	1.30	31.88	10.3	13.3	10.3	3.3			
<b>52</b>	63	554	1.30	27.83	10.9	13.5	10.9	3.6			
<b>53</b>	64	543	0.95	27.29	10.9	12.8	10.9	2.9			
<b>54</b>	65	534	1.35	26.84	11.0	13.6	10.8	3.6			
<b>59</b>	72	482	1.65	24.25	11.3	13.7	10.3	3.8			
<b>64</b>	78	446	1.15	22.40	11.5	13.3	10.2	3.3			
<b>65</b>	79	439	1.55	22.07	11.5	13.9	9.8	3.9			
<b>72</b>	87	398	1.90	20.00	11.7	14.0	9.3	4.0			
<b>83</b>	100	345	1.45	17.34	11.9	13.7	9.0	3.8			
<b>88</b>	106	326	2.15	16.40	11.9	14.2	8.5	4.3			
<b>103</b>	125	277	2.40	13.94	12.1	14.4	7.9	4.4			
<b>109</b>	132	262	1.95	13.19	12.1	14.1	7.9	4.1			
<b>126</b>	152	228	2.75	11.46	12.2	14.5	7.2	4.6			
<b>130</b>	157	220	2.85	11.05	12.2	14.6	7.1	4.6			
<b>132</b>	160	216	2.35	10.88	12.2	14.3	7.2	4.3			
<b>161</b>	195	177	2.85	8.92	12.3	14.5	6.6	4.5			

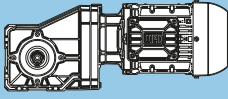
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P <sub>N</sub> = 3.0 kW										IE3	
50 Hz 3.0 kW		60 Hz 3.6 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
42	50	687	0.90	34.53	4.4	6.7	4.4	3.2	KH053-11P-L100L-04F	48	334
43	52	663	0.95	33.30	5.0	8.0	5.0	3.3			
46	55	626	1.00	31.46	5.7	9.5	5.7	3.4			
53	64	545	1.10	27.39	6.9	10.3	6.9	3.6			
60	73	476	1.30	23.93	7.7	10.6	7.7	3.9			
61	74	469	0.90	23.58	7.7	9.9	7.7	3.2			
73	88	393	1.55	19.73	8.4	10.8	8.4	4.1			
74	90	385	1.10	19.35	8.4	10.3	8.4	3.6			
89	107	322	1.90	16.19	8.8	11.0	8.8	4.3			
96	116	298	1.40	14.98	9.0	10.7	9.0	4.0			
105	127	274	2.20	13.75	9.1	11.2	9.1	4.5			
126	153	227	1.85	11.40	9.3	11.0	9.0	4.3			
127	154	225	2.70	11.31	9.3	11.3	8.7	4.6			
132	159	217	2.80	10.91	9.3	11.3	8.6	4.6			
153	185	187	2.25	9.40	9.5	11.2	8.2	4.5			
187	226	153	2.70	7.71	9.5	11.3	7.5	4.6			
68	82	423	0.95	21.25	3.2	4.7	3.2	2.2	KH043-11P-L100L-04F	45	332
75	90	384	0.80	19.29	**	**	**	**			
83	100	346	1.20	17.39	4.8	8.1	4.8	2.5			
97	117	295	0.95	14.85	5.5	8.0	5.5	2.4			
102	123	281	1.45	14.10	5.7	8.4	5.7	2.8			
122	147	235	1.75	11.81	6.1	8.6	6.1	3.0			
128	155	223	1.20	11.22	6.2	8.4	6.2	2.8			
150	182	190	2.00	9.57	6.4	8.7	6.4	3.1			
156	189	184	2.05	9.23	6.5	8.8	6.5	3.2			
157	190	183	1.40	9.18	6.5	8.6	6.5	3.0			
194	234	148	1.65	7.44	6.7	8.7	6.2	3.1			
231	279	124	1.90	6.23	6.8	8.9	5.7	3.3			
285	345	100	2.20	5.05	6.9	9.0	5.2	3.4			
296	357	97	2.30	4.87	6.9	9.0	5.2	3.4			
112	136	255	0.80	12.81	**	**	**	**	KH033-11P-L100L-04F	41	330
144	174	199	1.05	10.00	3.7	2.5	3.7	2.5			
159	193	180	0.95	9.03	4.0	2.4	4.0	2.4			
210	254	136	1.10	6.86	4.5	2.7	4.5	2.7			
270	326	106	1.30	5.34	4.8	2.9	4.8	2.9			
345	417	83	1.55	4.17	4.9	3.1	4.9	3.1			

Legend see page 261

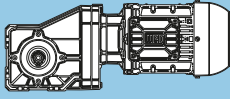
\*\* ... on request

<b>P<sub>N</sub> = 4.0 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>4.0 kW</b>		<b>4.8 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
<b>10</b>	12	3713	2.20	140.95	58.8	64.9	58.8	64.9	<b>KH103-11P-112M-04E</b>	292	344
<b>12</b>	14	3280	2.45	124.50	59.5	65.4	59.5	65.4			
<b>13</b>	16	2847	2.85	108.07	60.1	65.9	60.1	65.9			
<b>14</b>	17	2745	2.95	104.21	60.3	66.0	60.3	66.0			
<b>8.6</b>	10	4459	1.05	169.25	28.2	39.3	28.2	39.3	<b>KH093-11P-112M-04E</b>	174	342
<b>10</b>	12	3769	1.20	143.08	32.0	40.2	32.0	40.2			
<b>12</b>	14	3263	1.40	123.86	34.2	40.9	34.2	40.9			
<b>13</b>	16	2890	1.60	109.70	35.5	41.3	35.5	41.3			
<b>15</b>	18	2500	1.80	94.90	36.6	41.8	36.6	41.8			
<b>16</b>	19	2411	1.90	91.51	36.9	41.9	36.9	41.9			
<b>18</b>	22	2127	2.15	80.74	37.6	42.3	37.6	42.3			
<b>21</b>	26	1810	2.50	68.71	38.2	42.7	38.2	42.7			
<b>23</b>	27	1685	2.70	63.96	38.5	42.9	38.5	42.9			
<b>24</b>	30	1562	2.90	59.28	38.7	43.0	38.7	43.0			
<b>39</b>	47	978	2.85	37.13	39.4	43.3	39.4	43.3			
<b>10</b>	12	3753	0.80	142.45	**	**	**	**	<b>KH083-11P-112M-04E</b>	124	340
<b>12</b>	14	3317	0.95	125.90	16.3	27.7	16.3	7.6			
<b>14</b>	16	2805	1.10	106.46	20.9	37.7	20.9	8.4			
<b>16</b>	19	2411	1.25	91.51	23.4	41.4	23.4	8.9			
<b>18</b>	22	2105	1.45	79.89	25.0	41.9	25.0	9.4			
<b>21</b>	26	1803	1.70	68.44	26.3	42.3	25.3	9.8			
<b>22</b>	27	1739	1.75	66.00	26.5	42.4	24.7	9.9			
<b>23</b>	28	1663	1.75	63.12	26.8	42.5	24.2	10.0			
<b>25</b>	30	1535	2.00	58.25	27.2	42.7	23.3	10.2			
<b>26</b>	32	1452	2.10	55.11	27.4	42.9	22.7	10.4			
<b>30</b>	36	1287	2.35	48.87	27.9	43.1	21.3	10.6			
<b>32</b>	39	1198	1.40	45.48	28.1	42.6	21.1	10.1			
<b>35</b>	43	1085	2.80	41.19	28.3	43.4	19.8	10.9			
<b>40</b>	49	948	1.75	35.99	28.6	43.1	19.0	10.6			
<b>46</b>	56	828	2.35	31.43	28.8	43.3	17.8	10.8			
<b>52</b>	63	732	2.60	27.78	28.9	43.5	16.9	11.0			
<b>19</b>	23	2031	0.80	77.11	**	**	**	**	<b>KH073-11P-112M-04E</b>	83	338
<b>21</b>	25	1862	0.85	70.67	12.1	15.2	12.1	3.9			
<b>22</b>	27	1704	0.95	64.67	13.8	15.5	13.8	4.2			
<b>24</b>	29	1614	1.00	61.25	14.6	15.7	14.6	4.4			
<b>28</b>	34	1363	1.15	51.72	16.5	16.2	16.5	4.9			
<b>29</b>	35	1337	1.20	50.75	16.7	16.2	16.7	5.0			
<b>34</b>	41	1123	1.40	42.61	17.9	16.7	15.8	5.4			
<b>37</b>	45	1032	1.55	39.17	18.3	16.9	15.1	5.6			
<b>39</b>	48	967	0.80	36.72	**	**	**	**			
<b>45</b>	54	854	1.85	32.40	19.0	17.2	13.7	6.0			
<b>47</b>	57	811	1.15	30.79	19.2	16.5	13.9	5.2			
<b>53</b>	64	726	2.15	27.56	19.4	17.5	12.6	6.2			
<b>60</b>	73	637	1.45	24.17	19.7	17.0	12.3	5.8			
<b>61</b>	73	629	2.50	23.88	19.7	17.7	11.8	6.5			
<b>72</b>	87	531	2.95	20.17	19.9	17.9	10.9	6.7			
<b>78</b>	94	491	1.90	18.65	20.0	17.5	10.8	6.2			
<b>94</b>	114	407	2.25	15.43	20.2	17.7	9.9	6.5			
<b>111</b>	134	346	2.65	13.12	20.2	17.9	9.2	6.7			



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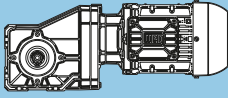
\*\* ... on request

P <sub>N</sub> = 4.0 kW										IE3				
50 Hz 4.0 kW		60 Hz 4.8 kW		i	at 50 Hz					m kg	Dimension sheet see page			
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft							
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN						
35	43	1085	0.80	41.17	**	**	**	**	KH063-11P-112M-04E	63	336			
36	44	1049	0.80	39.83	**	**	**	**						
43	52	892	0.85	33.85	7.6	12.4	7.6	2.5						
45	55	840	1.00	31.88	8.3	12.6	8.3	2.7						
52	63	733	1.00	27.83	9.5	12.9	9.5	3.0						
54	65	707	1.00	26.84	9.7	13.0	9.7	3.1						
60	72	639	1.25	24.25	10.3	13.2	10.3	3.3						
65	78	590	0.85	22.40	10.6	12.6	10.6	2.7						
66	80	581	1.15	22.07	10.7	13.4	10.5	3.5						
73	88	527	1.45	20.00	11.0	13.6	10.0	3.6						
84	101	457	1.10	17.34	11.4	13.2	9.6	3.3						
88	107	432	1.65	16.40	11.5	13.9	9.1	3.9						
104	126	367	1.85	13.94	11.8	14.1	8.3	4.1						
110	133	347	1.45	13.19	11.9	13.7	8.4	3.7						
127	153	302	2.10	11.46	12.0	14.3	7.6	4.3						
131	159	291	2.15	11.05	12.0	14.3	7.5	4.4						
133	161	287	1.75	10.88	12.1	14.0	7.6	4.0						
160	193	239	2.45	9.09	12.2	14.5	6.8	4.5						
163	197	235	2.15	8.92	12.2	14.2	6.9	4.3						
191	232	200	2.45	7.58	12.3	14.4	6.4	4.4						
233	282	164	2.80	6.23	12.3	14.5	5.9	4.6						
241	292	158	2.90	6.01	12.3	14.5	5.8	4.6						
53	64	722	0.80	27.39	**	**	**	**				KH053-11P-112M-04E	49	334
61	73	630	1.00	23.93	5.6	9.3	5.6	3.4						
73	89	520	1.20	19.73	7.2	10.4	7.2	3.7						
75	91	510	0.85	19.35	7.3	9.7	7.3	3.0						
90	108	427	1.45	16.19	8.1	10.7	8.1	4.0						
97	117	395	1.05	14.98	8.4	10.2	8.4	3.5						
105	128	362	1.70	13.75	8.6	10.9	8.6	4.2						
127	154	300	1.40	11.40	9.0	10.7	9.0	4.0						
128	155	298	2.05	11.31	9.0	11.1	9.0	4.4						
133	161	287	2.10	10.91	9.0	11.1	9.0	4.4						
154	187	248	1.70	9.40	9.2	10.9	8.6	4.2						
162	196	236	2.40	8.97	9.3	11.3	8.2	4.6						
188	228	203	2.05	7.71	9.4	11.1	7.9	4.4						
221	268	173	2.40	6.55	9.5	11.2	7.3	4.5						
269	326	142	2.95	5.39	9.2	11.4	6.7	4.7						
83	101	458	0.90	17.39	1.9	2.0	1.9	2.0	KH043-11P-112M-04E	46	332			
103	124	371	1.10	14.10	4.4	7.3	4.4	2.4						
123	149	311	1.30	11.81	5.3	8.3	5.3	2.7						
129	156	296	0.90	11.22	5.5	8.0	5.5	2.4						
152	183	252	1.50	9.57	6.0	8.5	6.0	2.9						
157	190	243	1.55	9.23	6.0	8.5	6.0	2.9						
158	191	242	1.05	9.18	6.1	8.3	6.1	2.7						
195	236	196	1.25	7.44	6.4	8.5	6.4	2.9						
233	282	164	1.45	6.23	6.6	8.7	6.0	3.1						
287	348	133	1.70	5.05	6.8	8.8	5.5	3.2						
298	360	128	1.75	4.87	6.8	8.8	5.4	3.2						

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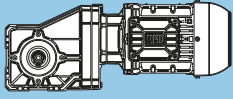
\*\* ... on request

P <sub>N</sub> = 5.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
5.5 kW		6.6 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
9.7	12	5418	2.40	151.11	86.3	92.1	86.3	92.1	KH123-11P-132S-04E	433	346
11	13	4724	2.80	131.76	87.1	92.8	87.1	92.8			
12	14	4555	2.90	127.05	87.2	92.9	87.2	92.9			
10	13	5054	1.60	140.95	56.0	63.4	56.0	63.4	KH103-11P-132S-04E	310	344
12	14	4464	1.80	124.50	57.4	64.1	57.4	64.1			
14	17	3736	2.15	104.21	58.8	64.9	58.8	64.9			
16	19	3348	2.40	93.37	59.4	65.3	59.4	65.3			
18	22	2865	2.80	79.90	60.1	65.9	60.1	65.9			
10	12	5130	0.90	143.08	23.2	38.5	23.2	38.5	KH093-11P-132S-04E	192	342
12	14	4441	1.05	123.86	28.3	39.4	28.3	39.4			
13	16	3933	1.15	109.70	31.2	40.0	31.2	40.0			
15	19	3402	1.35	94.90	33.6	40.7	33.6	40.7			
16	19	3281	1.40	91.51	34.1	40.8	34.1	40.8			
18	22	2895	1.60	80.74	35.5	41.3	35.5	41.3			
21	26	2463	1.85	68.71	36.7	41.9	36.7	41.9			
23	28	2293	2.00	63.96	37.2	42.1	37.2	42.1			
25	30	2125	2.15	59.28	37.6	42.3	37.6	42.3			
27	33	1939	2.35	54.07	38.0	42.5	38.0	42.5			
31	38	1678	2.70	46.81	38.5	42.9	38.5	42.9			
39	48	1331	2.10	37.13	39.0	42.7	39.0	42.7			
47	56	1125	2.50	31.39	39.3	43.0	39.3	43.0			
54	65	974	2.90	27.18	39.4	43.3	39.4	43.3			
14	17	3817	0.80	106.46	**	**	**	**			
16	19	3281	0.95	91.51	16.7	28.6	16.7	28.6			
18	22	2864	1.05	79.89	20.5	36.8	20.5	36.8			
21	26	2454	1.25	68.44	23.2	41.4	23.2	41.4			
22	27	2366	1.30	66.00	23.7	41.5	23.7	41.5			
23	28	2263	1.30	63.12	24.2	41.7	24.2	41.7			
25	30	2088	1.45	58.25	25.1	41.9	25.1	41.9			
27	32	1976	1.55	55.11	25.6	42.1	25.6	42.1			
30	36	1752	1.75	48.87	26.4	42.4	26.4	42.4			
32	39	1631	1.00	45.48	26.9	41.7	22.8	9.2			
36	43	1477	2.05	41.19	27.3	42.8	21.0	10.3			
41	50	1270	2.40	35.41	27.9	43.1	19.6	10.6			
47	57	1108	2.75	30.91	28.3	43.4	18.4	10.9			
53	64	996	1.95	27.78	28.5	43.0	17.8	10.5			
62	75	842	2.30	23.49	28.8	43.3	16.5	10.8			
73	87	724	2.65	20.19	29.0	43.5	15.3	11.0			
28	34	1854	0.85	51.72	12.2	15.2	12.2	3.9	KH073-11P-132S-04E	101	338
29	35	1820	0.90	50.75	12.6	15.2	12.6	4.0			
34	41	1528	1.05	42.61	15.3	15.8	15.3	4.6			
37	45	1404	1.15	39.17	16.2	16.1	15.7	4.8			
45	54	1162	1.35	32.40	17.7	16.6	15.0	5.3			
48	57	1104	0.85	30.79	18.0	15.6	14.4	4.3			
53	64	988	1.60	27.56	18.5	17.0	13.7	5.7			
61	74	856	1.85	23.88	19.0	17.2	12.7	6.0			
73	88	723	2.15	20.17	19.4	17.5	11.6	6.3			
75	91	697	2.25	19.45	19.5	17.6	11.5	6.3			
79	95	669	1.40	18.65	19.6	16.9	11.6	5.7			
88	106	596	2.65	16.61	19.8	17.8	10.6	6.5			
95	114	553	1.65	15.43	19.9	17.3	10.6	6.0			
112	135	470	1.95	13.12	20.0	17.5	9.7	6.3			
129	155	408	2.25	11.37	20.1	17.7	9.1	6.5			
153	184	344	2.65	9.60	20.2	17.9	8.4	6.7			
158	191	332	2.75	9.26	20.3	18.0	8.3	6.7			



Legend see page 261

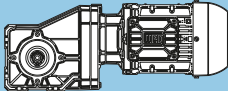
\*\* ... on request

P <sub>N</sub> = 5.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
5.5 kW		6.6 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
60	73	869	0.90	24.25	7.9	12.5	7.9	2.6	KH063-11P-132S-04E	81	336
66	80	791	0.85	22.07	8.9	12.8	8.9	2.8			
73	88	717	1.05	20.00	9.6	13.0	9.6	3.0			
84	102	622	0.85	17.34	10.4	12.5	10.1	2.5			
89	108	588	1.20	16.40	10.6	13.4	9.9	3.4			
105	127	500	1.35	13.94	11.2	13.7	9.0	3.7			
111	134	473	1.10	13.19	11.3	13.1	9.1	3.2			
128	154	411	1.55	11.46	11.6	14.0	8.2	4.0			
133	160	396	1.60	11.05	11.7	14.0	8.0	4.1			
135	162	390	1.30	10.88	11.7	13.5	8.2	3.6			
161	194	326	1.80	9.09	11.9	14.2	7.3	4.3			
164	198	320	1.60	8.92	12.0	13.8	7.4	3.9			
193	233	272	1.80	7.58	12.1	14.0	6.8	4.1			
235	283	223	2.10	6.23	12.2	14.3	6.2	4.3			
244	294	215	2.15	6.01	12.2	14.3	6.1	4.3			
297	357	177	2.45	4.94	12.3	14.5	5.6	4.5			
74	89	707	0.85	19.73	3.8	5.5	3.8	3.2	KH053-11P-132S-04E	68	334
90	109	580	1.05	16.19	6.4	10.2	6.4	3.5			
98	118	537	0.80	14.98	**	**	**	**			
107	128	493	1.25	13.75	7.5	10.5	7.5	3.8			
129	155	409	1.05	11.40	8.3	10.2	8.3	3.5			
130	156	406	1.50	11.31	8.3	10.8	8.3	4.1			
134	162	391	1.55	10.91	8.4	10.8	8.4	4.1			
156	188	337	1.25	9.40	8.8	10.5	8.8	3.8			
163	197	322	1.80	8.97	8.9	11.0	8.7	4.3			
190	229	276	1.50	7.71	9.1	10.8	8.4	4.1			
224	269	235	1.80	6.55	9.3	10.9	7.7	4.2			
272	327	193	2.15	5.39	9.4	11.1	7.1	4.4			
282	340	186	2.25	5.19	9.4	11.2	6.9	4.5			
343	413	153	2.70	4.27	8.6	11.3	6.4	4.6			

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\*\* ... on request

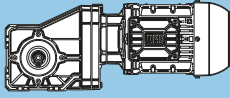
P <sub>N</sub> = 7.5 kW										IE3		
50 Hz		60 Hz				at 50 Hz					m kg	Dimension sheet see page
7.5 kW		9.0 kW				Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>			F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
9.7	12	7388	1.80	151.11	83.7	90.1	83.7	90.1	KH123-11P-L132M-04F	447	346	
11	13	6442	2.05	131.76	85.1	91.0	85.1	91.0				
12	14	6212	2.10	127.05	85.4	91.3	85.4	91.3				
13	16	5549	2.35	113.49	86.2	91.9	86.2	91.9				
15	18	4778	2.75	97.73	87.0	92.7	87.0	92.7				
30	36	2403	2.50	49.16	88.7	95.1	88.7	95.1				
52	63	1370	2.50	28.03	87.3	95.8	87.3	95.8				
10	13	6891	1.20	140.95	50.4	61.3	50.4	61.3	KH103-11P-L132M-04F	324	344	
12	14	6087	1.35	124.50	53.2	62.2	53.2	62.2				
14	17	5095	1.60	104.21	55.9	63.3	55.9	63.3				
16	19	4565	1.80	93.37	57.2	64.0	57.2	64.0				
18	22	3906	2.05	79.90	58.5	64.7	58.5	64.7				
21	26	3374	2.40	69.01	59.4	65.3	59.4	65.3				
28	33	2604	2.30	53.27	60.4	66.2	60.4	66.2				
37	45	1925	2.50	39.38	61.1	67.0	61.1	67.0				
48	58	1483	2.30	30.33	61.1	67.1	61.1	67.1				
65	79	1096	2.50	22.42	55.1	67.6	55.1	67.6				
13	16	5363	0.85	109.70	21.0	35.2	21.0	35.2	KH093-11P-L132M-04F	206	342	
15	19	4640	1.00	94.90	27.0	39.1	27.0	39.1				
16	19	4474	1.05	91.51	28.1	39.3	28.1	39.3				
18	22	3947	1.15	80.74	31.1	40.0	31.1	40.0				
21	26	3359	1.35	68.71	33.8	40.7	33.8	40.7				
23	28	3127	1.45	63.96	34.7	41.0	34.7	41.0				
25	30	2898	1.60	59.28	35.4	41.3	35.4	41.3				
27	33	2644	1.75	54.07	36.2	41.6	36.2	41.6				
31	38	2289	2.00	46.81	37.2	42.1	37.2	42.1				
35	43	2027	2.25	41.46	37.8	42.4	37.8	42.4				
39	48	1815	1.55	37.13	38.2	41.8	38.2	41.8				
41	49	1753	2.60	35.86	38.3	42.8	38.3	42.8				
42	51	1691	2.50	34.58	38.5	42.9	38.5	42.9				
47	56	1535	1.85	31.39	38.7	42.3	38.7	42.3				
54	65	1329	2.15	27.18	39.0	42.7	39.0	42.7				
61	74	1177	2.55	24.07	39.2	42.9	39.2	42.9				
70	85	1018	2.95	20.82	39.4	43.2	39.4	43.2				
73	88	982	2.50	20.08	39.4	43.3	39.4	43.3				
18	22	3906	0.80	79.89	**	**	**	**	KH083-11P-L132M-04F	156	340	
21	26	3346	0.90	68.44	16.0	27.1	16.0	27.1				
22	27	3227	0.95	66.00	17.3	29.8	17.3	29.8				
23	28	3086	0.95	63.12	18.6	32.6	18.6	32.6				
25	30	2848	1.10	58.25	20.6	37.0	20.6	37.0				
27	32	2694	1.15	55.11	21.7	39.4	21.7	39.4				
30	36	2389	1.30	48.87	23.6	41.5	23.6	41.5				
36	43	2014	1.50	41.19	25.4	42.0	25.4	42.0				
41	50	1731	1.75	35.41	26.5	42.4	26.5	42.4				
47	57	1511	2.00	30.91	27.2	42.8	27.2	42.8				
53	64	1358	1.40	27.78	27.7	42.3	27.7	42.3				
55	67	1295	2.30	26.48	27.8	43.1	27.8	43.1				
57	69	1249	2.40	25.54	28.0	43.2	28.0	43.2				
62	75	1148	1.70	23.49	28.2	42.7	28.2	42.7				
65	79	1102	2.60	22.54	28.3	43.4	28.3	43.4				
73	88	987	1.95	20.19	28.5	43.0	28.5	43.0				
77	94	925	2.95	18.91	28.6	43.6	28.6	43.6				
83	100	862	2.25	17.63	28.7	43.3	28.7	43.3				
97	117	738	2.65	15.10	28.9	43.5	28.9	43.5				
101	122	712	2.50	14.56	29.0	43.6	29.0	43.6				



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\*\* ... on request

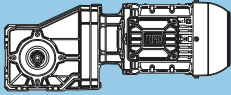


P <sub>N</sub> = 7.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
7.5 kW		9.0 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
37	45	1915	0.85	39.17	11.4	15.0	11.4	3.8	KH073-11P-L132M-04F	115	338
45	55	1584	1.00	32.40	14.9	15.7	13.3	4.5			
53	64	1347	1.20	27.56	16.6	16.2	13.4	5.0			
61	74	1168	1.35	23.88	17.7	16.6	13.4	5.3			
73	88	986	1.60	20.17	18.5	17.0	12.7	5.7			
75	91	951	1.65	19.45	18.7	17.0	12.5	5.8			
79	95	912	1.00	18.65	18.8	16.2	12.3	4.9			
88	107	812	1.95	16.61	19.2	17.3	11.5	6.1			
95	115	754	1.25	15.43	19.3	16.6	11.5	5.4			
112	135	641	1.45	13.12	19.7	17.0	10.6	5.7			
129	156	556	1.65	11.37	19.9	17.3	9.8	6.0			
153	184	469	1.95	9.60	20.0	17.5	9.0	6.3			
158	191	453	2.05	9.26	20.1	17.6	8.8	6.3			
185	224	387	2.40	7.91	20.2	17.8	8.2	6.5			
73	89	978	0.80	20.00	**	**	**	**	KH063-11P-L132M-04F	95	336
89	108	802	0.90	16.40	8.8	12.7	8.8	2.8			
105	127	682	1.00	13.94	9.9	13.1	9.2	3.2			
111	134	645	0.80	13.19	**	**	**	**			
128	154	560	1.15	11.46	10.8	13.5	9.0	3.5			
133	160	540	1.15	11.05	10.9	13.5	8.8	3.6			
135	163	532	0.95	10.88	11.0	12.9	8.6	2.9			
161	195	444	1.35	9.09	11.5	13.9	7.9	3.9			
164	198	436	1.15	8.92	11.5	13.3	8.1	3.4			
193	234	371	1.35	7.58	11.8	13.6	7.4	3.6			
235	284	305	1.55	6.23	12.0	13.9	6.7	3.9			
244	295	294	1.55	6.01	12.0	13.9	6.6	4.0			
297	358	242	1.80	4.94	12.2	14.2	6.0	4.2			
90	109	792	0.80	16.19	**	**	**	**	KH053-11P-L132M-04F	82	334
107	129	672	0.90	13.75	4.7	7.4	4.7	3.3			
130	156	553	1.10	11.31	6.8	10.3	6.8	3.6			
134	162	533	1.15	10.91	7.0	10.4	7.0	3.7			
156	188	460	0.90	9.40	7.8	9.9	7.8	3.2			
163	197	439	1.30	8.97	8.0	10.7	8.0	4.0			
190	230	377	1.10	7.71	8.5	10.3	8.5	3.6			
224	270	320	1.30	6.55	8.9	10.6	8.3	3.9			
272	328	264	1.60	5.39	9.2	10.8	7.5	4.1			
282	341	254	1.65	5.19	9.2	10.9	7.4	4.2			
343	415	209	2.00	4.27	9.0	11.1	6.7	4.4			

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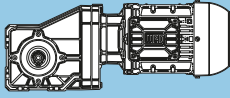
\*\* ... on request

P <sub>N</sub> = 9.2 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
9.2 kW		11 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
9.7	12	9094	1.45	151.11	80.6	88.4	80.6	88.4	KH123-11P-L132M-04G	452	346
11	14	7646	1.75	127.05	83.3	89.8	83.3	89.8			
13	16	6830	1.95	113.49	84.5	90.7	84.5	90.7			
15	18	5881	2.25	97.73	85.8	91.6	85.8	91.6			
17	21	5137	2.55	85.37	86.6	92.4	86.6	92.4			
25	30	3519	2.50	58.47	88.1	94.0	88.1	94.0			
30	36	2958	2.00	49.16	88.4	94.5	88.4	94.5			
44	53	2006	2.50	33.34	88.9	95.0	88.9	95.0			
52	63	1687	2.00	28.03	88.1	95.4	88.1	95.4			
10	13	8482	0.95	140.95	43.3	59.5	43.3	59.5	KH103-11P-L132M-04G	329	344
12	14	7492	1.10	124.50	48.0	60.6	48.0	60.6			
14	16	6503	1.25	108.07	51.8	61.7	51.8	61.7			
16	19	5619	1.45	93.37	54.6	62.7	54.6	62.7			
18	22	4808	1.70	79.90	56.6	63.7	56.6	63.7			
21	26	4153	1.95	69.01	58.0	64.4	58.0	64.4			
27	33	3206	1.90	53.27	59.6	65.5	59.6	65.5			
31	38	2831	2.65	47.05	60.1	65.9	60.1	65.9			
37	45	2370	2.00	39.38	60.7	66.5	60.7	66.5			
48	58	1825	1.90	30.33	61.2	66.6	61.2	66.6			
54	66	1612	2.65	26.79	59.4	66.9	59.4	66.9			
65	79	1349	2.00	22.42	55.7	67.3	55.7	67.3			
15	19	5711	0.80	94.90	**	**	**	**	KH093-11P-L132M-04G	211	342
16	19	5507	0.85	91.51	19.4	31.8	19.4	31.8			
18	22	4859	0.95	80.74	25.4	38.8	25.4	38.8			
21	26	4135	1.10	68.71	30.1	39.7	30.1	39.7			
23	28	3849	1.20	63.96	31.6	40.1	31.6	40.1			
25	30	3567	1.30	59.28	32.9	40.5	32.9	40.5			
27	33	3254	1.40	54.07	34.2	40.9	34.2	40.9			
31	38	2817	1.60	46.81	35.7	41.4	35.7	41.4			
35	43	2495	1.85	41.46	36.7	41.8	36.7	41.8			
39	48	2234	1.25	37.13	37.3	41.1	37.3	41.1			
41	49	2158	2.10	35.86	37.5	42.3	37.5	42.3			
42	51	2081	2.00	34.58	37.7	42.4	37.7	42.4			
47	56	1889	1.50	31.39	38.1	41.7	38.1	41.7			
48	58	1836	2.50	30.51	38.2	42.7	38.2	42.7			
54	65	1636	1.75	27.18	38.6	42.2	38.6	42.2			
56	68	1563	2.90	25.97	38.7	43.0	38.7	43.0			
61	73	1448	2.10	24.07	38.9	42.5	38.9	42.5			
70	85	1253	2.40	20.82	39.1	42.8	39.1	42.8			
73	88	1208	2.00	20.08	39.2	42.9	39.2	42.9			
82	100	1066	2.85	17.72	39.3	43.1	39.3	43.1			



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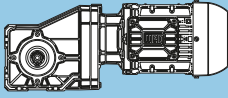
\*\* ... on request

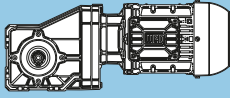
P <sub>N</sub> = 9.2 kW										IE3	
50 Hz 9.2 kW		60 Hz 11 kW		at 50 Hz						m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
22	27	3972	0.80	66.00	**	**	**	**	KH083-11P-L132M-04G	161	340
23	28	3798	0.80	63.12	**	**	**	**			
25	30	3505	0.90	58.25	14.0	22.8	14.0	7.3			
26	32	3316	0.95	55.11	16.3	27.7	16.3	7.6			
30	36	2941	1.05	48.87	19.9	35.5	19.9	8.2			
35	43	2479	1.25	41.19	23.0	41.3	23.0	8.8			
41	50	2131	1.45	35.41	24.9	41.9	22.6	9.4			
46	56	1891	1.05	31.43	25.9	41.2	21.9	8.7			
47	57	1860	1.65	30.91	26.0	42.3	21.0	9.8			
53	64	1672	1.15	27.78	26.7	41.6	20.4	9.1			
55	67	1594	1.90	26.48	27.0	42.6	19.3	10.1			
57	69	1537	1.95	25.54	27.2	42.7	19.0	10.2			
62	75	1414	1.40	23.49	27.5	42.2	18.7	9.7			
65	78	1356	2.10	22.54	27.7	43.0	17.8	10.5			
72	87	1215	1.60	20.19	28.0	42.6	17.3	10.1			
77	93	1138	2.40	18.91	28.2	43.3	16.3	10.8			
83	100	1061	1.85	17.63	28.4	42.9	16.1	10.4			
92	111	959	2.70	15.93	28.6	43.6	14.9	11.1			
97	117	909	2.15	15.10	28.7	43.2	14.9	10.7			
100	121	876	2.00	14.56	28.7	43.2	14.7	10.7			
114	137	773	2.55	12.85	28.9	43.4	13.8	10.9			
135	164	649	3.00	10.78	29.0	43.7	12.7	11.2			
45	54	1950	0.80	32.40	**	**	**	**	KH073-11P-L132M-04G	120	338
53	64	1659	0.95	27.56	14.2	15.6	11.8	4.3			
61	74	1437	1.10	23.88	16.0	16.0	12.0	4.8			
72	88	1214	1.30	20.17	17.4	16.5	12.1	5.2			
75	91	1170	1.35	19.45	17.6	16.6	12.1	5.3			
78	95	1122	0.85	18.65	17.9	15.5	11.2	4.2			
88	106	1000	1.60	16.61	18.5	16.9	12.0	5.7			
95	114	929	1.00	15.43	18.7	16.1	11.2	4.8			
111	135	790	1.20	13.12	19.2	16.5	11.2	5.3			
128	155	684	1.35	11.37	19.6	16.9	10.4	5.6			
152	184	578	1.60	9.60	19.8	17.2	9.5	5.9			
158	191	557	1.65	9.26	19.9	17.3	9.3	6.0			
185	223	476	1.95	7.91	20.0	17.5	8.6	6.3			
105	127	839	0.80	13.94	**	**	**	**	KH063-11P-L132M-04G	100	336
127	154	690	0.95	11.46	9.9	13.1	8.3	3.1			
132	160	665	0.95	11.05	10.1	13.2	8.3	3.2			
134	162	655	0.80	10.88	**	**	**	**			
161	194	547	1.10	9.09	10.9	13.5	8.2	3.6			
164	198	537	0.95	8.92	11.0	12.9	7.8	2.9			
193	233	456	1.10	7.58	11.4	13.2	7.8	3.3			
234	283	375	1.25	6.23	11.8	13.6	7.1	3.6			
243	294	362	1.30	6.01	11.8	13.6	7.0	3.7			
296	357	297	1.45	4.94	12.0	13.9	6.3	4.0			
129	156	681	0.90	11.31	4.5	6.9	4.5	3.2	KH053-11P-L132M-04G	87	334
134	162	657	0.95	10.91	5.1	8.2	5.1	3.3			
163	197	540	1.05	8.97	6.9	10.4	6.9	3.7			
189	229	464	0.90	7.71	7.8	9.9	7.8	3.2			
223	269	394	1.05	6.55	8.4	10.2	8.4	3.5			
271	327	324	1.30	5.39	8.8	10.5	8.0	3.8			
281	340	312	1.35	5.19	8.9	10.6	7.8	3.9			
342	413	257	1.65	4.27	9.2	10.8	7.1	4.1			

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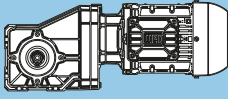
\*\* ... on request

$P_N = 11 \text{ kW}$										IE3	
50 Hz		60 Hz		at 50 Hz						m kg	Dimension sheet see page
11 kW		13 kW		Output shaft		Hollow shaft					
$n_{50}$ min <sup>-1</sup>	$n_{60}$ min <sup>-1</sup>	$M_2$ Nm	$f_b$	$i$	$F_{rN}$ kN	$F_{aN}$ kN	$F_{rN}$ kN	$F_{aN}$ kN			
10	12	10483	1.75	146.69	99.6	122.0	99.6	122.0	<b>KH153-22P-160M-04E</b>	746	348
12	14	9029	2.00	126.34	102.1	123.1	102.1	123.1			
13	16	7809	2.35	109.28	103.9	124.0	103.9	124.0			
15	18	6888	2.65	96.39	105.1	124.7	105.1	124.7			
26	31	4056	2.70	56.75	107.7	126.9	107.7	126.9			
41	50	2546	2.70	35.63	108.5	127.4	108.5	127.4			
9.7	12	10799	1.25	151.11	76.8	86.7	76.8	86.7	<b>KH123-22P-160M-04E</b>	514	346
11	13	9416	1.40	131.76	80.0	88.1	80.0	88.1			
13	16	8110	1.65	113.49	82.5	89.4	82.5	89.4			
15	18	6984	1.90	97.73	84.3	90.5	84.3	90.5			
17	21	6101	2.15	85.37	85.5	91.4	85.5	91.4			
20	24	5270	2.50	73.74	86.5	92.2	86.5	92.2			
24	29	4358	3.00	60.98	87.4	93.1	87.4	93.1			
25	30	4178	2.10	58.47	87.6	93.3	87.6	93.3			
29	35	3643	2.70	50.98	88.0	93.8	88.0	93.8			
44	53	2383	2.10	33.34	88.8	94.6	88.8	94.6			
51	61	2077	2.70	29.07	88.9	94.9	88.9	94.9			
12	14	8897	0.90	124.50	41.0	59.0	41.0	59.0	<b>KH103-22P-160M-04E</b>	391	344
14	16	7723	1.05	108.07	47.0	60.3	47.0	60.3			
16	19	6672	1.20	93.37	51.2	61.5	51.2	61.5			
18	22	5710	1.45	79.90	54.3	62.6	54.3	62.6			
21	26	4932	1.65	69.01	56.3	63.5	56.3	63.5			
25	30	4171	1.95	58.36	58.0	64.4	58.0	64.4			
31	37	3403	2.40	47.62	59.3	65.3	59.3	65.3			
36	43	2919	2.60	40.84	60.0	65.8	60.0	65.8			
38	46	2761	2.90	38.64	60.2	66.0	60.2	66.0			
42	50	2522	3.00	35.29	60.5	66.3	60.5	66.3			
55	66	1914	2.25	26.79	59.9	66.5	59.9	66.5			
63	76	1662	2.60	23.25	57.1	66.8	57.1	66.8			
73	88	1436	3.00	20.09	54.2	67.2	54.2	67.2			
18	22	5770	0.80	80.74	**	**	**	**	<b>KH093-22P-160M-04E</b>	273	342
21	26	4910	0.95	68.71	25.0	38.8	25.0	38.8			
25	30	4236	1.10	59.28	29.6	39.6	29.6	39.6			
30	36	3554	1.30	49.73	33.0	40.5	33.0	40.5			
35	43	2963	1.55	41.46	35.2	41.2	35.2	41.2			
36	44	2889	1.60	40.43	35.5	41.3	35.5	41.3			
41	49	2563	1.80	35.86	36.5	41.7	36.5	41.7			
47	56	2259	2.00	31.61	37.3	42.1	37.3	42.1			
48	58	2180	2.10	30.51	37.5	42.2	37.5	42.2			
57	68	1856	2.45	25.97	38.2	42.6	38.2	42.6			
61	74	1720	1.75	24.07	38.4	42.0	38.4	42.0			
66	79	1601	2.85	22.40	38.6	43.0	38.6	43.0			
71	85	1488	2.05	20.82	38.8	42.4	38.8	42.4			
83	100	1266	2.40	17.72	39.1	42.8	39.1	42.8			
97	118	1078	2.80	15.08	39.3	43.1	39.3	43.1			
30	36	3492	0.90	48.87	14.2	23.2	14.2	7.3	<b>KH083-22P-160M-04E</b>	223	340
36	43	2943	1.05	41.18	19.8	35.3	19.8	8.2			
44	53	2413	1.25	33.76	23.4	41.4	22.4	8.9			
48	57	2209	1.40	30.91	24.5	41.7	22.1	9.2			
56	67	1892	1.60	26.48	25.9	42.2	20.3	9.7			
65	79	1611	1.80	22.54	26.9	42.6	18.6	10.1			
78	94	1351	2.00	18.91	27.7	43.0	17.0	10.5			
83	101	1260	1.55	17.63	27.9	42.5	16.9	10.0			
92	111	1138	2.25	15.93	28.2	43.3	15.6	10.8			
97	118	1079	1.80	15.10	28.3	42.8	15.6	10.3			
113	136	933	2.60	13.06	28.6	43.6	14.1	10.7			
114	138	918	2.15	12.85	28.6	43.2	14.4	11.0			
136	165	770	2.55	10.78	28.9	43.5	13.2				
162	195	650	3.00	9.09	29.0	43.7	12.1	11.2			
62	74	1707	0.95	23.88	13.8	15.5	10.5	4.2	<b>KH073-22P-160M-04E</b>	182	338
73	88	1441	1.10	20.17	16.0	16.0	10.8	4.8			
89	107	1187	1.35	16.61	17.6	16.5	11.0	5.3			
129	156	813	1.15	11.37	19.2	16.5	10.3	5.2			
153	185	686	1.35	9.60	19.5	16.9	10.0	5.6			
186	224	565	1.65	7.91	19.8	17.2	9.0	6.0			

P <sub>N</sub> = 15 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
15 kW		18 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
10	12	14344	1.30	146.69	90.7	119.1	90.7	119.1	KH153-22P-160L-04F	769	348
12	14	12354	1.50	126.34	95.7	120.6	95.7	120.6			
13	16	10686	1.70	109.28	99.3	121.8	99.3	121.8			
15	18	9425	1.95	96.39	101.5	122.8	101.5	122.8			
18	21	8095	2.25	82.79	103.5	123.8	103.5	123.8			
21	26	6735	2.70	68.88	105.3	124.9	105.3	124.9			
26	31	5549	1.95	56.75	106.5	125.8	106.5	125.8			
30	36	4780	3.00	48.88	107.1	126.4	107.1	126.4			
41	50	3484	1.95	35.63	108.0	126.4	108.0	126.4			
48	58	3001	3.00	30.69	108.3	126.9	108.3	126.9			
9.7	12	14776	0.90	151.11	63.9	82.7	63.9	82.7	KH123-22P-160L-04F	537	346
11	13	12884	1.05	131.76	70.8	84.6	70.8	84.6			
13	16	11097	1.20	113.49	76.0	86.4	76.0	86.4			
15	18	9556	1.40	97.73	79.7	87.9	79.7	87.9			
17	21	8348	1.60	85.37	82.1	89.1	82.1	89.1			
20	24	7210	1.85	73.74	84.0	90.3	84.0	90.3			
24	29	5963	2.20	60.98	85.7	91.5	85.7	91.5			
25	30	5717	1.55	58.47	86.0	91.8	86.0	91.8			
29	35	4907	2.65	50.18	86.9	92.6	86.9	92.6			
33	40	4294	3.00	43.91	87.5	93.2	87.5	93.2			
44	53	3260	1.55	33.34	88.3	93.5	88.3	93.5			
50	61	2843	1.95	29.07	88.5	94.0	88.5	94.0			
59	71	2448	3.00	25.04	86.8	94.5	86.8	94.5			
14	16	10567	0.80	108.07	**	**	**	**	KH103-22P-160L-04F	414	344
16	19	9130	0.90	93.37	39.6	58.7	39.6	58.7			
18	22	7813	1.05	79.90	46.6	60.2	46.6	60.2			
21	26	6748	1.20	69.01	51.0	61.5	51.0	61.5			
25	30	5707	1.45	58.36	54.3	62.6	54.3	62.6			
31	37	4656	1.75	47.62	57.0	63.8	57.0	63.8			
36	43	3993	1.90	40.84	58.3	64.6	58.3	64.6			
38	46	3778	2.15	38.64	58.7	64.9	58.7	64.9			
42	50	3451	2.20	35.29	59.3	65.2	59.3	65.2			
49	59	2953	2.55	30.20	60.0	65.8	60.0	65.8			
55	66	2620	1.65	26.79	60.4	65.5	60.4	65.5			
56	68	2550	2.95	26.08	60.5	66.3	60.5	66.3			
63	76	2273	1.90	23.25	58.7	66.0	58.7	66.0			
73	88	1964	2.20	20.09	55.6	66.4	55.6	66.4			
85	103	1681	2.55	17.19	52.6	66.8	52.6	66.8			
99	120	1452	2.95	14.85	49.8	67.1	49.8	67.1			
25	30	5796	0.80	59.28	**	**	**	**	KH093-22P-160L-04F	296	342
29	36	4863	0.95	49.73	25.4	38.8	25.4	38.8			
35	43	4054	1.15	41.46	30.6	39.8	30.6	39.8			
36	44	3953	1.15	40.43	31.1	40.0	31.1	40.0			
41	49	3506	1.30	35.86	33.2	40.5	33.2	40.5			
46	56	3091	1.50	31.61	34.8	41.1	34.8	41.1			
48	58	2983	1.55	30.51	35.2	41.2	35.2	41.2			
56	68	2539	1.80	25.97	36.5	41.8	36.5	41.8			
61	74	2354	1.30	24.07	37.0	40.9	37.0	40.9			
65	79	2190	2.10	22.40	37.4	42.2	37.4	42.2			
70	85	2036	1.50	20.82	37.8	41.5	37.8	41.5			
78	94	1837	2.45	18.79	38.2	42.7	38.2	42.7			
83	100	1733	1.75	17.72	38.4	42.0	38.4	42.0			
97	118	1475	2.05	15.08	38.8	42.4	38.8	42.4			
113	136	1272	2.40	13.01	39.1	42.8	39.1	42.8			
134	163	1067	2.85	10.91	36.7	43.1	36.7	43.1			

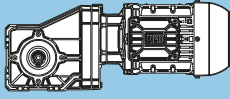
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\*\* ... on request

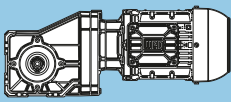
P <sub>N</sub> = 15 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
15 kW		18 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
43	53	3301	0.95	33.76	16.5	28.1	16.5	7.6	KH083-22P-160L-04F	246	340
47	57	3022	1.00	30.91	19.2	33.9	19.1	8.0			
55	67	2589	1.15	26.48	22.4	41.0	19.3	8.7			
65	79	2204	1.30	22.54	24.5	41.7	19.3	9.2			
77	94	1849	1.50	18.91	26.1	42.3	18.8	9.8			
83	101	1724	1.15	17.63	26.5	41.5	18.3	9.0			
92	111	1558	1.65	15.93	27.1	42.7	17.0	10.2			
97	118	1477	1.35	15.10	27.3	42.0	17.1	9.5			
112	136	1277	1.90	13.06	27.9	43.1	15.3	10.6			
114	138	1256	1.55	12.85	27.9	42.5	15.7	10.0			
136	165	1054	1.85	10.78	28.4	42.9	14.3	10.4			
161	195	889	2.20	9.09	28.7	43.2	13.1	10.7			
197	238	728	2.70	7.45	28.9	43.5	11.8	11.0			
73	88	1972	0.80	20.17	**	**	**	**	KH073-22P-160L-04F	205	338
88	107	1624	1.00	16.61	14.5	15.6	8.8	4.4			
129	156	1112	0.85	11.37	17.9	15.5	8.5	4.3			
153	185	939	1.00	9.60	18.7	16.1	8.7	4.8			
185	224	773	1.20	7.91	19.3	16.6	8.8	5.3			

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\*\* ... on request

P <sub>N</sub> = 18.5 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
18.5 kW		22 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
10	12	17630	1.05	146.69	79.7	116.5	79.7	116.5	KH153-22P-180M-04E	783	348
12	14	15184	1.20	126.34	88.2	118.4	88.2	118.4			
13	16	13134	1.40	109.28	93.9	120.0	93.9	120.0			
15	18	11585	1.60	96.39	97.4	121.2	97.4	121.2			
18	21	9950	1.85	82.79	100.6	122.4	100.6	122.4			
21	26	8278	2.20	68.88	103.3	123.7	103.3	123.7			
26	31	6869	2.65	57.15	105.1	124.8	105.1	124.8			
30	36	5875	2.45	48.88	106.2	125.5	106.2	125.5			
41	50	4282	1.60	35.63	107.5	125.6	107.5	125.6			
48	58	3689	2.45	30.69	107.9	126.2	107.9	126.2			
11	13	15836	0.85	131.76	59.2	81.6	59.2	81.6	KH123-22P-180M-04E	551	346
13	16	13640	1.00	113.49	68.3	83.8	68.3	83.8			
15	18	11746	1.15	97.73	74.3	85.7	74.3	85.7			
17	21	10260	1.30	85.37	78.1	87.2	78.1	87.2			
20	24	8863	1.50	73.74	81.1	88.6	81.1	88.6			
24	29	7329	1.80	60.98	83.8	90.2	83.8	90.2			
29	35	6031	2.20	50.18	85.6	91.5	85.6	91.5			
33	40	5277	2.45	43.91	86.5	92.2	86.5	92.2			
36	43	4958	2.65	41.25	86.8	92.5	86.8	92.5			
39	47	4544	2.90	37.81	87.2	92.9	87.2	92.9			
51	61	3494	1.60	29.07	88.1	93.2	88.1	93.2			
59	71	3009	2.45	25.04	88.2	93.8	88.2	93.8			
18	22	9603	0.85	79.90	36.4	58.2	36.4	58.2	KH103-22P-180M-04E	428	344
21	26	8294	1.00	69.01	44.3	59.7	44.3	59.7			
25	30	7014	1.15	58.36	50.0	61.2	50.0	61.2			
31	37	5723	1.40	47.62	54.3	62.6	54.3	62.6			
36	43	4908	1.55	40.84	56.4	63.6	56.4	63.6			
38	46	4644	1.75	38.64	57.0	63.9	57.0	63.9			
42	50	4241	1.80	35.29	57.9	64.3	57.9	64.3			
48	58	3708	2.20	30.85	58.8	64.9	58.8	64.9			
49	59	3630	2.10	30.20	59.0	65.0	59.0	65.0			
56	68	3134	2.40	26.08	59.7	65.6	59.7	65.6			
63	76	2794	1.55	23.25	60.1	65.2	60.1	65.2			
67	80	2650	2.85	22.05	58.0	66.1	58.0	66.1			
73	88	2415	1.80	20.09	56.8	65.8	56.8	65.8			
86	103	2066	2.10	17.19	53.5	66.3	53.5	66.3			
99	120	1785	2.40	14.85	50.7	66.7	50.7	66.7			
117	141	1510	2.85	12.56	47.8	67.0	47.8	67.0			
30	36	5977	0.80	49.73	**	**	**	**	KH093-22P-180M-04E	310	342
36	44	4859	0.95	40.43	25.4	38.8	25.4	38.8			
41	49	4310	1.05	35.86	29.1	39.5	29.1	39.5			
47	56	3799	1.20	31.61	31.9	40.2	31.9	40.2			
48	58	3667	1.25	30.51	32.5	40.3	32.5	40.3			
57	68	3121	1.45	25.97	34.7	41.0	34.7	41.0			
66	79	2692	1.70	22.40	36.1	41.6	36.1	41.6			
71	85	2502	1.20	20.82	36.6	40.6	36.6	40.6			
78	94	2258	2.00	18.79	37.3	42.1	37.3	42.1			
83	100	2130	1.45	17.72	37.6	41.3	37.6	41.3			
96	116	1836	2.50	15.28	38.2	42.7	38.2	42.7			
97	118	1812	1.70	15.08	38.2	41.8	38.2	41.8			
113	136	1564	1.95	13.01	38.7	42.3	38.7	42.3			
135	163	1311	2.30	10.91	37.5	42.7	37.5	42.7			
166	200	1066	2.85	8.87	34.6	43.1	34.6	43.1			
56	67	3183	0.95	26.48	17.7	30.7	16.6	7.8	KH083-22P-180M-04E	260	340
65	79	2709	1.05	22.54	21.6	39.2	17.2	8.5			
78	94	2273	1.20	18.91	24.2	41.6	17.3	9.1			
92	111	1915	1.35	15.93	25.8	42.2	17.4	9.7			
97	118	1815	1.10	15.10	26.2	41.4	16.5	8.9			
113	136	1570	1.55	13.06	27.1	42.7	16.3	10.2			
114	138	1544	1.30	12.85	27.1	41.9	16.4	9.4			
136	165	1296	1.50	10.78	27.8	42.4	15.2	9.9			
162	195	1093	1.80	9.09	28.3	42.8	13.8	10.3			
197	238	895	2.20	7.45	28.7	43.2	12.5	10.7			

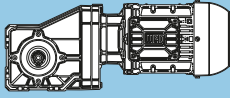
K

P <sub>N</sub> = 22 kW										IE3				
50 Hz		60 Hz		at 50 Hz						m kg	Dimension sheet see page			
22 kW		26 kW		Output shaft		Hollow shaft								
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>	i	F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN						
10	12	20966	0.90	146.69	63.6	111.2	63.6	111.2	KH153-22P-180L-04F	804	348			
12	14	18057	1.00	126.34	77.9	116.2	77.9	116.2						
13	16	15619	1.20	109.28	86.8	118.1	86.8	118.1						
15	18	13777	1.35	96.39	92.2	119.5	92.2	119.5						
18	21	11833	1.55	82.79	96.9	121.0	96.9	121.0						
21	26	9845	1.85	68.88	100.8	122.5	100.8	122.5						
26	31	8168	2.25	57.15	103.4	123.8	103.4	123.8						
30	36	6986	2.05	48.88	105.0	124.7	105.0	124.7						
31	37	6812	2.65	47.66	105.2	124.8	105.2	124.8						
35	42	6043	2.95	42.28	106.0	125.4	106.0	125.4						
41	50	5092	1.35	35.63	106.9	124.7	106.9	124.7						
48	58	4386	2.05	30.69	107.4	125.5	107.4	125.5						
55	67	3793	2.95	26.54	107.8	126.1	107.8	126.1						
13	16	16221	0.85	113.49	57.3	81.2	57.3	81.2				KH123-22P-180L-04F	572	346
15	18	13968	0.95	97.73	67.1	83.5	67.1	83.5						
17	21	12202	1.10	85.37	73.0	85.3	73.0	85.3						
20	24	10539	1.25	73.74	77.4	86.9	77.4	86.9						
24	29	8716	1.50	60.98	81.4	88.8	81.4	88.8						
29	35	7172	1.85	50.18	84.0	90.3	84.0	90.3						
33	40	6276	2.05	43.91	85.3	91.2	85.3	91.2						
36	43	5896	2.25	41.25	85.8	91.6	85.8	91.6						
39	47	5404	2.45	37.81	86.4	92.1	86.4	92.1						
42	51	5005	2.60	35.02	86.8	92.5	86.8	92.5						
45	54	4721	2.80	33.03	87.1	92.8	87.1	92.8						
51	61	4155	1.35	29.07	87.6	92.4	87.6	92.4						
59	71	3579	2.05	25.04	88.0	93.1	88.0	93.1						
68	82	3081	2.65	21.56	85.0	93.7	85.0	93.7						
21	26	9863	0.85	69.01	34.5	57.7	34.5	57.7	KH103-22P-180L-04F	449	344			
25	30	8341	1.00	58.36	44.1	59.6	44.1	59.6						
31	37	6806	1.20	47.62	50.8	61.4	50.8	61.4						
36	43	5837	1.30	40.84	53.9	62.5	53.9	62.5						
38	46	5523	1.45	38.64	54.8	62.9	54.8	62.9						
42	50	5044	1.50	35.29	56.1	63.4	56.1	63.4						
48	58	4409	1.85	30.85	57.5	64.1	57.5	64.1						
49	59	4316	1.75	30.20	57.7	64.2	57.7	64.2						
56	68	3727	2.05	26.08	58.8	64.9	58.8	64.9						
63	76	3323	1.30	23.25	59.5	64.5	59.5	64.5						
67	80	3152	2.40	22.05	59.3	65.6	59.3	65.6						
73	88	2871	1.50	20.09	58.1	65.1	58.1	65.1						
82	99	2573	2.95	18.00	54.8	66.2	54.8	66.2						
86	103	2457	1.75	17.19	54.5	65.7	54.5	65.7						
99	120	2122	2.05	14.85	51.6	66.2	51.6	66.2						
117	141	1795	2.40	12.56	48.5	66.6	48.5	66.6						
143	173	1465	2.95	10.25	45.1	67.1	45.1	67.1						
36	44	5778	0.80	40.43	**	**	**	**	KH093-22P-180L-04F	331	342			
41	49	5125	0.90	35.86	23.2	38.5	23.2	38.5						
47	56	4518	1.00	31.61	27.8	39.3	27.8	39.3						
48	58	4361	1.05	30.51	28.8	39.5	28.8	39.5						
57	68	3712	1.25	25.97	32.3	40.3	32.3	40.3						
66	79	3202	1.45	22.40	34.4	40.9	34.4	40.9						
71	85	2976	1.05	20.82	35.2	39.8	35.2	39.8						
78	94	2686	1.70	18.79	36.1	41.6	36.1	41.6						
83	100	2533	1.20	17.72	36.6	40.6	36.6	40.6						
96	116	2184	2.10	15.28	37.4	42.2	37.4	42.2						
97	118	2155	1.40	15.08	37.5	41.2	37.5	41.2						
113	136	1859	1.65	13.01	38.1	41.8	38.1	41.8						
123	149	1708	2.65	11.95	38.4	42.8	38.4	42.8						
135	163	1559	1.95	10.91	38.4	42.3	38.4	42.3						
166	200	1268	2.40	8.87	35.4	42.8	35.4	42.8						

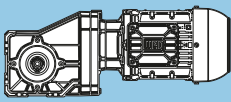
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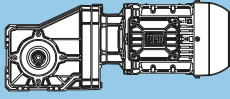
P <sub>N</sub> = 22 kW										IE3	
50 Hz 22 kW		60 Hz 26 kW		i	at 50 Hz					m kg	Dimension sheet see page
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		Output shaft		Hollow shaft				
					F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
56	67	3785	0.80	26.48	**	**	**	**	KH083-22P-180L-04F	281	340
65	79	3222	0.90	22.54	17.3	29.8	15.0	7.7			
78	94	2703	1.00	18.91	21.6	39.2	15.5	8.5			
92	111	2277	1.15	15.93	24.2	41.6	15.8	9.1			
97	118	2158	0.90	15.10	24.7	40.7	14.9	8.2			
113	136	1867	1.30	13.06	26.0	42.2	15.9	9.7			
114	138	1837	1.10	12.85	26.1	41.3	15.1	8.8			
136	165	1541	1.30	10.78	27.1	41.9	15.1	9.4			
162	195	1299	1.50	9.09	27.8	42.4	14.6	9.9			
197	238	1065	1.85	7.45	28.4	42.9	13.1	10.4			



<b>P<sub>N</sub> = 30 kW</b>										<b>IE3</b>	
<b>50 Hz</b>		<b>60 Hz</b>		<b>i</b>	<b>at 50 Hz</b>					<b>m</b> kg	<b>Dimension sheet</b> see page
<b>30 kW</b>		<b>36 kW</b>			<b>Output shaft</b>		<b>Hollow shaft</b>				
<b>n<sub>50</sub></b> min <sup>-1</sup>	<b>n<sub>60</sub></b> min <sup>-1</sup>	<b>M<sub>2</sub></b> Nm	<b>f<sub>B</sub></b>		<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN	<b>F<sub>rN</sub></b> kN	<b>F<sub>aN</sub></b> kN			
14	16	21155	0.90	109.28	62.5	108.9	62.5	108.9	<b>KH153-22P-200L-04E</b>	862	348
15	18	18659	1.00	96.39	75.4	115.8	75.4	115.8			
18	22	16027	1.15	82.79	85.5	117.8	85.5	117.8			
21	26	13334	1.35	68.88	93.4	119.8	93.4	119.8			
26	31	11063	1.65	57.15	98.5	121.6	98.5	121.6			
30	36	9462	1.50	48.88	101.4	122.8	101.4	122.8			
31	37	9226	2.00	47.66	101.8	123.0	101.8	123.0			
35	42	8185	2.20	42.28	103.4	123.8	103.4	123.8			
36	43	7931	2.30	40.97	103.8	123.9	103.8	123.9			
40	48	7221	2.50	37.30	104.7	124.5	104.7	124.5			
42	50	6862	2.65	35.45	105.1	124.8	105.1	124.8			
46	56	6200	2.95	32.03	105.8	125.3	105.8	125.3			
48	58	5941	1.50	30.69	106.1	123.9	106.1	123.9			
56	67	5138	2.20	26.54	106.8	124.7	106.8	124.7			
63	76	4532	3.00	23.41	107.3	125.3	107.3	125.3			
17	21	16526	0.80	85.37	**	**	**	**	<b>KH123-22P-200L-04E</b>	630	346
20	24	14275	0.95	73.74	65.9	83.2	65.9	83.2			
24	29	11805	1.15	60.98	74.1	85.7	74.1	85.7			
29	35	9714	1.35	50.18	79.3	87.8	79.3	87.8			
34	41	8500	1.50	43.91	81.8	89.0	81.8	89.0			
36	43	7985	1.65	41.25	82.7	89.5	82.7	89.5			
39	47	7319	1.80	37.81	83.8	90.2	83.8	90.2			
42	51	6779	1.95	35.02	84.6	90.7	84.6	90.7			
45	54	6394	2.05	33.03	85.1	91.1	85.1	91.1			
50	60	5786	2.25	29.89	85.9	91.7	85.9	91.7			
52	62	5523	2.40	28.53	86.2	92.0	86.2	92.0			
59	71	4847	1.50	25.04	86.9	91.5	86.9	91.5			
63	75	4569	2.85	23.60	87.2	92.9	87.2	92.9			
69	83	4174	1.95	21.56	87.3	92.4	87.3	92.4			
79	94	3647	2.25	18.84	82.9	93.0	82.9	93.0			
91	109	3150	2.60	16.27	78.6	93.6	78.6	93.6			
31	37	9218	0.90	47.62	39.0	58.6	39.0	58.6	<b>KH103-22P-200L-04E</b>	507	344
38	46	7480	1.10	38.64	48.1	60.6	48.1	60.6			
42	50	6831	1.10	35.29	50.7	61.4	50.7	61.4			
48	58	5972	1.35	30.85	53.5	62.3	53.5	62.3			
49	59	5846	1.30	30.20	53.9	62.5	53.9	62.5			
57	68	5049	1.50	26.08	56.1	63.4	56.1	63.4			
67	81	4268	1.80	22.05	57.8	64.3	57.8	64.3			
74	89	3889	1.10	20.09	58.5	63.7	58.5	63.7			
82	99	3484	2.20	18.00	57.0	65.2	57.0	65.2			
86	104	3328	1.30	17.19	56.9	64.5	56.9	64.5			
100	120	2875	1.50	14.85	53.5	65.1	53.5	65.1			
101	122	2826	2.70	14.60	52.5	65.9	52.5	65.9			
118	142	2431	1.80	12.56	50.1	65.8	50.1	65.8			
144	174	1984	2.20	10.25	46.4	66.4	46.4	66.4			
178	214	1609	2.70	8.31	42.9	66.9	42.9	66.9			
49	58	5906	0.80	30.51	**	**	**	**	<b>KH093-22P-200L-04E</b>	389	342
57	69	5027	0.90	25.97	24.1	38.6	24.1	38.6			
66	79	4336	1.05	22.40	29.0	39.5	29.0	39.5			
79	95	3637	1.25	18.79	32.6	40.4	32.6	40.4			
84	100	3430	0.90	17.72	33.5	39.0	33.5	39.0			
97	116	2958	1.55	15.28	35.3	41.2	35.3	41.2			
98	118	2919	1.05	15.08	35.4	39.9	35.4	39.9			
114	137	2518	1.20	13.01	36.6	40.6	36.6	40.6			
124	149	2313	1.95	11.95	37.1	42.1	37.1	42.1			
136	163	2112	1.45	10.91	37.6	41.3	37.6	41.3			
167	201	1717	1.75	8.87	37.0	42.0	37.0	42.0			
213	256	1343	2.25	6.94	33.5	42.7	33.5	42.7			

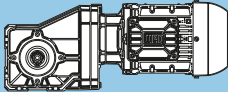
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P <sub>N</sub> = 37 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
37 kW		44 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
15	18	23013	0.80	96.39	**	**	**	**	KH153-22P-200L-04F	889	348
18	22	19766	0.95	82.79	70.1	114.9	70.1	114.9			
21	26	16445	1.10	68.88	84.0	117.5	84.0	117.5			
26	31	13645	1.35	57.15	92.6	119.6	92.6	119.6			
30	36	11670	1.25	48.88	97.3	121.1	97.3	121.1			
31	37	11379	1.60	47.66	97.9	121.3	97.9	121.3			
35	42	10094	1.80	42.28	100.3	122.3	100.3	122.3			
36	43	9782	1.85	40.97	100.9	122.5	100.9	122.5			
40	48	8905	2.05	37.30	102.3	123.2	102.3	123.2			
42	50	8464	2.15	35.45	103.0	123.5	103.0	123.5			
46	56	7647	2.40	32.03	104.1	124.2	104.1	124.2			
48	58	7327	1.25	30.69	104.5	122.4	104.5	122.4			
56	67	6363	2.85	26.65	105.7	125.1	105.7	125.1			
63	76	5589	2.45	23.41	106.4	124.2	106.4	124.2			
74	89	4801	2.80	20.11	107.1	125.0	107.1	125.0			
24	29	14559	0.90	60.98	64.8	82.9	64.8	82.9	KH123-22P-200L-04F	657	346
29	36	11980	1.10	50.18	73.6	85.5	73.6	85.5			
34	41	10484	1.25	43.91	77.6	87.0	77.6	87.0			
36	43	9848	1.35	41.25	79.0	87.6	79.0	87.6			
39	47	9027	1.45	37.81	80.8	88.5	80.8	88.5			
42	51	8361	1.60	35.02	82.0	89.1	82.0	89.1			
45	54	7886	1.65	33.03	82.9	89.6	82.9	89.6			
50	60	7136	1.85	29.89	84.1	90.3	84.1	90.3			
52	62	6812	1.95	28.53	84.6	90.7	84.6	90.7			
59	71	5978	1.25	25.04	85.7	90.2	85.7	90.2			
63	76	5635	2.35	23.60	86.1	91.9	86.1	91.9			
69	83	5147	1.60	21.56	86.6	91.2	86.6	91.2			
76	92	4637	2.85	19.42	85.0	92.9	85.0	92.9			
79	95	4498	1.85	18.84	85.0	92.0	85.0	92.0			
91	110	3884	2.10	16.27	80.4	92.7	80.4	92.7			
110	132	3214	2.55	13.46	74.9	93.6	74.9	93.6			
38	46	9225	0.90	38.64	39.0	58.6	39.0	58.6	KH103-22P-200L-04F	534	344
42	50	8425	0.90	35.29	43.6	59.5	43.6	59.5			
48	58	7365	1.10	30.85	48.6	60.8	48.6	60.8			
49	59	7210	1.05	30.20	49.2	60.9	49.2	60.9			
57	68	6227	1.25	26.08	52.7	62.1	52.7	62.1			
67	81	5264	1.45	22.05	55.5	63.2	55.5	63.2			
74	89	4796	0.90	20.09	56.7	62.4	56.7	62.4			
82	99	4298	1.75	18.00	57.7	64.3	57.7	64.3			
86	104	4104	1.05	17.19	58.1	63.4	58.1	63.4			
100	120	3545	1.25	14.85	55.3	64.2	55.3	64.2			
101	122	3486	2.20	14.60	54.1	65.2	54.1	65.2			
118	142	2999	1.45	12.56	51.7	65.0	51.7	65.0			
127	153	2784	2.70	11.66	49.4	66.0	49.4	66.0			
144	174	2447	1.75	10.25	47.6	65.7	47.6	65.7			
178	214	1984	2.20	8.31	43.9	66.4	43.9	66.4			
223	268	1585	2.70	6.64	40.3	66.9	40.3	66.9			

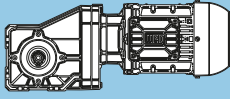
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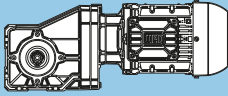
P <sub>N</sub> = 45 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
45 kW		55 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
21	26	20001	0.90	68.88	68.9	114.7	68.9	114.7	KH153-22P-225S/M-04F	1026	348
26	31	16595	1.10	57.15	83.5	117.3	83.5	117.3			
30	36	14193	1.00	48.88	91.1	119.2	91.1	119.2			
31	37	13839	1.35	47.66	92.0	119.4	92.0	119.4			
35	42	12277	1.50	42.28	95.9	120.6	95.9	120.6			
36	43	11897	1.55	40.97	96.8	120.9	96.8	120.9			
40	48	10831	1.70	37.30	99.0	121.7	99.0	121.7			
42	50	10294	1.75	35.45	100.0	122.1	100.0	122.1			
46	56	9301	1.95	32.03	101.7	122.9	101.7	122.9			
48	58	8912	1.00	30.69	102.3	120.8	102.3	120.8			
56	67	7738	2.35	26.65	104.0	124.1	104.0	124.1			
63	76	6798	2.00	23.41	105.2	123.0	105.2	123.0			
67	81	6420	2.85	22.11	105.6	125.1	105.6	125.1			
74	89	5839	2.30	20.11	106.2	124.0	106.2	124.0			
88	107	4858	2.95	16.73	107.1	125.0	107.1	125.0			
29	36	14571	0.90	50.18	64.7	82.9	64.7	82.9	KH123-22P-225S/M-04F	794	346
34	41	12750	1.00	43.91	71.3	84.7	71.3	84.7			
36	43	11978	1.10	41.25	73.6	85.5	73.6	85.5			
39	47	10979	1.20	37.81	76.3	86.5	76.3	86.5			
42	51	10169	1.30	35.02	78.3	87.3	78.3	87.3			
45	54	9591	1.40	33.03	79.6	87.9	79.6	87.9			
50	60	8679	1.50	29.89	81.5	88.8	81.5	88.8			
52	62	8284	1.60	28.53	82.2	89.2	82.2	89.2			
59	71	7271	1.00	25.04	83.9	88.6	83.9	88.6			
63	76	6853	1.90	23.60	84.5	90.6	84.5	90.6			
69	83	6260	1.30	21.56	85.3	89.8	85.3	89.8			
76	92	5639	2.35	19.42	86.1	91.8	86.1	91.8			
79	95	5471	1.50	18.84	86.3	90.8	86.3	90.8			
91	110	4724	1.75	16.27	82.4	91.7	82.4	91.7			
93	112	4634	2.85	15.96	80.6	92.9	80.6	92.9			
110	132	3908	2.10	13.46	76.5	92.7	76.5	92.7			
134	161	3214	2.55	11.07	71.0	93.5	71.0	93.5			
48	58	8958	0.90	30.85	40.7	58.9	40.7	58.9	KH103-22P-225S/M-04F	671	344
49	59	8769	0.90	30.20	41.8	59.1	41.8	59.1			
57	68	7573	1.00	26.08	47.7	60.5	47.7	60.5			
67	81	6403	1.20	22.05	52.2	61.9	52.2	61.9			
82	99	5227	1.45	18.00	55.6	63.2	55.6	63.2			
86	104	4991	0.90	17.19	56.2	62.2	56.2	62.2			
100	120	4312	1.00	14.85	57.4	63.1	57.4	63.1			
101	122	4239	1.80	14.60	55.9	64.3	55.9	64.3			
118	142	3647	1.20	12.56	53.4	64.0	53.4	64.0			
127	153	3386	2.25	11.66	50.8	65.3	50.8	65.3			
144	174	2976	1.45	10.25	49.1	65.0	49.1	65.0			
178	214	2413	1.80	8.31	45.0	65.8	45.0	65.8			
223	268	1928	2.25	6.64	41.2	66.5	41.2	66.5			



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P <sub>N</sub> = 55 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
55 kW		66 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
26	31	20282	0.90	57.15	67.5	114.5	67.5	114.5	KH153-22P-225S/M-04G	1074	348
31	37	16914	1.10	47.66	82.4	117.1	82.4	117.1			
36	44	14540	1.25	40.97	90.1	118.9	90.1	118.9			
40	48	13238	1.40	37.30	93.6	119.9	93.6	119.9			
42	50	12581	1.45	35.45	95.2	120.4	95.2	120.4			
46	56	11367	1.60	32.03	97.9	121.3	97.9	121.3			
56	67	9458	1.95	26.65	101.4	122.8	101.4	122.8			
63	76	8308	1.65	23.41	103.2	121.4	103.2	121.4			
67	81	7847	2.30	22.11	103.9	124.0	103.9	124.0			
74	89	7137	1.90	20.11	104.8	122.6	104.8	122.6			
80	97	6544	2.80	18.44	105.5	125.0	105.5	125.0			
88	107	5937	2.40	16.73	106.1	123.9	106.1	123.9			
107	129	4926	2.90	13.88	107.0	124.9	107.0	124.9			
36	43	14640	0.90	41.25	64.5	82.8	64.5	82.8	KH123-22P-225S/M-04G	842	346
42	51	12429	1.05	35.02	72.3	85.0	72.3	85.0			
45	54	11722	1.15	33.03	74.3	85.8	74.3	85.8			
50	60	10608	1.25	29.89	77.3	86.9	77.3	86.9			
52	63	10125	1.30	28.53	78.4	87.4	78.4	87.4			
63	76	8376	1.60	23.60	82.0	89.1	82.0	89.1			
76	92	6892	1.90	19.42	84.4	90.6	84.4	90.6			
79	95	6686	1.25	18.84	84.7	89.3	84.7	89.3			
91	110	5774	1.45	16.27	85.0	90.4	85.0	90.4			
93	112	5664	2.30	15.96	82.9	91.8	82.9	91.8			
109	132	4809	2.75	13.55	77.7	92.7	77.7	92.7			
110	133	4777	1.75	13.46	78.6	91.6	78.6	91.6			
134	161	3929	2.10	11.07	72.7	92.7	72.7	92.7			
163	196	3230	2.55	9.10	67.4	93.5	67.4	93.5			
191	231	2743	3.00	7.73	63.5	94.1	63.5	94.1			

Legend see page 261

P <sub>N</sub> = 75 kW										IE3	
50 Hz		60 Hz		i	at 50 Hz					m kg	Dimension sheet see page
75 kW		90 kW			Output shaft		Hollow shaft				
n <sub>50</sub> min <sup>-1</sup>	n <sub>60</sub> min <sup>-1</sup>	M <sub>2</sub> Nm	f <sub>B</sub>		F <sub>rN</sub> kN	F <sub>aN</sub> kN	F <sub>rN</sub> kN	F <sub>aN</sub> kN			
31	37	23065	0.80	47.66	**	**	**	**	KH153-22P-250S/M-04F	1178	348
36	43	19828	0.95	40.97	69.8	114.9	69.8	114.9			
40	48	18051	1.00	37.30	77.9	116.2	77.9	116.2			
42	50	17156	1.05	35.45	81.5	116.9	81.5	116.9			
46	56	15501	1.20	32.03	87.2	118.2	87.2	118.2			
56	67	12897	1.40	26.65	94.4	120.2	94.4	120.2			
63	76	11329	1.20	23.41	98.0	118.3	98.0	118.3			
67	81	10700	1.70	22.11	99.2	121.8	99.2	121.8			
74	89	9732	1.40	20.11	101.0	120.0	101.0	120.0			
80	97	8924	2.05	18.44	102.3	123.2	102.3	123.2			
88	106	8097	1.75	16.73	103.5	121.6	103.5	121.6			
93	112	7671	2.35	15.85	104.1	124.1	104.1	124.1			
107	128	6717	2.15	13.88	105.3	123.1	105.3	123.1			
108	130	6640	2.75	13.72	105.4	124.9	105.4	124.9			
128	154	5604	2.50	11.58	106.4	124.2	106.4	124.2			
149	179	4815	2.80	9.95	105.6	125.0	105.6	125.0			

Legend see page 261

\*\* ... on request



# Selection tables - Gear units

## Structure of the selection tables

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size <b>6</b>												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter <b>7</b>												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter <b>8</b>												
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
<b>K022</b>																	
2 stages	<b>9</b>																
$n_1=1400 \text{ min}^{-1}$	<b>10</b>																
Maximum torque 110 Nm	<b>11</b>																

Type	$i_{ges.}$	SERVO adapter											Input unit												
		$n_{1max}$	Adapter size <b>13</b>										$n_{1max}$	Input shaft [mm] <b>15</b>											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			

- 1** Type of gear unit
- 2** Total ratio
- 3** Permissible output torque at S1 operation ( $f_b = 1.0$ )
- 4** Output speed (gear unit) at  $n_1 = 1400 \text{ min}^{-1}$
- 5** Exact mathematical ratio
- 6** Possible motor frame sizes (Direct mounting)
- 7** Possible IEC adapter sizes
- 8** Possible NEMA adapter sizes
- 9** Number of gear stages
- 10** Motor speed
- 11** Maximum torque
- 12** Maximum input speed - SERVO adapter
- 13** Possible SERVO adapter sizes
- 14** Maximum input speed - direct mounting, IEC / NEMA adapter and input unit  
Higher input speeds on request
- 15** Possible input shafts of the input unit



Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
K022	68.88	110	20	551/8														
	61.75	102	23	247/4														
	53.65	110	26	1073/20														
	48.10	110	29	481/10														
	43.50	110	32	87/2														
	39.00	110	36	39/1														
	34.27	110	41	377/11														
	30.88	51	45	247/8														
	30.73	110	46	338/11														
	26.41	110	53	1479/56														
	24.05	81	58	481/20														
	23.68	110	59	663/28														
	20.63	103	68	1073/52														
	19.50	81	72	39/2														
	18.50	102	76	37/2														
	15.41	93	91	493/32														
	15.36	81	91	169/11														
	13.81	93	101	221/16														
	13.29	89	105	319/24														
	11.92	89	117	143/12														
	11.84	81	118	663/56														
	11.60	85	121	58/5														
	10.40	85	135	52/5														
	9.25	81	151	37/4														
	8.51	77	164	783/92														
7.63	77	183	351/46															
6.91	74	203	221/32															
5.96	69	235	143/24															
5.20	65	269	26/5															
3.82	57	367	351/92															
K033	217.88	200	6.4	1743/8														
	177.19	200	7.9	2835/16														
	140.80	200	9.9	6195/44														
	108.75	200	13	435/4														
	86.83	200	16	4515/52														
	71.93	200	19	1079/15														
	65.63	200	21	525/8														
	58.50	200	24	117/2														
	49.88	200	28	399/8														
	46.48	200	30	1534/33														
	38.80	200	36	1785/46														
	35.90	200	39	754/21														
	30.29	200	46	1575/52														
	29.97	129	47	1079/36														
	28.67	200	49	86/3														
	24.38	160	57	195/8														
	21.67	200	65	65/3														
	19.37	163	72	3835/198														
	16.47	200	85	247/15														
	14.96	163	94	1885/126														
	12.81	200	109	884/69														
	11.94	163	117	215/18														
	10.00	200	140	10/1														
	9.03	163	155	325/36														
	6.86	149	204	247/36														
5.34	137	262	1105/207															
4.17	126	336	25/6															

Legend see page 305

Type	$i_{ges.}$	SERVO adapter											Input unit														
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]												
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110					
<b>K022</b>	68.88	5000														-											
	61.75	5000														-											
	53.65	5000														3000											
	48.10	5000														3000											
	43.50	5000														3000											
	39.00	5000														3000											
	34.27	5000														3000											
	30.88	5000														-											
	30.73	5000														3000											
	26.41	5000														3000											
	24.05	5000														3000											
	23.68	5000														3000											
	20.63	5000														3000											
	19.50	5000														3000											
	18.50	5000														3000											
	15.41	4900														3000											
	15.36	5000														3000											
	13.81	4900														3000											
	13.29	4300														3000											
	11.92	4300														3000											
	11.84	5000														3000											
	11.60	3900														3000											
	10.40	3900														3000											
	9.25	5000														3000											
	8.51	3400														3000											
	7.63	3400														3000											
	6.91	4900														3000											
	5.96	4300														3000											
	5.20	3900														3000											
	3.82	3400														3000											
<b>K033</b>	217.88	5000														3000											
	177.19	5000														3000											
	140.80	5000														3000											
	108.75	5000														3000											
	86.83	5000														3000											
	71.93	5000														3000											
	65.63	5000														3000											
	58.50	5000														3000											
	49.88	4400														3000											
	46.48	5000														3000											
	38.80	3800														3000											
	35.90	5000														3000											
	30.29	3400														3000											
	29.97	5000														3000											
	28.67	5000														3000											
	24.38	5000														3000											
	21.67	5000														3000											
	19.37	5000														3000											
	16.47	4400														3000											
	14.96	5000														3000											
	12.81	3800														3000											
	11.94	5000														3000											
	10.00	3400														3000											
	9.03	5000														3000											
	6.86	4400														3000											
	5.34	3800														3000											
	4.17	3400														3000											

Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
K 3 stages $n_1=1400 \text{ min}^{-1}$ Maximum torque 400 Nm	277.79	400	5	14445/52														
	227.16	400	6.2	23625/104														
	179.37	400	7.8	25650/143														
	139.08	400	10	50625/364														
	113.83	400	12	38475/338														
	89.17	378	16	535/6														
	87.62	400	16	18225/208														
	72.92	400	19	875/12														
	66.20	400	21	6885/104														
	57.58	400	24	1900/33														
	54.18	400	26	16200/299														
	47.07	200	30	93197/1980														
	44.64	400	31	625/14														
	43.93	400	32	7425/169														
	38.49	270	36	30485/792														
	36.78	384	38	3825/104														
	36.54	400	38	475/13														
	30.39	324	46	33098/1089														
	29.81	361	47	775/26														
	28.74	357	49	20925/728														
	28.13	400	50	225/8														
	23.57	307	59	21775/924														
	21.25	400	66	85/4														
	19.29	294	73	1273/66														
	17.39	400	81	400/23														
	14.85	278	94	2613/176														
	14.10	400	99	550/39														
	11.81	400	119	425/36														
	11.22	262	125	14807/1320														
	9.57	373	146	775/81														
	9.23	369	152	775/84														
	9.18	251	152	6968/759														
7.44	240	188	67/9															
6.23	231	225	14807/2376															
5.05	221	277	27001/5346															
4.87	219	287	27001/5544															

Legend see page 305

Type	i <sub>ges.</sub>	SERVO adapter										Input unit													
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>K043</b>	277.79	5000													3000										
	227.16	5000													3000										
	179.37	5000													3000										
	139.08	5000													3000										
	113.83	5000													3000										
	89.17	5000													3000										
	87.62	5000													3000										
	72.92	5000													3000										
	66.20	4900													3000										
	57.58	5000													3000										
	54.18	4200													3000										
	47.07	5000													3000										
	44.64	5000													3000										
	43.93	3700													3000										
	38.49	5000													3000										
	36.78	3400													3000										
	36.54	5000													3000										
	30.39	5000													3000										
	29.81	3000													3000										
	28.74	2900													2900										
	28.13	5000													3000										
	23.57	5000													3000										
	21.25	4900													3000										
	19.29	5000													3000										
	17.39	4200													3000										
	14.85	5000													3000										
	14.10	3700													3000										
	11.81	3400													3000										
	11.22	4900													3000										
	9.57	3000													3000										
	9.23	2900													2900										
	9.18	4200													3000										
	7.44	3700													3000										
	6.23	3400													3000										
	5.05	3000													3000										
	4.87	2900													2900										



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>K053</b>  3 stages  $n_1=1400 \text{ min}^{-1}$  Maximum torque 600 Nm	245.70	600	5.7	2457/10														
	194.73	600	7.2	2142/11														
	151.20	600	9.3	756/5														
	124.06	600	11	8064/65														
	96.08	600	15	3843/40														
	80.46	564	17	7644/95														
	73.08	600	19	1827/25														
	63.77	600	22	13328/209														
	60.26	600	23	1386/23														
	49.52	600	28	4704/95														
	49.43	600	28	3213/65														
	42.00	600	33	42/1														
	40.63	600	34	50176/1235														
	38.32	268	37	728/19														
	34.53	600	41	518/15														
	33.30	600	42	333/10														
	31.46	600	44	2989/95														
	30.37	392	46	19040/627														
	27.39	577	51	630/23														
	23.93	600	58	11368/475														
	23.58	413	59	448/19														
	19.73	600	71	8624/437														
	19.35	413	72	14336/741														
	16.19	600	86	19992/1235														
	14.98	413	93	854/57														
	13.75	600	102	784/57														
	11.40	413	123	3248/285														
	11.31	600	124	29008/2565														
	10.91	600	128	1036/95														
	9.40	413	149	12320/1311														
	8.97	565	156	3920/437														
	7.71	413	182	1904/247														
	6.55	413	214	1120/171														
5.39	413	260	8288/1539															
5.19	413	270	296/57															
4.27	413	328	5600/1311															

Legend see page 305

Type	$i_{ges.}$	SERVO adapter										Input unit													
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>K053</b>	245.70	5000													3000										
	194.73	5000													3000										
	151.20	5000													3000										
	124.06	5000													3000										
	96.08	5000													3000										
	80.46	5000													3000										
	73.08	5000													3000										
	63.77	5000													3000										
	60.26	4500													3000										
	49.52	5000													3000										
	49.43	3900													3000										
	42.00	3600													3000										
	40.63	5000													3000										
	38.32	5000													3000										
	34.53	3200													3000										
	33.30	3100													3000										
	31.46	5000													3000										
	30.37	5000													3000										
	27.39	2800													2800										
	23.93	5000													3000										
	23.58	5000													3000										
	19.73	4500													3000										
	19.35	5000													3000										
	16.19	3900													3000										
	14.98	5000													3000										
	13.75	3600													3000										
	11.40	5000													3000										
	11.31	3200													3000										
	10.91	3100													3000										
	9.40	4500													3000										
	8.97	2800													2800										
	7.71	3900													3000										
	6.55	3600													3000										
	5.39	3200													3000										
	5.19	3100													3000										
	4.27	2800													2800										



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>K063</b>  3 stages  $n_1=1400 \text{ min}^{-1}$  Maximum torque 820 Nm	198.00	820	7.1	198/1														
	156.92	820	8.9	2040/13														
	121.85	820	11	1584/13														
	99.98	820	14	16896/169														
	81.53	571	17	1386/17														
	77.42	820	18	2013/26														
	64.62	820	22	840/13														
	58.89	820	24	3828/65														
	50.17	820	28	11088/221														
	48.56	820	29	14520/299														
	44.35	311	32	754/17														
	41.17	820	34	118272/2873														
	39.83	795	35	6732/169														
	35.15	454	40	1160/33														
	33.85	757	41	440/13														
	31.88	820	44	14091/442														
	27.83	714	50	3256/117														
	27.29	500	51	464/17														
	26.84	707	52	2442/91														
	24.25	782	58	26796/1105														
	22.40	500	63	14848/663														
	22.07	666	63	6600/299														
	20.00	738	70	101640/5083														
	17.34	500	81	1769/102														
	16.40	695	85	2772/169														
	13.94	662	100	3080/221														
	13.19	500	106	3364/255														
	11.46	624	122	22792/1989														
	11.05	618	127	2442/221														
	10.88	500	129	12760/1173														
	9.09	582	154	46200/5083														
	8.92	500	157	116/13														
	7.58	487	185	1160/153														
6.23	459	225	8584/1377															
6.01	454	233	2146/357															
4.94	428	283	5800/1173															

Legend see page 305

Type	i <sub>ges.</sub>	SERVO adapter										Input unit													
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]											
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>K063</b>	198.00	5000													3000										
	156.92	5000													3000										
	121.85	5000													3000										
	99.98	5000													3000										
	81.53	5000													3000										
	77.42	5000													3000										
	64.62	5000													3000										
	58.89	5000													3000										
	50.17	5000													3000										
	48.56	4700													3000										
	44.35	5000													3000										
	41.17	5000													3000										
	39.83	4200													3000										
	35.15	5000													3000										
	33.85	3700													3000										
	31.88	5000													3000										
	27.83	3300													3000										
	27.29	5000													3000										
	26.84	3200													3000										
	24.25	5000													3000										
	22.40	5000													3000										
	22.07	2900													2900										
	20.00	4700													3000										
	17.34	5000													3000										
	16.40	4200													3000										
	13.94	3700													3000										
	13.19	5000													3000										
	11.46	3300													3000										
	11.05	3200													3000										
	10.88	4700													3000										
	9.09	2900													2900										
	8.92	4200													3000										
	7.58	3700													3000										
	6.23	3300													3000										
	6.01	3200													3000										
	4.94	2900													2900										



Legend see page 305



Type	i <sub>ges.</sub>	M <sub>2nenn</sub>	n <sub>2</sub>	i <sub>exakt</sub>	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>K073</b>  3 stages  n <sub>1</sub> =1400 min <sup>-1</sup>  Maximum torque 1550 Nm	256.14	1550	5.5	5635/22														
	197.75	1550	7.1	791/4														
	165.85	1550	8.4	2156/13														
	130.16	1550	11	4165/32														
	100.45	1550	14	2009/20														
	99.87	1288	14	18676/187														
	83.09	1550	17	1911/23														
	77.11	1550	18	6554/85														
	70.67	1550	20	3675/52														
	64.67	1550	22	71456/1105														
	61.25	1550	23	245/4														
	51.72	1550	27	931/18														
	50.75	1550	28	203/4														
	49.88	1550	28	399/8														
	47.56	613	29	26680/561														
	42.61	1550	33	980/23														
	39.17	1550	36	16646/425														
	36.72	757	38	13108/357														
	32.40	1550	43	63336/1955														
	30.79	910	45	20416/663														
	27.56	1550	51	6090/221														
	24.17	910	58	145/6														
	23.88	1550	59	406/17														
	20.17	1550	69	15428/765														
	19.45	1550	72	1653/85														
	18.65	910	75	4756/255														
	16.61	1550	84	6496/391														
	15.43	910	91	6032/391														
	13.12	910	107	2900/221														
	11.37	910	123	580/51														
9.60	910	146	4408/459															
9.26	910	151	1102/119															
7.91	910	177	9280/1173															

Legend see page 305

Type	i <sub>ges.</sub>	SERVO adapter										Input unit												
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110		
<b>K073</b>	256.14	5000												3000										
	197.75	5000												3000										
	165.85	5000												3000										
	130.16	5000												3000										
	100.45	5000												3000										
	99.87	5000												3000										
	83.09	5000												3000										
	77.11	5000												3000										
	70.67	4600												3000										
	64.67	5000												3000										
	61.25	4200												3000										
	51.72	3700												3000										
	50.75	5000												3000										
	49.88	3600												3000										
	47.56	5000												3000										
	42.61	3300												3000										
	39.17	5000												3000										
	36.72	5000												3000										
	32.40	5000												3000										
	30.79	5000												3000										
	27.56	4600												3000										
	24.17	5000												3000										
	23.88	4200												3000										
	20.17	3700												3000										
	19.45	3600												3000										
	18.65	5000												3000										
	16.61	3300												3000										
	15.43	5000												3000										
	13.12	4600												3000										
	11.37	4200												3000										
	9.60	3700												3000										
	9.26	3600												3000										
	7.91	3300												3000										



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
K083	206.12	3000	6.8	13398/65														
	163.14	3000	8.6	26103/160														
	142.45	3000	9.8	2849/20														
	125.90	3000	11	25179/200														
	106.46	3000	13	12243/115														
	91.51	3000	15	23793/260														
	79.89	3000	18	6391/80														
	79.75	2851	18	319/4														
	68.44	3000	20	616/9														
	66.00	3000	21	66/1														
	63.12	2860	22	16159/256														
	58.25	3000	24	6699/115														
	55.11	3000	25	5291/96														
	48.87	3000	29	2541/52														
	48.71	3000	29	15587/320														
	45.48	1626	31	2001/44														
	41.19	3000	34	7579/184														
	41.18	3000	34	9471/230														
	35.99	1631	39	101361/2816														
	35.41	3000	40	1133/32														
	33.76	3000	41	4389/130														
	31.43	1916	45	11063/352														
	30.91	3000	45	11869/384														
	27.78	1901	50	97773/3520														
	26.48	2972	53	715/27														
	25.54	2940	55	715/28														
	23.49	1916	60	2067/88														
	22.54	2832	62	4147/184														
	20.19	1886	69	7107/352														
	18.91	2686	74	605/32														
	17.63	1937	79	24817/1408														
	15.93	2552	88	5863/368														
	15.10	1937	93	1495/99														
14.56	1748	96	4485/308															
13.06	2404	107	209/16															
12.85	1937	109	1131/88															
10.78	1937	130	345/32															
9.09	1937	154	1599/176															
7.45	1937	188	1311/176															

Legend see page 305

Type	$i_{ges.}$	SERVO adapter										Input unit											
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]									
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110	
<b>K083</b>	206.12	5000												3000									
	163.14	5000												3000									
	142.45	5000												3000									
	125.90	5000												3000									
	106.46	5000												3000									
	91.51	5000												3000									
	79.89	4500												3000									
	79.75	5000												3000									
	68.44	4000												3000									
	66.00	3900												3000									
	63.12	5000												3000									
	58.25	3600												3000									
	55.11	5000												3000									
	48.87	3100												3000									
	48.71	5000												3000									
	45.48	5000												3000									
	41.19	5000												3000									
	41.18	2800												2800									
	35.99	5000												3000									
	35.41	5000												3000									
	33.76	-												2500									
	31.43	5000												3000									
	30.91	4500												3000									
	27.78	5000												3000									
	26.48	4000												3000									
	25.54	3900												3000									
	23.49	5000												3000									
	22.54	3600												3000									
	20.19	5000												3000									
	18.91	3100												3000									
	17.63	4500												3000									
	15.93	2800												2800									
	15.10	4000												3000									
	14.56	3900												3000									
	13.06	-												2500									
	12.85	3600												3000									
	10.78	3100												3000									
	9.09	2800												2800									
	7.45	-												2500									



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
<b>K093</b>  3 stages  $n_1=1400 \text{ min}^{-1}$  Maximum torque 4500 Nm	169.25	4500	8.3	21156/125														
	143.08	4500	9.8	49364/345														
	123.86	4500	11	241531/1950														
	109.70	4500	13	24682/225														
	94.90	4500	15	192167/2025														
	91.51	4500	15	192167/2100														
	80.74	4500	17	139277/1725														
	68.71	4500	20	66994/975														
	63.96	4500	22	1599/25														
	59.28	4500	24	102254/1725														
	54.07	4500	26	3731/69														
	49.73	4500	28	19393/390														
	46.81	4500	30	5617/120														
	41.46	4500	34	3731/90														
	40.43	4500	35	75809/1875														
	37.13	2785	38	8541/230														
	35.86	4500	39	58097/1620														
	34.58	4149	40	58097/1680														
	31.61	4500	44	22919/725														
	31.39	2806	45	33215/1058														
	30.51	4500	46	42107/1380														
	27.18	2795	52	10001/368														
	25.97	4500	54	779/30														
	24.07	2991	58	6643/276														
	22.40	4500	62	15457/690														
	20.82	2991	67	103441/4968														
	20.08	2409	70	103441/5152														
	18.79	4500	75	451/24														
	17.72	2991	79	74971/4232														
	15.28	4500	92	22919/1500														
	15.08	2991	93	1387/92														
	13.01	2991	108	27521/2116														
11.95	4500	117	6929/580															
10.91	2991	128	4015/368															
8.87	2991	158	40807/4600															
6.94	2991	202	37011/5336															

Legend see page 305

Type	$i_{ges.}$	SERVO adapter										Input unit														
		$n_{1max}$	Adapter size										$n_{1max}$	Input shaft [mm]												
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110				
<b>K093</b>	169.25	5000													3000											
	143.08	5000													3000											
	123.86	5000													3000											
	109.70	4800													3000											
	94.90	4200													3000											
	91.51	4100													3000											
	80.74	3700													3000											
	68.71	3300													3000											
	63.96	5000													3000											
	59.28	3000													3000											
	54.07	5000													3000											
	49.73	-													2600											
	46.81	5000													3000											
	41.46	4800													3000											
	40.43	-													2300											
	37.13	5000													3000											
	35.86	4200													3000											
	34.58	4100													3000											
	31.61	-													2000											
	31.39	5000													3000											
	30.51	3700													3000											
	27.18	5000													3000											
	25.97	3300													3000											
	24.07	4800													3000											
	22.40	3000													3000											
	20.82	4200													3000											
	20.08	4100													3000											
	18.79	-													2600											
	17.72	3700													3000											
	15.28	-													2300											
	15.08	3300													3000											
	13.01	3000													3000											
	11.95	-													2000											
	10.91	-													2600											
	8.87	-													2300											
	6.94	-													2000											



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					l63	l71	l80	l90	l100	l112	l132	l160	l180	l200	l225	l250	l280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
K103  3 stages  $n_1=1400 \text{ min}^{-1}$  Maximum torque 8000 Nm	140.95	8000	9.9	128269/910														
	124.50	8000	11	13072/105														
	108.07	8000	13	20425/189														
	104.21	8000	13	20425/196														
	93.37	8000	15	3268/35														
	79.90	8000	18	72713/910														
	69.01	8000	20	55556/805														
	58.36	8000	24	817/14														
	53.27	5963	26	2983/56														
	47.62	8000	29	41667/875														
	47.05	7498	30	988/21														
	40.84	7498	34	30875/756														
	39.38	4728	36	30875/784														
	38.64	8000	36	39216/1015														
	35.29	7498	40	247/7														
	30.85	8000	45	30229/980														
	30.33	3395	46	2669/88														
	30.20	7498	46	1691/56														
	26.79	4269	52	884/33														
	26.08	7498	54	4199/161														
	23.25	4269	60	27625/1188														
	22.42	2692	62	27625/1232														
	22.05	7498	63	1235/56														
	20.09	4269	70	221/11														
	18.00	7498	78	12597/700														
	17.19	4269	81	1513/88														
	14.85	4269	94	3757/253														
	14.60	7498	96	2964/203														
	12.56	4269	111	1105/88														
	11.66	7498	120	9139/784														
10.25	4269	137	11271/1100															
8.31	4269	168	2652/319															
6.64	4269	211	8177/1232															

Legend see page 305

Type	i <sub>ges.</sub>	SERVO adapter											Input unit																										
		n <sub>1max</sub>	Adapter size											n <sub>1max</sub>	Input shaft [mm]																								
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110																	
<b>K103</b>	140.95	5000													3000																								
	124.50	5000													3000																								
	108.07	4500													3000																								
	104.21	4400													3000																								
	93.37	4000													3000																								
	79.90	3500													3000																								
	69.01	3200													3000																								
	58.36	-													2800																								
	53.27	5000													3000																								
	47.62	-													2400																								
	47.05	5000													3000																								
	40.84	4500													3000																								
	39.38	4400													3000																								
	38.64	-													2100																								
	35.29	4000													3000																								
	30.85	-													1900																								
	30.33	5000													3000																								
	30.20	3500													3000																								
	26.79	5000													3000																								
	26.08	3200													3000																								
	23.25	4500													3000																								
	22.42	4400													3000																								
	22.05	-													2800																								
	20.09	4000													3000																								
	18.00	-													2400																								
	17.19	3500													3000																								
	14.85	3200													3000																								
	14.60	-													2100																								
	12.56	-													2800																								
	11.66	-													1900																								
	10.25	-													2400																								
	8.31	-													2100																								
	6.64	-													1900																								



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Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size													
					63	71	80	90	100	112	132	160	180	200	225	-	-	
					IEC adapter													
					163	171	180	190	1100	1112	1132	1160	1180	1200	1225	1250	1280	
NEMA adapter																		
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-			
K123	151.11	13000	9.3	12089/80														
	131.76	13000	11	5929/45														
	127.05	13000	11	2541/20														
	113.49	13000	12	26103/230														
	97.73	13000	14	2541/26														
	85.37	13000	16	3927/46														
	73.74	13000	19	19173/260														
	60.98	13000	23	7623/125														
	58.47	8768	24	22451/384														
	50.98	9688	27	11011/216														
	50.18	13000	28	14553/290														
	49.16	5899	28	1573/32														
	43.91	12727	32	16159/368														
	41.25	13000	34	165/4														
	37.81	13000	37	605/16														
	35.02	13000	40	10857/310														
	33.34	5000	42	46943/1408														
	33.03	13000	42	12155/368														
	29.89	13000	47	2541/85														
	29.07	5525	48	2093/72														
	28.53	13000	49	913/32														
	28.03	3364	50	897/32														
	25.04	7258	56	4407/176														
	23.60	13000	59	4719/200														
	21.56	8053	65	345/16														
	19.42	13000	72	9009/464														
	18.84	8155	74	3315/176														
	16.27	8155	86	5727/352														
	15.96	13000	88	3575/224														
	13.55	13000	103	6721/496														
	13.46	8155	104	2691/200														
	11.57	13000	121	1573/136														
11.07	8155	126	56511/5104															
9.10	8155	154	22425/2464															
7.73	8155	181	42159/5456															
6.60	8155	212	897/136															

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Legend see page 305

Type	i <sub>ges.</sub>	SERVO adapter										Input unit											
		n <sub>1max</sub>	Adapter size										n <sub>1max</sub>	Input shaft [mm]									
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189		S190	[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110	
<b>K123</b>	151.11	5000												3000									
	131.76	4800												3000									
	127.05	4600												3000									
	113.49	4200												3000									
	97.73	3700												3000									
	85.37	3400												3000									
	73.74	-												3000									
	60.98	-												2600									
	58.47	5000												3000									
	50.98	4800												3000									
	50.18	-												2200									
	49.16	4600												3000									
	43.91	4200												3000									
	41.25	-												2000									
	37.81	3700												3000									
	35.02	-												1800									
	33.34	5000												3000									
	33.03	3400												3000									
	29.89	-												1600									
	29.07	4800												3000									
	28.53	-												3000									
	28.03	4600												3000									
	25.04	4200												3000									
	23.60	-												2600									
	21.56	3700												3000									
	19.42	-												2200									
	18.84	3400												3000									
	16.27	-												3000									
	15.96	-												2000									
	13.55	-												1800									
	13.46	-												2600									
	11.57	-												1600									
	11.07	-												2200									
	9.10	-												2000									
	7.73	-												1800									
	6.60	-												1600									



Legend see page 305

Type	$i_{ges.}$	$M_{2nenn}$	$n_2$	$i_{exakt}$	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
		[Nm]	[min <sup>-1</sup> ]		N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-		
<b>K153</b>	146.69	18000	9.5	6601/45													
	126.34	18000	11	23247/184													
3 stages	109.28	18000	13	28413/260													
	96.39	18000	15	88683/920													
	82.79	18000	17	4305/52													
	68.88	18000	20	1722/25													
	57.15	18000	24	66297/1160													
	56.75	10785	25	12259/216													
	48.88	14174	29	71955/1472													
	47.66	18000	29	3813/80													
	42.28	17806	33	1353/32													
	40.97	18000	34	50799/1240													
	37.30	18000	38	54899/1472													
	35.63	6771	39	962/27													
	35.45	18000	39	6027/170													
	32.03	18000	44	1025/32													
	Maximum torque 18000 Nm	30.69	8899	46	64935/2116												
		26.65	18000	53	533/20												
26.54		11178	53	1221/46													
23.41		13593	60	49543/2116													
22.11		18000	63	41041/1856													
20.11		13390	70	925/46													
18.44		18000	76	16523/896													
16.73		14116	84	1924/115													
15.85		18000	88	31447/1984													
13.88		14116	101	37037/2668													
13.72		18000	102	3731/272													
11.58		13865	121	14911/1288													
9.95	13306	141	28379/2852														
8.61	12793	163	3367/391														

K

Legend see page 305

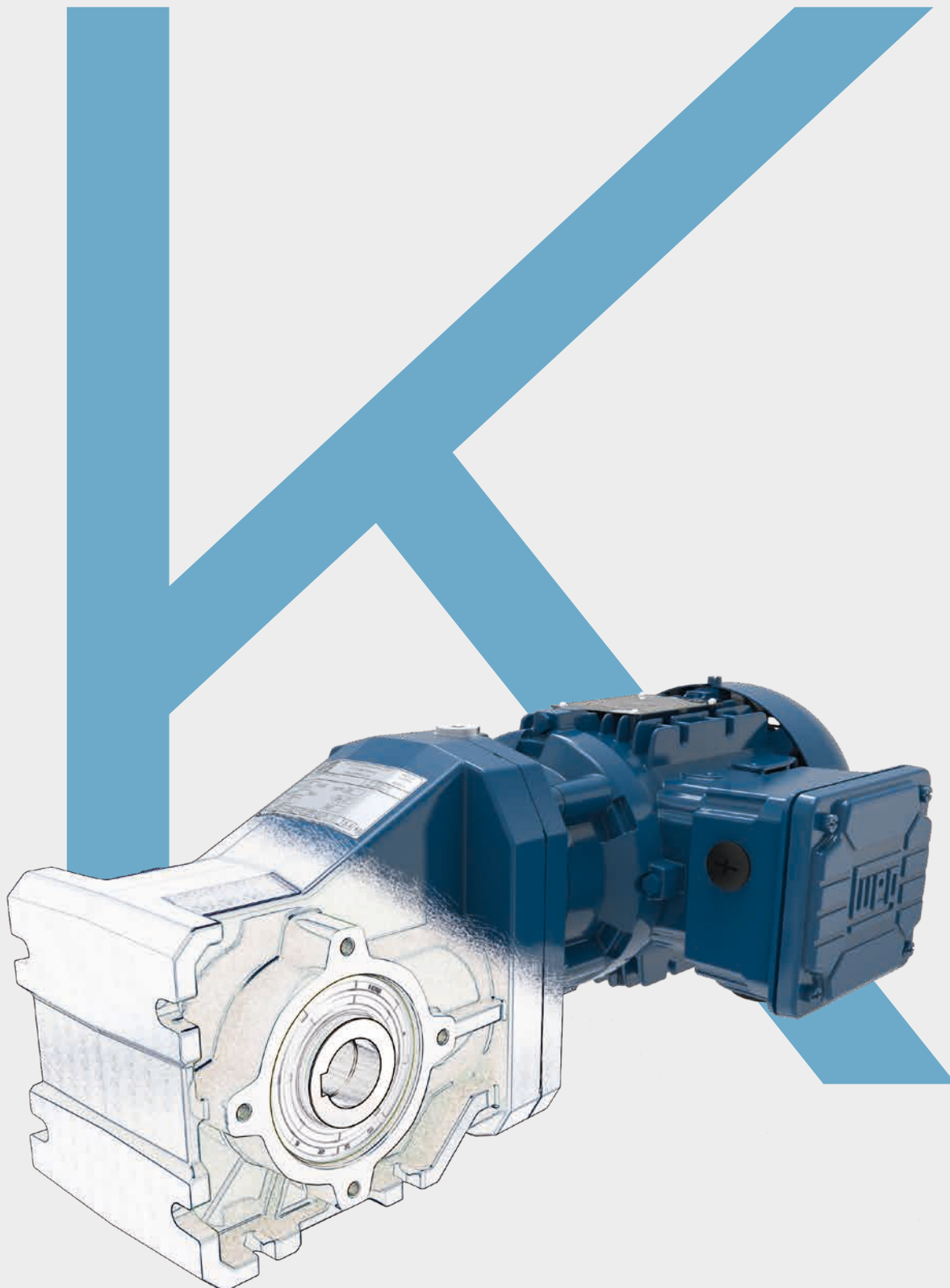
Type	$i_{ges.}$	SERVO adapter											Input unit												
		$n_{1max}$	Adapter size											$n_{1max}$	Input shaft [mm]										
			[min <sup>-1</sup> ]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190		[min <sup>-1</sup> ]	19x40	24x50	28x60	38x80	42x110	48x110	55x110			
<b>K153</b>	146.69	-													3000										
	126.34	-													3000										
	109.28	-													3000										
	96.39	-													3000										
	82.79	-													3000										
	68.88	-													2700										
	57.15	-													2300										
	56.75	-													3000										
	48.88	-													3000										
	47.66	-													2000										
	42.28	-													3000										
	40.97	-													1800										
	37.30	-													3000										
	35.63	-													3000										
	35.45	-													1700										
	32.03	-													3000										
	30.69	-													3000										
	26.65	-													2700										
	26.54	-													3000										
	23.41	-													3000										
	22.11	-													2300										
	20.11	-													3000										
	18.44	-													2000										
	16.73	-													2700										
	15.85	-													1800										
	13.88	-													2300										
	13.72	-													1700										
	11.58	-													2000										
	9.95	-													1800										
	8.61	-													1700										



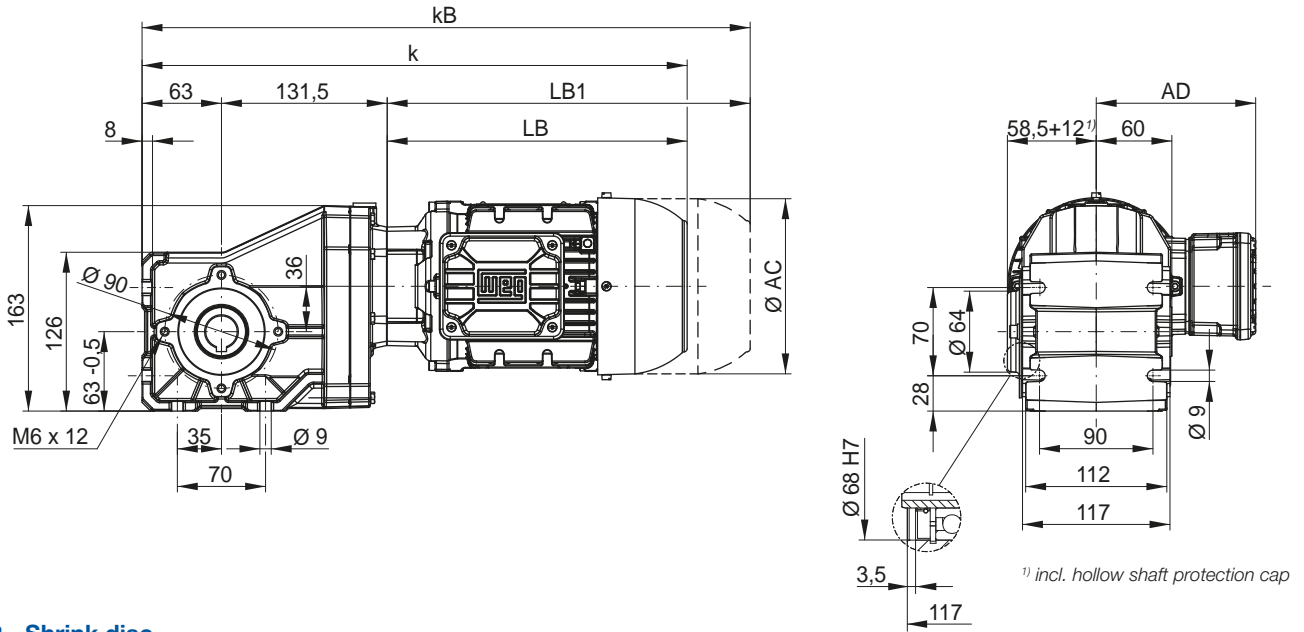
Legend see page 305



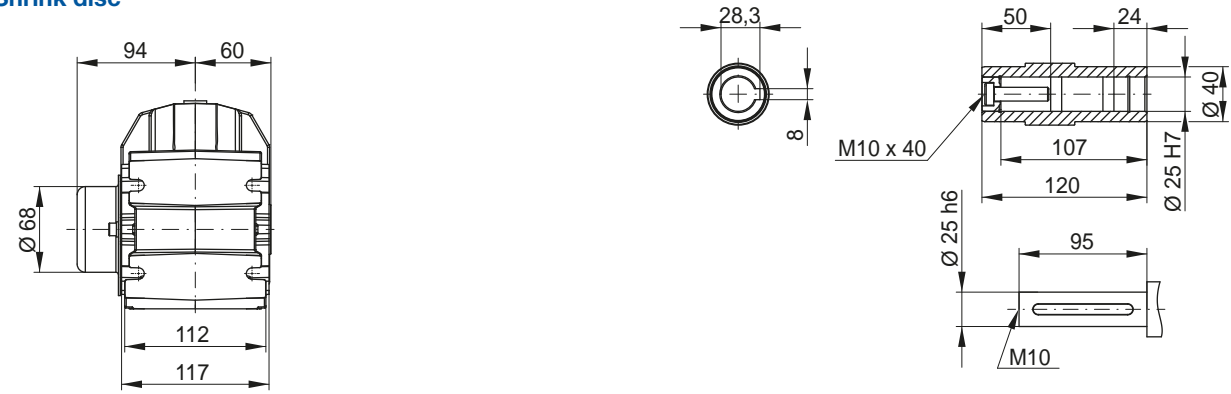
# Dimension sheets Geared Motors



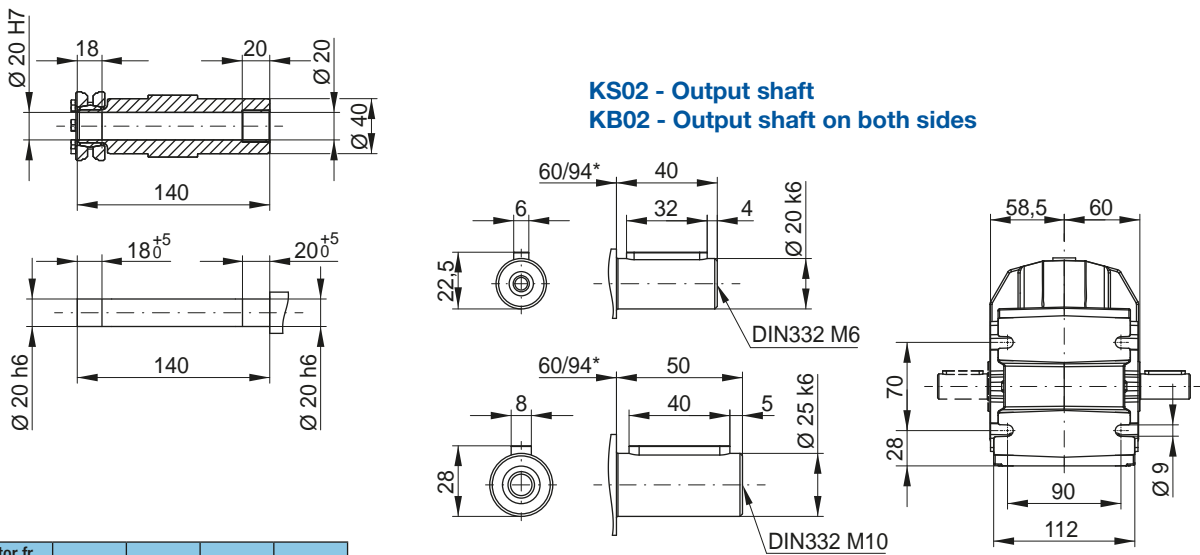
### KH02 - Hollow shaft



### KD02 - Shrink disc



### KS02 - Output shaft KB02 - Output shaft on both sides

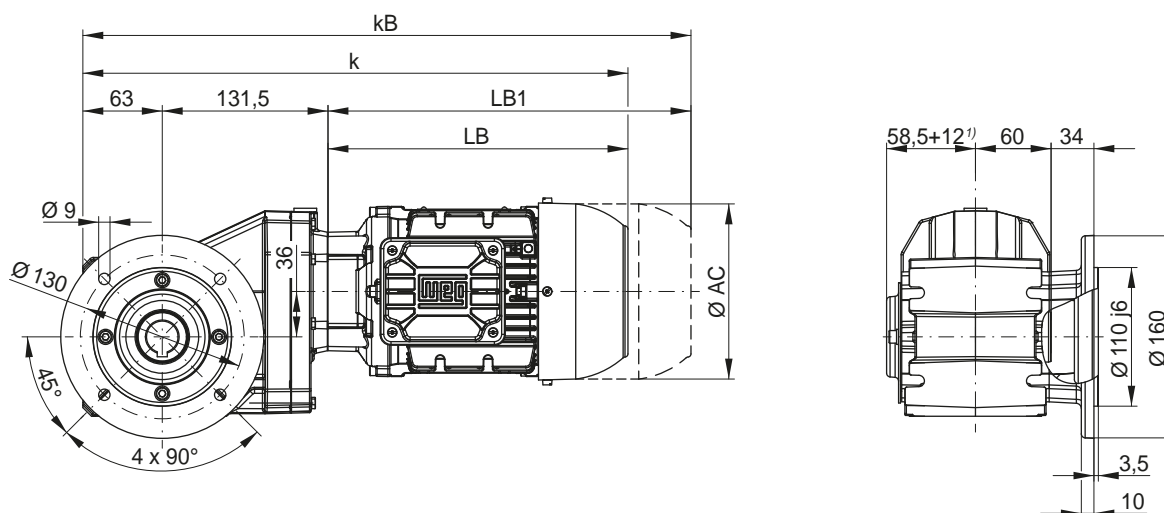


Motor fr.	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	399	433	441	483
kB	443	482	499	556
LB	204	238	246	288
LB1	248	287	304	361

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

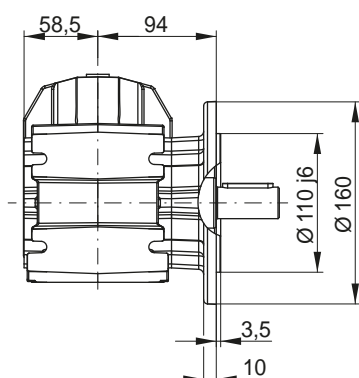
\*Designs KS(KB)/KF

### KO02 - B5 flange execution with hollow shaft

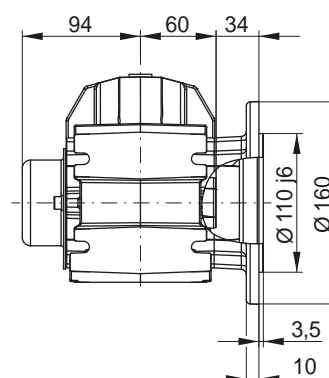


<sup>1)</sup> incl. hollow shaft protection cap

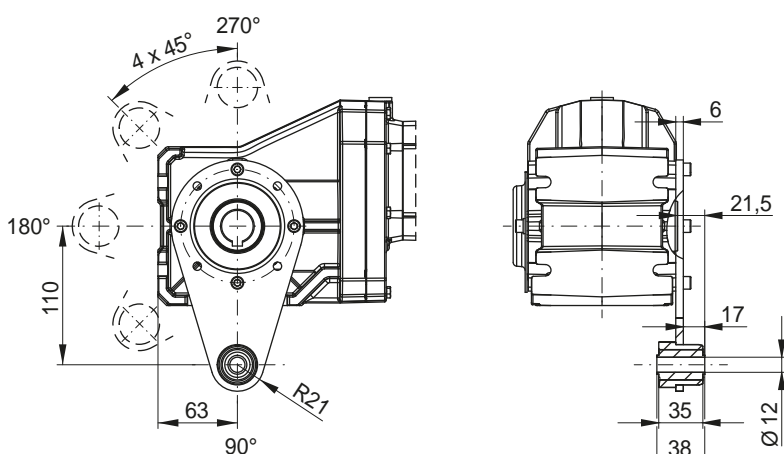
### KF02 - B5 flange execution with output shaft



### KP02 - B5 flange execution with hollow shaft and shrink disc

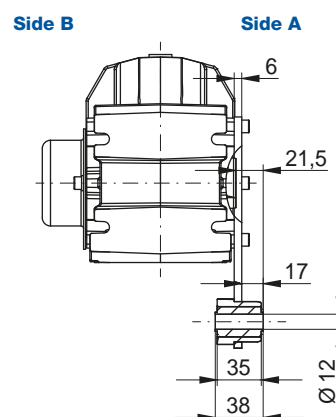


### KT02 - Hollow shaft with torque arm \*\*



Torque arm possible positions:  
90°, 135°, 180°, 225°, 270°

### KU02 - Hollow shaft with shrink disc and torque arm \*\*

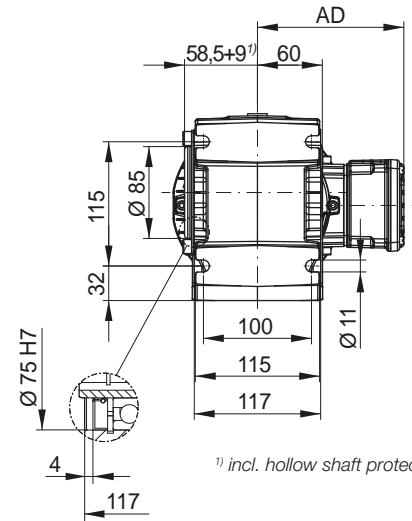
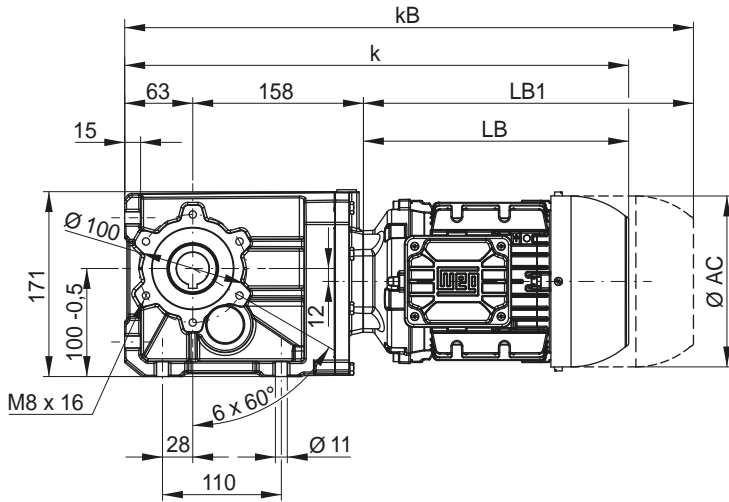


Dimensions in mm.

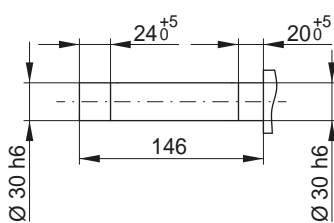
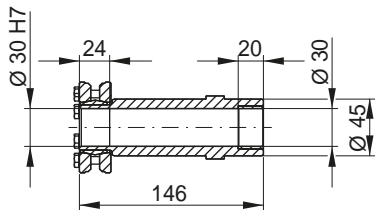
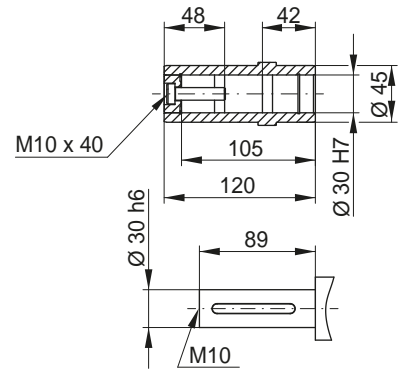
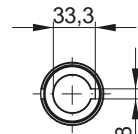
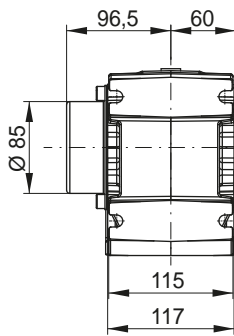
\*\* Torque arm may be mounted on side A or side B.



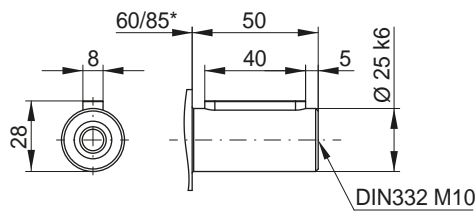
### KH03 - Hollow shaft



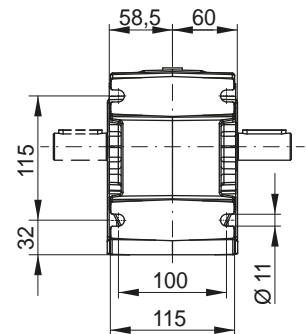
### KD03 - Shrink disc



### KS03 - Output shaft KB03 - Output shaft on both sides



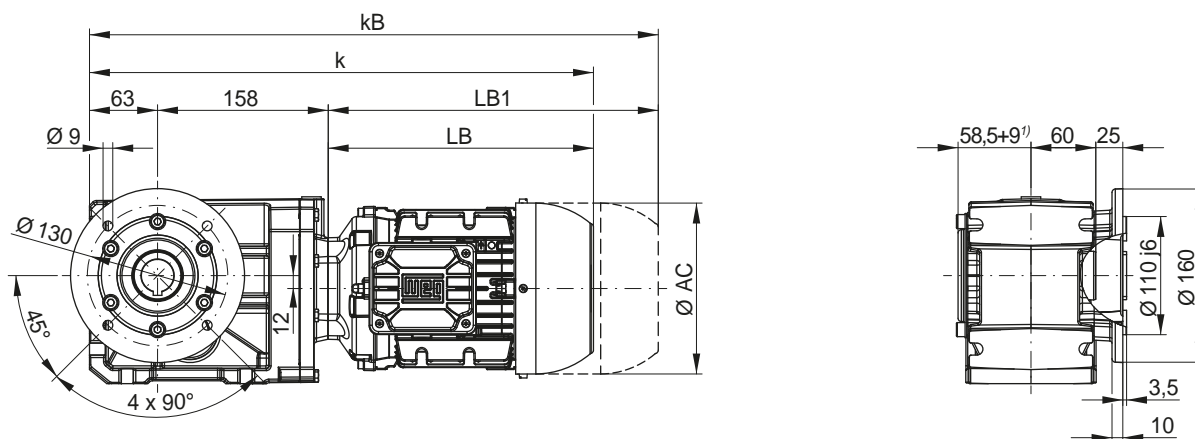
\*Designs KS(KB)/KF



Motor fr.	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	425	459	467	509	559	597
kB	469	508	525	582	643	681
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

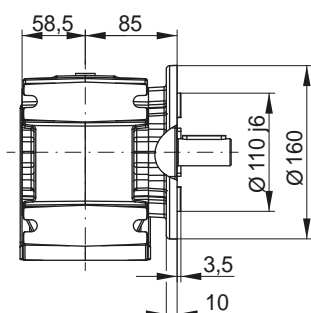
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

### KO03 - B5 flange execution with hollow shaft

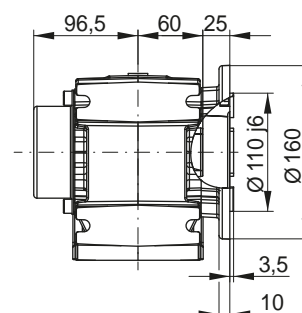


<sup>1)</sup> incl. hollow shaft protection cap

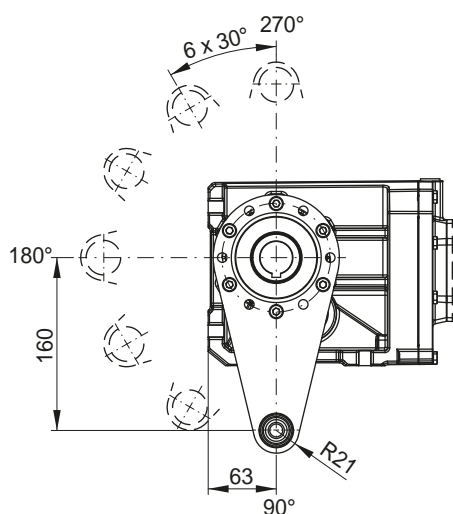
### KF03 - B5 flange execution with output shaft



### KP03 - B5 flange execution with hollow shaft and shrink disc



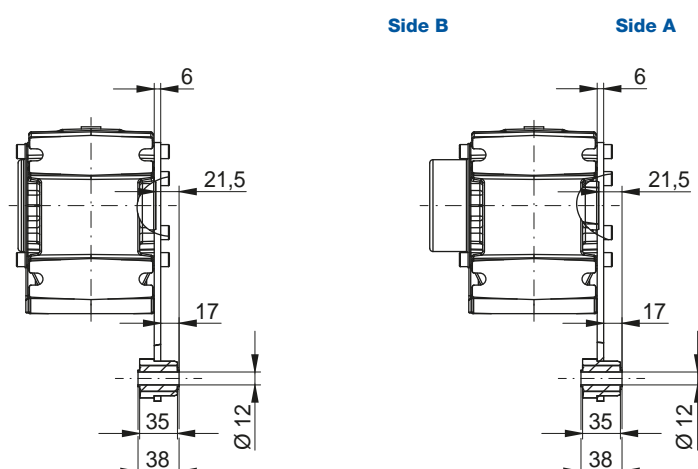
### KT03 - Hollow shaft with torque arm \*\*



Torque arm possible positions:  
90°, 120°, 150°, 180°, 210°, 240°, 270°

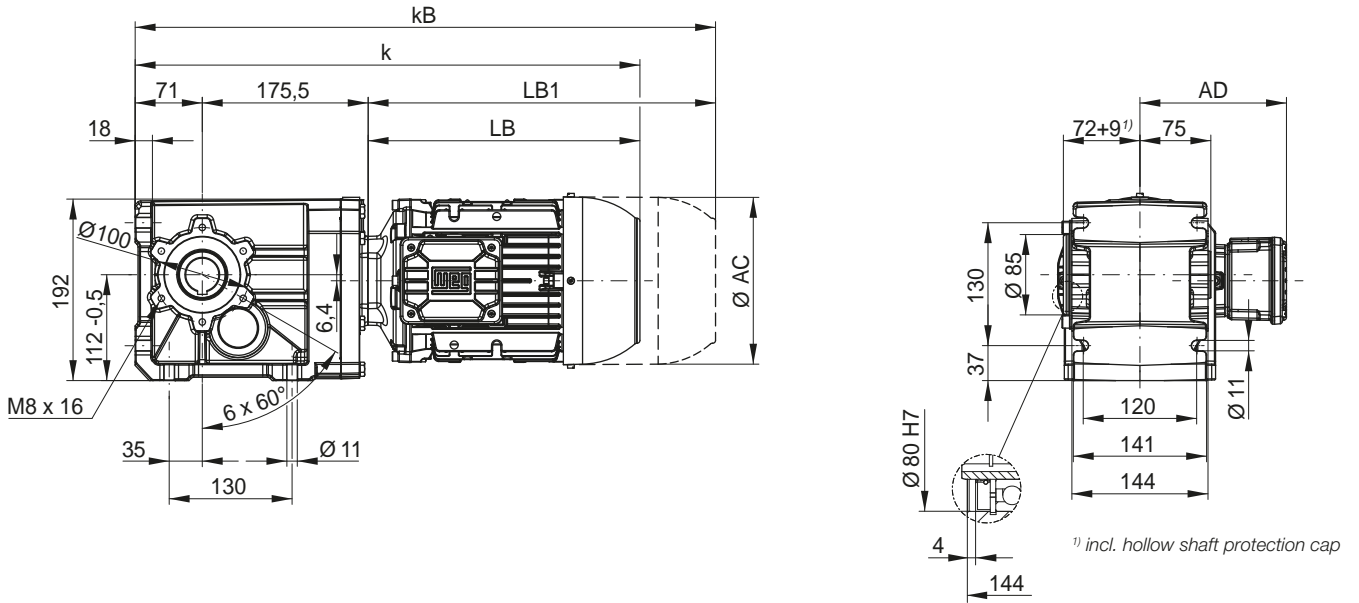
Dimensions in mm.

### KU03 - Hollow shaft with shrink disc and torque arm \*\*

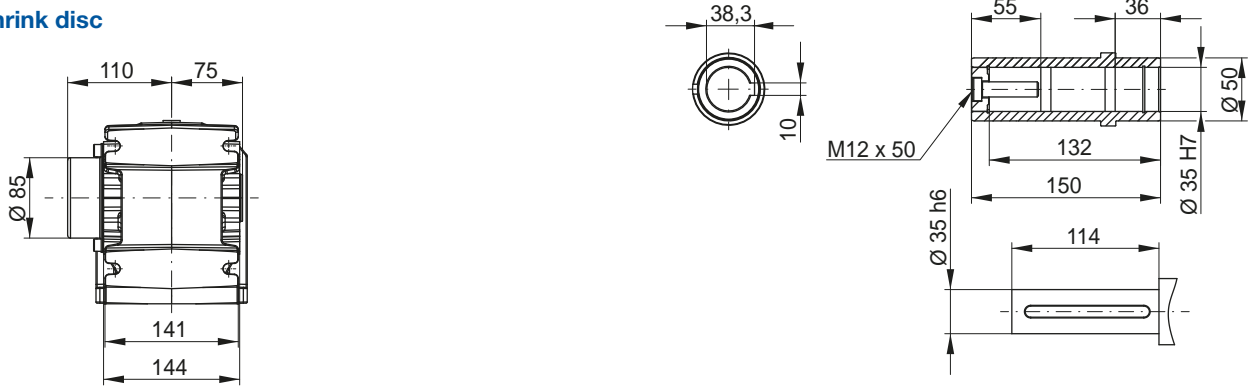


\*\* Torque arm may be mounted on side A or side B.

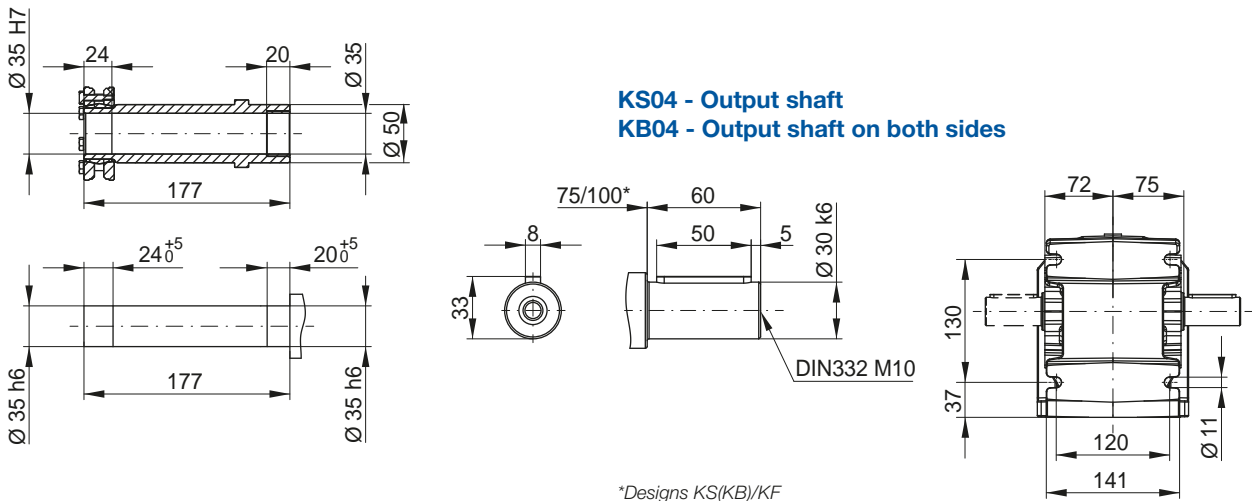
### KH04 - Hollow shaft



### KD04 - Shrink disc



### KS04 - Output shaft KB04 - Output shaft on both sides

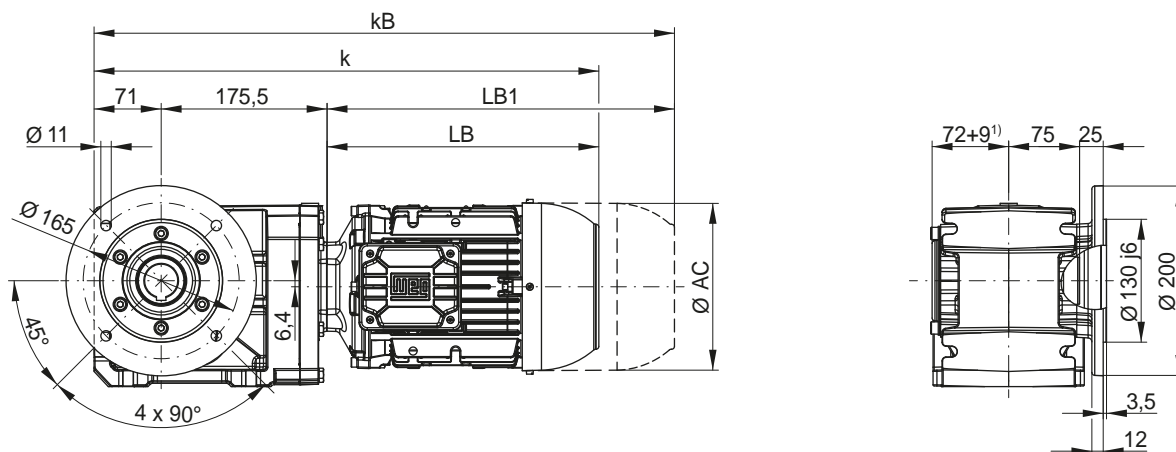


\*Designs KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M
AC	126	141	159	178	199	199	221
AD	125	133	142	152	162	162	180
k	451	485	493	535	585	623	595
kB	495	534	551	608	669	707	682
LB	204	238	246	288	338	376	348
LB1	248	287	304	361	422	460	435

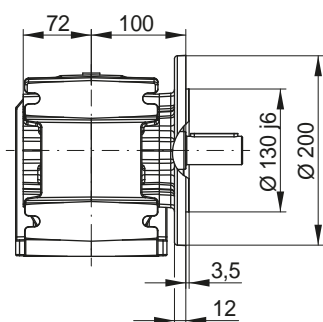
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

### KO04 - B5 flange execution with hollow shaft

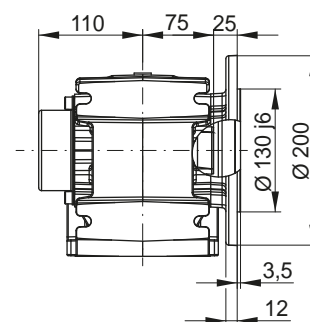


¹) incl. hollow shaft protection cap

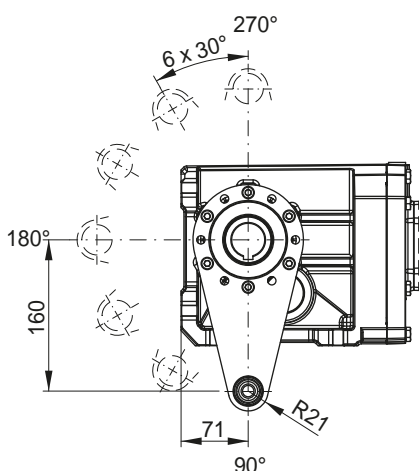
### KF04 - B5 flange execution with output shaft



### KP04 - B5 flange execution with hollow shaft and shrink disc

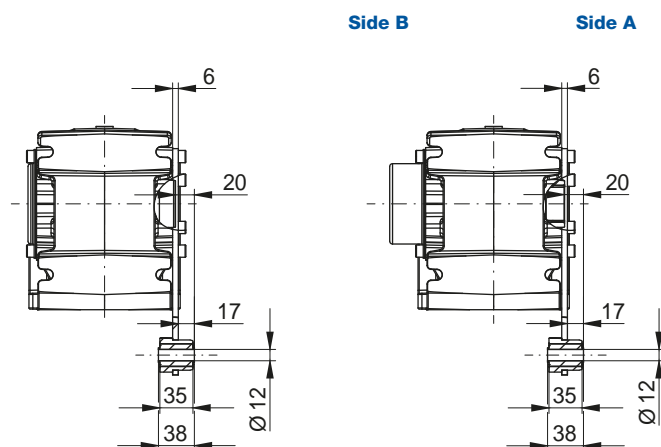


### KT04 - Hollow shaft with torque arm \*\*



Torque arm possible positions:  
90°, 120°, 150°, 180°, 210°, 240°, 270°

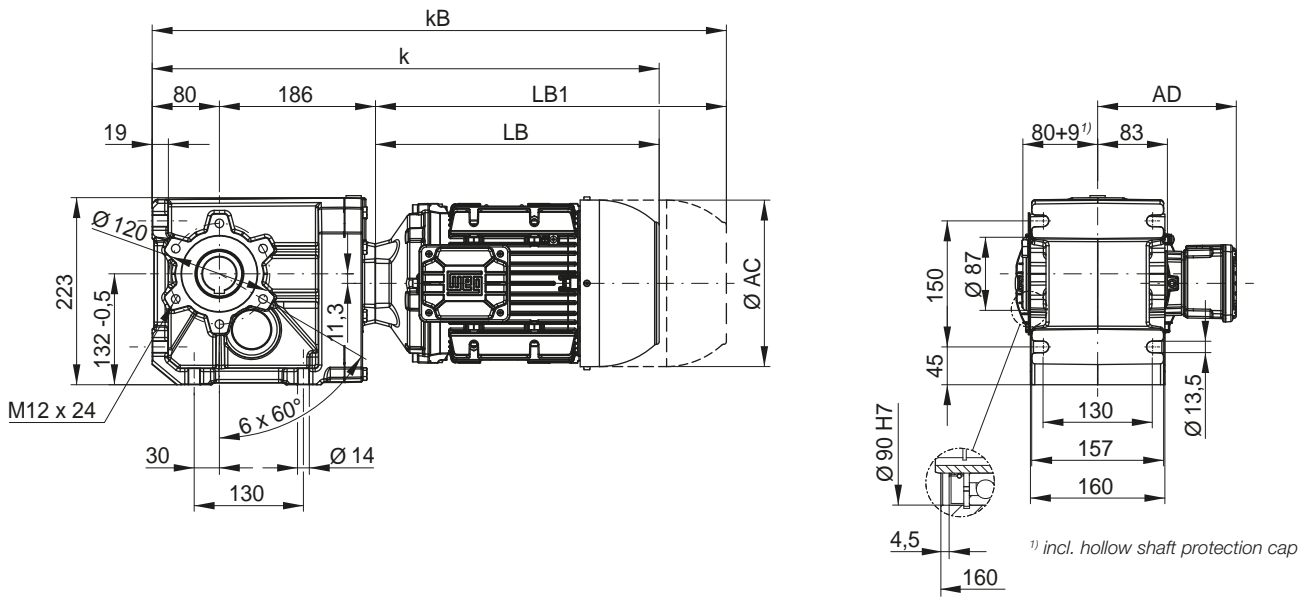
### KU04 - Hollow shaft with shrink disc and torque arm \*\*



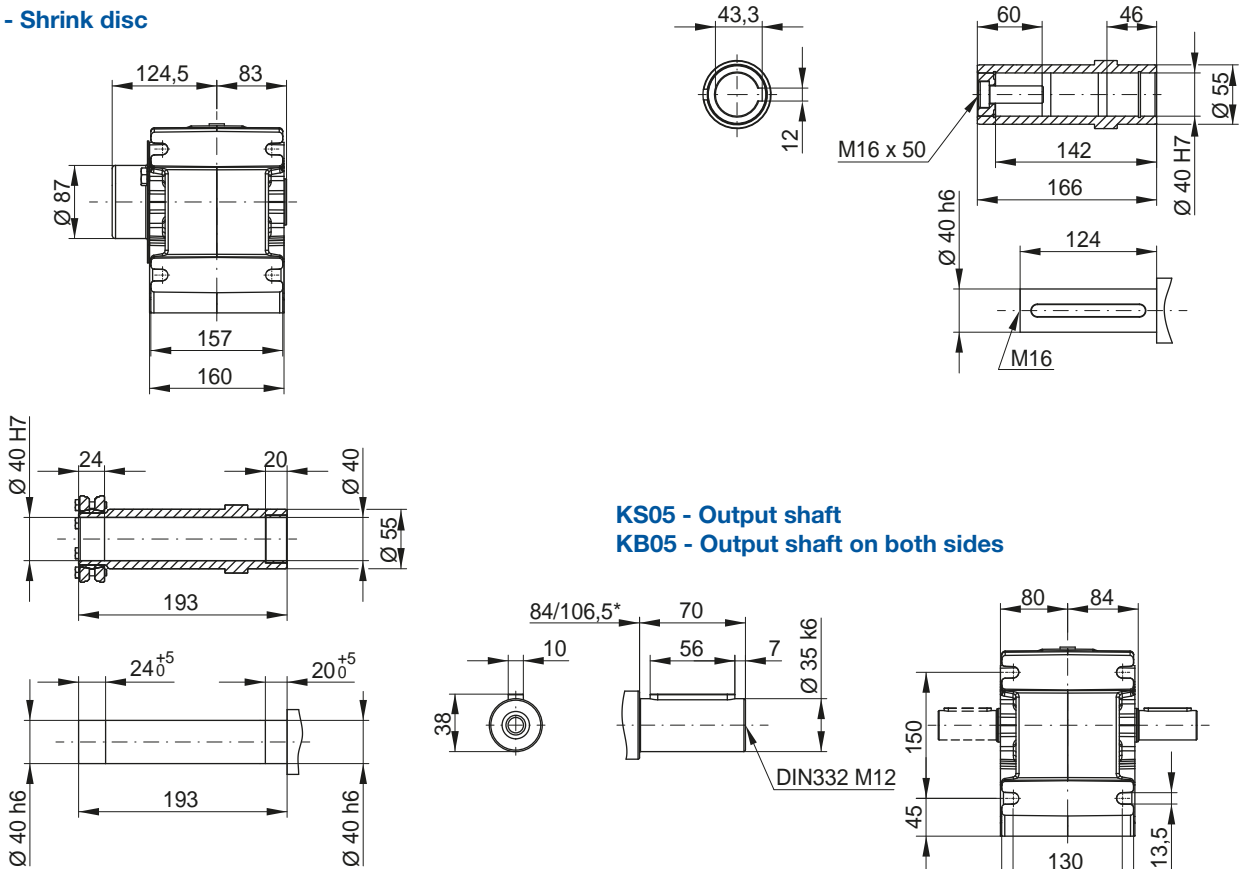
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

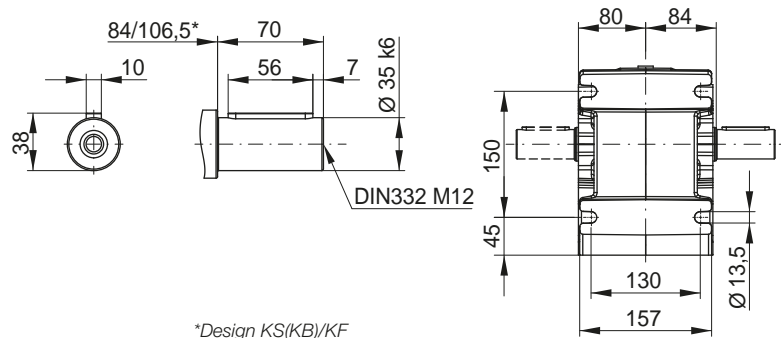
### KH05 - Hollow shaft



### KD05 - Shrink disc



### KS05 - Output shaft KB05 - Output shaft on both sides

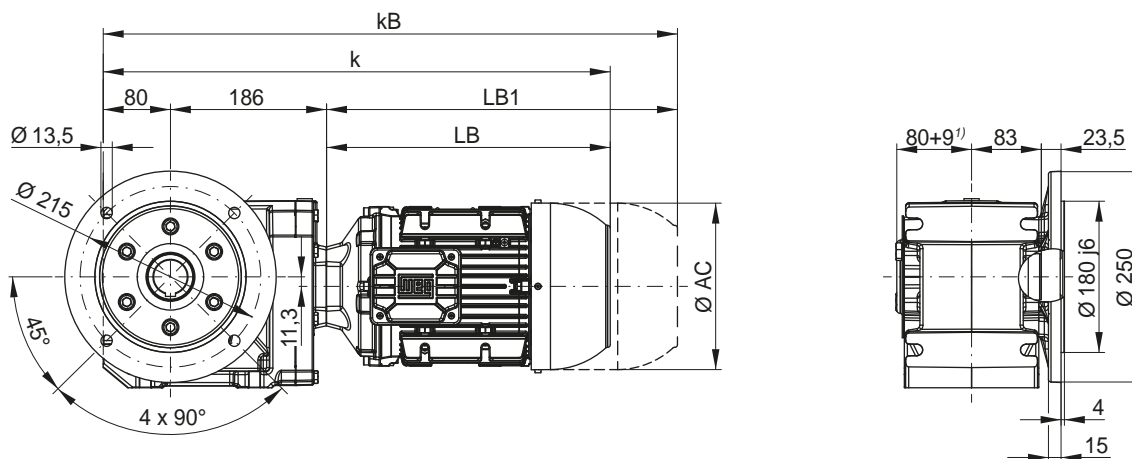


\*Design KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	470	504	512	554	604	642	614	679	717
kB	514	553	570	627	688	726	701	797	835
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

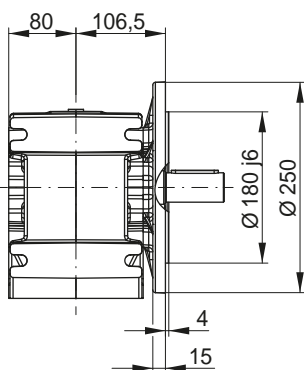
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

### KO05 - B5 flange execution with hollow shaft

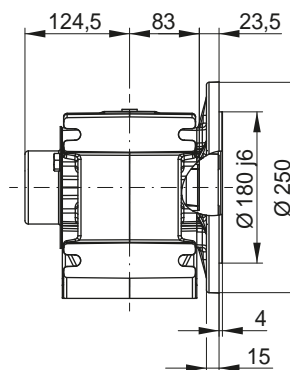


¹) incl. hollow shaft protection cap

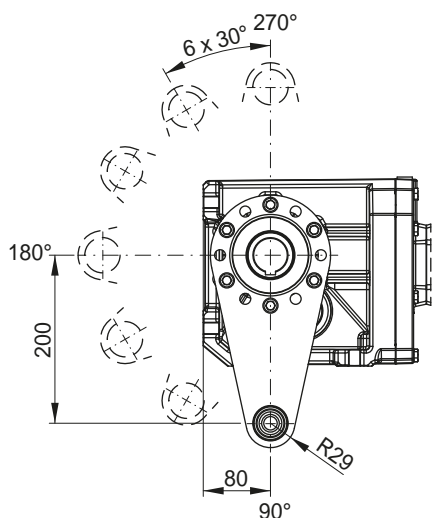
### KF05 - B5 flange execution with output shaft



### KP05 - B5 flange execution with hollow shaft and shrink disc

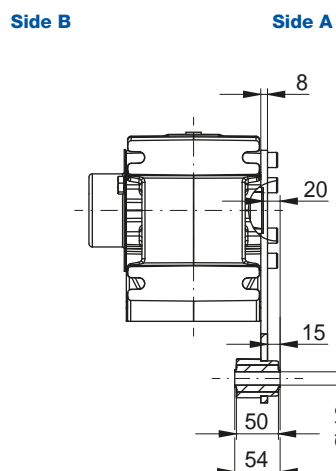


### KT05 - Hollow shaft with torque arm \*\*



Torque arm possible positions:  
90°, 120°, 150°, 180°, 210°, 240°, 270°

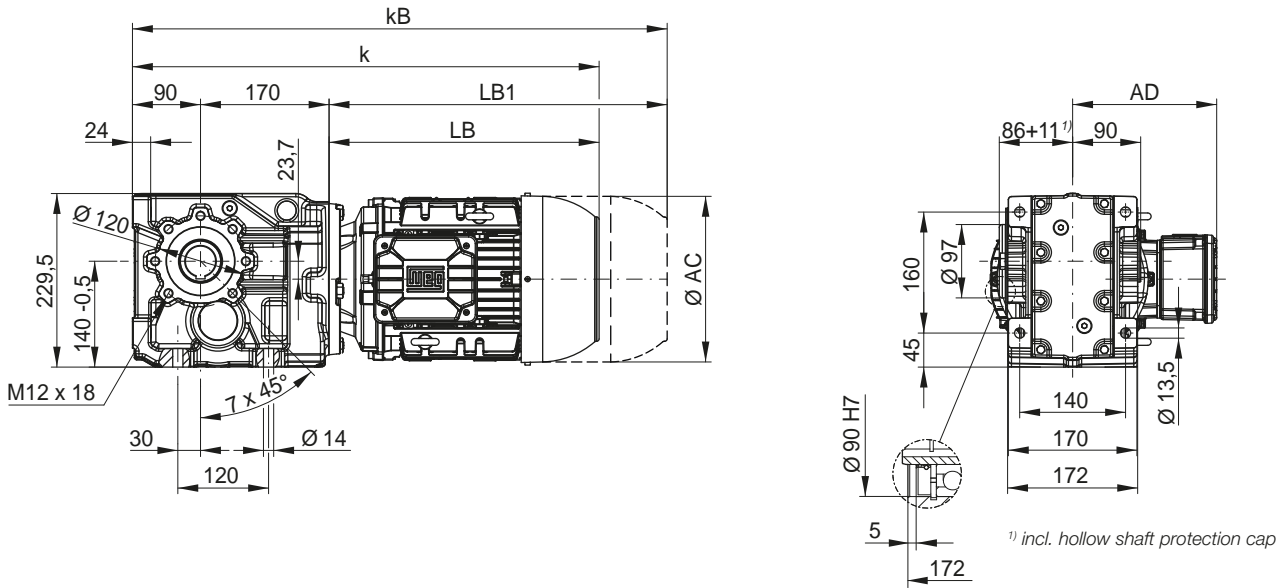
### KU05 - Hollow shaft with shrink disc and torque arm \*\*



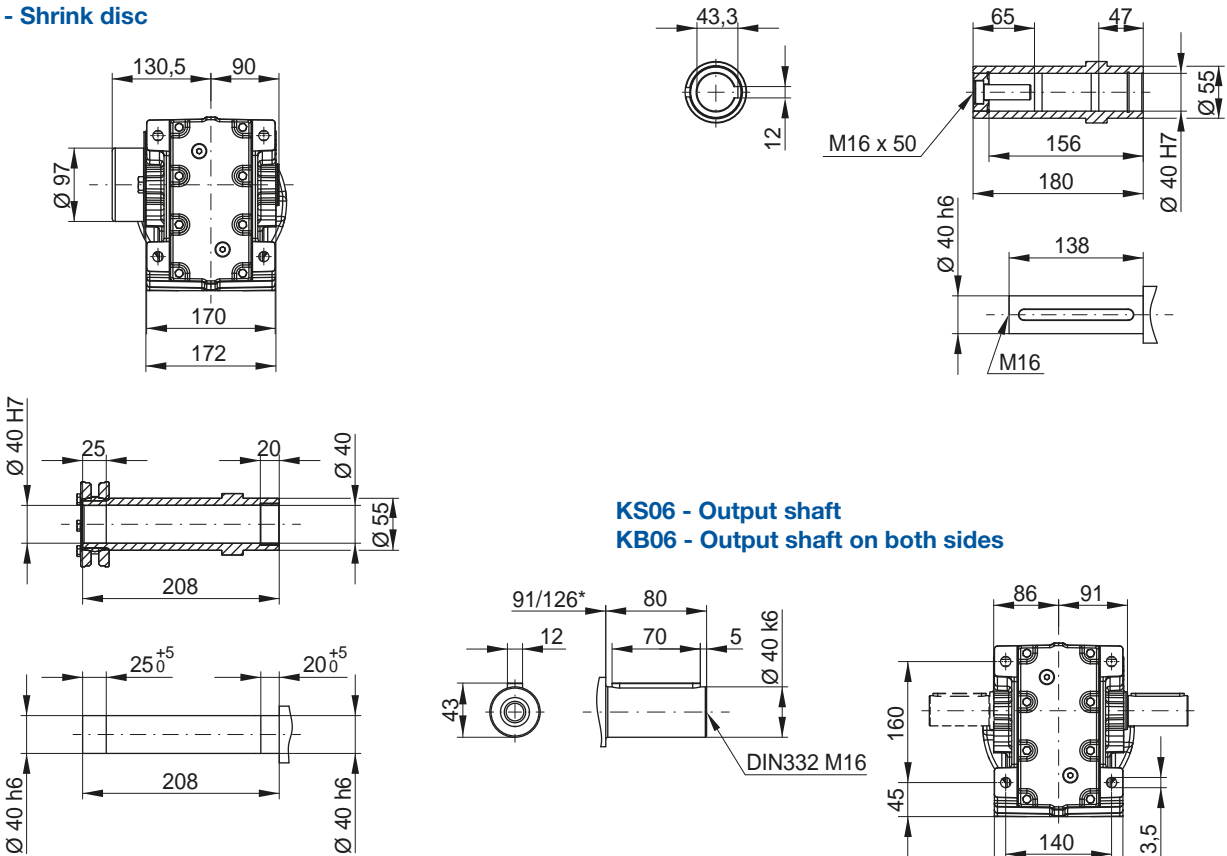
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

### KH06 - Hollow shaft



### KD06 - Shrink disc



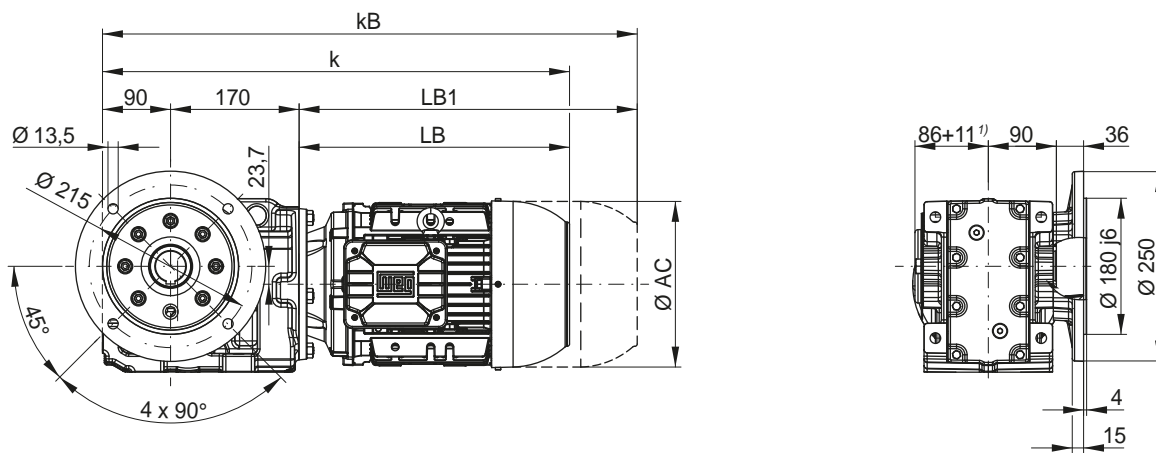
### KS06 - Output shaft KB06 - Output shaft on both sides

\*Designs KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	464	498	506	548	598	636	608	673	711
kB	508	547	564	621	682	720	695	791	829
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

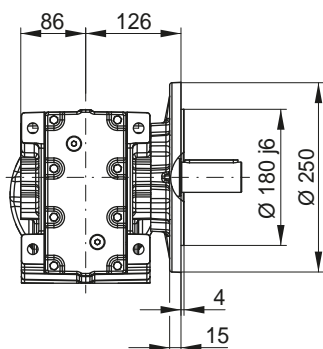
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

### KO06 - B5 flange execution with hollow shaft

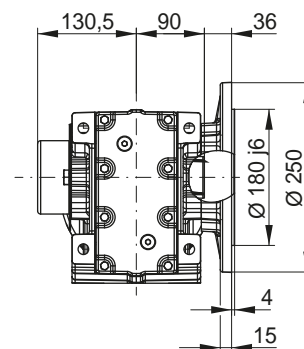


<sup>1)</sup> incl. hollow shaft protection cap

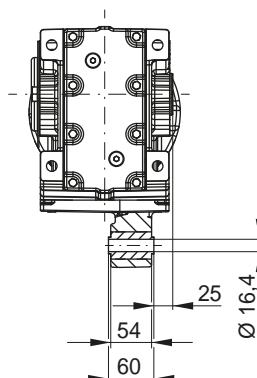
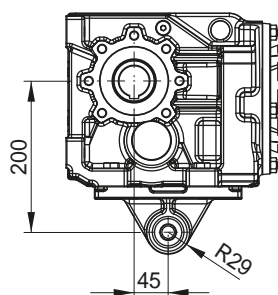
### KF06 - B5 flange execution with output shaft



### KP06 - B5 flange execution with hollow shaft and shrink disc



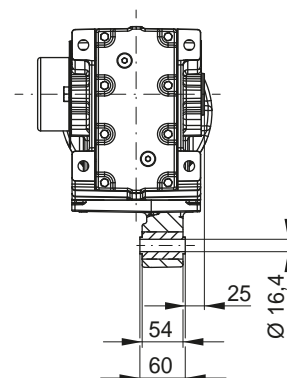
### KT06 - Hollow shaft with torque arm \*\*



### KU06 - Hollow shaft with shrink disc and torque arm \*\*

Side B

Side A

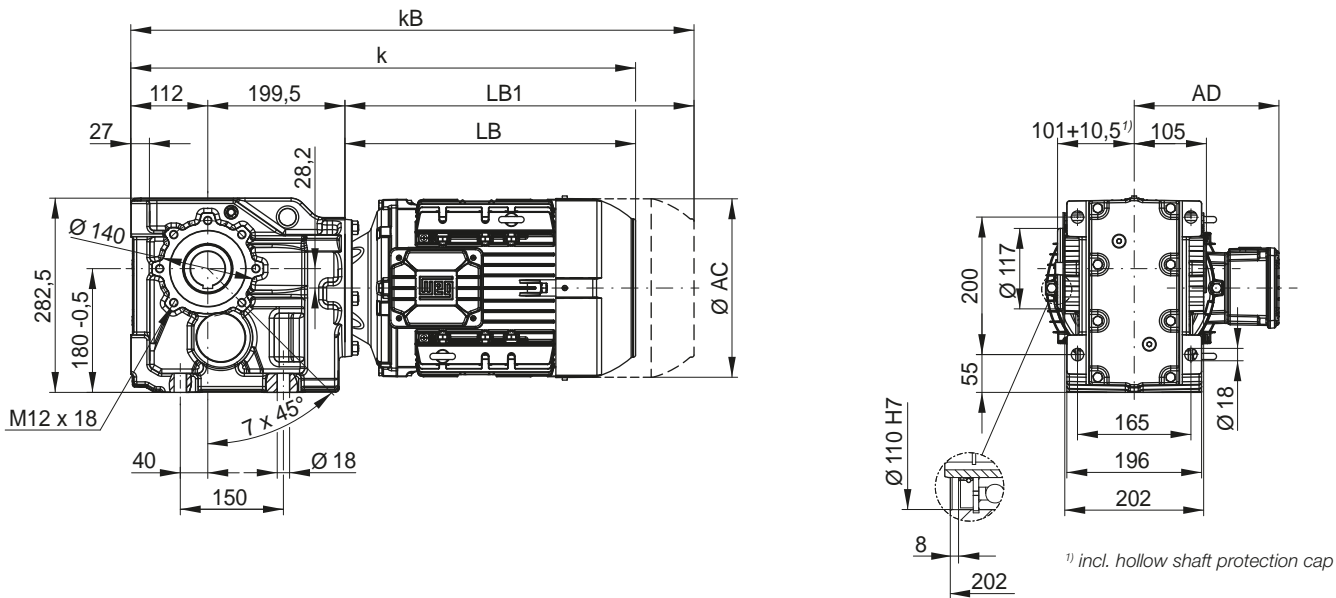


Dimensions in mm.

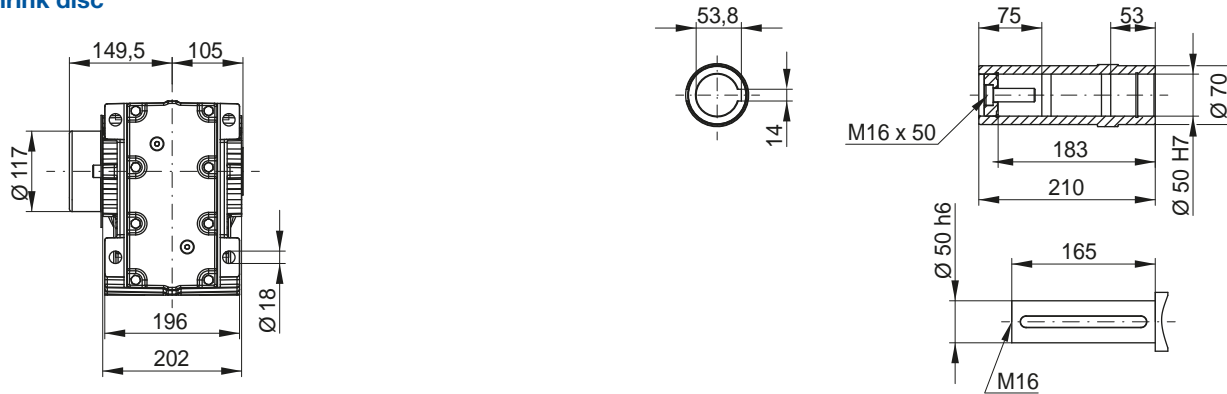
\*\* Torque arm may be mounted on side A or side B.



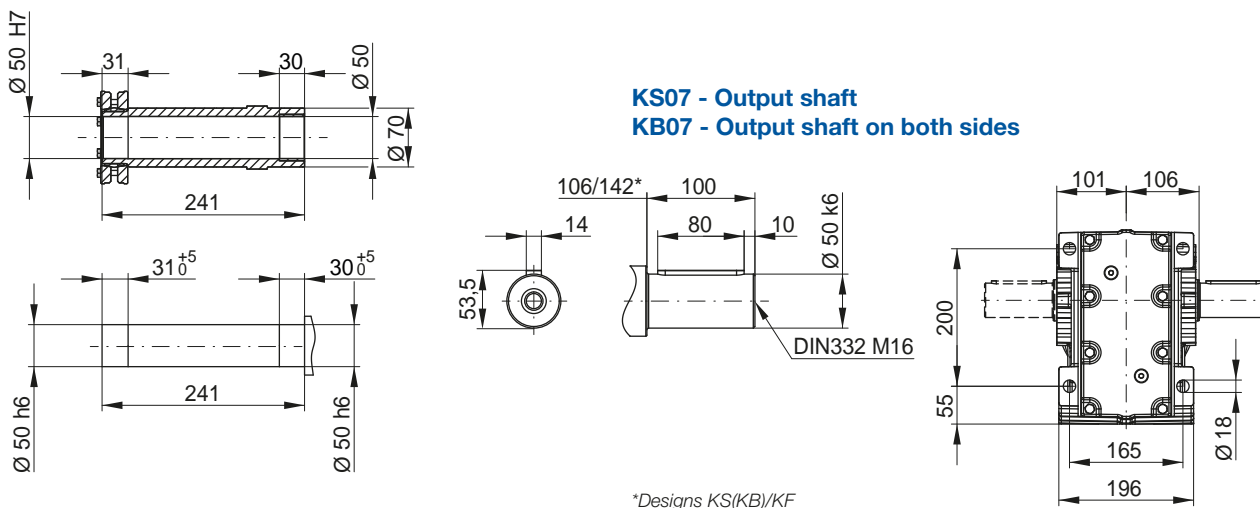
### KH07 - Hollow shaft



### KD07 - Shrink disc



### KS07 - Output shaft KB07 - Output shaft on both sides

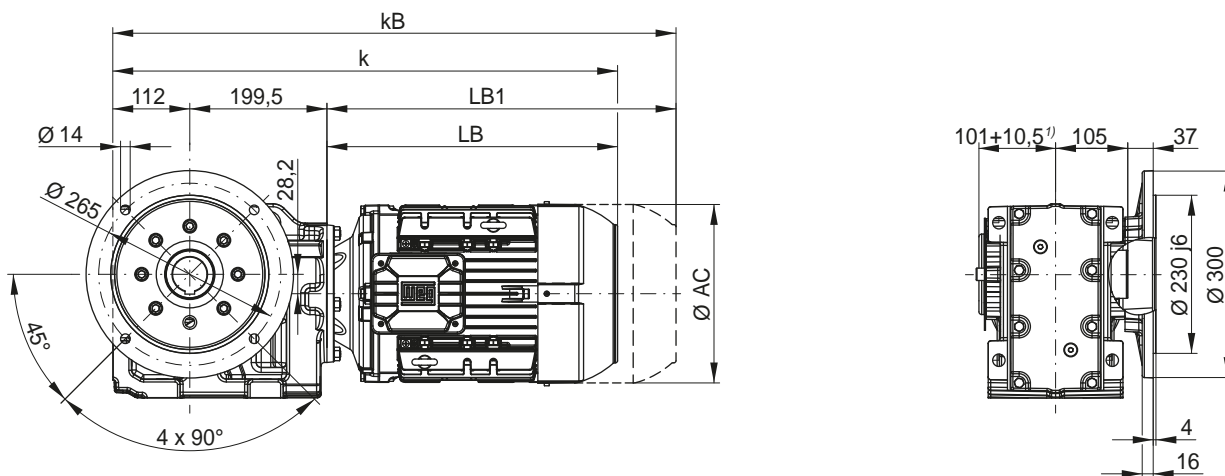


\*Designs KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	516	550	558	600	650	688	660	725	763	857	901
kB	560	599	616	673	734	772	747	843	881	981	1025
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

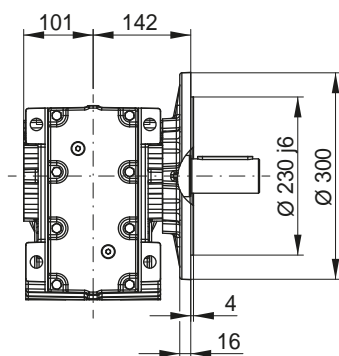
Motor dimension sheets see page 380; Gear unit size K07 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

### KO07 - B5 flange execution with hollow shaft

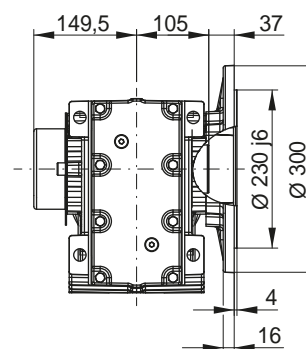


<sup>1)</sup> incl. hollow shaft protection cap

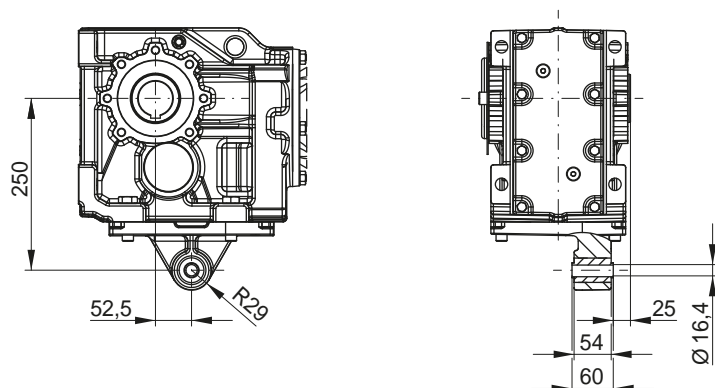
### KF07 - B5 flange execution with output shaft



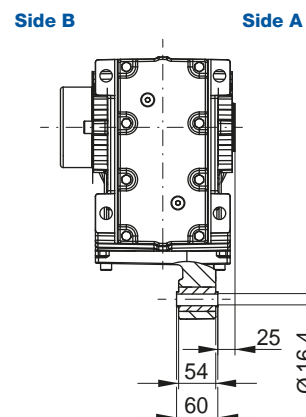
### KP07 - B5 flange execution with hollow shaft and shrink disc



### KT07 - Hollow shaft with torque arm \*\*



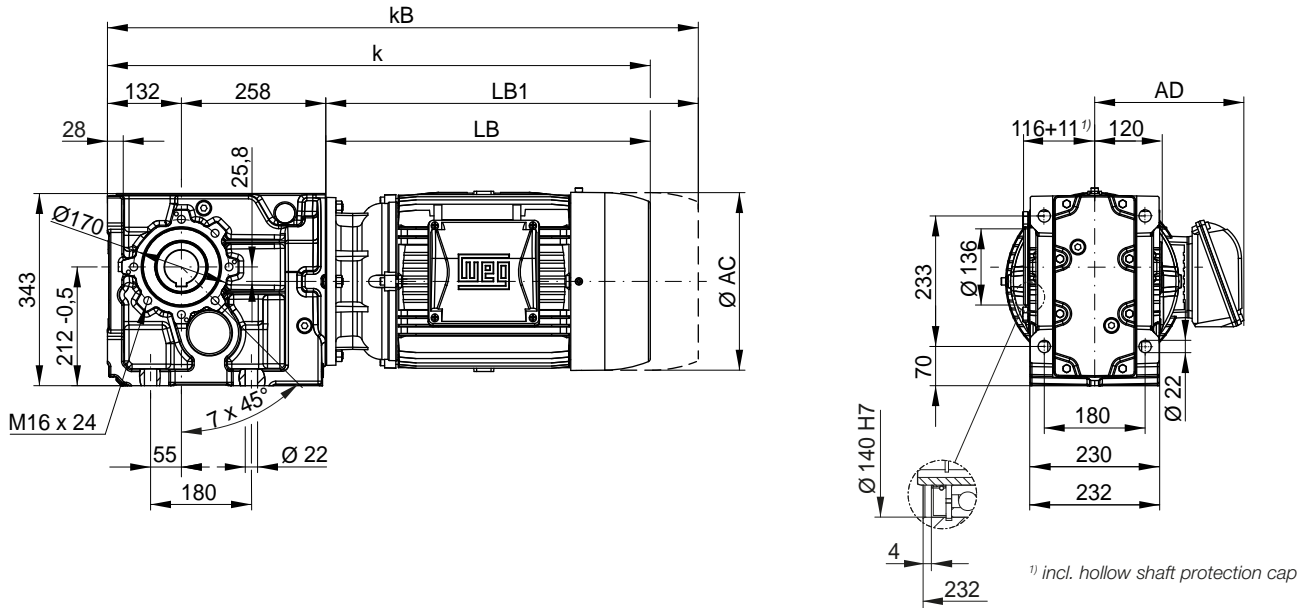
### KU07 - Hollow shaft with shrink disc and torque arm \*\*



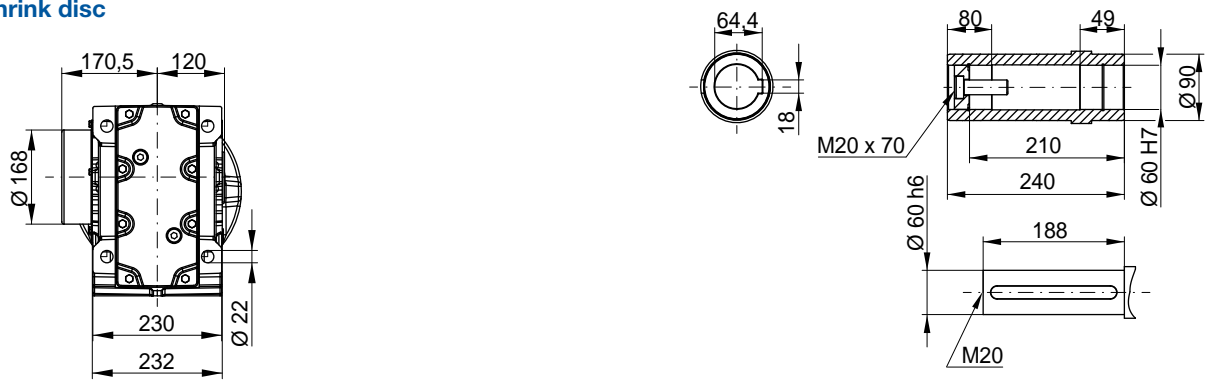
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

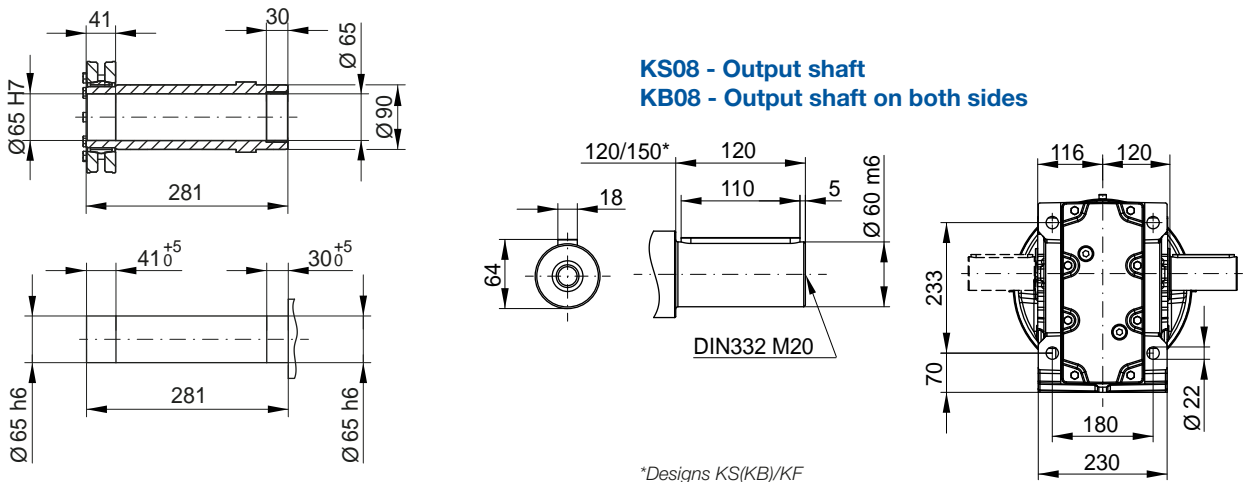
### KH08 - Hollow shaft



### KD08 - Shrink disc



### KS08 - Output shaft KB08 - Output shaft on both sides

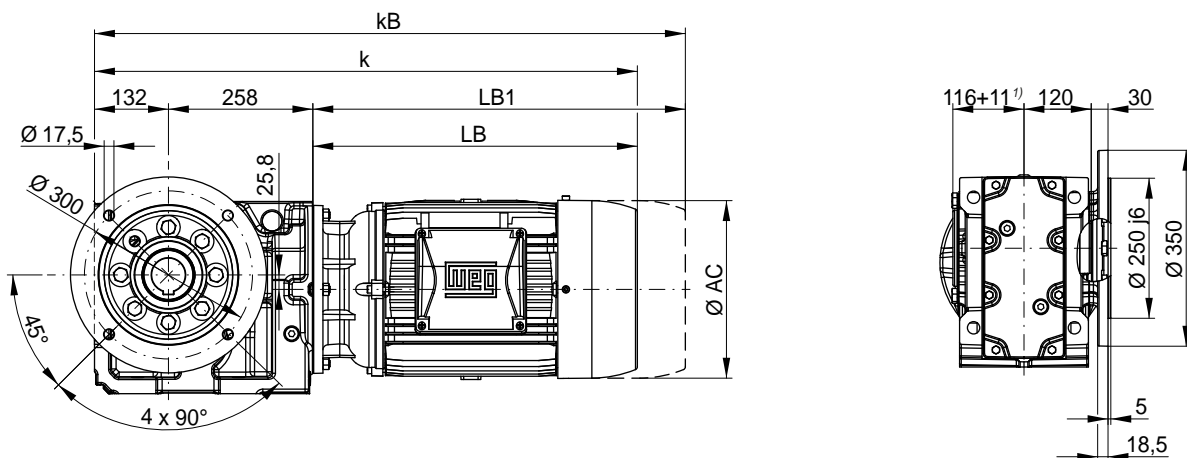


\*Designs KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	594	628	636	678	728	766	738	803	841	925	969	993	1031
kB	638	677	694	751	812	850	825	921	959	1049	1093	1111	1149
LB	204	238	246	288	338	376	348	413	451	535	579	603	641
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759

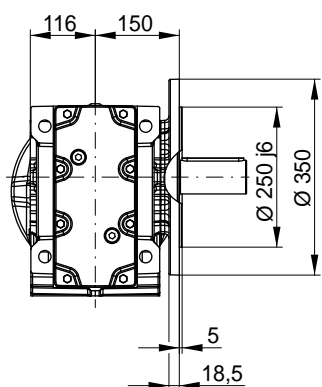
Motor dimension sheets see page 380; Gear unit size K08 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

### KO08 - B5 flange execution with hollow shaft

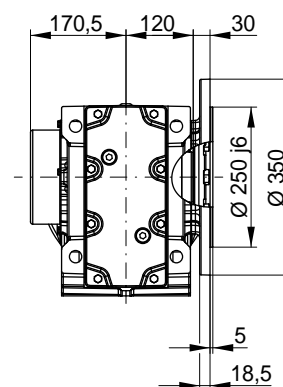


<sup>1)</sup> incl. hollow shaft protection cap

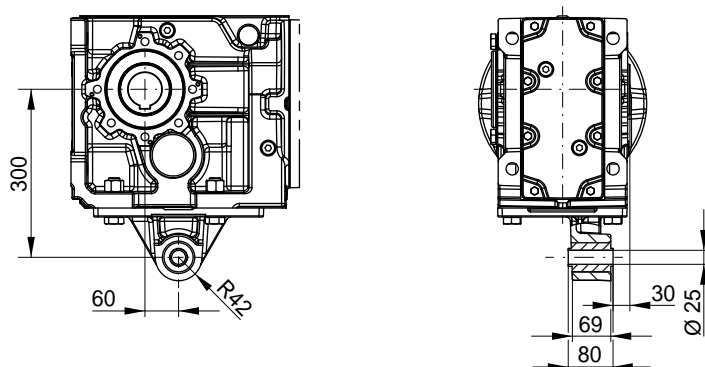
### KF08 - B5 flange execution with output shaft



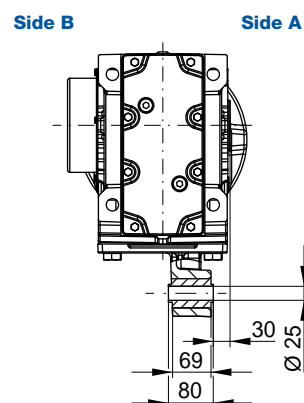
### KP08 - B5 flange execution with hollow shaft and shrink disc



### KT08 - Hollow shaft with torque arm \*\*



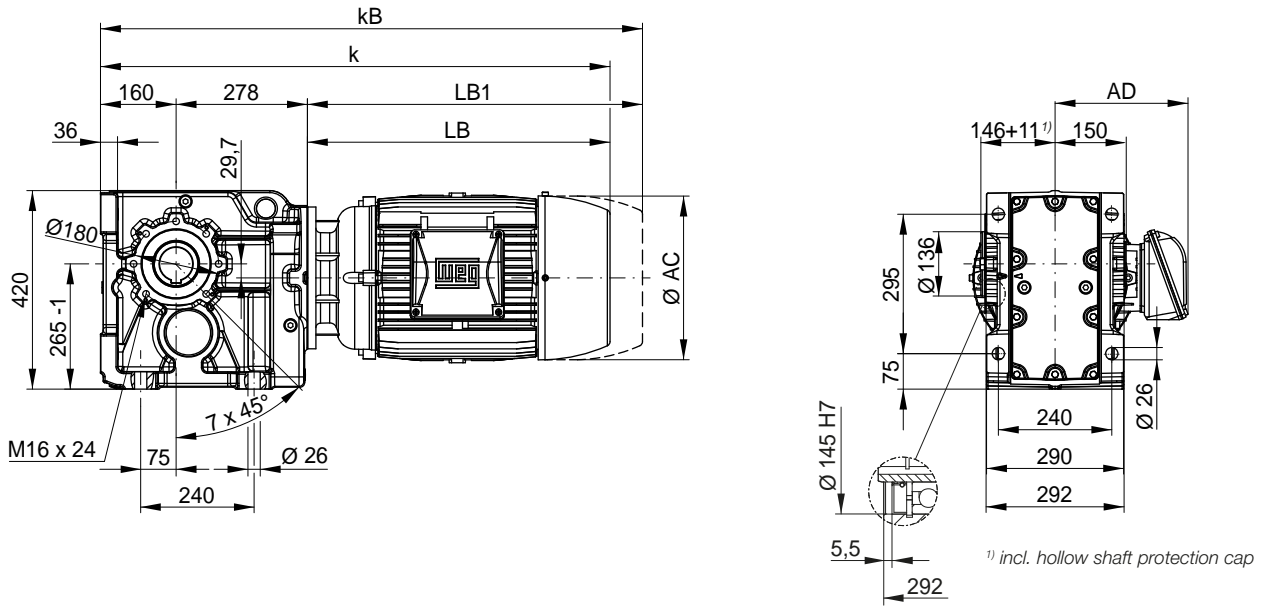
### KU08 - Hollow shaft with shrink disc and torque arm \*\*



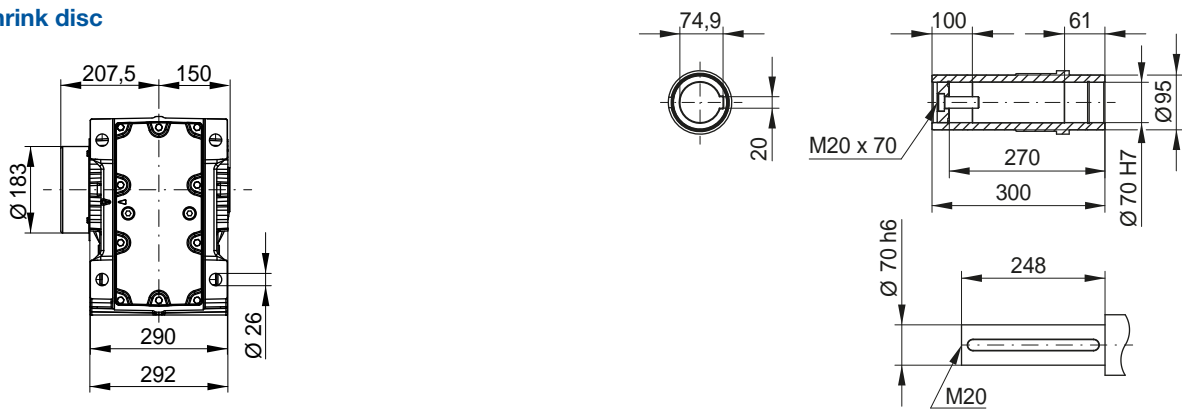
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

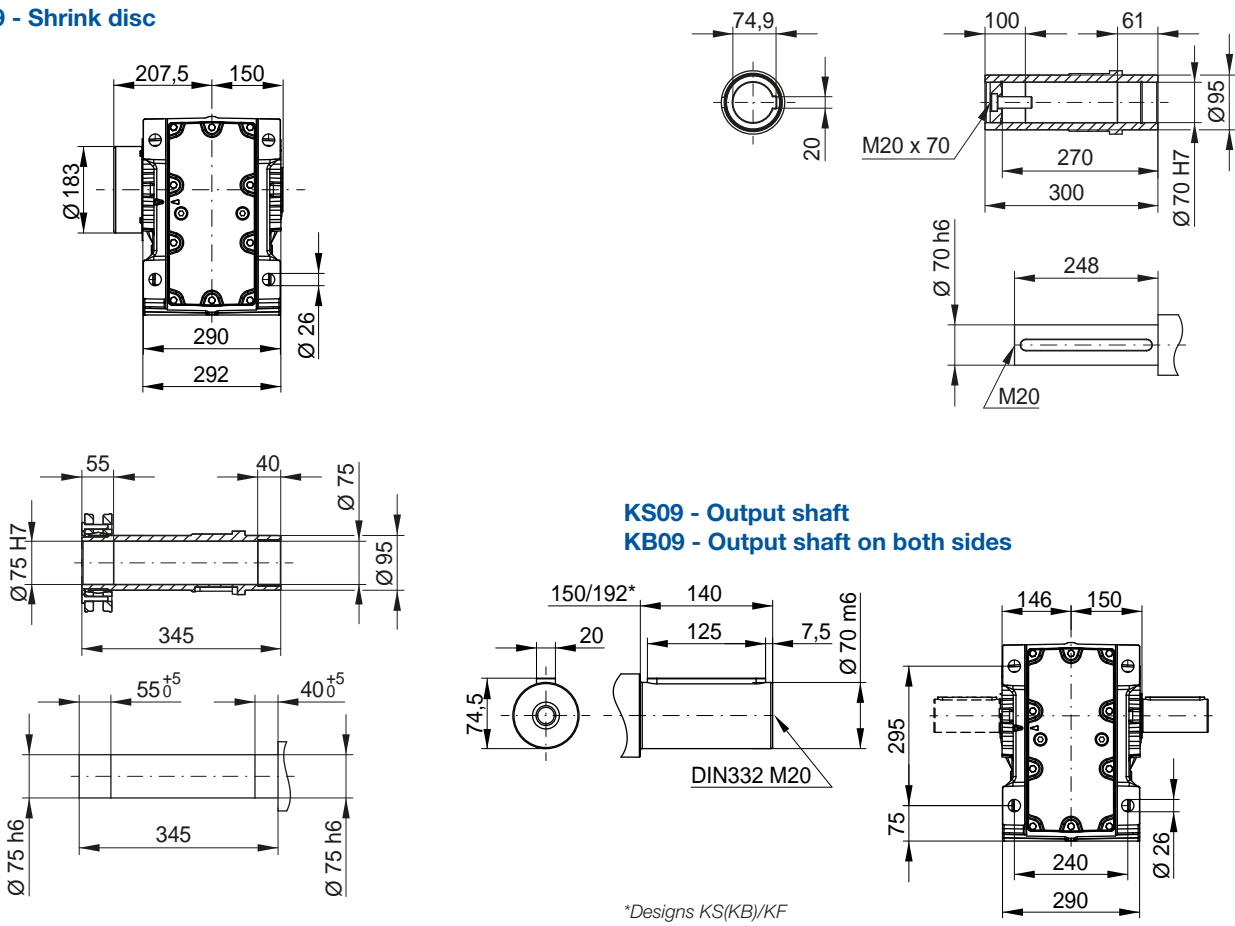
### KH09 - Hollow shaft



### KD09 - Shrink disc



### KS09 - Output shaft KB09 - Output shaft on both sides

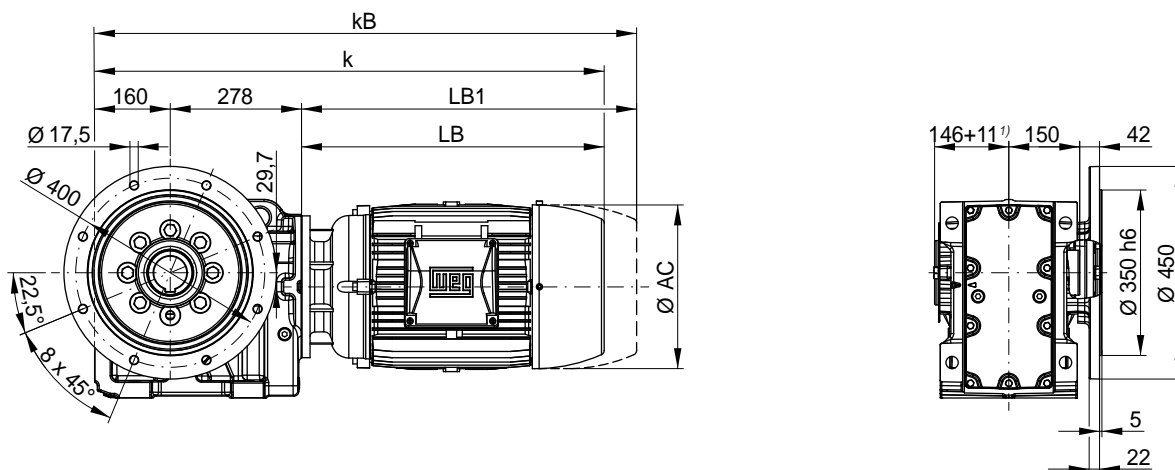


\*Designs KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	128	136	145	155	165	165	185	205	205	266	266	281	281	317
k	642	676	684	726	776	814	786	851	889	973	1017	1041	1079	1171
kB	686	725	742	799	860	898	873	969	1007	1097	1141	1159	1197	1297
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

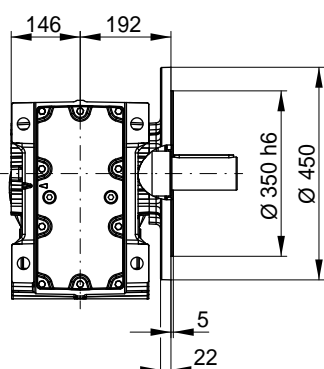
Motor dimension sheets see page 380; Gear unit size K09 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

### KO09 - B5 flange execution with hollow shaft

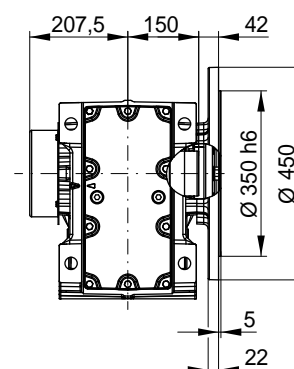


<sup>1)</sup> incl. hollow shaft protection cap

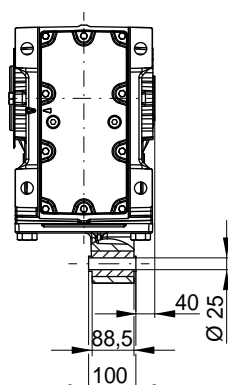
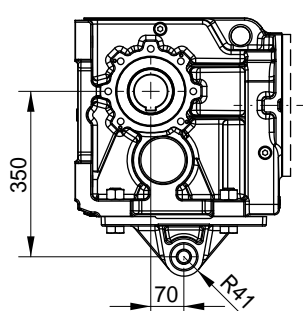
### KF09 - B5 flange execution with output shaft



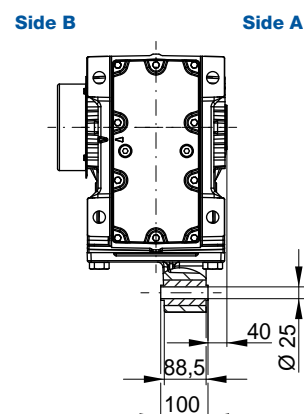
### KP09 - B5 flange execution with hollow shaft and shrink disc



### KT09 - Hollow shaft with torque arm \*\*



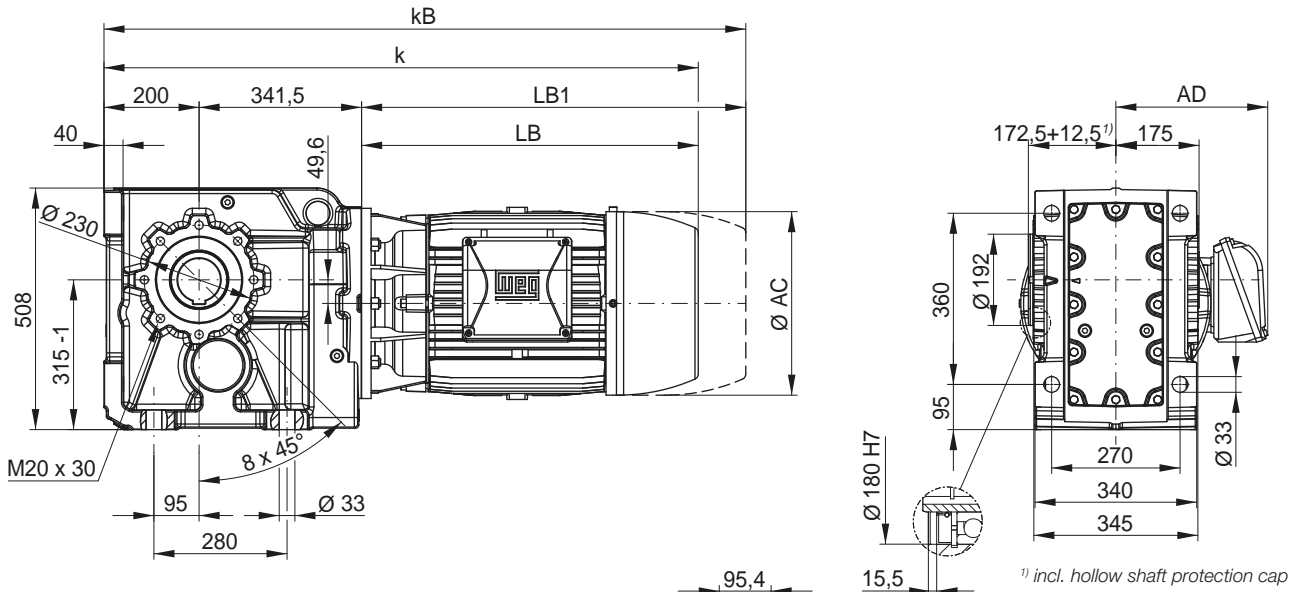
### KU09 - Hollow shaft with shrink disc and torque arm \*\*



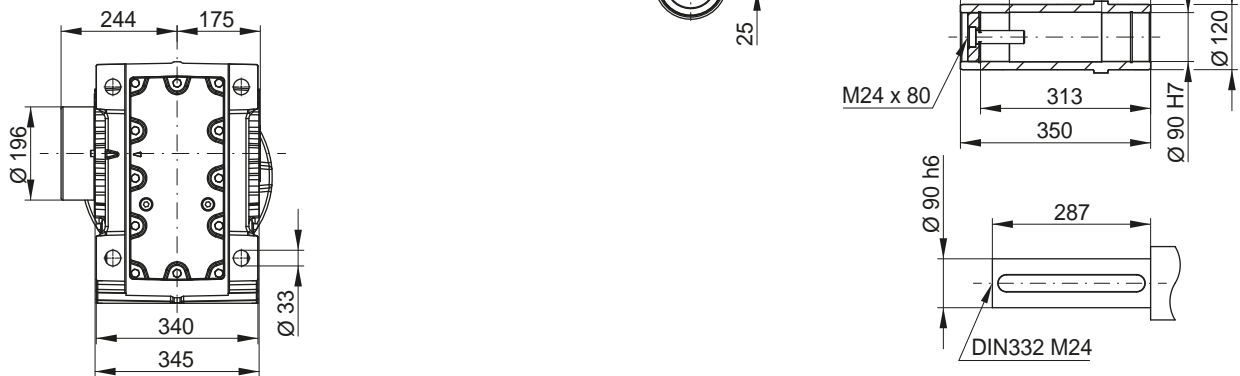
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

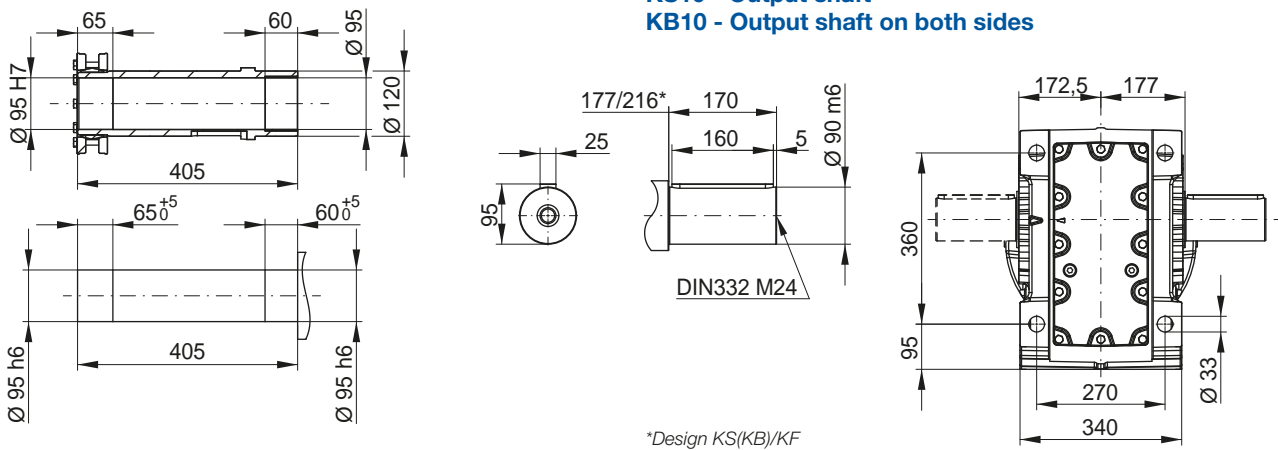
### KH10 - Hollow shaft



### KD10 - Shrink disc



### KS10 - Output shaft KB10 - Output shaft on both sides

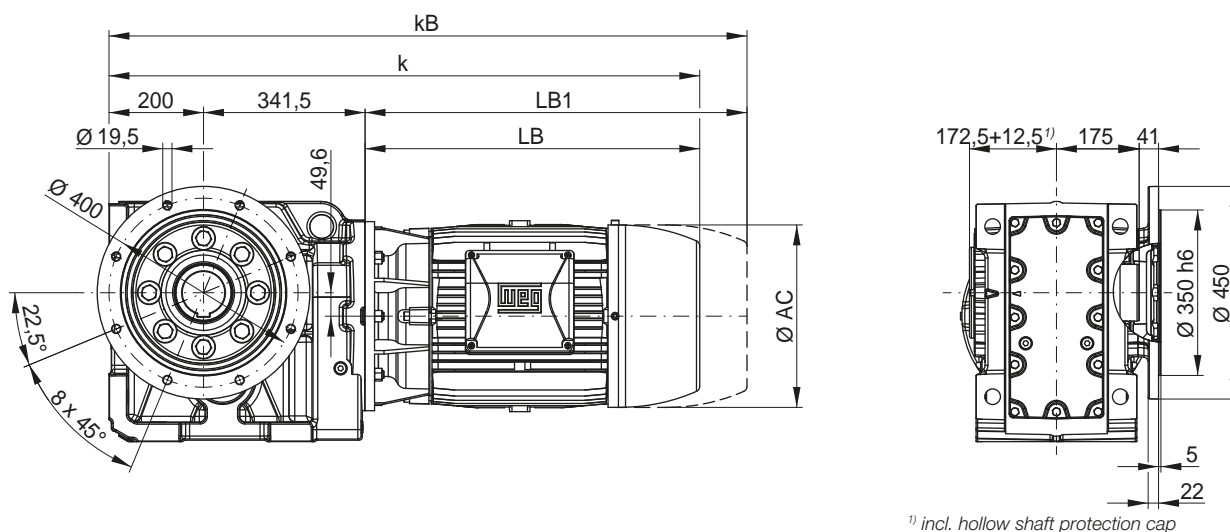


\*Design KS(KB)/KF

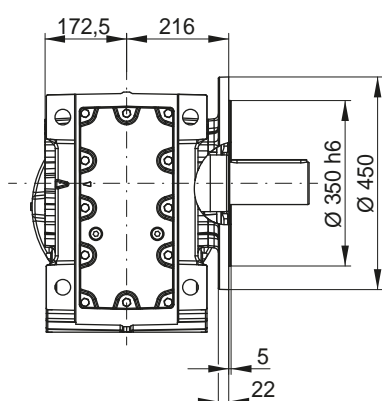
Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	890	955	993	1064	1108	1132	1170	1262	1370
kB	-	-	-	-	-	-	977	1073	1111	1188	1232	1250	1288	1388	1488
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size K10 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

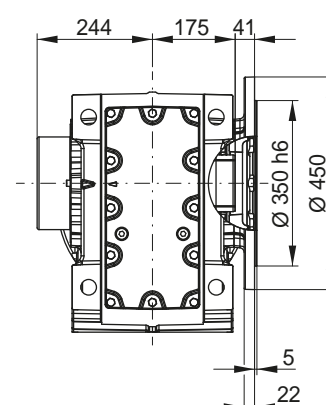
### KO10 - B5 flange execution with hollow shaft



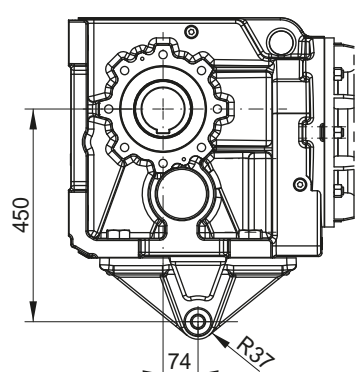
### KF10 - B5 flange execution with output shaft



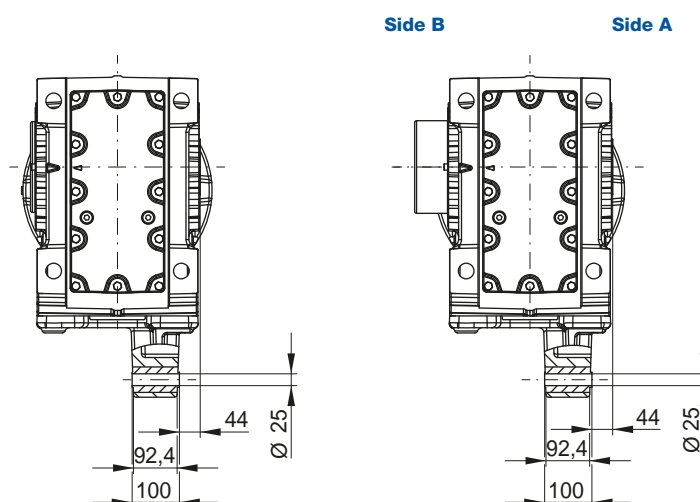
### KP10 - B5 flange execution with hollow shaft and shrink disc



### KT10 - Hollow shaft with torque arm \*\*



### KU10 - Hollow shaft with shrink disc and torque arm \*\*

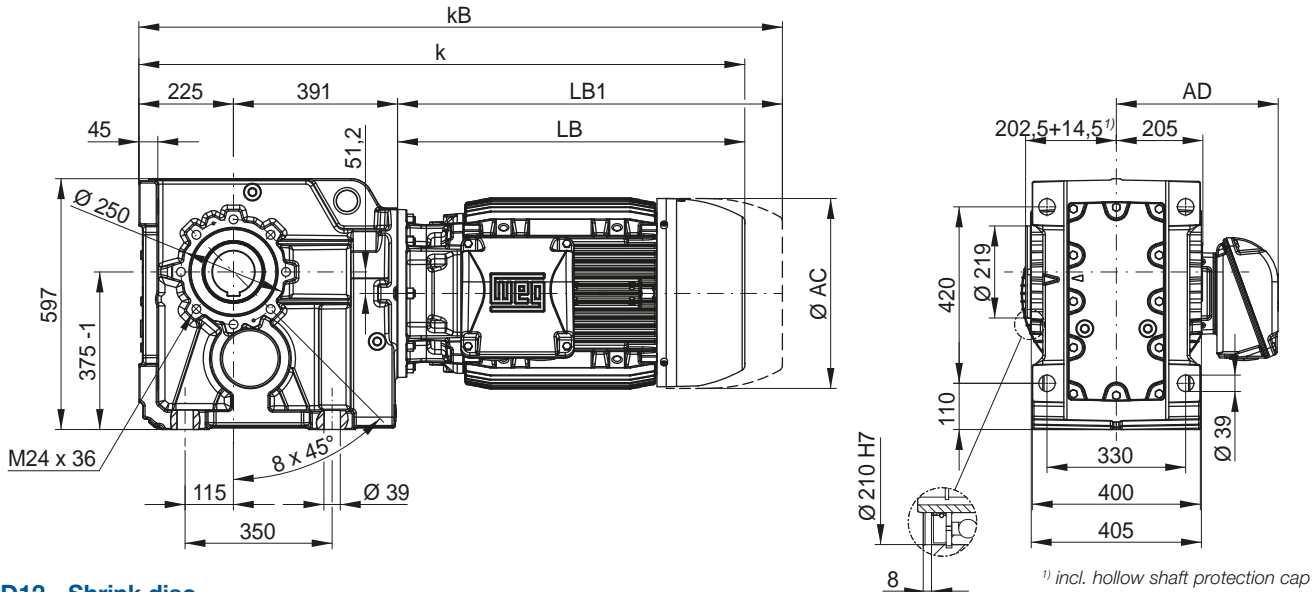


Dimensions in mm.

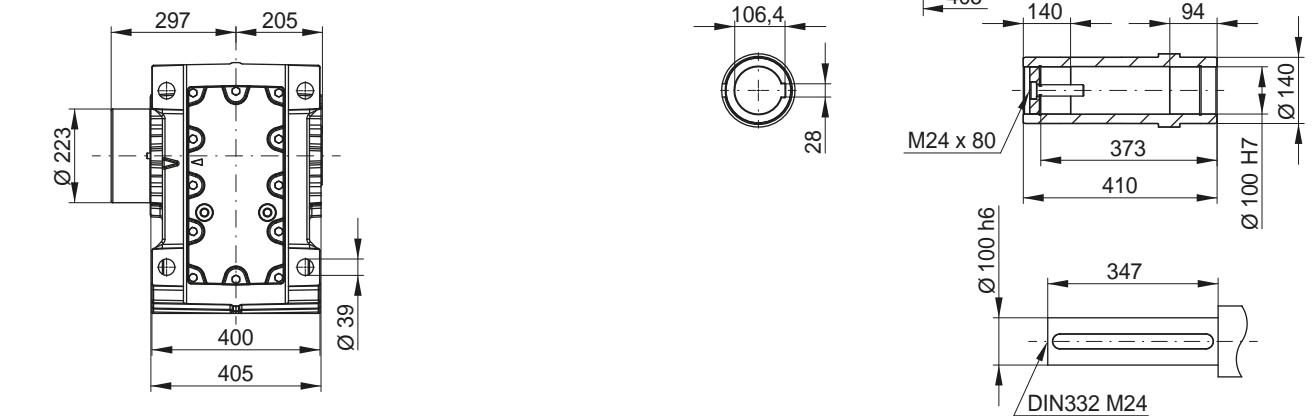
\*\* Torque arm may be mounted on side A or side B.



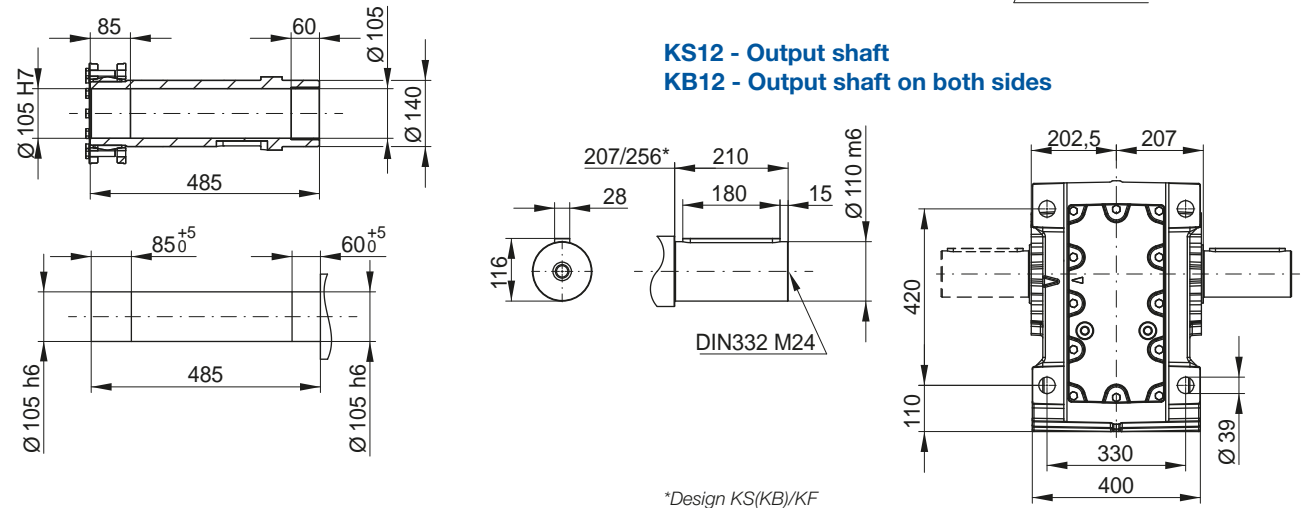
### KH12 - Hollow shaft



### KD12 - Shrink disc



### KS12 - Output shaft KB12 - Output shaft on both sides

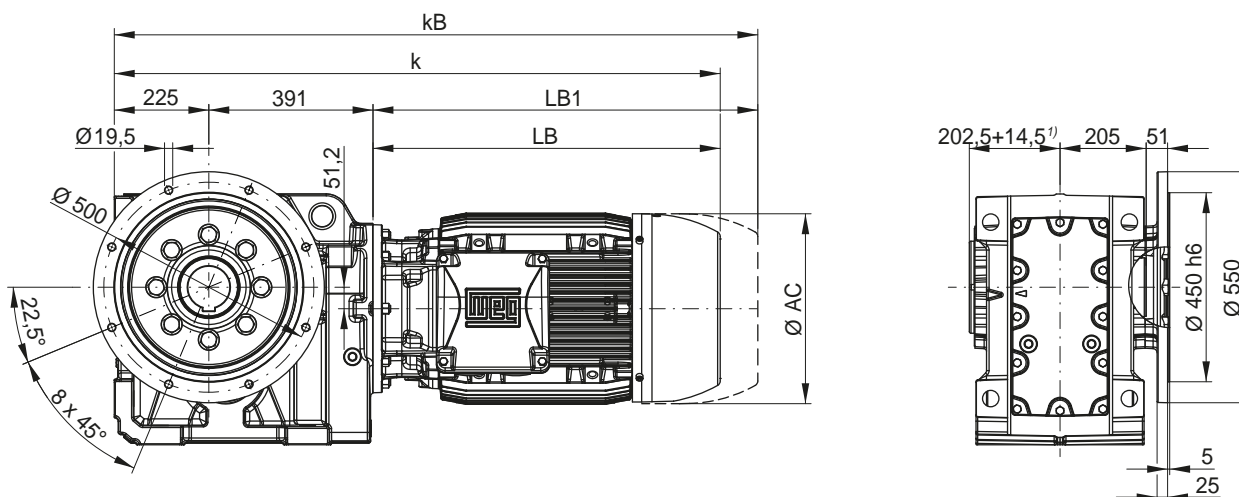


\*Design KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	964	1029	1067	1138	1182	1206	1244	1336	1444
kB	-	-	-	-	-	-	1051	1147	1185	1262	1306	1324	1362	1462	1562
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

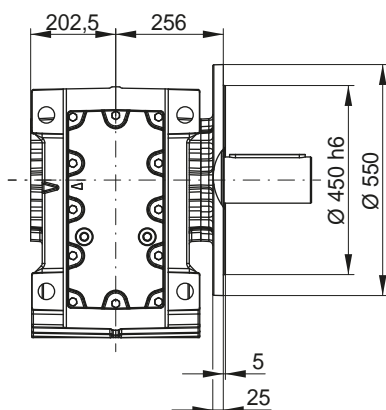
Motor dimension sheets see page 380; Gear unit size K12 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

### KO12 - B5 flange execution with hollow shaft

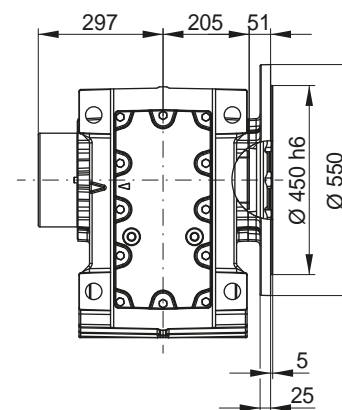


<sup>1)</sup> incl. hollow shaft protection cap

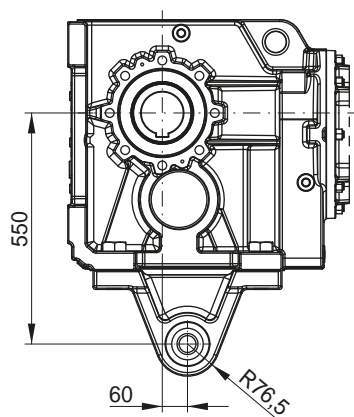
### KF12 - B5 flange execution with output shaft



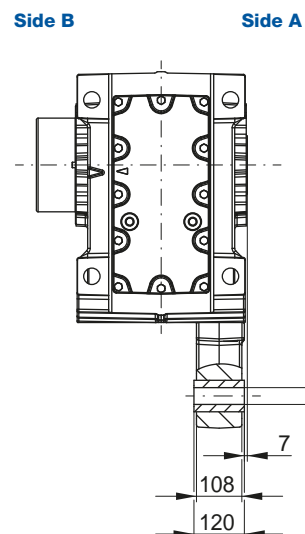
### KP12 - B5 flange execution with hollow shaft and shrink disc



### KT12 - Hollow shaft with torque arm \*\*



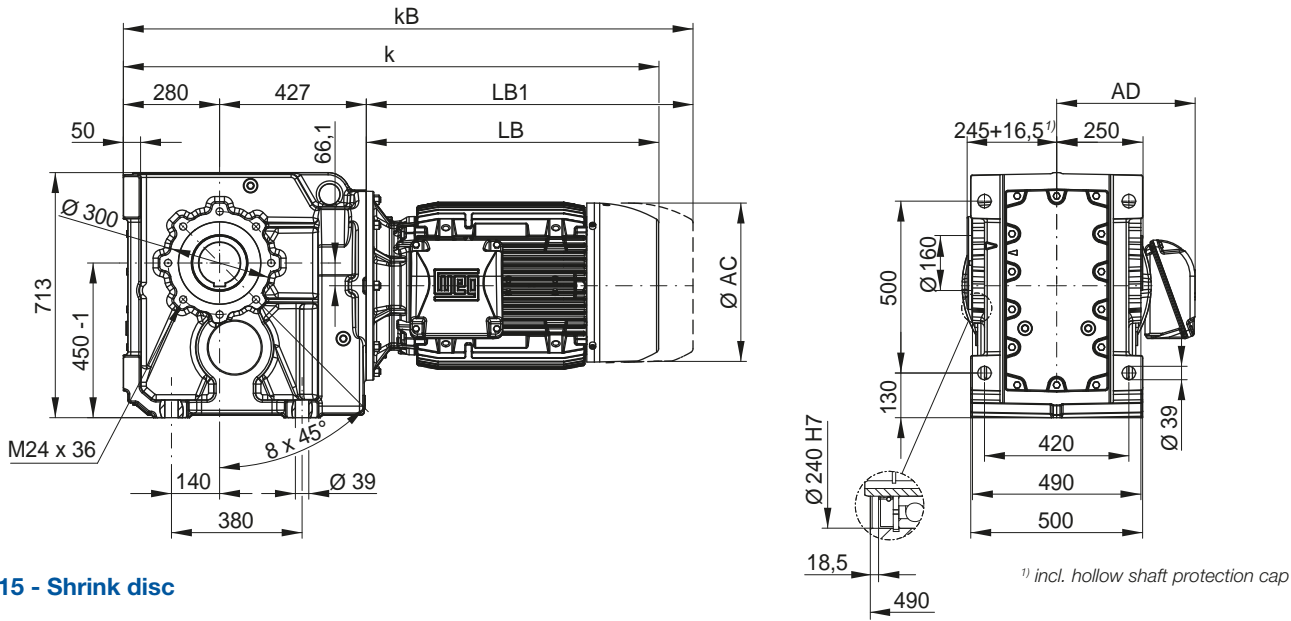
### KU12 - Hollow shaft with shrink disc and torque arm \*\*



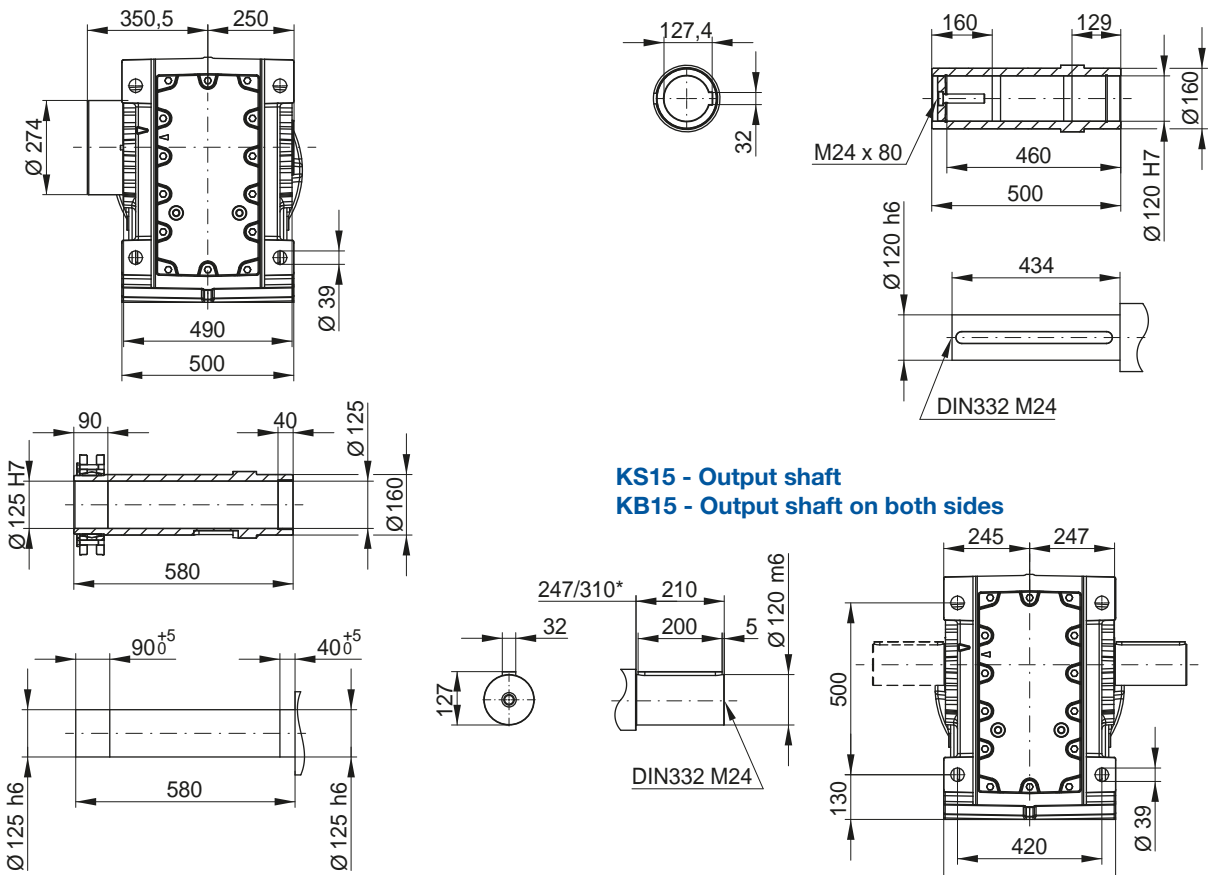
Dimensions in mm.

\*\* Torque arm may be mounted on side A or side B.

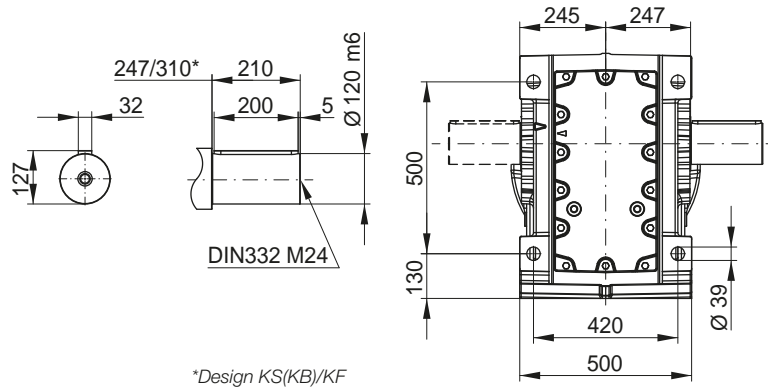
### KH15 - Hollow shaft



### KD15 - Shrink disc



### KS15 - Output shaft KB15 - Output shaft on both sides

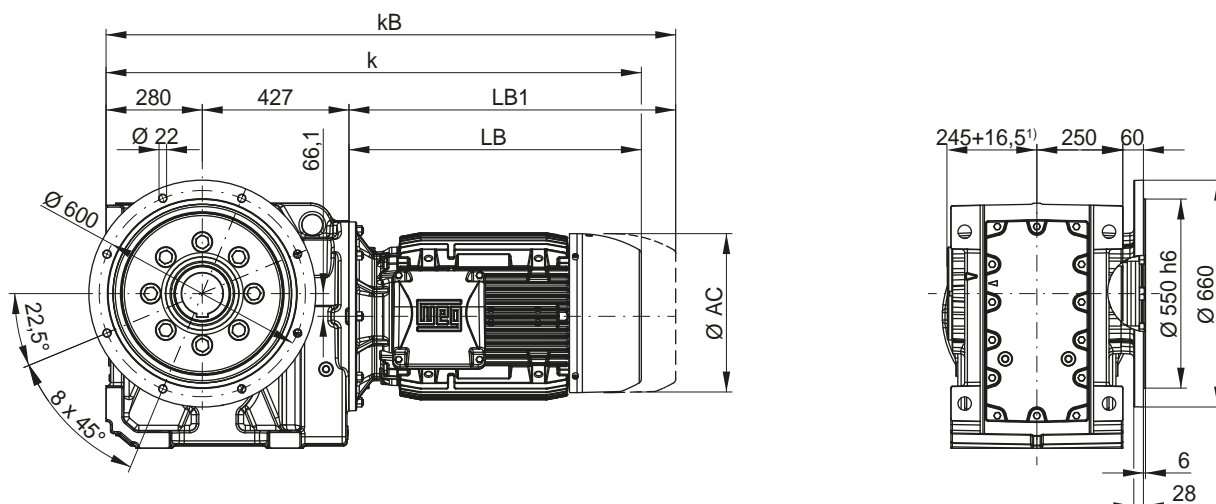


\*Design KS(KB)/KF

Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	1213	1257	1281	1319	1411	1519	1558
kB	-	-	-	-	-	-	-	-	-	1337	1381	1399	1437	1537	1637	1676
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

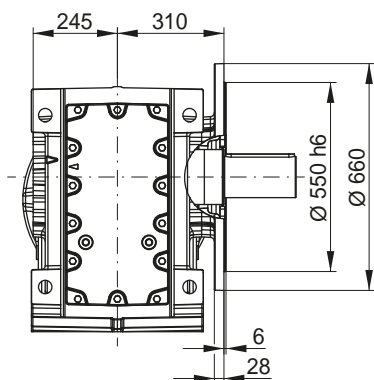
Motor dimension sheets see page 380; Gear unit size K15 corresponds to motor flange FR-550. Description of motor lengths LB and LB1 see page 384.

### KO15 - B5 flange execution with hollow shaft

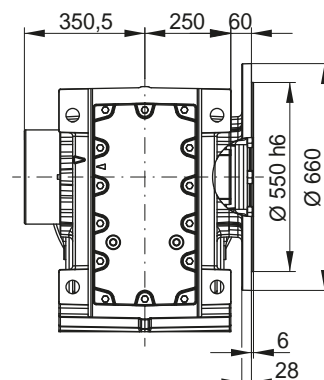


¹) incl. hollow shaft protection cap

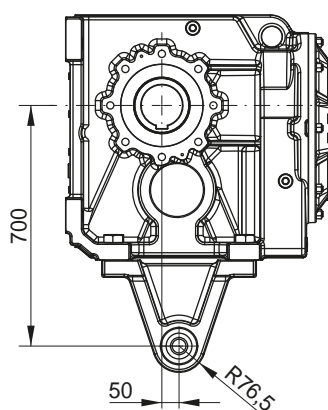
### KF15 - B5 flange execution with output shaft



### KP15 - B5 flange execution with hollow shaft and shrink disc



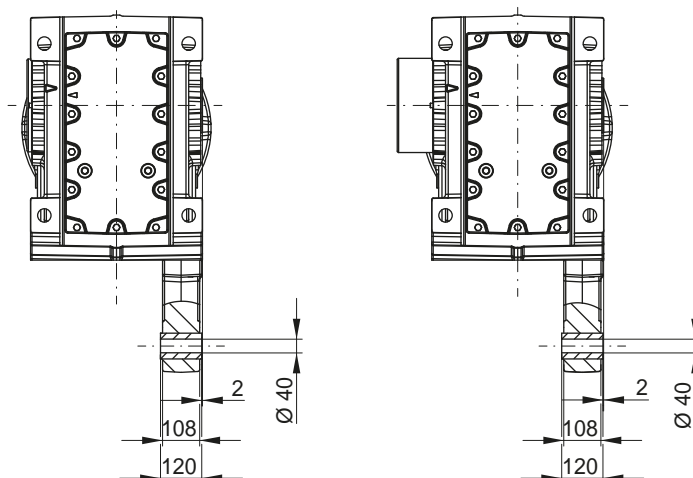
### KT15 - Hollow shaft with torque arm \*\*



### KU15 - Hollow shaft with shrink disc and torque arm \*\*

Side B

Side A

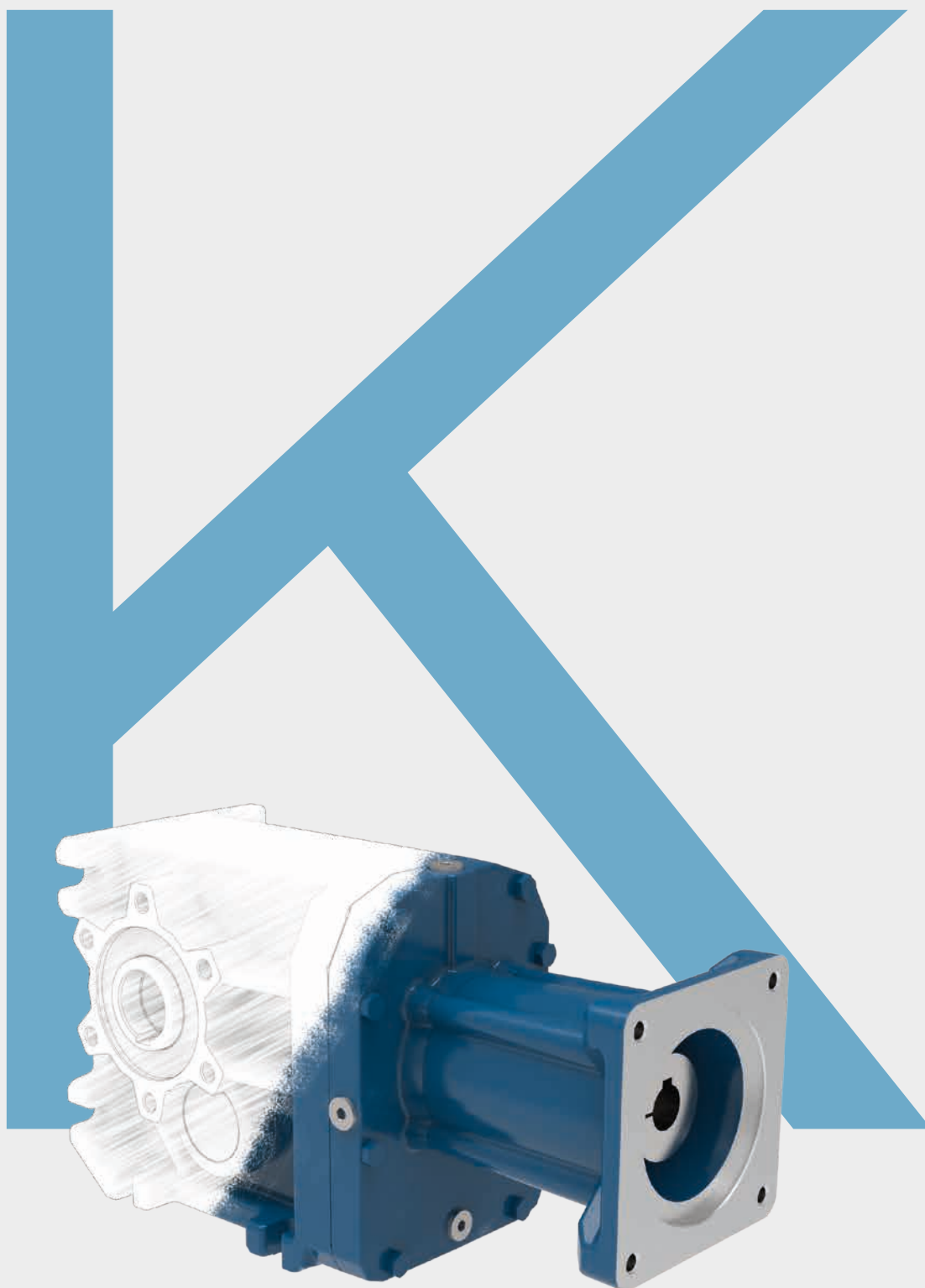


Dimensions in mm.

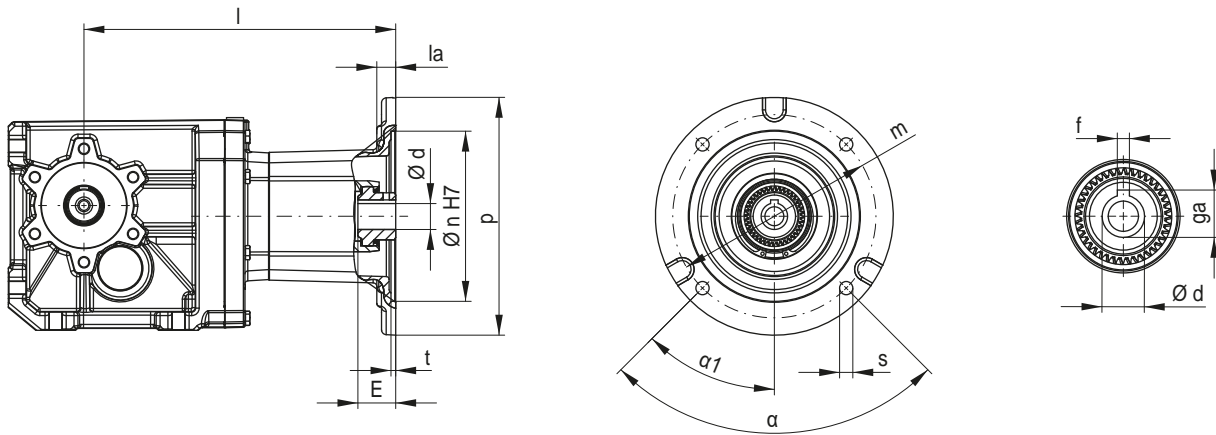
\*\* Torque arm may be mounted on side A or side B.



# Dimension sheets Input types



## IEC Adapter I63 to I280



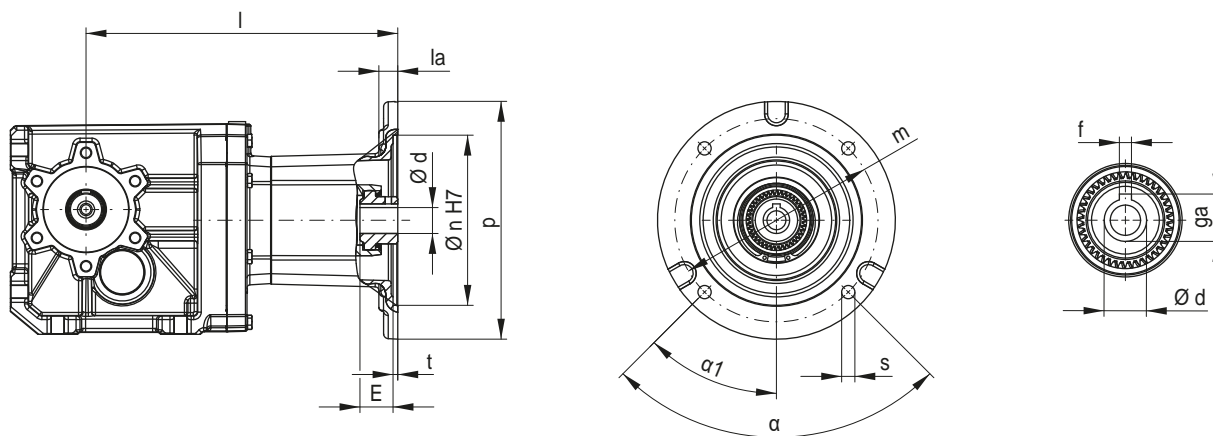
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280		
p	160	160	200	200	250	250	300	350	350	400	400	550	550		
n	95	110	130	130	180	180	230	250	250	300	350	450	450		
la	22.5	10	13	13	15	20	15	35	35	20	20	20	20		
m	115	130	165	165	215	215	265	300	300	350	400	500	500		
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5	5	5		
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19	19	19		
alpha	90	90	90	90	90	90	90	90	90	90	45	45	45		
alpha <sub>1</sub>	35	45	45	45	45	45	45	45	45	45	45	45	45		
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E <sup>1)</sup>	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	146

<sup>1)</sup> Maximum motor shaft length for motors with key

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
		l											
K02	163.5	163.5	191.5	191.5	-	-	-	-	-	-	-	-	-
K03	190	190	218	218	249	-	-	-	-	-	-	-	-
K04	207.5	207.5	235.5	235.5	266.5	319.5	-	-	-	-	-	-	-
K05	218	218	246	246	277	330	341	-	-	-	-	-	-
K06	202.5	202.5	230.5	230.5	261.5	314.5	325.5	-	-	-	-	-	-
K07	232.5	232.5	260.5	260.5	291.5	344.5	355.5	441.5	-	-	-	-	-
K08	281.5	281.5	309.5	309.5	340.5	393.5	404.5	489	489	-	-	-	-
K09	301.5	301.5	329.5	329.5	360.5	413.5	424.5	509	509	537.5	-	-	-
K10	-	-	-	-	-	467.5	478.5	560.5	560.5	589	619	-	-
K12	-	-	-	-	-	516.5	527.5	609.5	609.5	638	668	757	757
K15	-	-	-	-	-	-	-	629.5	629.5	658	688	777	777

Dimensions in mm.

### NEMA Adapter N56 to N364



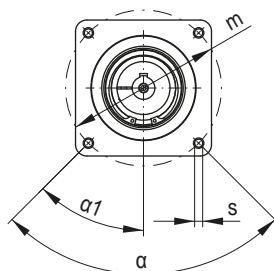
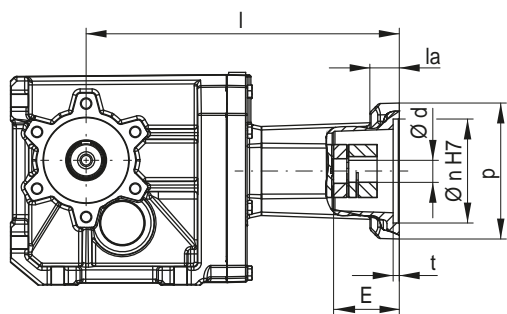
Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	16	16
α	90	90	90	90	90	90	90	90	90
α <sub>1</sub>	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5



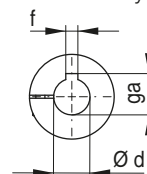
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
K02	191.5	191.5	-	-	-	-	-	-	-
K03	218	218	249	-	-	-	-	-	-
K04	235.5	235.5	266.5	319.5	-	-	-	-	-
K05	246	246	277	330	341	-	-	-	-
K06	230.5	230.5	261.5	314.5	325.5	-	-	-	-
K07	260.5	260.5	291.5	344.5	355.5	441.5	-	-	-
K08	309.5	309.5	340.5	393.5	404.5	489	492	-	-
K09	329.5	329.5	360.5	413.5	424.5	509	512	559.5	-
K10	-	-	-	467.5	478.5	560.5	563.5	611	626.5
K12	-	-	-	516.5	527.5	609.5	612.5	660	675.5
K15	-	-	-	-	-	629.5	632.5	695.5	695.5



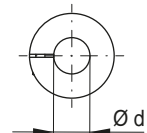
## SERVO Adapter S92 bis S190



Shaft with key



Smooth shaft



Type	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190								
p	101	144	144	144	144	144	144	197	197	197								
n	80	95	95	110	110	110	130	114.3	130	180								
la	17.5	31	31	31	31	31	31	35	32	38								
m	100	115	130	130	145	165	165	200	215	215								
t	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5								
s	M6x12	M8x16	M8x16	M8x16	M8x16	M8x16	M8x16	13.5	15	15								
α	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°								
α <sub>1</sub>	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°								
d <sup>1)</sup>	14	16	19	19	19	22	24	28	24	24	32	35	32	32	38	38		
f	5	5	6	6	6	6	8	8	8	8	10	10	10	10	10	10		
ga	16.3	18.3	21.8	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	35.3	41.3
E <sup>2)</sup>	47.5		69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5	
E <sup>3)</sup>	47.5		69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5	

<sup>1)</sup> Other shaft diameters on request

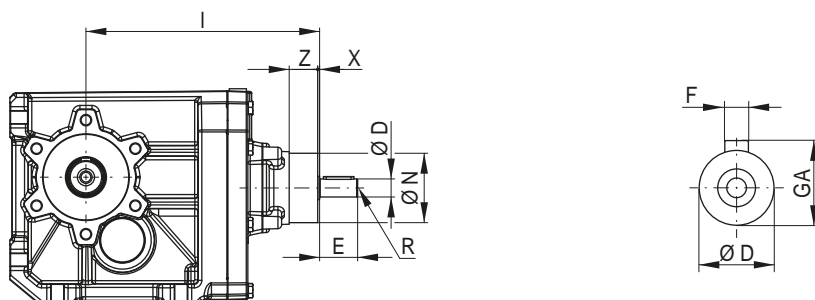
<sup>2)</sup> Maximum motor shaft length for motors with key

<sup>3)</sup> Maximum motor shaft length for motors with smooth shaft

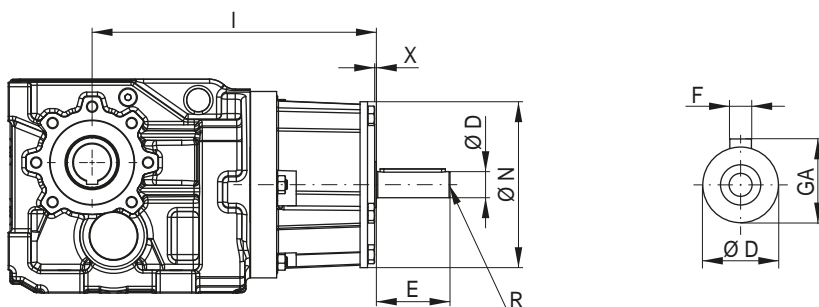
Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	I									
K02	229	277	277	277	277	277	277	-	-	-
K03	255.5	303.5	303.5	303.5	303.5	303.5	303.5	-	-	-
K04	273	321	321	321	321	321	321	391.5	385.5	412.5
K05	283.5	331.5	331.5	331.5	331.5	331.5	331.5	402	396	423
K06	268	316	316	316	316	316	316	386.5	380.5	407.5
K07	298	346	346	346	346	346	346	416.5	410.5	437.5
K08	347	395	395	395	395	395	395	465.5	459.5	486.5
K09	367	415	415	415	415	415	415	485.5	479.5	506.5
K10	-	-	-	-	-	-	-	539.5	533.5	560.5
K12	-	-	-	-	-	-	-	588.5	582.5	609.5
K15	-	-	-	-	-	-	-	-	-	-

Dimensions in mm.

### Input Unit U2, U3



### Input Unit U5, U6, U7

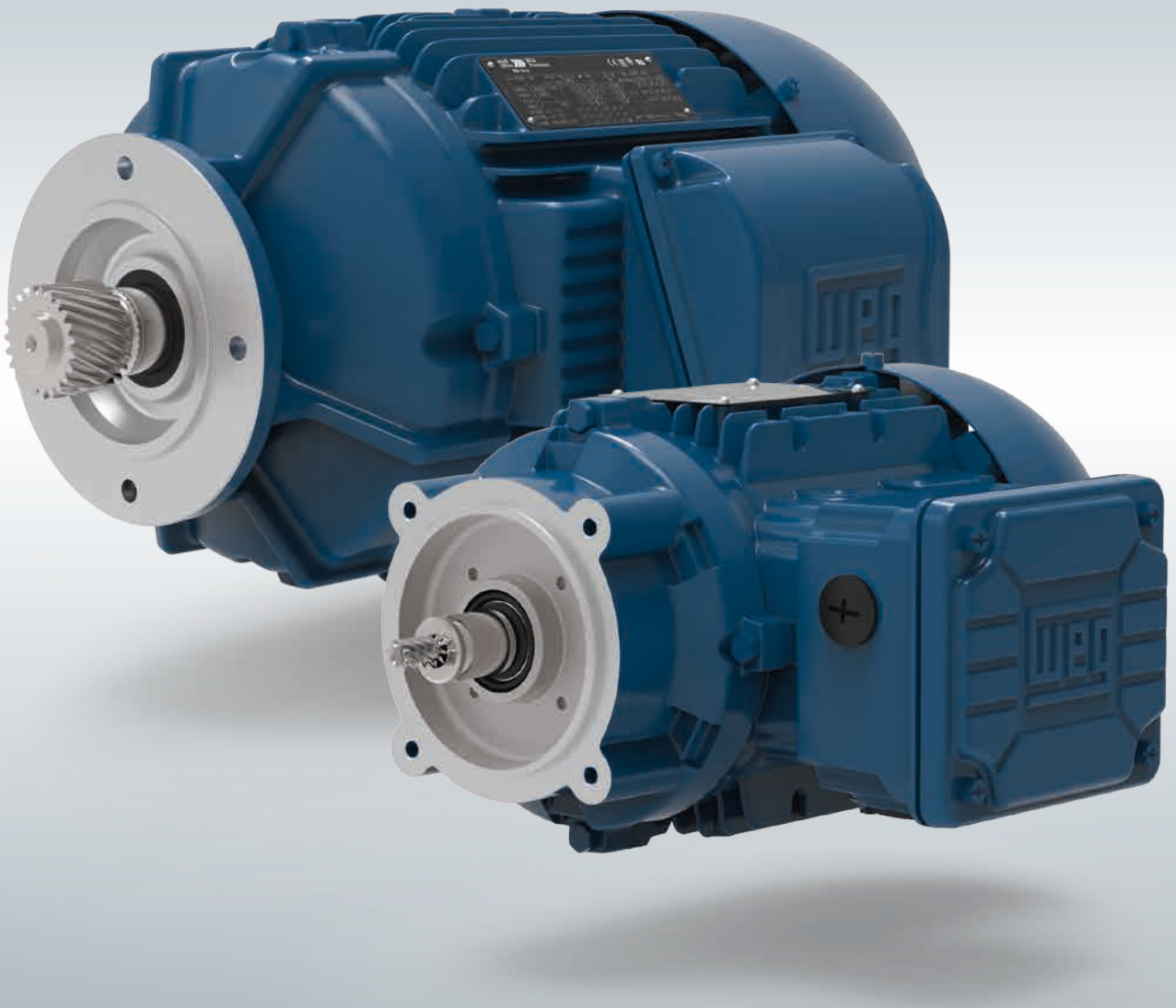


Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	I				
K02	191.5	-	-	-	-
K03	218	-	-	-	-
K04	235.5	267.5	-	-	-
K05	246	278	-	-	-
K06	230.5	262.5	305	-	-
K07	260.5	292.5	335	-	-
K08	309.5	341.5	382.5	404.5	-
K09	329.5	361.5	402.5	424.5	-
K10	-	415.5	454	476	545
K12	-	464.5	503	525	594
K15	-	-	523	545	614



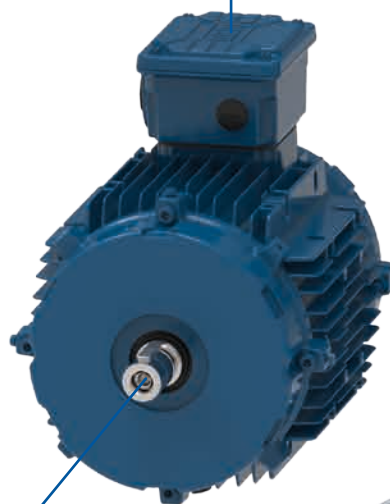


## Modular System Motor





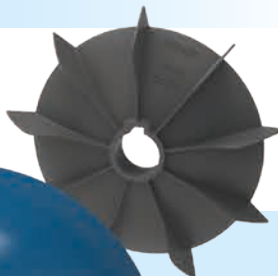
Terminal box designs  
page 386



Brake systems  
and back stops  
page 389

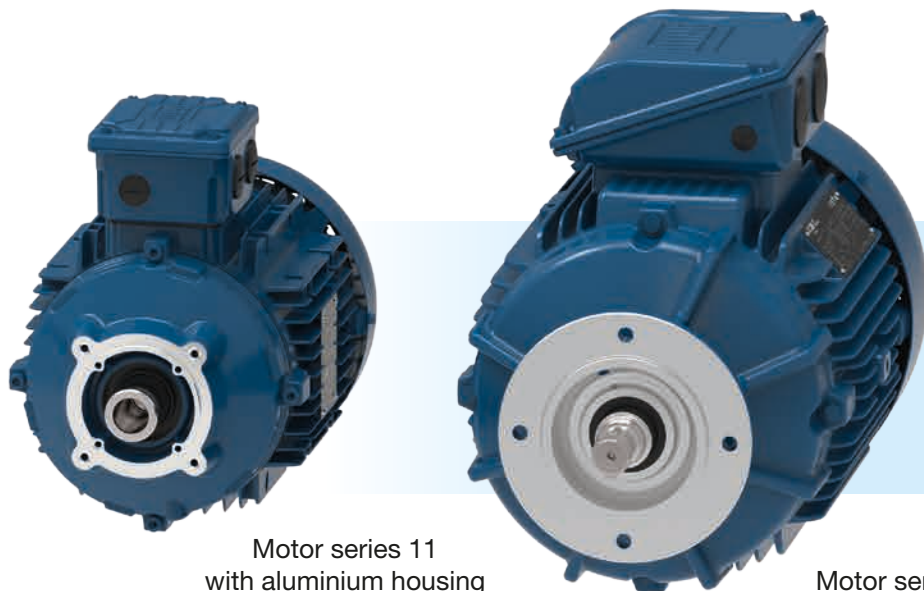


Encoder systems  
page 400



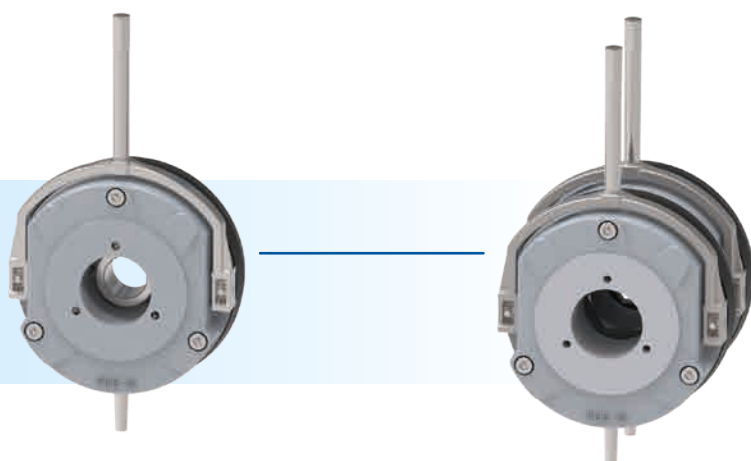
Ventilation systems  
page 403





Motor series 11  
with aluminium housing  
(frame sizes 63 - 132)

Motor series 22  
with cast iron housing  
(frame sizes 160 - 250)



## The modular motor system

Our motor system is an optimised and modularly designed kit. It includes harmonised modules like brakes, encoders, forced ventilation and connecting systems which are combined to the customer's requirements.

The significant advantage of this concept offers fast and reliable delivery times, not only to our local customers but also internationally, because WEG's competent sales network and assembling centres guarantee the availability of components worldwide.

Detailed description of the motor modules see from page 385.

## The modular system motor

Due to special windings and clever connecting systems it's possible to use the same motor all over the world. Just a change of connection (4 possible options) and the motor can do its job reliably in Europe, USA or Far East, from 110 V to 690 V, 50 Hz and 60 Hz.

### The modular system motor is available in two energy efficiency classes:

IE1: Series 11N, IEC frame sizes 63 to 80 (up to 0.55 kW)

IE3: Series 11P (aluminium), IEC sizes 80 to 132 (0.75 - 9.2 kW) and series 22P (cast iron), IEC sizes 160 and 250 (11-75 kW)

Motors in energy efficiency class IE4 on request

### Advantages

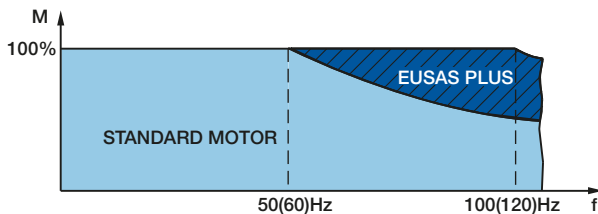
- Wide voltage range
- Switchable to all usual voltages worldwide (rated voltages):
  - 115-480 V - 50/60 Hz up to and including frame size 100
  - 200-690 V - 50/60 Hz for frame sizes 112 to 250
- Frequency inverter operation 100/120 Hz
- Ambient temperature -20 to +40 °C
- Nameplate with 50/60 Hz data
- Flexible adjustment of the terminal box
- Reinforced bearings (integral motor)
- Shaft system for immediate assembling of motor modules, like encoders, brakes, back stop, etc.
- Standard degree of protection IP55
- Thermal protection with bimetal switch and/or PTC thermistor
- Thermal class F
- System motor, prepared for flexible assembling of motor modules
- Certified for worldwide distribution: CE, CSA, UL, EAC

M

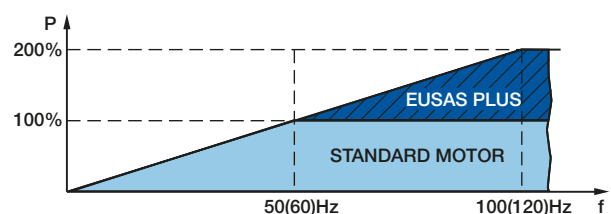
### The ideal motor for frequency inverter operation

Switchable to 100/120 Hz. Simply switch over and use the double output.

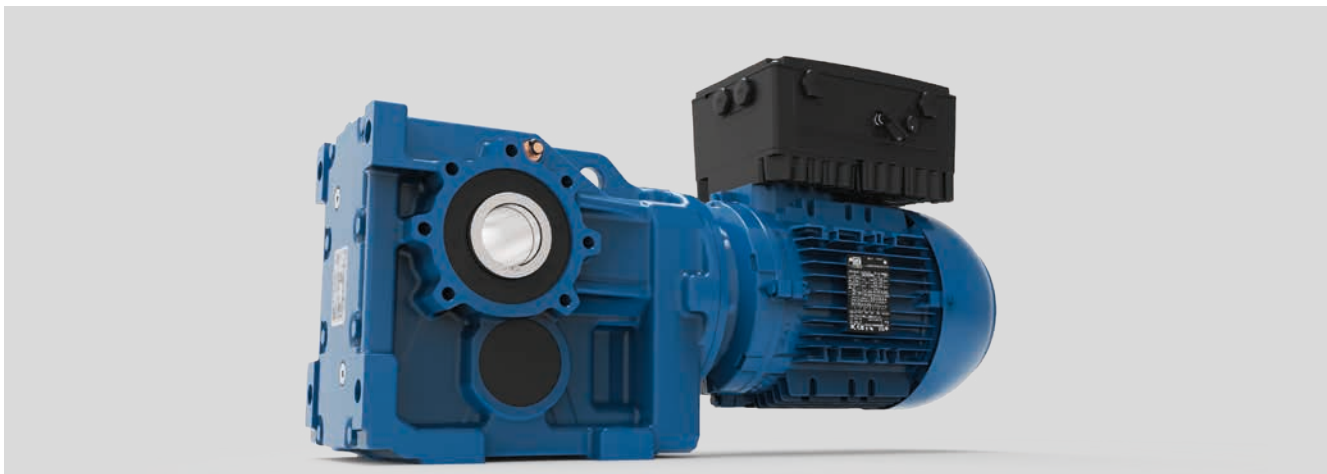
The excellent combination of the modular system motor and variable speed drives by WEG (type CFW for various applications and decentralised motor drive MW500) enables drive systems with wide speed range.



Rated torque up to double rated speed



Two times rated power at double rated speed



WG20 geared motor with decentralised motor drive MW500

## Type code

# 11P-EX-L100L-04F-LT-TH-SH-K1-KB-MIP-BR..-SG-FL-SD

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- 1** Motor series:                    11N = Aluminium motor in energy efficiency class IE1, frame sizes 63 - 80 (up to 0.55 kW)  
    11P = Aluminium motor in energy efficiency class IE3, frame sizes 80 - 132 (0.75 - 9.2 kW)  
    22P = Cast iron motor in energy efficiency class IE3, frame sizes 160 - 250 (11 - 75 kW)
- 2** ATEX execution:                    when operated in explosive atmospheres, see page 368
- 3** Stator length:                    L.  
    .S  
    .S/L  
    .S/M  
    .M  
    .L
- 4** IEC frame size:                    63        132  
    71        160  
    80        180  
    90        200  
    100      225  
    112      250
- 5** Number of poles:                    04 = 4 poles  
    06 = 6 poles
- 6** Power indicator:                    D  
    E  
    F  
    G
- 7** High/Low temperature execution:    see page 385
- 8** Temperature control:                    see page 385
- 9** Anti-condensation heating:            see page 385
- 10** Climatic protection:                    see page 386
- 11** Drain:                                    see page 386
- 12** Terminal box designs:                    see page 386
- 13** Brake systems, back stop:            see page 389
- 14** Encoder systems:                    see page 400
- 15** Ventilation systems:                    see page 403
- 16** Additional modules:                    see page 405



# Options

## 1. Basic execution

Description	Key	Page	IEC frame size														
			63	71	80	90	100	112	132	160	180	200	225	250			
Switchable voltage (4 connections)	-	368															
Temperature controller for switch off (+155 °C)	TH	385															
PTC thermistor protection for switch off (+155 °C)	TF	385															
Thermal class F (up to +155 °C)	-	368															
Fixed bearing NDE	-	-															
Fixed bearing DE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Degree of protection IP55	-	17															
Certifications (CE, EAC, UL, CSA)	-	-															

## 2. Electrical options

Description	Key	Page	IEC frame size														
			63	71	80	90	100	112	132	160	180	200	225	250			
Special voltage SPECI-Volt	-	368															
Temperature controller for warning and switch off	2TH	385															
PTC thermistor protection for warning and switch off	2TF	385															
Temperature sensor KTY	KTY	385															
Temperature sensor Pt100	-	-															
Anti-condensation heating 230 V	SH	385	-														
Thermal class H (up to +180 °C)	-	-															

## 3. Mechanical options

Description	Key	Page	IEC frame size														
			63	71	80	90	100	112	132	160	180	200	225	250			
Degree of protection IP56	-	17															
Degree of protection IP65	-	17															
Degree of protection IP66	-	17															
Degree of protection IP67	-	17															
High temperature execution (max. +80 °C ambient temperature)	HT	385															
Low temperature execution	LT	385															
ATEX zone 2+22: II 3G Ex ec IIC T3 Gc / II 3D Ex tc IIIC T125°C Dc	EX	368															
Humidity protection K1	K1	386															
Corrosion protection K2	K2	386															
Drain	KB	386															
Multipin box	MIP	386															
Multi-plug-connect systems	MIG..	387															
Multi-plug-connect system for forced ventilation	MIG10-FL	387															
Non-ventilated without NDE shaft end	U	404															
Non-ventilated with NDE shaft end	UW	404															
Different position of the terminal box	-	-															
Relubrication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Standard		Special execution (on request)
	Optional		Not available

#### 4. Options - motor modules

Description	Key	Page	IEC frame size														
			63	71	80	90	100	112	132	160	180	200	225	250			
Spring loaded brake - IP55, 24 V	BR..	393															
Spring loaded brake - IP55, 102 V	BR..	393															
Spring loaded brake - IP55, 190 V, 195 V	BR..	393															
Double spring loaded brake in low noise execution	BBRHGD..	394	-														
Totally closed spring loaded brake - IP66	BRGH..	395	-														
Manual release for brake	(BR)H..	393	1)														
Locking device for manual release	(BR)HA..	393	1)														
Corrosion protection IP55 for brake	(BR)R..	393															
Dust protection IP65 for brake	(BR)S..	393	1)														
Corrosion and dust protection IP65 for brake	(BR)SR..	393	1)														
Brake in low noise execution	(BR)GD..	393	-														
Micro switch	(BR)M	393	2)	2)	2)												
Anti-condensation heating for brakes	-	395	-	-													
Fast excitation rectifier	-	397															
Back stop KKM	KKM	399					-	-	-	-	-	-	-	-	-	-	-
Back stop RSM	RSM	399	-	-	-	-											
Encoder outside the fan cover	I.	400															
Encoder inside the fan cover	S.	400	-														
Encoder (1024 pulses, HTL/TTL, IP66)	.G	400	I.	S.													
Mating plug for encoder without cable	-	-	I.	S.													
Mating plug for encoder with cable	-	-	I.	S.													
SINCOS encoder	.C	400	-	-													I. S.
Resolver	.R	400	-														-
Special encoder	.A	401															
SSI multiturn encoder	SS	401	-														
Heavy Duty encoder	SV	401	-	-	-												
Forced ventilation (TEFV)	FL	403															
Fly wheel fan	ZL	404	-									-	-	-	-	-	-
Hand wheel	HR	405	-														
Protection cap	SD	405															
Protection cap for encoders	ID	405	-	-	-												
Second shaft end - module shaft	ZWM	406	-														
Second shaft end - solid shaft	ZWV	406															-

#### 5. Additional options

Description	Key	Page	IEC frame size														
			63	71	80	90	100	112	132	160	180	200	225	250			
Special nameplate (aluminium)	-	-															
Second nameplate (not fixed, aluminium or stainless steel)	-	-															
Metal fan	ZM	404															
Vibration severity grade "B" (reduced) according to DIN IEC 60034-14	-	368															
Wide range grease (-40 °C to +175 °C)	-	-															

1) not possible with 2 Nm brake

2) Micro switch not possible for totally closed brakes at 2 and 5 Nm

	Standard		Special execution (on request)
	Optional		Not available

# General information

Frame size	63	71	80	90S/L	(L)100L	112M	(L)132M,S	160M,L	180M,L	200L	225S/M	250S/M		
<b>Mechanical features</b>														
Mounting form	B14R						B5R							
Housing material	aluminium EN AC-46100						cast iron EN GJL-200							
Degree of protection	IP55													
Grounding	simple grounding - one inside the terminal box										double - in the terminal box and on the frame			
Cooling method	fan - IC411 (TEFC)													
Fan material	polypropylen										aluminium			
Fan cover material	sheet steel													
Endshields material	aluminium EN AC-46100 *						cast iron EN GJL-200							
Drain	rubber drain plug													
Bearings	Locking	without bearing cap with circlip - NDE						without bearing cap with circlip - DE			internal + external bearing cap and spring washers - NDE			
	DE	6203 ZZ	6204 ZZ	6205 ZZ	6305 ZZ	6207 ZZ	6307 ZZ	6309 ZZ	6309 ZZ-C3	6312 ZZ-C3	6314 ZZ-C3	6314 ZZ-C3	6316 ZZ-C3	
	NDE	6201 ZZ	6203 ZZ	6203 ZZ	6205 ZZ	6206 ZZ	6206 ZZ	6308 ZZ	6209 ZZ-C3	6211 ZZ-C3	6212 ZZ-C3	6314 ZZ-C3	6314 ZZ-C3	
Shaft seal	Type	radial shaft seal												
	DE	17x30x7	20x30x7	25x40x7	25x40x7	35x52x7	35x52x7	45x60x8	45x60x8	60x90x10	60x90x10	70x90x10	70x90x10	
	NDE	12x22x7	17x28x5	17x28x5	25x35x7	30x40x4	30x40x4	40x56x8	45x62x7	55x70x8	60x75x8	70x85x8	70x85x8	
	Material	NBR												
Lubrication	Type of grease	Mobil Polyrex EM												
	Grease fitting	without grease fitting												
Terminal block	9 poles													
Terminal box material	aluminium EN AC 47000						cast iron EN GJL-200							
Cable entry	Main	2 x M25x1.5				2 x M32x1.5		2 x M40x1.5		2 x M50x1,5		2 x M50x1,5		2 x M63x1,5
	Accessory	2 x M16x1.5												
	Plug	threaded plug for transport and storage; cable gland optional												
Shaft material	1.0511/1.1191 – C40/C45E – AISI 1040/45										1.7225 - 42CrMo4 - AISI 4140			
Direction of rotation	both directions													
Vibration	class A													
Nameplate material	stainless steel 1.4301 (AISI 304)													
Flange	FC-120					FC-160		FR-200 FR-250 FR-300 FR-400 FR-550	FR-250 FR-300 FR-400 FR-550	FR-300 FR-400 FR-550	FR-400 FR-550	FR-550		
<b>Electrical features</b>														
Power [kW] 4 poles	0.12 - 0.18	0.25 - 0.37	0.55 - 0.75	1.1 - 1.5	2.2 - 3.0	4.0	5.5 - 9.2	11.0 - 15.0	18.5 - 22	30	45 - 55	75		
Power [kW] 6 poles	0.12	0.18 - 0.25	0.37 - 0.55	0.75	1.1 - 1.5	2.2	3.0 - 5.5	-	-	-	-	-		
Design	N													
Voltage / Frequency	Δ	230 V (50Hz) // 265 V (60Hz)					Δ		400 V (50 Hz) // 460 V (60 Hz)					
	ΔΔ	115 V (50 Hz) // 132 V (60Hz)					ΔΔ		200 V (50 Hz) // 230 V (60 Hz)					
	Y	400 V (50 Hz) // 460 V (60 Hz)					Y		690 V (50 Hz) // -					
	YY	200 V (50 Hz) // 230 V (60 Hz)					YY		346 V (50 Hz) // 400 V (60 Hz)					
Winding	Impregnation	dip										continuous flow impregnation		
	Insulation class	F (DT 80K)												

\* Except frame sizes L100L and L132M: endshield (NDE) made from cast iron EN GJL-200

## 1. Nameplate

The stainless steel plate is fixed on the frame and bears data for 50 Hz and 60 Hz. The information on the nameplate contains all relevant specifications of the product (see examples for motor frame sizes 90, 132 and 160).

VFRG				14057615	
		M330015009A4YC12031G			
~ 3 AL90S/L-04					
IP55 INS CLF ΔT 80 K S1 SF 1.00 AMB 40°C					
V	Hz	kW	RPM	A	PF
115 ΔΔ / 200 Y Y	50	1.5	1450	11.0 / 6.30	0.80
230 Δ / 400 Y				5.50 / 3.15	
132 ΔΔ / 230 Y Y	60	1755	1755	9.72 / 5.58	0.78
265 Δ / 460 Y				4.84 / 2.78	
50Hz	IE3	86.0 (100%)	86.0 (75%)	84.0 (50%)	
60Hz		86.5 (100%)	85.5 (75%)	82.5 (50%)	
NEMA Eff 86.5% 2.0HP 460 V 60Hz 1755 RPM					
2.78 A PF 0.78 DES A CODE L SF 1.15 CC029A					
→ 6305-ZZ		MOBIL POLYREX EM		23 kg	
→ 6205-ZZ					
2753 Markt Piesting, Austria					

VFRG				14057670	
		M330055013A48C16031G			
~ 3 AL132S-04					
IP55 INS CLF ΔT 80 K S1 SF 1.00 AMB 40°C					
V	Hz	kW	RPM	A	PF
200 ΔΔ / 346 Y Y	50	5.5	1465	20.6 / 11.9	0.85
400 Δ / 690 Y				10.3 / 5.97	
230 ΔΔ / 400 Y Y	60	1765	1765	18.1 / 10.4	0.83
460 Δ / -				9.05 / -	
50Hz	IE3	90.7 (100%)	90.7 (75%)	90.0 (50%)	
60Hz		91.7 (100%)	91.0 (75%)	88.5 (50%)	
NEMA Eff 91.7% 7.5HP 460 V 60Hz 1765 RPM					
9.05 A PF 0.83 DES A CODE K SF 1.15 CC029A					
→ 6309-ZZ		MOBIL POLYREX EM		69 kg	
→ 6308-ZZ					
2753 Markt Piesting, Austria					

				M430110016G41R20010G	
		UL 3PT9 US LISTED		CE ENEC UL 3PT9 US LISTED IEC 60034-1	
		MOD.TE1BF0X0\$		IEC 60034-1	
~ 3 160M-04 IP55 INS CLF ΔT 80 K S1 SF 1.00 AMB 40°C					
V	Hz	kW	RPM	A	PF
200 ΔΔ / 346 Y Y	50	11	1470	41.8 / 24.1	0.83
400 Δ / 690 Y				20.9 / 12.1	
230 ΔΔ / 400 Y Y	60	1775	1775	36.9 / 21.2	0.81
460 Δ / -				18.4 / -	
		IE3		Eff 100%	75%
				91.6	91.8
				92.4	91.0
→ 6309-ZZ-C3		MOBIL POLYREX EM		2753 Markt Piesting, Austria	
→ 6209-ZZ-C3					
		NEMA Eff 92.4% 15HP 460 V 60Hz 1775 RPM		18.4 A PF0.81 Des A Code K SF 1.00 CC029A	
		Alt 1000 m.a.s.l.		127 kg	

## 2. Voltage and frequency fluctuations

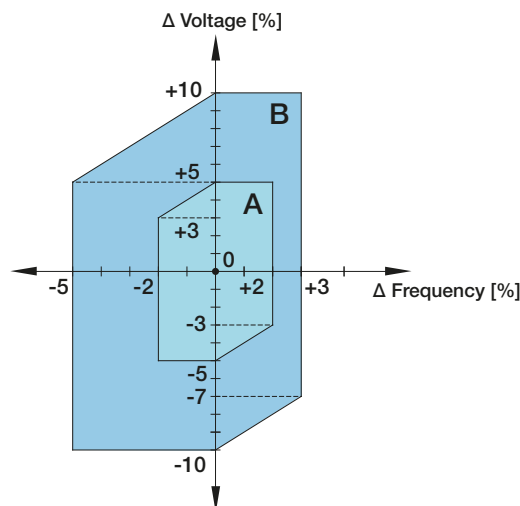
According to DIN EN 60034-1, a distinction is made between range A and range B (outside A) for voltage and frequency fluctuations. Range A and range B describe the permissible range in which frequency and voltage levels are permitted to deviate from the relevant measurement point (see illustration). The coordinate mean point "0" identifies the measurement point for the frequency and voltage in each case. The motor must be able to issue the rated torque in both ranges A and B.

### Range A

In continuous operation in range A, the characteristics are permitted to vary from the rated operation, and the heating at the limits of range A can be around 10 K higher.

### Range B

The deviations from the characteristics are permitted to be greater than in range A, the heating levels can be higher than at the measurement point. Duration and frequency of operation in range B should be limited. Corrective measures, e.g. power reduction, should be provided. If a machine has multiple rated voltages or a rated voltage range, the permissible voltage and frequency fluctuations apply for each individual value of the rated voltage.



Ranges A and B according to DIN EN 60034-1

### 3. Modes of operation

Duty type according to DIN EN 60034-1 and VDE 0530-1.

The duty type is designated by the abbreviations S1 to S10. For the duty types S4, S5 and S7 the duty cycles/hour (c/h) and the factor of inertia  $F_I$  should also be stated at the bottom.

The factor of inertia  $F_I$  is the ratio of the total load moment of inertia (referred to the motor shaft) and the motor moment of inertia, to the motor moment of inertia, i.e.

$$F_I = \frac{\sum J_{ex,red} + J_{mot}}{J_{mot}}$$

Definition		Example
S1	Continuous running duty with constant load	S1
S2	Short-time duty with constant load Duration of operation under rated conditions (recommended values: 10, 30, 60 or 90 min)	S2 10 min
S3	Intermittent periodic duty. Motor temperature not affected by starting operation Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Cycle duration (10 min unless otherwise stated)	S3 25 % 60 min
S4	Intermittent periodic duty. Motor temperature affected by starting operation Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Indication of the duty cycles per hour and of the factor of inertia $F_I$	S4 40 % 200, $F_I=2$
S5	Intermittent periodic duty. Motor temperature affected by starting operation and electric braking Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Indication of the duty cycles per hour and of the factor of inertia $F_I$	S5 15 % 300, $F_I=1$
S6	Continuous operation periodic duty. Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Cycle duration (10 min unless otherwise stated)	S6 25 % 60 min
S7	Continuous operation with starting and electric braking Indication of the duty cycles per hour and of the factor of inertia $F_I$	S7 200, $F_I=1$
S8	Continuous operation with related load/speed changes (Sequence of similar cycles) Speeds during the duty cycle Periods for which these speeds are maintained during the duty cycle Indication of the factor of inertia $F_I$	S8 3000 <sup>min-1</sup> , 10 min 1500 <sup>min-1</sup> , 15 min $F_I=1.5$
S9	Continuous operation duty with unrelated load/speed changes	S9
S10	Duty with discrete constant loads and speed	S10 $F_I=0.6$

Legend see page 396.

### 4. Rated power according to VDE 0530-1

The listed rated power of the motor corresponds to the output power according to VDE 0530-1 for continuous operation S1, frequency 50/60 Hz, max. ambient temperature +40 °C, max. altitude 1000 m above sea level.

According to this standard at rated values (voltage and frequency) the motors may be overloaded for two minutes by 1.5 times the rated current, without damage of the winding.

The motors are calculated by rated values according to thermal class B, but produced in class F and by operation with rated values fit for higher loads:

- a. At rated power and rated voltage the ambient temperature may be increased from +40 °C to +60 °C.
- b. Provided that ambient temperature does not exceed +40 °C, the normal capacity in continuous operation can be increased by appr. 10 %.

All technical data stated applies to rated frequency of 50 Hz and supply voltage of 400 V rated voltage at rated power. If the load changes, the stated values will deviate to higher or lower.

## 5. Power correction factors

S2			
Time [min]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.20	1.25
30		1.05	1.10
60		1.00	1.00
15	160 - 200	1.40	1.45
30		1.20	1.25
60		1.10	1.10
15	225 - 250	1.45	1.45
30		1.30	1.30
60		1.15	1.15

S3			
DC [%]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.15	1.40
25		1.10	1.30
40		1.05	1.20
60		1.03	1.10
15	160 - 200	1.30	1.40
25		1.20	1.30
40		1.10	1.20
60		1.05	1.10
15	225 - 250	1.35	1.40
25		1.25	1.30
40		1.15	1.20
60		1.05	1.10

S6			
DC [%]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.20	1.30
25		1.15	1.25
40		1.10	1.20
60		1.05	1.15
15	160 - 200	1.25	1.30
25		1.20	1.25
40		1.15	1.20
60		1.10	1.15
15	225 - 250	1.30	1.35
25		1.25	1.30
40		1.15	1.25
60		1.10	1.15

- Factors for low voltage safe area motors with insulation class F/B ( $\Delta T_{80K}$ )  
 - The breakdown torque should be at least 30 % higher than factors

## 6. Torque

The motors are fitted with squirrel-cage rotors suitable for direct online starting. The values of starting torque and break-down torque, expressed as a multiple of the rated torque, are given in the performance data. A deviation in the voltage from rated value changes the torques as an approximate function of the square of the voltages.

## 7. Efficiency class

Standard IEC 60034-30 defines uniform efficiency classes, valid for 2, 4, 6 and 8 pole asynchronous motors (50/60 Hz) with output powers of 0.12 kW to 1,000 kW. This standard divides 3-phase induction motors with cage rotor in efficiency classes IE1=standard efficiency, IE2=high efficiency and IE3=premium efficiency. Our motors are labelled with efficiency class and factor on the nameplate.

## 8. Motor protection

The correct selection of protective equipment determines essentially the operation reliability and service life of motors. Current dependent protection and thermal protective devices are available. Fuses do not protect the motor against overloads, they only protect the supply cables or switchboards against short circuits.

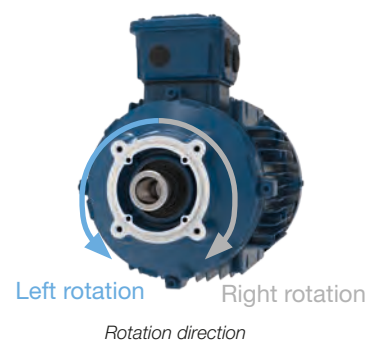
## 9. Overload protection (protection relay)

It is recommended to use starters with thermal overload protection. The overloads should be adjusted to the rated current shown on the nameplate. Thermal protective devices (thermistors in windings) see page 385.

## 10. Speed and rotation direction

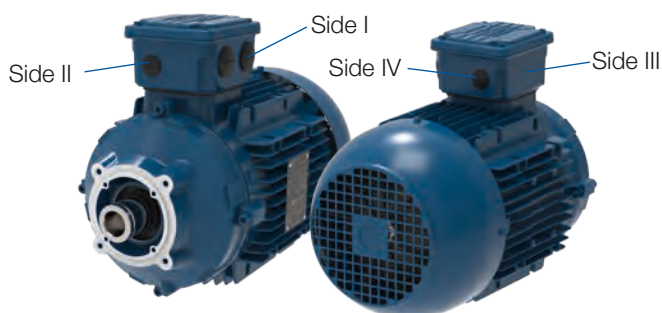
The rated speed is valid for the rated dates (voltage, frequency). The synchronous speed depends on the line frequency.

The motors are able for operation in both directions. By connection of U1, V1, W1 to L1, L2, L3 the rotation will be to the right if you look at the shaft from the drive-side. Left direction can be easily made by changing of two wires.



## 11. Cable entry

For all frames, the terminal box can be rotated in 90° increments. Terminal boxes are not delivered with cable glands in standard. Motors are supplied with plastic threaded plugs in the cable entries to maintain the degree of protection during transport and storage. In order to guarantee the degree of protection, cable entries must comply with at least the same degree of protection indicated on the motor nameplate.



Side designation for cable entries

## 12. Motors for the Ex area according to Directive 2014/34/EU

The modular integral motors can be used in both safe area applications and explosion-proof areas. The motors are certified for category 3, zone 2+22.

Zone 2: II 3G Ex ec IIC T3 Gc  
 Zone 22: II 3D Ex tc IIIC T125°C Dc

The protection types in this case are increased safety (Ex ec) and protection by means of housing (Ex tc). The motors can be used in a temperature range of -20 to +40 °C.

If temperatures deviate or additional motor options (brakes, encoders, etc.) are required, please contact us beforehand.

## 13. Cooling

The motors are totally enclosed fan cooled (TEFC) by means of external surface ventilation (IC411, as per IEC 60034-6). Maximum ambient temperature +40 °C. Please check the minimum distance "Y" (see dimension sheets from page 380) between cover and wall by mounting the motor.

### ▪ Integral fans (TEFC, IC411)

Particular attention has been dedicated to the shape in order to reduce noise and improve the efficiency of the motor. Radial construction has been selected to allow rotation in both directions.

### ▪ Fan cover

In treated steel plate, properly profiled to improve efficiency and reduce the noise produced by the fan.

### ▪ Forced ventilation (TEFV, IC416) see also page 403

For special operating conditions, e.g. increased permissible number of operations per hour or variable speed operation, the motors of IEC sizes 63 to 200 can be supplied with forced ventilation by means of a separately fitted fan motor.

## 14. Insulation

The motors in this catalogue comply with the requirements of thermal class F. All windings are impregnated with varnish with a high mechanical strength. The maximum temperature of the insulation is, according to thermal class F, at +155 °C. The motors are utilised at rated values according to thermal class B (+130 °C). Copper wire insulation and the impregnation varnish have a temperature index class F and therefore there is a large margin of safety in addition to high overload capacity. Motors from frame size 160 are equipped with the WISE® insulation system of the new W22 motor range by WEG.

## 15. Noise levels

Noise measurements were taken in accordance with standard IEC 60034-9 (see table to the right).

Frame size	Noise level - dB(A), Distance: 1 meter			
	50 Hz		60 Hz	
	4p	6p	4p	6p
63	44	43	48	47
71	43	43	47	47
80	44	43	48	47
90	49	45	51	49
100	53	44	54	53
112	56	52	56	52
132	56	53	58	55
160	61	56	-	-
180	61	56	-	-
200	63	60	-	-
225	63	61	-	-
250	64	61	-	-

## 16. Balancing of rotors

Motors comply with vibration strength level "A" according to standard IEC 60034-14. On request, motors may also be balanced according to level "B".

## 17. Shaft ends

Shaft ends of motors in frame sizes 63 up to 132 are equipped with a conical bore and do not have a key, while the frame sizes 160 to 250 have a shaft with closed end keyway. On the non-driven side, modular motors have a system shaft to mount motor modules, such as brakes, encoders, back stops, etc.

## 18. Voltage, current and frequency

In standard execution the motors are delivered with following rated voltages: see chapter 19 (basic connection).

### Special voltages

Motors for special voltages and/or frequencies are available on request.

### Speed and connection

Tolerance of the motor speed according to IEC 60034. Terminal board connection see page 369.

## Connection

### ▪ Direct connection

The starting torque in direct connection amounts to 160 to 330 % of the rated torque, depending on power and number of poles. The starting current is about 2.5 to 8 times of the rated current.

### ▪ Star-delta starting

The star-delta (Y-D) starting is an easy way to reduce the starting current and starting torque. Motors can be started with this starting method whenever the supply voltage corresponds to the rated voltage of the motors in delta connections. Up from frame size 112 the standard modular motors are supplied with windings designed for this starting method (e.g. 400 V D / 690 V Y). A Y-D-starting is only possible with delta service connection (this shall be considered when selecting a motor!), as the motor is first Y-connected and is changed over to D-connection after the run-up phase. At Y-D-starting, the starting currents and torques will be reduced to about 1/3 of the values produced in case of direct-online starting. Attention should be paid to the fact that a current impulse is produced when changing over to D-connection.

## 19. Electrical connection

### Motor series 11N and 11P (IEC frame sizes 63 to 100)

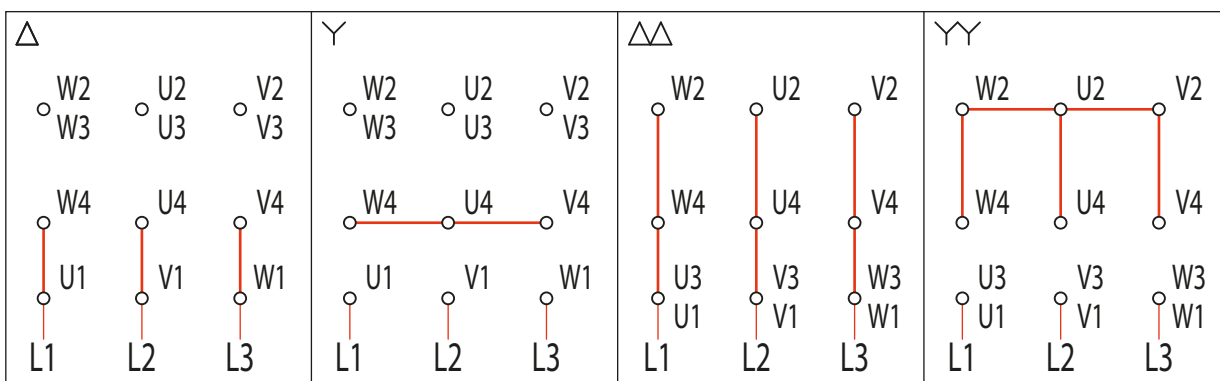
Possible connection		Rated voltages*		Frequency inverter operation	
		Rated power $P_N$	Increased rated power $1,2 \times P_N$		
	Delta	230 V at 50 Hz 265 V at 60 Hz	- 265 V at 60 Hz		400 V, 87 Hz
	Delta - Delta	115 V at 50 Hz 132 V at 60 Hz	- 132 V at 60 Hz		230 V, 100 Hz
	Star (basic connection)	400 V at 50 Hz 460 V at 60 Hz	- 460 V at 60 Hz		400 V, 100 Hz
	Star - Star	200 V at 50 Hz 230 V at 60 Hz	- 230 V at 60 Hz		460 V, 120 Hz

### Motor series 11P and 22P (IEC frame sizes 112 to 250)

Possible connection		Rated voltages*		Frequency inverter operation	
		Rated power $P_N$	Increased rated power $1,2 \times P_N$		
	Delta (basic connection)	400 V at 50 Hz 460 V at 60 Hz	- 460 V at 60 Hz		400 V, 100 Hz
	Delta - Delta	200 V at 50 Hz 230 V at 60 Hz	- 230 V at 60 Hz		460 V, 120 Hz
	Star	690 V at 50 Hz -	- -		
	Star - Star	346 V at 50 Hz 400 V at 60 Hz	- 400 V at 60 Hz		

\* Tolerances of rated voltages in compliance with range A according to DIN EN 60034-1 (see page 365)

### Terminal board connection





## 20. Variable speed drive application

The stator windings of the motors are wound with class F insulation (class H optional) and are suitable for either DOL starting or - regarding the limits shown in the table below - via a variable speed drive.

Rated voltage				
220-240/380-415 V (50 Hz) 400-460 V (60 Hz)				
Motor rated voltage	Voltage spikes	dV/dt *	Rise time *	Time between pulses
	At motor terminals (phase-phase)	At motor terminals (phase-phase)		
$V_{rated} < 460 \text{ V}$	$\leq 1600 \text{ V}$	$\leq 5200 \text{ V}/\mu\text{s}$	$\geq 0.1 \mu\text{s}$	$\geq 6 \mu\text{s}$
$460 \text{ V} \leq V_{rated} < 575 \text{ V}$	$\leq 2000 \text{ V}$	$\leq 6500 \text{ V}/\mu\text{s}$		
$575 \text{ V} \leq V_{rated} \leq 1000 \text{ V}$	$\leq 2400 \text{ V}$	$\leq 7800 \text{ V}/\mu\text{s}$		

\* dV/dt and rise time definition according to NEMA MG1 - part 30

### Notes:

- In order to protect the motor insulation system, the maximum recommended switching frequency is 5 kHz.
- If one or more of the above conditions is not attended, a filter (load reactor or dV/dt filter) must be installed in the output of the VSD.
- General purpose motors with rated voltage greater than 575 V, which at the time of purchase did not have any indication of operation with VSD, are able to withstand the electrical limits set in the table above for rated voltage up to 575 V. If such conditions are not fully satisfied, output filters must be used.
- General purpose motors of the dual voltage type, for example 400/690 V or 380/660 V, which at the time of purchase did not have any indication of operation with VSD, are able to be driven by a VSD in the higher voltage only if the limits set in the table above for rated voltage up to 460 V are fully attended in the application. Otherwise, a load reactor or a dV/dt filter must be installed in the VSD output.

## Electrical basic data

### Notes for electrical basic data

The technical data according to selection tables (starting current, torques, power factor, etc.) are valid for the rated values, that means for the rated voltage and rated frequency.

If the motors are running on higher or lower voltage within the wide range voltage, the stator winding will be utilised according to thermal class F. In these cases a power increase in accordance to a. and b. on page 366 is not possible.

The design of the wide range winding permits supply voltage deviations in the indicated wide range voltage of  $\pm 5\%$  without reduction of the power.

Series	IEC frame size	Type	1	2	3					4	5	6			7	8	9	10	11	12
			$P_N$ [kW]	$n_N$ [min <sup>-1</sup> ]	$I_N$ at 115 V [A]	$I_N$ at 200 V [A]	$I_N$ at 230 V [A]	$I_N$ at 400 V [A]	$I_N$ at 690 V [A]	$\frac{I_A}{I_N}$ at 400 V	IE class	$\eta$ 4/4 [%]	$\eta$ 3/4 [%]	$\eta$ 1/2 [%]	$\cos\phi$	$M_N$ [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	$J_{mot}$ [kgm <sup>2</sup> ]	m [kg]

Type	$P_N$ [kW]	at 380 V						at 420 V						Frequency inverter operation						Brake		
		at 380 V		at 380 V		at 420 V		at 420 V		400 V / 87 Hz			400 V / 100 Hz			$M_B$ [Nm]	$J_B$ x10 <sup>-3</sup> [kgm <sup>2</sup> ]	m [kg]				
		$I_N$ [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	$I_N$ [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	$P_N$ [kW]	$n_N$ [min <sup>-1</sup> ]	$I_N$ [A]	$P_N$ [kW]	$n_N$ [min <sup>-1</sup> ]	$I_N$ [A]									

- 1  $P_N$  = Rated power
- 2  $n_N$  = Rated speed
- 3  $I_N$  = Rated current
- 4  $I_A/I_N$  = Ratio of starting current to rated current
- 5 IE class = Efficiency class
- 6  $\eta$  4/4 (3/4, 1/2) = Efficiency at rated power, voltage and frequency
- 7  $\cos\phi$  = Power factor
- 8  $M_N$  = Rated torque
- 9  $M_A/M_N$  = Ratio of starting torque to rated torque
- 10  $M_K/M_N$  = Ratio of sweeping torque to rated torque
- 11  $J_{mot}$  = Motor moment of inertia
- 12 m = Weight of the motor
- 13  $M_B$  = Braking torque
- 14  $J_B$  = Brake moment of inertia
- 15 m = Weight of the motor brake



### 4 Poles, 1500 min<sup>-1</sup>, 50 Hz

Series	IEC frame size	Type	P <sub>N</sub>	n <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>A</sub>	IE class	η	η	η	cosφ	M <sub>N</sub>	M <sub>A</sub>	M <sub>K</sub>	J <sub>mot</sub>	m
			[kW]	[min <sup>-1</sup> ]	at 115 V [A]	at 200 V [A]	at 230 V [A]	at 400 V [A]	at 690 V [A]	at 400 V		[%]	[%]	[%]		[Nm]	M <sub>A</sub> /M <sub>N</sub>	M <sub>K</sub> /M <sub>N</sub>		
11N	63	11N-63-04E	0.12	1375	1.69	0.97	0.85	0.49	-	3.5	IE1	51.0	47.0	43.0	0.70	0.83	2.0	2.2	0.0003	5.0
		11N-63-04F	0.18	1370	2.16	1.24	1.08	0.62	-	3.5	IE1	58.0	54.0	46.0	0.72	1.26	2.0	2.2	0.0004	5.2
	71	11N-71-04E	0.25	1370	2.87	1.65	1.44	0.83	-	3.7	IE1	61.5	58.0	53.0	0.71	1.74	1.8	1.9	0.0004	6.0
		11N-71-04F	0.37	1365	3.69	2.12	1.84	1.06	-	3.7	IE1	66.0	62.0	58.0	0.76	2.59	2.0	2.0	0.0006	6.8
	80	11N-80-04E	0.55	1415	4.94	2.84	2.47	1.42	-	5.4	IE1	70.0	68.0	63.0	0.80	3.71	2.0	2.8	0.0019	8.8
11P	80	11P-80-04F	0.75	1430	5.70	3.28	2.85	1.64	-	7.0	IE3	82.5	82.0	80.0	0.80	5.01	3.2	3.4	0.0032	11.6
	90	11P-90S/L-04E	1.1	1455	8.35	4.80	4.17	2.40	-	7.6	IE3	84.8	84.5	83.0	0.78	7.22	2.5	3.3	0.0055	15.8
		11P-90S/L-04F	1.5	1450	11.2	6.42	5.58	3.21	-	7.4	IE3	85.5	85.0	84.0	0.79	9.88	2.6	3.4	0.0066	17.4
	100	11P-100L-04E	2.2	1435	16.3	9.40	8.15	4.70	-	7.6	IE3	86.7	86.5	85.0	0.78	14.6	2.5	3.0	0.0090	27.0
		11P-L100L-04F	3	1440	21.9	12.6	10.9	6.30	-	7.8	IE3	88.0	88.0	87.0	0.78	19.9	3.5	3.7	0.0120	33.6
	112	11P-112M-04E	4	1450	-	16.4	-	8.20	4.75	7.0	IE3	89.1	89.1	88.7	0.79	26.4	2.3	3.1	0.0182	34.5
	132	11P-132S-04E	5.5	1465	-	20.6	-	10.3	5.97	8.5	IE3	90.7	90.7	90.0	0.85	35.9	2.4	3.4	0.0528	53.4
		11P-L132M-04F	7.5	1465	-	28.4	-	14.2	8.22	8.5	IE3	90.6	90.0	87.5	0.84	48.9	2.5	3.4	0.0638	67.0
		11P-L132M-04G	9.2	1460	-	34.7	-	17.4	10.1	8.5	IE3	91.0	91.0	90.1	0.84	60.2	2.5	3.3	0.0730	72.0
	22P	160	22P-160M-04E	11	1470	-	41.8	-	20.9	12.0	7.5	IE3	91.6	91.8	91.1	0.83	71.5	2.8	3.2	0.1191
22P-160L-04F			15	1465	-	55.8	-	27.9	16.2	7.2	IE3	92.3	92.5	92.2	0.84	97.8	2.8	3.1	0.1534	157
180		22P-180M-04E	18.5	1470	-	70.2	-	35.1	20.4	7.4	IE3	92.8	92.8	92.2	0.82	120	3.0	3.2	0.1740	171
		22P-180L-04F	22	1470	-	82.1	-	41.0	23.8	7.3	IE3	93.2	93.0	92.3	0.83	143	3.4	3.4	0.2097	192
200		22P-200L-04E	30	1480	-	114	-	57.1	33.1	7.5	IE3	93.7	93.6	92.9	0.81	194	2.8	3.1	0.3202	250
		22P-200L-04F	37	1480	-	144	-	72.0	41.7	8.3	IE3	93.9	93.5	92.5	0.79	239	3.0	3.3	0.3869	277
225		22P-225S/M-04F	45	1480	-	162	-	80.9	46.9	7.5	IE3	94.4	94.1	93.7	0.85	291	2.8	3.1	0.6733	414
		22P-225S/M-04G	55	1480	-	205	-	102	59.3	8.3	IE3	94.6	94.0	93.5	0.82	355	3.1	3.4	0.7347	462
250	22P-250S/M-04F	75	1480	-	262	-	131	75.9	7.8	IE3	95.0	94.8	94.5	0.87	484	2.8	3.3	1.2200	566	

Legend see page 371

### 4 Poles, 1500 min<sup>-1</sup>, 50 Hz

Type	P <sub>N</sub> [kW]	at 380 V			at 420 V			Frequency inverter operation						Brake		
		I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	400 V / 87 Hz			400 V / 100 Hz			M <sub>B</sub> [Nm]	J <sub>B</sub> x10 <sup>-3</sup> [kgm <sup>2</sup> ]	m [kg]
								P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]			
11N-63-04E	0.12	0.51	1.8	2.0	0.46	2.2	2.4	0.21	2393	0.89	0.24	2750	1.02	2 4	0.015 0.015	1.1 1.0
11N-63-04F	0.18	0.65	1.8	2.0	0.59	2.2	2.4	0.31	2384	1.13	0.36	2740	1.31			
11N-71-04E	0.25	0.87	1.6	1.7	0.79	2.0	2.1	0.44	2384	1.51	0.50	2740	1.73	4 2	0.015 0.015	1.0 1.1
11N-71-04F	0.37	1.12	1.8	1.8	1.01	2.2	2.2	0.64	2375	1.93	0.74	2730	2.23			
11N-80-04E	0.55	1.49	1.8	2.5	1.35	2.2	3.1	0.96	2462	2.59	1.1	2830	2.98	8 4	0.061 0.015	1.6 1.0
11P-80-04F	0.75	1.73	2.9	3.1	1.56	3.5	3.7	1.3	2488	2.99	1.5	2860	3.44			
11P-90S/L-04E	1.1	2.53	2.3	3.0	2.29	2.8	3.6	1.9	2532	4.38	2.2	2910	5.04	16 8	0.20 0.061	3.1 1.6
11P-90S/L-04F	1.5	3.38	2.3	3.1	3.06	2.9	3.7	2.6	2523	5.86	3	2900	6.74			
11P-100L-04E	2.2	4.95	2.3	2.7	4.48	2.8	3.3	3.8	2497	8.56	4.4	2870	9.87	32 16	0.45 0.20	4.2 3.1
11P-L100L-04F	3	6.63	3.2	3.3	6.00	3.9	4.1	5.2	2506	11.4	6	2880	13.2			
11P-112M-04E	4	8.63	2.1	2.8	7.81	2.5	3.4	-	-	-	8	2900	17.2	60 32	0.86 0.45	6.3 4.2
11P-132S-04E	5.5	10.8	2.2	3.1	9.81	2.6	3.7	-	-	-	11	2930	21.6	100 60	1.22 0.86	10.0 6.3
11P-L132M-04F	7.5	14.9	2.3	3.1	13.5	2.8	3.7	-	-	-	15	2930	29.8			
11P-L132M-04G	9.2	18.3	2.3	3.0	16.6	2.8	3.6	-	-	-	18.4	2920	36.5			
22P-160M-04E	11	22.0	2.5	2.9	19.9	3.1	3.5	-	-	-	22	2940	43.9	150 100	2.85 6.65	14.7 10.0
22P-160L-04F	15	29.4	2.5	2.8	26.6	3.1	3.4	-	-	-	30	2930	58.6			
22P-180M-04E	18.5	36.9	2.7	2.9	33.4	3.3	3.5	-	-	-	37	2940	73.7	250 150	6.65 2.85	21.5 14.7
22P-180L-04F	22	43.2	3.1	3.1	39.0	3.7	3.7	-	-	-	44	2940	86.1			
22P-200L-04E	30	60.1	2.5	2.8	54.4	3.1	3.4	-	-	-	60	2960	120	400 250	19.5 6.65	35 21.5
22P-200L-04F	37	75.8	2.7	3.0	68.6	3.3	3.6	-	-	-	74	2960	151			
22P-225S/M-04F	45	85.2	2.5	2.8	77.0	3.1	3.4	-	-	-	90	2960	170	400 250	19.5 6.65	35 21.5
22P-225S/M-04G	55	107	2.8	3.1	97.1	3.4	3.7	-	-	-	110	2960	214			
22P-250S/M-04F	75	138	2.5	3.0	125	3.1	3.6	-	-	-	150	2960	275	1000	45	73

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### 4 Poles, 1800 min<sup>-1</sup>, 60 Hz

Series	IEC frame size	Type	$P_N$	$n_N$	$I_N$	$I_N$	$I_N$	$I_N$	$I_N$	$\frac{I_A}{I_N}$	IE class	$\eta$	$\eta$	$\eta$	$\cos\phi$	$M_N$	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	$J_{mot}$	m
			[kW]	[min <sup>-1</sup> ]	at 132 V [A]	at 230 V [A]	at 400 V [A]	at 265 V [A]	at 460 V [A]	at 460 V [A]		[%]	[%]	[%]						
11N	63	11N-63-04E	0.12	1695	1.54	0.88	0.51	0.77	0.44	5.0	IE1	62.0	55.0	42.0	0.55	0.68	3.2	4.2	0.0003	5.0
		11N-63-04F	0.18	1700	1.89	1.09	0.63	0.94	0.54	4.2	IE1	66.0	55.7	47.5	0.63	1.01	2.6	2.7	0.0004	5.2
	71	11N-71-04E	0.25	1700	2.40	1.38	0.80	1.20	0.69	3.7	IE1	68.0	65.0	55.0	0.67	1.41	2.1	2.2	0.0004	6.0
		11N-71-04F	0.37	1685	3.52	2.02	1.17	1.75	1.01	4.7	IE1	70.0	64.0	58.2	0.66	2.10	2.7	2.7	0.0006	6.8
	80	11N-80-04E	0.55	1725	4.29	2.46	1.42	2.14	1.23	6.5	IE1	74.0	71.0	64.9	0.76	3.05	2.5	3.6	0.0019	8.8
11P	80	11P-80-04F	0.75	1740	5.16	2.96	1.71	2.57	1.48	8.3	IE3	83.5	80.0	78.5	0.76	4.12	3.8	4.3	0.0032	11.6
	90	11P-90S/L-04E	1.1	1760	7.32	4.20	2.42	3.65	2.10	8.5	IE3	86.5	84.0	80.0	0.76	5.97	2.9	3.9	0.0055	15.8
		11P-90S/L-04F	1.5	1755	9.86	5.66	3.22	4.91	2.83	8.3	IE3	86.5	85.5	82.5	0.77	8.17	3.0	3.8	0.0066	17.4
	100	11P-100L-04E	2.2	1745	14.1	8.12	4.66	7.02	4.04	9.0	IE3	89.5	88.0	85.0	0.76	12.0	2.8	3.5	0.0090	27.0
		11P-L100L-04F	3	1740	19.0	10.9	6.27	9.46	5.43	8.6	IE3	89.5	86.5	84.0	0.77	16.5	4.6	4.8	0.0120	33.6
	112	11P-112M-04E	4	1755	-	14.6	8.37	-	7.28	8.0	IE3	89.5	89.5	87.5	0.77	21.8	2.5	3.5	0.0182	34.5
	132	11P-132S-04E	5.5	1765	-	18.1	10.4	-	9.07	8.9	IE3	91.7	91.0	88.5	0.83	29.8	2.6	4.3	0.0528	53.4
		11P-L132M-04F	7.5	1770	-	24.8	14.3	-	12.4	9.0	IE3	91.7	91.5	91.0	0.83	40.5	2.7	4.3	0.0638	67.0
		11P-L132M-04G	9.2	1765	-	30.7	17.7	-	15.4	9.0	IE3	91.7	91.5	90.4	0.82	49.8	2.6	3.8	0.0730	72.0
	22P	160	22P-160M-04E	11	1775	-	36.9	21.2	-	18.4	8.2	IE3	92.4	92.2	91.0	0.81	59.2	3.0	3.7	0.1191
22P-160L-04F			15	1775	-	49.4	28.4	-	24.7	7.6	IE3	93.0	92.9	92.0	0.82	80.7	2.9	3.5	0.1534	157
180		22P-180M-04E	18.5	1775	-	61.3	35.2	-	30.6	7.7	IE3	93.6	93.0	92.0	0.81	99.6	3.4	3.6	0.1740	171
		22P-180L-04F	22	1775	-	72.0	41.4	-	36.0	8.5	IE3	93.6	93.2	92.1	0.82	118	3.5	3.8	0.2097	192
200		22P-200L-04E	30	1780	-	100	57.5	-	50.0	8.3	IE3	94.1	93.7	92.6	0.80	161	2.9	3.5	0.3202	250
		22P-200L-04F	37	1782	-	124	71.5	-	62.2	9.3	IE3	94.5	94.0	93.0	0.79	198	3.5	3.6	0.3869	277
225		22P-225S/M-04F	45	1782	-	142	81.4	-	70.8	8.6	IE3	95.0	94.5	93.0	0.84	241	3.2	3.5	0.6733	414
		22P-225S/M-04G	55	1785	-	179	103	-	89.3	9.6	IE3	95.4	94.5	93.8	0.81	294	3.7	4.2	0.7347	462
250	22P-250S/M-04F	75	1780	-	229	132	-	115	8.2	IE3	95.4	95.0	94.1	0.86	403	3.2	4.1	1.2200	566	

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### 4 Poles, 1800 min<sup>-1</sup>, 60 Hz

Type	P <sub>N</sub> [kW]	at 380 V			at 420 V			at 440 V			at 480 V			Frequency inverter operation						Brake		
		I <sub>N</sub> [A]	M <sub>A</sub> M <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	I <sub>N</sub> [A]	M <sub>A</sub> M <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	I <sub>N</sub> [A]	M <sub>A</sub> M <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	I <sub>N</sub> [A]	M <sub>A</sub> M <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	460 V / 105 Hz			460 V / 120 Hz			M <sub>B</sub> [Nm]	J <sub>B</sub> x10 <sup>-3</sup> [kgm <sup>2</sup> ]	m [kg]
														P <sub>N</sub> [kW]	η <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	P <sub>N</sub> [kW]	η <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]			
11N-63-04E	0.12	0.54	2.2	2.9	0.48	2.7	3.5	0.46	2.9	3.8	0.42	3.5	4.6	0.21	2966	0.81	0.24	3390	0.93	2	0.015	1.1
11N-63-04F	0.18	0.66	1.8	1.8	0.59	2.2	2.3	0.57	2.4	2.5	0.52	2.8	2.9	0.32	2975	0.99	0.36	3400	1.14	4	0.015	1.0
11N-71-04E	0.25	0.83	1.4	1.5	0.75	1.8	1.8	0.72	1.9	2.0	0.66	2.3	2.4	0.44	2975	1.26	0.50	3400	1.45	4	0.015	1.0
11N-71-04F	0.37	1.22	1.8	1.8	1.11	2.3	2.3	1.06	2.5	2.5	0.97	2.9	2.9	0.65	2949	1.84	0.74	3370	2.12	2	0.015	1.1
11N-80-04E	0.55	1.49	1.7	2.5	1.35	2.1	3.0	1.29	2.3	3.3	1.18	2.7	3.9	0.96	3019	2.25	1.1	3450	2.58	8	0.061	1.6
11P-80-04F	0.75	1.79	2.6	2.9	1.62	3.2	3.6	1.55	3.5	3.9	1.42	4.1	4.7	1.3	3045	2.70	1.5	3480	3.11	4	0.015	1.0
11P-90S/L-04E	1.1	2.54	2.0	2.7	2.30	2.4	3.3	2.20	2.7	3.6	2.01	3.2	4.2	1.9	3080	3.83	2.2	3520	4.41	16	0.20	3.1
11P-90S/L-04F	1.5	3.43	2.0	2.6	3.10	2.5	3.2	2.96	2.7	3.5	2.71	3.3	4.1	2.6	3071	5.16	3	3510	5.94	8	0.061	1.6
11P-100L-04E	2.2	4.89	1.9	2.4	4.42	2.3	2.9	4.22	2.6	3.2	3.87	3.0	3.8	3.9	3054	7.37	4.4	3490	8.48	32	0.45	4.2
11P-L100L-04F	3	6.57	3.1	3.3	5.95	3.8	4.0	5.68	4.2	4.4	5.20	5.0	5.2	5.3	3045	9.93	6	3480	11.4	16	0.20	3.1
11P-112M-04E	4	8.81	2.3	3.2	7.97	2.8	3.9	7.61	2.3	3.2	6.98	2.7	3.8	-	-	-	8	3510	15.3	60	0.86	6.3
11P-132S-04E	5.5	10.9	2.3	3.9	9.90	2.9	4.7	9.48	2.4	3.9	8.69	2.8	4.7	-	-	-	11	3530	19.0	32	0.45	4.2
11P-L132M-04F	7.5	15.1	2.4	3.9	13.6	3.0	4.7	13.0	2.5	3.9	11.9	2.9	4.7	-	-	-	15	3540	26.0	100	1.22	10.0
11P-L132M-04G	9.2	18.6	2.3	3.4	16.9	2.9	4.2	16.1	2.4	3.5	14.8	2.8	4.1	-	-	-	18.4	3530	32.3	60	0.86	6.3
22P-160M-04E	11	22.3	2.7	3.3	20.2	3.3	4.1	19.2	2.7	3.4	17.6	3.3	4.0	-	-	-	22	3550	38.6	150	2.85	14.7
22P-160L-04F	15	29.9	2.6	3.2	27.0	3.2	3.9	25.8	2.7	3.2	23.7	3.2	3.8	-	-	-	30	3550	51.9	100	6.65	10.0
22P-180M-04E	18.5	37.1	3.1	3.2	33.5	3.7	4.0	32.0	3.1	3.3	29.3	3.7	3.9	-	-	-	37	3550	64.3	250	6.65	21.5
22P-180L-04F	22	43.6	3.2	3.4	39.4	3.9	4.2	37.6	3.2	3.5	34.5	3.8	4.1	-	-	-	44	3550	75.6	150	2.85	14.7
22P-200L-04E	30	60.5	2.6	3.2	54.8	3.2	3.9	52.3	2.7	3.2	47.9	3.2	3.8	-	-	-	60	3560	105	400	19.5	35
22P-200L-04F	37	75.3	3.2	3.2	68.1	3.9	4.0	65.0	3.2	3.3	59.6	3.8	3.9	-	-	-	74	3564	131	250	6.65	21.5
22P-225S/M-04F	45	85.7	2.9	3.2	77.5	3.5	3.9	74.0	2.9	3.2	67.9	3.5	3.8	-	-	-	90	3564	149	400	19.5	35
22P-225S/M-04G	55	108	3.3	3.8	98.1	4.1	4.6	93.4	3.4	3.8	85.6	4.0	4.6	-	-	-	110	3570	188	250	6.65	21.5
22P-250S/M-04F	75	139	2.9	3.7	126	3.5	4.5	120	2.9	3.8	110	3.5	4.5	-	-	-	150	3560	242	1000	45	73

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### 6 Poles, 1000 min<sup>-1</sup>, 50 Hz

Series	IEC frame size	Type	P <sub>N</sub>	n <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	$\frac{I_A}{I_N}$	IE class	η	η	η	cosφ	M <sub>N</sub>	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J <sub>mot</sub>	m
			[kW]	[min <sup>-1</sup> ]	at 115 V [A]	at 200 V [A]	at 230 V [A]	at 400 V [A]	at 690 V [A]	at 400 V		[%]	[%]	[%]		[Nm]				
11N	63	11N-63-06F	0.12	890	1.87	1.08	0.94	0.54	-	2.6	IE1	48.0	47.0	43.0	0.67	1.29	1.7	1.6	0.00050	5.4
	71	11N-71-06E	0.18	895	2.89	1.66	1.45	0.83	-	3.5	IE1	54.0	52.0	48.0	0.58	1.92	1.8	2.4	0.00080	7.4
		11N-71-06F	0.25	900	3.83	2.20	1.92	1.10	-	3.5	IE1	57.5	57.0	56.5	0.57	2.65	2.2	2.2	0.00090	8.0
	80	11N-80-06E	0.37	920	4.10	2.36	2.05	1.18	-	3.8	IE1	62.0	60.0	55.0	0.73	3.84	1.7	1.7	0.00190	9.6
		11N-80-06F	0.55	930	5.53	3.18	2.77	1.59	-	4.0	IE1	65.8	65.8	65.0	0.76	5.65	2.0	2.6	0.00300	10.8
11P	90	11P-90S/L-06E	0.75	940	6.71	3.86	3.35	1.93	-	5.2	IE3	79.0	79.0	76.5	0.71	7.62	2.5	2.8	0.00660	17.8
	100	11P-100L-06D	1.1	960	9.74	5.60	4.87	2.80	-	6.0	IE3	81.0	80.0	77.0	0.70	10.9	2.1	3.2	0.01100	21.6
		11P-100L-06E	1.5	950	12.9	7.40	6.45	3.70	-	5.5	IE3	82.5	82.5	81.5	0.71	15.1	2.3	2.8	0.01430	25.4
	112	11P-112M-06E	2.2	960	-	10.4	-	5.22	3.03	6.4	IE3	84.5	84.5	83.0	0.72	21.9	2.4	2.9	0.02570	34.4
	132	11P-132S-06E	3	970	-	13.8	-	6.91	4.01	6.0	IE3	85.8	85.8	85.0	0.73	29.6	1.9	2.5	0.05660	55.0
		11P-132M-06F	4	960	-	18.0	-	8.99	5.21	6.5	IE3	86.8	86.8	86.0	0.74	39.8	2.2	2.5	0.05660	56.0
		11P-L132M-06G	5.5	970	-	25.0	-	12.5	7.25	7.3	IE3	88.0	87.0	86.0	0.72	54.2	2.1	2.5	0.07550	71.8

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**6 Poles, 1000 min<sup>-1</sup>, 50 Hz**

Type	P <sub>N</sub> [kW]	at 380 V			at 420 V			Frequency inverter operation						Brake		
		I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	400 V / 87 Hz			400 V / 100 Hz			M <sub>B</sub> [Nm]	J <sub>B</sub> x10 <sup>-3</sup> [kgm <sup>2</sup> ]	m [kg]
								P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]			
11N-63-06F	0.12	0.56	1.5	1.4	0.51	1.9	1.8	0.21	1549	0.98	0.24	1780	1.13	2 4	0.015 0.015	1.1 1.0
11N-71-06E	0.18	0.87	1.6	2.2	0.79	2.0	2.6	0.31	1557	1.52	0.36	1790	1.74	4 2	0.015 0.015	1.0 1.1
11N-71-06F	0.25	1.16	2.0	2.0	1.05	2.4	2.4	0.44	1566	2.02	0.50	1800	2.31			
11N-80-06E	0.37	1.24	1.5	1.5	1.12	1.9	1.9	0.64	1601	2.15	0.74	1840	2.48	8 4	0.061 0.015	1.6 1.0
11N-80-06F	0.55	1.67	1.8	2.3	1.51	2.2	2.9	0.96	1618	2.91	1.1	1860	3.34			
11P-90S/L-06E	0.75	2.03	2.3	2.5	1.84	2.8	3.1	1.3	1636	3.52	1.5	1880	4.05	16 8	0.20 0.061	3.1 1.6
11P-100L-06D	1.1	2.95	1.9	2.9	2.67	2.3	3.5	1.9	1670	5.11	2.2	1920	5.88	32 16	0.45 0.20	4.2 3.1
11P-100L-06E	1.5	3.89	2.1	2.5	3.52	2.5	3.1	2.6	1653	6.77	3.0	1900	7.77			
11P-112M-06E	2.2	5.49	2.2	2.6	4.97	2.6	3.2	-	-	-	4.4	1920	11.0	60 32	0.86 0.45	6.3 4.2
11P-132S-06E	3.0	7.27	1.7	2.3	6.58	2.1	2.8	-	-	-	6	1940	14.5	100 60	1.22 0.86	10.0 6.3
11P-132M-06F	4.0	9.46	2.0	2.3	8.56	2.4	2.8	-	-	-	8	1920	18.9			
11P-L132M-06G	5.5	13.2	1.9	2.3	11.90	2.3	2.8	-	-	-	11	1940	26.3			

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### 6 Poles, 1200 min<sup>-1</sup>, 60 Hz

Series	IEC frame size	Type	P <sub>N</sub>	n <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	I <sub>N</sub>	$\frac{I_A}{I_N}$	IE class	η	η	η	cosφ	M <sub>N</sub>	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J <sub>mot</sub>	m
			[kW]	[min <sup>-1</sup> ]	at 132 V [A]	at 230 V [A]	at 400 V [A]	at 265 V [A]	at 460 V [A]	at 460 V [A]		[%]	[%]	[%]		[Nm]				
11N	63	11N-63-06F	0.12	1105	1.67	0.96	0.55	0.83	0.48	2.9	IE1	53.2	50.4	46.6	0.59	1.04	2.0	2.0	0.00050	5.4
	71	11N-71-06E	0.18	1105	2.76	1.58	0.91	1.37	0.79	4.0	IE1	54.9	51.8	45.4	0.52	1.56	2.2	2.9	0.00080	7.4
		11N-71-06F	0.25	1110	3.52	2.02	1.17	1.75	1.01	3.7	IE1	58.5	58.0	57.5	0.53	2.15	2.6	2.6	0.00090	8.0
	80	11N-80-06E	0.37	1130	3.76	2.16	1.25	1.87	1.08	4.5	IE1	63.1	59.9	53.1	0.68	3.13	2.2	2.2	0.00190	9.6
		11N-80-06F	0.55	1140	5.54	3.18	1.84	2.76	1.59	5.0	IE1	67.0	67.0	65.0	0.65	4.57	2.5	3.4	0.00300	10.8
11P	90	11P-90S/L-06E	0.75	1145	5.82	3.34	1.92	2.90	1.66	6.2	IE3	82.5	80.0	77.0	0.69	6.26	2.9	3.4	0.00660	17.8
	100	11P-100L-06D	1.1	1165	8.22	4.72	2.73	4.10	2.36	7.9	IE3	87.5	81.0	76.0	0.67	9.02	2.4	3.8	0.01100	21.6
		11P-100L-06E	1.5	1155	11.0	6.30	3.63	5.48	3.14	6.3	IE2	86.5	85.5	82.5	0.69	12.4	2.5	3.2	0.01430	25.4
	112	11P-112M-06E	2.2	1165	-	8.88	5.11	-	4.44	7.6	IE2	87.5	85.5	82.5	0.71	18.0	2.6	3.4	0.02570	34.4
	132	11P-132S-06E	3	1165	-	12.0	6.91	-	6.00	6.3	IE3	89.5	88.5	85.5	0.70	24.6	1.8	2.9	0.05660	55.0
		11P-132M-06F	4	1165	-	15.8	9.09	-	7.90	6.6	IE3	89.5	88.5	85.5	0.71	32.8	1.9	3.0	0.05660	56.0
		11P-L132M-06G	5.5	1175	-	21.6	12.4	-	10.8	8.0	IE3	91.0	88.5	85.5	0.70	44.7	2.2	2.8	0.07550	71.8

Legend see page 371

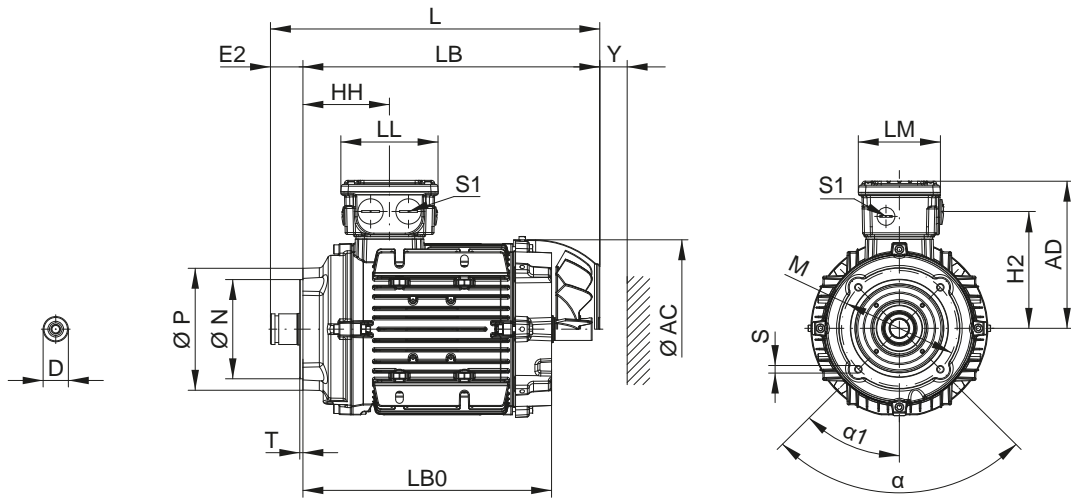
### 6 Poles, 1200 min<sup>-1</sup>, 60 Hz

Type	P <sub>N</sub> [kW]	at 380 V			at 420 V			at 440 V			at 480 V			Frequency inverter operation						Brake		
		I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I <sub>N</sub> [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	460 V / 105 Hz			460 V / 120 Hz			M <sub>B</sub> [Nm]	J <sub>B</sub> x10 <sup>-3</sup> [kgm <sup>2</sup> ]	m [kg]
														P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	P <sub>N</sub> [kW]	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]			
11N-63-06F	0.12	0.58	1.4	1.4	0.52	1.7	1.7	0.50	1.8	1.8	0.46	2.2	2.2	0.21	1934	0.87	0.24	2210	1.00	2 4	0.015 0.015	1.1 1.0
11N-71-06E	0.18	0.95	1.5	2.0	0.86	1.8	2.4	0.82	2.0	2.7	0.75	2.4	3.2	0.32	1934	1.44	0.36	2210	1.65	4 2	0.015 0.015	1.0 1.1
11N-71-06F	0.25	1.22	1.8	1.8	1.11	2.2	2.2	1.06	2.4	2.4	0.97	2.8	2.8	0.44	1943	1.84	0.50	2220	2.12			
11N-80-06E	0.37	1.31	1.5	1.5	1.18	1.8	1.8	1.13	2.0	2.0	1.04	2.4	2.4	0.65	1978	1.96	0.74	2260	2.27	8 4	0.061 0.015	1.6 1.0
11N-80-06F	0.55	1.92	1.7	2.3	1.74	2.1	2.8	1.66	2.3	3.1	1.52	2.7	3.7	0.96	1995	2.90	1.1	2280	3.34			
11P-90S/L-06E	0.75	2.01	2.0	2.3	1.82	2.4	2.8	1.74	2.7	3.1	1.59	3.2	3.7	1.31	2004	3.05	1.5	2290	3.49	16 8	0.20 0.061	3.1 1.6
11P-100L-06D	1.1	2.86	1.6	2.6	2.58	2.0	3.2	2.47	2.2	3.5	2.26	2.6	4.1	1.93	2039	4.31	2.2	2330	4.96	32 16	0.45 0.20	4.2 3.1
11P-100L-06E	1.5	3.80	1.7	2.2	3.44	2.1	2.7	3.28	2.3	2.9	3.01	2.7	3.5	2.63	2021	5.75	3	2310	6.59			
11P-112M-06E	2.2	5.38	2.3	3.1	4.87	2.9	3.7	4.64	2.4	3.1	4.26	2.8	3.7	-	-	-	4.4	2330	9.32	60 32	0.86 0.45	6.3 4.2
11P-132S-06E	3	7.27	1.6	2.6	6.58	2.0	3.2	6.27	1.6	2.7	5.75	2.0	3.2	-	-	-	6	2330	12.6	100 60	1.22 0.86	10.0 6.3
11P-132M-06F	4	9.57	1.7	2.7	8.66	2.1	3.3	8.26	1.7	2.7	7.57	2.1	3.3	-	-	-	8	2330	16.6			
11P-L132M-06G	5.5	13.1	2.0	2.5	11.8	2.4	3.1	11.3	2.0	2.6	10.4	2.4	3.0	-	-	-	11	2350	22.7			

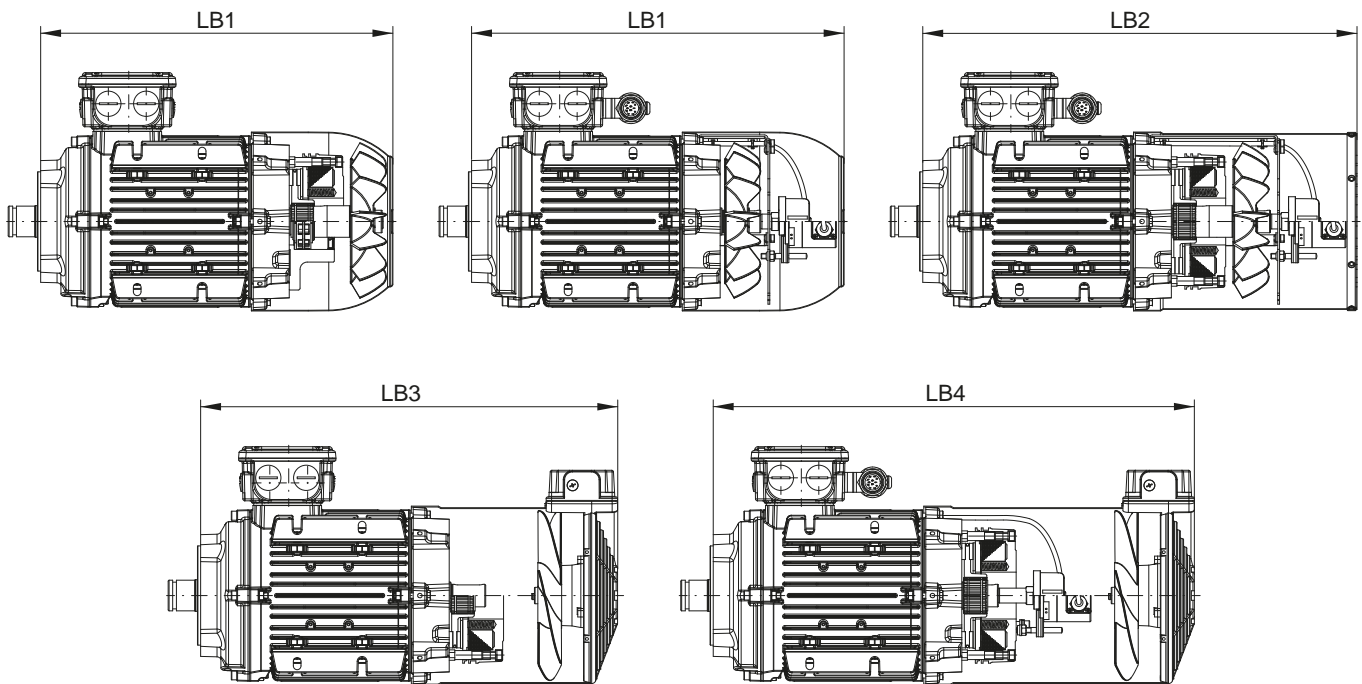
Legend see page 371

# Dimension sheets

## Integral motor frame sizes 63 - 132



M



Description of the dimensions L, LB, LB0,... see page 384

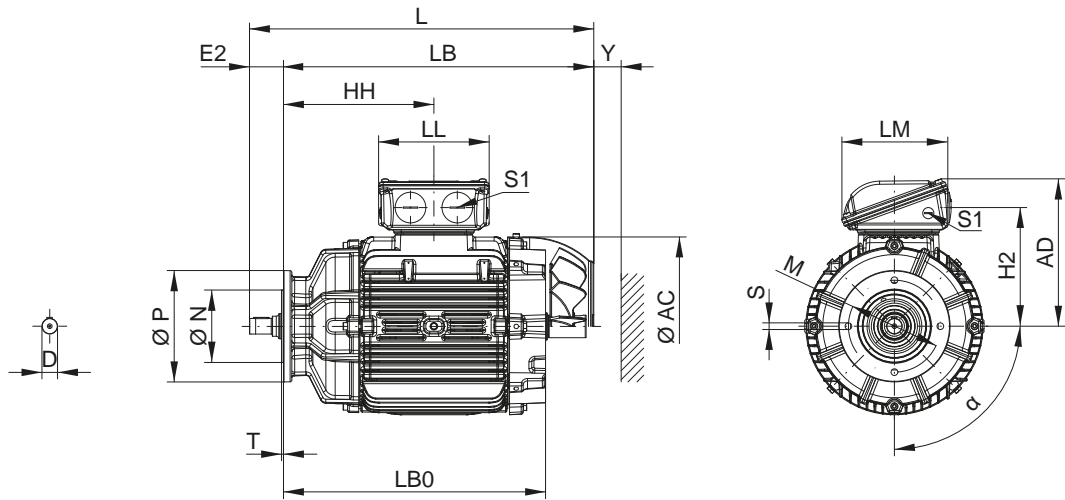
Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	≤ Ø 30 mm	j6
	> Ø 30 mm to Ø 50 mm	k6
	> Ø 50 mm	m6
N	≤ Ø 250 mm	j6
	> Ø 250 mm	h6

Dimension tolerances		
Dimension name	Dimensions	Permissible deviation
M	up to 200 mm	± 0.25 mm
	more than 200 up to 500 mm	± 0.5 mm
	ore than 500 mm	± 1.0 mm

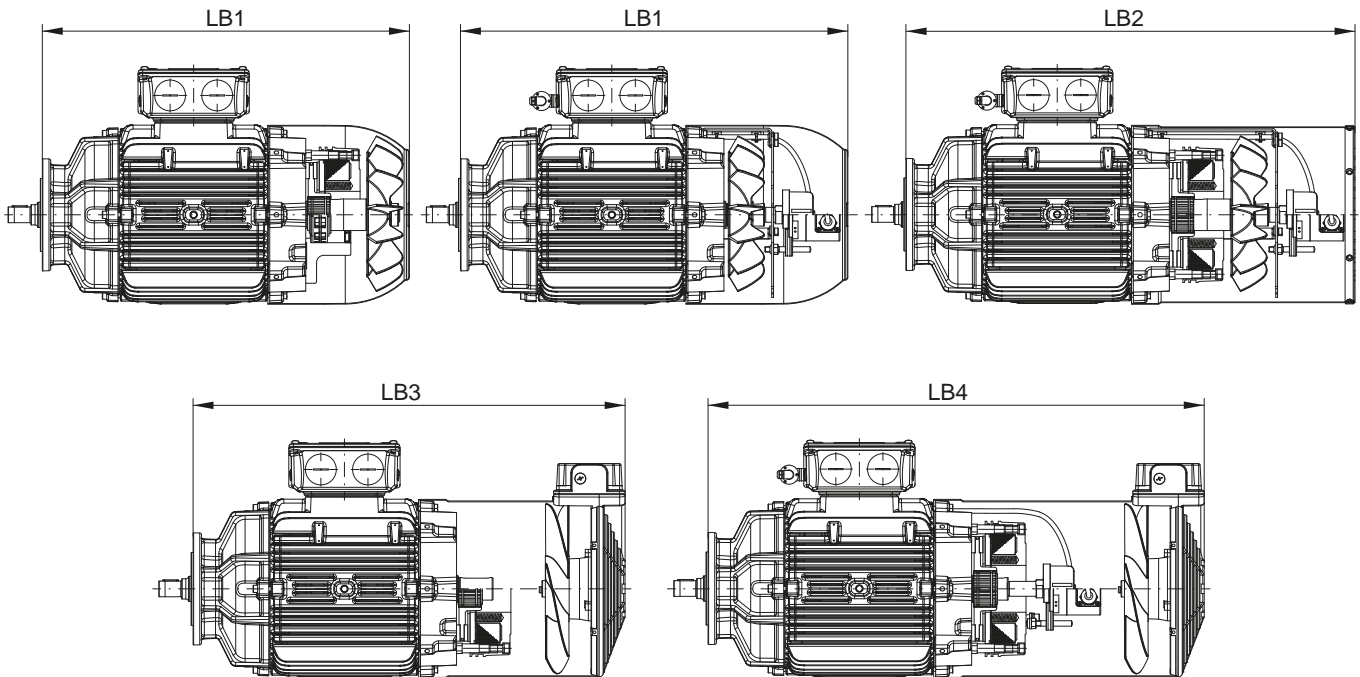
Dimensions in mm. Motor dimensions are typical values.  
Subject to change.

IEC frame size	63	71	80	90	100	L100	112	132	L132
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
D	16	19	24	24	34	34	34	42	42
E2	26	26	26	26	26	26	36	36	36
HH	83	91	88	88	107	107	117	122	122
H2	91	99	108	118	128	128	144	164	164
LL	108	108	108	108	108	108	137	137	137
LM	92	92	92	92	92	92	118	118	118
M	100	100	100	100	100	100	130	130	130
N	80	80	80	80	80	80	110	110	110
P	94	94	94	94	94	94	135	135	135
S	M6	M6	M6	M6	M6	M6	M8	M8	M8
S1	2 x M25 x 1.5 + 2 x M16 x 1.5					2 x M32 x 1.5 + 2 x M16 x 1.5			
T	3	3	3	3	3	3	4	4	4
Y	25	26	30	33	36	36	41	50	50
$\alpha$	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°
$\alpha_1$	45°	45°	45°	45°	45°	45°	45°	45°	45°
L	230	264	272	314	364	402	384	449	487
LB	204	238	246	288	338	376	348	413	451
LB0	173	196	205	242	285	323	290	359	397
LB1	248	287	304	361	422	460	435	531	569
LB2	-	358	381	437	500	538	511	614	652
LB3	322	347	365	422	476	514	493	598	636
LB4	392	417	435	485	532	570	549	650	688

Integral motor frame sizes 160 to 250



M



Description of the dimensions L, LB, LB0,... see page 384

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	$\geq \text{Ø } 28 \text{ mm}$	n6
N	$\leq \text{Ø } 250 \text{ mm}$	j6
	$> \text{Ø } 250 \text{ mm}$	h6

Dimension tolerances		
Dimension name	Dimensions	Permissible deviation
M	up to 200 mm	$\pm 0.25 \text{ mm}$
	more than 200 up to 500 mm	$\pm 0.5 \text{ mm}$
	more than 500 mm	$\pm 1.0 \text{ mm}$

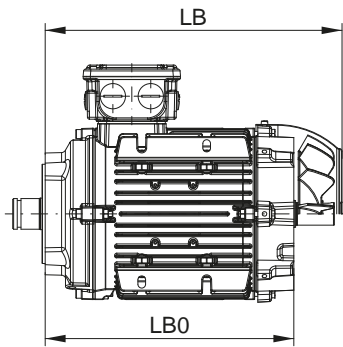
Dimensions in mm. Motor dimensions are typical values. Subject to change.

IEC frame size	160M					160L				
	FR-200	FR-250	FR-300	FR-400	FR-550	FR-200	FR-250	FR-300	FR-400	FR-550
AC	329					329				
AD	266					266				
D	28					28				
E2	61	66	71	84	100	61	66	71	84	100
HH	270	265	260	257	241	270	265	260	257	241
H2	213					213				
LL	199					199				
LM	190					190				
M	165	215	265	300	400	165	215	265	300	400
N	130	180	230	300	450	130	180	230	300	450
P	200	250	300	400	550	200	250	300	400	550
S	12	15	15	19	19	12	15	15	19	19
S1	2 x M40 x 1.5 + 2 x M16 x 1.5					2 x M40 x 1.5 + 2 x M16 x 1.5				
T	3,5	4	4	5	5	3,5	4	4	5	5
Y	65					65				
α	4 x 90°					4 x 90°				
L	606					650				
LB	545	540	535	522	506	589	584	579	566	550
LB0	480	475	470	457	441	524	519	514	501	485
LB1	669	664	659	646	630	713	708	703	690	674
LB2	747	742	737	724	708	791	786	781	768	752
LB3	757	752	747	734	718	801	796	791	778	762
LB4	823	818	813	800	784	867	862	857	844	828

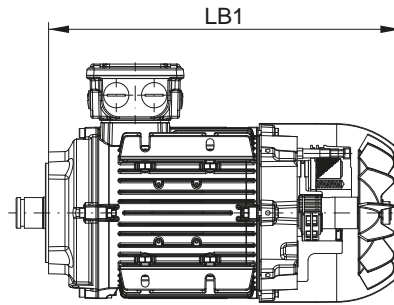
IEC frame size	180M				180L			
	FR-250	FR-300	FR-400	FR-550	FR-250	FR-300	FR-400	FR-550
AC	347				347			
AD	281				281			
D	32				32			
E2	66	71	84	100	66	71	84	100
HH	303	298	285	269	303	298	285	269
H2	228				228			
LL	199				199			
LM	190				190			
M	215	265	300	400	215	265	300	400
N	180	230	300	450	180	230	300	450
P	250	300	400	550	250	300	400	550
S	15	15	19	19	15	15	19	19
S1	2 x M40 x 1.5 + 2 x M16 x 1.5				2 x M40 x 1.5 + 2 x M16 x 1.5			
T	4	4	5	5	4	4	5	5
Y	68				68			
α	4 x 90°				4 x 90°			
L	674				712			
LB	608	603	590	574	646	641	628	612
LB0	531	526	513	497	569	564	551	535
LB1	726	721	708	692	764	759	746	730
LB2	839	834	821	805	877	872	859	843
LB3	828	823	810	794	866	861	848	832
LB4	893	888	875	859	931	926	913	897

IEC frame size	200L			225S/M		250S/M
	FR-300	FR-400	FR-550	FR-400	FR-550	FR-550
AC	386			453		482
AD	317			385		403
D	38			38		48
E2	71	84	100	84	100	100
HH	348	335	319	286	270	261
H2	260			304		321
LL	230			269		268
LM	218			286		286
M	265	300	400	300	400	400
N	230	300	450	300	450	450
P	300	400	550	400	550	550
S	15	19	19	19	19	19
S1	2 x M50 x 1.5 + 2 x M16 x 1.5			2 x M50 x 1.5 + 2 x M16 x 1.5		2 x M63 x 1.5 + 2 x M16 x 1.5
T	4	5	5	5	5	5
Y	78			85		85
α	4 x 90°			8 x 45°		8 x 45°
L	804			912		951
LB	733	720	704	828	812	851
LB0	629	616	600	714	698	737
LB1	859	846	830	946	930	969
LB2	977	964	948	1062	1046	1085
LB3	929	916	900	1100	1084	1123
LB4	1009	996	980	1100	1084	1123

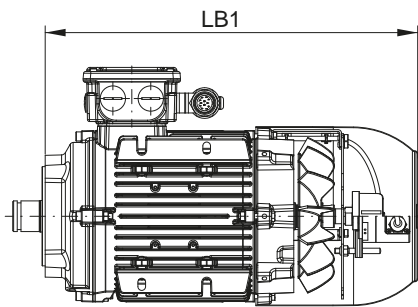
## Length description motor modules



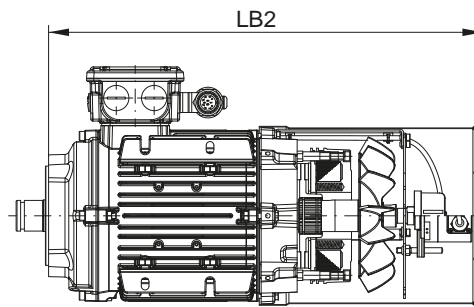
**LB** Self ventilated  
**LB0** Non-ventilated



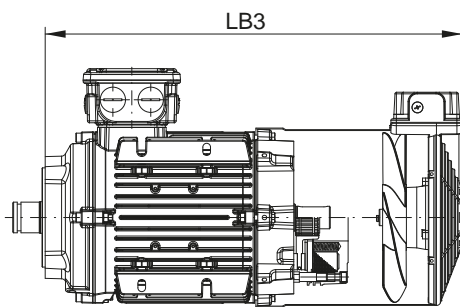
**LB1** Self ventilated with brake  
 or back stop type RSM



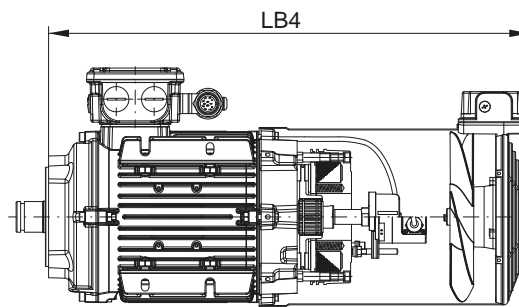
**LB1** Self ventilated with standard encoder,  
 SSI multiturn encoder or resolver



**LB2** Self ventilated with brake and standard encoder,  
 SSI multiturn encoder or resolver



**LB3** Forced ventilation with or without brake



**LB4** Forced ventilation with/without brake and standard encoder,  
 SSI multiturn encoder or resolver

M

## Motor modules

### High / Low temperature execution

<b>HT</b>	High temperature execution
<b>LT</b>	Low temperature execution

To ensure steady operation even at increased or very low ambient temperatures, we offer specially adjusted motor executions with more resistant components.

### Temperature control

<b>TH</b>	Bimetal switch for switch off
<b>2TH</b>	Bimetal switch for warning and switch off
<b>TF</b>	PTC thermistor for switch off
<b>2TF</b>	PTC thermistor for warning and switch off
<b>KTY</b>	Temperature sensor

In the standard version, the motors are designed with motor protection in the motor winding. In order to protect the winding of a three-phase induction motor against thermal overloads, resulting for example from overloading and operation with only two phases, one of the following devices can be provided:

#### TH - Bimetal switch „NC contact“ (+155°C)

The contact is normally closed (NC); the disc opens when the winding's temperature reaches limits dangerous for the insulation system. When a limit temperature is reached, these bimetal switches (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

#### TF - PTC thermistor (+155°C)

The most comprehensive protection against thermal overloading caused in starting against heavy masses, heavy alternating load and high frequency starting resp. brake operation or high ambient temperatures of the motor is provided by PTC thermistors installed in the motor winding.

The sensors are temperature sensitive resistors (PTC) which change value almost instantaneously at their response temperature. The switch off level corresponds to the thermal class of the insulation. This characteristic is used in combination with tripping devices (on request) to monitor the temperature of the motor. For warning purposes additional bimetal switches or PTC thermistors with lower switch off temperature can be fitted. These correspond to the key **2TH** and **2TF**.

#### KTY - Temperature sensor

This sensor is a semiconductor that changes its resistance depending on temperature in accordance with a defined characteristic. The evaluation is made by an extra tripping device (on request). The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor. Evaluation is performed, for example, in the frequency inverter.

### Anti-condensation heating

<b>SH</b>	Anti-condensation heating
-----------	---------------------------

Windings of motors, which are operating at conditions of extreme temperature changes or extreme climatic conditions, are endangered of condensation water. The built in anti-condensation heating warms up the motor windings after switching off and prevents the motor inside from condensation water.

**During motor operation the anti-condensation heating must not be switched on. The limit temperature of the winding (+155°C in thermal class F) must not be exceeded! Temperature control is advisable!**

IEC frame size	Heating performance [W]
71	13
80	25
90	
100	
112	50
132	
160	
180	75
200	
225	
250	100

The anti-condensation heating must be supplied with a separate voltage.

Supply voltage: 230 V (1~) - Voltage range for IEC frame sizes: 71 to 200: 220 - 240 V, 50/60 Hz



## Climatic protection

<b>K1</b>	Humidity protection
<b>K2</b>	Corrosion protection

The following standardised climatic protection executions are available for motors exposed to extreme climatic conditions:

### K1 - Humidity protection

Humid warm climate or humid variable climate with max. relative air humidity of 92 %, also for areas on the seaside

### K2 - Corrosion protection

Relative air humidity of more than 92 % (extreme formation of condensation water), furthermore against chemically aggressive gases and vapours of increased concentration

## Drain

<b>KB</b>	Drain
-----------	-------

In cases of increased air humidity, periodic duty, installation in the open air or when subject to extreme climatic conditions, the motors are endangered by the formation of condensation. The endshields have holes for drainage of water that may condense inside the frame. These holes are supplied with rubber drain plugs, which leave the factory in closed position and must be opened periodically to allow the exit of condensed water.

**To determine the correct position of the hole the exact mounting position of the motor must be defined.**

# M

## Terminal box designs

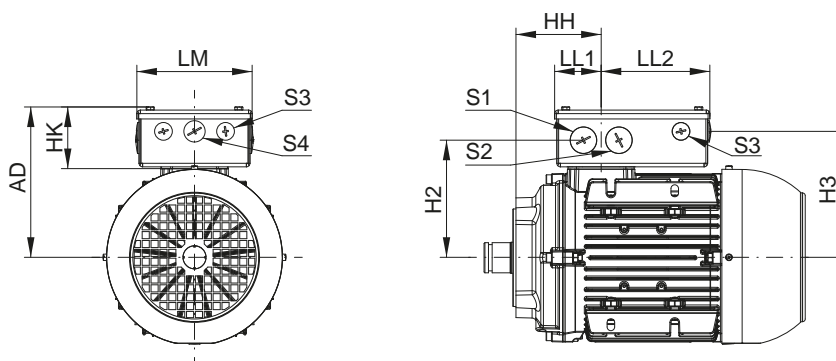
<b>MIP</b>	Multipin box
<b>MIG..</b>	MIG - connect systems

### MIP - Multipin box

IEC frame sizes: 63 to 250

This extended terminal box was designed to permit additional options, such as brakes, incremental encoders, thermal elements, anti-condensation heating and the like, to be connected in an orderly fashion in the box.

The terminal box can be equipped with up to 22 sockets, including a brake rectifier. The terminal used are two-wire terminals fitted with cage clamp connectors. These are suitable for single-wire, multi-wire and fine-wire lines with diameters up to 4 mm<sup>2</sup>.



IEC frame size	MIP box												
	AD	HH	HK	H2	H3	LM	LL1	LL2	S1	S2	S3	S4	
63	132	90	69	95	99	130	52	122	2xM25	2xM25	4xM16	1xM20	
71	140	99	69	103	107	130	52	122	2xM25	2xM25	4xM16	1xM20	
80	149	95	69	112	116	130	52	122	2xM25	2xM25	4xM16	1xM20	
90	159	96	69	122	126	130	52	122	2xM25	2xM25	4xM16	1xM20	
100	169	109	69	132	136	130	52	122	2xM25	2xM25	4xM16	1xM20	
112	182	130	70	144	154	140	68	138	2xM32	2xM32	4xM16	1xM25	
132	202	123	70	164	174	140	68	138	2xM32	2xM32	4xM16	1xM25	
160	FR-200	269	270	104	211	220	205	105	171	2xM50	2xM40	4xM16	1xM25
	FR-250		265										
	FR-300		260										
	FR-400		257										
	FR-550		241										
180	FR-250	284	303	104	231	240	205	105	171	2xM50	2xM40	4xM16	1xM25
	FR-300		298										
	FR-400		285										
	FR-550		269										
	FR-300		348										
200	FR-400	300	335	104	250	256	205	105	177	2xM50	2xM40	4xM16	1xM25
	FR-550		319										
	FR-400		286										
225	FR-400	344	270	104	289	295	205	105	177	2xM50	2xM40	4xM16	1xM25
	FR-550		270										
250	FR-550	361	261	104	306	312	205	105	177	2xM50	2xM40	4xM16	1xM25

Dimensions in mm

### MIG - connect system

Models: MIG10B, MIG16, MIG10-FL  
IEC frame sizes: 63 to 180 (MIG10-FL up to 250)

The MIG (Multiplug) - connect system is a standardised distributed connection system. It is used for the integration of power and control cabling into a single motor connector. The plug is assembled in-house and replaces the terminal box.

#### Most important advantages:

- Quick installation and service at site
- Avoiding wiring faults
- Motor replacement without electrical manipulation

For motor frame sizes 63 to 180 three MIG types of different power ratings are used. For each MIG model mating connectors are available:

#### MIG10B:

With 18 PINs and ground this most compact plug enables connection to motors up to a rated current of 10 A with voltages up to 400/690 V and protection degrees up to IP67. Beside the power wires a variety of auxiliary wires can be connected as well.

#### MIG16:

This MIG for mid-sized motors supports a maximum current of 16 A at 500 V with 10 PINs in total. In case a wider variety of auxiliary PINs is necessary a mixed holding can be offered (6 PINs - 16 A; 12 PINs - auxiliary).

#### MIG40:

To achieve all contacts to be connected with one plug a mixed holding of PINs has to be used in this case. 6 PINs for 40 A at 400/690 V together with 12 PINs auxiliary guarantees full contactability.

For motor frame sizes 63 to 250 with forced ventilation the following MIG type is available:

#### MIG10-FL:

On demand this MIG can replace the normal forced ventilation connection. Thereby this motor module has all advantages of a MIG - connect plug system. The plug is equipped with 3 PINs and grounding and can be mounted on every forced ventilation size.

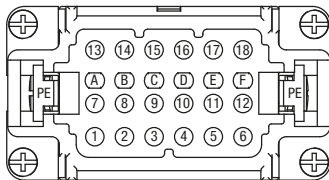


MIG40 execution

### MIG - connect system overview table

IEC frame size		63	71	80	90	100	112	132	160	180
400 V, 50 Hz	4p	10B	10B	10B	10B	10B	16	16	40	40
	6p	10B	10B	10B	10B	10B	16	16	40	40
230 V, 50 Hz	4p	10B	10B	10B	10B	16	-	-	-	-
	6p	10B	10B	10B	10B	16	-	-	-	-
400 V, 100 Hz	4p	10B	10B	10B	10B	16	40	40	-	-
	6p	10B	10B	10B	10B	10B	16	40	-	-
460 V, 60 Hz	4p	10B	10B	10B	10B	10B	16	16	40	40
	6p	10B	10B	10B	10B	10B	16	16	40	40
460 V, 120 Hz	4p	10B	10B	10B	10B	16	16	40	-	-
	6p	10B	10B	10B	10B	10B	16	40	-	-

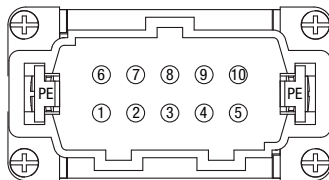
#### PIN assignment MIG10B



PIN	Assignment
PE	Grounding terminal
1	Winding connection U1
2	Winding connection V1
3	Winding connection W1
4*	Bimetal release 1 TH1
5	Brake heating tape
6	Anti-condensation heating
7	Winding connection W4
8	Winding connection U4
9	Winding connection V4
10*	Bimetal release 1 TH1
11	Brake heating tape
12	Anti-condensation heating

PIN	Assignment
13	Brake
14	Brake
15	Brake microswitch
16	Brake microswitch
17*	Bimetal release 2 TH2
18*	Bimetal release 2 TH2
*alternatively	
4	PTC thermistor 1 TF1
10	PTC thermistor 1 TF1
17	PTC thermistor 2 TF2
17	Resistance thermometer KTY1
18	PTC thermistor 2 TF2
18	Resistance thermometer KTY 1

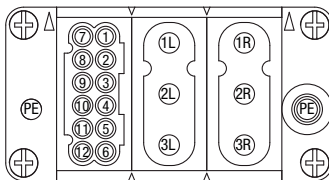
#### PIN assignment MIG16



PIN	Assignment
PE	Grounding terminal
1	Winding connection U1
2	Winding connection V1
3	Winding connection W1
4*	Brake
5*	Brake
6	Winding connection W4
7	Winding connection U4

PIN	Assignment
8	Winding connection V4
9*	Temperature sensor 1
10*	Temperature sensor 1
*alternatively	
9	Anti-condensation heating
10	Anti-condensation heating
4	Temperature sensor 2
5	Temperature sensor 2

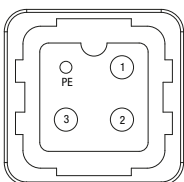
#### PIN assignment MIG40



PIN	Assignment
PE	Grounding terminal
1R	Winding connection U1
2R	Winding connection V1
3R	Winding connection W1
1L	Winding connection W4
2L	Winding connection U4
3L	Winding connection V4
1	Brake
2	Temperature sensor 1
3	Temperature sensor 2

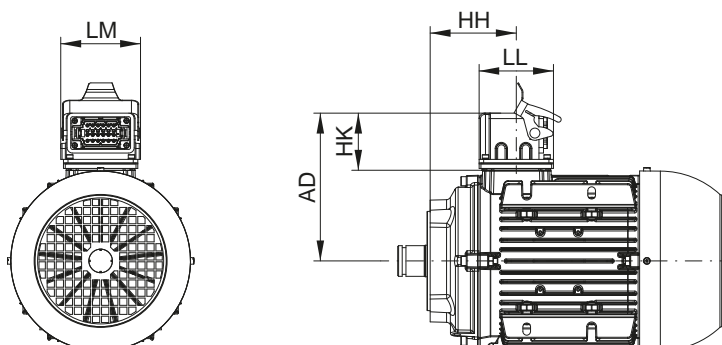
PIN	Assignment
4	Temperature sensor 3
5	Anti-condensation heating
6	
7	Brake
8	Temperature sensor 1
9	Temperature sensor 2
10	Temperature sensor 3
11	Anti-condensation heating
12	

#### PIN assignment MIG10-FL



PIN	Assignment
PE	Grounding terminal
1	Power connection L1
2	Power connection L2
3	Power connection L3

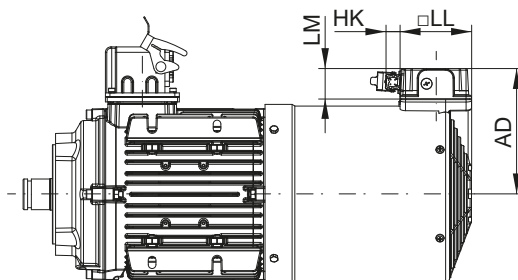
### Dimension sheet MIG10B, MIG16, MIG40



IEC frame size	MIG - connect system						
	MIG Type	AD	HH	HK	LL	LM	
63	10B	124	90	61	82	86	
71	10B	132	99	61	82	86	
80	10B	141	95	61	82	86	
90	10B	151	96	61	82	86	
100	10B / 16	161	109	61	82	86	
112	16 / 40	173	130	61	82	86	
132	16 / 40	193	123	61	82	86	
160	FR-200	40	226	270	61	82	86
	FR-250			265			
	FR-300			260			
	FR-400			257			
	FR-550			241			
180	FR-250	40	241	303	61	82	86
	FR-300			298			
	FR-400			285			
	FR-550			269			

Dimensions in mm

### Dimension sheet MIG10-FL



IEC frame size	MIG10-FL			
	AD	HK	□LL	LM
63	118	28	107	32
71	124			
80	134			
90	143			
100	152			
112	164			
132	185			
160	211			
180	211			
200	211			
225	211			
250	211			

Dimensions in mm

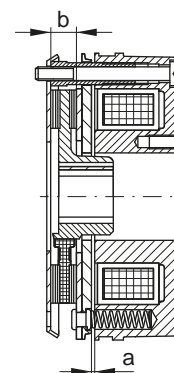
### Brake system and Back stop

<b>BR..</b>	Spring loaded brake
<b>BBRHGD..</b>	Double spring loaded brake
<b>BRGH..</b>	Totally closed spring loaded brake (Heavy Duty)
<b>KKM</b>	Back stop (frame sizes 63 to 90)
<b>RSM</b>	Back stop (frame sizes 100 to 250)

The mounted spring loaded brake is a single-disc brake with two friction surfaces. It is released electromagnetically and brakes by spring pressure, when the brake is de-energised. The DC-brake coil is supplied from a rectifier which is located in the motor terminal box and will be delivered as standard for AC-side connection.

#### Product information

- Voltages: Standard: 190 V DC (BR4, 8, 16, 32) or 195 V DC (BR2, 5, 10, 20, 40, 60, 100, 150, 250, 400, 1000)  
Optional: 24 V DC  
Special execution: 102/103 V DC
- All bare parts corrosion protected
- Short switching times
- Large reserve for abrasion
- Designed for 100 % duty cycle and max. admissible temperature limit of +145°C
- Degree of protection IP55 (standard)



a air gap  
b brake lining thickness

On motors with brake-endshield on the non-driven side subsequent installation of brakes is possible (brake-motor-set available).

### Function and adjustment (see illustration below)

When the brake is de-energised, the springs are pressing the armature disc (9) against the brake disc (7) and the friction plate (5). The motor shaft (3) is braked via the brake disc (7) and the gear hub (6). When the brake is energised, a magnetic field is built up and the armature disc (9) is pulled against the magnetic case with the coil (10). When the motor is running, the brake disc (7) can rotate freely from the brake surfaces. In the case of power failure, the brake functions automatically by spring force. A manual release (11) is optionally available (subsequent assembling is also possible).

### Braking torque adjustment

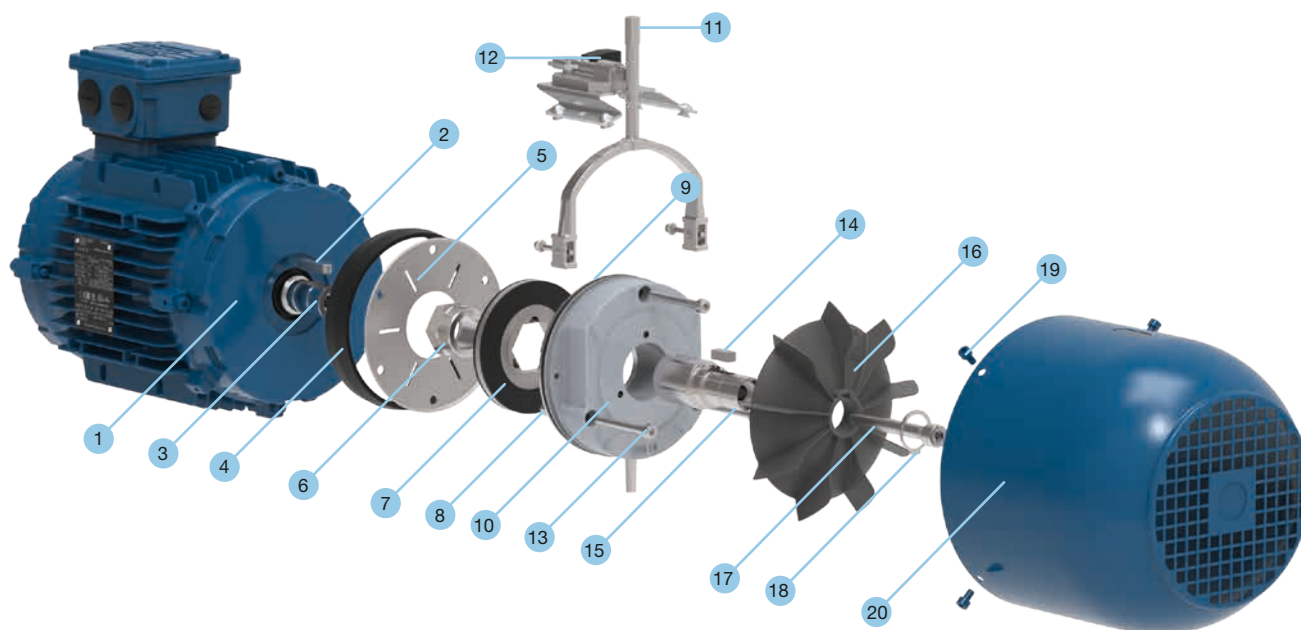
At delivering, the brakes and the brake motors are adjusted to the brake torque  $M_B$ . Brake torque reduction is done by removing of springs. Reduced brake torque on request.

### Maintenance

Due to abrasion of the friction linings (7) the air gap "a" (see page 389) between magnetic case (10) and armature disc (9) expands. It is necessary to check and readjust the air gap in certain intervals or replace the brake disc (7).

### Readjustment of the air gap

First of all the three fixing screws (13) must be loosened half a turn. Now the sleeve screws (8) can be screwed into the magnetic case (10) by turning counter-clockwise. By turning the three fixing screws (13) clockwise, the magnetic case (10) can be moved in direction to the armature disc (9), as long as the nominal air gap  $a_{normal}$  (see table on page 392) is obtained. Now the three sleeve screws (8) will be unscrewed clockwise from the magnetic case (10) and the fixing screws (13) will be fixed. Please check the air gap "a" with a feeler gauge, if it is symmetrical and adjust it if necessary.



- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1 Brake endshield                  | 11 Manual release lever (optional) |
| 2 Key                              | 12 Locking device                  |
| 3 Motor shaft                      | 13 Socket cap screw                |
| 4 Dust protection ring             | 14 Key                             |
| 5 Friction plate                   | 15 Brake shaft extension           |
| 6 Gear hub                         | 16 Fan                             |
| 7 Brake disc with friction linings | 17 Socket cap screw                |
| 8 Sleeve screws                    | 18 Retaining ring                  |
| 9 Armature disc                    | 19 Fan cover screws                |
| 10 Magnetic case                   | 20 Fan cover (brake execution)     |

Exploded view: Brake with manual release and locking device, frame size 100

## Brake selection

As shown in the following selection table, it is possible to supply brake motors with different brake torques to correspond to the most possible applications. It is also possible to achieve an optimal adaption, by means of the mode of connection of the brake. If exact values about the application are available, we recommend to calculate the braking torque according to the following formulas on page 396, otherwise the proportion between motor rated torque ( $M_N$ ) and braking torque ( $M_B$ ) can be taken as an indication for the dimensioning of the brake and check, if the safety factor is sufficient.

For normal applications we recommend sizing the brake 1.5 - 2 times the motor rated torque ( $M_N$ ), for special applications (lifting gears, switching operation, etc.) 2 - 3 times the motor torque and as holding brake approx. 1 time the rated torque.

Reduced brake torques on request.

- **Execution A - working brake**

$M_B$  approx. 1.5 - 2 times  $M_N$ , or applications with medium masses to be accelerated and medium number of starts

- **Execution B - holding brake**

$M_B$  approx. 1 time  $M_N$  for drives with small masses to be accelerated and number of starts resp. for keeping the drive stopped

## Brake selection table

IEC frame size	BR.. Standard brake		BBRHGD.. Double brake		BRGH.. Totally closed brake	
	Standard Execution A $M_B$	Execution B $M_B$	Standard Execution A $M_B$	Execution B $M_B$	Standard Execution A $M_B$	Execution B $M_B$
63	2 Nm	4 Nm	-	-	-	-
71	4 Nm	2 Nm	2 x 6 Nm	-	5 Nm	-
80	8 Nm	4 Nm	2 x 12,5 Nm	2 x 6 Nm	10 Nm	5 Nm
90	16 Nm	8 Nm	2 x 25 Nm	2 x 12,5 Nm	20 Nm	10 Nm
100	32 Nm	16 Nm	2 x 50 Nm	2 x 25 Nm	40 Nm	20 Nm
112	60 Nm	32 Nm	2 x 75 Nm	2 x 50 Nm	60 Nm	40 Nm
132	100 Nm	60 Nm	2 x 125 Nm	2 x 75 Nm	100 Nm	60 Nm
160	150 Nm	100 Nm	2 x 187 Nm	2 x 125 Nm	150 Nm	100 Nm
180	250 Nm	150 Nm	2 x 300 Nm	2 x 187 Nm	250 Nm	150 Nm
200	400 Nm	250 Nm	2 x 500 Nm	2 x 300 Nm	400 Nm	250 Nm
225	400 Nm	250 Nm	2 x 500 Nm	2 x 300 Nm	400 Nm	250 Nm
250	1000 Nm	-	2 x 1200 Nm	-	1000 Nm	-

Spring loaded brake: electrical characteristics																		
$U_{2nenn} =$	$U_2 =$	Brake size		2**	4*	5**	8*	10**	16*	20**	32*	40**	60**	100**	150**	250**	400**	1000**
[V]	[V]	$M_B$	[Nm]	2	4	5	8	10	16	20	32	40	60	100	150	250	400	1000
190* 195**	170-210 162-236	Coil current	[A]	0.13	0.11	0.13	0.13	0.18	0.16	0.20	0.21	0.26	0.32	0.42	0.50	0.65	0.85	0.83
		Power	[W]	26	20	26	25	36	30	38	40	50	63	82	99	127	165	162
		Resistance	[Ω]	1475	1805	1475	1444	1070	1203	990	903	754	600	464	385	300	230	235
24	19-28	Coil current	[A]	1.14	0.83	1.14	1.04	1.44	1.25	1.70	1.66	2.10	2.70	3.30	4.00	5.20	7.30	-
		Power	[W]	27	20	27	25	34	30	41	40	50	65	80	96	125	175	-
		Resistance	[Ω]	21	29	21	23	17	19	14	14	12	8.9	7.2	6.0	4.6	3.3	-
102 <sup>1)</sup> ** 103 <sup>1)</sup> *	85-133 93-113	Coil current	[A]	0.30	0.19	0.30	0.24	0.38	0.31	0.45	0.39	0.53	0.60	0.85	0.94	1.23	1.76	-
		Power	[W]	31	20	31	25	38	32	46	40	54	60	87	95	125	179	-
		Resistance	[Ω]	340	531	340	424	271	332	228	265	192	174	120	109	83	58	-

  standard brake

<sup>1)</sup> special execution (on demand)

Spring loaded brake: mechanical characteristics																
Brake size		2	4	5	8	10	16	20	32	40	60	100	150	250	400	1000
$M_B$	[Nm]	2	4	5	8	10	16	20	32	40	60	100	150	250	400	1000
$M_{BS}$	[Nm]	-	6	7.5	12	15	24	30	48	60	90	150	225	375	600	1500
$P_{20}$	[W]	26	20	26	25	36	30	38	40	50	63	82	100	127	165	162
$J_B$	[kgm <sup>2</sup> x10 <sup>-3</sup> ]	0.015	0.015	0.015	0.061	0.045	0.20	0.172	0.45	0.45	0.86	1.22	2.85	6.65	19.5	45
$P_R$	[J/s]	80	*	80	*	100	*	130	*	160	200	250	300	350	400	450
$W_{Rmax}$	[Jx10 <sup>3</sup> ]	3	3	3	7.5	6	12	12	24	25	35	50	75	105	150	200
$W_{RN}$	[Jx10 <sup>7</sup> ]	5	8.5	5	15.8	12	26.4	20	53	35	60	125	200	340	420	450
$a_{normal}$	[mm]	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6
$a_{max}$	[mm]	0.6	0.5	0.6	0.5	0.7	0.5	0.8	0.75	0.9	1.0	1.1	1.1	1.2	1.2	1.7
$b_{min}$	[mm]	4.5	4.5	4.5	5.5	5.5	7.5	7.5	8.0	9.5	11.5	12.5	14.5	16.5	16.5	21
$m$	[kg]	1.1	1.0	1.1	1.6	1.9	3.1	3.1	4.2	4.6	6.3	10	14.7	21.5	35	73
$t_{2=}$	[ms]	35	45	35	57	45	76	60	115	80	120	160	200	220	300	320
$t_{1≈}$	[ms]	70	*	70	*	95	*	140	*	175	210	280	350	500	800	3000
$t_{1=}$	[ms]	30	28	30	31	45	47	60	53	75	90	120	150	180	200	160
Fits on IEC motor frame size		63, 71	63, 71, 80	63, 71, 80	80, 90	80, 90	90, 100	90, 100	100, 112	100, 112	112, 132	132, 160	160, 180	180, 200, 225	200, 225	250

\* on request

	Designation	Unit
Rated torque of spring loaded brake	$M_B$	[Nm]
Holding torque of the spring loaded brake	$M_{BS}$	[Nm]
Brake coil power consumption	$P_{20}$	[W]
Brake moment of inertia	$J_B$	[kgm <sup>2</sup> ]
Friction performance	$P_R$	[J/s]
Friction per switch cycle	$W_{Rmax}$	[J]
Friction until readjustment	$W_{RN}$	[J]
Air gap	$a$	[mm]

	Designation	Unit
Minimum brake rotor thickness	$b$	[mm]
Mass of moved machine parts	$m$	[kg]
Engaging time	$t_1$	[ms]
Release time of brake	$t_2$	[ms]
Output voltage DC rectifier	$U_{2=}$	[V]
For DC switching	$=$	-
For AC switching	$≈$	-

## BR.. - Spring loaded brake

Degree of protection IP55.

<p><b>BR..</b> Spring loaded brake without additional options</p> <p><b>Possible options:</b></p> <p><b>BRH..</b> With manual release</p> <p><b>BRHA..</b> With manual release and locking device</p> <p><b>BRR..</b> With corrosion protection IP55</p> <p><b>BRS..</b> With dust protection IP65</p> <p><b>BRSR..</b> With dust and corrosion protection IP65</p> <p><b>BRGD..</b> Low noise execution</p>	➔	<p><b>Ordering examples:</b></p> <p><b>BR5</b> Brake 4 Nm</p> <p><b>BRHASRGD32</b> Brake 32 Nm with manual release, locking device, dust and corrosion protection and low noise execution</p>
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### BRM - Micro switch

When brake release monitoring is necessary, a micro switch (5) can be fitted to indicate brake release. This signal can be used to start the electric motor. When air gap "a" (see page 389) is at its maximum and the armature is no longer attracted to the magnet body the motor will not start and air gap "a" must be adjusted.

The installation of the micro switch is possible for brake sizes 5, 10, 20, 40, 60, 100, 150, 250, 400 and 1000.

### BRH.. - Manual release

The installation of the manual release is possible for brakes > 4 Nm. The manual release (1) is necessary for manually releasing the brake in cases of power failure. Brakes will be supplied with manual releases fitted by factory. The adjustment of the manual release may not be changed, not even when air gap "a" (see page 389) is readjusted, as safety can be adversely affected.

### BRHA.. - Manual release with locking device

In case of service the manual release can be fastened with a locking device. Take care that in rated condition the brake is released (see illustration on page 394). The 0° position of the manual release with locking device is **only possible** with motor frame sizes 225 and 250.

### BRR.. - Corrosion protection

Protection class IP55. Consists of painted brake endshield and friction plate (3), which is made of non-corrosive material.

### BRS.. - Dust protection

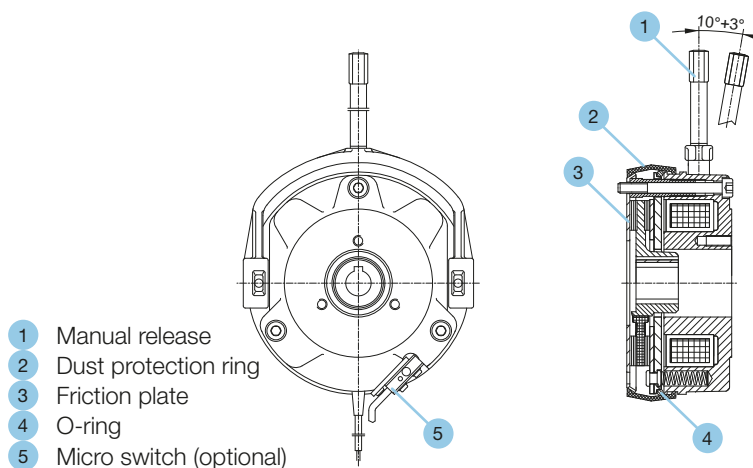
Protection class IP65. Consists of friction plate (3), which is made of non-corrosive material, dust protection ring (2) and shaft seal.

### BRSR.. - Corrosion and dust protection

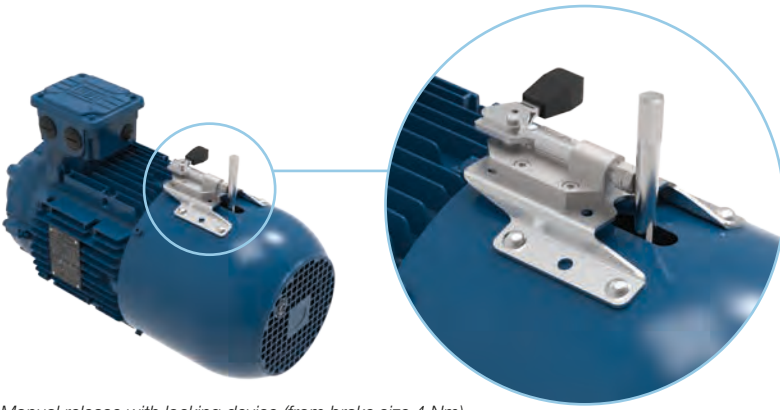
Protection class IP65. Consists of painted brake endshield, friction plate (3), which is made of a non-corrosive material, dust protection ring (2) and shaft seal.

### BRGD.. - Low noise execution

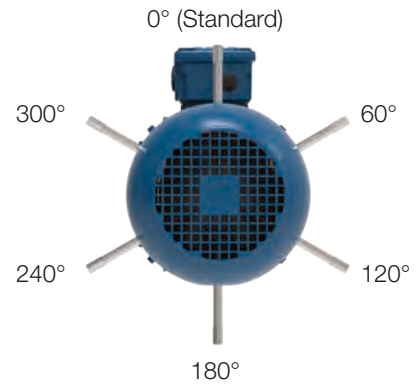
To reduce the switching noises of the spring loaded brake, the o-ring (4) can be inserted between armature plate and brake body.







Manual release with locking device (from brake size 4 Nm)



Possible positions of the manual release at the view of the motor fan cover. (The 0° position of the manual release with locking device is only possible with motor frame sizes 225 and 250.)

### BBRHGD.. - Double spring loaded brake

Double brakes (from motor frame size 71) are two specially designed low noise brakes working independently of each other meeting high demands on safety.

As option a micro switch (5) is monitoring the function of the brakes. The brakes are executed per default in low noise execution and with manual release.

**BBRHGD..** Double brake in low noise execution with manual release (standard)

#### Possible options:

**BBRHSGD..** With dust protection IP65  
**BBRGD..** Without manual release

#### Ordering examples:

**BBRHGD6** Double brake 2 x 6 Nm in low noise execution with manual release  
**BBRHSGD187** Double brake 2 x 187 Nm in low noise exec. with man. release and dust protection

### BBRM - Micro switch

When brake release monitoring is necessary, a micro switch (5) can be fitted to indicate brake release. This signal can be used to start the electric motor. When air gap "a" (see page 389) is at its maximum and the armature is no longer attracted to the magnet body the motor will not start and air gap "a" must be re-adjusted.

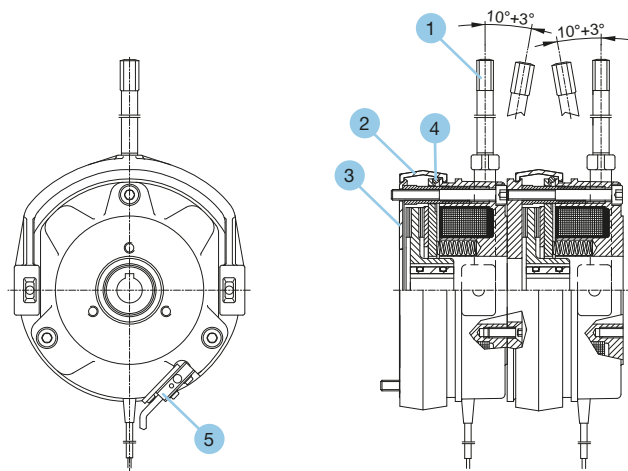
### BBRHSGD.. - Dust protection

Protection class IP65. Consists of friction plate (3), which is made of non-corrosive material, dust protection ring (2) and shaft seal.

### BBRHGD.. - Manual release

The manual release (1) for manually releasing of the brake in cases of power failure. Brakes will be supplied in standard with manual release fitted by factory. The adjustment of the manual release may not be changed, not even when air gap "a" (see page 389) is readjusted, as security can be adversely affected.

Possible positions of the manual release see on page 394.



- 1 Manual release
- 2 Dust protection ring
- 3 Friction plate
- 4 O-ring
- 5 Micro switch (optional)

### BRGH - Totally closed spring loaded brake „heavy duty“

The fully capsulated brake design with dust and waterproof cable glands is in accordance with protection degree IP66. On ventilated motor executions IC411 the shaft passage is sealed by sealrings. The brake is executed with manual release in standard. On the brake disc a lining for high loads is fitted. Brake selection table see page 391.

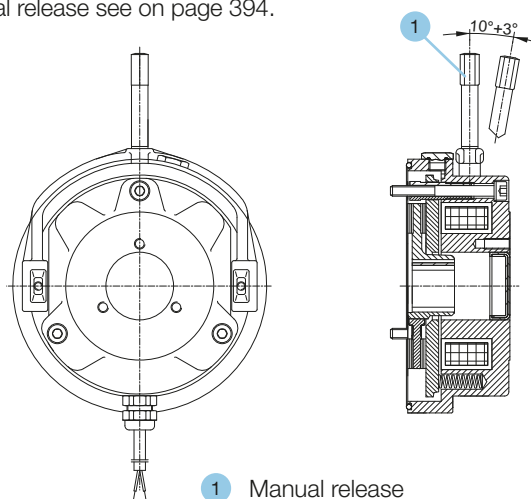
<p><b>BRGH..</b> Totally closed spring loaded brake with manual release</p> <p><b>Possible options:</b></p> <p><b>BRGHA..</b> With manual release and locking device</p> <p><b>BRG..</b> Without manual release</p>	➔	<p><b>Ordering examples:</b></p> <p><b>BRGH10</b> Brake 10 Nm with manual release</p> <p><b>BRGHA150</b> Brake 150 Nm with manual release and locking device</p>
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#### BRGH.. - Manual release

The manual release (1) is necessary for manually releasing the brake in cases of power failure. Brakes will be supplied in standard with manual release fitted by factory.

The adjustment of the manual release may not be changed, not even when air gap “a” (see page 389) is readjusted, as safety can be adversely affected.

Possible positions of the manual release see on page 394.



1 Manual release

#### Anti-condensation heating for brakes

When operating at conditions of extreme temperature changes or extreme climatic conditions, the windings are endangered of condensation water. The built in anti-condensation heater warms up the magnet windings after switching off and prevents the brakes inside from condensation water.

The anti-condensation heating must be supplied with a separate voltage.

Supply voltage 230 V (1~)

Voltage range: 220 - 230 V, 50/60 Hz

Brake size [Nm]	Performance [W]
10	16
20	29
40	33
60	35
100	48
150	53
250	70
400	128
1000	131

## Calculation of the brake torque

If the mass moment of inertia, the rotation speed and the permissible braking time of the machine are known, the torque of the spring loaded brake can be calculated.

	Formula	Unit
Load moment (static load)	$M_L = F \cdot r$	[Nm]
Braking torque (dynamic) There is a pure dynamic load if fly-wheels, rolls, etc. have to be slowed down and when the static load is very insignificant.	$M_a = 1,046 \cdot 10^2 \cdot J_{ZUS} \cdot \frac{n}{t - t_1}$ $M_{aerf} = M_a \cdot K \leq M_B$	[Nm]
Braking torque (dynamic and static load) In most applications there is also dynamic load in addition to static load.	$M_{aerf} = (M_a \pm M_L) \cdot K$ $M_{aerf} = (1,046 \cdot 10^2 \cdot J_{ZUS} \cdot \frac{n}{t_b} \pm M_L) \cdot K$ $M_{aerf} \leq M_B$	[Nm]
Estimated determination of braking torque	$M_{aerf} = 9,55 \cdot 10^3 \cdot \frac{P}{n} \cdot K$ $M_{aerf} \leq M_B$	[Nm]
Deceleration time	$t = t_B + t_1$	[ms]
Acceleration time	$t_A = \frac{J_{ges} \cdot n_1}{9,55 \cdot (M_A \pm M_L)} + t_2$ $J_{ges} = J_E + J_{ZUS}$	[s] [kgm <sup>2</sup> ]
Braking time	$t_B = \frac{J_{ges} \cdot n_1}{9,55 \cdot (M_A \pm M_L)}$ $J_{ges} = J_E + J_{ZUS}$	[s] [kgm <sup>2</sup> ]
The conversion of several mass moments of inertia with different rotation speeds in a mass moment of inertia reduced to the motor shaft	$J_{ZUS} = \frac{J_2 \cdot n_2^2 + J_3 \cdot n_3^2 \dots}{n_1^2}$	[kgm <sup>2</sup> ]
Conversion of straight-line moved machine parts into a corresponding J on the motor shaft	$J = 91,2 \cdot m \cdot \frac{v^2}{n_1^2}$	[kgm <sup>2</sup> ]
Friction per switch cycle	$W_R = \frac{J_{ZUS} \cdot n^2}{182,5} \cdot \frac{M_B}{M_B \pm M_L}$ $W_R < W_{Rmax}$	[J]
Friction performance	$P_R = W_R \cdot S$ $P_R < P_{Rmax}$	[J/s]

Designation	Unit	Description
$M_L$	[Nm]	Load moment Sign + : when the load moment acts decelerating (lifts when going up) Sign - : when the load moment acts accelerating (lifts when going down)
$M_{aerf}$	[Nm]	Necessary braking torque
$M_a$	[Nm]	Braking torque
$M_A$	[Nm]	Starting torque of motor
$M_B$	[Nm]	Rated torque of spring loaded brake
K	-	Safety factor according to the operating conditions (1...3)
F	[N]	Force
$F_I$	-	Factor of inertia
r	[m]	Lever arm
m	[kg]	Mass of moved machine parts
J, J <sub>1</sub> , J <sub>2</sub>	[kgm <sup>2</sup> ]	Mass moment of inertia
J <sub>E</sub>	[kgm <sup>2</sup> ]	Proper mass moment of inertia
J <sub>ges</sub>	[kgm <sup>2</sup> ]	Total mass moment of inertia
J <sub>mot</sub>	[kgm <sup>2</sup> ]	Mass moment of inertia of the motor

Designation	Unit	Description
J <sub>ZUS</sub>	[kgm <sup>2</sup> ]	Additional mass moment of inertia
K	-	Safety factor K ≥ 2
P	[kW]	Power
P <sub>R</sub>	[J/s]	Friction performance
P <sub>Rmax</sub>	[J/s]	Maximum friction performance
n	[min <sup>-1</sup> ]	Rotation speed
n <sub>1</sub>	[min <sup>-1</sup> ]	Rotation speed of motor
n <sub>2</sub> , n <sub>3</sub>	[min <sup>-1</sup> ]	Rotation speeds
t	[ms]	Deceleration time
t <sub>A</sub>	[s]	Acceleration time
t <sub>B</sub>	[s]	Braking time
t <sub>1</sub>	[ms]	Engaging time
t <sub>2</sub>	[ms]	Release time of brake
v	[m/s]	Speed
W <sub>R</sub>	[J]	Friction work per switch cycle
W <sub>Rmax</sub>	[J]	Permissible friction per switch cycle
S	[s <sup>-1</sup> ]	Number of switch cycle per second

## Rectifier

### Power supply

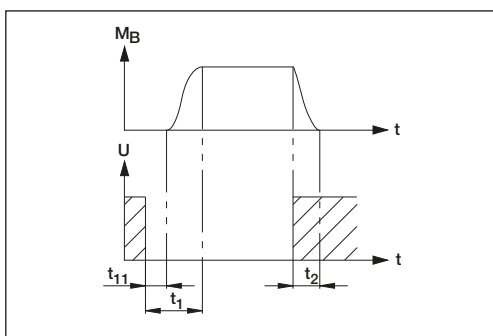
The DC-brake coil is normally supplied by a half wave rectifier incorporated in the motor terminal box and is also available for coil voltages 162-236 V DC, 85-133 V DC or 24 V DC (24 V with block terminal for external power supply!) Corresponding rectifiers and coil voltages are optionally available for all special voltages. The rectifiers are equipped with varistors to protect them against over-voltages.

At number of starts more than 1/s, please contact us for rectifier loading capacity.

### Switching modes

By default brake motors will be delivered with connected rectifier for AC-side switching. For DC-side switching the bridge between terminals 5 and 6 must be removed and a switching contact must be connected. Start-up of motor only with connecting brake.

- **AC-side switching** is executed before the rectifier on AC-side. Here the magnetic field is de-energised slowly, the brake interrupts softly with delay. (Release time  $t_1 \approx$ )
- **DC-side switching** is executed between rectifier and coil. Thereby an extremely low degree of overrunning is achieved. For all gear units, which require exact braking, especially for lifting gears, a DC-side switching of the brake is absolutely required. (Release time  $t_1 \approx$ )



	Designation	Unit
Braking torque	$M_B$	[Nm]
Voltage	U	[V DC]
Engaging time	$t_1$	[ms]
Response delay (time from switching power off until braking torque increases)	$t_{11}$	[ms]
Release time (time from switching power on until braking torque begins to decrease)	$t_2$	[ms]

### Rectifier selection

- *Half-wave and bridge rectifier*

The half wave rectifier which halves the supply voltage is the most cost effective. The bridge rectifier produces 90 % DC voltage from the AC supply voltage. Both rectifiers are available for switching on AC or DC side. Varistors in the input and output protect the rectifiers against surge voltages.

Half-wave rectifier:  $U_{2=} = 0.45 \times U_{1\sim}$   $I_{max} = 1 \text{ A}$

Bridge rectifier:  $U_{2=} = 0.9 \times U_{1\sim}$   $I_{max} = 2 \text{ A}$

- *Fast excitation rectifier*

For motor frame sizes 63-132 this rectifier can't be installed in the standard terminal box.

The high-speed rectifier uses special connections to make different direct voltages available on the terminals. This means that the following brake operating modes can be selected:

1. Rapid response: Brake voltage level equal to the holding voltage of the fast excitation rectifier: The ventilation time of the brake is reduced.
2. Power reduction: Brake voltage level equal to overexcitation voltage of the fast excitation rectifier: reduced performance losses in the brake coil, engage time of the brake is reduced.

Max. connection voltage:  $U_{1\sim} = 500 \text{ V AC}$   
 Max. permissible connections: 600 connections/h  
 Max. permissible switching capacity: 210 W

Rectifier type	System	$U_N$ [V]	$I_N$ [A]
FBGR-E500/220-GS	Half-wave rectifier	500	1
FBGR-B400/345-GS	Bridge rectifier	400	2
FBGR-S500/220-GS480	Fast excitation rectifier	500	2

Overexcitation phase (voltage)	$T = 0 - 500 \text{ ms } (\pm 200 \text{ ms})$	$U_{2=} = 0.9 \times U_{1\sim}$	$I_N = 4 \text{ A}$
Holding phase (voltage)	$T > 500 \text{ ms}$	$U_{2=} = 0.45 \times U_{1\sim}$	$I_N = 2 \text{ A}$

### Connection examples

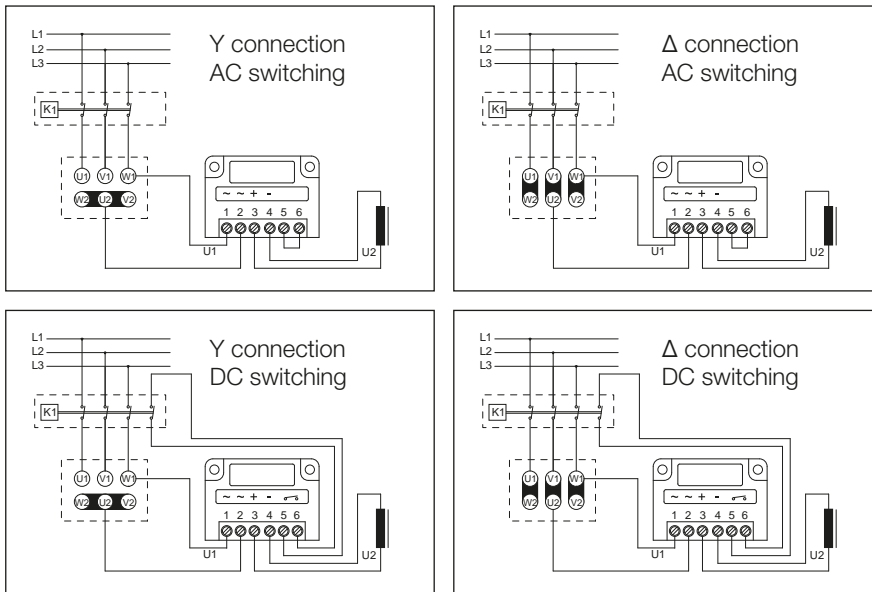
3~ U <sub>N</sub> [V]	Connection	U <sub>1</sub> ~ [V]	Rectifier type	Designation U <sub>1</sub> ~	U <sub>2</sub> = [V]	Brake coil voltage [V]
380-420-480		380-420-480	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
380-420-480		380-400-480	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
660-690-725		380-400-420	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
220-240		220-240	FBGR-B400/345-GS	230 V~	195-214	190/195 (162-236)
330-365-415		190-210-240	FBGR-B400/345-GS	230 V~	169-187-214	190/195 (162-236)
190-210-240		190-210-240	FBGR-B400/345-GS	230 V~	169-187-214	190/195 (162-236)
500		500	FBGR-E500/220-GS	480 V~	223	190/195 (162-236)
380-420-480		220-240-280	FBGR-E500/220-GS	480 V~	98-107-125	102 (85-133) <sup>1)</sup>
220-240-280		220-240-280	FBGR-E500/220-GS	480 V~	98-107-125	102 (85-133) <sup>1)</sup>
330-365-415		190-210-240	FBGR-E500/220-GS	480 V~	85-94-107	102 (85-133) <sup>1)</sup>
190-210-240		190-210-240	FBGR-E500/220-GS	480 V~	85-94-107	102 (85-133) <sup>1)</sup>
500		290	FBGR-E500/220-GS	480 V~	129	102 (85-133) <sup>1)</sup>

standard brake

<sup>1)</sup> special execution

	Designation	Unit
Maximum rated output current DC rectifier	I <sub>N</sub>	[A]
3~ rated motor voltage	3~ U <sub>N</sub>	[V]
Maximum rated input voltage AC rectifier	U <sub>N</sub>	[V]
Supply voltage AC rectifier	U <sub>1</sub> ~	[V]
Output voltage DC rectifier	U <sub>2</sub> =	[V]

### Switching diagram for braking motor (star-delta connection)



### Back stop

- Installing a back stop guarantees that the motor
- can start only in one direction
  - can't be turned in wrong direction from counteract torques

**KKM** Back stop (IEC frame size 63 to 90)

**RSM** Back stop (IEC frame size 100 to 250)

The applied free wheels of the clamping bodies are mounted on the motor endshield (NDE) in such a manner, that the standard motor dimension LB up to motor size 90 will not be lengthened. From motor size 100 the motor dimension LB1 is valid. The back stop has been largely dimensioned and corresponds approx. to the motor starting torque (M<sub>A</sub>) to prevent a damage in case of short-time-starting against the back stop at switchings made by error. Nevertheless, the free direction of rotation must be determined first, especially at big motor powers and we recommend for the first starting the star connection and only then the delta connection at correct rotation.

### Fields of application:

- Drives for elevators and inclined lifts
- Pumps and fans with backpressure ratchet
- Gearmotors for conveyors with non-reverse characteristic

#### KKM - Back stop (ball bearing free-wheelings)

The elements have bearing characteristics and are used instead of the bearing on the fan side. The outer dimensions are identical to the deep-groove ball bearings.

##### ▪ Function

Rolling elements and spring loaded clamping bodies are built in between inner and outer ring. The rolling elements and ratchet elements are fixed in a plastic cage. Torque transmitting is made by tight fits on the inner and outer ring. The elements are grease prelubricated. They are maintenance-free for 10,000 to 20,000 hours under normal working conditions.

##### ▪ Mounting

The KKM back stop will be mounted instead of the bearing on the non-driven side.

#### RSM - Back stop (with centrifugal mechanism)

Because the mounted back stops have no bearing properties, they are mounted directly near the non-drive bearing. Above the lifting speed the centrifugal elements are working contactless and so they are maintenance free under normal conditions.

##### ▪ Mounting

The centrifugal elements are mounted directly near the non-driven side bearing between bearing and fan under the fan cover. The inner ring of the back stop is connected with the shaft with a key DIN 6885-1.

##### ▪ Direction of rotation

The direction of rotation has to be given with the ordering.

##### ▪ Back stop direction

Back stop direction at a view on output shaft right or left.  
By turning the entire back stop system by 180°, the back stop direction can be reversed (applies only for RSM!).



### Back stop overview

IEC frame size	Back stop type	Torque [Nm]	Motor length dimension (see page 380)
63	KKM	7.4	LB
71	KKM	13.5	LB
80	KKM	40	LB
90	KKM	68	LB
100	RSM	150	LB1
112	RSM	150	LB1
132	RSM	390	LB1
160	RSM	580	LB1
180	RSM	580	LB1
200	RSM	1050	LB1
225	RSM	1050	LB1
250	RSM	2100	LB1

## Encoder systems

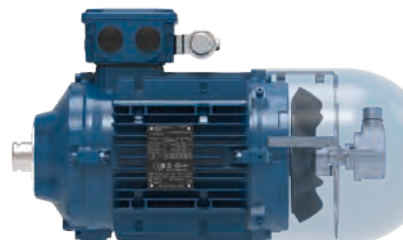
- I.** Encoder outside the fan cover
- S.** Encoder inside the fan cover



Encoder outside the fan cover



Standard position connector (M23)



Encoder inside the fan cover

### Modular design

We are using encoders with hollow shaft ( $\varnothing$  12 mm) open at one end. The modular motor shafts are fit to attach an encoder set. The mounting of encoders therefore is easy and immediately possible. Add-on kits are easy to retrofit.

### Mounting of encoders

The encoders are equipped with an integral bearing and connected directly on the non-driven motor shaft side. During angular acceleration of the shaft the stator coupling must absorb only the torque resulting from friction in the bearing.

### IG, SG - Standard encoder

Available for IEC motor frame sizes 63 to 250 (IG) / 71 to 250 (SG)

Type: Kübler Sendix 5020

Pulses per revolution: 1024

Output signal: HTL or TTL

Voltage supply: 10-30 V at HTL, 5 V at TTL

Degree of protection: IP66

IG standard: with PIN connector (M23) on the encoder

SG standard: with PIN connector (M23) on the terminal box (mating connector not included in delivery)

Other numbers of pulses per revolution on request.

### IC, SC - SINCOS encoder

Available for IEC motor frame sizes 80 to 225 (IC) / 80 to 250 (SC)

Pulses per revolution: 1024

Output signal: Sinus 1VSS

Voltage supply: 10-30 V or 5 V

IC standard: with PIN connector (M23) on the encoder

SC standard: with PIN connector (M23) on the terminal box (mating connector not included in delivery)

Other numbers of pulses per revolution on request.

Encoders in standard mechanical designs can also be implemented as electric SINCOS versions. In this case, signals A and B are available on the output as sinusoidal voltage signals with a signal level of 1 VSS or one 0 pulse once per rotation. These can be used in many different ways in the downstream electronics. Via interpolation of the two signals shifted by  $90^\circ$ , very high resolutions are achieved and can therefore also be used with very slow movements for speed control.

### IR, SR - Resolver

Available for IEC motor frame sizes 71 to 200

Degree of protection: IP54 (IP66 on request)

IR standard: with 0.6 m cable (open one way, 6 strands)

SR standard: with 0.6 m cable (open one way, 6 strands)

Resolvers are primarily 2-pole, electromagnetic measuring transducers for converting the angle position of a rotor into an electrical value. Resolvers are wear-free and robust, as the most important elements for acquiring the information consist only of iron core and copper coils. Contamination therefore plays a lesser role.

The configuration consists of 2 stator coils positioned at an offset of  $90^\circ$  (S1/S3 and S2/S4) and a rotating rotor coil (R1/R2).

In this process, the rotor coil supply is inductive, in other words, brushless. The R1/R2 rotor coil is excited using a sinusoidal alternating voltage. The amplitudes of the voltages induced in stator coils S1/S3 and S2/S4 depend on the rotor angle.

Input voltage:  $E_{(R1/R2)} = E \times \sin(\omega t)$

Output:  $E_{(S1/S3)} = T_r \times E_{(R1/R2)} \times \cos(\varphi)$   
 $E_{(S2/S4)} = T_r \times E_{(R1/R2)} \times \sin(\varphi)$

Standard input voltage:  $E_{(R1/R2)} = 7 \text{ V}$   
 Standard transformation ratio:  $T_r = 0.5$

### SS - SSI multi turn encoder

Available for IEC motor frame sizes 71 to 250  
 Digits per revolution: 8192 at 4096 possible rotations  
 Output signal: TTL  
 Voltage supply: 5 V  
 Degree of protection: IP66  
 SS standard execution: with PIN connector on the terminal box

The SSI multiturn absolute encoder signals a single exactly defined position to the drive frequency controller. Maximum permissible number of motor revolutions can be 4096. The resolution is 8192 steps per revolution. The serial communication is corresponding to the specification of the SSI-protocol. SSI means Synchronous Serial Interface.

The permissible cable length is 100 m at least if EMC-compatible wiring is guaranteed.

### SV - Heavy Duty encoder

Available for IEC motor frame sizes 90 to 250  
 Pulses per revolution: 1024  
 Output signal: HTL or TTL  
 Voltage supply: 10 - 30 V at HTL, 5 V at TTL  
 Degree of protection: IP65  
 Optional insulation inserts available to protect against shaft currents.

The Heavy Duty encoder boasts a high degree of ruggedness in a very compact design. Its special construction makes it perfect for all applications in very harsh environments.

### IA, SA - Special encoder

The mounting of special encoders is possible on request.

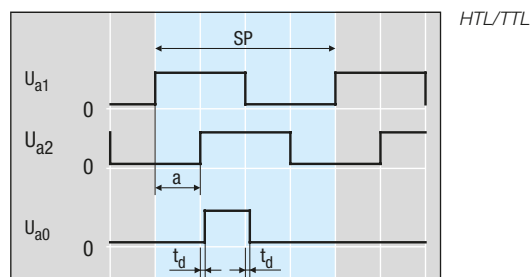
### Type of signal

#### HTL-/TTL - output signal

Encoders with HTL/TTL square-wave output signals incorporate a circuit that digitises scanning signals, providing two 90° (el.) phase-shifted HTL-/TTL square-wave pulse trains  $U_{a1}$  and  $U_{a2}$  and a reference pulse  $U_{a0}$ , which is gated with the incremental signals  $U_{a1}$  and  $U_{a2}$ .

The integrated electronics also generate the inverse signals of all square-wave pulse trains. The distance between two successive edges of the combined pulse trains  $U_{a1}$  and  $U_{a2}$  is one measuring step. HTL/TTL square-wave signals can be transmitted to the subsequent electronics (without inverting: max. cable length 100 m; with inverting: 250 m), provided that the specified  $5 \text{ V} \pm 5 \%$  supply voltage is maintained at the encoder.

Extended cable length is possible with fiber-optic cable.



#### HTL signal levels

$U_H \geq 2.1 \text{ V}$  at  $I_H = 20 \text{ mA}$   
 $U_L \leq 2.8 \text{ V}$  at  $I_L = 20 \text{ mA}$   
 with power supply +24 V, without cable

#### TTL signal levels

$U_H \geq 2.5 \text{ V}$  at  $I_H = 20 \text{ mA}$   
 $U_L \leq 0.5 \text{ V}$  at  $I_L = 20 \text{ mA}$

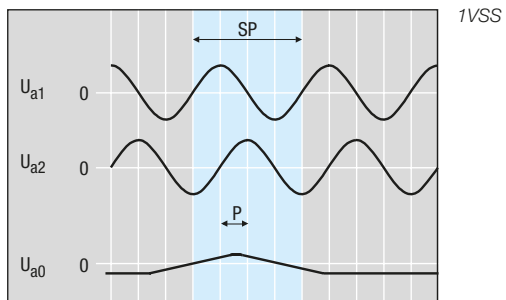


▪ **1VPP - output signals**

The sinusoidal incremental signals  $U_{a1}$  and  $U_{a2}$  are phase-shifted by  $90^\circ$  and have signal levels of approximately 1VPP. The signal peaks from the reference mark signal have a usable component of approximately 0.5 V.

Signal interpolation and digitalisation can be performed by electronics, which output TTL-compatible signals.

Voltage signals can be transmitted to the subsequent electronics unit over cables as long as 50 m, provided that the specified  $5\text{ V} \pm 5\%$  supply voltage is maintained at the encoder. Encoders that produce voltage signals have sensor line connections for detection of the supply voltage at the encoder; corresponding control systems in the subsequent electronics can then maintain the voltage tolerance.



	Designation
Encoder signals	$U_{a1}, U_{a2}$
Reference pulse	$U_{a0}$
Signal level HIGH	$U_H$
Signal level LOW	$U_L$
Edge separation	a
Phase shift	P
Current at signal level HIGH	$I_H$
Current at signal level LOW	$I_L$
Signal period	SP
Delay time	$t_d$



## Ventilation systems

<b>FL</b>	Forced ventilation
<b>ZL</b>	Fly wheel fan
<b>ZM</b>	Metal fan
<b>U</b>	Non-ventilated without NDE shaft end
<b>UW</b>	Non-ventilated with NDE shaft end

### FL - Forced ventilation (TEFV, IC416)

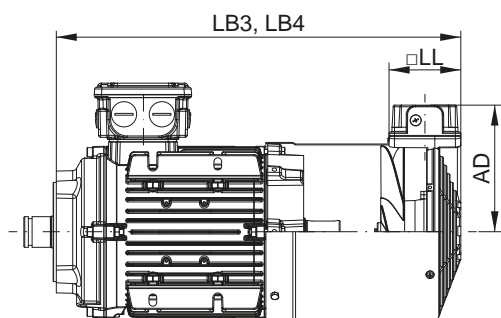
IEC frame sizes: 63 to 250

At applications with high starting frequencies, startings against heavy masses, heavy alternating load and operations with frequency inverters, self ventilation of the motor sometimes will not be sufficient and forced ventilation is necessary. At frequencies under 30 Hz forced ventilation is recommended in order not to thermally overstrain the motor.

### Forced ventilation currents (2 pole ventilation motor)

IEC frame size	Phases Connection	Capacitor μF	50 Hz					60 Hz				
			Voltage range V	Current A <sup>1)</sup>	Power W <sup>1)</sup>	Air current capacity m <sup>3</sup> /h	Noise level dB(A)	Voltage range V	Current A <sup>1)</sup>	Power W <sup>1)</sup>	Air current capacity m <sup>3</sup> /h	Noise level dB(A)
63	3~Y	-	346-525	0.09	28	54	47	380-575	0.08	29	69	52
	3~Δ	-	200-303	0.15	28			220-332	0.14	29		
	1~⊥Δ	1.5	230-277	0.18	46			230-277	0.21	54		
71	3~Y	-	346-525	0.09	29	78	51	380-575	0.07	28	99	56
	3~Δ	-	200-303	0.15	29			220-332	0.13	28		
	1~⊥Δ	1.5	230-277	0.18	48			230-277	0.21	56		
80	3~Y	-	346-525	0.09	33	128	54	380-575	0.07	36	151	58
	3~Δ	-	200-303	0.16	33			220-332	0.13	36		
	1~⊥Δ	1.5	230-277	0.19	48			230-277	0.22	59		
90	3~Y	-	346-525	0.22	78	216	59	380-575	0.18	71	258	63
	3~Δ	-	200-303	0.39	78			220-332	0.32	71		
	1~⊥Δ	3.0	220-277	0.29	59			220-277	0.23	61		
100	3~Y	-	346-525	0.21	80	278	60	380-575	0.18	80	328	65
	3~Δ	-	200-303	0.37	80			220-332	0.30	80		
	1~⊥Δ	3.0	220-277	0.29	62			220-277	0.28	73		
112	3~Y	-	346-525	0.20	87	355	62	380-575	0.17	93	418	66
	3~Δ	-	200-303	0.35	87			220-332	0.29	93		
	1~⊥Δ	3.0	220-277	0.27	64			220-277	0.36	88		
132	3~Y	-	346-525	0.37	160	550	67	380-575	0.32	180	650	71
	3~Δ	-	200-303	0.64	160			220-332	0.55	180		
	1~⊥Δ	6.0	230-277	0.52	125			230-277	0.61	163		
160	3~Y	-	346-525	0.74	314	980	73	380-575	0.62	391	1160	77
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
180	3~Y	-	346-525	0.74	314	1200	74	380-575	0.62	391	1379	80
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
200	3~Y	-	346-525	0.74	314	1324	74	380-575	0.62	391	1575	81
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
225	3~Y	-	346-525	0.74	314	1324	74	380-575	0.62	391	1575	81
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
250	3~Y	-	346-525	0.74	314	1324	74	380-575	0.62	391	1575	81
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		

1) maximum permissible values



IEC frame size	AD	□LL
63	118	107
71	124	107
80	134	107
90	143	107
100	152	107
112	164	107
132	185	107
160	211	107
180	211	107
200	211	107
225	211	107
250	211	107

Dimensions in mm. Dimensions LB3 and LB4 see drawings from page 380

### ZL - Fly wheel fan

IEC frame sizes: 71 to 132 (special execution)

Fly wheel fans increase the inertial moment of the standard motors by a multiple and help to decrease the start up time of the motors. Motors with fly wheel fan often are used at crane drives or machine-systems where a soft start up is required. Available for motor sizes 71 to 132 on request, exchangeable without modification with standard fan, pay attention to the reduced starting frequency! Braking by reversal and driving up against a buffer stop is not permissible.

Motor without brake:  $J_{ges} = J_{mot} + J_{ZL}$

Brake motor:  $J_{ges} = J_{mot} + J_{ZL} + J_B$

	Designation	Unit
Total mass moment of inertia	$J_{ges}$	[kgm <sup>2</sup> ]
Mass moment of motor	$J_{mot}$	[kgm <sup>2</sup> ]
Mass moment of brake	$J_B$	[kgm <sup>2</sup> ]
Mass moment of fly wheel fan	$J_{ZL}$	[kgm <sup>2</sup> ]
Weight of fly wheel fan	m	[kg]

IEC frame size	$J_{ZL}$ [kgm <sup>2</sup> ] x 10 <sup>-3</sup>	m [kg]
71	2	1.3
80	2	1.3
90	3	1.6
100	10	3.3
112	10	3.3
132	14	3.8

### ZM - Metal fan

IEC frame size: 63 to 250

For ambient temperatures which are lesser than or greater than the operation temperatures of the standard plastic fan wheels, the ventilation can be provided via metal fan wheels. These can be manufactured from aluminium, steel plate or cast iron. Using a metal fan can be appropriate in the event of difficult climatic conditions.

### U - Non-ventilated without NDE shaft end (TENV)

IEC frame size: 63 to 250

In this version, there is no fan or fan cover. The NDE is completely enclosed. A cover plate is used as the sealing component. This prevents dirt, water, etc. from entering the motor.

### UW - Non-ventilated with NDE shaft end (TENV)

IEC frame size: 63 to 250

This design is realised by omitting the fan. The standard fan cover is used as contact protection for the remaining NDE rotating shaft. Motors of these designs are intended for use in systems where fans or fan covers integrated into the motor are not appropriate due to the environmental conditions, for design reasons or at the customer's request.

The motors are therefore designed without integrated fans or fan covers.

In the non-ventilated version, the resulting reduction in nominal motor output must be observed!



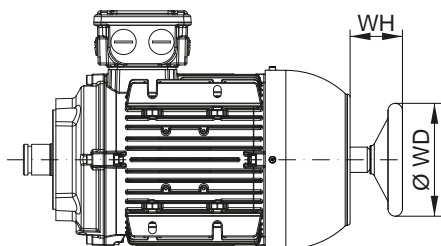
## Additional modules

<b>HR</b>	Hand wheel
<b>SD</b>	Protection cap
<b>ID</b>	Protection cap for encoders
<b>ZWM</b>	Second shaft end - module shaft
<b>ZWV</b>	Second shaft end - solid shaft

### HR - Hand wheel

IEC frame sizes: 71 to 250

By using a second shaft end it is possible to fit a hand wheel.



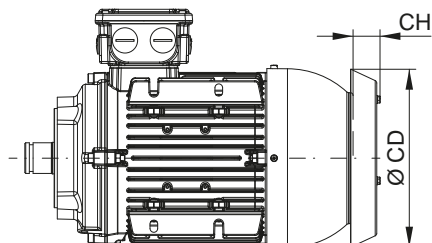
IEC frame size	ØWD	WH
71	125	51
80	125	51
90	125	51
100	125	51
112	125	51
132	200	60
160	200	60
180	200	60
200	200	60
225	200	60
250	200	60

Dimensions in mm.

### SD - Protection cap

IEC frame sizes: 63 to 250

When installed vertically with the shaft downward, e.g. IM V1, the air intake opening can be protected against water and foreign substance by means of a protective cap.



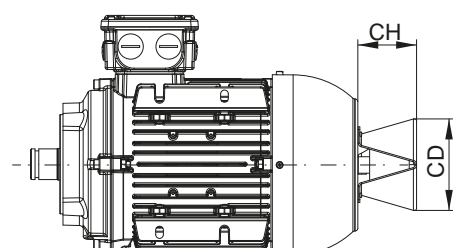
IEC frame size	ØCD	CH
63	124	20
71	139	20
80	157	20
90	176	20
100	197	32
112	219	35
132	254	35
160	266	52
180	310	57
200	380	67
225	427	72
250	427	72

Dimensions in mm.

### ID - Protection cap for encoders

IEC frame sizes: 90 to 250

If mounted outside the fan cover, the encoder may be protected against foreign matter and other external influence by a separate protection cap.



Protection cap for	CD	CH
IG standard encoder	74	116
IV Heavy Duty encoder	115	183

Dimensions in mm.

## ZW. - Second shaft end

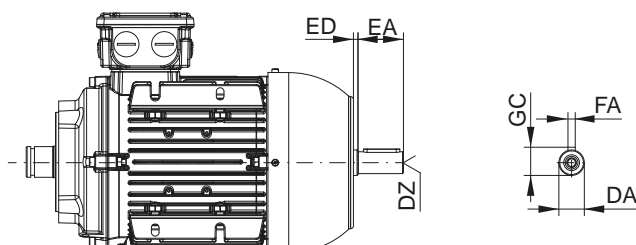
Motors with or without brake can be supplied with a second free shaft end.

### ZWM: Module shaft

IEC frame sizes: 71 to 250. This shaft end can be used to transfer half the rated output of the motor.

### ZWV: Solid shaft

IEC frame sizes: 63 to 200. Available on request.



IEC frame size	DA	DZ <sup>2)</sup>	EA	ED	FA	GC
63 <sup>1)</sup>	11	M4	23	-	4	12.5
71	14	M5	30	5	5	16
80	14	M5	30	5	5	16
90	19	M6	40	5	6	21.5
100	24	M8	50	5	8	27
112	24	M8	50	5	8	27
132	28	M10	60	5	8	31
160	38	M12	80	5	10	41
180	38	M12	80	5	10	41
200	38	M12	80	5	10	41
225 <sup>2)</sup>	38	M12	80	5	10	41
250 <sup>2)</sup>	38	M12	80	5	10	41

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
DA	≤ Ø 30 mm	j6
	> Ø 30 mm up to Ø 50 mm	k6

Dimensions in mm. <sup>1)</sup> ZWV only <sup>2)</sup> ZWM only <sup>3)</sup> centre hole with thread according to DIN 332-1

## Standards

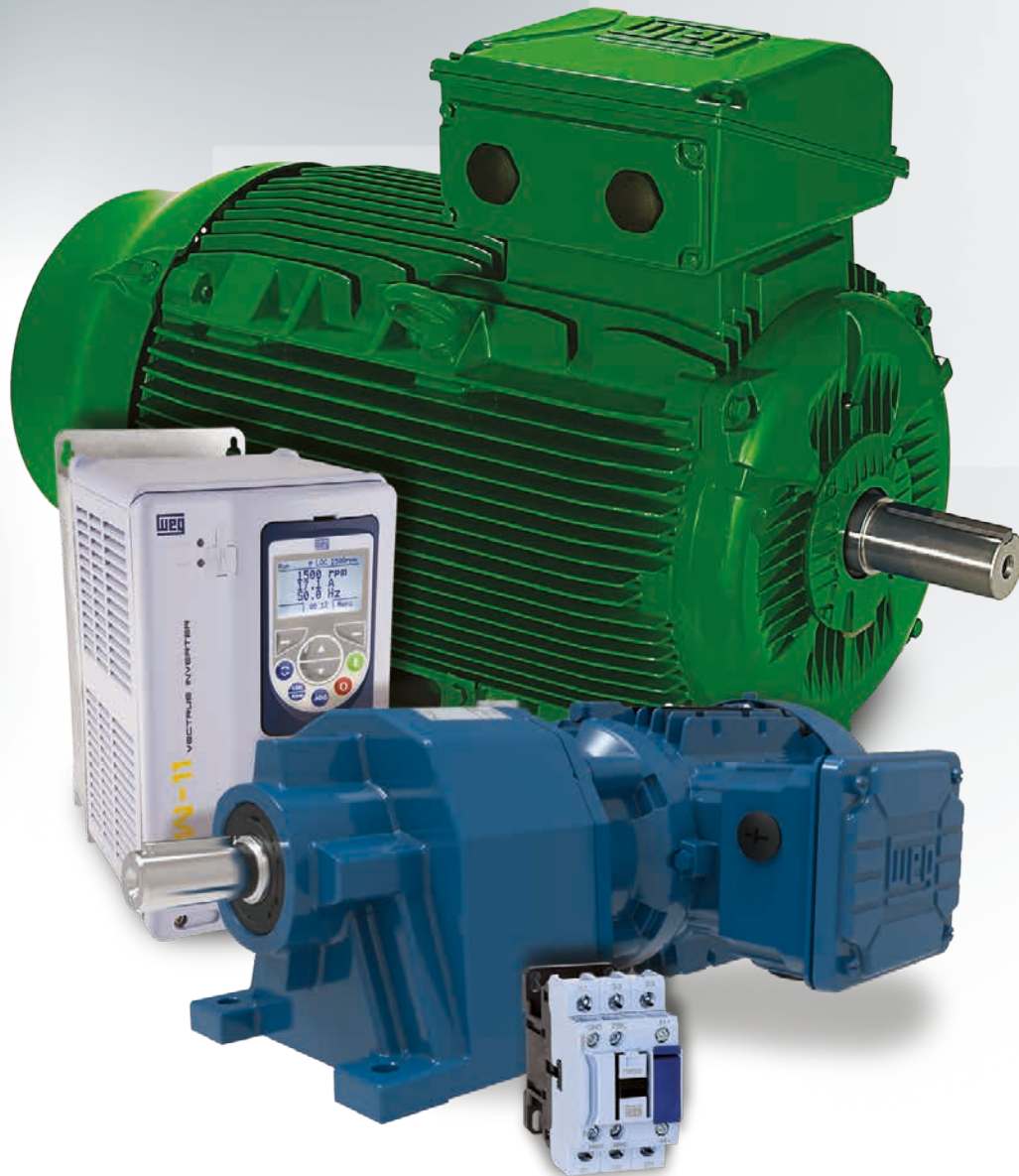
The motors comply with the competent standards and specifications, especially with the following:

Title	IEC	DIN / EN / VDE
Rotating electrical machines Rating and performance	IEC 60034-1 IEC 60085	DIN EN 60034-1
Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	IEC 60034-2-1	DIN EN 60034-2-1
Degrees of protection provided by integral design of rotating electrical machines (IP Code)	IEC 60034-5	DIN EN 60034-5
Methods of cooling (IC Code)	IEC 60034-6	DIN EN 60034-6
Classification of types of construction, mounting arrangements and terminal box position (IM Code)	IEC 60034-7	DIN EN 60034-7
Terminal markings and direction of rotation	IEC 60034-8	DIN EN 60034-8
Noise limits	IEC 60034-9	DIN EN 60034-9
Starting performance of single-speed three-phase cage induction motors	IEC 60034-12	DIN EN 60034-12
Mechanical vibration of certain machines with shaft heights 56 mm and higher - measurement, evaluation and limits of vibration severity	IEC 60034-14	DIN EN 60034-14
Dimensions and output series for rotating electrical machines	IEC 60072-1	DIN EN 50347
Thermal protection	IEC 60034-11	DIN EN 60034-11
CENELEC standard voltages	IEC 60038	DIN EN 60038

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The values shown are subject to change without prior notice.