SCHUNK®

ROBOT ACCESSORIES

AUTOMATION

SCHUNK takes the initiative. For you.

SCHUNK AUTOMATION anticipates trends in technology and customer needs and implements them in unique products, solutions and services.

Profit from the synergy of our triple expertise as a pioneer in automation, in modular assembly automation and in modular robotics.

With a complete range that includes gripper modules, turning and rotary units, linear modules, robot accessories, modular assembly automation and vision systems, we possess a compatible basis for delivering industry-specific solutions in every periphery.

Discover SCHUNK, the partner that can strengthen your market position in your industry. Today – with the technological capacity of tomorrow.

GRIPPING MODULES | ROTARY MODULES | LINEAR MODULES | ROBOT ACCESSORIES | MODULAR ASSEMBLY AUTOMATION | MACHINE VISION

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Robot Accessories

Product Overview

Robot Accessories

Synergies with SCHUNK

SCHUNK SYNERGY:
Toolholding/Workholding and Automation

Visions in two technology areas

Toolholding/workholding and automation are our core competences. The resulting synergy effects make us unique. SCHUNK understands this complex world of clamping and handling like no one else. As a long-standing components specialist we know the demands and requirements of both technology areas. Moreover there's the fascination of new possibilities. With our twofold expertise we can provide you with trend-setting leading technology. From the spindle to robotics.

We call this "SCHUNK SYNERGY". Get to know us as your active "all-in-one" partner – all the services from one source to benefit you.

More innovative for you!

SCHUNK opens up new horizons

Shaping technology. Putting the dynamics into processes. Increasing added value. SCHUNK is one of the world's leading manufacturers for clamping and gripping technology, and our name is synonymous with innovation.

We are a family-run business based in Lauffen, Germany and a globally active company rolled into one. Continual dialog with our customers and the personal responsibility and individual endeavors of each andevery employee to perform the work faultlessly and in the best quality produce solutions, which precisely conform to our customers' needs and the demanding requirements of the market.

SCHUNK opens up new horizons. For even today, we are focusing on the opportunities of tomorrow, and boast a comprehensive range of future-oriented technologies. Our promise: High-quality solutions that not only live up to your expectations, but exceed them! And on this premise, we have consistently based our corporate philosophy: Quality, reliability and pioneering spirit.

Through continuous development, we are constantly opening up new prospects for our customers. Technical creativity, supreme expertise and soundly based experience are the success factors we offer you in engineering, production and service.

We are thinking ahead – for you!

Partners with a System Approach

System partners

Solutions from one source

As one of the most innovative market leaders, we offer unique solutions with our gripping systems, rotary units, linear modules, robot accessories and customized applications. Our broad product range enables us to offer precisely the right solution, even for your specialized tasks. We are development partners for various industries and specialize in your handling applications.

Whenever handling tasks require maximum precision and economic efficiency, SCHUNK provides the momentum and the perfect solution for putting them into practice.

You, too, can benefit from our complete automation range from one source. From standardized and individual gripper modules to complex functional modules. Rediscover SCHUNK! Again and again.

Gripping Modules

SCHUNK currently has the most comprehensive range of universal grippers and gripper modules for small components. Pneumatic or electric. Offering all features from state-of-the-art materials and coatings employed as standard to internal media feed-through. With our high level of technical expertise, SCHUNK sets the trend for cost-efficient handling in any industry, in any field.

Rotary Modules

Technology and functionality in the most compact form. SCHUNK's range of rotary modules represents the entire spectrum of compact turning and rotary units, swivel heads and rotary fingers. In other words, it's the ideal solution for handling tasks.

Linear Modules

Precision mini-slides, pneumatic linear modules, rigid gantry axes and axes with servo-electric linear drive – the SCHUNK product range offers linear technology for high-speed automated assembly. Compact and designed as a modular system.

Robot Accessories

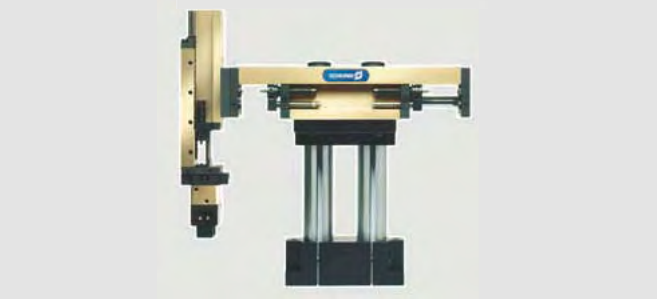
Robot accessories from SCHUNK – the complete range of modules for perfect interplay between the robot arm and the tool. Suitable for all types of robot, it is also an ideal enhancement to flexible robot applications.

Machine Vision

In automated assembly, image processing modules from SCHUNK represent the flexible solution for manifold sensor applications. All high-quality components are perfectly phased to each other. The necessary software for object and position detection stands for 100 % process reliability.

Modular Assembly Automation

Flexible – fast – future-secure. This is the system GEMOTEC from SCHUNK. The comprehensive program of pneumatic and electric modules opens an unforeseen variety of combination possibilities. All actuators are compatible with each other. Where other companies still have to conduct design work, the system GEMOTEC is already assembled. Fast and straightforward.



SCHUNK sets Standards

Robot Accessories

The SCHUNK product range for reliable combinations

SCHUNK robot accessories comprise a comprehensive range of modules for mechanical, sensoric and energetic combination of handling devices and robots. Quick-change systems, rotary feed-throughs, collision and overload protection, force sensors, compensation units and insertion units ensure the perfect interplay between the robot arm and the gripper. The basis of this leading-edge technology "made in Germany" is our ongoing innovative excellence.

SCHUNK offers more. More willingness to accept challenges and put ideas into practice, more commitment to investment in innovative technology, more flexibility in solving the problems presented by a rapidly developing future. That's what we stand for!

For the benefit of our customers.

Good reasons for choosing robot accessories from SCHUNK:

- Comprehensive range from a single source
- Suitable for almost all types of robot
- Easy integration
- Compact designs
- Series with well-matched sizes

Product highlight – SWS Quick-change System

The shortest possible changeover times, safety included

Wherever short changeover times between a handling device and a robot tool is required, the SWS quick-change system is the ideal choice. The patented highlight is the pneumatically operated locking mechanism for force-free locking and unlocking as well as for self maintained locking in locked position. Using adapters, SWS is universal and increases the flexibility of the robot in all automated production lines.

Facts which speak for themselves:

- Complete series with 11 sizes
- Compact dimensions as drive is incorporated into the housing
- High bearing load capacity
- Option for universal energy transmission for fluid media with self-sealing couplings
- Optional adapter coding via plug connector

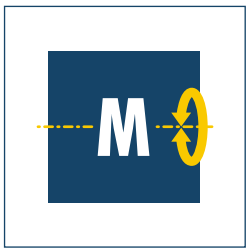
Tool Changing

TOOL CHANGING

MWS

Sizes
020

Handling weight
0.5 kg

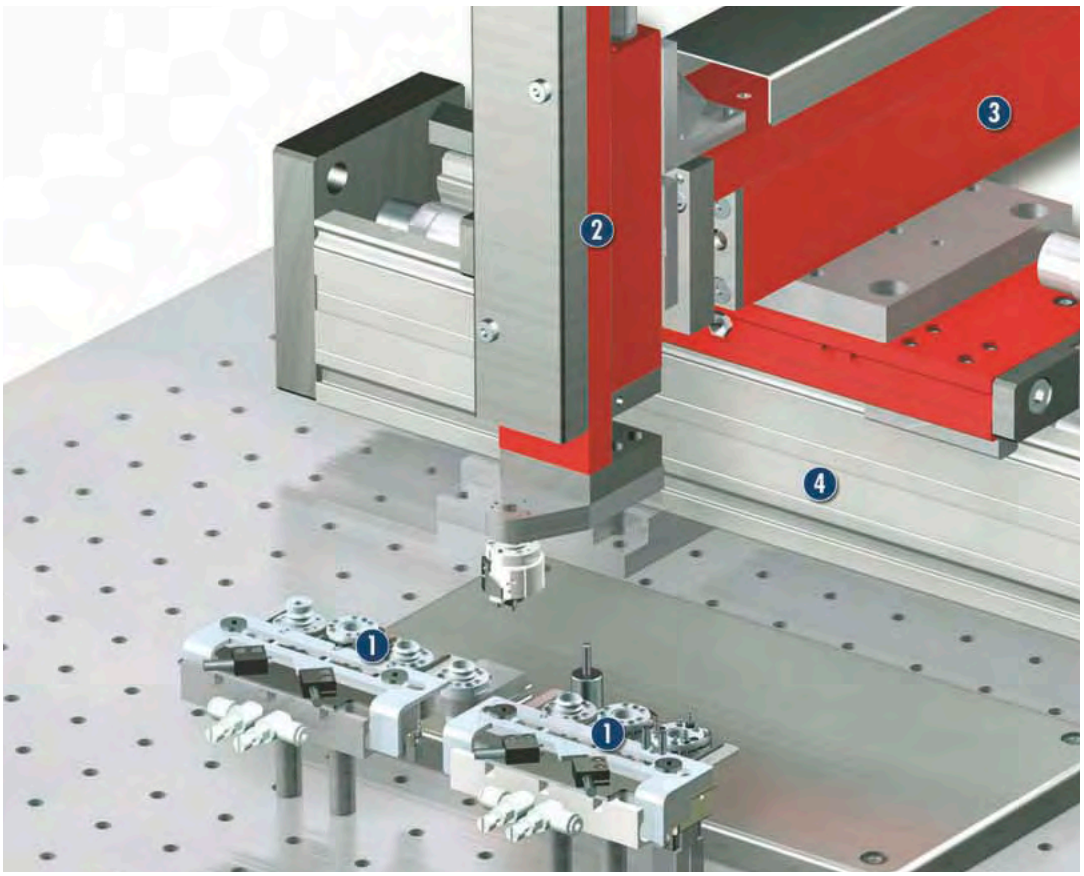


Moment load M_x
0.5 Nm

Moment load M_y
0.5 Nm

Moment load M_z
0.2 Nm

Application example



Automated assembly of writing utensils:

Lead refills are inserted into mechanical pencils. The MWS ensures fast changing of the gripping modules and tools.

1. MWS 20 Miniature Quick-change System
2. ELM 23-H70 Linear Module with direct drive (GEMOTECH System)
3. ELM 37-H260 Linear Module with direct drive (GEMOTECH System)
4. EPM 48-0300 Gantry Module with direct drive (GEMOTECH System)

Miniature Change Systems

Manual tool changing system for small manipulators and grippers, with integrated air and electric feed-through

Area of application

Ideal for use in microsystems technology, especially for handling of miniature components

Your advantages and benefits

Extremely flat design
for low interfering contours

Easy handling without the need of additional tools
Can be released easily and quickly

Free center bore
for feed-through of parts, camera, laser beams, etc.

Integrated feed-throughs
for 6 fluid or electric media/signals

Suitable storage rack
for reliable positioning of your tools available as accessory

ISO flange pattern
for easy installation, conforms to DIN 32565 Level 4

General information on the series

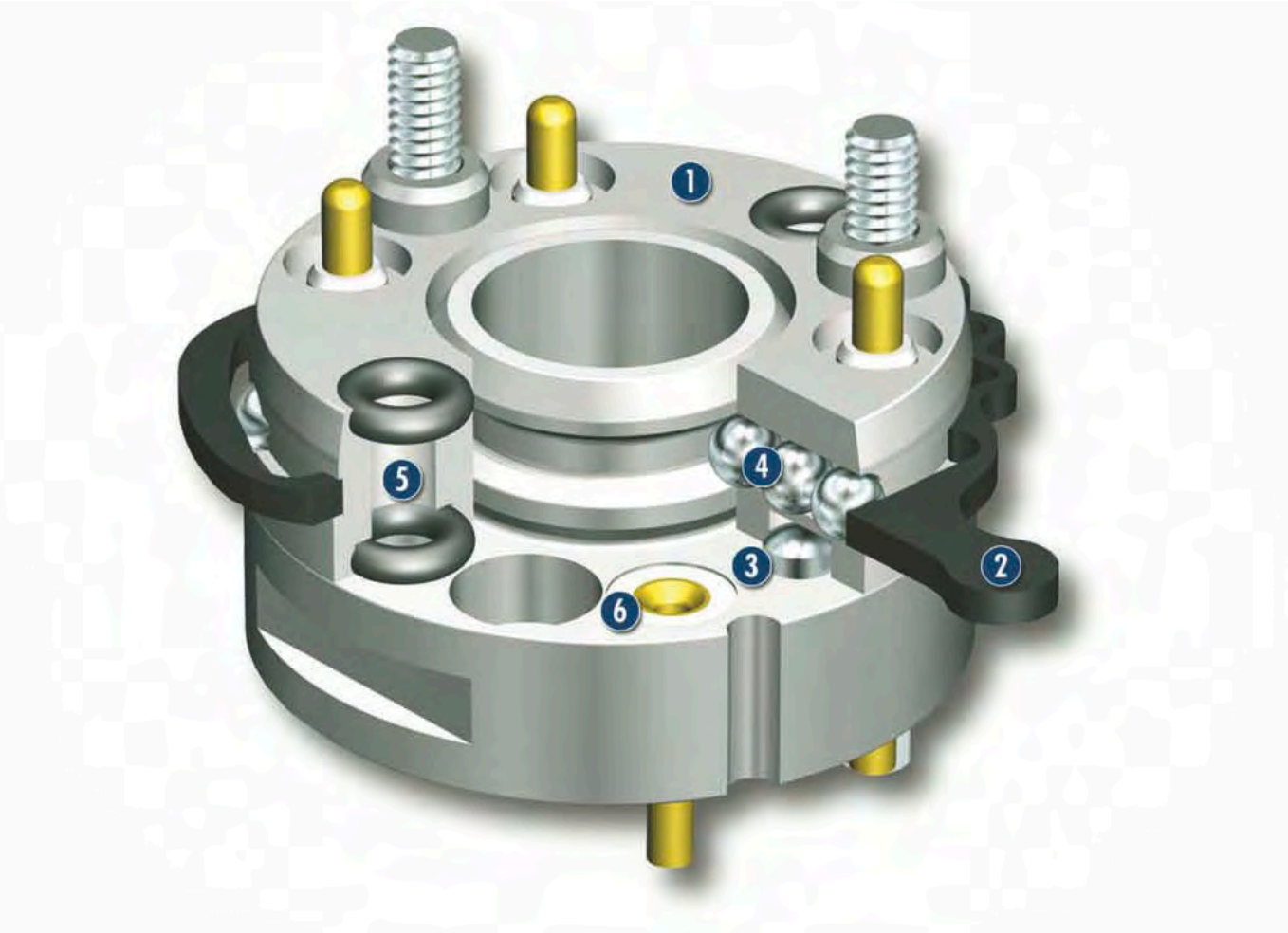
Working principle
locking is achieved by turning the actuating ring

Actuation
manual via integrated locking ring

Energy transmission
integrated pneumatic/fluid and electric feed-through

Warranty
24 months

Sectional diagram



1 **End plate**

2 **Locking ring**
self-locking and sturdy

3 **Torque pin**
for exact coupling and maximum precision

4 **Locking mechanism**
self-locking and sturdy

5 **Pneumatic feed-through**
no interfering contour due to integration in housing

6 **Electric feed-through**
for electric energy and signal transmission

Functional characteristics

The miniature change system (MWS) consists of a miniature change head (MWK) and a miniature change adapter (MWA).
The miniature change head (MWK) is connected with the miniature change adapter (MWA) by a form-fit connection by actuating the locking ring.
Integrated pneumatic feed-throughs supply the tool reliably with energy.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

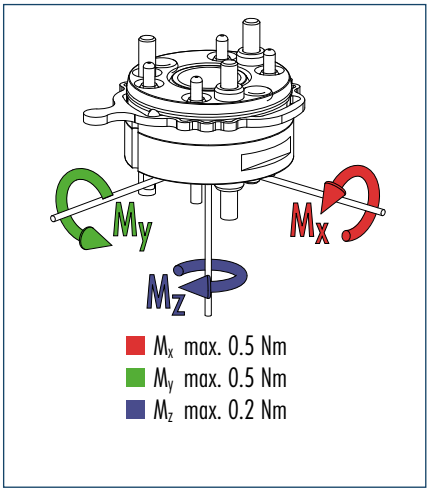
ⓘ The specific size of the desired accessories, availability for the model and the name and ID no. can be found in the additional diagrams following each model.

General notes on the series

Utilization under extreme ambient conditions

Please be aware that use under extreme conditions (e.g. with coolants, or in the presence of casting dust or abrasive dust) can significantly reduce the tool life of these units, for which we can make no guarantee. In many cases, however, we have a solution. Please contact us.

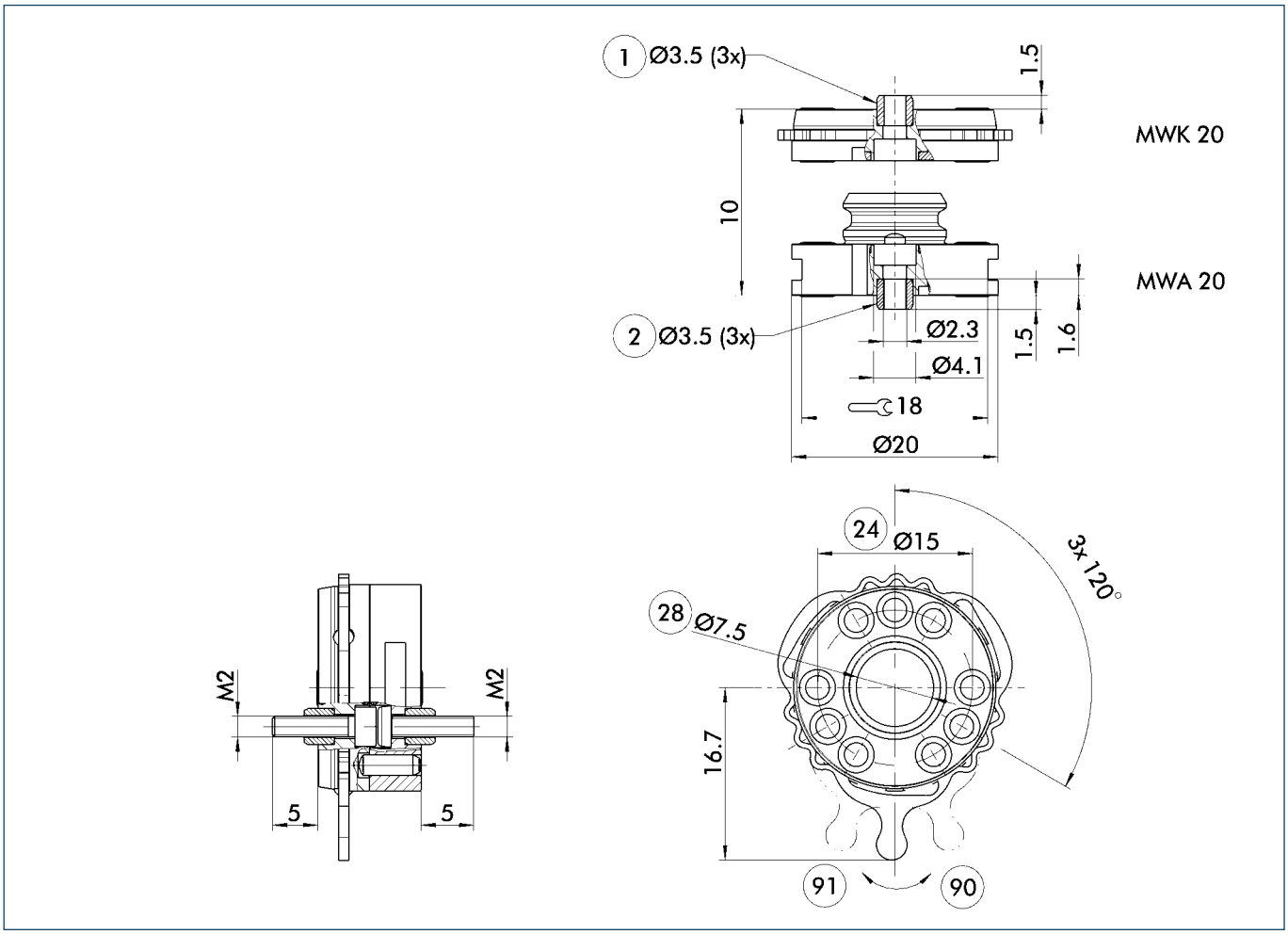
Moment load



Technical data

Designation		MWK 020	MWA 020
	ID	0305623	0305624
Maximum payload	[kg]	0.5	
Required locking force/unlocking force	[N]	7 ... 13	
Required locking moment	[Nm]	0.1 ... 0.2	
Repeat accuracy	[mm]	0.1	
Total weight	[kg]	16	
Weight of head	[g]	7	
Weight of adapter	[g]	9	
Pneumatic energy transmission (direct connection)		2x	(can be expanded up to 6x, if there is no electric energy transmission)
Electric energy transmission		4x	(can be expanded up to 6x, if there is no pneumatic energy transmission)
Max. permissible XY axis misalignment during coupling (calculated)	[mm]	± 0.3	
Max. permissible angular misalignment on Z during coupling (calculated)	[°]	± 0.8	
Max. distance during locking in Z	[mm]	0.25	
Max. static moment M_X and M_Y	[Nm]	0.5	
Max. static moment M_Z	[Nm]	0.2	
Max. tensile force load in Z	[N]	50	
Spring-mounted electric contacts		U=24 VDC, Imax=1 A	
Diameter of center bore	[mm]	7.5	

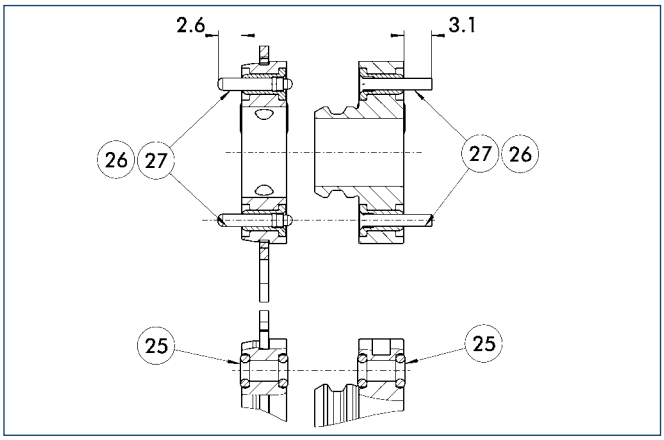
Main views



The drawing shows the basic version of the quick-change system without dimensional consideration of the options described below.

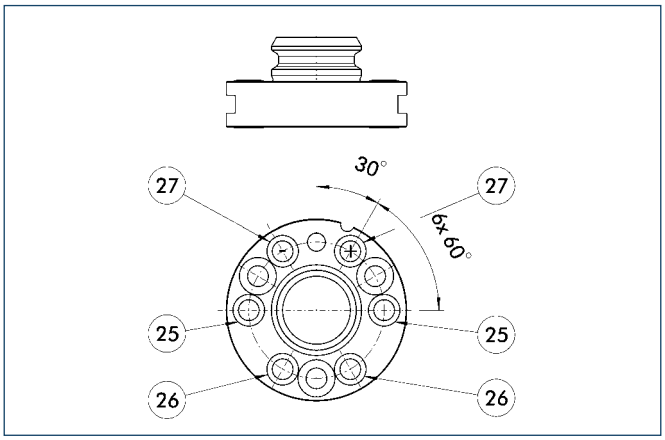
(1) Connection, robot-side
(2) Connection, tool-side
(24) Bolt pitch circle
(28) Through-bore
(90) Unlocked position
(91) Locked position

Function of fluid and electric feed-through



(25) Fluid feed-through
(26) Electric signal feed-through
(27) Electric power feed-through

Position of fluid and electric feed-through



(25) Fluid feed-through
(26) Electric signal feed-through
(27) Electric power feed-through

Electric option for MWS 20

Designation	ID	
MWK-E4	**305693**	Electric contact 4 x 24 VDE/1 A for MWK
MWA-E4	**305694**	Electric contact 4 x 24 VDE/1 A for MWA

SWS-I

Tool Changing · Quick-change System · With integrated Valves

Size
011

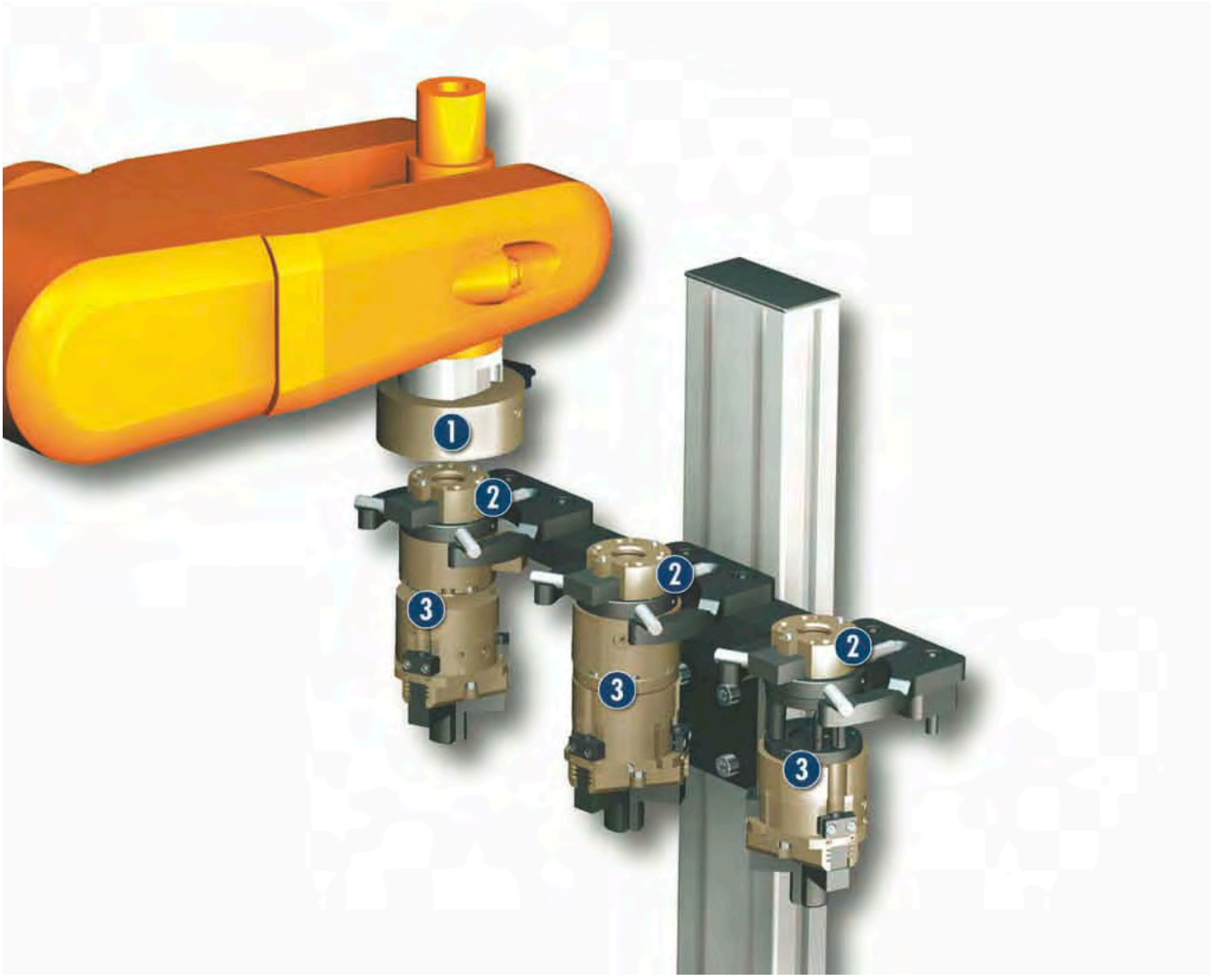
Handling weight
16 kg

Moment load M_x
25 Nm

Moment load M_y
25 Nm

Moment load M_z
34 Nm

Application example



6-axis buckling-arm robot for changing the gripper tools from the storage rack SWM-S. The storage rack contains application-specific tools with collision- and overload protection (OPR), compensation units (AGE) or insertion units (FUS).

1. Quick-change Head SWK-I-011
2. Quick-change Adapter SWA-I-011
3. Application-specific Gripper tools

Quick-change System

pneumatic tool change system with integrated 3/2 directional valves and patented locking system

Area of application

Can be used wherever short changeover times between a handling device and a tool are required

Your advantages and benefits

Integrated 3/2 directional control valve
for easy hose connection and assembly

Patented self-retaining system
for a safe connection between gripper-change head and gripper-change adapter

Drive incorporated into the housing
for compact dimensions and fewer interfering contours.

All functional components are made from hardened steel
for a greater change system load bearing capacity

Integrated electric feed-through
for safe monitoring of tools

Integrated air feed-through
for safe energy supply to the handling modules and tools

Storage racks to fit all sizes
available as an accessory for reliable positioning of your tools

ISO flange
for easy attachment to most types of robots without additional adapter plates

General information on the series

Working principle
Piston-activated locking bearings

Material
Housing made from high-strength, hard-coated aluminum, functional components made from hardened steel

Actuation
Pneumatic, with filtered compressed air (10 µm): dry or lubricated

Operating pressure range
From 4.5 bar to 6 bar

Maintenance
Prelubricated – relubrication recommended after 2 million cycles

Ambient temperature
From 5 °C to 60 °C

Energy transmission
Variable via attachment modules, depending on the type

Self-locking
Mechanical when locking

Warranty
24 months

Sectional diagram

1 Locking mechanism
trouble-free locking and unlocking, self-locking in locked position

2 Drive
pneumatic and powerful with extremely easy handling

3 Pneumatics freed-through
incorporation into the housing therefore no interfering contours

4 Integrated 3/2 directional valves
for control of the change system and the tool

5 Electrical feed-throughs
incorporation into the housing therefore no interfering contours

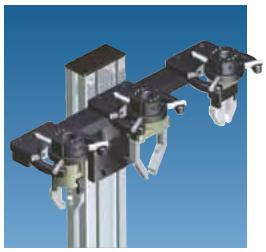
Function description

The quick-change system SWS-I consists of a robot-side change-head and a tool-side change-adapter. The adapter is self-locking in the head via a patented ball mechanism and it is supplied with compressed air by the integrated valves. Two of the six 3/2 pneumatic valves are required for locking and unlocking of the adapter; the other four are available for other tasks.
The electric supply of the tools takes place via a contact plate with six free contacts, which supply, for example up to four proximity switches with electricity or can return their signals to the control system.

Accessories

Accessories from SCHUNK – the suitable complement for the highest level of functionality, reliability and consistent performance of all automaton modules.

Storage racks



Cable connectors

ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question.

General information on the series

Use under extreme ambient conditions

Please note that the use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the life span of these units and we cannot accept any liability for this reduction.
However, in many cases we have a solution at hand. Please ask for details.

SWS-I-011

Tool Changing · Quick-change System · With integrated Valves

Product description

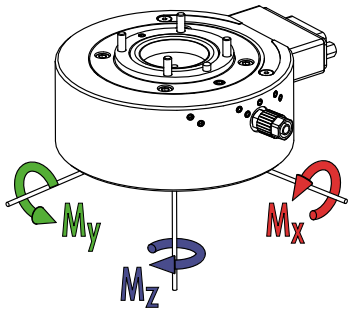
Small, light-weighted and compact with six pieces integrated 3/2 directional valves.

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 3 mm is possible.

Patented, self-retaining locking system

Air feed-through with specially developed rubber seals

Moment load



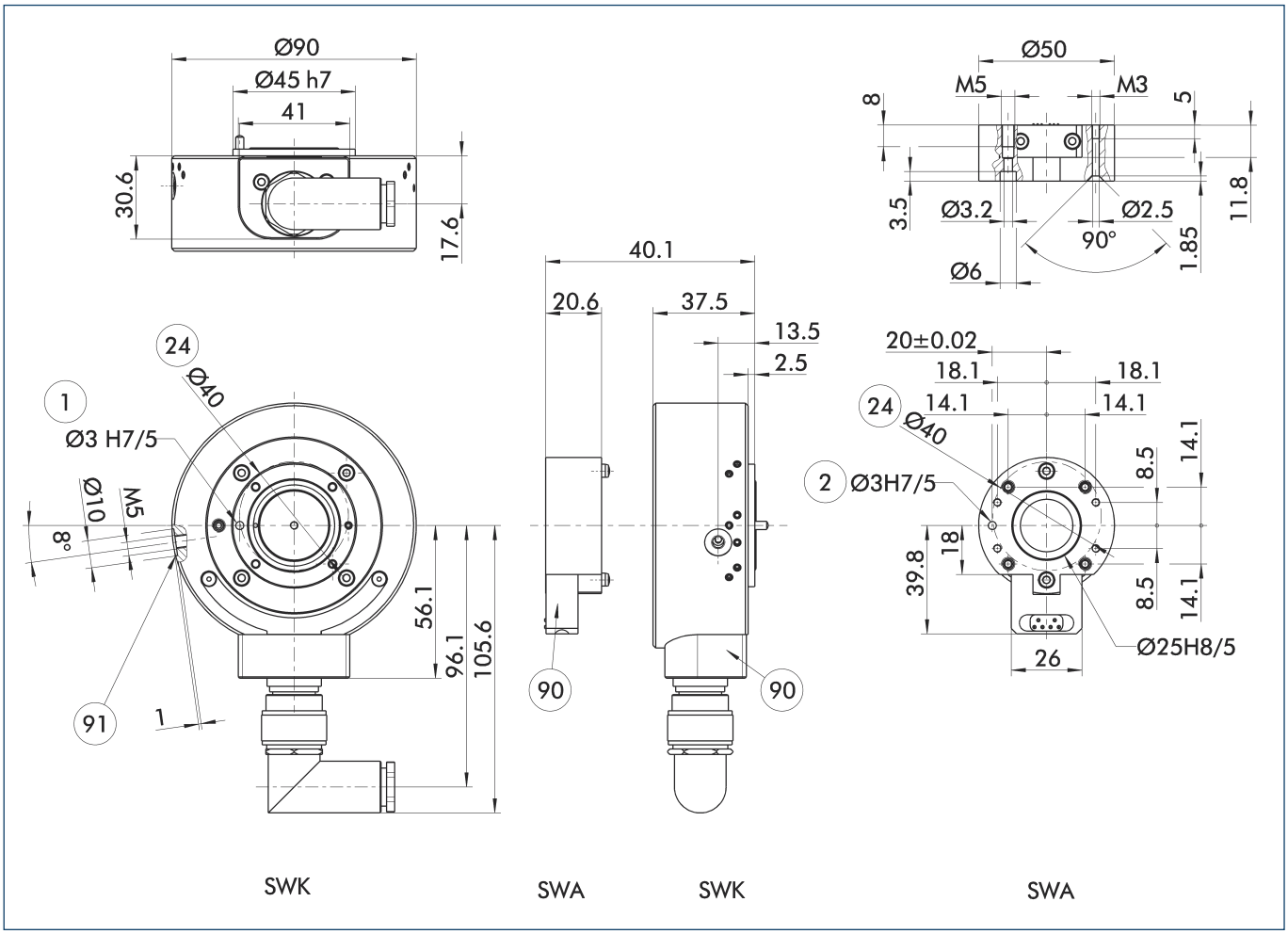
- M_x max. 25.0 Nm
- M_y max. 25.0 Nm
- M_z max. 34.0 Nm

ⓘ The dynamic moment load can be up to three times longer than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

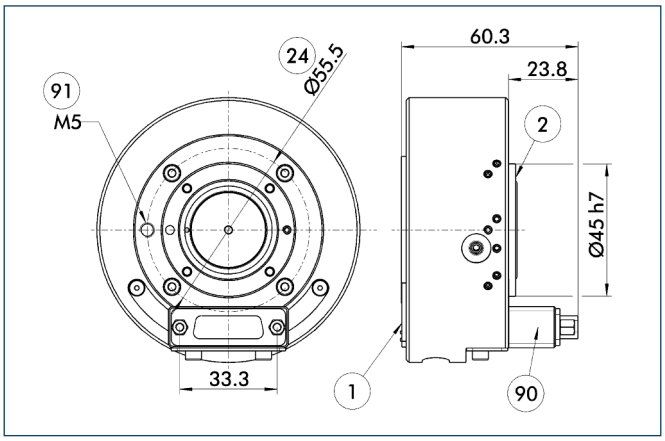
Designation		SWK-I-011-4-6-R	SWK-I-011-4-6-A	SWA-I-011-4-6	
	ID	0302811	0302812	0302810	
		Head	Head	Adapter	
Cable and air outlet			radial	axial	
Maximum payload	[kg]	16	16	16	At low moments a higher payload is possible
Locking force (from 6 bar)	[N]	1068	1068	1068	At higher tensile forces the system “falls” into the self-retaining status
Repeatability	[mm]	0.01	0.01	0.01	Tested at 1 million cycles
Weight	[kg]	0.59	0.59	0.59	Head-side 0.495 kg; adapter side 0.095 kg
Maximum distance on locking	[mm]	3.0	3.0	3.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and adapter touching
Energy transmission pneumatic		4 x pneumatic M5 max. 7 bar			
Energy transmission electrical		6x 3A/50V	6x 3A/50V	6x 3A/50V	
Maximum permissible XY offset	[mm]	± 1	± 1	± 1	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	± 2	± 2	Maximum permissible angular offset around the Z axis when locking

Main views SWK-I-011-4-6-R and SWA-I-011-4-6



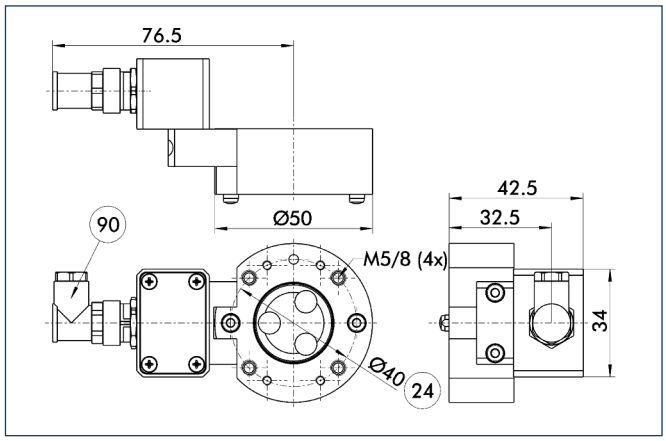
① Connection unit
② Connection assembly
㉔ Bolt pitch circle
㉚ Energy transmission
㉛ Main connection for compressed air

Change in dimensions SWK-I-011-4-6-A



① Connection unit
② Connection assembly
㉔ Bolt pitch circle
㉚ Energy transmission
㉛ Main connection for compressed air

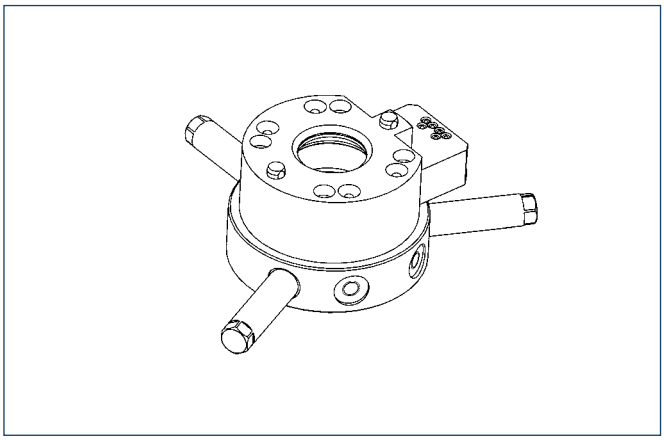
SWA-I-011 with pluggable electrical option



Designation	ID
SWA-I-011-4-6-S	0302809

Cable connector enclosed.

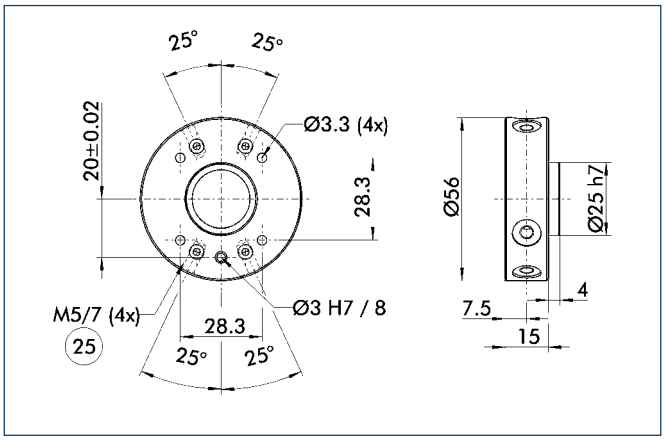
Distribution flange (axial on radial)



SWA with distribution flange and rack bolt
The distribution flange is mounted on the SWA and allows radial grip of air at the SWA.

Optionally, 3 bolts can be mounted on the SWM for storage purposes.

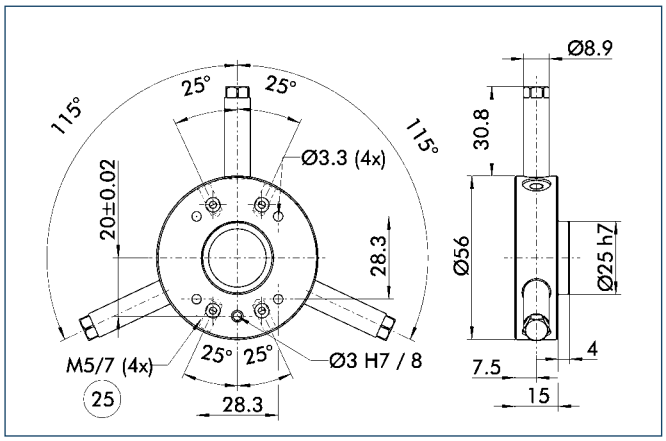
Distribution flange without workpiece stops



(25) Air feed-through

Designation	ID
A-SWA-I-011-V	**0302813**

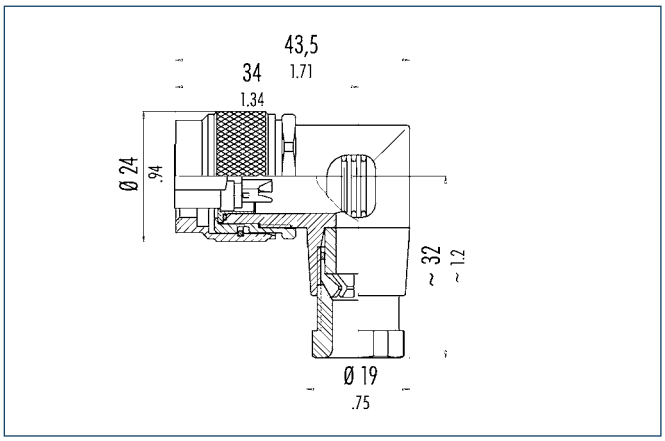
Distribution flange with workpiece stops



(25) Air feed-through

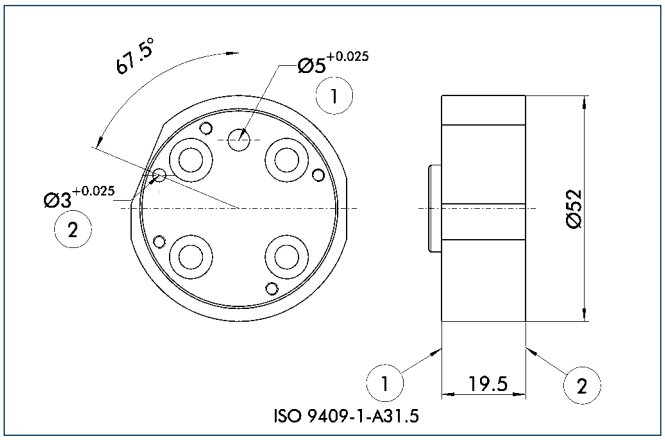
Designation	ID	Scope of delivery
Distribution flange A-SWA-I-011-V	**0302813**	1x
Workpiece stops SWMTSS-M5-3303	**0302577**	3x

Cable connector



Designation	ID
for SWK-I-011-4-6-R (ID 0302811) KAS-SWK-I-011-90	**9949866**
for SWK-I-011-4-6-R (ID 0302811) KAS-D15-SWK-I-0	**0301282**

Standard adpater plates for ISO flanges

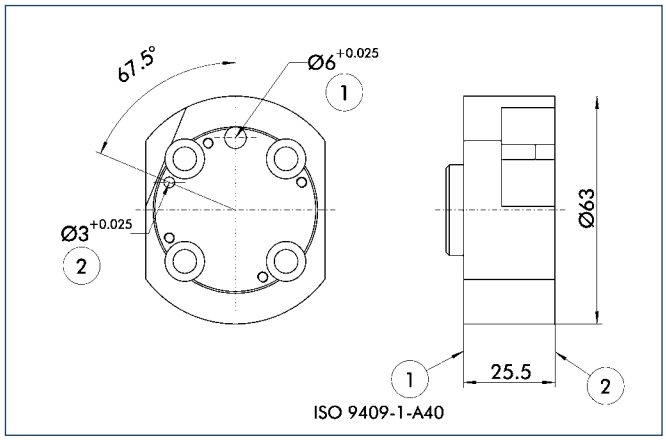


① Robot-side connection
② Tool-side connection

Adapter plate A31.5

For mounting the SWK-011 directly to the flange in accordance with ISO 9409-1-A31.5

Designation	ID
A-SWK-011-ISO-A-31.5	0302221

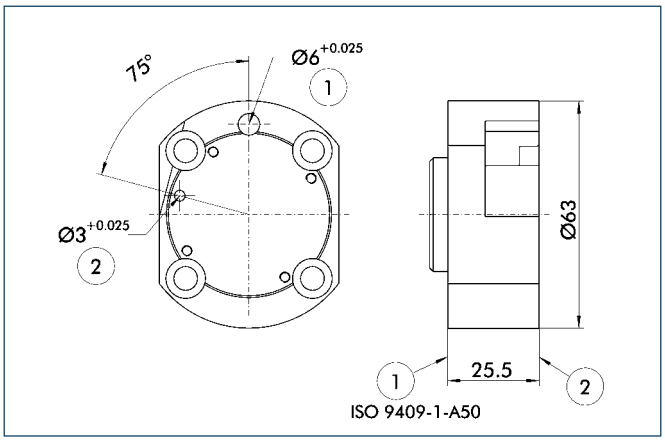


① Robot-side connection
② Tool-side connection

Adapter plate A40

For mounting the SWK-011 directly to the flange in accordance with ISO 9409-1-A40

Designation	ID
A-SWK-011-ISO-A-40	0302222



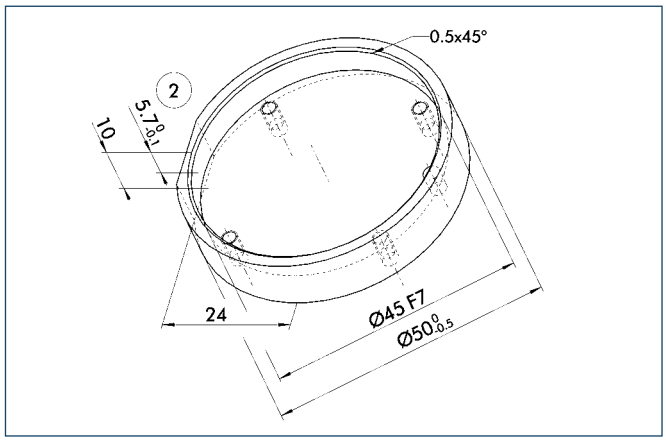
① Robot-side connection
② Tool-side connection

Adapter plate A50

For mounting the SWK-011 directly to the flange in accordance with ISO 9409-1-A50

Designation	ID
A-SWK-011-ISO-A-50	0302223

Design note for adapter plates



② Tool-side connection

Recommendation for designing the adaptation. Adapters are required for sealing the piston area.

Sizes
005 .. 602

Handling weight
up to 1000 kg

Moment load M_x
up to 13000 Nm

Moment load M_y
up to 13000 Nm

Moment load M_z
up to 5500 Nm

Application example

Joining tool for attaching small to medium-sized workpieces. The tool can be used in both clean and dirty environments. The quick-change system means that it can be used alternately with other tools on the robot flange.

1. DPZ-plus 100 3-Finger Centric Gripper
2. FUS-213C Insertion Unit
3. SWS-041 Quick-change System

Quick-change System

Pneumatic tool changing system
with patented locking system

Area of application

Can be used wherever short changeover times between a handling device and a tool (gripper, electrode holder) are required

Your advantages and benefits

Complete series with 15 sizes
for an optimum selection of sizes and a wide range of applications

Patented self-retaining locking system
for a safe connection between the quick-change head and the quick-change adapter

Drive incorporated into the housing
for compact dimensions and fewer interfering contours

All functional components made from hardened steel
for a greater change system load bearing capacity

Wide range of cable connectors
for universal energy transmission options

Integrated air feed-through
for safe energy supply to the handling modules and tools

Transmission options for other media
with optional self-sealing couplings

Adapter coding
possible via plug connection

Storage racks to fit all sizes
available as an accessory for reliable positioning of your tools

ISO flange
for easy attachment to most types of robots without additional adapter plates

General information on the series

Working principle
Piston-activated locking bearings

Material
Housing made from high-strength, hard-coated aluminum, functional components made from hardened steel

Actuation
Pneumatic, with filtered compressed air (10 µm): dry or lubricated

Operating pressure range
From 4.5 bar to 6 bar

Maintenance
Prelubricated – relubrication recommended after 2 million cycles

Ambient temperature
From 5 °C to 60 °C

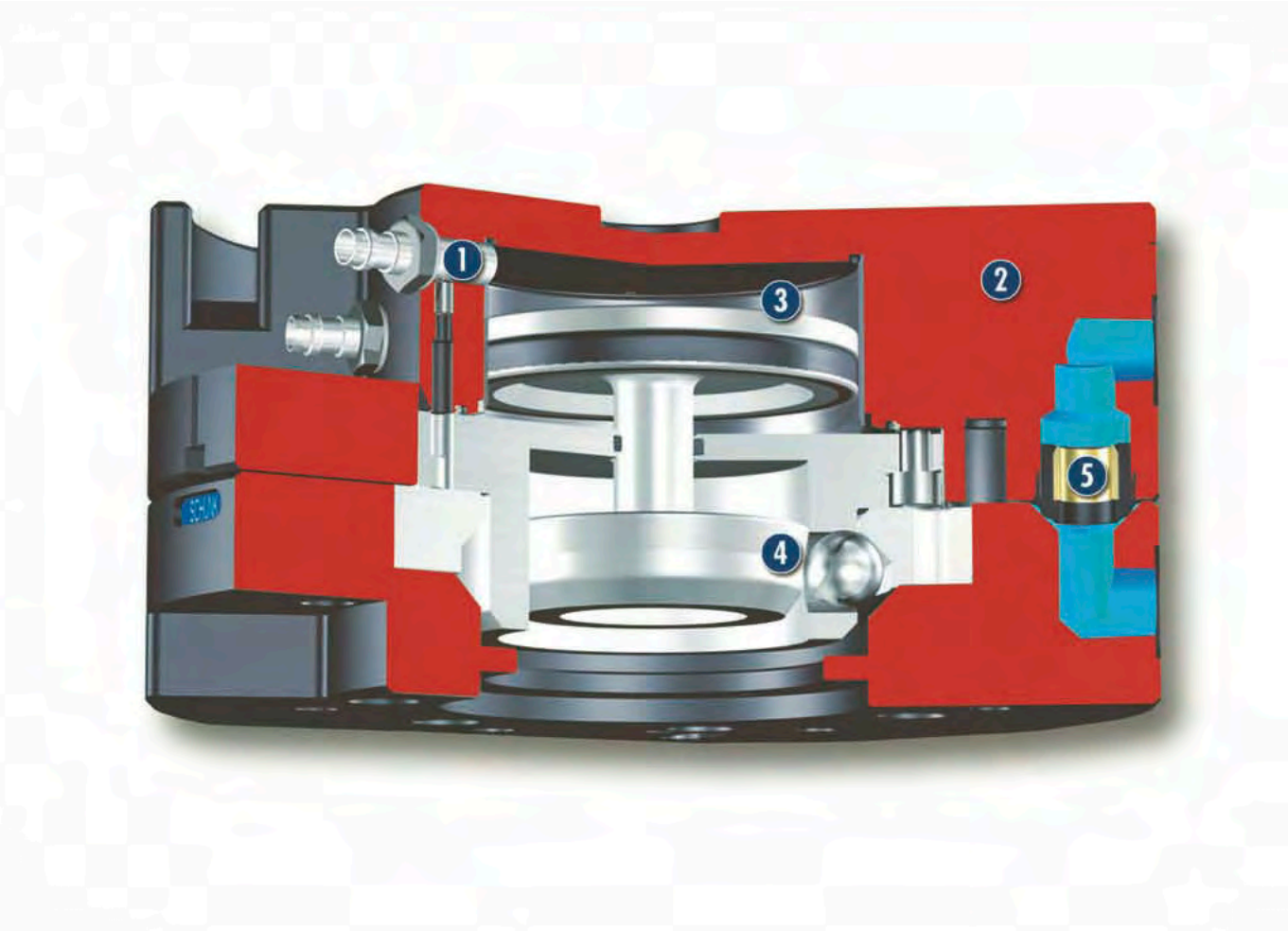
Energy transmission
Variable via attachment modules, depending on the type

Monitoring for the locking mechanism
via inductive proximity switches, depending on the size

Self-locking
Mechanical when locking

Warranty
24 months

Sectional diagram



1 Sensor monitoring for the locking mechanism
incorporated into the housing in the SWS-110, optional with other sizes

2 Housing
weight-reduced through the use of a high-strength aluminum alloy

3 Drive
pneumatic and powerful with extremely easy handling

4 Locking mechanism
trouble-free locking and unlocking, self-locking in locked position

5 Pneumatics feed-through
incorporation into the housing therefore no interfering contours, also suitable for vacuums

Function description

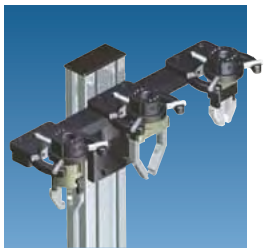
Automatic changing of the robot tool (e.g. gripper, vacuum lifting devices, pneumatically or electrically driven tools, electrode holders etc.) increases the flexibility of your robot. The quick-change system (SWS) consists of a quick-change head (SWK) and a quick-change adapter (SWA). The SWK, mounted onto the robot, couples up the SWA mounted onto your tool. A pneumatically driven locking piston, with its patented design, ensures that the connection is secure. After coupling, pneumatic and electric feed-throughs automatically supply your robot tool.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

SIP sensor interface plate

Storage racks



Cable connectors

Electronic modules

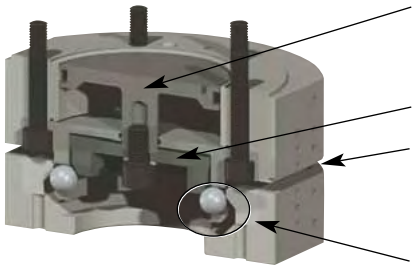
ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question.

General information on the series

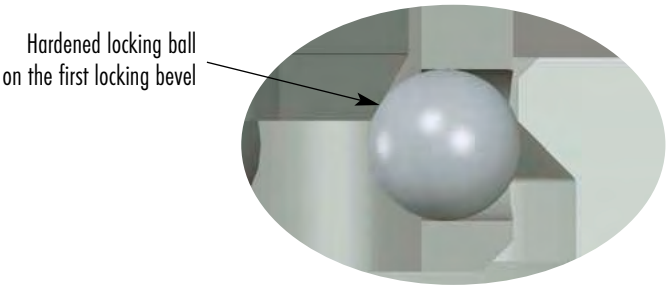
Use in extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the life span of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

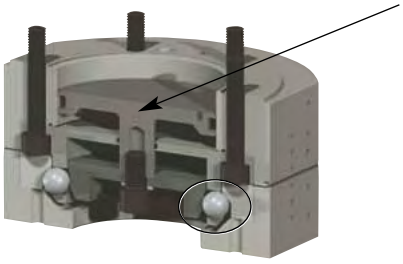
Detailed function description



SWK - SWA before locking

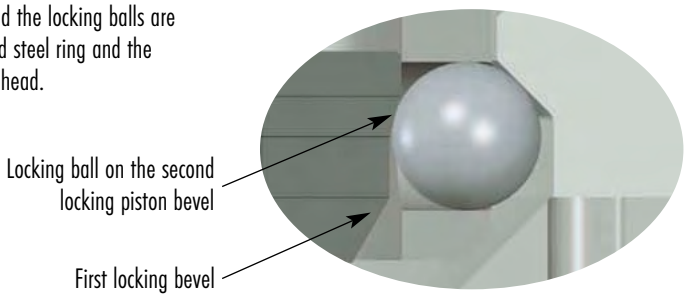


Detailed view

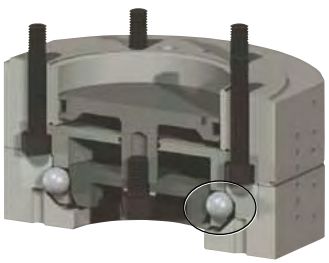


When the piston is actuated the locking balls are pushed under the hardened steel ring and the adapter is pulled onto the head.

SWK - SWA when locked

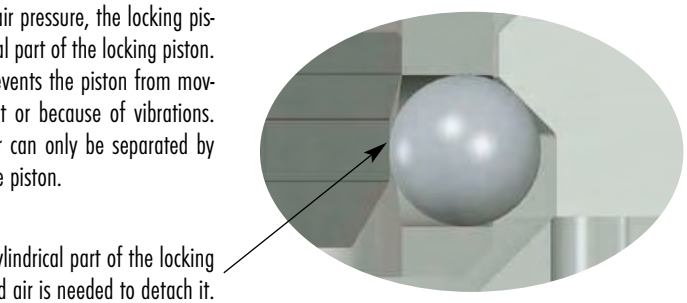


Detailed view



In the event of a drop in air pressure, the locking piston is held by the cylindrical part of the locking piston. The piston seal friction prevents the piston from moving due to its own weight or because of vibrations. The head and the adapter can only be separated by pneumatic actuation of the piston.

SWK - SWA in self-locking position



Detailed view

Selecting the quick-change system

1. Size selection

a. Simple size determination

If the change system is subject to very low forces and moments you can select the quick-change head on the basis of the maximum payload.
Choose a quick-change system which has a maximum payload larger than the useful load of your robot.
Choose the accurate method if the change system is subject to higher moments.

b. The accurate method

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

2. Pneumatics and electrics

Determine the number and sizes of the pneumatic and electric feed-throughs.

3. Temperature and chemicals

Nitrile seals on the quick-change units ensure optimum air feed-through. Buna N O-rings seal the piston chamber very effectively.
Both materials are resistant to many chemicals and are suited to temperatures between 5 °C and 60 °C.

SWS sizes at a glance

Designation		SWS-005	SWS-011	SWS-020	SWS-021	SWS-040	SWS-041
Recommended handling weight	[kg]	8	16	25	25	50	50
Locking force at 5.5 bar	[N]	690	1068	2314	2314	4540	4540
Static moment M_x and M_y	[Nm]	12.5	25	56.5	56.5	157	157
Static moment M_z	[Nm]	17	34	78	78	216	216
Pneumatic feed-through		6x M5	6x M5	12x M5	8x G 1/8"	8x G 1/8"	6x G 3/8"
Air connections, locked and unlocked		M5	M5	M5	M5	G 1/8"	G 1/8"

Designation		SWS-060	SWS-071	SWS-110	SWS-150	SWS-300
Recommended handling weight	[kg]	75	79	150	200	455
Locking force at 5.5 bar	[N]	7387	8075	12149	16109	35333
Static moment M_x and M_y	[Nm]	197	395	784	1356	3870
Static moment M_z	[Nm]	294	395	784	1130	2825
Pneumatic feed-through		8x G 1/8"	8x G 1/4"	8x G 3/8"	10x G 3/8"	10x G 3/8"
Air connections, locked and unlocked		G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/4"

SWS-005

Tool Changing · Quick-change System · Light Load

Product description

Ejector function on the SWK
Prevents the head and the adapter from sticking together after unlocking.
A common problem when working with light tools.

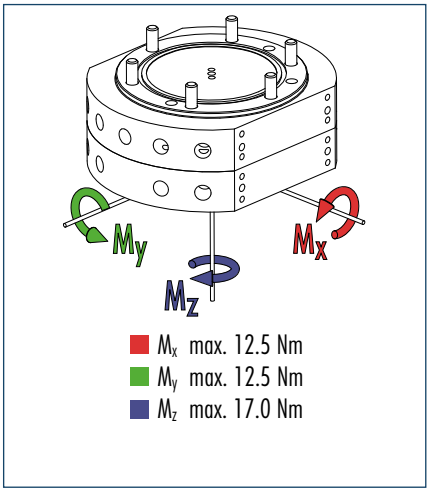
High degree of repeat accuracy

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 3 mm is possible.

Patented, self-retaining locking system

Air feed-through with specially developed rubber seals

Moment load



ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

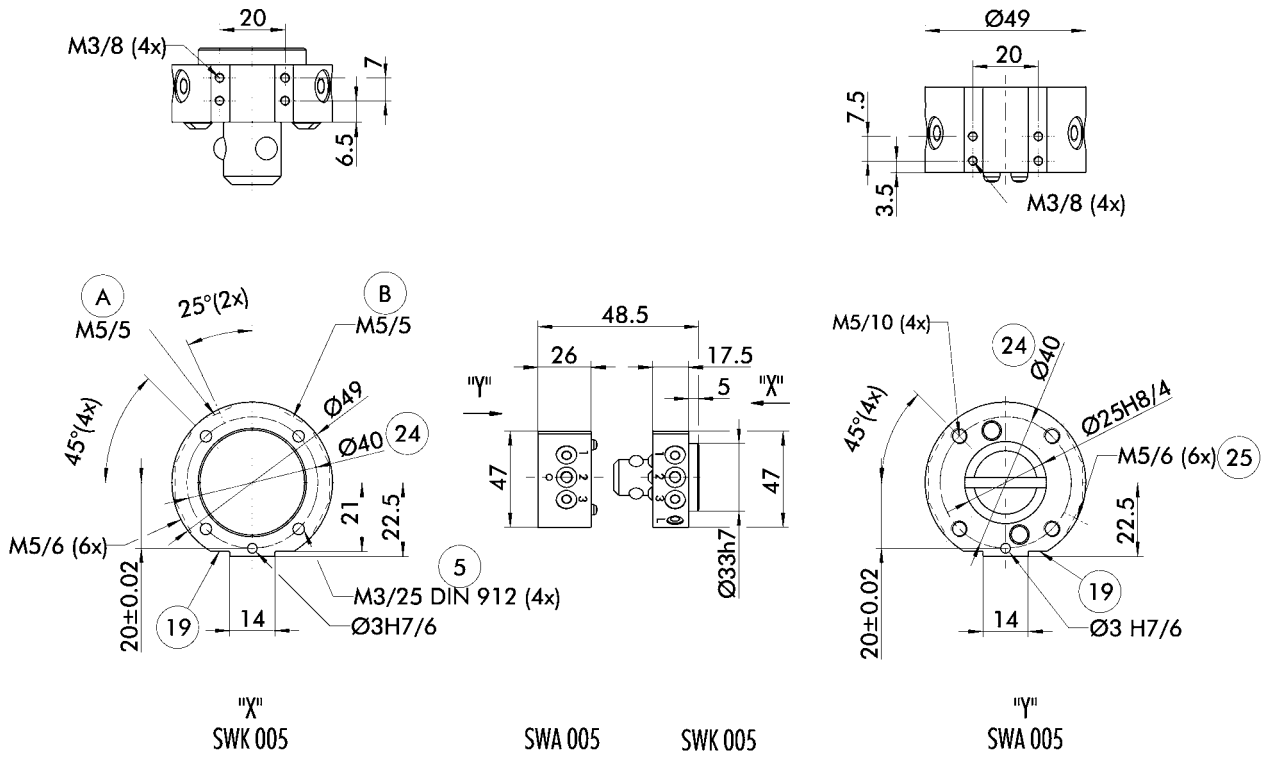
Designation		SWS-005	
Maximum payload	[kg]	8	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	12.5	
Static moment load M_z	[Nm]	17	
Dynamic moment load M_{xy}	[Nm]	37.5	
Dynamic moment load M_z	[Nm]	51	
Locking force (at 6 bar)	[N]	710	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.01	Tested at 1 million cycles
Weight	[kg]	0.37	0.27 kg head; 0.1 kg adapter
Min./max. distance on locking	[mm]	1.5 / 3.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		6x pneumatic M5	Max. 7 bar
Maximum permissible XY offset	[mm]	± 1	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

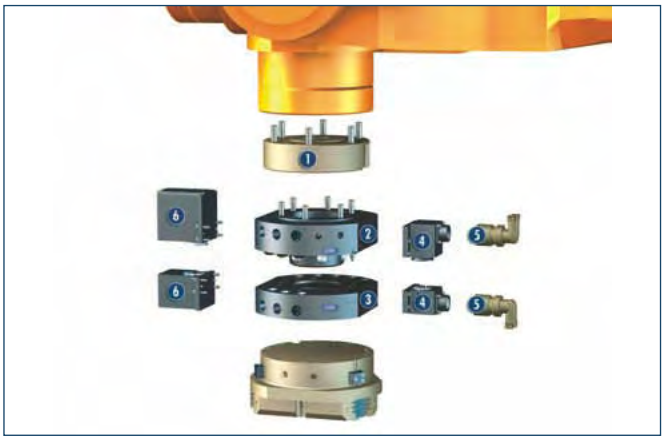
Designation		Detailed data sheet
B15	15 pins, 3 A/50 V, Sub-D connector	See "SWS options" chapter
E10	10 pins, 3 A/50 V, solder contacts	See "SWS options" chapter
E2A	20 pins, 3 A/50 V, solder contacts	See "SWS options" chapter
E3A	30 pins, 3 A/50 V, solder contacts	See "SWS options" chapter
Storage station for SWS		See "SWS options" chapter

How to order (example)

SW☐-005-☐☐☐-000

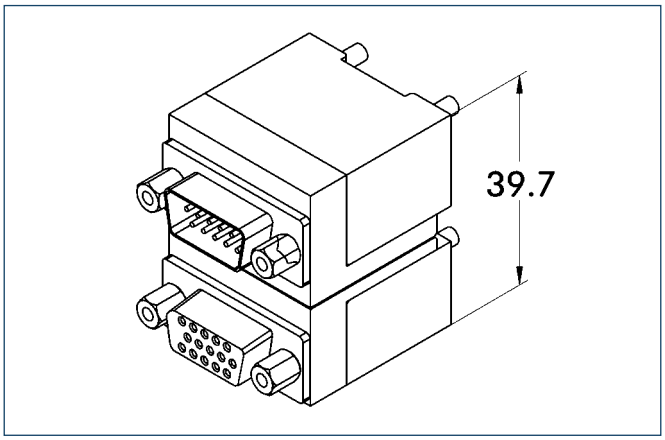
SWS-005	Examples
Option (000 = no option)	**SWK-005-000-000** (SWK-005, head side, no option)
K = head **A** = adapter	**SWA-005-B15-000** (SWA-005, adapter plate side, with B15 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. B15)
⑤ Cable connector for option 1
⑥ Option 2

Sub-D connector B15



Option:
Sub-D connector with 15 spring-loaded, gold-coated pins (3 Amp/50 VAC per pin)

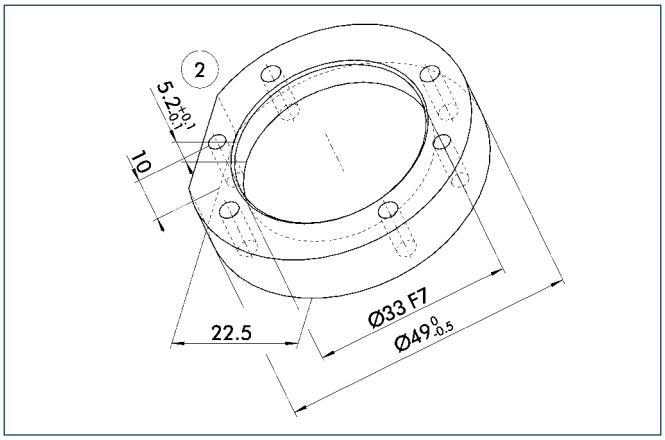
Designation	ID	Fits Description
B15 head	**9937326**	SWK 15 pin, 3 Amp/50 VAC E option with high-density Sub-D connector
B15 adapter	**9937327**	SWA 15 pin, 3 Amp/50 VAC E option with high-density Sub-D connector

Cable connectors

Cable connector for the connection between the B15 module and the cable

	Straight	
Cable connectors for	ID	Designation
B15 head	**0301264**	KAS-A15-K
B15 adapter	**0301265**	KAS-A15-A

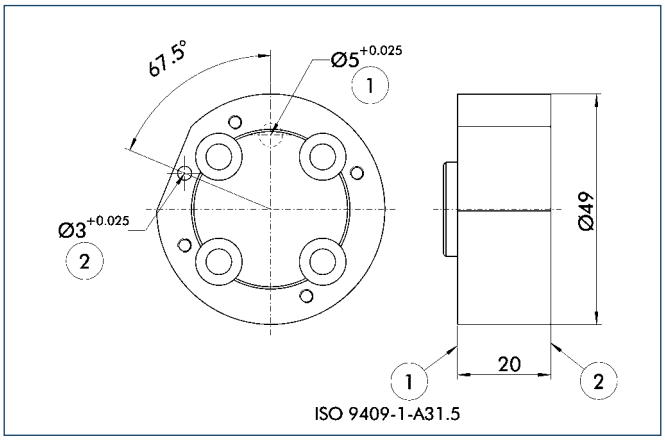
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

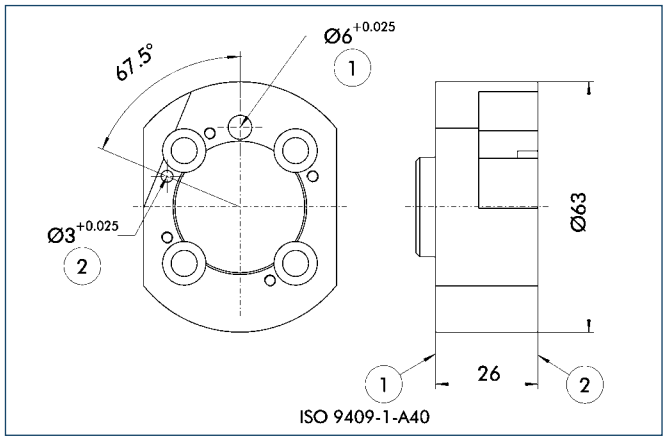


① Robot-side connection
② Tool-side connection

Adapter plate A31.5

For mounting the SWK-005 directly to a flange in accordance with ISO 9409-1-31.5-4-M5

Designation	ID
A-SWK-005-ISO-A-31.5	0302218

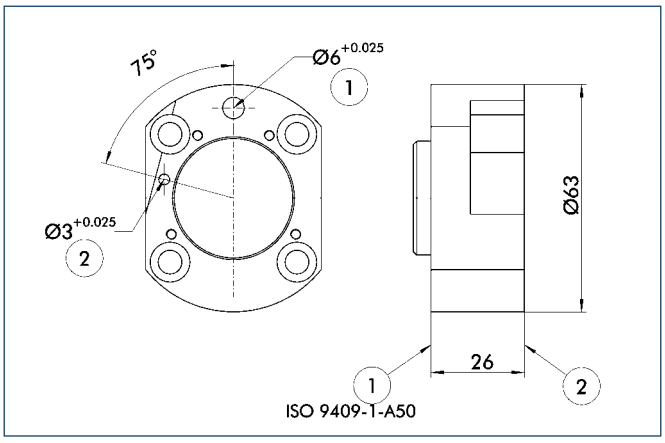


① Robot-side connection
② Tool-side connection

Adapter plate A40

For mounting the SWK-005 directly to a flange in accordance with ISO 9409-1-40-M6

Designation	ID
A-SWK-005-ISO-A-40	0302219



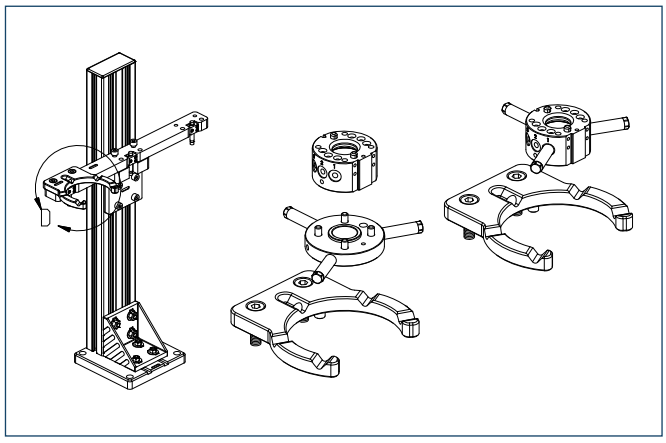
① Robot-side connection
② Tool-side connection

Adapter plate A50

For mounting the SWK-005 directly to a flange in accordance with ISO 9409-1-50-4-M6

Designation	ID
A-SWK-005-ISO-A-50	0302220

Modular quick-change rack SWM-S



The modular “small” quick-change rack has been designed for the SWS-005 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and the tool size allows you to create a rack tailor-made to your application. The option of utilizing unused air feed-throughs for attaching the workpiece bolts is a unique feature.

SWS-011

Product description

Light, small and compact with extremely high locking force

No-Touch-Locking™

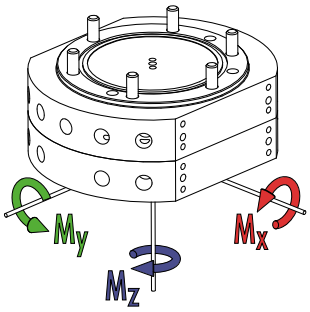
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 3 mm is possible.

Patented, self-retaining locking system

A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



M_x max. 25.0 Nm
M_y max. 25.0 Nm
M_z max. 34.0 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

Designation		SWS-011	
Maximum payload	[kg]	16	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	25	
Static moment load M_z	[Nm]	34	
Dynamic moment load M_{xy}	[Nm]	75	
Dynamic moment load M_z	[Nm]	102	
Locking force (at 6 bar)	[N]	1068	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.01	Tested at 1 million cycles
Weight	[kg]	0.21	0.13 kg head; 0.08 kg adapter
Max. distance on locking	[mm]	3.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		6x pneumatic M5	Max. 7 bar
Maximum permissible XY offset	[mm]	± 1	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

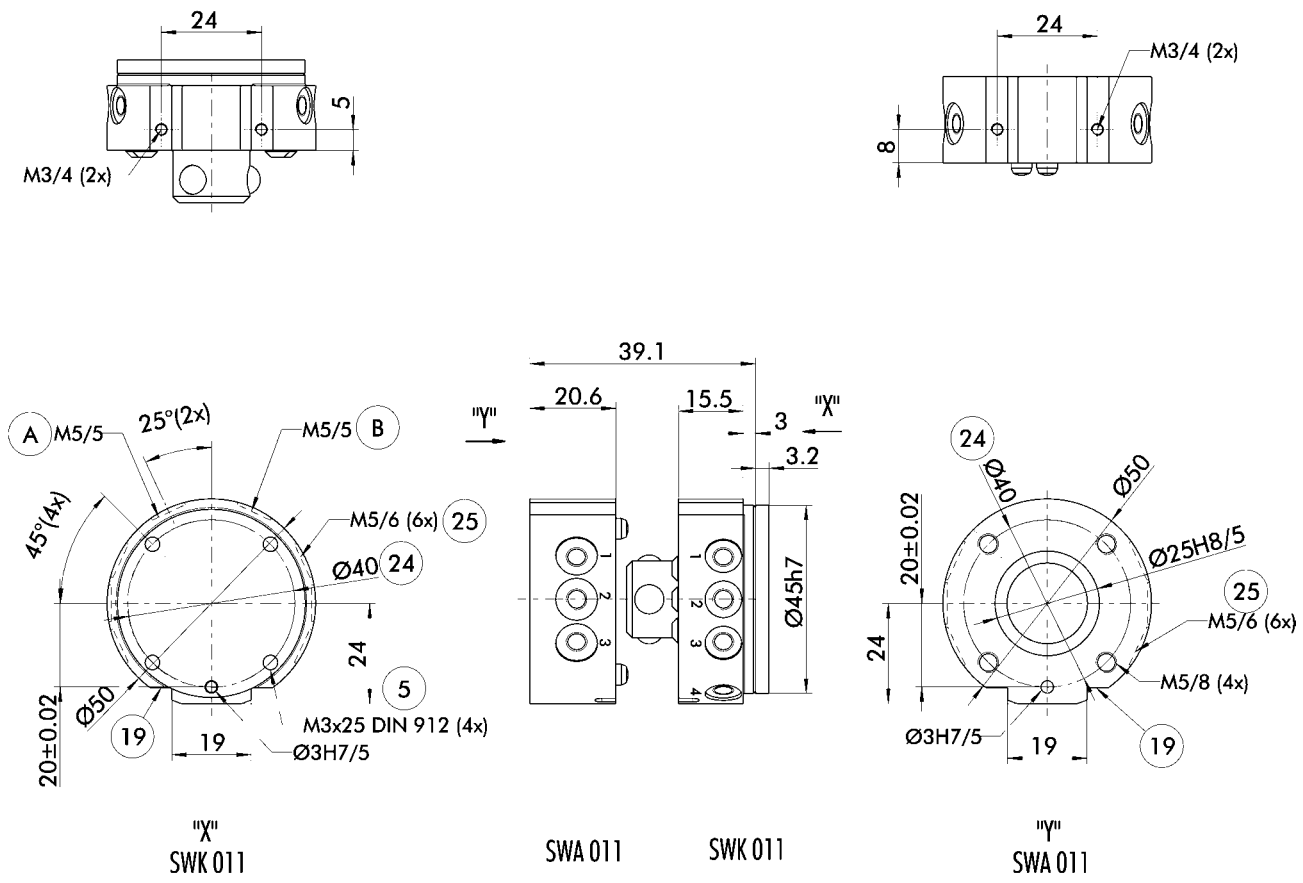
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

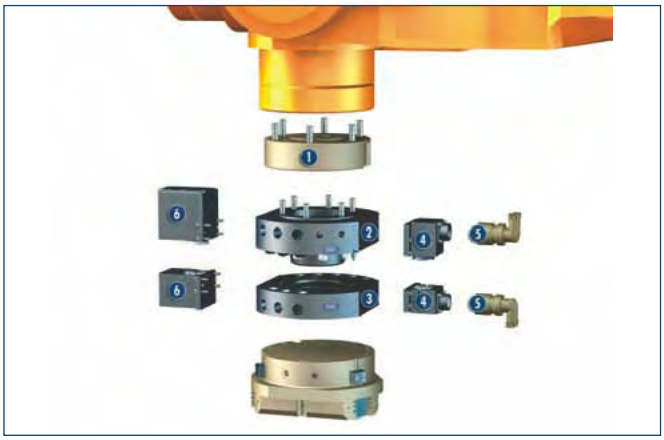
Designation		Detailed data sheet
A15	15 pins, 3 A/50 V, Sub-D connector	See “SWS options” chapter
E10	10 pins, 3 A/50 V, solder contacts	See “SWS options” chapter
E20	20 pins, 3 A/50 V, solder contacts	See “SWS options” chapter

How to order (example)

SW☐-011-☐☐☐-000

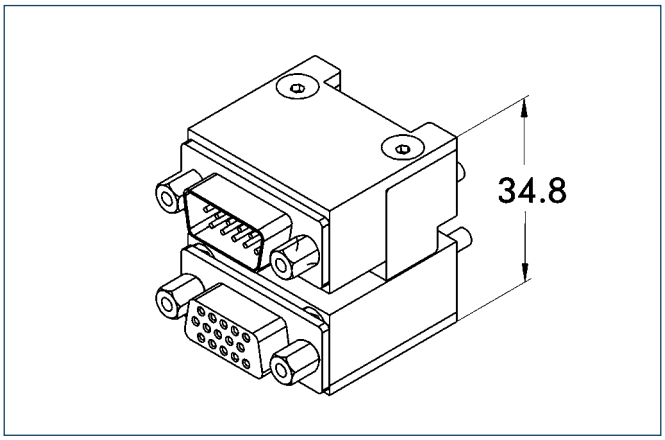
SWS-011	Examples
Option (000 = no option)	**SWK-011-000-000** (SWK-011, head side, no option)
K = head **A** = adapter	**SWA-011-A15-000** (SWA-011, adapter plate side, with A15 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. A15)
⑤ Cable connector for option 1
⑥ Option 2

Sub-D connector A15



Option:
Sub-D connector with 15 spring-loaded, gold-coated pins (3 Amp/50 VAC per pin)

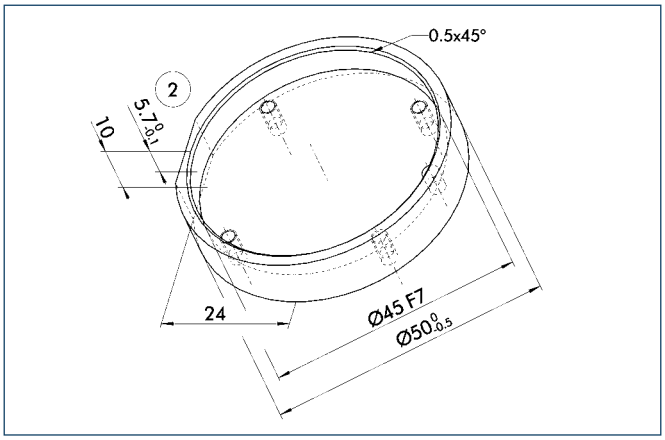
Designation	ID	Fits Description
A15 head	**9936357**	SWK 15 pin, 3 Amp/50 VAC E option with Sub-D connector
A15 adapter	**9936356**	SWA 15 pin, 3 Amp/50 VAC E option with Sub-D connector

Cable connectors

Cable connector for the connection between the B15 module and the cable

Straight		
Cable connectors for	ID	Designation
B15 head	**0301264**	KAS-A15-K
B15 adapter	**0301265**	KAS-A15-A

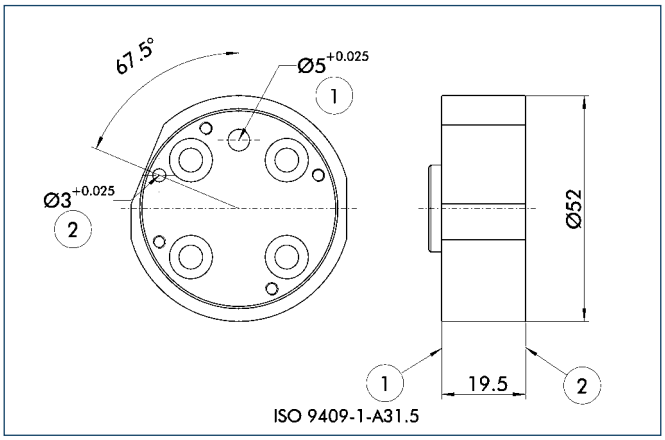
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

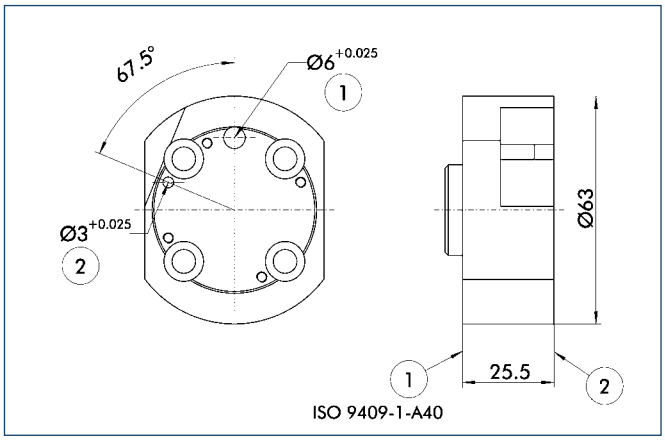


① Robot-side connection
② Tool-side connection

Adapter plate A31.5

For mounting the SWK-011 directly to a flange in accordance with ISO 9409-1-31.5-4-M5

Designation	ID
A-SWK-011-ISO-A-31.5	0302221

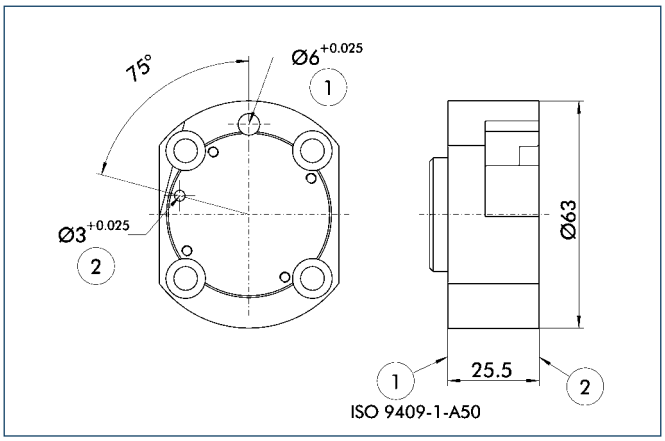


① Robot-side connection
② Tool-side connection

Adapter plate A40

For mounting the SWK-011 directly to a flange in accordance with ISO 9409-1-40-M6

Designation	ID
A-SWK-011-ISO-A-40	0302222



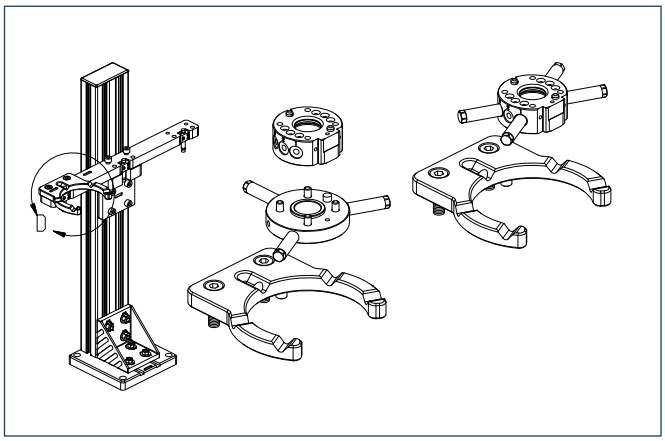
① Robot-side connection
② Tool-side connection

Adapter plate A50

For mounting the SWK-011 directly to a flange in accordance with ISO 9409-1-50-4-M6

Designation	ID
A-SWK-011-ISO-A-50	0302223

Modular quick-change rack SWM-S



The modular “small” quick-change rack has been designed for the SWS-011 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and the tool size allows you to create a rack tailor-made to your application. The option of utilizing unused air feed-throughs for attaching the workpiece bolts is a unique feature.

SWS-020

Tool Changing · Quick-change System · Light Load

Product description

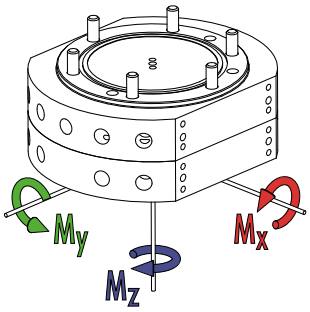
12 size M5 air feed-throughs incorporated into the housing

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch.
A maximum distance of 3 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



M_x max. 56.5 Nm
M_y max. 56.5 Nm
M_z max. 78.0 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

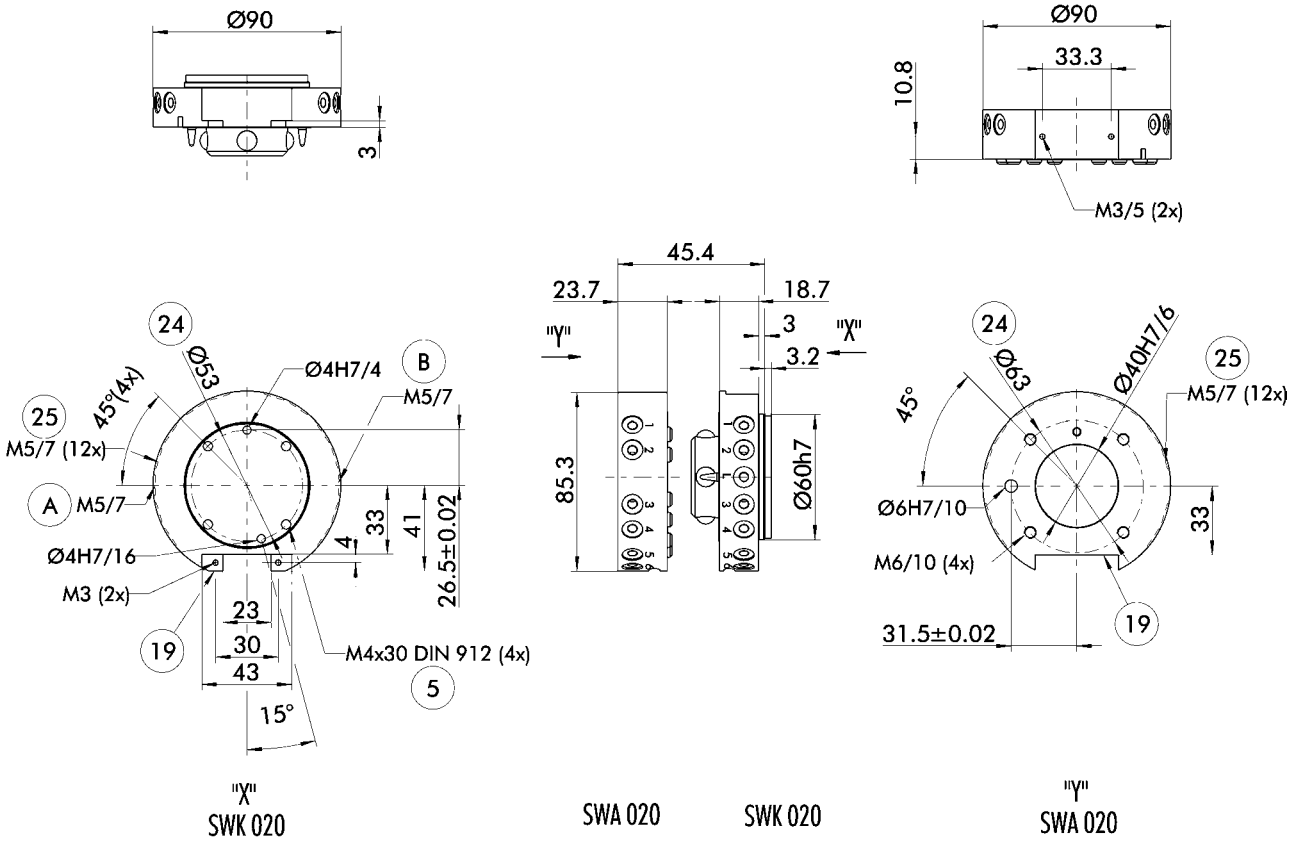
Designation		SWS-020	
Maximum payload	[kg]	25	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	56.5	
Static moment load M_z	[Nm]	78	
Dynamic moment load M_{xy}	[Nm]	169.5	
Dynamic moment load M_z	[Nm]	234	
Locking force (at 6 bar)	[N]	2314	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	0.8	0.5 kg head; 0.3 kg adapter
Max. distance on locking	[mm]	3.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		12x pneumatic M5	Max. 7 bar
Maximum permissible XY offset	[mm]	± 1	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

Designation		Detailed data sheet
K19	19 pins, 3 A/50 V, MS connector	See "SWS options" chapter
K26	26 pins, 3 A/50 V, MS connector	See "SWS options" chapter
KM14	14-pin, (12x5 A/250 VAC* and 2x13 A/250 VAC*)	See "SWS options" chapter

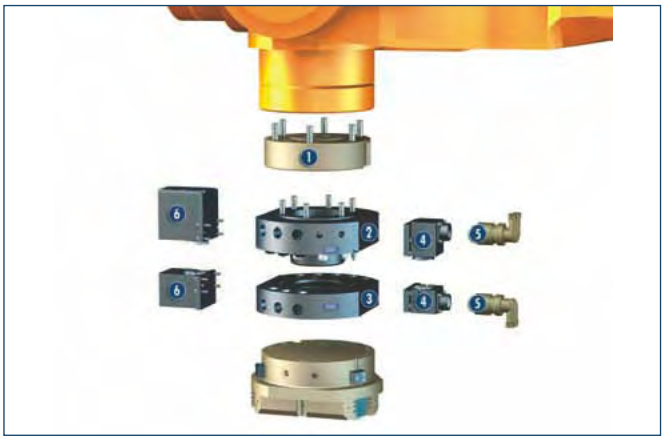
* 250 VAC grounding done by customer

How to order (example)

SW□-020-□□□-000

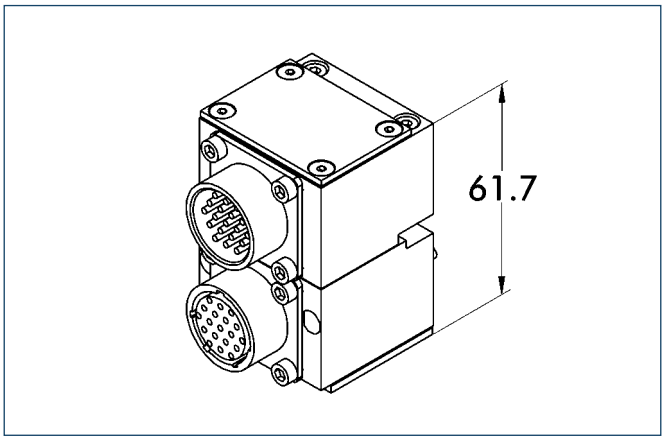
SWS-020	Examples
Option (000 = no option)	**SWK-020-000-000** (SWK-020, head side, no option)
K = head **A** = adapter	**SWA-020-K19-000** (SWA-020, adapter plate side, with K19 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. K19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector K19



Option:
Miniature quick-change connector with protected contact and splash-proof contact pins (3 Amp/50 VAC per pin)
K19 = 19-pin

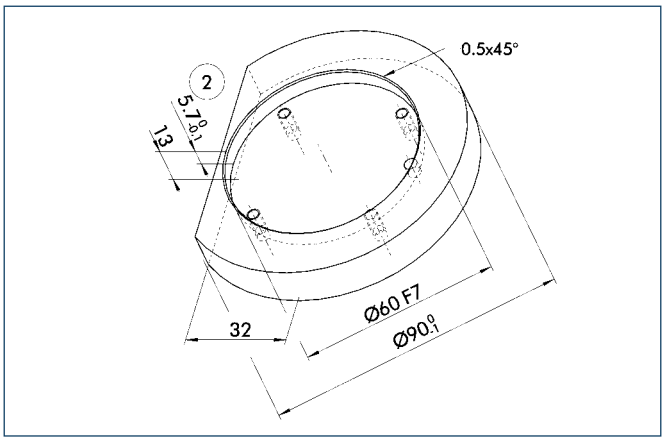
Designation	ID	Fits Description
K19 head	**9937328**	SWK 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector
K19 adapter	**9937329**	SWA 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector

Cable connectors

Cable connector for the connection between the K19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
K19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
K19 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

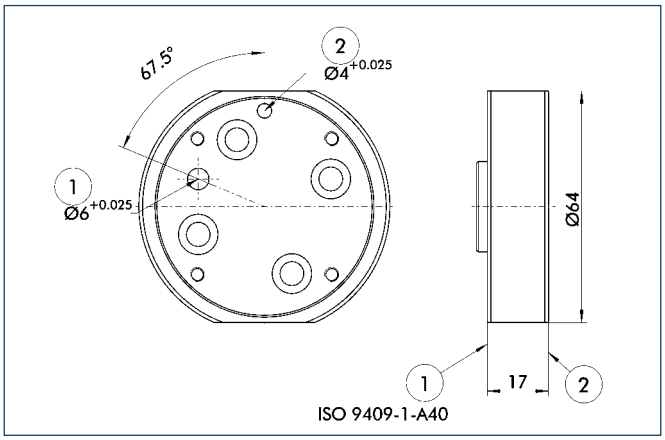
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

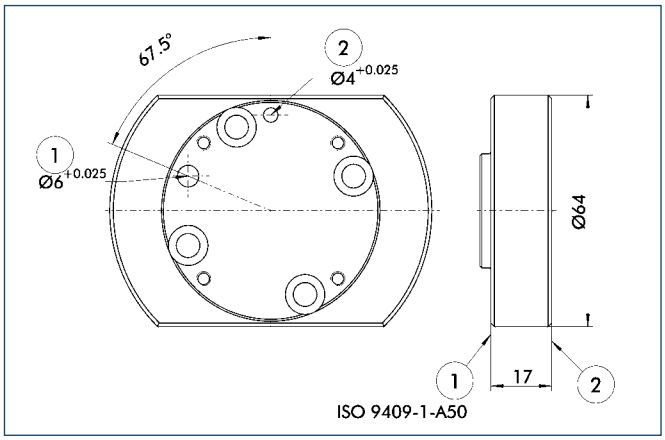


① Robot-side connection
② Tool-side connection

Adapter plate A40

For mounting the SWK-020 directly to a flange in accordance with ISO 9409-1-40-M6

Designation	ID
A-SWK-020-ISO-A-40	0302200

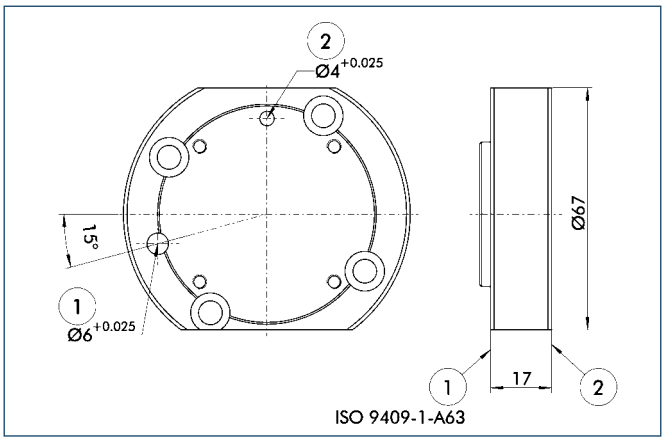


① Robot-side connection
② Tool-side connection

Adapter plate A50

For mounting the SWK-020 directly to a flange in accordance with ISO 9409-1-50-4-M6

Designation	ID
A-SWK-020-ISO-A-50	0302201



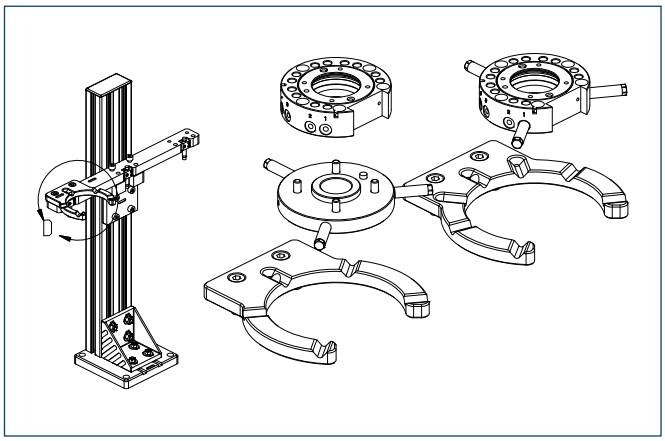
① Robot-side connection
② Tool-side connection

Adapter plate A63

For mounting the SWK-020 directly to a flange in accordance with ISO 9409-1-63-4-M6

Designation	ID
A-SWK-020-ISO-A-63	0302202

Modular quick-change rack SWM-S



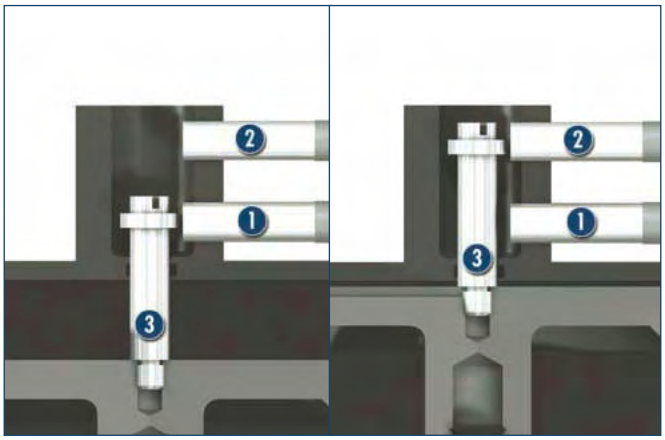
The modular “small” quick-change rack has been designed for the SWS-020 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and the tool size allows you to create a rack tailor-made to your application. The option of utilizing unused air feed-throughs for attaching the workpiece bolts is a unique feature.

Typical set-up on the robot

when using the SIP sensor interface plate

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example - K19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

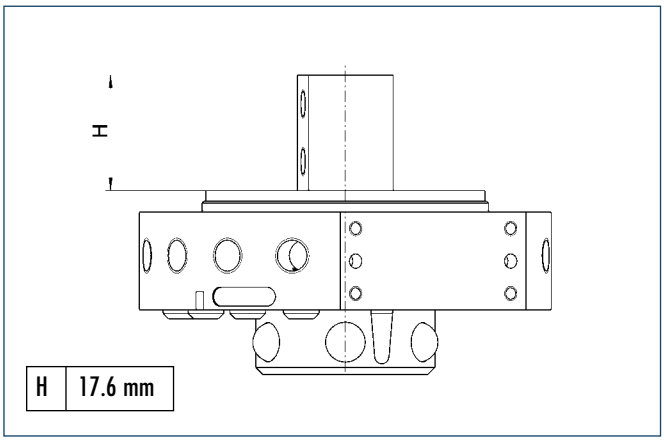


Locked Unlocked

① Sensor for locked (INW 41/S 9941216)
② Sensor for unlocked (INW 41/S 9941216)
③ Sensor target

Using the sensor interface plate, it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

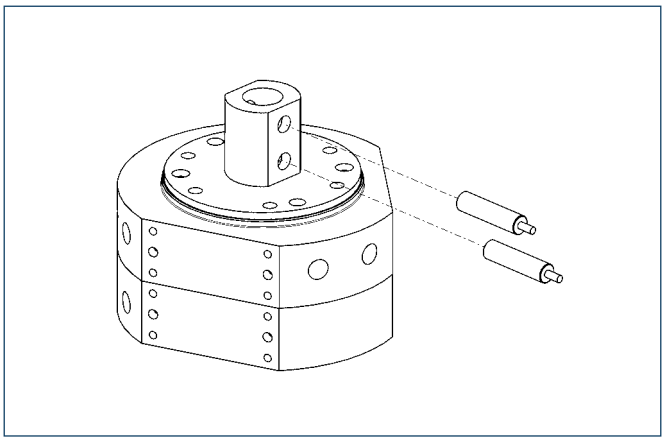
Minimum height of adapter plate for SIP-020



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



Inductive proximity switch

Designation	ID
IN 41/S	9941216

SWS-021

Tool Changing · Quick-change System · Light Load

Product description

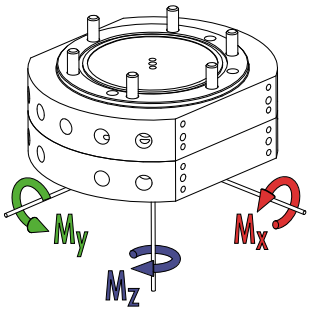
8 x G 1/8" air feed-throughs incorporated into a small, compact changer

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 3 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the outwards gripping locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



M_x max. 56.5 Nm
M_y max. 56.5 Nm
M_z max. 78.0 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

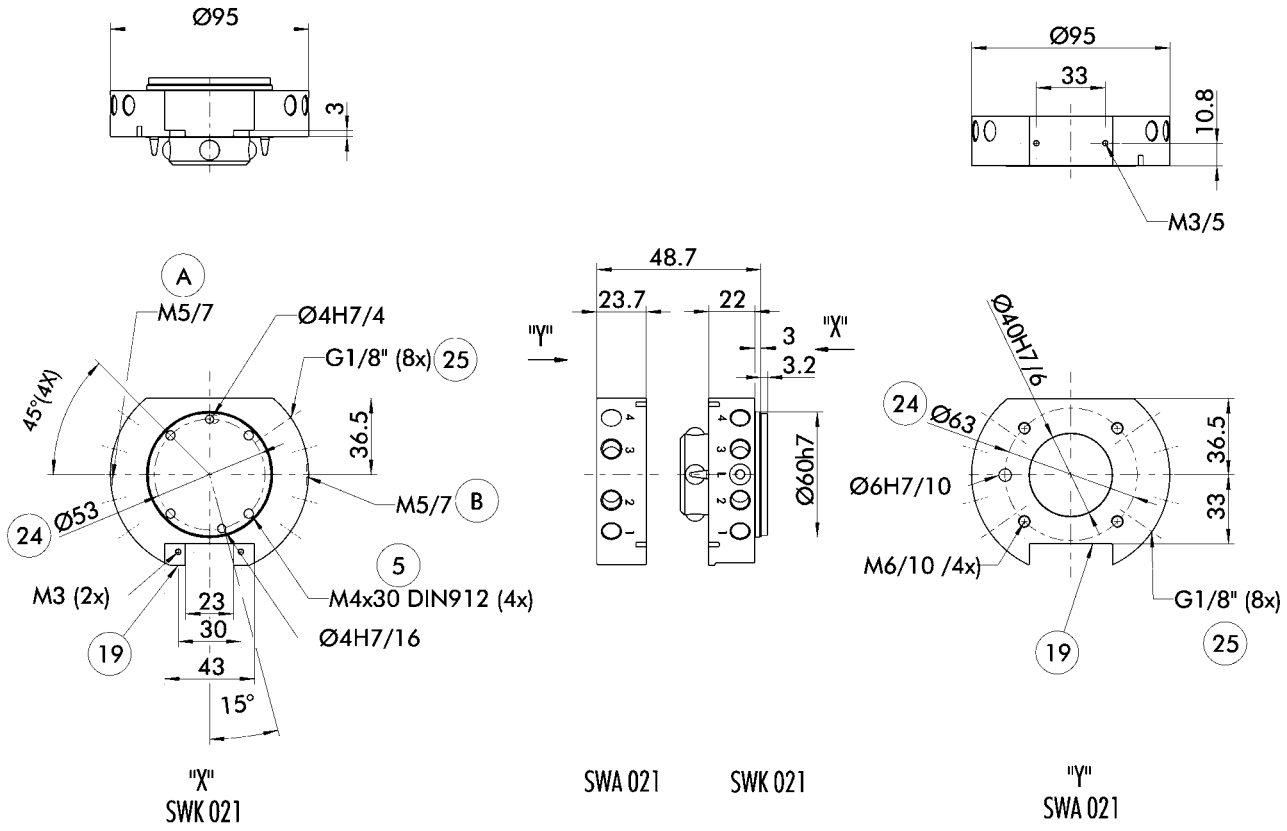
Designation		SWS-021	
Maximum payload	[kg]	25	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	56.5	
Static moment load M_z	[Nm]	78	
Dynamic moment load M_{xy}	[Nm]	169.5	
Dynamic moment load M_z	[Nm]	234	
Locking force (at 6 bar)	[N]	2314	In the event of higher tensile forces the system "falls" into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	0.8	0.5 kg head; 0.3 kg adapter
Max. distance on locking	[mm]	3.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		8x pneumatic G 1/8"	Max. 7 bar
Maximum permissible XY offset	[mm]	± 1	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

Designation		Detailed data sheet
K19	19 pins, 3 A/50 V, MS connector	See "SWS options" chapter
K26	26 pins, 3 A/50 V, MS connector	See "SWS options" chapter
KM14	14-pin, (12x5 A/250 VAC* and 2x13 A/250 VAC*)	See "SWS options" chapter

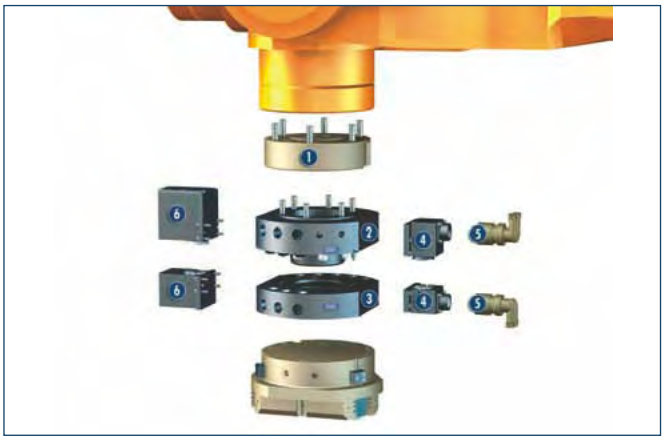
* 250 VAC grounding done by customer

How to order (example)

SW☐-021-☐☐☐-000

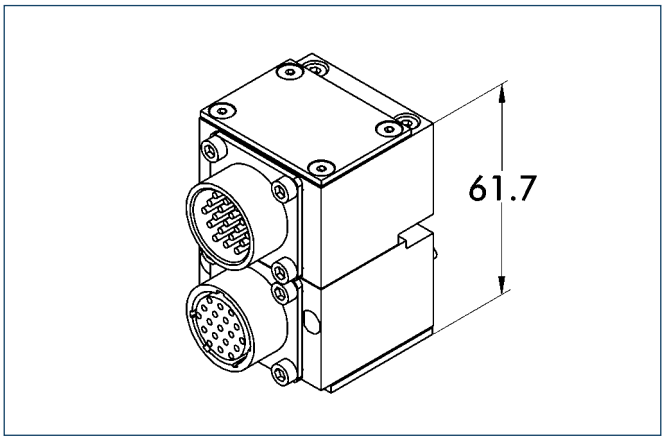
SWS-021	Examples
Option (000 = no option)	**SWK-021-000-000** (SWK-020, head side, no option)
K = head **A** = adapter	**SWA-021-K19-000** (SWA-021, adapter plate side, with K19 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. K19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector K19/ K26



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (3 Amp/50 VAC per pin)
K19 = 19-pin

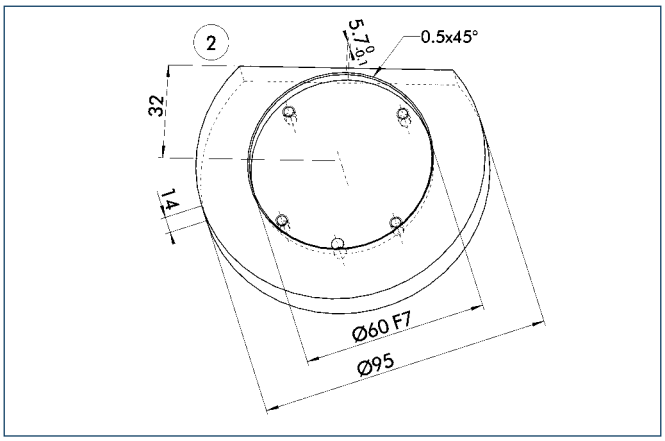
Designation	ID	Fits Description
K19 head	**9937328**	SWK 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector
K19 adapter	**9937329**	SWA 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector

Cable connectors

Cable connector for the connection between the K19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
K19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
K19 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

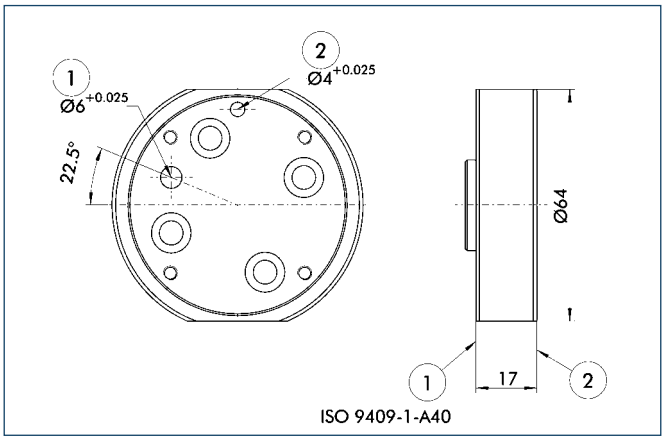
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

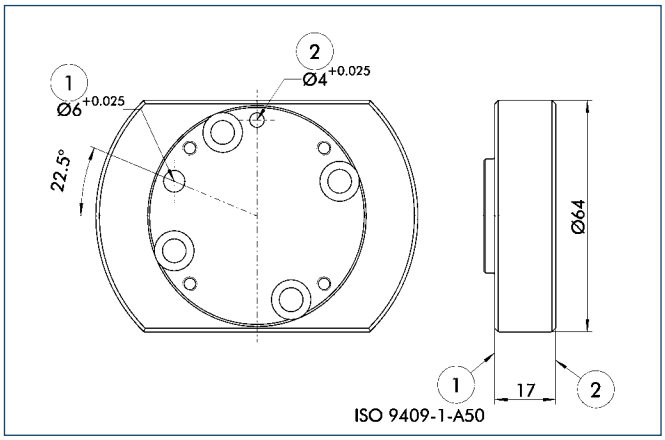


① Robot-side connection
② Tool-side connection

Adapter plate A40

For mounting the SWK-021 directly to a flange in accordance with ISO 9409-1-40-M6

Designation	ID
A-SWK-020-ISO-A-40	0302200

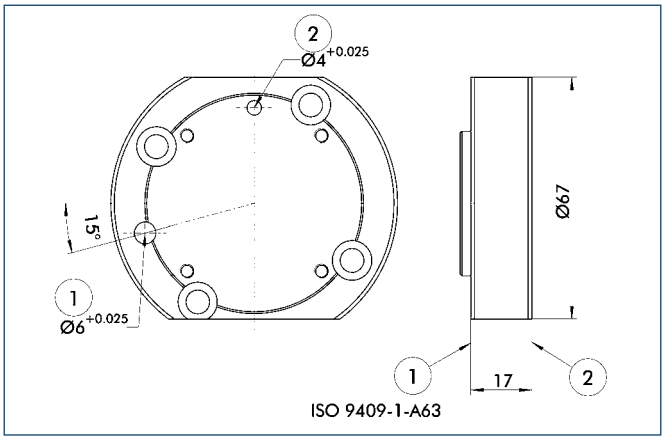


① Robot-side connection
② Tool-side connection

Adapter plate A50

For mounting the SWK-021 directly to a flange in accordance with ISO 9409-1-50-4-M6

Designation	ID
A-SWK-020-ISO-A-50	0302201



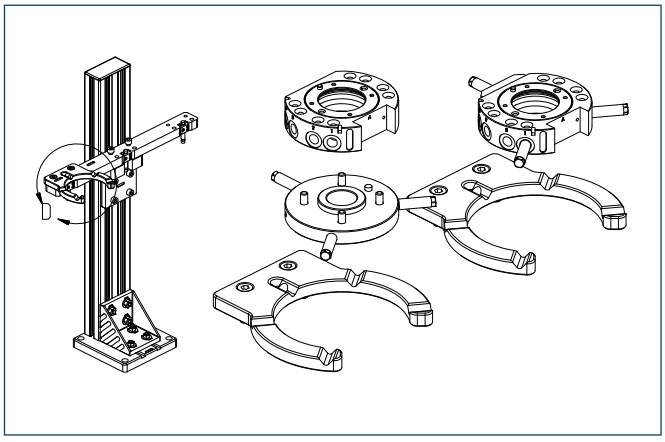
① Robot-side connection
② Tool-side connection

Adapter plate A63

For mounting the SWK-020 directly to a flange in accordance with ISO 9409-1-63-4-M6

Designation	ID
A-SWK-020-ISO-A-63	0302202

Modular quick-change rack SWM-S



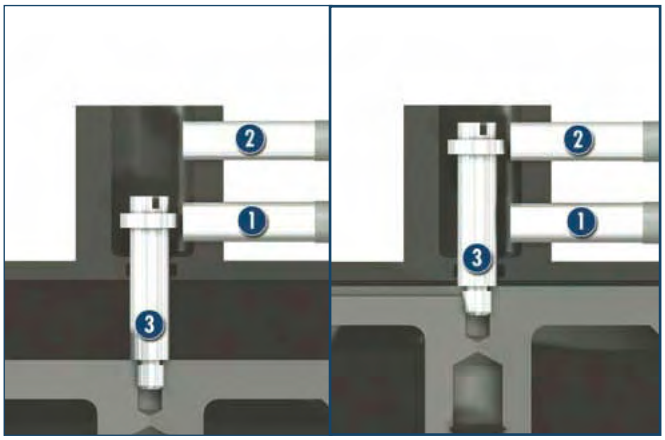
The modular “small” quick-change rack has been designed for the SWS-021 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and the tool size allows you to create a rack tailor-made to your application. The option of utilizing unused air feed-throughs for attaching the workpiece bolts is a unique feature.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example: K19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

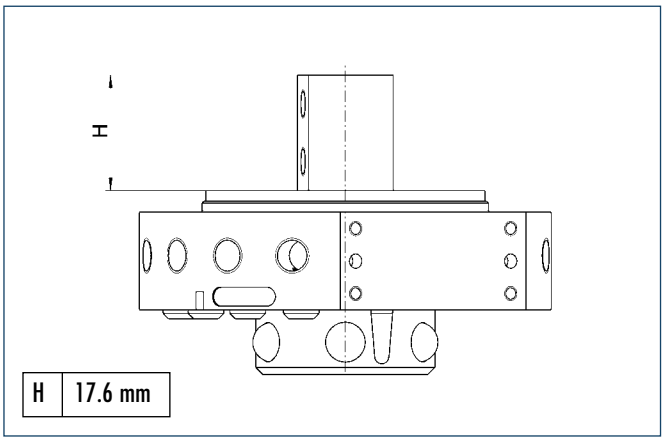


Locked **Unlocked**

① Sensor for locked IN 41/S 9941216
② Sensor for unlocked
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

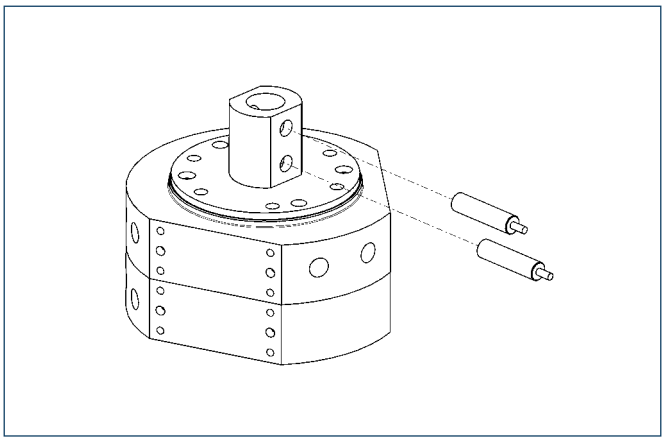
Minimum height of adapter plate for SIP-021



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



Inductive proximity switch

Designation	ID
IN 41/S	9941216

SWS-040

Tool Changing · Quick-change System · Medium Load

Product description

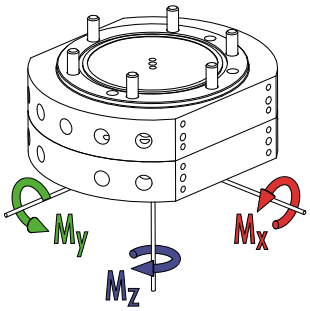
Three times moment rigidity and two times payload in comparison to SWS-020

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 5 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the outwards gripping locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



- M_x max. 157 Nm
- M_y max. 157 Nm
- M_z max. 216 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

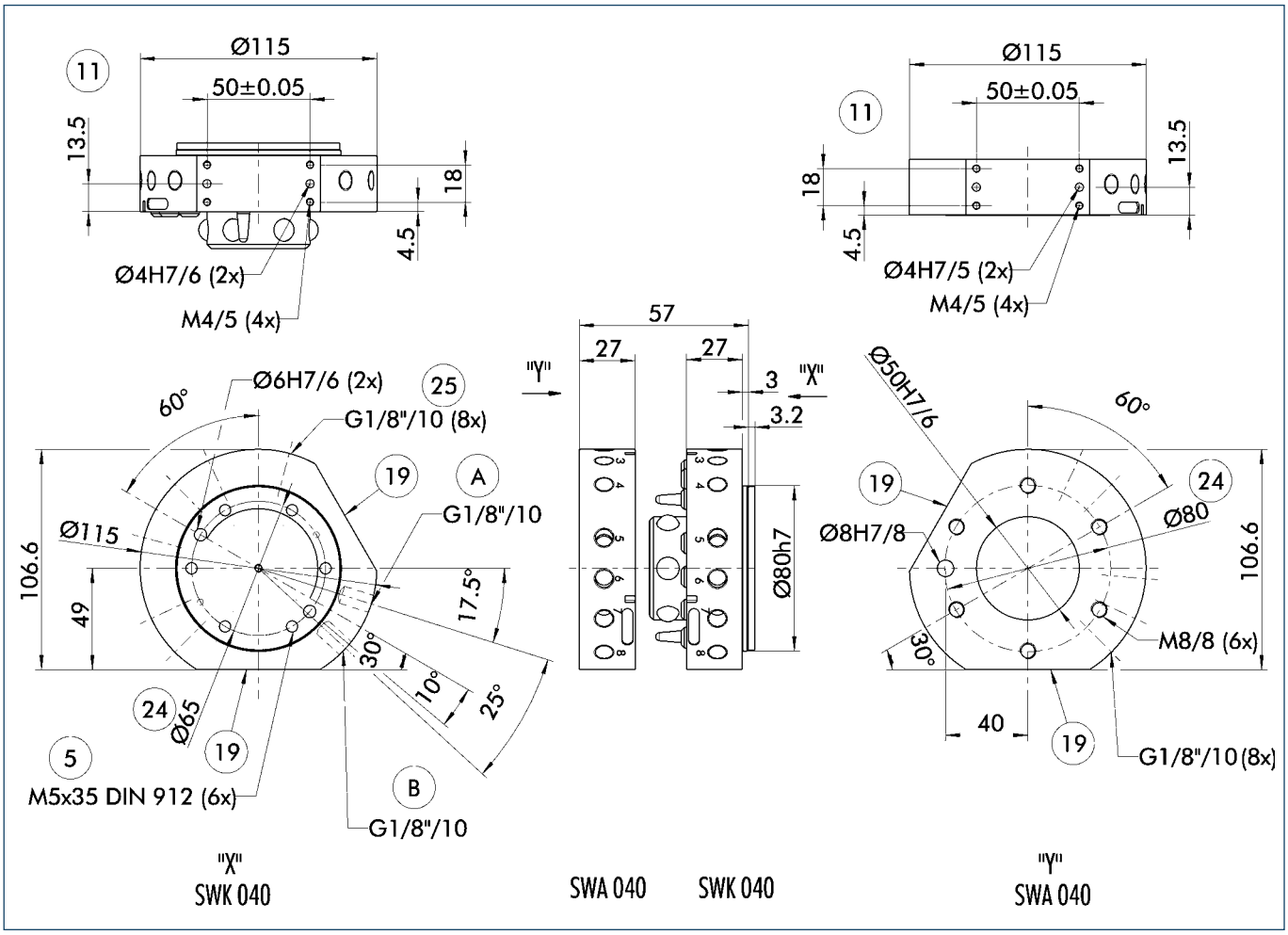
Designation		SWS-040	
Maximum payload	[kg]	50	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	157	
Static moment load M_z	[Nm]	216	
Dynamic moment load M_{xy}	[Nm]	471	
Dynamic moment load M_z	[Nm]	648	
Locking force (at 6 bar)	[N]	4540	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	1.7	1.1 kg head; 0.6 kg adapter
Min./max. distance on locking	[mm]	5.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		8x pneumatic G 1/8”	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(11) Drilling pattern on both sides
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 3 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

How to order (example)

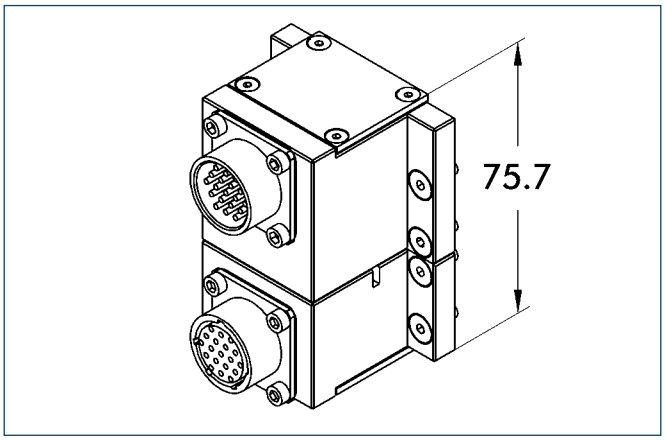
SW☐-040-☐☐☐-☐☐☐

SWS-040	Examples
Option B Option A	**SWK-040-000-000** (SWK-040, head side, no option)
K = head A = adapter	**SWA-040-R19-000** (SWA-040, adapter plate side, with R19 option)
	SWA-040-R19-F02 (SWA-040, head side, with R19 option and F02 option)

Typical set-up on the robot

① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14-pin can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10-pin can be used by customer - see drawing, fits R19 head

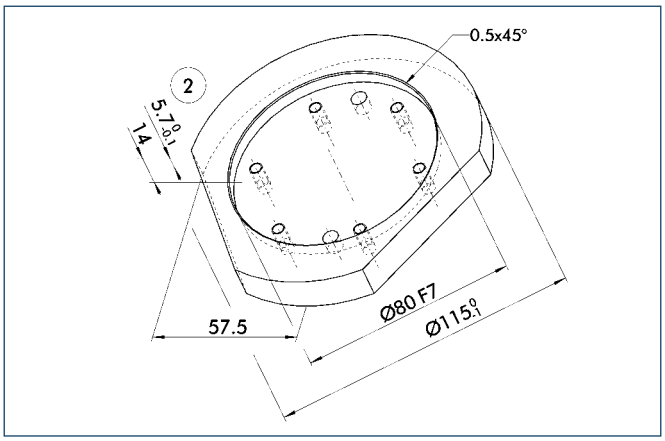
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

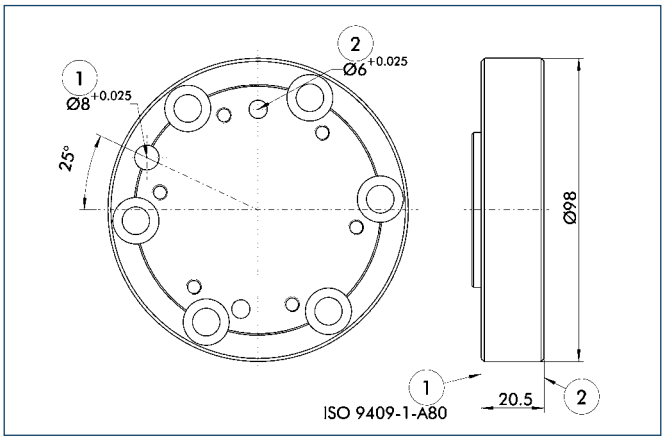
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

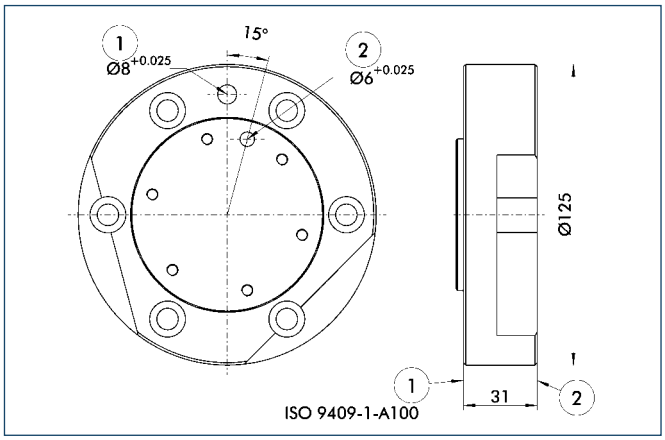


① Robot-side connection
② Tool-side connection

Adapter plate A80

For mounting the SWK-040 directly to a flange in accordance with ISO 9409-1-80-6-M8

Designation	ID
A-SWK-040-ISO-A-80	0302203



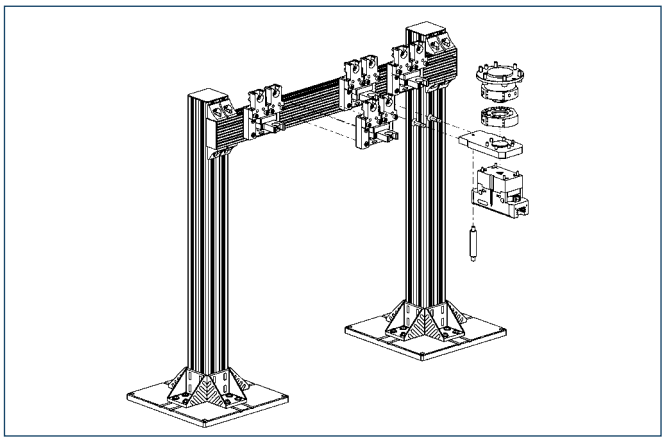
① Robot-side connection
② Tool-side connection

Adapter plate A100

For mounting the SWK-040 directly to a flange in accordance with ISO 9409-1-100-6-M8

Designation	ID
A-SWK-040-ISO-A-100	0302204

Modular quick-change rack SWM-M



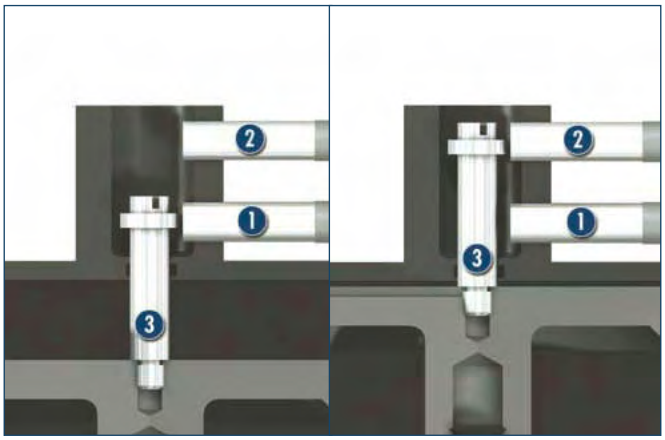
The modular “medium” quick-change rack has been designed for the SWS-040 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example - R19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

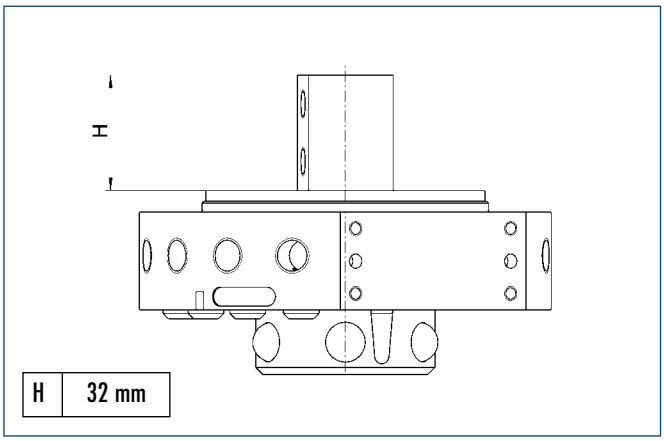


Locked Unlocked

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

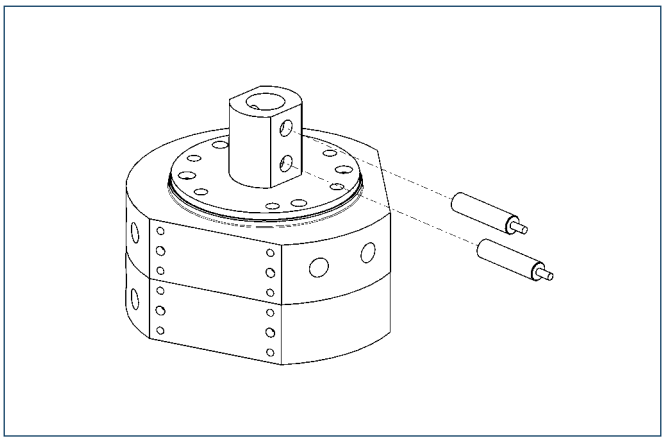
Minimum height of adapter plate for SIP-040



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



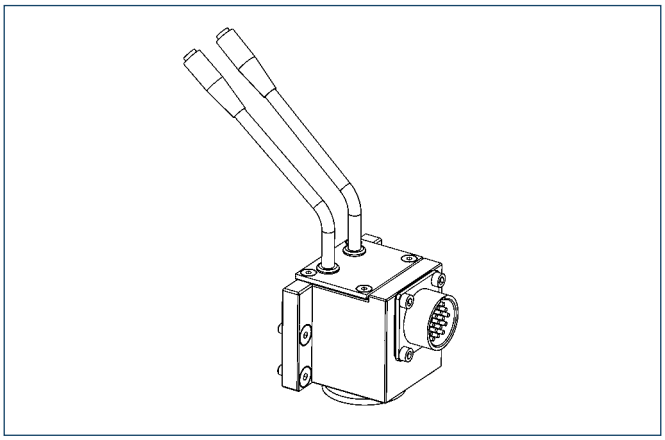
Inductive proximity switch

Designation	ID
INW 80/S-M12	0301508
INW 80/S-M8	0301408

Inductive proximity switch in conjunction with R19-W

Designation	ID
IN-C 80/S-M8	0301475

Electronic module R19-W



With connection option for proximity switch

The piston stroke control proximity switches can be monitored via the R19 electronic module. In order to do this, the cables are connected directly to the module.

Designation	ID	
R19-W	**9942041**	19 pins 5 A/250 V, 15 are free and 4 pins are needed for the proximity switches

Option also available for other electronic modules

SWS-041

Tool Changing · Quick-change System · Medium Load

Product description

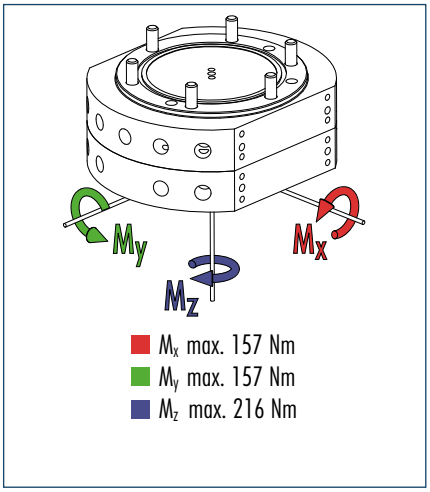
6x G 3/8" and 4x G 1/8" air feed-throughs incorporated into a small, compact changer

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 5 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

Designation		SWS-041	
Maximum payload	[kg]	50	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	157	
Static moment load M_z	[Nm]	216	
Dynamic moment load M_{xy}	[Nm]	471	
Dynamic moment load M_z	[Nm]	648	
Locking force (at 6 bar)	[N]	4540	In the event of higher tensile forces the system "falls" into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	2.1	1.4 kg head; 0.7 kg adapter
Min./max. distance on locking	[mm]	5.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		6x pneumatic G 3/8" 4x pneumatic G 1/8"	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 2	Maximum permissible angular offset around the Z axis when locking

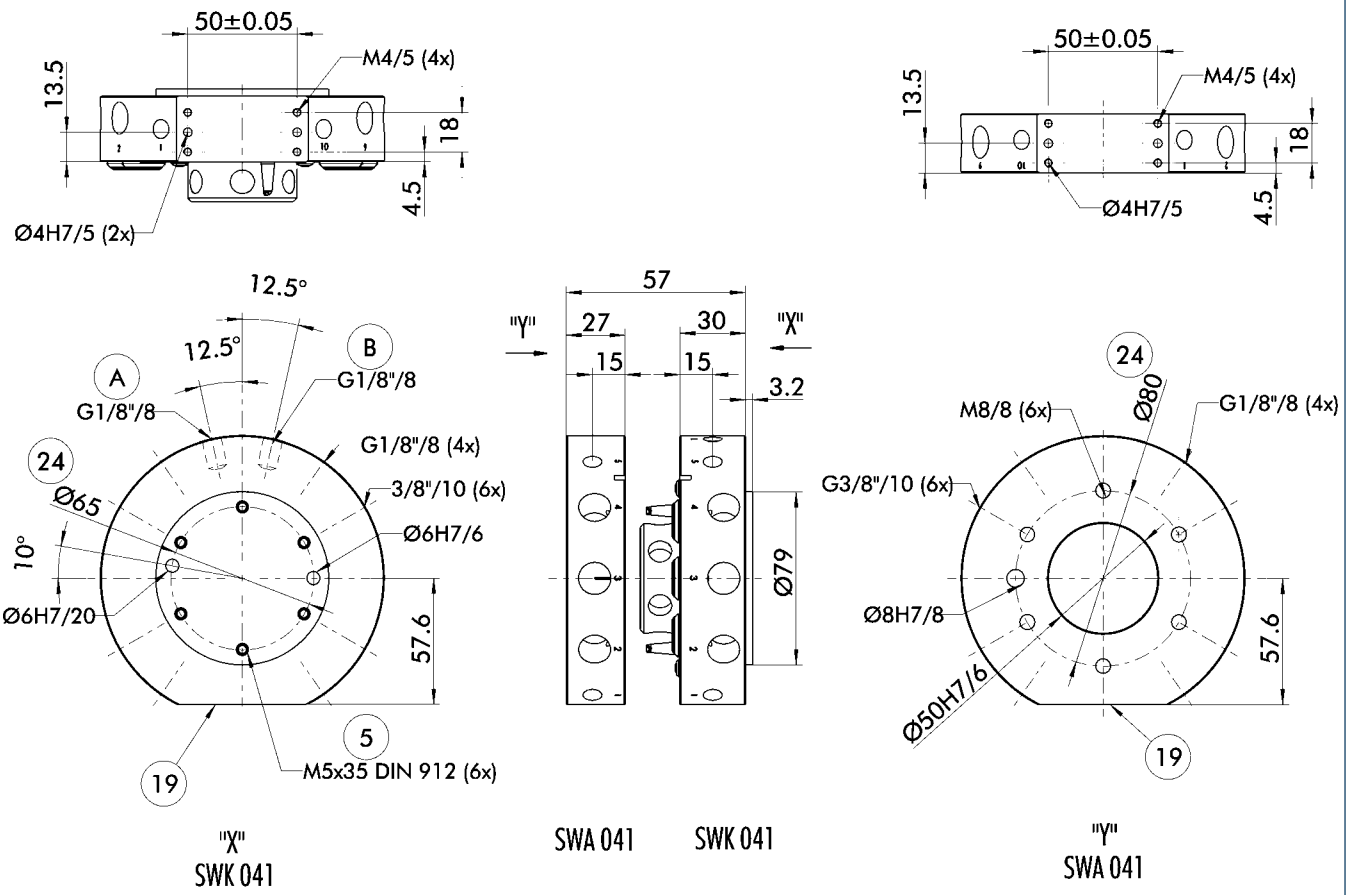
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle

Cable connectors

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 3 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

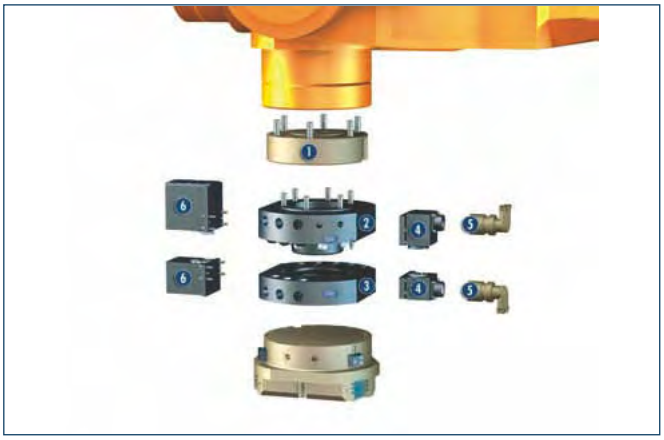
How to order (example)

SW☐-041-☐☐☐-000

SWS-041	Examples
Option (000 = no option)	SWK-041-000-000 (SWK-041, head side, no option)
K = head A = adapter	SWA-041-R19-000 (SWA-041, adapter plate side, with R19 option)

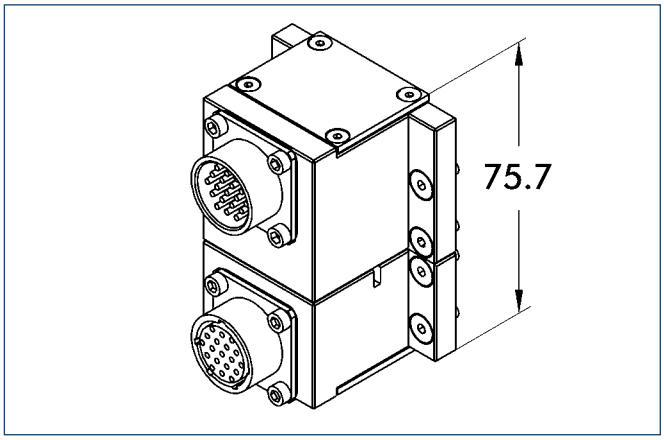
SWS-041

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14 pins can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10 pins can be used by customer - see drawing, fits R19 head

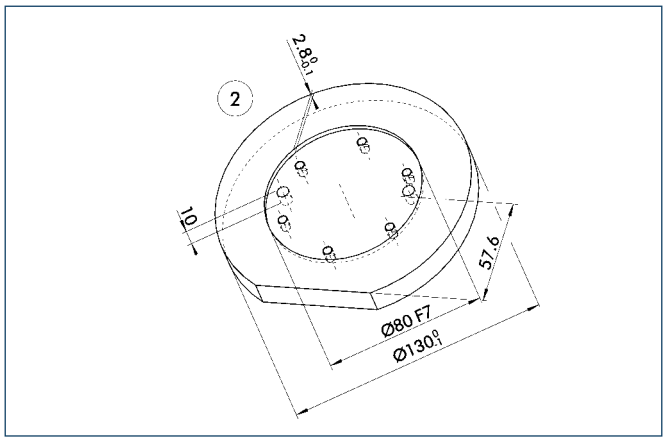
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

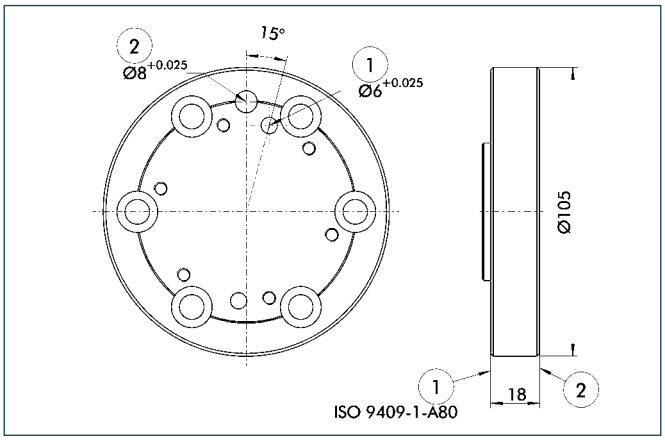
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

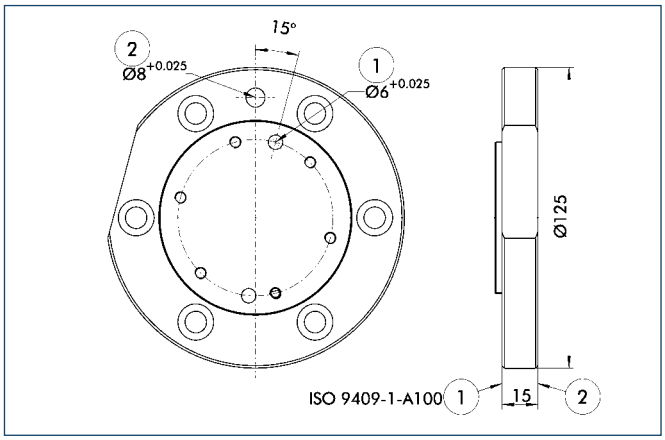


① Robot-side connection
② Tool-side connection

Adapter plate A80

For mounting the SWK-041 directly to a flange in accordance with ISO 9409-1-80-6-M8

Designation	ID
A-SWK-041-ISO-A-80	0302205



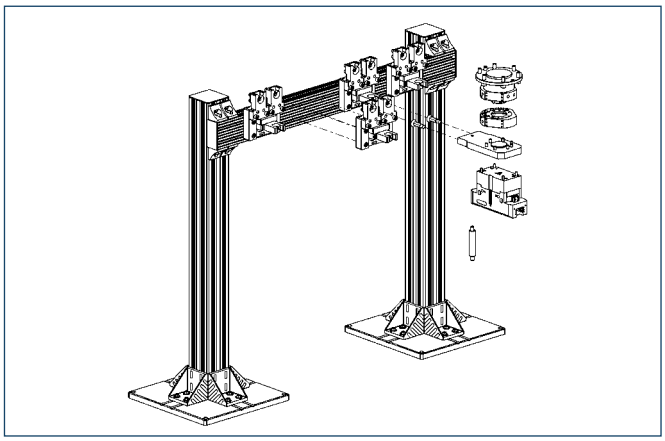
① Robot-side connection
② Tool-side connection

Adapter plate A100

For mounting the SWK-041 directly to a flange in accordance with ISO 9409-1-100-6-M8

Designation	ID
A-SWK-041-ISO-A-100	0302206

Modular quick-change rack SWM-M



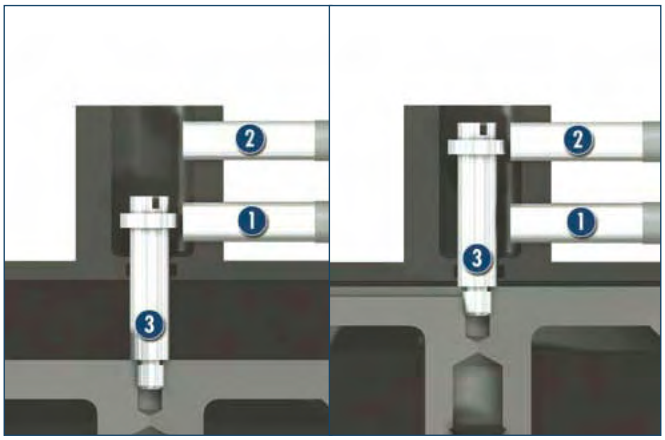
The modular “medium” quick-change rack has been designed for the SWS-041 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example - R19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

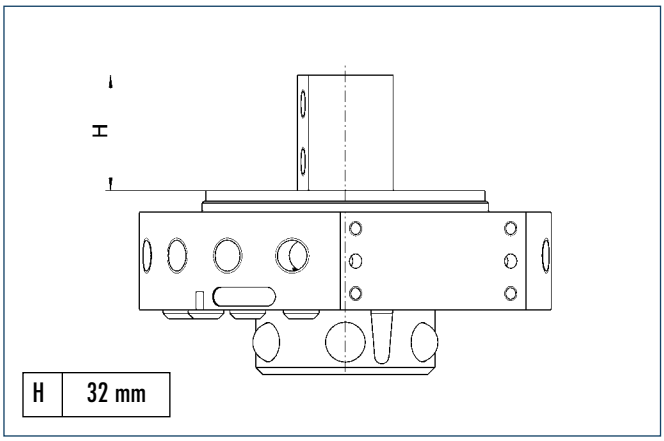


Locked **Unlocked**

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

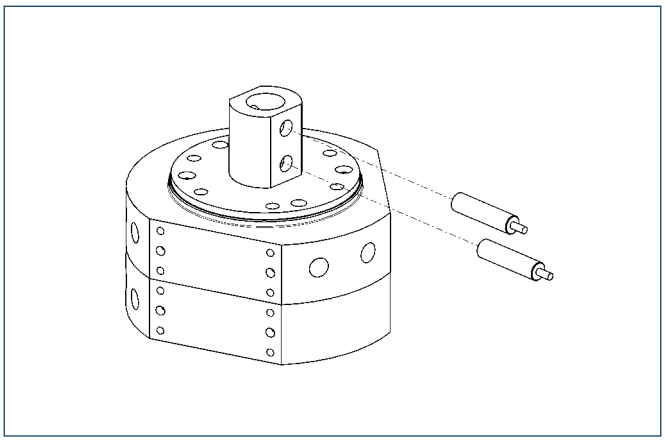
Minimum height of adapter plate for SIP-041



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



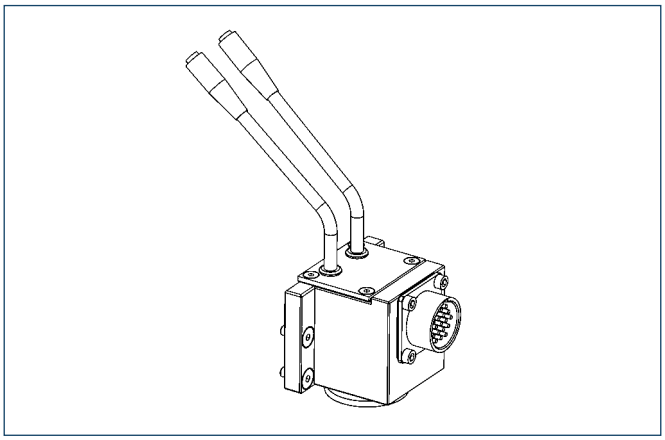
Inductive proximity switch

Designation	ID
INW 80/S-M12	0301508
INW 80/S-M8	0301408

Inductive proximity switch in conjunction with R19-W

Designation	ID
IN-B 80/S-M8	0301475

Electronic module R19-W



With connection option for proximity switch

The piston stroke control proximity switches can be monitored via the R19-W electronic module. In order to do this, the cables are connected directly to the module.

Designation	ID	
R19-W	**9942041**	19 pins 5 A/250 VAC*, 15 are free and 4 pins are needed for the proximity switches

* 250 VAC grounding done by customer

Option also available for other electronic modules

SWS-060

Tool Changing · Quick-change System · Medium Load

Product description

Light and compact with an extremely high locking force

No-Touch-Locking™

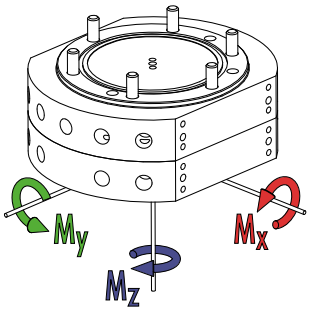
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 5 mm is possible.

Patented, self-retaining locking system

A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



- M_x max. 197 Nm
- M_y max. 197 Nm
- M_z max. 294 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

Designation		SWS-060	
Maximum payload	[kg]	75	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	197	
Static moment load M_z	[Nm]	294	
Dynamic moment load M_{xy}	[Nm]	591	
Dynamic moment load M_z	[Nm]	882	
Locking force (at 6 bar)	[N]	7387	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	2.0	1.3 kg head; 0.7 kg adapter
Min./max. distance on locking	[mm]	5.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		8x pneumatic G 1/8”	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

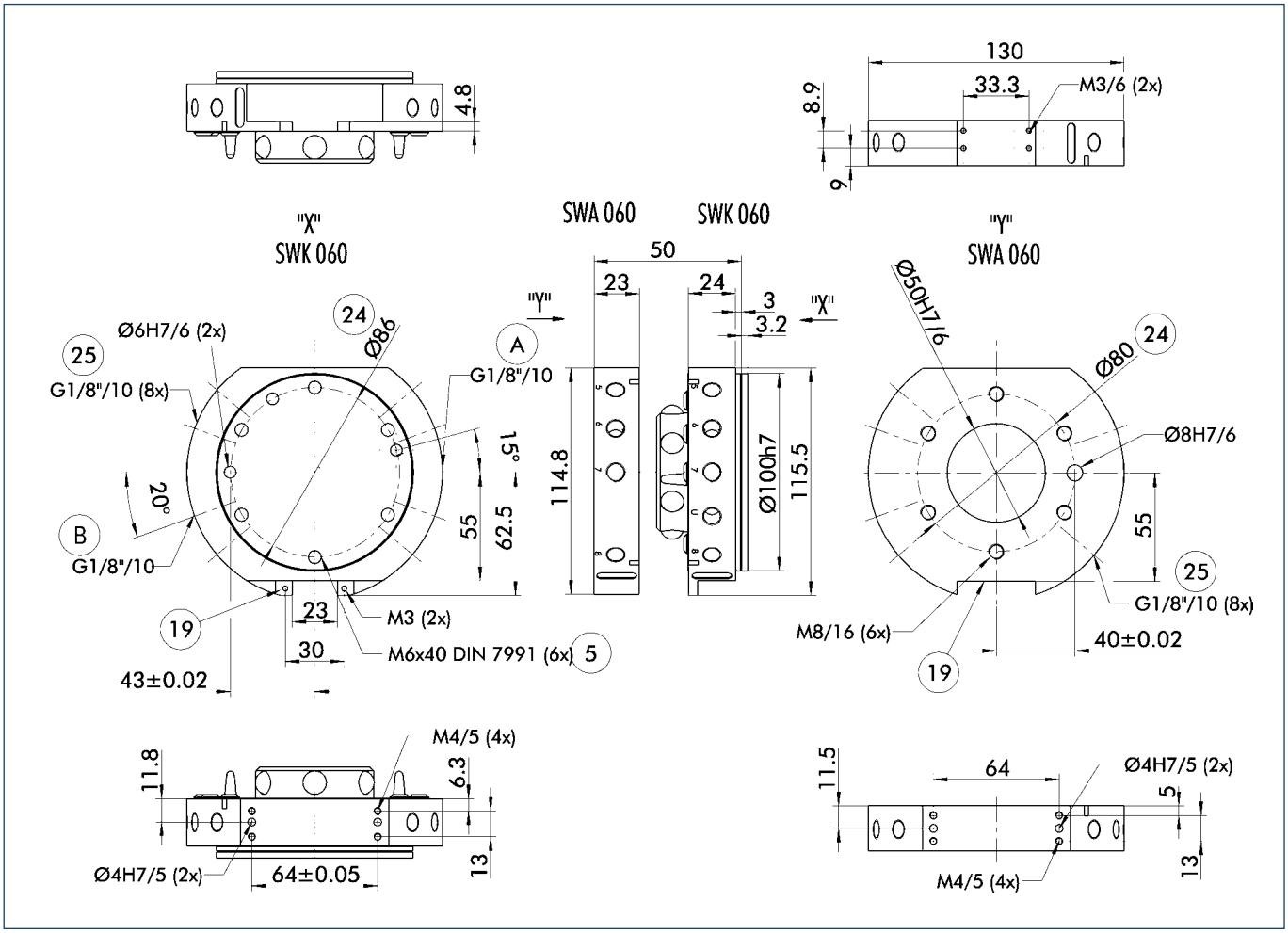
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

Designation		Detailed data sheet
K19	19 pins, 3 A/50 V, MS connector	See "SWS options" chapter
K26	26 pins, 3 A/50 V, MS connector	See "SWS options" chapter
KM14	14-pin, (12x5 A/250 VAC* and 2x13 A/250 VAC*)	See "SWS options" chapter

* 250 VAC grounding done by customer

How to order (example)

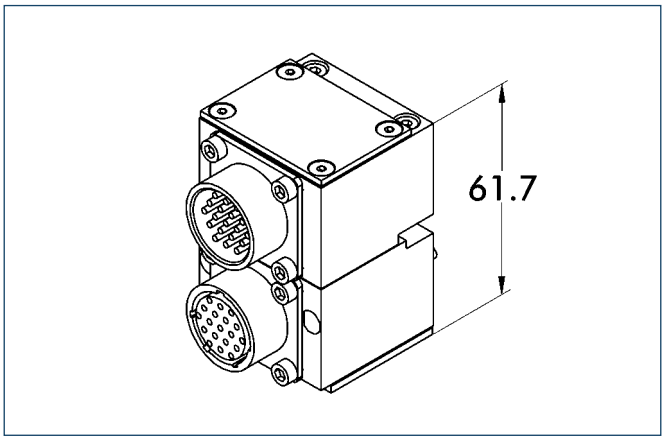
SW☐-060-☐☐☐-000

SWS-060	Examples
Option (000 = no option)	**SWK-060-000-000** (SWK-060, head side, no option)
K = head **A** = adapter	**SWA-060-R19-000** (SWA-060, adapter plate side, with R19 option)

Typical set-up on the robot

① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. K19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector K19



Option: Miniature quick-change connector with contact protected and splash-proof contact pins (3 Amp/50 VAC per pin).
K19 = 19-pin

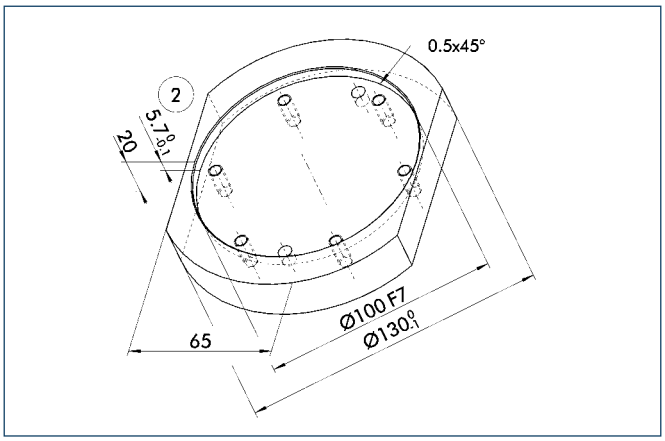
Designation	ID	Fits Description
K19 head	**9937328**	SWK 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector
K19 adapter	**9937329**	SWA 19 pin, 3 Amp/50 VAC E option with miniature quick-change connector

Cable connectors

Cable connector for the connection between the K19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
K19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
K19 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

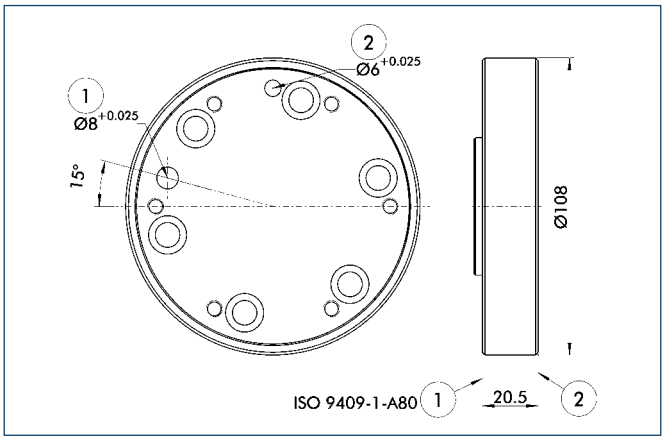
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

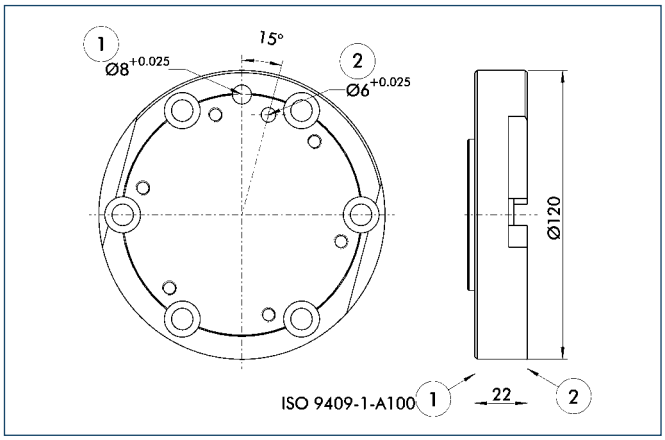


① Robot-side connection
② Tool-side connection

Adapter plate A80

For mounting the SWK-060 directly to a flange in accordance with ISO 9409-1-80-6-M8

Designation	ID
A-SWK-060-ISO-A-80	0302207



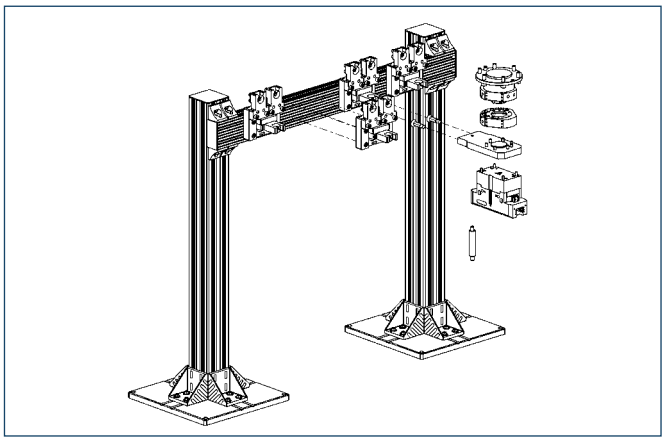
① Robot-side connection
② Tool-side connection

Adapter plate A100

For mounting the SWK-060 directly to a flange in accordance with ISO 9409-1-100-6-M8

Designation	ID
A-SWK-060-ISO-A-100	0302208

Modular quick-change rack SWM-M



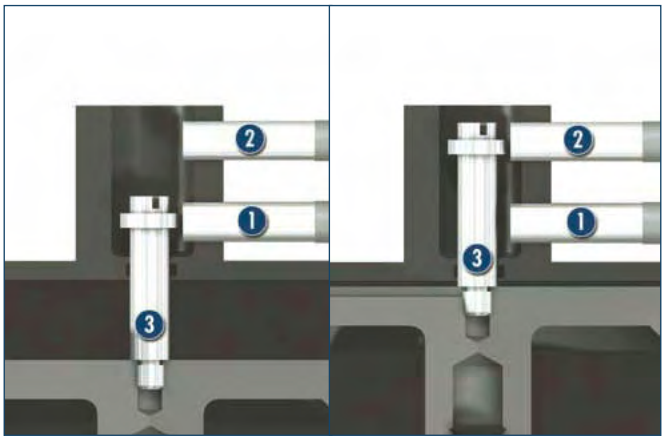
The modular “medium” quick-change rack has been designed for the SWS-060 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example: K19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

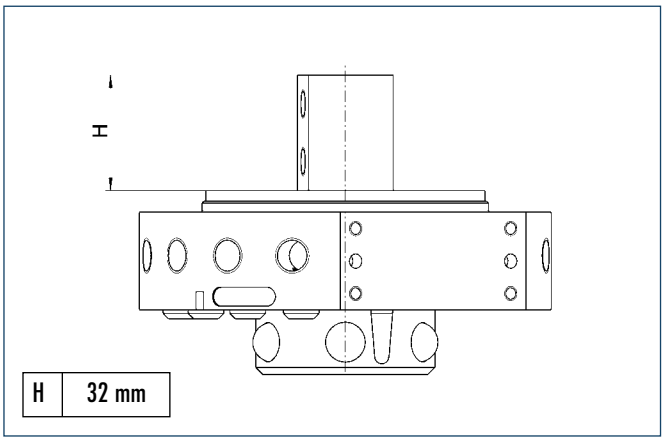


Locked **Unlocked**

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

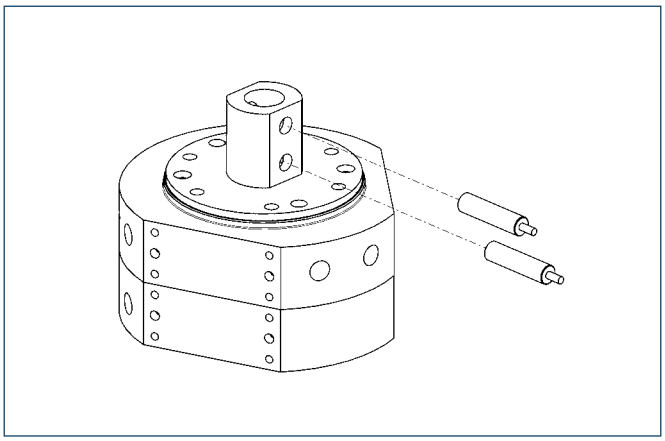
Minimum height of adapter plate for SIP-060



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



Inductive proximity switch

Designation	ID
INW 80/S-M12	**0301508**
INW 80/S-M8	**0301408**

SWS-071

Tool Changing · Quick-change System · Medium Load

Product description

Light and compact with an extremely strong locking force

No-Touch-Locking™

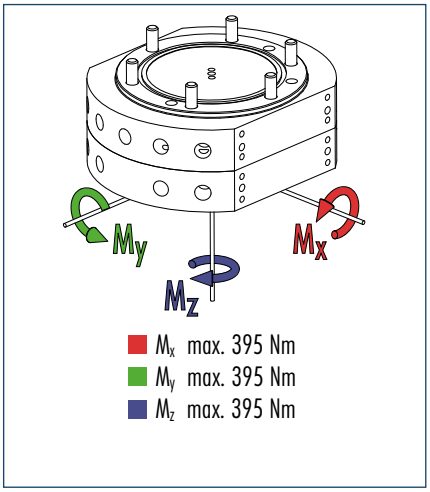
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 5 mm is possible.

Patented, self-retaining locking system

A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

Designation		SWS-071	
Maximum payload	[kg]	79	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	395	
Static moment load M_z	[Nm]	395	
Dynamic moment load M_{xy}	[Nm]	1185	
Dynamic moment load M_z	[Nm]	1185	
Locking force (at 6 bar)	[N]	8075	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	3.1	1.8 kg head; 1.3 kg adapter
Min./max. distance on locking	[mm]	5.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		8x pneumatic G 1/4”	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

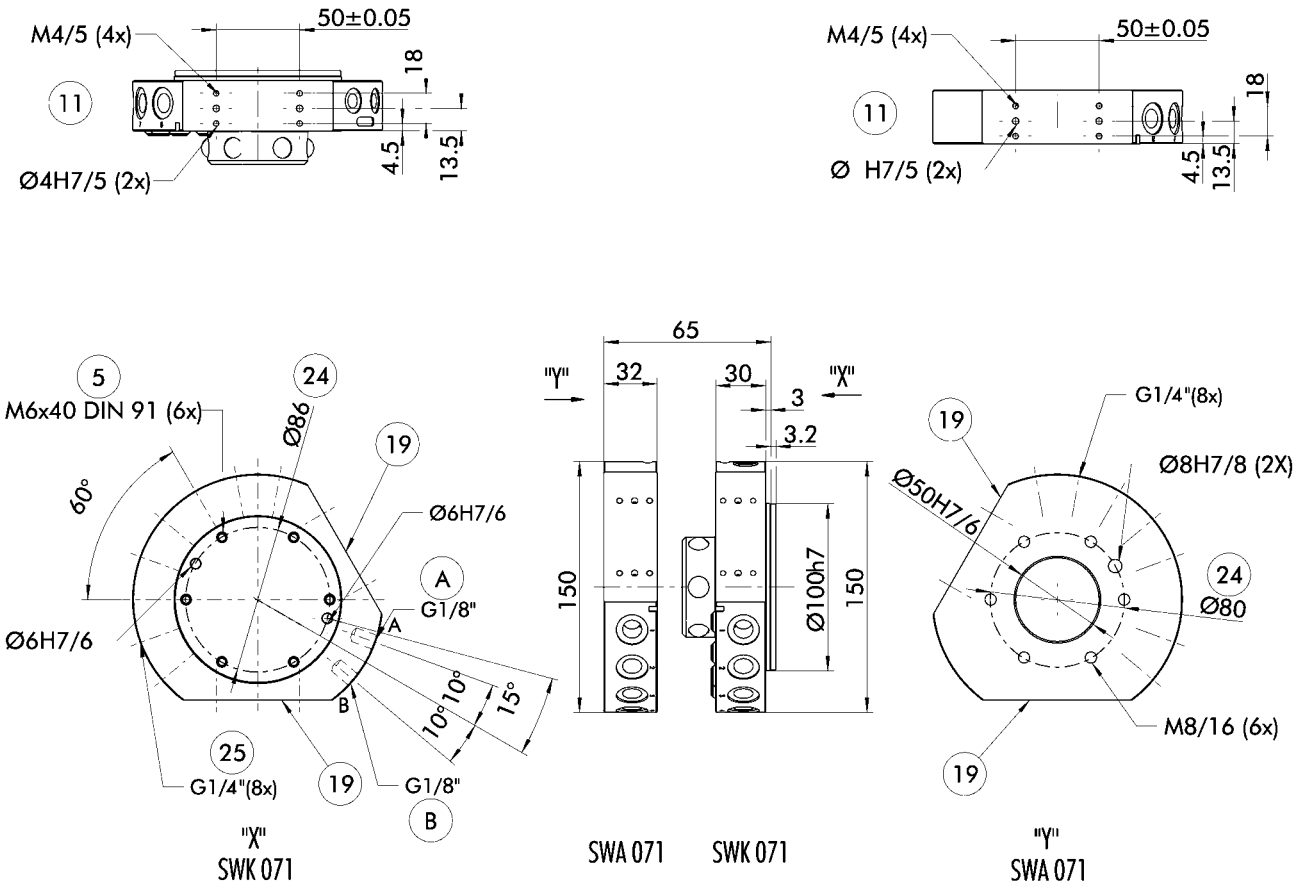
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(11) Drilling pattern on both sides
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Electrical options

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

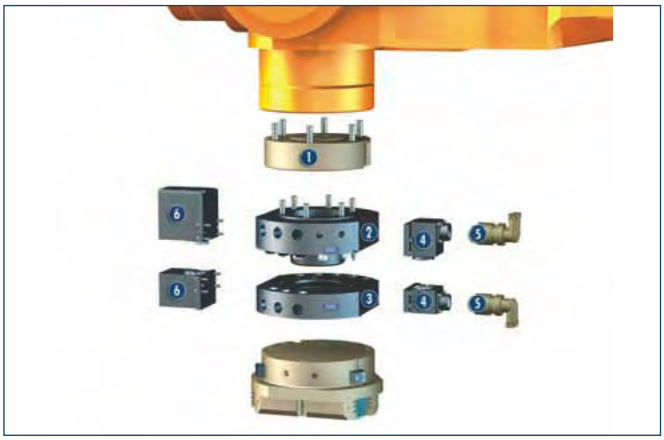
* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

How to order (example)

SW□-071-□□□-□□□

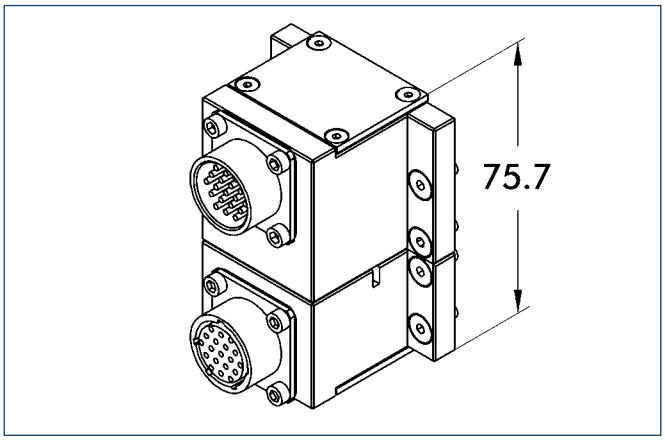
SWS-071	Examples
Option B	**SWK-071-000-000** (SWK-071, head side, no option)
Option A	
K = head	**SWA-071-R19-000** (SWA-071, adapter plate side, with R19 option)
A = adapter	**SWA-071-T19-F02** (SWA-071, head side, with T19 option and F02 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19/R26/R32



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14 pins can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10 pins can be used by customer - see drawing, fits R19 head

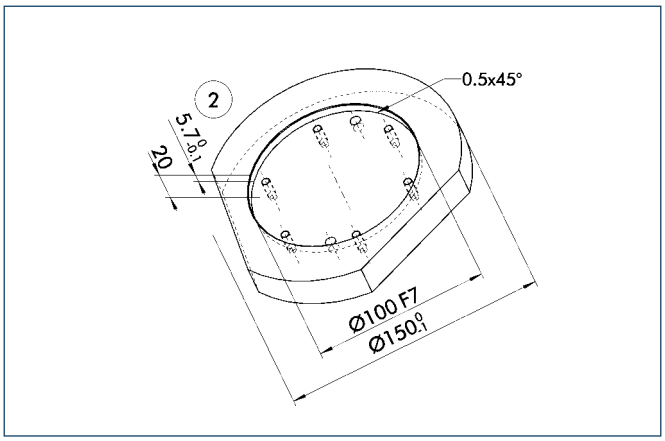
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

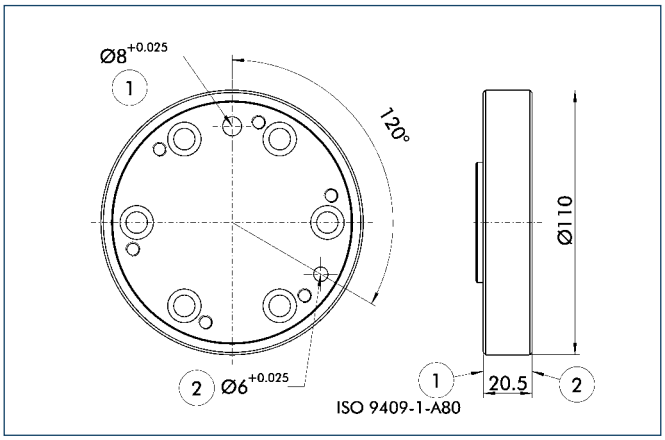
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

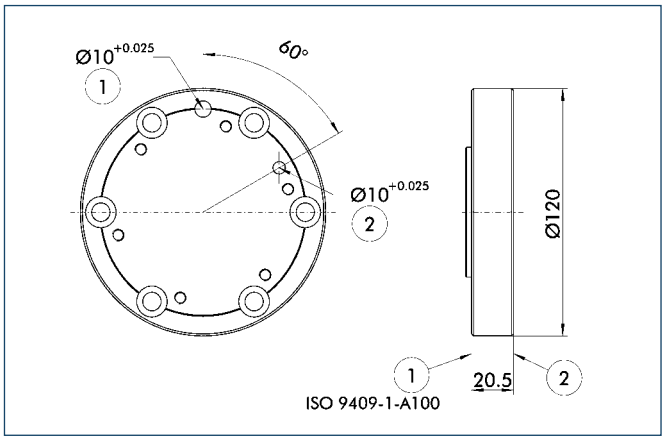


① Robot-side connection
② Tool-side connection

Adapter plate A80

For mounting the SWK-071 directly to a flange in accordance with ISO 9409-1-80-6-M8

Designation	ID
A-SWK-071-ISO-A-80	0302209



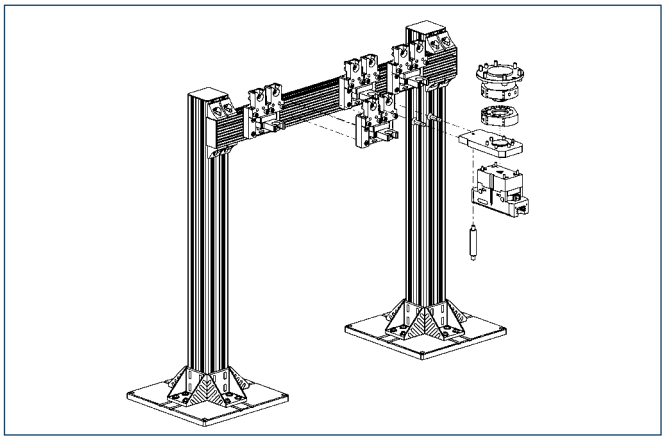
① Robot-side connection
② Tool-side connection

Adapter plate A100

For mounting the SWK-071 directly to a flange in accordance with ISO 9409-1-100-6-M8

Designation	ID
A-SWK-071-ISO-A-100	0302210

Modular quick-change rack SWM-M



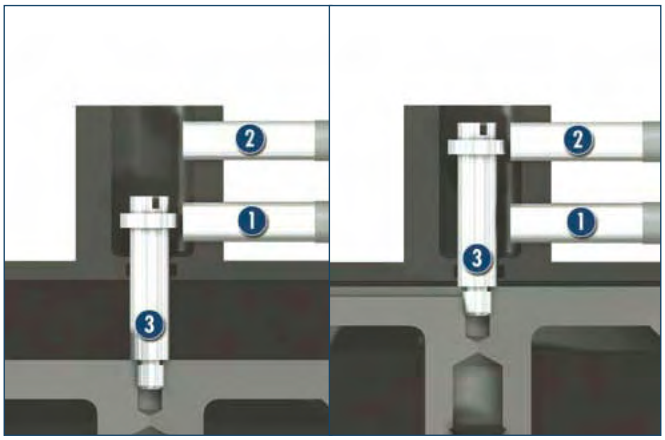
The modular “medium” quick-change rack has been designed for the SWS-071 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example: R19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

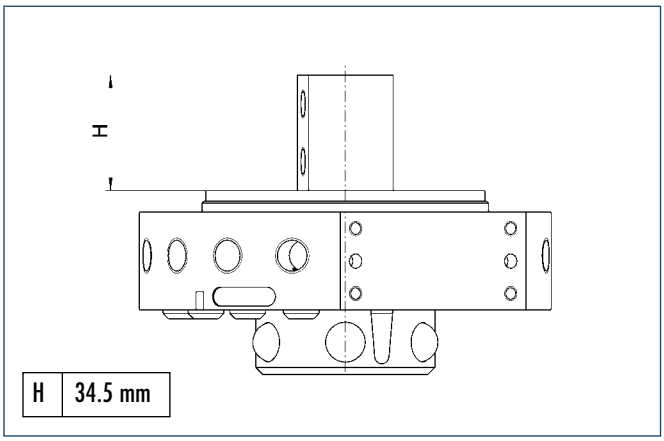


Locked **Unlocked**

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

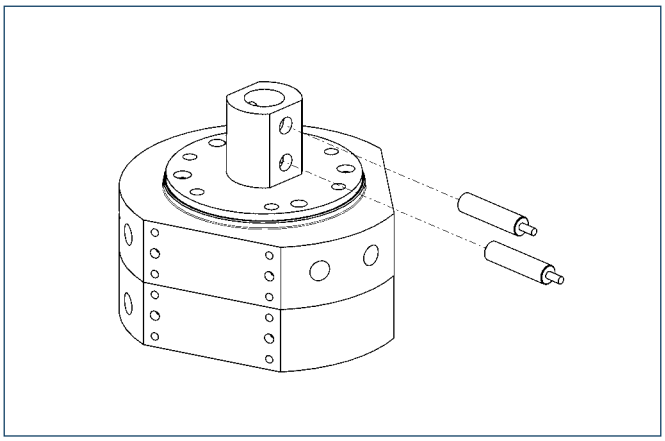
Minimum height of adapter plate for SIP-071



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



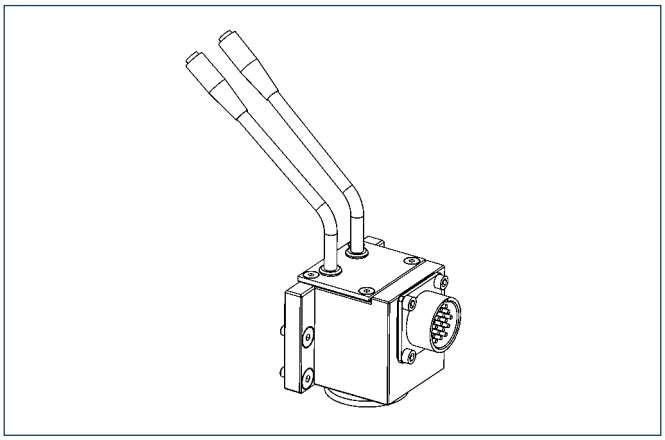
Inductive proximity switch

Designation	ID
INW 80/S-M12	0301508
INW 80/S-M8	0301408

Inductive proximity switch in conjunction with R19-W

Designation	ID
IN-C 80/S-M8	0301477

Electronic module R19-W



With connection option for proximity switch

The piston stroke control proximity switches can be monitored via the R19-W electronic module. In order to do this, the cables are connected directly to the module.

Designation	ID	
R19-W	**9942041**	19 pins 5 A/250 VAC*, 15 are free and 4 pins are needed for the proximity switches

* 250 VAC grounding done by customer

Option also available for other electronic modules

SWS-110

Tool Changing · Quick-change System · Medium Load

Product description

Outstanding weight/force ratio

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 7 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

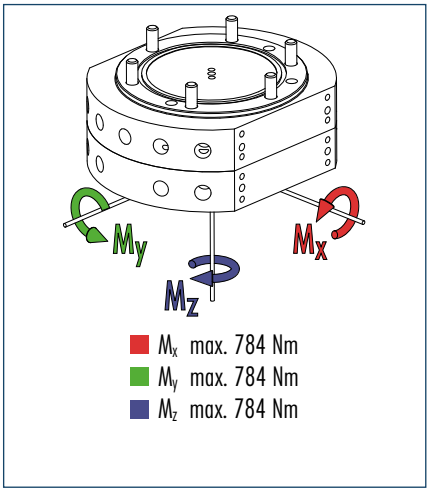
Integrated locking monitoring
for locked and unlocked

Mounting option for DeviceNet module

Direct mounting to ISO 9409-1-A125 adapter plates
Available for other flanges

Air feed-through with specially developed rubber seals

Moment load



ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

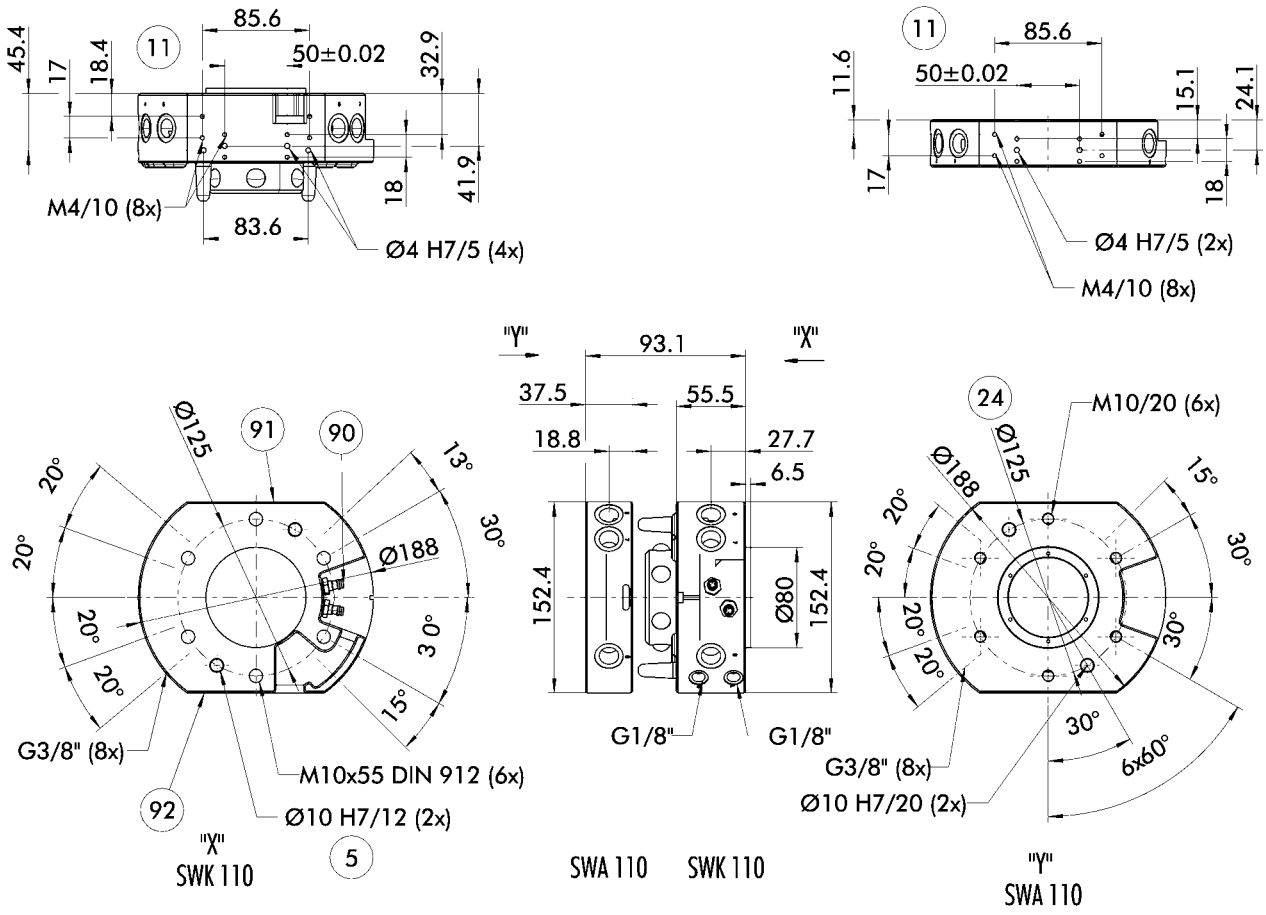
Designation		SWS-110	
Maximum payload	[kg]	150	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	784	
Static moment load M_z	[Nm]	784	
Dynamic moment load M_{xy}	[Nm]	2352	
Dynamic moment load M_z	[Nm]	2352	
Locking force (at 6 bar)	[N]	12149	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	5.9	3.9 kg head; 2.0 kg adapter
Min./max. distance on locking	[mm]	7.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		8x pneumatic G 3/8”	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(11) Drilling pattern on both sides
(24) Bolt pitch circle
(90) Optional proximity switch
(91) Screw connection area for option 2
(92) Screw connection area for option 1

Cable connectors

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

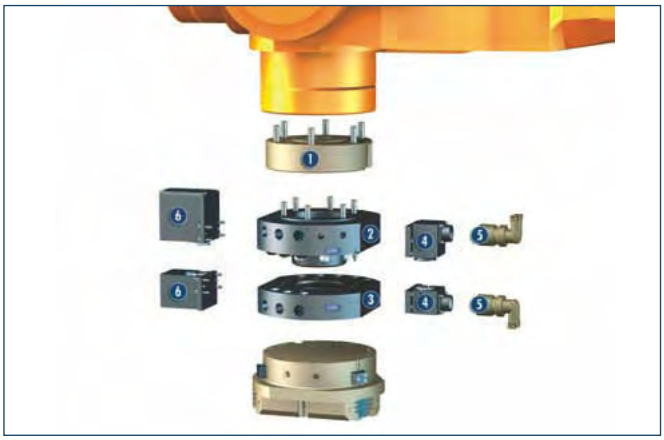
* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

How to order (example)

SW☐-110-☐☐☐-000

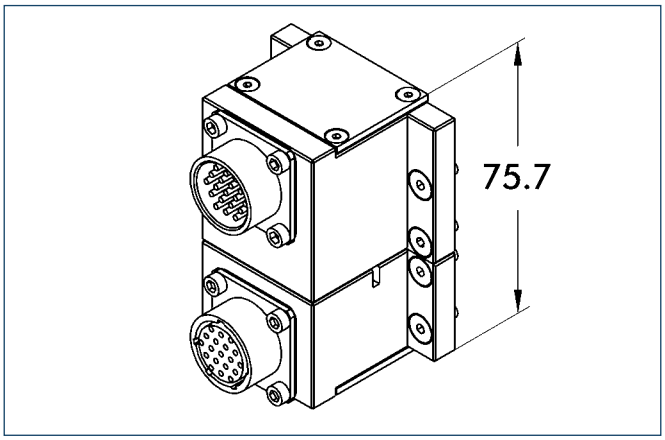
SWS-110	Examples
Option (000 = no option)	**SWK-110-000-000** (SWK-110, head side, no option)
K = head **A** = adapter	**SWA-110-R19-000** (SWA-110, adapter plate side, with R19 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14 pins can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10 pins can be used by customer - see drawing, fits R19 head

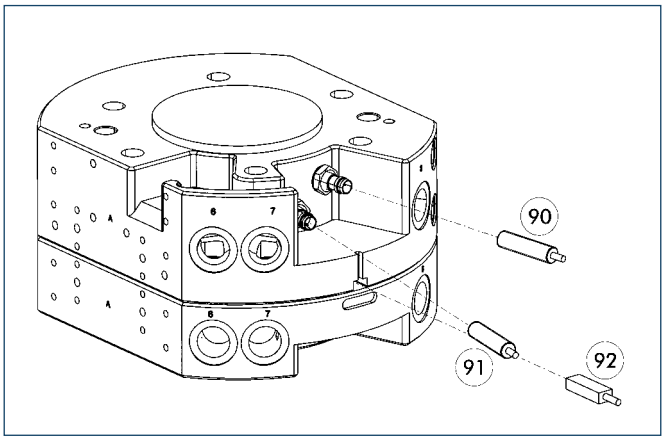
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

Proximity switch installation position

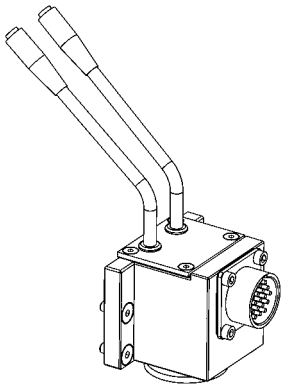


(90) Sensor for locked
(91) Sensor for unlocked
(92) Sensor for presence monitoring

Inductive proximity switch

Designation	ID
IN 81/S	0302454

Electronic module R19-R



With connector option for proximity switch

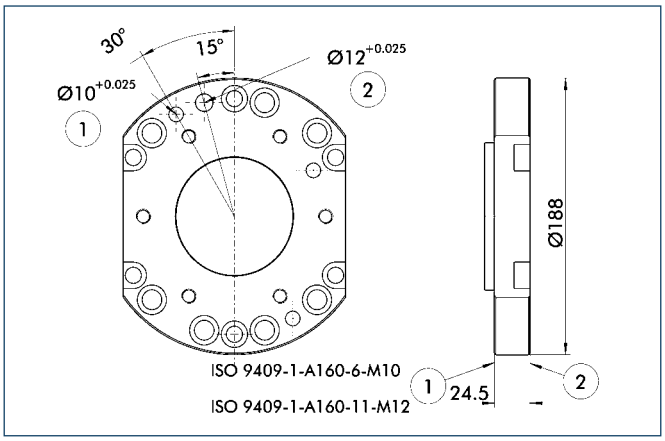
The piston stroke control proximity switches can be monitored via the R19 electronic module. In order to do this, the cables are connected directly to the module.

Designation	ID	
R19-R	9942391	19 pins 5 A/250 VAC*, 15 are free and 4 pins are needed for the proximity switches

* 250 VAC grounding done by customer

Option also available for other electronic modules

Standard adapter plates for ISO flanges



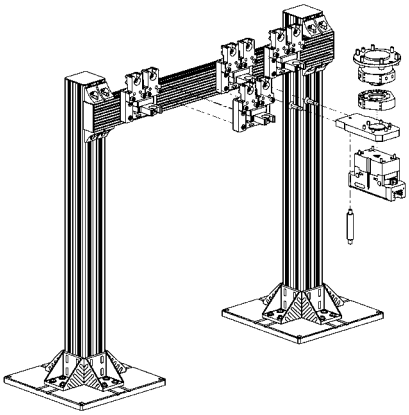
(1) Robot-side connection
(2) Tool-side connection

Adapter plate A160

For mounting the SWK-150 directly to a flange in accordance with ISO 9409-1-160-6-M10/ISO 9409-1-160-11-M12

Designation	ID
A-SWK-110-ISO-A-160	0302225

Modular quick-change rack SWM-M



The modular "medium" quick-change rack has been designed for the SWS-110 size. The system's modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

SWS-150

Tool Changing · Quick-change System · Medium Load

Product description

Extremely high locking forces

No-Touch-Locking™

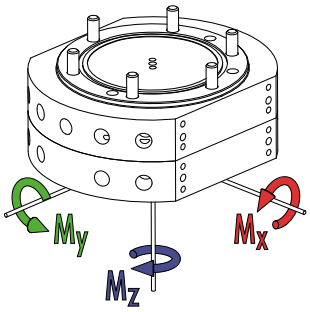
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 7 mm is possible.

Patented, self-retaining locking system

A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel components made from stainless Rc 58.

Air feed-through with specially developed rubber seals

Moment load



M_x max. 1356 Nm
M_y max. 1356 Nm
M_z max. 1130 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

Designation		SWS-150	
Maximum payload	[kg]	200	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	1356	
Static moment load M_z	[Nm]	1130	
Dynamic moment load M_{xy}	[Nm]	4068	
Dynamic moment load M_z	[Nm]	3390	
Locking force (at 6 bar)	[N]	16109	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	7.5	4.8 kg head; 2.7 kg adapter
Min./max. distance on locking	[mm]	7.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		10x pneumatic G 3/8”	Max. 7 bar
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

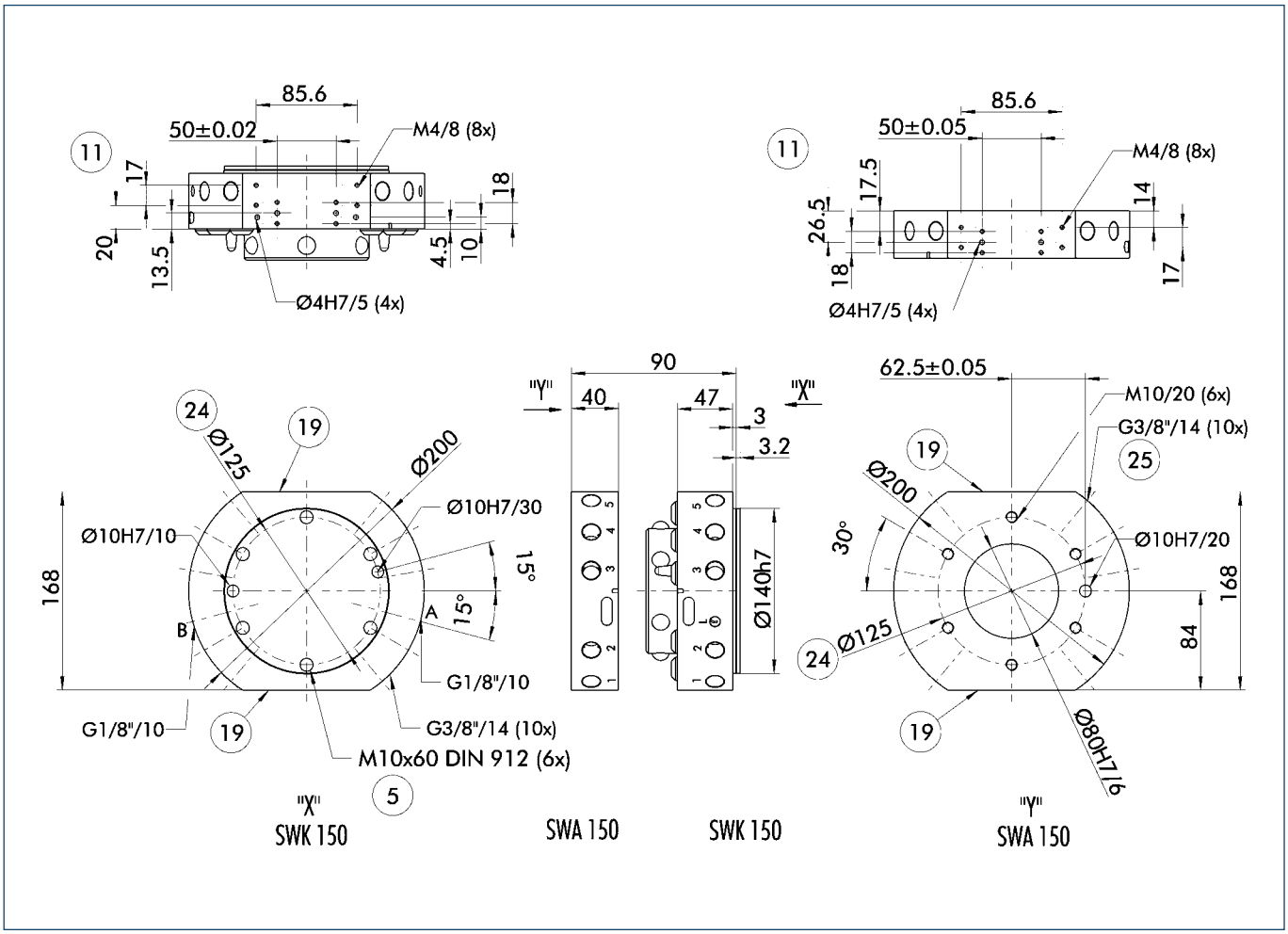
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
(5) Through-bore for screw connection with screw (enclosed)
(11) Drilling pattern on both sides
(19) Screw connection area for options
(24) Bolt pitch circle
(25) Air feed-through

Cable connectors

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

How to order (example)

SW□-150-□□□-□□□

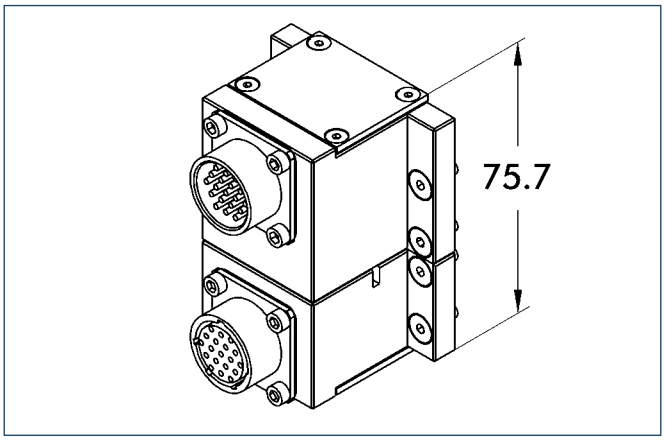
SWS-150	Examples
Option B Option A	**SWK-150-000-000** (SWK-150, head side, no option)
K = head A = adapter	**SWA-150-R19-F02** (SWA-150, adapter plate side, with R19 option and F02 option)
	SWA-150-R19-000 (SWA-150, head side, with R19 option)

SWS-150

Typical set-up on the robot

① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14 pins can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10 pins can be used by customer - see drawing, fits R19 head

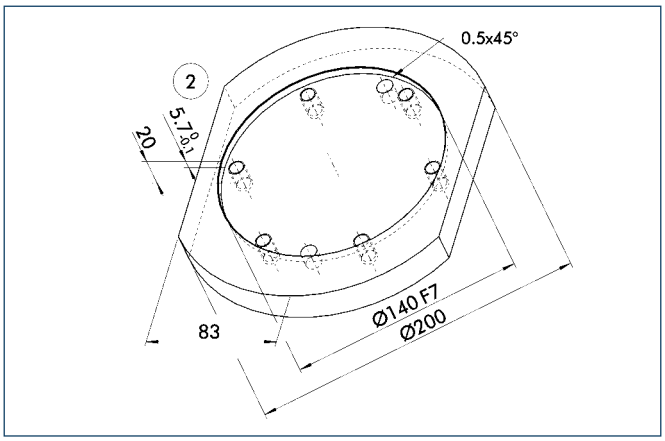
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

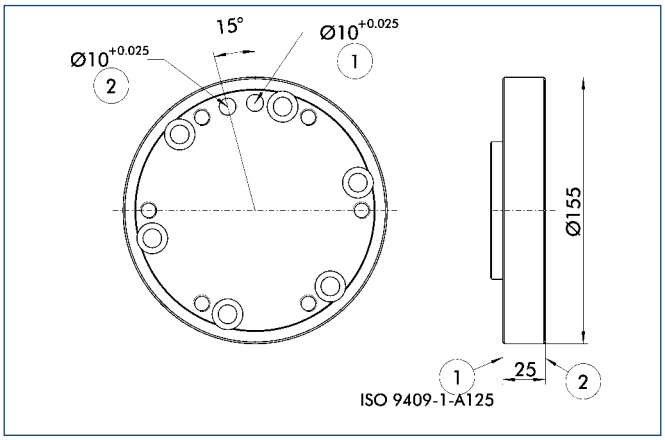
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

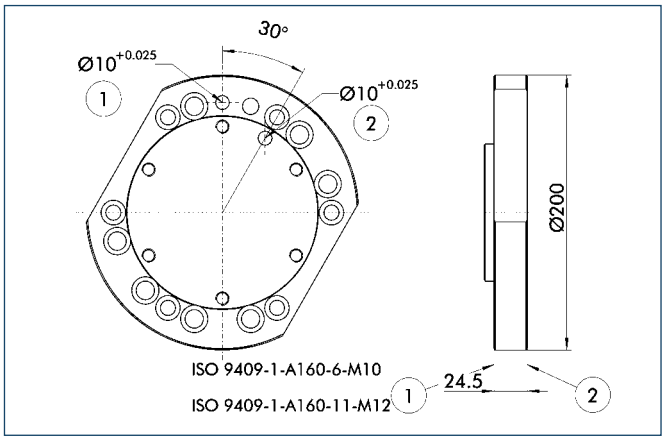


① Robot-side connection
② Tool-side connection

Adapter plate A125

For mounting the SWK-150 directly to a flange in accordance with ISO 9409-1-125-6-M10

Designation	ID
A-SWK-150-ISO-A-125	0302213



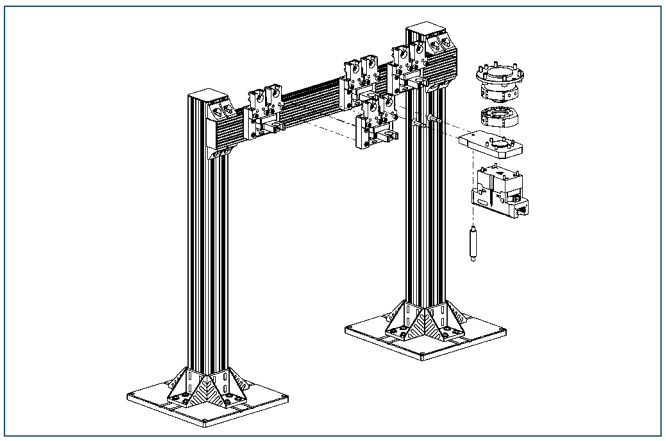
① Robot-side connection
② Tool-side connection

Adapter plate A160

For mounting the SWK-150 directly to a flange in accordance with ISO 9409-1-160-6-M10/ISO 9409-1-160-11-M12

Designation	ID
A-SWK-150-ISO-A-160	0302214

Modular quick-change rack SWM-M



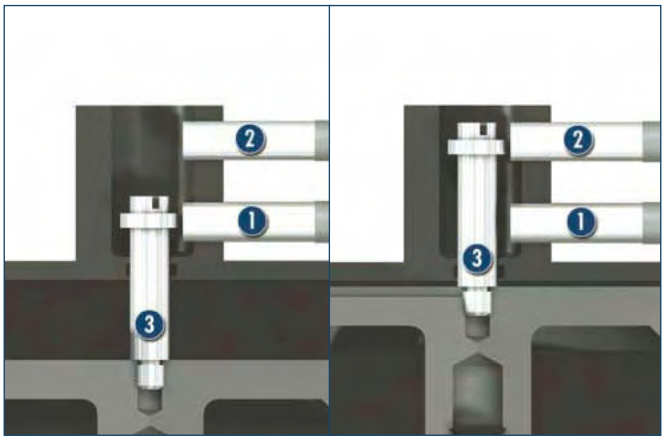
The modular “medium” quick-change rack has been designed for the SWS-150 size. The system’s modular structure enables you to assemble your rack on an individual basis. Depending on the number of tools, the storage position and tool size allows you to create a rack tailor-made to your application.

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example: R19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

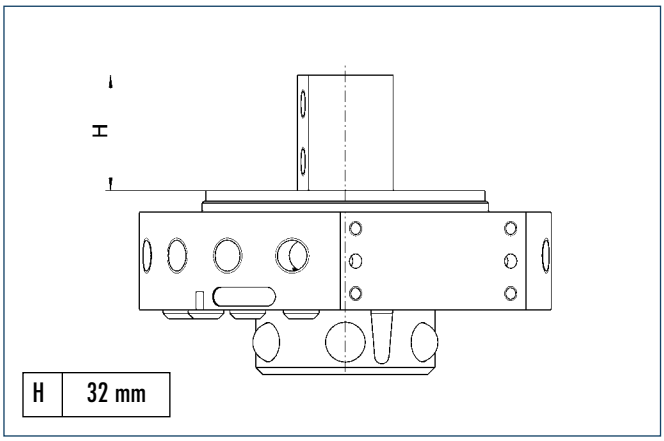


Locked **Unlocked**

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

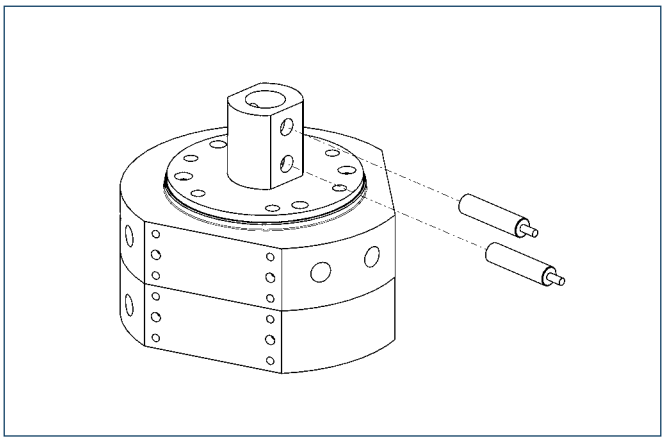
Minimum height of adapter plate for SIP-150



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



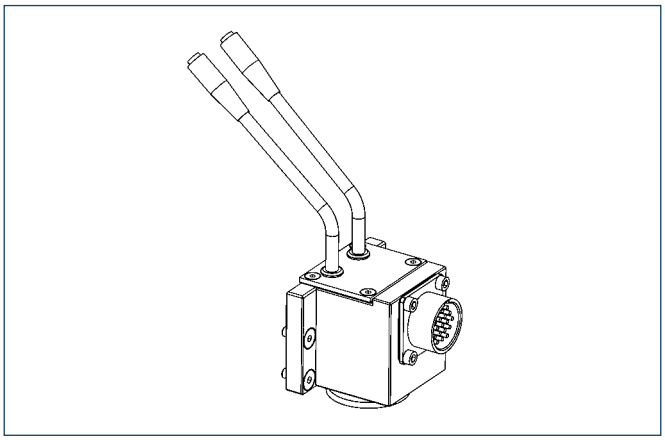
Inductive proximity switch

Designation	ID
INW 80/S-M12	**0301508**
INW 80/S-M8	**0301408**

Inductive proximity switch in conjunction with R19-W

Designation	ID
IN-B 80/S-M8	**0301475**

Electronic module R19-W



With connector option for proximity switch

The piston stroke control proximity switches can be monitored via the R19-W electronic module. In order to do this, the cables are connected directly to the module.

Designation	ID	
R19-W	**9942041**	19 pins 5 A/250 VAC*, 15 are free and 4 pins are needed for the proximity switches

* 250 VAC grounding done by customer

Option also available for other electronic modules

SWS-300

Tool Changing · Quick-change System · Medium Load

Product description

Integrated electric module with five feed-throughs

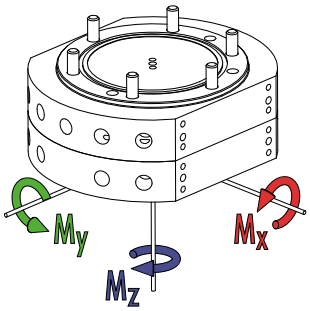
Integrated sensor for presence monitoring
The sensor issues a signal when there is a distance of 1.5 mm between the head and the adapter.

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 10 mm is possible.

Patented, self-retaining locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load.

Air feed-through with specially developed rubber seals

Moment load



M_x max. 3870 Nm
M_y max. 3870 Nm
M_z max. 2825 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

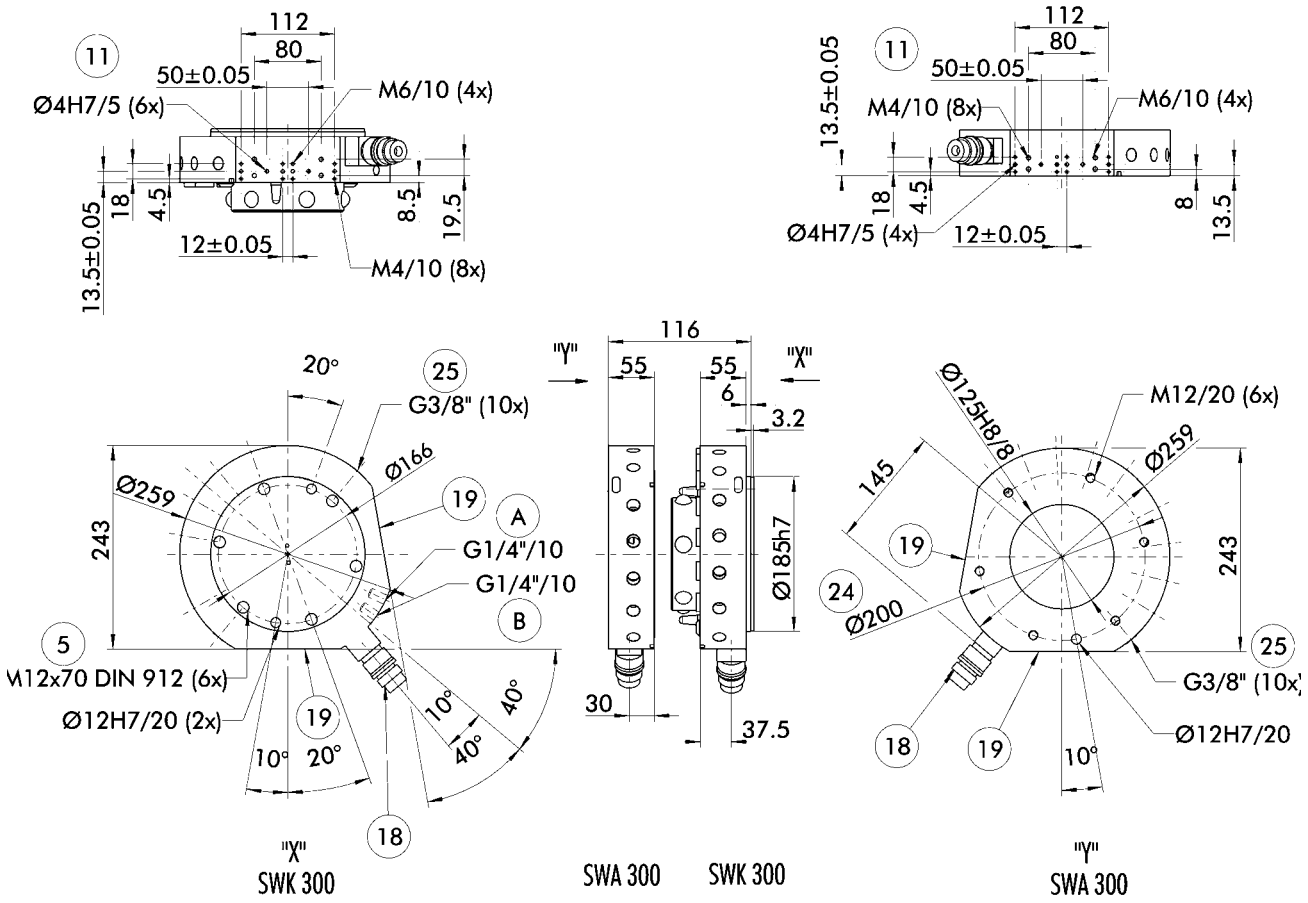
Designation		SWS-300	
Maximum payload	[kg]	455	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	3870	
Static moment load M_z	[Nm]	2825	
Dynamic moment load M_{xy}	[Nm]	11610	
Dynamic moment load M_z	[Nm]	8475	
Locking force (at 6 bar)	[N]	35333	In the event of higher tensile forces the system "falls" into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	19.1	11.8 kg head; 7.3 kg adapter
Min./max. distance on locking	[mm]	10	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Pneumatic energy transmission		10x pneumatic G 3/8"	Max. 7 bar, 8 are self-sealing
Maximum permissible XY offset	[mm]	± 3	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking
Electric energy transmission			5 x 5 A/90 V

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



The drawing shows the quick-change system in the basic version, the dimensions do not include the options described below.

A Locked air connection
B Unlocked air connection
⑤ Through-bore for screw connection with screw (enclosed)
⑪ Drilling pattern on both sides
⑱ Cable connector, by special order
⑲ Screw connection area for options
㉔ Bolt pitch circle
㉕ Air feed-through

Electrical options

Designation		Detailed data sheet
R19	19 pins, 5 A/250 VAC*, MS connector	See "SWS options" chapter
R26	26 pins, 3 A/250 VAC*, MS connector	See "SWS options" chapter
G19	19 pins, 5 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
G26	26 pins, 3 A/250 VAC*, MS connector, pivotable connector socket	See "SWS options" chapter
MT8	8 pins, 20 A/500 VAC**	See "SWS options" chapter
MT14	14 pins, 13 A/500 VAC**	See "SWS options" chapter

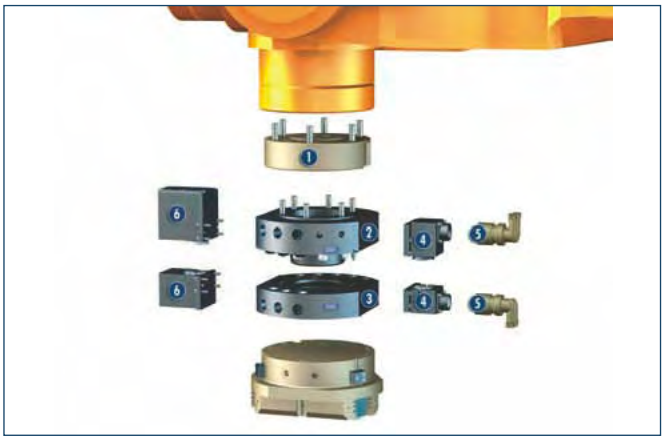
* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

How to order (example)

SW☐-300-☐☐☐-☐☐☐

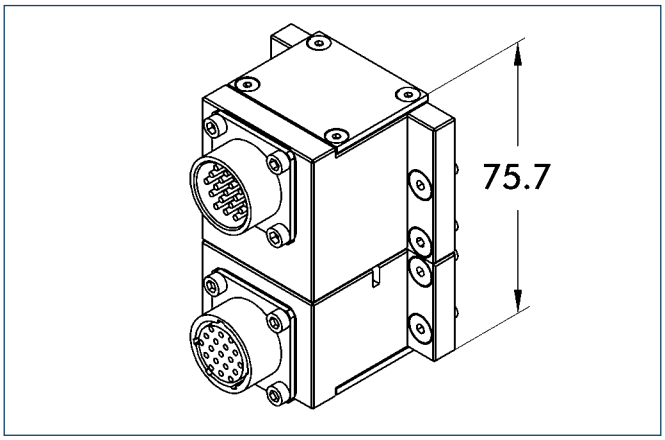
SWS-300	Examples
Option B	SWK-300-000-000
Option A	(SWK-300, head side, no option)
K = head	SWA-300-MT8-000
A = adapter	(SWA-300, adapter plate side, with MT8 option)
	SWA-300-R19-F02
	(SWA-300, head side, with R19 option and F02 option)

Typical set-up on the robot



① Adapter plate on ISO flange
② Quick-change head SWK
③ Quick-change adapter SWA
④ Option 1: Electric modules (e.g. R19)
⑤ Cable connector for option 1
⑥ Option 2

Quick-change connector R19



Option: Miniature quick-change connector with protected contact and splash-proof contact pins (5 Amp/250 VAC per pin). With tool coding as an option.
R19 = 19-pin

Designation	ID	Fits Description
R19 head	**9935815**	SWK 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R19 adapter	**9935816**	SWA 19 pins, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA tool coding 0-9 tools, 5 Amp/250 VAC* 14 pins can be used by customer - see drawing, fits R19 head
R10 adapter	**9941385**	SWA tool coding 0-99 tools, 5 Amp/250 VAC* 10 pins can be used by customer - see drawing, fits R19 head

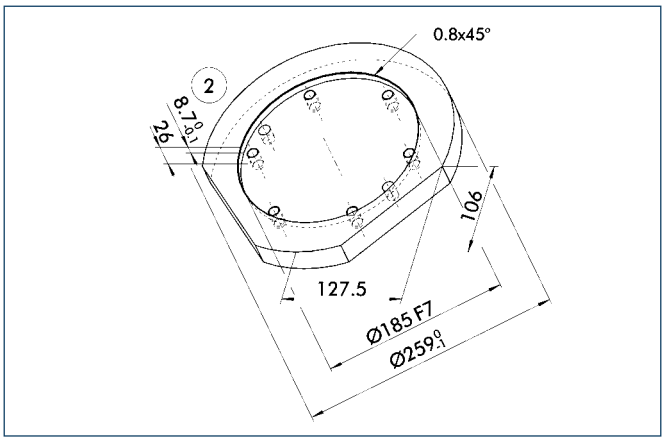
* 250 VAC grounding done by customer

Cable connectors

Cable connector for the connection between the R19 module and the cable

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

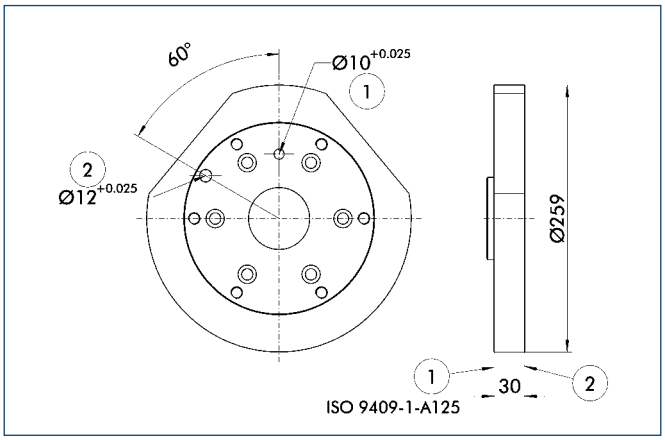
Design information for adapter plate



② Tool-side connection

Adapter design recommendation. An adapter is required to seal the piston chamber.

Standard adapter plates for ISO flanges

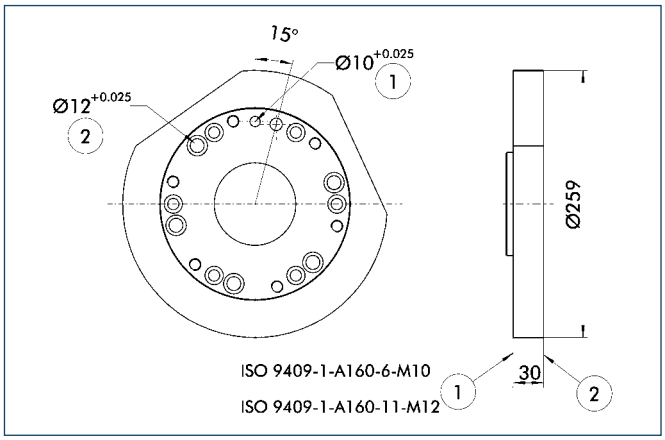


① Robot-side connection
② Tool-side connection

Adapter plate A125

For mounting the SWK-300 directly to a flange in accordance with ISO 9409-1-125-6-M10

Designation	ID
A-SWK-300-ISO-A-125	0302215

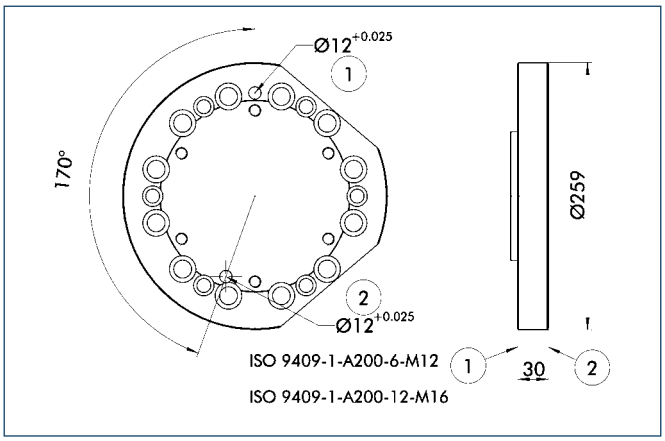


① Robot-side connection
② Tool-side connection

Adapter plate A160

For mounting the SWK-300 directly to a flange in accordance with ISO 9409-1-160-6-M10/ISO 9409-1-160-11-M12

Designation	ID
A-SWK-300-ISO-A-160	0302216



① Robot-side connection
② Tool-side connection

Adapter plate A200

For mounting the SWK-300 directly to a flange in accordance with ISO 9409-1-200-6-M12/ISO 9409-1-200-12-M16

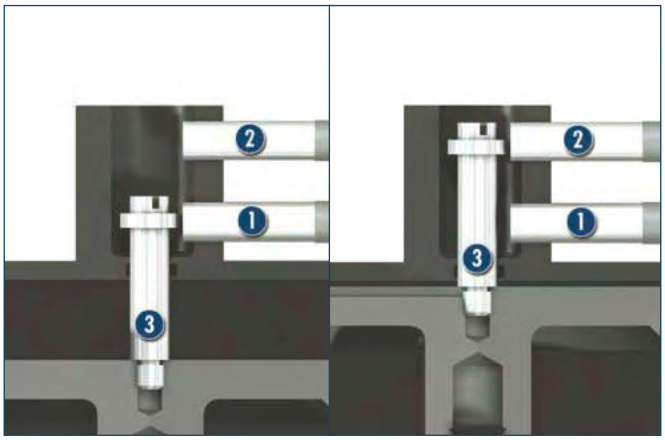
Designation	ID
A-SWK-300-ISO-A-200	0302217

Typical set-up on the robot

when using the SIP piston stroke control

① Adapter plate on ISO flange
② SIP piston stroke control
③ Proximity switch
④ Quick-change head SWK
⑤ Quick-change adapter SWA
⑥ Option 1 (example: R19)
⑦ Cable connector (KAS) for option 1
⑧ Option 2

Mode of operation of the SIP

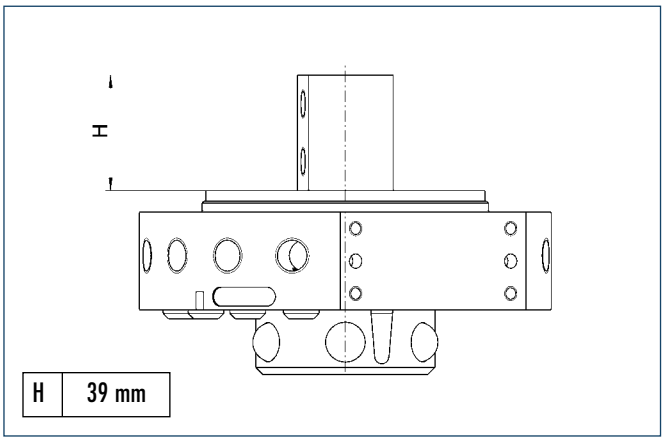


Locked **Unlocked**

① Sensor for locked (INW 80/S 0301508 or 0301408)
② Sensor for unlocked (INW 80/S 0301508 or 0301408)
③ Sensor target

Using the piston stroke control it is possible to monitor the locked and unlocked position of the quick-change head by means of inductive proximity switches.

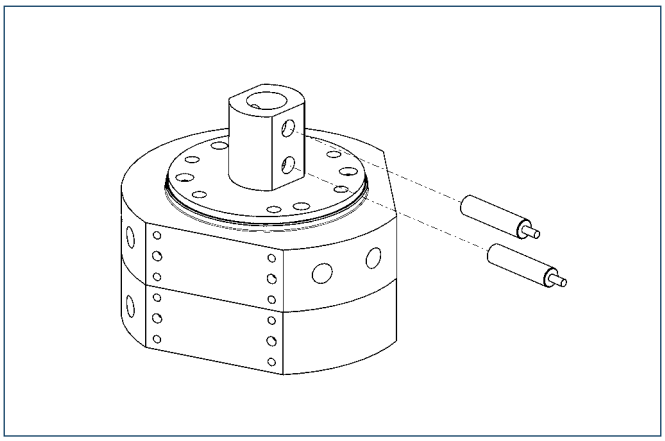
Minimum height of adapter plate for SIP-300



The drawing shows the minimum height of the adapter plate needed for installing a piston stroke control.

ⓘ Suitable adapter plates for ISO flanges available on request.

Proximity switch installation position



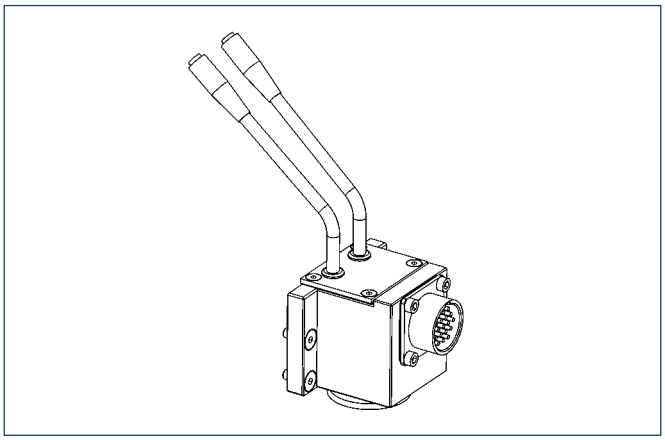
Inductive proximity switch

Designation	ID
INW 80/S-M12	**0301508**
INW 80/S-M8	**0301408**

Inductive proximity switch in conjunction with R19-W

Designation	ID
IN-C 80/S-M8	**0301475**

Electronic module R19-W



With connector option for proximity switch

The piston stroke control proximity switches can be monitored via the R19-W electronic module. In order to do this, the cables are connected directly to the module.

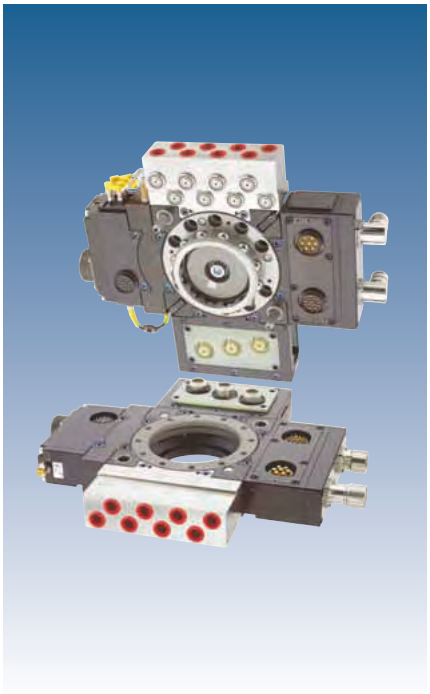
Designation	ID	
R19-W	**9942041**	19 pins 5 A/250 VAC*, 15 are free and 4 pins are needed for the proximity switches

* 250 VAC grounding done by customer

Option also available for other electronic modules

SWS-L 210

Change · Quick-change System · High Load Capacity



Product description

Excellent weight-force ratio

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 2.5 mm is possible.

Patented self-retaining locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel parts are made of stainless Rc 58.

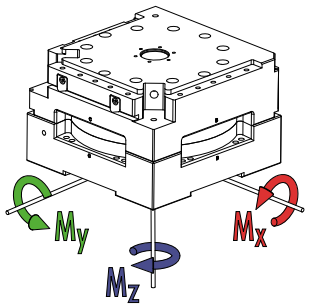
Integrated lock monitoring
for locked and unlocked

Connection option for DeviceNet modules

Direct mounting to ISO 9409-1-A125

Adapter plates
available for other flange patterns

Moment load



M_x max. 2700 Nm
M_y max. 2700 Nm
M_z max. 2260 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

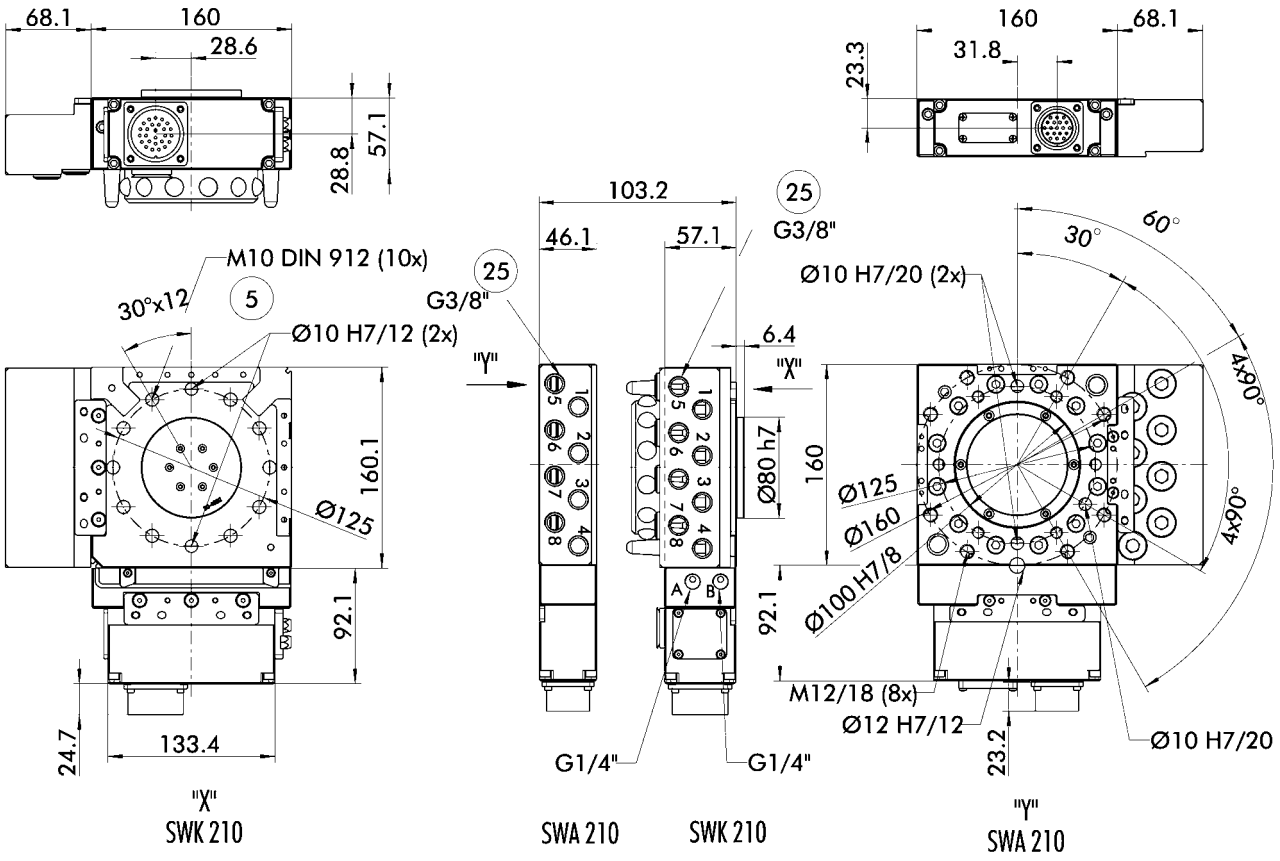
Designation		SWS-L 210	
Maximum payload	[kg]	225	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	2700	
Static moment load M_z	[Nm]	2260	
Dynamic moment load M_{xy}	[Nm]	8100	
Dynamic moment load M_z	[Nm]	6780	
Locking force (at 6 bar)	[N]	31150	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	7.7	5.3 kg head; 2.4 kg adapter
Min./max. distance on locking	[mm]	2.0	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY axis offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

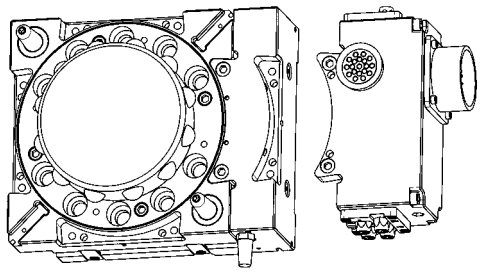
Main views



The drawing shows the quick-change system with a fluid module FH2 (SWK-210-BM-JB2-SA2-FH2-000-000) and a signal module SA2 (SWA-210-SA2-FH2-000-000)

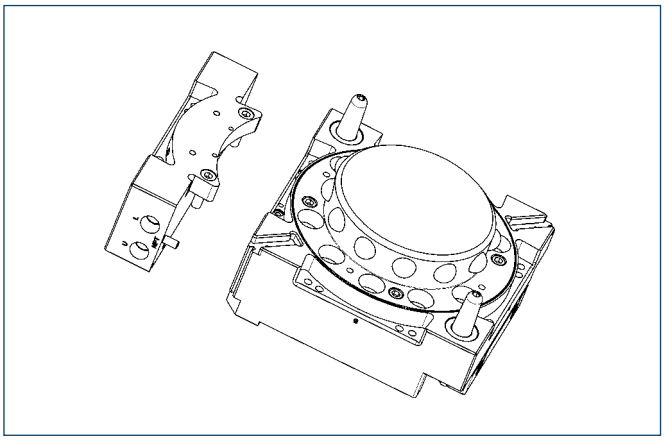
A Locked air connection
B Unlocked air connection
(5) Through-bores for screw connection with screw (enclosed)
(25) Fluid feed-through

Mounting module options



The newly designed mounting surfaces enable fast and secure mounting of air, electric, water and other modules.
The same mounting surface is used for the SWS-L 210, SWS-L 310 and the SWS-L 510.

Locking and unlocking adapter



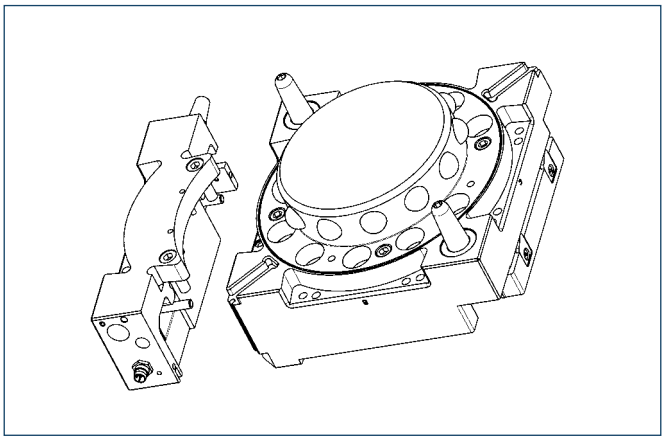
The change head (SWK) is supplied with pneumatic power by means of the locking and unlocking adapter. It is mounted on surface A and contains two air connections, one for locking and one for unlocking the SWK. The system is controlled by a valve provided by the customer.

Designation	ID	Description
SWK-L-JB2-M	**9948548**	Locking and unlocking adapter

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

Valve adapter



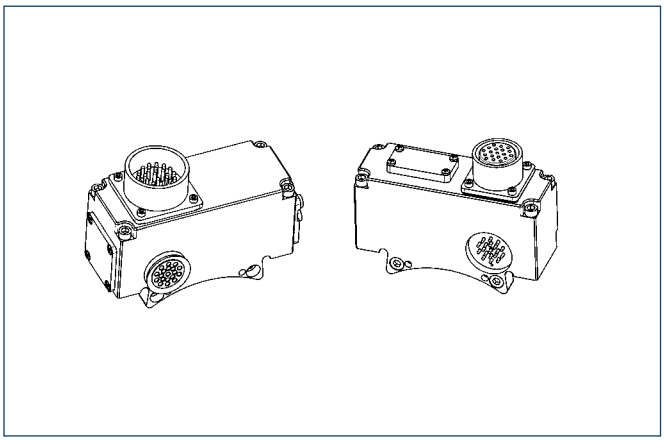
As an alternative to the use of a locking and unlocking adapter, it is possible to use a valve adapter. A double- or single-acting magnetic valve is integrated in the valve adapter for control of the SWK. The system is controlled by electrical connectors on the valve adapter. The signals can be transmitted by cables provided by the customer or via an electric module.

Designation	ID	Description
SWK-L-JD2-M	**9948550**	Single-acting valve
SWK-L-JF2-M	**9948552**	Double-acting valve

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

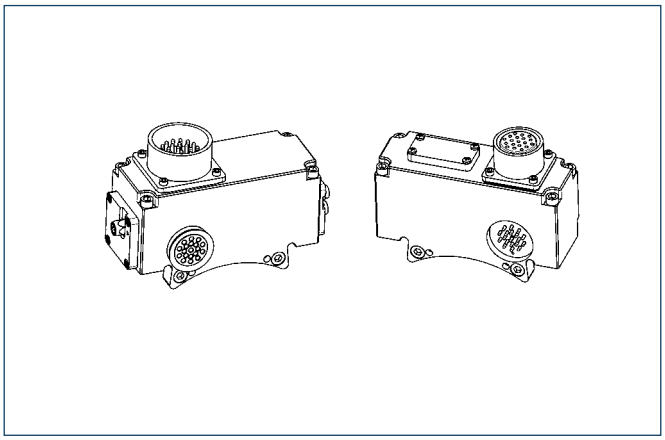
SAX signal module



- The SAX signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the SAX. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.

Designation	ID	Description
SWK-L-SA2-M	9948563	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors Without valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

VA2 signal module



- The VA2 signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the VA2. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.
- If a valve block is used, the switch signal can be tapped directly at the VA2.
- TSI monitoring is available optionally. The TSI ensures that the actuating valve can be actuated only in the change position in the magazine.

Designation	ID	Description
SWK-L-VA2-T	9948554	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors With valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

How to order

SW□-□□□□-□□□-□□□-□□□-□□□-S□

SWS-210, SWS-310 and SWS-510

Proximity switch monitoring
G: Inductive proximity switch PNP 0: No proximity switches Further variants on request

Optional modules
A selection of available modules can be found in the chapter “SWS-L” Options
Further variants on request
Note: A Jxx module, locking and unlocking adapters or a valve adapter must be mounted on surface A.
Signal modules are mounted on the Jxx module.
For combinations on the A-surface, the designation 'A' is a combination of the Jxx and the signal module.
SWK-210B-**JC2DD4**-AA2-0-0-SG
Jxx: Locking and unlocking adapters or a valve adapter (only on surface 'A'):
Axx: Pneumatic module (anodized aluminum, not suitable for fluids)
Dxx: DeviceNet modules
Exx: Servo modules
Fxx: Fluid pneumatic modules (stainless steel, self-sealing)
Pxx: Power module for welding current
Sxx: Signal modules
Uxx: Stud welding modules
Vxx: Signal modules with valve controller
'0' option not used

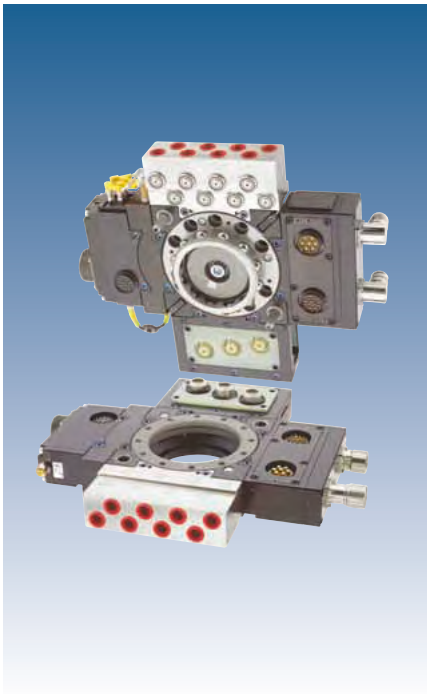
Collar or step on the mounting surface
A: No collar (head side), no step (tool side) B: 80 mm distance/collar (only for 210)
C: 100 mm distance/collar (only for 210, 310) D: 125 mm distance/collar (only for 310, 510)
E: 160 mm collar (only for 510)

Size
2: SWS-210 3: SWS-310 5: SWS-510

Page
K: Head (robot side) A: Adapter (tool side)

SWS-L 310

Change · Quick-change System · High Load Capacity



Product description

Excellent weight-force ratio

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 2.5 mm is possible.

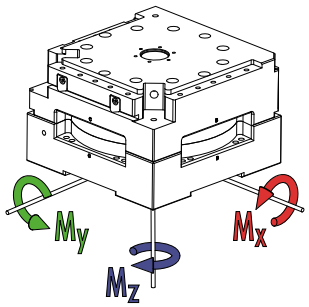
Patented self-locking locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel parts are made of stainless Rc 58.

Integrated lock monitoring
for locked and unlocked

Connection option for DeviceNet modules

Direct mounting to ISO 9409-1-A200
Adapter plates
available for other flange patterns

Moment load



M_x max. 3870 Nm
M_y max. 3870 Nm
M_z max. 3150 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

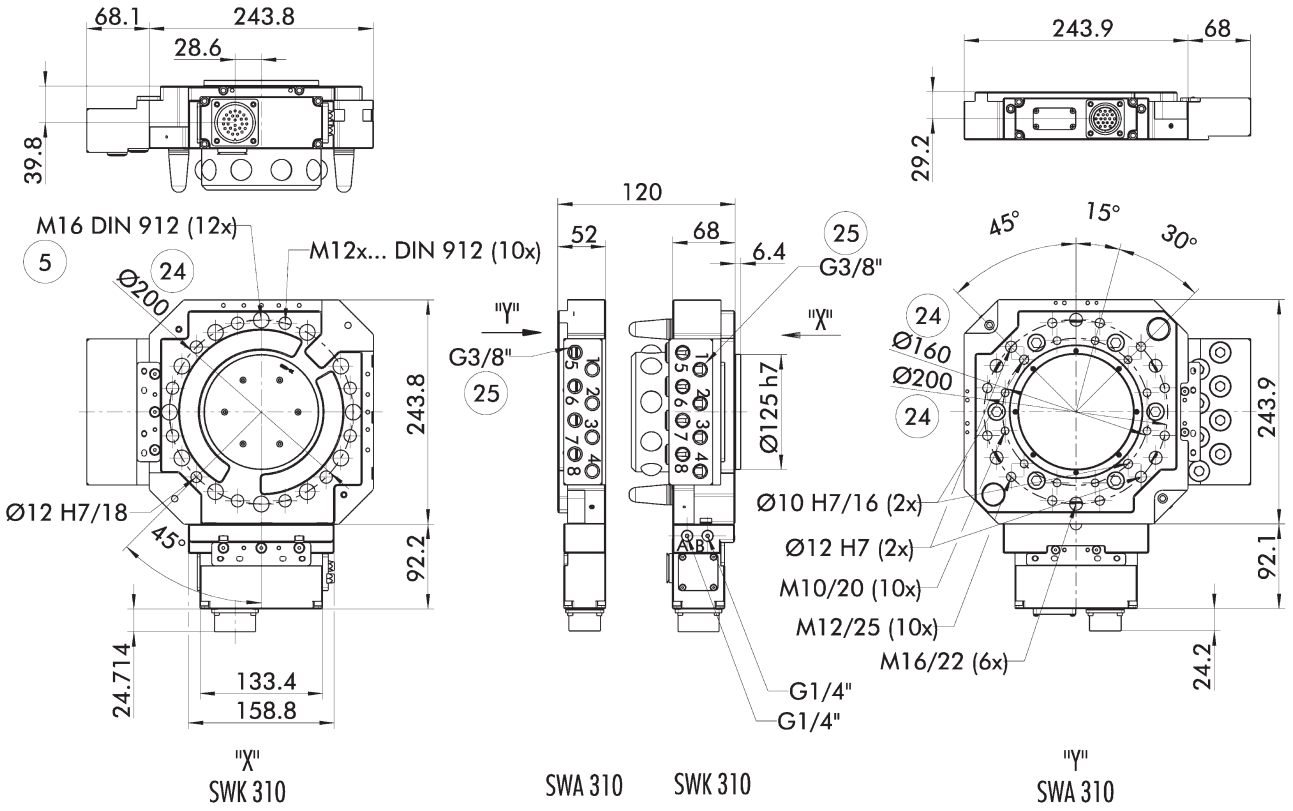
Technical data

Designation		SWS-L 310	
Maximum payload	[kg]	500	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	3870	
Static moment load M_z	[Nm]	3150	
Dynamic moment load M_{xy}	[Nm]	11610	
Dynamic moment load M_z	[Nm]	9450	
Locking force (at 6 bar)	[N]	35333	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	20	12.5 kg head; 7.5 kg adapter
Min./max. distance on locking	[mm]	2.5	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

Information on moment load
Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

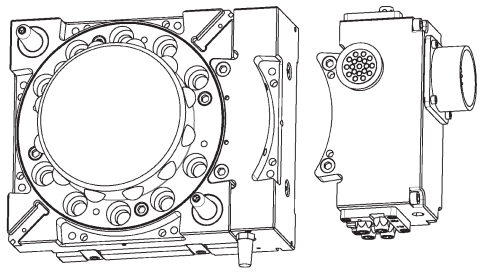
Main views



The drawing shows the quick-change system with a fluid module FH2 (SWK-310-DM-JB3-SA2-FH2-000-000) and a signal module SA2 (SWA-310-SA2-FH2-000-000)

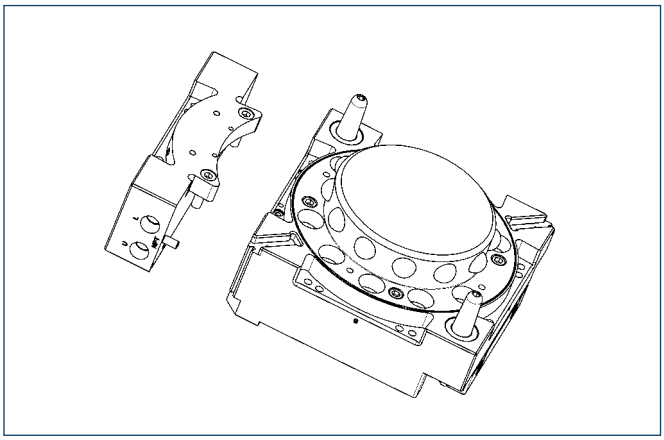
A Locked air connection
B Unlocked air connection
(5) Through-bores for screw connection with screw (enclosed)
(24) Bolt pitch circle
(25) Fluid feed-through

Mounting module options



The newly designed screw connection surfaces enable fast and secure mounting of air, electric, water and other modules.
The same mounting surface is used for the SWS-L 210, SWS-L 310 and the SWS-L 510.

Locking and unlocking adapter



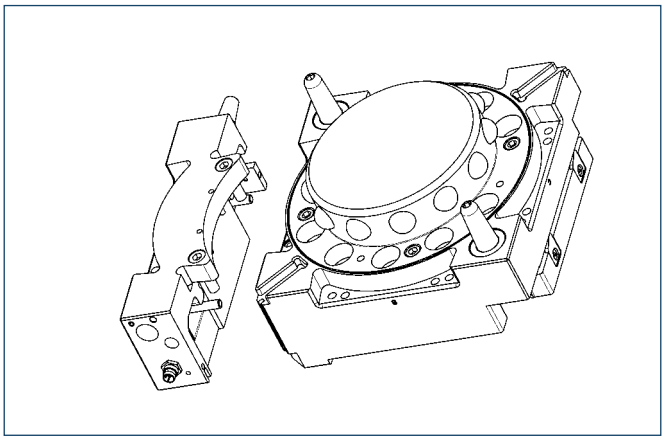
The change head (SWK) is supplied with pneumatic power by means of the locking and unlocking adapter. It is mounted on surface A and contains two air connections, one for locking and one for unlocking the SWK. The system is controlled by a valve provided by the customer.

Designation	ID	Description
SWK-L-JB3-M	**9948549**	Locking and unlocking adapter

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

Valve adapter



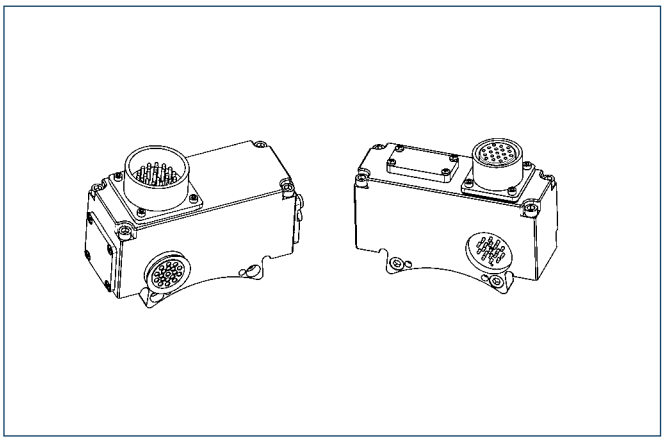
As an alternative to the use of a locking and unlocking adapter, it is possible to use a valve adapter. A double- or single-acting magnetic valve is integrated in the valve adapter for control of the SWK. The system is controlled by electrical connectors on the valve adapter. The signals can be transmitted by cables provided by the customer or via an electric module.

Designation	ID	Description
SWK-L-JD3-M	**9948551**	Single-acting valve
SWK-L-JF3-M	**9948553**	Double-acting valve

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

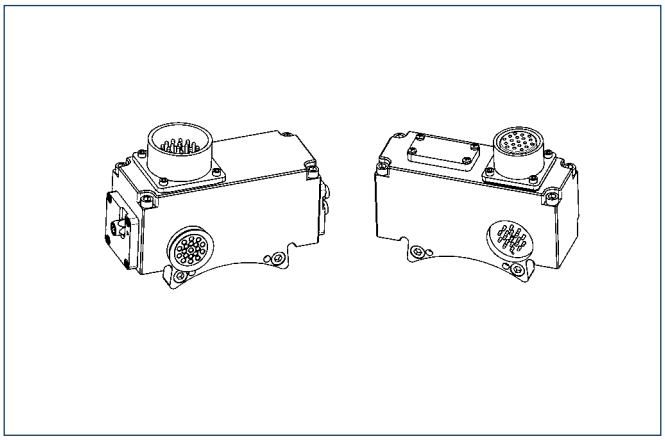
SAX signal module



- The SAX signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the SAX. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.

Designation	ID	Description
SWK-L-SA2-M	9948563	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors Without valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

VA2 signal module



- The VA2 signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the VA2. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.
- If a valve block is used, the switch signal can be tapped directly at the VA2.
- TSI monitoring is available optionally. The TSI ensures that the actuating valve can be actuated only in the change position in the magazine.

Designation	ID	Description
SWK-L-VA2-T	9948554	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors With valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

How to order

SW□-□□□□-□□□-□□□-□□□-□□□-S□

SWS-210, SWS-310 and SWS-510

Proximity switch monitoring
G: Inductive proximity switch PNP 0: No proximity switches Further variants on request

Optional modules
A selection of available modules can be found in the chapter “SWS-L” Options
Further variants on request
Note: A Jxx module, locking and unlocking adapters or a valve adapter must be mounted on surface A.
Signal modules are mounted on the Jxx module.
For combinations on the A-surface, the designation 'A' is a combination of the Jxx and the signal module.
SWK-210B-**JC2DD4**-AA2-0-0-SG
Jxx: Locking and unlocking adapters or a valve adapter (only on surface 'A'):
Axx: Pneumatic module (anodized aluminum, not suitable for fluids)
Dxx: DeviceNet modules
Exx: Servo modules
Fxx: Fluid pneumatic modules (stainless steel, self-sealing)
Pxx: Power module for welding current
Sxx: Signal modules
Uxx: Stud welding modules
Vxx: Signal modules with valve controller
'0' option not used

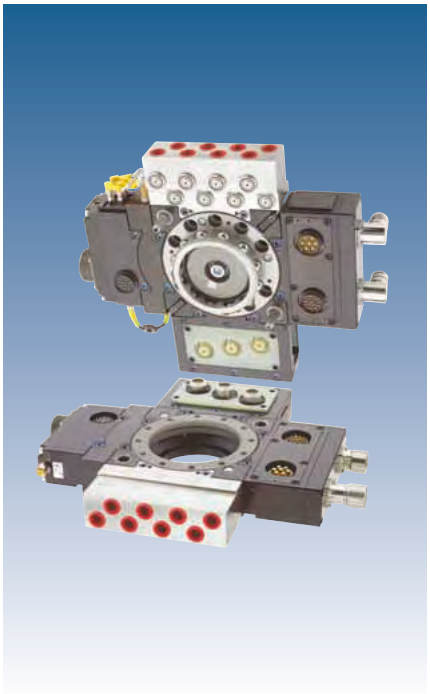
Collar or step on the mounting surface
A: No collar (head side), no step (tool side) B: 80 mm distance/collar (only for 210)
C: 100 mm distance/collar (only for 210, 310) D: 125 mm distance/collar (only for 310, 510)
E: 160 mm collar (only for 510)

Size
2: SWS-210 3: SWS-310 5: SWS-510

Page
K: Head (robot side) A: Adapter (tool side)

SWS-L 510

Change · Quick-change System · High Load Capacity



Product description

Excellent weight-force ratio

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 2.5 mm is possible.

Patented self-locking locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel parts are made of stainless Rc 58.

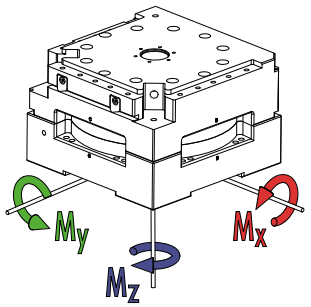
Integrated lock monitoring
for locked and unlocked

Connection option for DeviceNet modules

Direct mounting to ISO 9409-1-A200

Adapter plates
available for other flange patterns

Moment load



M_x max. 4680 Nm
M_y max. 4680 Nm
M_z max. 3500 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static moment.

Technical data

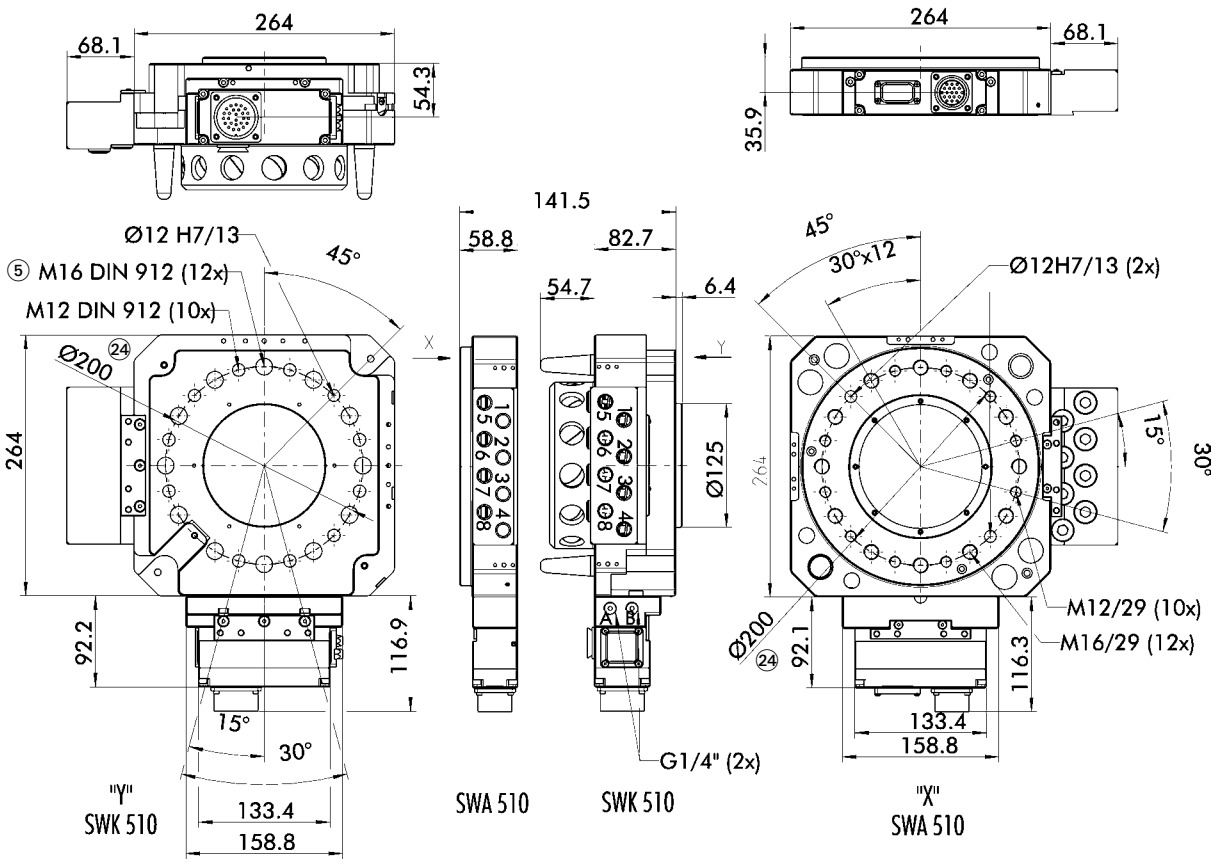
Designation		SWS-L 510	
Maximum payload	[kg]	700	A larger payload is possible with smaller moments
Static moment load M_{xy}	[Nm]	4680	
Static moment load M_z	[Nm]	3500	
Dynamic moment load M_{xy}	[Nm]	14040	
Dynamic moment load M_z	[Nm]	10500	
Locking force (at 6 bar)	[N]	62300	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	28	19.3 kg head; 8.7 kg adapter
Min./max. distance on locking	[mm]	2.5	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.
· Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
· Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
· Calculate the static moment (m x D)
· Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

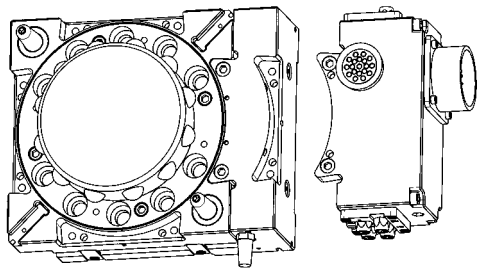
Main views



The drawing shows the quick-change system with a fluid module FH2 (SWK-510-DM-JB3-SA2-FH2-000-000) and a signal module SA2 (SWA-510-SA2-FH2-000-000)

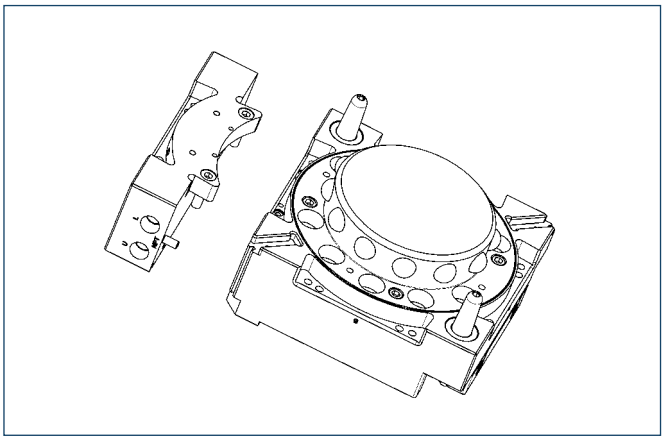
A Locked air connection
B Unlocked air connection
⑤ Through-bores for screw connection with screw (enclosed)
㉔ Bolt pitch circle

Mounting module options



The newly designed screw connection surfaces enable fast and secure mounting of air, electric, water and other modules.
The same mounting surface is used for the SWS-L 210, SWS-L 310 and the SWS-L 510.

Locking and unlocking adapter



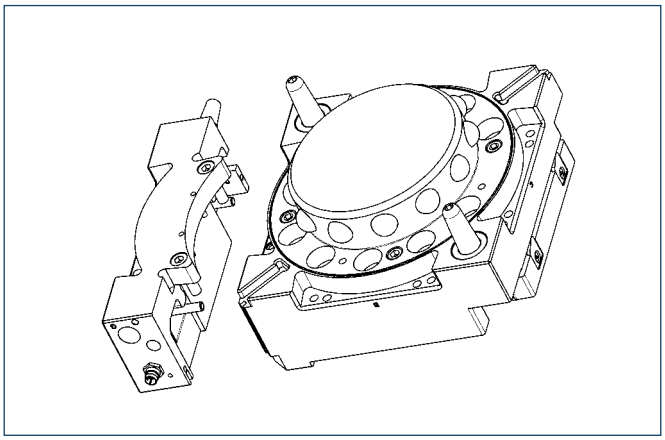
The change head (SWK) is supplied with pneumatic power by means of the locking and unlocking adapter. It is mounted on surface A and contains two air connections, one for locking and one for unlocking the SWK. The system is controlled by a valve provided by the customer.

Designation	ID	Description
SWK-L-JB3-M	**9948549**	Locking and unlocking adapter

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

Valve adapter



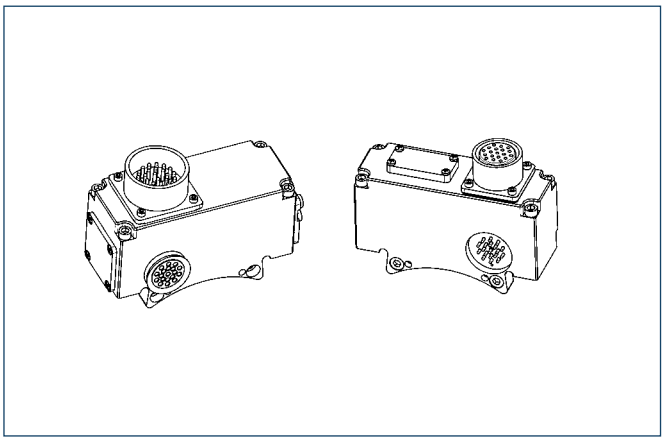
As an alternative to the use of a locking and unlocking adapter, it is possible to use a valve adapter. A double- or single-acting magnetic valve is integrated in the valve adapter for control of the SWK. The system is controlled by electrical connectors on the valve adapter. The signals can be transmitted by cables provided by the customer or via an electric module.

Designation	ID	Description
SWK-L-JD3-M	**9948551**	Single-acting valve
SWK-L-JF3-M	**9948553**	Double-acting valve

If further modules are to be mounted on the mounting surface A, a spacer must be mounted on the tool side.

Designation	ID	Description
SWA-20-1197	**9948547**	Spacer

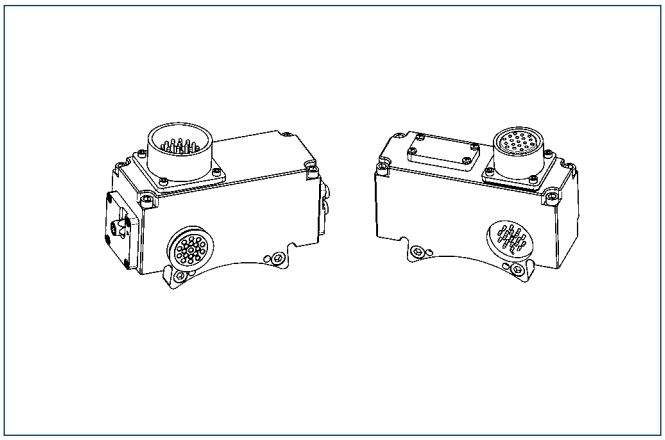
SAX signal module



- The SAX signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the SAX. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.

Designation	ID	Description
SWK-L-SA2-M	9948563	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors Without valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

VA2 signal module



- The VA2 signal module enables signal transmission to the SWA and the control of the SWK.
- The electrical connection is established via an amphenol connector of the MS series. Customized connections are possible.
- The two ready-to-lock (R1 and R2) sensors and the proximity switches for “unlocked” and “locked” (U and L) can be connected directly to the VA2. The signals are transmitted to the robot controller via the amphenol connector.
- Up to 19 electric feed-throughs are available.
- Tool encoding: Up to 999 tools are available optionally.
- If a valve block is used, the switch signal can be tapped directly at the VA2.
- TSI monitoring is available optionally. The TSI ensures that the actuating valve can be actuated only in the change position in the magazine.

Designation	ID	Description
SWK-L-VA2-T	9948554	E-module, 26-pin amphenol, 19-pin block, connection of L/U/R1/R2 sensors With valve controller (compatible with SA2-T, SA3-T, SA4-T, and SA5-T)
SWA-L-SA2-T	9948555	E-module, 19-pin amphenol, 19-pin block, 19 feed-throughs
SWA-L-SA3-T	9948556	E-module, 19-pin amphenol, 19-pin block, 15 feed-throughs, tool encoding 0-9
SWA-L-SA4-T	9948557	E-module, 19-pin amphenol, 19-pin block, 11 feed-throughs, tool encoding 0-99
SWA-L-SA5-T	9948558	E-module, 19-pin amphenol, 19-pin block, 7 feed-throughs, tool encoding 0-999

How to order

SW□-□□□□-□□□-□□□-□□□-□□□-S□

SWS-210, SWS-310 and SWS-510

Proximity switch monitoring
G: Inductive proximity switch PNP 0: No proximity switches Further variants on request

Optional modules
A selection of available modules can be found in the chapter “SWS-L” Options
Further variants on request
Note: A Jxx module, locking and unlocking adapters or a valve adapter must be mounted on surface A.
Signal modules are mounted on the Jxx module.
For combinations on the A-surface, the designation 'A' is a combination of the Jxx and the signal module.
SWK-210B-**JC2DD4**-AA2-0-0-SG
Jxx: Locking and unlocking adapters or a valve adapter (only on surface 'A'):
Axx: Pneumatic module (anodized aluminum, not suitable for fluids)
Dxx: DeviceNet modules
Exx: Servo modules
Fxx: Fluid pneumatic modules (stainless steel, self-sealing)
Pxx: Power module for welding current
Sxx: Signal modules
Uxx: Stud welding modules
Vxx: Signal modules with valve controller
'0' option not used

Collar or step on the mounting surface
A: No collar (head side), no step (tool side) B: 80 mm distance/collar (only for 210)
C: 100 mm distance/collar (only for 210, 310) D: 125 mm distance/collar (only for 310, 510)
E: 160 mm collar (only for 510)

Size
2: SWS-210 3: SWS-310 5: SWS-510

Page
K: Head (robot side) A: Adapter (tool side)

Options for SWS-L 210, 310 and 510

Valve modules

ID	Designation	Description
9948548	SWK-L-JB2-M	Connecting plate for locking and unlocking suitable for SWK-L 210
9948549	SWK-L-JB3-M	Connecting plate for locking and unlocking suitable for SWK-L 310 and SWK-L 510
9948550	SWK-L-JD2-M	Valve connection plate for SWK-L 210 with integrated valve. Valve with spring return. Only one air connection is required for actuating the changeover contact. The valve is controlled via a VA2 or VB2 module that is mounted on the JD2.
9948551	SWK-L-JD3-M	Valve connection plate for SWK-L 310 and SWK-L 510 with integrated valve. Valve with spring return. Only one air connection is required for actuating the changeover contact. The valve is controlled via a VA2 or VB2 module that is mounted on the JD3.
9948552	SWK-L-JF2-M	Valve connection plate for SWK-L 210 with integrated valve. Only one air connection is required for actuating the changeover contact. The valve is controlled via a VA2 or VB2 module that is mounted on the JD2.
9948553	SWK-L-JF3-M	Valve connection plate for SWK-L 310 and SWK-L 510 with integrated valve. Valve with spring return. Only one air connection is required for actuating the changeover contact. The valve is controlled via a VA2 or VB2 module that is mounted on the JD3.
9948547	SWA-20-1192	SWA 210/310/510 spacer plate

Signal modules

ID	Designation	Description
9948554	SWK-L-VA2-M	- The signal module enables the activation and control of the SWS. The module is mounted on the SWK and is suitable for models SWS-L 210; SWS-L 310 and SWS-L 510. - Pins are splash-proof and protected against accidental contact - Up to 19 signals available for use by customer - An additional switch (TSI) in the VA2-M module prevents accidental uncoupling of the system by the controller. The TSI is actuated when the tool is placed in the magazine. Only then the valve is released so that it can be actuated. - Ready-to-Lock (R1 and R2), locking and unlocking sensors can be monitored via the VA2-M module. On the tool side, the module can be combined with the SA2-T, SA3-T, SA4-T or SA5-T.
9948563	SWK-L-SA2-M	- The module is mounted on the SWK and is suitable for models SWS-L 210; SWS-L 310 and SWS-L 510. - Pins are splash-proof and protected against accidental contact - Up to 19 signals available for use by customer - Ready-to-Lock (R1 and R2), locking and unlocking sensors can be monitored via the VA2-M module. On the tool side, the module can be combined with the SA2-T, SA3-T, SA4-T or SA5-T.
9948559	SWK-L-VB2-M	- The signal module enables the activation and control of the SWS. The module is mounted on the SWK and is suitable for models SWS-L 210; SWS-L 310 and SWS-L 510. - Pins are splash-proof and protected against accidental contact - Up to 19 signals available for use by customer - Ready-to-Lock (R1 and R2), locking and unlocking sensors can be monitored via the VA2-M module. On the tool side, the module can be combined with the SA2-T, SA3-T, SA4-T or SA5-T or VB2-T, VB3-T or VB4-T.
9948555	SWA-L-SA2-T	SWA signal module, 19 pin can be combined with VA2-M; VB2-M or SA2-M
9948556	SWA-L-SA3-T	SWA signal module, 19/15 pin can be combined with VA2-M; VB2-M or SA2-M. Module with integrated tool encoding for 9 tools. 15 pins are available for use by customer.
9948557	SWA-L-SA4-T	SWA signal module, 19/11 pin can be combined with VA2-M; VB2-M or SA2-M. Module with integrated tool encoding for 99 tools. 11 pins are available for use by customer.
9948558	SWA-L-SA5-T	SWA signal module, 19/7 pin can be combined with VA2-M; VB2-M or SA2-M. Module with integrated tool encoding for 999 tools. 7 pins are available for use by customer.
9948560	SWA-L-VB2-T	SWA signal module, 19 pin can be combined with VB2-M. - An additional switch (TSI) in the VB2-T module prevents accidental uncoupling of the system by the controller. The TSI is actuated when the tool is placed in the magazine. Only then the valve is released so that it can be actuated.
9948561	SWA-L-VB3-T	SWA signal module, 19 pin can be combined with VB2-M. - An additional switch (TSI) in the VB2-T module prevents accidental uncoupling of the system by the controller. The TSI is actuated when the tool is placed in the magazine. Only then the valve is released so that it can be actuated. Module with integrated tool encoding for 9 tools.
9948562	SWA-L-VB4-T	SWA signal module, 19 pin can be combined with VB2-M. - An additional switch (TSI) in the VB2-T module prevents accidental uncoupling of the system by the controller. The TSI is actuated when the tool is placed in the magazine. Only then the valve is released so that it can be actuated. Module with integrated tool encoding for 99 tools.

Pneumatic modules

ID	Designation	Description
9948564	SWK-L-AF2-M	SWK pneumatic module (8) 3/8" G for 6.9 bar maximum
9948565	SWA-L-AF2-T	SWA pneumatic module (8) 3/8" G for 6.9 bar maximum
9948566	SWK-L-AG2-M	SWK pneumatic module with (4) 3/8" G for 6.9 bar maximum and (2) 3/4" G vacuum
9948567	SWA-L-AG2-T	SWA pneumatic module with (4) 3/8" G for 6.9 bar maximum and (2) 3/5" G vacuum
9948568	SWK-L-AH2-M	SWK pneumatic module (8) 3/8" G self-sealing (8) Self-sealing on head side 6.9 bar maximum, only compressed air
9948569	SWA-L-AH2-T	SWA pneumatic module (8) 3/8" G (4) Self-sealing on the adapter side 6.9 bar maximum, only compressed air
9948570	SWA-L-AH3-T	SWA pneumatic module (8) 3/8" G 6.9 bar maximum, only compressed air
9948571	SWA-L-AH4-T	SWA pneumatic module (8) 3/8" G (8) Self-sealing on the adapter side 6.9 bar maximum, only compressed air
9948572	SWK-L-AK2-M	SWK pneumatic module (10) 1/4" G self-sealing for 6.9 bar maximum
9948573	SWA-L-AK2-T	SWA pneumatic module (10) 1/4" G self-sealing for 6.9 bar maximum
9948574	SWK-L-AL2-M	SWK pneumatic module (2) 3/4" G self-sealing for 6.9 bar maximum
9948575	SWA-L-AL2-T	SWA pneumatic module (2) 3/4" G self-sealing for 6.9 bar maximum
9948576	SWK-L-AM2-M	SWK pneumatic module (2) 1/2" G self-sealing for 6.9 bar maximum
9948577	SWA-L-AM2-T	SWA pneumatic module (2) 1/2" G self-sealing for 6.9 bar maximum

Fluid modules

ID	Designation	Description
9948578	SWK-L-FC2-M	SWK pneumatic module (8) 3/8" G self-sealing (8) Self-sealing on head side 6.9 bar maximum
9948579	SWA-L-FC2-T	SWA pneumatic module (8) 3/8" G (4) Self-sealing on the adapter side 6.9 bar maximum
9948580	SWA-L-FC3-T	SWK pneumatic module (8) 3/8" G 6.9 bar maximum
9948581	SWA-L-FC4-T	SWK pneumatic module (8) 3/8" G (8) Self-sealing on the adapter side 6.9 bar maximum.

Hydraulic modules

ID	Designation	Description
9948582	SWK-L-HB2-M	Hydraulic module with (2) 3/8" and (1) G1/4" for 158 bar
9948583	SWA-L-HB2-T	Hydraulic module with (2) 3/8" and (1) G1/4" for 158 bar
9948584	SWK-L-HB3-M	Hydraulic module with (2) G 3/8" for 158 bar
9948585	SWA-L-HB3-T	Hydraulic module with (2) G 3/8" for 158 bar

SWS-L 602

Change · Quick-change System · High Load Capacity

Product description

Excellent weight-force ratio

No-Touch-Locking™
Locking without touching. Ensures that the SWS is securely locked even when the SWK and SWA do not touch. A maximum distance of 2.5 mm is possible.

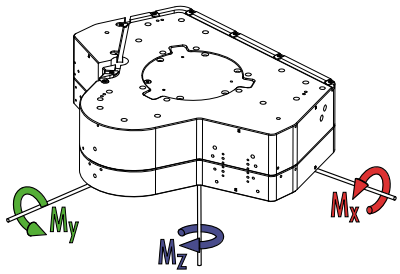
Patented self-locking locking system
A larger piston diameter and the OD locking mechanism increase the permissible moment load. Steel parts are made of stainless Rc 58.

Integrated lock monitoring
for locking and unlocking

Connection option for DeviceNet modules

Adapter plates
available for other flange patterns

Moment load



- M_x max. 13750 Nm
- M_y max. 13750 Nm
- M_z max. 5500 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 12-fold static static moment.

Technical data

Designation		SWS-L 602	
Maximum payload	[kg]	1130	A larger payload is possible with smaller moments
Locking force (at 6 bar)	[N]	93000	In the event of higher tensile forces the system “falls” into the self-locking position
Repeat accuracy	[mm]	0.015	Tested at 1 million cycles
Weight	[kg]	58.1	
Min./max. distance on locking	[mm]	2.5	No-Touch-Locking™ technology allows the parts to be coupled without the head and the adapter touching
Maximum permissible XY offset	[mm]	± 2	Maximum permissible XY offset when locking
Maximum permissible angular offset	[°]	± 1	Maximum permissible angular offset around the Z axis when locking

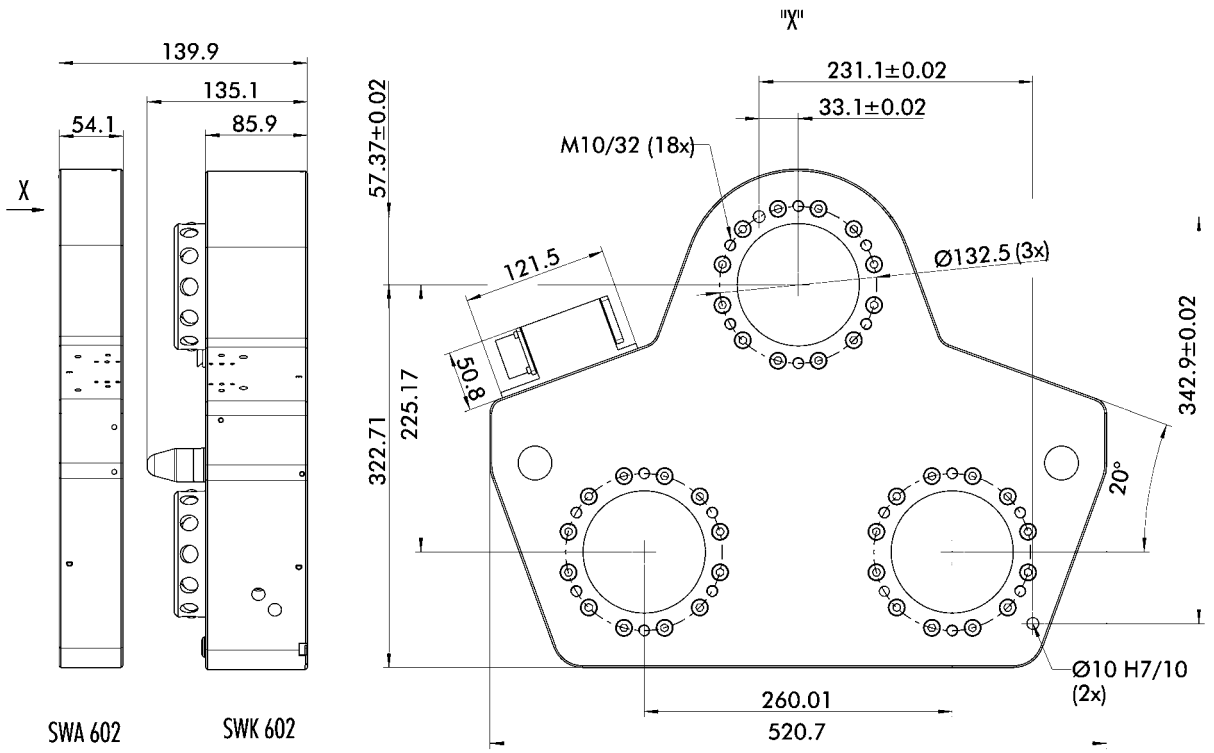
Information on moment load

Selecting the correct quick-change system depends on the moment load which the system is subject to.
Proceed as follows to calculate the maximum moments.

- Determine the center of gravity and the weight (m in Newtons) of your heaviest tool (gripper, adapter plate and tool)
- Determine the distance (D in meters) from the center of gravity to the underside of the quick-change adapter (SWA)
- Calculate the static moment (m x D)
- Select a quick-change system with a permissible moment that is equal to or greater than the moment you have calculated

Robot movements can also have an effect on the change system. Dynamic moments can come into effect which are 2 – 3 times greater than the static moments you have calculated. The SWS quick-change systems are designed for handling dynamic moments which can be up to three times greater than the static moments.

Main views



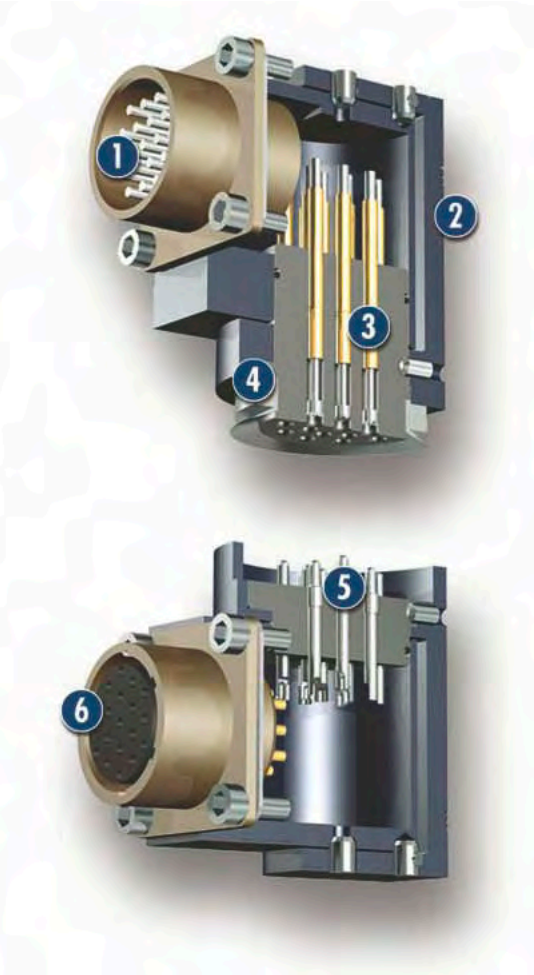
The drawing shows the basic version of the quick-change system without dimensional consideration of the options described below.

Electric modules

Name	No. of pins	Elec. data	Cable connector type	Comment	Fits SWS size
A15	15	3 A/50 V	Sub-D connector		11
B15	15	3 A/50 V	Sub-D connector		5
E10-005	10	3 A/50 V	Solder contacts		5
E10-010	10	3 A/50 V	Solder contacts		11
E20	20	3 A/50 V	Solder contacts		11
E2A	20	3 A/50 V	Solder contacts		5
E3A	30	3 A/50 V	Solder contacts		5
G19	19	5 A/250 VAC*	Amphenol PT series Bayonet catch	Plug connection can be pivoted to 5 positions	40, 41, 71, 100, 110, 150, 300
G26	26	3 A/250 VAC*	Amphenol PT series Bayonet catch	Plug connection can be pivoted to 5 positions	40, 41, 71, 100, 110, 150, 300
K19	19	3 A/50 V	Amphenol PT series Bayonet catch		20, 21, 60
K26	26	3 A/50 V	Amphenol PT series Bayonet catch		20, 21, 60
KM14	14	12x 5 A/250 VAC* 2x 13 A/250 VAC*	Amphenol PT series Bayonet catch		20, 21, 60
MT8	8	20 A/500 VAC**	Amphenol MS series Threaded		40, 41, 71, 100, 110, 150, 300
MT14	14	13 A/500 VAC**	Amphenol MS series Threaded		40, 41, 71, 100, 110, 150, 300
R19	19	5 A/250 VAC*	Amphenol PT series Bayonet catch		40, 41, 71, 100, 110, 150, 300
R14	14	5 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 9 tools Fits R19 (adapter side only)	40, 41, 71, 100, 110, 150, 300
R10	10	5 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 99 tools Fits R19 (adapter side only)	40, 41, 71, 100, 110, 150, 300
R26	26	3 A/250 VAC*	Amphenol PT series Bayonet catch		40, 41, 71, 100, 110, 150, 300
R21	21	3 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 9 tools Fits R26 (adapter side only)	40, 41, 71, 100, 110, 150, 300
R17	17	3 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 99 tools Fits R26 (adapter side only)	40, 41, 71, 100, 110, 150, 300
R32	32	3 A/250 VAC*	Amphenol PT series Bayonet catch		40, 41, 71, 100, 110, 150, 300
S19	19	5 A/250 VAC*	Amphenol PT series Bayonet catch		40, 41, 71, 100, 110, 150, 300
S14	14	5 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 9 tools Fits S19 (adapter side only)	40, 41, 71, 100, 110, 150, 300
S26	26	3 A/250 VAC*	Amphenol PT series Bayonet catch		40, 41, 71, 100, 110, 150, 300
S21	21	3 A/250 VAC*	Amphenol PT series Bayonet catch	Tool coding for 9 tools Fits S26 (adapter side only)	40, 41, 71, 100, 110, 150, 300
T19	19	5 A/250 VAC*	Amphenol MS series Threaded		40, 41, 71, 100, 110, 150, 300
T14	14	5 A/250 VAC*	Amphenol MS series Threaded	Tool coding for 9 tools Fits T19 (adapter side only)	40, 41, 71, 100, 110, 150, 300
T10	10	5 A/250 VAC*	Amphenol MS series Threaded	Tool coding for 99 tools Fits T19 (adapter side only)	40, 41, 71, 100, 110, 150, 300

* 250 VAC grounding done by customer
** 500 VAC grounding done by customer

Sectional diagram of the G19 module



1 **Flange socket**
for cable connectors

2 **Aluminum housing**

3 **Contact pins**
spring loaded

4 **Splash protection**

5 **Leading pin**
for connection to earth

6 **Flange socket**
for cable connectors

Pneumatic and fluid modules

Name	No. of feed-throughs	Size	Pressure	Media	Fits SWS size
V34	1	G 3/4"		Vacuum only	40, 41, 71, 110, 150, 300
P05	10	M5	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P14	2	G 1/4"	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P186	6	G 1/8"	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P18	4	G 1/8"	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P238	2	G 3/8"	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P38A	4	G 3/8" axial	7 bar	Pneumatic and vacuum	40, 41, 71, 110, 150, 300
P38-E	4	G 3/8"	7 bar	Pneumatic and vacuum	110, 150

A15 for SWS-011

Product description

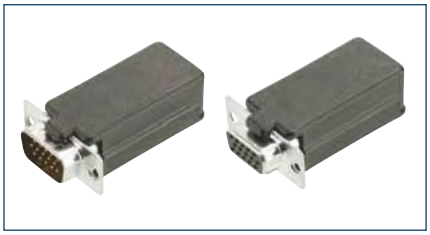
Sub-D connector
15-pin
3 Amp/50 VAC per pin
Spring-loaded, gold-coated contact pins

Technical data

Designation	ID	Fits	Description
A15 head	**9936357**	SWK	15-pin, 3 Amp/50 VAC E option with Sub-D connector
A15 adapter	**9936356**	SWA	15-pin, 3 Amp/50 VAC E option with Sub-D connector

ⓘ ID only for replacement orders and separate orders.

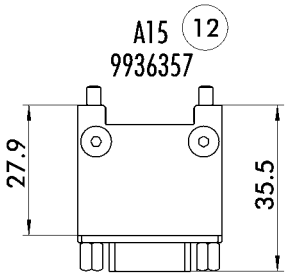
Suitable cable connectors

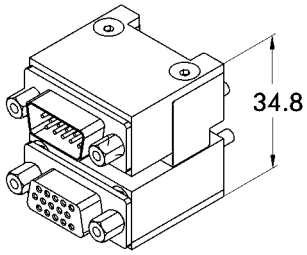


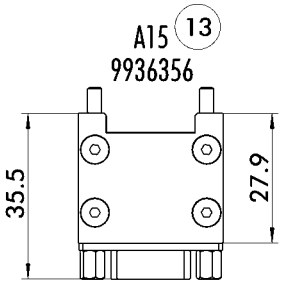
	Straight	
Cable connectors for	ID	Designation
A15 head	**0301264**	KAS-A15-K
A15 adapter	**0301265**	KAS-A15-A

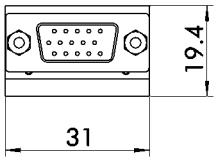
The cable connector establishes the connection between the A15 module and the cable.

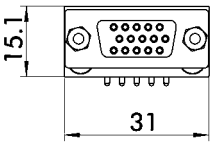
Main views

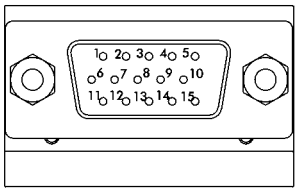


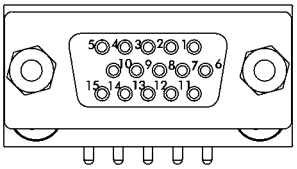












Pin out

A15 head side HD Sub-D 15 male		A15 adapter side HD Sub-D 15 female
1	>>	1
2	>>	2
3	>>	3
4	>>	4
5	>>	5
6	>>	6
7	>>	7
8	>>	8
9	>>	9
10	>>	10
11	>>	11
12	>>	12
13	>>	13
14	>>	14
15	>>	15

⑫ Head side
⑬ Adapter side

B15 for SWS-005

Product description

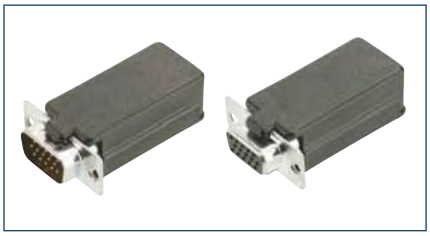
Sub-D connector
15-pin
3 Amp/50 VAC per pin
Spring-loaded, gold-coated contact pins

Technical data

Designation	ID	Fits	Description
B15 head	**9937326**	SWK	15-pin, 3 Amp/50 VAC E option with high-destiny Sub-D connector
B15 adapter	**9937327**	SWA	15-pin, 3 Amp/50 VAC E option with high-destiny Sub-D connector

ⓘ ID only for replacement orders and separate orders

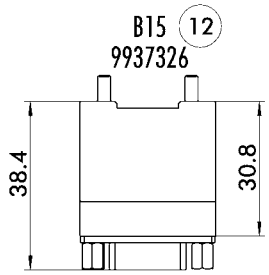
Suitable cable connectors

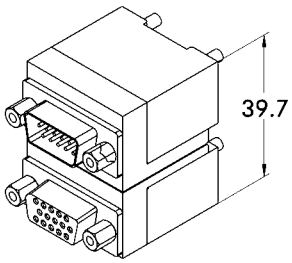


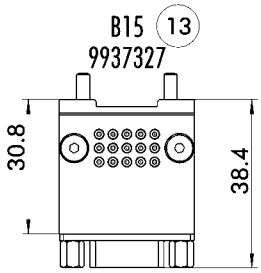
	Straight	
Cable connectors for	ID	Designation
B15 head	**0301264**	KAS-A15-K
B15 adapter	**0301265**	KAS-A15-A

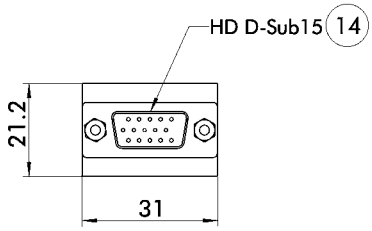
The cable connector establishes the connection between the B15 module and the cable.

Main views



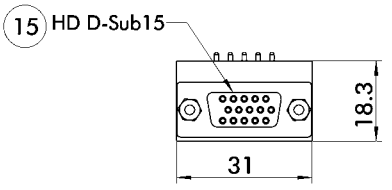


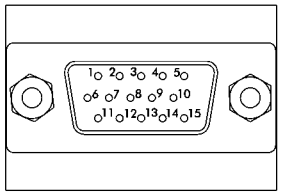


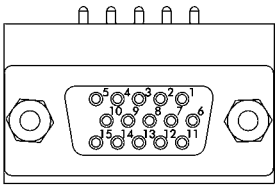


Pin out

B15 head side		B15 adapter side
HD Sub-D 15 male		HD Sub-D 15 female
1	>>	1
2	>>	2
3	>>	3
4	>>	4
5	>>	5
6	>>	6
7	>>	7
8	>>	8
9	>>	9
10	>>	10
11	>>	11
12	>>	12
13	>>	13
14	>>	14
15	>>	15







⑫ Head side
⑬ Adapter side
⑭ Male connector
⑮ Female connector

E2A for SWS-005

Product description

20-pin

3 Amp/50 VAC per pin

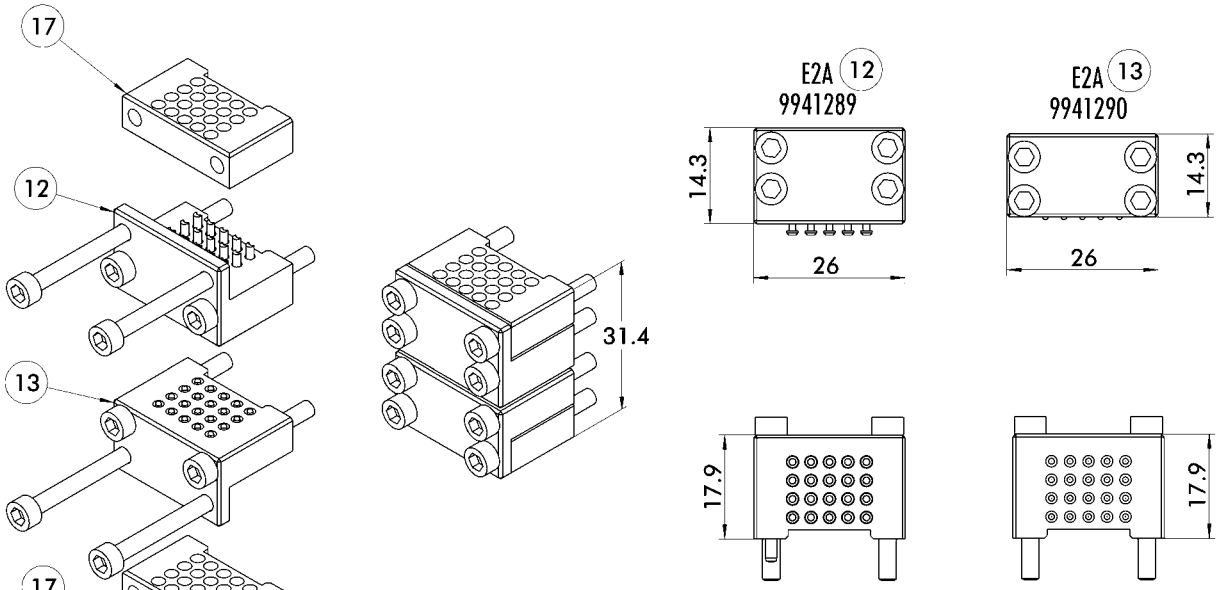
Gold-coated contact pins, spring-loaded on the robot side

Technical data

Designation	ID	Fits	Description
E2A head	**9941289**	SWK	20-pin, 3 Amp/50 VAC E option with solder contacts
E2A adapter	**9941290**	SWA	20-pin, 3 Amp/50 VAC E option with solder contacts

ⓘ ID only for replacement orders and separate orders

Main views



⑫ Head side
⑬ Adapter side
⑰ Cover

E3A for SWS-005

Product description

30-pin

3 Amp/50 VAC per pin

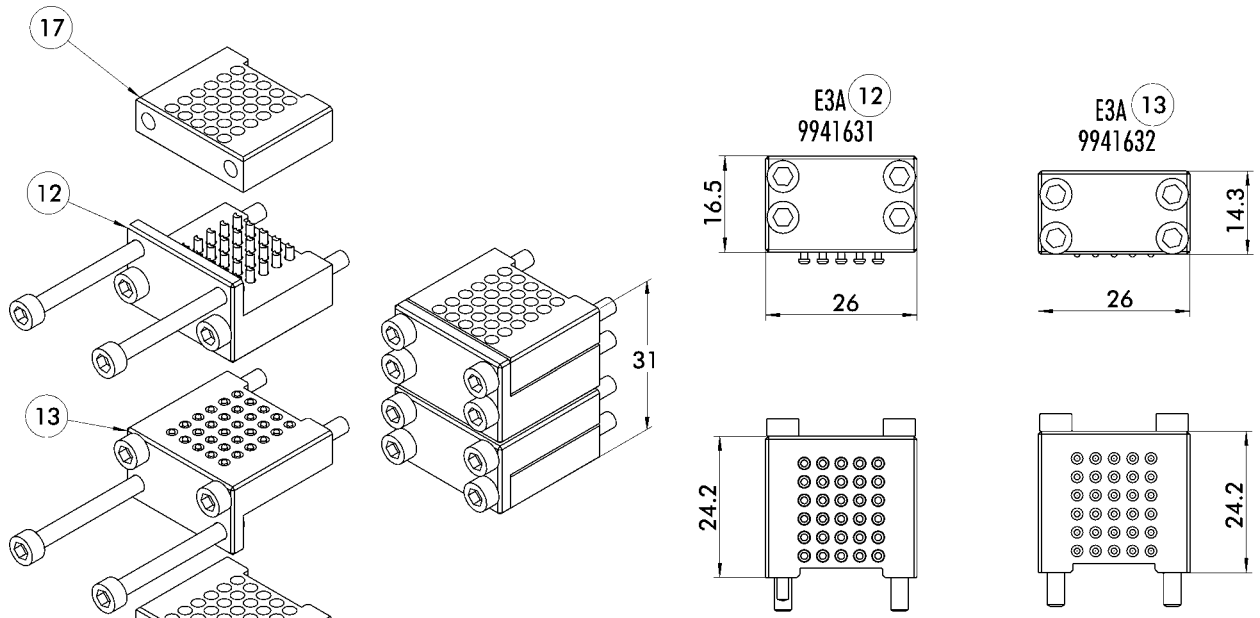
Gold-coated contact pins, spring-loaded on the robot side

Technical data

Designation	ID	Fits	Description
E3A head	**9941631**	SWK	30-pin, 3 Amp/50 VAC E option with solder contacts
E3A adapter	**9941632**	SWA	30-pin, 3 Amp/50 VAC E option with solder contacts

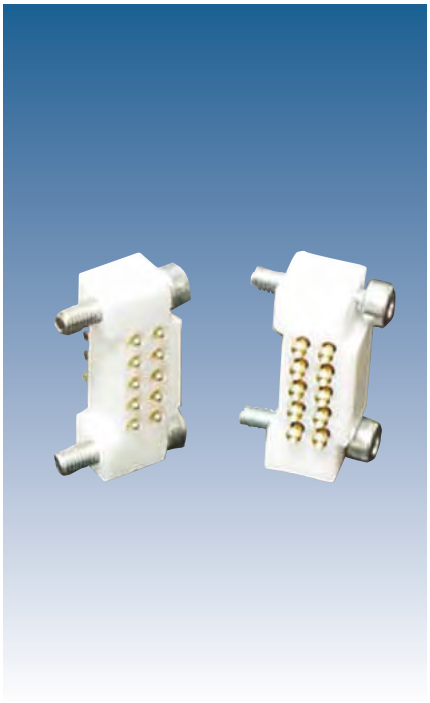
ⓘ ID only for replacement orders and separate orders

Main views



⑫ Head side
⑬ Adapter side
⑰ Cover

E10-005 for SWS-005



Product description

10-pin

3 Amp/50 VAC per pin

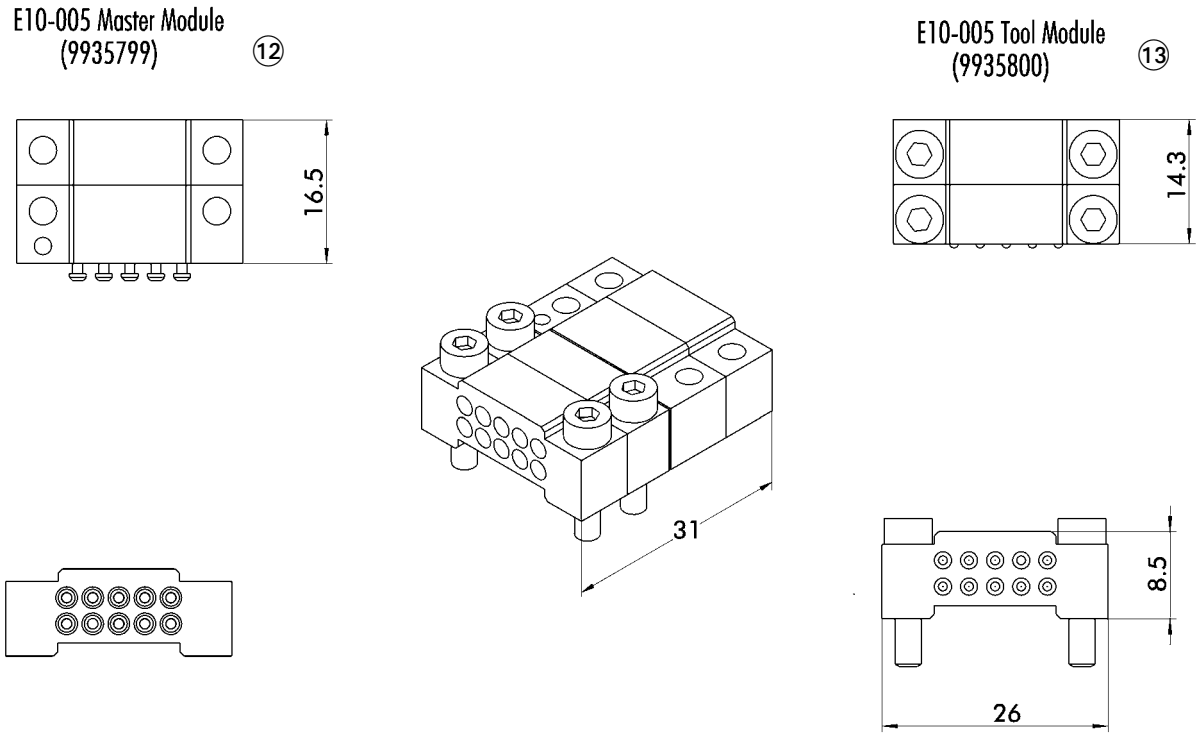
Gold-coated contact pins, spring-loaded on the robot side

Technical data

Designation	ID	Fits	Description
E10-005 head	**9935799**	SWK	10-pin, 3 Amp/50 VAC E option with solder contacts
E10-005 adapter	**9935800**	SWA	10-pin, 3 Amp/50 VAC E option with solder contacts

ⓘ ID only for replacement orders and separate orders

Main views



⑫ Head side
⑬ Adapter side

E10-010 for SWS-011

Product description

10-pin

3 Amp/50 VAC per pin

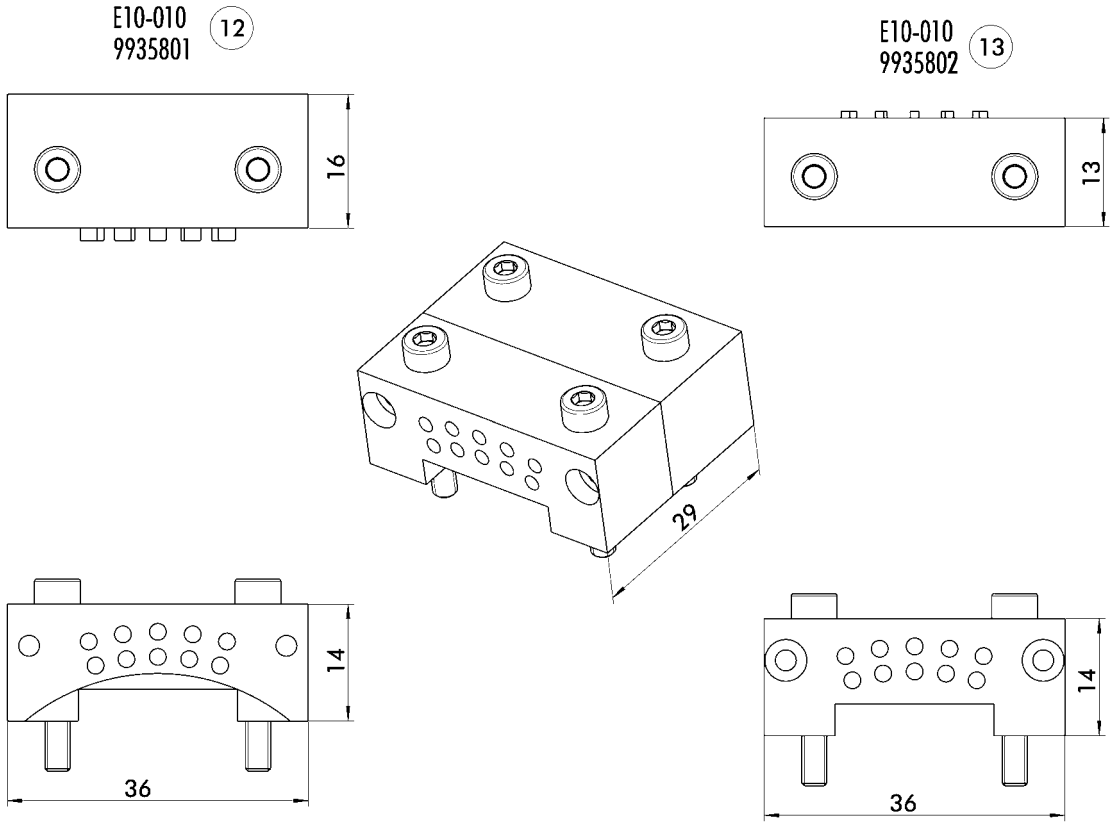
Gold-coated contact pins, spring-loaded on the robot side

Technical data

Designation	ID	Fits	Description
E10-010 head	**9935801**	SWK	10-pin, 3 Amp/50 VAC E option with solder contacts
E10-010 adapter	**9935802**	SWA	10-pin, 3 Amp/50 VAC E option with solder contacts

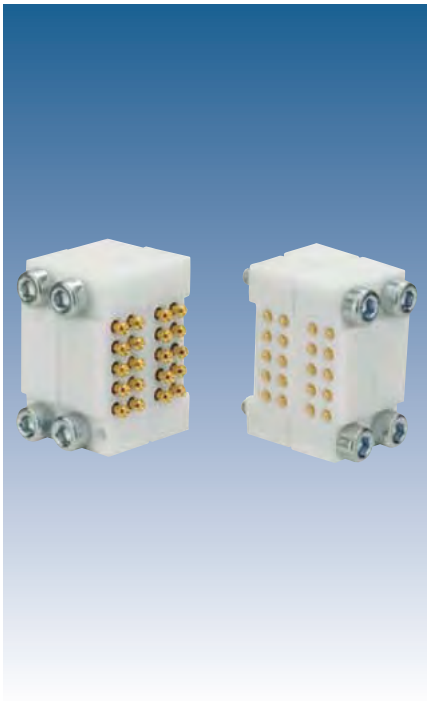
ⓘ ID only for replacement orders and separate orders

Main views



12 Head side
13 Adapter side

E20 for SWS-011



Product description

20-pin

3 Amp/50 VAC per pin

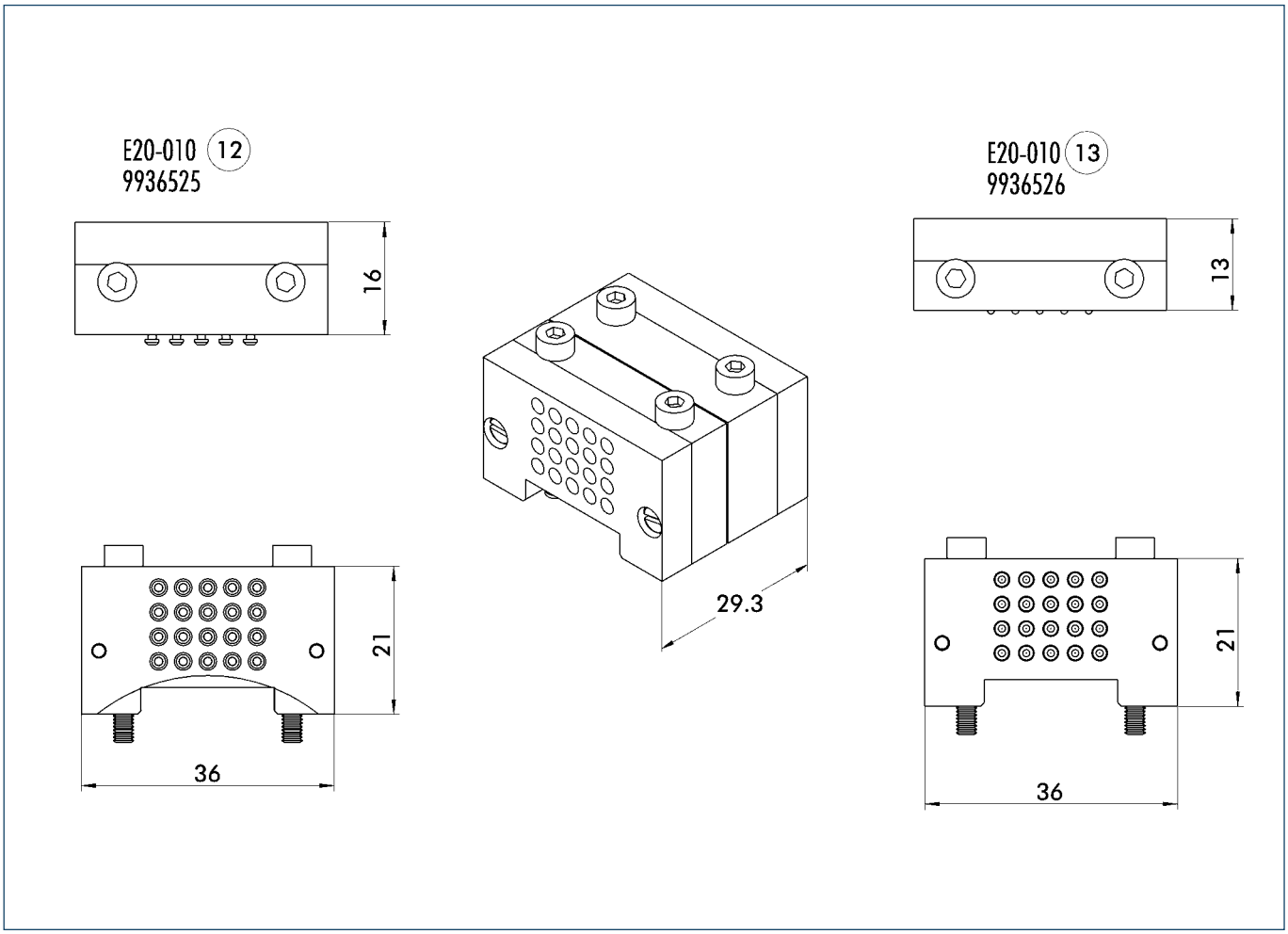
Gold-coated contact pins, spring-loaded on the robot side

Technical data

Designation	ID	Fits	Description
E20 head	**9936525**	SWK	20-pin, 3 Amp/50 VAC E option with solder contacts
E20 adapter	**9936526**	SWA	20-pin, 3 Amp/50 VAC E option with solder contacts

ⓘ ID only for replacement orders and separate orders

Main views



12 Head side
13 Adapter side

G19 for SWS

Product description

Pivoted connector
can be fixed into 5 positions

19-pin

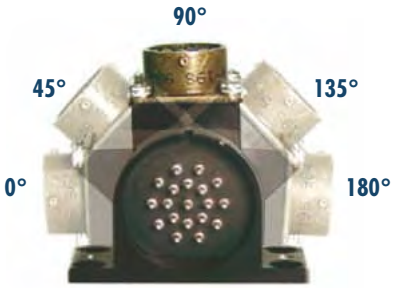
5 Amp/250 VAC* per pin

MS miniature quick-change connector

Contact pins protected against accidental contact

Splash-proof

Adjustment angle



Technical data

Designation	ID	Fits	Description
G19 head	**9940649**	SWK	19-pin/5A/250 VAC*
G19 adapter	**9940650**	SWA	19-pin/5A/250 VAC*

* 250 VAC grounding done by customer

ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

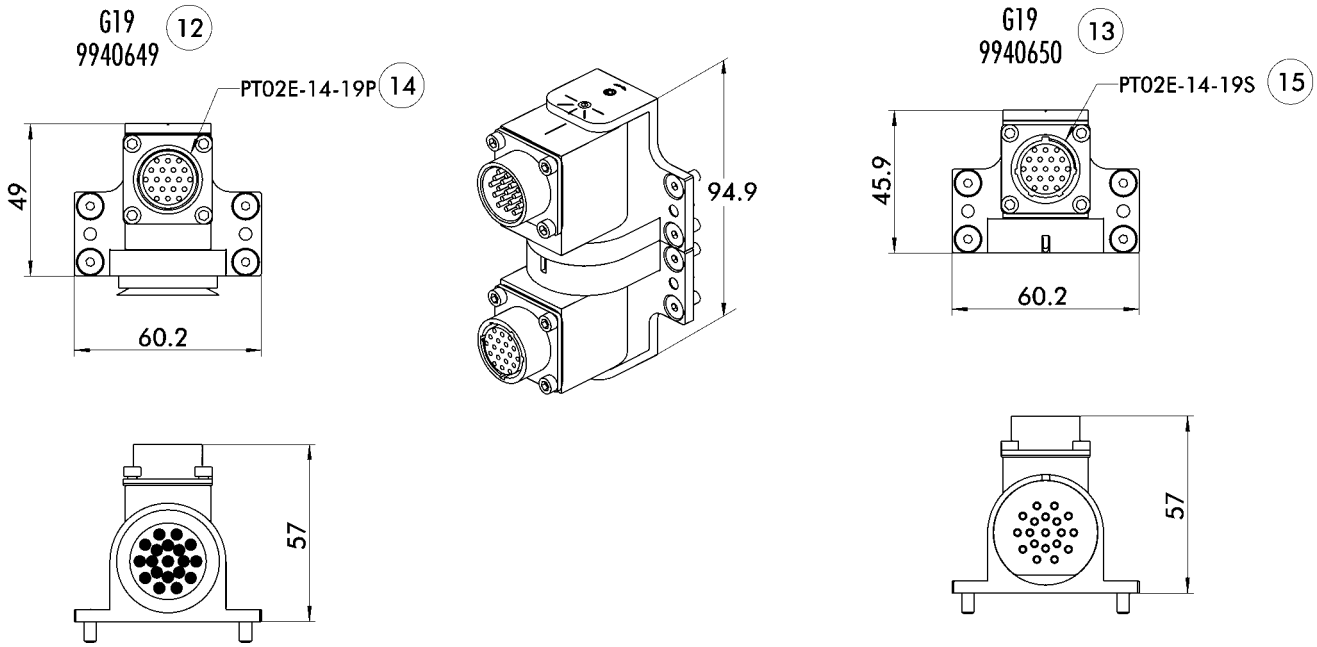
	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
G19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
G19 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

The cable connector establishes the connection between the G19 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS

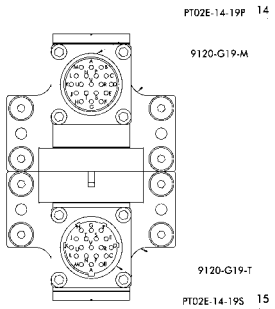
SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views G19 head and G19 adapter



⑫ Head side
⑬ Adapter side
⑭ Male connector
⑮ Female connector

G19 pin assignment



⑭ Male connector
⑮ Female connector

Pin out	
G19-T	G19-M
PT02E-14-19S	PT02E-14-19P
Female connector	Male connector
A < - - - - - - - - - - < < - - - - - - - - - - < A	
B < - - - - - - - - - - < < - - - - - - - - - - < B	
C < - - - - - - - - - - < < - - - - - - - - - - < C	
D < - - - - - - - - - - < < - - - - - - - - - - < D	
E < - - - - - - - - - - < < - - - - - - - - - - < E	
F < - - - - - - - - - - < < - - - - - - - - - - < F	
J < - - - - - - - - - - < < - - - - - - - - - - < J	
K < - - - - - - - - - - < < - - - - - - - - - - < K	
L < - - - - - - - - - - < < - - - - - - - - - - < L	
M < - - - - - - - - - - < < - - - - - - - - - - < M	
N < - - - - - - - - - - < < - - - - - - - - - - < N	
P < - - - - - - - - - - < < - - - - - - - - - - < P	
R < - - - - - - - - - - < < - - - - - - - - - - < R	
S < - - - - - - - - - - < < - - - - - - - - - - < S	
T < - - - - - - - - - - < < - - - - - - - - - - < T	
U < - - - - - - - - - - < < - - - - - - - - - - < U	
V < - - - - - - - - - - < < - - - - - - - - - - < V	

G26 for SWS

Product description

Pivoted connector
can be fixed into 5 positions

26-pin

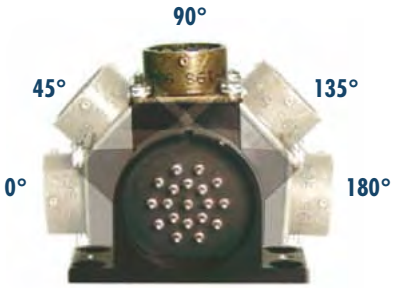
5 Amp/250 VAC* per pin

MS miniature quick-change connector

Contact pins protected against accidental contact

Splash-proof

Adjustment angle



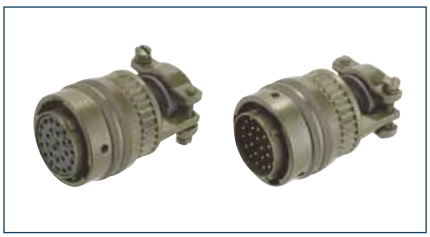
Technical data

Designation	ID	Fits	Description
G26 head	**9941560**	SWK	26-pin/3A/250 VAC*
G26 adapter	**9941561**	SWA	26-pin/3A/250 VAC*

* 250 VAC grounding done by customer

ⓘ ID only for replacement orders and separate orders

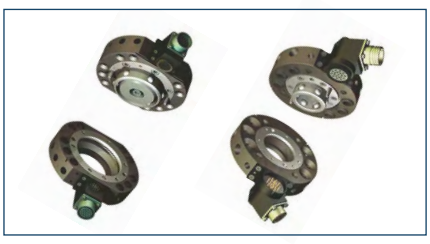
Suitable cable connectors



	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
G26 head	**0301250**	KAS-26B-K-0	**0301252**	KAS-26B-K-90
G26 adapter	**0301251**	KAS-26B-A-0	**0301253**	KAS-26B-A-90

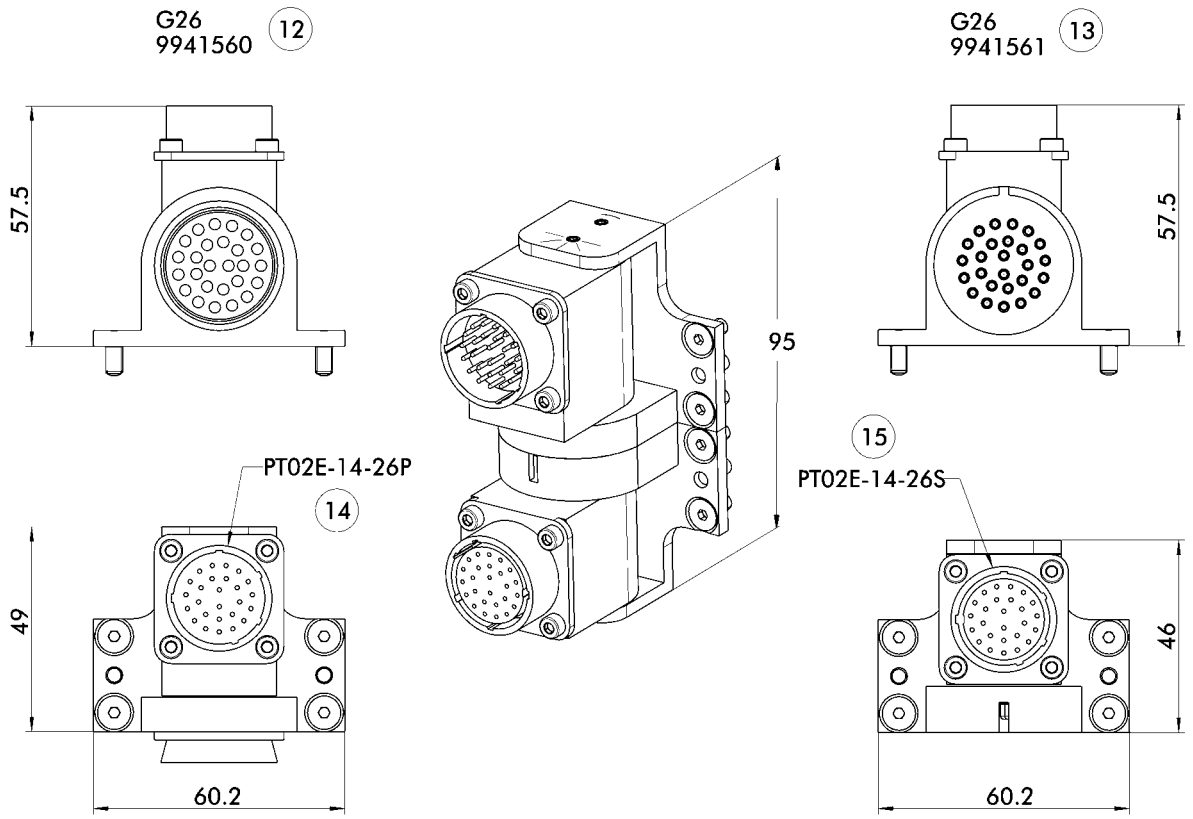
The cable connector establishes the connection between the G26 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS



SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views



12 Head side
13 Adapter side
14 Male connector
15 Female connector

K19 for SWS-020; SWS-021; SWS-060

Product description

19-pin
3 Amp/50 VAC per pin
MS miniature quick-change connector
Contact pins protected against accidental contact
Splash-proof

Technical data

Designation	ID	Fits	Description
K19 head	**9937328**	SWK	19-pin, 3 Amp/50 VAC E option with miniature quick-change connector
K19 adapter	**9937329**	SWA	19-pin, 3 Amp/50 VAC E option with miniature quick-change connector

ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

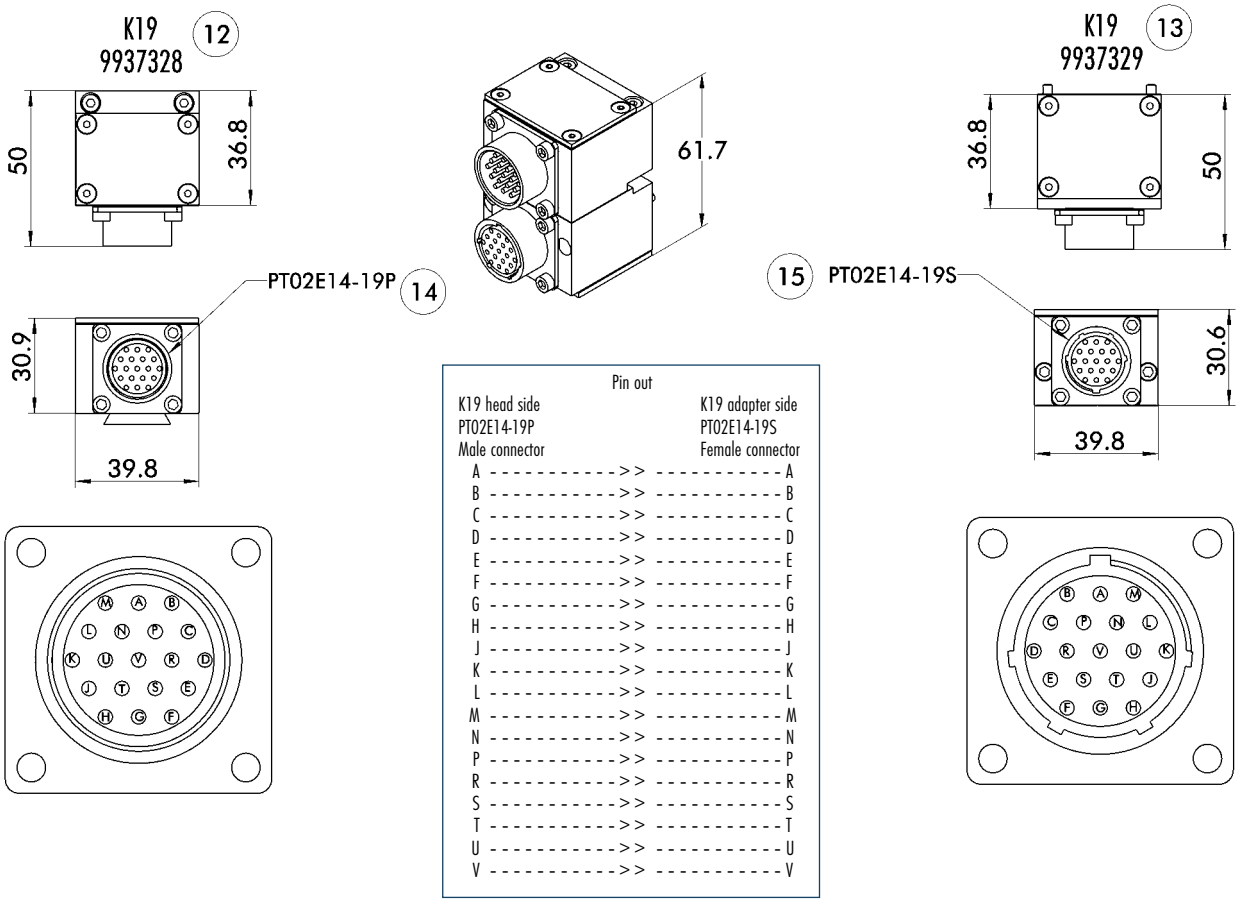
	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
K19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
K19 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

The cable connector establishes the connection between the K19 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS

SWS	Side	Adapter plate needed
SWS-020	A; B	No
SWS-021	A	No
SWS-060	A	No

Main views K19 head and K19 adapter



Pin out

K19 head side PT02E14-19P Male connector		K19 adapter side PT02E14-19S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	L
M	>>	M
N	>>	N
P	>>	P
R	>>	R
S	>>	S
T	>>	T
U	>>	U
V	>>	V

(12) Head side
(13) Adapter side
(14) Male connector
(15) Female connector

K26 for SWS-020; SWS-021; SWS-060

Product description

26-pin
3 Amp/50 VAC per pin
MS miniature quick-change connector
Contact pins protected against accidental contact
Splash-proof

Technical data

Designation	ID	Fits	Description
K26 head	**9937798**	SWK	26-pin, 3 Amp/50 VAC E option with miniature quick-change connector
K26 adapter	**9937799**	SWA	26-pin, 3 Amp/50 VAC E option with miniature quick-change connector

ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

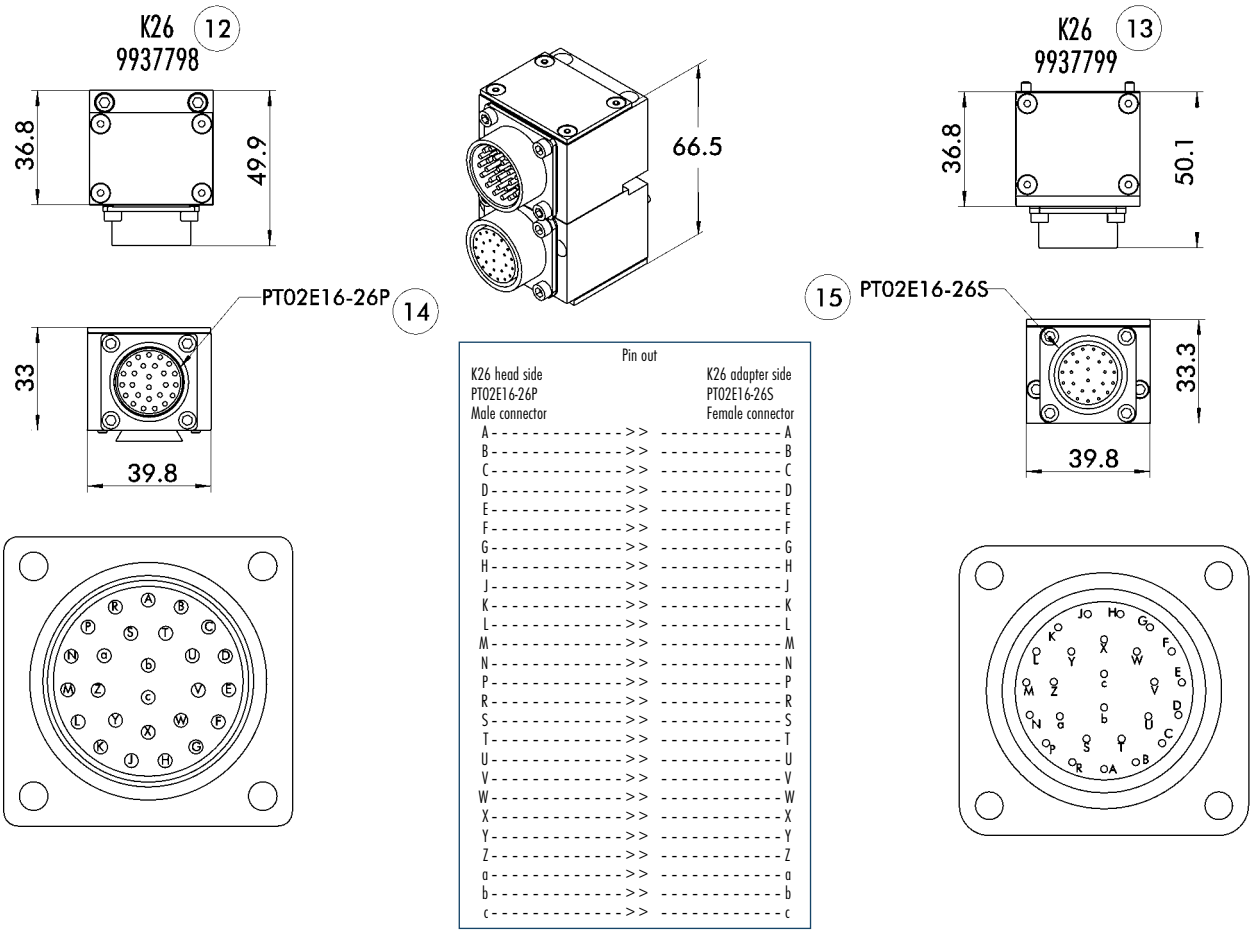
	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
K26 head	**0301250**	KAS-26B-K-0	**0301252**	KAS-26B-K-90
K26 adapter	**0301251**	KAS-26B-A-0	**0301253**	KAS-26B-A-90

The cable connector establishes the connection between the K26 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS

SWS	Side	Adapter plate needed
SWS-020	A; B	No
SWS-021	A	No
SWS-060	A	No

Main views K26 head and K26 adapter



Pin out

K26 head side PT02E16-26P Male connector		K26 adapter side PT02E16-26S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	L
M	>>	M
N	>>	N
P	>>	P
R	>>	R
S	>>	S
T	>>	T
U	>>	U
V	>>	V
W	>>	W
X	>>	X
Y	>>	Y
Z	>>	Z
a	>>	a
b	>>	b
c	>>	c

⑫ Head side
⑬ Adapter side
⑭ Male connector
⑮ Female connector

MT8 for SWS

Product description

8-pin 20 A/500 VAC**
MS threaded plug
Spring-loaded contact pins
Splash-proof

Technical data

Designation	ID	Fits	Description	
MT8 head	**9937157**	SWK	20 Amp/500 VAC** per pin E option	Plug right
MT8L head	**9949318**	SWK	20 Amp/50 VAC** pro Pin E-Option	Plug left
MT8 adapter	**9937158**	SWA	20 Amp/500 VAC** per pin E option	Plug right
MT8L adapter	**9949317**	SWA	20 Amp/50 VAC** pro Pin E-Option	Plug left

** 500 VAC grounding done by customer

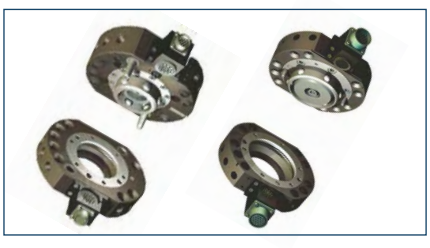
ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
MT8 head	**0301268**	KAS-08G-K-0	**0301270**	KAS-08G-K-90
MT8 adapter	**0301269**	KAS-08G-A-0	**0301271**	KAS-08G-A-90

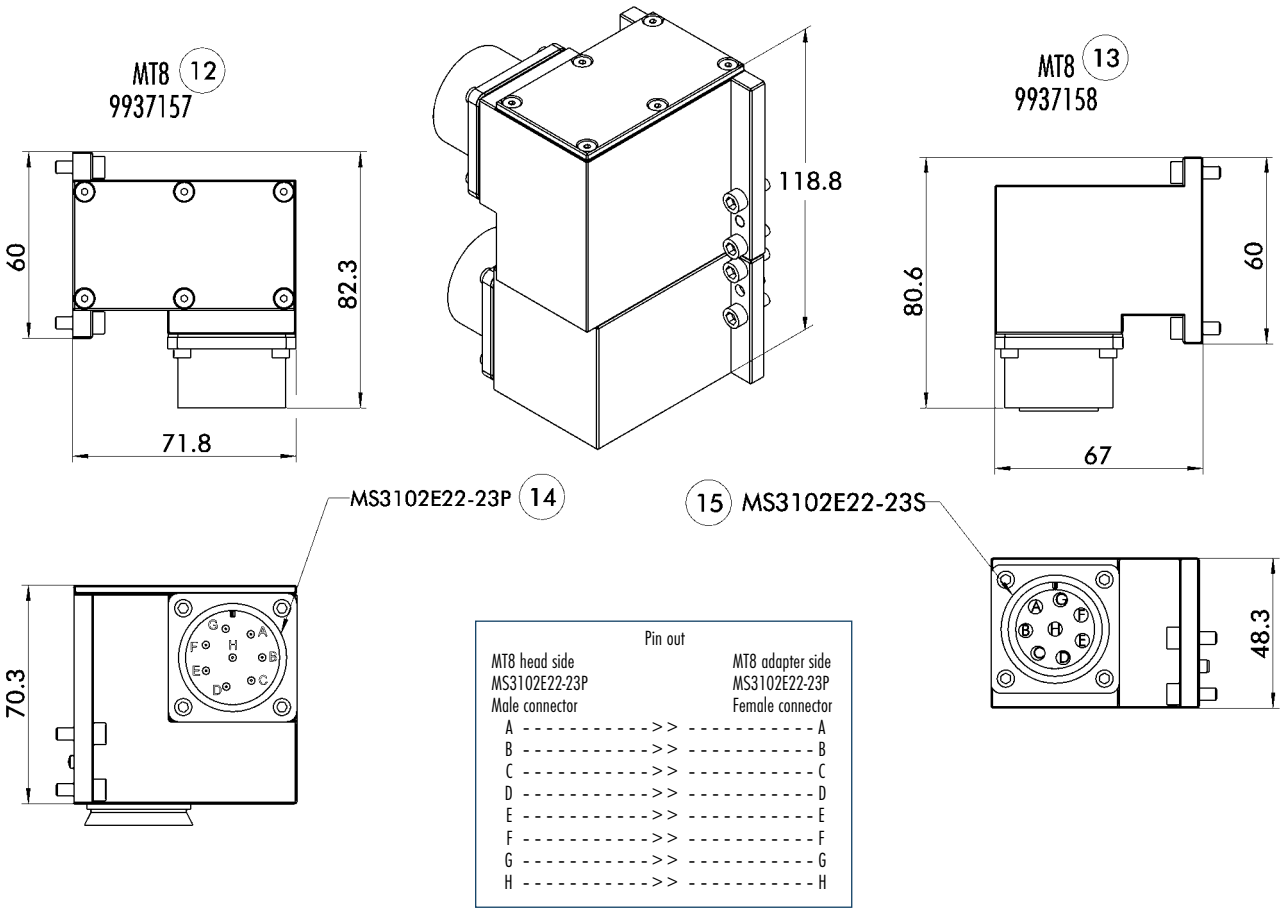
The cable connector establishes the connection between the MT8 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS



SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views MT8 head and MT8 adapter



ⓘ On option with a sinistral cable exit.

⑫ Head side
⑬ Adapter side
⑭ Male connector
⑮ Female connector

MT14 for SWS

Product description

14-pin 13 A/500 VAC**
MS threaded plug
Spring-loaded contact pins
Splash-proof

Technical data

Designation	ID	Fits	Description
MT14 head	**9938527**	SWK	13 Amp/500 VAC** per pin E option
MT14 adapter	**9938528**	SWA	13 Amp/500 VAC** per pin E option

** 500 VAC grounding done by customer

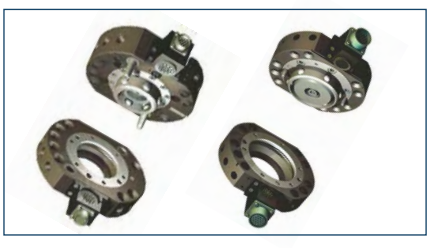
ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
MT14 head	**0301242**	KAS-19G-K-0	**0301254**	KAS-19G-K-90
MT14 adapter	**0301243**	KAS-19G-A-0	**0301255**	KAS-19G-A-90

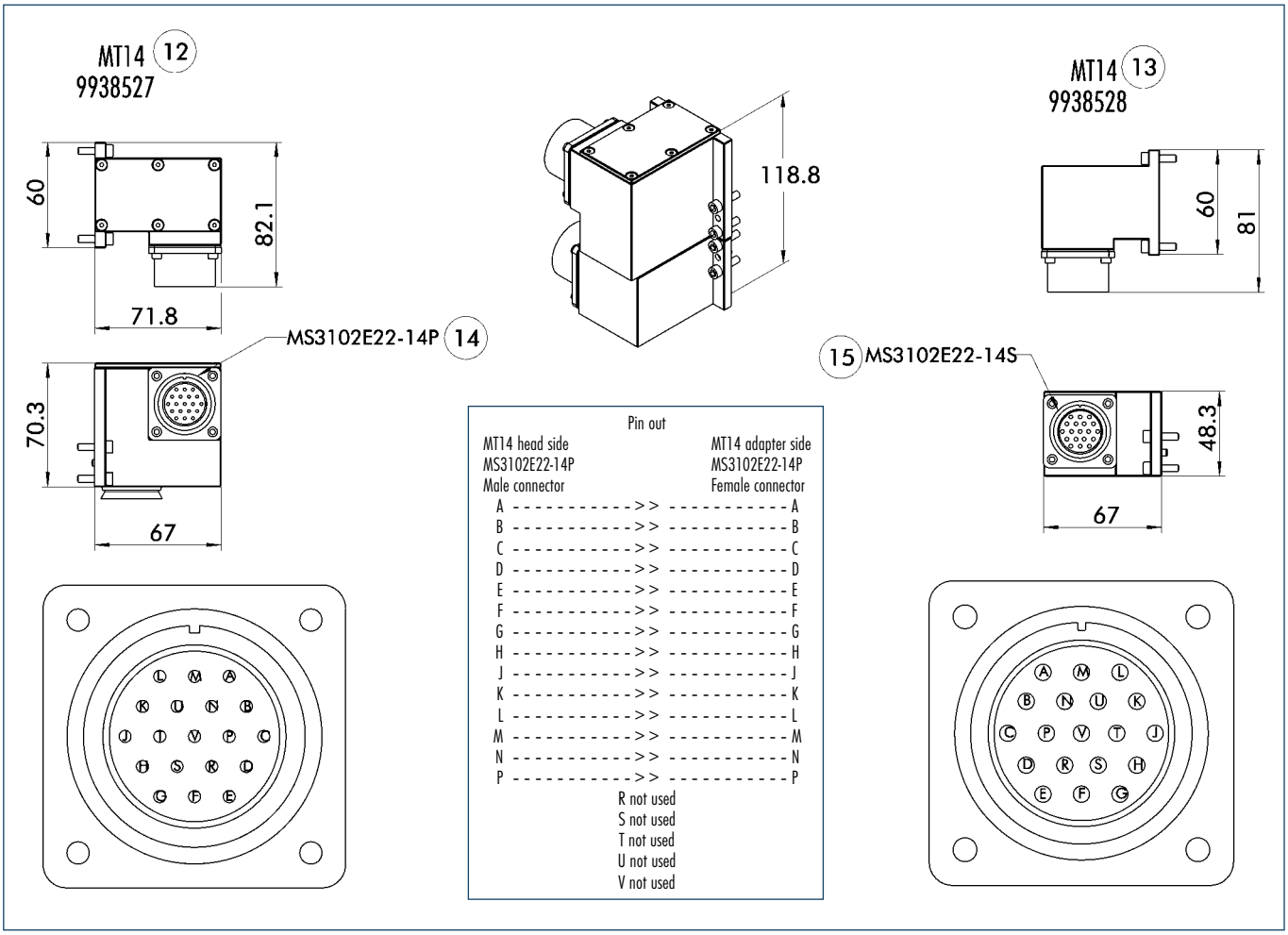
The cable connector establishes the connection between the MT14 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS



SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views MT14 head and MT14 adapter



12 Head side
13 Adapter side
14 Male connector
15 Female connector

R19 for SWS

Product description

19-pin
5 Amp/250 VAC* per pin
MS miniature quick-change connector
Contact pins protected against accidental contact
With tool coding as an option
Splash-proof

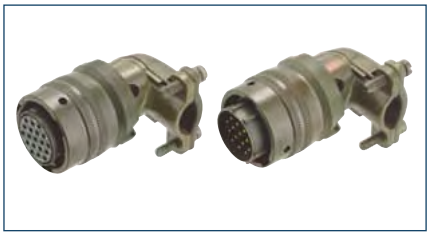
Technical data

Designation	ID	Fits	Description
R19 head	**9935815**	SWK	19-pin, 5 Amp/250 VAC* E option with miniature quick-change connector
R19W head	**9942041**	SWK	Connection possibility for proximity switches for control of piston stroke (to be used for SWK-100 R19R)
R19R head	**9942391**	SWK	Connection possibility for proximity switches for control of piston stroke (SWK-110)
R19 adapter	**9935816**	SWA	19-pin, 5 Amp/250 VAC* E option with miniature quick-change connector
R14 adapter	**9935100**	SWA	Tool coding 0-9 tools, 5 Amp/250 VAC* 14-pin can be used by customer - see drawing, suitable for R19 head
R10 adapter	**9941385**	SWA	Tool coding 0-99 tools, 5 Amp/250 VAC* 10-pin can be used by customer - see drawing, suitable for R19 head

* 250 VAC grounding done by customer

ⓘ ID only for replacement orders and separate orders

Suitable cable connectors



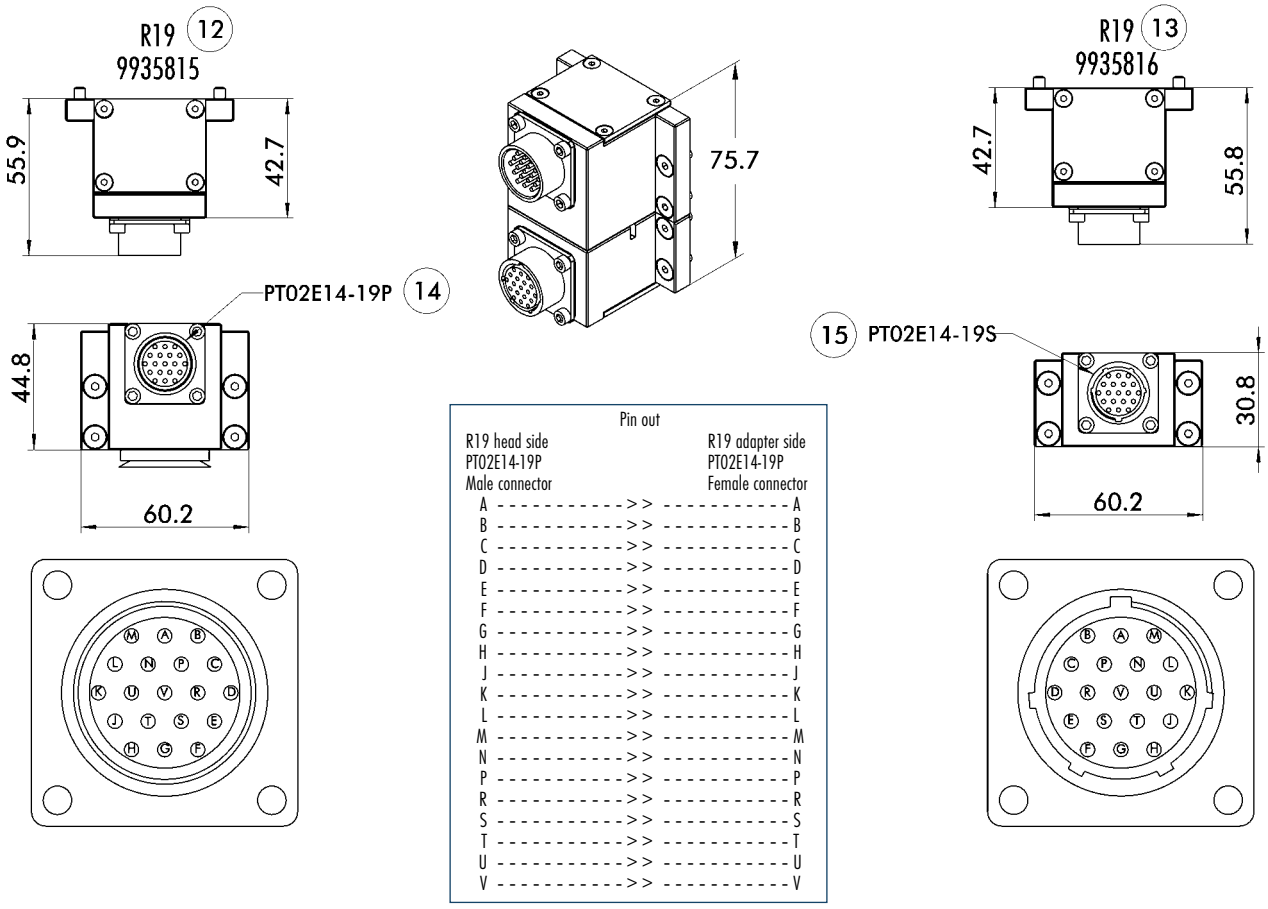
	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R19 head	**0301240**	KAS-19B-K-0	**0301248**	KAS-19B-K-90
R19; R14; R10 adapter	**0301241**	KAS-19B-A-0	**0301249**	KAS-19B-A-90

The cable connector establishes the connection between the R19 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS

SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views R19 head and R19 adapter



Pin out

R19 head side PT02E14-19P Male connector		R19 adapter side PT02E14-19P Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	L
M	>>	M
N	>>	N
P	>>	P
R	>>	R
S	>>	S
T	>>	T
U	>>	U
V	>>	V

12 Head side
13 Adapter side
14 Male connector
15 Female connector

S modules

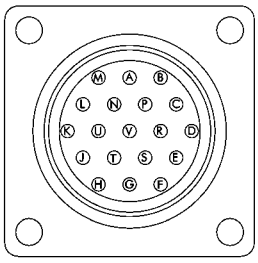
As opposed to the R modules, the S modules have the connector socket opposite the contact pins.
The following models are available: S19 and S14 (tool coding) suitable for R19

T modules

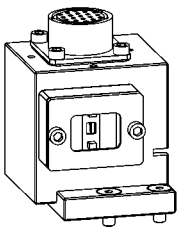
The T modules and R modules differ in terms of the connector used.
R modules have a bayonet connection and T modules have a thread.
The following models are available: T19, T14 and T10 (tool coding) suitable for R19

Main views R19 head and R14/R10 adapter

R19-M (12)
PT02E-14-19P



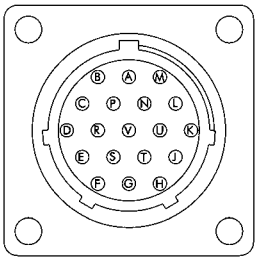
R10-T



Pin out

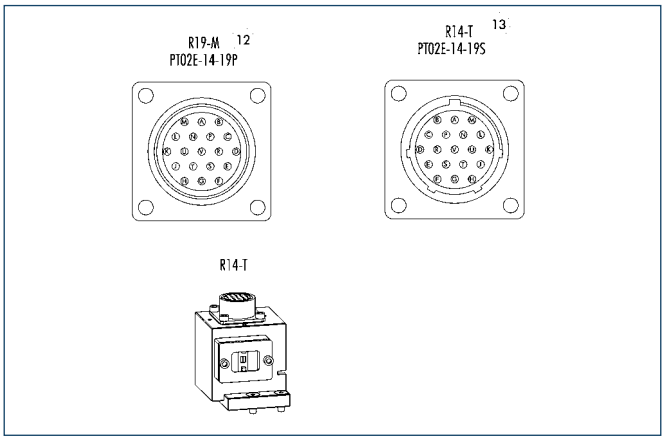
R19 head side PT02E-14-19P Male connector		R10 adapter side PT02E-14-19S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	Switch 1
L	>>	
M	>>	
N	>>	
P	>>	Switch 2
R	>>	
S	>>	
T	>>	
U	>>	
V	>>	V

R10-T (13)
PT02E-14-19S



(12) Head side
(13) Adapter side

R14 plug connection

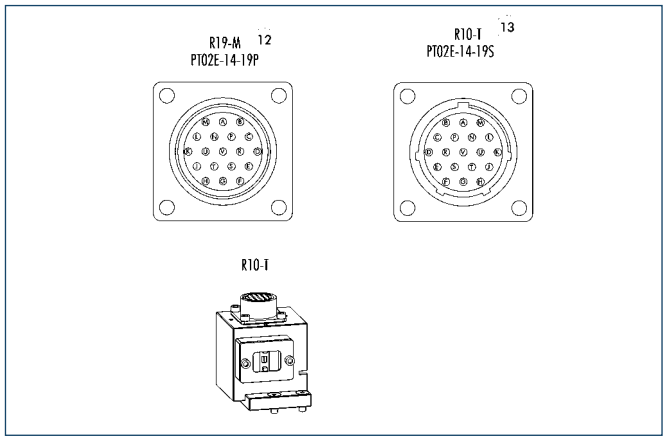


⑫ Head side ⑬ Adapter side

Pin out

R19 head side PT02E-14-19P Male connector		R14 adapter side PT02E-14-19S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	L
M	>>	M
N	>>	N
P	>>	Switch 1
R	>>	Switch 1
S	>>	Switch 1
T	>>	Switch 1
U	>>	
V	>>	V

R10 plug connection



⑫ Head side ⑬ Adapter side

Pin out

R19 head side PT02E-14-19P Male connector		R10 adapter side PT02E-14-19S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	Switch 1
L	>>	Switch 1
M	>>	Switch 1
N	>>	Switch 1
P	>>	Switch 2
R	>>	Switch 2
S	>>	Switch 2
T	>>	Switch 2
U	>>	
V	>>	V

Connector pin assignment R19W head/R14 adapter

Pin out

	R19W-M head side R19R-M Pin		R14-T adapter side Socket	
	A	>>	A	
	B	>>	B	
Unlock signal (black)	C	>>	C	No connect
10-30 VDC (brown)	D	>>	D	No connect
	E	>>	E	
	F	>>	F	
	G	>>	G	
0 VDC (blue)	H	>>	H	No connect
	J	>>	J	
Lock signal (black)	K	>>	K	No connect
	L	>>	L	
	M	>>	M	
	N	>>	N	
	P	>>	P	No connect
	R	>>	R	No connect
	S	>>	S	No connect
	T	>>	T	No connect
	U	Common >>	U	No connect
	V	>>	V	

Ground

Connector pin assignment R19W head/R19 adapter

Pin out

	R19W-M head side R19R-M Pin		R19-T adapter side Socket	
	A	>>	A	
	B	>>	B	
Unlock signal (black)	C	>>	C	No connect
10-30 VDC (brown)	D	>>	D	No connect
	E	>>	E	
	F	>>	F	
	G	>>	G	
0 VDC (blue)	H	>>	H	No connect
	J	>>	J	
Lock signal (black)	K	>>	K	No connect
	L	>>	L	
	M	>>	M	
	N	>>	N	
	P	>>	P	
	R	>>	R	
	S	>>	S	
	T	>>	T	
	U	>>	U	
	V	>>	V	

Ground

R26 for SWS

Product description

26-pin
3 Amp/250 VAC* per pin
MS miniature quick-change connector
Contact pins protected against accidental contact
With tool coding as an option
Splash-proof

Technical data

Designation	ID	Fits	Description
R26 head	**9935819**	SWK	26-pin, 3 Amp/250 VAC* E option with miniature quick-change connector
R26 adapter	**9935820**	SWA	26-pin, 3 Amp/250 VAC* E option with miniature quick-change connector
R21 adapter	**9799841**	SWA	Tool coding 0-9 tools, 3 Amp/250 VAC* 21-pin can be used by customer - see drawing, suitable for R26 head
R17 adapter	**9941386**	SWA	Tool coding 0-99 tools, 3 Amp/250 VAC* 17-pin can be used by customer - see drawing, suitable for R26 head

* 250 VAC grounding done by customer

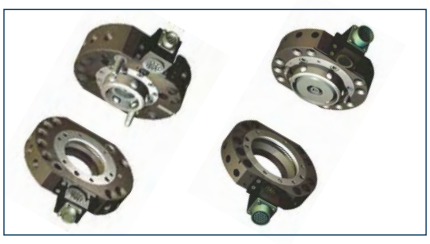
ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R26 head	**0301250**	KAS-26B-K-0	**0301252**	KAS-26B-K-90
R26; R21; R17 adapter	**0301251**	KAS-26B-A-0	**0301253**	KAS-26B-A-90

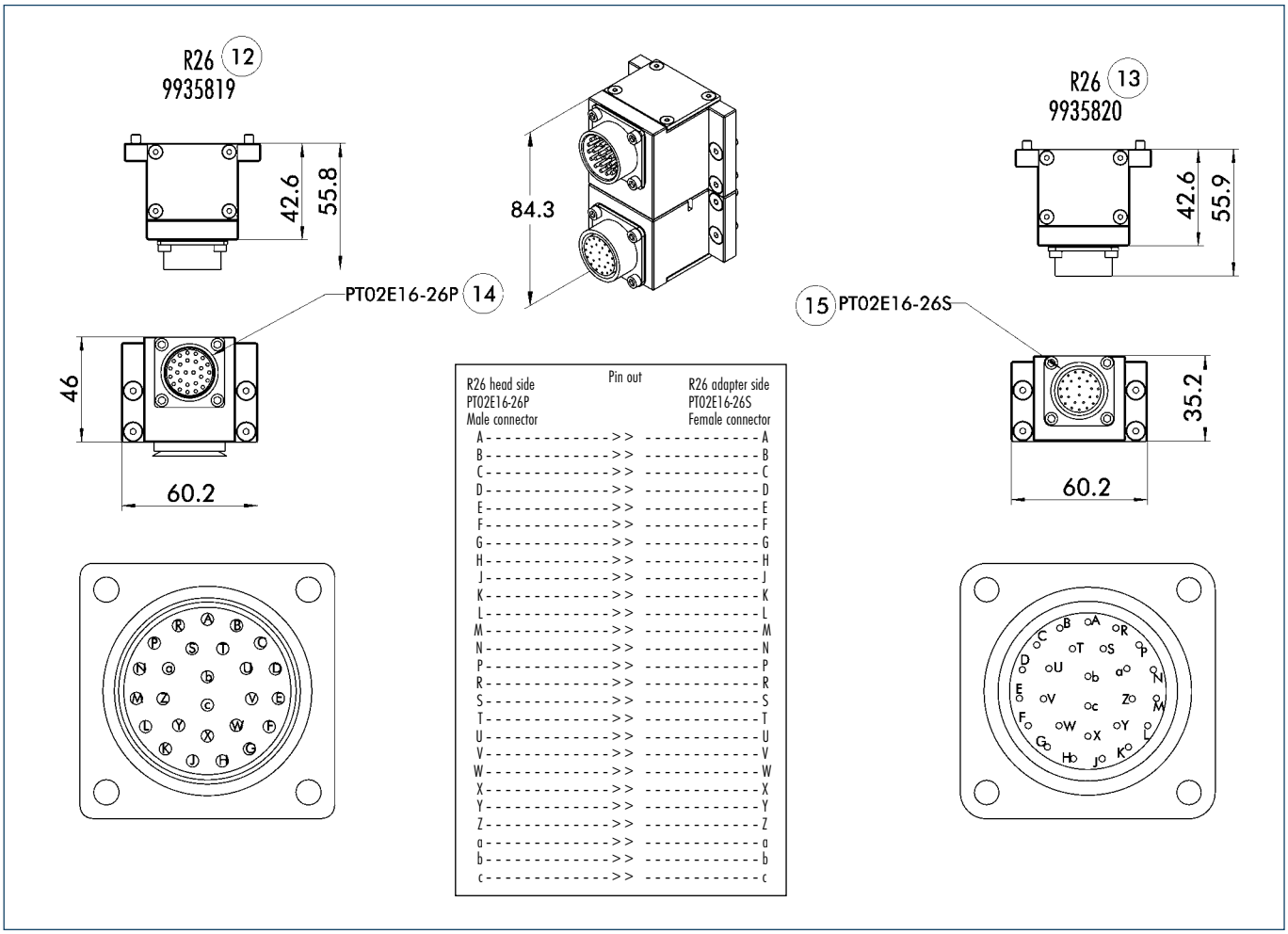
The cable connector establishes the connection between the R26 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS



SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views R26 head and R26 adapter



12 Head side
13 Adapter side
14 Male connector
15 Female connector

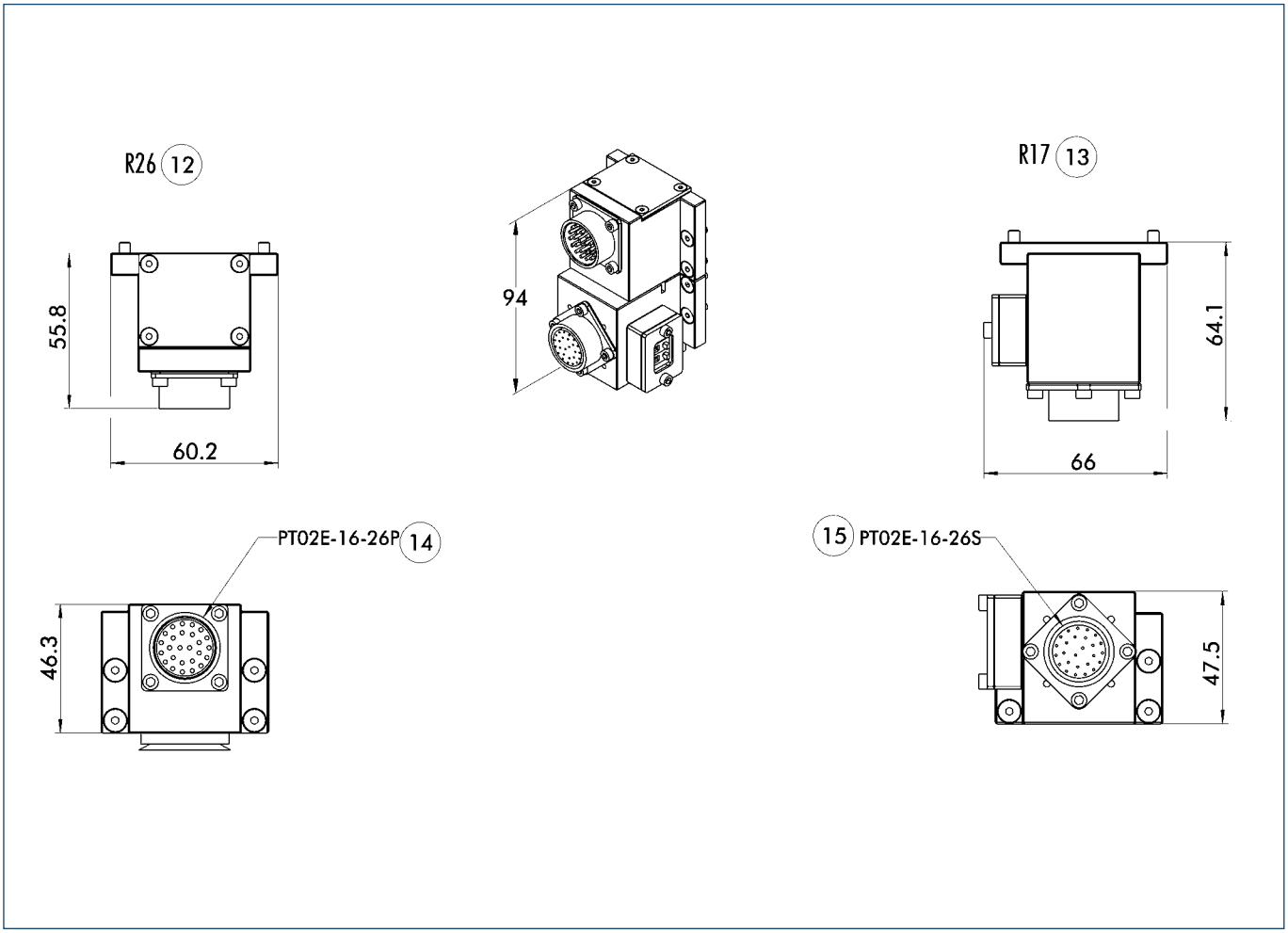
S modules

As opposed to the R modules, the S modules have the connector socket opposite the contact pins.
The following models are available: S26 and S21 (tool coding) suitable for R26

T modules

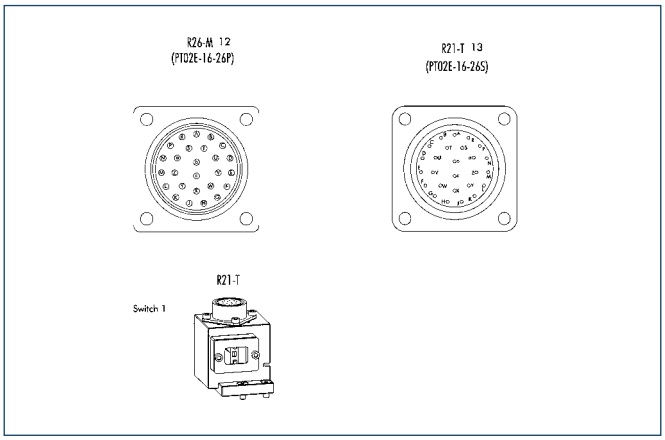
The T modules and R modules differ in terms of the connector used.
R modules have a bayonet connection and T modules have a thread.
The following models are available: T26 suitable for R26

Main views R26 head and R21/R17 adapter



12 Head side
13 Adapter side
14 Male connector
15 Female connector

R21 plug connection

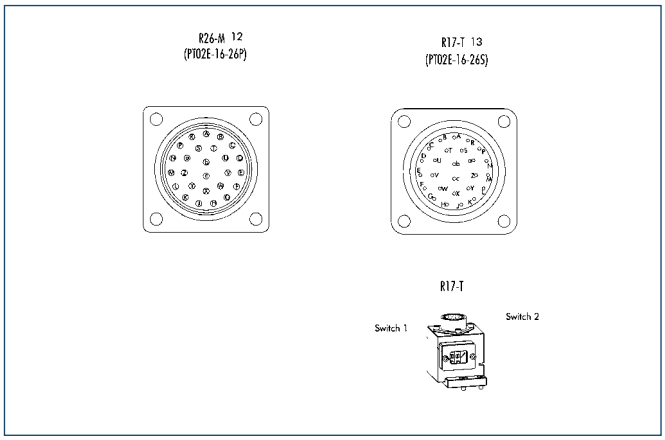


⑫ Head side
⑬ Adapter side

Pin out

R26 head side PT02E-16-26P Male connector		R21 adapter side PT02E-16-26S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	L
M	>>	M
N	>>	N
P	>>	Switch 1
R	>>	Switch 1
S	>>	Switch 1
T	>>	Switch 1
U	>>	
V	>>	V
W	>>	W
X	>>	X
Y	>>	Y
Z	>>	Z
a	>>	a
b	>>	b
c	>>	c

R17 plug connection



⑫ Head side
⑬ Adapter side

Pin out

R26 head side PT02E-16-26P Male connector		R17 adapter side PT02E-16-26S Female connector
A	>>	A
B	>>	B
C	>>	C
D	>>	D
E	>>	E
F	>>	F
G	>>	G
H	>>	H
J	>>	J
K	>>	K
L	>>	Switch 1
M	>>	Switch 1
N	>>	Switch 1
P	>>	Switch 1
R	>>	Switch 2
S	>>	Switch 2
T	>>	Switch 2
U	>>	Switch 2
V	>>	
W	>>	W
X	>>	X
Y	>>	Y
Z	>>	Z
a	>>	a
b	>>	b
c	>>	c

R32 for SWS

Product description

32-pin
3 Amp/250 VAC* per pin
MS miniature quick-change connector
Contact pins protected against accidental contact
With tool coding as an option
Splash-proof

Technical data

Designation	ID	Fits	Description
R32 head	**9941387**	SWK	32-pin, 3 Amp/250 VAC* E option with miniature quick-change connector
R32 adapter	**9941388**	SWA	32-pin, 3 Amp/250 VAC* E option with miniature quick-change connector

* 250 VAC grounding done by customer

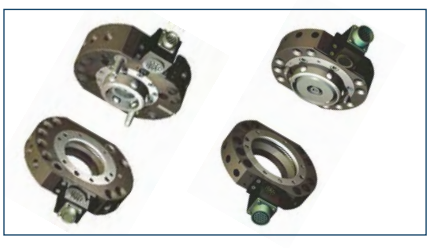
ⓘ ID only for replacement orders and separate orders

Suitable cable connectors

	Straight		90°	
Cable connectors for	ID	Designation	ID	Designation
R32 head	**0301272**	KAS-36B-K-0	**0301274**	KAS-36B-K-90
R32 adapter	**0301273**	KAS-36B-A-0	**0301275**	KAS-36B-A-90

The cable connector establishes the connection between the R32 module and the cable.
Ready-made cable connectors with 2, 3 or 5 m cable available on request.

Compatible SWS

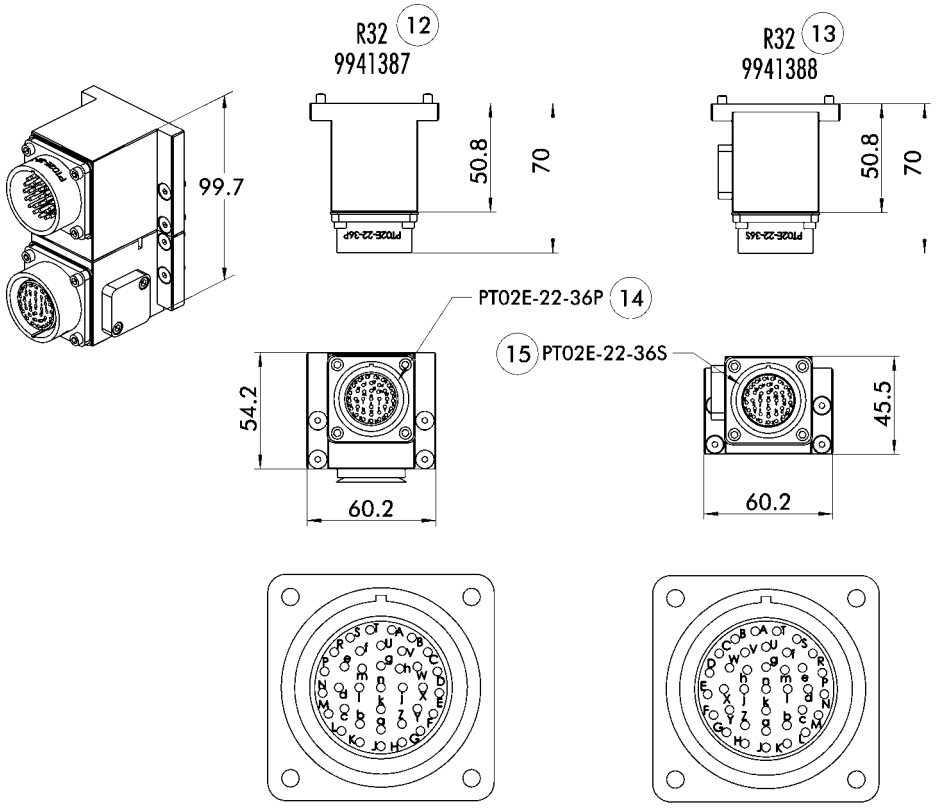


SWS	Side	Adapter plate needed
SWS-040	A; B	No
SWS-041	A	No
SWS-071	A; B	No
SWS-110	A; B	No
SWS-150	A; B	No
SWS-300	A; B	No

Main views R32 head and R32 adapter

Pin out

R32 head side PT02E-22-36P			R32 adapter side PT02E-22-36P
A	>>	>>	A
B	>>	>>	B
C	>>	>>	C
D	>>	>>	D
E	>>	>>	E
F	>>	>>	F
G	>>	>>	G
H	>>	>>	H
J	>>	>>	J
K	>>	>>	K
L	>>	>>	L
M	>>	>>	M
N	>>	>>	N
P	No connection >>	No connection	P
R	No connection >>	No connection	R
S	No connection >>	No connection	S
T	No connection >>	No connection	T
U	>>	>>	U
V	>>	>>	V
W	>>	>>	W
X	>>	>>	X
Y	>>	>>	Y
Z	>>	>>	Z
a	>>	>>	a
b	>>	>>	b
c	>>	>>	c
d	>>	>>	d
e	>>	>>	e
f	>>	>>	f
g	>>	>>	g
h	>>	>>	h
j	>>	>>	j
k	>>	>>	k
l	>>	>>	l
m	>>	>>	m
n	>>	>>	n



12 Head side
13 Adapter side
14 Male connector
15 Female connector

Quick-change Rack

Modular quick-change rack in two versions. SWM-S fits change systems from size SWS-005 to SWS-021 and SWM-M fits change systems from size SWS-040.

Your advantages and benefits

Modular system
facilitates a flexible, application-specific design

V-shaped support points
for accurate positioning of the storage position and repeatability

Aluminum profile as the base body
or use the structure you already have

Corrosion resistant, hardened workpiece pins

Optional sensor monitoring

Intermediate plate blanks
available for attaching workpiece pins.
Alternatively, unused air feed-throughs can be used for attaching the workpiece pins.

General information on the series

Storage plate
The U-shaped storage plate is designed to support the tools. The plate is either mounted onto the mounting block or on the 3 or 4 position adapter. The screws and cylindrical pins required for assembly are provided as standard. The V-shaped indentations in the storage plate facilitate compensation of the tool when coupling and uncoupling.

Intermediate plate blank
The intermediate plate blank is mounted between the tool and the SWA tool change adapter. The SWA screw connection diagram and bore holes for the workpiece bolts are already on the plate. Subsequently, the plate can be machined by the customer to fit the gripper.
Three workpiece pins and screws for mounting the SWA are supplied in the standard delivery package.
The plate is supplied without a customer-specific screw connection diagram as standard.
We would be happy to provide you with a quote for customer-specific plates. Please ask for details.

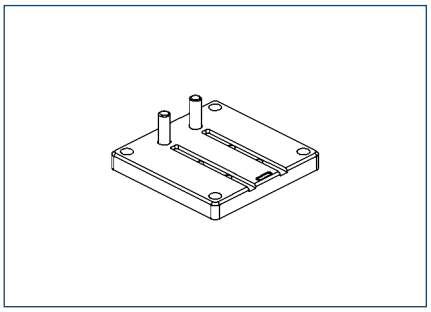
Base plate
The base plate forms the basis of the changer rack. It comprises of a square aluminum plate which the aluminum profile is attached to.

Stand profile and stand bracket
All the parts needed for assembly are delivered as standard for the stand profile and the stand bracket.
The aluminum profile is a 45 x 90 Bosch profile with a length of 610 mm.
Threads on the front enable the profile to be mounted onto the base plate.
The rigidity of the system is improved by attaching a stand bracket.

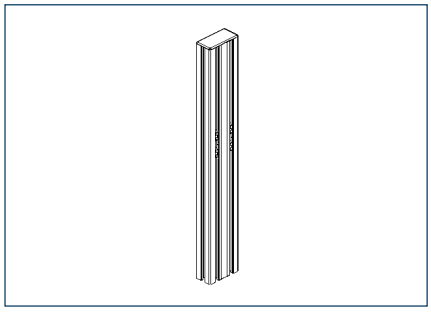
Mounting block
The mounting block can be positioned freely on the aluminum profile. We recommend that the block is pinned to ensure secure assembly. The cylindrical pins are already preassembled in the mounting block.
The storage plate or the position adapter are mounted onto the mounting block.
Sensor brackets for monitoring the presence of the tool are mounted onto the mounting block.

3 or 4 position adapter
The position adapters enable you to fix three or four tools to one stand profile.
The position adapter is mounted onto the mounting block and three or four storage plates are mounted onto the adapter. Sensor brackets for monitoring the presence of the tool can be mounted onto the adapter.

Storage station options SWS-005 to SWS-021

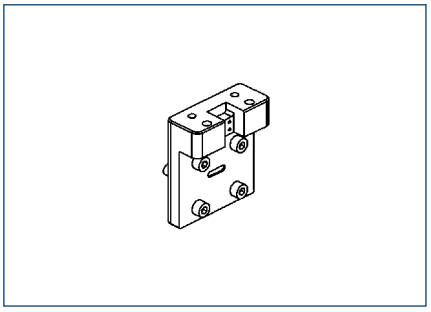


Base plate
SWM-TSS-3311
ID 0302580

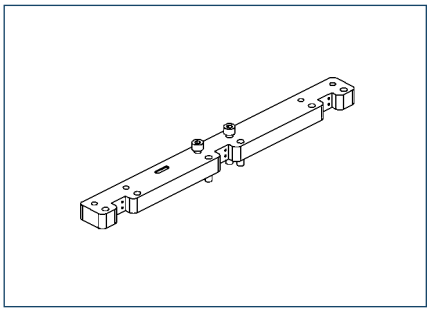


Stand profile 610 mm
SWM-TSS-1020-610
ID 0302586

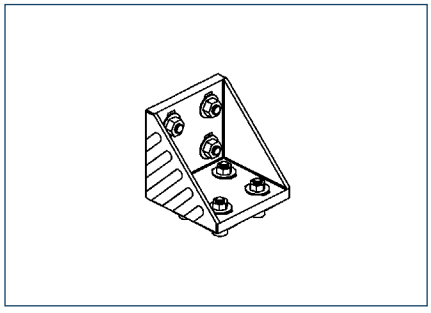
Other lengths available on request



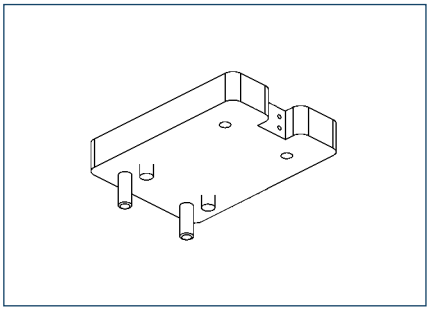
Mounting block
SWM-TSS-3306
ID 0302582



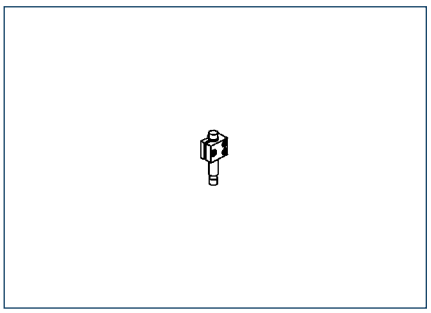
3 position adapter
SWM-TSS-3308
ID 0302583



Stand bracket
SWM-TSS-1030
ID 0302581

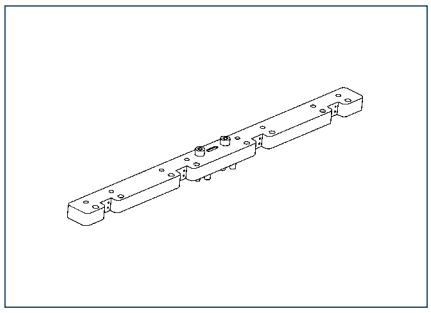


Extension adapter
SWM-TSS-3361
ID 0302585



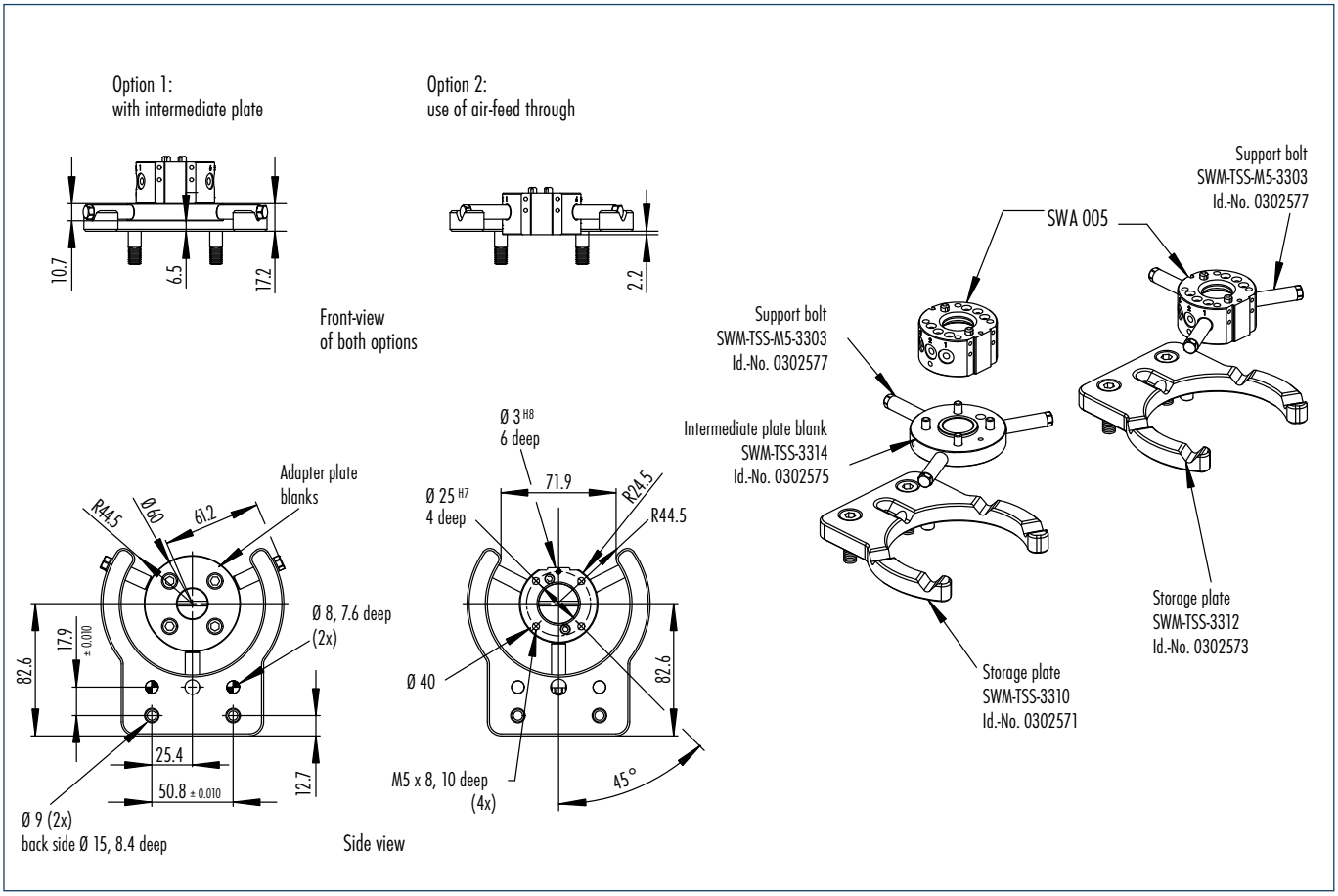
Sensor bracket
SWM-TSS-3315
ID 0302584

For proximity switch INW 80/S, ID 0301508

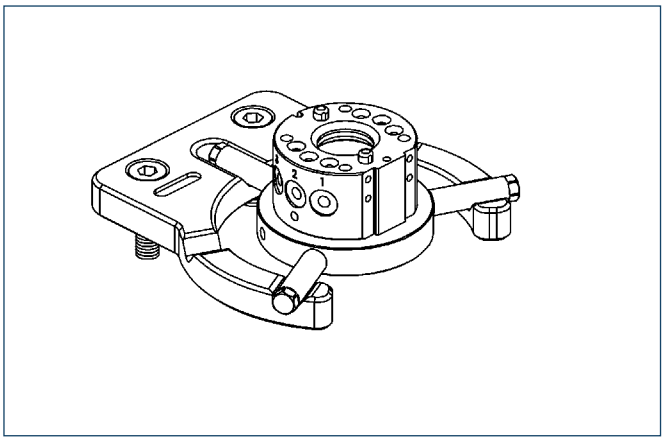


4 position adapter
SWM-TSS-3431
ID 0302587

Option SWS-005

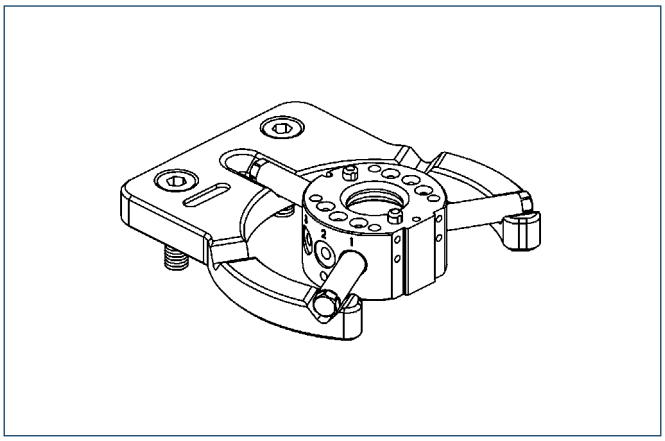


SWS-005 with intermediate plate



With intermediate plate	SWS-005
Storage plate	SWM-TSS-3310 **ID 0302571**
Intermediate plate blank*	SWM-TSS-3314 **ID 0302575**
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

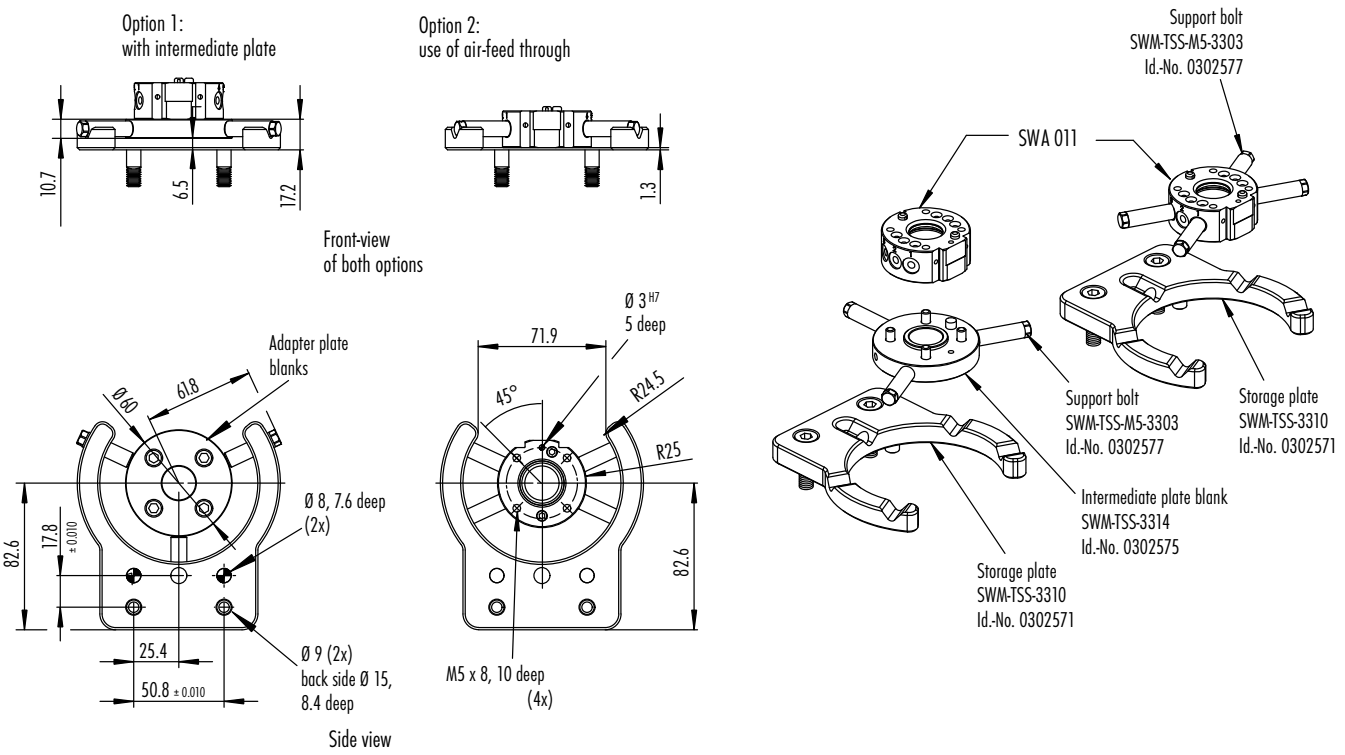
SWS-005 using the air feed-through



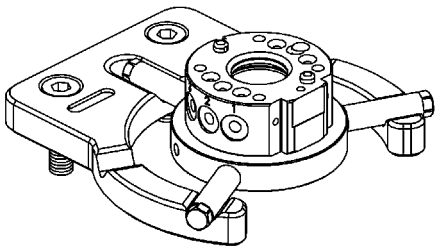
Using the air feed-through	SWS-005
Storage plate	SWM-TSS-3312 **ID 0302573**
Assembly block for storage block***	-
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

* 3 workpiece bolts delivered as standard
** Bolts are available separately
*** Without workpiece bolts

Option SWS-011

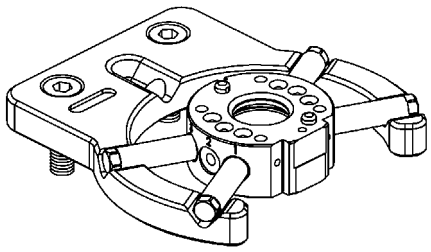


SWS-011 with intermediate plate



With intermediate plate	SWS-011
Storage plate	SWM-TSS-3310 **ID 0302571**
Intermediate plate blank*	SWM-TSS-3314 **ID 0302575**
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

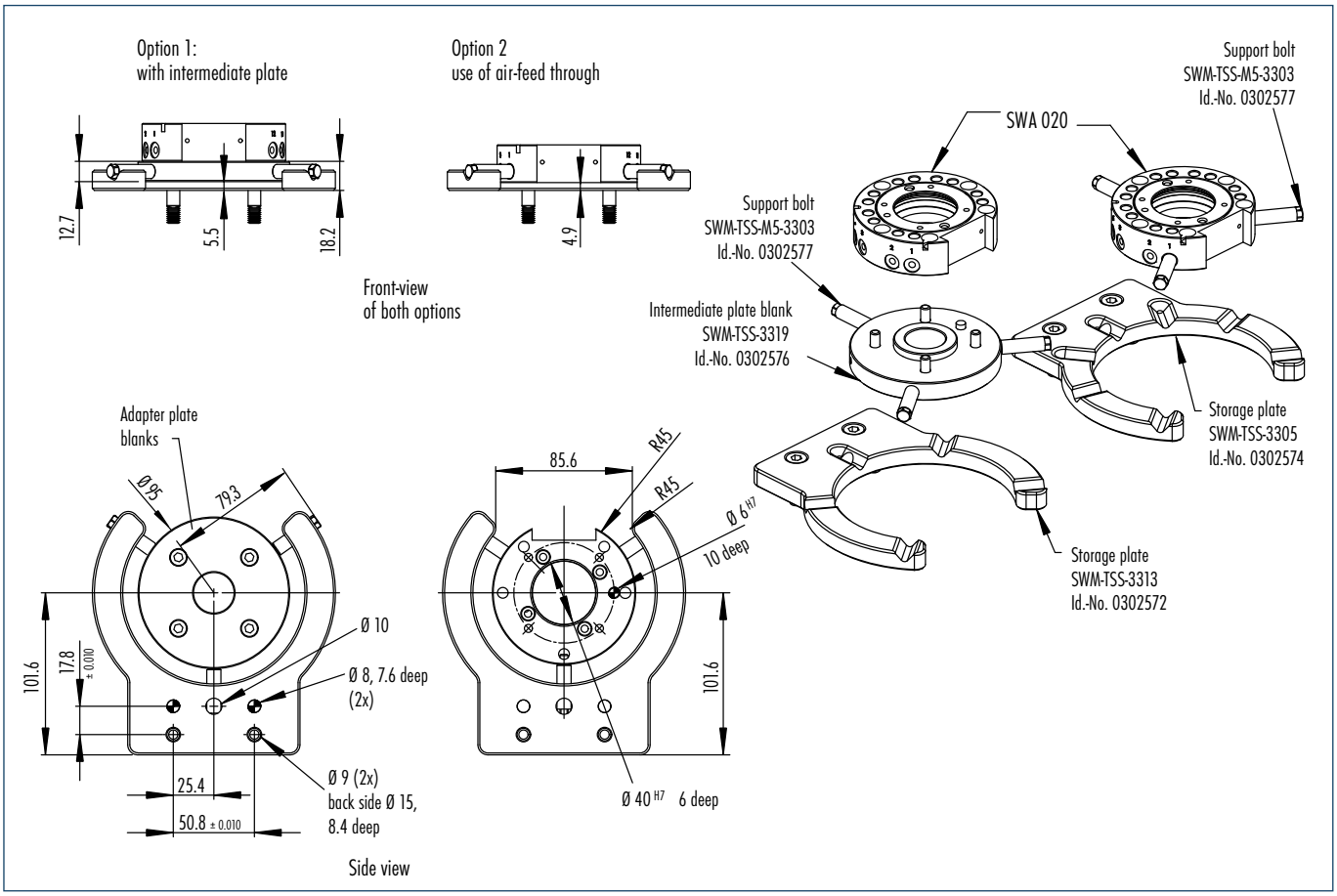
SWS-011 using the air feed-through



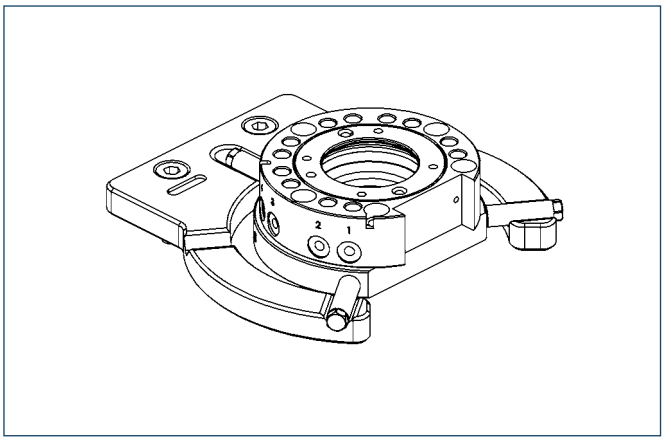
Using the air feed-through	SWS-011
Storage plate	SWM-TSS-3310 **ID 0302571**
Assembly block for storage block***	-
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	No

* 3 workpiece bolts delivered as standard
** Bolts are available separately
*** Without workpiece bolts

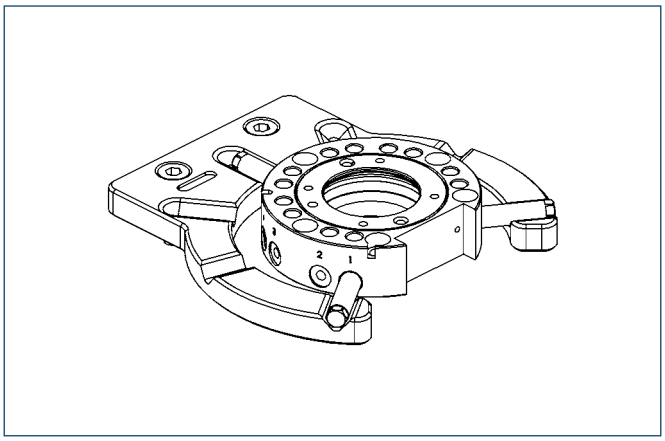
Option SWS-020



SWS-020 with intermediate plate



SWS-020 using the air feed-through

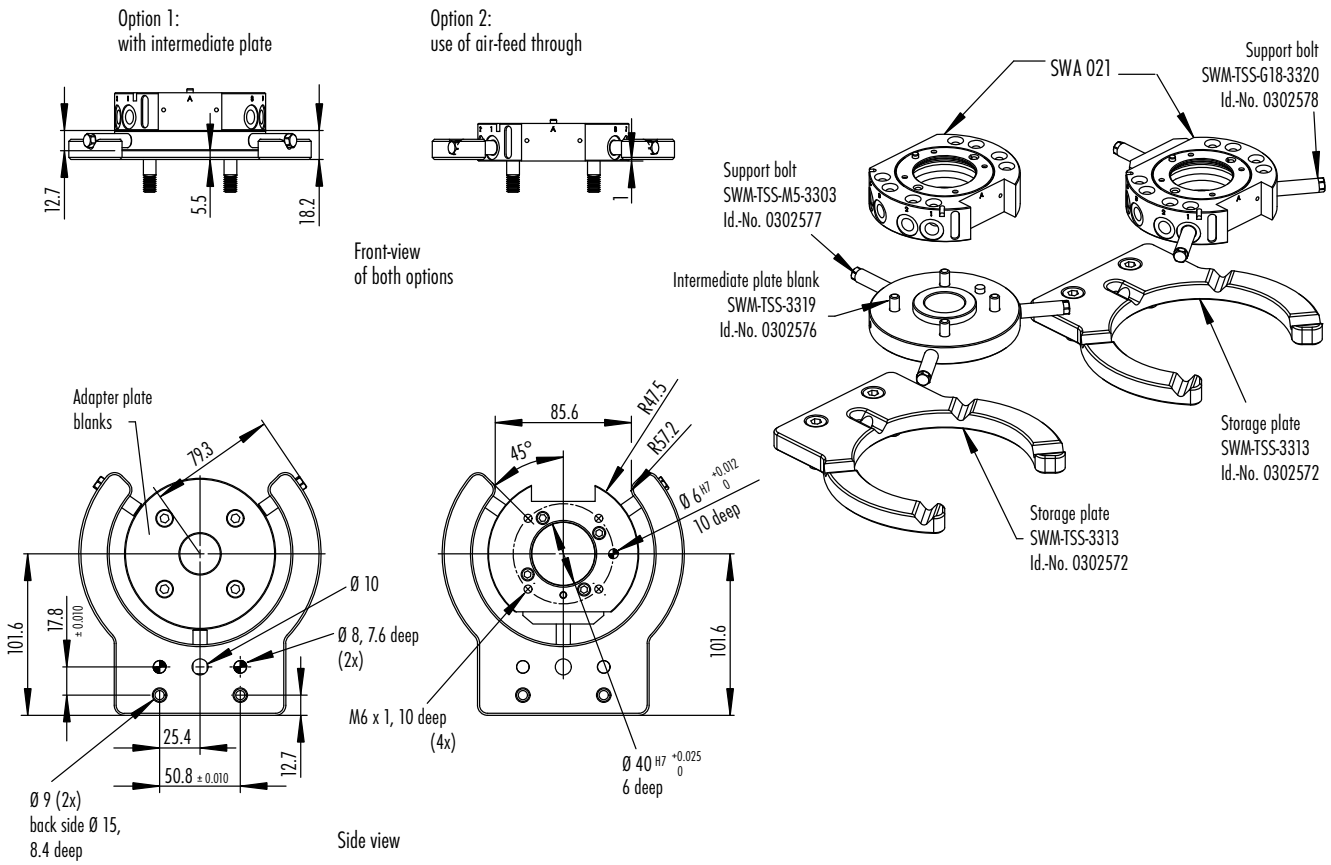


With intermediate plate	SWS-020
Storage plate	SWM-TSS-3313 **ID 0302572**
Intermediate plate blank*	SWM-TSS-3319 **ID 0302576**
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

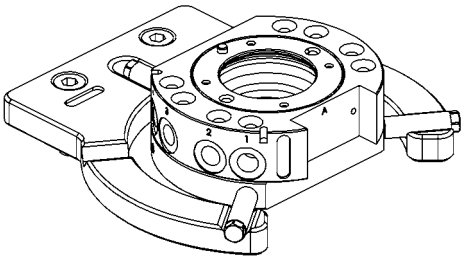
Using the air feed-through	SWS-020
Storage plate	SWM-TSS-3305 **ID 0302574**
Assembly block for storage block***	-
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

* 3 workpiece bolts delivered as standard
** Bolts are available separately
*** Without workpiece bolts

Option SWS-021

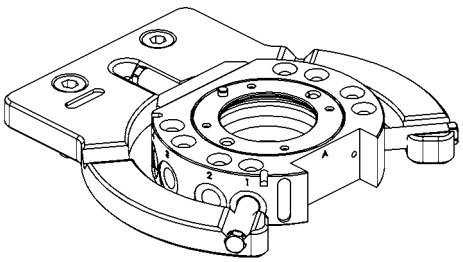


SWS-021 with intermediate plate



With intermediate plate	SWS-021
Storage plate	SWM-TSS-3313 **ID 0302572**
Intermediate plate blank*	SWM-TSS-3319 **ID 0302576**
Workpiece bolts**	SWM-TSS-M5-3303 **ID 0302577**
Presence monitoring via proximity switch possible	Yes

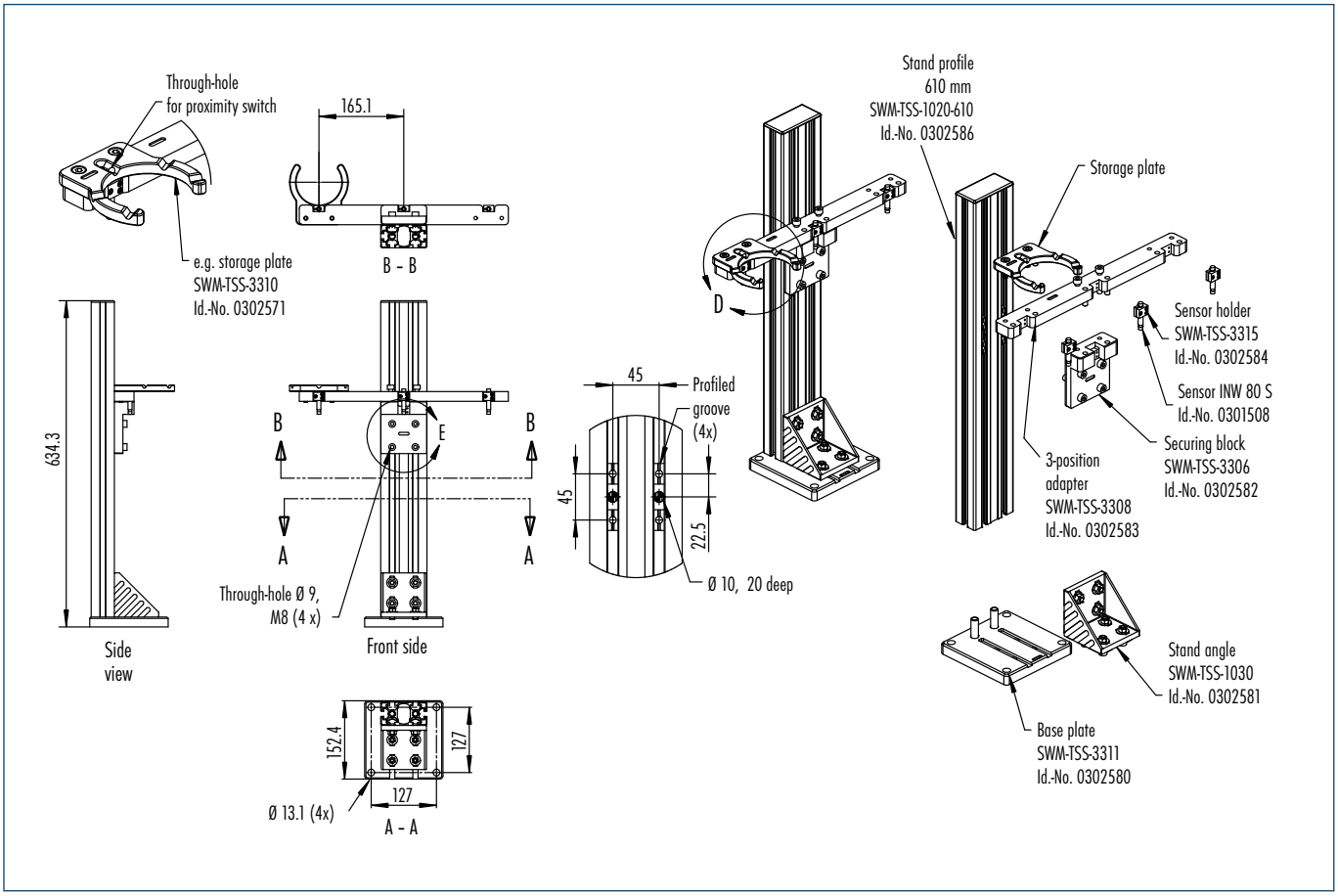
SWS-021 using the air feed-through

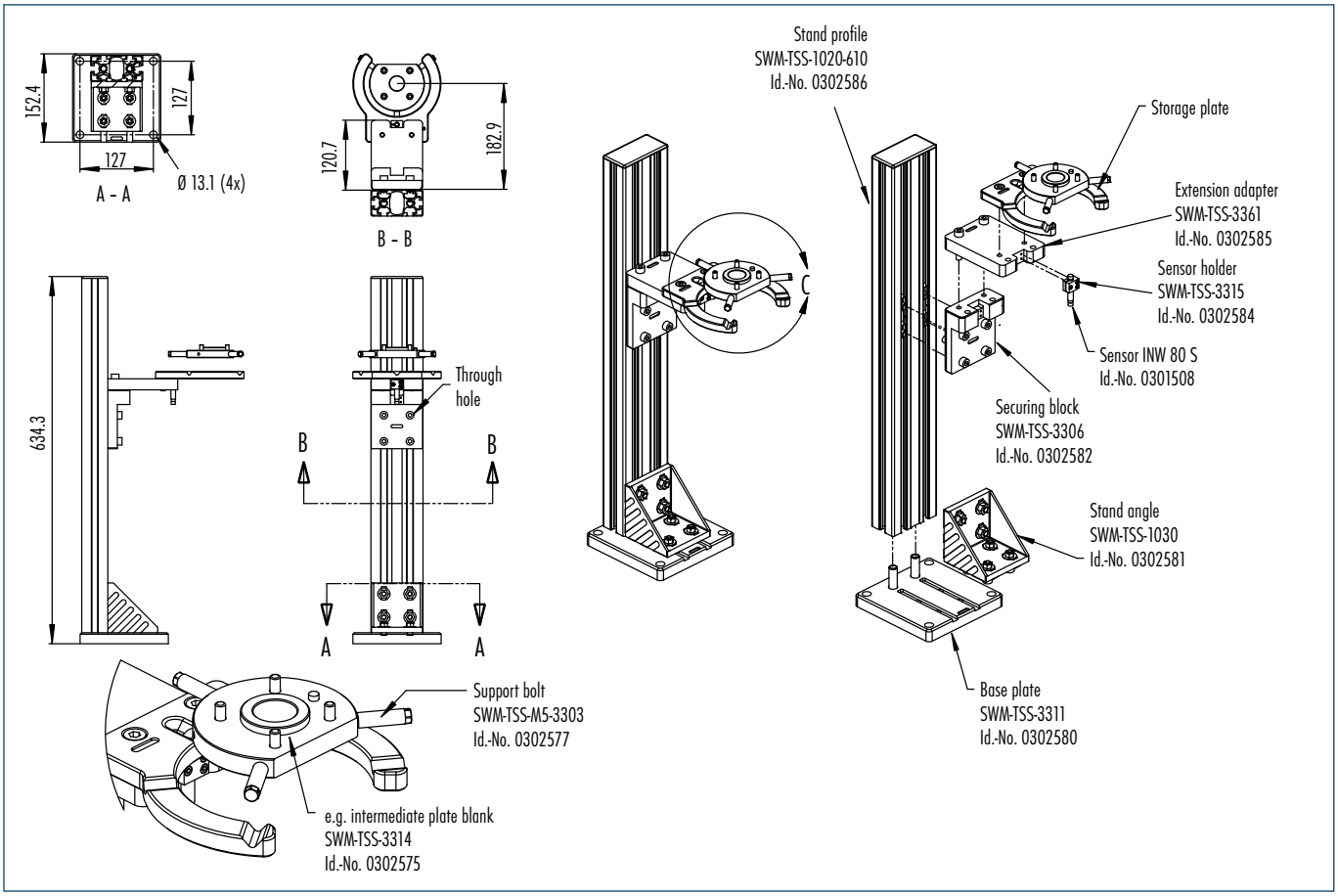


Using the air feed-through	SWS-021
Storage plate	SWM-TSS-3313 **ID 0302572**
Assembly block for storage block***	SWM-TSS-3360 **ID 0302579**
Workpiece bolts**	SWM-TSS-G18-3320 **ID 0302578**
Presence monitoring via proximity switch possible	Yes

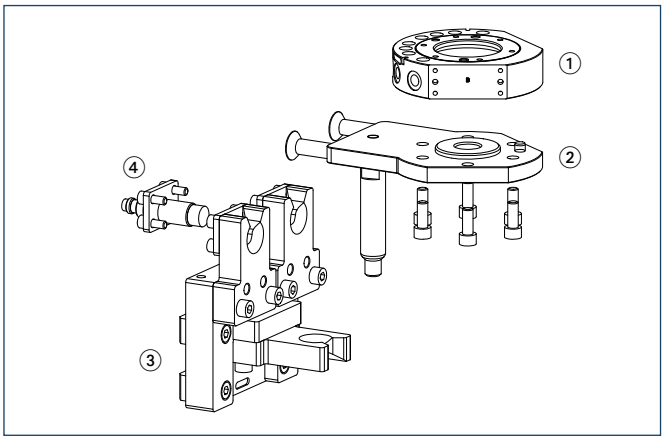
* 3 workpiece bolts delivered as standard
** Bolts are available separately
*** Without workpiece bolts

Main views storage station option for SWS





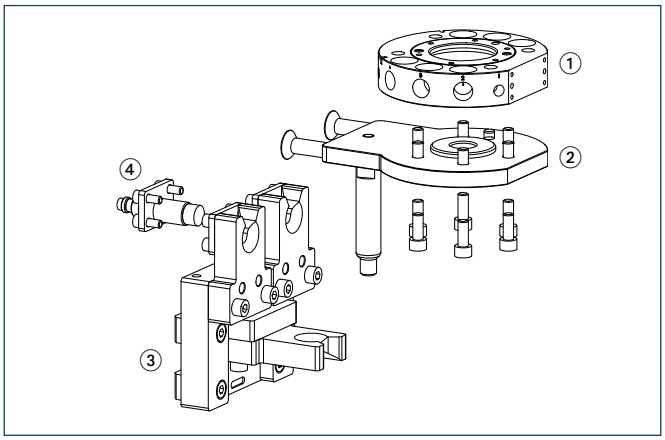
SWS-040



1 Quick-change adapter SWA 40
2 Intermediate plate for SWA 40
3 Storage module
4 Proximity switch

Description	SWS-040	ID
Intermediate plate	SWM-TSM-TP-4627	0303216
Storage module	SWM-TSM-MM-3597	0303212
Proximity switch	SWM-1SM-SM-4206	0303243
Proximity switch	IN-B180-S-M12	0303244
Presence monitoring via proximity switch possible	Yes	

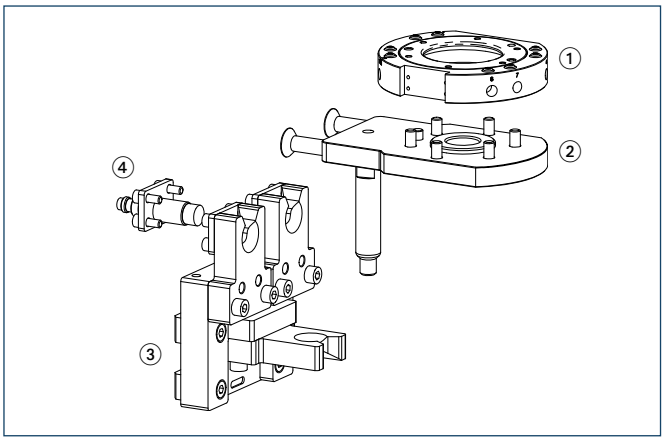
SWS-041



1 Quick-change adapter SWA 041
2 Intermediate plate for SWA 041
3 Storage module
4 Proximity switch

Description	SWS-041	ID
Intermediate plate	SWM-TSM-TP-4056	0303217
Storage module	SWM-TSM-MM-3597	0303212
Proximity switch	SWM-1SM-SM-4206	0303243
Proximity switch	IN-B180-S-M12	0303244
Presence monitoring via proximity switch possible	Yes	

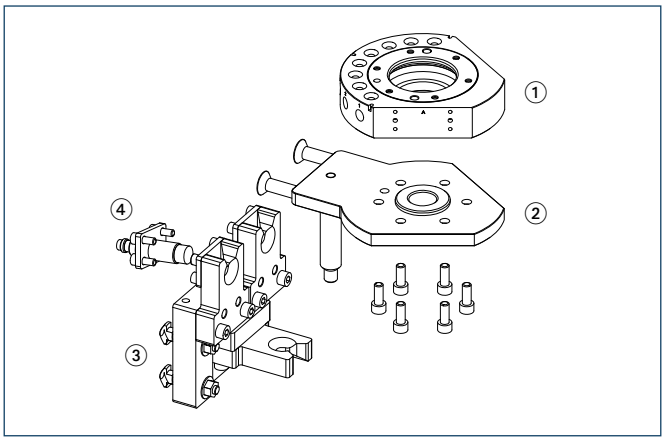
SWS-060



1 Quick-change adapter SWA 060
2 Intermediate plate for SWA 060
3 Storage module
4 Proximity switch

Description	SWS-060	ID
Intermediate plate	SWM-TSM-TP-4057	0303218
Storage module	SWM-TSM-MM-3597	0303212
Proximity switch	SWM-1SM-SM-4206	0303243
Proximity switch	IN-B180-S-M12	0303244
Presence monitoring via proximity switch possible	Yes	

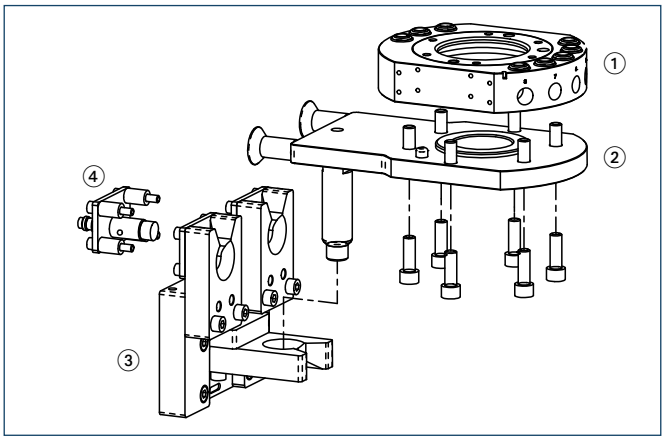
SWS-071



1 Quick-change adapter SWA 071
2 Intermediate plate for SWA 071
3 Storage module
4 Proximity switch

Description	SWS-071	ID
Intermediate plate	SWM-TSM-TP-4058	0303219
Storage module	SWM-TSM-MM-3597	0303212
Proximity switch	SWM-1SM-SM-4206	0303243
Proximity switch	IN-B180-S-M12	0303244
Presence monitoring via proximity switch possible	Yes	

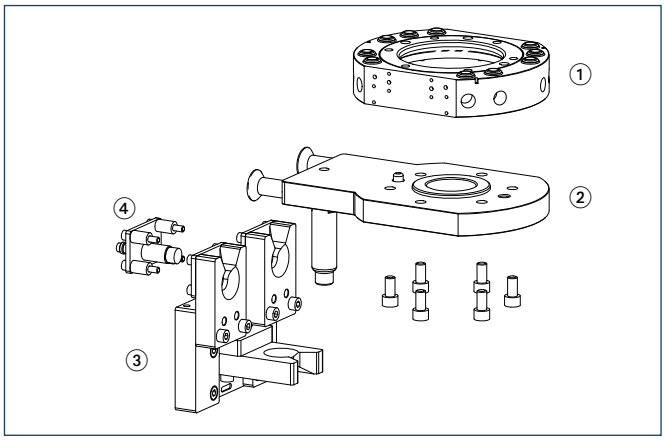
SWS-110



1. Quick-change adapter SWA 110
2. Intermediate plate for SWA 110
3. Storage module
4. Proximity switch

Description	SWS-110	ID
Intermediate plate	SWM-TSM-TP-4059	**0303220**
Storage module	SWM-TSM-MM-4018	**0303214**
Proximity switch	SWM-1SM-SM-4205	**0303245**
Proximity switch	IN-B180-S-M12	**0303244**
Presence monitoring via proximity switch possible	Yes	

SWS-150



1. Quick-change adapter SWA 150
2. Intermediate plate for SWA 150
3. Storage module
4. Proximity switch

Description	SWS-150	ID
Intermediate plate	SWM-TSM-TP-4060	**0303221**
Storage module	SWM-TSM-MM-4018	**0303214**
Proximity switch	SWM-1SM-SM-4205	**0303245**
Proximity switch	IN-B180-S-M12	**0303244**
Presence monitoring via proximity switch possible	Yes	

Sizes
064 .. 125

Handling weight
up to 170 kg

Moment load M_x
up to 400 Nm

Moment load M_y
up to 400 Nm

Moment load M_z
up to 600 Nm

Application example

Replacing and placing tools in a gripper changing rack

1. Gripper Changing Rack
2. Gripper Changing Adapter GWA
3. Gripper Changing Head GWK

Gripper Change System

Pneumatic gripper change system

Area of application

Fast conversion of production lines for other products;
the use of various different tools on a robot

Your advantages and benefits

Integrated air feed-through
for safe energy supply for the gripper modules

Storage racks for all sizes
for reliable positioning of your tools

Storage racks to fit all sizes
available as an accessory for reliable positioning of your tools

Robust wedge-hook kinematics
for a secure connection between the gripper changing head and the gripper changing adapter

Two 18-pin electrical feed-throughs as standard
sufficient feed-throughs for most applications

ISO flange
for easy attachment to most types of robots without additional adapter plates

General information on the series

Actuation
Pneumatic, compressed air filtered (10 µm), dry or lubricated

Operating pressure range
4.5 bar to 6 bar

Energy transmission
For elec. power: 2 x 18-pin 0.14 mm²; 60 V ~; max. 1 A delivered as standard. Available as an option: 4-pin 2.5 mm²; 380 V/B ~; max. 25 A in accordance with VDE guidelines

Protection class
IP 65 when locked, in accordance with DIN 40050

Coding
Four proximity switches can be installed, therefore a total of 15 adapters possible or via elec. plug connection

Locking mechanism monitoring
Possible via inductive proximity switches

Working principle
Wedge gear with planar power transmission

Safety equipment
In the event of a power failure, self-locking is ensured by means of integrated springs

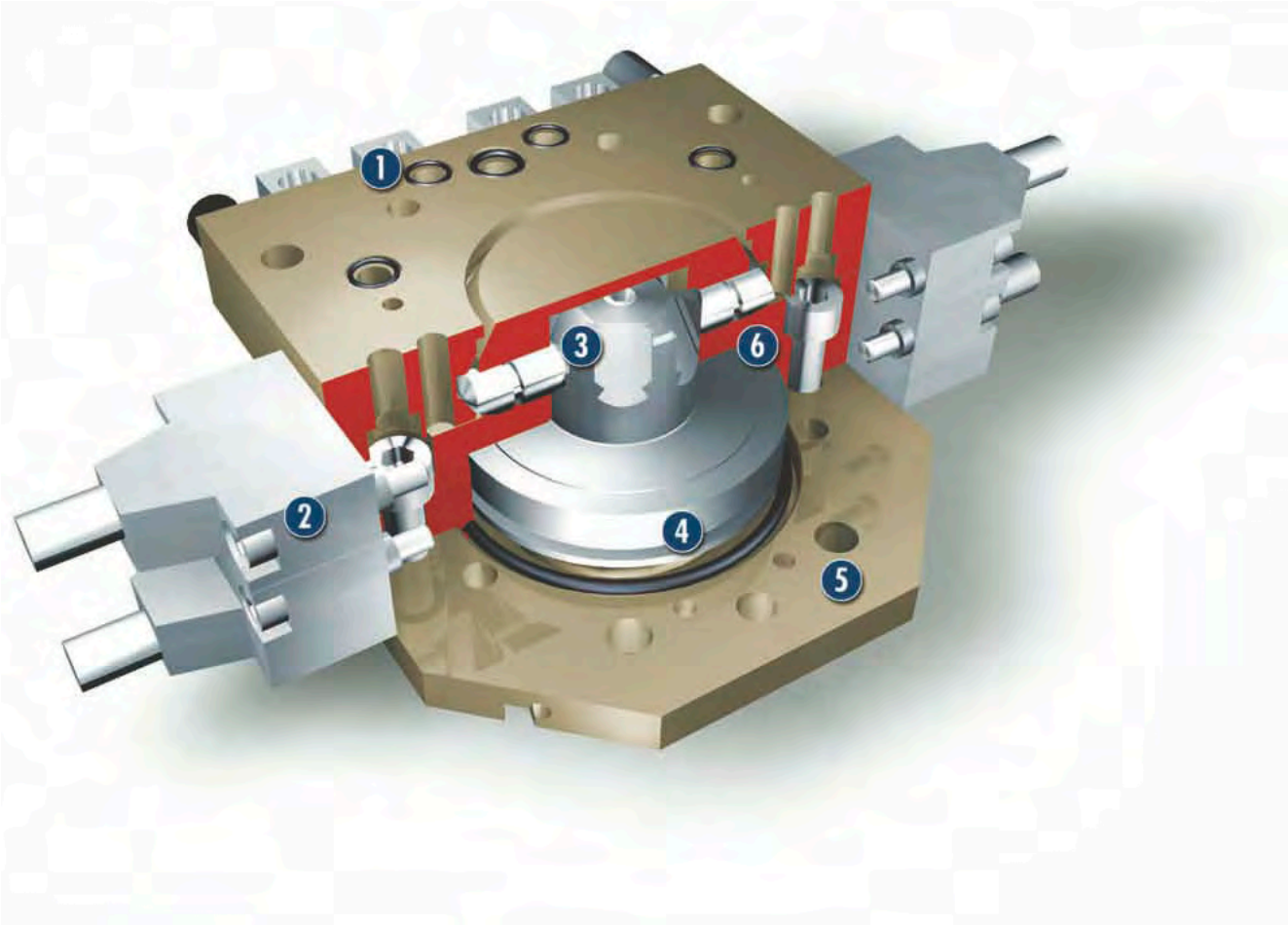
Ambient temperature
5 °C to 60 °C

Material
Housing: high-strength, hard-coated Al alloy. Functional components: hardened steel

Maintenance
Prelubricated – relubrication recommended after 2 million cycles

Warranty
24 months

Sectional diagram



1 Pneumatics feed-through
integration into housing means no interfering contours

2 E module
for electrical energy and signal transmission

3 Locking mechanism
wedge-hook system for high locking forces, integrated springs for maintaining the locking force in the event of a drop in pressure

4 Drive
pneumatic and powerful with extremely easy handling

5 Housing
weight-reduced through the use of a high-strength aluminum alloy

6 Lock
for compensating positioning errors in the X-Y plane

Function description

Automatic changing of the robot tool (e.g. gripper, vacuum lifting devices, pneumatically or electrically driven tools, electrode holders etc.) increases the flexibility of your robot.
The gripper changing system (GWS) is made up of a gripper changing head (GWK) and a gripper changing adapter (GWA). The GWK, mounted onto the robot, couples up the GWA mounted onto your tool. The locking mechanism, based on a wedge-hook system, provides a secure connection. Integrated springs maintain the locking force in the event of a drop in pressure. After coupling, pneumatic and electric feed-throughs automatically supply your robot tool.

Accessories

Accessories from SCHUNK - the suitable supplement for maximum functionality, reliability and performance of all automation modules.

IN inductive proximity switches

Fittings

GWM storage racks

ⓘ For the exact size of the accessories, availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the “Accessories” catalog section.

GWS-064

Product description

Wedge-hook kinematics

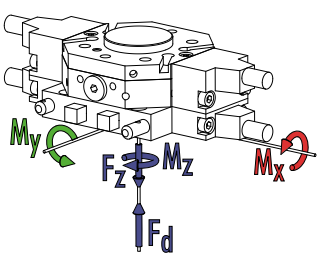
Self-locking in the event of a power failure
by means of integrated springs

Energy transmission
2x 18 pins 60 V-1 A

Piston stroke control
optional

Direct mounting
to ISO 9409-1-50-4-M6

Moment load

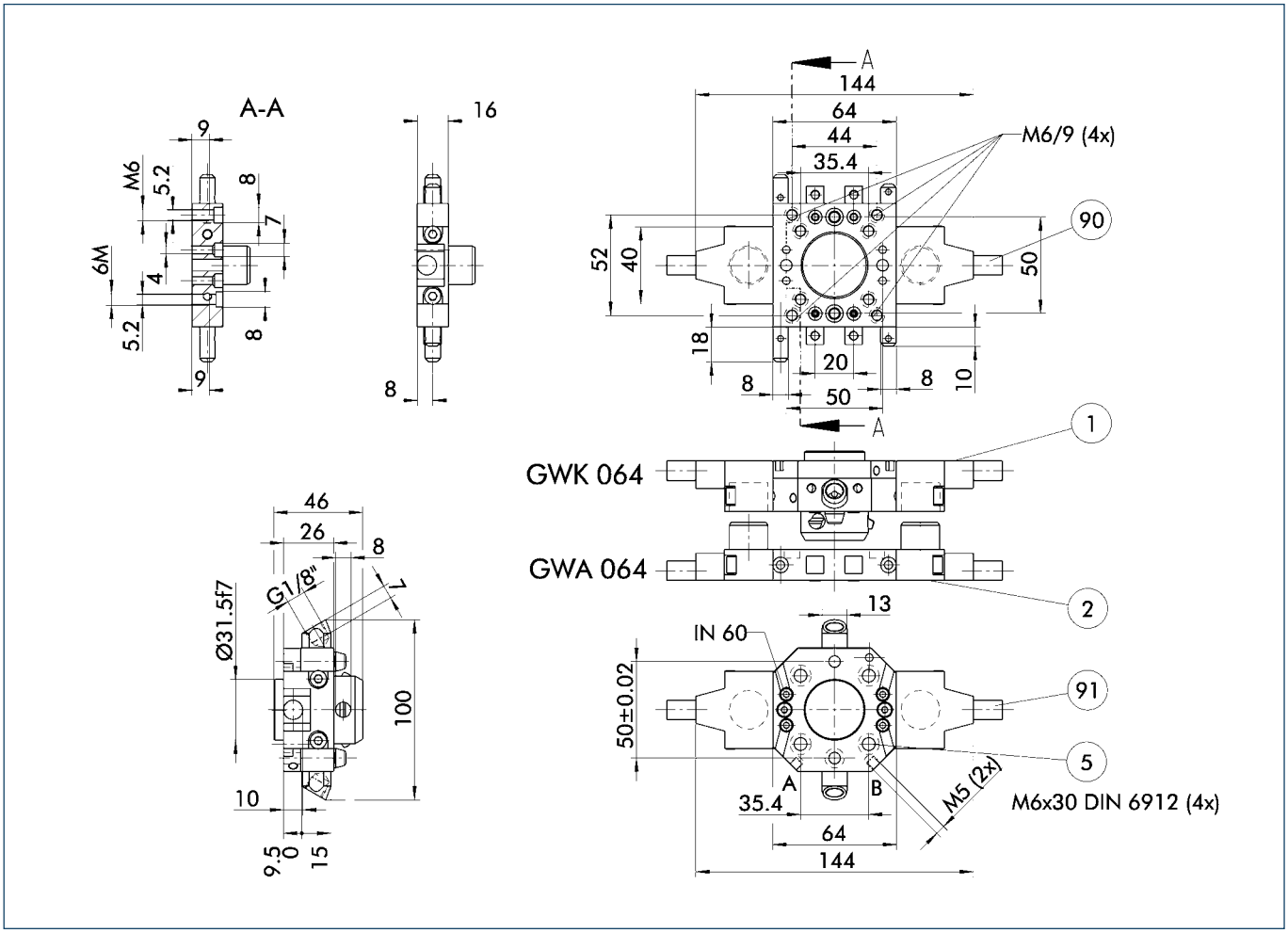


- F_Z max. 1800 N
- M_{XY} max. 75 Nm
- M_Z max. 100 Nm
- F_d max. 3000 N

Technical data

Designation		GWK-064	GWK-A-064	GWA-064
	ID	0302506	0302534	0302517
Piston stroke control		No	Yes	No
Maximum payload	[kg]	60	60	60
Repeat accuracy	[mm]	0.02	0.02	0.02
Weight (in total, without cables)	[kg]	0.5	0.74	0.35
Pneumatic energy transmission		4x M5 and 2x G 1/8"	4x M5 and 2x G 1/8"	4x M5 and 2x G 1/8"
Electric energy transmission		2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A
Min./max. distance on locking	[mm]	2	2	2
Maximum permissible XY offset	[mm]	1.5	1.5	1.5
Maximum permissible angular offset	[°]	1	1	1

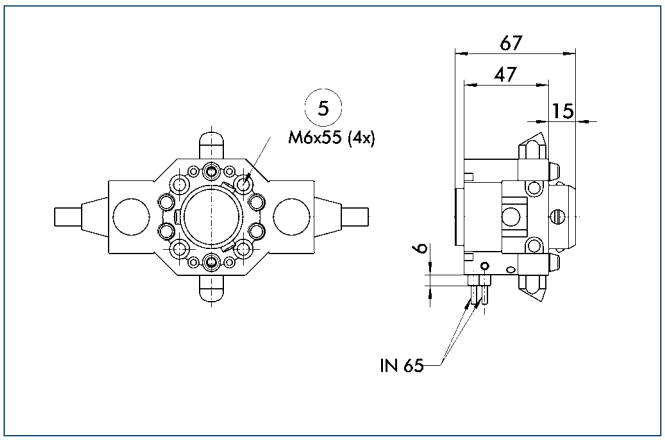
Main views



The drawing shows the change system in the basic version, the dimensions do not include the options described below.

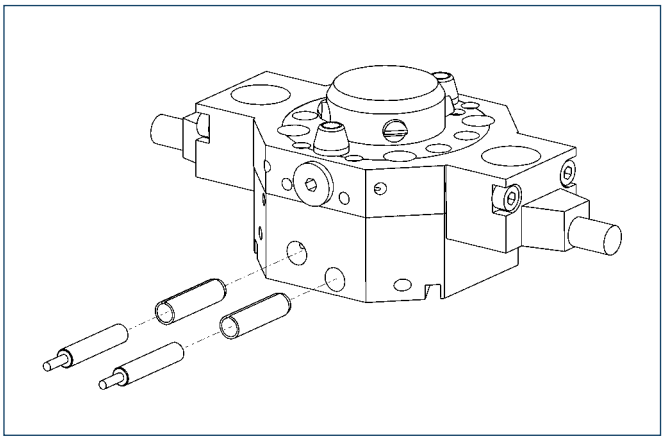
A Locked air connection
B Unlocked air connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑨⓪ Tool side cable length 2 m
⑨① Robot side cable length 5 m

View of GWK-A with piston stroke control



⑤ Through-bore for screw connection with screw (enclosed)

Installing the proximity switch in the GWK-A

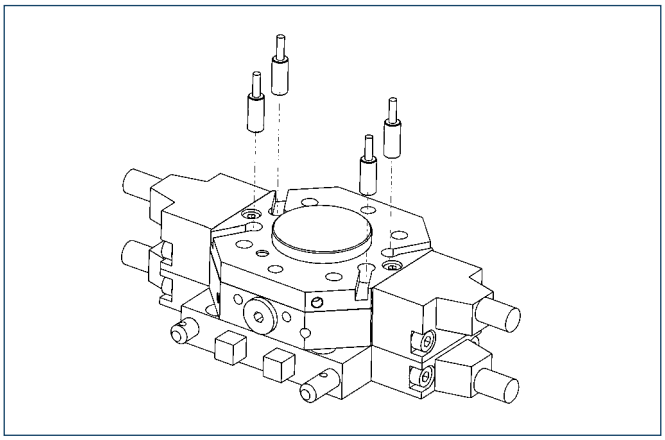


End position monitoring:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 65/S-M12	0301576	
IN 65/S-M8	0301476	•
INK 65/S	0301554	

ⓘ Two sensors and optional extension cables are needed for each gripper change system

Installing the proximity switch for coding



Coding:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 60/S-M12	0301585	
IN 60/S-M8	0301485	•
INK 60/S	0301553	

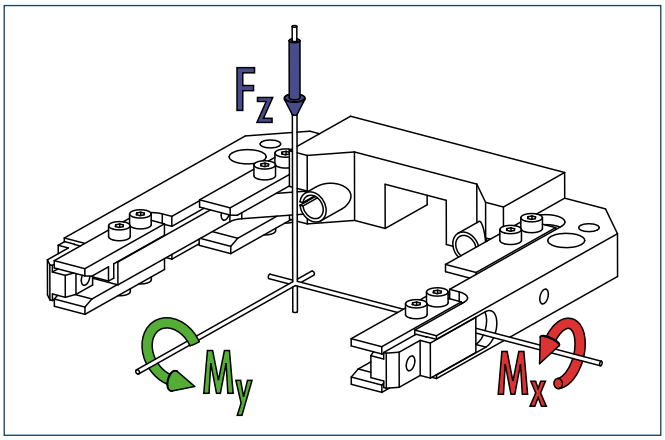
ⓘ A max. of four sensors can be mounted per gripper change system. Therefore 15 tools can be given binary codes.

Extension cables for proximity switches/magnetic switches

Designation	ID
GK 3-M8	0301622
KV 10-M12	0301596
KV 10-M8	0301496
KV 20-M12	0301597
KV 20-M8	0301497
KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 5-M12	0301507
WK 3-M8	0301594
WK 5-M8	0301502

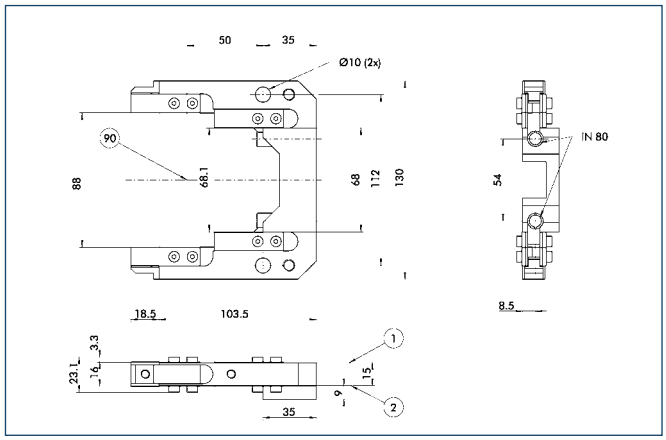
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.

Forces and moments GWM-S 064



Designation	F_Z	M_X	M_Y
GWM-S 064	420 N	6 Nm	23 Nm

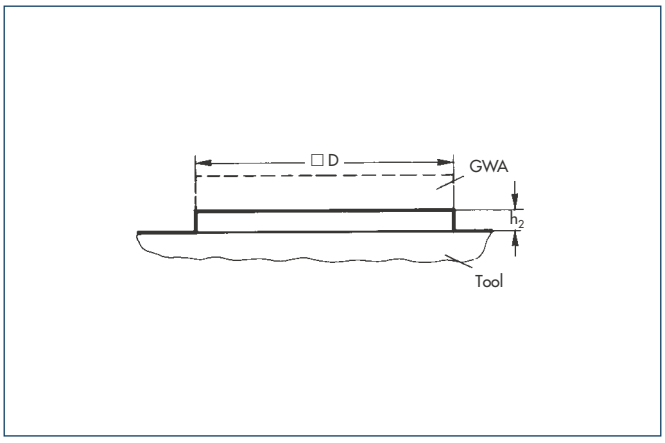
GWM-S 064



① Robot-side connection
② Tool-side connection
90 Center of GWA

Designation	GWM-S
Material	Aluminum
Presence monitoring	Possible by means of proximity switches (by separate order)
Assembly position	Horizontal only (vertical on request)
Add. coding	On request
Load compensation	
in X, Y-axis	± 0.5 mm
in Z-axis	± 0.25 mm

Adapter plate arrangement

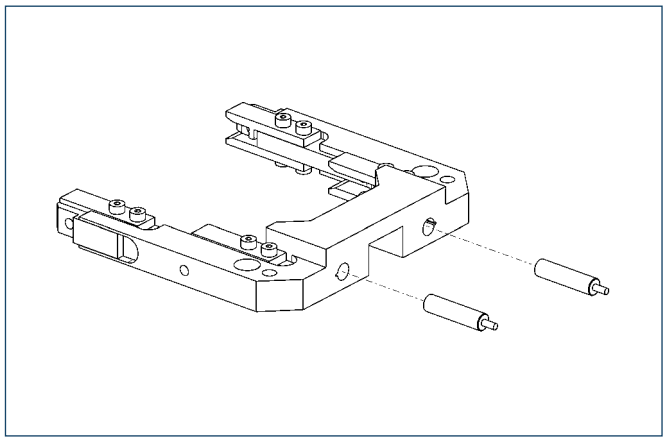


Adapter arrangement on tool-side of GWA

Note

When attaching tools to the GWA adapter plates the external diameters indicated with □ D = 64 mm are not to be exceeded in the height h_2 = 5 mm.

Proximity switches for GWM-S



Proximity switches

with easy to assemble design and LED display

Designation	Switching function	ID
INW 80/SL	Closer	0301509

GWS-080

Product description

Wedge-hook kinematics

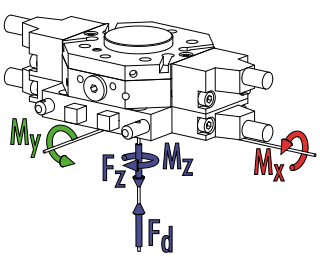
Self-locking in the event of a power failure
by means of integrated springs

Energy transmission
2x 18 pins 60 V-1 A

With piston stroke control
optional

Direct mounting
to ISO 9409-1-63-4-M6

Moment load

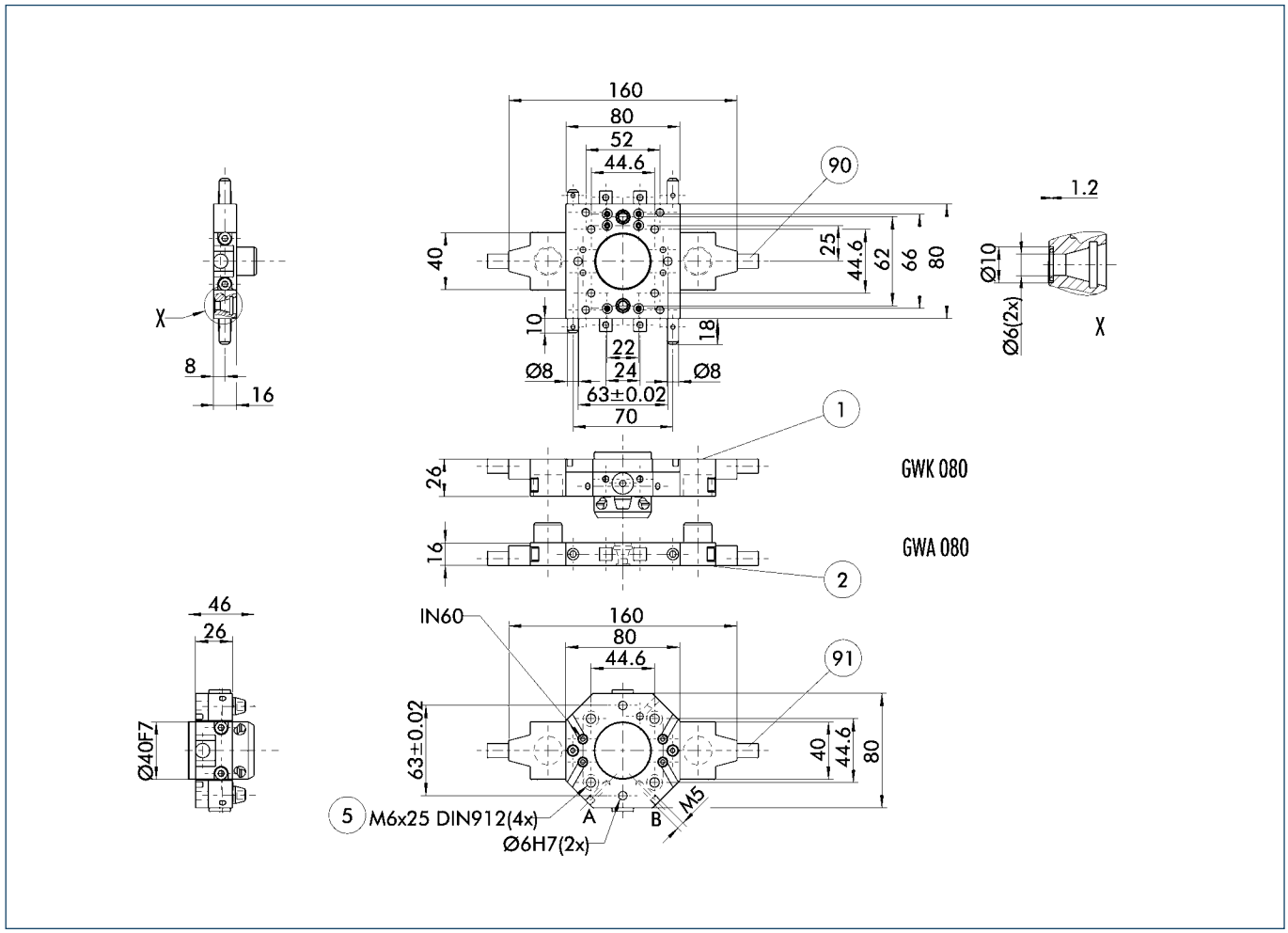


- F_Z max. 2500 N
- M_{XY} max. 100 Nm
- M_Z max. 200 Nm
- F_d max. 5000 N

Technical data

Designation		GWK-080	GWK-A-080	GWA-080
	ID	0302509	0302535	0302520
Piston stroke control		No	Yes	No
Maximum payload	[kg]	86	86	86
Repeat accuracy	[mm]	0.02	0.02	0.02
Weight (in total, without cables)	[kg]	0.65	0.95	0.4
Pneumatic energy transmission		6x M5 and 2x G 1/8"	6x M5 and 2x G 1/8"	6x M5 and 2x G 1/8"
Electric energy transmission		2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A
Min./max. distance on locking	[mm]	2	2	2
Maximum permissible XY offset	[mm]	1.5	1.5	1.5
Maximum permissible angular offset	[°]	1	1	1

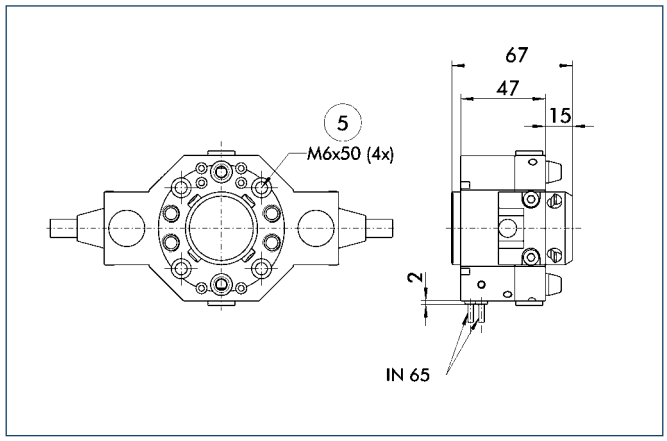
Main views



The drawing shows the change system in the basic version, the dimensions do not include the options described below.

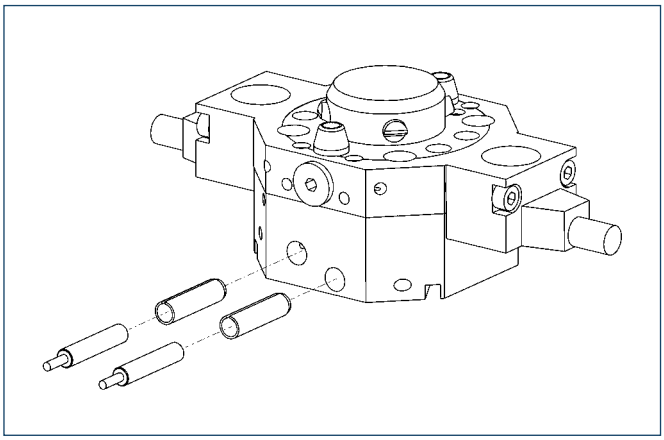
A Locked air connection
B Unlocked air connection
(1) Robot-side connection
(2) Tool-side connection
(5) Through-bore for screw connection with screw (enclosed)
(90) Tool-side cable length 2 m
(91) Robot-side cable length 5 m

View of GWK-A with piston stroke control



(5) Through-bore for screw connection with screw (enclosed)

Installing the proximity switch in the GWK-A

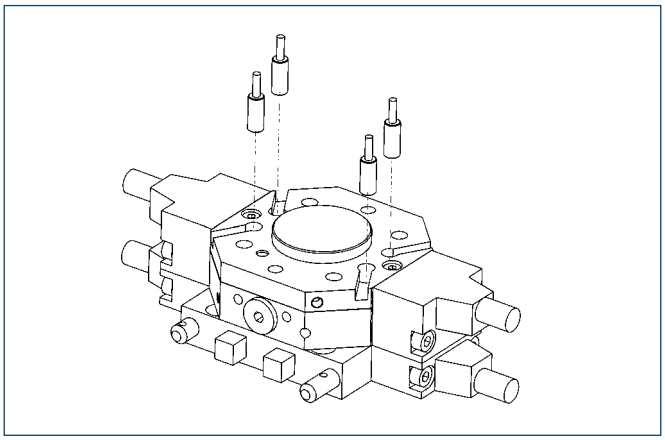


End position monitoring:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 65/S-M12	0301576	
IN 65/S-M8	0301476	•
INK 65/S	0301554	

ⓘ Two sensors and optional extension cables are needed for each gripper change system

Installing the proximity switch for coding



Coding:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 60/S-M12	0301585	
IN 60/S-M8	0301485	•
INK 60/S	0301553	

ⓘ A max. of four sensors can be mounted per gripper change system. Therefore 15 tools can be given binary codes.

Extension cables for proximity switches/magnetic switches

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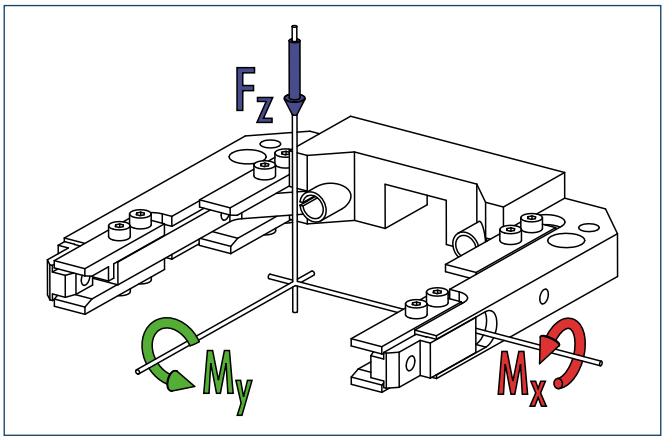
KV 10-M12	0301596
KV 10-M8	0301496
KV 20-M12	0301597
KV 20-M8	0301497
KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 5-M12	0301507
WK 3-M8	0301594
WK 5-M8	0301502

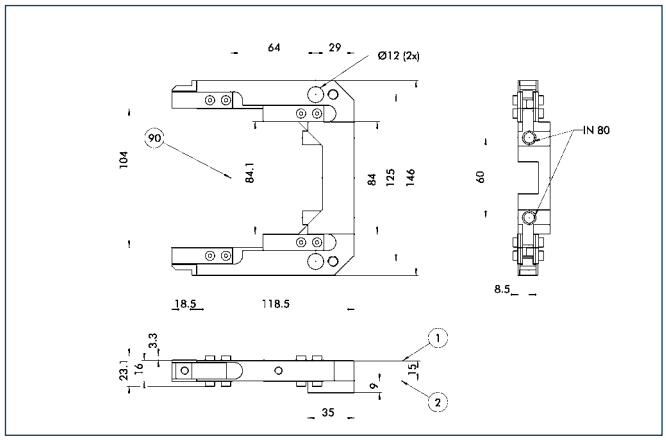
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.

Forces and moments GWM-S 080



Designation	F_Z	M_X	M_Y
GWM-S 080	600 N	8 Nm	30 Nm

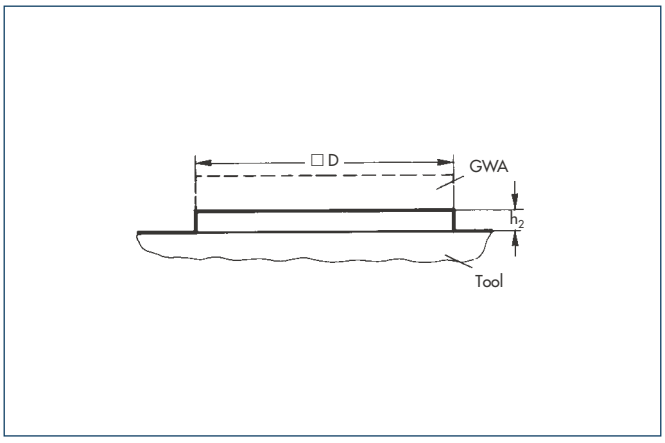
GWM-S 080



① Robot-side connection
② Tool-side connection
90 Centre of GWA

Designation	GWM/GWM-S
Material	Aluminum
Presence monitoring	Possible, by means of proximity switches (by separate order)
Assembly position	Horizontal only (vertical on request)
Add. coding	On request
Load compensation	
in X, Y-axis	± 0.5 mm
in Z-axis	± 0.25 mm

Adapter plate arrangement

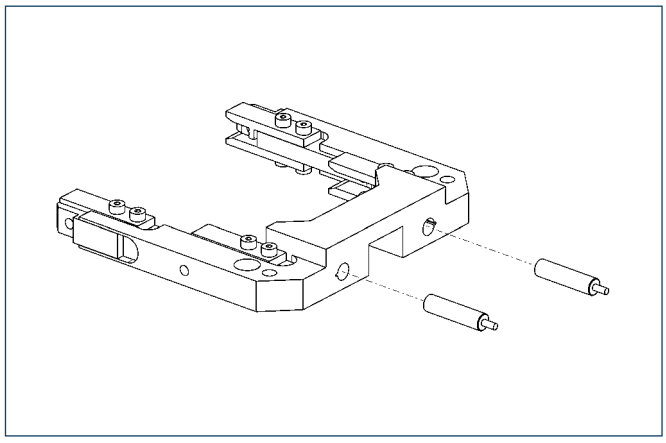


Adapter arrangement on tool-side of GWA

Note

When attaching tools to the GWA adapter plates the external diameters indicated with □ D = 80 mm are not to be exceeded in the height h_2 = 6 mm.

Proximity switches for GWM-S



Proximity switches

with easy to assemble design and LED display

Designation	Switching function	ID
INW 80/SL	Closer	0301509

GWS-125

Product description

Wedge-hook kinematics

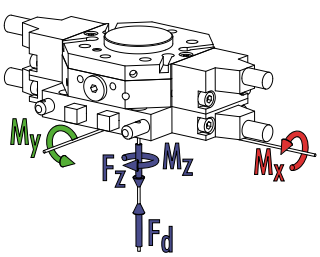
Self-locking in the event of a power failure
by means of integrated springs

Energy transmission
2x 18 pins 60 V-1 A

Piston stroke control
optional

Direct mounting
to ISO 9409-1-100-6-M8

Moment load

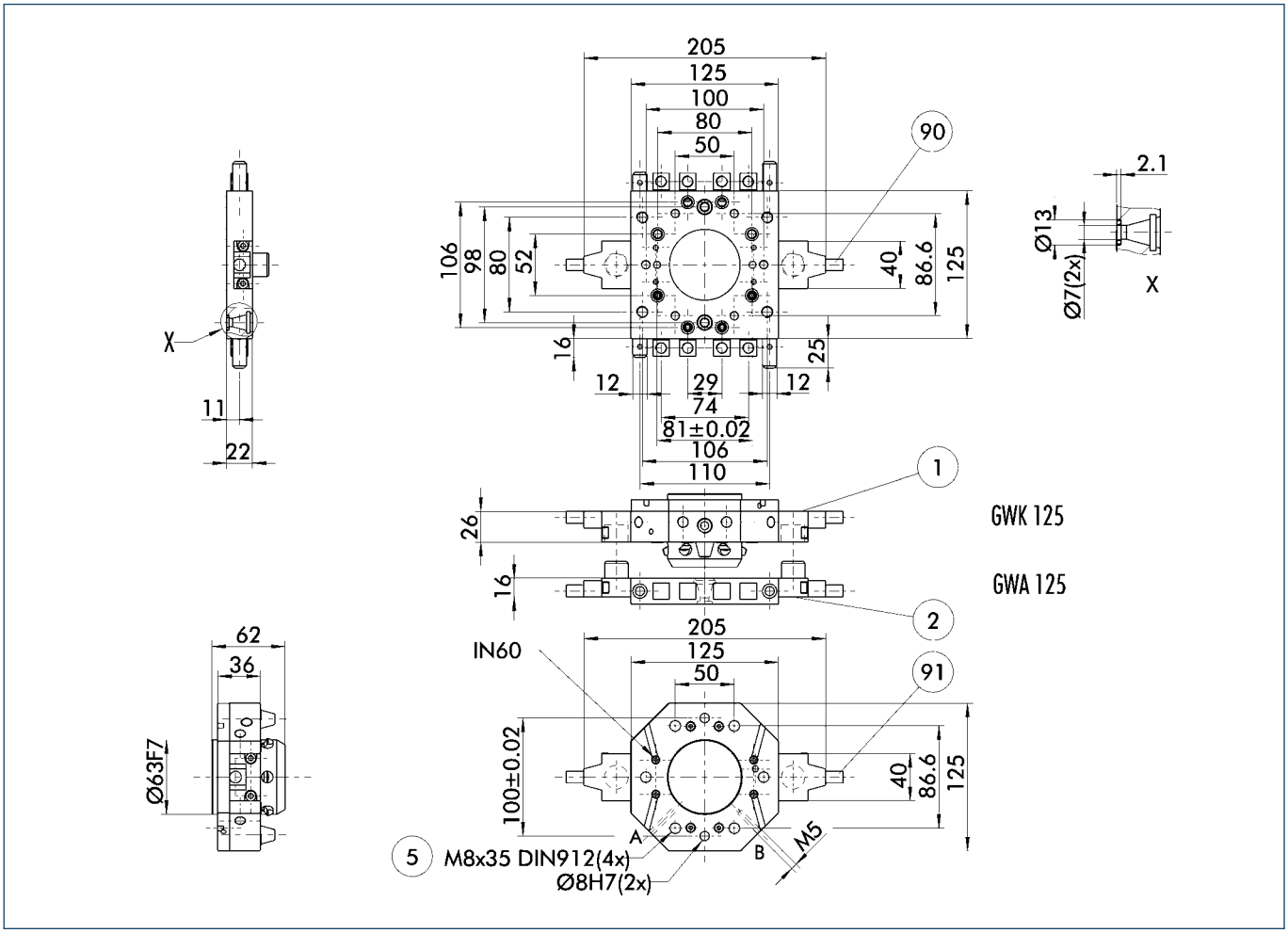


- F_Z max. 6000 N
- M_{XY} max. 400 Nm
- M_Z max. 600 Nm
- F_d max. 9000 N

Technical data

Designation		GWK-125	GWK-A-125	GWA-125
	ID	0302514	0302536	0302525
Piston stroke control		No	Yes	No
Maximum payload	[kg]	170	170	170
Repeat accuracy	[mm]	0.02	0.02	0.02
Weight (in total, without cables)	[kg]	2.3	2.6	1.7
Pneumatic energy transmission		8x G 1/8" 2x G 1/4"	8x G 1/8" 2x G 1/4"	8x G 1/8" 2x G 1/4"
Electric energy transmission		2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A	2x 18 pins 60 V/1 A
Min./max. distance on locking	[mm]	2	2	2
Maximum permissible XY offset	[mm]	1.5	1.5	1.5
Maximum permissible angular offset	[°]	1	1	1

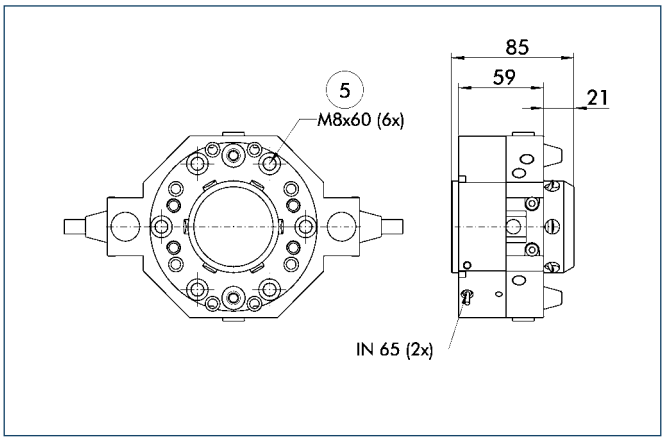
Main views



The drawing shows the change system in the basic version, the dimensions do not include the options described below.

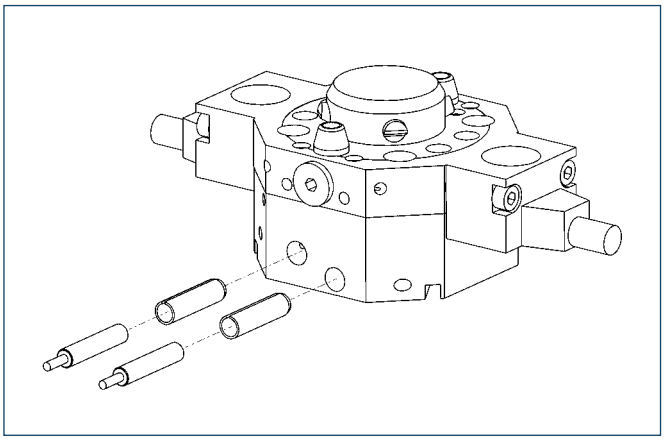
A Locked air connection
B Unlocked air connection
(1) Robot-side connection
(2) Tool-side connection
(5) Through-bore for screw connection with screw (enclosed)
(90) Tool-side cable length 2 m
(91) Robot-side cable length 5 m

View of GWK-A with piston stroke control



(5) Through-bore for screw connection with screw (enclosed)

Installing the proximity switch in the GWK-A

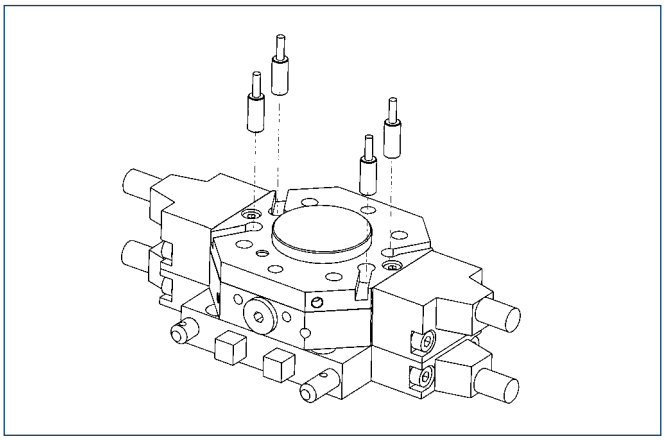


End position monitoring:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 65/S-M12	0301576	
IN 65/S-M8	0301476	•
INK 65/S	0301554	

ⓘ Two sensors and optional extension cables are needed for each gripper change system

Installing the proximity switch for coding



Coding:
Inductive proximity switches, for direct mounting

Designation	ID	Recommended product
IN 60/S-M12	0301585	
IN 60/S-M8	0301485	•
INK 60/S	0301553	

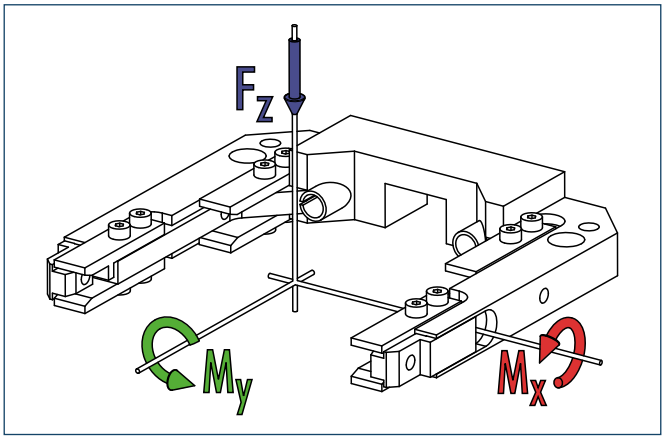
ⓘ A max. of four sensors can be mounted per gripper change system. Therefore 15 tools can be given binary codes.

Extension cables for proximity switches/magnetic switches

Designation	ID
GK 3-M8	0301622
GK 3-M5-PNP/NPN	0301652
KV 10-M12	0301596
KV 10-M8	0301496
KV 20-M12	0301597
KV 20-M8	0301497
KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 5-M12	0301507
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

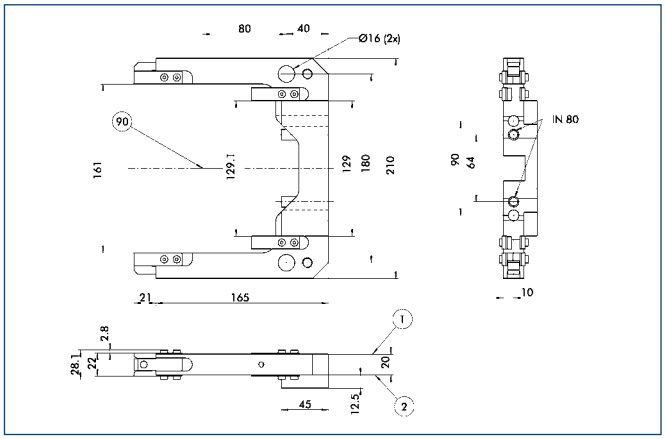
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.

Forces and moments GWM-S 125



Designation	F_Z	M_X	M_Y
GWM-S 125	1500 N	30 Nm	70 Nm

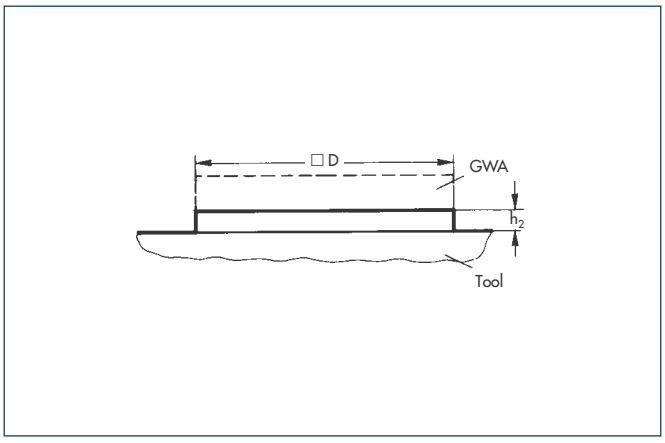
GWS-S 125



① Robot-side connection
② Tool-side connection
90 Centre of GWA

Designation	GWM/GWM-S
Material	Aluminum
Presence monitoring	Possible, by means of proximity switches (by separate order)
Assembly position	Horizontal only (vertical on request)
Add. coding	On request
Load compensation	
in X, Y-axis	± 0.5 mm
in Z-axis	± 0.25 mm

Adapter plate arrangement

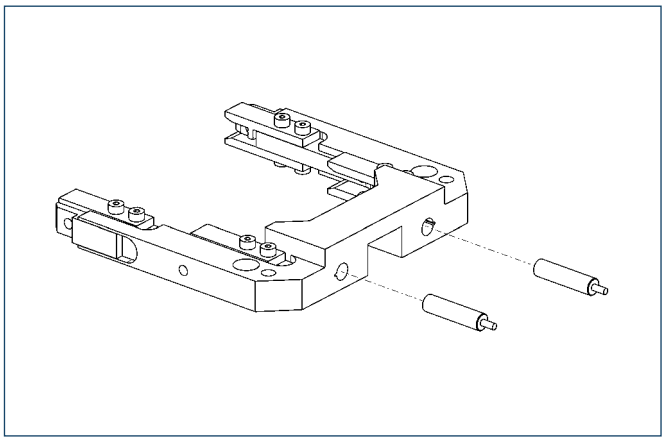


Adapter arrangement on tool-side of GWA

Note

When attaching tools to the GWA adapter plates the external diameters indicated with □ D = 125 mm are not to be exceeded in the height h_2 = 7 mm.

Proximity switches for GWM-S



Proximity switches

with easy to assemble design and LED display

Designation	Switching function	ID
INW 80/SL	Closer	0301509

Sizes
040 .. 125

Payload
8 kg .. 54 kg

Moment load M_x
up to 320 Nm

Moment load M_y
up to 320 Nm

Air feed-through
up to 6 x G1/4"

Application example

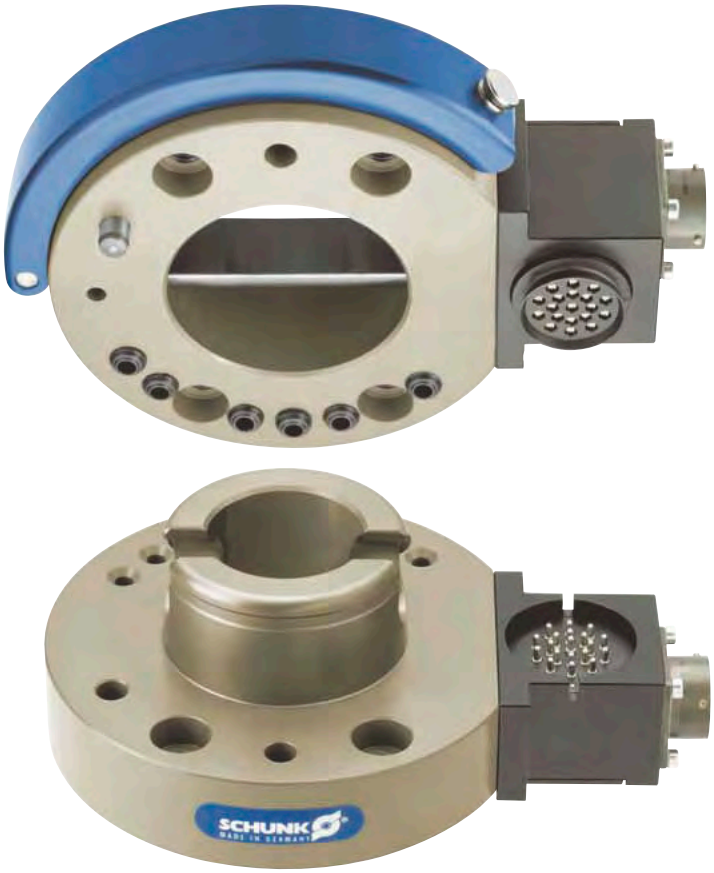
Flexible assembly unit for various product versions. Simple and quick tool changing using an HWS

1 HWS made up of HWK and HWA

2 PGN-plus 2-Finger Parallel Gripper

Manual Gripper Change System

Manual tool changing system with integrated air feed-through and optional electrical feed-through



Area of application

Ideally suited for use with flexible production set-ups, for products with a large range of versions

Your advantages and benefits

Series with six sizes
for an optimum selection of sizes and a broad range of applications

Integrated air feed-through
for safe energy supply for the handling modules and tools

Mounting option for additional, optional pneumatic and electric modules
for optimum setup in line with your application

Simple handling without any additional tools
can be detached at any time in one single movement

ISO flange
for easy attachment to most types of robots without additional adapter plates

General information on the series

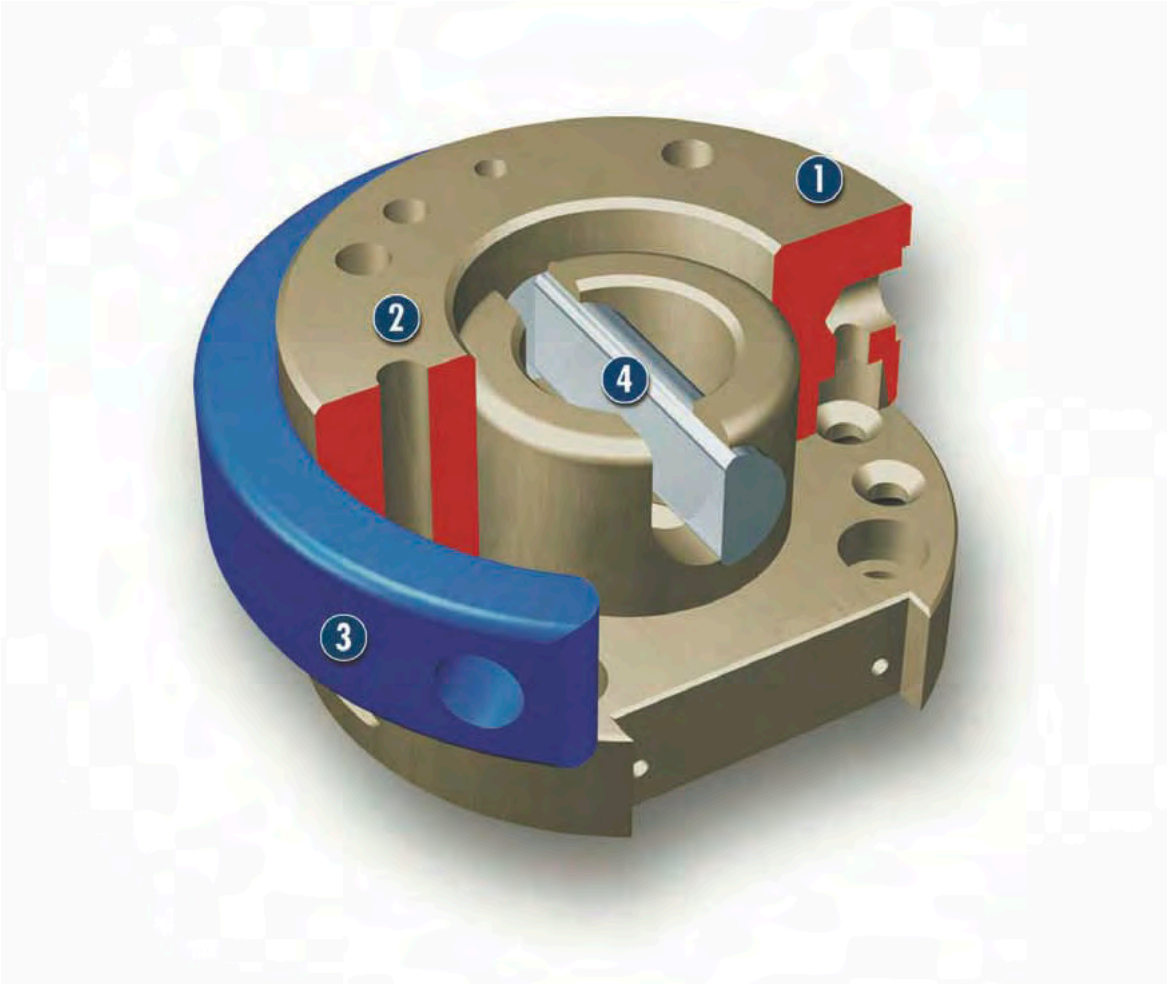
Working principle
A semi-cylindrical shaft is clamped or unclamped by turning the hand lever

Actuation
Manual, via integrated hand lever

Energy transmission
Integrated pneumatic feed-through, electric as an option

Warranty
24 months

Sectional diagram



1 **Direct mounting**
by means of standardized ISO 9409 interface for robots

2 **Housing**
weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

3 **Integrated hand lever**
for manual actuation

4 **Locking mechanism**
patented, simple and safe

Function description

The manual changing system (HWS) consists of a manual changing head (HWK) and a manual changing adapter (HWA).
The manual changing head (HWK) is locked, positively and without clearance, to the manual changing adapter (HWA) by means of a patented locking system. In order to do this a semi-cylindrical shaft is rotated by 180° using a hand lever. Integrated pneumatic feed-throughs reliably supply the tool with power.

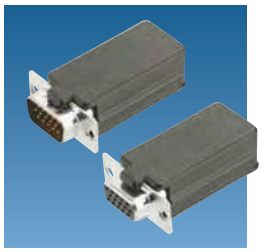
Accessories

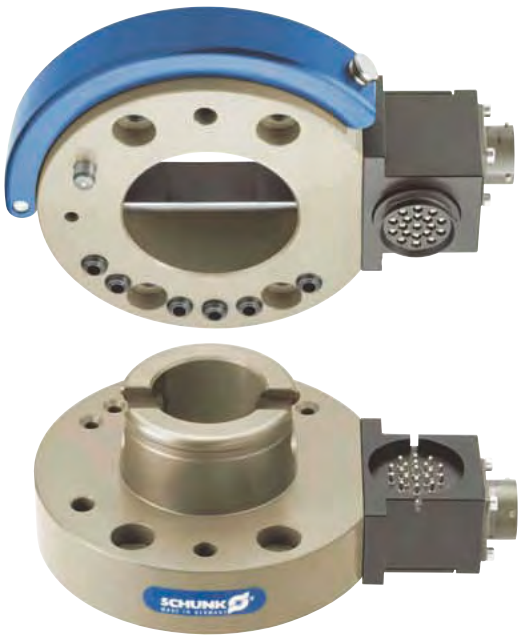
Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

E modules

Fittings

Cable connectors





ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

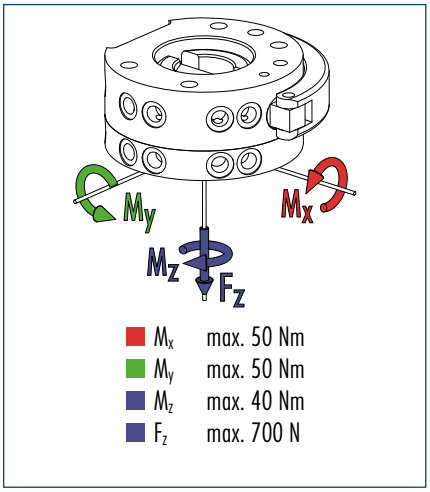
General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life span of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

HWS-040

Moment load

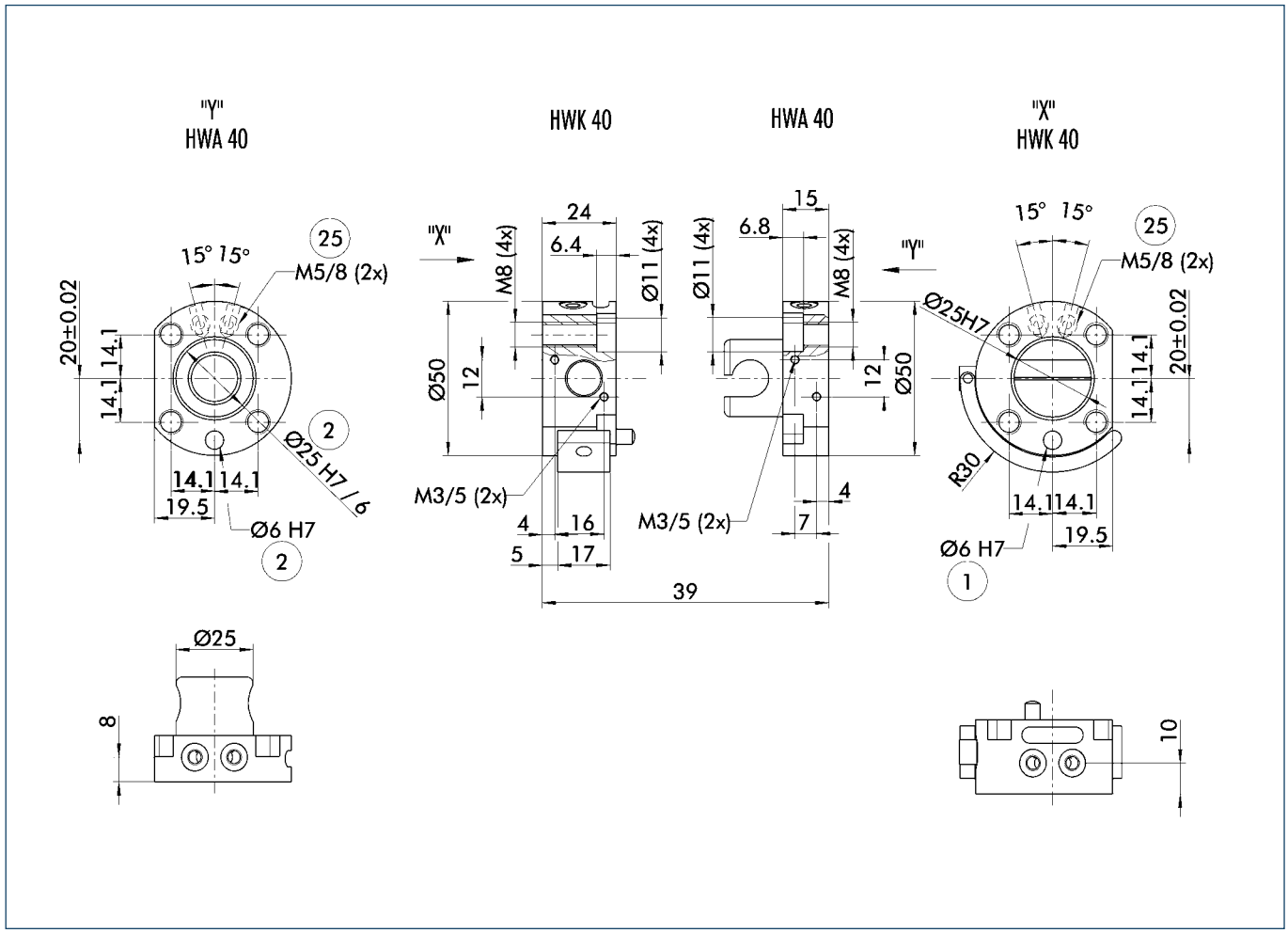


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

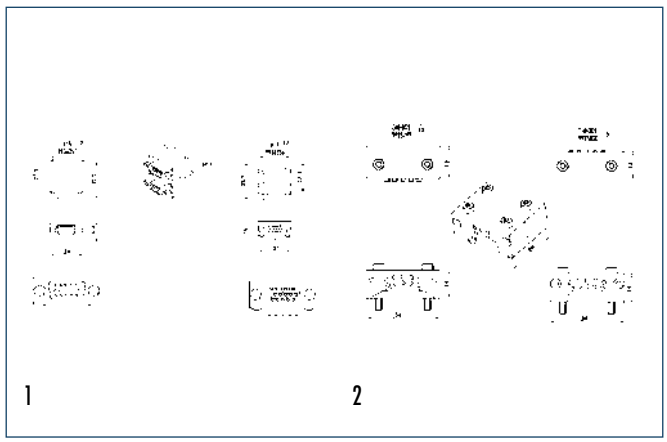
Designation		HWS-040	
Graduated circle diameter	[mm]	40	
Maximum payload	[kg]	8	A larger payload is possible with smaller moments
Tensile force	[N]	700	
Weight	[kg]	0.22	0.14 kg HWK/ 0.08 kg HWA
Repeat accuracy	[mm]	0.01	Tested at 80000 cycles
Pneumatic feed-through		2 x M5	Max. 7 bar
Screw connection diagram		ISO-9409-40-4-M6	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 2

1 Sub-D connector A15
⑫ Head side
⑬ Adapter side

2 E module E10
⑫ Head side
⑬ Adapter side

Designation		Detailed data sheet
E10	10 pins, 3 A/50 V, solder contacts	See "SWS options" chapter
A15	10 pins, 3 A/50 V, Sub-D connector	See "SWS options" chapter

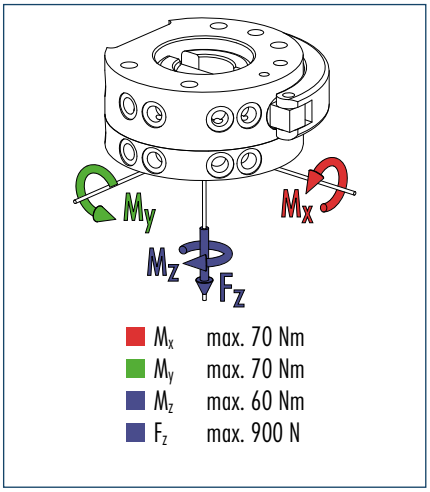
How to order (example)

HW ☐ -040- ☐ ☐ ☐ -000

HWS-040	Example
Option (000 = no option)	**HWK-040-000-000** (HWK-040, head side, no option)
K = head **A** = adapter	**HWA-040-E10-000** (HWA-040, adapter plate side, with E10 option)

HWS-050

Moment load

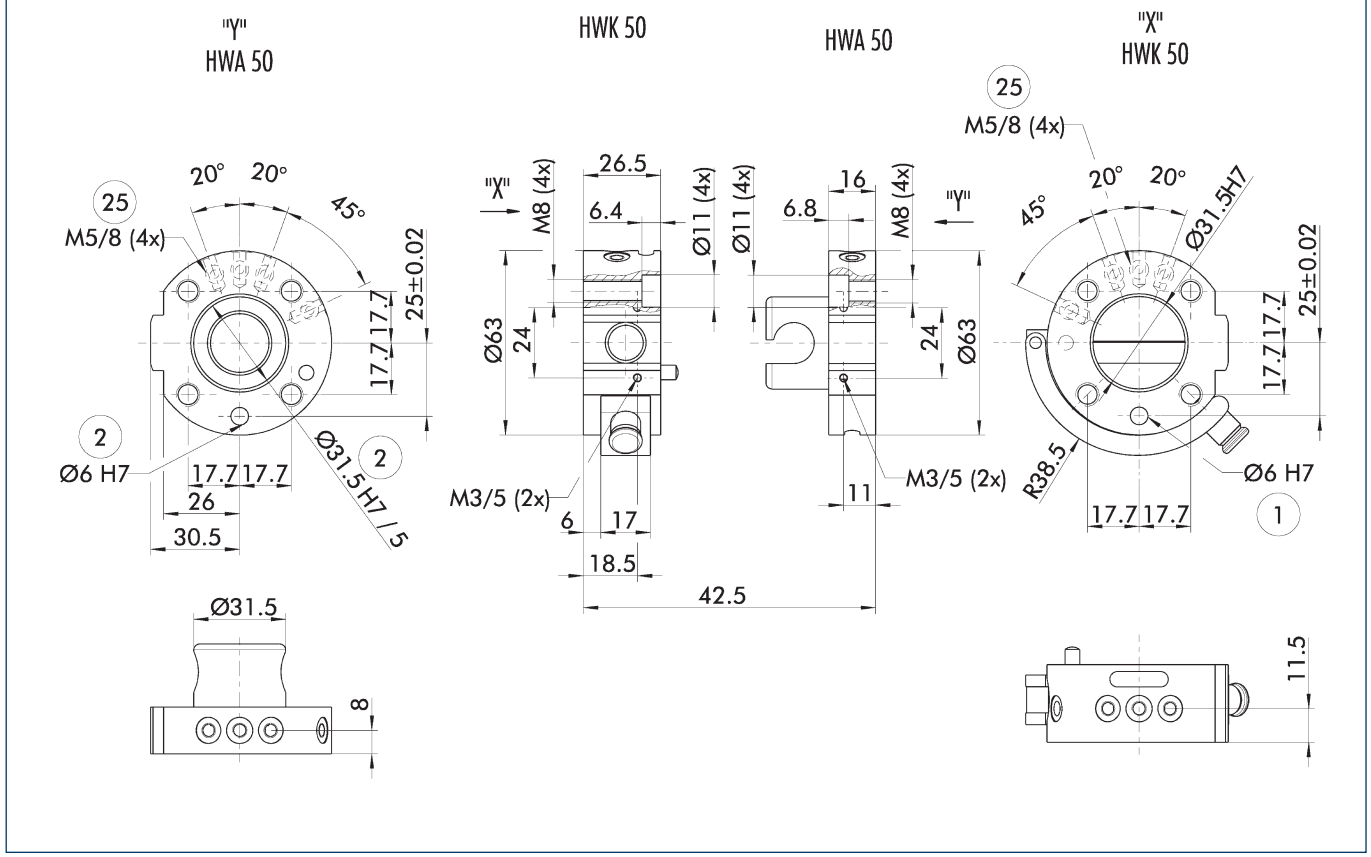


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

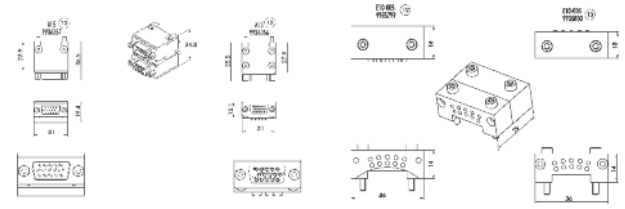
Designation		HWS-050	
Graduated circle diameter	[mm]	50	
Maximum payload	[kg]	12	A larger payload is possible with smaller moments
Tensile force	[N]	900	
Weight	[kg]	0.38	0.24 kg HWK/ 0.14 HWA
Repeat accuracy	[mm]	0.01	Tested at 80000 cycles
Pneumatic feed-through		4 x M5	Max. 7 bar
Screw connection diagram		ISO-9409-50-4-M6	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 2

1 Sub-D connector A15
⑫ Head side
⑬ Adapter side

2 E module E10
⑫ Head side
⑬ Adapter side

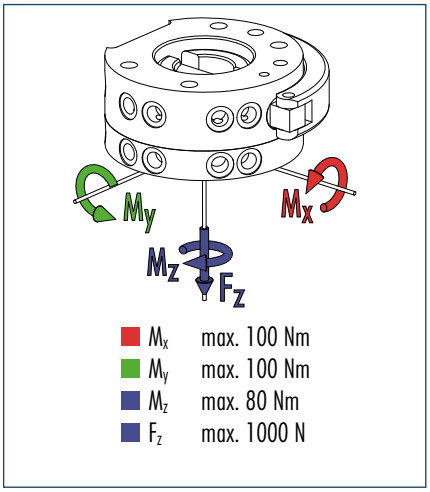
Designation		Detailed data sheet
E10	10 pins, 3 A/50 V, solder contacts	See "SWS options" chapter
A15	10 pins, 3 A/50 V, Sub-D connector	See "SWS options" chapter

How to order (example)

HW ☐ -050- ☐ ☐ ☐ -000

HWS-050	Example
Option (000 = no option)	**HWK-050-000-000** (HWK-050, head side, no option)
K = head **A** = adapter	**HWA-050-A15-000** (HWA-050, adapter plate side, with A15 option)

Moment load

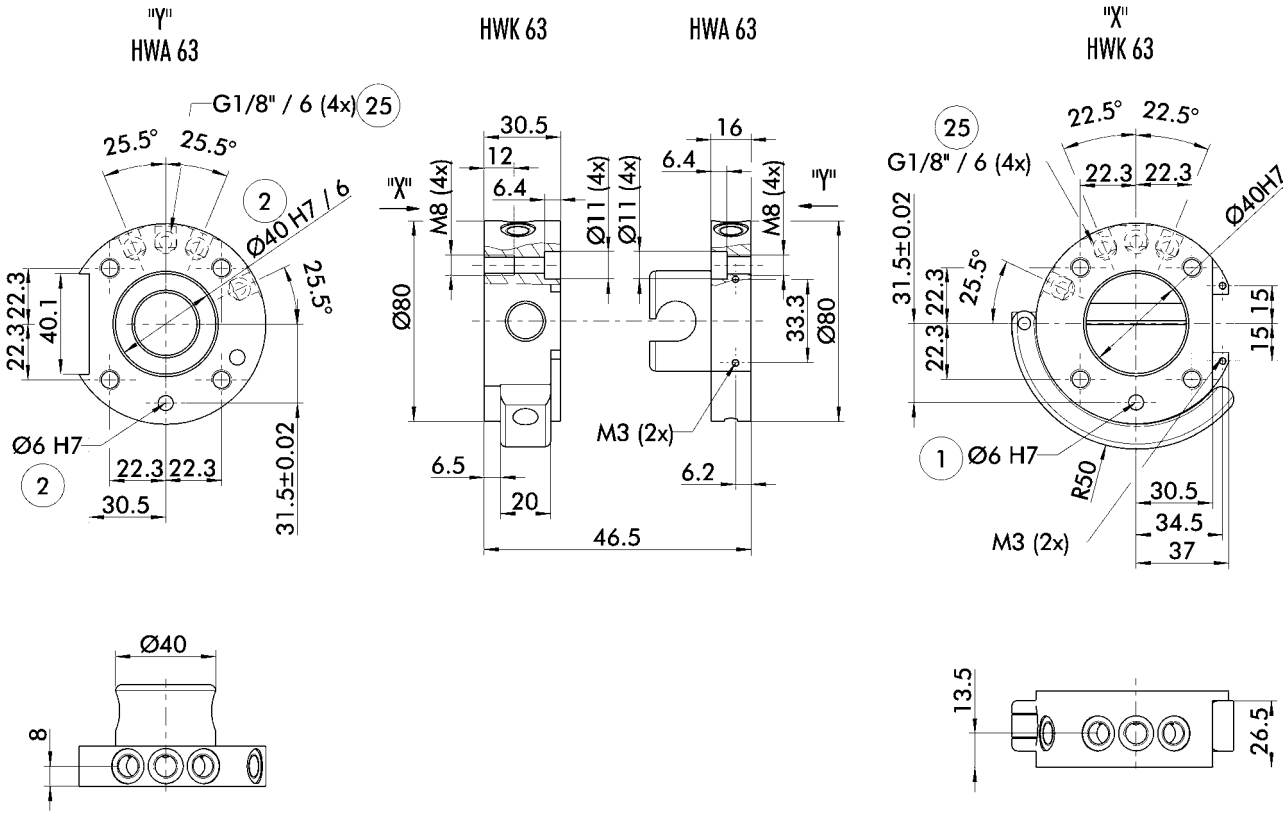


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

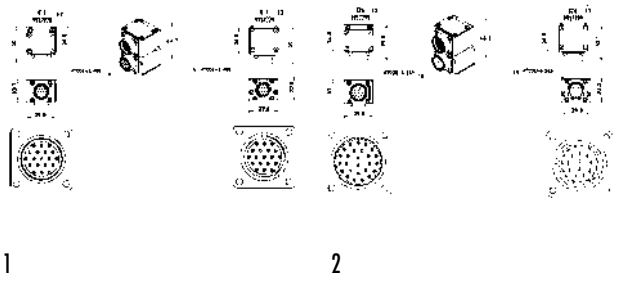
Designation		HWS-063	
Graduated circle diameter	[mm]	63	
Maximum payload	[kg]	16	A larger payload is possible with smaller moments
Tensile force	[N]	1000	
Weight	[kg]	0.60	HWK 0.40 kg/ HWA 0.20 kg
Repeat accuracy	[mm]	0.01	Tested at 80000 cycles
Pneumatic feed-through		4 x G1/8"	Max. 7 bar
Screw connection diagram		ISO-9409-63-4-M6	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 MS connector K19
⑫ Head side
⑬ Adapter side

2 MS connector K26
⑫ Head side
⑬ Adapter side

Designation		Detailed data sheet
K19	19 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter
K26	26 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter

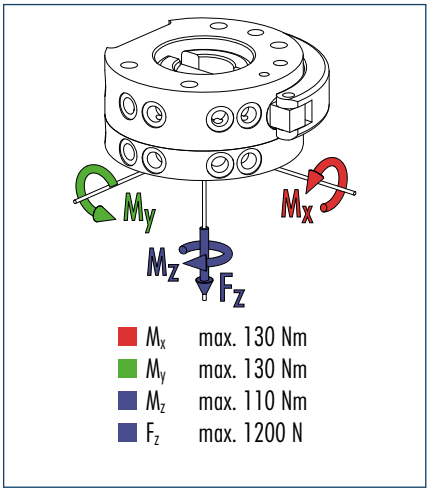
How to order (example)

HW□-063-□□□-000

HWS-063	Example
Option (000 = no option)	HWK-063-K19-000 (HWK-063, head side, with K19 option)
K = head A = adapter	HWA-063-000-000 (HWA-063, adapter plate side, no option)

HWS-080

Moment load

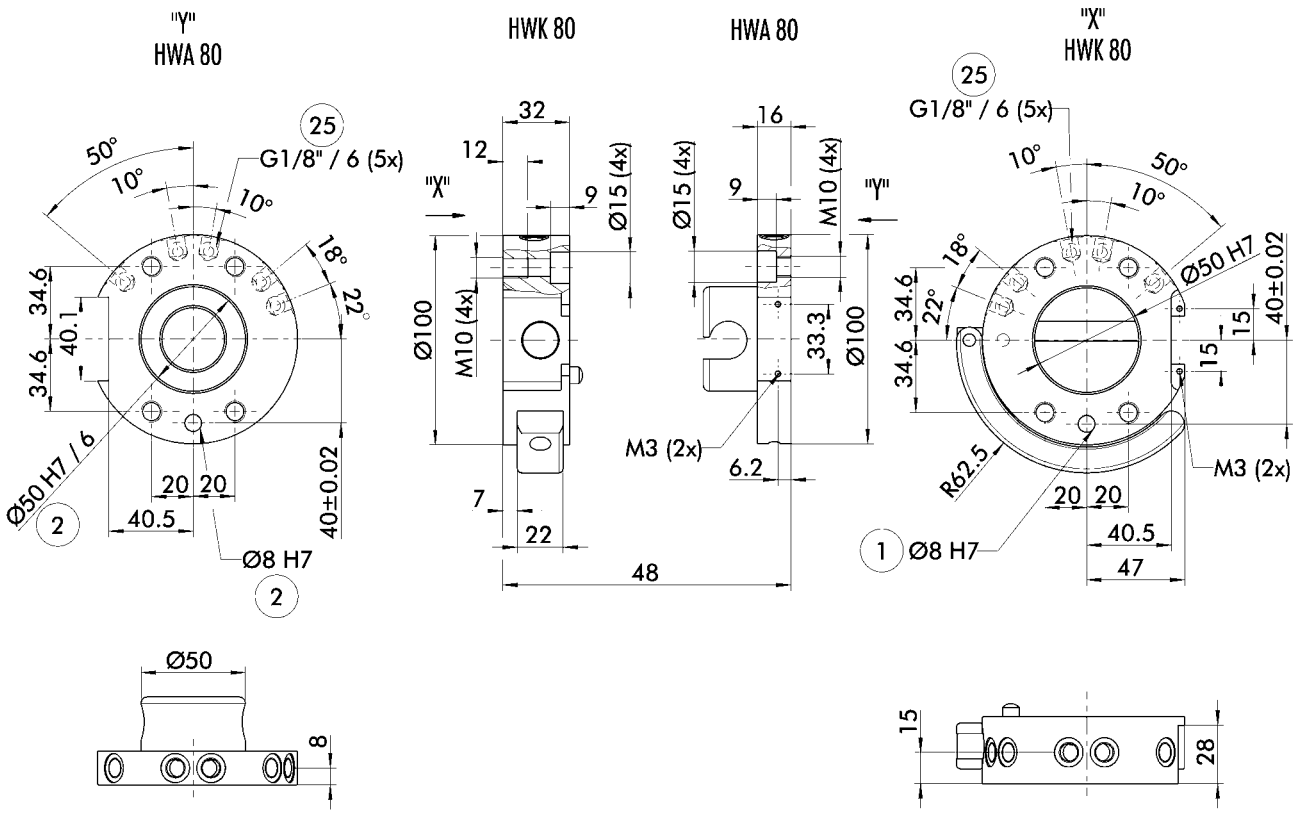


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

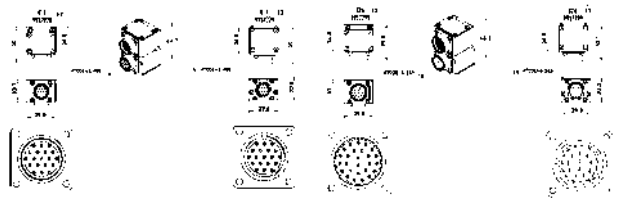
Designation		HWS-080	
Graduated circle diameter	[mm]	80	
Maximum payload	[kg]	24	A larger payload is possible with smaller moments
Tensile force	[N]	1200	
Weight	[kg]	0.94	HWK 0.64 kg/ HWA 0.30 kg
Repeat accuracy	[mm]	0.01	Tested at 80000 cycles
Pneumatic feed-through		5 x G1/8"	Max. 7 bar
Screw connection diagram		ISO-9409-80-6-M8	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 2

1 MS connector K19
⑫ Head side
⑬ Adapter side

2 MS connector K26
⑫ Head side
⑬ Adapter side

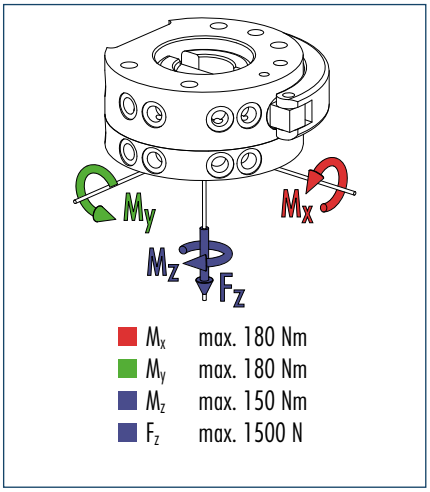
Designation		Detailed data sheet
K19	19 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter
K26	26 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter

How to order (example)

HW ☐ -080- ☐ ☐ ☐ -000

HWS-080	Example
Option (000 = no option)	**HWK-080-K19-000** (HWK-080, head side, with K19 option)
K = head **A** = adapter	**HWA-080-000-000** (HWA-080, adapter plate side, no option)

Moment load

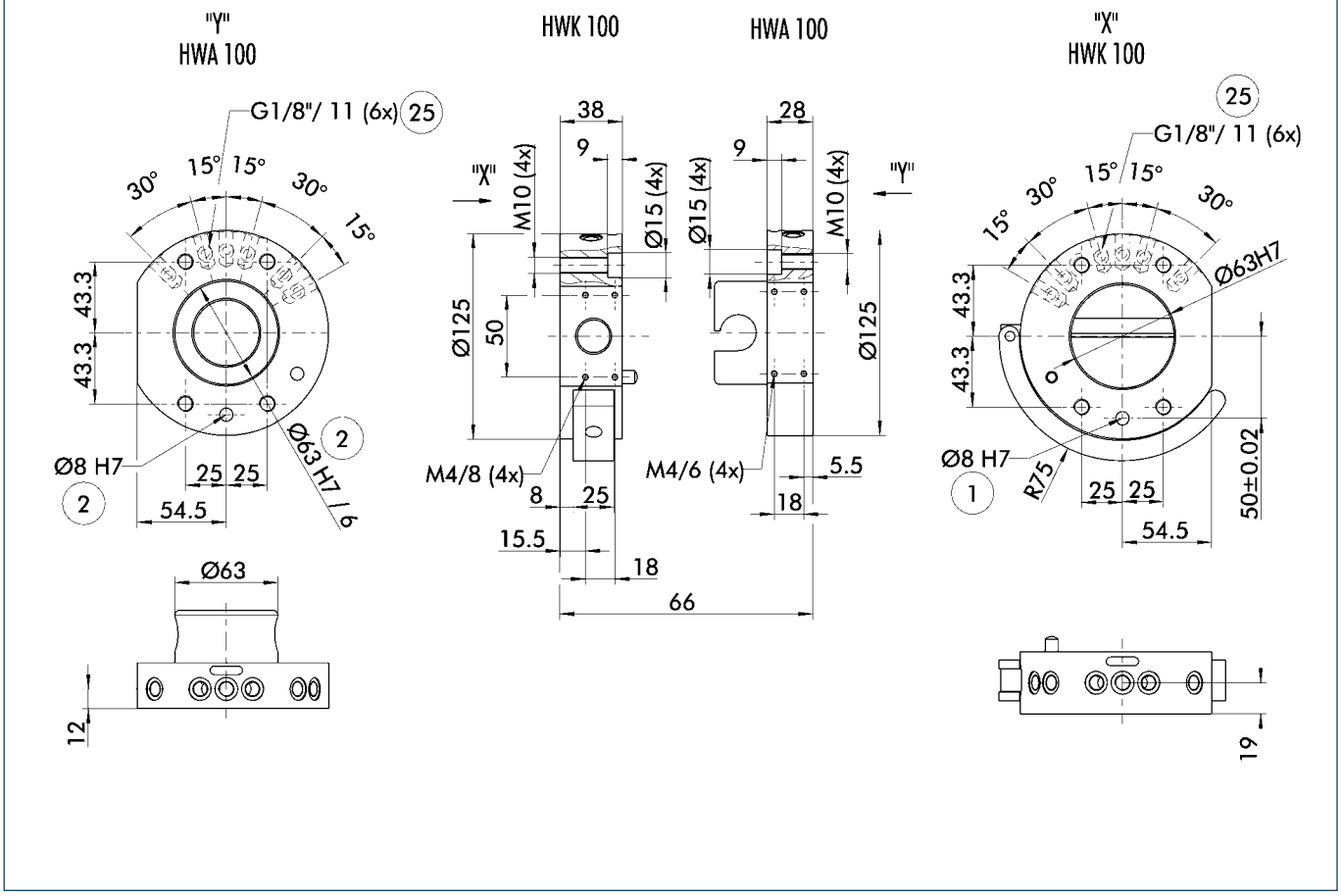


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

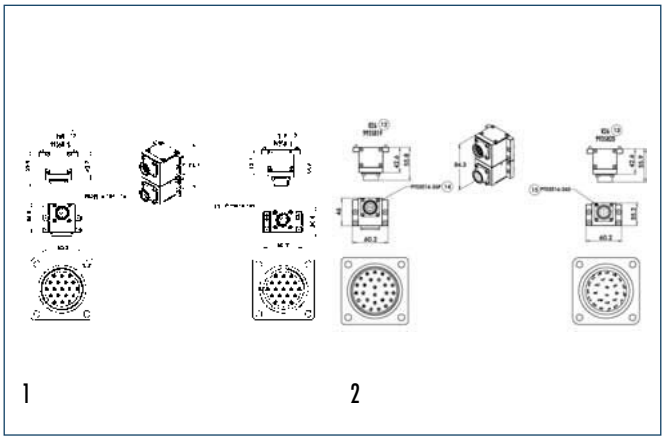
Designation		HWS-100	
Graduated circle diameter	[mm]	100	
Maximum payload	[kg]	30	A larger payload is possible with smaller moments
Tensile force	[N]	1500	
Weight	[kg]	2.30	HWK 1.35 kg/ HWA 0.95 kg
Repeat accuracy	[mm]	0.015	Tested at 80000 cycles
Pneumatic feed-through		6 x G1/8"	Max. 7 bar
Screw connection diagram		ISO-9409-100-6-M8	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 MS connector R19
⑫ Head side
⑬ Adapter side

2 MS connector R26
⑫ Head side
⑬ Adapter side

Designation		Detailed data sheet
R19	19 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter
R26	26 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter

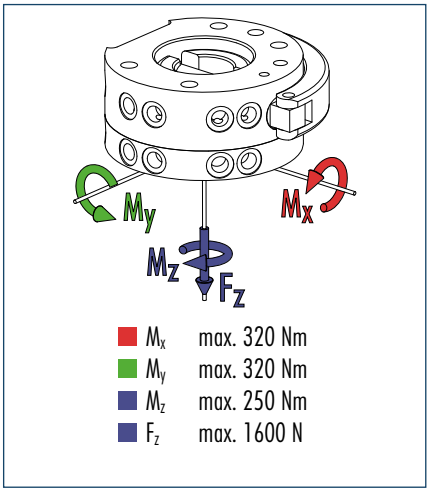
How to order (example)

HW ☐ -100- ☐ ☐ ☐ -000

HWS-100	Example
Option (000 = no option)	HWK-100-R19-000 (HWK-100, head side, with R19 option)
K = head A = adapter	HWA-100-000-000 (HWA-100, adapter plate side, no option)

HWS-125

Moment load

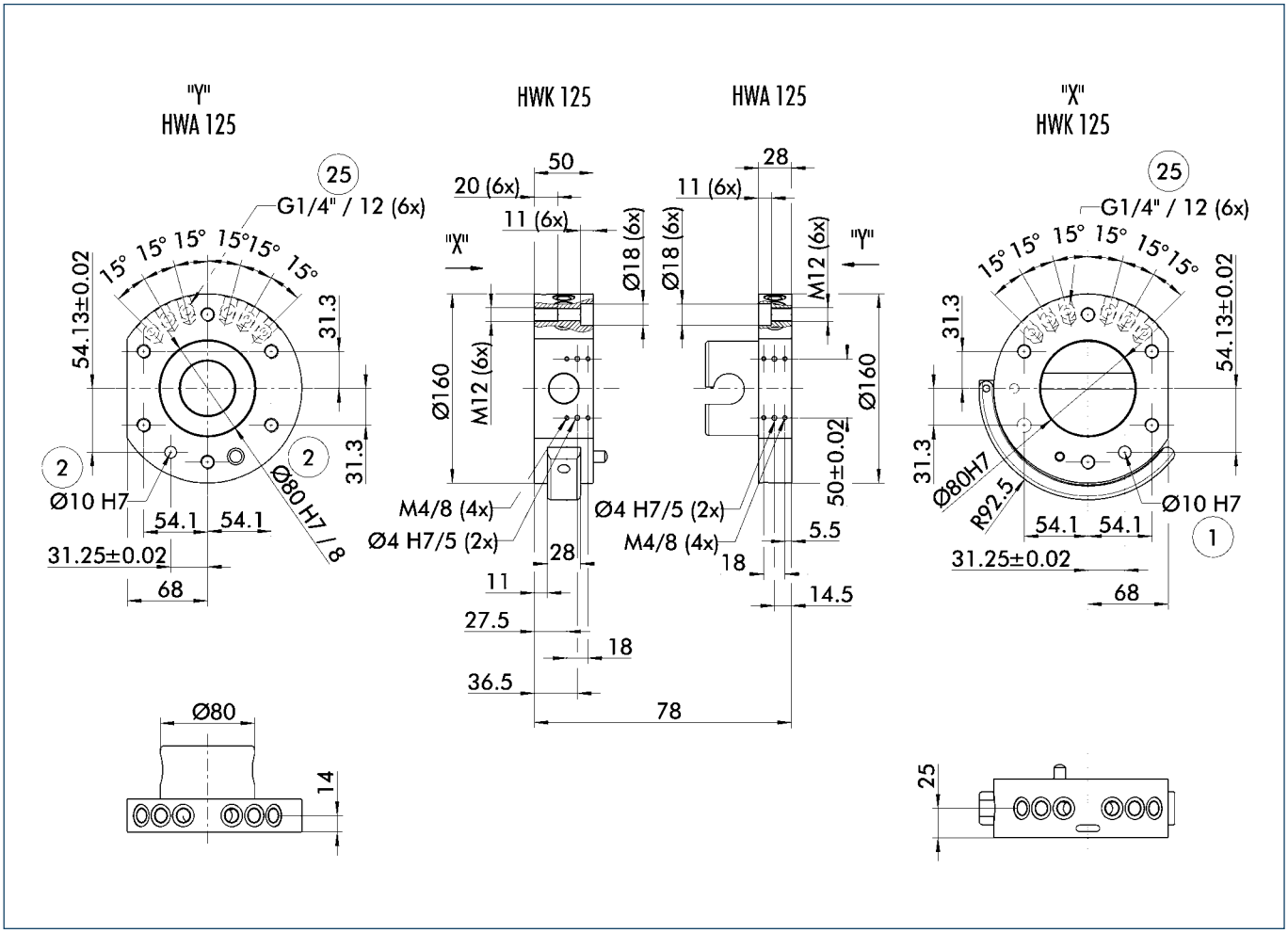


M_x, M_y: The dynamic moment load can be up to three times larger than the static moment load.
M_z: Tests have shown that mounting screws shear off in the event of 20-fold static moment. A twist angle is produced dependant upon M_z. This is less than 0.2° at the M_z stated.

Technical data

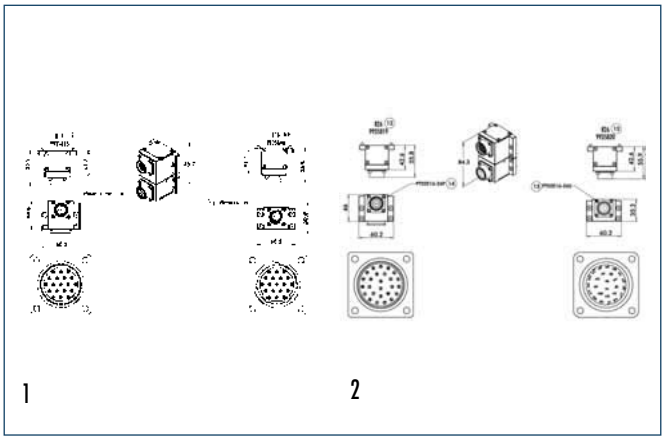
Designation		HWS-125	
Graduated circle diameter	[mm]	125	
Maximum payload	[kg]	54	A larger payload is possible with smaller moments
Tensile force	[N]	1600	
Weight	[kg]	3.92	HWK 2.40 kg/ HWA 1.52 kg
Repeat accuracy	[mm]	0.02	Tested at 80000 cycles
Pneumatic feed-through		6 x G1/4"	Max. 7 bar
Screw connection diagram		ISO-9409-125-6-M10	

Main views



① Robot-side connection
② Tool-side connection
㉕ Air feed-through

E modules



1 MS connector R19
⑫ Head side
⑬ Adapter side

2 MS connector R26
⑫ Head side
⑬ Adapter side

Designation		Detailed data sheet
R19	19 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter
R26	26 pins, 3 A/50 V MS plug, splash-proof	See "SWS options" chapter

How to order (example)

HW ☐ -125- ☐ ☐ ☐ -000

HWS-125	Example
Option (000 = no option)	**HWK-125-R19-000** (HWK-125, head side, with R19 option)
K = head **A** = adapter	**HWA-125-000-000** (HWA-125, adapter plate side, no option)

Sizes
50

Payload
16 kg

Torque load M_x
50 Nm

Torque load M_y
50 Nm

Torque load M_z
up to 4x

Example for application

Lightweight arm in the field of service robotic

1. 3-Finger Electric Gripping Hand SDH
2. Servo-electric Rotary Actuator PRL
3. Flat Manual Change System FWS

Flat manual change system

Extremely flat manual change system with integrated air and electrical feed-through

Area of application

Can be used wherever low clearance between the effector and the flange surface of the robot arm, low weight and fast changing of the effector are required.

Benefits

Extremely flat design (with a height of only 14 mm)
Weight-reduced for low interference contours and fast effector change

Easily handling without the need of additional tools
Can be released easily and quickly

Integrated feed-throughs
for up to four fluid and/or 8 electric signals

Central arrangement of the electrical and pneumatic feed-throughs
Therefore especially suitable for automation components with internal supply lines

ISO flange pattern
for easy installation, complies with EN ISO 9409-1:2004 “Industrial robot mechanical interfaces” with a graduated circle diameter of 50 mm

General information on the series

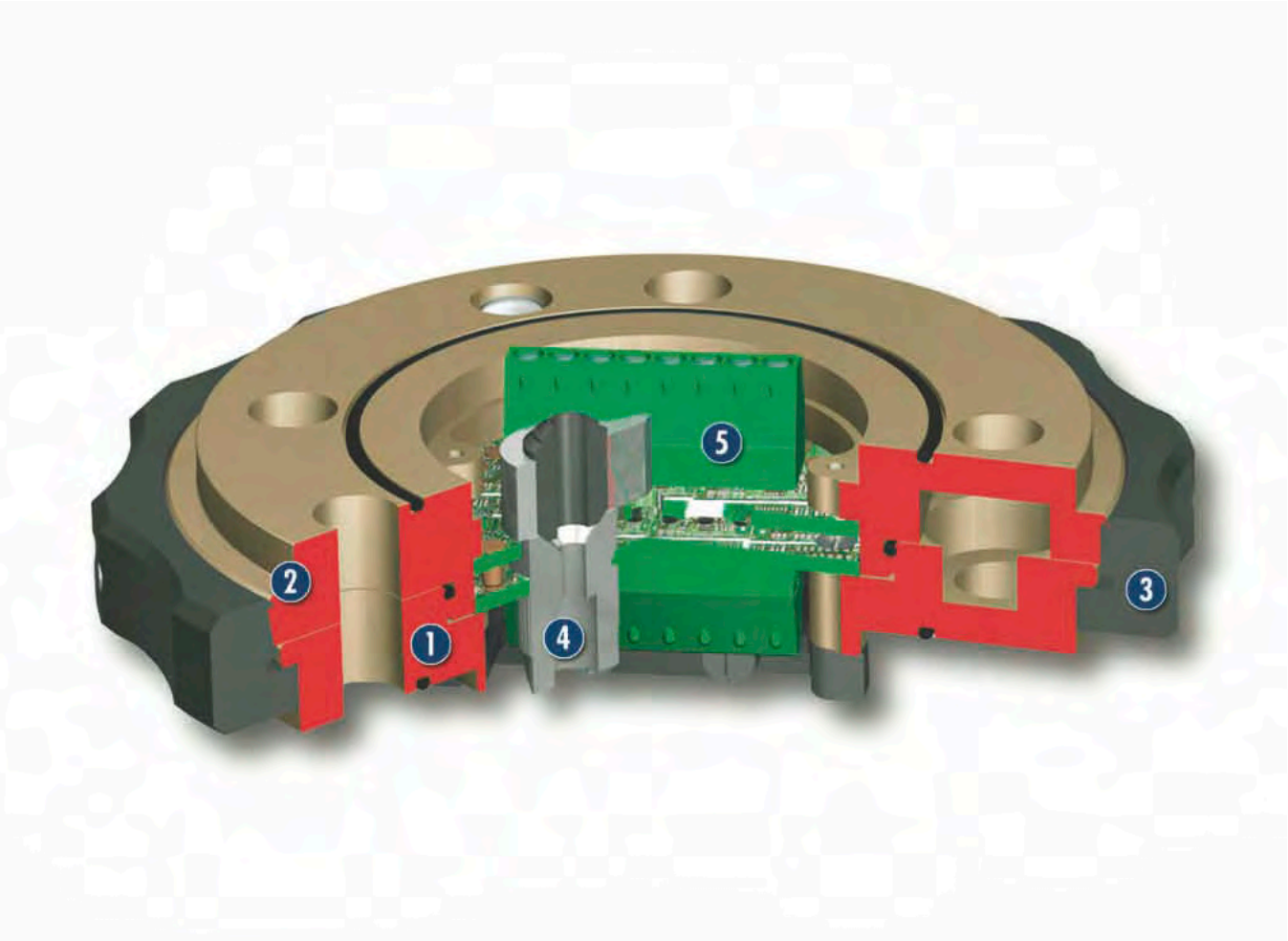
Working principle
locking is achieved by turning the actuating ring

Actuation
manual via integrated locking ring

Energy transmission
integrated pneumatic/fluid and electric feed-through

Warranty
24 months

Sectional diagram



1 **FWK robot-side change head**
with ISO screw connection diagram for direct mounting on the robot flange

2 **FWA tool-side change adapter**

3 **Coupling ring**
for manual actuation of the change system

4 **Pneumatic feed-through**
no interfering contour due to integration in housing

5 **Electrical feed-through**
for electrical energy and signal transmission

Functional characteristics

The flat manual change system FWS consists of a change head (FWK) and a change adapter (FWA). The change head is connected with the change adapter by a form-fit connection by actuating the locking ring.
Integrated pneumatic and electric feed-through supply the tool reliably with energy.

Options and special information

Central pneumatic and electric feed-through
If central arrangement of the energy feed-throughs is not possible or not practical, a radial cable feed-through in the form of a spacer ring can be inserted in the FWS.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Fittings

ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the “Accessories” catalog section.

General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life span of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

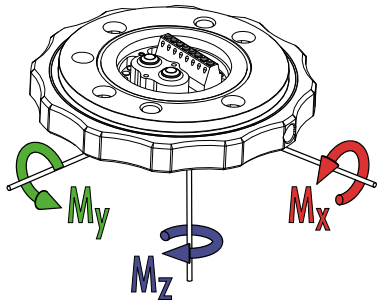
FWS-050

Product description

The change system complies with EN ISO 9409-1:2004 "Industrial robots - mechanical interfaces" with a graduated circle diameter of 50 mm. Due to the low height of just 14 mm, the ideal field of application of the change system are sites, where low interference contours between the effector and the flange surface of the robot arm are given, low weights and fast changing of the effector are required.

Up to 28 electric and 2 pneumatic feed-throughs are available, centrally located. Therefore the FWS is especially suitable for automation components with internal supply lines. If this should not be possible, a spacer can be used for radial cable feed-through.

Moment load



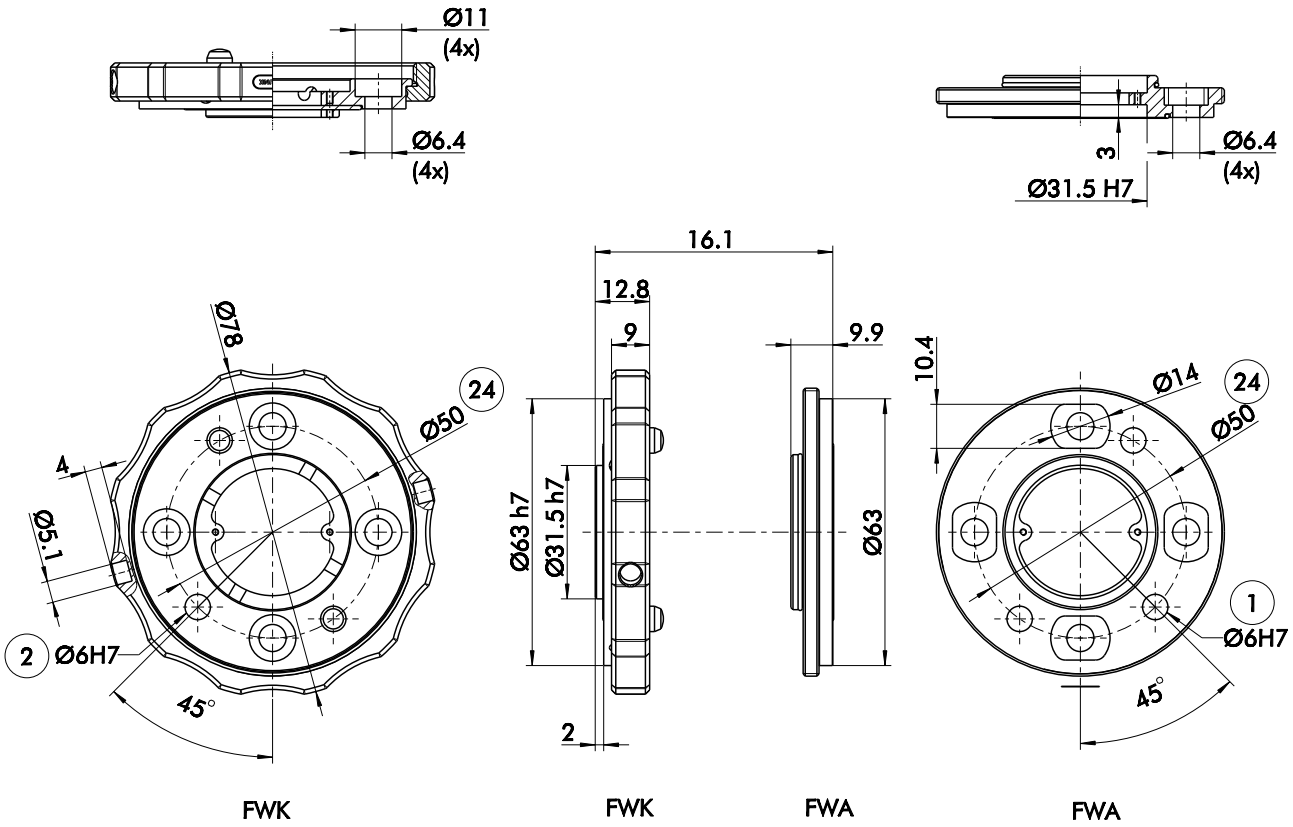
M_x	max. 50 Nm
M_y	max. 50 Nm
M_z	max. 35 Nm

ⓘ The dynamic moment load can be up to three times larger than the static moment load. Tests have shown that the system will only begin to fail in the event of 20-fold static moment.

Technical data

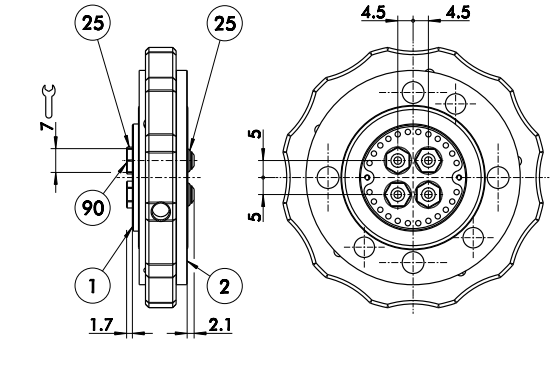
Designation		FWK-050-0-0	FWA-050-0-0	FWK-050-2-8	FWA-050-2-8	FWK-050-4-0	FWA-050-4-0
	ID	320600	320601	320602	320603	320604	320605
Max. payload	[kg]			16			
Torque load							
M_x	[Nm]			50			
M_y	[Nm]			50			
M_z	[Nm]			35			
Weight	[g]	85	45	94	52	98	60
Air feed-through		0	0	2	2	4	4
Electric feed-through		0	0	8	8	0	0

Main views FWS-050-0-0



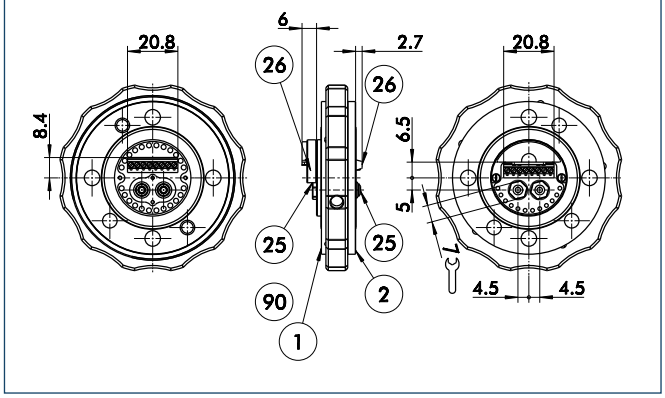
1 Connection, robot-side
2 Connection, tool-side
24 Bolt pitch circle

FWS-050-4-0



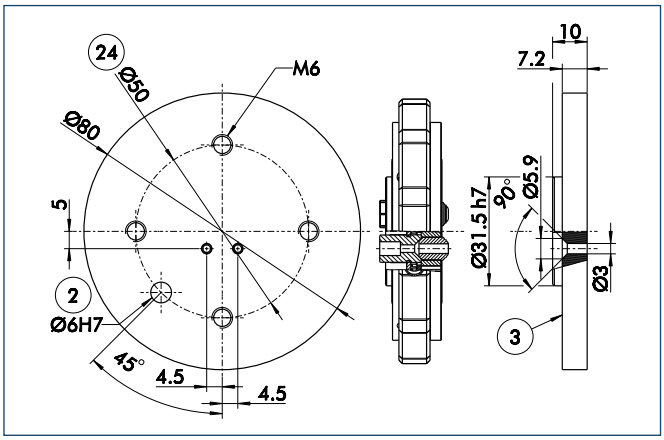
1 Connection, robot-side
2 Connection, tool-side
25 Air feed-through
90 Connection for pneumatic hose

FWS-050-2-8



1 Connection, robot-side
2 Connection, tool-side
25 Fluid feed-through
26 Electrical signal feed-through
90 Connection for pneumatic hose

Screw connection diagram for ISO flange pattern



(2) Connection, tool-side
(3) Adapter plate
(24) Bolt pitch circle

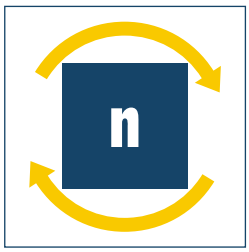
Feed-through

FEED-THROUGH

DDF

Feed-through · Rotary Feed-through for Robots

Sizes
031 .. 160

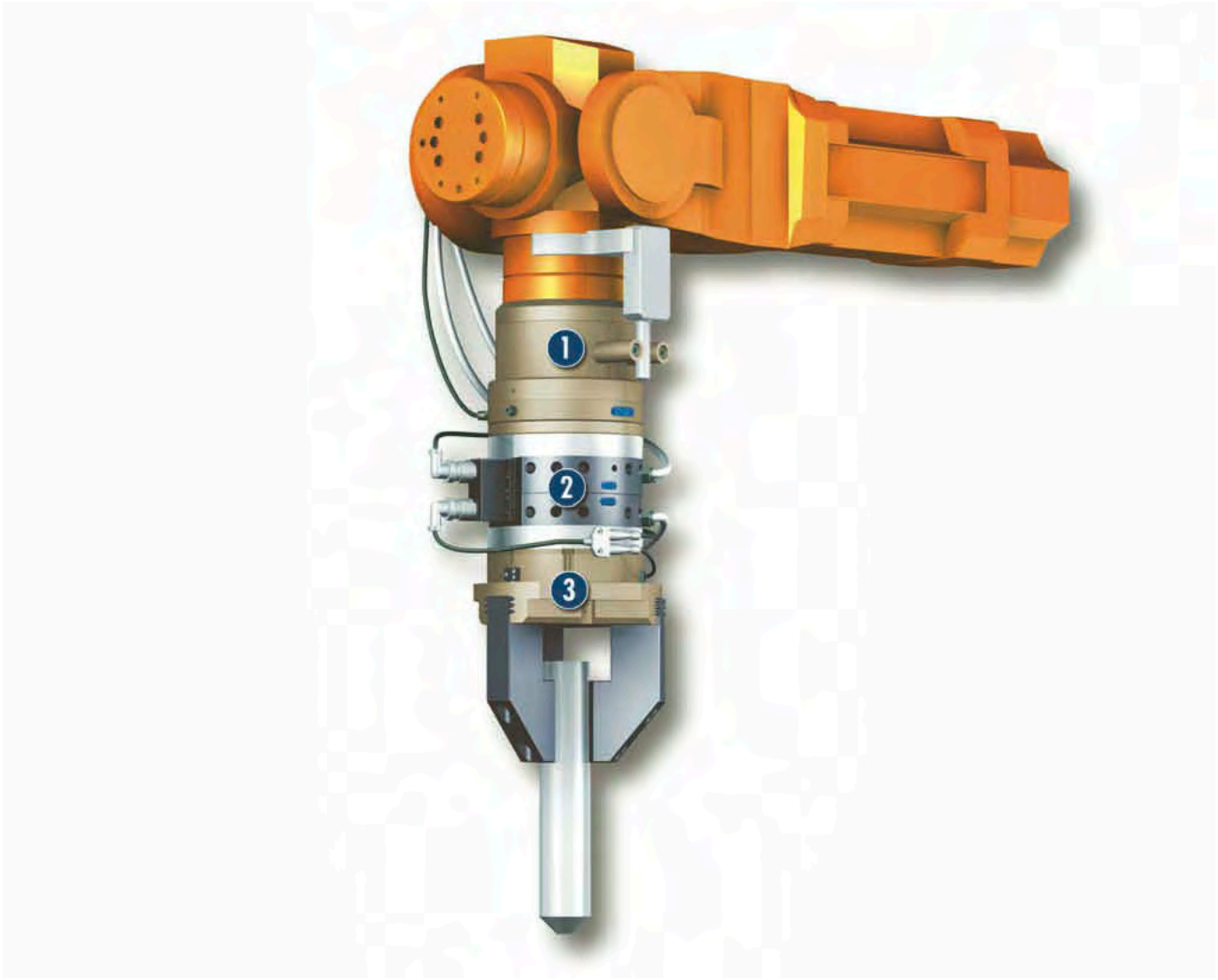


Max. speed
120 $^{1}/_{min}$

Air feed-through
2x .. 4x

Electrical feed-throughs
Up to 10x

Application example



Insertion tool for assembling small to medium-sized axes. The rotary feed-through ensures that they can be rotated several times and in an unlimited way (> 360°) during the assembly process. Slip ring contacts and air feed-throughs integrated into the rotary feed-through reliably supply the gripper with power.

1. Rotary Feed-through DDF-125
2. SWS Quick-change System
3. PZN-plus 200-1 3-Finger Centric Gripper

Rotary Feed-through for Robots

Pneumatic and electric rotary feed-through
for use on the robot

Area of application

Robot applications with unlimited rotational movement

Your advantages and benefits

Combined air and electrical feed-through
for extensive supply to your gripper system

ISO flange
for easy attachment to most types of robots without additional adapter plates

Complete series with 14 sizes
for an optimum selection of sizes

Electric plug contacts
for easy replacement and easy integration

General information on the series

Pneumatics feed-through
Up to four feed-throughs with a max. of 10 bar

Electrical feed-throughs
Via a slip ring, up to ten electrical signals with 60 V and 1 A

Mounting
Standardized ISO 9409 interface (robot-side)

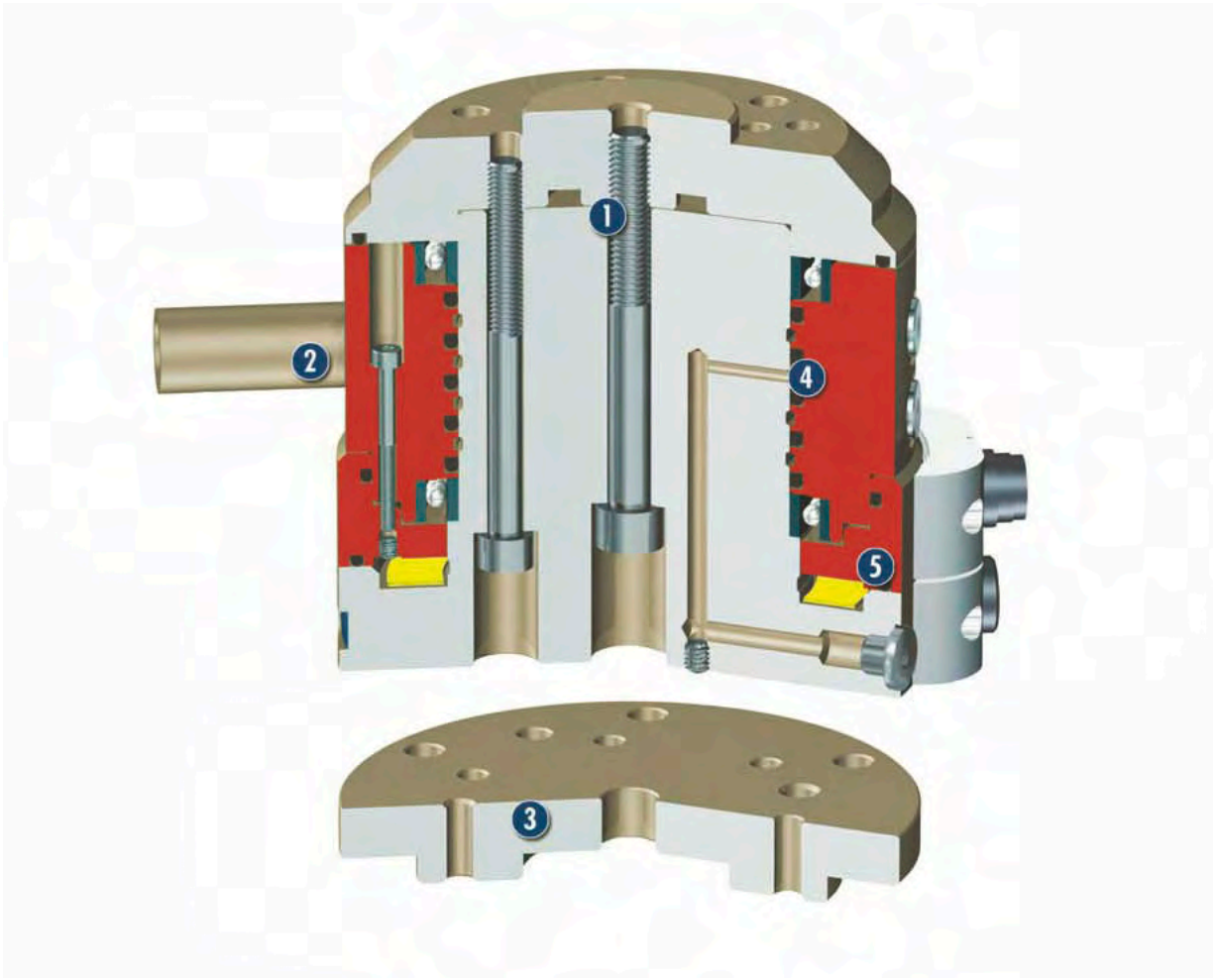
Material
The rotary feed-through is made of a high-strength, hard-coated aluminum alloy

Assembly position
Optional

Ambient temperature
From 5 °C to 60 °C

Scope of delivery
Small parts for fastening, operating manual, maintenance instructions, manufacturer's declaration

Sectional diagram



1 Housing
weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

2 Torque Support
to support stationary side of the unit

3 ISO Adapter Plate
(optional)

4 Pneumatics Feed-through
to supply the gripper, linear unit etc.

5 Slip Ring
as electrical feed-through for up to ten signals

Function description

The DDF facilitates rotation of the robot axis by more than 360°, without hoses and cables twisting around the axis. Integrated air feed-throughs and slip ring contacts reliably supply the tool with power, even at high speeds.
The DDF consists of two parts. The shaft colored grey in the rendered illustration is mounted onto the robot's flange. There is a ring (red) around the shaft. The ring is joined to a non-rotating part of the robot via a torque support. The shaft rotates in the ring when the robot flange turns. A slip ring, integrated into the shaft and the ring, transmits electrical signals from the stationary ring to the rotating shaft. In addition to the electric leads, up to 4 pneumatic leads are fed through.

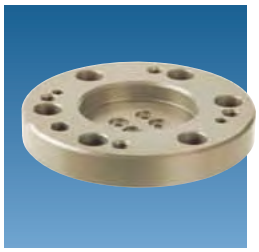
The DDF facilitates speeds of up to 120 revs/minute and payloads of 18000 N and 700 Nm. The use of specially coated seals reduces the unit's required breakaway torques and its constant torque. The DIN 9409-1 standardized mounting flange makes it possible to mount the rotary feed-throughs on nearly every robot.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Sensor cables

Adapter plates



Fittings

ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

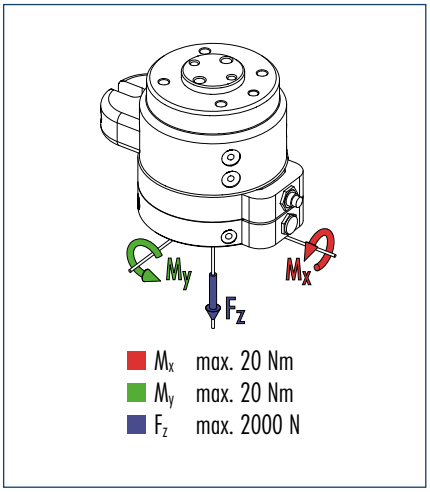
General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

DDF-031

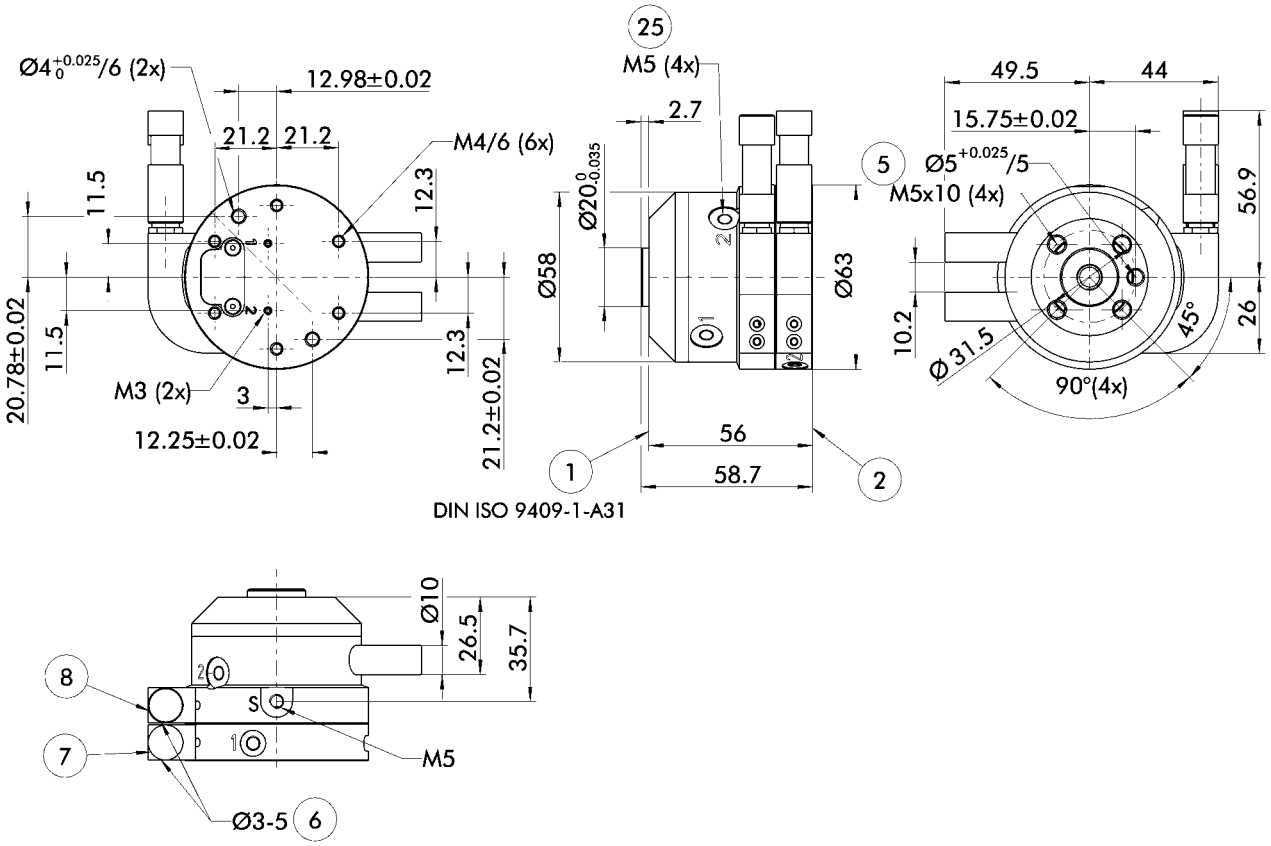
Forces and moments



Technical data

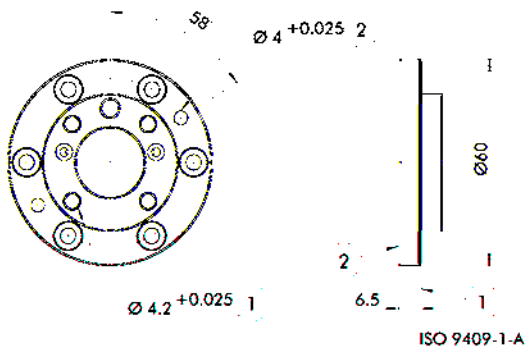
Designation		DDF-031-S
	ID	0323033
Weight	[kg]	0.5
Max. speed	[min^{-1}]	120
Max. speed	[°/s]	720
Constant torque	[Nm]	1
Starting torque (after shutdown)	[Nm]	1.5
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-31.5-4-M5
Energy transmission		
Air		2 x compressed air up to 10 bar
Electrical energy		4 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Field wire-able connector
⑧ Field wire-able connector
㉕ Air feed-through

DDF-031-S adapter plates



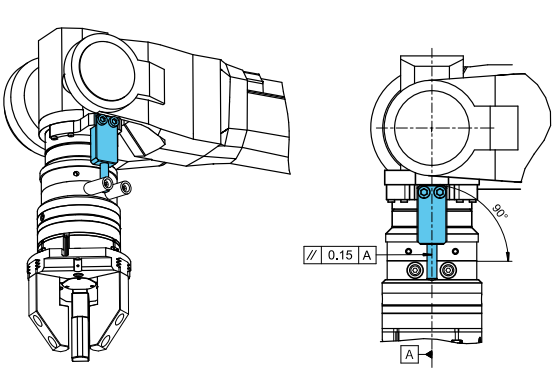
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-31.5-4-M5 screw connection diagram

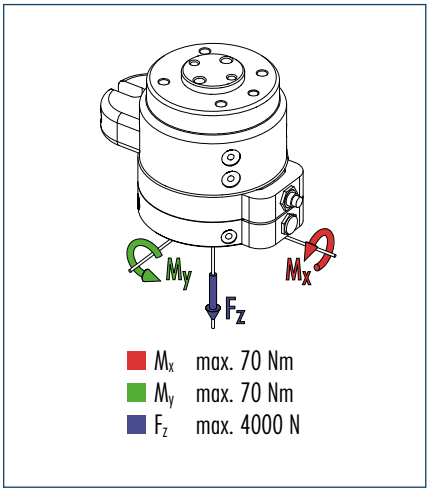
Designation	ID	Height
A-DDF-031	0323220	13 mm

Assembly notes



DDF-040

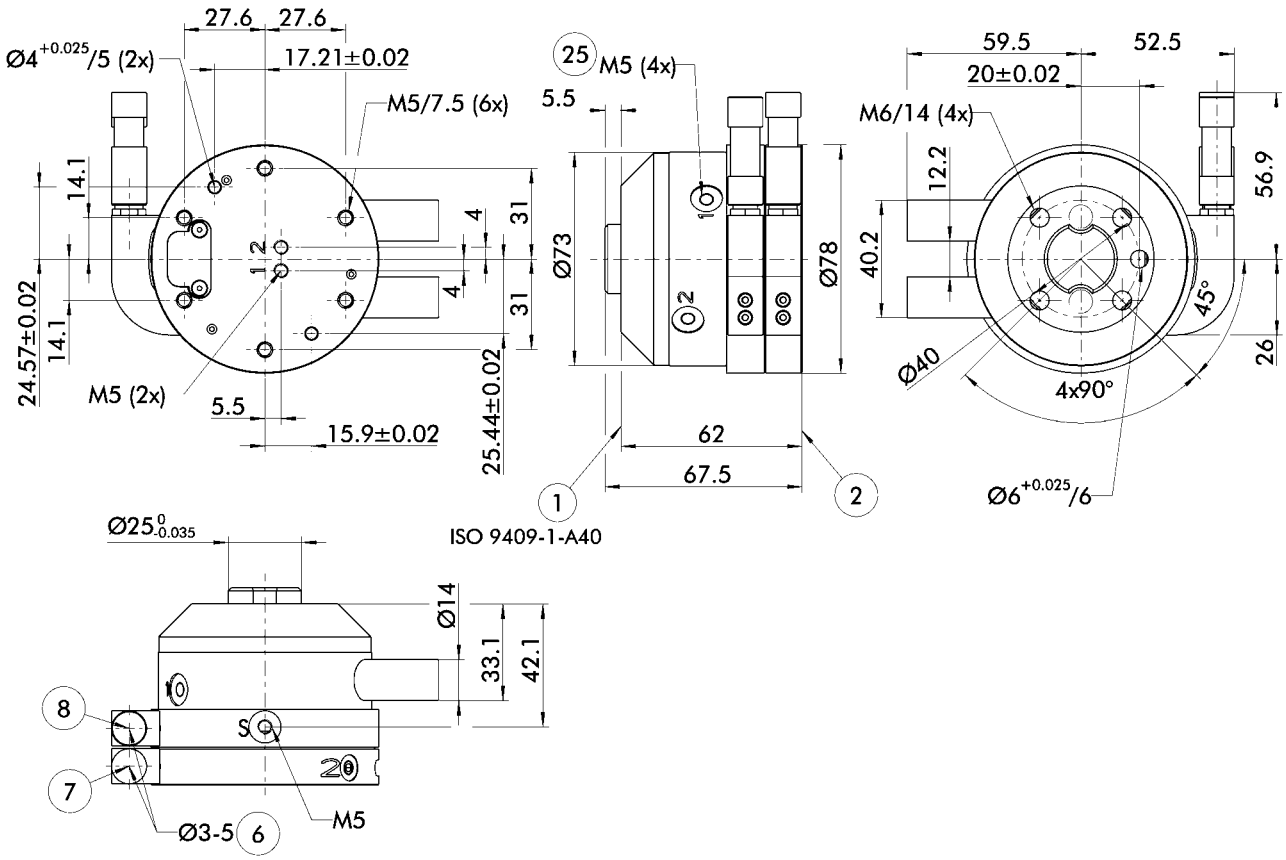
Forces and moments



Technical data

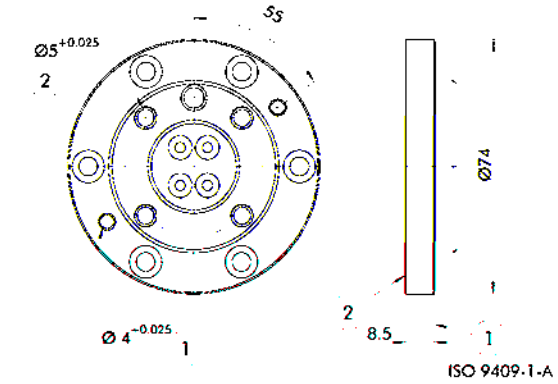
Designation		DDF-040-S
	ID	0323044
Weight	[kg]	0.9
Max. speed	[min^{-1}]	120
Max. speed	[°/s]	720
Constant torque	[Nm]	1.5
Starting torque (after shutdown)	[Nm]	2.5
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-40-4-M6
Energy transmission		
Air		2 x compressed air up to 10 bar
Electrical energy		4 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-040 adapter plates



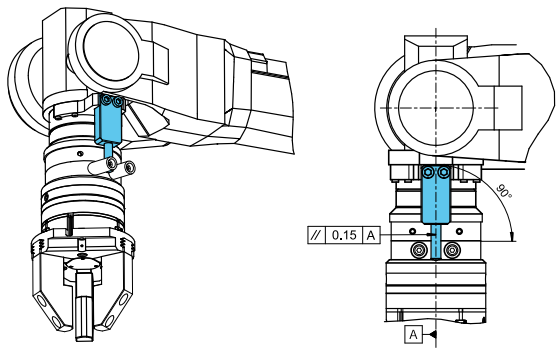
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-40-4-M6 screw connection diagram

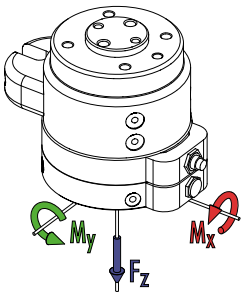
Designation	ID	Height
A-DDF-040	0323221	15 mm

Assembly notes



DDF-040-1

Forces and moments

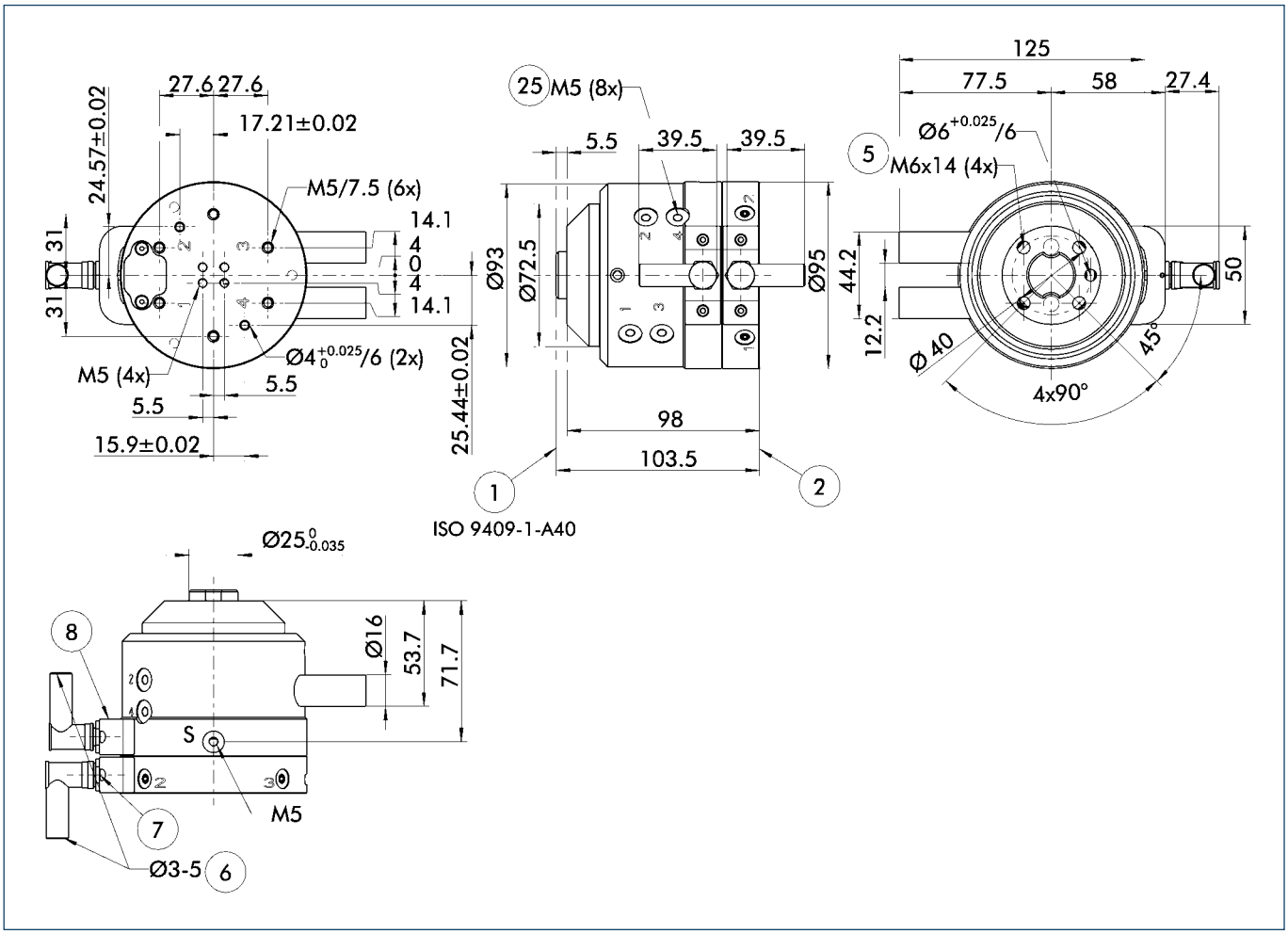


M_x max. 110 Nm
M_y max. 110 Nm
F_z max. 4000 N

Technical data

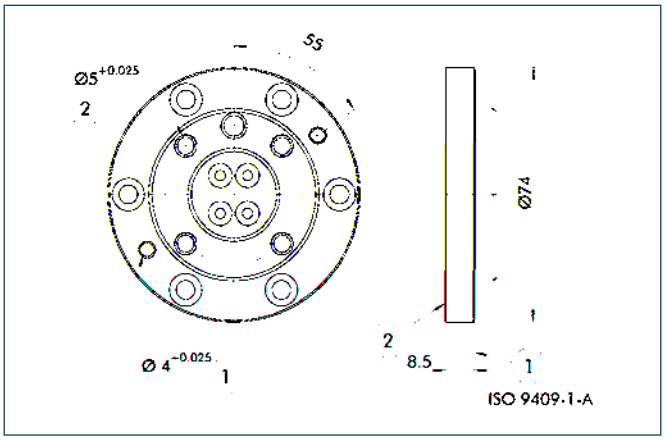
Designation		DDF-040-1-KS
	ID	0323047
Weight	[kg]	2
Max. speed	[min^{-1}]	110
Max. speed	[°/s]	660
Constant torque	[Nm]	6
Starting torque (after shutdown)	[Nm]	8
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-40-4-M6
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-040 adapter plates



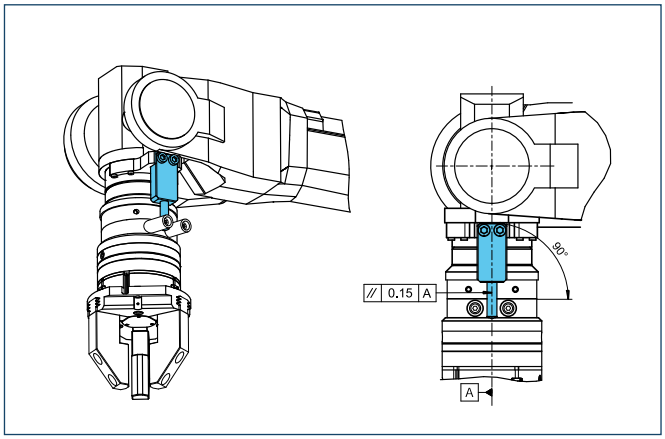
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-40-4-M6 screw connection diagram

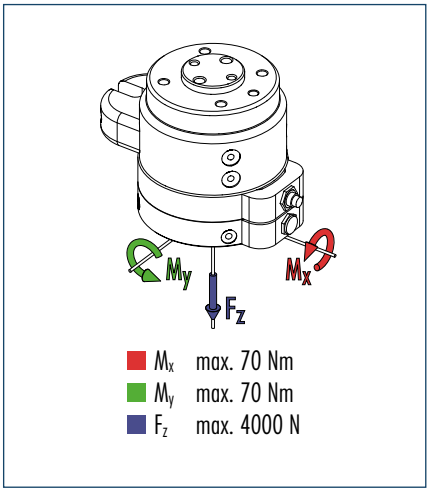
Designation	ID	Height
A-DDF-040	0323221	15 mm

Assembly notes



DDF-050

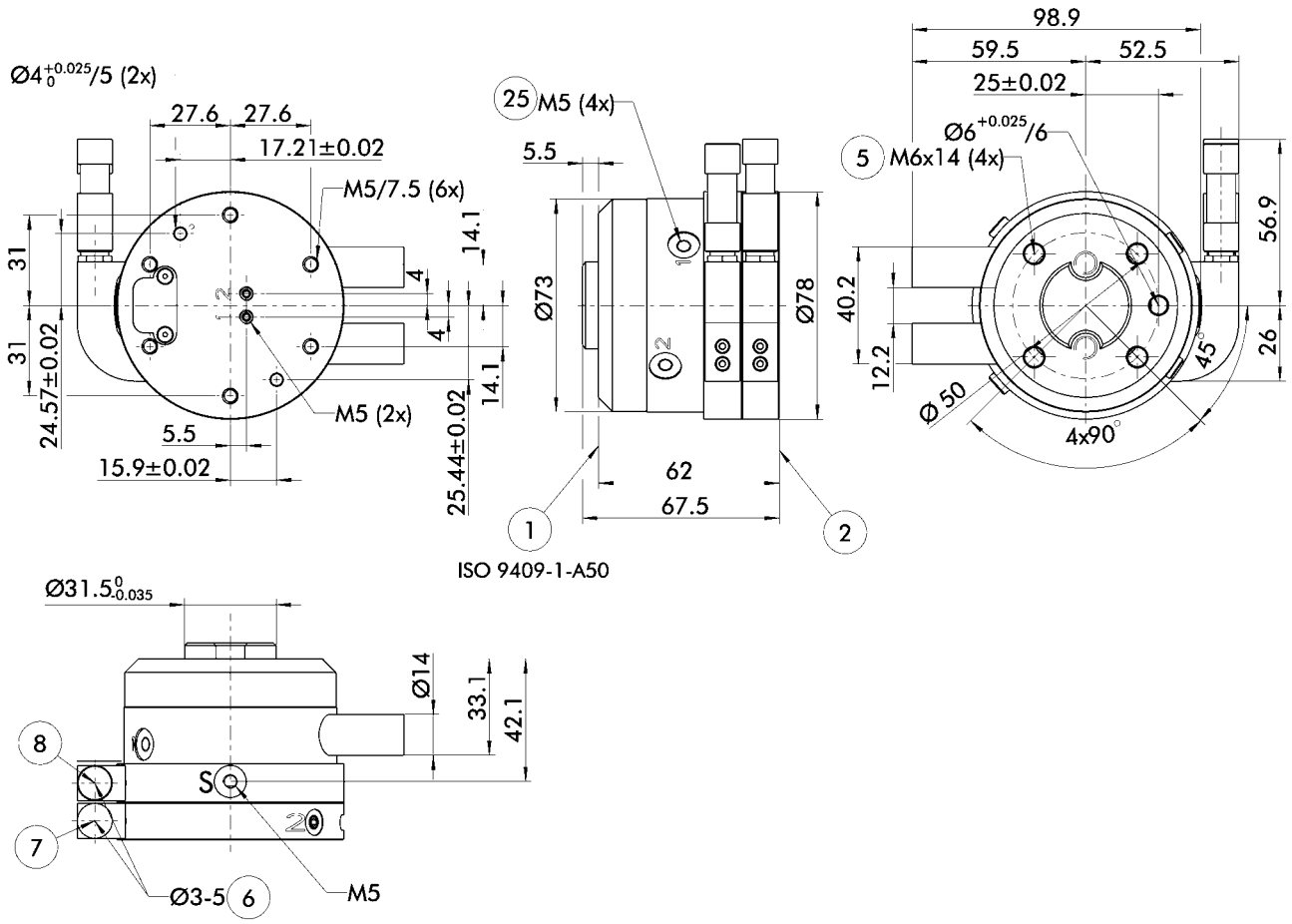
Forces and moments



Technical data

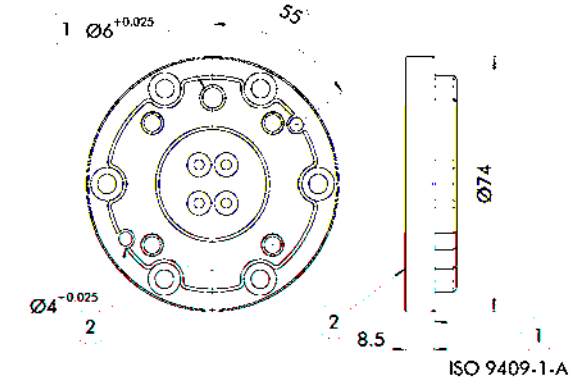
Designation		DDF-050-S
	ID	0323054
Weight	[kg]	0.95
Max. speed	[min^{-1}]	120
Max. speed	[°/s]	720
Constant torque	[Nm]	1.5
Starting torque (after shutdown)	[Nm]	2.5
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-50-4-M6
Energy transmission		
Air		2 x compressed air up to 10 bar
Electrical energy		4 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-050 adapter plates



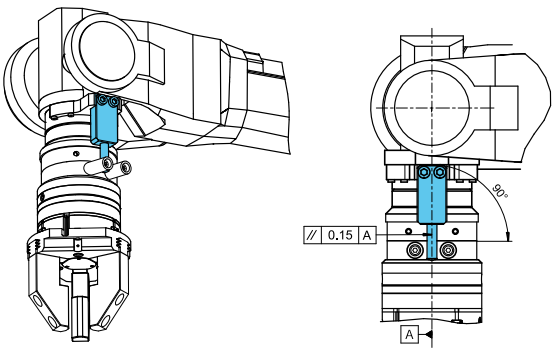
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-50-4-M6 screw connection diagram

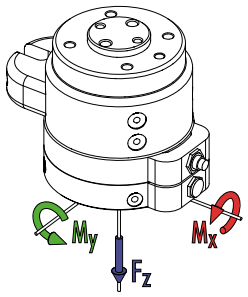
Designation	ID	Height
A-DDF-050	0323222	15 mm

Assembly notes



DDF-050-1

Forces and moments

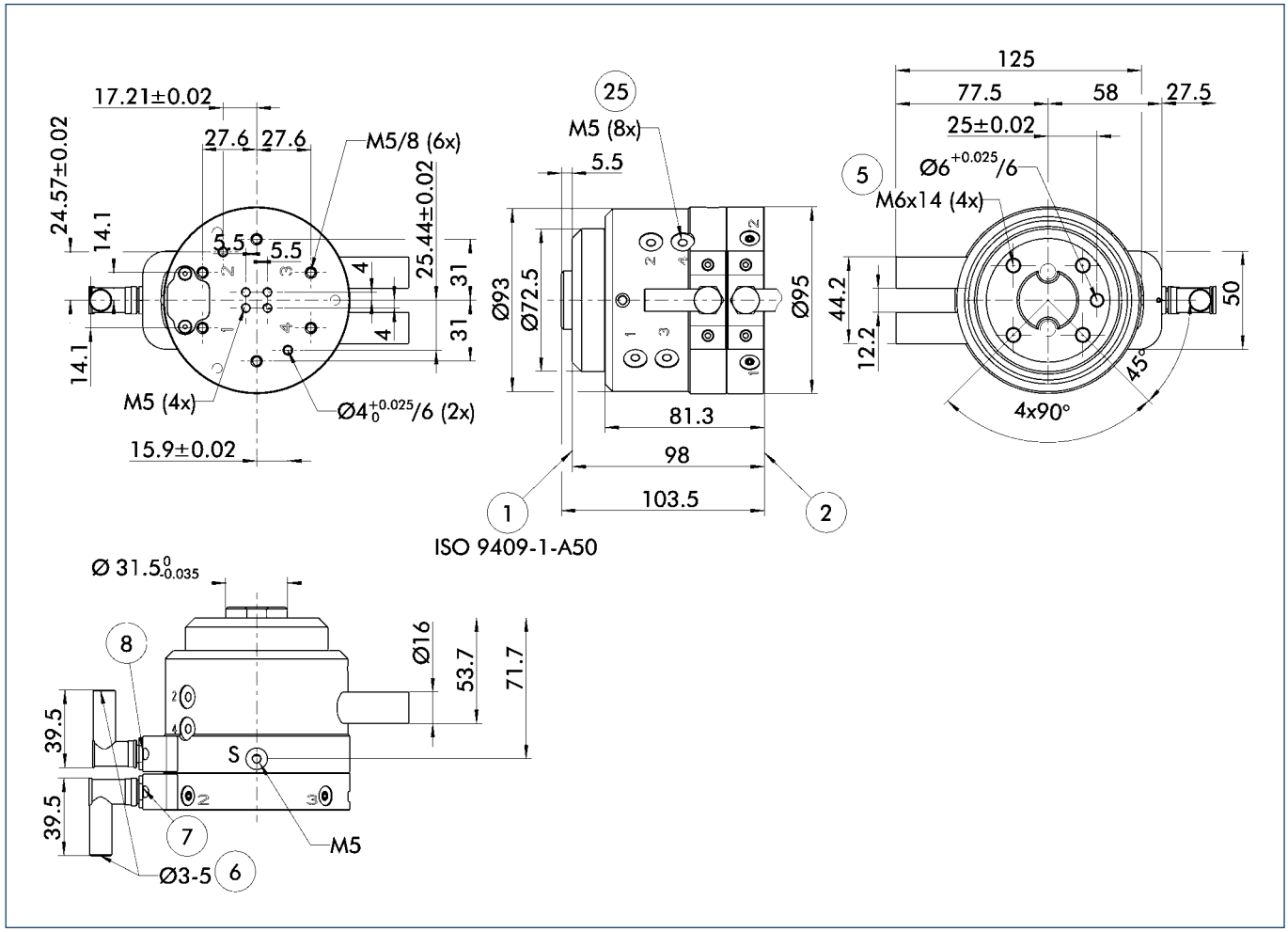


M_x	max. 110 Nm
M_y	max. 110 Nm
F_z	max. 4000 N

Technical data

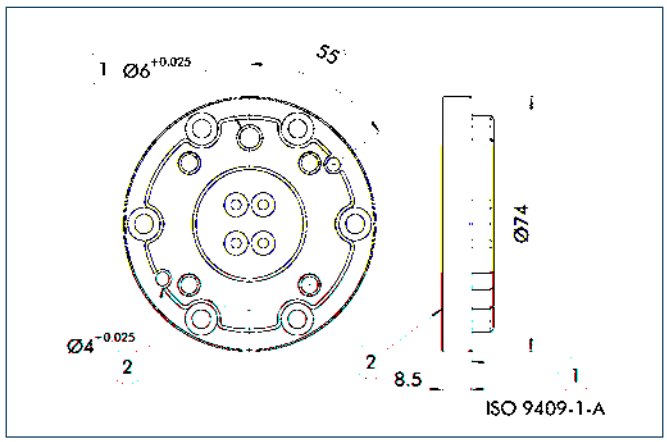
Designation		DDF-050-1-KS
	ID	0323057
Weight	[kg]	2.1
Max. speed	[min^{-1}]	110
Max. speed	[°/s]	660
Constant torque	[Nm]	6
Starting torque (after shutdown)	[Nm]	8
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-50-4-M6
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-050 adapter plates



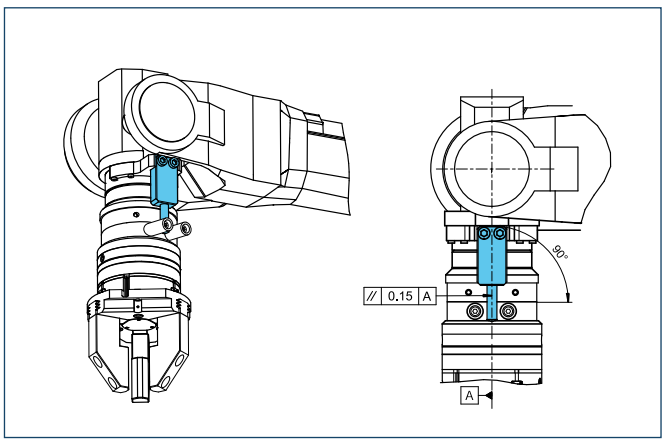
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-50-4-M6 screw connection diagram

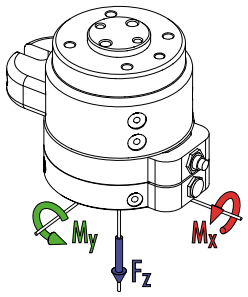
Designation	ID	Height
A-DDF-050	0323222	15 mm

Assembly notes



DDF-063

Forces and moments

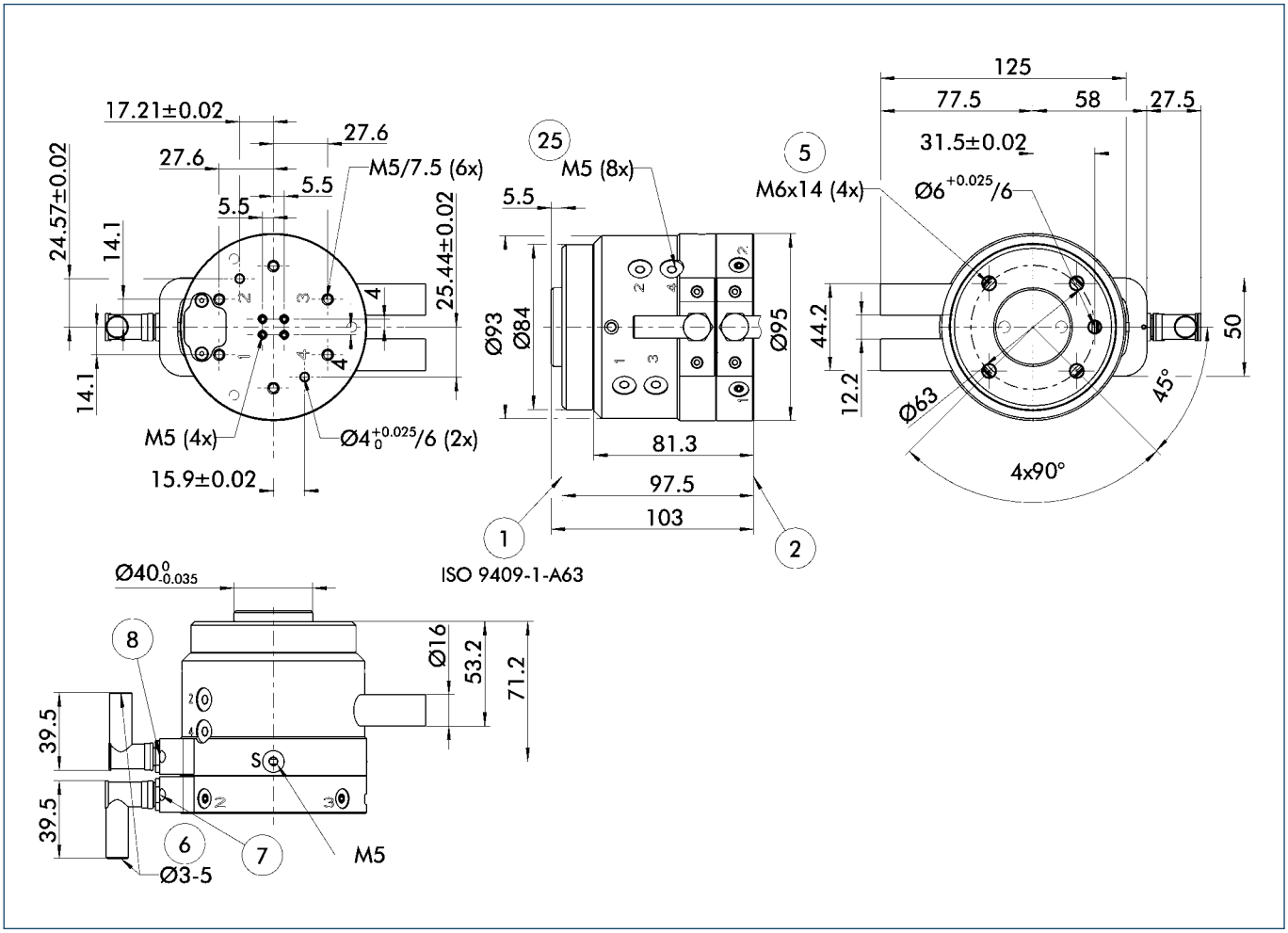


M_x max. 120 Nm
M_y max. 120 Nm
F_z max. 6000 N

Technical data

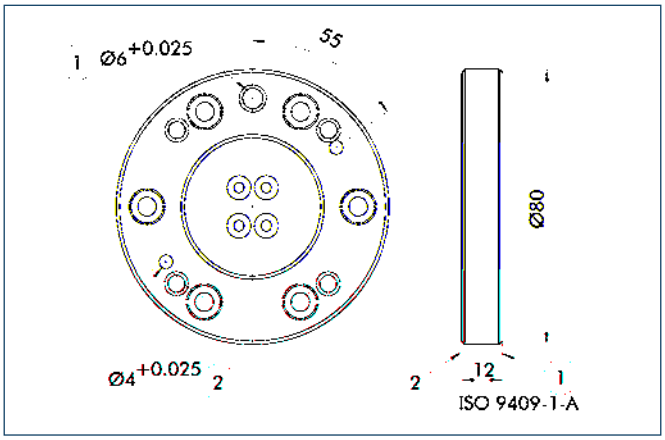
Designation		DDF-063-KS
	ID	0323067
Weight	[kg]	2.2
Max. speed	[min^{-1}]	110
Max. speed	[°/s]	660
Constant torque	[Nm]	6
Starting torque (after shutdown)	[Nm]	8
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-63-4-M6
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-063 adapter plates



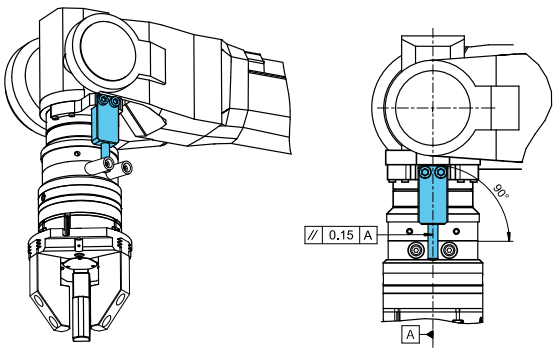
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-63-4-M6 screw connection diagram

Designation	ID	Height
A-DDF-063	0323223	12 mm

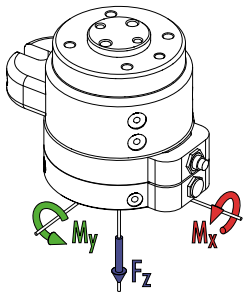
Assembly notes



DDF-080

Feed-through · Rotary Feed-through for Robots

Forces and moments

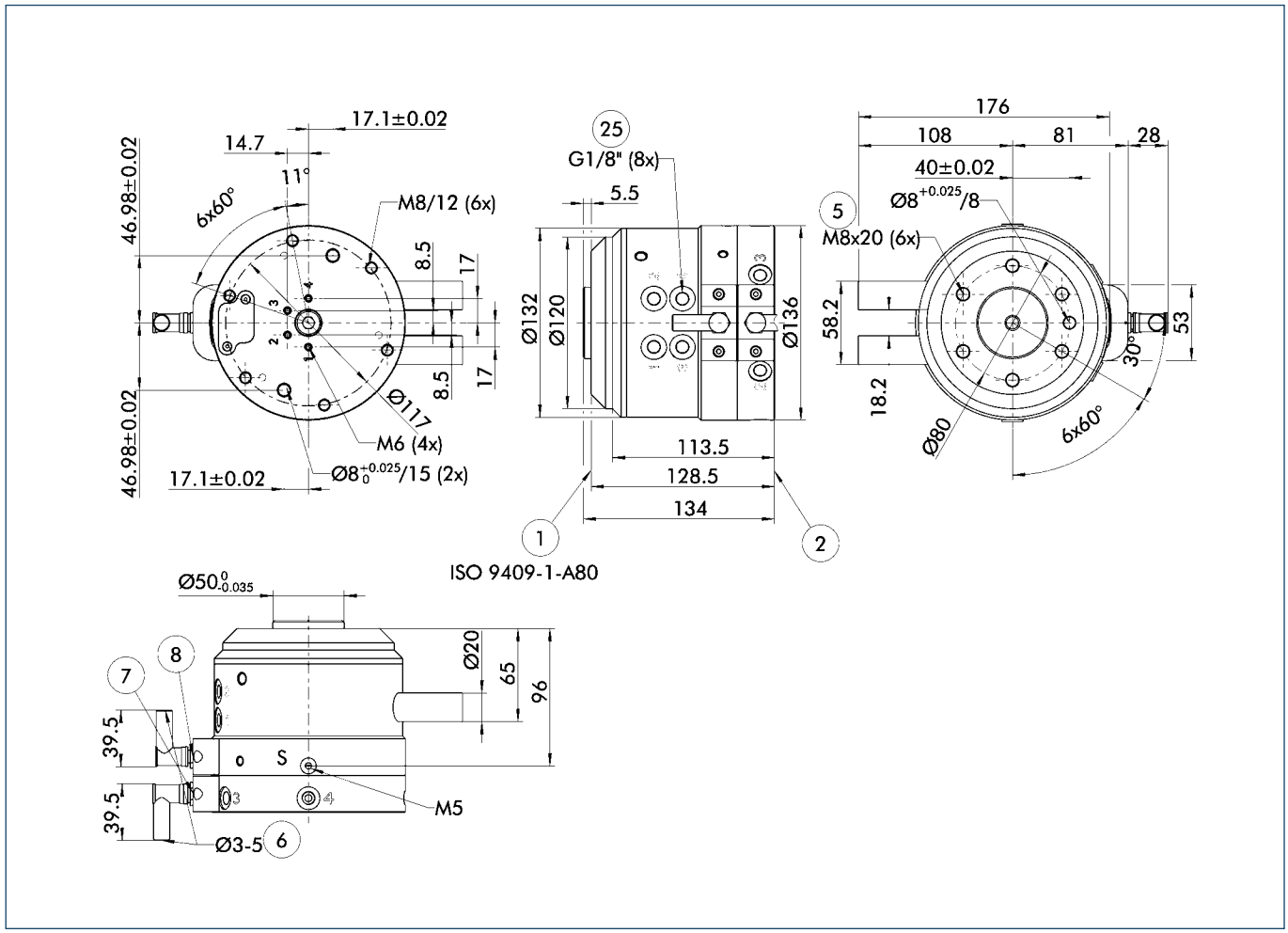


M_x	max. 290 Nm
M_y	max. 290 Nm
F_z	max. 12000 N

Technical data

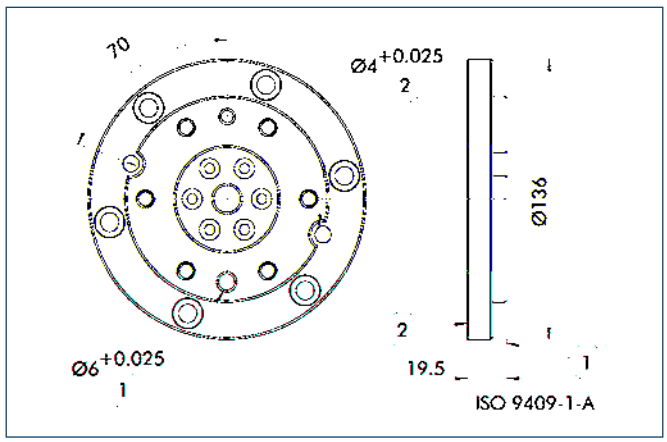
Designation		DDF-080-KS
	ID	0323090
Weight	[kg]	5.4
Max. speed	[min^{-1}]	100
Max. speed	[°/s]	600
Constant torque	[Nm]	20
Starting torque (after shutdown)	[Nm]	32
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-80-6-M8
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-080 adapter plates



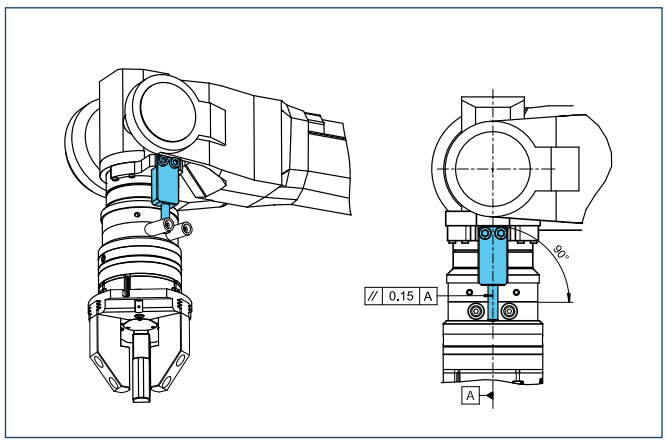
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-80-6-M8 screw connection diagram

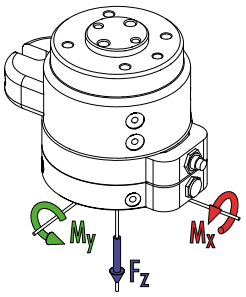
Designation	ID	Height
A-DDF-080	0323224	19.5 mm

Assembly notes



DDF-080-1

Forces and moments

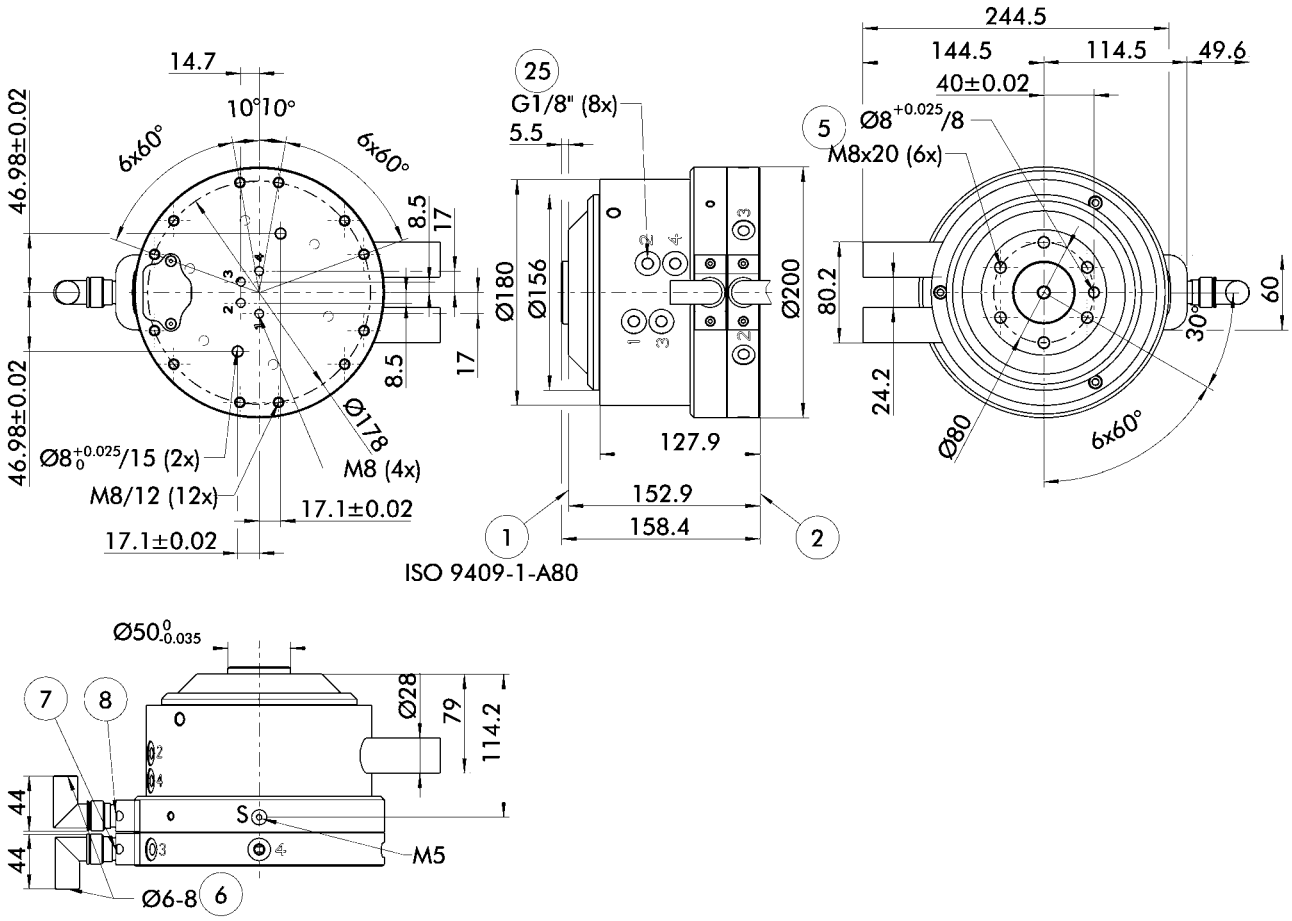


M_x	max. 500 Nm
M_y	max. 500 Nm
F_z	max. 12000 N

Technical data

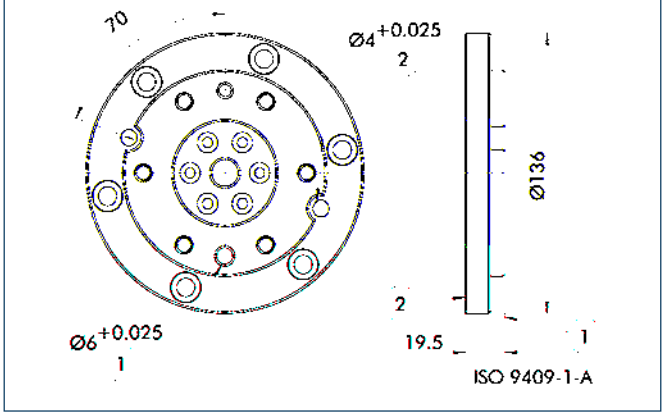
Designation		DDF-080-1-KS
	ID	0323091
Weight	[kg]	11
Max. speed	[min^{-1}]	90
Max. speed	[°/s]	540
Constant torque	[Nm]	42
Starting torque (after shutdown)	[Nm]	60
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-80-6-M8
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-080 adapter plates



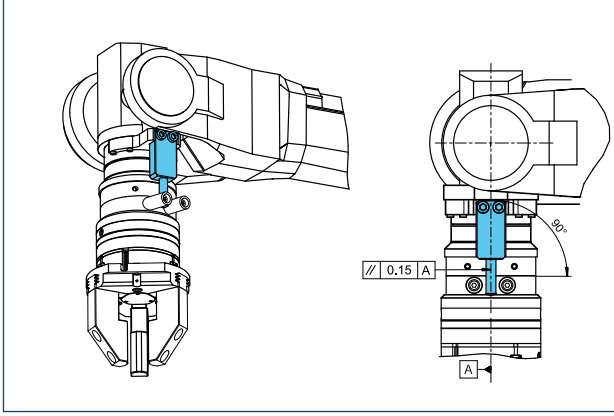
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-80-6-M8 screw connection diagram

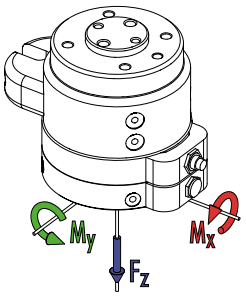
Designation	ID	Height
A-DDF-080	0323224	19.5 mm

Assembly notes



DDF-100

Forces and moments

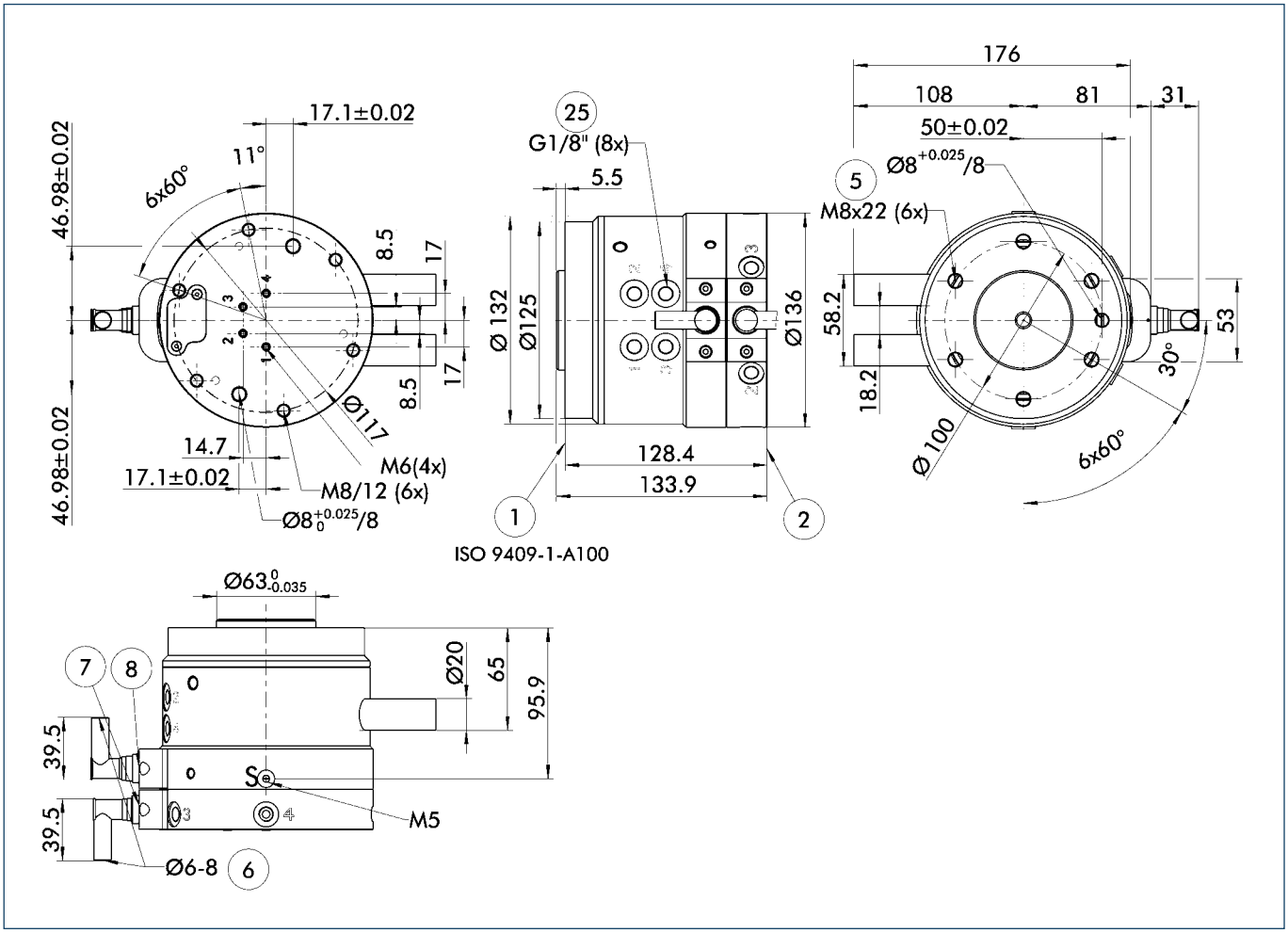


M_x max. 290 Nm
M_y max. 290 Nm
F_z max. 12000 N

Technical data

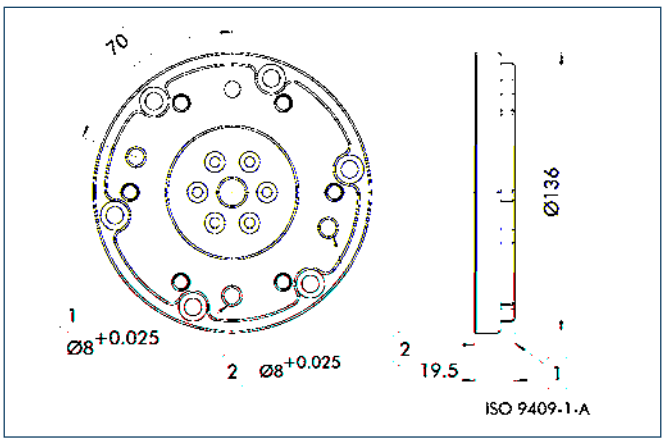
Designation		DDF-100-KS
	ID	0323110
Weight	[kg]	5.6
Max. speed	[min^{-1}]	100
Max. speed	[°/s]	600
Constant torque	[Nm]	20
Starting torque (after shutdown)	[Nm]	32
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-100-6-M8
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-100 adapter plates



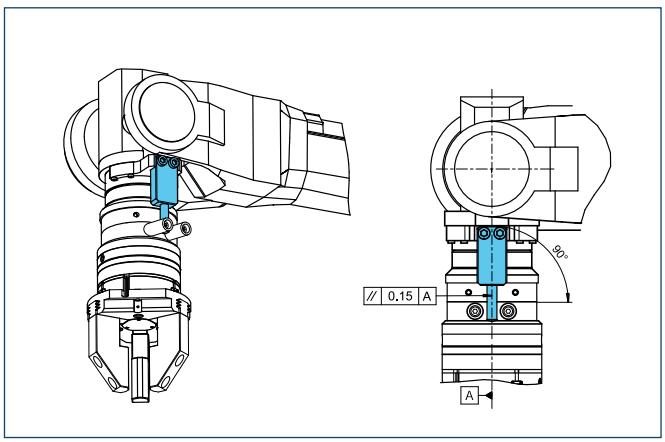
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-100-6-M8 screw connection diagram

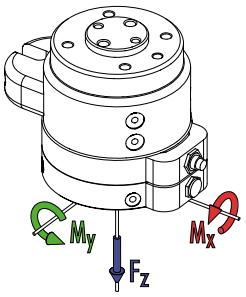
Designation	ID	Height
A-DDF-100	0323225	19.5 mm

Assembly notes



DDF-100-1

Forces and moments

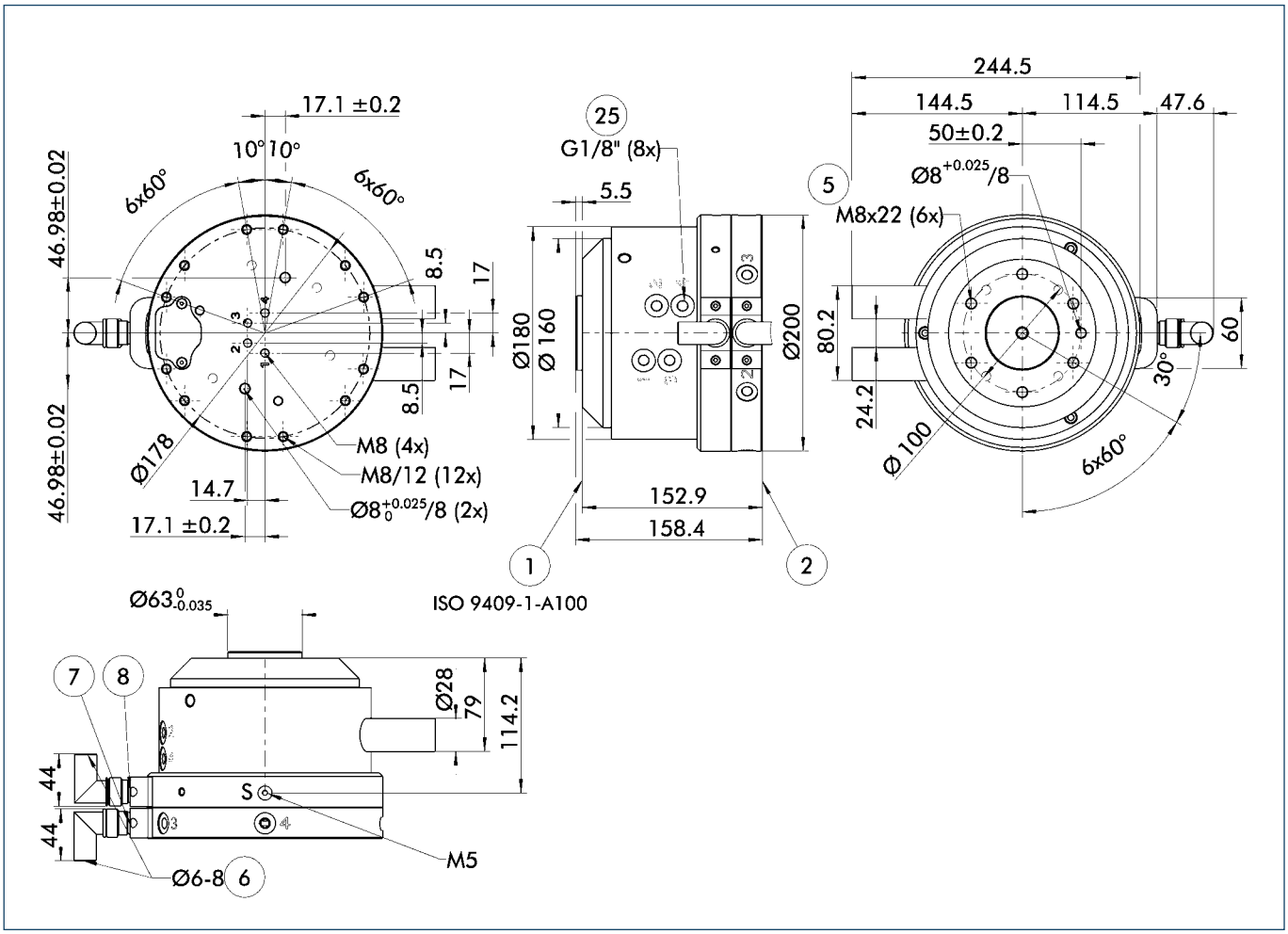


M_x	max. 500 Nm
M_y	max. 500 Nm
F_z	max. 12000 N

Technical data

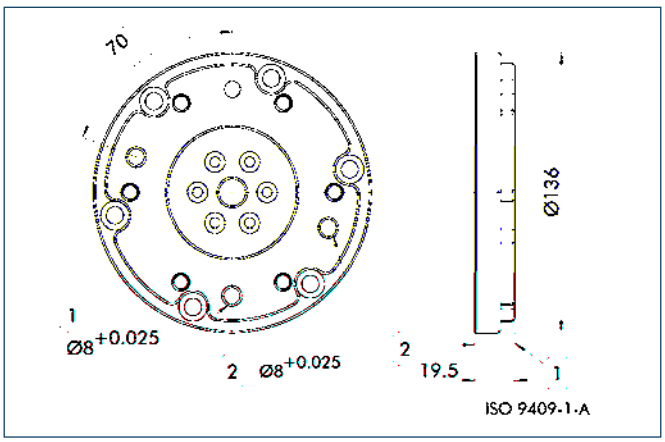
Designation		DDF-100-1-KS
	ID	0323111
Weight	[kg]	11.3
Max. speed	[min^{-1}]	90
Max. speed	[°/s]	540
Constant torque	[Nm]	42
Starting torque (after shutdown)	[Nm]	60
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-100-6-M8
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-100 adapter plates



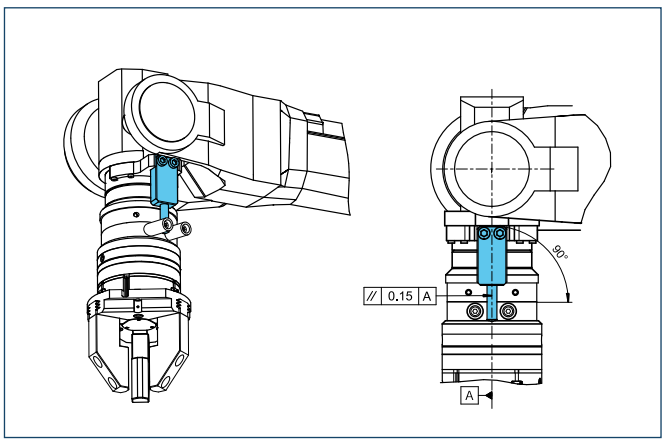
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-100-6-M8 screw connection diagram

Designation	ID	Height
A-DDF-100	0323225	19.5 mm

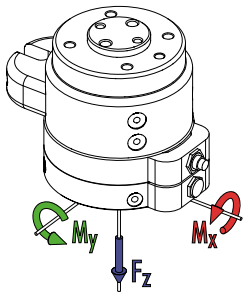
Assembly notes



DDF-125

Feed-through · Rotary Feed-through for Robots

Forces and moments

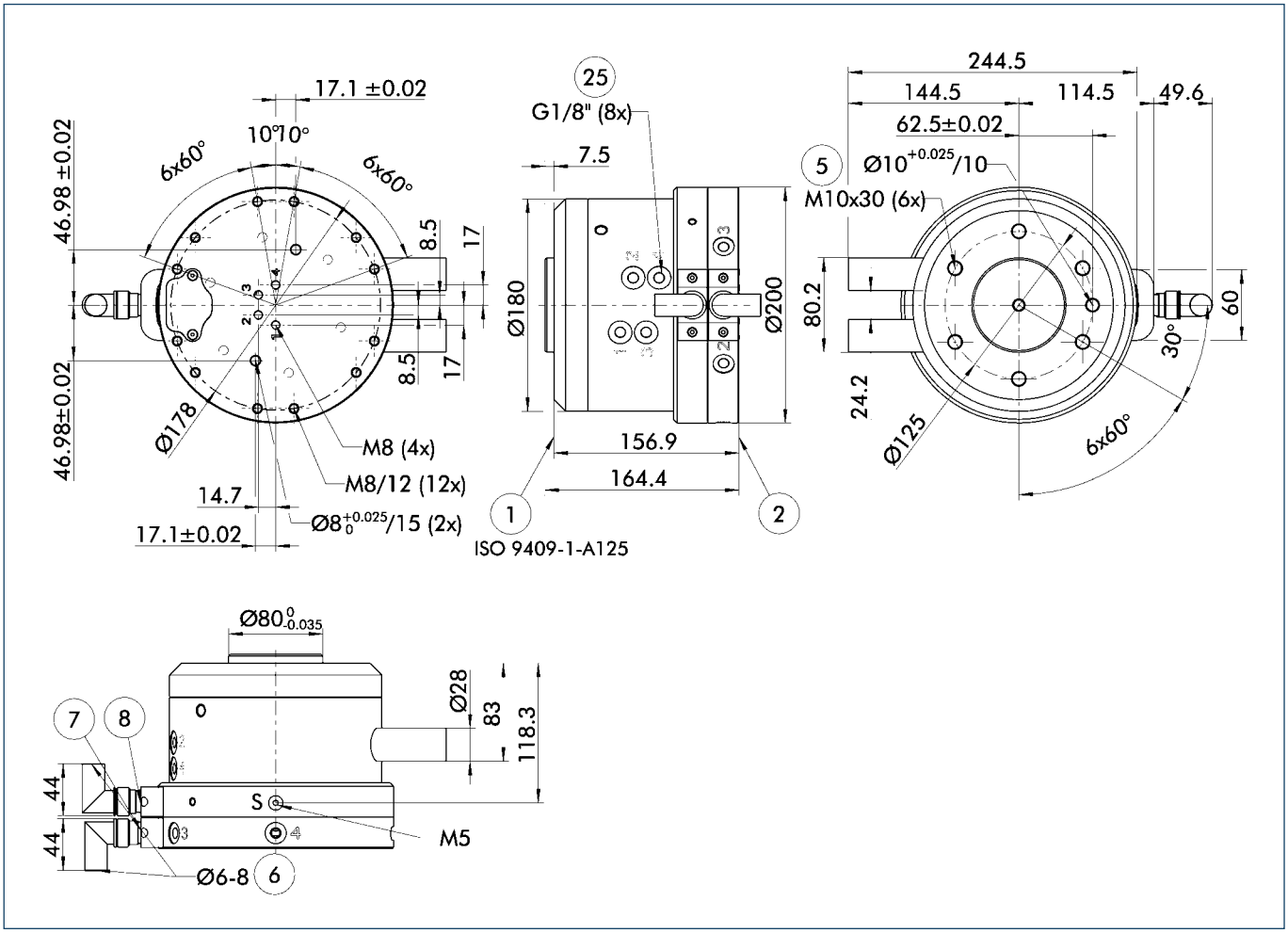


M_x	max. 550 Nm
M_y	max. 550 Nm
F_z	max. 18000 N

Technical data

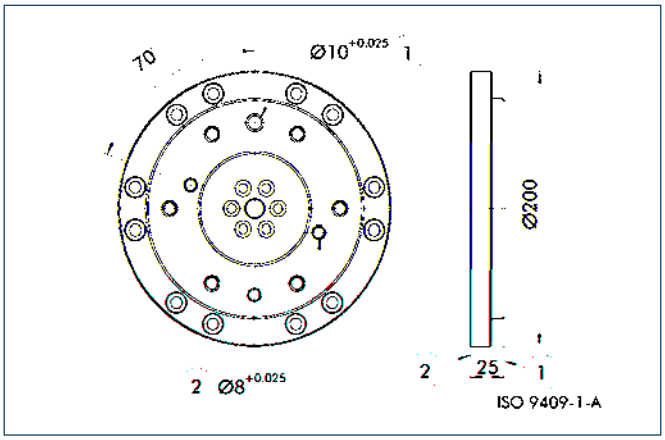
Designation		DDF-125-KS
	ID	0323135
Weight	[kg]	13.5
Max. speed	[min^{-1}]	90
Max. speed	[°/s]	540
Constant torque	[Nm]	42
Starting torque (after shutdown)	[Nm]	60
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-125-6-M10
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-125 adapter plates



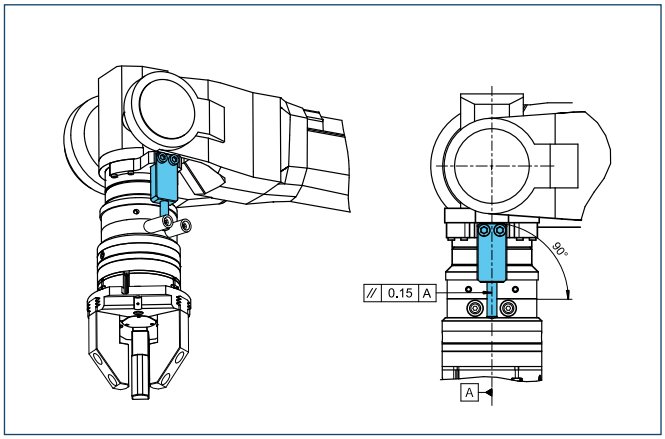
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-125-6-M10 screw connection diagram

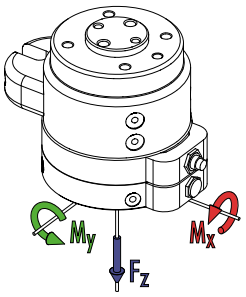
Designation	ID	Height
A-DDF-125	0323226	25 mm

Assembly notes



DDF-125-1

Forces and moments

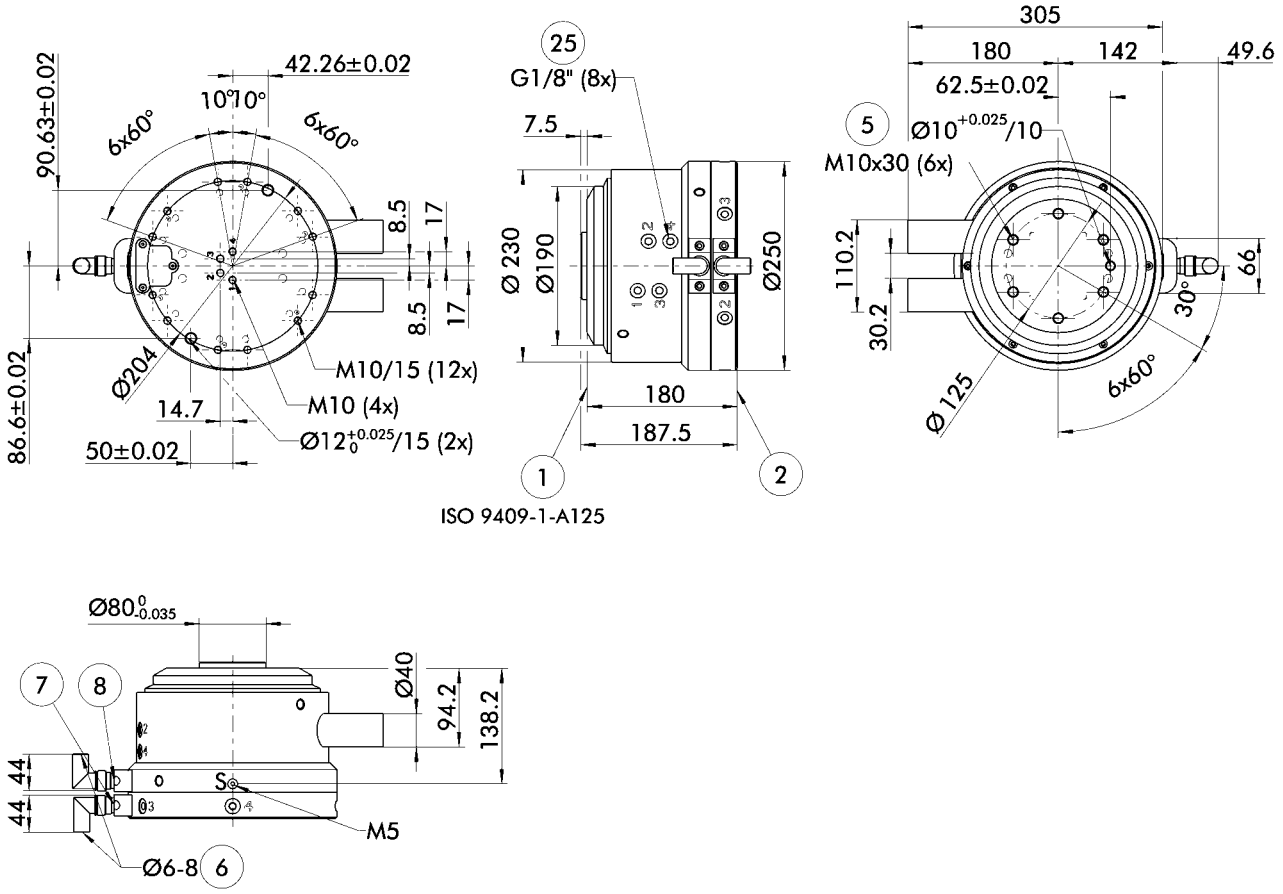


M_x max. 820 Nm
M_y max. 820 Nm
F_z max. 18000 N

Technical data

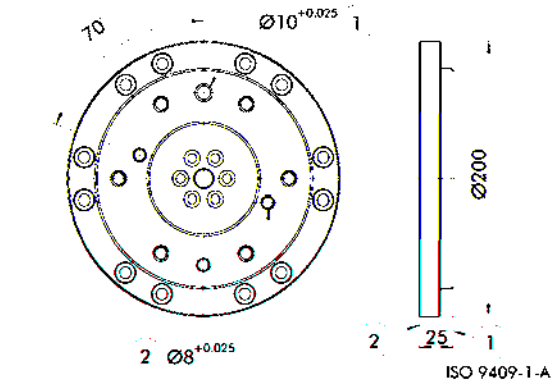
Designation		DDF-125-1-KS
	ID	0323136
Weight	[kg]	21
Max. speed	[min^{-1}]	70
Max. speed	[°/s]	420
Constant torque	[Nm]	65
Starting torque (after shutdown)	[Nm]	95
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-125-6-M10
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-125 adapter plates



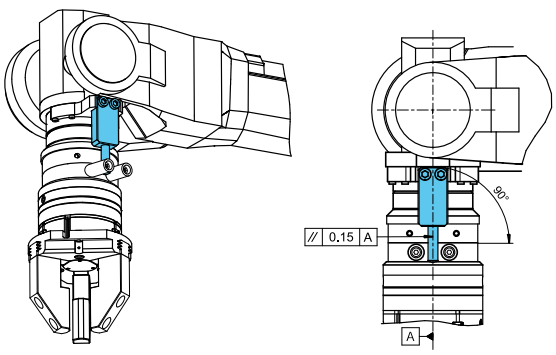
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-125-6-M10 screw connection diagram

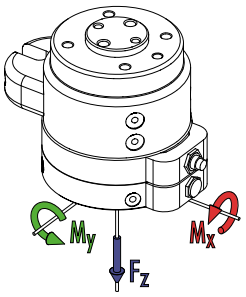
Designation	ID	Height
A-DDF-125	0323226	25 mm

Assembly notes



DDF-160

Forces and moments

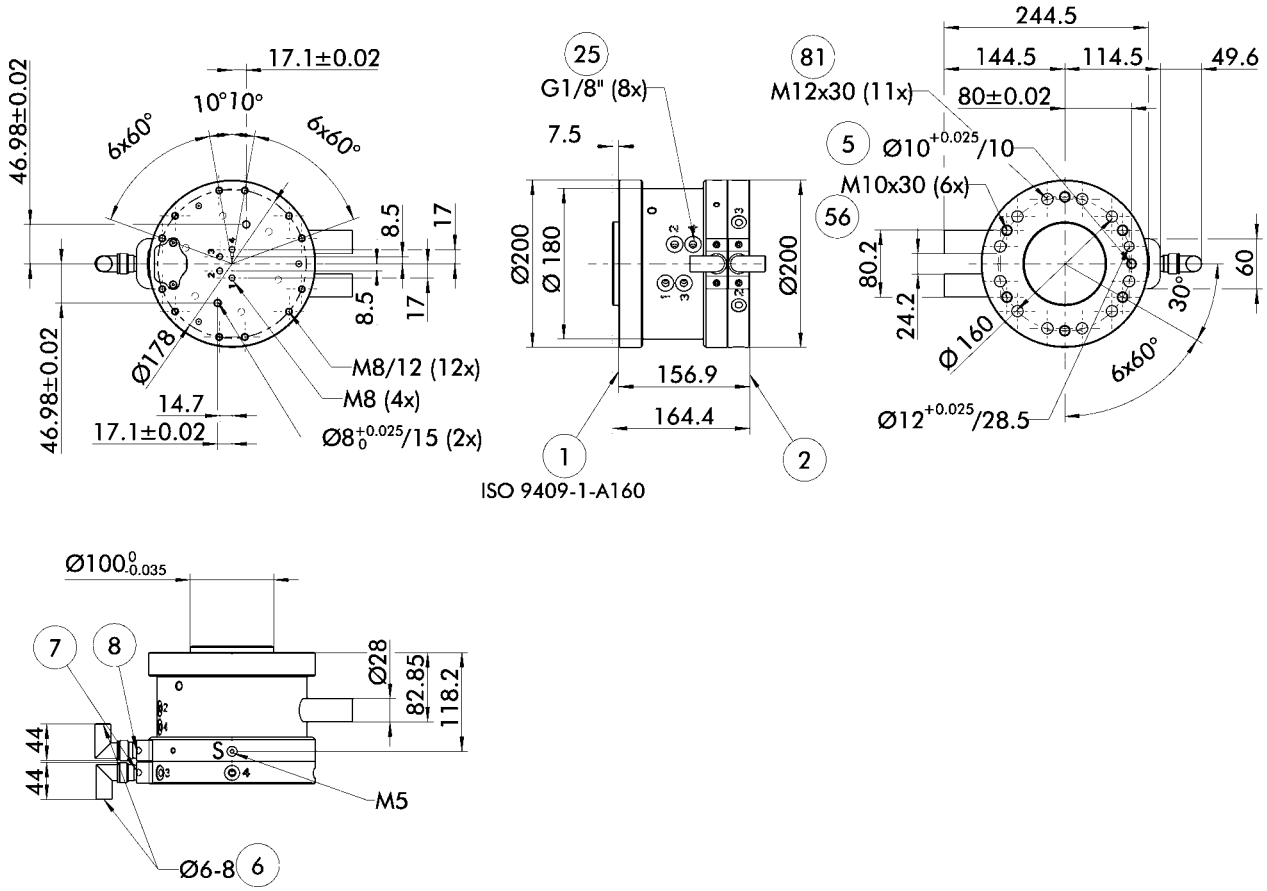


M_x max. 550 Nm
M_y max. 550 Nm
F_z max. 18000 N

Technical data

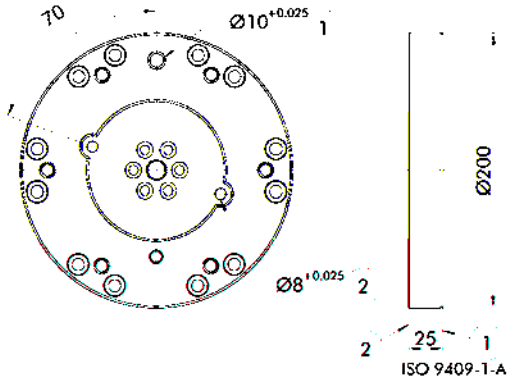
Designation		DDF-160-KS
	ID	0323170
Weight	[kg]	14
Max. speed	[min^{-1}]	90
Max. speed	[°/s]	540
Constant torque	[Nm]	42
Starting torque (after shutdown)	[Nm]	60
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-160-6-M10 / ISO 9409-1-160-11-M12
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through
㊺ Included in scope of delivery
㊽ Not included in scope of delivery

DDF-160 adapter plates



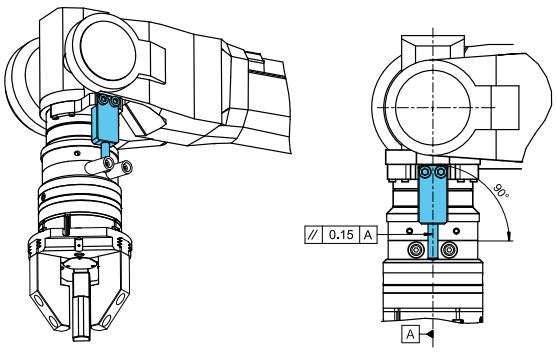
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-160-6-M10 screw connection diagram

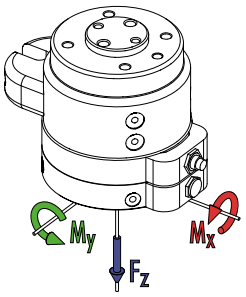
Designation	ID	Height
A-DDF-160	0323227	19 mm

Assembly notes



DDF-160-1

Forces and moments

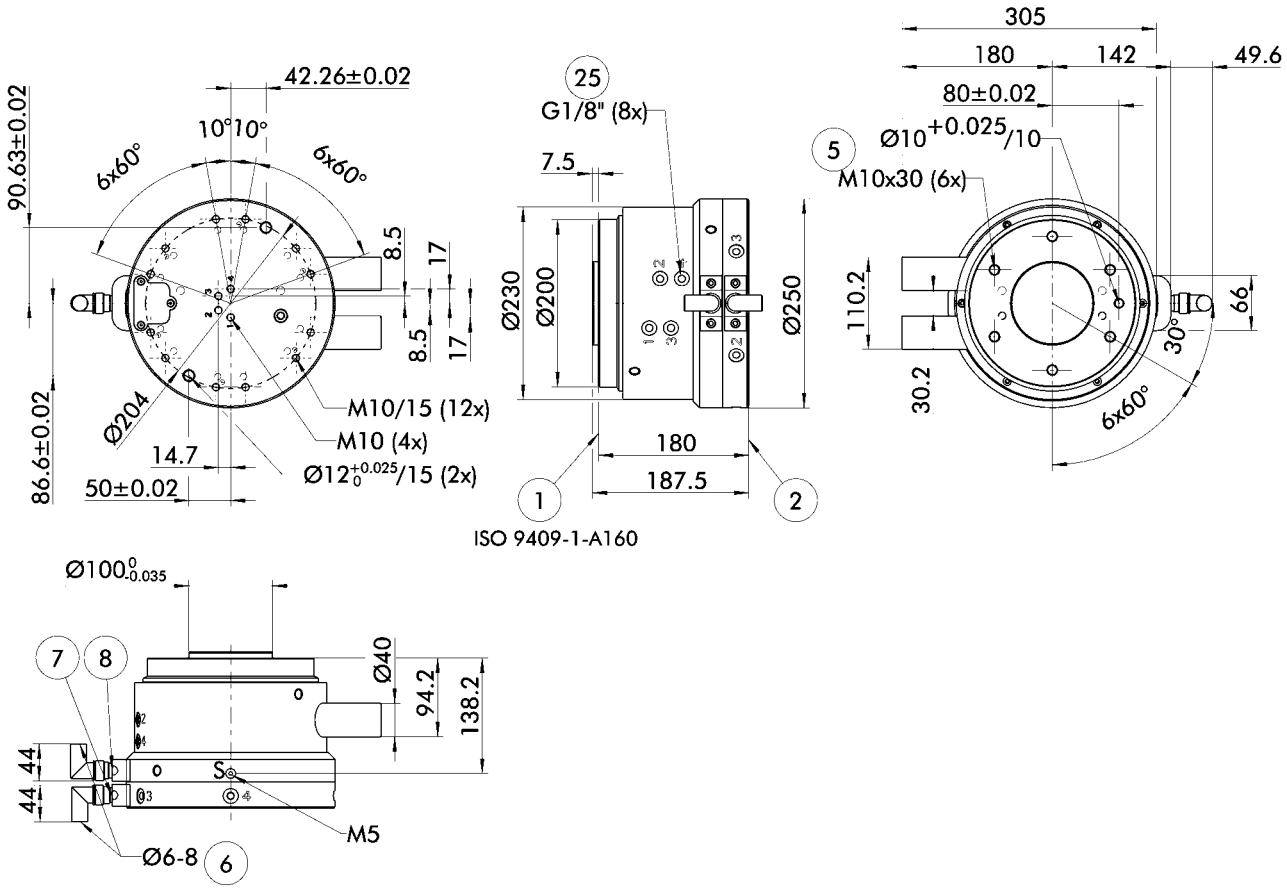


M_x	max. 820 Nm
M_y	max. 820 Nm
F_z	max. 18000 N

Technical data

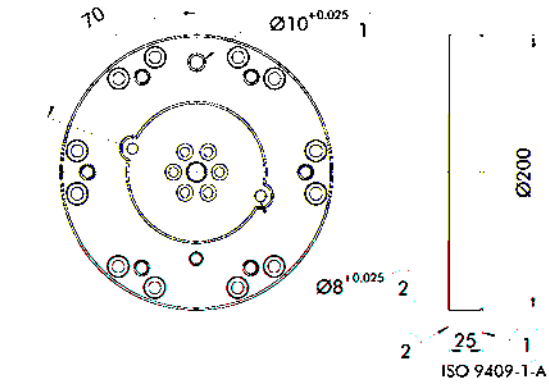
Designation		DDF-160-1-KS
	ID	0323171
Weight	[kg]	22
Max. speed	[min^{-1}]	70
Max. speed	[°/s]	420
Constant torque	[Nm]	65
Starting torque (after shutdown)	[Nm]	95
Rotary movement		Unlimited
Mounting of round, mechanical interface		ISO 9409-1-160-6-M10
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		10 x electr. signals; with max. 60 V; 1 A

Main views



S Air purge connection
① Robot-side connection
② Tool-side connection
⑤ Through-bore for screw connection with screw (enclosed)
⑥ Usable cable diameter
⑦ Cable bushing enclosed
⑧ Cable connector enclosed
㉕ Air feed-through

DDF-160 adapter plates



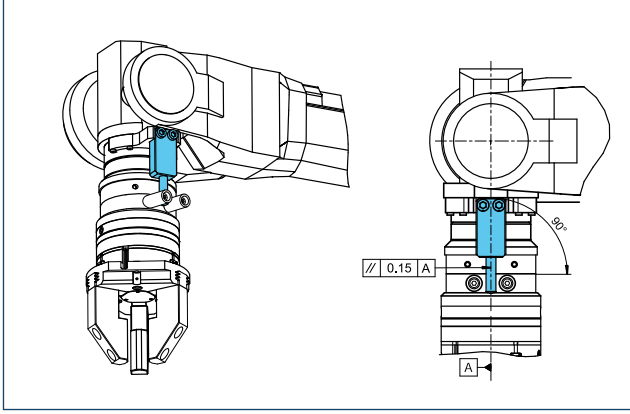
① Robot-side connection
② Tool-side connection

Adapter plate

Tool-side adapter plate with ISO 9409-1-160-6-M10 screw connection diagram

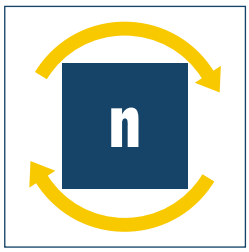
Designation	ID	Height
A-DDF-160	0323227	19 mm

Assembly notes



DDF-SE

Sizes
080 .. 120



Max. speed
500 revs/ min

Air feed-through
Up to 6x

Electrical feed-throughs
Up to 8x

Application example

Turning a component for laser welding or centrifugal drying

1. Drive Motor
2. Coupling
3. DDF-SE 080 Stationary Rotary Feed-through
4. PZB 2-Finger Parallel Gripper

Stationary Feed-through

Pneumatic and electric rotary feed-through for stationary use

Area of application

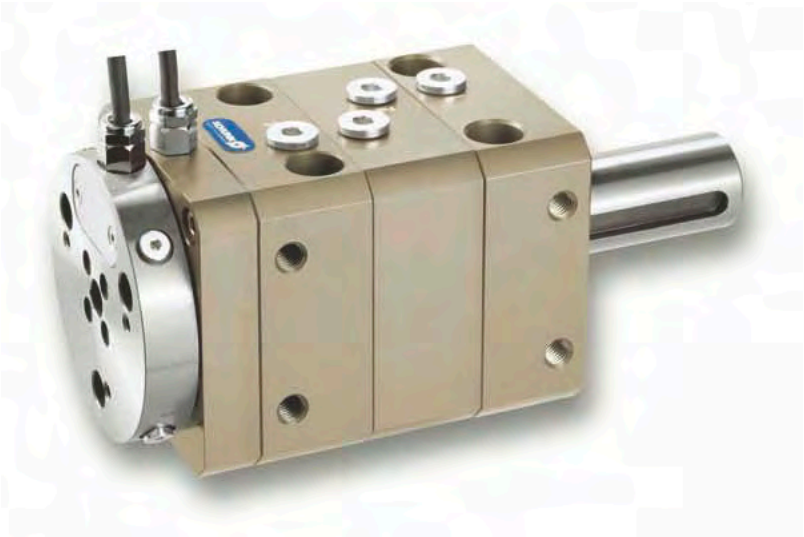
For use on rotary indexing tables and rotating grippers

Your advantages and benefits

Combined air and electrical feed-through
for extensive supply to your gripping system

Standardized shaft end
for easy gear assembly

Up to 500 1/min
your gripping system will be ensured a reliable pneumatics and electrics supply, even with fast rotary movements



General information on the series

Pneumatics feed-through
Up to six feed-throughs with a max. of 10 bar

Electrical feed-throughs
Via slip rings, up to eight electrical signals with max. 60 V and 1 A

Material
The rotary feed-through is made from a high-strength, hard-coated aluminum alloy. The shaft is made from hardened steel.

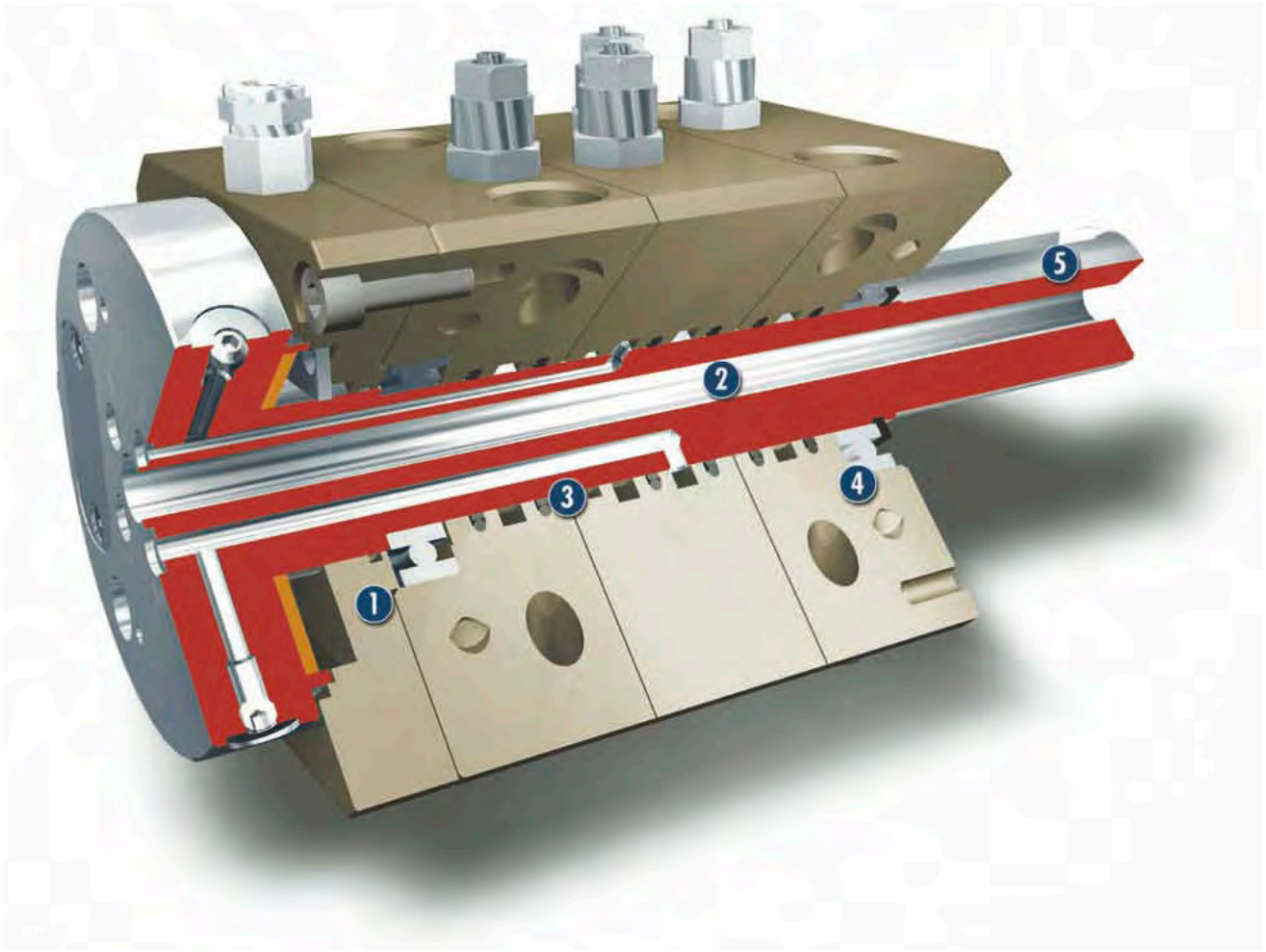
Assembly position
Optional

Operating temperature
From 5 °C to 60 °C

Scope of delivery
Centering sleeves for mounting and direct connection, operating manual, maintenance instructions, manufacturer's declaration

Warranty
24 months

Sectional diagram



1 Slip Ring
as electrical feed-through for up to eight signals

2 Center Bore
end-to-end for workpieces, sensor systems and actuators

3 Pneumatics Feed-through
to supply grippers, linear units and other actuators

4 Ball Bearings
to absorb strong forces and large moments

5 Steel Shaft with Keyway
for fast and direct mounting

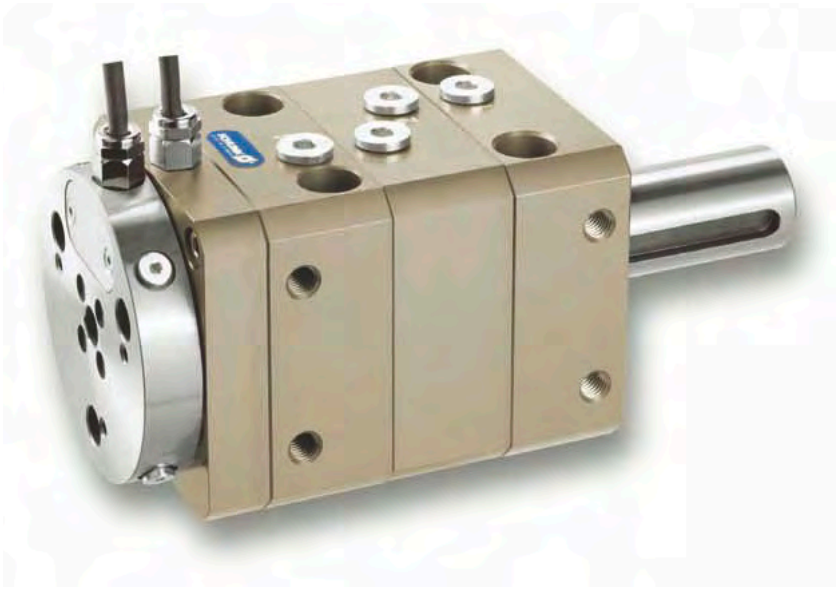
Function description

The DDF-SE facilitates rotation of your tool by more than 360°, without hoses and cables twisting around the axis. Integrated slip ring contacts reliably supply the tool with power, even at high speeds (500 min^{-1}). In addition to the electric leads, up to six pneumatic leads are fed through.
The drive motor is flange-mounted via a standardized shaft end with keyway. In order to minimize the offset between the motor and the DDF-SE, a coupling must be provided.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Fittings



ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

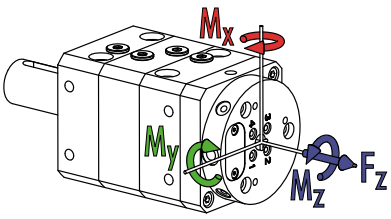
General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

DDF-080 SE

Forces and moments

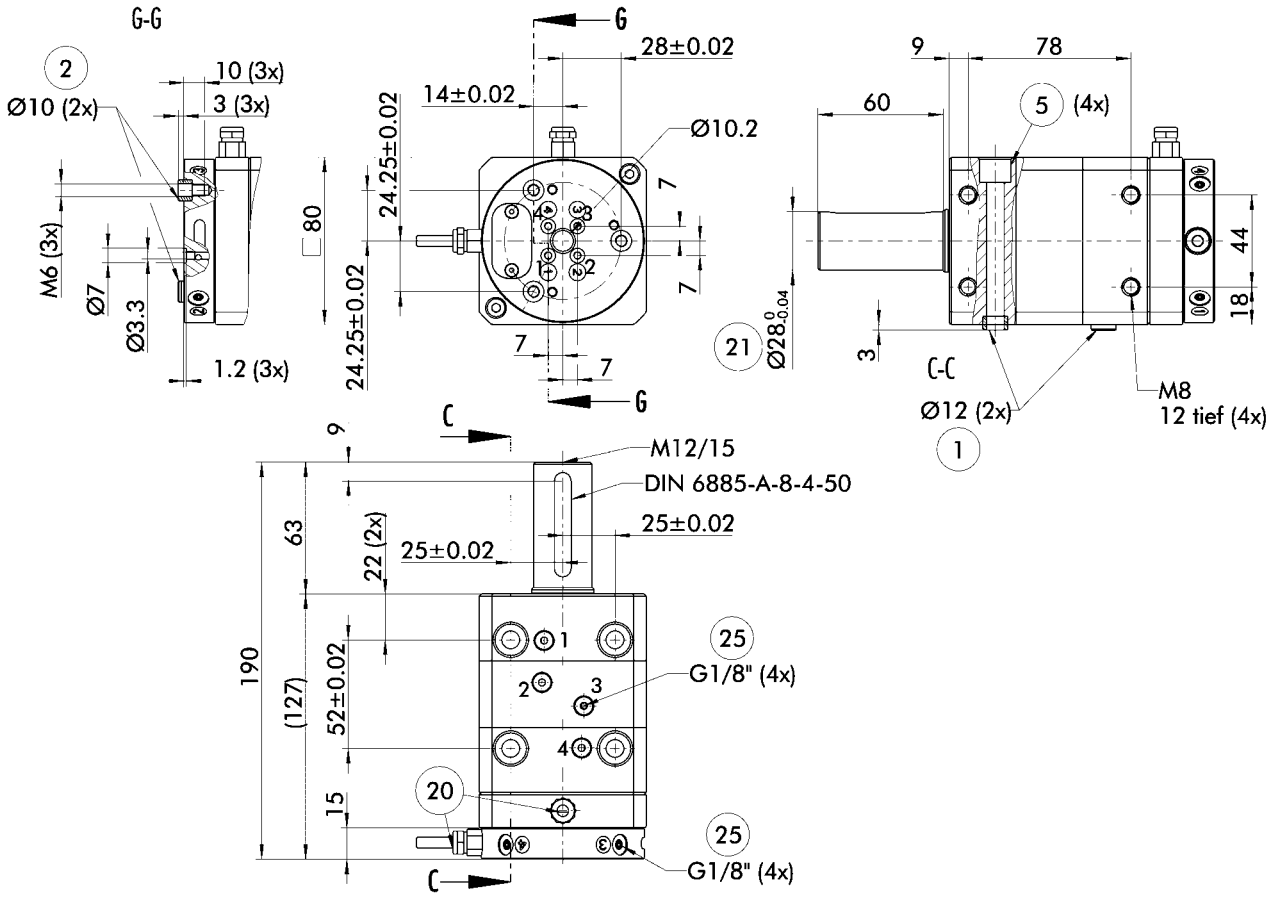


- M_x max. 60 Nm
- M_y max. 60 Nm
- M_z max. 60 Nm
- F_z max. 2000 N

Technical data

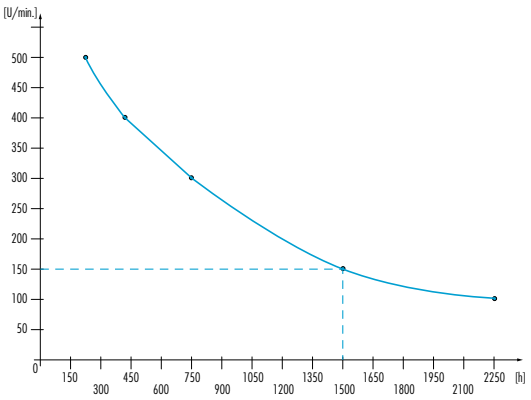
Designation		DDF-080 SE
	ID	0323280
Weight	[kg]	3.3
Max. speed	[min^{-1}]	500
Max. acceleration	[m/s^2]	20
Constant torque	[Nm]	4
Starting torque (after shutdown)	[Nm]	5
Rotary movement		Unlimited
Mounting		Threaded holes for centering sleeves
Energy transmission		
Air		4 x compressed air up to 10 bar
Electrical energy		6 x electr. signals; with max. 60 V; 1 A

Main views



① Connection of module
② Tool-side connection
⑤ Through-bore for screw connection with screw
⑳ Connection for electrical feed-through
㉑ Drive connection
㉕ Air feed-through

Life span of seals



Life span of seals (at pressure of 6 bar)

Example

DDF-080 SE is driven constantly at 150 min^{-1} in 3-shift operation (24 hours).

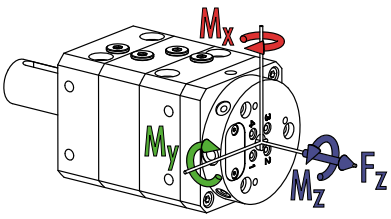
Life span of seals

After 1500 hours the seals should be changed.
(Seal set is available from SCHUNK)

Designation	ID
DSA for DDF-080 SE	0370280

DDF-120 SE

Forces and moments

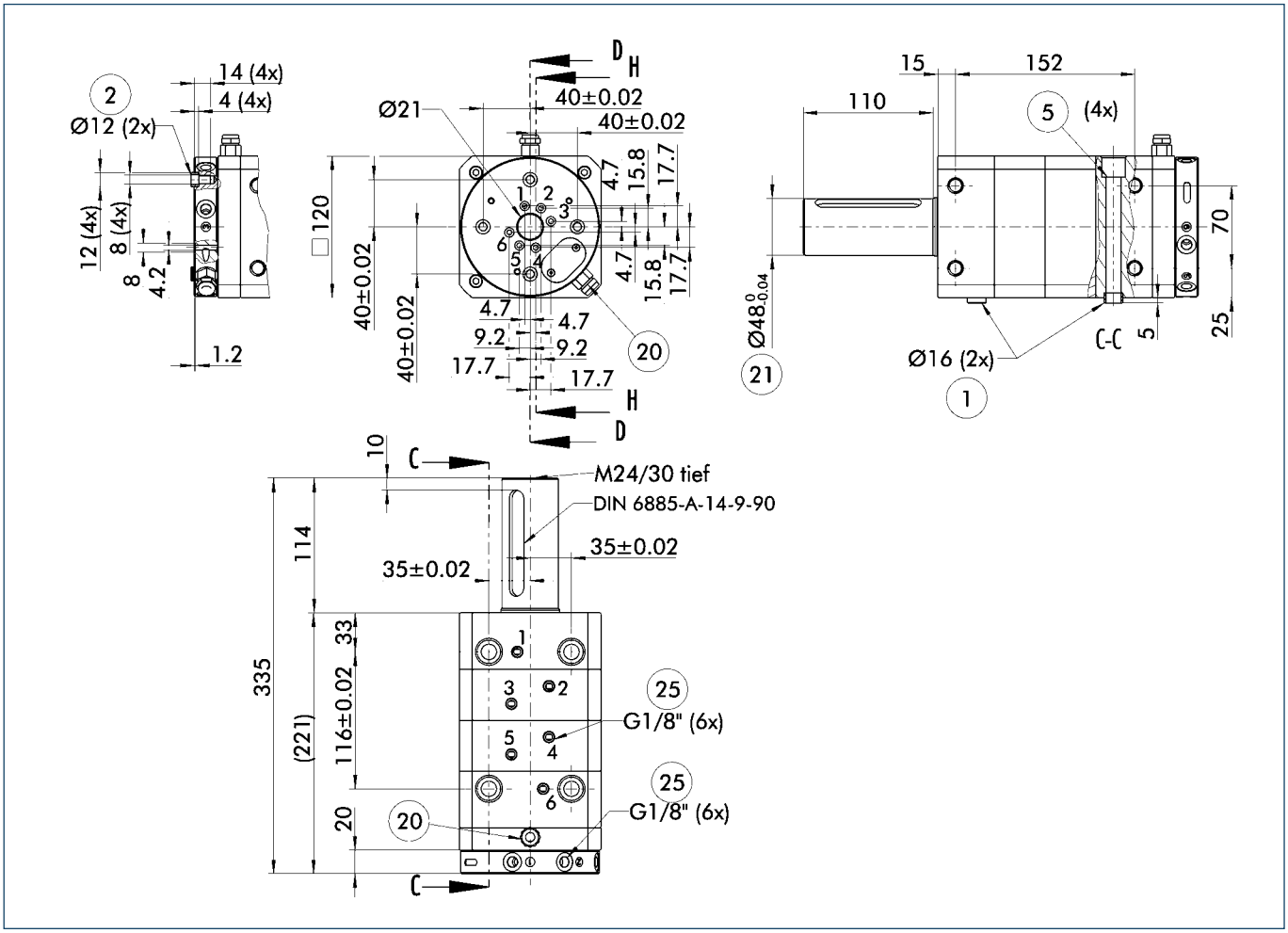


- M_x max. 250 Nm
- M_y max. 250 Nm
- M_z max. 250 Nm
- F_z max. 4000 N

Technical data

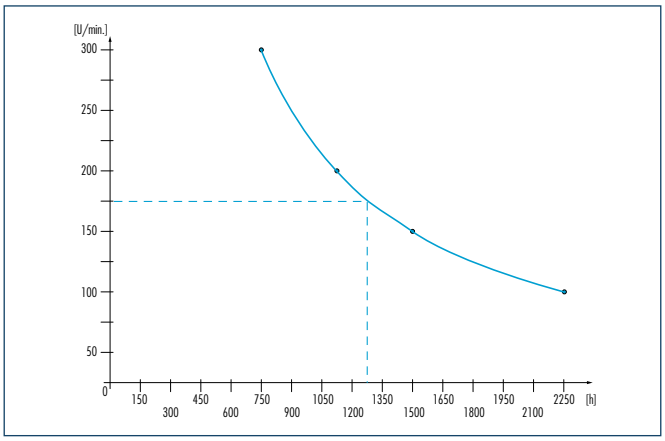
Designation		DDF-120 SE
	ID	0323285
Weight	[kg]	9
Max. speed	[min^{-1}]	300
Max. acceleration	[m/s^2]	20
Constant torque	[Nm]	13
Starting torque (after shutdown)	[Nm]	20
Rotary movement		Unlimited
Mounting		Threaded holes for centering sleeves
Energy transmission		
Air		6 x compressed air up to 10 bar
Electrical energy		8 x electr. signals; with max. 60 V; 1 A

Main views



① Connection of module
② Tool-side connection
⑤ Through-bore for screw connection with screw
⑳ Connection for electrical feed-through
㉑ Drive connection
㉕ Air feed-through

Life span of seals



Life span of seals (at pressure of 6 bar)

Example

DDF-120 SE is driven constantly at 175 min^{-1} in 3-shift operation (24 hours).

Life span of seals

After 1300 hours the seals should be changed. (Seal set is available from SCHUNK)

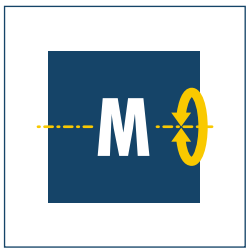
Designation	ID
DSA for DDF-120 SE	0370280

Protecting

PROTECTING

Sizes
080 .. 200

Triggering force F_z
100 N .. 22400 N



Triggering torque M_x
1.2 Nm .. 2140 Nm

Triggering torque M_y
1.2 Nm .. 2140 Nm

Triggering torque M_z
2.1 Nm .. 1850 Nm

Application example

Assembly unit for intermediate sleeves with a variety of diameters. The unit is protected by an anti-collision device to prevent damage.

1. **PFH 30 2-Finger Parallel Gripper with workpiece-specific gripper fingers**
2. **OPS-100 Collision and Overload Protection**

Collision and Overload Protection

Collision and overload protection for protecting robots and handling units against damage resulting from collisions or overload conditions.

Area of application

Standard solution for all robot applications whereby the robot, the tool or the workpiece are to be protected in the event of a collision

Your advantages and benefits

Triggering force and torque can be adjusted via the operating pressure
for optimum protection of your components

Integrated monitoring
for signal transmission in the event of a collision, whereby the robot can be stopped

ISO adapter plates as an option
for easy mounting to most types of robots

General information on the series

Working principle
Integrated cylinder piston

Housing material
Aluminum, anodized

Actuation
Pneumatic, with filtered compressed air (10 µm): dry or lubricated

Maintenance
Maintenance-free

Assembly position
Optional

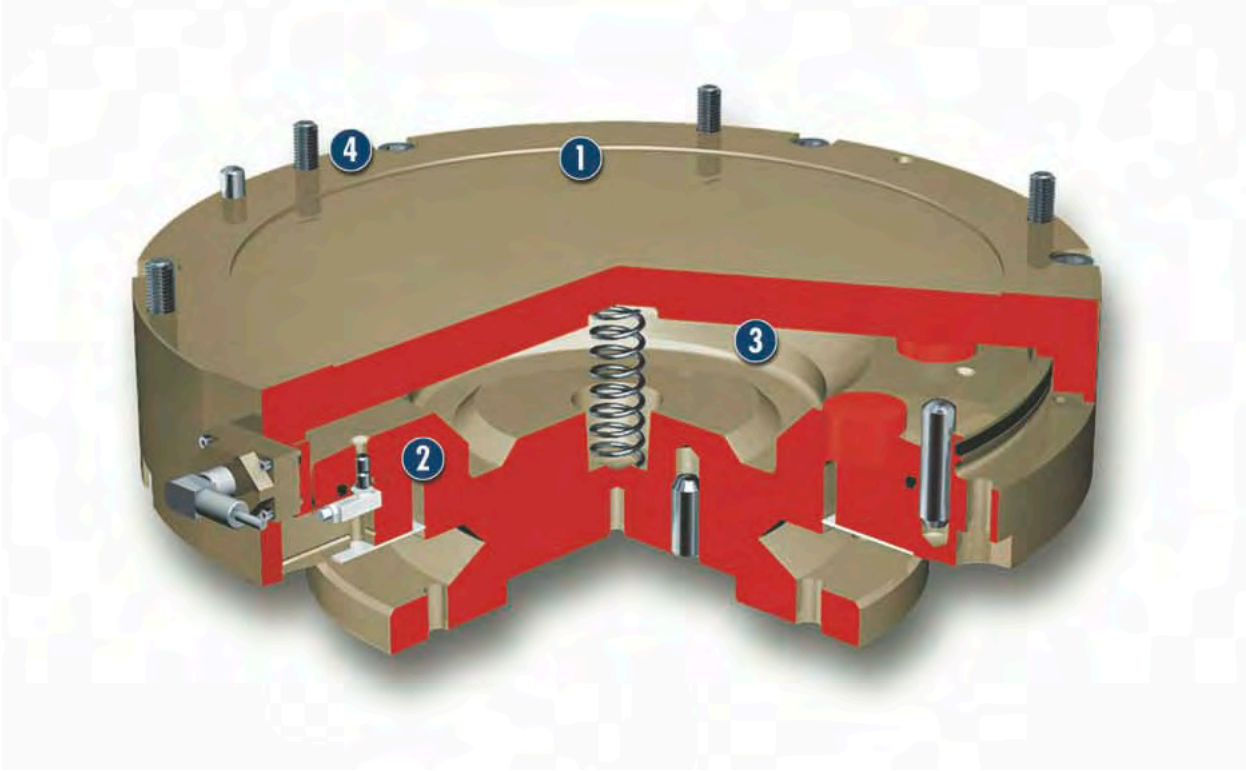
Ambient temperature
From 5 °C to 60 °C

Scope of delivery
Right-angle coupling with 5 m cable, operating manual, maintenance instructions, manufacturer's declaration

Accessories
Adapter plates for mounting directly to flange ISO 9409-1A...

Warranty
24 months

Sectional diagram



1 **Housing**
weight-reduced through the use of a hard-anodized, high-strength aluminum alloy

2 **Sensor System**
for reliable electronic monitoring

3 **Drive**
pneumatic for easy adjustment of the sensitivity

4 **Centering and Mounting Options**
for easy mounting of your handling device

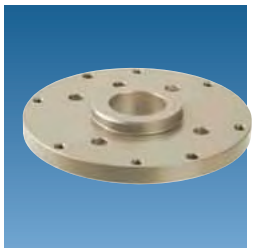
Function description

In the event of a collision, the tool plate deflects while simultaneously actuating the system's emergency stop mechanism. After deflection, the OPS can be manually reset and the system can be brought back to its original position.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Adapter plates



Fittings

Sensor cables

ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

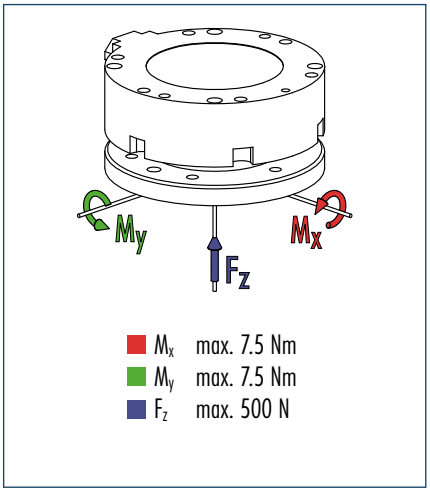
General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life span of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

OPS-080

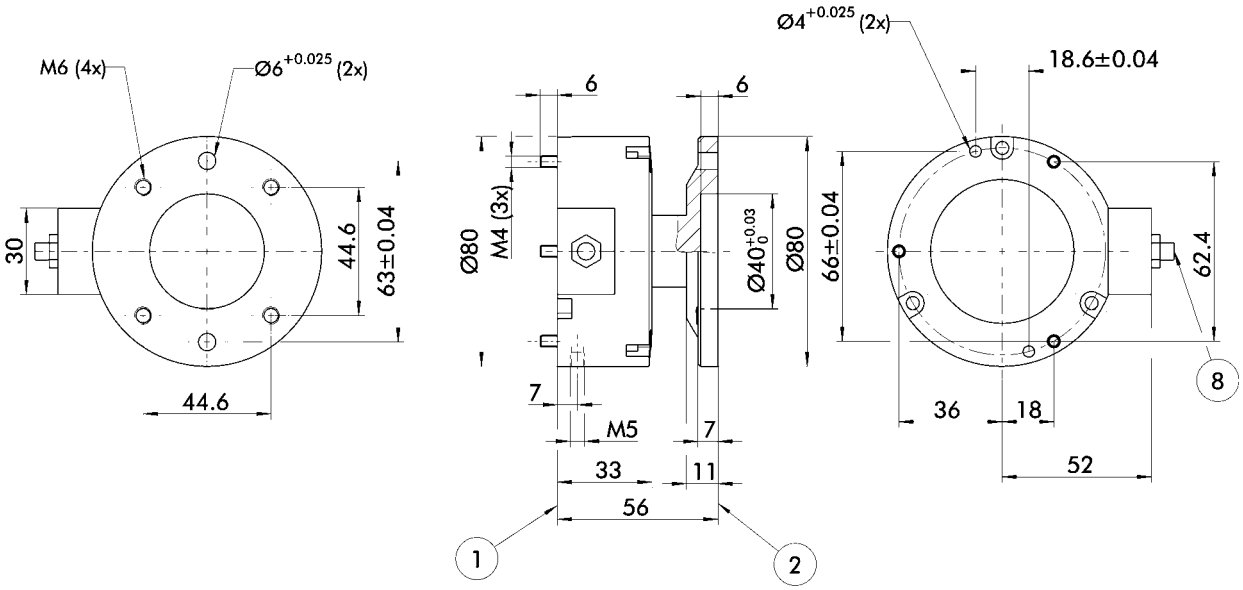
Forces and moments



Technical data

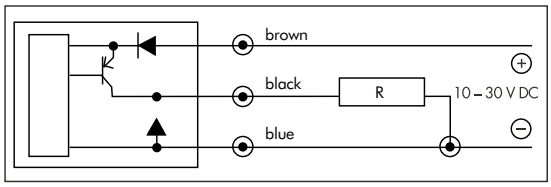
Designation		OPS-080	
	ID	0321125	
Axial deflection	[mm]	12	
Angular deflection	[°]	± 12	
Min. ambient temperature	[°C]	5	
Max. ambient temperature	[°C]	60	
Sensitivity	[mm]	< 0.1	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	0.5 - 3.0	
Weight	[kg]	0.4	
Supply voltage	[VDC]	10 ... 30	Residual ripple max. 10 %
Max. current input without load	[mA]	6	
Max. voltage drop	[V]	3.5	
Output (switching)		PNP	
Max. output current - resistive load	[mA]	180 (short circuit proof)	

Main views

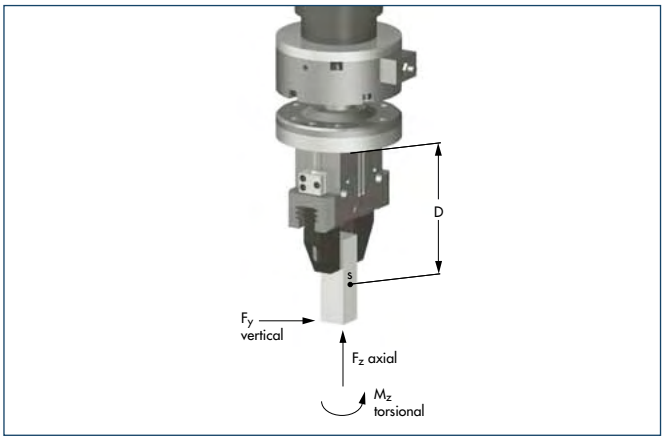


① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

Output circuit diagram



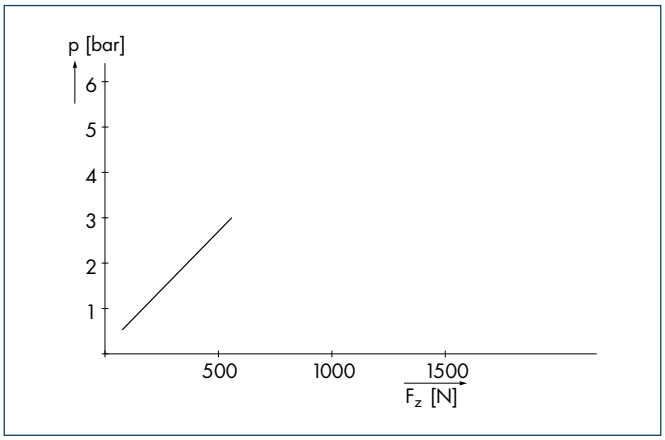
Calculating the intake air pressure (P) for OPS-080



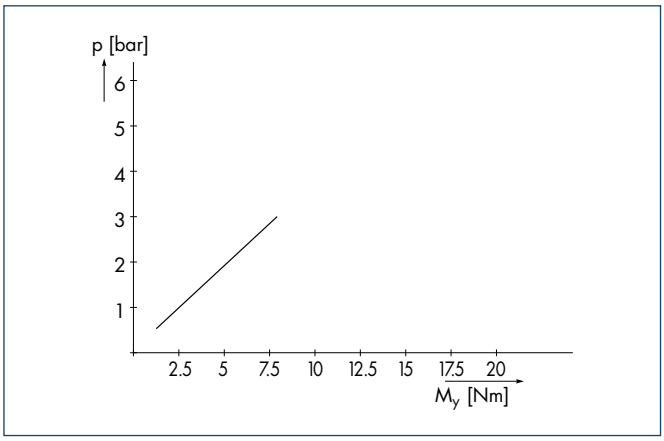
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

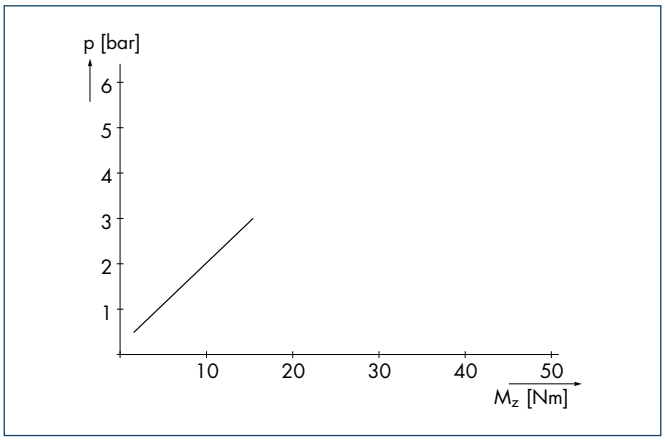
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

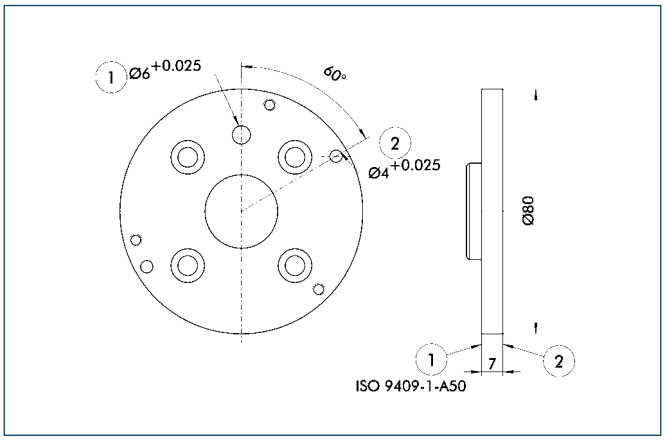


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A50

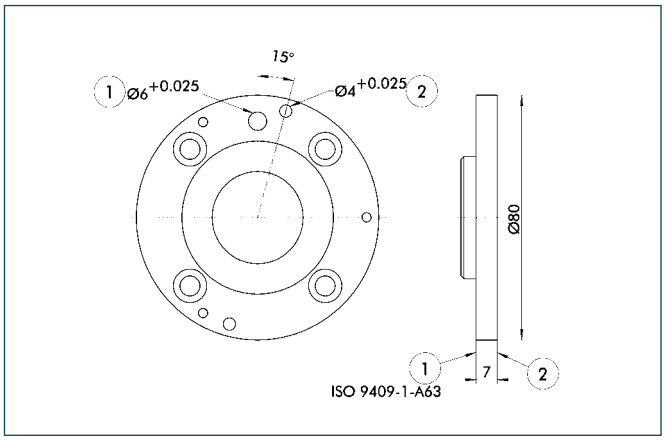


① Robot-side connection
② Tool-side connection

For mounting the OPS-080 directly to a flange in accordance with ISO 9409-1-A50

Designation	ID
A-OPS-080-ISO-A50-R	0321114

Adapter plate A63



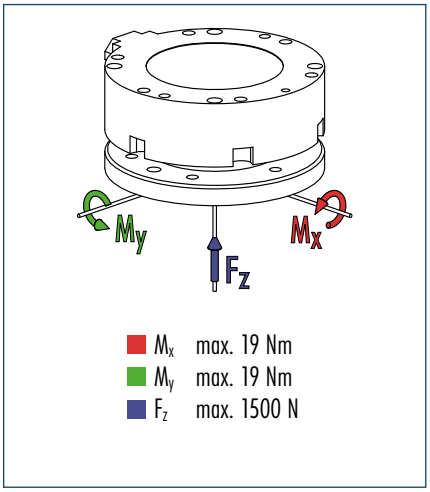
① Robot-side connection
② Tool-side connection

For mounting the OPS-080 directly to a flange in accordance with ISO 9409-1-A63

Designation	ID
A-OPS-080-ISO-A63-R	0321115

OPS-100

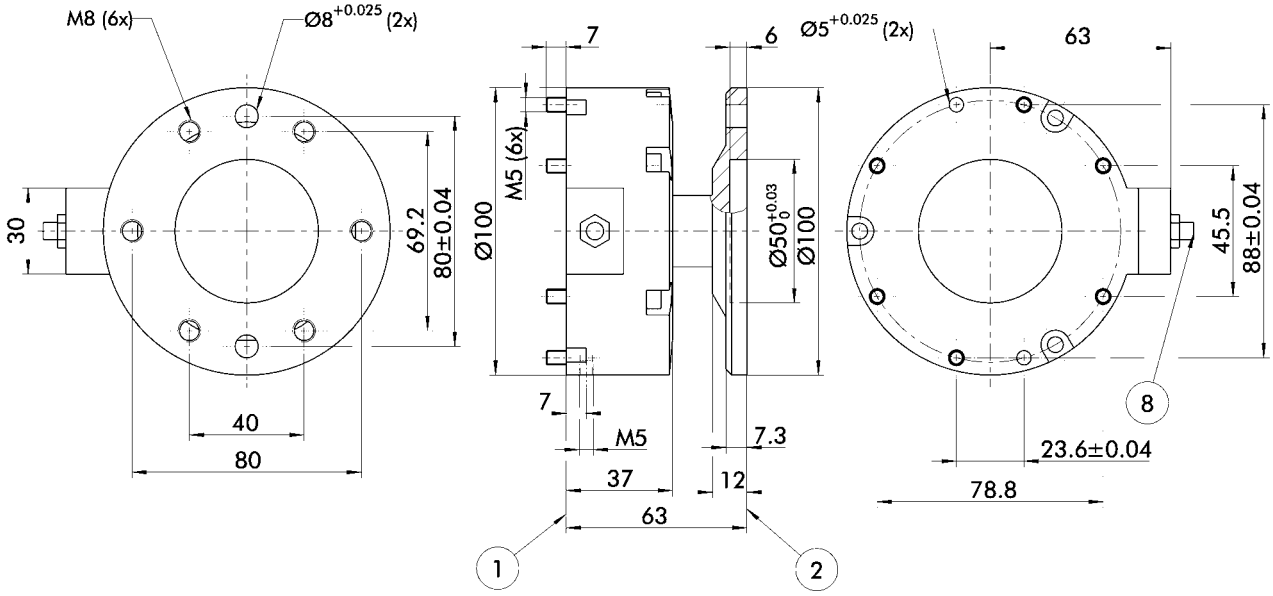
Forces and moments



Technical data

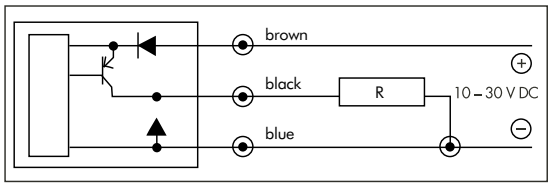
Designation		OPS-100	
	ID	0321130	
Axial deflection	[mm]	14	
Angular deflection	[°]	± 12	
Min. ambient temperature	[°C]	5	
Max. ambient temperature	[°C]	60	
Sensitivity	[mm]	< 0.1	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	0.5 - 5.0	
Weight	[kg]	0.7	
Supply voltage	[VDC]	10 ... 30	Residual ripple max. 10 %
Max. current input without load	[mA]	6	
Max. voltage drop	[V]	3.5	
Output (switching)		PNP	
Max. output current - resistive load	[mA]	180 (short circuit proof)	

Main views

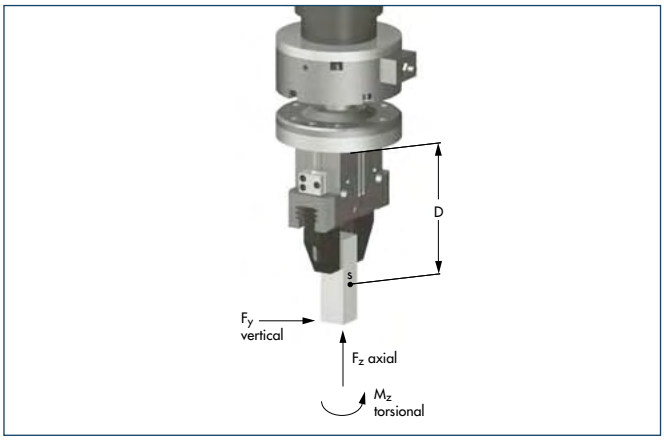


① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

Output circuit diagram



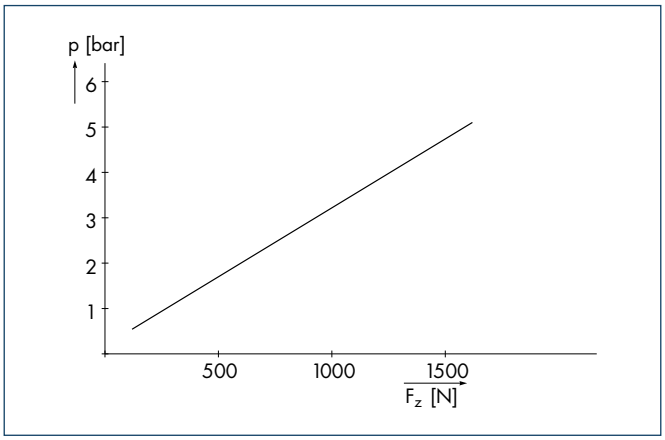
Calculating the intake air pressure (P) for OPS-100



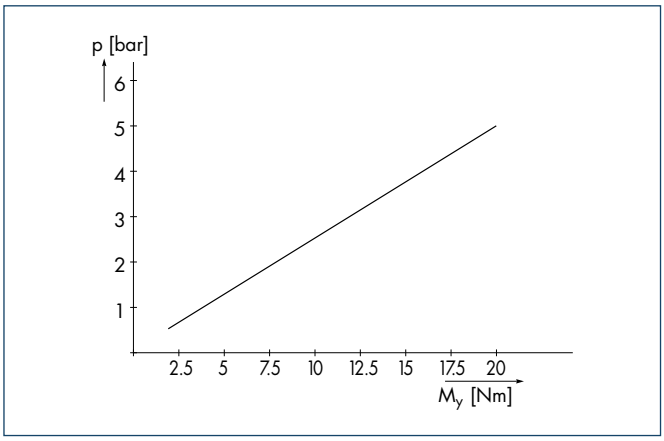
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

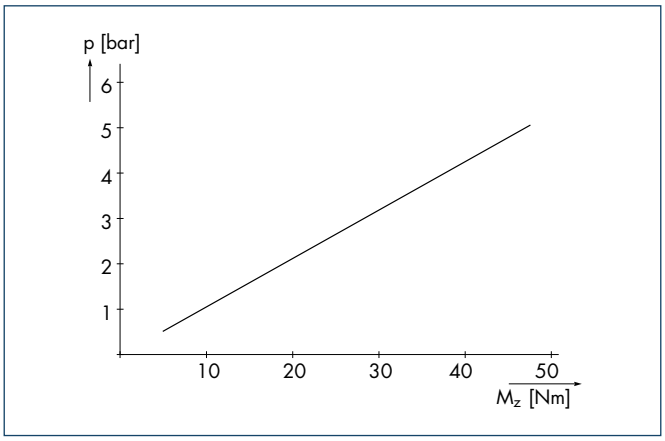
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

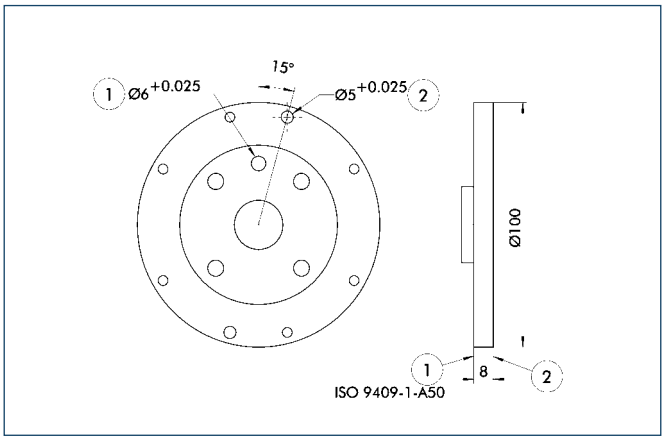


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A50

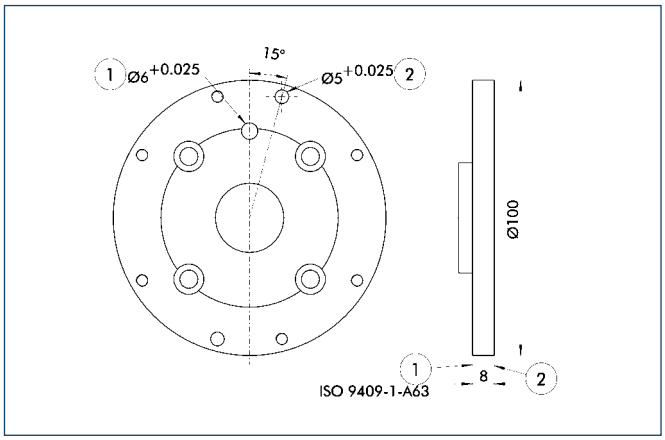


① Robot-side connection
② Tool-side connection

For mounting the OPS-100 directly to a flange in accordance with ISO 9409-1-A50

Designation	ID
A-OPS-100-ISO-A50-R	0321122

Adapter plate A63

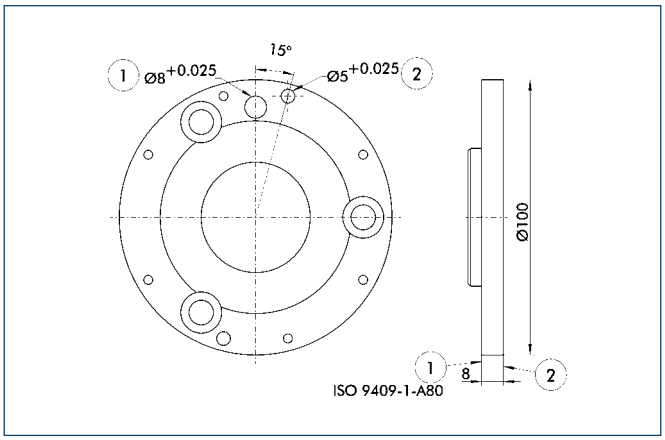


① Robot-side connection
② Tool-side connection

For mounting the OPS-100 directly to a flange in accordance with ISO 9409-1-A63

Designation	ID
A-OPS-100-ISO-A63-R	0321123

Adapter plate A80



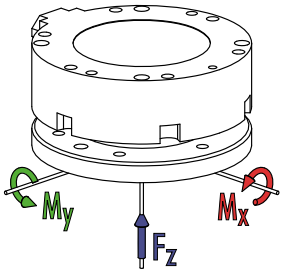
① Robot-side connection
② Tool-side connection

For mounting the OPS-100 directly to a flange in accordance with ISO 9409-1-A80

Designation	ID
A-OPS-100-ISO-A80-R	0321116

OPS-160

Forces and moments

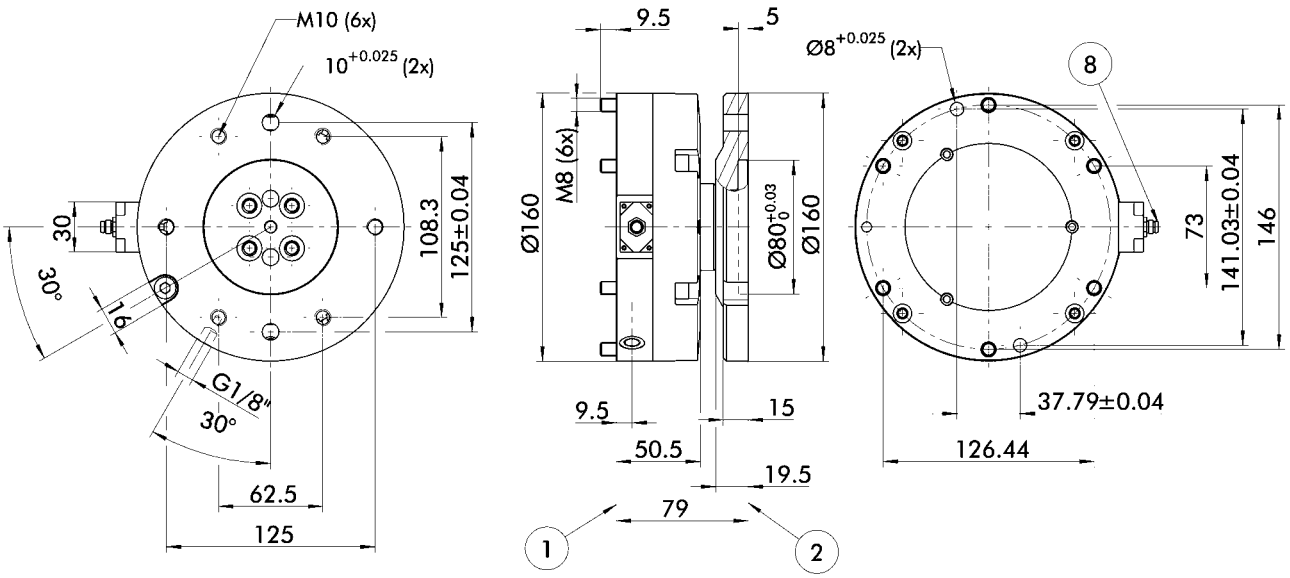


M_x max. 80 Nm
M_y max. 80 Nm
F_z max. 4500 N

Technical data

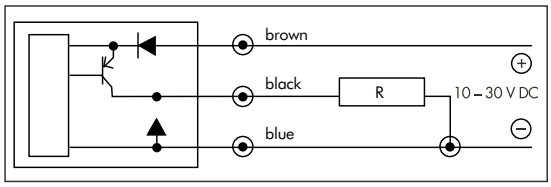
Designation		OPS-160	
	ID	0321135	
Axial deflection	[mm]	8	
Angular deflection	[°]	± 5	
Min. ambient temperature	[°C]	5	
Max. ambient temperature	[°C]	60	
Sensitivity	[mm]	< 0.2	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	1 - 5	
Weight	[kg]	4.3	
Supply voltage	[VDC]	10 ... 30	Residual ripple max. 10 %
Max. current input without load	[mA]	6	
Max. voltage drop	[V]	3.5	
Output (switching)		PNP	
Max. output current - resistive load	[mA]	180 (short circuit proof)	

Main views

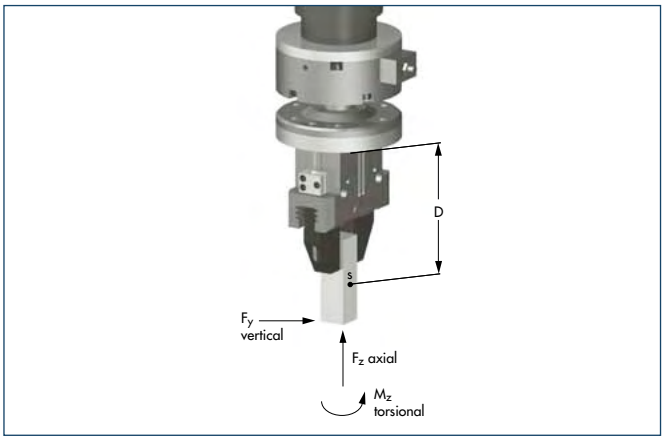


① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

Output circuit diagram



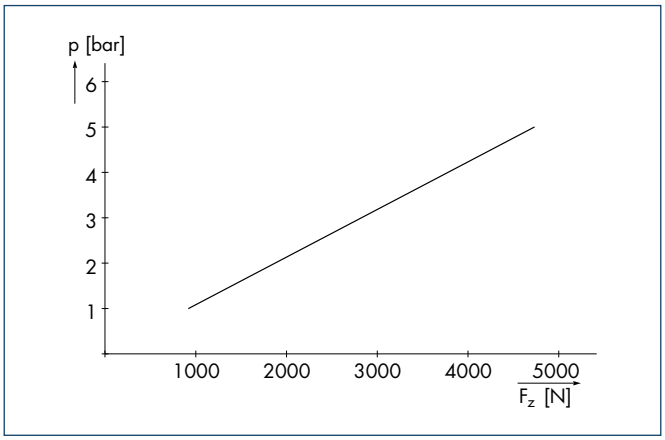
Calculating the intake air pressure (P) for OPS-160



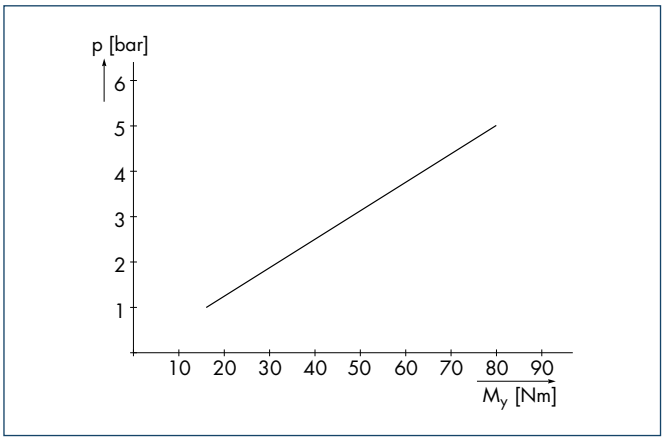
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

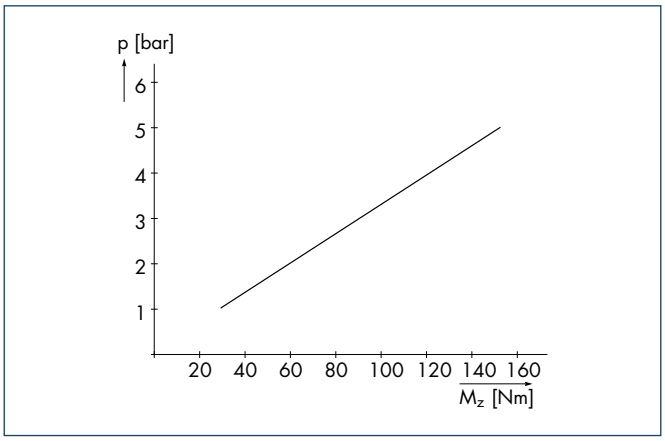
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

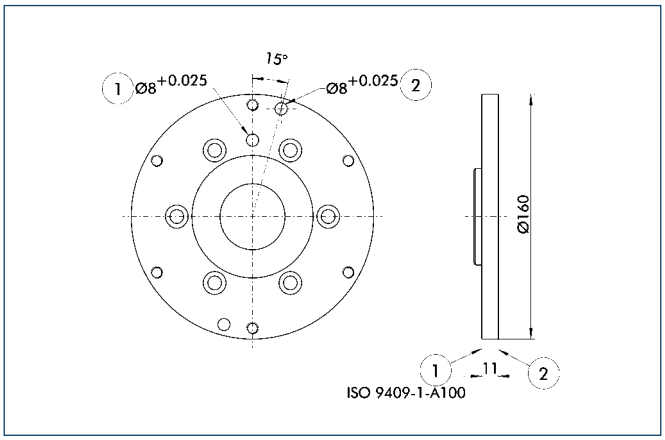


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A100

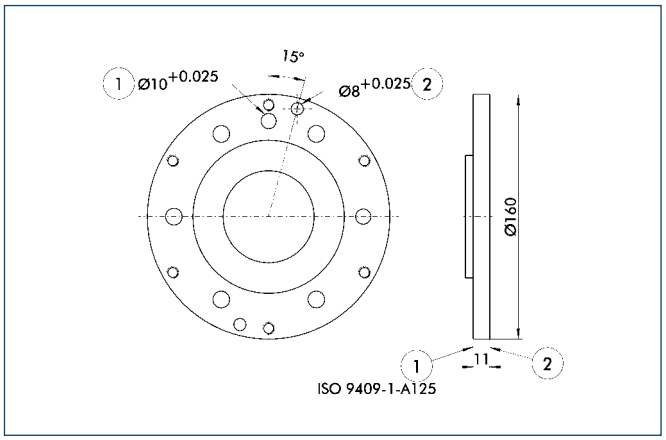


① Robot-side connection
② Tool-side connection

For mounting the OPS-160 directly to a flange in accordance with ISO 9409-1-A100

Designation	ID
A-OPS-160-ISO-A100-R	0321224

Adapter plate A125



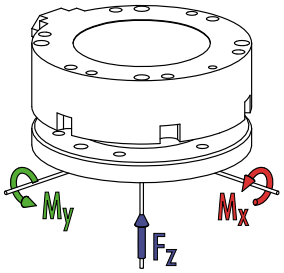
① Robot-side connection
② Tool-side connection

For mounting the OPS-160 directly to a flange in accordance with ISO 9409-1-A125

Designation	ID
A-OPS-160-ISO-A125-R	0321117

OPS-200

Forces and moments



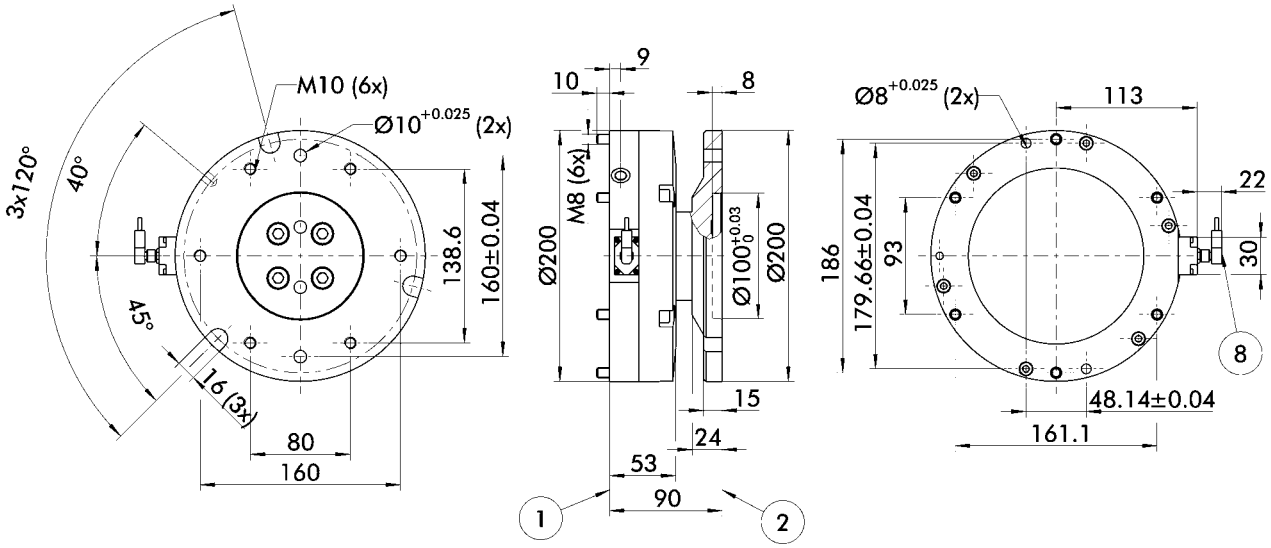
M_x max. 430 Nm
M_y max. 430 Nm
F_z max. 7000 N

Technical data

Designation		OPS-200	OPS-200-VS	
	ID	0321140	0321141	
Axial deflection	[mm]	9.5	9.5	
Angular deflection	[°]	± 4	± 4	
Rotational deflection	[°]	360	± 45	
Min. ambient temperature	[°C]		5	
Max. ambient temperature	[°C]		60	
Sensitivity	[mm]	< 0.3	< 0.3	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.05	± 0.05	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	± 5	
Operating pressure range	[bar]	1 - 6	1 - 6	
Weight	[kg]	7.0	7.0	
Supply voltage	[VDC]	10 ... 30	10 ... 30	Residual ripple max. 10 %
Max. current input without load	[mA]	6	6	
Max. voltage drop	[V]	3.5	3.5	
Output (switching)		PNP	PNP	
Max. output current - resistive load	[mA]	180 (short circuit proof)	180 (short circuit proof)	

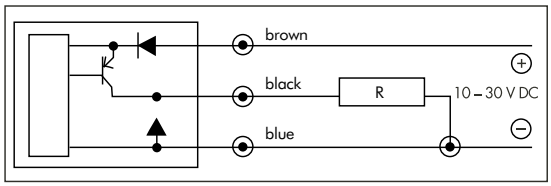
ⓘ The OPS-200-VS version is equipped with a rotational travel limitation device

Main views

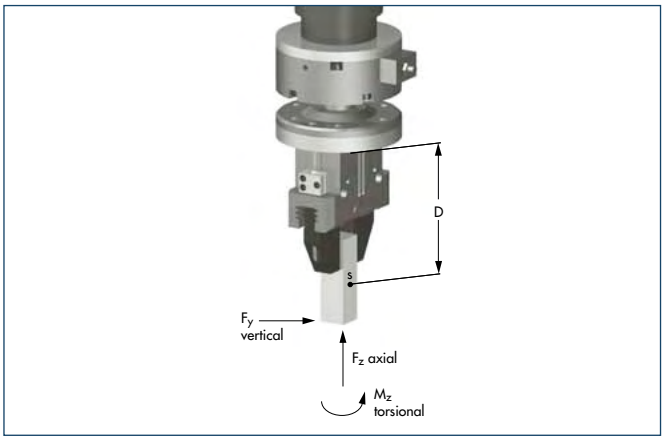


① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

Output circuit diagram



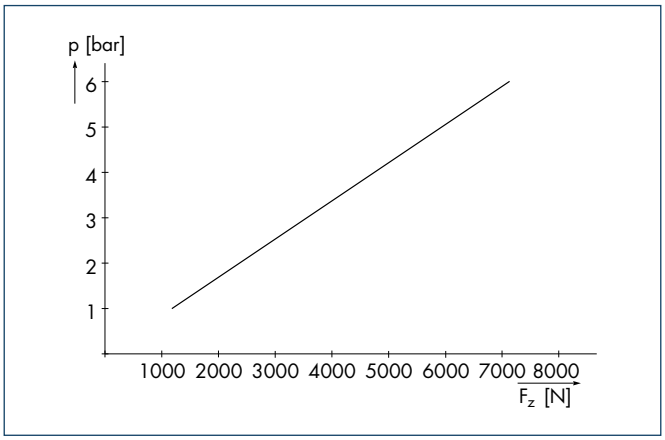
Calculating the intake air pressure (P) for OPS-200



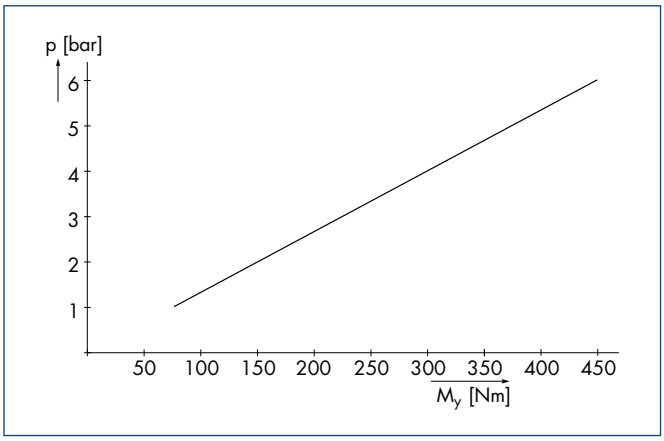
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

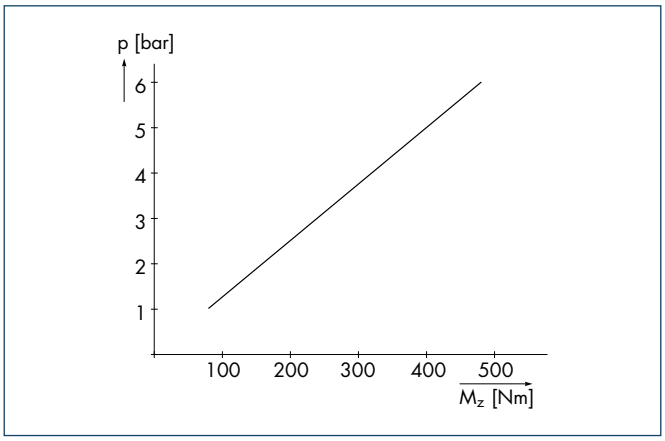
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

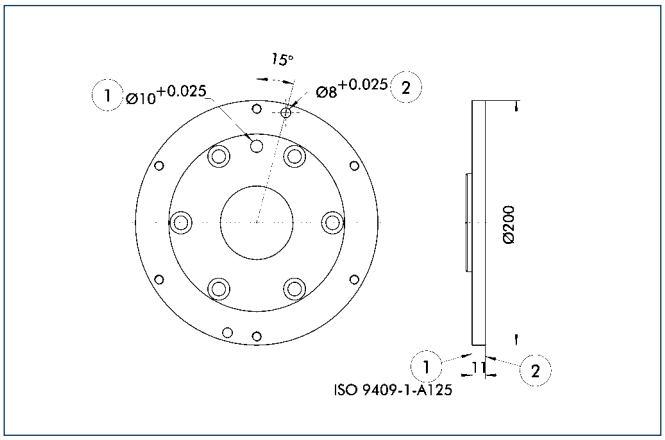


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A125

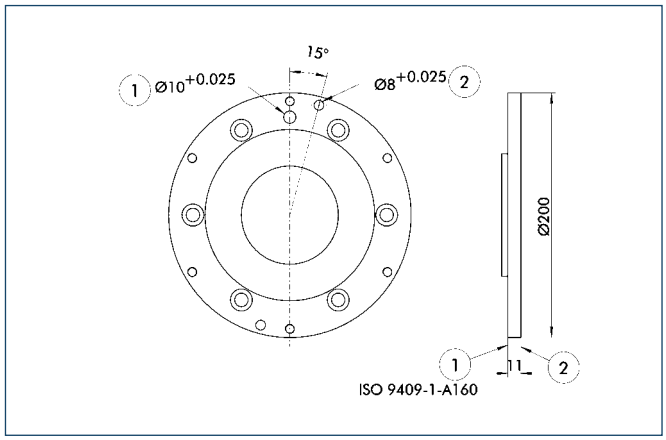


① Robot-side connection
② Tool-side connection

For mounting the OPS-200 directly to a flange in accordance with ISO 9409-1-A125

Designation	ID
A-OPS-200-ISO-A125-R	0321126

Adapter plate A160



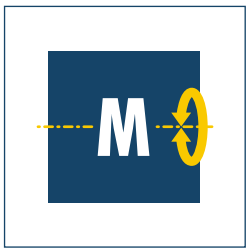
① Robot-side connection
② Tool-side connection

For mounting the OPS-200 directly to a flange in accordance with ISO 9409-1-A160

Designation	ID
A-OPS-200-ISO-A160-R	0321118

Sizes
063 .. 101

Triggering force F_z
100 N .. 2000 N



Triggering torque M_x
1.2 Nm .. 27.5 Nm

Triggering torque M_y
1.2 Nm .. 27.5 Nm

Triggering torque M_z
2.1 Nm .. 45 Nm

Application example

Assembly unit for intermediate sleeves with a variety of diameters. The unit is protected by an anti-collision device to prevent damage.

1 PFH 30 2-Finger Parallel Gripper with workpiece-specific gripper fingers

2 OPS-101 Collision and Overload Protection

Collision and Overload Protection

Collision and overload protection for protecting robots and handling units against damage resulting from collisions or overload conditions.

Area of application

Standard solution for all robot applications whereby the robot, the tool or the workpiece are to be protected in the event of a collision

Your advantages and benefits

Triggering force and torque can be adjusted via the operating pressure
for optimum protection of your components

Integrated monitoring
for signal transmission in the event of a collision, whereby the robot can be stopped

ISO adapter plates as an option
for easy mounting to most types of robots

Optimized design
Design changes to the internal structure have increased the maximum possible deflection angle from 4° to 8°, so that there is now more space to make compensating movements in the event of a collision. We improved the mounting of the sleeve with which the housing is sealed from the back of the flange; we also equipped the system with an easy-to-assemble plug that is easier to repair when damaged.

General information on the series

Working principle
Integrated cylinder piston

Housing material
Aluminum, anodized

Actuation
Pneumatic, with filtered compressed air (10 µm): dry or lubricated

Maintenance
Maintenance-free

Assembly position
Optional

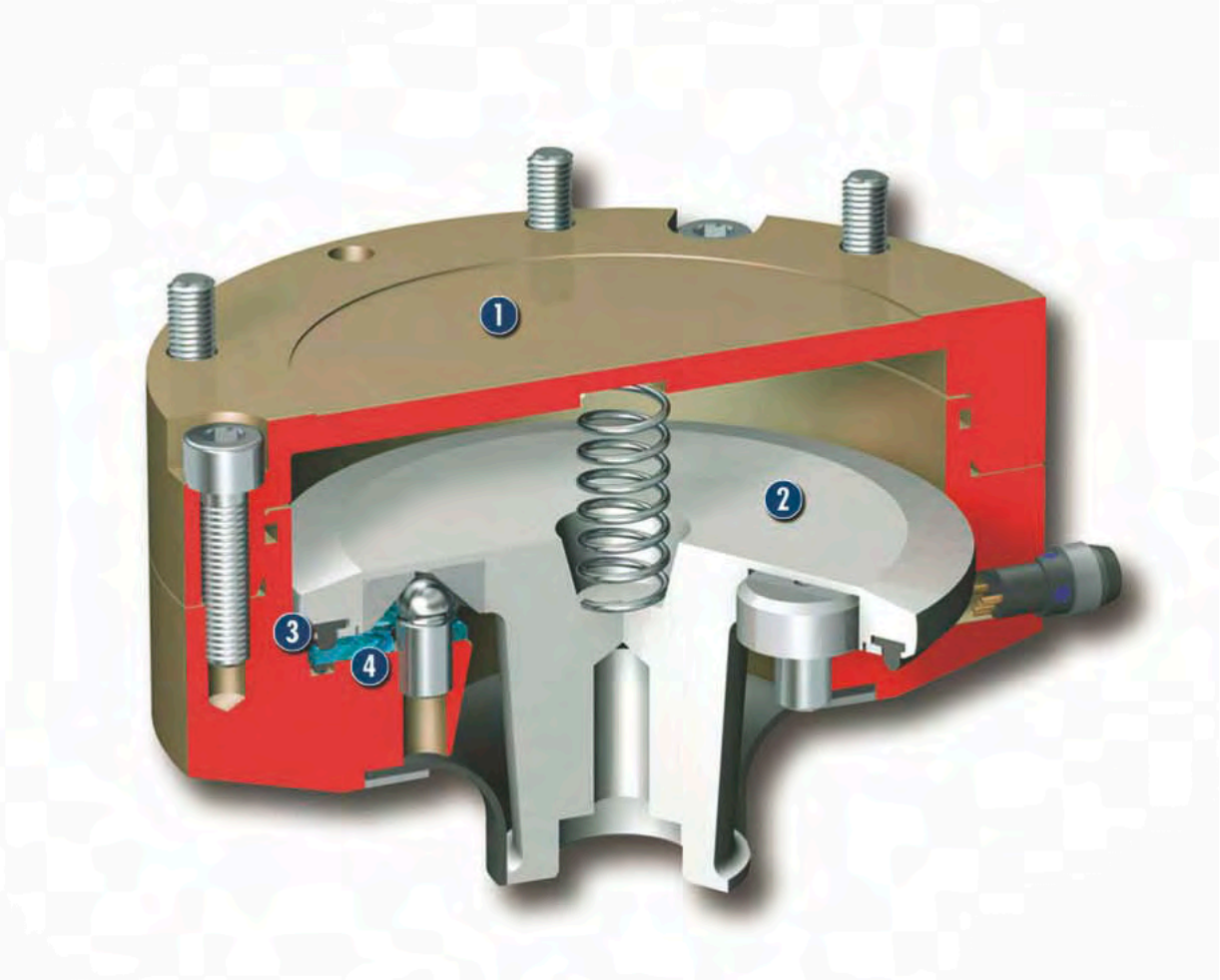
Ambient temperature
From 5 °C to 60 °C

Scope of delivery
Right-angle coupling with 5 m cable, operating manual, maintenance instructions, manufacturer's declaration

Accessories
Adapter plates for mounting directly to flange ISO 9409-1A...

Warranty
24 months

Sectional diagram



1 **Housing**
weight-optimized through the use of a hardened epoxy-coated, highly robust aluminum alloy

2 **Drive**
pneumatic for ease of setting sensitivity

3 **Conductive Seal**
for immediate information detection and transfer to the robot controls

4 **Integrated Cable-break Checks**

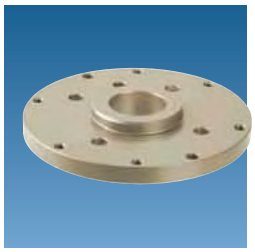
Function description

In the event of a collision, the tool plate deflects while simultaneously actuating the system's emergency stop mechanism. After deflection, the OPS can be manually reset and the system can be brought back to its original position.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Adapter plates



Fittings

Sensor cables

ⓘ For the exact size of the accessories, the availability for this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

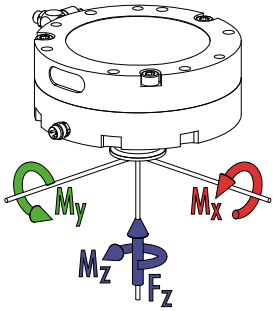
General information on the series

Extreme ambient conditions

Please note that use in extreme ambient conditions (e.g. in the coolant zone, in the presence of abrasive dust) can significantly reduce the tool life span of these units and we cannot accept any liability for this reduction. However, in many cases we have a solution at hand. Please ask for details.

OPS+063

Forces and moments

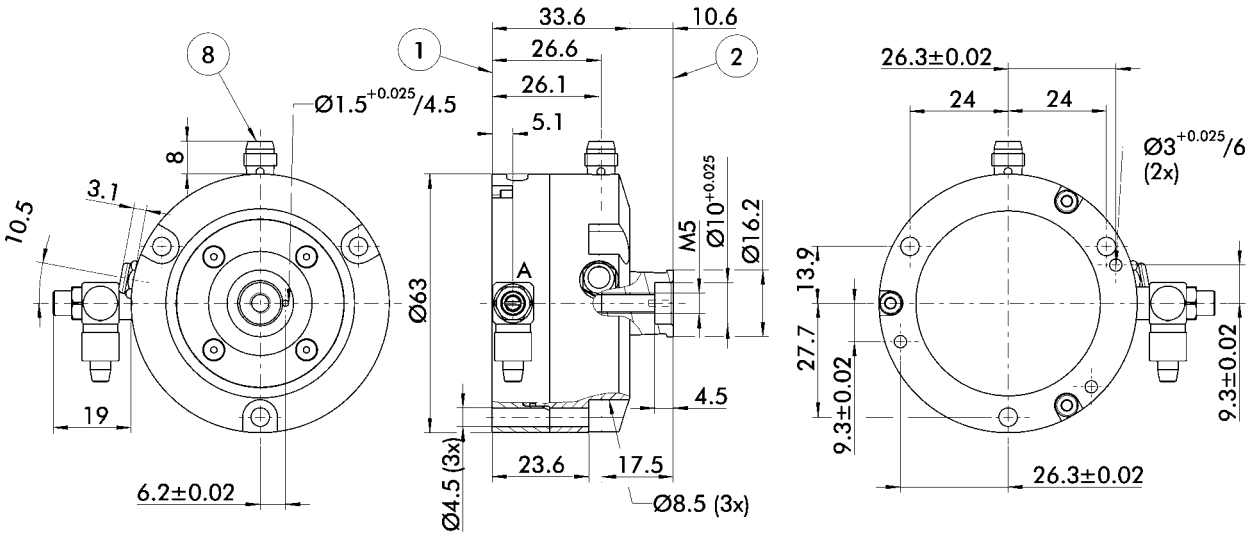


- M_x max. 6 Nm
- M_y max. 6 Nm
- M_z max. 13.9 Nm
- F_z max. 645 N

Technical data

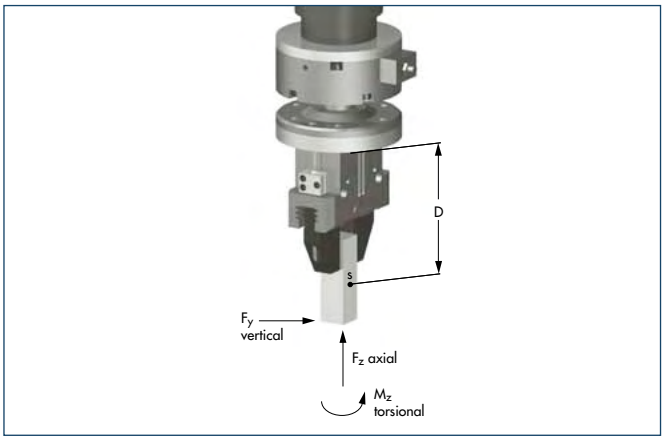
Designation		OPS+063	
	ID	0321230	
Axial deflection	[mm]	10	
Angular deflection	[°]	14	
Torsional displacement	[°]	360	
Max. ambient temperature	[°C]	5 - 60	
Material		Aluminum alloy, hard anodized	
Sensitivity	[mm]	< 0.1	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	1 - 6	
Weight	[kg]	0.3	
Max. payload	[kg]	2	
Normal voltage	[VDC]	24	
Operating voltage UB triggered/locked at RL = ∞	[VDC]	22 ... 26	
Nominal current	[mA]	0 / < 8	
Nominal output voltage UA at RL= ∞	[V]	≥ 23.2	
Nominal output voltage UA at RL ≥ 2k	[V]	≥ 21.0	
Nominal output current at RL ≥ 2k	[mA]	≤ 12.0	
Reverse-polarity protected		Yes	
Short circuit proof		Yes	

Main views



① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

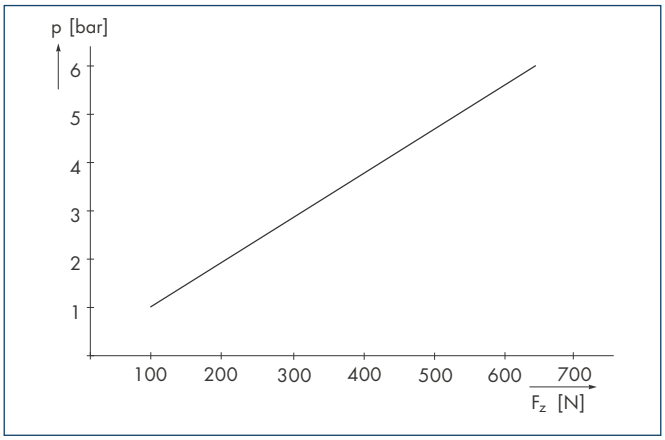
Calculating the intake air pressure (P) for OPS+063



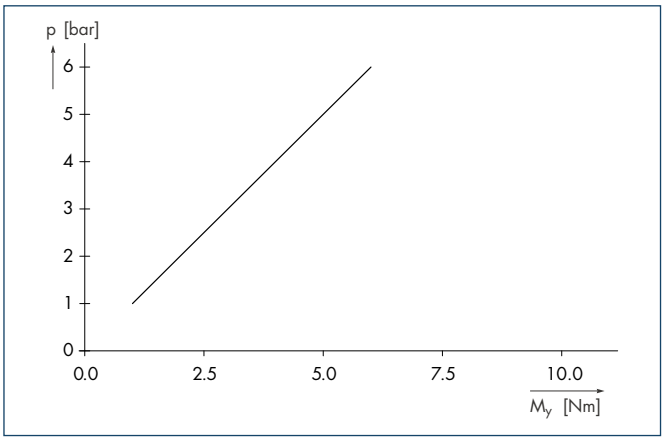
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

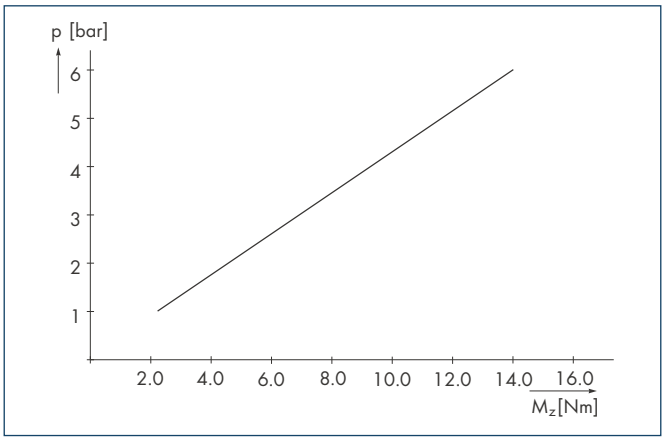
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

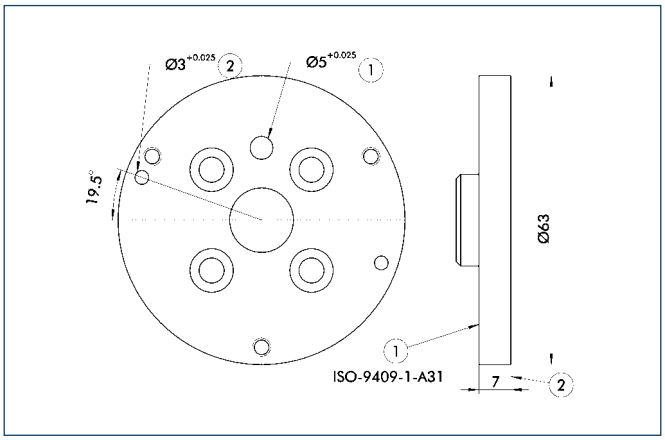


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A31,5

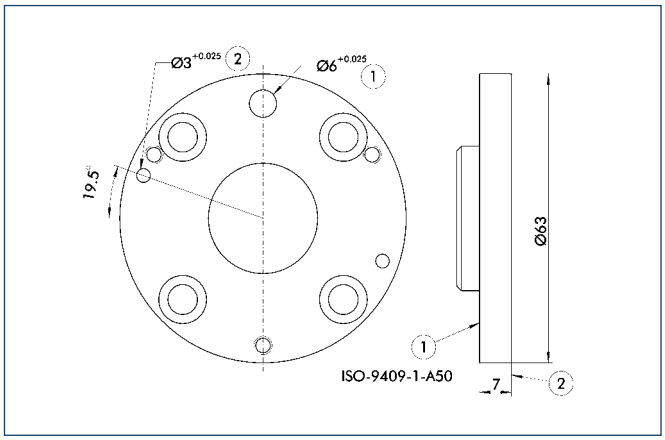


① Robot-side connection
② Tool-side connection

For mounting the OPS+063 directly to a flange in accordance with ISO 9409-1-A31,5

Designation	ID
A-OPS-063-ISO-A31-R	0321137

Adapter plate A50



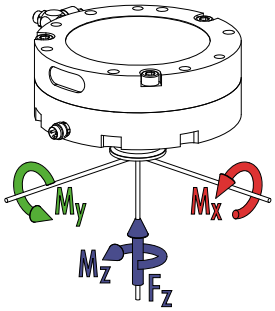
① Robot-side connection
② Tool-side connection

For mounting the OPS+063 directly to a flange in accordance with ISO 9409-1-A50

Designation	ID
A-OPS-063-ISO-A50-R	0321124

OPS+081

Forces and moments

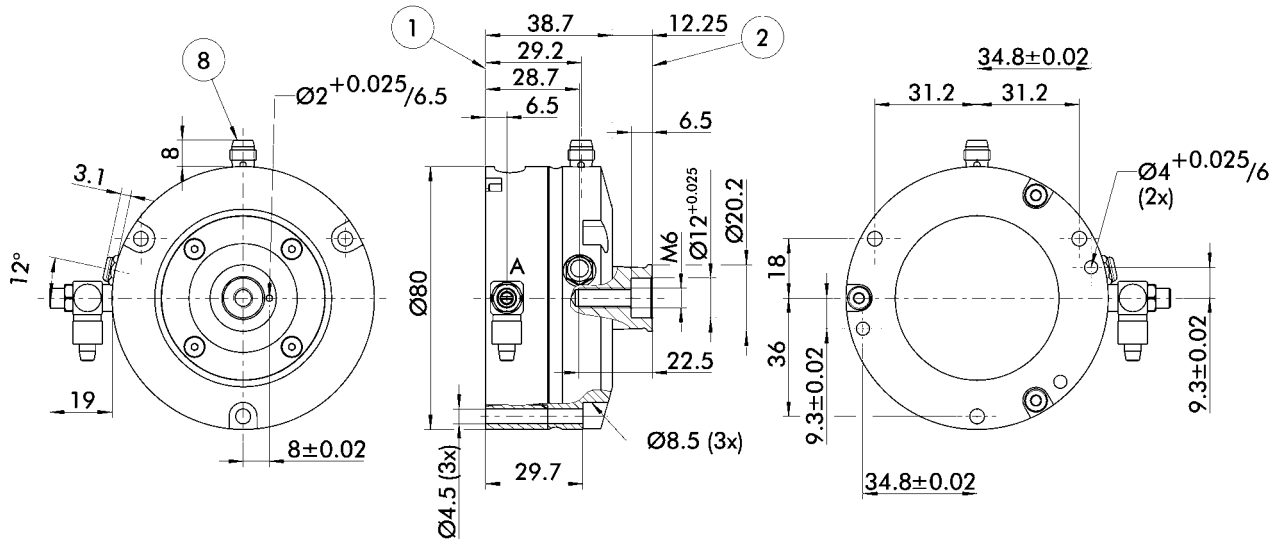


- M_x max. 11 Nm
- M_y max. 11 Nm
- M_z max. 21.1 Nm
- F_z max. 1140 N

Technical data

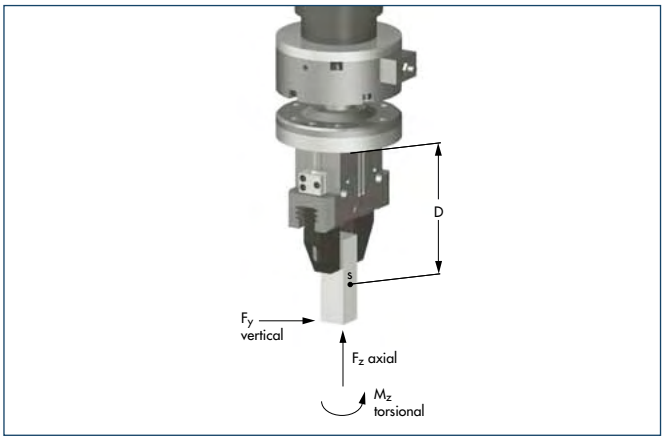
Designation		OPS+081	
	ID	0321231	
Axial deflection	[mm]	12	
Angular deflection	[°]	14	
Torsional displacement	[°]	360	
Max. ambient temperature	[°C]	5 - 60	
Material		Aluminum alloy, hard anodized	
Sensitivity	[mm]	< 0.1	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	1 - 6	
Weight	[kg]	0.6	
Max. payload	[kg]	4	
Normal voltage	[VDC]	24	
Operating voltage UB triggered/locked at RL = ∞	[VDC]	22 ... 26	
Nominal current	[mA]	0 / < 8	
Nominal output voltage UA at RL= ∞	[V]	≥ 23.2	
Nominal output voltage UA at RL ≥ 2k	[V]	≥ 21.0	
Nominal output current at RL ≥ 2k	[mA]	≤ 12.0	
Reverse-polarity protected		Yes	
Short circuit proof		Yes	

Main views



① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

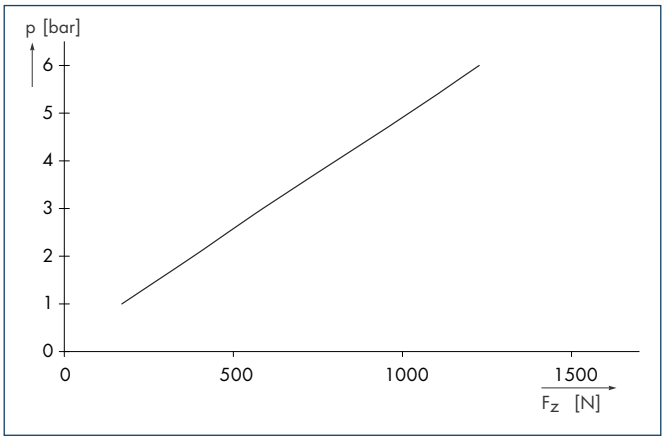
Calculating the intake air pressure (P) for OPS+081



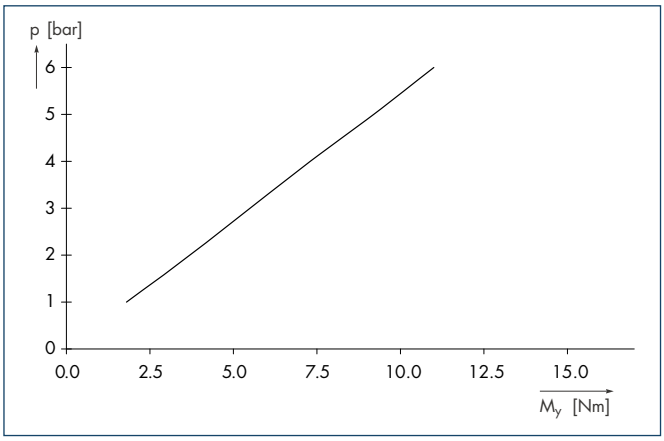
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

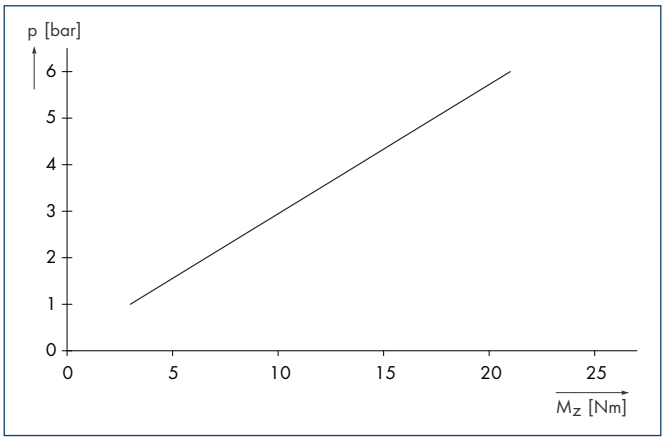
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

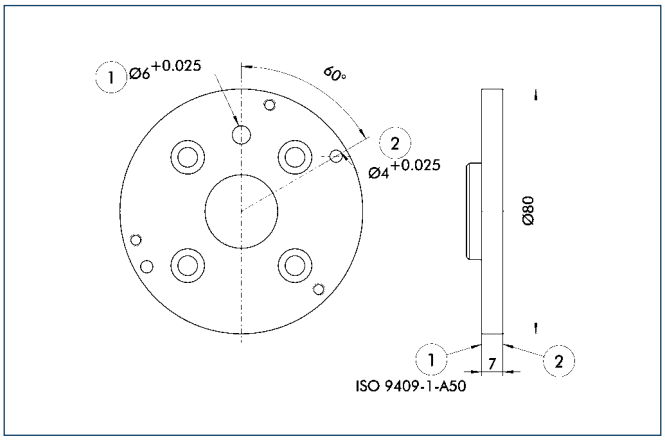


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A50

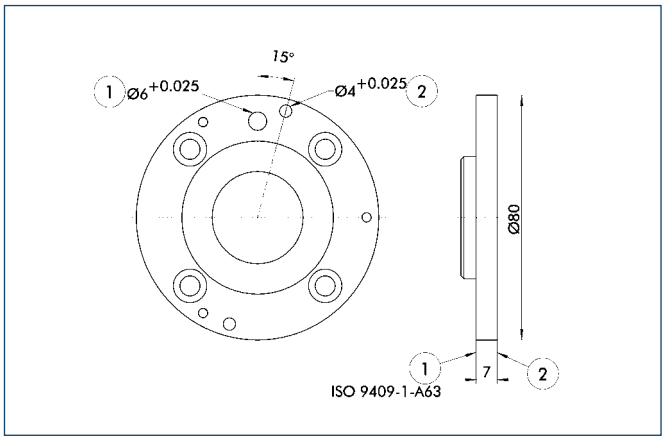


① Robot-side connection
② Tool-side connection

For mounting the OPS+081 directly to a flange in accordance with ISO 9409-1-A50

Designation	ID
A-OPS-080-ISO-A50-R	0321114

Adapter plate A63



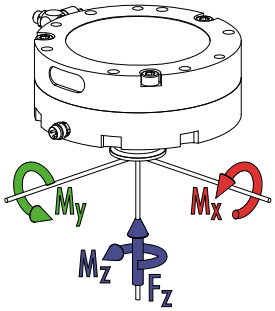
① Robot-side connection
② Tool-side connection

For mounting the OPS+081 directly to a flange in accordance with ISO 9409-1-A63

Designation	ID
A-OPS-080-ISO-A63-R	0321115

OPS+101

Forces and moments

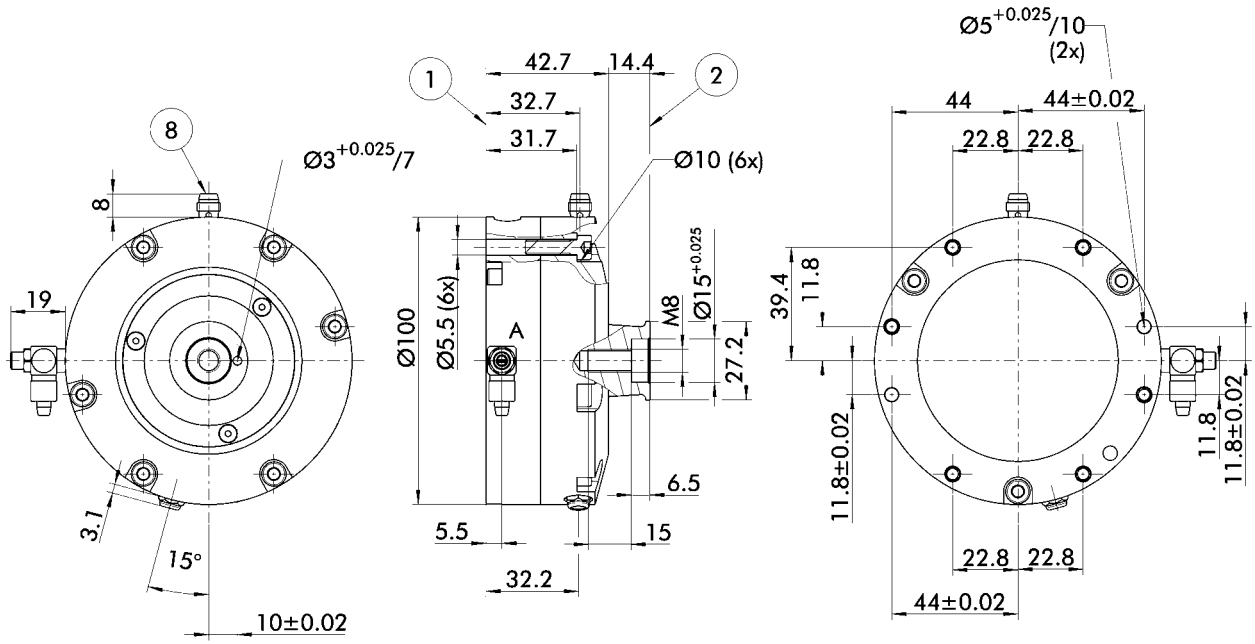


- M_x max. 25 Nm
- M_y max. 25 Nm
- M_z max. 46.6 Nm
- F_z max. 1780 N

Technical data

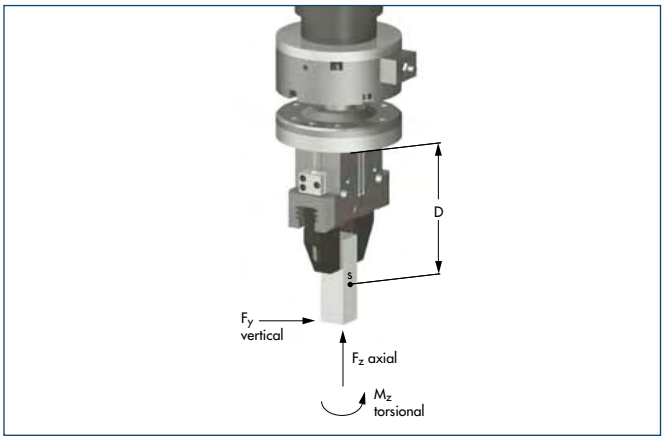
Designation		OPS+101	
	ID	0321232	
Axial deflection	[mm]	14	
Angular deflection	[°]	16	
Torsional displacement	[°]	360	
Max. ambient temperature	[°C]	5 - 60	
Material		Aluminum alloy, hard anodized	
Sensitivity	[mm]	< 0.1	Sensitivity, center of tool plate, axial
Repeat accuracy	[mm]	± 0.02	Repeat accuracy, center of tool plate
Rotational repeat accuracy	[min]	± 5	
Operating pressure range	[bar]	1 - 6	
Weight	[kg]	1.2	
Max. payload	[kg]	8	
Normal voltage	[VDC]	24	
Operating voltage UB triggered/locked at RL = ∞	[VDC]	22 ... 26	
Nominal current	[mA]	0 / < 8	
Nominal output voltage UA at RL= ∞	[V]	≥ 23.2	
Nominal output voltage UA at RL ≥ 2k	[V]	≥ 21.0	
Nominal output current at RL ≥ 2k	[mA]	≤ 12.0	
Reverse-polarity protected		Yes	
Short circuit proof		Yes	

Main views



① Robot-side connection
② Tool-side connection
⑧ Cable connector enclosed

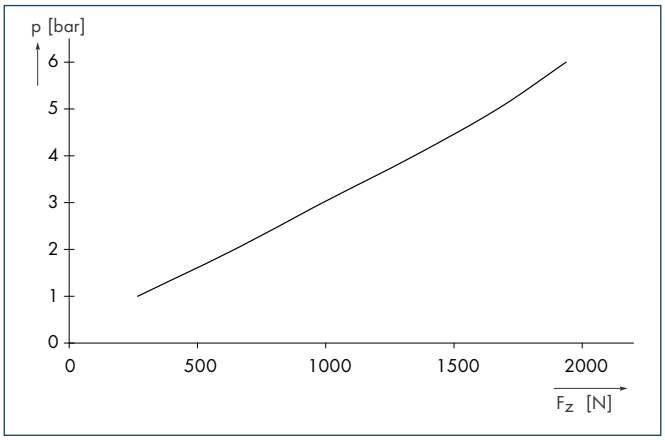
Calculating the intake air pressure (P) for OPS+101



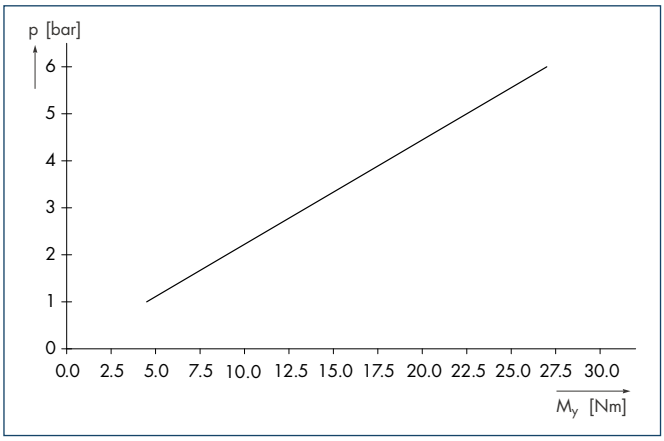
Please use the following formulas or diagrams for a rough calculation of the intake air pressure.

P: Pressure in bar
F_y; F_z: Force from the mass and the acceleration calculated in N
M_y, M_z: Moment from the force and the lever arm calculated in Nm
D: Attachment length in m

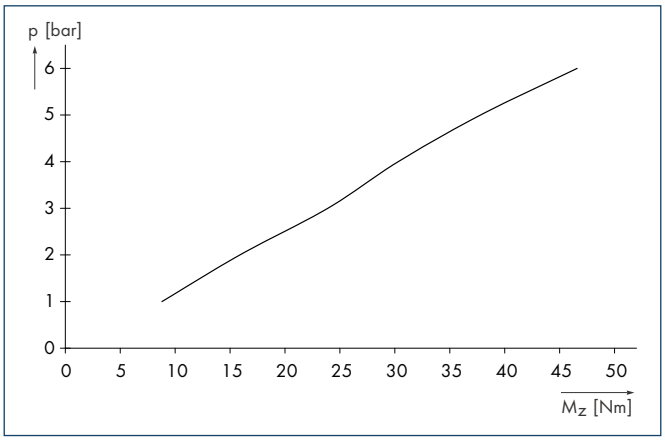
The calculated pressure P must be within the operating pressure range of the OPS.



Type of load: Axial (F_z)

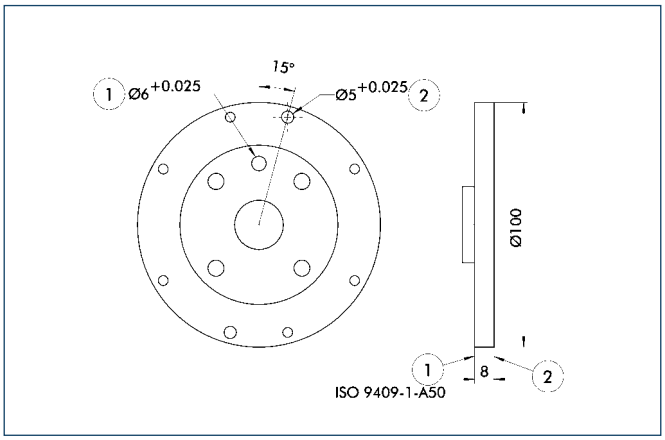


Type of load: Vertical (M_y)



Type of load: Torsional (M_z)

Adapter plate A50

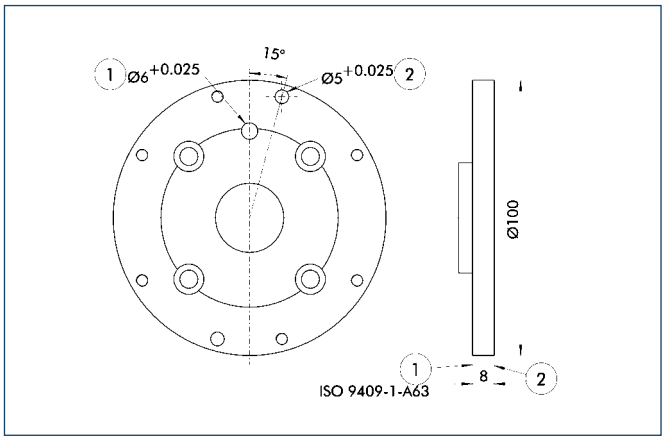


① Robot-side connection
② Tool-side connection

For mounting the OPS+101 directly to a flange in accordance with ISO 9409-1-A50

Designation	ID
A-OPS-100-ISO-A50-R	0321122

Adapter plate A63

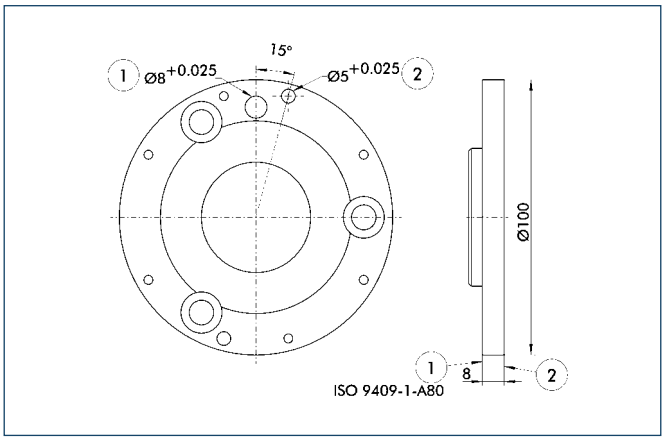


① Robot-side connection
② Tool-side connection

For mounting the OPS+101 directly to a flange in accordance with ISO 9409-1-A63

Designation	ID
A-OPS-100-ISO-A63-R	0321123

Adapter plate A80



① Robot-side connection
② Tool-side connection

For mounting the OPS+101 directly to a flange in accordance with ISO 9409-1-A80

Designation	ID
A-OPS-100-ISO-A80-R	0321116