



Pneumatic components

# Safety precautions

Always read this section before starting use.

Refer to Intro 69 for general precautions of the cylinder, and to Intro 78 for general precautions of the cylinder switch.

RRC
GRC
RV3*
NHS
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system and hybrid robot

## Design & Selection

### 1. Lubrication

#### CAUTION

##### ■ Cylinder

This cylinder is oil-free. If lubrication is required, use Turbine Oil Class 1 ISO VG32. Packing may be damaged if a different lubricant is used, and operation faults may occur. Once the cylinder is lubricated, check that lubricant is supplied. Operation may be unstable if insufficient lubrication is made.

##### ■ LM guide

Lubricate from the grease nipple per 100 km travel.

Supply one of the following grease:

- Lithium-based grease (JIS No. 2)
- Urea-based grease (JIS No. 2)



### 2. Service life

#### CAUTION

■ The life of the unit is greatly affected by the life of pneumatic components.

General components are used for pneumatic components, so life is 3 to 5 million operations or a travel of approx. 1,000 km. (The values above are not guaranteed as life is greatly affected by working conditions, environment, etc.)

## Installation & Adjustment

### 1. Mounting attitude

#### WARNING

■ Units other than the HRL-1 (L) can be installed only horizontally. Installation upside down will lead to damage.

Select the load capacity of the vertical installation (Z axis installation) based on the built-in cylinder thrust.



### 2. Quality of air

#### CAUTION

■ The compressed air supplied to drive the unit must be clean and have low moisture.

Install a filter, etc., on the pneumatic circuit. Note the filter's filtration, flow, and installation (near the direction valve). Remove drainage accumulated in the filter. (Regularly check that drainage does not reach the element.)

● If harmful compressed air is supplied, the life of consumables (packing, gasket, etc.) in components (filter, directional control valve, cylinder, etc.) will drop and operation faults may occur.

■ Do not use ultra dry air for this product, or the product life will be shortened.



### 3. Piping

#### CAUTION

■ Flush piping with compressed air before piping to the cylinder.

If cutting chips or sealing tape used during piping, or rust enters the pipe, fault such as air leakage may occur.



### 4. Alignment adjustment

#### CAUTION

When a 3-position all ports closed drive valve is used or if the block valve assembled slider table is slid with using external force assembled, negative pressure will be generated on the drive valve, and the seal belt may drop off, leading to air leakage, so adjust with the block released.

Modular unit

RRC
GRC
RV3*
NHS
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

## During Use & Maintenance

### 1. Position locking

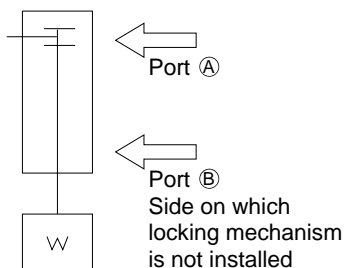
#### ⚠ WARNING

- Supply pressure to the port (B), and release the lock after removing load applied on the locking mechanism.

If both ports (A) and (B) are exhausted and pressure is supplied to port (A) while the piston is locked, the lock may be released and the piston rod may pop out, which is hazardous.

- If the cylinder is held while pressure is applied to the locking mechanism, the stop pin may be dislocated. Do not use the 3-position closed center and 3-position P/A/B connection solenoid valve.

- If back pressure is applied in the locked state, the lock may be released. Use the discrete solenoid valve as a single unit or use an individual exhaust manifold.



### 2. External environment

#### ⚠ CAUTION

- Install the unit and other device products (filter, directional control valve, cylinder, etc.) where they will not be subjected to rain water or direct sunlight. Do not use this product outdoors.



- Do not use this product where it will be subject to cutting chips, oil, coolant, oil mist, etc. If this type of environment is unavoidable due to installation, provide a protective cover, etc.



- Do not use this product where foreign matter such as cutting chips, dust, or spatter, etc., contact to or enter in the units.

If this type of environment is unavoidable due to installation, provide a protective cover, etc.



- Do not use this product in an environment where it may be corroded.

Damage or operation faults will be occurred in this environment.



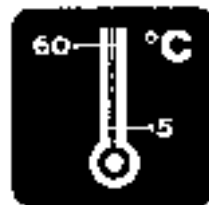
### 3. Ambient temperature

#### ⚠ CAUTION

- The range of the ambient temperature in which can use the unit is 5 to 60°C.

Do not use the unit if the temperature exceeds 60°C, or damage or operation faults may occur.

If the temperature is less than 5°C, moisture in the circuit may freeze and lead to damage or faults. Take measures to prevent freezing.



### 4. Repair parts

#### ⚠ CAUTION

The cylinder and valve packing, O-ring, gasket, cushion rubber and shock absorber used in this unit are consumables. Refer to device catalogs for details on part types.

If use is continued with a weak shock absorber, vibration and impact increase and may decrease stopping accuracy and damage the guide or other parts. Replace the shock absorber.

RRC  
GRC  
RV3\*  
NHS  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

RRC  
GRC  
RV3\*  
NHS  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

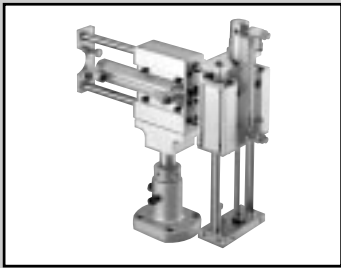
## ● 2-action pneumatic robot

● : Standard, ○ : Option, ■ : Not available

Model no.	Load capacity (kg)					Basic unit/basic cylinder		Stroke length (mm)														Page			
								X - axis							Z - axis										
								1	1.5	2	3	5	X-axis	Z-axis	50	75	100				125		150	200	250
HRL-2S	●	●	●	●	●	HRL-1	HRL-1	●	●	●				●	●	●	●	●	●	●	●	●	●	●	194
HRL-2G	●	●	●	●	■	SCM	SCM	●	●	●				●	●	●	■	■	●	●	●	●	●	●	197

## ● Pneumatic robot element Single shaft unit

Model no.	Load capacity (kg)	Basic cylinder	Stroke length (mm)		Page
			Basic body shape	Long body shape	
HRL-1*	5, 10, 15, 25, 50, 65	SCM	50, 75, 100, 125, 150, 200, 250, 300	350, 400, 450, 500, 550, 600	200



Hybrid robot  
2-action pneumatic robot

# HRL-2S Series

● Load capacity: 1, 1.5, 2, 3, 5kg



## Specifications

Descriptions		HRL-2S-1005	HRL-2S-1010	HRL-2S-1505	HRL-2S-1510	HRL-2S-1515
Load capacity (Note 1)	kg	1	1.5	2	3	5
Basic unit	X axis	HRL-1-10	HRL-1-10	HRL-1-15	HRL-1-15	HRL-1-15
	Z axis	HRL-1-05		HRL-1-05	HRL-1-10	
Guide rod diameter	mm	13	13	16	16	16
	Z axis			13	13	
Maximum speed	mm/s	300mm/s				
Repeatability	mm	±0.1				
Stroke length	mm	50 to 300				
	Z axis	25 to 150				
Product weight	kg	$7.1 + 0.0037 \times X \text{ axis stroke length} + 0.0033 \times Z \text{ axis stroke length}$	$7.2 + 0.0037 \times X \text{ axis stroke length} + 0.0037 \times Z \text{ axis stroke length}$	$7.8 + 0.0051 \times X \text{ axis stroke length} + 0.0033 \times Z \text{ axis stroke length}$	$7.9 + 0.0051 \times X \text{ axis stroke length} + 0.0037 \times Z \text{ axis stroke length}$	$8.6 + 0.0051 \times X \text{ axis stroke length} + 0.0051 \times Z \text{ axis stroke length}$
Movable part weight	kg	$3.3 + 0.0027 \times X \text{ axis stroke length} + 0.0033 \times Z \text{ axis stroke length}$	$3.4 + 0.0027 \times X \text{ axis stroke length} + 0.0037 \times Z \text{ axis stroke length}$	$3.6 + 0.0041 \times X \text{ axis stroke length} + 0.0033 \times Z \text{ axis stroke length}$	$3.7 + 0.0041 \times X \text{ axis stroke length} + 0.0037 \times Z \text{ axis stroke length}$	$4.4 + 0.0041 \times X \text{ axis stroke length} + 0.0051 \times Z \text{ axis stroke length}$
	Z axis	$1.0 + 0.0025 \times Z \text{ axis stroke length}$	$1.0 + 0.0027 \times Z \text{ axis stroke length}$	$1.0 + 0.0025 \times Z \text{ axis stroke length}$	$1.0 + 0.0027 \times Z \text{ axis stroke length}$	$1.3 + 0.0041 \times Z \text{ axis stroke length}$
SC3W-6-6						
Shock absorber (Note 2)		NCK-00-0.7		X axis NCK-00-1.2	NCK-00-1.2	
				Z axis NCK-00-0.7		
Working pressure	MPa	0.3 to 0.7				

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity. (Value is for reference.)

Note 2: Use at 74% or less of the shock absorber's allowable value at working speed and air pressure.

## Switch specifications

● 1 color/2 color indicator

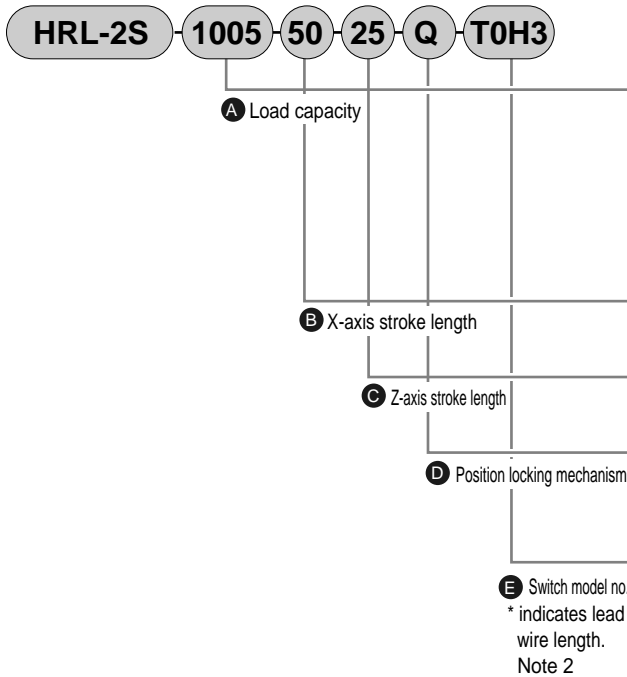
Descriptions	Proximity 2 wire		Proximity 3 wire			Reed 2 wire				
	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V		T5H/T5V		
Applications	Programmable controller		Programmable controller, relay			Programmable controller		Programmable controller, relay IC circuit (w/o light), serial connection		
Output method	-		NPN output	PNP output	NPN output	-				
Power voltage	-		10 to 28 VDC			-				
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	
Load current	5 to 20mA (Note 1)		100mA or less		50mA or less	5 to 50mA	7 to 20mA	50mA or less	20mA or less	
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)				
Leakage current	1mA or less		10 μA or less			0mA				

Note 1: Maximum load current above: 20mA applies at 25°C. When ambient temperature around a switch is higher than 25°C, the value is lower than 20mA. (5 to 10mA when 60°C)

● With preventive maintenance output

Descriptions	Proximity 3 wire		Proximity 4 wire		Proximity 3 wire		Proximity 4 wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller		Programmable controller		Programmable controller		
Output method	NPN output								
Light	Red/green LED (ON lighting)								
	Yellow LED (ON lighting)								
Output section	Power voltage	-		10V to 28 VDC		-		10V to 28 VDC	
	Load voltage	10V to 30 VDC		30 VDC or less		10V to 30 VDC		30 VDC or less	
	Load current	5 to 20mA		50mA or less		5 to 20mA		50mA or less	
	Leakage current	1mA or less		10 μA or less		1.2mA or less		10 μA or less	
Preventive maintenance output	Load voltage	30 VDC or less							
	Load current	20mA or less		50mA or less		5 to 20mA or less		50mA or less	
	Leakage current	10 μA or less							

### How to order



Symbol	Descriptions			
<b>A Load capacity</b>				
1005	1kg			
1010	1.5kg			
1505	2kg			
1510	3kg			
1515	5kg			
<b>B X-axis stroke length</b>				
50, 75, 100, 125, 150, 200, 250, 300				
<b>C Z-axis stroke length (mm)</b>				
25, 50, 75, 100, 125, 150				
<b>D Position locking mechanism</b>				
Blank	None			
Q	Selected			
<b>E Switch model no.</b>				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T2H*	T2V*	Proximity	1 color indicator type	2-wire
T3H*	T3V*		2 color indicator type	3-wire
T2YH*	T2YV*			2 color indicator type (w/o indicator light for preventive maintenance output)
T3YH*	T3YV*		3-wire	
T2YFH*	T2YFV*		2 color indicator type (w/ indicator light for preventive maintenance output (1 color))	3-wire
T3YFH*	T3YFV*			4-wire
T2YMH*	T2YMV*		2 color indicator type (w/ indicator light for preventive maintenance output (1 color))	3-wire
T3YMH*	T3YMV*			4-wire
T2YD*	-		Strong magnetic field proof switch	2-wire
T2YDT*	-			
T2JH*	T2JV*	Off-delay type	2-wire	
<b>*Lead wire length</b>				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			

- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

### Note on model no. selection

- Note 1 Position locking mechanism can be installed on head side of cylinder only.
- Note 2 2 pcs. installed per R and Z axis as standard specifications.

### <Example of model number> **HRL-2S-1005-50-25-Q-T0H3**

Model: Hybrid robot HRL-2S Series

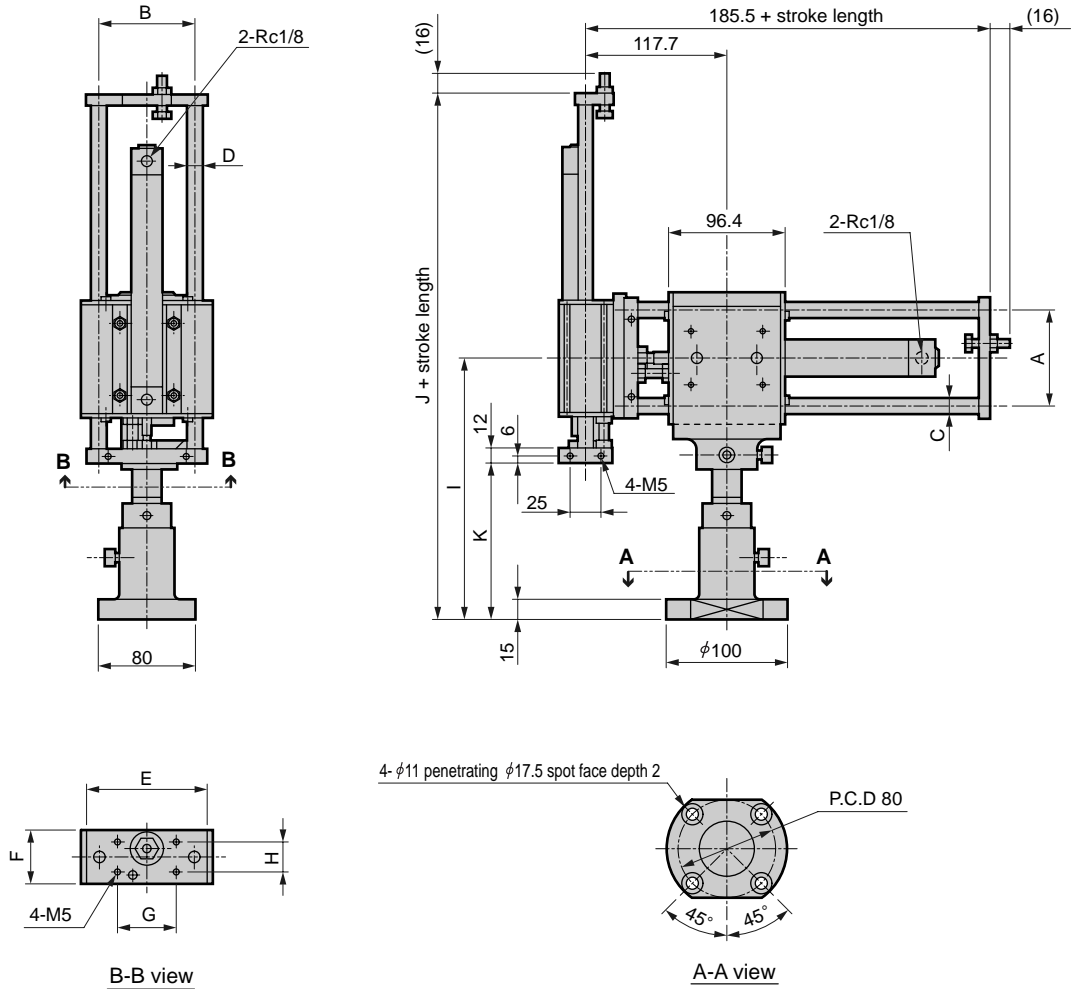
- A** Load capacity: 1kg
- B** R axis stroke length: 50mm
- C** Z axis stroke length: 25mm
- D** Position locking mechanism: available
- E** Switch model no.: reed T0H switch, lead wire 3m

Hybrid robot  
Modular unit

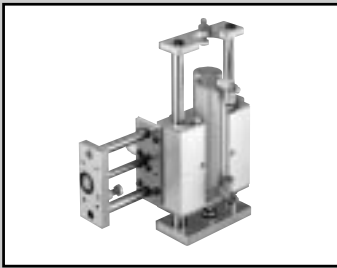
# HRL-2S Series

## Dimensions

- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/  
BHG
- LHA
- LHAG
- HKP
- HLA/  
HLB
- HLAG/  
HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
-\*.HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK
- Ending



Basic model	A	B	C	D	E	F	G	H	I	J	K
HRL-2S-1005	80	80	φ13	φ13	100	44	50	25	215	283	129
-1010									225	293	139
-1505	94	94	φ16	φ16	120		60		225	293	139
-1510											
-1515											



Hybrid robot  
2-action pneumatic robot

# HRL-2G Series

● Load capacity: 1, 1.5, 2, 3kg



## Specifications

Descriptions		HRL-2G-1005	HRL-2G-1010	HRL-2G-1505	HRL-2G-1510
Load capacity (Note 1)	kg	1	1.5	2	3
Basic cylinder	X axis	SCM-00-20D	SCM-00-25D	SCM-00-20D	SCM-00-25D
	Z axis	SCM-00-25D		SCM-00-32D	
Guide rod diameter	X axis	13			
	Z axis	13		16	
Maximum speed	mm/s	300			
Repeatability	mm	±0.1			
Stroke length	X axis	50 to 200			
	Z axis	25 to 150			
Product weight	kg	4.7 + 0.0033 × X axis stroke length + 0.0037 × Z axis stroke length	4.7 + 0.0037 × X axis stroke length + 0.0037 × Z axis stroke length	5.7 + 0.0033 × X axis stroke length + 0.0052 × Z axis stroke length	5.7 + 0.0037 × X axis stroke length + 0.0052 × Z axis stroke length
Movable part weight	X axis	1.0 + 0.0025 × X axis stroke length	1.0 + 0.0027 × X axis stroke length	1.0 + 0.0025 × X axis stroke length	1.0 + 0.0027 × X axis stroke length
	Z axis	3.6 + 0.0033 × X axis stroke length + 0.0007 × Z axis stroke length	3.7 + 0.0037 × X axis stroke length + 0.0007 × Z axis stroke length	4.2 + 0.0033 × X axis stroke length + 0.0011 × Z axis stroke length	4.3 + 0.0037 × X axis stroke length + 0.0011 × Z axis stroke length
Shock absorber (Note 2)		NCK-00-0.7		X axis NCK-00-0.7	Z axis NCK-00-1.2
Working pressure	MPa	0.3 to 0.7			

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity. (Value is for reference.)

Note 2: Use at 74% or less of the shock absorber's allowable value at working speed and air pressure.

## Switch specifications

● 1 color/2 color indicator

Descriptions	Proximity 2 wire		Proximity 3 wire			Reed 2 wire			
	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V		T5H/T5V	
Applications	Programmable controller		Programmable controller			Programmable controller		Programmable controller, relay IC circuit (w/o light), serial connection	
Output method	-		NPN output	PNP output	NPN output	-			
Power voltage	-		10 to 28 VDC			-			
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 20mA (Note 1)		100mA or less	50mA or less	5 to 50mA	7 to 20mA	50mA or less	20mA or less	
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)			
Leakage current	1mA or less		10 μA or less			0mA			

Note 1: Maximum load current above: 20mA applies at 25°C. When ambient temperature around a switch is higher than 25°C, the value is lower than 20mA. (5 to 10mA when 60°C)

● With preventive maintenance output

Descriptions	Proximity 3 wire		Proximity 4 wire		Proximity 3 wire		Proximity 4 wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller		Programmable controller		Programmable controller		
Output method	NPN output								
Light	Red/green LED (ON lighting)								
	-				Yellow LED (ON lighting)				
Output section	Power voltage	-		10V to 28 VDC		-		10V to 28 VDC	
	Load voltage	10V to 30 VDC		30 VDC or less		10V to 30 VDC		30 VDC or less	
	Load current	5 to 20mA		50mA or less		5 to 20mA		50mA or less	
	Leakage current	1mA or less		10 μA or less		1.2mA or less		10 μA or less	
Preventive maintenance output	Load voltage	30 VDC or less							
	Load current	20mA or less		50mA or less		5 to 20mA or less		50mA or less	
	Leakage current	10 μA or less							

RRC  
GRC  
RV3\*  
NHS  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/BHG  
LHA  
LHAG  
HKP  
HLA/HLB  
HLAG/HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2 \*-HC  
CKH2  
CKLB2  
NCK/SCK/FCK  
FJ  
FK

Ending

Hybrid robot  
Modular unit

# HRL-2G Series

## How to order

**HRL-2G-1505-50-25-T0H3**

**A** Load capacity

**B** X-axis stroke length

**C** Z-axis stroke length

**D** Switch model no.

\* indicates lead wire length.

Note 1

- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2
- CKL2
- \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

Symbol	Descriptions			
<b>A Load capacity</b>				
1005	1kg			
1010	1.5kg			
1505	2kg			
1510	3kg			
<b>B X-axis stroke length</b>				
50, 75, 100, 125, 150, 200				
<b>C Z-axis stroke length (mm)</b>				
25, 50, 75, 100, 125, 150				
<b>D Switch model no.</b>				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T2H*	T2V*	Proximity	1 color indicator type	2-wire
T3H*	T3V*			3-wire
T2YH*	T2YV*		2 color indicator type	2-wire
T3YH*	T3YV*			3-wire
T2YFH*	T2YFV*		2 color indicator type (w/o indicator light for preventive maintenance output)	3-wire
T3YFH*	T3YFV*			4-wire
T2YMH*	T2YMV*		2 color indicator type (w/ indicator light for preventive maintenance output (1 color))	3-wire
T3YMH*	T3YMV*			4-wire
T2YD*	-		Strong magnetic field proof switch	2-wire
T2YDT*	-			
T2JH*	T2JV*	Off-delay type	2-wire	
<b>*Lead wire length</b>				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			

### Note on model no. selection

Note 1 2 pcs. installed per R and Z axis as standard specifications.

<Example of model number>  
**HRL-2G-1505-50-25-T0H3**

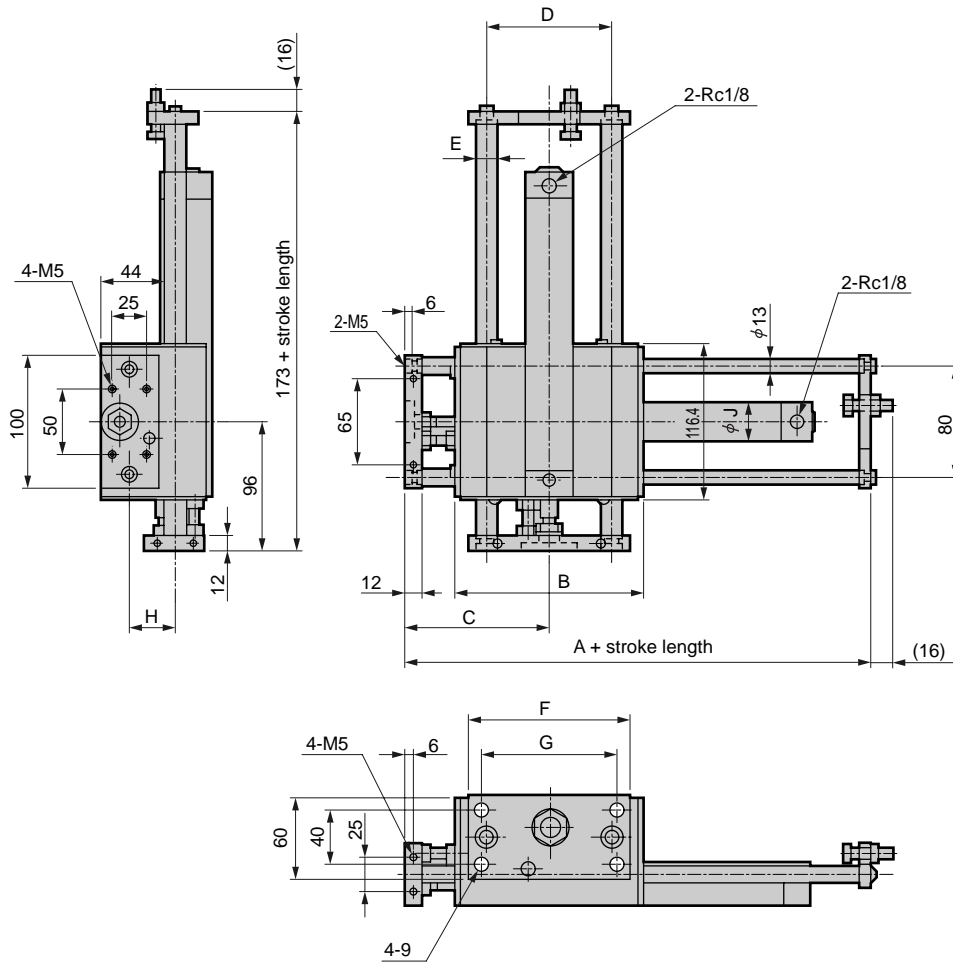
Model: Hybrid robot HRL-2G Series

- A** Load capacity: 2kg
- B** X axis stroke length: 50mm
- C** Z axis stroke length: 25mm
- D** Switch model no.: reed T0H switch, lead wire 3m





● HRL-2G

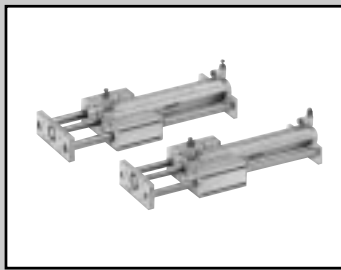


Basic model	A	B	C	D	E	F	G	H	I	J
HRL-2G-1005	174	116.4	96	80	φ13	100	80	31	31	26
-1010										31
-1505	194	136.4	106	94	φ16	120	100	34	38	26
-1510										31

- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/  
BHG
- LHA
- LHAG
- HKP
- HLA/  
HLB
- HLAG/  
HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
\*-HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK

Ending

Hybrid robot  
Modular unit



Hybrid robot  
Pneumatic robot element single axis unit

# HRL-1 Series

● Load capacity: 5, 10, 15, 25, 50, 65kg



## Specifications

Descriptions	HRL-1*-05	HRL-1*-10	HRL-1*-15	HRL-1*-15H	HRL-1*-25	HRL-1*-50	HRL-1*-65	
Load capacity (vertical) Note 1 kg	5	10	15		25	50	65	
Basic cylinder	SCM-00-20D	SCM-00-25D	SCM-00-32D		SCM-00-40D	SCM-00-50D	SCM-00-63B	
Cylinder bore size mm	20	25	32		40	50	63	
Guide rod diameter mm	13	13	16	20	20	25	30	
Maximum speed mm/s	500							
Working pressure MPa	0.3 to 0.7							
Adjustable stroke range Note 2 mm	0 to -10mm (extended side)							
Shock absorber Note 3	NCK-00-0.7		NCK-00-1.2		NCK-00-12			
Product weight kg	Basic type	2+ (0.0033 × stroke length)	2.1+ (0.0037 × stroke length)	2.8+ (0.0051 × stroke length)	2.9+ (0.0069 × stroke length)	10.8+ (0.0081 × stroke length)	11.9+ (0.0122 × stroke length)	13.3+ (0.02 × stroke length)
	Long body type	2.3+ (0.0033 × stroke length)	2.4+ (0.0037 × stroke length)	3.1+ (0.0051 × stroke length)	3.2+ (0.0069 × stroke length)	12.5+ (0.0081 × stroke length)	13.6+ (0.0122 × stroke length)	15+ (0.02 × stroke length)
Movable part weight kg	Basic type	0.9+ (0.0025 × stroke length)	0.9+ (0.0027 × stroke length)	1.3+ (0.0041 × stroke length)	1.6+ (0.0059 × stroke length)	4.1+ (0.0066 × stroke length)	5.2+ (0.0102 × stroke length)	6.1+ (0.0137 × stroke length)
	Long body type	1.0+ (0.0025 × stroke length)	1.0+ (0.0027 × stroke length)	1.5+ (0.0041 × stroke length)	1.8+ (0.0059 × stroke length)	4.4+ (0.0066 × stroke length)	5.7+ (0.0102 × stroke length)	6.8+ (0.0137 × stroke length)
Speed control valve Note 4	SC3W-6-6				SC3W-6-8	SC3W-8-8		

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity. (Value is for reference.)

Note 2: Adjustable stroke is not available for retracted side.

Note 3: The shock absorber is built in. Use within the following allowable shock absorber values at working speed and air pressure.

- HRL-1\*F-05/10/15/15H pull: 70% or less
- HRL-1\*F-25/50/65 pull: 65% or less
- Other than the above: 74% or less

Note 4: The speed control valve is an accessory.

## Switch specifications

● 1 color/2 color indicator

Descriptions	Proximity 2 wire		Proximity 3 wire			Reed 2 wire				
	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V		T5H/T5V		
Applications	Programmable controller		Programmable controller			Programmable controller		Programmable controller, relay IC circuit (w/o light), serial connection		
Output method	-		NPN output	PNP output	NPN output	-				
Power voltage	-		10 to 28 VDC			-				
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	
Load current	5 to 20mA (Note 1)		100mA or less		50mA or less	5 to 50mA	7 to 20mA	50mA or less	20mA or less	
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)				
Leakage current	1mA or less		10 μA or less			0mA				

Note 1: Maximum load current above: 20mA applies at 25°C. When ambient temperature around a switch is higher than 25°C, the value is lower than 20mA. (5 to 10mA when 60°C)

● With preventive maintenance output

Descriptions	Proximity 3 wire		Proximity 4 wire		Proximity 3 wire		Proximity 4 wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller		Programmable controller		Programmable controller		
Output method	NPN output								
Light	Red/green LED (ON lighting)								
	Yellow LED (ON lighting)								
Output section	Power voltage	-	10V to 28 VDC		-	10V to 28 VDC			
	Load voltage	10V to 30 VDC	30 VDC or less		10V to 30 VDC	30 VDC or less			
	Load current	5 to 20mA	50mA or less		5 to 20mA	50mA or less			
	Leakage current	1mA or less	10 μA or less		1.2mA or less	10 μA or less			
Preventive maintenance output	Load voltage	30 VDC or less							
	Load current	20mA or less	50mA or less		5 to 20mA or less		50mA or less		
	Leakage current	10 μA or less							

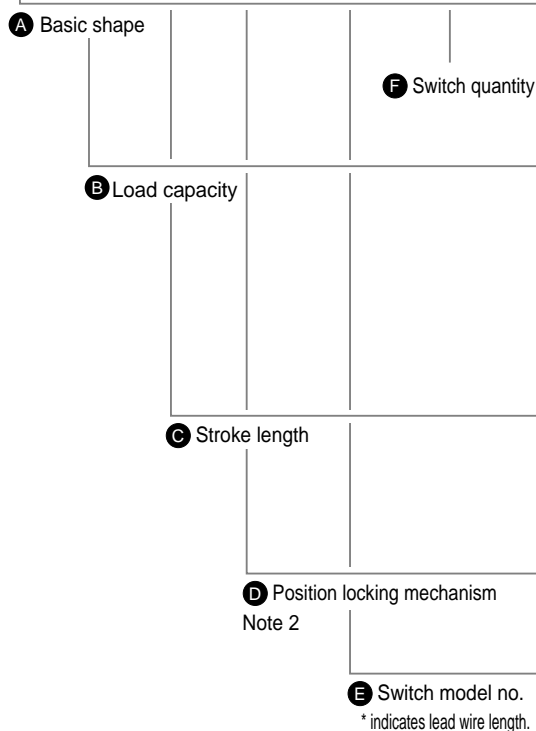
### How to order

Without switch Note 1

**HRL-1** **L** - **05** - **350** - **Q**

With switch

**HRL-1** **L** - **05** - **350** - **Q** - **T0H3** - **R**



Symbol	Descriptions			
<b>A Basic shape</b>				
Blank	Basic type			
L	Long body			
F	Basic type front flange			
LF	Long body front flange			
<b>B Load capacity (vertical)</b>				
05	5kg			
10	10kg			
15	15kg			
15H	15kg			
25	25kg			
50	50kg			
65	65kg			
<b>C Stroke length (mm)</b>				
(Basic body shape)				
50, 75, 100, 125, 150, 200, 250, 300				
(Long body shape)				
350, 400, 450, 500, 550, 600				
<b>D Position locking mechanism</b>				
Blank	None			
Q	Selected			
<b>E Switch model no.</b>				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T2H*	T2V*	Proximity	1 color indicator type	2-wire
T3H*	T3V*		3-wire	
T2YH*	T2YV*		2 color indicator type	2-wire
T3YH*	T3YV*		3-wire	
T2YFH*	T2YFV*		2 color indicator type (w/o indicator light for preventive maintenance output)	3-wire
T3YFH*	T3YFV*		4-wire	
T2YMH*	T2YMV*	2 color indicator type (w/ indicator light for preventive maintenance output (1 color))	3-wire	
T3YMH*	T3YMV*	4-wire		
T2YD*	-	Strong magnetic field proof switch	Off-delay type	2-wire
T2YDT*	-			
T2JH*	T2JV*	Off-delay type	2-wire	
<b>*Lead wire length</b>				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			
<b>F Switch quantity</b>				
R	One on rod end			
H	One on head end			
D	Two			
T	Three			

### ⚠ Note on model no. selection

Note 1: When no switch is selected, availability of the cylinder switch rail depends on whether position locking is selected.

Without position locking mechanism: Without switch rail

With position locking mechanism: With switch rail

Note 2: Position locking mechanism can be installed on head side of cylinder only.

<Example of model number>

**HRL-1L-05-350-Q-T0H3-R**

Model: Hybrid robot HRL-1 Series

**A** Basic shape: Long body

**B** Load capacity: 5kg

**C** Stroke length: 350mm

**D** Position locking mechanism: Available

**E** Switch model no.: Reed T0H switch, lead wire 3m

**F** Switch quantity: One on rod end

RRC

GRC

RV3\*

NHS

HR

LN

FH100

HAP

BSA2

BHA/

BHG

LHA

LHAG

HKP

HLA/

HLB

HLAG/

HLBG

HEP

HCP

HMF

HMFB

HFP

HLC

HGP

FH500

HBL

HDL

HMD

HJL

BHE

CKG

CK

CKA

CKS

CKF

CKJ

CKL2

CKL2

-\*HC

CKH2

CKLB2

NCK/

SCK/FCK

FJ

FK

Ending

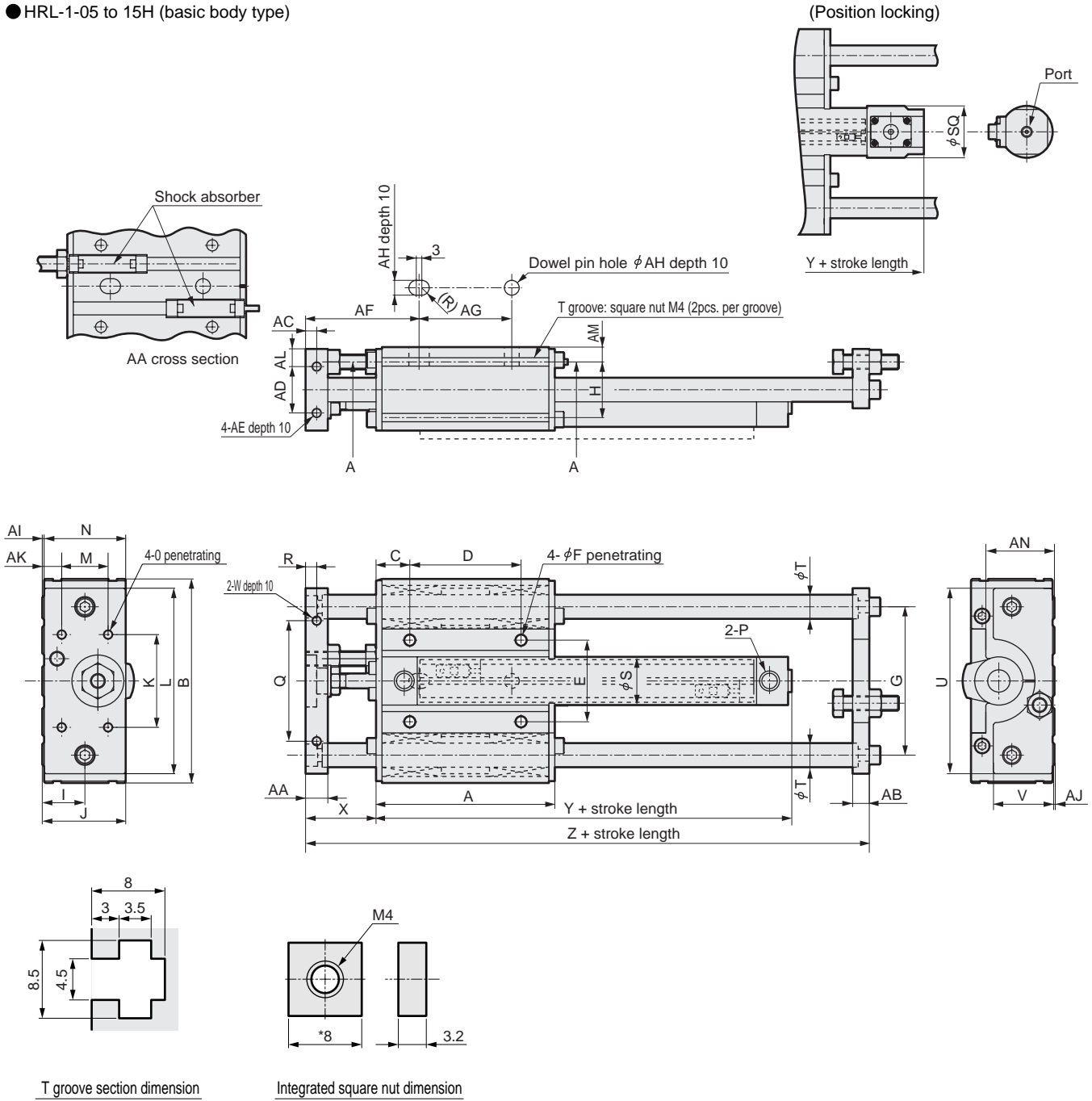
Hybrid robot

Modular unit

# HRL-1 Series

## Dimensions

● HRL-1-05 to 15H (basic body type)



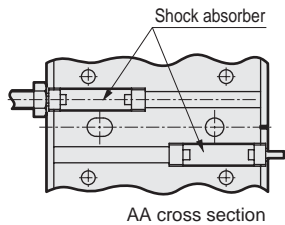
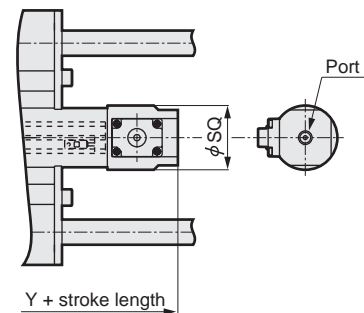
Model no.	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	B	C	D	E	F	
HRL-1-05	50, 75																110			44	6	
-10	100, 125	96.4	12	9	6	25	M5	61.2	50	$8^{+0.03}_0$	1	1	10.5	9.5	8	37		18.2	60			
-15	150, 200																130			52	7	
-15H	250, 300																					
Model no.	G	H	I	J	K	L	M	N	O	P	Q	R	S	SQ	T	U	V	W	X	Y		Z
HRL-1-05					50	100					65			26	30							
-10	80													31	35	13	100	32			74.2	94.2
-15		30	23	45			25	44	M5	Rc1/8	6							M5	38			
-15H	94				60	120					75			38	38.1	16	120	38			76.2	96.2
															20							154

### Dimensions

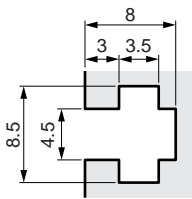
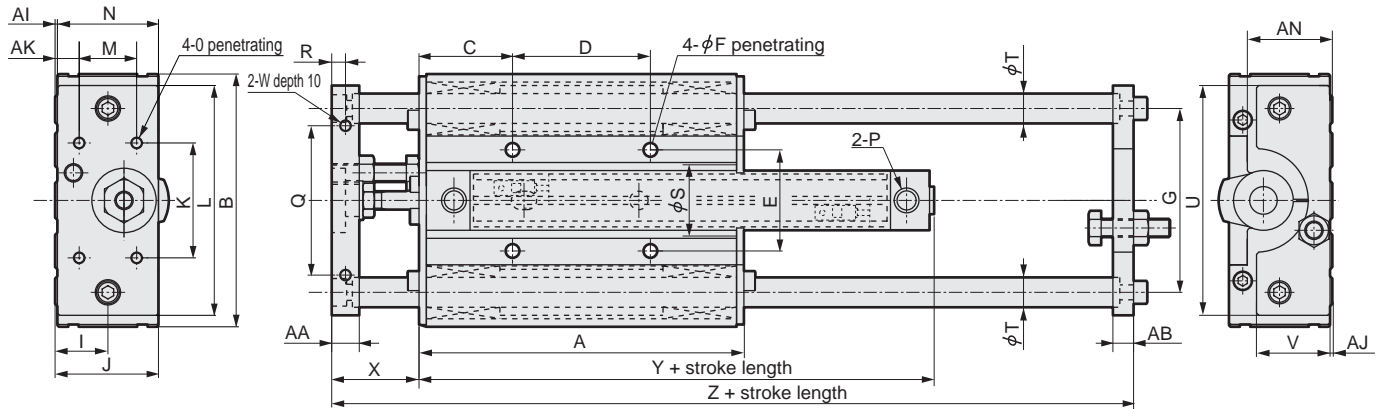
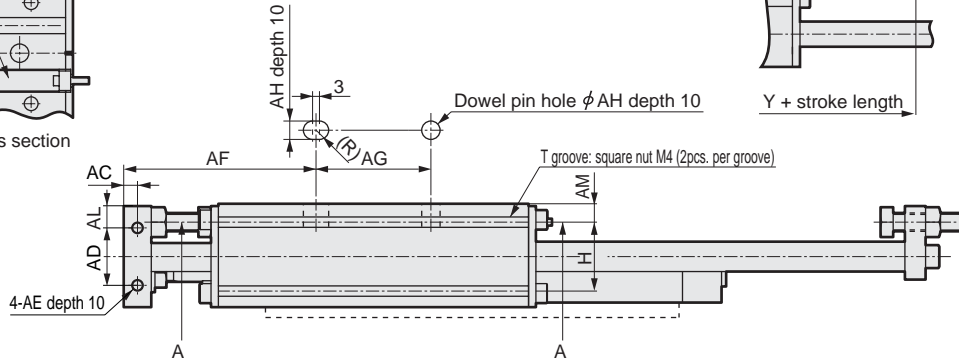


● HRL-1L-05 to 15H (long body type)

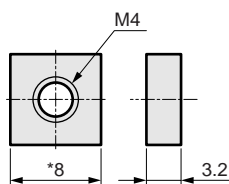
(Position locking)



AA cross section



T groove section dimension



Integrated square nut dimension

- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK

Ending

Model no.	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	B	C	D	E	F
HRL-1L-05	350, 400	141.4						83.7									110	40.7		44	6
-10	450, 500		12	9	6	25	M5		50	8 <sup>+0.03</sup> <sub>0</sub>	1	1	10.5	9.5	8	37			60		
-15	550, 600	151.4						88.7									130	45.7		52	7
-15H																					

Model no.	G	H	I	J	K	L	M	N	O	P	Q	R	S	SQ	T	U	V	W	X	Y		Z	
																				W/o position locking	W/ position locking		
HRL-1L-05	80				50	100					65			26	30	13	100	32			74.2	94.2	199
-10		30	23	45			25	44	M5	Rc1/8		6		31	35				M5	38			
-15					60	120					75			38	38.1	16	120	38			76.2	96.2	209
-15H	94														20								

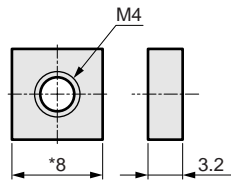
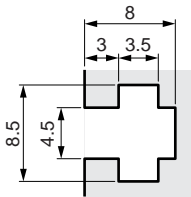
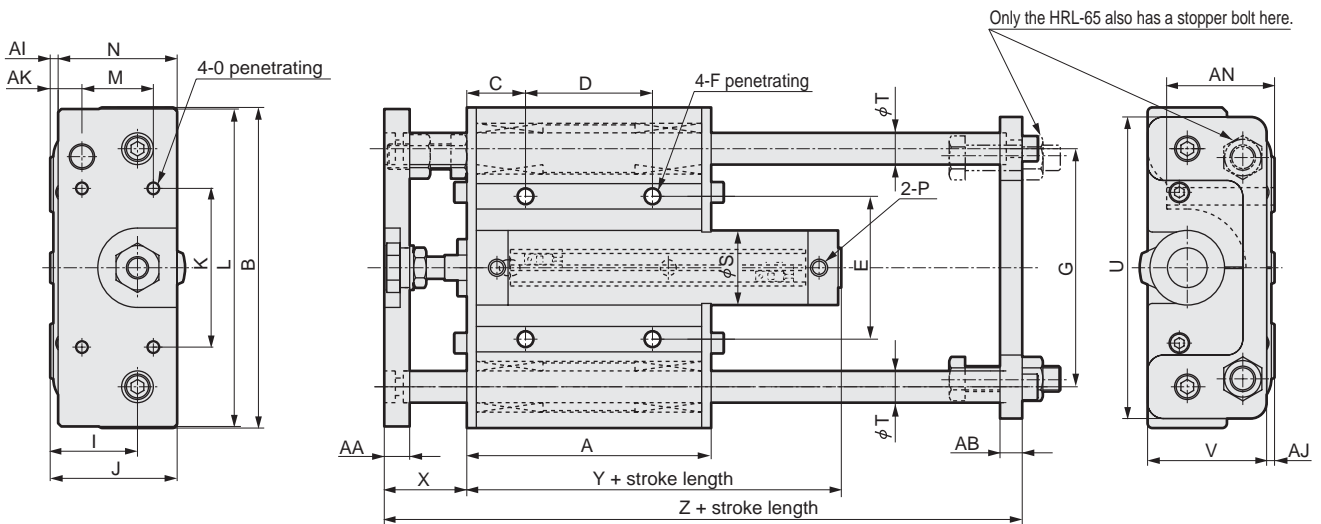
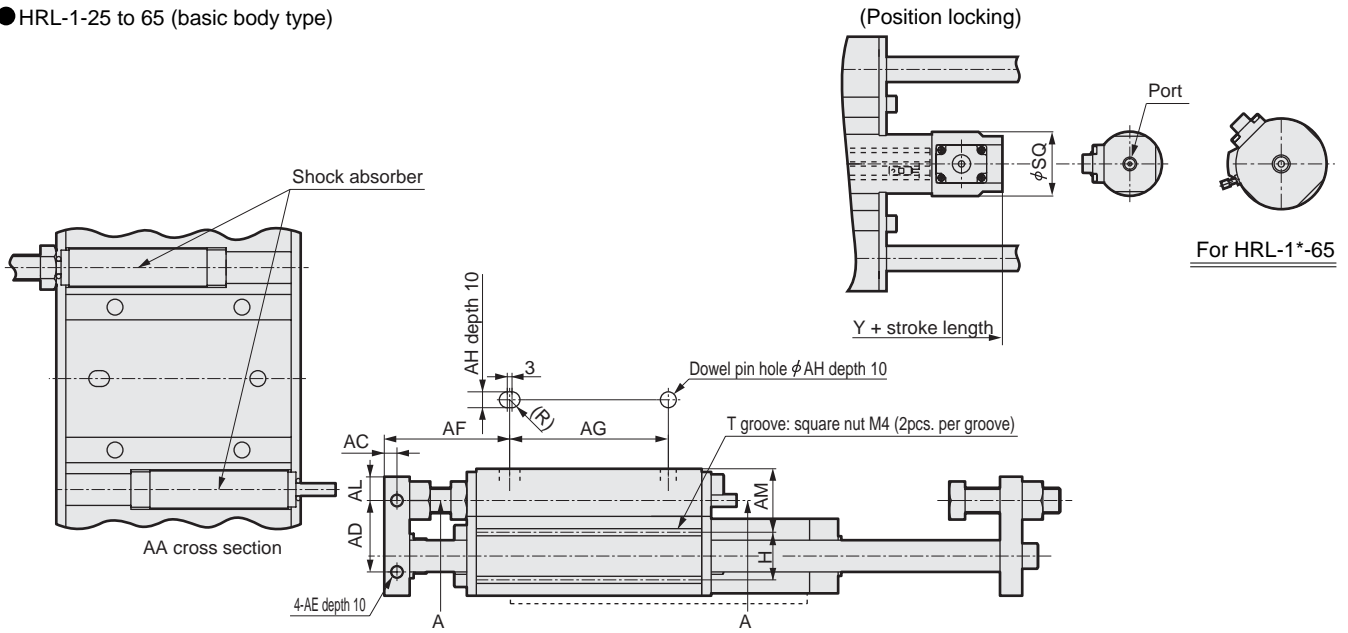
Hybrid robot  
Modular unit

# HRL-1 Series

## Dimensions

- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK

● HRL-1-25 to 65 (basic body type)



T groove section dimension

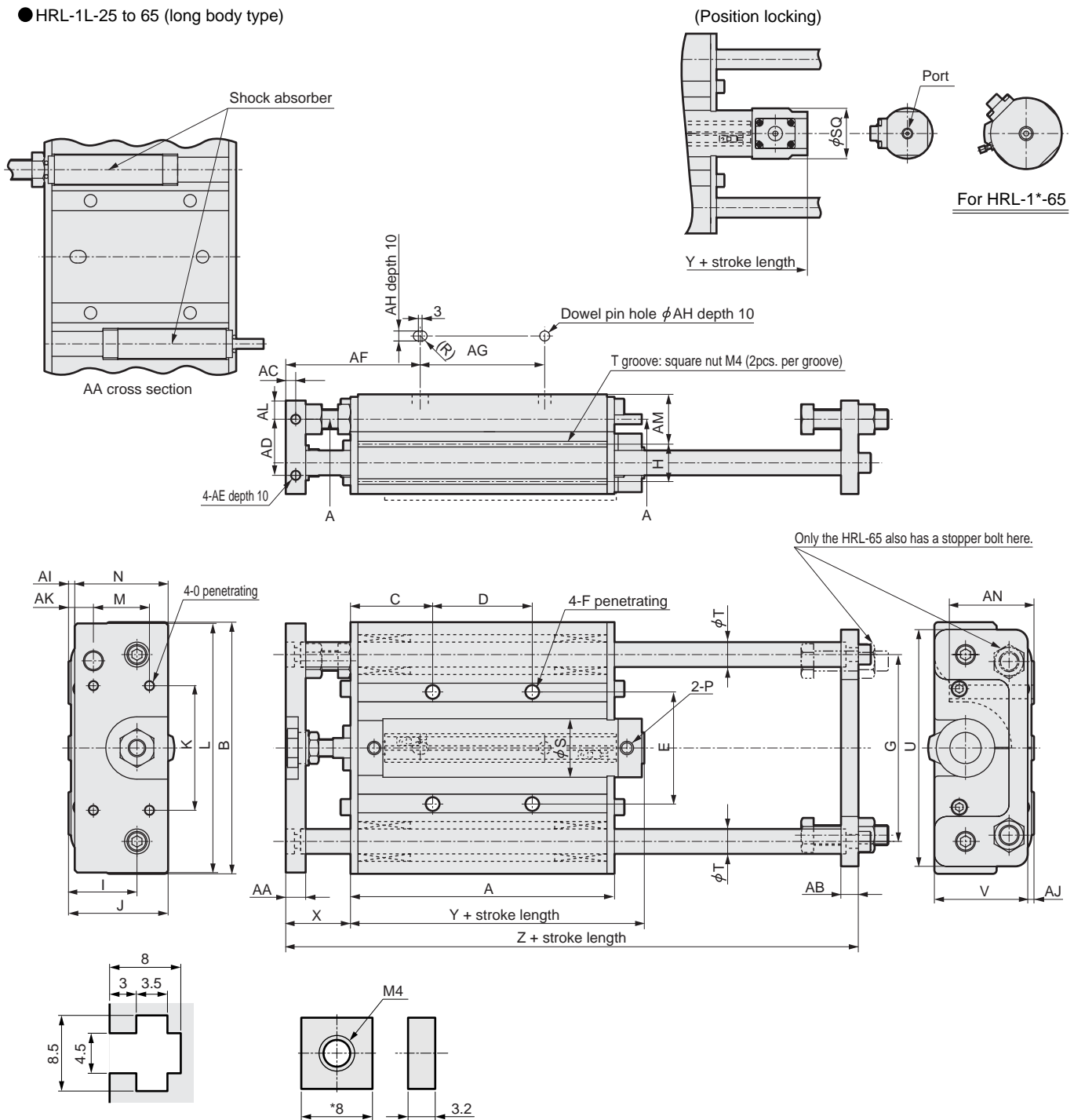
Integrated square nut dimension

Model no.	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	B	C	D		
HRL-1-25	50, 75, 100		16		8			79													
-50	125, 150, 200	154	19	14	9.5	45	M8	82	100	$10^{+0.03}_0$	5	5	20	15	40	68	202	37	80		
-65	250, 300											2									
Model no.	E	F	G	H	I	J	K	L	M	N	O	P	S	SQ	T	U	V	X	Y		Z
HRL-1-25																			W/o position locking	W/ position locking	
-50	90	11	150	30	55	80	100	200	45	75	M8	Rc1/8	47	51	20		75	52	86	121	252
-65						92						Rc1/4	58	60	25	190	78	55	98	138	255

### Dimensions



● HRL-1L-25 to 65 (long body type)



T groove section dimension

Integrated square nut dimension

Model no.	Stroke range (mm)	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	B	C	D		
HRL-1L-25	350, 400		16		8			108													
-50	450, 500	212	19	14	9.5	45	M8	111	100	10 <sup>+0.03</sup> <sub>0</sub>	5	5	20	15	40	68	202	66	80		
-65	550, 600											2									
Model no.	E	F	G	H	I	J	K	L	M	N	O	P	S	SQ	T	U	V	X	Y		Z
HRL-1L-25						80						Rc1/8	47	51	20		75	52	86	121	310
-50	90	11	150	30	55		100	200	45	75	M8	Rc1/4	58	60	25	190	75	55	98	138	313
-65						92							72	72.1	30		78				

- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK

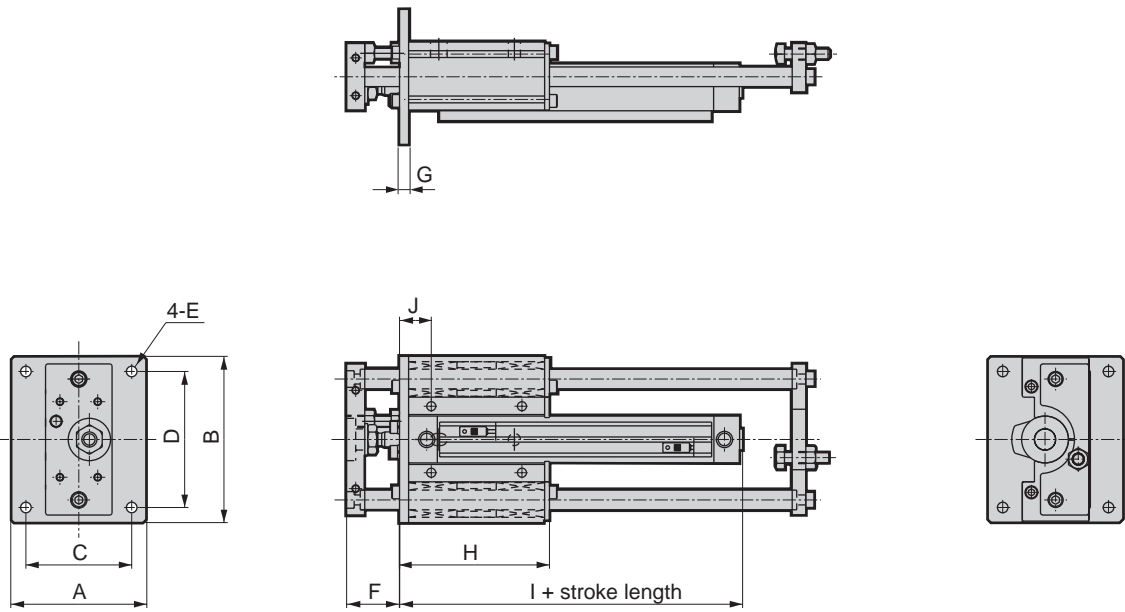
Ending

Hybrid robot  
Modular unit

# HRL-1 Series

## Dimensions

● Front flanged



\* Other dimensions are the same as basic type.

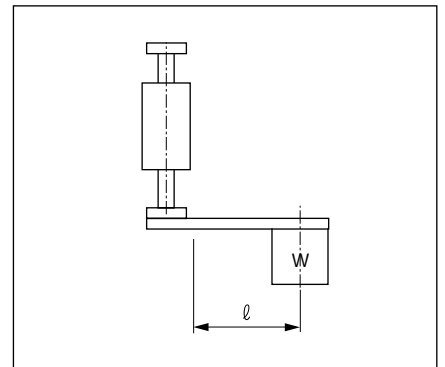
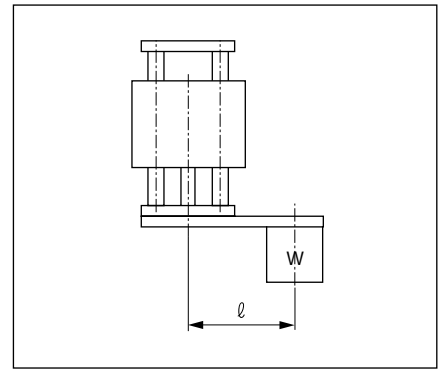
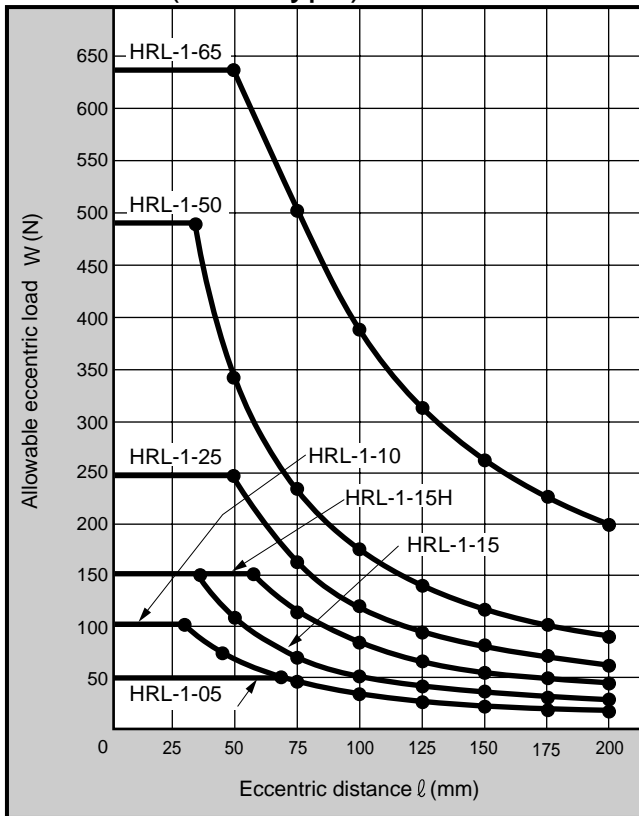
Model no.	A	B	C	D	E	F	G	H		I	J		
								Basic type	Long body type		Basic type	Long body type	
HRL-1*F-05	90	110	70	90	7	35	6	99.2	144.2	77	21	43.5	
-10		130		100								48.5	
CKG			-15H	110								170	11
CKA	-25	140	200	110	170	11	49	12	160	218	104	43	72
CKS	-50	140	200	110	170	11	49	12	160	218	104	43	72
CKF	-65												

- RRC
- GRC
- RV3\*
- NHS
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/  
BHG
- LHA
- LHAG
- HKP
- HLA/  
HLB
- HLAG/  
HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
-\*HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK
- Ending

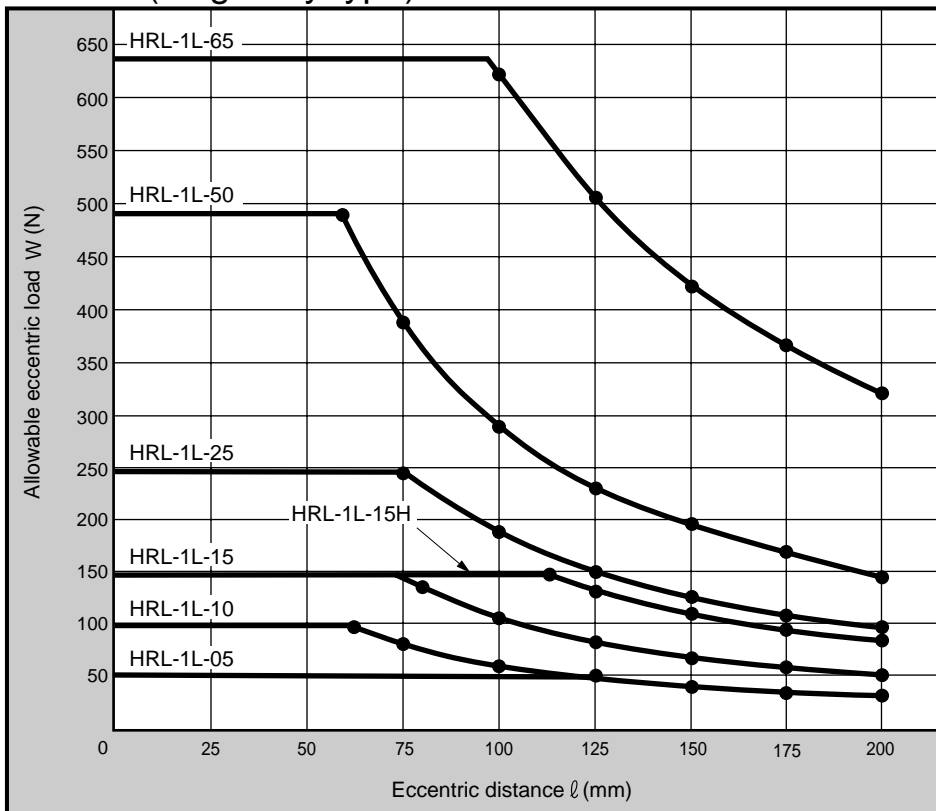


## Allowable eccentric load

### ● HRL-1 (basic type)



### HRL-1L (long body type)



RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK
Ending

Hybrid robot  
Modular unit