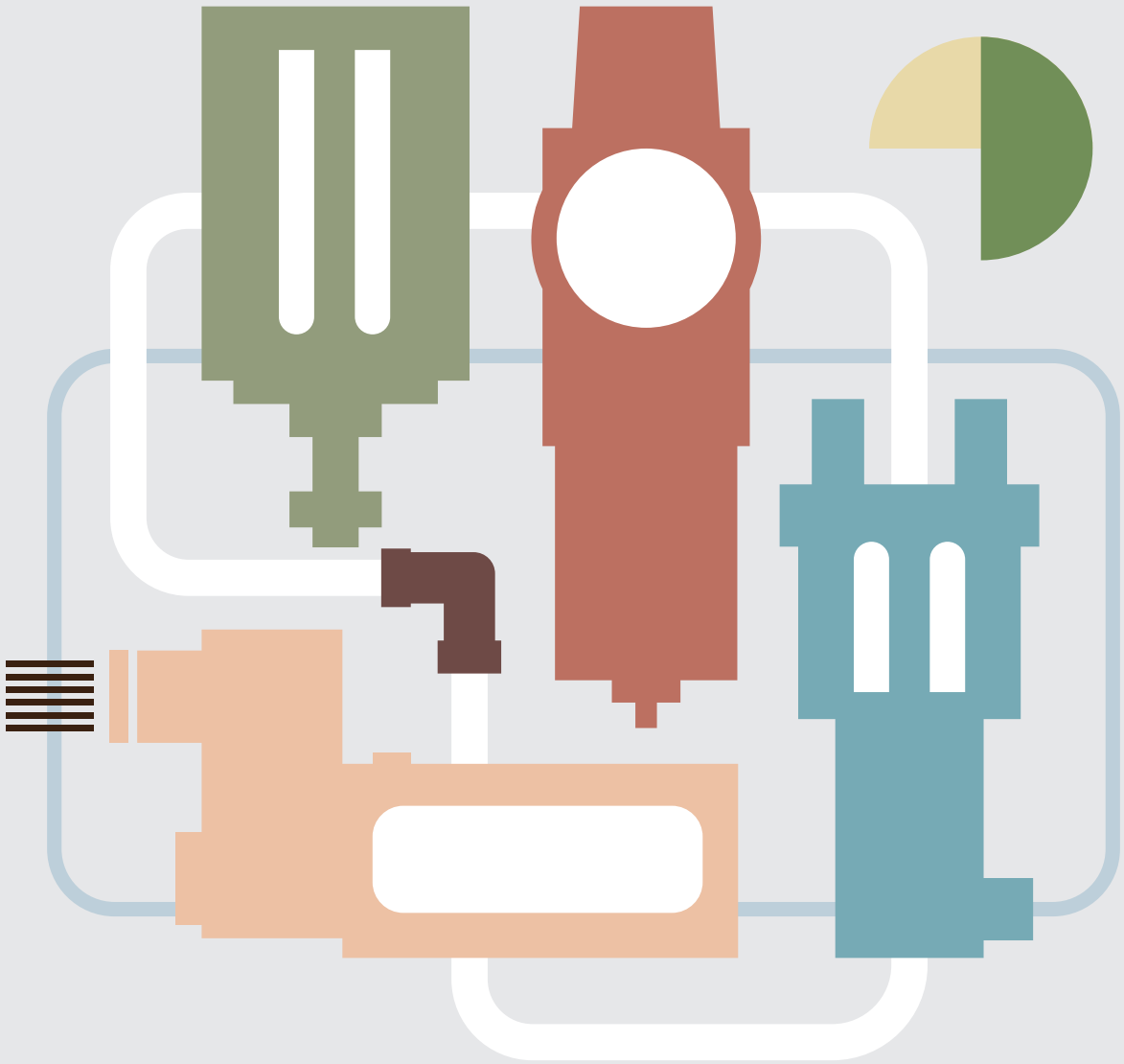
ALL SERIES

PRODUCT OVERVIEW

SNS INDUSTRIAL

Directional Control Valve | Air Treatment Unit | Air Cylinder | Electric Actuator | Vacuum Component | Tube & Fitting



mindman

Reservation

mindman@mindman.com.tw

Scan to visit

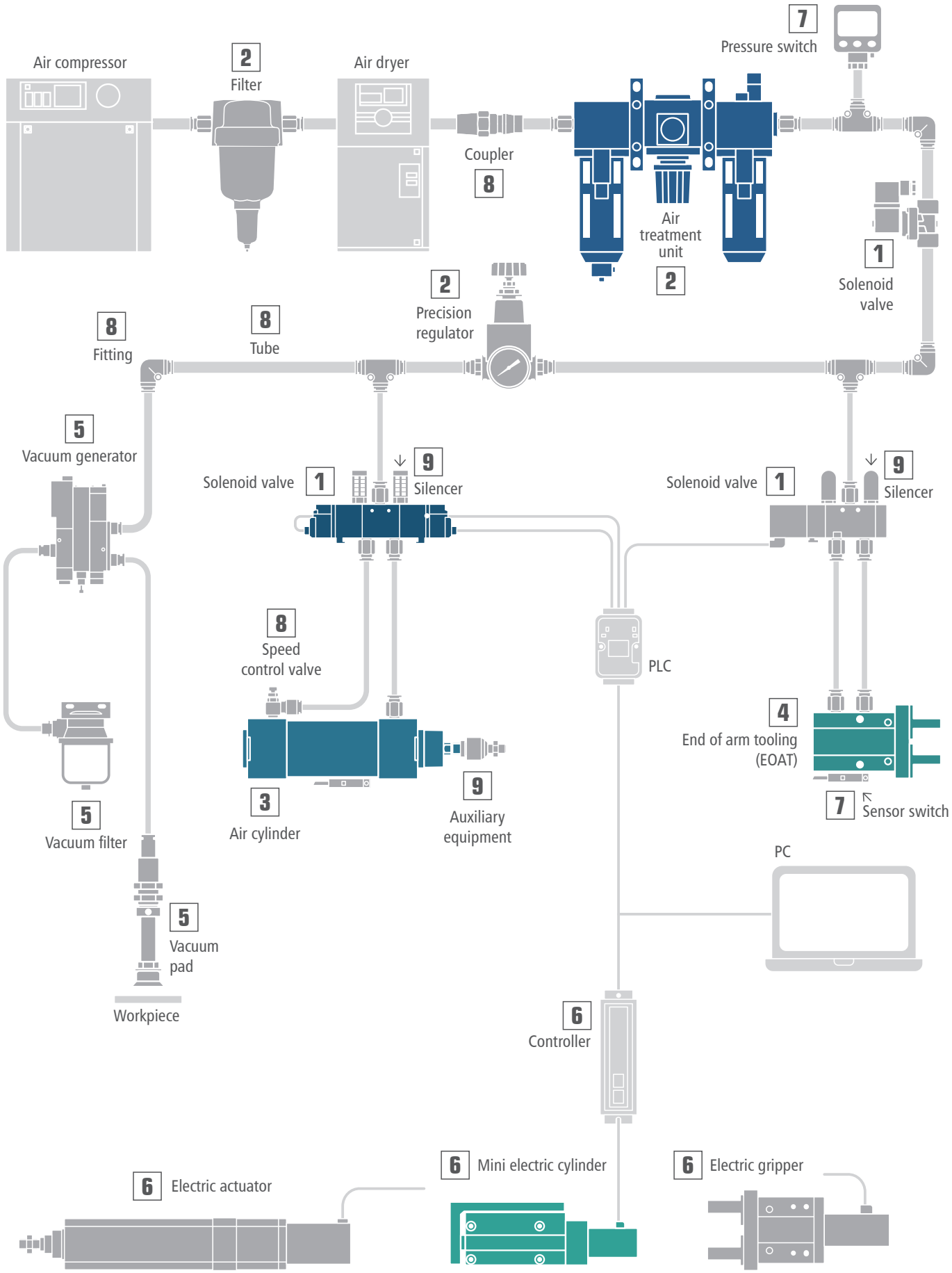
DIRECTIONAL CONTROL VALVE
Solenoid Valve / Pilot & Mechanical Valve

AIR TREATMENT UNIT
F.R.L.Unit / Pressure Switch

AIR CYLINDER
ISO / Table / Stopper / Rodless

GRIPPER & ROTARY ACTUATOR
End of Arm Tooling (EOAT)

ELECTRIC ACTUATOR
Belt Driven / Ball Screw / Mini. / Gripper


Air compressor
2 Filter
Air dryer
Coupler
8
7 Pressure switch
Air treatment unit
2
1 Solenoid valve
2 Precision regulator
8 Fitting
8 Tube
5 Vacuum generator
Solenoid valve 1
9 Silencer
Solenoid valve 1
9 Silencer
8 Speed control valve
PLC
4 End of arm tooling (EOAT)
7 Sensor switch
3 Air cylinder
9 Auxiliary equipment
5 Vacuum filter
5 Vacuum pad
Workpiece
PC
6 Controller
6 Electric actuator
6 Mini electric cylinder
6 Electric gripper

COMPANY BRIEF INTRODUCTION

ISO 9001
Quality

ISO 14001
Environmental Friendly

ISO 45001
Health and Safety

Mindman Industrial Co., Ltd. was established in 1979 with a destination to provide high quality automation components for a wide variety of industries.

During the past 40 years, Mindman has devoted to the expansion of our product range. Thanks to our R&D department, we are proud to possess the diversified product lineup includes solenoid valves, air treatment units, pneumatic cylinders, electric actuators and all different types of fluid power accessories.

We always believe that fast delivery of automation components is the key of success in the market. Through the complete vertical integration of all manufacturing processes and automated warehouse, we are confident to achieve on time delivery.

To keep quality high during the whole production process, we implement the strict quality control standard. We thoroughly control the process via standard operation procedure (SOP), statistical process control system (SPC) and total productive management (TPM). Most important of all, Mindman commits to providing the products with 100% inspection after assembly.

Currently, Mindman products are exported to more than 90 countries around the world. We devoted ourselves to building the relationship with customers worldwide and provide them with the strong support, such as online 3D drawing, inventory check and promotional program. In the vast automation market, Mindman will spare no effort in establishing a brand – a world-class premium automation components supplier.

RoHS CE MIT

CORE BUSINESS

Manufacture and sale of various high-quality automation components

140,000

Automation Products ↑

No.1

Quantity supplied of pneumatic components in Taiwan

1979

FOUNDED

ONLINE

SERVICE

INVENTORY INQUIRY

MANUFACTURE BASE

TAINAN

TAIWAN

HEADQUARTERS

TAIPEI

TAIWAN

PRESIDENT

CHING-CHENG HUANG

SALES NETWORK

97 COUNTRIES

EMPLOYEES

600 PEOPLE

MADE IN TAIWAN

100%

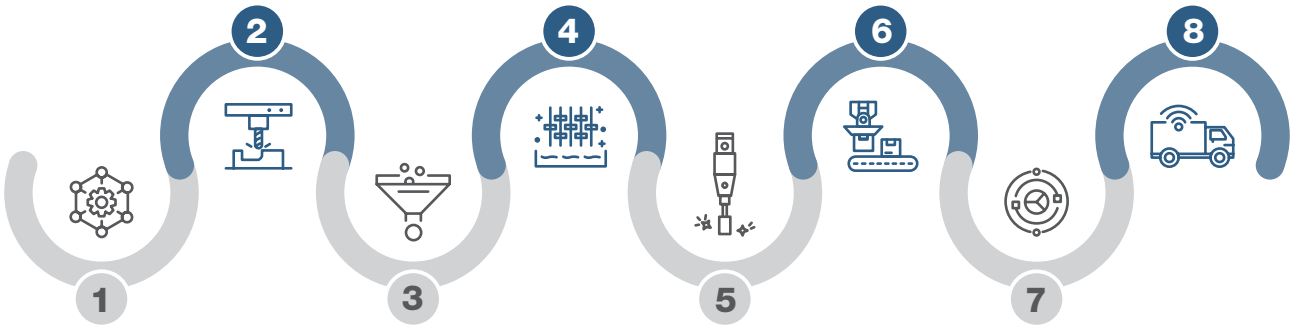
CAPITAL

USD 12,558,000

PLANT AREA

90,000 m^2

100% Vertical integration.
Control the quality from materials to final products.



1. Die casting

Production quality is strictly controlled starting from die-casting mold design to final robotic grinding and polishing.

2. Machining

We carry over 300 CNC machines in house and processing more than 100,000 different types of parts.

3. Plastic injection

Automated plastic injection production line with high-precision measuring tools and AOI dimension control system to sustain superb quality.

4. Surface coating

- Surface pretreatment
- Electric static coating
- Hard anodization
- Impregnation process

5. Grinding

Linear rail grinding, slide block grinding, pull rod grinding etc. are all processed in-house.

6. Product assembling

Utilizing automated assembly machines with software tracking to achieve high-volume and flexible production.

7. 100% Inspection

100% inspection is our commitment to all Mindman customers.

Automated warehouse profile

- Plant area: 6600m^2
- 84240 stock units
- 99.9% accuracy

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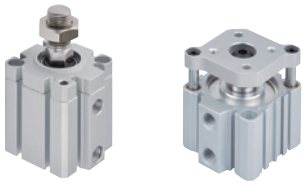
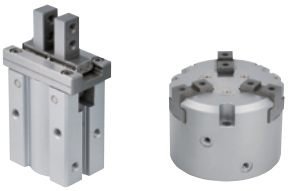
Directional Control Valve 1

Air Treatment Unit 2



Air Cylinder 3



End of Arm Tooling (EOAT) 4

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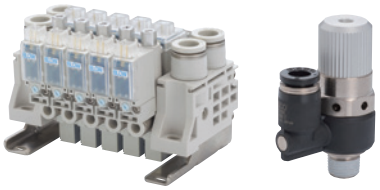

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Electric Actuator 6

Sensors 7

Auxiliary Equipment 9

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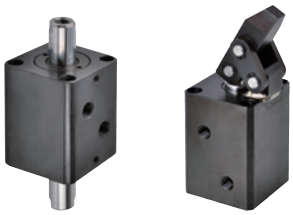
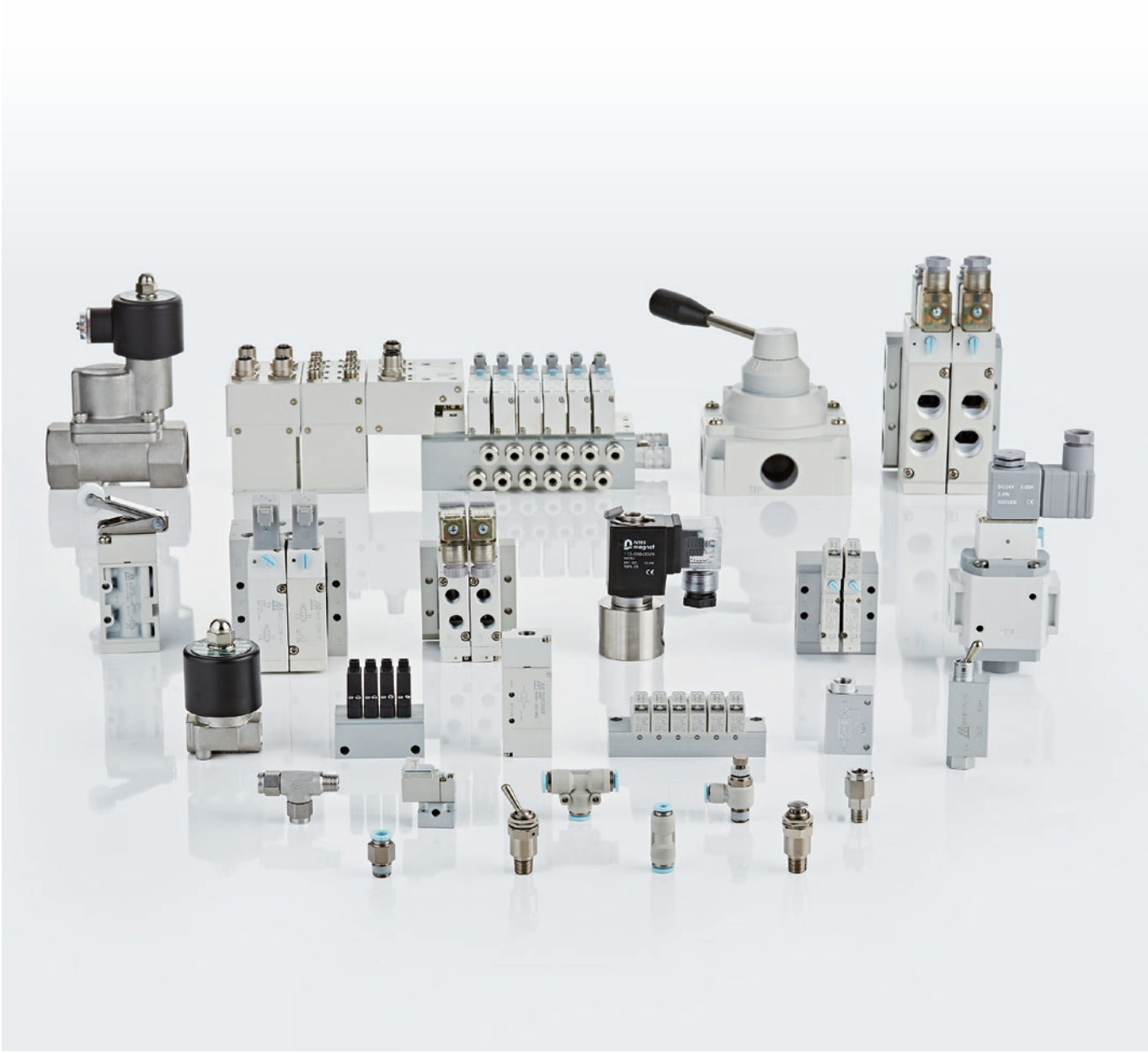




High Wear Resistance | Energy Saving | Quick Response | Low Noise | Longevity | Integration

Directional Control Valve

U-Packing (NBR)	DISK seal. High wear resistance, wide working temperature - 30 ~ +100°C , excellent sealability.
Plunger material	Resulfurized stainless steel with 17% chromium and 1.5% silicon. Provide a very low coercive field and a very high permeability.
Terminal material	Material of terminal housing is PA6 which has good chemical resistance and weather resistance.
Contact spring	Contact spring makes wiring quick and easy. Also, it prevents wire damage.
Coil	Insulation class H. Heat-resistant to 180°C (the operating temperature of the valve is -5 ~ 50°C).
Low Noise	Bridge rectifier design. Converting AC voltage to DC, it can eliminate operating noise.
Multi connector system	Simplification and integration reduce air consumption and pressure drop, making less piping and wiring jobs.

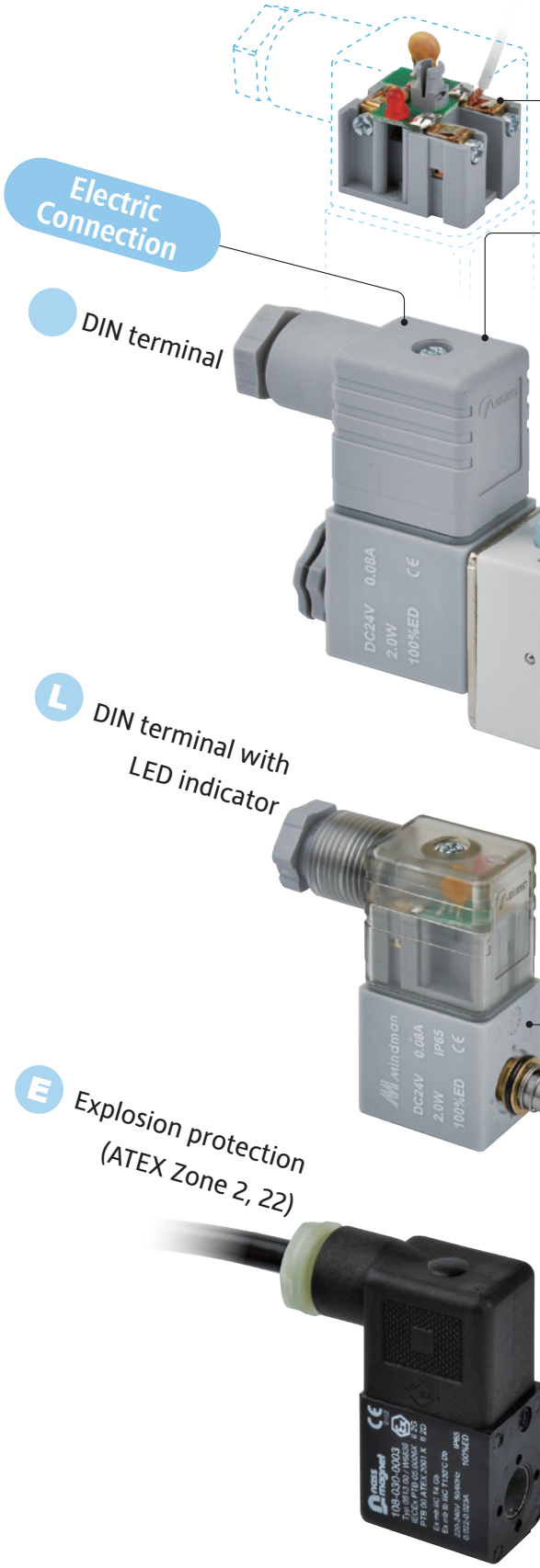
New Energy Industry

Textile Industry

Machine Tool

Industry 4.0

MVSC series [with 22 mm coil]



Product features

Contact spring

Contact spring makes wiring quick and easy.
Also, it prevents wire damage.

Terminal material

Material of terminal housing is PA6 which has good chemical resistance and weather resistance.

Manual override

Drop-shaped manual override is easy for testing with one push or spin.

Applying SurTec 650

Nonoxidizable for 336hrs under neutral salt spray test.

No leakage

All products go through leakage test according to JIS regulation.

DISK seal

NBR

U-packing design
High wear resistance, wide working temperature
- 30 ~ +100°C , excellent sealability.

Coil

Low power consumption, DC24V power 2W

Insulation class	Coil	F class/ 155°C
	Copper wire	H class/ 180°C

Plunger material

Resulfurized stainless steel with 17% chromium and 1.5% silicon. Provide a very low coercive field and a very high permeability.

Product specification

Effective orifice	18 mm^2
Max. operating pressure	0.8 MPa (8 kgf/cm^2)
Ambient temperature	–5 ~ +50°C (No freezing)
Lifetime	50 million cycles under normal service condition

MVSC series

Model	Port size	Port/Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSC-220	1/8, 1/4	3/2, 5/2, 5/3	16~18 (0.89~1.0)	<40	0.2~0.8	AC110/220V DC12/24V
MVSC-260	1/4	5/2, 5/3	16~18 (0.89~1.0)	<40	0.2~0.8	
MVSC-300	3/8	3/2, 5/2, 5/3	25~35 (1.39~1.94)	<50	0.2~0.8	
MVSC-460	1/2	3/2, 5/2, 5/3	30~60 (1.67~3.33)	<50	0.2~0.8	

MVSC1 series

Model	Port size	Port/Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSC1-150	M5	5/2	3.8 (0.21)	DC<23, AC<35	0.15~0.8	AC110/220V DC12/24V
MVSC1-180	1/8	3/2, 5/2, 5/3	9~15 (0.5~0.83)	DC<30, AC<45	0.15~0.8	
MVSC1-220	1/8, 1/4	3/2, 5/2, 5/3	16~18 (0.89~1.0)	DC<50, AC<40	0.2~0.8	

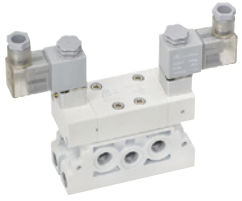
MVSD / MVSD1 series

Model	Port size	Port/Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSD-180	1/8	3/2, 5/2, 5/3	9~15 (0.5~0.83)	<30	0.15~0.8	AC110/220V, DC24V
MVSD1-180	1/8	5/2, 5/3	9~12 (0.5~0.67)	<30	0.15~0.8	AC110/220V, DC24V

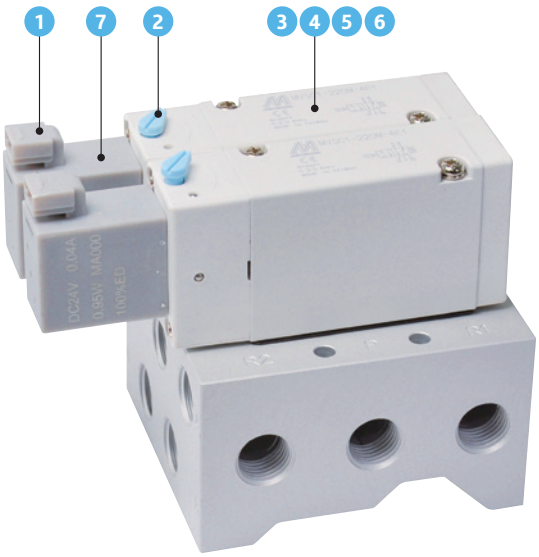
MVSE series [High pressure type]

Model	Port size	Port/Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSE-260	1/4	5/2, 5/3	16~18 (0.89~1.0)	<40	0.2~1.2	AC110/220V DC24V
MVSE-300	3/8	5/2, 5/3	34.5~35 (1.92~1.94)	<50	0.2~1.2	
MVSE-500	1/2	5/2	41 (2.28)	<50	0.2~1.2	
MVSE-510	1/2	5/2	65 (3.61)	<60	0.2~0.7	
MVSE-600	3/4, 1	5/2	96 (5.33),100 (7.5)	<80	0.2~0.7	

MVSI series [ISO-1 / ISO-3]



Model	Port/Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSI-260	5/2, 5/3	20, 22 (1.11, 1.22)	<40	0.2~0.7	AC110/220V DC24V
MVSI-450	5/2	27 (1.5)	<40	0.2~0.7	
MVSI-510	5/2	65 (3.61)	<60	0.2~0.7	



Electric Connection

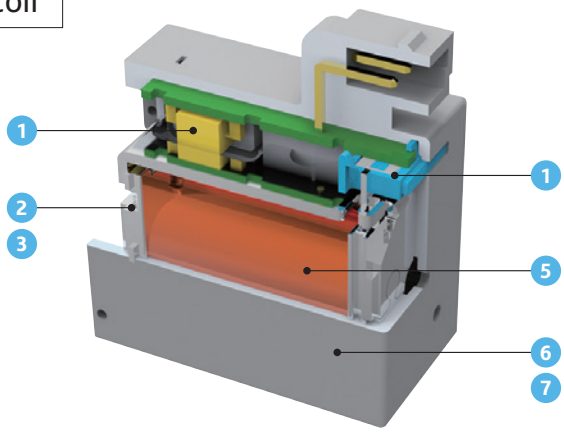
H : Horizontal plug with LED indicator

W : Lead wire

D : DIN terminal

L : DIN terminal with LED indicator

Coil



MVSC1 / MVSP series

[with 15 mm coil]

Product features

1 Electrical Connection

Quick plug design, easy to wiring by socket.

2 Manual override

Manual override design, easier to test.

3 Quick response

Quick response time (25~30ms)(DC).

4 DISK seal, U-packing (NBR)

High wear resistance, wide working temperature - 35 ~ +150°C, excellent sealability, lifetime 50 million cycles.

5 PLC direct drive

Direct drive from I/O connections of PLC is capable.

6 Applying SurTec 650

Nonoxidizable for 336hrs under neutral salt spray test.

7 Coil

Energy saving. Long life.

8 Specifications

	MVSC1	MVSP
Effective orifice	12~38 mm^2	8~27 mm^2
Max. operating pressure	0.8 MPa	0.7 MPa
Ambient temperature	–5 ~ +50°C (No freezing)	
Lifetime	50 million cycles under normal service condition	

Coil features

1 Bridge rectifier design

Converting AC voltage to DC, it can eliminate operating noise.

2 Low power consumption

DC power 0.95W, it can save over 70% power consumption compared with other brand (3W).

3 Low current consumption

It can extend lifetime of driver (PLC, Relay...).

4 Indicator (LED)

Indicating coil operating condition.

5 Cooper wire insulation class

H class / 180ºC

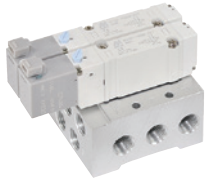
6 Coil insulation class

F class / 155ºC

7 Low ambient temperature as operating

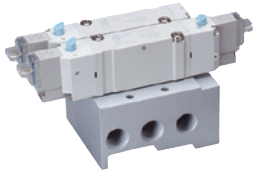
MVSN series [NAMUR]

Model	Port size	Port/ Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSN-220	1/8, 1/4	5/2	18 (1.0)	<38	0.2~0.8	AC24/110/220V DC24V
MVSN-300	1/4	5/2, 5/3	30~35 (1.67~1.94)	<50	0.2~0.8	



MVSP series

Model	Port size	Port/ Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSP-156	1/8	5/2, 5/3	8~14.6 (0.45~0.81)	AC<46ms, DC<25ms	0.15~0.7	AC110/220V DC12/24V
MVSP-188	1/4	5/2, 5/3	11~27 (0.61~1.5)	AC<45 ms, DC<33 ms	0.15~0.7	



MVSY series

Model	Port size	Port/ Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSY-100	M5	5/2, 5/3	4.5~5 (0.25~0.29)	<15	0.2~0.7	AC110/220V DC6/12/24V
MVSY-156	1/8	5/2, 5/3	8~14.6 (0.45~0.81)	<20	0.15~0.7	
MVSY-188	1/4	5/2, 5/3	11~27 (0.61~1.5)	<50	0.15~0.7	

MVSV series [Direct operated] [Low vacuum]

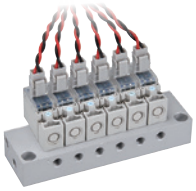
Model	Port size	Port/ Position	Effective orifice mm² (Cv)	Response time ms	Operating pressure MPa	Voltage
MVSV-220	1/8	3/2	5.2~6.2 (0.29~0.34)	<20	-0.1~0.7	DC24V

MVDA series [Quick Response]

Model	Port size	Port/ Position	Flow rate N l/min	Response time ms	Operating pressure MPa	Voltage
MVDA-80	M5, 1/8	2/2, 3/2	25, 28	ON<2, OFF<1	0~1.2	DC12/24V
MVDA-120	M5	2/2, 3/2	80, 100	ON<5, OFF<2	0~0.8	DC12/24V

MVDC series [Suitable for air, low vacuum]

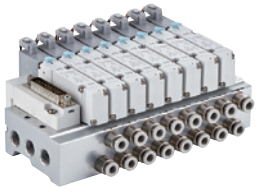
Model	Port size	Port/ Position	Effective orifice mm^2 (Cv)	Response time ms	Operating pressure MPa	Voltage
MVDC-220	1/8	2/2, 3/2	0.8 (0.044)	<20	0~0.7	AC110/220V/DC24V
MVDC-300	1/8, 1/4	3/2	3.9~4.6 (0.22~0.26)	<20	-0.1~1	DC24V



MVDY series

Model	Port size	Port/ Position	Effective orifice mm^2 (Cv)	Response time ms (min)	Operating pressure MPa	Voltage
MVDY-100	M5	3/2	P → A: 0.09~0.28 A → R: 0.35	DC<4 ms AC<20ms	0~0.9	AC110/220V DC6/12/24V

Multi Connector System

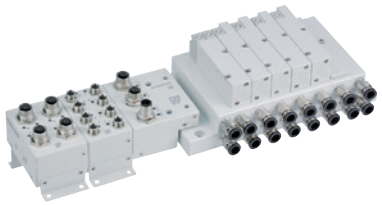


MVB series

- 25 Pin D-sub connector (MVB series).
- 26 Pin flat cable (MVB1 series).
- Simple electric wire system. Max. operating frequency: 5Hz.

Model	Port size	Port/ Position	Effective orifice mm^2 (Cv)	Manifold stations min.~ max.	Applicable solenoid valve
MVB-100	1/8	5/2, 5/3	4.5~5 (0.25~0.29)	2~12	MVSY-100
MVB1-100	1/8	5/2, 5/3	4.5~5 (0.25~0.29)	5~12	MVSY-100
MVB-156	ø4, ø6, ø8	5/2, 5/3	8~14.6 (0.45~0.81)	2~12	MVSY / SP-156
MVB-220	1/8, 1/4	3/2, 5/2, 5/3	16~18 (0.89~1.0)	2~16	MVSC-220
MVB-300	3/8	3/2, 5/2, 5/3	25~35 (1.39~1.94)	3~12	MVSC-300
MVB-460	1/2	3/2, 5/2, 5/3	30~60 (1.67~3.33)	3~12	MVSC-460

MVJA series EtherNet/IP

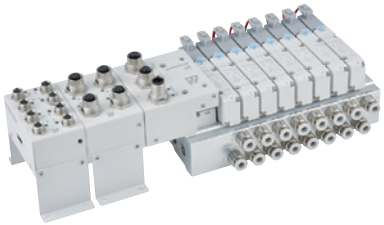


- All-in-one gasket for the base can be easier to increase the number of valve blocks.
- Plug-in design reduces the time for wiring and labor cost.
- 25 Pin D-sub connector.
- The function for communication protocol can be expanded with MVE series.
- The module is compatible with both NPN/PNP.
- Low power consumption (0.55W standard) for solenoid valve.

Model	Port size	Port/ Position	Effective orifice mm² (Cv)	Manifold stations min.~ max.	Compatible protocol	Connector
MVJA-156	ø6, ø8	5/2, 5/3	7.5~13 (0.42~0.72)	1~12	EtherNet / IP	25 pin D-sub

Fieldbus System

MVE series EtherNet/IP



- Compatible protocol: EtherNet / IP
- Up to 8 of I/O unit can be connected.
- Wiring time and labor cost can be reduced.
- In addition to the general star type, it is available for linear and ring topologies.
- Short / Open-circuit detection function | The location of error can be identified.
- Counter function | It is possible to ascertain the maintenance period and identify the parts that require maintenance.
- Web server function | Enable status checking and parameter setting by using web browser.
- Input device | Switch | Proximate sensor | Photoelectric switch | Limit switch
- Output device | Valve | Relay | Buzzer | Indicator light

Model	Compatible protocol	Connector	Manifold stations min.~ max.	Applicable solenoid valve
MVE-100	EtherNet / IP	25 pin D-sub	2~12	MVSY-100
MVE-156	EtherNet / IP	25 pin D-sub	2~12	MVSY-156 / MVSP-156

MVE2 series Modbus PROFINET EtherNet/IP EtherCAT IO-Link CC-Link IE Field Basic

- Solenoid valve can match different modules.
- Quick tube fittings can be installed.
- Fast troubleshooting thanks to multi-angle LED display.
- It is easy to repair due to solenoid valves can be replaced simple and fast.
- Labor cost can be reduced. Reduce error of wiring.
- Web server function.
- The voltage is DC24V.

Model	Compatible protocol	Fieldbus communication module OUT / IN	Manifold stations min.~ max.	Applicable solenoid valve
MVE2-100	IO-Link, Profinet EtherNet/IP EtherCAT CC-Link IEFB Modbus-RTU	M12 socket, D-coded (Female)	6,8,12,16	MVSY-100
MVE2-156			6,8,12,16	MVSY-156
MVE2-188			6,8,12,16	MVSY-188
MVE2-220			6,8,12,16	MVSC1-220

MVPH series [High-flow]

- High-flow pressure compensated proportional valve designed primarily for mixing and dosing of gases in ventilation, respiratory equipment, anesthesia, and analytical instruments. Product life: 100 millions.
- Application industry : Printing industry, textile industry, packaging industry, fuel cell.

Model	Ways / Function	Media	Filter of front end μm	Operating pressure MPa	Flow (sl/min)
MVPH	2/2 NC Proportional	Air, oxygen, neutral gases	recommended < 20	0~7	≥ 190 @ 2.4 bar rel. @ 20°C

MVPM series [Precision Flow]

- Direct acting orifice size from ø0.2 to 2 mm. Pressure up to 12 bar.
- Suited for dosing precisely gases in the medical and in the analytical field.
- Application industry : Gas analysis, chromatography, biotechnology, semiconductor facility, liquid flow.

Model	Ways / Function	Media	Orifice size mm	Operating pressure MPa	Flow (sl/min)
MVPM	2/2 NC Proportional	Air, oxygen, neutral gases	ø0.2~ø2	0~12	≥ 3.8 ~ ≥ 70 @ 12 bar rel. @ 20°C

Pilot Valve

MVAA series

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVAA-150	M5	5/2	0~0.8	3.8
MVAA-180	1/8	3/2, 5/2	0~0.8	12
MVAA-220	1/4	3/2, 5/2, 5/3	0~0.8	18
MVAA-260	1/4	5/2	0~0.8	18
MVAA-300	3/8	3/2, 5/2, 5/3	0~0.8	35
MVAA-460	1/2	3/2, 5/2, 5/3	0~0.8	50

Mechanical Valve

MVMA series [Roller Lever]

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVMA-260	1/4	5/2	0~0.8	18
MVMA-300	3/8	5/2	0~0.8	35

Mechanical Valve

MVMB series [Button]

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm²
MVMB-220	1/4	3/2, 5/2	0.15~0.8	18
MVMB-250	1/4	2/2, 3/2	0~1	18
MVMB-300	3/8	5/2	0.15~0.8	30

MVMC series [Button]

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm²
MVMC-210	1/8, 1/4	3/2	0~1	19

EPA series

Model	Type	Port size	Port	Operating pressure MPa
EPA-100	Pin plunger	1/8	3	0~0.9
EPA-100A	Ball actuator	1/8	3	0~0.9
EPA-101	Retained toggle	1/8	3	0~0.9
EPA-101A	Toggle	1/8	3	0~0.9
EPA-102	Palm button	1/8	3	0~0.9
EPA-103	Roller plunger	1/8	3	0~0.9
EPA-104	Pilot	1/8	3	0~0.9
EPA-105	Roller lever	1/8	3	0~0.9
EPA-106	One way lever	1/8	3	0~0.9
EPA-107	Plain lever	1/8	3	0~0.9
EPA-108	Push button	1/8	3	0~0.9
EPA-109	Selector	1/8	3	0~0.9

Hand Valve

MVHF series

Model	Port size	Port/ Position	Stem travel Stroke/ Arc of travel	Max. operating pressure psig max.	Effective orifice mm²	Medium
MVHF-2P/3P N.C.	1/8	3/2	1/8 Travel	150	7.2	Air
MVHF-3P N.O.	1/8	3/2	1/8 Travel	150	5.7	Air
MVHF-3V	1/8	3/2	60°	150	–	Air, water, oil
MVHF-5V	1/8	5/2	80°	150	4.3	Air, water, oil
MVHF-5P	1/8	5/2	1/8 Travel	150	8.6	Air, water, oil
MVHF-AP	10-32, 1/8	Single action	–	150	–	Air
MVHF-LB	90° angle, heavy duty mounting bracket for clippard miniature valves					
MVHF-PB	Manual push button (valve actuators)					

MVHA series

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVHA-2	M5	2/2, 3/2	0~0.9	1.8
MVHA-3	M5	2/2, 3/2	0~0.9	1.8
MVHA-4	M5	5/2	0~0.9	1.9
MVHA-31	1/8	3/2	0~0.9	4.5
MVHA-41	1/8	5/2	0~0.9	5.5

MVHA series [Manual / Mech. Operator]

Model	Type	Material
MVHA-34T	Fingertip operator	Nickel-plated steel
MVHA-34C	Cam operator	Level: Nickel-plated steel, Roller: POM
MVHA-34CW	One-way cam operator	Level: Nickel-plated steel, Roller: POM
MVHA-34B	Ball operator	Level: Nickel-plated steel, Ball: Chrome steel
MVHA-34A	Air pilot operator	Nickel-plated brass

MVHB series

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVHB-220	1/4	5/2, 5/3	0~0.8	16~18
MVHB-260	1/4	5/2, 5/3	0~0.8	18
MVHB-300	3/8	5/2, 5/3	0~1.2	34
MVHB-500	1/2	5/2, 5/3	0~1.2	41

MVHD series

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVHD-220	1/8, 1/4	3/2, 5/2	0~0.8	18

Hand Valve

MVHS series

Model	Port size	Operating pressure MPa	Effective orifice mm^2
MVHS	1/4, 3/8, 1/2, 3/4	0.05~1	P → A: 30.4~85.4 , A → R: 34.1~90.7

MVHC series

Model	Port size	Port	Operating pressure MPa	Effective orifice mm^2
MVHC	1/8, 1/4, 3/8, 1/2, 3/4	4	0.05~1	7~71

Shutoff Valve

MVHT series

Model	Port size	Port/ Position	Operating pressure MPa	Model for F.R.L
MVHT-302	1/4, 3/8, 1/2	2/2, 3/2	0~1.5	MA**302
MVHT-400	1/4, 3/8, 1/2	2/2, 3/2	0~1.5	MA**401, 403

MVHR series [Manual type / Solenoid type (S)]

Model	Port size	Port/ Position	Operating pressure MPa	Model for F.R.L	Voltage Solenoid type (S)
MVHR-302 (S)	1/4, 3/8, 1/2	3/2	0.1~1	MA**302	AC110V, 220V (50/60)Hz, DC24V
MVHR-400 (S)	1/4, 3/8, 1/2	3/2	0.1~1	MA**401, 403	

Foot Pedal Valve

MVFA series

Model	Port size	Port/ Position	Operating pressure MPa	Effective orifice mm^2
MVFA	1/4	3/2, 4/2	0.2~7	8

Selection table

*Seal-code N NBR, J EPDM, V Viton, T Teflon, R RUBY, Z FFKM, S Silicon

	Model	Inside structure			N.C.	N.O.	Fluid							Material		Port size	CV
		Piston	Diaphragm	Plunger			Water / Air	Hot water	Steam	Light oil	Heavy oil	Gas	Vacuum	Body	Seal		
2/2 WAY	MBS			○	●		●			●		●	●	Brass	N,J,V,T,Z	M5,1/8,1/4	0.03~0.40
	MBD			○	●		●			●		●	●	Forged brass	N,V	1/4~1/2	0.14~0.95
	MCS			○	●		●			●		●	●	Forged brass	N,J,V,T,R,Z	1/4~3/4	0.10~1.30
	MED		○		●		●			●		●		Forged brass	N,J,V	1/4~1/2	1.1~2.2
	MEP			○	●		●							Forged brass	N,J,V	3/8,1/2	2.4
	MGA	○			●		●	●						Forged brass	N,J,V	3/8,1/2	1.9~2.6
	MGS	○			●		●	●	●					Forged brass	T	3/8,1/2	1.9~2.6
	MGD		○		●		●					●		Forged brass	N,J,V	3/8~2	2.0~31
	MJS			○	●		●			●		●	●	Brass	N,J,V	—	0.08~0.32
	MJR			○	●		●			●		●	●	Brass	N,J,V	—	0.10~0.42
	MPD		○		●		●							PA (Nylon)	N,J,V	3/8~1	1.6~11
	MPK		○		●		●							PA (Nylon)	N,J,V	3/8~1	1.6~11
	MRB			○		●	●			●		●		Brass	V	1/8,1/4	0.05~0.09
	MRC			○		●	●			●		●		Brass	N,J,V	1/8~3/8	0.10~0.31
	MUCL *1			○	●		●			●		●		SUS #303	N,J,V,T,Z	1/8,1/4	0.03~0.27
	MUPH		○		●		Corrosive fluid							PVC/PTFE	T	1/4~3/4	0.11~2.5
	MUSC			○	●		●			●		●	●	SUS #303	N,J,V,T,R,Z	1/8~3/8	0.03~1.30
	MUSD		○		●		●			●		●		SCS14	N,J,V	1/2	2.0
	MUSK		○		●		●			●		●	●	SCS14,#303	N,J,V	1/2	2.0
	MUSL *1		○		●		●			●		●		SCS14	N,J,V	1/2	2.0
	MWA	○			●		●			●		●		Brass	N	3/8~2	3.0~31
	MWH	○			●						●			Brass	V	3/8~2	3.0~31
	MWS	○			●		●	●	●					Brass	T	3/8~2	3.0~31
	MWD		○		●		●					●		Forged brass	N,J,V	3/8~2	3.0~31
	MWK		○		●		●			●		●	●	Forged brass	N,J,V	3/8~2	3.0~31
	MYA	○			●		●	●						Forged brass	N,J,V	3/8,1/2	1.9~2.6
	MYS	○			●		●	●	●					Forged brass	T	3/8,1/2	1.9~2.6
	MZS			○	●		●			●		●	●	Forged brass	N,J,V,T,R,Z	1/8~1/2	0.1~0.8
	MUD			○	●	●	●			●		●	●	Brass	N,J,V,S	1/8~1/2	0.23~0.79
	MUS-6~10			○	●				●					Brass	T	1/8~3/8	0.32~0.54
	MUDC		○		●		●			Corrosive fluid				PVC/PTFE	T	1/4~1	0.28~4
	MSUS	○		○	●	●	●		●	●		●	●	SUS #304	N,J,V,T,S	1/8~2	0.23~48
	MUAO	○			●		●				●			Brass	N	1/4~1/2	2.5
	MUW		○		●		●			●				Forged brass	N,J,V,S	3/8~2	4.5~48
	MUW-NO		○			●	●			●		●	●	Forged brass	N,J,V,S	3/8~2	4.5~48
	MUW-F		○		●	●	●			●				FC-20	N,J,V,S	1 1/4~4	22~180
	MUG		○		●							●		Forged brass	N	3/8~2	4.5~48
	MUV		○		●								●	Forged brass	N	3/8~2	4.5~48
	MUAW	○			●		●							Cast bronze	N	1/2~2	4~48
	MUS	○			●				●	●	●			Cast bronze	T	1/2~2	4~48
	MUS-F	○			●		●		●	●				FC-20	J,V,T,S	1 1/4~4	22~175
	MSUW		○		●	●	●			●		●	●	SUS #304	N,J,V,S	1/2~2	4.5~48
	MSUW-F		○		●		●			●			●	SUS #304	N,J,V,S	1/2~2	4.5~48
	MUPS	○			●		●		●	●				Cast bronze	J,V,T,S	1/2~1	4~12
	MXAD			○	●		●			●		●	●	Forged brass	N,J,V,S	1/8~1/2	0.26~0.97
	MXAD-AF		○		●		●			●		●	●	Forged brass	N,J,V,S	3/8~2	4.5~48
	MXCD		○		●		●			●				Forged brass	N,V	1/4~1/2	2.4~2.7
	MXPV		○		●		●			●				Forged brass	N,J,V,S	3/8~3/4	4.5~9.3

	Model	Inside structure			N.C.	N.O.	Fluid							Material		Port size	CV
		Piston	Diaphragm	Plunger			Water / Air	Hot water	Steam	Light oil	Heavy oil	Gas	Vacuum	Body	Seal		
3/2 WAY	MCT			○	●		●			●		●	●	Forged brass	N,J,V,Z	1/4~3/4	0.02~0.65
	MJT			○	●		●			●		●	●	Brass	N,J,V	—	0.10~0.42
	MRJ			○		●	●			●		●	●	Brass	N,J,V	—	0.10~0.31
	MUST			○	●		●			●		●	●	SUS#303	N,J,V,Z	1/8~3/8	0.03~0.65
	MUT			○	●	●	●			●	●	●	●	Forged brass	V	1/8~3/8	0.02~0.31
	MZT			○	●		●			●		●	●	Forged brass	N,J,V,Z	1/8~1/2	0.05~0.65
	MUA			○	●		●						●	Brass	N,V	1/4,3/8	0.1~0.12

*1. MUCL, MUSL are Latch valve.

MBS series [2/2 way N.C. plunger type]

- Available fluid: Air, gas, water, vacuum, oil etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MBS	Brass	M5, 1/8, 1/4	NBR, EPDM, Viton Teflon, FFKM	0.03~0.4	AC: 1~30 DC: 0.1~30	AC: 5.3~8 VA DC: 5.2~6.8 W

MBD series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air, gas, light oil, vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MBD	Forged brass	1/4, 3/8, 1/2	NBR, Viton	0.14~0.95	AC: 1.5~25 DC: 0.5~20	AC: 5.7~23 VA DC: 5.2~18.5 W

MCS series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air, gas, vacuum, light oil (below 50cst.) etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MCS	Forged brass	1/4, 3/8 1/2, 3/4	NBR, EPDM, Viton Teflon, Ruby, FFKM	0.1~1.3	AC: 0.4~40 DC: 0.4~30	AC: 8.6~24 VA DC: 10~18.5 W

MCT series [3/2 way N.C. plunger type]

- Available fluid: water, air, gas, vacuum, light oil (50 cst down) etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MCT	Forged brass	1/4, 3/8 1/2, 3/4	NBR, EPDM Viton, FFKM	0.02~0.65	AC/DC 0.8~16	AC: 8.6~24 VA DC: 10~18.5 W

MED series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, gas, light oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.3~ bar	Coil power AC / DC
MED	Forged brass	1/4, 3/8, 1/2	NBR, EPDM, Viton	1.1~2.2	AC: 4~10 DC: 2~7	AC: 5.3~8 VA DC: 5.2~6.8 W

MEP series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MEP	Forged brass/ SUS plate	3/8, 1/2	NBR, EPDM, Viton	2.4	AC: 0.2~1.2 DC: 0.1~0.5	AC: 9.2~23 VA DC: 10~18.5 W

MGA / MGS series [2/2 way N.C. piston type]

- Available fluid: water, air and higher temp. fluids

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure bar	Coil power AC / DC
MGA	Forged brass	3/8, 1/2	NBR, EPDM, Viton	1.9~2.6	AC: 0.3~16 DC: 0.3~10	AC: 9.2~33 VA DC: 10~18.5 W
MGS	Forged brass	3/8, 1/2	Teflon	1.9~2.6	0.3~10	AC: 15.4~33 VA DC: 15~18.5 W

MGD series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, gas

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.3~ bar	Coil power AC / DC
MGD	Forged brass	3/8~2	NBR, EPDM, Viton	2~31	AC: 8~16 DC: 5~16	AC: 5.3~19.5 VA DC: 5.2~15 W

MJS / MJR series [2/2 way N.C. plunger type]

- Available fluid: water, air, gas, oil, vacuum

Model	Body mat'l	Orifice mm	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MJS	Brass	1.6~3.5	NBR, EPDM ,Viton	0.08~0.32	AC: 5~40, DC: 4~30	AC: 9.2~23 VA DC: 10~18.5 W
MJR	Brass	1.6~3.5	NBR, EPDM ,Viton	0.1~0.42	AC: 2~40, DC: 2~30	

MJT / MRJ series [3/2 way N.C., N.O. plunger type]

- Available fluid: water, air, gas, oil, vacuum

Model	Body mat'l	Orifice mm	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MJT N.C.	Brass	Body 1.6~3.5, Top 1.6~2.5	NBR, EPDM Viton	0.1~0.42	AC/DC: 2~20	AC: 9.2~23 VA DC: 10~18.5 W
MRJ N.O.	Brass	Body 2.0~3.5, Top 1.6~3.0		0.1~0.31	AC/DC: 1~10	

MPD / MPK series [2/2 N.C. diaphragm type]

- Available fluid: water, air

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.2~ bar	Coil power AC / DC
MPD	PA (Nylon)	3/8, 1/2, 3/4, 1	NBR, EPDM, Viton	1.6~1f1	AC: 3.5~7, DC: 0.8~3.5	AC: 6.9~18 VA DC: 6.2~18.5 W
MPK	PA (Nylon)	3/8, 1/2, 3/4, 1	NBR, EPDM, Viton	1.6~11	AC: 4~7, DC: 0.8~7	

MRB / MRC series [2/2 N.O. plunger type]

- Available fluid: water, air, gas, light oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MRB	Brass	1/8, 1/4	Viton	0.05~0.09	AC/DC: 8~10	AC: 5.3~6.9 VA DC: 5.2~6.2 W
MRC	Brass	1/8, 1/4, 3/8	NBR, EPDM, Viton	0.1~0.31	AC/DC: 5~24	AC: 9.2~33 VA DC: 10~18.5 W

MUCL series [2/2 way N.C. plunger type]

- Available fluid: water, air, gas, light oil (below 50cst) etc.
- Energy-saving, blocking hazardous fluid.
- Valve open when power on, then power shut off, valve still open. Change to opposite pole, valve close.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power DC
MUCL	SUS #303	1/8, 1/4	NBR, EPDM, Viton Teflon, FFKM	0.03~0.27	4~15	DC 6/12/24 V 6.9/6.9/6

MUPH series [2/2 way N.C. diaphragm type]

- Available fluid: sulfuric acid, hydrochloric acid, chemically corrosive fluids.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MUPH	Teflon, PVC	1/4, 3/8 1/2, 3/4	Teflon	0.11~2.5	0.4~5	AC: 21/30 VA DC: 18.5/25 W

MUSC series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air, gas, light oil (below 50cst.), vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MUSC	SUS #303	1/8, 1/4	NBR, EPDM, Viton Teflon, FFKM	0.03~0.4	AC: 1.0~30 DC: 0.1~30	AC: 5.3~24 VA DC: 5.2~18.5 W
MUSC	SUS #303	1/4, 3/8	NBR, EPDM, Viton Teflon, Ruby, FFKM	0.1~1.3	AC: 0.4~40 DC: 0.4~30	

MUSD series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, gas, light oil

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.3~ bar	Coil power AC / DC
MUSD	SUS #SCS14	1/2	NBR, EPDM, Viton	2	AC: 4~10 DC: 3~7	AC: 5.3~8 VA DC: 5.2~6.8 W

MUSK series [2/2 way N.C. pilot diaphragm type]

- Available fluid: water, air, gas, light oil, vacuum etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.3~ bar	Coil power AC / DC
MUSK	SUS #SCS14 body SUS #304 cover	1/2	NBR, EPDM, Viton	2	AC: 4~9 DC: 3~7	AC: 5.3~8 VA DC: 5.2~6.8 W

MUSL series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, gas, light oil
- Energy-saving, blocking hazardous fluid.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power DC
MUSL	SUS #SCS14	1/2	NBR, EPDM, Viton	2	4.5~5	DC 6/12/24 V 6.9/6/6

MUST series [3/2 way N.C. plunger type]

- Available fluid: water, air, gas, light oil (below 50cst.) , vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0 ~ bar	Coil power AC / DC
MUST	SUS #303	1/8, 1/4, 3/8	NBR, EPDM Viton, FFKM	0.03~0.65	AC/DC: 0.8~12	AC: 5.3~24 VA DC: 5.2~18.5 W

MUT series [3/2 way N.C., N.O. plunger type]

- Available fluid: water, air, gas, light oil, heavy oil (Max. 120 cst.), vacuum.

Model	Body mat'l	Port size	Seal mat'l	Operating pressure 0 ~ bar	Coil power AC / DC
MUT	Forged brass	1/8, 1/4, 3/8	Viton	AC: 1.5~14 DC: 0.7~14	AC: 5.3~23 VA DC: 5.2~18.5 W

MWA / MWH / MWS series [2/2 way N.C. plunger type]

- Available fluid: air, water, light oil, gas, heavy oil, high viscosity fluids (Max. 120 cst), steam. high temp. fluids etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.5~ bar	Coil power AC / DC	Fluid
MWA	Forged brass	3/8~2	NBR	3~31	AC: 3~16, DC: 1~10	AC 9.2~33 VA DC 10~18.5 W	air, water, light oil, gas
MWH		3/8~2	Viton	3~31	AC: 3~15, DC: 1~10		heavy oil, high viscosity fluids
MWS		3/8~2	Teflon	3~31	AC: 3~10, DC: 1~7		steam. high temp. fluids

MWD / MWK series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, gas, light oil, vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0.2 ~ bar	Coil power AC / DC
MWD	Forged brass	3/8~2	NBR, EPDM, Viton	3~31	AC: 0.5~16, DC: 0.5~4	AC: 9.2~23 VA DC: 10~18.5 W
MWK		3/8~2	NBR, EPDM, Viton	3~31	AC: 1~16, DC: 1~4	

MYA / MYS series [2/2 way N.C. piston type]

- Available fluid: water, air and high temp. fluids.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MYA	Forged brass	3/8, 1/2	NBR, EPDM, Viton	1.9~2.6	AC: 0.3~20 DC: 0.3~12	AC: 9.2~33 VA DC: 10~18.5 W
MYS	Forged brass	3/8, 1/2	Teflon	1.9~2.6	AC: 0.3~10 DC: 0.3~7	

MZS series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air, gas, light oil (below 50cst.), vacuum etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MZS	Forged brass	1/8, 1/4 3/8, 1/2	NBR, EPDM, Viton Teflon, Ruby, FFKM	0.1~0.8	AC: 2.5~40 DC: 2~30	AC: 8.6~24 VA DC: 10~18.5 W

MZT series [3/2 N.C. plunger type direct acting]

- Available fluid: water, air, gas, vacuum, light oil (below 50cst.) etc.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MZT	Forged brass	1/8, 1/4 3/8, 1/2	NBR, EPDM, Viton, FFKM	0.05~0.65	AC/DC: 0.8~12	AC: 8.6~24 VA DC: 10~18.5 W

MUD / MUS series [2/2 way N.C., N.O. plunger type]

- Available fluid: water, air, steam, light oil, gas, vacuum

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa	Coil power Torr	Fluid
MUD N.C.	Brass	1/8, 1/4, 3/8, 1/2	NBR	0.18~0.79	0~2	$0\sim10^{-3}$	Water, air, light oil, gas, vacuum
MUD N.O.	Brass	1/8, 1/4, 3/8	NBR	0.18~0.79	0~2	$0\sim10^{-3}$	
MUS N.C.	Brass	1/8, 1/4, 3/8	Teflon	0.23	0~1	–	Steam, light oil

MUA series [3/2 way N.C. plunger type]

- Available fluid: water, air, vacuum

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa	Vacuum Torr
MUA	Brass	1/4, 3/8	NBR	0.1~0.12	0~1	$0\sim10^{-3}$

MUDC series [2/2 way N.C. diaphragm type]

- Available fluid: Air, water, corrosive fluid (PH 0~14)

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa
MUDC	PVC	1/4, 3/8, 1/2, 3/4, 1	Synthetic rubber	0.28~3.5	0~0.1
MUDC-TF	Teflon	1/4, 3/8, 1/2, 3/4, 1	Synthetic rubber	0.28~4	0~0.1

MSUS series [2/2 way N.C., N.O. plunger type]

- Available fluid: water, air, steam, gas, light oil, vacuum

Model (Low flow)	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa	Vacuum Torr
MSUS N.C.	SUS #304	1/8, 1/4, 3/8	NBR, Teflon, Viton	0.23~0.58	0~1	$0\sim10^{-3}$
MSUS N.O.	SUS #304	1/8, 1/4, 3/8	NBR, Teflon	0.23~0.58	0~1	$0\sim10^{-3}$

MSUS series [2/2 way N.C., N.O. plunger type]

- Available fluid: water, air, steam, light oil.

Model (High flow)	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa
MSUS N.C.	SUS #304	1/2~2	Teflon	4~48	0.05~1
MSUS N.O.	SUS #304	1/2~2	Teflon	4~48	0.05~1

MUAO series [2/2 way N.C., N.O. plunger type]

- Available fluid: water, air, heavy oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa
MUAO	Brass	1/4, 3/8, 1/2	NBR	2.5	0.05~1.5

MUW series [2/2 way diaphragm type]

- Available fluid: W water, W air, LO light oil, G gas, VA vacuum

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa Standard	Operating pressure MPa High	Vacuum Torr	Fluid
MUW N.C.	Forged brass	3/8~2	NBR	4.5~48	0~0.7	0.05~2	–	W LO
MUW N.O.	Forged brass	3/8~2	NBR	4.5~48	0~0.7	–	$0\sim10^{-3}$	W LO G VA
MUW-F N.C.	FC-20	1 1/4~4	NBR	22~180	0.05~0.8	–	–	W LO
MUW-F N.O.	FC-20	1 1/4~4	NBR	22~180	0.05~0.8	–	–	W LO

MUG / MUV series [2/2 way N.C. diaphragm type]

Model	Fluid	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa	Vacuum Torr
MUG	Gas	Forged brass	3/8~2	NBR	4.5~48	0~0.7	–
MUV	Vacuum	Forged brass	3/8~2	NBR	4.5~48	–	$0\sim10^{-3}$

MUAW series [2/2 way N.C. piston type]

- Available fluid: water, air

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa
MUAW	Cast bronze	1/2~2	NBR	4~48	0.05~1.5

MUS series [2/2 way N.C. piston type]

- Available fluid: W water, W air, T steam, LO light oil, HO heavy oil

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa	Fluid
MUS	Cast bronze	1/2~2	Teflon	4~48	0.05~1	T LO HO
MUS-F	FC-20 Cast Iron	1 1/4~4	Teflon	22~175	0.1~1	T W LO

MSUW series [2/2 way N.C., N.O. diaphragm type]

- Available fluid : W water, W air, G gas, LO light oil, VA vacuum

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa Standard	Operating pressure MPa High	Vacuum Torr	Fluid
MSUW N.C.	SUS #304	1/2~2	NBR	4.5~48	0~0.7	0.05~2	$0\sim10^{-3}$	W LO VA
MSUW N.O.	SUS #304	1/2~2	NBR	4.5~48	0~0.7	–	$0\sim10^{-3}$	W G LO VA
MSUW-F N.C.	SUS #304	1/2~2	NBR	4.5~48	0~0.7	0.05~2	$0\sim10^{-3}$	W LO VA

MUPS series [2/2 way N.C. piston type]

- Available fluid: water, air, steam, light oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure MPa
MUPS	Cast bronze	1/2, 3/4, 1	Teflon	4~12	0.05~1

MXAD series [2/2 way N.C. plunger type direct acting]

- Available fluid: water, air, light oil, gas, vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar Brass	SUS	Vacuum Torr
MXAD	Brass SUS	1/8, 1/4 3/8, 1/2	NBR, Viton Silicon, EPDM	0.26~0.97	1~10	2~10	$0\sim10^{-6}$

MXAD-AF series [2/2 way N.C. diaphragm type direct acting]

- Available fluid: water, air, light oil, gas, vacuum.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar Brass	SUS	Vacuum Torr
MXAD-AF	Brass SUS	3/8~2	NBR, Viton Silicon, EPDM	4.5~48	5~10	7~10	$0\sim10^{-6}$

MXCD series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, light oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar Brass	SUS
MXCD	Brass, SUS	1/4, 3/8, 1/2	NBR, Viton	2.4~2.7	0.3~20	0.2~20

MXPV series [2/2 way N.C. diaphragm type]

- Available fluid: water, air, light oil.

Model	Body mat'l	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar Brass	SUS
MXPV	Brass, SUS	3/8, 1/2, 3/4	NBR, Viton Silicon, EPDM	4.5~9.3	0.5~10	0.2~20

Heat Treatment Technology | High Protection | Self-Locking Mechanism | Efficient Water Removal | Remote Monitoring | Diverse Modularization

Air Treatment Unit

Tempering treatment	Tempering treatment makes the inner case more solid and reduces fracture possibility when operating.
Protection	Body with SurTec 650 surface treatment enhance the resistance of oxidation from acidbase.
Self-locking	Pressed-in and self-locking mechanism to ensure stability.
Filter	Water removal rate 93%, 99%(Precision) ◦
Precision regulator	Repeatability under ±0.5% F.S.
Remote monitoring	Achieve remote monitoring through the feedback of electric signal and stepless control of the thrust force.
Diversified combination	Diversified modular products can be applied in the different instances.

Medical Industry | New Energy Industry | Semiconductor Industry | Food Industry | Machine Tool | Industry 4.0

MACP series

Model	Port size	Operating pressure MPa	Lubricating oil capacity c.c	Min. flow for oil drip ℓ / min	Filter element μm
MACP200	1/8, 1/4	0.05~1	20	35, 50	40, 5
MACP200L	1/8, 1/4	0.05~1	35	35, 50	40, 5
MACP302	1/4, 3/8, 1/2	0.05~1	65	50, 60, 60	5, 40
MACP400	1/4, 3/8, 1/2	0.05~1	200	100, 200, 400	40, 5
MACP401	1/4, 3/8, 1/2	0.05~1.5	200	30, 65, 80	40, 5
MACP403	1/4, 3/8, 1/2	0.05~1	200	30, 65, 80	40, 5
MACP501	3/4, 1	0.05~1	200	25, 33	40

MACT series

Model	Port size	Operating pressure MPa	Lubricating oil capacity c.c	Min. flow for oil drip ℓ / min	Filter element μm
MACT200	1/8, 1/4	0.05~1	20	35, 50	40, 5
MACT200L	1/8, 1/4	0.05~1	35	35, 50	40, 5
MACT302	1/4, 3/8, 1/2	0.05~1	65	50, 60, 60	5, 40
MACT400	1/4, 3/8, 1/2	0.05~1	200	100, 200, 400	40, 5
MACT401	1/4, 3/8, 1/2	0.05~1.5	200	30, 65, 80	40, 5
MACT403	1/4, 3/8, 1/2	0.05~1	200	30, 65, 80	40, 5
MACT501	3/4, 1	0.05~1	200	25, 33	40

F. R. Unit

MAFR series

Model	Port size	Operating pressure MPa	Drain capacity cm^3	Filter element μm
MAFR100	M5	0.05~1	3.5	5, 40
MAFR200	1/8, 1/4	0.05~1	9.5	40, 5
MAFR200L	1/8, 1/4	0.05~1	25	40, 5
MAFR302	1/4, 3/8, 1/2	0.05~1	35	5, 40
MAFR400	1/4, 3/8, 1/2	0.05~1	100	40, 5
MAFR401	1/4, 3/8, 1/2	0.05~1.5	70	40, 5
MAFR403	1/4, 3/8, 1/2	0.05~1	75	40, 5
MAFR501	3/4, 1	0.05~1.5	70, 75	40

Filter

MAF series

Model	Port size	Operating pressure MPa	Drain capacity cm^3	Removal ratio %	Rated flow ℓ / min	Filter element μm
MAF200	1/8, 1/4	0.05~1	9.5	–	–	40, 5
MAF200L	1/8, 1/4	0.05~1	25	–	–	40, 5
MAF302	1/4, 3/8, 1/2	0.05~1	35	–	–	5, 40
MAF302G[*1]	1/4, 3/8, 1/2	0.05~1	35	99±1	550, 1280	–
MAF400	1/4, 3/8, 1/2	0.05~1	100	–	1500~2200	40, 5
MAF401	1/4, 3/8, 1/2	0.05~1.5	70	–	1500~2500	40, 5
MAF403	1/4, 3/8, 1/2	0.05~1	75	–	–	40, 5
MAF501	3/4, 1	0.05~1.5	70, 75	–	–	40
MAF900	1 1/2	0.05~1.75	–	99	20000	50
MAF901	2	0.05~1.75	–	–	63000	50

*1. Water separator

Auto Drainer

MAD series

Model	Port size	Operating pressure MPa	Discharge per operation c.c.
MAD400	1/4, 3/8, 1/2	0.05~1	–
MAD401	1/2	0.1~1.3	–
MAD401H	1/2	0.1~1.3	–
MAD500	1/2 (Inlet), 3/8 (Outlet)	0.13~1.3	60/ per on time. Max. operation 25 times per minute.
MAD501	1/2 (Manual outlet) 3/8, 5/16"HOSE (Automatic outlet)	0.05~1	–

Auto Drain Valve

FMRF / MADV series

Model	Port size	Operating pressure MPa
FMRF300	ø8 (I.D.)	0.15~1
MADV400-WA	1/8 (female thread)	0.05~1.3
MADV400-WB	M1/8 (male thread)	0.05~1.3

MAR series

Model	Port size	Operating pressure MPa	Regulated pressure MPa	Repeatability
MAR100	M5	1	0.05~0.7	±10% F.S.
MAR200	1/8, 1/4	1	0.05~0.85	–
MAR302	1/4, 3/8, 1/2	1	0.05~0.85	–
MAR400	1/4, 3/8, 1/2	1	0.05~0.85	–
MAR401	1/4, 3/8, 1/2	1.5	0.1~0.85, 0.1~1.5	–
MAR403	1/4, 3/8, 1/2	1	0.1~0.85	–
MAR501	3/4, 1	1.5	0.05~0.85	±7% F.S.
MAR900	1 1/2	2.1	0.09~0.86	–
MAR901	2	3.1	max. 1.75	–

MAHR series [High pressure type]

Model	Type	Port size	Max. operating pressure MPa	Regulated pressure MPa
MAHR200	Standard	1/4	3.5	0~1
MAHR200	High pressure (H)	1/4	3.5	0~2.7

Hand-Held Regulator

MAR300LK series

- Design: No convex shaft, small size and high transportability. Anodized aluminum body to achieve lightweight. (80g around)
- The outlet pressure can be observed through the scale of adjustment knob to determine. The lock mechanism can prevent rotation by accidentally.
- The unique structure of adjustment knob enables the pressure regulation to be completed within one turning round.
- Outlet pressure can be directly exhausted by turning back the adjustment knob.

Model	Port size	Max. operating pressure MPa	Regulated pressure MPa	Proof pressure MPa	Weight g
MAR300LK	1/4	1.5	0.3~0.9	3.75	80

MAER series features

1 **Stepless control**

Stepless control of air pressure proportional to an electrical signal.

High precision pressure control

Achieve high precision pressure control with microcomputer PID.

Certification Comply with IP65 and CE certification.

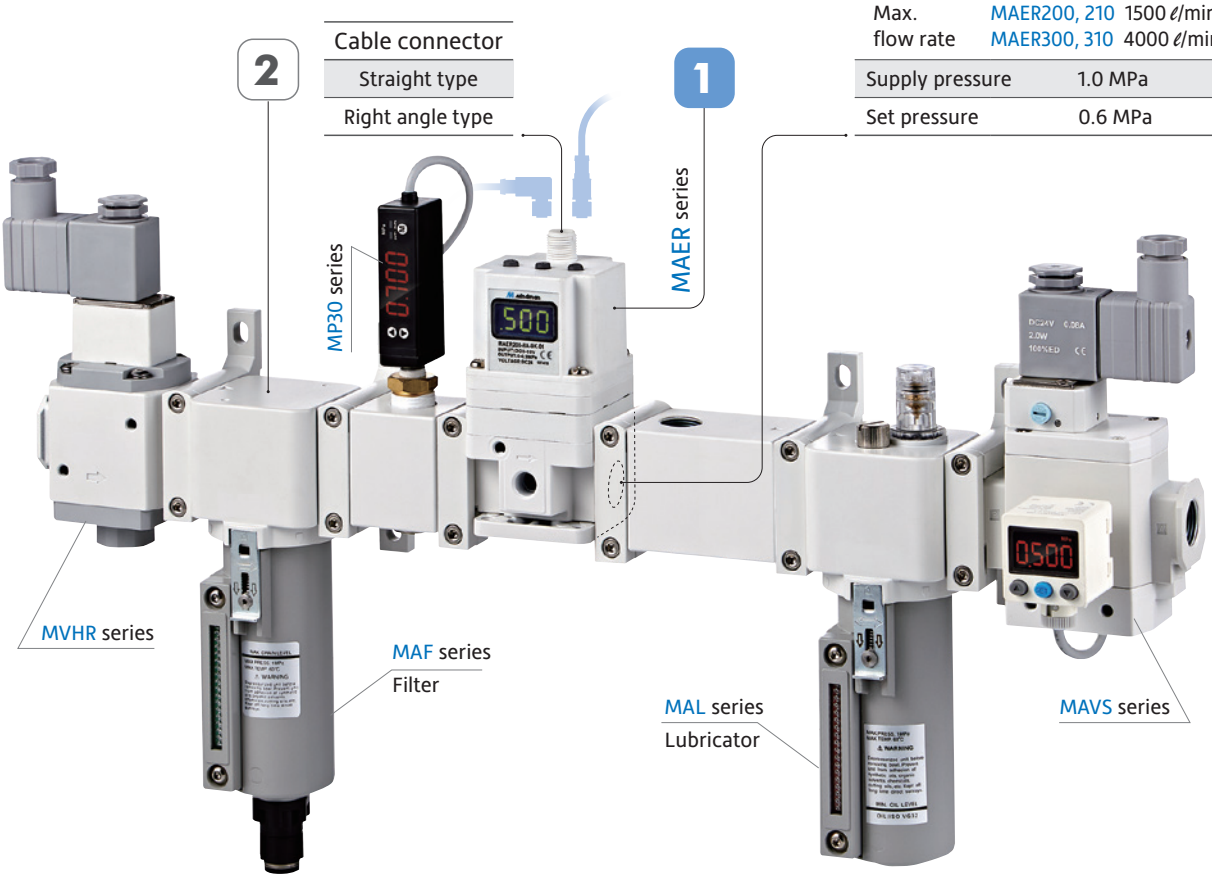
2 **Compatible with modular**

MAER200, 210 can be assembled with MA**302 series.
MAER300, 310 can be assembled with MA**401 / 403 series.

1

Regulator performance	
Linearity	±1 less (F.S.)
Hysteresis	±0.5 less (F.S.)
Repeatability	±0.5 less (F.S.)
Sensitivity	±0.2 less (F.S.)

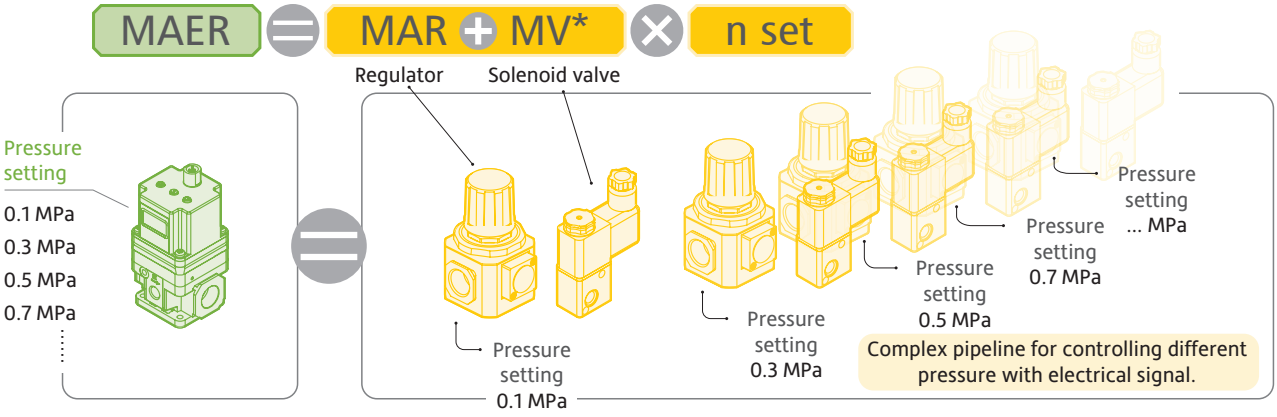
Max. flow rate	MAER200, 210	1500 ℓ/min
	MAER300, 310	4000 ℓ/min
Supply pressure		1.0 MPa
Set pressure		0.6 MPa



Energy saving piping VS **Traditional piping**

Simplify complex pipeline for controlling different pressure. Space saving, Reduce cost, Energy saving.

Tradition piping for multi-stage air pressure.



Electro Pneumatic Regulator

MAER series

- Stepless control of air pressure proportional to an electrical signal.
- Simplify complex pipeline for controlling different pressure.
- Compatible with modular. • Pressure display unit MPa, kgf/cm^2, bar, psi, kPa.
- Achieve high precision pressure control with microcomputer PID.
- Maximum flow rate 1500 & 4000 l /min (Supply pressure 1.0 MPa, Set pressure 0.6 MPa).
- Comply with IP65 and CE certification.

Model	Port size	Max. operating pressure MPa	Output pressure display % F.S. ±1 digit	Enclosure	Compatible with modular
MAER200	1/4, 3/8	1	±2	IP65	MA*302 series
MAER300	1/4, 3/8, 1/2	1	±2	IP65	MA*401, 403 series

[Communication type]

Model	Port size	Max. operating pressure MPa	Output pressure display % F.S. ±1 digit	Communication Protocol	Compatible with modular
MAER210	1/4, 3/8	1	±2	RS-232, RS-485	MA*302 series
MAER310	1/4, 3/8, 1/2	1	±2	RS-232, RS-485	MA*401, 403 series

Precision Regulator

MAIR series

- Convenient design, quick mounted bracket, can also be installed on the panel.
- Can be used with mechanical or electronic digital pressure gauge.
- Compared with the MAR series, low pressure drop problem, better flow characteristics.
- Compact & lightweight.
- Compatible with modular.

Model	Port size	Max. operating pressure MPa	Regulated pressure MPa	Repeatability % F.S.	Air consumption ℓ /min(ANR) F.S.	Compatible with modular
MAIR100	1/8	1	0.005~0.8	±0.5	4.4	–
MAIR200	1/4	1	0.005~0.8	±0.5	4.4	MA*302 series
MAIR300	1/4, 3/8, 1/2	1	0.005~0.8	±0.5	11.5	MA*401, 403 series

Lubricator

MAL series

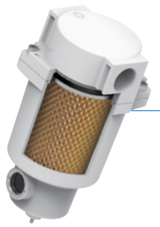
Model	Port size	Max. operating pressure MPa	Lubricating oil capacity c.c	Min. flow for oil drip ℓ / min	Max. flow rate ℓ / min
MAL200	1/8, 1/4	1	20	35, 50	–
MAL200L	1/8, 1/4	1	35	35, 50	–
MAL302	1/4, 3/8, 1/2	1	65	50, 60, 60	–
MAL400	1/4, 3/8, 1/2	1	200	100, 200, 400	400, 1300, 2500
MAL401	1/4, 3/8, 1/2	1.5	200	30, 65, 80	1200, 2000, 2100
MAL403	1/4, 3/8, 1/2	1	200	30, 65, 80	–
MAL501	3/4, 1	1.5	200	25, 33	–
MAL900	1 1/2	1.75	1000	204	12000

MAMG

EWS
Water separator
Removal rate 99%±1

Separating the water droplet with a special filtration in the compressed air. * cannot remove moisture.

MAMB



E3
3 µm
Filtration efficiency 99%

Removing the impurities which the particles are bigger than 3µm in compressed air, and extending the life of precision filter in the down-stream, then preventing trouble with the equipment.

MAMD

E03
0.3 µm
Filtration efficiency 99.9%

Removing the oil mist and impurities which the particles are bigger than 0.3µm in compressed air.

MAMM

E001
0.01 µm
Filtration efficiency 99.9%

Removing the oil mist and impurities which the particles are bigger than 0.01µm in compressed air. The filter can be applied to requirement of high purity and extremely low oil mist.

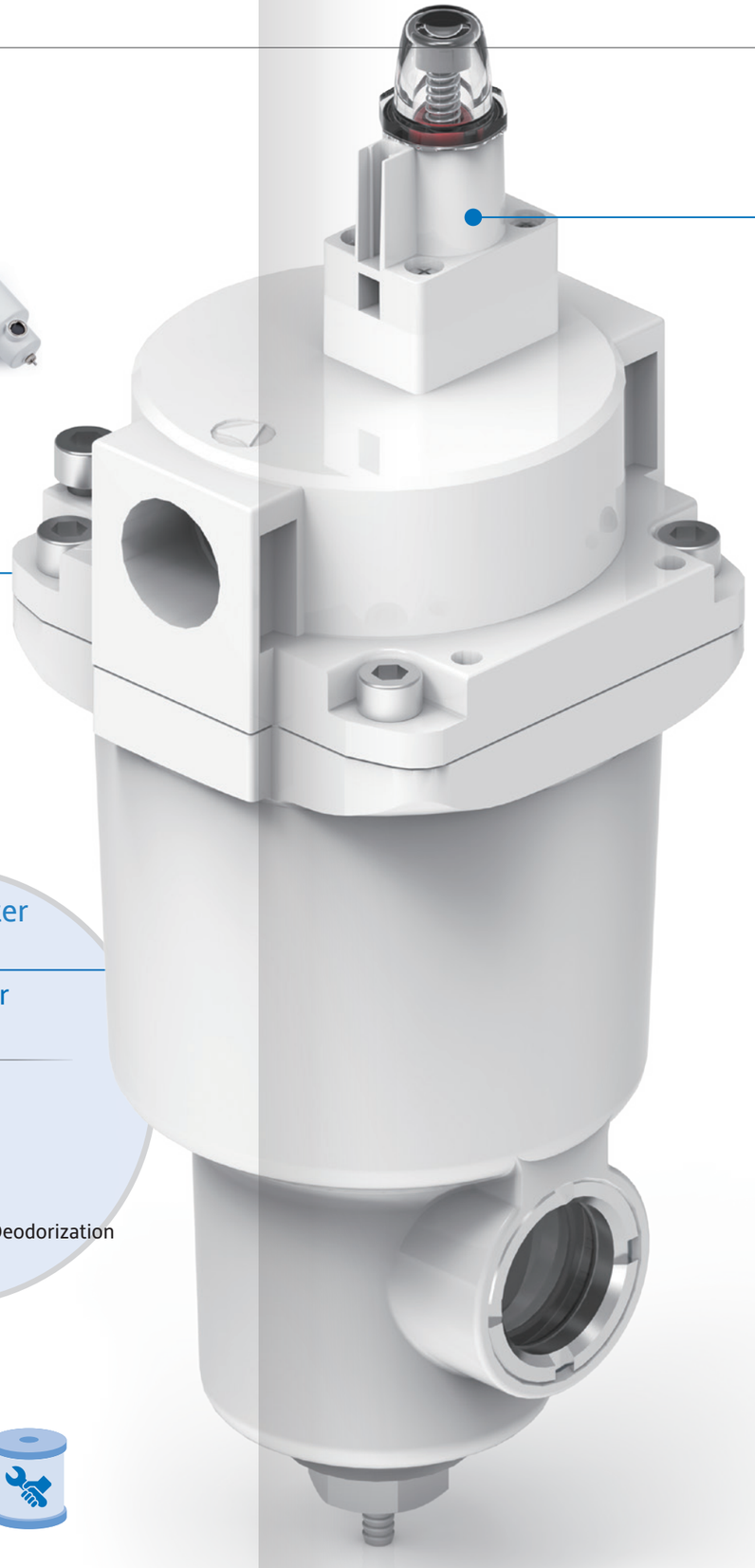
MAMF

E001D
0.01 µm +Deodorization
Filtration efficiency 99.9%

Adsorbing the order and efficiently removing oil mist with an activated carbon element in compressed air. The filter can be applied to requirement of high purity and oil-free, such as precision painting operations or food and medical equipment. * Assembling a MAMD series as pre-filter to extend the life of activated carbon.

Body & Port size
[Rc, G, NPT thread]

MAM*25 1/4, 3/8
MAM*35 3/8, 1/2
MAM*45 1/2, 3/4
MAM*55 3/4, 1



Model & Filter element

Water separator
MAMG

Precision filter
MAMB 3 µm
MAMD 0.3 µm
MAMM 0.01 µm
MAMF 0.01 µm + Deodorization

Maintenance

Replace filter element at least once per year or when pressure drop reaches 0.07 MPa.
(E001D every 6 months)

Differential pressure indicator (Option)

Double-check with a Sensor switch and an indicator to achieve preventative maintenance.

⚠ Caution

This product can't be operated in a location in which pulsations frequently occur.
The indicator is only available with Indicator (Q) and Indicator with switch (QR) models.

Operation image

Initial (No clogging) | Replacement recommended

An indicator that can confirm intuitively.
A clear cover and colorful lamp enables high visibility.
A mark that help you know when it is time to replace the filter element.

Sensor switch (Option)

RDFE(V)
Solid state output, Normally open
Operating voltage: 5~30V DC
Switching current: 50mA max.

A hint for preventative maintenance

Generally speaking, the filter element should be replaced about once a year. This is just a guideline. The air cleanliness of the secondary side depends on working conditions. To keep your system at optimal conditions, we recommend that

Customers replace filter elements regularly / follow the Replacement mark.

Precision Filter

MAF* / MAT* series

Model	Port size	Operating pressure MPa	Drain capacity cm^3	Filter element μm
MAF200D/M	1/8, 1/4	0.05~1	6.5	D:0.3, M:0.01
MAF200LD/M	1/8, 1/4	0.05~1	20	D:0.3, M:0.01
MAF302D/M	1/4, 3/8, 1/2	0.05~1	35	D:0.3, M:0.01
MAF401A/D/M	1/4, 3/8, 1/2	0.05~1.5	70	A:5, D:0.3, M:0.01
MAFF401AD/DM	1/4, 3/8, 1/2	0.05~1.5	70+70	AD:5+0.3, DM:0.3+0.01
MAFR401AD	1/4, 3/8, 1/2	0.05~1.5	70+70	AD:5+0.3
MATFR401	1/4, 3/8, 1/2	0.05~1.5	70+70+70	5+0.3+0.01
MAF501D/M	3/4, 1	0.05~1.5	75, 70	D:0.3, M:0.01

Precision Filter · Water Separator

MAMG series [Water separator]

- Separating the water droplet with a special filtration in the compressed air. * cannot remove moisture.

Model	Port size	Operating pressure MPa	Nominal flow capacity ℓ / min (0.7 MPa)	Removal rate %	Compatible with modular
MAMG25	1/4, 3/8	0.05~1	650	99±1	MA*401-W MA*403 series
MAMG35	3/8, 1/2	0.05~1	1350	99±1	
MAMG45	1/2, 3/4	0.05~1	2100	99±1	MA*501 series
MAMG55	3/4, 1	0.05~1	3600	99±1	MA*501 series

MAM* series [Air/ Mist/ Micro mist filter]

- Adsorbing the order and efficiently removing oil mist with an activated carbon element in compressed air. The filter can be applied to requirement of high purity and oil-free, such as precision painting operations or food and medical equipment.
- Assembling a MAMD series as pre-filter to extend the life of activated carbon.

Model	Body size	Port size	Operating pressure MPa	Nominal flow capacity ℓ / min (0.7 MPa)	Filter element μm	Compatible with modular
MAMB	25	1/4, 3/8	0.05~1	650	3	MA*401, MA*403 series
	35	3/8, 1/2	0.05~1	1350	3	
	45	1/2, 3/4	0.05~1	2100	3	MA*501 series
	55	3/4, 1	0.05~1	3600	3	MA*501 series
MAMD	25	1/4, 3/8	0.05~1	650	0.3	MA*401, MA*403 series
	35	3/8, 1/2	0.05~1	1350	0.3	
	45	1/2, 3/4	0.05~1	2100	0.3	MA*501 series
	55	3/4, 1	0.05~1	3600	0.3	MA*501 series
MAMM	25	1/4, 3/8	0.05~1	500	0.01	MA*401, MA*403 series
	35	3/8, 1/2	0.05~1	1000	0.01	
	45	1/2, 3/4	0.05~1	2000	0.01	MA*501 series
	55	3/4, 1	0.05~1	3600	0.01	MA*501 series
MAMF	25	1/4, 3/8	0.05~1	500	0.01+Deodorization	MA*401, MA*403 series
	35	3/8, 1/2	0.05~1	1000	0.01+Deodorization	
	45	1/2, 3/4	0.05~1	2000	0.01+Deodorization	MA*501 series
	55	3/4, 1	0.05~1	3600	0.01+Deodorization	MA*501 series

MAVS series

- Start-up valve for low speed air supply to gradually raise initial pressure in an air system and for quick exhaust by cutting off air supply.
- Combination with modular type air units (F.R.L. unit).
- Adaptor possess smooth pressure relief is optional.

Model	Port size	Operating pressure MPa	Effective orifice mm^2	Voltage AC / DC	Compatible with modular
MAVS200	1/4	0.25~1	1(P)→2(A): 20, 2(A)→3(R): 24	AC110/220V,DC24V	–
MAVS300	3/8	0.25~1	1(P)→2(A): 37, 2(A)→3(R): 49	AC110/220V,DC24V	MA*302 series
MAVS400	1/2	0.25~1	1(P)→2(A): 61, 2(A)→3(R): 76	AC110/220V,DC24V	MA*401 MA*403 series

High Efficiency Compressed Air Filter

MJF / MJL series [Ported / Flanged]

- Air filter engineering original imported top quality filter element 98% voids volume provides long life time with lowest operating cost. Pleated media provides far more filter surface, therefore more dirt holding capacity, lower diff. pressure and lower running cost compare to conventional wrapped element designs.
- A. Filter media: AFE uses high performance borosilicate microfiber with 98% void volume. The pleated design assures the highest possible filtration area within the element geometry to provide low operating cost.
- B. End cap: An O-ring sealed alumina end cap for the highest possible operating temperature together with tie rod construction provides highest possible security against pressure spikes in the compressed air system.
- C. Stainless steel support sleeves: Inner and outer SS support sleeves for supporting the filter media, incl. a mechanical pre-separation.

Model	Port size	Operating pressure	Max. capacity		Oil removal	Filter element
	inch	barG	Nm^3/min	SCFM	mg/m^3	μ
MJF	1/2~2 1/2	16	1.6~25	56~882	0.003~0.1	0.01, 1, 3
MJL	1/2~2 1/2, 3"~8"FL	10	1.6~150	56~5295	0.003~0.1	0.01, 1, 3

Digital Condensation Removal Timer

MBS / MCS / MBD series [Automation control systems]

- The Digital Condensation Removal Timer is a compact, modular timer valve combination specifically designed for air line condensation removal. This digital timer is compatible with MBS/ MCS/MBD series valve size to obtain an optimal system.
- This device easily programmed by two press-keys and a LCD display.
- Timer is water and dust protected to IP65 when installed properly to a coil and connector with provided M3 screw.

Model	Port size	Seal mat'l	Flow coefficient Cv	Operating pressure 0~ bar	Coil power AC / DC
MBS	M5, 1/8, 1/4	NBR, EPDM Viton, Teflon	0.03~0.18	AC: 1~30 DC: 0.1~30	AC: 5.3~8 VA DC: 5.2~6.8 W
MCS	1/4, 3/8, 1/2, 3/4	NBR, EPDM, Viton Teflon, Ruby, FFKM	0.1~1.3	AC: 0.4~40 DC: 0.4~30	AC: 8.6~24 VA DC: 10~18.5 W
MBD	1/4, 3/8, 1/2	NBR, Viton	0.14~0.95	AC: 1.5~25 DC: 1.5~20	AC: 5.7~23 VA DC: 5.2~18.5 W

Pressure Gauge

MPG-60 series [Digital pressure gauge]

- 6 user programmable pressure units (kPa, MPa, kgf/cm^2, psi, bar, mmHg) available.
- Battery powered, Back light option.
- Easy / fast read out with digital display.
- Power saving mode.
- LCD display: 3 1/2 digital, 7 segment LCD display (Black)
- IP65 enclosure, dust and splash-proof.

Model	Rate / display pressure range	Proof pressure	Operating pressure	Programmable pressure unit
MPG-60V	-101 ~ 0 kPa / -101 ~ 10 kPa	300 kPa	±1% F.S. ±1digit	psi, bar mmHg, kPa
MPG-60P	0 ~ 1 MPa / -0.1 ~ 1 MPa	1.5 MPa	±0.2% F.S. ±1digit	psi, bar, kfg/cm^2, MPa

PG series

Model	Port size	Pressure range *2 MPa	Precision	Proof pressure
PG-20	–	10K	±4% F.S.	The max. scale of gauge times 1.2
PG-20W *1	–	10K	±4% F.S.	
PG-25	1/16	10K	±4% F.S.	
PG-33S *1	1/8	2K, 4K, 10K	ASME B class	
PG-40	1/8	1K, 2K, 3K, 4K, 5K, 10K, 20K	ASME B class	
PG-40W *1	1/8	1K, 2K, 3K, 4K, 5K, 10K, 20K	ASME B class	
PG-40S *1	1/8	2K, 4K, 10K	ASME B class	
PG-50	1/4	10K, 20K	ASME B class	

*1. W: White, S: Stainless steel

*2. 1K: 0~0.1 MPa, 2K: 0~0.2 MPa, 3K: 0~0.3 MPa, 4K: 0~0.4 MPa 5K: 0~0.5 MPa, 10K: 0~1 MPa, 20K: 0~2 MPa

Booster Regulator

MVBA-2100 series

- Increase factory air pressure by up to twice as much.
- Air-only operation requires no power supply, reduces heat generation, and allows easy installation.

Model	Pressure increase rate	Port size	Operating pressure MPa	Max. flow rate ℓ/min
MVBA-2100	Twice	3/8	0.2~1	1000

MVBAT series [with air tank]

- Increase the primary pressure in the air line up to twice.
- Air-only operation requires no power supply, reduces heat generation, and allows easy installation.

Model	Pressure increase rate	Tank internal capacity L	Port size	Operating pressure MPa	Max. flow rate ℓ/min
MVBAT10	Twice	10	3/8	0.2~1	1000
MVBAT20	Twice	20	3/8	0.2~1	1000

MHBS / MHBD series [Single / Dual pressure type]

- Generates high pressure by use of high pressure hydraulic fluid.
- Universal design enables unit to be used in a wide variety of applications.
- Ideal for providing the motive force for marking, punching, shearing, straightening, embossing and welding.

Model	Type	Intensified pressure ratio	Discharging volume c.c.	Port size	Operating pressure MPa	Generated hydraulic pressure MPa
MHBS-078	Single pressure type	7.8	50	3/8	0.2~0.7	5.3
MHBS-110		11	120	1/2	0.2~0.7	7.6
MHBS-250		25	120	1/2	0.2~0.7	17.2
MHBD-078	Dual pressure type	7.8	50	3/8	0.2~0.7	5.3
MHBD-110		11	120	1/2	0.2~0.7	7.6
MHBD-250		25	120	1/2	0.2~0.7	17.2

MEMO

ISO Compliant | Space Saving | High Precision | High Rigidity | Longevity | Patent

Air Cylinder

ISO cylinder	Conforms to ISO 15552 specification enabling worldwide interchangeability.
Mini cylinder	Stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
Guide cylinder	Higher loading capacity compared to unguided standard compact cylinders.
Table	The linear rails been heat treated and cryogenic finish, forming precisely grinding V-grooves. It is suitable for limited stroke linear motion system with high accuracy.
Rodless cylinder	50% space saving when compared to conventional cylinders.
Stopper cylinder	Patented lever-lock mechanism. Adjustable shock absorber with easy replacement design.

Electronics Industry
New Energy Industry
Textile Industry
Food Industry
Machinery Industry
Industry 4.0

MCQA series

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer a high resistance to corrosion and low internal friction.
- Custom cylinders are available as are non standard strokes, rod extensions and special rod threads.
- Available with comprehensive internationally recognised range of fixed and flexible mountings.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQA	11: Double acting / Male thread	40, 50, 63, 80, 100, 125, 150, 200	50~2500	0.05~1
MCQA	21: Double rod / Double acting	40, 50, 63, 80, 100, 125, 150, 200	50~2500	0.05~1
MCQA	27: Double rod / Adjustable male thread	40, 50, 63, 80, 100, 125, 150, 200	50~2500	0.05~1

MCQA-AH series [Air/ oil converter]

- Displacement is suggested about 50% of total volume
- Max. oil ascending speed is about 200mm/sec
- Oil is feeded not exceeding 80% of total volume.
- Unit should be installed vertically above the cylinder / actuator.

Model	Tube I.D.	Operating pressure	Proof pressure	Medium
	mm	MPa	MPa	
MCQA-AH	40, 50, 63, 80, 100, 125, 150	0.05~1	1.5	ISO VG32 equivalent

MCQN series [Inch]

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer a high resistance to corrosion and low internal friction.
- Full range of NFPA interchangeable mounting configurations.

Model	Style	Tube I.D.	Stroke	Operating pressure
		inch	inch	MPa
MCQN	11: Double acting / Male thread	1 1/2, 2, 2 1/2, 3 1/4, 4	1~100	0.05~1

MCQV series [ISO 15552]

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer a high resistance to corrosion and low internal friction.
- Conforms to ISO 15552 specification enabling worldwide interchangeability.
- Available with comprehensive internationally recognised range of fixed and flexible mountings.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQV	11: Double acting / Male thread	125, 150, 200	50~2000	0.05~1
MCQV	21: Double rod / Double acting	125, 150, 200	50~2000	0.05~1
MCQV	27: Double rod / Adjustable male thread	125, 150, 200	50~2000	0.05~1

MCQV3 series [ISO 15552] [Automatic air cushioning]

- Pneumatic cushioning at both ends without adjusting.
- Special housing and bushing enable self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer high resistance to corrosion and low internal friction.
- Conforms to ISO 15552 specification enabling worldwide.
- Available with comprehensive internationally recognised range of fixed and flexible mountings.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQV3	11: Double acting / Male thread	32, 40, 50, 63, 80, 100	50~2500	0.05~1
MCQV3	21: Double rod / Double acting	32, 40, 50, 63, 80, 100	50~2500	0.05~1
MCQV3	27: Double rod / Adjustable male thread	32, 40, 50, 63, 80, 100	50~2500	0.05~1

MCQVS series [ISO 15552] [Stainless steel]

- AISI 316 stainless steel, fit the chemical, food and pharmaceutical environment.
- Conform to ISO 15552 specification, enabling worldwide interchangeability.
- Available with comprehensive internationally recognised range of fixed and flexible mountings.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQVS	11: Double acting / Male thread	32, 40, 50, 63, 80, 100	25~1000	0.1~1
MCQVS	21: Double rod / Double acting	32, 40, 50, 63, 80, 100	25~1000	0.1~1
MCQVS	27: Double rod / Adjustable male thread	32, 40, 50, 63, 80, 100	25~1000	0.1~1

MCQV3L series [ISO 15552] [End lock]

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer a high resistance to corrosion and low internal friction.
- Conforms to ISO 15552 specification enabling worldwide interchangeability.
- Available with comprehensive internationally recognised range of fixed and flexible mountings.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQV3L	11: Double acting / Male thread (Rod cover)	63, 80	50~600	0.15~1
MCQV3L	11: Double acting / Male thread (Head cover)	63, 80	50~600	0.15~1

MCQI3 series [ISO 15552] [Automatic air cushioning]

- Pneumatic cushioning at both ends without adjusting.
- Special housing and bushing enable self lubrication of piston rod.
- Hard anodised aluminium cylinder tubes offer high resistance to corrosion and low internal friction.
- Conforms to ISO 15552 specification enabling worldwide.
- With four grooves on the tube, proximity and reed sensors can be easily inserted into any position.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCQI3	11: Double acting / Male thread	32, 40, 50, 63, 80, 100	50~2500	0.05~1
MCQI3	21: Double rod / Double acting	32, 40, 50, 63, 80, 100	50~2500	0.05~1
MCQI3	27: Double rod / Adjustable male thread	32, 40, 50, 63, 80, 100	50~2500	0.05~1

MCB* series [Rod locking cylinder]

- Brake function is applicable in both directions.
- No lubricant is required for the piston rod. Utilize oil-containing alloys and special bearing bush to eliminate the necessity of lubrication on piston rod.
- Hard anodized aluminum tube and stainless steel tube allows cylinder to have better corrosion and abrasion resistance.
- Conform to ISO 15552 standards. Unified design, most parts and mounting accessories are interchangeable.
- Available with a comprehensive selection of mountings for fixed or flexible installation.

Model	Style	Tube I.D.	Stroke	Operating pressure	Rod locking	
		mm	mm	MPa	Working pressure MPa	Retention forces N
MCBMI	11: Double acting / Male thread	20, 25	10~800	0.3~0.6	min. 0.3	490
MCBQI3	11: Double acting / Male thread	32, 40, 50, 63, 80 ,100	50~2300	0.3~0.6	min. 0.3	7700
MCBQV3	11: Double acting / Male thread	32, 40, 50, 63, 80 ,100	50~2300	0.3~0.6	min. 0.3	7700
MCBQV	11: Double acting / Male thread	125	50~1800	0.3~0.6	min. 0.3	12040

MCB series [Locking unit]

- Locking unit is a mechanical device to apply to cylinders ISO 15552 and ISO 6432 whose scope is to block cylinder's rod in any position. This solution allows to block the race of the cylinder anytime takes place an unexpected fall of pressure.
- The blocking force is always and however greater of the one developed from the respective cylinder at 1 MPa.

Model	Tube I.D.	Rod diameter	Operating pressure	Rod locking	
	mm	mm	MPa	Working pressure MPa	Retention forces N
MCB	20~125	8~32	0.3~0.6	min. 0.3	490~12040

Power Cylinder

MHPD series

- Hydro-pneumatic solution provides high power in confined space.
- Simple construction make these units ideal in many applications where previously hydraulics were the only option.
- Quiet in operation.
- Only requires a pneumatic valve to make the system operate.
- Wide range of working strokes and output forces available.

Model - Pressure boost	Tube I.D.	Total stroke	Working stroke	Operating pressure	Medium
	mm	mm	mm	MPa	
MHPD-1T	50	50, 75, 100, 150, 200	5, 10, 15, 20	0.3~0.8	Filtered air with or without lubrication
MHPD-3T	70	50, 75, 100, 150, 200	5, 10, 15, 20	0.3~0.8	
MHPD-5T	80	50, 75, 100, 150, 200	5, 10, 15, 20	0.3~0.8	
MHPD-8T	100	50, 75, 100, 150, 200	5, 10, 15, 20	0.3~0.8	
MHPD-10T	125	50, 75, 100, 150, 200	5, 10, 15, 20	0.3~0.8	

MCJA series

- Ultra Compact, light weight and space saving cylinder.
- Wide range of bore sizes and strokes (12mm~100mm).
- Single and double acting available.
- Ideal for use in machinery where space is limited and incorporating sensor groove which enables flush fitting of sensors.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCJA	11: Single rod / Double acting	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.02~1
MCJA	12: Double acting / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.02~1
MCJA	13: Single acting / Normally extended male thread	12, 16, 20, 25, 32, 40, 50	5~300	0.1~1
MCJA	14: Single acting / Normally extended female thread	12, 16, 20, 25, 32, 40, 50	5~300	0.1~1
MCJA	15: Single acting / Normally returned male thread	12, 16, 20, 25, 32, 40, 50	5~300	0.1~1
MCJA	16: Single acting / Normally returned female thread	12, 16, 20, 25, 32, 40, 50	5~300	0.1~1
MCJA	21: Double rod / Double acting	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.02~1
MCJA	22: Double rod / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.02~1
MCJA	23: Single acting / Double rod / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.1~1
MCJA	24: Single acting / Double rod / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.1~1
MCJA	27: Double rod / Adjustable male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.02~1

MCJA-3 series [Multiple position]

Model	Style	Tube I.D. mm	Max. stroke mm		Operating pressure MPa
			First	Total	
MCJA	31: Double acting / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~130	300	0.02~1
MCJA	32: Double acting / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~130	300	0.02~1
MCJA	35: Single acting / Normally returned male thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1
MCJA	36: Single acting / Normally returned female thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1

MCJA-4 series [Back to back type]

Model	Style	Tube I.D. mm	Max. stroke mm		Operating pressure MPa
			First	Second	
MCJA	41: Double acting / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~130	300	0.02~1
MCJA	42: Double acting / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~130	300	0.02~1
MCJA	43: Single acting / Normally extended male thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1
MCJA	44: Single acting / Normally extended female thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1
MCJA	45: Single acting / Normally returned male thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1
MCJA	46: Single acting / Normally returned female thread	12, 16, 20, 25, 32, 40, 50	5~30	30	0.1~1

MCJQ series

- Ultra compact, light weight and space saving cylinder.
- Wide range of bore sizes and strokes (12mm~100mm).
- Single and double acting available.
- Ideal for use in machinery where space is limited and incorporating sensor groove which enables flush fitting of sensors.
- Sensor can be mounted on any one of three faces on 12 and 16 bore and on four faces on 20~100 bore.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCJQ	11: Double acting / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1
MCJQ	12: Double acting / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1
MCJQ	13: Single acting / Normally extended male thread	12, 16, 20, 25, 32, 40, 50	5~20	0.1~1
MCJQ	14: Single acting / Normally extended female thread	12, 16, 20, 25, 32, 40, 50	5~20	0.1~1
MCJQ	15: Single acting / Normally returned male thread	12, 16, 20, 25, 32, 40, 50	5~20	0.1~1
MCJQ	16: Single acting / Normally returned female thread	12, 16, 20, 25, 32, 40, 50	5~20	0.1~1
MCJQ	21: Double rod / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1
MCJQ	22: Double rod / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1
MCJQ	23: Single acting / Double rod / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~20	0.1~1
MCJQ	24: Single acting / Double rod / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~20	0.1~1
MCJQ	27: Double rod / Adjustable male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1
MCJQ	28: Double rod / Adjustable female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~300	0.05~1

MCKJQ series [Non-rotation]

- Hexagonal rods for Non-rotation feature. Stainless Steel rods for higher corrosion resistance.
- The profile designs are based on MCJQ.
- Anodised aluminum tubes provide better corrosion and abrasion resistance.

Model	Style	Tube I.D.	Stroke	Operating pressure	Rod non-rotation accuracy	Allowable rotational torque
		mm	mm	MPa	°	kgf · cm
MCKJQ	11: Double acting / Male thread	12, 16, 20, 25, 32, 40	5~100	0.1~1	±0.5~±1	0.4~4.5
MCKJQ	12: Double acting / Female thread	12, 16, 20, 25, 32, 40	5~100	0.1~1	±0.5~±1	0.4~4.5

MCJQ2 series

- Ultra Compact, light weight and space saving cylinder.
- Single and double acting available.
- Ideal for use in machinery where space is limited and incorporating sensor groove which enables flush fitting of sensors.

Model	Style	Tube I.D.	Stroke	Operating pressure
		mm	mm	MPa
MCJQ2	11: Double acting / Male thread	12, 16, 20, 25	5~50	0.05~1
MCJQ2	12: Double acting / Female thread	12, 16, 20, 25	5~50	0.05~1

MCJQ-3 series [Multiple position]

- Two-stage stroke: Two compact cylinders with same I.D. but different strokes length are connected to achieve two-stage stroke.

Model	Style	Tube I.D.	Max. stroke mm		Operating pressure
		mm	First	Total	MPa
MCJQ	31: Double acting / Male thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~100	300	0.05~1
MCJQ	32: Double acting / Female thread	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~100	300	0.05~1

MCJI series [ISO 21287]

- Wide range of bore sizes and strokes. Ultra compact, light weight and space saving.
- Sensor slots on RCI sides for flush mounting of proximity sensors. Standard with magnet.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCJI	11: Double acting / Male thread	25, 32, 40, 50, 63, 80, 100	5~500	0.05~1
MCJI	12: Double acting / Female thread	25, 32, 40, 50, 63, 80, 100	5~500	0.05~1
MCJI	21: Double rod / Double acting	25, 32, 40, 50, 63, 80, 100	5~500	0.05~1
MCJI	22: Double rod / Female thread	25, 32, 40, 50, 63, 80, 100	5~500	0.05~1

MCJI-3 series [Multiple position]

Model	Style	Tube I.D. mm	Max. stroke mm		Operating pressure MPa
			First	Total	
MCJI	31: Double acting / Male thread	20, 25, 32, 40, 50, 63, 80, 100	5~150	500	0.05~1
MCJI	32: Double acting / Female thread	20, 25, 32, 40, 50, 63, 80, 100	5~150	500	0.05~1

MCJU series [Plate oval] [Non-rotation]

- Plate type design for ultra compact, Oval piston design for non-rotation and space saving.
- Sensor slots on sides for flush mounting of proximity sensors.
- Standard with magnet.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCJU	11: Double acting / Male thread	25, 32, 40, 50, 63	5~300	0.05~0.7
MCJU	12: Double acting / Female thread	25, 32, 40, 50, 63	5~300	0.05~0.7
MCJU	21: Double rod / Double acting	25, 32, 40, 50, 63	5~300	0.05~0.7
MCJU	22: Double rod / Female thread	25, 32, 40, 50, 63	5~300	0.05~0.7

Multi-Mount Cylinder

MCFA series

- Compact and space saving.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCFA	11: Double acting / Male thread	6, 10, 16, 20, 25, 32	5~50	0.05~0.7
MCFA	21: Double rod / Double acting	6, 10, 16, 20, 25, 32	5~50	0.05~0.7

MCFB series

- Compact and space saving.
- Flush fitting sensor.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCFB	11: Double acting / Male thread	6, 8, 10, 16, 20	4~50	0.05~0.7
MCFB	21: Double rod / Double acting	6, 8, 10, 16, 20	4~50	0.05~0.7
MCFB	15: Single acting / Normally returned male thread	6, 8, 10	4~10	0.2~0.7
MCFB	16: Single acting / Normally returned female thread	6, 8, 10	4~10	0.2~0.7

MCMA series

- Special housing and bushing enable self lubrication of piston rod.
- Hard anodised stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- Cylinder mountings, available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMA	11: Double acting / Male thread	16, 20, 25, 32, 40	15~500	0.06~0.7
MCMA	13: Single acting / Normally extended male thread	16, 20, 25, 32, 40	15~150	0.15~0.7
MCMA	15: Single acting / Normally returned male thread	16, 20, 25, 32, 40	15~150	0.15~0.7
MCMA	21: Double rod / Double acting	16, 20, 25, 32, 40	15~500	0.06~0.7
MCMA	23: Single acting / Double rod male thread	16, 20, 25, 32, 40	15~150	0.15~0.7
MCMA	27: Double rod / Adjustable male thread	16, 20, 25, 32, 40	15~500	0.06~0.7

MCMB series

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- Cylinder mountings, available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMB	11: Double acting / Male thread	20, 25, 32, 40	25~300	0.05~1
MCMB	13: Single acting / Normally extended male thread	20, 25, 32, 40	25~300	0.23~1
MCMB	15: Single acting / Normally returned male thread	20, 25, 32, 40	25~300	0.18~1
MCMB	21: Double rod / Double acting	20, 25, 32, 40	25~300	0.05~1
MCMB	27: Double rod / Adjustable male thread	20, 25, 32, 40	25~300	0.05~1

MCKMB series [Non-rotation]

- Cylinder with hexagonal rod design enables non-rotation of rod.
- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- Cylinder mountings, available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCKMB	11: Double acting / Male thread	20, 25, 32, 40	25~300	0.05~0.7

MCMBL series [End lock]

- Cylinder remains same position when it reaches end of stroke even if the input air source is gone.
- Self-lubricating bush provides longer service life.
- Stainless steel cylinder tubes for better corrosion resistance.
- Cylinder mountings, available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMBL	11: Double acting / Male thread	32, 40	25~300	0.15~1

Mini Cylinder

MCMBR series

- The cylinder can be directly mounted without bracket, the overall length is greatly shortened. This gives the benefit of saving space when installing the cylinder.
- Increased strength and accuracy of installation.
- Cylinder can be front mounted or bottom mounted.

Model	Mounting	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMBRA	Bottom mounting	11: Double acting / Male thread	20, 25, 32, 40	25~300	0.05~1
MCMBRB	Front mounting	11: Double acting / Male thread	20, 25, 32, 40	25~300	0.05~1

MCMI series [ISO 6432]

- Special housing and bushing enables self lubrication of piston rod.
- Hard anodised stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- ISO 6432 standard (ø8~ø25). Enables world-wide inter-changeability.
- Available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMI	11: Double acting / Male thread	8, 10, 12, 16, 20, 25, 32, 40	10~1000	0.06~0.7
MCMI	13: Single acting / Normally extended male thread	16, 20, 25	15~150	0.23~0.7
MCMI	15: Single acting / Normally returned male thread	16, 20, 25	15~150	0.18~0.7
MCMI	21: Double rod / Male thread	16, 20, 25, 32, 40	15~450	0.06~0.7
MCMI	27: Double rod / Adjustable male thread	16, 20, 25, 32, 40	15~450	0.06~0.7

MCMIS series [ISO 6432 Stainless steel]

- Special housing and bushing enables self lubrication of piston rod.
- Highly resistant with crimped covers and entirely built in stainless steel. Available with or without adjustable cushioning, double acting or through piston rod. On request complaint with 2014/34/UE ATEX directive.
- ISO 6432 standard. Enables world-wide inter-changeability.
- Available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMIS	11: Double acting / Male thread	10, 12, 16, 20, 25	10~500	0.08~1
MCMIS	21: Double rod / Male thread	10, 12, 16, 20, 25	10~500	0.08~1

Pen Cylinder

MCMJ series

- Stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- Available with a comprehensive range of accessories for rigid or flexible mounting.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMJ	11: Double acting / Male thread	6, 10, 16	15~200	0.06~0.7
MCMJ	13: Single acting / Normally extended male thread	6, 10, 16	15~150	0.15~0.7
MCMJ	15: Single acting / Normally returned male thread	6, 10, 16	15~150	0.15~0.7

MCMJ1 series

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMJ1	15: Single acting / Normally returned male thread	4	5~20	0.3~0.7

MCMJP series

- Space saving, compact design enables simple mounting.
- Flush fitting sensor switch.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMJP	11: Double acting / Male thread	6, 10, 16	5~40	0.06~0.7
MCMJP	18: Double acting / Threadless	6, 10, 16	5~40	0.06~0.7

MCMJP* series

- A short stroke miniature cylinder with a shorter overall length.

Model	Mounting	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCMJPB	Panel mounting	10: Single acting / Normally returned without thread	6, 10, 15	5, 10, 15	0.15~0.7
MCMJPS	Plug mounting	15: Single acting / Normally returned male thread	6, 10, 15	5, 10, 15	0.15~0.7

Round Cylinder

MCCG series [mm]

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCCG	11: Double acting / Male thread	20, 25, 32, 40, 50, 63, 80, 100	25~1200	0.05~1

MCCN series [inch]

Model	Style	Tube I.D. inch	Stroke inch	Operating pressure MPa
MCCN	11: Double acting / Male thread	3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2	1~48	0.05~1

High Speed Cylinder

MCCH series

- The diameter of the port orifice has been enlarged to support high speed operation. max speed: 3000mm/sec.
- Longer cushion rod to absorb more exercise energy and reduce external cushioning settings.
- The cylinder with relief valve provides better cushioning performance than the general purpose cylinder with needle valve.
- The relief valve body can rotate 360 degrees freely, which is convenient for adjustment and use.

Model	Style	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCCH	11: Double acting / Male thread	25, 32	250~1500	0.05~1

Twin-Guide Cylinder

MCGA series [Stop type / Lift type]

- Strong cylinder capable of high loads, used extensively for stopping work carriers in both the vertical and horizontal position.
- Large diameter guide rods enable cylinder to take high off-set loads.
- Can be used as 90 degree pusher on large conveyor systems.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGA	03 : Stop / Slide bush	20, 32, 40, 50, 63, 80	30~100	0.1~1
MCGA	13 : Lift / Linear bearing	20, 32, 40, 50, 63, 80	30~100	0.1~1
MCGA	53 : Lift / Slide bush	20, 32, 40, 50, 63, 80	30~100	0.1~1

MCGA series [Push type]

- Long stroke type of the anti-turn accuracy, improved by integrating the guides and cylinder.
- Linear bush bearing type available for high accuracy in the high speed work. On the link bar at the top, Many thread holes for mounting attachments are provided for easy mounting.
- Lift type of long stroke is available by replacing the link bar with table plate. Standard with magnet.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGA	23: Push / Linear bearing	20, 32, 40, 50, 63, 80	30~700	0.1~1
MCGA	63: Push / Slide bush	20, 32, 40, 50, 63, 80	30~700	0.1~1

MCGB series

- Proven track record in manufacturing precision guided cylinders.
- Multi-Ports as standard enabling two direction mounting option.
- Flush fitting sensors.
- In built high density rubber pad absorbs energy at the end of stroke.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGB	03: Stop / Slide bush	12, 16, 20, 25, 32	10~200	0.1~1
MCGB	23: Push / Linear bearing	12, 16, 20, 25, 32	10~200	0.1~1

MCGS series

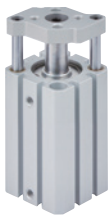
- Multi-ports as standard enabling both direction mounting. Proven track record in manufacturing precision guided cylinders.
- Non-rotation accuracy ± 0.1° .
- Embedding type sensors.
- The sensor cable will be in the same direction as the piping tube if vertical type sensor switch (Angle cable) is used.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGS	–	6, 10	5~20	0.15~0.7
MCGS	03: Stop / Slide bush	12, 16, 20, 25, 32, 40, 50, 63	10~400	0.1~1
MCGS	07: Stop / Slide bush / Stroke adjustable	12, 16, 20, 25, 32, 40, 50, 63	10~400	0.1~1
MCGS	23: Push / Linear bearing	12, 16, 20, 25, 32, 40, 50, 63	10~400	0.1~1
MCGS	27: Push / Linear bearing / Stroke adjustable	12, 16, 20, 25, 32, 40, 50, 63	10~400	0.1~1

MCGI series [Compact]

- Higher loading capacity compared to unguided standard compact cylinders.
- Wide range of bore sizes and strokes.
- Ultra compact, light weight and space saving.
- Sensor slots on RCI sides for flush mounting of proximity sensors.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGI	12: Lift / Slide bush	20, 25, 32, 40, 50, 63, 80, 100	5~300	0.1~1



MCGM series [Compact]

- Higher loading capacity compared to unguided standard compact cylinders.
- Up to 6 flush fitting reed switches can be mounted.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGM	12: Lift / Slide bush	12, 16, 20, 25, 32, 40, 50, 63, 80, 100	5~100	0.1~1

MGT* series

- The guide rod cylinder is a combination of ISO 6432 / ISO 15552 cylinders with guide accessories. It has excellent resistance to rotation, torque and lateral load.
- Four self-lubricating bushes or linear bearings enable high loading and precise movement.
- Simplified structure, save a lot of time when designing mechanism/application, generating new drawing and installing.
- The MGT* have longer stroke and a larger bore size than the MCG* cylinder.
- ø32~ø63 With four grooves on the tube, reed sensors can be easily inserted into any position.
- Adjustable cushion as standard.

Model	Purpose / type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MGTK	Light duty type	20, 25	15~500	0.2~0.7
MGTX	Light duty flange type	32, 40, 50, 63	50~1500	0.2~0.7
MGTB	Heavy duty (bush) type	20, 25, 32, 40, 50, 63	50~1500	0.2~0.7
MGTU	Heavy duty (linear bearing) type	20, 25, 32, 40, 50, 63	50~1500	0.2~0.7

MCGD series [Twin-guide]

- Can be used as plate slide type or body slide type.
- The air cylinder and guide share a compact design which enables the cylinder to work smoothly along its stroke.
- The cylinder is extremely rigid and strong. Flush fitting sensor available.

Model	Type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCGD	03: Slide bush	12, 16, 20, 25, 32	30~250	0.1~1
MCGD	23: Linear bearing	12, 16, 20, 25, 32	30~250	0.1~1

MCG3 series [Triple-guide]

- Three guide rods equally spaced enable consistent movement even when uneven load is applied.
- Increases productivity on conveyor lines.
- When connected to a rotary actuator the unit can be used as an auto turn lifter.

Model	Purpose / Type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCG3	D: Circle table lift / Slide bush	63, 80	30, 50, 75, 100	0.1~1
MCG3	B: Circle table lift / Linear bearing	63, 80	30, 50, 75, 100	0.1~1
MCG3	D90: Turntable / Angle 90°/ Slide bush	63	30, 50, 75, 100	0.1~1
MCG3	B90: Turntable / Angle 90°/ Linear bearing	63	30, 50, 75, 100	0.1~1
MCG3	D180: Turntable / Angle 180°/ Slide bush	63	30, 50, 75, 100	0.1~1
MCG3	B180: Turntable / Angle 180°/ Linear bearing	63	30, 50, 75, 100	0.1~1
MCG3	QD: Quad table lift / Slide bush	63	30, 50, 75, 100	0.1~1
MCG3	QB: Quad table lift / Linear bearing	63	30, 50, 75, 100	0.1~1

MCDA series [Dual-rod cylinder]

- Compact in width and length with precision guidance.
- High lateral loads can be applied on both slide and linear bearing unit.
- Non rotation is standard.

Model	Type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCDA	03: Slide bush	6, 12, 16, 20, 25, 32	10~200	0.05~0.7
MCDA	23: Linear bearing	6, 12, 16, 20, 25, 32	10~200	0.05~0.7

MCDJ series [Dual-rod cylinder]

- Compact in width and length with precision guidance.
- High lateral loads can be applied on both slide and linear bearing unit.

Model	Type of bearing	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCDJ	03: Slide bush	6, 10	10~50	0.1~0.7

MCSS series

- High precision combination of cylinder and linear rail.
- Flush fitting sensor groove.
- Provide optional combination for stroke adjuster and end lock (for vertical installation to prevent falling).

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa	Cushion
MCSS	Double acting	6, 8, 12, 16, 20, 25	10~150	0.15~0.7	Rubber bumper, Shock absorber

MCSQ series

- High precision combination of cylinder and linear rail.
- Flush fitting sensor groove.

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa	Cushion
MCSQ	Double acting	6, 8	10~75	0.15~0.7	Rubber bumper, Shock absorber

MCSF series [Low profile]

- ø5.2: The thickness is 6.5mm, achieving the slim compact.
- Built-in guide for accurate motion. Flush fitting sensor groove.

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa	Cushion
MCSF	Double acting	5.2	10	0.2~0.7	Cushion spring
MCSF	Double acting	8, 12, 16, 20	10~100	0.15~0.7	Rubber bumper

MCSH series [Compact]

- Compact precision cylinder.
- Cylinder can take high lateral loads and is also non rotating.
- Cylinder can be mounted in 3 or 4 positions.

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa	Cushion
MCSH	Double acting	6, 10, 16, 20	5~60	0.05~0.7	Rubber bumper

MCRPL(F) series

- Double acting
- ø16, 25, 32, 40, 50, 63 mm
- Operating pressure: 0.1~0.78 MPa
- Stroke: 100~5600 mm
- Cushion: With adjustable cushion at both ends

MCRPLK series

- Double acting
- ø16, 25, 32, 40 mm
- Operating pressure: 0.1~0.78 MPa
- Stroke: 100~3600 mm
- Cushion: With adjustable cushion at both ends

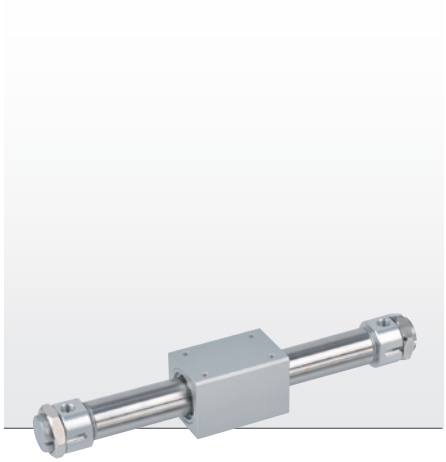
MCRPLS series

- Double acting
- ø32, 40, 50, 63 mm
- Operating pressure: 0.05~0.8 MPa
- Stroke: 100~2000 mm
- Cushion: With adjustable cushion at both ends

MCRPM series

[Magnetically coupled]

- Double acting
- ø10, 15, 20, 25, 32, 40 mm
- Operating pressure: 0.18~0.7 MPa
- Stroke: 100~2000 mm
- Holding force: 53.9~922 N



MCRPMD series

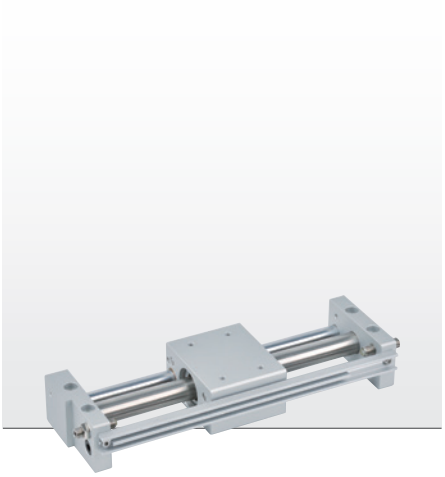
[Magnetically coupled]

- Double acting
- ø10, 15, 20, 25, 32 mm
- Operating pressure: 0.18~0.7 MPa
- Stroke: 100~2000 mm
- Holding force: 53.9~588 N

MCRPMS series

[Magnetically coupled]

- Double acting
- ø10, 15, 20, 25, 32 mm
- Operating pressure: 0.2~0.7 MPa
- Stroke: 50~1500 mm
- Holding force: 53.9~588 N



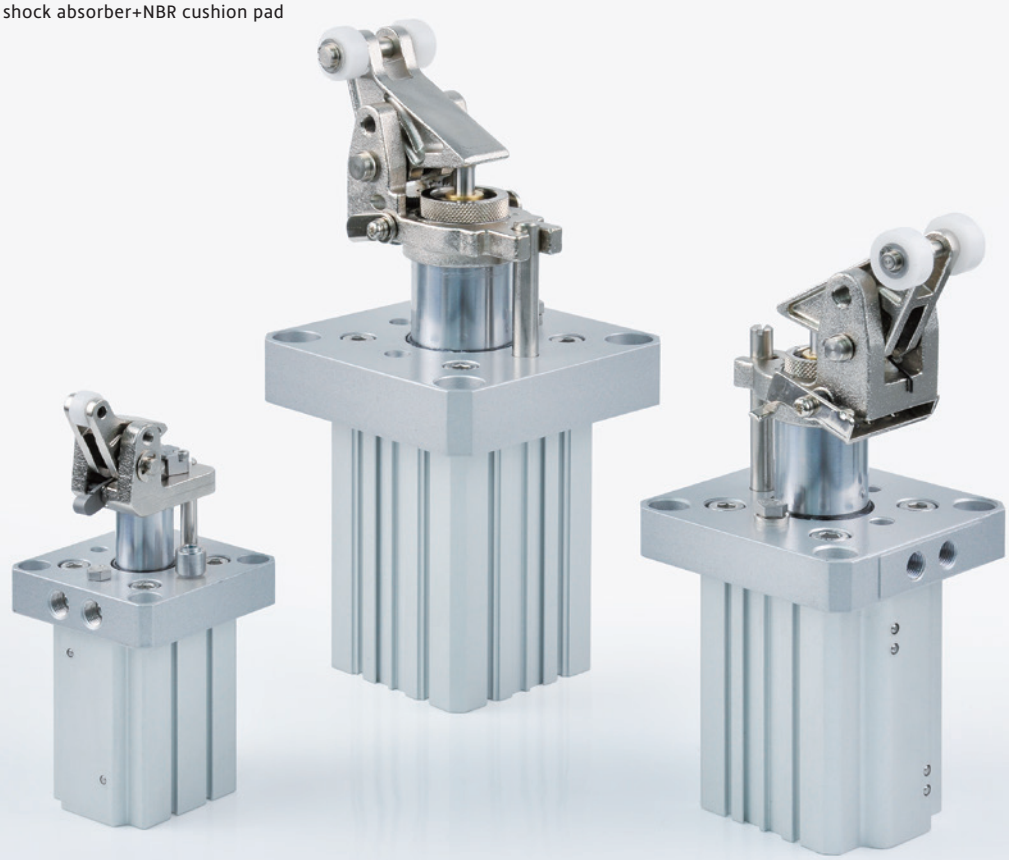
MSBE series

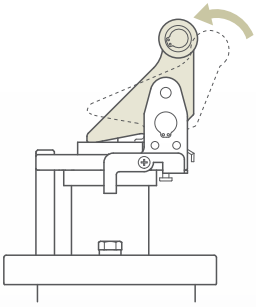
- Double acting
- ø32, 50, 63, 80 mm
- Operating pressure: 0.2~1 MPa
- Stroke: 20, 30, 40 mm
- Adjustable shock absorber+NBR cushion pad

Logistics Classification

Automation Equipment

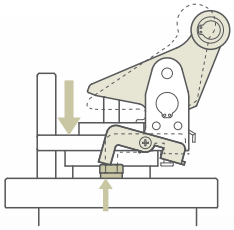
Patent





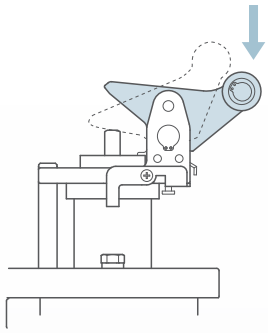
Lock Mechanism

Lock mechanism prevents the light-weight workpiece from moving back by the force of shock absorber after damping.



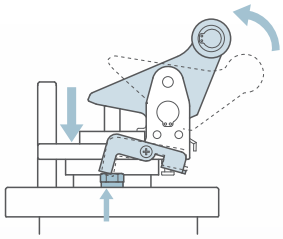
Pneumatic Unlock Lock Mechanism

The locking / deactivation mechanism of MSBE*-L* can be unlocked / reactivated by return the piston rod.



Deactivation Mechanism

Deactivation mechanism can deactivate the cylinder without any disassembling.



Pneumatic Unlock Deactivation Mechanism

The mechanism can be unlocked / reactivated by return the piston rod. Replace traditional manual unlock, which is suitable for fully automated production lines.
[for ø50, ø63, ø80]

MSBR series

Model	Operation type	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSBR	Stopper with roller	Double acting	20-20	0.2~1
MSBR	Stopper with roller	Single acting (Spring extended)	32-20, 40-30, 50-30	0.2~1

MSBS series

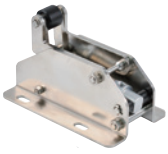
Model	Operation type	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSBS	Direct stopper	Double acting	20-10, 32-20, 50-30	0.2~1

MSAR series

Model	Operation type	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSAR	Stopper with roller	Single acting (Spring extended)	32-20, 50-30, 80-30	0.2~1

MSLP series

Model	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSLP-P	Double acting Extend type	32-40	0.2~1
MSLP-CP	Double acting Return type	32-40	0.2~1



MSLL series

Model	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSLL	Double acting with spring	25-30, 40-30	0.2~1
MSLL-D	Double acting without spring	25-30, 40-30	0.2~1

MSLD series

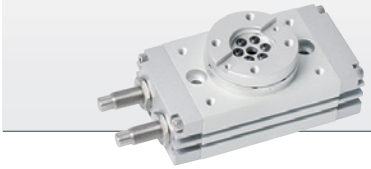
Model	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MSLD	Double acting with spring and shock absorber	50-50	0.2~1

MCRA series

- Double acting
- ø63 mm
- Operating pressure: 0.1~1 MPa
- Rotary angle: 90, 180°
- Allowable kinetic energy: 1.5 J
- Air cushion

MCRB series

- Double acting
- ø16, 20, 25, 32 mm
- Operating pressure: 0.1~1 MPa
- Rotary angle: 0~190°
- Allowable kinetic energy: 0.007~1.6 J
- NBR spacer, shock absorber



MCRC series

[Vane mechanism]

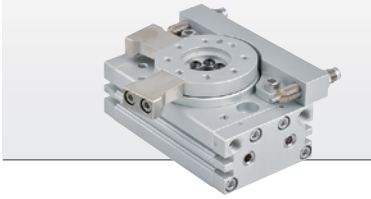
- Double acting
- Size: 30
- Operating pressure: 0.15~1 MPa
- Rotary angle: 90, 180, 270°
- Allowable kinetic energy: 0.02 J

MCRQ series

- Double acting
- ø12, 16, 20, 25, 32, 40 mm
- Operating pressure: 0.1~1 MPa
- Rotary angle: 0~190°
- Allowable kinetic energy: 0.006~2.9 J
- Rubber bumper, Shock absorber

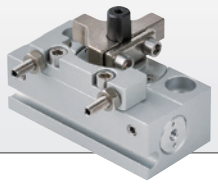
MCRQ-S series

- Double acting
- ø16, 20, 25 mm
- Operating pressure: 0.2~1 MPa
- Rotary angle: 90, 180°
- Allowable kinetic energy: 0.23~1.82 J
- Shock absorber



MCRJ-S series [Mini]

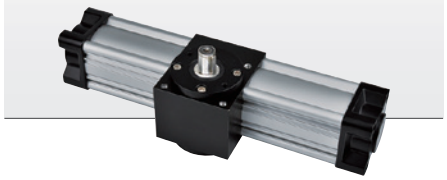
- Double acting
- ø6, 8 mm
- Operating pressure: 0.15~0.7 MPa
- Rotary angle: 90, 180°
- Angle adjustment: Each rotation end ±5 °



- The body is manufactured in anodized aluminium alloy, and has been designed looking at the harmonious aesthetic development.
- Pinion and rack produced from carbon steel reduces backlash within the mechanism.

MRTH series

- Male pivot gear (standard type)
- Male pivot gear (double end rod type)
- ø40, 63, 80 mm
- Operating pressure: 0.13~0.7 MPa
- Rotary angle: 90, 180°
- Allowable kinetic energy: 0.26~3.03 J



MRTF series

- Female pivot gear
- ø40, 63, 80 mm
- Operating pressure 0.13~0.7 MPa
- Rotary angle: 90, 180°
- Allowable kinetic energy: 0.26~3.03 J

MCKC series [Pneumatic-swing]

- Built-in counterbore design for mounting without additional bracket.
- Easy to adjust sensor position.
- Selectable clamping lever.

Model	Acting type	Tube I.D.	Operating pressure MPa	Rotary angle °	Rotary direction
MCKC	Double acting	12, 16, 20, 25, 32, 40, 50	0.1~1	90±10	Left (L), Right (R)

MCKB series

- Lever type clamp cylinder gives high clamping force.
- Simple mounting of sensors on all four sides of body.
- Hard anodised body gives smooth lines and high corrosion resistance.

Model	Acting type	Tube I.D. - Stroke mm	Operating pressure MPa
MCKB	Double acting	25-20, 32-25, 40-25, 50-30, 63-35	0.1~1

MCKA series

- Aluminium alloy tube provides both smooth lines and high corrosion resistance.
- Self lubricated nose bush gives long life.
- Versatile porting position available.
- End cushioning at both ends reduces impact loads.

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCKA	Double acting	40	50~150	0.05~1

MCKG series

- Aluminium alloy tube provides both smooth lines and high corrosion resistance.
- Self lubricated nose bush gives long life.
- Versatile porting position available.
- End cushioning at both ends reduces impact loads.
- Available with magnetic piston and sensors.

Model	Acting type	Tube I.D. mm	Stroke mm	Operating pressure MPa
MCKG	Double acting	50, 63	50~150	0.05~1

Strong Clamping | Space Saving | Multi Types of Arms | Multi-Angle | Anti-Interference Sensor | Self-Locking Mechanism

MCKD series [Powerful]

- Oval piston design for space saving.
- Clamping arm angle is adjustable via adjusting bolt.
- 12 types of clamping arm are available for different applications.
- 15° minimum release angle for lowering clamping time.
- Welding slag and magnetic field proof sensor available.
- Cylinder remains clamping position with self-locking mechanism even if there is no air input.

Model	Acting type	Tube I.D. mm	Release angle °	Operating pressure MPa
MCKD	Double acting	50, 63	15, 30, 45, 60, 75, 90, 105, 120, 135	0.3~0.8

Lightweight | High Grip | High Precision | High Rigidity | Longevity | Patent

End of Arm Tooling (EOAT)

Applications of advanced robot system become the crucial technology.
Therefore, Mindman launched diversified lightweight grippers for different industries & application.

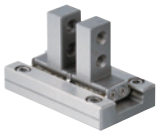
Durability	Mindman has an ultra-high lifespan of 5,000,000 actuation test with excellent reliability.
Diversity	Parallel, angle, rotation, all-in-one gripper and deburring tools, etc.
Automatic Tool Changer	MCTC series, patented and won the 2022 Taiwan Excellence Award.

Electronics Industry
Automotive Industry
Automation Equipment
Food Industry
Machinery Industry
Industry 4.0

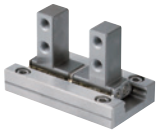
Various Jaws are Available

- Standard

- Narrow

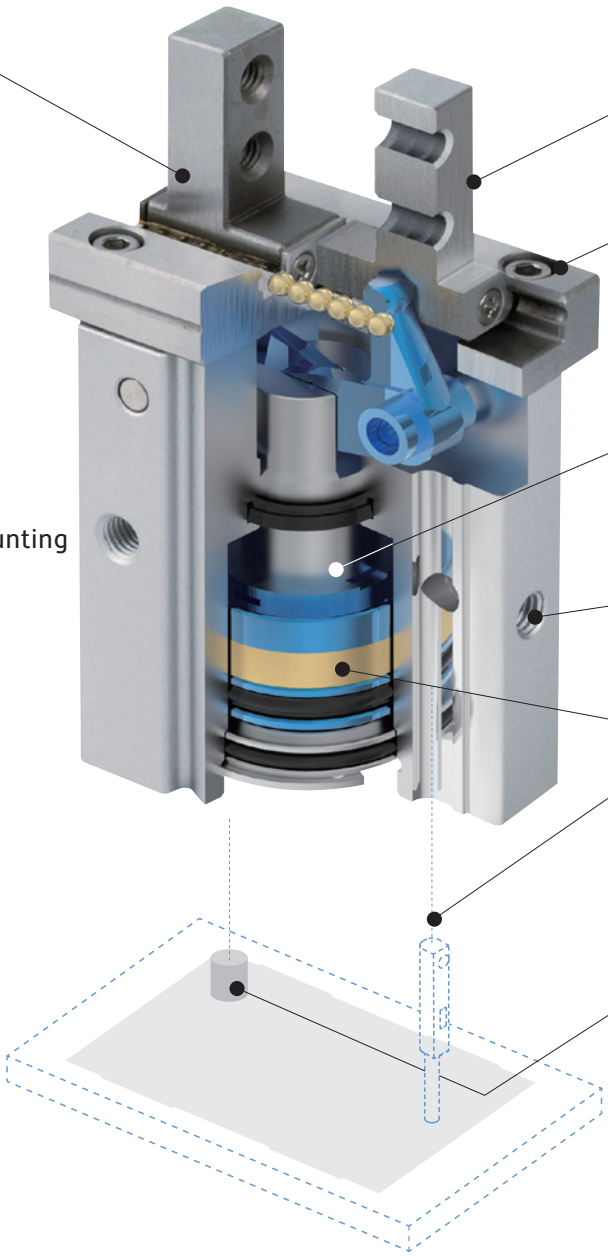


- Side tapped mounting



- Through hole

- Flat



Repeatability

±0.01 mm

Stroke

Standard and long stroke.

[The stroke length for long stroke type is approximately double compare with standard type]

Acting

Single / Double acting

[N.C. / N.O. (optional)]

Mounting Position

Bottom / Side / Front

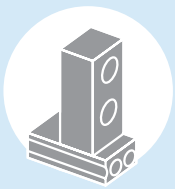
Sensor Switch

RDE, RNE, RPE series

[Standard with magnet Embedded sensor design]

Positioning Holes

With positioning holes for fast positioning when changing grippers.



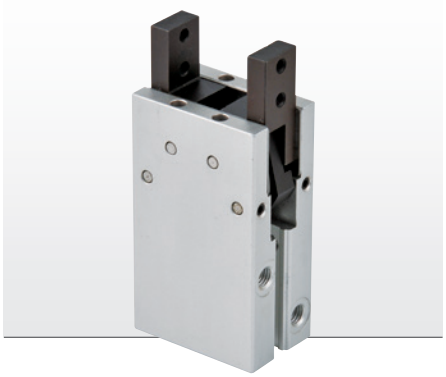
7 kinds of mounting jaw available

Linear ball bearing guide for high rigidity and precision

Whole gripping made with martensitic stainless steel

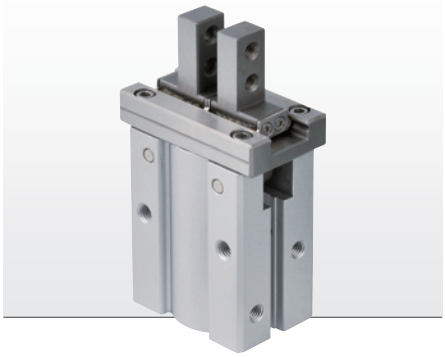
MCHB series

- Double acting / Single acting N.O.
- ø12, 16, 20, 25, 32 mm
- Max. gripping force (*1) : 120 N



MCHC series

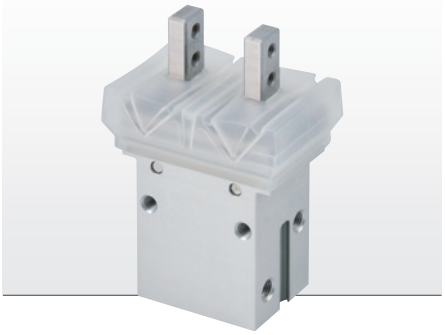
- Double acting / Single acting
- ø6, 10, 16, 20, 25, 32, 40 mm
- Max. gripping force (*1) : 254 N



MCHCJ series

[Dust Cover]

- Double acting
- Tube I.D.: ø16 mm
- Max. gripping force (*1) : 30 N



*1. Operation pressure 0.5 MPa, gripping length 20mm, the external effective gripping force for the largest bore in the series.
*2. Operation pressure 0.6 MPa, gripping length 40mm, the external effective gripping force for the largest bore in the series.

MCHH series

- Double acting
- ø20, 25, 40 mm
- Max. gripping force (*1) : 125 N

MCHS series

- Double acting
- Size: 50, 66, 80, 100, 125, 160, 200, 300
- Max. gripping force (*2) : 3411 N

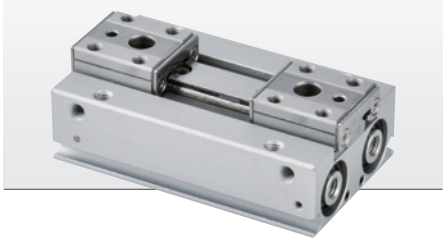
MCHS-OS series

[Clamping Safety Device]

- Double acting
- Size: 80, 100, 125
- Max. gripping force (*2) : 1287 N

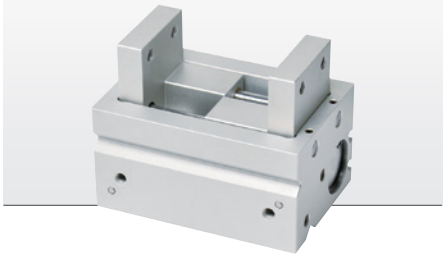
MCHD series

- Double acting
- ø8, 12, 16, 20 mm
- Max. gripping force (*1): 140 N



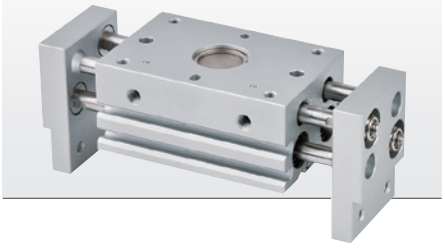
MCHU series

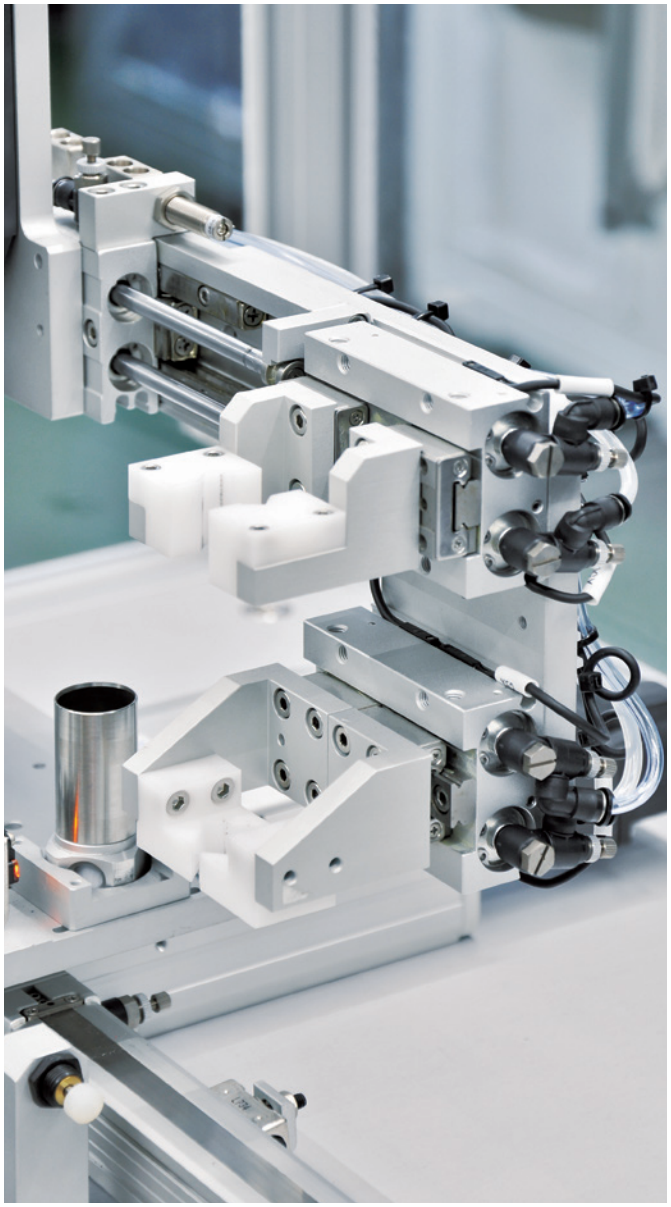
- Double acting
- ø12, 16, 20 mm
- Max. gripping force (*1): 60 N



MCHX series

- Double acting
- ø10, 16, 20, 25, 32, 40 mm
- Max. gripping force (*1): 410 N



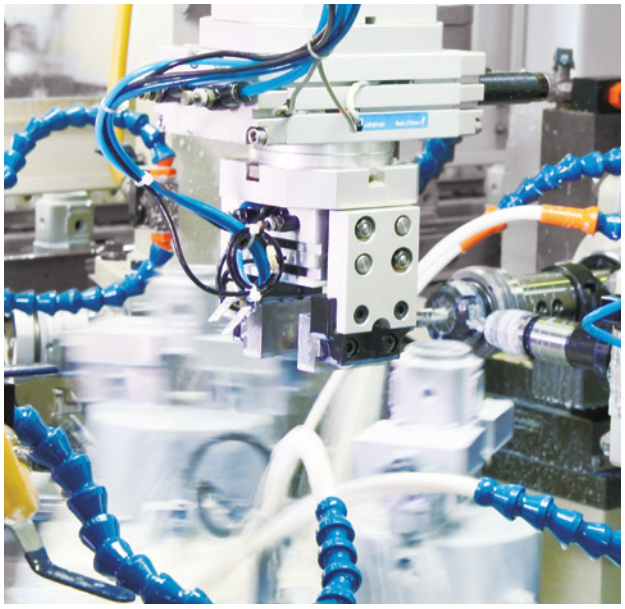


Parallel gripper MCHD ▲ / MCHU ▼ for automatic assembly of gripping applications.

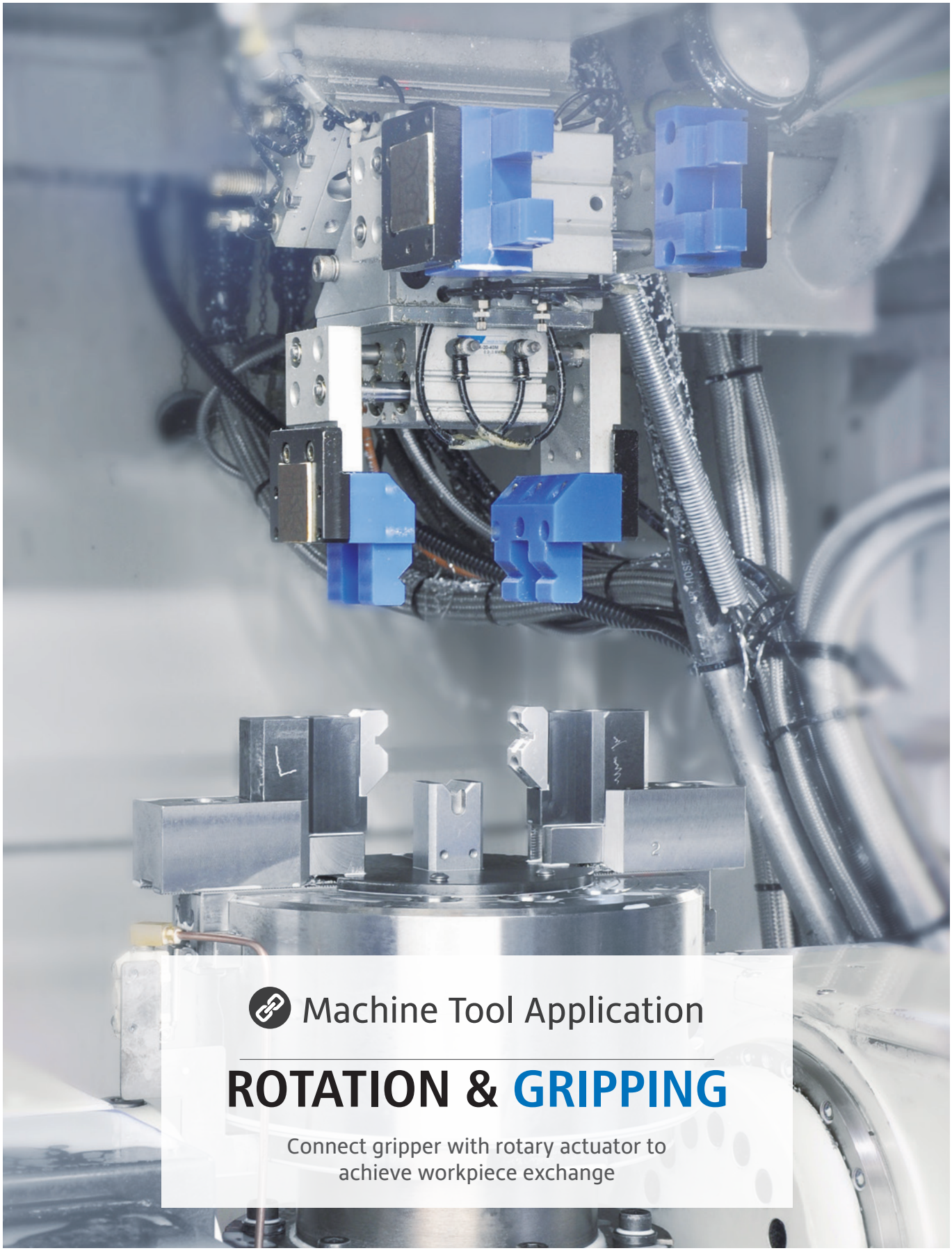
Connect with

AIR CYLINDER

Automation equipment applications



Rotary actuator MCRQ with gripper MCHX for machine tool application.



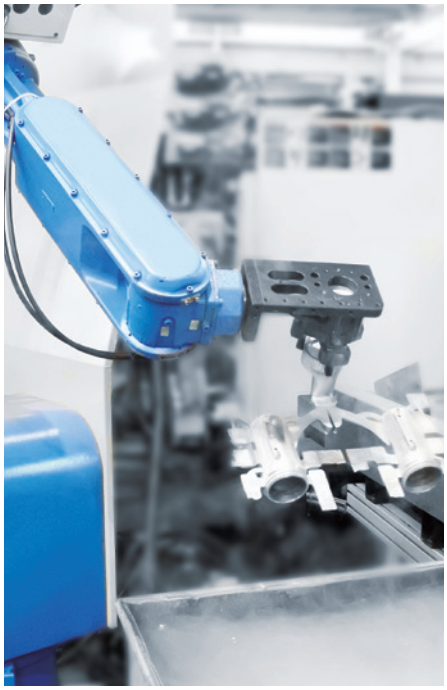
Machine Tool Application

ROTATION & GRIPPING

Connect gripper with rotary actuator to achieve workpiece exchange

MCHG2 series

- Double acting
- ø16, 20, 25, 32, 40, 50, 63, 80, 100, 125 mm
- Max. gripping force (*2) : 1270 N



MCHJ series

- Double acting
- Size: 50, 66, 80, 100, 125, 160
- Max. gripping force (*1) : 1747 N

Parallel Gripper MCHJ for die casting gripping application.

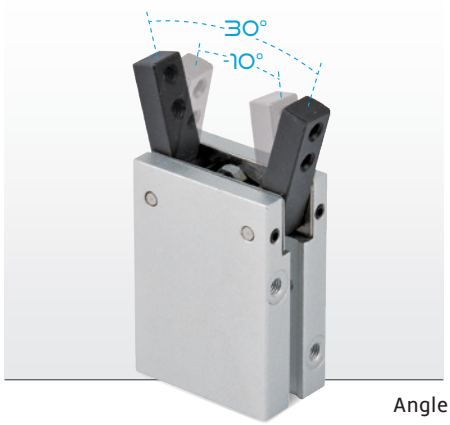
*1. Operation pressure 0.6 MPa, gripping length 40mm, the external effective gripping force for the largest bore in the series.
*2. Operation pressure 0.5 MPa, gripping length 50mm, the external effective gripping force for the largest bore in the series.
*3. The external effective gripping force for the largest bore in the series.

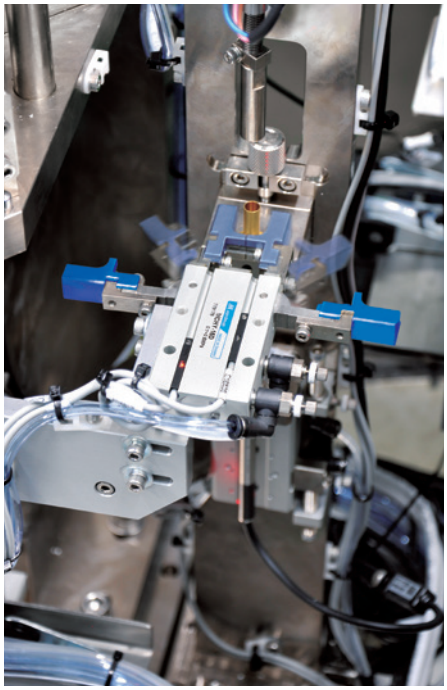
* With dust-proof module.

Angular Gripper 30° / 180°

MCHA series

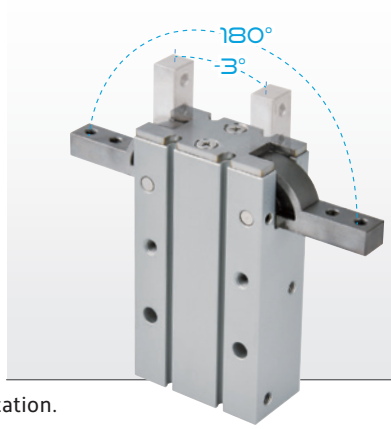
- Double acting / Single acting N.O.
- ø12, 16, 20, 25, 32 mm
- Max. effective gripping force (*3) : 0.17 Nm
- Clamp / Release angle: -10~+30°





MCHY series

- Double acting
- ø10, 16, 20, 25 mm
- Max. effective gripping force (*3) : 2.28 Nm
- Operating angle: -3~+180°



Angle gripper MCHY for assembly part clamping application.

ALL-IN-ONE Pneumatic Gripper [Patent]

- All-in-One module design with embedded solenoid valves and sensor switches.
- Only one I/O signal cable and one air tube is required. Plug and play.
- High reliability and simple operation compare with electric grippers.
- Wire integrated inside and power-off protection.
- Easy mounting design with threads and bolts.

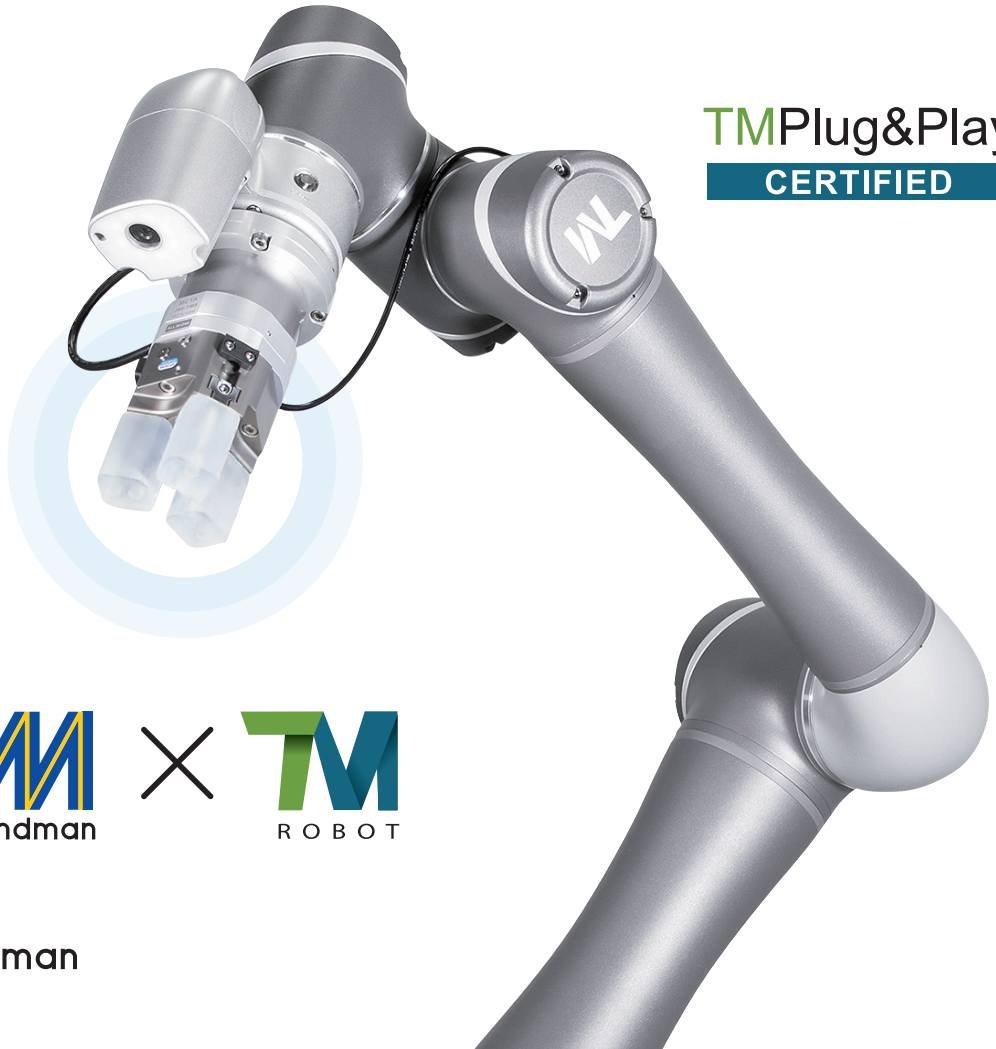
MCTA-J66 series

- Double acting
- Gripper: MCHJ-66
- Max. gripping force (*1) : 188 N

MCTA-S80 series

- Double acting
- Gripper: MCHS-80
- Max. gripping force (*1) : 285 N

*1. Operation pressure 0.6 MPa, gripping length 40mm, the external effective gripping force for the largest bore in the series.



TMPlug&Play CERTIFIED

Mindman × TM ROBOT

- High rigidity locating pins with special treatment for good service life.
- Tapered locating stud for high locating accuracy.
- Repeat accuracy ±0.015mm.
- Ejection mechanism for releasing base plate (R) and tool plate (T).
- Self-locking mechanism for preventing plates from ejecting when pneumatic source is accidently removed.
- Accurate connection change with electric module to avoid manual operation mistakes.
- ISO flange for easy-mounting on most of the robot arms

Video introduction

MCTC series

- Size: 20 , 41
- handing weight :
  Size 20: Tool : 3.5 kg [with tool plate (T)]
  Workpiece : 21.5 kg
  Size 41: Tool : 18 kg [with tool plate (T)]
  Workpiece : 32 kg
- Repeat accuracy : ±0.015 mm

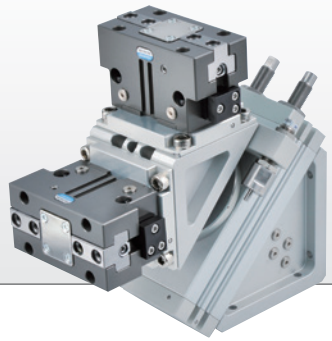
TAIWAN 2022 EXCELLENCE

180° Rotation Gripper

- Hollow shaft design for easy sensor wiring.
- Various grippers are available for exchange.
- Direct connection: Air supply tunnel connects directly to the base without piping to ensure flexibility when rotating.
- Modular rotation and gripping system for automation applications.
- Water repellent design for environment with cutter fluid.
- Magnetic as standard. Can be used with embedded sensors.

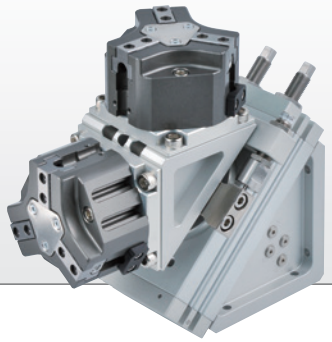
MCRT-S series

- ø20 mm with MCHS
  Gripper size: 50, 66, 80
- ø25 mm with MCHS
  Gripper size: 100, 125



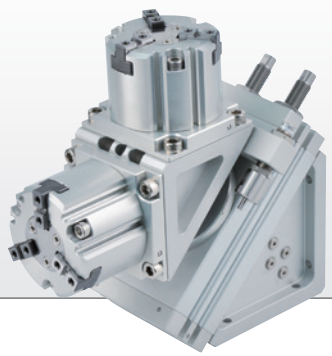
MCRT-J series

- ø20 mm with MCHJ
  Gripper size: 50, 66
- ø25 mm with MCHJ
  Gripper size: 80, 100



MCRT-G series

- ø20 mm with MCHG2
  Gripper size: ø16, 20, 25, 32, 40 mm
- ø25 mm with MCHG2
  Gripper size: ø50, 63 mm



Deburring Tool For Robot

TRG / TRF / TAF series [For robot]

- Remove the smallest or thicker burrs on curved or straight edges, improve work efficiency and workpiece quality.
- Suitable for plastic, die-casting and machined workpieces.

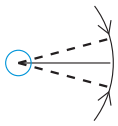
Model	Compliant type	Application	Burr size	Compliant angle	Compliant force N	Spindle idle speed RPM	Cutter shank diameter mm	Tool	Workpiece type
TRG20	Radial	Curved edge	S, M	3.5°	2~10	65,000	3	Milling cutter	Plastic, die-casting
TRG30	Radial	Curved edge	L	3.5°	6~30	25,000	6	Milling cutter	Plastic, die-casting
TRF20	Radial	Curved edge	S	3.5°	5~30	9,000	5	Round file	Die-casting
TAF20	Angular	Straight edge	S	±5.5°	4~20	9,000	5	File	Die-casting

Floating mode

Two types of floats mode available for different application requirements.

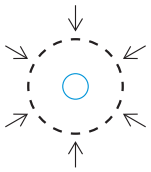
Angular

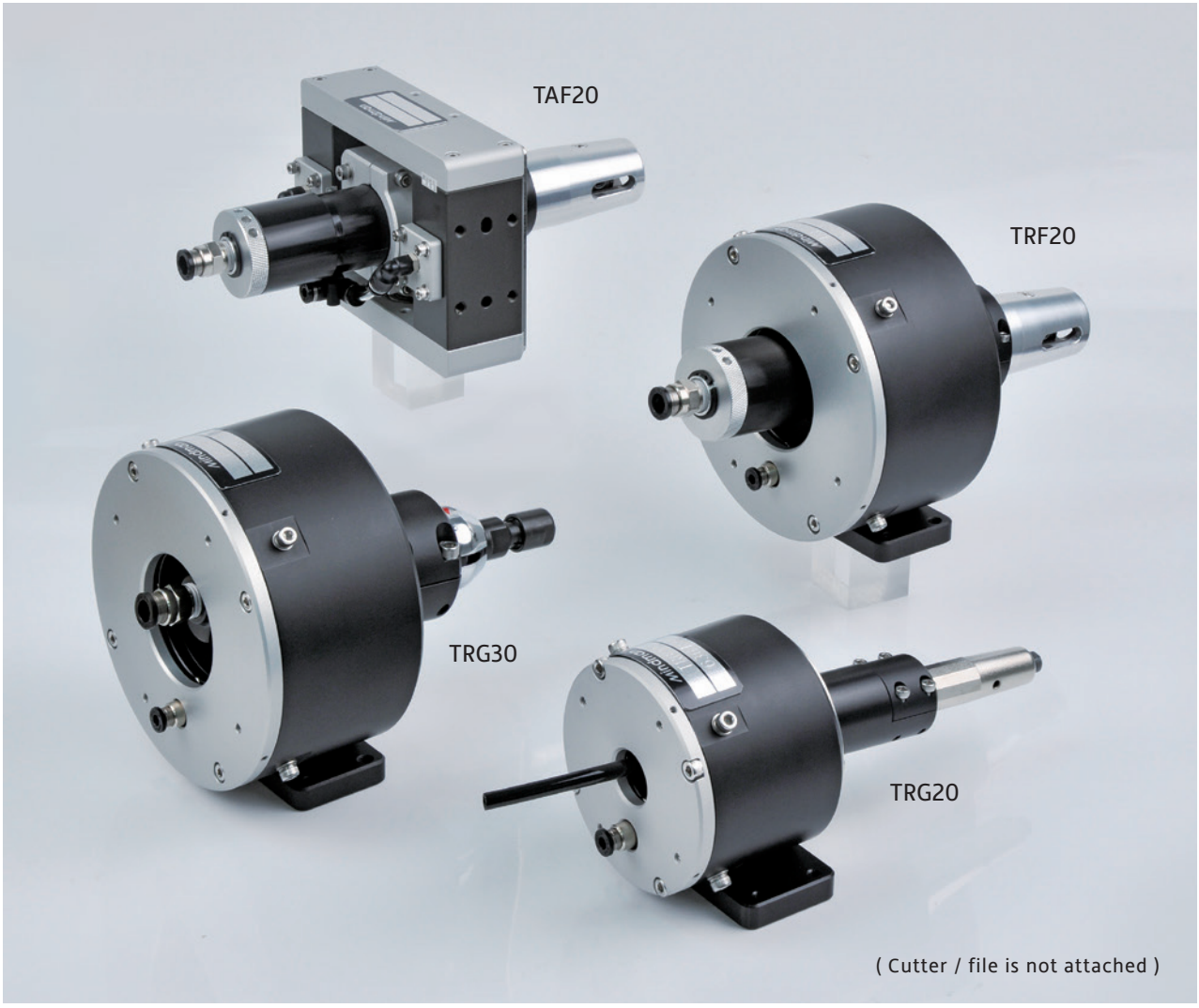
Floating in angular direction. Allow lateral tolerance and position change. Suitable for straight line or plane deburring.



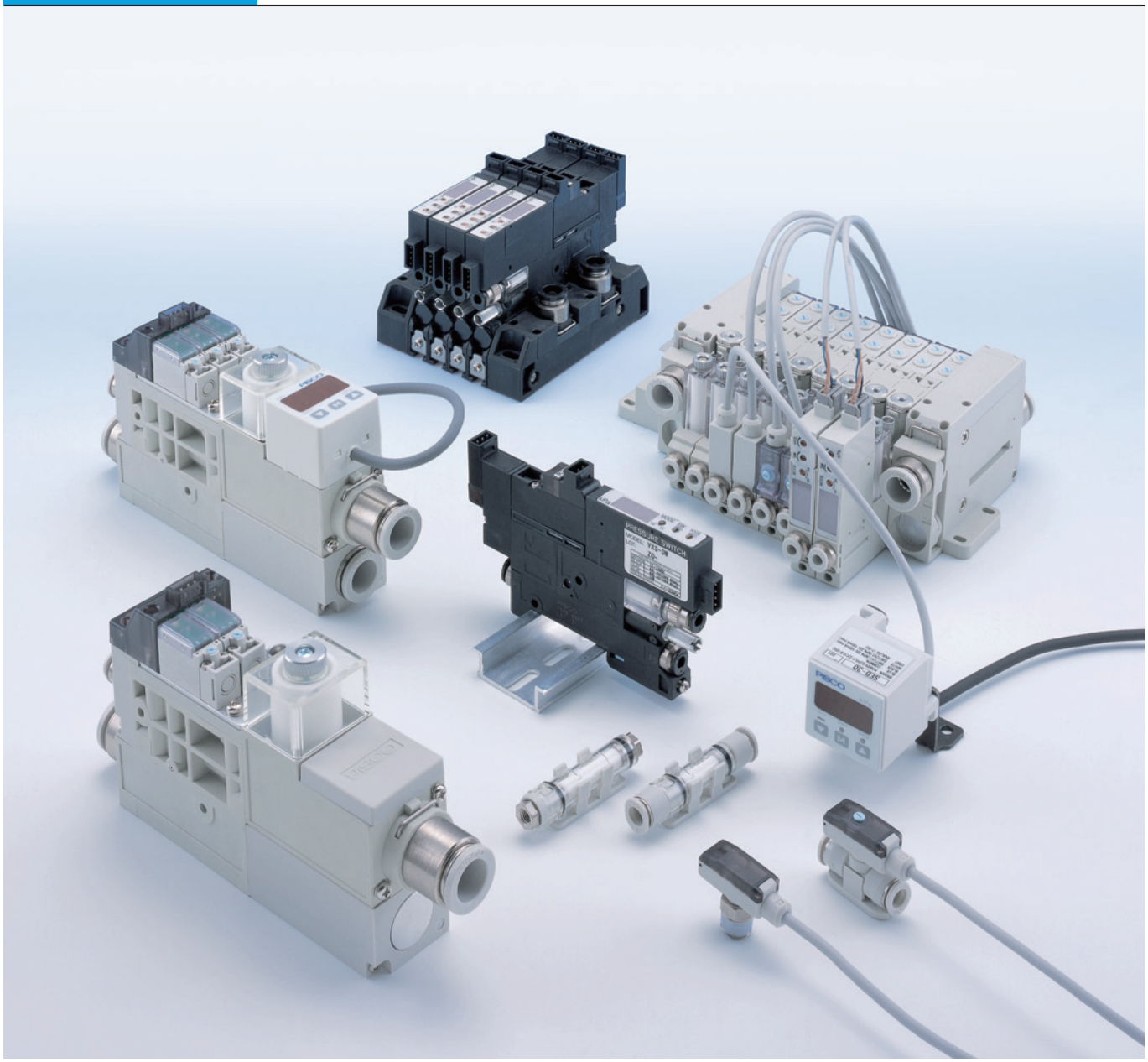
Radial

Floating in radial direction. Allow radial tolerance or position change. Suitable for complex contour deburring.





(Cutter / file is not attached)



ISO Compliant | Variety of Styles | High Quality | General Environment | Special Environment | Clean Environment

Vacuum Component PISCO®

Vacuum Generator	Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
Vacuum Pad	General-shape cup suitable for thick and flat work and deep-shape cup for spherical fruits (apple, etc.) or balls are available.
Vacuum Accessories	Swing-type suction cup bracket allows the suction cup to tilt freely. The vacuum breaking unit reduces the vacuum breaking time and can also control the vacuum breaking pressure.
Vacuum Filter	Filter out the dust and water drops sucked in by the vacuum generator or vacuum pump.

Semiconductor Industry | Packaging Industry | Automation Equipment

Glass Industry | Automotive Industry | Chemical Industry

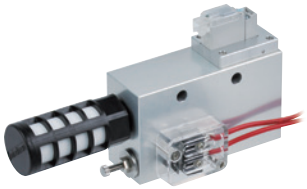
-S3 No copper-based material is used (standard)

-S3 No copper-based material is used (optional)

2 IN 1 Two different functions integrated into one product

FOOD Food sanitation act or FDA compliant

AIR Reduce compressed air consumption



MVVA series

- Variety of nozzle diameter are available for different flow requirement.
- The basic type has a simple structure without moving parts and has a long service life.
- Equipped with solenoid valve module design to save space and easy piping.
- Sensor switch (Optional) is available for remote control.

Model	Type	Vacuum switch type*	Nozzle dia.	Final vacuum	Suction flow	Air consumption	Operating pressure
			mm	kPa (mmHg)	ℓ/min	ℓ/min	MPa
MVVA	Standard	SJ / EV	ø1.0, 1.5, 2.0, 2.5, 3.0	–91.8 (–690)	32~225	76~385	0.1~0.6
MVVA-S	Solenoid valve control	SJ / EV	ø1.0, 1.5, 2.0	–91.8 (–690)	21~99	50~187	0.15~0.6

* SJ : Adjustable switch / EV: Pressure switch

MVVB series [Vacuum start-upvalve / Vacuum breaker valve]

Model	Port size	Nozzle dia.	Fina vacuum	Suction flow	Air consumption	Supply pressure	Operating pressure
		mm	kPa (mmHg)	ℓ/min	ℓ/min	MPa	MPa
MVVB	Rc1/8	0.7	–90 (-675)	9	23	0.5	0.1~0.6

MVVZA series [With digital vacuum display]

Model	Nozzle number	Nozzle dia.	Fina vacuum	Suction flow	Air consumption	Supply pressure	Operating pressure
		mm	kPa (mmHg)	ℓ/min	ℓ/min	MPa	MPa
MVVZA	2	1.5	–92 (-690)	350	310	0.6	0.1~0.6
MVVZA	4	1.5	–92 (-690)	500	550	0.6	0.1~0.6

MZL112 / 212 series [Multistage]

- Adopt 3-stage cartridge, enhancing vacuum flow and saving air consumption.
- Optional solenoid valve and vacuum pressure switch.
- Internal vacuum filter and vacuum silencer. The filter element is replaceable.
- A variety of installation directions are available.

Model	Nozzle dia.	Max. suction flow	Air consumption	Max. vacuum pressure	Max. operating pressure	Supply pressure
	mm	ℓ/min	ℓ/min	kPa	MPa	MPa
MZL112	1.2	100	63	–84	0.7	0.2~0.5
MZL212	1.2 x 2	200	126	–84	0.7	0.2~0.5

Vacuum Generator - Direct mount

VH [Valve direct mounting type elbow]

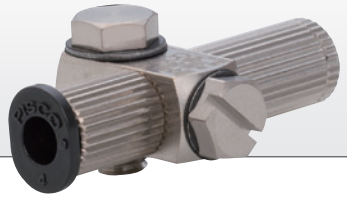
- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Nozzle diameter: ø0.5~ø2.0
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E

VS [Valve direct mounting type straight]

- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Nozzle diameter: ø0.5~ø2.0
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E

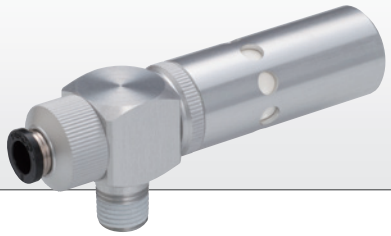
VM [Vacuum pad direct mounting type elbow]

- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Vacuum pad direct mounting.
- Nozzle diameter: ø0.3~ø0.5
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E



VC [Vacuum pad direct mounting type straight]

- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Vacuum pad direct mounting.
- Nozzle diameter: ø0.3~ø2.0
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E



VU [Pipe type]

- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Nozzle diameter: ø0.5~ø0.7
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E

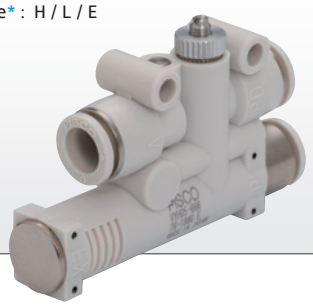
VUM [Small-seized pipe type]

- Super small and lightweight ejector.
- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Connectable to small vacuum pad holder VPMB directly.
- Nozzle diameter: ø0.3~ø0.5
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E

* H : High-vacuum type (Rated supply pressure: 0.5 MPa)
  L : Large-flow type (Rated supply pressure: 0.5 MPa)
  E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.5 MPa)

VY [Blow-off mechanism equipped type]

- Ejector and blow-off mechanism are integrated.
- Small and lightweight body makes it possible to place on the terminal part of the vacuum piping. High speed cycle of suction and blow-off mechanism is achieved by diffuser spool.
- Nozzle diameter: ø0.5~ø0.7
- Medium: Air
- Operating pressure: 0.3~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E



VB [Box type]

- Integrated with mechanical vacuum switch.
- Compressed air is converted to vacuum and can be combined with suction cup to transport materials.
- Nozzle diameter: ø0.5~ø1.2
- Medium: Air
- Operating pressure: 0.15~0.7 MPa
- Operating temp.: 0~60°C (No freezing)
- Performance* : H / L / E

VLM [Multi-stage high flow]

- Securing high flow and high vacuum level.
- Excellent in ozone resistance.
- Suitable for suction conveyance, defoaming deaeration, vacuum packing, vacuum holding etc.
- Nozzle diameter: ø1.6
- Nozzle quantity: 1~6 pcs (Single, double, triple layer)
- Suction flow rate: 290~1110 l/min (ANR)
- Air consumption: 110~660 l/min (ANR)
- Medium: Air
- Operating pressure: 0.3~0.7 MPa
- Operating temp.: 5~50°C

VVV [Multi-stage nozzle]

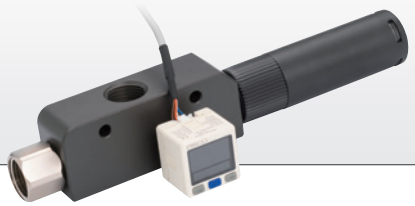
- Ensuring high vacuum pressure & flow by low (0.35 MPa) air supply.
- 3 vacuum ports enable easy distribution.
- Easy maintenance and long life.
- Exhaust direction can be selected from straight or elbow, depending on the installation site.
- Optional digital pressure gauge to check the pressure.
- Nozzle diameter: ø1.6, 2.5, 2.7 mm
- Operating pressure: 0.3~0.7 MPa
- Rated supply pressure: 0.35 MPa
- Operating temp.: 5~50°C

VRL [Unitasking]

- To convey small, irregular materials, such as particles, powder and fibers in the air current.
- Select the proper type according to work-piece size and the amount.
- Medium: Air / Inert gas
- Suction flow: 50~300 N l /min
- Min. dia. of flow channel: ø2.8~ø7.5 mm
- Final vacuum: – 53 kPa
- Operating pressure: 0~0.9 MPa
- Rated supply pressure: 0.5 MPa
- Operating temp.: 0~60°C (No freezing)

VLS [Boxed type aluminum body]

- Nozzle diameter: ø2.0, 2.5, 2.8 mm
- Quiet operation with the cylinder type muffler.
- Pressure gauge and sensor can be installed.
- Simple structure - easy maintenance.



* H: High-vacuum type (Rated supply pressure: 0.5 MPa)
L : Large-flow type (Rated supply pressure: 0.5 MPa)
E: High-vacuum at low air pressure supply type (Rated supply pressure: 0.5 MPa)

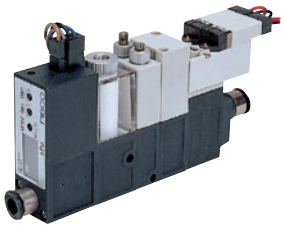
Vacuum Generator

VG series [Multi-function]

- Vacuum switch and blow-off valve is integrated. Select the best combination in accordance with applications.

Model	Medium	Performance*	Nozzle bore	Vacuum level	Suction flow	Air consumption	Operating pressure
			mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa
VG	Air	H / L / E	ø0.5~1.0	–93 ~ – 66	7 [7] ~34 [40]	11.5~46	0.25~0.7

* H : High-vacuum type (Rated supply pressure: 0.5MPa)
L : Large-flow type (Rated supply pressure: 0.5MPa)
E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.35MPa)

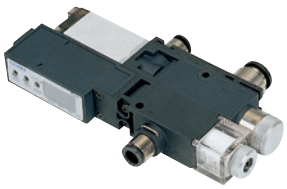


VJ series [Multi-function]

- Pressure adjusting function is added to the conventional blow-off air control function to prevent work-pieces from being blown away.
- A relief mechanism built into the blow-off circuit which breaks the vacuum (extra pressure is relieved) achieve shorter blow-off time.
- Wide variety of combinations can cope with various needs. External vacuum controller for vacuum pump series is for available. Less wiring is achieved. -S3

Model	Medium	Performance*	Nozzle bore	Vacuum level	Suction flow	Air consumption	Operating pressure
			mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa
VJ	Air	H / L / E / K	ø0.5~1.2	–93.1 ~ – 66.5	7 [7] ~ 38 [38]	11.5~70	0.3~0.7

* H : High-vacuum type (Rated supply pressure: 0.5 MPa)
L : Large-flow type (Rated supply pressure: 0.5 MPa)
E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.35 MPa)
K : Combination of different vacuum characteristics on mounting units on a manifold
(Details should be described on Specification Order Form separately)

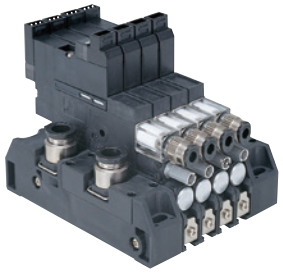


VK series [Multi-function] * Standing stock, fast delivery.

- Selection of the most suitable module for your application is possible by the modularized each unit and rich combination of units.
- 7 unit combinations and 18 module types.

Model	Medium	Performance*	Nozzle bore	Vacuum level	Suction flow	Air consumption	Operating pressure
			mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa
VK	Air	H / L / E	ø0.5~1.2	–93 ~–66.5	5.4 [5.4] ~ 37 [50]	11.5 ~ 70	0.25~0.7

* H : High-vacuum type (Rated supply pressure: 0.5 MPa)
L : Large-flow type (Rated supply pressure: 0.5 MPa)
E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.35 MPa)

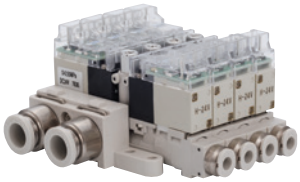


VX series [Multi-function]

- Lightweight and compact body meeting market needs.
- Pursue of faster responsiveness of suction solenoid valve to the extreme realized the high cycle of vacuum system.
- Wide variety of combinations enables to meet various applications. External vacuum controller for vacuum pump is also available.
- Max. 10 mounting units in a manifold type. -S3

Model	Medium	Performance*	Nozzle bore	Vacuum level	Suction flow	Air consumption	Operating pressure
			mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa
VX	Air	H / L / E	ø0.5~1.0	–93.1 ~–66.5	7 [7] ~20 [26]	8.8~46	0.3~0.7

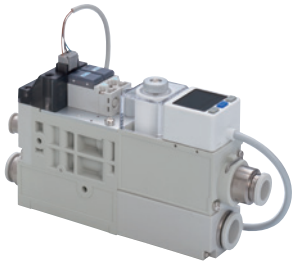
* H : High-vacuum type (Rated supply pressure: 0.5 MPa)
L : Large-flow type (Rated supply pressure: 0.5 MPa)
E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.35 MPa)



VN series [Multi-function] [High-speed response]

- The low-profile vacuum generator is suitable for application requiring a limited space.
- High speed, yet stable response is realized. (ON / OFF = 5msec or less)
- Tiny work piece is removed gently when releasing vacuum with blow-off.
- Common supply port type is also available.
- 20L/min. of vacuum release (blow-off) air flow is secured.
- Exhaust type: Silencer vent

Model	Medium	Nozzle bore	Final vacuum	Suction flow	Air consumption	Operating pressure	Rated supply pressure
		mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa	MPa
VN	Air	ø0.4~0.6	–90.4	1.7 [2] ~8.1 [9.5]	6 ~ 12	0~0.55	0.35~0.5

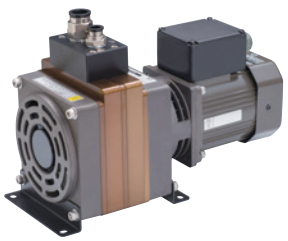


VQ series [Control large flow]

- Best suitable to control large flow with width of 31.5mm.
- The suction flow rate of double-stage pump is about 40% more flow than single stage pump.
- Exhaust method: Silencer vent, tube exhaust (ø12mm push-in fitting)

Model	Medium	Nozzle bore	Final vacuum	Suction flow	Air consumption	Operating pressure	Rated supply pressure
		mm	kPa	ℓ/min [ANR]	ℓ/min [ANR]	MPa	MPa
VQ	Air	ø0.7~2.0	–93 ~–66	24 [24] ~ 143 [160]	23 ~ 200	0.3~0.7	0.35~0.5

Rotary Vacuum Pump

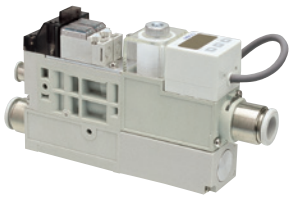


RPV series

- Realizing low driving noise, low vibration, low heat generation, low dust generation and long life.
- Light weight and compact. Space saving is realized by adoption of the special rotor form.
- The top level high efficiency in the industry is realized for the pumping speed per motor power 1(W).
  1.0/1.2 [pumping speed (l/min)/motor power (W)] (50/60Hz)
- Lubrication is unnecessary by adoption of the excellent clean vacuum grease for low dust and low volatile.
- Low dust generation is realized by minimization of sliding parts. Contamination to surrounding area is controlled.
- Low noise operation and low vibration are realized by full balancing design for rotary part.
- Low generation of heat is realized by adoption of forced air-cooling system.
- RoHS and CE marking compliant. (Single-phase 100V with built-in power switch type is not compliant with CE marking.)
- Uses: Adsorption and handling, vacuum packaging, defoaming, degassing, vacuum forming, etc.
- Gas (inhaled gas): No corrosive or exposable gas, max. suction pressure: Atmospheric pressure

Model	Type	Cylinder numbers	Cylinder layout	Pumping speed	Final vacuum	Motor voltage	Ambient temp.
				ℓ/min	kPa G	V	°C
RPV06A	Medium vacuum 30 ℓ	Twin	In-line	30 (50Hz) 36 (60Hz)	≤-100.95 (50Hz) ≤-101.0 (60Hz)	200/220/230 100/110/115	5~40
RPV062	Low vacuum 60 ℓ	Twin	Parallel	60 (50Hz) 72 (60Hz)	≤-97.8 (50Hz) ≤-98.3 (60Hz)	200/220/230 100/110/115	5~40
RPV063	Low vacuum 90 ℓ	Triple	Parallel	90 (50Hz) 108 (60Hz)	≤-97.8 (50Hz) ≤-98.3 (60Hz)	200/220/230	5~40
RPV064	Low vacuum 120 ℓ	Quad	Parallel	120 (50Hz) 144 (60Hz)	≤-97.8 (50Hz) ≤-98.3 (60Hz)	200/220/230	5~40

External Vacuum Controller



VQP series [Large flows]

- 31.5mm wide vacuum unit is designed to optimize the control of large vacuum flows.
- Easily viewable LCD dual display pressure sensor is prepared for pressure sensor.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VQP	Air*, Vacuum	0.3~0.7	–100~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

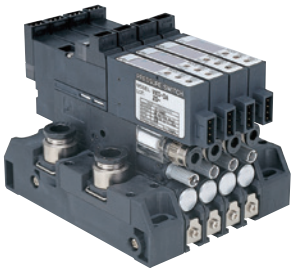
* JIS B 8392-1 : Class1.2.1~2.4.3 compliant

VJP series [Pressure adjustment / Blow-off flow adjusting]

- Pressure adjusting function is added to conventional blow-off flow adjusting function. It enables to prevent works from being blown away.
- Wide variety of combinations enables to meet various applications. Complex vacuum generator VJ Series is also available.
- Visibility improvement by adopting LED display for vacuum switch indication.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VJP	Air*, Vacuum	0.3~0.7	–100~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

* JIS B 8392-1 : Class1.2.1~2.4.3 compliant

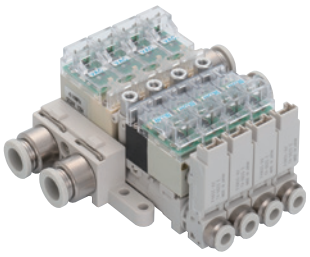


VXP / VXPT series [High-cycle]

- Lightweight and compact body meeting market needs.
- The response characteristics of each type are maximized, to realize a high-cycle vacuum system.
- The 3-port specification, VXPT, has adopted a three-way vacuum supply main valve, then blow-off time is drastically shortened.
- Wide variety of combinations enables to meet various applications. Complex vacuum generator VX Series is also available. Max. 10 mounting units in a manifold type.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VXP / PT	Air*, Vacuum	0.3~0.7	–100~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

* JIS B 8392-1 : Class1.2.1~2.4.3 compliant

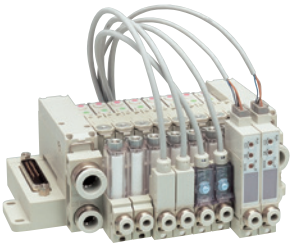


VNP series [High-speed response]

- Suitable for semiconductor industry such as IC chip loader or IC handler.
- Suitable for the application requiring a limited space.
  Compact and lightweight external vacuum controller. The body height is lowered in particular.
- High-speed response time (ON / OFF = 5msec or less). Direct operated solenoid valve is used for the main valve.
- Four types of analog output type sensor are prepared.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VNP	Air*, Vacuum	0~0.55	–100~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

* JIS B 8392-1 : Class1.2.1~2.4.3 compliant

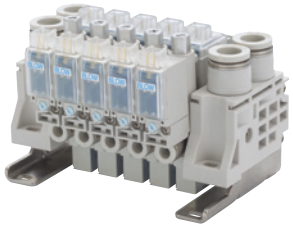


VZP series [Sub-D / Flat cable connector]

- Small in size and lightweight. External vacuum controller with bundled wiring dedicated to manifold mount.
- The electricity of valve lower to 0.55W in order to save energy.
- Easy to maintain.
- Various kinds of vacuum sensors for wide range of applications.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VZP	Air*, Vacuum	0.3~0.7	–100~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

* JIS B 8392-1: Class1.2.1~2.4.3 compliant



VIP series [Built-in flow & pressure sensor]

- Built-in flow sensor type (Industry's first) is added to the lineup.
  Conventional pressure sensor mount type and no pressure sensor type are also available.
- Recommendable to semiconductor equipment (chip mounter and handler) and vacuum transfer equipment for miniature work piece.
- Ultra small body. Realizes vacuum switchover with large flow.

Model	Medium	Operating pressure MPa	Working vacuum kPa	Operating temp. °C	Vibration resistant m/s^2	Impact resistance m/s^2	Protective structure
VIP	Air*, Vacuum	0.3~0.7	–90~0	5~50 (No freezing)	Below 50	Below 150	Equivalent to IEC IP40

* JIS B 8392-1: Class1.2.1~2.4.3 compliant

No Contact Transfer

MHPSC series

- The principle of these prehension is based on the exploitation of the Bernouilli effect. A positive pressure is applied through form adequate (Insert + curve). The exhaust of this air goes through of low pressure and gets a vacuum aspiring any kind of object.
- It is used in the transfer disc, CD, DVD, pick up circuit board, eggs or fruits packaging, glass sheet leave (no mark on the surface), paper sheet with small thickness (Transfer sheet by sheet), handling of object on concave or convex surface. Handling of biscuit, wafer, paste, pastry making, membrane, sponge, textile, mirror, etc...

Model	Medium	Port size	Material	Air consumption ℓ/min	Lifting force N	Operating pressure MPa
MHPSC	Dry air filter 40μ	M3, M5	Aluminum & stainless steel	100~210	0.9~6	0.2~0.7

Vacuum Pad - Application Environment

- Please choose the vacuum pad material and shape that suits your work and usage environment.

	Application		Cardboard	Plywood	Iron plate	Food	Semiconductor	Molded product	Thin
	Vacuum pad material / shape	Code							
Rubber	Nitrile rubber	N	●	●	●	●			
Rubber	Oil resistant NBR	NH	●	●	●	●			
Rubber	Urea rubber	U	●	●	●				
Rubber	Silicone rubber	S				●	●	●	●
Rubber	Fluororubber	F					●		
Rubber	Fluorosilicone rubber	FS						●	
Rubber	Neoprene	C				●			
Rubber	HNBR	HN	●	●	●	●			
Rubber	EPDM	EP							
Rubber	Compliant with Food Sanitation Law NBR	G	●	●	●	●			
Rubber	Antistatic NBR [Low Resistance]	NE	●	●	●	●			
Rubber	Antistatic BR [Low Resistance]	E					●		
Rubber	Antistatic Silicone Rubber	SE				●	●	●	●
Resin	PEEK	K					●		
Resin	POM	M							
Resin	Antistatic PEEK	KE					●		
Standard	General	R	●	●	●		●		
Standard	Deep	A				●	●		
Standard	Small	RM					●		
Soft		L					●	●	
Soft bellows		LB	●	●	●		●	●	
Skidproof		K	●	●	●	●	●	●	
Bellows		B	●	●	●	●	●		
Multi-bellows		W	●	●	●	●	●		
Packaging		PB				●			
Ultrathin		P	●	●	●	●	●	●	●
Flat		F				●	●		●
Mark-free		Q					●		
Sponge		S				●	●		
Oval		E	●	●	●	●	●		

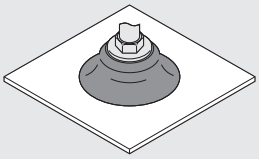
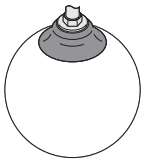
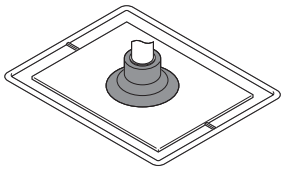
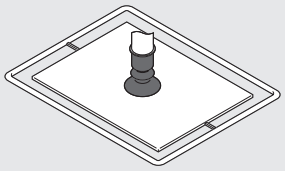
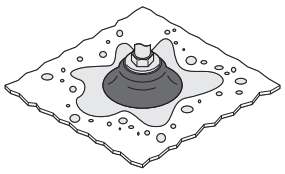
*1. Rubber material: Volume resistance of antistatic NBR (low resistance) and antistatic BR (low resistance) is 200Ω·cm or less.

	pharmaceutical chemistry	High temperature	Low concentration ozone	Light / Ozone resistant	Humid environment	Uneven surface	Packing machine	Packaging bag	Electronic equipment parts	Liquid crystal manufacturing equipment
Nitrile rubber					●		●			
Oil resistant NBR					●		●			
Urea rubber			●				●			
Silicone rubber		●	●		●		●	●		
Fluororubber	●	●	●		●		●			
Fluorosilicone rubber		●	●		●		●			
Neoprene					●	●				
HNBR			●		●					
EPDM			●	●	●					
Compliant with Food Sanitation Law NBR					●					
Antistatic NBR [Low Resistance]					●		●		●	
Antistatic BR [Low Resistance]									●	
Antistatic Silicone Rubber		●			●		●		●	
PEEK					●					●
POM			●		●		●			
Antistatic PEEK					●				●	●
General	●	●	●	●	●				●	
Deep	●	●	●	●	●					
Small	●	●	●	●	●				●	
Soft									●	
Soft bellows			●	●	●					
Skidproof	●	●								
Bellows	●	●	●	●	●		●	●	●	●
Multi-bellows	●	●	●	●	●			●		
Packaging								●		
Ultrathin	●	●					●			
Flat	●	●					●			
Mark-free							●		●	●
Sponge						●				
Oval	●	●	●	●	●				●	

*2. Rubber material: The volume resistance of antistatic silicone rubber is 105Ω·cm or less. * 3. Resin material: The volume resistance of antistatic PEEK is 105 to 106 Ω·cm.

Vacuum Pad - Pad Shape

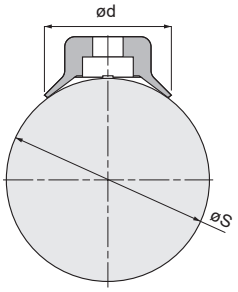
- Please select suitable pads for your application from the following.

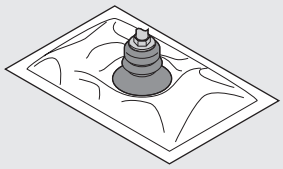
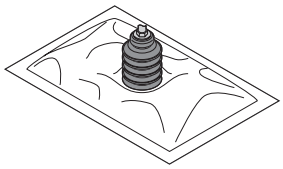
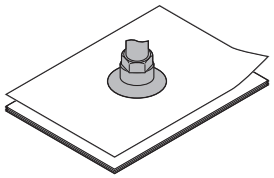
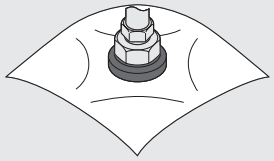
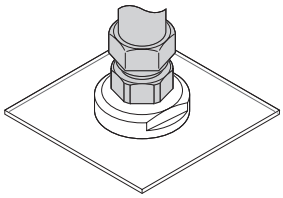
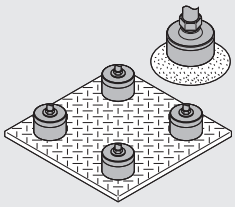
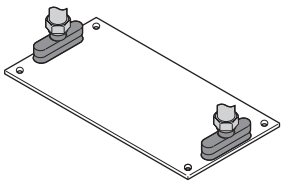
	Pad shape	Recommended workpiece	Pad size	Pad material	Features
R Standard General type		Thick & flat work-piece	ø1~ø200	N, S, U, F, SE, E, NE, G, HN, EP	1. Small: Small work-piece and semiconductor facility. General: Best suitable for flat work-piece. Flat work-piece : Work-piece with enough hardness and thickness Deep: Suitable for round fruit or ball. Round fruit : Apple, etc. 2. Wide selection of pad sizes, materials and holder types. 3. Stroke length of a spring holder is selectable. 4. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec.: No copper based metal parts. HNBR or FKM is adopted for seal rubber.
A Standard Deep type		Round fruit or ball (*1)	ø15~ø100	N, S, U, F, NE, G, HN, EP	
RM Standard Small type		Small work-piece or semiconductor manufacturing device	ø0.7~ø4	N, S, U, F, SE, E, NE, G, HN, EP	
L Soft		Taking out molded parts / Fragile work-piece	ø4~ø40	N, S, FS, SE, NE	1. Various selections of pad size, pad material and holder type. Newly added pad materials for various types of work-piece. 2. Soft and flexible pad enables to pick up paper, and also leaves less mark on work-piece. 3. Downsized holders (A, B, C and D type) are available for space-saving. No need to detach a holder when replacing vacuum pad. Optional selection of Fall prevention valve and Vacuum Filter. 4. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec. : No copper based metal parts. HNBR or FKM is adopted for seal rubber.
LB Soft bellows		Taking out molded parts / Fragile work-piece	ø6~ø20	N, S, U, NE, HN, EP	
K Skidproof		Greasy work-piece such as pressed parts	ø10~ø50	NH, S, U, F, NE	1. Vacuum Pad for Greasy Work-Piece. 2. Avoid slipping by unique pad shape design. 3. Downsized holders (A, B, C and D type) are available for space-saving. No need to detach a holder when replacing vacuum pad. Optional selection of Fall prevention valve and Vacuum Filter. 4. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec. : No copper based metal parts. HNBR or FKM is adopted for seal rubber.

*1. The table below is a reference for the vacuum pad deep type and the size of round work-piece.

Unit: mm

Spherical dia. øS	ø20	ø30	ø40	ø50	ø80	ø100	ø120	ø160	ø200
Pad size ød	ø15	ø20	ø25	ø30	ø40	ø50	ø60	ø80	ø100



	Pad shape	Recommended workpiece	Pad size	Pad material	Features
B Bellows		Food package	ø6~ø100	N, S, U, F, SE, NE, NH, EP	1. Suitable for soft work-pieces such as papers, plastic bags, etc. This pad has a characteristic of flexible motion. 2. Downsized holders (A, B, C and D type) are available for space-saving. No need to detach a holder when replacing vacuum pad. Optional selection of Fall prevention valve and Vacuum Filter. 3.Resin attachment to avoid suction marks on work-piece is now available. Best suitable for transporting of glass, painting process and taking-out molded parts. 4. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec.: No copper based metal parts. HNBR or FKM is adopted for seal rubber.
W Multi-bellows		Food package	ø10~ø50	N, S, U, F, NE, G, HN, EP	
PB Packaging bags		Bag-like article conveyance	ø30~ø50	S	1. Realize followability to speedy and precise movement of conveyance robot. 2. Pad hardness and bellows layers for selection. 3. Contributing space-saving and followability to high-speed conveyance. Compared to 5 bellows layers, approx. 25.3% shorter. 4. For work-piece contacting parts, Food Safe Act. (Japan) complied and FDA equivalent materials (*) are used. * This product is not FDA certificated.
P Ultrathin		Thin work-piece such as paper or plastic bag	ø8~ø20	N, S, U, F, FS, NE	1. Improvement in adhesion and minimizing the overlapping adhesion by the lower lip height. 2. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec.: No copper based metal parts. HNBR or FKM is adopted for seal rubber.
F Flat		Thin work-piece such as sheet or plastic bag	ø10~ø30	N, S, U, F, NE, SE	1. Groove on a flat pad reduces deformation and wrinkle on a work-piece. 2. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec.: No copper based metal parts. HNBR or FKM is adopted for seal rubber.
Q Mark-free		LCD glass / in Painting process / semiconductor manufacturing device	ø10~ø30	K, M, KE	1. Flexible resin pad leaves less suction mark on work-pieces. 2. Smoothly release work-pieces by blow-off air. 3. Easy replacement of a resin pad without a spanner or a hex. key. 4. Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration". -S3 spec.: No copper based metal parts. HNBR or FKM is adopted for seal rubber.
S Sponge		Exterior wall panel, pebble, seashell	ø10~ø100	C, S	1. Suitable for work-pieces with rough and uneven surface such as wall panel, small stone and seashell. 2. Downsized holders (A, B, C and D type) are available for space-saving. No need to detach a holder when replacing vacuum pad. Optional selection of Fall prevention valve and Vacuum Filter. 3. Variety of selections in pad holder for “Copper alloy free” and against “low ozone concentration”. No copper based metal parts, HNBR, and FKM are adopted for seal rubber
E Oval		Long work-piece (e.g. circuit board and semiconductor product)	ø2×4~ ø8×30	N, S, U, F, SE, E, NE, HN, EP	1. Long work-pieces with limited suction area like circuit board and semiconductors. 2. Oval vacuum pad is with vacuum ejector. 3. Three types of switch for selection 1 Switch output+ 1 Analog output 2 Switch output 1 Analog output

VP*- R / A / RM [Standard]

- Pad size: ø0.7 ~ ø200
- Various vacuum pad material options.
- R : Best suitable for flat work-piece.
  A : Suitable for round fruit or ball.
  RM: Small work-piece and semiconductor facility.

VP*- L [Soft]

- Pad size: ø4 ~ ø40
- No mark on plastic molded articles.

VP*- K [Skidproof]

- Pad size: ø10 ~ ø50
- Vacuum pad for greasy work-piece.

VP*- LB [Soft bellows]

- Pad size: ø6 ~ ø20
- Vacuum pad for resin molded product.
- No mark on plastic molded articles.

VP*- B [Bellows]

- Pad size: ø2 ~ ø100
- Vacuum pad for retort pouch.
- Variety of selections in pad holder for "copper alloy free" and against " low ozone concentration".

VP*- W [Multi-bellows]

- Pad size: ø6 ~ ø50
- Vacuum pad for retort pouch.
- Variety of selections in pad holder for "copper alloy free " and against " low ozone concentration".

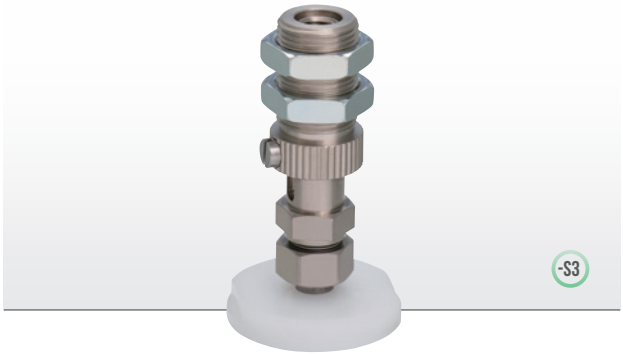
VP*- PB [Packaging bag]

- Pad size: ø20 ~ ø50
- For bag-like article conveyance.
- For work-piece contacting parts, Food Safe act.

Video Introduction

VP*- Q [Mark-free]

- Pad size: ø10 ~ ø30
- Vacuum pad for smart glass, painting and semiconductor equipment.



VP*- P [Ultrathin]

- Pad size: ø8 ~ ø20
- Vacuum pad for paper and plastic bag.

VP*- S [Sponge]

- Pad size: ø10 ~ ø100
- Vacuum pad for wall panels and stones.

VP*- F [Flat]

- Pad size: ø10 ~ ø30
- Vacuum pad for panel and vinyl.

VP*- E [Oval]

- Pad size: ø2×4 ~ ø8×30
- Vacuum pad for circuit board and semiconductor.

VSPE [Cylinder]

- Pad size: ø4 ~ ø40
- Vacuum pad equipped with cylinder & Vacuum generator.

VT [Air pincette]

- Pad size: ø1 ~ ø8
- Vacuum pad equipped with vacuum generator.
- Air pincette equipped with vacuum pad and vacuum generator. Suitable for assembling small components.
- Valve incorporated product “VTB” makes less noise and save energy.

ECV [Fall prevention valve]

- Male thread size: M3 ~ M10, Rc1/8
- Minimize the pressure drop of other circuit when a workpiece falls down.
- Even if some vacuum pads are not operated, active vacuum pads can work normally because vacuum drop is reduced.

FH [Free holder]

- Pad size: ø10 ~ ø100
- Articulation angle: 30°/ 15°
- Suitable for picking up work-pieces with non-vertical position or with unfixed angle.

VFF [Vacuum filter pad direct mounting type]

- Operating pressure: – 100~0 kPa
- Filtering accuracy: 10 μm
- Vacuum filter for various vacuum piping.

VLF [Vacuum release unit]

- Operating pressure: 0~0.7 MPa
- Operating vacuum pressure: – 101~0 kPa
- Add-on blow off controller is for vacuum generators with vacuum blow-off function and controls blow-off air while maintaining characteristics of vacuum generators.

VFB [Large capacity union type for vacuum circuit]

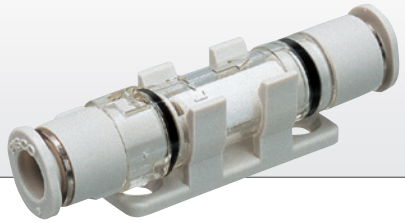
- Dusts and drains are removed by cyclone effect and element.
- Dusts are not scattered by easy detachment of dust case.
- Operating pressure: –100 ~ 0 kPa
- Filtering accuracy: 10 μm

VFR [Large capacity union type for exhaustion]

- Dusts and drains are removed by cyclone effect and element.
- Large dust case reduces maintenance frequency.
- Assemble to the exhaust part of vacuum generator to move the dust.
- Operating pressure: –100 ~ 0 kPa
- Filtering accuracy: 10 μm

VFU [Small union type]

- There are 2 selections of element size depending on dust size or exchange period of the element.
- (0,1 type) Small vacuum filter is suitable for a high-cycle vacuum operation. (2,3 type) easy to assemble and stable.
- Operating pressure: –100 ~ 0 kPa
- Filtering accuracy: 5 μm (Trapping efficiency 95%)



VFJ [Plug-in]

- Vacuum Filter for Various Vacuum Piping
- Plug-in type with filter. PP material achieves a low price.
- Operating pressure: –100 ~ 0 kPa
- Filtering accuracy: 5 μm (Trapping efficiency 95%)

VFL [Large flow]

- Vacuum filter for vacuum pumps and large flow vacuum generators.
- Operating pressure: –101 ~ 0 kPa
- Filtration accuracy: 1, 5, 10, 200 μm (Trapping efficiency 95%)
- Bowl capacity: 90 cm^3
- Processing flow rate: 360 l /min [ANR]

MAFV302

- Remove water droplets and pollutants to ensure the quality of the vacuum gas supply system.
- Nylon cup body to adapt to a variety of environmental needs.
- Port size: 1/4, 3/8, 1/2 , Filter element: 5 μm
- Operating pressure: –100~0 kPa
- Drain capacity: 35 cm^3

Vacuum Regulator / End of Arm Tooling (EOAT)

- Push-lock knob for easy pressure adjustment.
- Realized max. 50% of weight saving compared to conventional model. The main body is made of resin, and aluminum is used for the metal part.
- Best suitable for the control of the source pressure. Terminal pressure also can be controlled.

RVZ [Vacuum regulator push-lock type]

- Operating pressure: – 100~100 kPa
- Setting Pressure: – 100~1.3 kPa
- Max. suction flow rate: 30ℓ/min[ANR]
- Operating temp.: 0~50°C (No freezing)

-S3

- Vacuum generator with blow - off function which can be assembled to EOAT.
- Small and light. Nozzle bore 0.5 & 0.7 type: Height 20, Nozzle bore 1.0 & 1.2, Height 28 mm
- High speed suction / blow-off cycle. Exhaust noises are below 75dB [A].
- Built-in blow-off air storage chamber. Storage capacity of blow-off air is expandable. Extra storage chamber of blow-off air can be added by connecting a tubing with a plug cap. (Only for nozzle bore of 1.0mm & 1.2mm type.)

Video Introduction

VYR* [EOAT Direct mountable material handling vacuum generator]

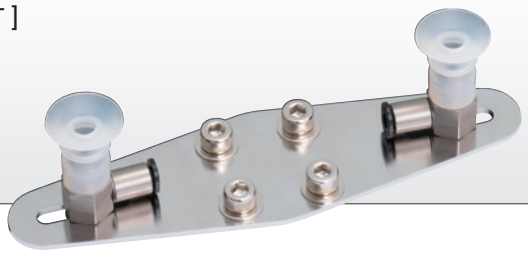
- Operating pressure: – 93~-66 kPa
- Max. suction flow rate: 70ℓ/min [ANR]

2IN1

* H : High-vacuum type (Rated supply pressure: 0.5 MPa)
L : Large-flow type (Rated supply pressure: 0.5 MPa)
E : High-vacuum at low air pressure supply type (Rated supply pressure: 0.35 MPa)

- Plural vacuum pads can be mounted on a plate to connect to EOAT.
- Two types are available : High strength type and light weight type. Can be used for various applications, like conveyance of heavy work-piece or light-weighting of arm tooling.
- Mounting hole for robot and cylinder is standard. Compatible with installation sizes for articulated robots, parallel link robot and air cylinder of different companies.

VPRHT / L [Interface plates for EOAT]



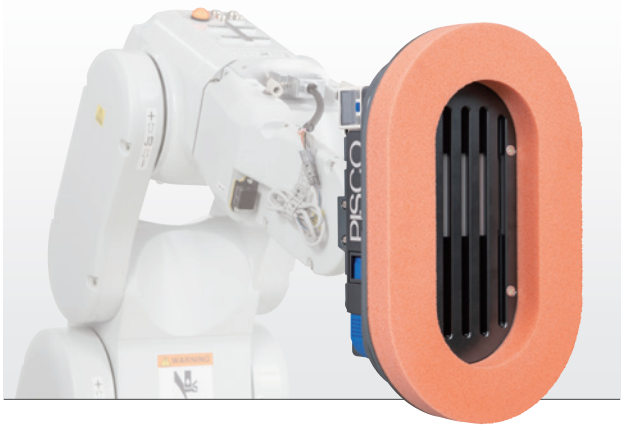
End of Arm Tooling (EOAT) - Vacuum Gripper

- High-vacuum type. Vacuum gripper suitable for conveyance of large work-piece. Max. suction flow rate: 760 ℓ / min (The value of the three vacuum generators included creates).
- Value of built-in vacuum generator and vacuum pump compatible type is available.
- Large-flow vacuum generator is built-in. Can be directly connected to EOAT of P.C.D. 31.5, 40, 56, 80, 100.
- Once the flange mounting plate is attached to the robot arm, slide it in for easy installation. Improve operability and safety.
- 3 types of gripper are available: sponge type (O-shaped and full sponge) and hexagonally-arranged vacuum pads type. Can be used for various types of work-piece.

VRG / VMG Adsorption demo | VRG Features | VRG Can handling | VMG (sponge) Wood handling | VMG (vacuum pad) Carton Handling

VRG [O-shaped sponge]

- Work with irregularities such as bags and PET boggles.
- Theoretical max. clamping force: 1512.7 N
- Medium: Air, Vacuum
- Operating pressure: 0.3~0.7 MPa
- Final vacuum: – 94 kPa

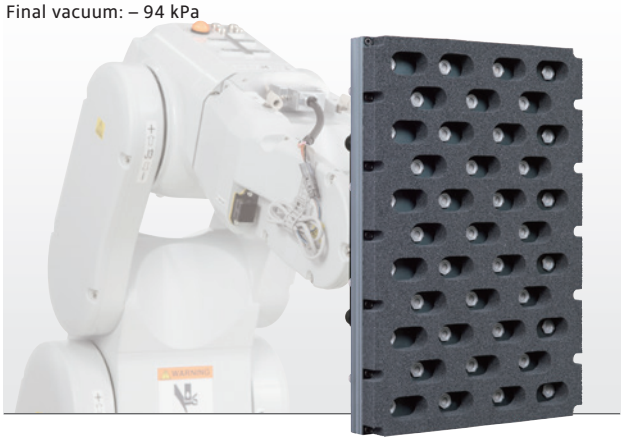


VLG [Full sponge] [Hexagonally-arranged]

- Mounting plate is provided to attach to the P.C.D. 31.5 robot arm.
- Built-in large flow vacuum generator. Ensure maximum suction flow: 890 ℓ /min (*). *Specification value for 4 built-in injectors.
- By installing a drop prevention valve or a check valve, workpieces can be sucked even if there are unsuctioned parts.
- Theoretical max. clamping force: 118.1 N
- Operating pressure: 0.3~0.7 MPa
- Medium: Air
- Final vacuum: – 94 kPa

VMG [Full sponge]

- Work with irregularities such as wood and exterior wall materials.
- Theoretical max. clamping force: 1546.4 N
- Medium: Air, Vacuum
- Operating pressure: 0.3~0.7 MPa
- Final vacuum: – 94 kPa



VMG [Hexagonally-arranged]

- Cardboard and bags
- Theoretical max. clamping force: 2369.5 N
- Medium: Air, Vacuum
- Operating pressure: 0.3~0.7 MPa
- Final vacuum: – 94 kPa

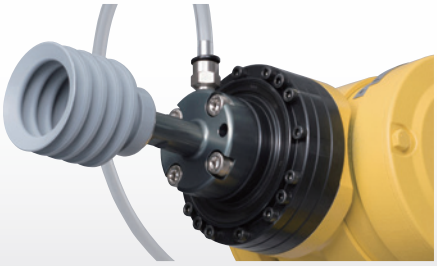
- Can be mounted to EOAT with P.C.D. 31.5 M5. Converting attachment for various robots of different companies are available.
- HSP type for mounting vacuum pad and HSC type for mounting gripper are available.
- Assemble to vacuum pad, 2 / 3 finger parallel gripper.

HSP / HSC [Mounting flange HS for EOAT]

- Piping: side and top
- For safety, optional protective cover, spring type (-VPF) and 2 finger parallel gripper (-CHA / -CHB)

HSP video HSC video

HSP [For vacuum pad]



Fixed (-VPM)

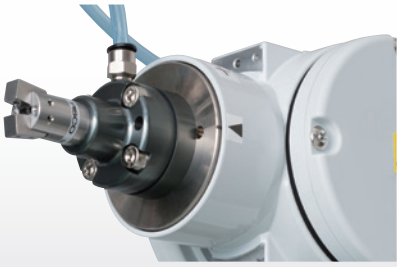
Spring (-VPF)

Spring type low dust (-VPLFC)

HSC [For gripper]

2 finger - parallel gripper (-CHA / -CHB)

3 finger - parallel gripper (-CHT)



Lever gripper (-CHM)

- Max. 16 vacuum pads can be mounted on this modular kit.
- No need to design EOAT. This modular kit can be directly mounted to EOAT.
- Robot flange converting attachment" are available, which connects EOAT with a robot of different companies.

HML [Vacuum modular kit HML for EOAT]

- Adjust max width: 144, 210mm (main lever) ,120~204 mm (pad lever)
- Vacuum pad number: 4~16 pcs

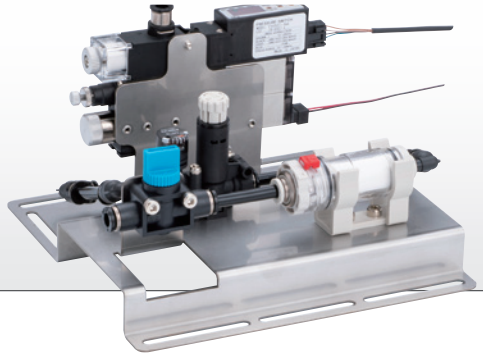
Arrange range

Pad arrangement

- Unitized equipment necessary for supplying vacuum and compressed air to the EOAT (End of arm tooling).
- Unitized pneumatic equipment necessary for suction conveyance by vacuum pad and grip conveyance by gripper.
- Eliminating the need to select the necessary equipment on the pneumatic circuit. Reducing the labor of piping and installation between equipment.
- Simply connect this unit to the supply port (IN) side and output port (P or V) side to generate a vacuum or switch the air circuit.

HKU [Vacuum & air control unit]

- With vacuum generator: VK series
- Vacuum performance
  H12 : High vacuum type (supply pressure 0.5 MPa)
  L12 : Large flow type (supply pressure 0.5 MPa)
  E12 : Low supply pressure high vacuum type (supply pressure 0.35 MPa)



- Easy to assemble and suction test for using general-purpose tools. "Robot flange mounting plates" are available, which connects trial kit with a robot of different companies. (sold separately)
- For suction test are available according to the application (Vacuum pad, aluminum frame, vacuum generator, air piping fitting).
- Vacuum pads and pad holders are also available.

VPGFSKIT [Vacuum pad trial kit]

- This trial kit makes possible from the initial suction test to installation on EOAT (End of arm tooling).
- Pad size: ø2 ~ ø50

Assembly video

ISO Compliant | High Speed and Stability | Space Saving | High Precision | Smart Control | Patent

Electric Actuator

High repeatability	The ball screw drive has a maximum repeatability of ±0.01mm, which is suitable for precision assembly.
High movement speed	Belt drive maximum travel speed 3000 mm/s.
ISO specification	Flanges comply with ISO 15552 and can be used with a variety of accessories.
Space saving	Built-in slide rail and motor built-in design to reduce product volume.
Lever lock patent	MESBE series, patented and won the 2022 Taiwan Excellence Award.
Control System	The controller provides communication, pulse, and I/O control for different applications.
	The motor adopts closed-loop control, which can reduce the influence of interference or noise on the system and improve the stability of the system.

Semiconductor Industry
New Energy Industry
Automation Equipment
Electronics Industry
Automotive Industry
Industry 4.0

METFB series [Slider / Belt drive]

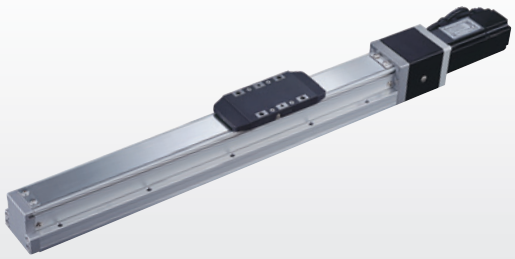
- Size-Lead: 25-50, 32-72, 40-72
- Stroke: 100~2000 mm
- Motor type: Step □ 42, 56
  Servo 100, 200, 400 W
- Positioning repeatability: ±0.05 mm
- Max. speed: 2400 mm/s
- Work load: 1.5~16 kg
- Transmission: Timing belt
- Guide type: Linear guide

METB series [Slider / Belt drive]

- Size: 42, 55, 80
- Stroke: 100~6000 mm
- Moments: 20~450 Nm
- Positioning repeatability: ±0.05 mm
- Max. speed: 3000 mm/s
- Max.load: 460~4500 N
- Transmission: Timing belt
- Guide type: Linear guide

METG series [Slider / Guideway drive]

- Size: 4, 5, 8
- Stroke: 50~1100 mm
- Positioning repeatability: ±0.005 mm
- Lead: 2~20 mm
- Max. speed: 1000 mm/s
- Work load: 3~25 kg
- Motor type: Servo
- Transmission: Ball screw lead
- Guide type: Linear guide



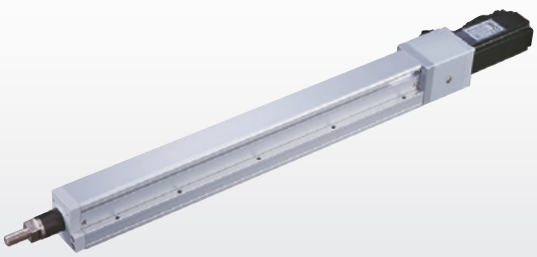
METS2 series [Slider / Ball screw drive]

- Size: 10, 14, 17, 22*
- Stroke: 100~1500 mm
- Positioning repeatability: ±0.01 mm
- Lead: 5~40 mm
- Max. speed: 2000 mm/s
- Work load: 3~150 kg
- Rated thrust: 85~2563 N
- Motor type: Servo
- Transmission: Ball screw lead
- Guide type: Linear guide

* Size 22 is METS series

MEQG series [Rod Type / Ball screw drive]

- Size: 5, 8
- Stroke: 50~800 mm
- Positioning repeatability: ±0.01 mm
- Lead: 2~20 mm
- Max. speed: 1000 mm/s
- Work load: 3~50 kg
- Rated thrust: 85~1388 N
- Motor output: 100, 200, 400 W
- Motor type: Servo
- Transmission: Ball screw lead
- Guide type: Linear guide

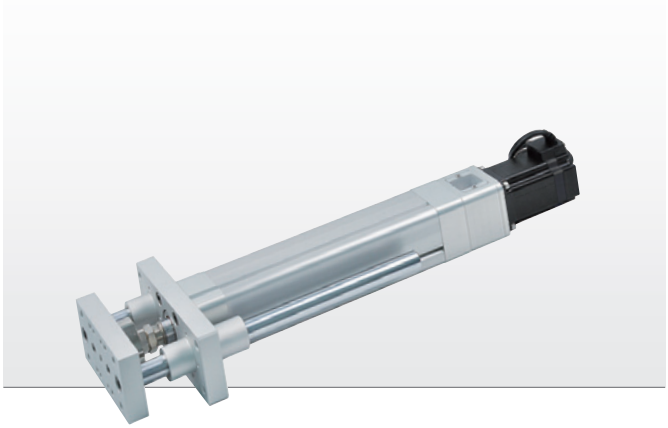


METI series [Ball screw drive] 2023 Coming soon

- Size: 32, 50
- Stroke: 50~200 mm
- Positioning repeatability: ±0.02 mm
- Lead: 2.5~20 mm
- Max. speed: 1000 mm/s
- Work load: 5~20 kg
- Rated thrust: 95~760 N
- Motor type: Step □ 42
  Servo 100 W
- Transmission: Ball screw lead
- Guide type: Linear guide

MEQI-L series [ISO 15552] 2023 Coming soon

- Size: 32, 40, 50, 63
- Stroke: 100~800 mm
- Positioning repeatability: ±0.02 mm
- Lead: 2.5~20 mm
- Max. speed: 1000 mm/s
- Work load: 5~110 kg
- Rated thrust: 95~1560 N
- Motor size: 56
- Transmission: Ball screw lead
- Motor type: Step □ 42, Servo 100, 400 W



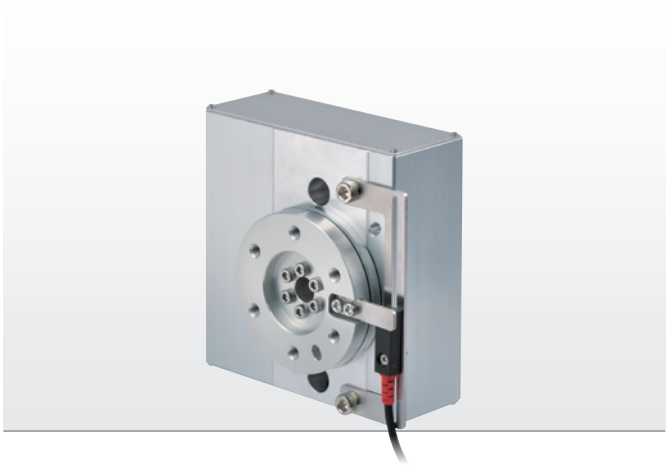
MEQI-T series [ISO 15552] 2023 Coming soon

- Size: 32, 40, 50, 63
- Stroke: 100~800 mm
- Positioning repeatability: ±0.1 mm
- Lead: 1.5~4 mm
- Max. speed: 200 mm/s
- Work load: 5~80 kg
- Rated thrust: 300~1060 N
- Transmission: Trapezoidal screw
- Motor type: Step □ 42, 56, Servo 100, 400 W

MERE series [Electric rotary actuator]

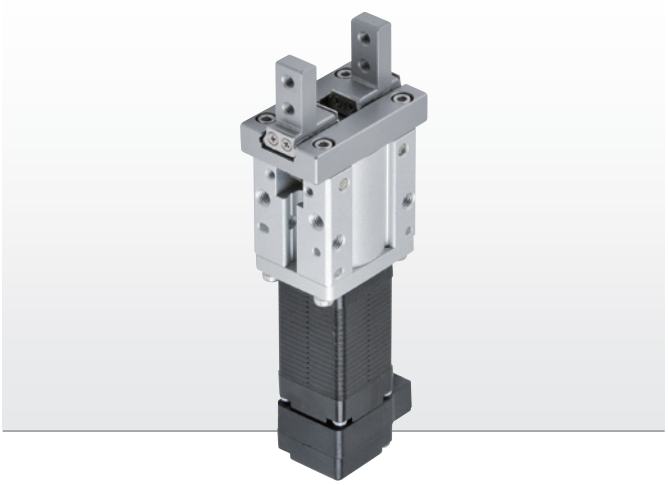
2023 Coming soon

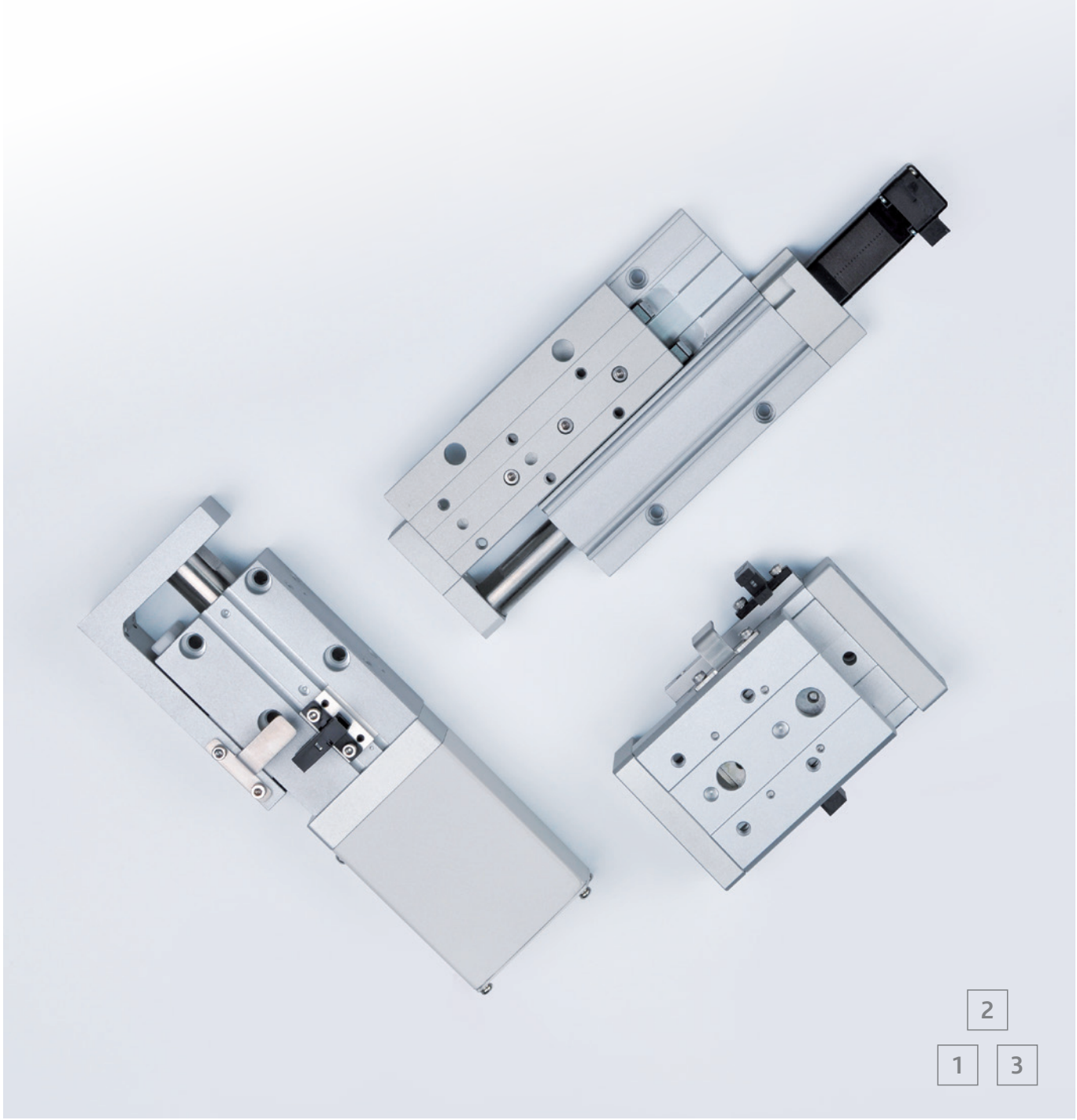
- Size: 30
- Positioning repeatability: ±0.05 mm
- lead angle: 12 °
- Max. speed: 420 °/sec
- Work load: 37 kg
- Swing angle: 320, 360 °
- Max. torque: 0.8 N.m
- Motor type: Step □ 28
- Transmission: Worm screw



MEHC2 series [Electric gripper]

- Size: 16, 25
- Gripping force: 19.5, 26 N
- Open and close stroke: 6, 14 mm
- Repeatability: ±0.02 mm
- Gripping mass: 0.4, 0.8 kg
- Motor size: □ 20, 28 mm
- Guide type: Linear guide
- Transmission: Trapezoidal screw





1

MESH2 series

- Size: 16, 20
- Positioning repeatability: ±0.02 mm
- Lead: 2, 8 mm
- Max. speed: ≤50~≤400 mm/s
- Work load: 0.8~6 kg
- Stroke: 30, 50 mm
- Motor size: □ 20, 28 mm

- Motor type: Step
- Transmission: Ball screw lead
- Guide type: Linear guide

2

MESF2 series

- Size: 16, 20
- Positioning repeatability: ±0.02 mm
- Lead: 2, 8 mm
- Max. speed: ≤50~≤400 mm/s
- Work load: 0.8~6 kg
- Stroke: 30, 50, 75, 100 mm
- Motor size: □ 20, 25 mm

- Motor type: Step
- Transmission: Ball screw lead
- Guide type: Roller guide

3

MESS2 series

- Size: 16, 25
- Positioning repeatability: ±0.02 mm
- Lead: 2, 8 mm
- Max. speed: ≤50~≤400 mm/s
- Work load: 0.8~6 kg
- Stroke: 30, 50, 75, 100 mm
- Motor size: □ 20, 28 mm

- Motor type: Step
- Transmission: Ball screw lead+belt
- Guide type: Cross roller guide

Electric Stopper Actuator [Taiwan Excellence / Patent]

MESBE series

- Size-Stroke: 32-20, 50-30, 63-30, 80-40
- Lead: 1.5, 2.5, 2 mm
- Repeatability: ±0.1 mm
- Max. operating frequency: 5.5 c.p.m
- Motor size: ☐ 35, 42, 56, 80 mm
- Motor type: Step
- Transmission: Trapezoidal screw+belt

Smart Control

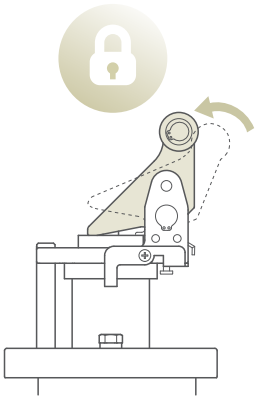
Automation Equipment

Logistics Classification

Self-Locking Mechanism

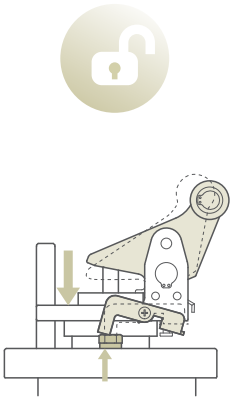
Patent

Taiwan 2022 Excellence



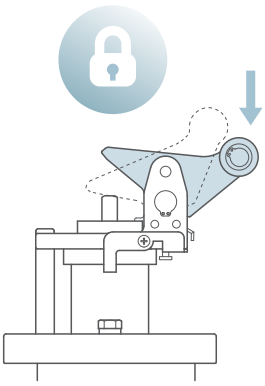
Lock mechanism

Lock mechanism prevents the light-weight workpiece from moving back by the force of shock absorber after damping.



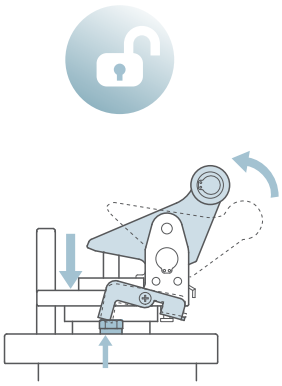
Pneumatic unlock lock mechanism

The locking / deactivation mechanism of MSBE*-L* can be unlocked / reactivated by return the piston rod.



Deactivation mechanism

Deactivation mechanism can deactivate the cylinder without any disassembling.



Pneumatic unlock deactivation mechanism

The mechanism can be unlocked /reactivated by return the piston rod. Replace traditional manual unlock, which is suitable for fully automated production lines.

Electric Cylinder Controller

CK10 series [Torque type]

- Support RS-485 communication (Modbus RTU)
- Support single / double pulse control
- Support position table motion control function
- Offer dynamic-link library for PC Base (.dll for C++, C#)
- Support torque control with interrupt / continue function

CM20 series [Position type]

- Support RS-485 communication (Modbus RTU)
- Support single / double pulse control
- Programmable motion control function

Communication Protocol | IP65 High Protection | Pressure Conversion | High Precision | Remote Monitoring | Smart Control

Sensor

Pressure switch	High precision, slim, differential pressure, high differential pressure, gap and other multi-function options.
Multi-Controller	12 pressure ranges for transducer. Dual LCD display allow setting value to be displayed.
Flow Sensor	Applicable for semiconductor manufacturing process. RS485 Modbus RTU real-time monitoring.
Sensor switch	C slot, T slot, square, etc. can correspond to a variety of sensor grooves.
	Proximity, linear position, and photomicrosensor are also available.

Semiconductor Industry | Food Industry | Automation Equipment | Medical Industry | Automotive Industry | Industry 4.0

Pressure Switch

MP1 series
[Hysteresis adjustable]

- Setting pressure : Vacuum –101~0 kPa
  Low 0~100 kPa, Positive 0~1 MPa
- Repeatability : ≤±1%F.S.
- Response time : 5ms or less
- Port size : 1/8", M5×0.8

MP10 series [Compact]

- Compact size : 26×10×10.4 mm
- Setting pressure : Vacuum 0~ –101.3 kPa
  Positive 0~0.6 MPa
- Repeatability : ±1%F.S.
- Response time : 1ms
- Port size : ø4, 6 mm, 1/8", M5×0.8

MP30 series [Compact]

- Setting pressure : Compound –100~100 kPa
  Vacuum 0~ –101.3 kPa, Positive 0~1 MPa
- Repeatability : ≤± 0.2% F.S. ±1 digit
- Response time : ≤2.5 ms
- Port size : 1/8", M5×0.8

MP41 series
[High precision]

- Setting pressure : Compound –101~101 kPa
  Positive –0.1~1 MPa
- Repeatability : ±0.2% F.S. ±1 digit
- Matching model : MA**302, 401, 403, 501

MP43 series
[High precision]

- Setting pressure : Compound –101~101 kPa
  Vacuum –101.3 ~ 10 kPa
  Positive –0.1~1 MPa
- Repeatability : ±0.2% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/8", M5×0.8, #10~32UNF

Corresponding Semiconductor

MP45 series
[High precision]

- Setting pressure : Compound –101~101 kPa
  Vacuum –101.3 ~ 10 kPa
  Positive –0.1~1 MPa
- Repeatability : ±0.2% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/8", M5×0.8, #10~32UNF

IP65

MP47 series
[High precision]

- Setting pressure : Compound –103~103 kPa
  Vacuum –103 ~ 10 kPa, Positive –0.103~1.03 MPa
- Repeatability : ±0.3% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/8", M5×0.8, #10~32UNF
- Applicable for semiconductor manufacturing process.

Corresponding Semiconductor | Power-save

MP50 series
[High precision]

- Setting pressure : Compound –101~101 kPa
  Vacuum–101.3 ~ 10 kPa
  Positive –0.1~1 MPa, High –0.1~2 MPa
- Repeatability : ±0.3% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/4", M5×0.8
- For use in corrosive liquid or gas environments.

IP65

MP75 series
[High precision / Remote control]

- Setting pressure : Compound –101~101 kPa
  Positive –0.1~1 MPa, High –0.1~2 MPa
- Repeatability : ±0.3% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/4", M5×0.8
- IOT pneumatic & hydraulic pressure sensor.
  (multi-medium)

IP65 | RS485

MP70 series
[Communication type]

- Setting pressure : Compound –101~101 kPa Vacuum –101.3~10 kPa, Positive -0.1~1 MPa
- Repeatability : ±0.2% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : 1/8", M5×0.8, #10-32 UNF
- Smart pressure sensor
- Remote control. Real-time monitoring.

Corresponding Semiconductor RS485

MP90 series [Slim]

- Setting pressure : Compound –101~101 kPa Vacuum –101.3 ~ 10 kPa, Positive –0.1~1 MPa
- Repeatability : ±0.2% F.S. ±1 digit
- Response time : 2.5ms or less
- Port size : M5×0.8
- 10 mm width with compact size
- Key-lock function

Corresponding Semiconductor

MPS series

- Pressure setting : 0.1~0.7 MPa
- Operating pressure : max. 0.8 MPa
- Operation output : Normal open ON (Red led lighting up) above value.
- Port size : 1/8"

MP800 series
[Differential pressure]

- Setting pressure : 0~1, 0~2, 0~5 kPa -1~ 1, -2~2 , -5~5 kPa
- Repeatability : ±0.5% F.S. ±1 digit
- Response time : 2ms or less
- Port size : M5
- Air flow detection, filter air monitoring.

MP7800 series
[Differential pressure]

- Setting pressure : -10~10, -1~1, -2~2, -5~5 kPa
- Repeatability : ±0.5% F.S. ±1 digit
- Response time : 2ms or less
- Port size : M5
- Air flow detection, filter air monitoring.

RS485

MPDS series
[High differential pressure]

- Setting pressure : 0 ~ 1000 kPa
- Rated pressure : –1000 ~ 1000 kPa
- Repeatability : ±0.2% F.S. ±1 digit
- Port size : M5
- Filter air monitoring, leakage test.

IP65 RS485

MPGS series [Gap]

- Detection distance : 0.01 ~ 0.1 mm
- Operating pressure : 250 ~ 350 kPa
- Consumption Flow Rate : ≤ 16ℓ / min @ 300 kPa
- Repeatability : ±5 μm
- Port size : 1/8"
- The gap cause by shavings can be detectable.

Video intro

IP65

MP400 series
[Multi-controller]

- Setting pressure : 12 pressure ranges for transducer
- Repeatability : ±0.1% F.S. ±1 digit
- Response time : 2.5ms or less

Flow Sensor

- Cost Control, user-friendly, High performance, multiple output function.
- Multiple output function
  Instantaneous flow value accumulated flow value pressure value.
- 2-in-1 design
  Pressure and flow rate simultaneous monitoring. (MFP01, 02 series)
- Screen invertible
  Display can be vertically inverted. To set and watch monitor easily. (MF01, 02 series)
- Paint and coating flow monitoring
  Air flow and pressure management of paint and coating processes.
- Laser welding monitoring
  Precision management of shielding gas, flow rate and pressure.
- Suction operation
  Detect the suction state of microelectronic parts by flow rate.
- Electronic part installation
  Control the tension of gold wire for bonding electronic parts.
- Leakage detect
  Container with gas and inspect whether it leaks.
- Air consumption monitoring: Monitor air consumption of devices.

MFP01 series [Flow & Pressure]

- Measured flow rate : 0~500, 0~1000 ml/min
  0~5, 0~10, 0~50, 0~100, 0~200 ℓ/min
- Rated pressure : -90 ~ 800 kPa
- Repeatability : flow ±1% F.S. ±1 digit, pressure ±0.2% F.S. ±1 digit
- Response time : flow min. 50ms, pressure min. 2.5 ms
- Port size : ø6, ø8, 1/8", 1/4"

RS485

MF01 series [Flow]

- Measured flow rate : 0~500, 0~1000 ml/min
  0~5, 0~10, 0~50, 0~100, 0~200 ℓ/min
- Working pressure : –0.09~0.8 MPa
- Repeatability : ±1% F.S. ±1 digit
- Response time : Switch output min. 50ms, Analog output 100 ms or less
- Port size : ø6, ø8, 1/8", 1/4"

Corresponding Semiconductor RS485

MFP02 series [Flow & Pressure]

- Measured flow rate : 2~500, 5~1000, 10~2000 ℓ/min
- Rated pressure : -90 ~ 1000 kPa
- Repeatability : flow ±1% F.S. ±1 digit, pressure ±0.2% F.S. ±1 digit
- Response time : flow min. 50ms, pressure min. 2.5 ms
- Port size : 1/2", 3/4"

RS485

MF02 series [Flow]

- Measured flow rate : 2~500, 5~1000, 10~2000 ℓ/min
- Working pressure : 0~1 MPa
- Repeatability : ±1% F.S. ±1 digit
- Response time : Switch output min. 50ms, Analog output 100 ms or less
- Port size : 1/2", 3/4"

Corresponding Semiconductor RS485

MFPS series [Flow & Pressure]

- 3-color indicator
- 2 Analog outputs 1 ~ 5 V
- Measured flow rate : 0~10, -10~10 ℓ/min
- Rated pressure : -100 ~ 100 kPa
- Repeatability : ≤ ± 2% F.S., pressure ≤ ± 1% F.S.
- Response time : flow ≤ 5ms (90% Response time), pressure ≤ 1ms
- Port size : M5×0.8

RCE series [C slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, Non-contact,
  NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~220V, DC10~28V, DC5~30V

IP67

RCE1 series [C slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, Non-contact,
  NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~120V, DC5~30V

IP67

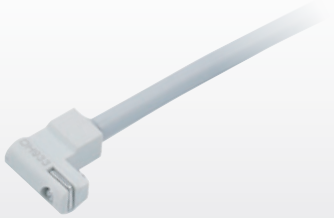
RDEP series [C slot]

- Wiring method : 2 wire
- Switching logic : Solid state output N.O.
- Switch type : Current sourcing
- Voltage : DC10~28V

IP67

RDFE series [C slot]

- Wiring method : 2, 3 wire
- Switching logic : Solid state output N.O.
- Switch type : Non-contact, NPN current
  sinking, PNP current sourcing
- Voltage : DC5~30V



IP67

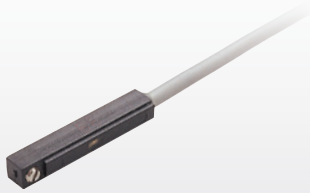
RDGV series [C slot]

- Wiring method : 2, 3 wire
- Switching logic : Solid state output N.O.
- Switch type : NPN current sinking,
  PNP current sourcing
- Voltage : DC10~28V, DC5~28V

IP67

RCD series [T slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, Non-contact,
  NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~120V, DC5~30V



IP67

RCI series [T slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, NPN current
  sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC/AC5~120V
  DC10~30V

IP67

LN32H series [T slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, NPN current
  sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC10~30V

IP67

LN40R series [T slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O.,
  Solid state output N.O.
- Switch type : Reed switch, NPN current
  sinking, PNP current sourcing
- Voltage : DC/AC5~120V, DC5~30V

IP67

LN65 series [T slot]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O., Solid state output N.O.
- Switch type : Reed switch, Non-contact, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC5~30V

IP67

RCA series [Square]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O., Solid state output N.O.
- Switch type : Reed switch, Non-contact, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC5~30V

IP67

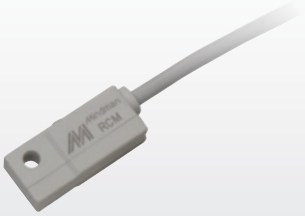
RCB series [Square]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O., Solid state output N.O.
- Switch type : Reed switch, Non-contact, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC5~30V

IP67

RCM series [Square]

- Wiring method : 2, 3 wire
- Switching logic : SPST N.O., Solid state output N.O.
- Switch type : Reed switch, Non-contact, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC/AC5~120V DC10~30V, DC5~28V, DC5~30V



IP67

RCV series [Square]

- Wiring method : 2 wire
- Switching logic : SPST N.O.
- Switch type : Reed switch
- Voltage : DC/AC5~240V
- For food and pharmaceutical environment
- The switch holds up to corrosive environments, high temperature and shock.

AISI 316

IP67

RDKP series [Square]

- Wiring method : 2 wire
- Switching logic : Solid state output N.O.
- Switch type : Reed switch
- Voltage : DC10~28V
- Applied in the strong magnetic field environment such as automotive manufacturing or areas near welding machine.

IP67

LN01A series

- Wiring method : 2, 3 wire
- Switching logic : N.O., Solid state output N.O.
- Switch type : Reed switch, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC10~30V

IP67

LN01G series

- Wiring method : 2, 3 wire
- Switching logic : N.O.,Solid state output N.O.
- Switch type : Reed switch, NPN current sinking, PNP current sourcing
- Voltage : DC/AC5~240V, DC5~30V

IP67

LN01P series

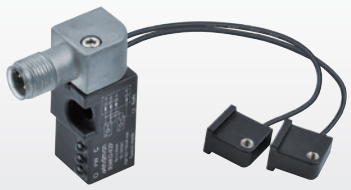
- Wiring method : 2, 3 wire
- Switching logic : N.O., Solid state output N.O.
- Switch type : Reed switch, NPN current sinking, PNP current sourcing
- Voltage : DC/AC10~220V, DC5~30V

IP67

RNKD series

[Proximity Sensor]

- Wiring method : 3 wire
- Switching logic : Solid state output N.O.
- Switch type : NPN current sinking, PNP current sourcing
- Voltage : DC10~30V

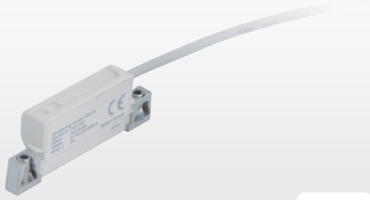


IP67

RLZ series [C, T slot]

[Linear Position]

- Freely set measuring range.
- Measuring range : 40±1 mm
- Linearity error : ± 0.2 mm @ 25°C
- Repeatability : ± 0.01 mm @ 25°C
- Voltage : DC15~30V, Ripple (P-P) ≤ 10 %
- Magnetic field strength : 20 ~ 200 Gauss

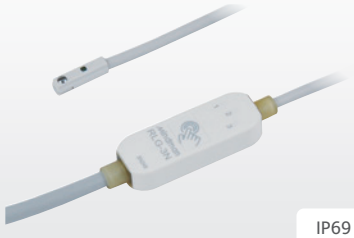


IP69

RLG series [C slot]

[Magnetic Linear Position]

- 3 point positioning.
- Measuring range : 50±1 mm
- Switch type : 3 NPN current sinking
  3 PNP current sourcing
- Repeatability : ± 0.01 mm
- Voltage : DC5~30V
- Magnetic requirement : 40 ~ 1000 Gauss

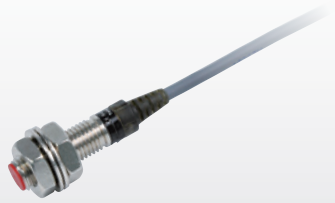


IP69

RJY series

[Proximity sensor]

- Body thread : M5, M8
- Wiring method : 3 wire
- Switching logic : Solid state output N.O.
- Switch type : NPN current sinking, PNP current sourcing
- Voltage : DC10~30V

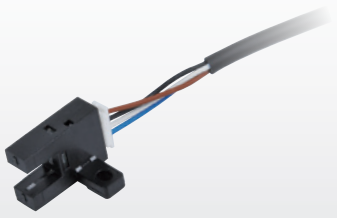


IP67

RLT series

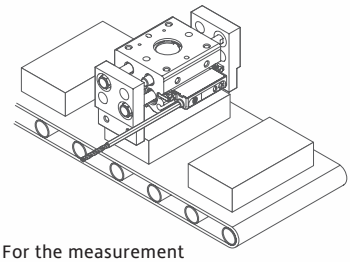
[Slot-Type Photomicrosensor]

- Sensing distance : 6 mm (slot width)
- Sensing object : Opaque : 2×0.8mm min.
- Switch type : NPN current sinking, PNP current sourcing
- Differential distance : Max. 0.025 mm
- Voltage : DC8~24V
- Applicable electric actuator

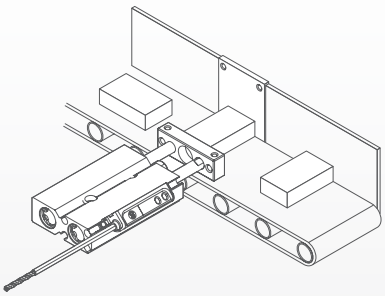


IP50

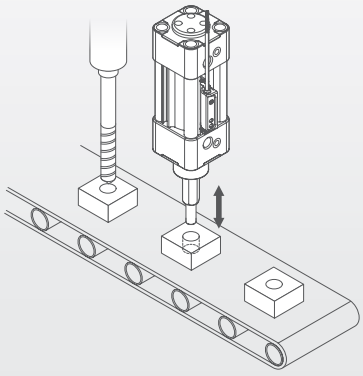
Applicable



For the measurement of dimensions.



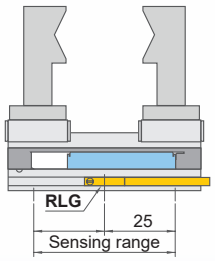
For long/short side detection.



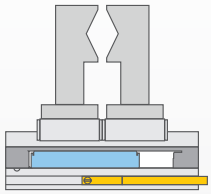
Used to check machined holes.

Setting example

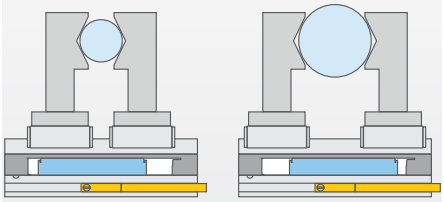
State1
Gripper open



State2
Gripper close



State3 : Gripping



Setting procedure example for state 3.

1. Press button once, then long press until three indicators flash.
2. Keep press button till indicator 3 flashes, then adjust gripper to gripping position.
3. Long press button to finish.

* Check manual for more details.

MEMO

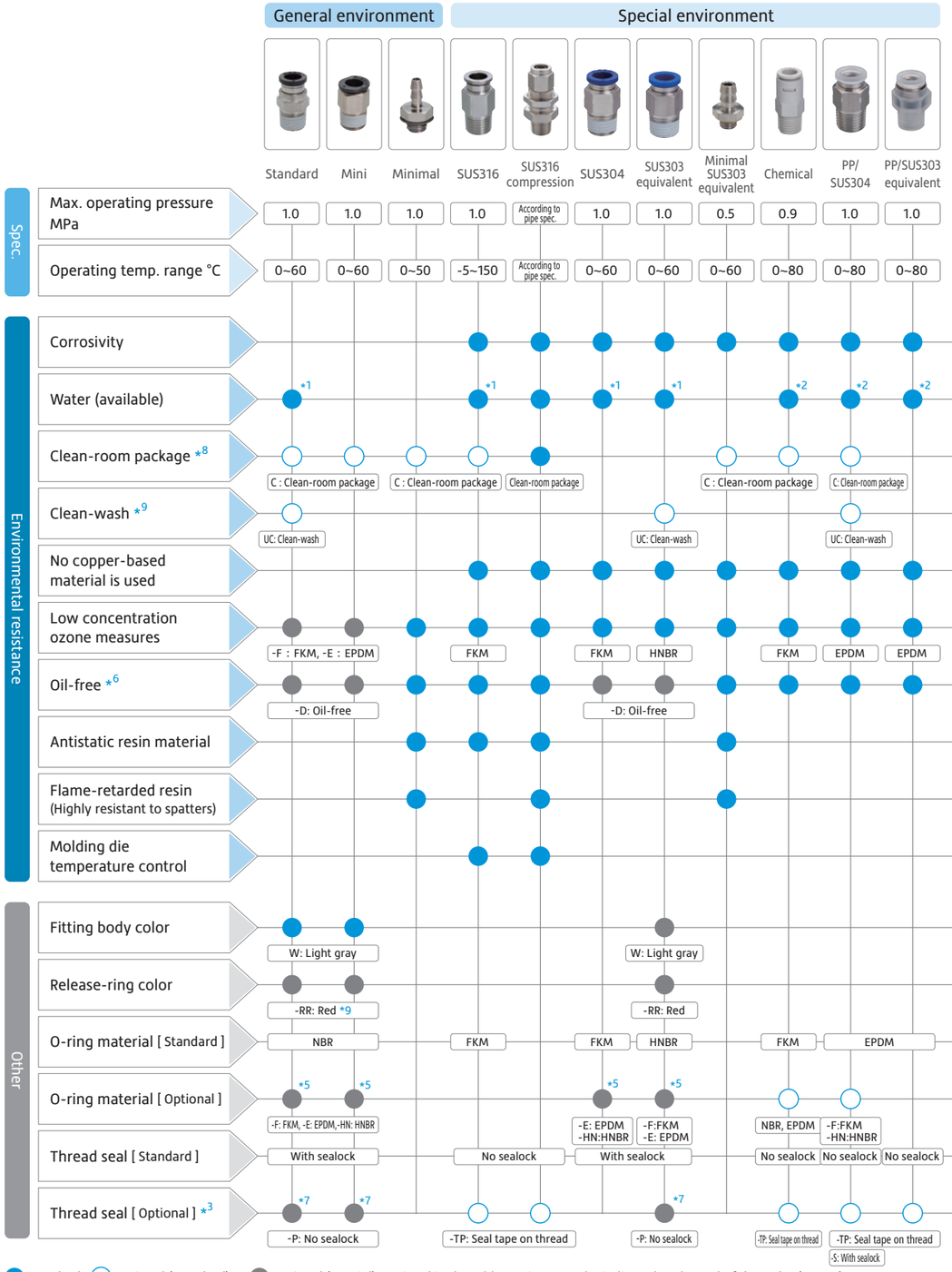
ISO Compliant | Variety of Styles | High Quality | Environmental Protection | Special Environment | Clean Environment

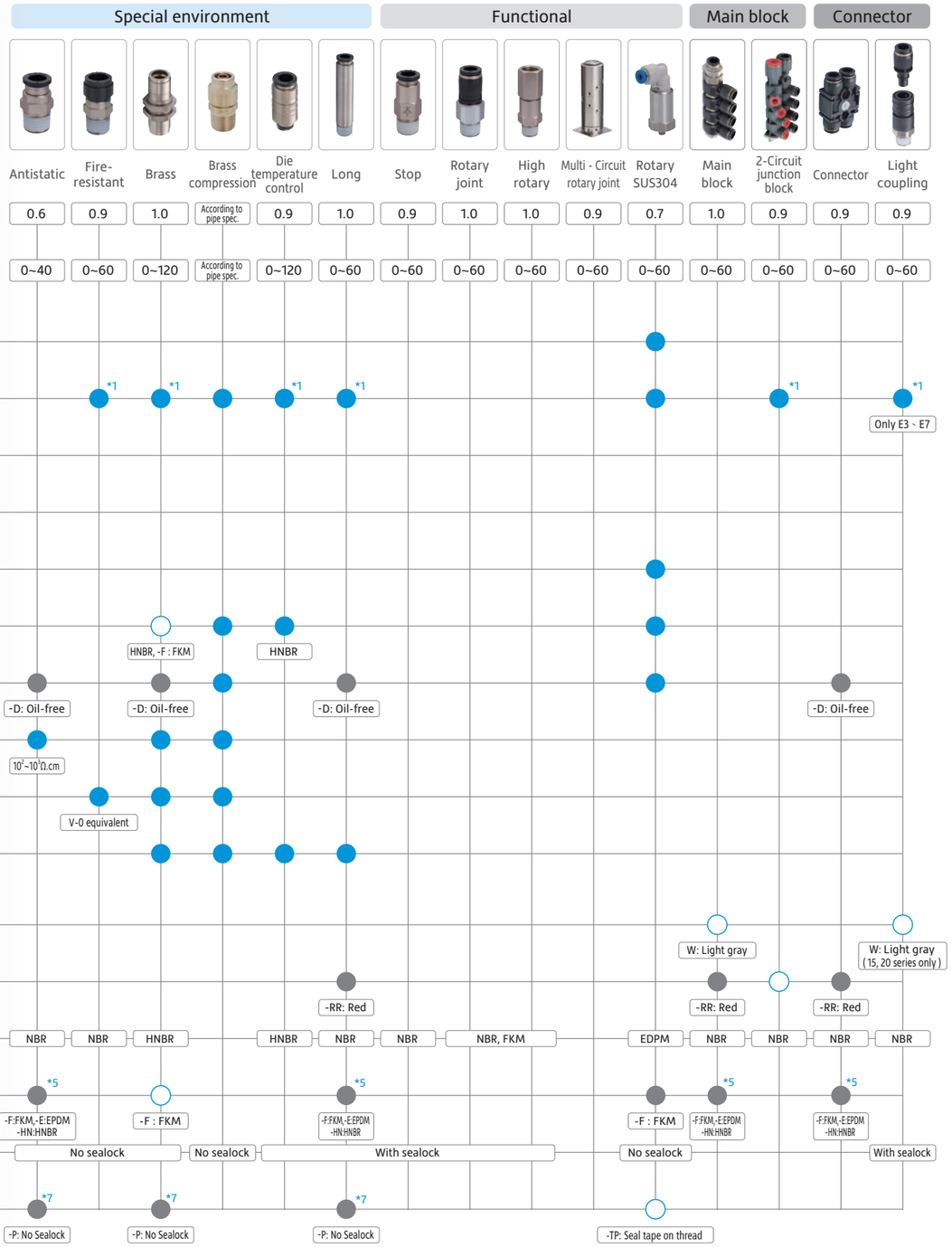
Fitting PISCO®

Quality and Environmental	Obtained ISO 9001 quality certification and ISO 14001 environmental protection certification.
General environment	One touch, minimal, functional, main block, connector.
Special environment	For corrosive, chemical, clean environment, antistatic, spatters, brass etc..
⚠ Caution	PISCO fittings are not available for sale in European region.

-S3 No copper-based material is used (standard)
2IN1 Two different functions integrated into one product
FOOD Food Sanitation Act or FDA Compliant
OIL Oil-free
-S3 No copper-based material is used (optional)
DUST Clean room packaging specifications
DUST Cleaning and washing specifications
AIR Reduce compressed air consumption

Semiconductor Industry
Food Industry
Automation Equipment
Pharmaceutical Industry
Secondary Battery
Chemical Industry





Standard ○ Optional (Standard) * ● Optional (Special) * Listed in the table, options may be indicated at the end of the order (eg -TP).

* 1. Be sure to place insert ring (WR) into the tube edge.
* 2. We recommend using insert ring (WR) for the tubing used in applications other than those that require no metal materials in wetted parts.
* 3. Seal specifications are available with R (Rc) threads only.
* 4. The gasket material will vary with the rubber material.
* 5. All EPDM rubber grades are oil-free and cannot be combined with grease grades.

With Sealock-coating

No Sealock-coating

*6.There is no intentional use of lubricants in the normal assembly process for oil-free products. Therefore, products that use rubber parts may suffer from poor sliding and poor airtightness. Products with rotary/slide parts are not included.
*7. Without Sealock specifications cannot be used in combination with Fluoroelastomer (FKM).
*8. Regarding the cleanliness and dust generation of the product, please evaluate it with an actual machine.
*9. If clean-wash is selected, the rubber material cannot be changed to FKM.

■ Standard ■ Mini ■ SUS #304 ● Flame-retarded ● Antistatic

PC

POC

PB

PD

PE

PEG

PL

PLL

PLH

PA

PH

PAF

PLHJ

PLLJ

PLJ

PLGJ

PLLGJ

PGJ

PG

PU

PW

PYJ

PY

PWJ

PM

PMF

PML

PMP

PF

PFF

PV

PVU

PVX

PAU

PTJ

PCF

■ Standard ■ Mini ■ SUS #304 ● Flame-retarded ● Antistatic

PHW

■

PAW

■

PHT

■

PAT

■

PAX

■■

PX

■■

PHF

■

POL

■■

PRJ

■

PRX

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PRG

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PLF

■

PKD

■■

PKG

■■

PKJ

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PKVD

■

PKVG

■

PPF

■■■

PZA

■■

PZB

■■

PZC

■■

PP

■■●

PIG

■

PIJ

■■

PCC

■

POLL

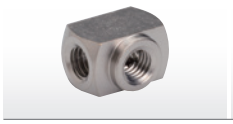
■

* The photo is a standard one-touch fitting, the appearance of other one-touch fitting types will be slightly different.
* PCC / POLL photo is a mini one-touch fitting.

Type - Minimal Fitting

■ Minimal ■ Minimal (SUS303 equivalent)

LE



■■

LB - F

■■

LH - F

■■

LZ

■

LD

■

LU - F

■

LL

■■

LB

■■

LH

■■

LC

■■

LG

■■

LU

■

LCN

■

LLC

■

LM

■

LN

■■

LP

■■

LHN

■

LS

■■

* The photo is a minimal fitting, and the appearance of the stainless steel version will be slightly different.
* For minimal stainless steel fitting, the ordering code is S, ex. SLE.

Release Ring Color

Brown (mm)
- Seal rubber FKM (-F)

Yellow (mm)
- Seal rubber EPDM (-E)
- Oil-free (-D)

White (inch)
- Standard package
- Clean room package
- Clean-wash package

Light gray (mm)
- Standard package
- Clean room package
- Clean-wash package

Light blue (mm)
- Clean room package
- Clean-wash package

Red (mm)
- Standard package
- Clean room package
- Clean-wash package
- Customized

Dark blue (mm)
- Stainless steel standard package
- Clean-wash package

STANDARD

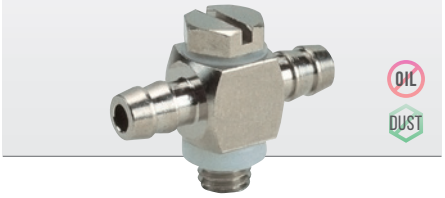
- Push-in fitting for general pneumatic piping. Wide variety of products.
- Medium : Air, Water (Conditional)
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12, 16 mm
  (inch) ø1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2

MINI

- 40% smaller than the standard type fitting.
- Medium : Air
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø1.8, 2, 3, 4, 6 mm
  (inch) ø1/8, 5/32, 1/4
- Thread size : M3x0.5, M5x0.8, M6x1, R1/8, 1/4, 3/8

MINIMAL

- Barb joint best suitable for space-saving piping.
- They are optimal for piping vacuum equipment. (Use with vacuum tube.)
- Medium : Air
- Max. operating pressure : 0.5 MPa (0.4 MPa with vacuum tube)
- Operating temp.: – 100kPa
- Operating temp.: 0~50ºC (No freezing)
- Tube dia. : (Tube O.D.) ø3, 4, 5, 6 mm
  (Tube I.D.) ø2, 2.5, 3.5, 4 mm
- Thread size : M3x0.5, M5x0.8, M6x1, R1/8



STOP

- Push-in fitting with built-in stop valve. The flow-shut mechanism will operate to stop the air flow when the tube is disconnected and allow air flow when the tube is connected.
- Easy Insertion and disconnection by double-passage structure.
- Medium : Air
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2

ROTARY JOINT

- These piping joints are used for swiveling and swinging connections.
- Medium : Air
- Max. operating pressure: 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12 mm
  (inch) ø1/4, 5/16, 3/8
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2

HIGH ROTARY JOINT

- Push-in fitting joint best suitable for high-speed swiveling and swinging connections.
- Medium : Air
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12 mm
  (inch) ø1/4, 5/16, 3/8
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2

MULTI-CIRCUIT ROTARY JOINT

- Best suitable for piping of index tables or other rotary equipment.
- Number of circuits: 4, 6, 8
- Medium : Air
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Thread size : M5x0.8, M6x1, R1/8

LIGHT COUPLING

- The light coupling is small and light weight, which enable attach and detach with only one hand.
- Compatible with other manufacturer's couplings.
- Medium : Air, water (Conditional)
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : ø6, 8, 10 mm
- Thread size : R1/8, 1/4, 3/8

COLOR CAP

- Color caps can be used for identification of different applications of the joints.
- Color: Black, red, orange, ocher, yellow, green, blue, sky blue, gray, white
- Sharp : Standard, mini oval, mini round
- Tube dia. : ø4, 6, 8, 10, 12, 16 mm

MAIN BLOCK

- Assembling manifold blocks for concentrated branching.
- Same flow rate with steel piping. Half size body.
- Combination with 14 types of different size blocks.
- Medium : Air
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12, 16 mm
  (inch) ø1/2, 5/8
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2, 3/4, 1

2-CIRCUIT JUNCTION BLOCK

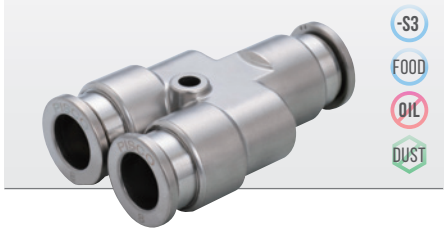
- This add-on type concentrated branching joint serves two lines the same time.
- Medium : Air, water (Conditional)
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (Inlet-port) ø10, 12 mm
  (Outlet-port) ø6, 8 mm

CONNECTOR

- The Connector realizes simultaneous connection and disconnection of multiple lines. It makes easy moving of the devices.
- Connections can be stacked or combined using Connector Band. Multiple connection with different diameter tubings.
- Medium : Air
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø3, 4, 6, 8 mm
  (inch) ø1/8, 5/32, 1/4, 5/16

SUS316

- Lock-claws type push-in fitting.
- Metal: SUS316, Seal rubber : FKM
- All materials are oil-free and compliant with Japan food sanitation act.
- Realized down-sizing (compared with Pisco's conventional products.)
- Medium: Air, water, others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : – 5~150°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12, 16 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2



SUS304

- Metal: SUS304, Seal rubber : FKM
- This tube fitting serves best where strength is required, corrosive atmosphere or the atmosphere contains chemicals.
- No copper-based material is used.
- Medium: Air, water, others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12, 16 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2

SUS303 Equivalent

- Stainless steel whose corrosion resistance is equivalent to SUS303 is adopted. Seal rubber : HNBR
- Low concentration ozone measures.
- This tube fitting serves best where strength is required or corrosive atmosphere.
- Medium : Air, water (Conditional)
- Max. operating pressure : 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12, 16 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2

SPATTER

- Flame-retardant resin. Resistant to flame and weld spatter. (Equivalent to V-0)
- Release-ring cover prevents malfunction of release-ring due to the weld spatter.
- Medium: Air, water (Conditional)
- Max. operating pressure : 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2

BRASS

- The release-ring also uses brass.
- Seal rubber: HNBR, FKM, NBR
- Resistant to flame and weld spatter.
- Medium: Air, water, heat medium oil (Conditional)
- Max. operating pressure: 1.0 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~100°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12 mm
- Thread size : M5x0.8, R1/8, 1/4, 3/8, 1/2

ANTISTATIC

- Suitable for electrostatic dissipating and antistatic applications.
- Medium : Air
- Max. operating pressure: 0.6 MPa
- Max. vacuum : – 100kPa
- Operating temp. : 0~40°C (No freezing)
- Volume resistance :
  Conductive PBT $1x10^3$ Ω.cm
  Conductive POM $1x10^2$ Ω.cm
- Tube dia. : ø3, 4, 6, 8, 10, 12 mm
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2

MINIMAL SUS303

- Stainless steel whose corrosion resistance is equivalent to SUS303 is adopted.
- This ultra small barb fitting is best suitable for requiring corrosive resistance or use in chemical atmosphere where space-saving piping is required.
- Max 15% (approx.) smaller than conventional minimal fitting.
- Medium : Air
- Max. operating pressure : 0.5 MPa (0.4 MPa with vacuum tube)
- Max. vacuum : – 100kPa
- Operating temp. : 0~60°C (No freezing)
- Tube dia. : (Tube O.D.) ø3, 4, 6 mm
  (Tube I.D.) ø2, 2.5, 4 mm
- Thread size : M3x0.5, M5x0.8, M6x1

-S3 OIL DUST

SUS316 Compression

- Compression fitting made of SUS316, which is highly resistant to corrosion. Suitable for chemical industry, medical, semiconductor, food industry, etc.
- Medium: Air, Water, Others such as chemicals (Conditional)
- Max. operating pressure: Depending on max. operating pressure of tube.
- Max. vacuum : – 100 kPa
- Operating temp. : Depending on operating temp. range of tube (No freezing)
- Tube dia.- Tube O.D.XTube I.D. :
  (mm) ø4x2, 4x2.5, 6x4, 8x5, 8x6, 10x6.5, 10x7.5, 10x8, 12x8, 12x9, 12x10, 16x11, 16x13 mm
  (inch) ø1/4x1/4, 3/8x3/8, 1/2x1/2
- Thread size: R(Rc)1/8, 1/4, 3/8, 1/2

-S3 FOOD OIL DUST

ALL BRASS COMPRESSION

- By using special brass in the main metal body, this product line has achieved the high resistant performance against water.
- Best suitable for Auto Industry and Thermal Control for mold tooling.
- Medium : Air, Water, Others such as chemicals (Conditional)
- Max. operating pressure : Depending on max. operating pressure of tube
- Max. vacuum : – 101.3kPa
- Operating temp. : Depending on operating temp. range of tube (No freezing)
- Tube dia. : (Tube O.D.) ø4, 6, 8, 10, 12, 16 mm
  (Tube I.D.) ø2.5, 4, 5, 6, 6.5, 7.5, 8, 9, 11, 13 mm
- Thread size : R(Rc)1/8, 1/4, 3/8, 1/2

OIL

PP / SUS304

- PP (Polypropylene) is selected for the body material.
- Thread material : SUS304, PP
  Seal rubber: EPDM, FKM, HNBR ◦
- Visible fluid by transparent body color.
- Medium: Air, Water, Others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa (at 0~20°C)
- Max. vacuum : – 100 kPa
- Operating temp. : 0~80°C (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12 mm
  (inch) ø1/4, 3/8, 1/2
- Thread size : M3x0.5, M5x0.8, R1/8, 1/4, 3/8, 1/2

-S3 FOOD OIL DUST DUST

PP / SUS303 Equivalent

- PP (Polypropylene) is selected for the body material and EPDM for seal material to adapt to clean environment.
- Thread material: SUS303, PP
  Seal rubber: EPDM, FKM, HNBR ◦
- Visible fluid by transparent body color.
- Medium: Air, Water, Others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa (at 0~20°C)
- Max. vacuum : – 100 kPa
- Operating temp. : 0~80°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12 mm
- Thread size : M3x0.5, M5x0.8, R1/8, 1/4, 3/8, 1/2

-S3 OIL DUST DUST

CHEMICAL

- All-resin (PPS) made fitting.
- which possesses excellent heat resistance, noncombustible (UL94 V-0 equivalent) and chemical resistance and the seal is made of fluoric rubber.
- No worry for rust and metal Ion.
- Oil-free for all parts and compliant with Japanese Food Sanitation Act.(only FKM option)
- Medium: Air, Water, others such as chemicals (Conditional)
- Max. operating pressure: 0.9 MPa (at 0 ~20°C)
- Max. vacuum : – 100 kPa
- Operating temp. : 0~80°C (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12 mm
- Thread size : R1/8, 1/4, 3/8, 1/2

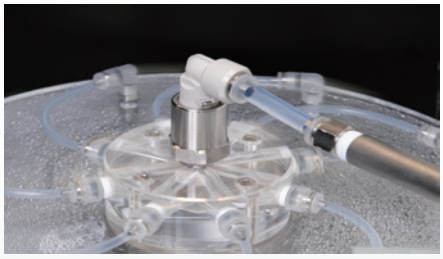
-S3 FOOD OIL DUST

DIE TEMPERATURE CONTROL

- Molding Die Temperature control coupling.
- Push the release sleeve and remove the joint part, then you see no projection on the die.
- Medium: Air, Clean water, Heat medium oil (Conditional)
- Max. operating pressure: 0.9 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~120°C (No freezing)
- Tube dia. : (Tube O.D.) ø4, 6, 8, 10, 12 mm
  (Tube I.D.) 1/4, 3/8
  (Inner thread) Rc1/8, 1/4, 3/8
- Thread size : R1/8, 1/4, 3/8, 1/2

ROTARY JOINT SUS304

- Applicable to semiconductor field, secondary battery field, etc.
- One-touch fitting for rotating part piping for corrosive environments.
- PPS, SUS304, etc. with "chemical resistance" and "corrosion resistance" are used for wetted parts.
- No copper-based material is used. Non-grease oil-free specifications.
- Introducing a new one-touch joint for swinging and rotating parts. Two types of fluids are used: water (RWL) and air (RAL).
- Seal rubber : EPDM, FKM (Optional)
- Medium : Air, Water, Other gases (Conditional)
- Max. operating pressure : 0.7 MPa
- Max. vacuum : – 100 kPa
- Operating temp. : 0~60°C (No freezing)
- Allowable rotation speed : 500min^{-1}
- Tube dia.-Tube O.D. :
  (mm) ø4, 6, 8, 10, 12 mm, (inch) ø1/4, 3/8, 1/2
- Thread size : M5x0.8, M6x1, R1/8, 1/4, 3/8, 1/2, 10-32UNF, NPT1/8, 1/4, 3/8, 1/2



MEMO

MEMO

ISO Compliant | Variety of Styles | High Quality | Environmental Protection | Special Environment | Clean Environment

Control Valve PISCO®

Quality and Environmental	Obtained ISO 9001 quality certification and ISO 14001 environmental protection certification.
General environment	Speed controller, needle valve, quick exhaust valve, pressure regulator, check valve, silencer
Special environment	Corrosion resistance and spatter speed controller, stainless steel needle valve, clean room, fluororesin needle valve

- -S3 No copper-based material is used (standard)
- 2in1 Two different functions integrated into one product
- FOOD Food Sanitation Act or FDA Compliant
- OIL Oil-free
- -S3 No copper-based material is used (optional)
- DUST Clean room packaging specifications
- DUST Cleaning and washing specifications
- AIR Reduce compressed air consumption

Semiconductor Industry | Food Industry | Automation Equipment | Pharmaceutical Industry | Secondary Battery | Chemical Industry

Selection Guide - Speed Controller

* Applicable to standard type, PP material, brass.

		General environment							Special environment				
Series	Speed controller	Standard	Large flow	Low flow	Push-Lock	Slot-head	Cushion	Constant flow	SUS316	SUS303 equivalent	PP	Fire-resistant	Brass
	Throttle (needle) valve	Standard							SUS316		PP		Brass
Spec.	Max. operating pressure MPa	0.9	0.7	0.9	1.0	0.9	1.0	0.9	0.9 1.0	0.9	1.0	0.9	1.0
	Operating temp. range °C	0~60	0~60	0~60	0~60	0~60	0~60	0~60	-5~60 -5~150	0~60	0~80	0~60	0~100 0~120
Environmental resistance	Corrosivity	●	●	●	●	●	●	●	●	●	●	●	●
	Water (available) *1	●	●	●	●	●	●	●	●	●	●	●	●
	Clean-room package	○		○		○			○		○		
	No copper-based material is used	●	●	●	●	●	●	●	●	●	●	●	●
	Low concentration ozone measures	●	●	●	●	●	●	●	●	FKM	HNBR	●	FKM, HNBR
	Oil-free	●	●	●	●	●	●	●	●	●	●	●	●
	Antistatic resin material	●	●	●	●	●	●	●	●	●	●	●	●
	Flame-retarded resin (Highly resistant to spatters)	●	●	●	●	●	●	●	●	●	●	●	●
Other	Fitting body color	○	○	○	●	○	●	●	●	●	●	●	●
	Release-ring color	●	●	●	●	●	●	●	●	●	●	●	●
	O-ring material [Standard]	NBR	NBR	NBR	NBR	NBR	NBR,HNBR	NBR	HNBR	HNBR	EPDM	NBR	HNBR
	O-ring material [Optional]	●	●	●	●	●	●	●	●	●	○	●	○
	Thread seal [Standard]	With sealock	With sealock	With sealock	With sealock	With sealock	●	With sealock	No sealock	With sealock	No sealock	With sealock	With sealock
	Thread seal [Optional] *2	●	●	●	●	●	○	●	○	●	○	●	●

-RR: Red *4 (Release-ring color, Standard)
-F: FKM, -E: EPDM, -HN: HNBR (O-ring material [Optional])
-P: No sealock (Thread seal [Optional] *2)
-TP: Seal tape on thread
-P: no sealock
-TP: Seal tape on thread
-S: With sealock
-F: FKM, -E: EPDM
-F:FKM -HN:HNBR
-F: FKM

● Standard ○ Optional (Standard) * ● Optional (Special) * Listed in the table, options may be indicated at the end of the order (eg -TP).

* 1. Be sure to place insert ring (WR) into the tube edge.
* 2. Seal specifications are available with R (Rc) threads only.
* 3. The gasket material will vary with the rubber material.
* 4. Available only if the resin color is black.


With sealock-coating


No sealock-coating

JS* [Standard]

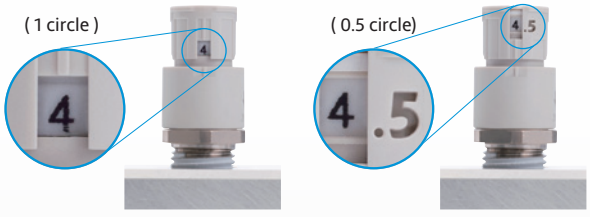
- The most standard speed control valve for driving devices.
- Free, mini, universal, large flow, low flow etc optional.
- Packaging option: Standard, C : Clean room package, W: Light-gray body, W-C : Light-gray body + Clean room pkg.
- Medium: Air
- Operating pressure : 0.05~1.0 MPa
- Check valve opening pressure : 0.005 ~0.05 MPa
- Operating temp. : 0~60°C (No freezing)

JKC / JKL [Constant flow]

- This speed controller fixes the operation speed of driving device.
- It is best suited for use with mass-produced dedicated machines.
- Medium : Air
- Operating pressure : 0.1~0.9 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : 0~60°C (No freezing)

JSG* [Push-lock type]

- Speed setting can be checked with indicator.
- Easy adjustment due to its liner characteristics.
- Easy to identify the flow direction by the knob color.
- Medium: Air
- Operating pressure : 0.01~1.0 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : 0~60°C (No freezing)
- Push-Lock type knob. Easy to handle. Flow rate can be set by 30 steps in one turn. * The number of turn is visible every 1/2 turn.



Push-lock display (side up, down, top adjustment)

JSDC / JSDS [Slot-head]

- It prevents unnecessary manual adjustments during the operations.
- Use a slot screwdriver to adjust the needle (speed adjustment).
- Approx. 2/3 height of the conventional Speed Controller. Suitable for a small space.
- Medium : Air
- Operating pressure : 0.1~0.9 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : 0~60°C (No freezing)

BJSU [2-stage speed controller]

- Industry's first ! It enables same control as the cylinder with shock absorber. (Patent no. 5578502)
- Shock absorber is not required. Two-stage exhaust flow rate adjustment is realized. By using 2nd stage exhaust speed to be as cushion (brake), controlling like a shock absorber is possible.
- Speed control (EX1), shock absorbing (cushion) strength (EX2), and start timing of shock absorber (TIM) are separately adjustable.
- Medium : Air
- Operating pressure : 0.2~1.0 MPa
- Operating temp. : 0~60°C (No freezing)

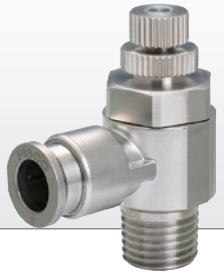
Special Environment - Speed Controller

SJSC [SUS303 like corrosivity]

- Best suitable for operating where strength is required or in corrosive atmosphere.
- Stainless steel whose corrosion resistance is equivalent to SUS303 is adopted. Copper alloy free material for metal parts.
- HNBR for seal rubber against low ozone concentration.
- Medium : Air • Operating pressure : 0.1~0.9 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : 0~60°C (No freezing)

SSJSC [SUS316]

- The same lock-claws system as tube fitting is adopted.
- External parts are made of SUS316 that has excellent anti-corrosive characteristics.
- The material of sealing rubber is FKM (One of diaphragm is HNBR).
- Packaging option: Standard package, clean room package
- Medium: Air • Operating pressure : 0.1~0.9 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : –5~60°C (No freezing)



JSC- * - V-O [Speed controller spatter]

- A fire-resistant resin (equivalent to UL V-0) is applied for the body material to adapt to spatter environment.
- Protective Cover at both needle and joint parts to protect from sparks.
- Medium: Air • Operating temp. : 0~60°C (No freezing)
- Operating pressure : 0.1~0.9 MPa, 0.05~0.5 MPa (Low cracking pressure type)
- Check valve opening pressure : 0.05 MPa,0.02 MPa (Low cracking pressure type)

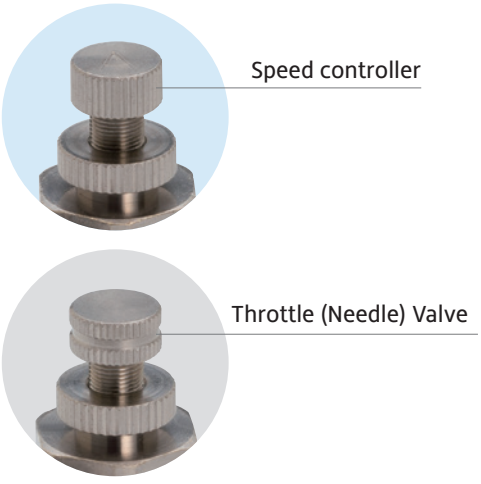
PJS* [PP material]

- PP (polypropylene) is applied for the body material to adapt to clean environment.
- Seal rubber: EPDM (standard), FKM, HNBR
- Packaging option: Standard package, clean room package
- Medium: Air, other (conditional)
- Operating pressure : 0.05~1.0 MPa (at 0~20°C)
- Check valve opening pressure : 0.005~0.05 MPa
- Operating temp.: 0~80°C (No freezing)

JKSC [Brass material]

- Not only the body but the release ring is made of brass, thus best suitable for high heat and spatter environments.
- Seal rubber : HNBR, FKM
- Medium : Air
- Operating pressure : 0.1~1.0 MPa
- Check valve opening pressure : 0.05 MPa
- Operating temp. : 0~100°C (HNBR), 0~120°C (FKM) (No freezing)

Knob Difference



* Applicable to standard type, PP material, brass.

JNC / S / MU [Standard]

- Throttle valve controls the operation speed of a pneumatic device and the transmission of air pressure signals. The flow rate can be adjusted while the air is flowing.
- Rotatable Resin body and fitting for free type (JNS).
- Packaging option : Standard, C : Clean room package, W : Light-gray body, W-C : Light-gray body + clean room pkg.
- Medium: Air
- Max. operating pressure : 0.9 MPa、1.0 MPa (JNMU)
- Operating temp. : 0~60°C (No freezing)
- Max. vacuum : –100 kPa

SSJNC [SUS316]

- The same lock-claws system as tube fitting is adopted.
- Needle valve made of stainless steel SUS316 which has excellent anti-corrosivity. Seal rubber : FKM
- Packaging option: Standard package, clean room package
- Medium: air, water, other chemicals (Proviso)
- Max. operating pressure : 1.0 MPa
- Max. vacuum : –100 kPa
- Operating temp. : –5~150°C (No freezing)

PJN* [PP material]

- PP (polypropylene) body material for clean environment.
- Visible fluid by semi-transparent body color.
- Seal rubber : EPDM (standard), FKM, HNBR
- Packaging option : Standard package, clean room package
- Medium : Air, water, others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa (at 0~20°C)
- Max. vacuum: –100 kPa
- Operating temp. : 0~80°C (No freezing)

KJNC [Brass material]

- Not only the body but the release ring is made of brass, the best suitable for high heat and spatter environments.
- Seal rubber: HNBR, FKM
- Operating temp. : 0~100°C (HNBR), 0~120°C (FKM) (No freezing)
- Medium : Air
- Max. operating pressure : 1.0 MPa
- Max. vacuum : –100 kPa

ET [Exhaust needle valve]

- This Exhaust needle valve with silencer controls the exhaust flow rate.
- Lower price than speed controller.
- Medium : Air
- Max. operating pressure : 0~0.9 MPa
- Operating temp. : 0~60°C (No freezing)

EQ [Quick exhaust valve]

- Best suitable for high-speed drive cylinder.
- Standard quick exhaust valve series is equipped with silencer. Re-adjustment of exhaust flow is not necessary when replacing silencer element.
- Medium : Air
- Operating pressure : 0.1 ~ 0.7 MPa
- Min. opening pressure : 0.05 MPa
- Operating temp. : 5~60°C (No freezing)

EQ* [Quick exhaust valve mini type]

- An eco (energy-saving) type with a tube outer diameter of ø3 mm is available for mini.
- Reduced annual air consumption by 90,000L by reducing the size from ø4mm to ø3mm. (According to our conditions)
- Added socket type (EQJ) to Mini.
- Operating pressure : 0.1 ~ 0.7 MPa
- Min. opening pressure : 0.05 MPa
- Operating temp. : 5~60°C (No freezing)

RV* [Regulator push-lock type]

- Pressure adjustment work is easy with the push-lock type knob. A compact regulator that allows pressure adjustment in the middle of piping due to its compact design.
- Comes with a relief mechanism that is convenient for adjusting equipment. With backflow mechanism.
- Medium: Air
- Operating pressure : 0 ~ 1.0 MPa
- Pressure setting : 0.1 ~ 0.8 MPa
- Indicated pressure : 0 ~ 0.8 MPa
- Accuracy (gauge) : ±5% F.S.
- Operating temp. : 0~60°C (No freezing)

JPC / S [Pressure controller]

- In driving an actuator under high pressure, compressed air can be saved by use of the pressure controller to reduce the pressure only during home return.
- Controls the pressure for advance and return of an actuator.
- Medium : Air
- Operating pressure : 0 ~ 0.9 MPa
- Pressure setting : 0.2 ~ 0.6 MPa
- Operating temp. : 0~60°C (No freezing)

PC / PL [Fixed orifice joint]

- Lower price than throttle (needle) valve.
- Installable in small space.
- 18 types of orifice bore.
- Medium : Air
- Max. operating pressure : 1.0 MPa
- Max. vacuum : –100 kPa
- Operating temp. : 0~60°C (No freezing)

RVFUP [Pre-set pressure regulator]

- Factory preset enables reduction of pressure adjusting time in the assembly process. No adjustment of downstream pressure is needed.
- Tamper-proof - prevents unwanted adjustments. There is no pressure adjusting screw nor knob.
- The body volume is reduced by 33% compared with the RVUP model.
- Medium : Air
- Operating pressure : Preset pressure~1.0 MPa
- Operating temp. : 0~60°C (No freezing)
- Pressure tolerance : ± 0.025 MPa (When preset pressure+0.3 MPa is supplied)

CV* [Check valve]

- Check valve permits the air flow in one direction but checks the flow in the opposite direction, thus keeping the output pressure at a constant level.
- Low-cost and lightweight resin type
- Medium : Air
- Max. operating pressure : 0.9 MPa
- Max. vacuum : –100 kPa
- Min. opening pressure : 0.01 MPa or less
- Min. opening differential pressure : 0.02 MPa (Metal poppet), 0.04 MPa (Resin poppet)
- Operating temp. : 0~60°C (No freezing)

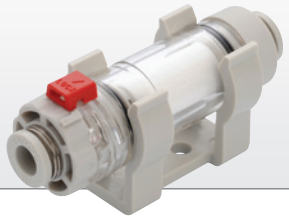
PCVLU [Check valve PP for low operating pressure]

- PP (polypropylene) is applied for the body material to adapt to clean environment.
- Clear (semitransparent) color used for the resin body makes it possible to check visually the fluid (liquid) inside. Easy to check sanitary condition.
- SUS304 is used for the metal parts. FKM is used for valve packing. EPDM is used for elastic sleeve (FKM and NBR are optional).
- Medium: Air, water, others such as chemicals (Conditional)
- Max. operating pressure : 1.0 MPa (at 0~20°C)
- Max. vacuum : –100 kPa
- Min. opening pressure : 5 kPa (at 25°C)
- Min. opening differential pressure : 0.01 MPa
- Operating temp. : 0~80°C (No freezing)

SFU

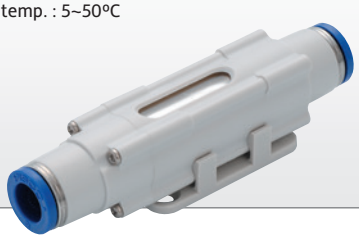
[Positive-negative pressure union filter]

- Element can be replaced without any tool, easy maintenance.
- Suitable as pre-filter in positive pressure system.
- Medium : Air
- Max. operating pressure : 1.0 MPa (at 20°C)
- Max. vacuum : –100 kPa
- Filtering accuracy : 5 μm (Trapping efficiency 95%)
- Operating temp. : 0~50°C (No freezing)



MFU [Hollow fiber membrane filter]

- Small body, lightweight and large flow rate.
- Filtering accuracy : 0.01 μm, correcting Efficiency: 99.99%
- Suitable for semiconductors, measuring instruments, printing and medical fields.
- Explosion-proof structure by a plastic body covering the filter case.
- Medium : Air, nitrogen
- Operating pressure : 1.0 MPa (at 20°C)
- Max. vacuum : –100 kPa
- Filtering accuracy : 0.01 μm (Trapping efficiency 99.99%)
- Operating temp. : 5~50°C



SR / T / M [Silencer]

- Silencer, connected to the exhaust port of a device, suppresses the exhaust noise.
- Excellent silencing effect.
- Selection from 3 types. Selection from taper thread type, metric thread type and push-in fitting type.
- Medium : Air
- Operating pressure : 0~0.9 MPa
- Operating temp. : 0~60°C (No freezing)

[Check Valve]

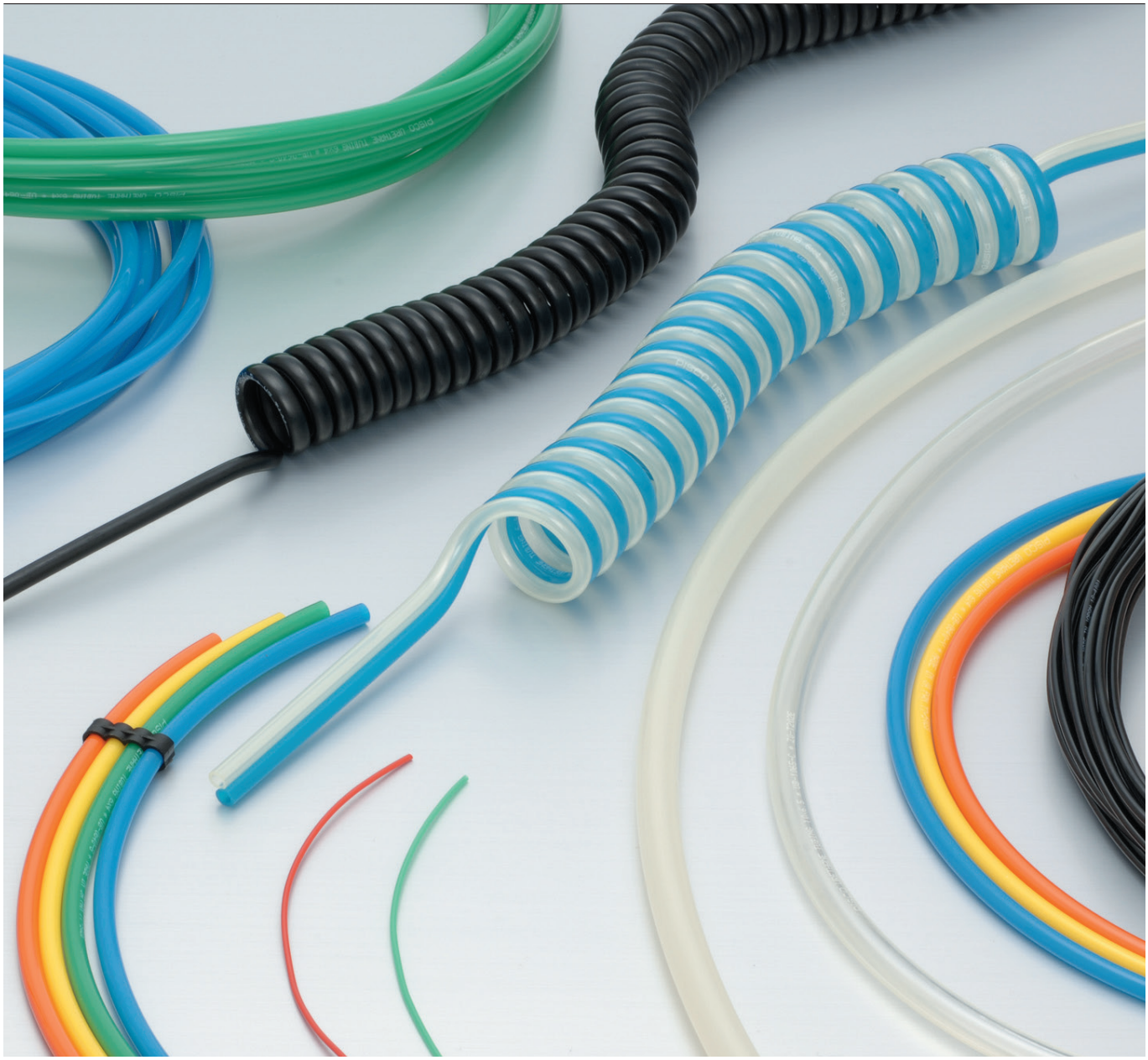
VUS21* [LED digital pressure sensor]

- LED displays are used for set-up pressure and working pressure.
- 2 points signal output type and 1point signal output with 1 analog output type is available.
- Output detection accuracy is enhanced by the use of semiconductor switch.
- Current consumption : 40mA or less
- Operating pressure : –100 ~ 0 kPa
- Pressure setting : –99 ~ 0 kPa
- Operating temp. : 0~50°C (No freezing)
- Protective structure : IEC standard IP40 equiv.

GP [Pressure gauge]

- Compact body, which can fit to small space.
- The built-in tube fitting type can indicate pressure only by inserting a tube.
- Medium : Air
- Indicated pressure range (gauge) : 0~0.8 MPa
- Operating temp. : 0~60°C (No freezing)
- Tolerance : ± 5% (Full scale)
- Scale angle : 150°

MEMO



ISO Compliant | Variety of Styles | High Quality | Environmental Protection | Special Environment | Clean Environment

Tube PISCO®

Quality and Environmental	Obtained ISO 9001 quality certification and ISO 14001 environmental protection certification.
General environment	Polyurethane type, vacuum tube, nylon type, multi-colored ribbon tube, spiral coiled tube.
Special environment	Fluoropolymer tube, polyolefin tube, anti-spatter, anti-static.

-S3 No copper-based material is used (standard)

DUST Clean room packaging specifications

FOOD Food sanitation act or FDA compliant

Semiconductor Industry

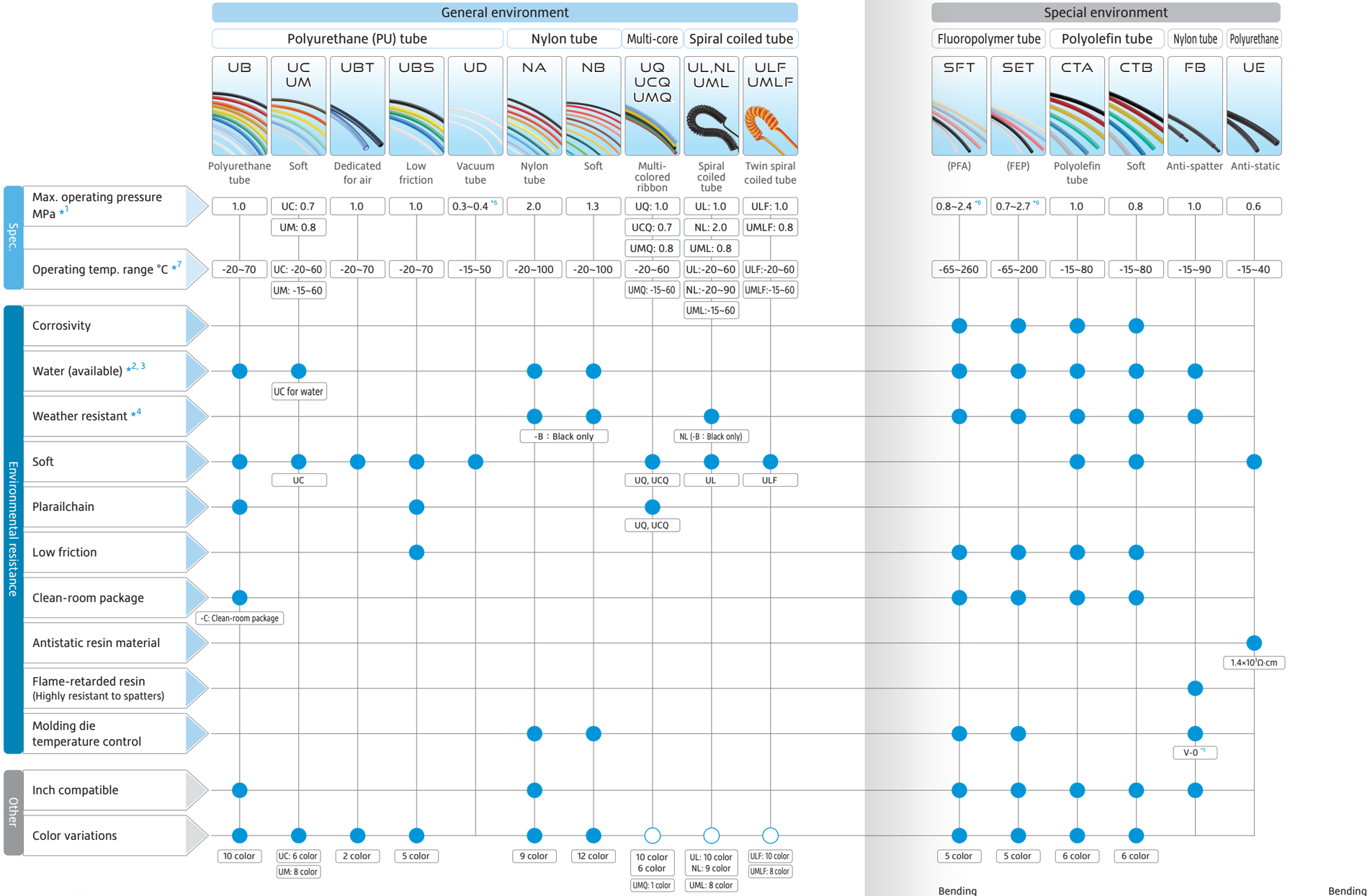
Food Industry

Automation Equipment

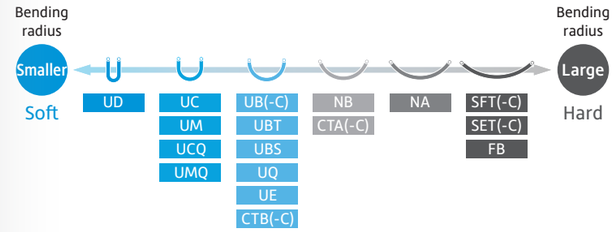
Pharmaceutical Industry

Secondary Battery

Chemical Industry



Standard ◯ Optional (Standard) * * Listed in the table, options may be indicated at the end of the order (eg -C).



* 1. The maximum operating pressure is at 20°C, 65%RH.
* 2. Be sure to place insert ring (WR) into the tube edge.
* 3. When using resin one-touch fittings (chemical/PP type) in fields other than those requiring no use of metal materials, we recommend using an insert ring (WR) for the tube.
* 4. Not suitable for outdoor use.
* 5. The cover part is made of PVC.
* 6. Note! The maximum operating pressure of the vacuum tube and fluororesin tube differs depending on the piping size.
* 7. The indicated temperature range is for when the fluid used is air. Please note that the operating temperature range differs for liquids.

Tube size (O.D.×I.D.) Unit: ømm

mm

Polyurethane tube

Size / Type	1.8×1	2×1.2	3×2	4×2.5	6×4	8×5	10×6.5	12×8	16×11
UB	●	●	●	●	●	●	●	●	●
UC	–	–	–	●	●	●	●	●	–
UM	–	–	–	●	●	●	●	●	●
UBT	–	–	●	●	●	●	●	●	–
UBS	–	–	–	●	●	●	●	●	–
UD	–	–	–	●	●	● (8×6)	● (10×7.5)	● (12×9)	–
UQ	–	–	●	●	●	●	●	●	–
UMQ	–	–	–	●	●	●	●	●	–
UL	–	–	●	●	●	●	●	●	–
UML	–	–	–	●	●	●	●	●	–
ULF	–	–	●	●	●	●	●	●	–
UMLF	–	–	–	●	●	●	●	●	–
UE	–	–	●	●	●	●	●	●	–

Nylon tube

Size / Type	4×2	4×2.5	6×4	8×6	10×7.5	10×8	12×9	12×10	16×13
NA	–	●	●	●	●	–	●	–	●
NB	–	●	●	●	●	–	●	–	●
FB	–	●	●	●	●	–	●	–	–

Polyolefin tube

Size / Type	4×2	4×2.5	6×4	8×5	8×6	10×6.5	10×7.5	10×8	12×8	12×9	12×10	16×13
CTA	●	●	●	–	●	–	●	●	–	●	●	●
CTB	–	●	●	●	–	●	–	–	●	–	–	–

Fluoropolymer tube

Size / Type	4×2	4×2.5	6×4	8×6	10×7.5	10×8	12×9	12×10	16×13
SFT	●	●	●	●	●	●	●	●	●
SET	●	●	●	●	●	●	●	●	●

inch

Polyurethane tube

Size / Type	1/8 (3.18×2)	5/32* (4×2.5)	3/16 (4.76×2.99)	1/4 (6.35×4.15)	5/16* (8×5)	3/8 (9.53×5.99)	1/2 (12.7×8.5)	5/8* (16×11)
UB	●	●	●	●	●	●	●	●

Nylon tube

Size / Type	1/8 (3.18×2)	5/32* (4×2.5)	3/16 (4.76×2.99)	1/4 (6.35×4.57)	5/16* (8×6)	3/8 (9.53×6.99)	1/2 (12.7×9.56)	5/8* (16×13)
NA	●	●	●	●	●	●	●	●
FB	–	●	–	●	●	●	●	–

Polyolefin tube

Size / Type	5/32* (4×2)	5/32* (4×2.5)	1/4 (6.35×4.57)	5/16* (8×6)	3/8 (9.53×6.99)	1/2 (12.7×9.56)	5/8* (16×13)
CTA	●	●	●	●	●	●	●
CTB	–	●	● (6.35×4.15)	● (8×5)	● (9.53×5.99)	● (12.7×8.5)	–

Fluoropolymer tube

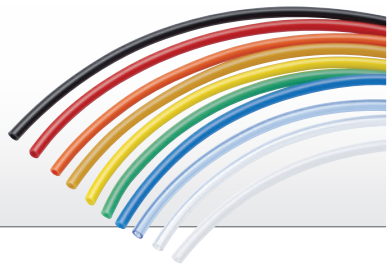
Size / Type	1/8 (3.18×2.18)	5/32* (4×2.5)	1/4 (6.35×4.57)	5/16* (8×6)	3/8 (9.53×6.99)	1/2 (12.7×9.56)	5/8* (16×13)	1 (25.4×22.2)
SFT	–	●	●	●	●	●	●	–
SET	–	●	●	●	●	●	●	–

* Inch size: 5/32, 5/16, 5/8 are shared with mm sizes.

UB [Polyurethane tube - 10 colors]

DUST -S3

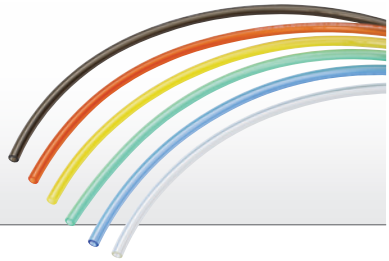
- Very flexible and kink resistant, suitable for applications where maneuverability is required and cleaning and packing in cleanroom ISO class 6 equivalent.
- Tube dia. : ø1.8 ~ ø16 (O.D.), ø1 ~ ø11 (mm, inch)(I.D.) , tube length : 20, 50, 100 m
- Medium : Air, water (conditional)
- Max. operating pressure : 1.0 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : Air -20~70 °C (No freezing), water -15~60 °C (No freezing)



UC [Soft polyurethane tube - 6 colors]

-S3

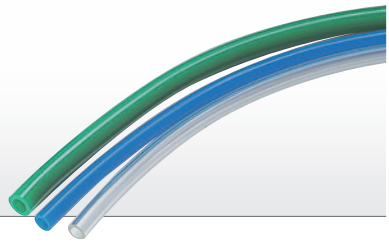
- Extreme flexibility allows the installation in in a narrow space where a tight bending radius is required.
- Tube dia. : ø4 ~ ø12 (O.D.), ø2.5 ~ ø8 mm (I.D.), tube length : 20, 100 m
- Medium : Air, water (conditional)
- Max. operating pressure : 0.7 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : Air -20~60 °C (No freezing), water -15~60 °C (No freezing)



UM [Soft polyurethane tube - 8 colors]

-S3

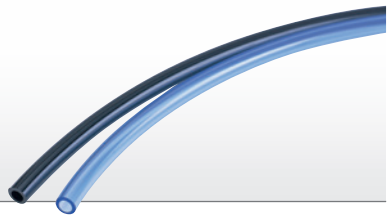
- Extreme flexibility allows the installation in in a narrow space where a tight bending radius is required.
- Tube dia. : ø4 ~ ø16 (O.D.), ø2.5 ~ ø11 mm (I.D.), tube length : 20, 100 m
- Medium : Air
- Max. operating pressure : 0.8 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -15~60 °C (No freezing)



UBT [Dedicated polyurethane tube for air - 2 colors]

-S3

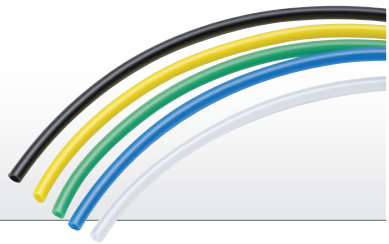
- The Ester based polyurethane tube has achieved 20% cost saving compared to Ether based polyurethane tube (UB). Featuring excellent flexibility, suitable where small bending radius is needed.
- Tube dia. : ø3 ~ ø12 (O.D.), ø2 ~ ø8 mm (I.D.), tube length : 20, 50, 100 m
- Medium: Air
- Max. operating pressure : 1.0 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -20~70 °C (No freezing)



UBS [Low friction polyurethane tube - 5 colors]

-S3

- Best suitable for cable/hose protecting and guiding devices, and where small bending radius is required.
- The friction factor is 1/3 of PISCO's most versatile polyurethane tubings (UB)
- Tube dia. : ø4 ~ ø12 (O.D.), ø2.5 ~ ø8 mm (I.D.), tube length : 20, 100 m
- Medium: Air
- Max. operating pressure : 1.0 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -20~70 °C (No freezing)



UD [Vacuum tube - 1 color]

-S3

- Very soft and flexible suitable for piping of moving parts.
- Suitable for applications where maneuverability or small bend radius is required.
- Tube dia. : ø4 ~ ø12 (O.D.), ø2.5 ~ ø9 mm (I.D.), tube length : 20, 100 m
- Medium : Air
- Max. operating pressure : 0.4 MPa (at 20 °C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -15~50 °C (No freezing)

NA [Nylon tube - 9 colors]

-S3

- Fine pressure, wear, and cold resistance.
- Excellent bending fatigue resistance. stably usable for long time.
- Tube dia.: ø4 ~ ø16 (O.D.), ø2.5 ~ ø13 (mm, inch)(I.D.), tube length: 20, 100 m
- Tube hardness (reference): shore D 65
- Medium: Air, water (Conditional), thermal oil (Conditional)
- Max. operation pressure: 2.0 MPa (at 20°C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -20~100°C (No freezing), water, thermal oil -15~90°C (No freezing)

NB [Soft nylon tube - 12 colors]

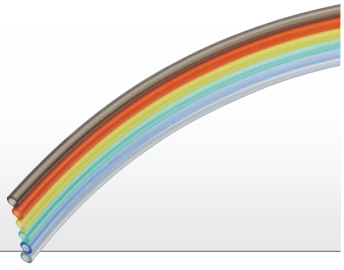
-S3

- Fine pressure, wear, and cold resistance. NB tube for hot water and thermal oil.
- Excellent bending fatigue resistance. Stably usable for long time.
- Tube dia.: ø4 ~ ø16 (O.D.), ø2.5 ~ ø13 (mm, inch)(I.D.), tube length: 20, 100 m
- Tube hardness (reference): shore D 58
- Medium: Air, water (Conditional), thermal oil (Conditional)
- Max. operation pressure: 1.3 MPa (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -20~100°C (No freezing), water, thermal oil -15~90°C (No freezing)

UQ / UCQ [(Soft) Multi-colored ribbon tube - (6)10 colors]

-S3

- Flexible and it is easy tracing and identifying the piping.
- Eliminate tangling issues and enable easy tracing and troubleshooting
- Tube dia.: ø3 ~ ø12 (O.D.), ø2 ~ ø8 mm (I.D.), No. of cores: 2~6, Tube length: 20, 100 m
- Medium: Air, water (Conditional)
- Max. operation pressure: 1.0 MPa (UQ), 0.7 MPa (UCQ) (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -20~60 °C (No freezing), water -15~60 °C (No freezing)



UMQ [Multi ribbon tube - 1 color]

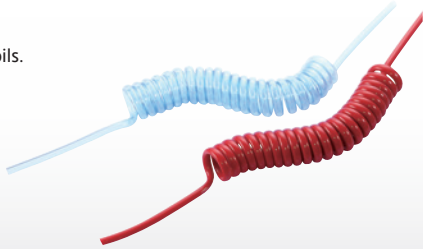
-S3

- Suitable for double-acting and multi-acting equipment, providing air supply.
- Tube dia.: ø4 ~ ø12 (O.D.), ø2.5 ~ ø8 mm (I.D.), No. of cores: 2~6, Tube length: 10 ~ 100 m
- Medium: Air
- Max. operation pressure: 0.8 MPa (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: -15~60 °C (No freezing)

UL / NL [Spiral coiled polyurethane / Nylon tube - 10/9 colors]

-S3

- Suitable for piping for air guns, air-powered screwdrivers and so on.
- The piping of movable part is completed in a small space without distorting the joints.
- UL: polyurethane (UB) processed into coil, NL: Excellent resilience nylon tube (NA) machined into coils.
- Tube dia.: ø3 ~ ø12 (O.D.), tube length before coiling: 1 ~ 20 m
- Medium: Air, water (conditional)
- Max. operation pressure: 1.0 MPa (UL), 2.0 MPa (NL) (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: UL: -20~60 (Air), -15~60 °C (Water)(No freezing),
  NL: -20~90 (Air), -15~90 °C (Water)(No freezing)



UML [Spiral coiled tube - 8 colors]

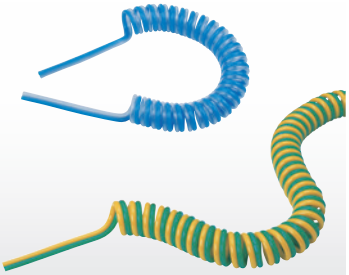
-S3

- Suitable for piping for air guns, air-powered screwdrivers and so on.
- The piping of movable part is completed in a small space without distorting the joints.
- UM: polyurethane (UB) processed into coil.
- Tube dia.: ø4 ~ ø12 (O.D.), tube length before coiling: 1 ~ 20 m
- Medium: Air
- Max. operation pressure: 0.8 MPa (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: -15~60 °C (No freezing)

ULF [Twin spiral coiled tube - 10 colors]

-S3

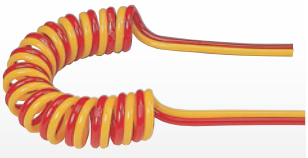
- Double tube coiled tubing is ideal for application where repeat-bending and twisting is required.
  Flexible polyurethane (UB).
- Tube dia.: ø3 ~ ø12 (O.D.), tube length before coiling: 1 ~ 10 m
- Medium: Air, water (conditional)
- Max. operation pressure: 1.0 MPa (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -20~60 °C (No freezing), water -15~60 °C (No freezing)



UMLF [Twin spiral coiled tube - 8 colors]

-S3

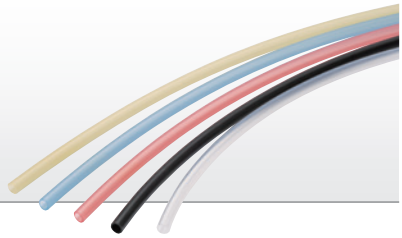
- Double tube coiled tubing is ideal for application where repeat-bending and twisting is required.
- Tube dia.: ø4 ~ ø12 (O.D.), tube length before coiling: 1 ~ 10 m
- Medium: Air
- Max. operation pressure: 0.8 MPa (at 20 °C, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: -15~60 °C (No freezing)



SFT [Fluoropolymer (PFA) tube - 5 colors]

FOOD DUST -S3

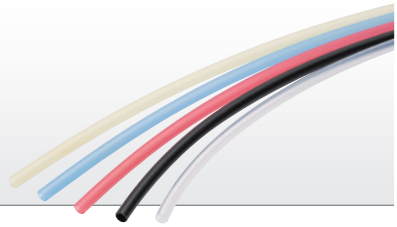
- Excellent in chemical and weather resistance. Good for use in chemical, food, medical and semi-conductor industries.
- Extruded from fluoropolymer (PFA) which is excellent in chemical resistance. Superior interior surface smoothness, transparency and purity.
- Inch size models, perfect to be used with the inch-sized SUS316 compression fitting are prepared.
- Tube dia: ø4 ~ ø16 (O.D.), ø2 ~ ø13 (mm, inch)(I.D.)
- Tube length: 5m, 20m, 50m, 100m
- Medium: Air, water, others such as chemicals (Conditional)
- Max. operating pressure: 2.4 MPa (at 20ºC, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -65~260ºC (No freezing)



SET [Fluoropolymer (FEP) tube - 5 colors]

FOOD DUST -S3

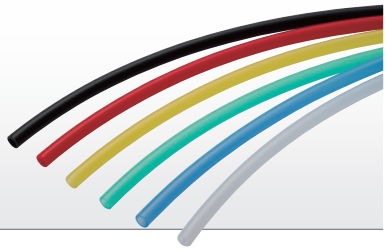
- Superior chemical resistance makes Fluororesin Tube best suited for chemical, food-processing, medical care and semiconductor applications.
- Achieved 44% cost reduction compared with Pisco SFT tube series. Extensive service temperature range.
- Inch size models, perfect to be used with the inch-sized SUS316 compression fitting are prepared.
- Tube dia: ø4 ~ ø16 (O.D.), ø2 ~ ø13 (mm, inch)(I.D.)
- Tube length: 5m, 20m, 50m, 100m
- Medium: Air, water, others such as chemicals (Conditional)
- Max. operating pressure: 2.7 MPa (at 20ºC, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: Air -65~200ºC (No freezing)



CTA [Polyolefin tube - 6 colors]

FOOD DUST -S3

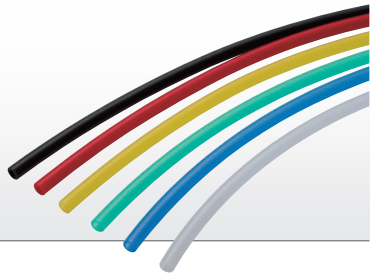
- Suitable for application requiring sufficient flow rate under clean environment. Adopting a polyolefin type resin suitable for clean environment.
- Superior water resistance.
- Cleaning and packing in cleanroom ISO class 6 equivalent.
- Tube dia: ø4 ~ ø16 (O.D.), ø2 ~ ø13 mm (I.D.) , Tube length: 20m, 100m
- Medium: Air, Water, Others such as chemicals (Conditional)
- Max. operating pressure: 1.0 MPa (at 20ºC, 65%RH)
- Max. vacuum: -100 kPa
- Operating temp.: -15~80ºC (No freezing)



CTB [Soft polyolefin tube - 6 colors]

FOOD DUST -S3

- Suitable for application requiring sufficient flow rate under clean environment. Adopting a polyolefin type resin suitable for clean environment.
- Superior water resistance.
- Cleaning and packing in cleanroom ISO class 6 equivalent.
- Tube dia : ø4 ~ ø12.7 (O.D.) , ø2.5 ~ ø8.5 mm (I.D.), tube length : 20m, 100m
- Medium : Air, water, others such as chemicals (Conditional)
- Max. operating pressure : 0.8 MPa (at 20ºC, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -15~80ºC (No freezing)



FB [Anti-spatter - 1 color]

-S3

- Covered with flame-retardant resin UL-94 (V-0 equivalent) exhibits an excellent spatter resistance.
- Can also be used with hot water and thermal oil.
- Tube dia : ø6 ~ ø14.7 (Cover O.D.) ø4 ~ ø12.7 (O.D.), ø2.5 ~ ø9.56 (mm, inch)(I.D.)
- Tube length : 20m, 50m, 100m
- Medium : Air, water, thermal oil (Conditional)
- Max. operating pressure : 1.0 MPa (at 20°C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -15~90°C (No freezing)

UE [Anti-static (ESD) tube - 1 color]

-S3

- Polyurethane based ESD (anti-static) tubing.
  Best suited for use on manufacturing or assembly line that requires dissipation of static electricity and prevention of electrification.
- Tube dia: ø3 ~ ø12 (O.D.), ø2 ~ ø8 mm (I.D.)
- Tube length : 20m, 100m
- Medium : Air
- Surface resistance : -1.4×10^3 Ω·cm
- Max. operating pressure : 0.6 MPa (at 20°C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : -15~40°C (No freezing)

MEMO

TCN -15 [Tube shears]

- Cut tube smoothly.
- Sharp edge and excellent in durability.
- Tube dia (O.D.) : ø3 ~ ø16 mm , ø1/8 ~ ø5/8 inch

TC-21 [Tube cutter]

- The blade has two cutting edges. Change the cutting edge by rotating the blade 180 degree.
- Tube can be cut to required length because of built-in tape measure (1m).
- The tube cutting plane becomes right angled and fine because of the tube guide.
- The lock mechanism keeps the cutter safely locked.
- Tube cutter blade (TC-C).

TSC [Spatter tube remover]

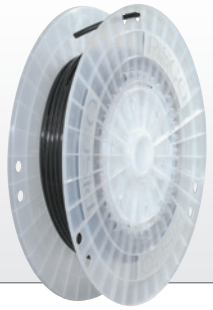
- Peeling only the flame retardant cover of PISCO antispatter tube (FB tube) like sharpening a pencil.
- No damage to the inner tube.
- The transparent cover enables to check cutting progress easily.
- Tube dia (O.D.) : ø4 ~ ø12 mm

TSC Operational Video

- Tube can be cut to required length because of built-in tape measure (1 m)

TR [Tube reel]

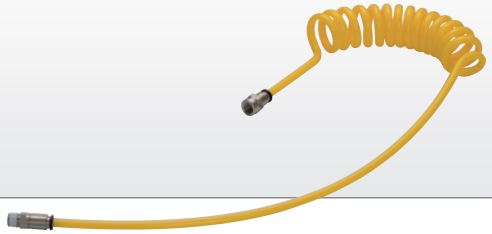
- Easy to supply and change tube.
- 4 Width selections according to tube sizes.
- The reel is reusable to reduce waste. Material of the reel is all plastic.
- Applicable Tube dia. : ø4 ~ ø16 mm , ø1/8 ~ ø1/2 inch
- Operating temp. : -10~50°C



ULT / PCT

[Coiling tube with twist-proof fitting]

- Avoid twisted tube problem for air tool.
- Fittings built-in at both tube end.
- Tube O.D. : ø8, Thread size : R1/4, Rc1/4
- Tube length : 2.5, 5, 7.5, 10m
- Medium : Air
- Max. operating pressure : 0.9 MPa (20°C, 65%RH)
- Max. vacuum : -100 kPa
- Operating temp. : 0~60°C (No freezing)

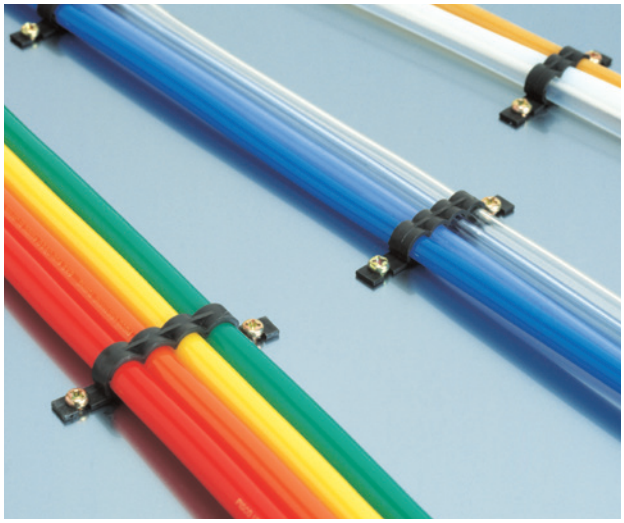


WR [Insert ring]

- Protect tubes from deformation.
- Ultra soft tube is connectable to fitting.
- Necessary for the connection with push-in fitting, when fluid medium is water.
- Tube dia. : ø3x2 ~ ø16x13 mm , ø3/16 ~ ø1/2 inch

TB [Tube binder]

- Bind a plurality of tubes by clamping it.
- Fixable on wall with fixing holes. Fixing hole is removable when unnecessary.
- Number of bound tubes : 2, 3, 4
- Tube dia (O.D.) : ø4~12



ISO Compliant | Variety of Styles | High Quality | Environmental Protection | Special Environment | Clean Environment

Change Valve PISCO®

Change valve	Change valve
Shut-off valve	Hand valve, Ball valve, Ball valve SUS304, Ball valve SUS316 equivalent
Push-type valve	Mechanical valve

-S3 No copper-based material is used (standard)

OIL Oil-free

Semiconductor Industry

Food Industry

Automation Equipment

Pharmaceutical Industry

Secondary Battery

Chemical Industry

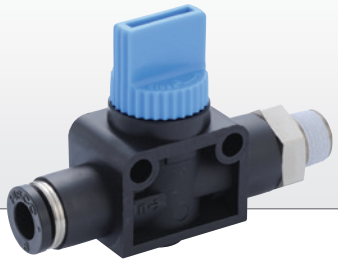
HBV [Change valve - Three-way]

- Changeover air direction by 90°. Fine operability and easy changeover.
- Lightweight and compact design.
- Medium : Air
- Max. operating pressure : 0.7 MPa
- Max. vacuum : -100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø6, 8, 10, 12 mm
  (inch) ø1/4, 5/16, 3/8, 1/2 inch

Video Introduction

HV [Hand valve]

- Hand Valve turns on and off air pressure to pneumatic devices.
- Three-directional control valve, which discharges the residual pressure, and two-directional control valve is available.
- Medium: Air • Max. operating pressure : 1.0 MPa
- Max. vacuum : -100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6, 8, 10, 12 mm
  (inch) ø3/16, 1/4, 5/16, 3/8, 1/2, 5/32 inch
- Thread size : R1/8, 1/4, 3/8, 1/2 , NPT1/8, 1/4, 3/8, 1/2



Video Introduction

BV [Ball valve]

- Ensure Effective area for variety of tube dia. control open/close air supply.
- Easily adjustable lever with scale for 10 series
- PPS Material for 20/60 Series. Water can be used.
- Medium : Air, water (Conditional)
- Effective area : 10, 20, 60 mm^2
- Max. operating pressure : 0.9 MPa
- Max. vacuum : -100 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø3, 4, 6, 8, 10, 12 mm
  (inch) ø1/8, 5/32, 1/4, 5/16, 3/8, 1/2 inch
- Thread size : R1/8, 1/4, 3/8, 1/2

Video Introduction

BV*-SUS [Ball valve SUS304]

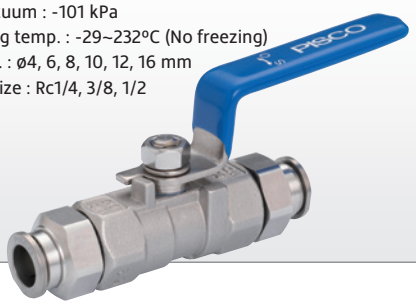
- Corrosion resistant ball valve ideal for use in special environments.
- SUS304 is used for the metal material. FKM is used for the seal material.
- Medium: Air, water, others (Conditional)
- Effective area : 20, 60 mm^2
- Max. operating pressure : 0.9 MPa
- Max. vacuum : -100 kPa
- Operating temp. : 0~80ºC (No freezing)
- Tube dia. : (mm) ø6, 8, 10, 12 mm, (inch) ø1/4, 5/16, 3/8, 1/2 inch
- Thread size : R1/8, 1/4, 3/8, 1/2

-S3

NSB*/ SSPC

[Ball valve SUS316 equivalent]

- SUS316 equivalent material (SUS316 or CF8M) for fluid contact part. Chemical and mixed gas can be used as fluid medium. 1 piece, reduced bore type.
- Medium : Air, Inert gas such as nitrogen/helium (no toxic), water/ liquid (Conditional), others such as chemicals (Conditional)
- Max. operating pressure : 6.9 MPa
- Max. vacuum : -101 kPa
- Operating temp. : -29~232ºC (No freezing)
- Tube dia. : ø4, 6, 8, 10, 12, 16 mm
- Thread size : Rc1/4, 3/8, 1/2



-S3
OIL

MV* [Mechanical valve]

- This push-type valve turns on and off the input of air pressure. The operating force is not affected by the strength of air pressure owing to the spool valve mechanism.
- The three-directional control valve exhausts residual pressure when closed.
- Medium : Air • Operating pressure : 0~0.7 MPa
- Max. vacuum : -101 kPa
- Operating temp. : 0~60ºC (No freezing)
- Tube dia. : (mm) ø4, 6 mm, (inch) ø1/8, 5/32 inch

Video Introduction

Low Wear || Space Saving || High Speed And Stability | | Low Noise | Longevity || Pipeline Integration

Plarailchain PISCO®

Flaps open and closed	HPU, HPO (full-covered open-close flap type), HPE (open-close split flap type), HPC (low noise type)
Flaps fixed	HPK (no flap type), HPM (full-cover type)
Low abrasion and low noise	SP, SPO (low abrasion, low noise, full-covered open-close flap type), SD (high durability, low abrasion)
Minimum dust ejection	SC (low abrasion, low noise), SCL (low abrasion, low noise, space saving)
Operating environment	Avoid using in acid/alkaline atmosphere or in hot water.

DUST Products that generate less dust

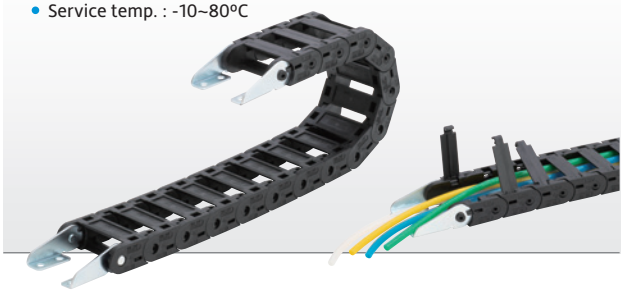
Automation Equipment

Machinery Industry

New Energy Industry

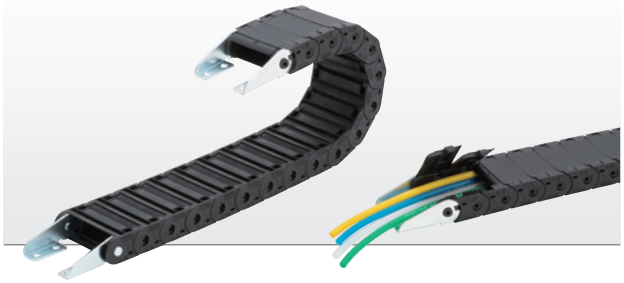
HPU [Open-close flap type]

- The specially designed flaps, opening on either side, facilitate replacement or additional of cables. You can check the cables with the flaps down in place.
- Excellent in safety, durability, smooth movement and easy operation. Capable of following every linear motion and any.
- Bending radius (R) : 19 ~ 200 mm
- Max. cable / Tube dia. O.D.: 7, 11, 19, 36 mm
- Pitch : 20, 25, 32, 45, 70 mm
- Service temp. : -10~80ºC



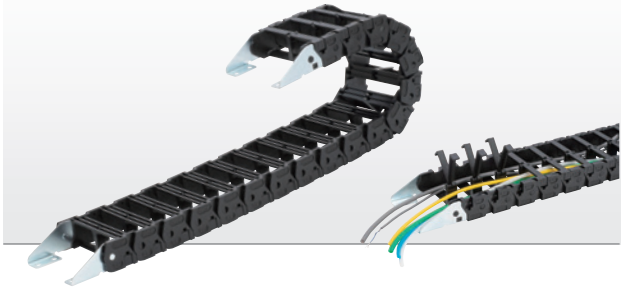
HPO [Full-covered open-close flap type]

- The full-enclosing type protects cables well by preventing entry of dust.
- The flaps can be opened on either side. The specially designed flaps, opening on either side, facilitate replacement or additional of cables.
- Bending radius (R) : 30 ~ 400 mm
- Max. cable / Tube dia. O.D. : 10, 20, 36, 46 mm
- Pitch: 20, 26, 45, 60, 90 mm
- Service temp. : -10~80ºC



HPE [Open-close split flap type]

- Cables can be sorted and accommodated into two compartments.
- The interior space comprises two halves, each of which has its own flaps. The cables can be divided by the type. The flaps of only one side can be opened for replacement of cables there.
- Bending radius (R) : 50 ~ 200 mm
- Pitch : 19 mm
- Pitch : 45 mm
- Service temp. : -10~80ºC

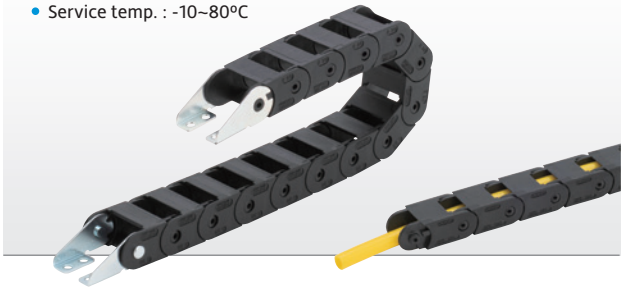


HPC [Low noise type]

- Applying smaller block compositions and special engineering plastics contribute to the low noise.
- The flaps break open in the middle, so that you can add or remove cables simply by pushing in or pulling out.
- Bending radius (R) : 30 ~ 150 mm
- Max. cable / Tube dia. O.D. : 16, 19, 23, 24, 28, 31 mm
- Pitch : 25, 32, 45 mm
- Service temp. : 0~50ºC

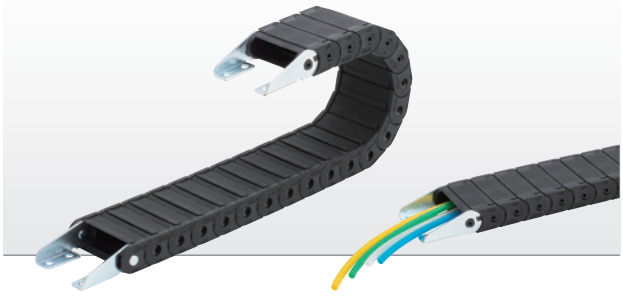
HPK [No flap type]

- Simple one-piece design and cost effective cable carrier.
- The smaller sizes of the series which store even just one cable are available.
- Inner cables can be checked from outside.
- Simple one-piece design and cost effective cable carrier.
- Bending radius (R) : 19 ~ 50 mm
- Max. cable / Tube dia. O.D. : 7, 12 mm
- Pitch: 20, 25, 32 mm
- Service temp. : -10~80ºC



HPM [Full-cover type]

- Simple one-piece design, cost effective, fully-enclosed cable carrier.
- Cost effective and suitable for mass-production machineries.
- Simple design, cost effective, fully-enclosed.
- Bending radius (R) : 28 ~ 50 mm
- Max. cable / Tube dia. O.D. : 13, 14 mm
- Pitch: 15, 22 mm
- Service temp. : -10~80ºC



SP [Low abrasion, low noise, open-close flap type]

- The cable carrier made of special plastic realizes less abrasive wear on cables/tubings in the carrier. Special resin reduces abrasive wear on cables to around one-fourth or one-fifth of other carriers.
- Best suitable for the environment where static electricity should be dissipated.
- Bending radius (R): 30 ~ 400 mm
- Max. cable / Tube dia. O.D.: 12, 16, 20, 28, 34, 36, 44, 60, 64 mm
- Pitch : 25, 32, 36, 43.3, 62.5, 67, 91, 100 mm
- Service temp. : -10~80ºC

SPO [Low abrasion, low noise, full-covered open-close flap type]

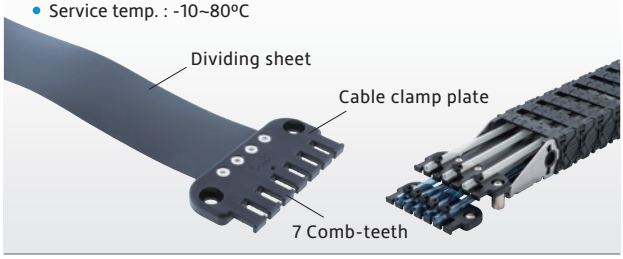
- The cable carrier (full enclosing type) made of special plastic realizes less abrasive wear on cables/tubings in the carrier. Special resin reduces abrasive wear on cables to around one-fourth or one-fifth of other carriers.
- Compared with conventional carriers, the carrier reduces abrasive wear on the cables, hoses in it.
- The flap opens from both sides along the outer radius as well as inner radius.
- Bending radius (R) : 125 ~ 250 mm
- Service temp. : -10~80ºC
- Max. cable / Tube dia. O.D. : 36, 44 mm
- Pitch : 67, 91 mm

SD [High durability, Low abrasion, open-close flap type]

- Can be used for high-speed, high-load drive units.
- The load is distributed by strengthening the joint structure.
- Reduced behavior change. The pitch between link connections has been minimized to achieve smooth operation. Long service life by suppressing splashing during operation and stop.
- Bending radius (R) : 50 ~ 100 mm
- Max. cable / Tube dia. O.D. : 20 mm
- Service temp. : -10~80ºC
- Pitch : 25 mm

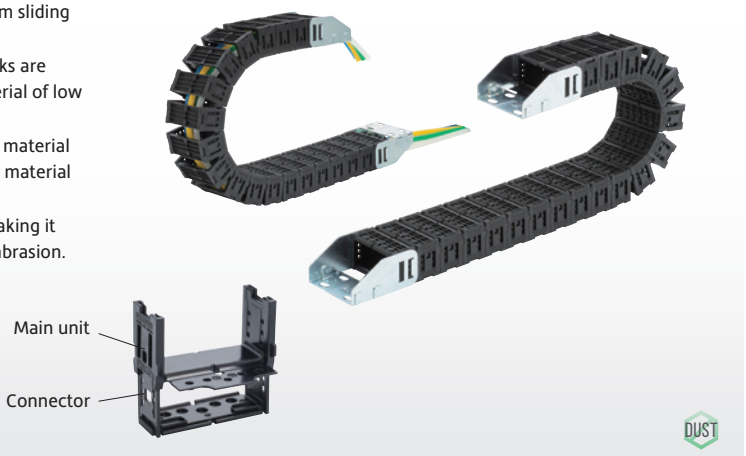
CC [Cable clamp & dividing sheet shelf]

- Easy to fasten and divide the interior cables/tubings. Place cables and tubings along comb-teeth of a cable clamp plate and fasten them with cable ties.
- To reduce drawn-in or protruded cables which may cause wear and tear.
- By using spacers, cables and tubes can be organized into double tier.
- Reduce wear between cables and tubes.
- 7 types, from 4 to 10 comb-teeth, are available according to the plate width.
- Service temp. : -10~80ºC



SC · SCL [Min. dust ejection, low noise, open-close flap, hinge connection type]

- The connecting construction (snap-together) that is free from sliding part minimizes the generation of dust
- Link-against-link friction noise, which is generated when links are traveling, is significantly reduced, thanks to use of soft material of low percussive noise.
- The structure of a hard material frame combined with a soft material frame prevents rigidity reduction, which is incidental to soft material based products.
- Flaps are made of same material as Plarailchain SP series, making it possible to further increase rigidity while decreasing cable abrasion. The flap opens at both sides. It is also removable.
- Bending radius (R) : 28 ~ 115 mm
- Max. cable / Tube dia. O.D.: 12, 16, 20, 24, 28 mm
- Pitch : 18, 20, 30, 45 mm
- Service temp. : -8~80ºC



Lightweight | Variety of Styles | Space Saving | General Environment | Special Environment | High Quality

Auxiliary Equipment

Product item | Floating joint / Rod ends / Shock absorbers / Cable with connector / Connector / Jet cooler / Flow control valve / Quick exhaust valve / Shuttle valve / Silencer throttle valve / Check valve / Silencer / Pilot check valves / Hydraulic speed controllers / Polyurethane tube (PU tube) / Stainless fitting / Coupler / Pneumatic presses

Machinery Industry
Food Industry
Automation Equipment
New Energy Industry
Automotive Industry
Machine Tool

MFC series [Floating Joint]

- Applicable cylinder tube I.D. ø6 ~ 160 mm
- Rotation angle ±5°
- The shaft alignment time for the error tolerance connects between two shafts can be finished and installed easily, even the newcomer can do also.
- Thread size : M3, M4, M5, M6, M8, M10, M12, M14, M16, M18, M20, M22, M24, M26, M27, M30, M36, M39, M40, M45, M50

MFCS series [Floating Joint]

- Applicable cylinder tube I.D. ø6 ~ 32 mm
- Rotation angle ±5°
- The shaft alignment's time for the error tolerance connects between two shafts can be finished and installed easily, even the newcomer can do also.
- Thread size : M3, M4, M5, M6, M8, M10

MDSC series

[Shock absorbers]

- Non-adjustable (Self compensation)
- Thread size : M8×1 ~ M36×1.5
- Stroke : 6~60 mm
- Max. Nm per cycle : 1.8~260 Nm
- Max. impact speed : 0.8~4 m/s

PHS series [Rod ends]

- Dia. A : ø5~30 mm
- Female thread size : M5~M30
- Copper lining structure embedded.
- Carbon steel body.
  High carbon chromium bearing steel.

PHS-S series [Rod ends]

- Dia. A : 5~20 mm
- Female thread size : M4~M20
- Embedded bearing structure.
- Stainless steel body.
  Sintered bronze bush.

MDFC series

[Shock absorbers]

- Adjustable
- Thread size : M14×1 ~ M36×1.5
- Stroke : 10~50 mm
- Max. Nm per cycle : 15~220 Nm
- Max. impact speed : 3.2 m/s

MAC series

[Shock absorbers]

- Self compensation
- Thread size : M8×1 ~ M36×1.5
- Stroke : 6~80 mm
- Max. Nm per cycle : 2~250 Nm
- Max. impact speed : 0.5~4 m/s

MAD series

[Shock absorbers]

- Adjustable
- Thread size : M14×1/1.5 ~ M64×2
- Stroke : 10~150 mm
- Max. Nm per cycle : 20~3600 Nm
- Max. impact speed : 1.5~4.5 m/s

MACD series

[Shock absorbers]

- Dual-side buffering
- Thread size : M20×1.5
- Stroke : 30~50 mm
- Max. Nm per cycle : 45~60 Nm
- Max. impact speed : 1~3.5 m/s

M83R-F series

[Cable with connector]

- Number of contacts : 3
- Rated voltage/current : DC/AC125V / 3A
- Material: Brass (Au plating), contact bearer : PVC
- Spec. : M8 (male) – M8 (female)

IP67

M125R-WB series

[Cable with connector]

- Number of contacts : 5
- Rated voltage/current : DC/AC125V / 3A
- Material: Brass (Au plating), contact bearer : PVC
- Spec. : M12 (female)

B-coded

IP67

M124R-FA series

[Cable with connector]

- Number of contacts : 4
- Rated voltage/current : DC/AC125V / 3A
- Material: Brass (Au plating), contact bearer : PVC
- Spec. : M12 (male) – M12 (female)

A-coded

IP67

M124R-RJD series

[Communication cable Ethernet/IP]

- Number of contacts : 4, 8
- Rated voltage/current : DC/AC30V / 0.5A
- Material: Brass (Au plating), contact bearer : PVC
- Spec. : M12 (male) – RJ45

D-coded

IP67

EtherNet/IP

IP20

M124R-MD series

[Communication cable Ethernet/IP]

- Number of contacts : 4
- Rated voltage/current : DC/AC30V / 0.5A
- Material: Brass (Au plating), contact bearer : PVC
- Spec. : M12 (male) – M12 (male)

D-coded

IP67

M83/84/88 series

[Cable with connector]

- Number of contacts : 3, 4, 8
- Rated voltage/current : DC/AC60V/3A, DC30V/1.5A
- Material : Brass (Au plating), contact bearer : PP, PA
- Spec. : M8 (female)

IP67

M83C-M series

[Connector]

- Number of contacts : 3
- Rated voltage/current : DC/AC60V / 5A
- Housing material : Nylon
- Spec. : M8 (male)

IP67

M124C-M series

[Connector]

- Number of contacts : 4
- Rated voltage/current : DC/AC250V / 4A
- Housing material : Nylon
- Spec. : M12 (male)

A-coded

D-coded

IP50

MJC series

- Jet out cooler air maximum 60°C lower than the inlet air only by supplying compressed air.
- Uses the theory of vortex, no moving parts are used in the construction, hence long life sustainability.
- Does not require coolant or an electrical source, utilises the high speed flow of compressed air for generating cool air from hot air.
  Ideal for applications where rapid cooling is required, e. g., spot welding.
- Can produce consistent supply of cool air even when the supply in is 40 Degrees C.
  By changing air consumption you can simply change the cooling temperature.

Model	Cool air out port	Max. temp. drop °C	Operating pressure MPa
MJC-150K	1/8	60	0.3~0.7
MJC-300K	1/4	60	0.3~0.7
MJC-450K	3/8	60	0.3~0.7
MJC-600K	3/8	60	0.3~0.7

Flow Control Valve

MSC series

Model	Port size	Flow ℓ / min		Number of needle rotations	Operating pressure MPa
		Free	Controlled		
MSC100	M3×0.5, M5×0.8	20, 90	20, 80	6, 8	0.1~0.7
MSC201	1/8, 1/4	110, 140	180, 220	8	0~1
MSC300	3/8, 1/2	300, 400	500, 520	8	0~1
MSC500	1/2, 3/4	5771, 6697	6316, 8384	–	0~1
MSC600	3/4, 1	8221, 14047	8929, 12522	–	0~1

Quick Exhaust Valve

MVQE series

- This unit makes it possible to achieve increased piston speeds on the exhaust stroke for single acting and double acting cylinders.

Model	Port size	Effective orifice mm²		Operating pressure MPa
		IN → OUT	OUT → EXH	
MVQE100	1/8	9	19	0.1~1
MVQE300	1/4, 3/8	24, 25	31, 33	0.1~1
MVQE301	3/8, 1/2	60, 110	70, 110	0.1~1
MVQE400	1/2	46	46	0.1~1
MVQE501	3/4, 1	135, 176	180, 187	0.1~1

MVAS series

[Shuttle valve]

- Port size : 1/8, 1/4
- Operating pressure : 0.1~1 MPa
- Effective orifice : 11.5, 30.5 mm^2
- This valve has two input inlets (E1,E2) and can be controlled in different position. First activated position can get through to output signal (A).

MSLC2 series

[Silencer throttle valve]

- Port size : 1/8, 1/4, 3/8, 1/2
- Operating pressure : 0.1~0.7 MPa

MJBV series

[Check valve]

- Port size : 1/8, 1/4, 3/8, 1/2
- Operating pressure : 0.1~0.7 MPa

MSL series

[Brass silencer]

- Port size : M5, 1/8, 1/4, 3/8, 1/2, 3/4, 1

MSLT series

[Plastic silencer]

- Port size : 1/8, 1/4, 3/8, 1/2, 3/4, 1
- Operating pressure : 0~0.9 MPa

MSLE series

[Plastic silencer]

- Port size : 1/8, 1/4, 3/8, 1/2, 3/4, 1
- Operating pressure : 1 MPa
- Significant noise reduction & high air flow.
- High chemical resistance & Rust free.

MSR series

[Plastic silencer]

- Port size : 1/8, 1/4, 3/8
- Operating pressure : 0~0.9 MPa

MPC series

[Pilot check valve]

- Port size : 1/8, 1/4, 3/8
- Operating pressure : 0.05~0.95 MPa
- Effective orifice : 24, 79 mm2
- Maintains pressure in event of air failure.
- Prevents leakage in an air system.

MEF300 series

[Exhaust cleaner]

- Port size : Rc3/8
- Operating pressure : 0~0.9 MPa
- Filter element : 6 μm
- The MEF300 can remove oil mist and dust in exhaust air for keeping environment clean.

MHR series

- Hydraulic speed controllers are ideal for all kind of cutting tools on machines which need continuous, stable feeding speed.
- Completely sealed construction with anti-dust function to prevent oil leakage, perfect for using in special environment.
- Feeding speeds freely are variable, with reverse travel using powerless springs.
- Small size, easy to install, suitable for robot drilling equipments, conveyor lines, pneumatic tools, woodworking equipments, grinding and cutting machines.

Model	Max. stroke mm	Max. load kfg
MHR-15	15	15~350
MHR-30	30	15~350
MHR-60	60	15~350
MHR-80	80	15~350
MHR-100	100	15~350
MHR-3160	60	30~420
MHRT-60	60	15~350
MHRT-100	100	15~350

Stainless Fitting

MNS* series

- All materials are made of SUS304 / SUS316, which is highly resistant to corrosion, making this series suitable for not only chemical industries but also for airtight special environments (Medical, semiconductor, food, etc.)
- The tube insert part is tightened by a cap nut, ensuring a tight and stable tube.

Model	Type	Tube dia.O.D. mm	Thread size R/Rc	Working vacuum in.Hg (kPa)
MNSC	Straight	4~12, 1/4, 5/16, 3/8, 1/2	1/8, 1/4, 3/8, 1/2	–29.8 (–100)
MNSL	Elbow	4~12, 1/4, 5/16, 3/8, 1/2	1/8, 1/4, 3/8, 1/2	–29.8 (–100)
MNSU	Union straight	4~12, 1/4, 5/16, 3/8, 1/2	–	–29.8 (–100)
MNSV	Union elbow	4~12, 1/4, 5/16, 3/8, 1/2	–	–29.8 (–100)
MNSE	Union tee	4~12, 1/4, 5/16, 3/8, 1/2	–	–29.8 (–100)

Coupler

MS*/ MP* series

- Material : Steel, Brass

Model		Type	Thread size	Hose size	PU size I.D.×O.D.
Socket	Plug				
MSM	**MPM**	Male screw	R1/4, 3/8, 1/2	–	–
MSF	**MPF**	Female screw	Rc1/4, 3/8, 1/2	–	–
MSH	**MPH**	Hose screw	–	5/16, 3/8, 1/2" Hose	–
MSP	**MPP**	Nut style	–	–	5×8, 6.5×10, 8×12

MF* series

- It is the most popular model for export among the air presses and adopts practical construction design. Therefore, it is solid & durable with very low failure rate.
- Popular styles & sizes to meet the demands of all industries. Emphasizes on the safety design to let operators free from danger.
- The distance between working table and cylinder spindle can be changed and adjusted according to the height of cylinder base so as to match the height of the work pieces.
- Because of the light weight of this unit, it is easy to move without affecting the working efficiency.

Model	Port size	Output	Stroke	Stroke adj.	Cylinder dia.	Air consumption
	Rc	kg	mm	mm	mm	ℓ / min
MF100-60	1/4	65	50	30	50	1.2
MF100-100	3/8	120	50	30	63	2
MF101A-100	3/8	120	100	30	63	4
MF101A-200	3/8	200	100	30	80	6
MF101A-300	3/8	300	100	30	100	10
MF102-500	1/2	500	100	30	125	16
MF102-800	1/2	750	100	30	150	23
MF103A-1500	3/4	1350	100	30	200	42
MF103B-3000	3/4	2700	100	30	200×2	65

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High Strength | High Torque | Easy to Maintain | Space Saving | Quick Installation | Longevity

Hydraulic Cylinder

Compact	Short stroke and compact body design minimizes total length.
Round	MDO* series with magnetic piston allows sensors to be used.
Rotary	The body is manufactured in anodized aluminium alloy
Lever-type	Lever type clamp cylinder gives high clamping force. Carbon steel body ensures long life of unit.
Swing clamp	Compact design. Available in both clockwise and anti clockwise movement.
Thread-body	Simple construction, high strength unit ideal for pushing heavy loads.
Work support	Hydraulic work support is used to both minimise vibration during machining and offer increased support.

Agricultural Machinery
Construction Industry
Automotive Industry
Marine Fisheries
Machinery Industry
Heavy Machinery

Hydraulic Cylinder

MDH* series [Double acting]

Model	Double acting & Type	Tube I.D.	Stroke	Max. operating pressure
		mm	mm	MPa
MDHB	Standard type	40, 50, 63, 80, 100, 125, 150	50~1900	14
MDHD	Double rod type	40, 50, 63, 80, 100, 125, 150	50~1900	14
MDHN	Adjustable forward stroke cylinder	40, 50, 63, 80, 100, 125, 150	50~1900	14

MDM* series [Double acting - with magnet]

Model	Double acting & Type	Tube I.D.	Stroke	Max. operating pressure
		mm	mm	MPa
MDMB	Standard type	40, 50, 63, 80, 100	50~500	7
MDMD	Double rod type	40, 50, 63, 80, 100	50~500	7
MDMN	Adjustable forward stroke cylinder	40, 50, 63, 80, 100	50~500	7

Compact Hydraulic Cylinder

MHCB / MHCQ series

- Short stroke and compact body design minimizes total length.
- The cylinder barrel is manufactured from anodised aluminium alloy. Internal wall is specially treated, featuring maximum smoothness and long service.
- High quality and durability.

Model	Type	Tube I.D.	Stroke	Max. operating pressure
		mm	mm	MPa
MHCB	Single rod / Front mounting	20, 25, 32, 40, 50, 63, 80	30~100	14
MHCB-D	Double rod / Front mounting	20, 25, 32, 40, 50, 63, 80	30~100	14
MHCB-DA/B	Double rod / Adjustable stroke	20, 25, 32, 40, 50, 63, 80	30~100	14
MHCQ	Single rod / Side mounting	20, 25, 32, 40, 50, 63, 80	30~100	14
MHCQ-D	Double rod / Side mounting	20, 25, 32, 40, 50, 63, 80	30~100	14
MHCQ-DA/B	Double rod / Adjustable stroke	20, 25, 32, 40, 50, 63, 80	30~100	14

MHCB-M series [With magnet]

- Compact body design makes overall length to the minimum.
- Honed cylinder inner barrel ensures smooth and consistent piston movement.
- High quality materials are used throughout construction.

Model	Type	Tube I.D.	Stroke	Max. operating pressure
		mm	mm	MPa
MHCB-M	Front mounting	32, 40, 50, 63, 80	5~50	7
MHCB-MZ	Front mounting / Male thread	32, 40, 50, 63, 80	5~50	7

Compact Hydraulic Cylinder

MHCB* series [Manifold type]

- Short stroke and compact body design minimizes total length.
- The cylinder barrel is manufactured from anodised aluminium alloy. Internal wall is specially treated, featuring maximum smoothness and long service.
- High quality and durability.

Model	Mounting / Type	Tube I.D. mm	Stroke mm	Max. operating pressure MPa
MHCBR	Front / Axial front manifold type	20, 25, 32, 40, 50, 63, 80	30~50	14
MHCBF	Front / Axial back manifold type	20, 25, 32, 40, 50, 63, 80	30~50	14
MHCBS	Side / Manifold type	20, 25, 32, 40, 50, 63, 80	30~50	14
MHCBS-D	Side / Manifold type / Double rod	20, 25, 32, 40, 50, 63, 80	30~50	14
MHCBS-DA/B	Side / Adjustable stroke / Double rod	20, 25, 32, 40, 50, 63, 80	30~50	14

Round Hydraulic Cylinder

MDO* series [With magnet]

- Hydraulic cylinder with magnetic piston allows sensors to be used.

Model	Type	Tube I.D. mm	Stroke mm	Max. operating pressure MPa
MDOC	Pivot type	20, 32	25~300	3.5
MDOA	Front nose mounting type	20, 32	25~300	3.5
MDOD	Double rod type	20, 32	25~300	3.5
MDON	Adjustable forward stroke type	20, 32	25~300	3.5

Hydraulic Rotary Actuator

MRPH series [With magnet]

- The body is manufactured in anodized aluminium alloy, and has been designed looking at the harmonious aesthetic development.
- Pinion and rack made of carbon steel reduce backlash within the mechanism.
- Rotation adjustment screw.

Model	Type	Tube I.D. mm	Rotation °	Max. operating pressure MPa
MRPH	Male pivot gear	32, 40	90, 180±5	3.5

Hydraulic Lever-Type Cylinder

MHCK series

- Lever type clamp cylinder gives high clamping force. Manifold or freestanding model available.
- Carbon steel body ensures long life of unit. Ideal for use on CNC machine tools where repetitive clamping is required.

Model	Type	Tube I.D. mm	Stroke mm	Max. operating pressure MPa
MHCK	Standard type	25, 32, 40, 50, 63	25~40	0.5~5
MHCK-F	Manifold type	25, 32, 40, 50, 63	25~40	0.5~5

Hydraulic Swing Clamp Cylinder

MTHS / MTHD series

- Compact design. Available in both clockwise and anti clockwise movement.
- Available in single and double arms. Available in inbuilt flow control.
- Standard angle of rotation: 90°±2° (0°, 45°, 60° are optional)

Model	Double acting / Type	Tube I.D. mm	Swing stroke mm	Clamping stroke mm	Operating pressure MPa
MTHS	Single side clamping arm	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17, 30, 34	0.5~7
MTHS-FC	Single side clamping arm (With flow control)	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17	0.5~7
MTHS-F	Single side clamping arm	25, 32, 40, 50	9, 11, 13	13, 15, 17	0.5~7
MTHS-MF	Single side clamping arm	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17	0.5~7
MTHD	Double sides clamping arm	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17, 30, 34	0.5~7
MTHD-FC	Double sides clamping arm (With flow control)	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17	0.5~7
MTHD-F	Double sides clamping arm	25, 32, 40, 50	9, 11, 13	13, 15, 17	0.5~7
MTHD-MF	Double sides clamping arm	25, 32, 40, 50, 63	9, 11, 13	13, 15, 17	0.5~7

Hydraulic Work Support

MSP series

- Hydraulic work support is used to both minimise vibration during machining and offer increased support.
- A type unit works on the outward stroke with a internal spring.
- B type unit works with oil pressure providing the motive force.

Model	Type	Tube I.D. mm	Stroke mm	Max. operating pressure MPa
MSP-A	Single acting / Spring outward stroke	16	8	10~35
MSP-B	Single acting / Oil pressure motive force	16	8	10~35

MHS*/ MHTS* series

- Double clamp retracting, the piston rod rotates, causing the clamping arm to swing in either a clockwise or counterclockwise direction.
- Pull cylinder type, available in rotation angles of 0°, 45°, 60° or 90°.
- The cylinder body is made of aluminum alloy and the surface is hardening treated.

Model	Double acting / Type	Tube I.D.	Swivel stroke	Clamping stroke	Operating pressure
		mm	mm	mm	MPa
MHS	Single side clamping arm / Flange	25, 32, 40, 50, 63	12, 14	14, 15	2~4.5
MHSD	Double side clamping arm / Flange	25, 32, 40, 50, 63	12, 14	14, 15	2~4.5
MHTS	Single side clamping arm / Threaded	25, 32, 40, 50, 63	12, 14	14, 15	2~4.5
MHTSD	Double side clamping arm / Threaded	25, 32, 40, 50, 63	12, 14	14, 15	2~4.5

MF*/ MD* series [High oil pressure]

- Double clamp retracting, the piston rod rotates, causing the clamping arm to swing in either a clockwise or counterclockwise direction.
- Pull cylinder type, available in rotation angles of 0°, 45°, 60° or 90°.
- The cylinder body is made of carbon steel and the surface is hardening treated.

Model	Type	Tube I.D.	Swivel stroke	Clamping stroke	Operating pressure
		mm	mm	mm	MPa
MFS	Single side clamping arm / Flange	25, 32, 40	12, 15	11, 18	5~21
MDS	Double side clamping arm / Flange	25, 32, 40	12, 15	11, 18	5~21
MFT	Single side clamping arm / Threaded	25, 32, 40	12, 15	11, 18	5~21
MDT	Double side clamping arm / Threaded	25, 32, 40	12, 15	11, 18	5~21

Hydraulic Threaded-Body Cylinder

MTC series

- Simple construction, high strength unit ideal for pushing heavy loads.
- Threaded body design allows quick and easy installation.
- Additional mounting heads can be fitted to the rod.
- Teflon packing ensures zero leakage.

Model	Type	Tube I.D.	Stroke	Max. operating pressure
		mm	mm	MPa
MTC-A	Single acting / No thread	12, 16, 20, 25	10, 12, 15, 16	2~35
MTC-B	Single acting / Female thread	12, 16, 20, 25	10, 12, 15, 16	2~35

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