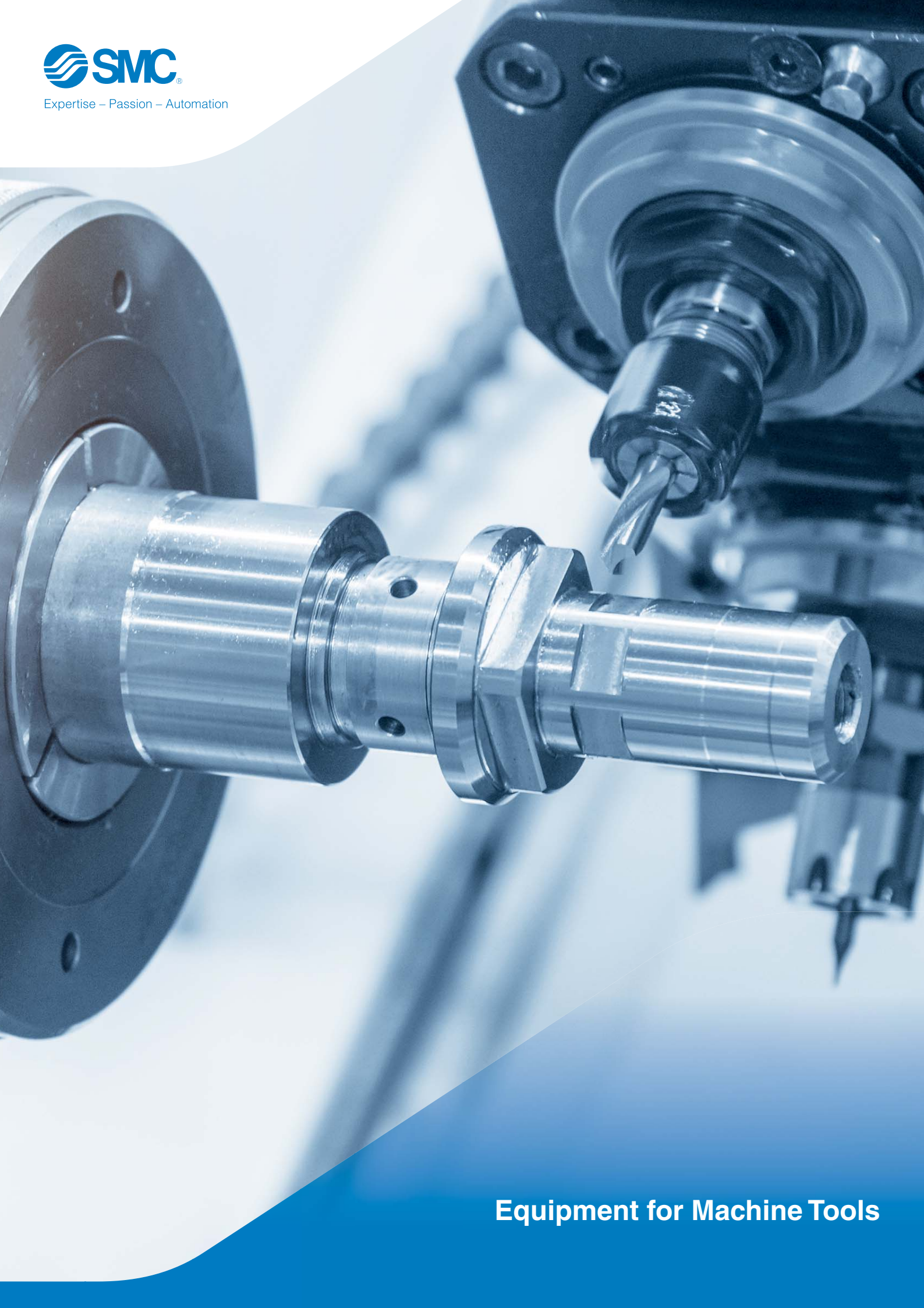
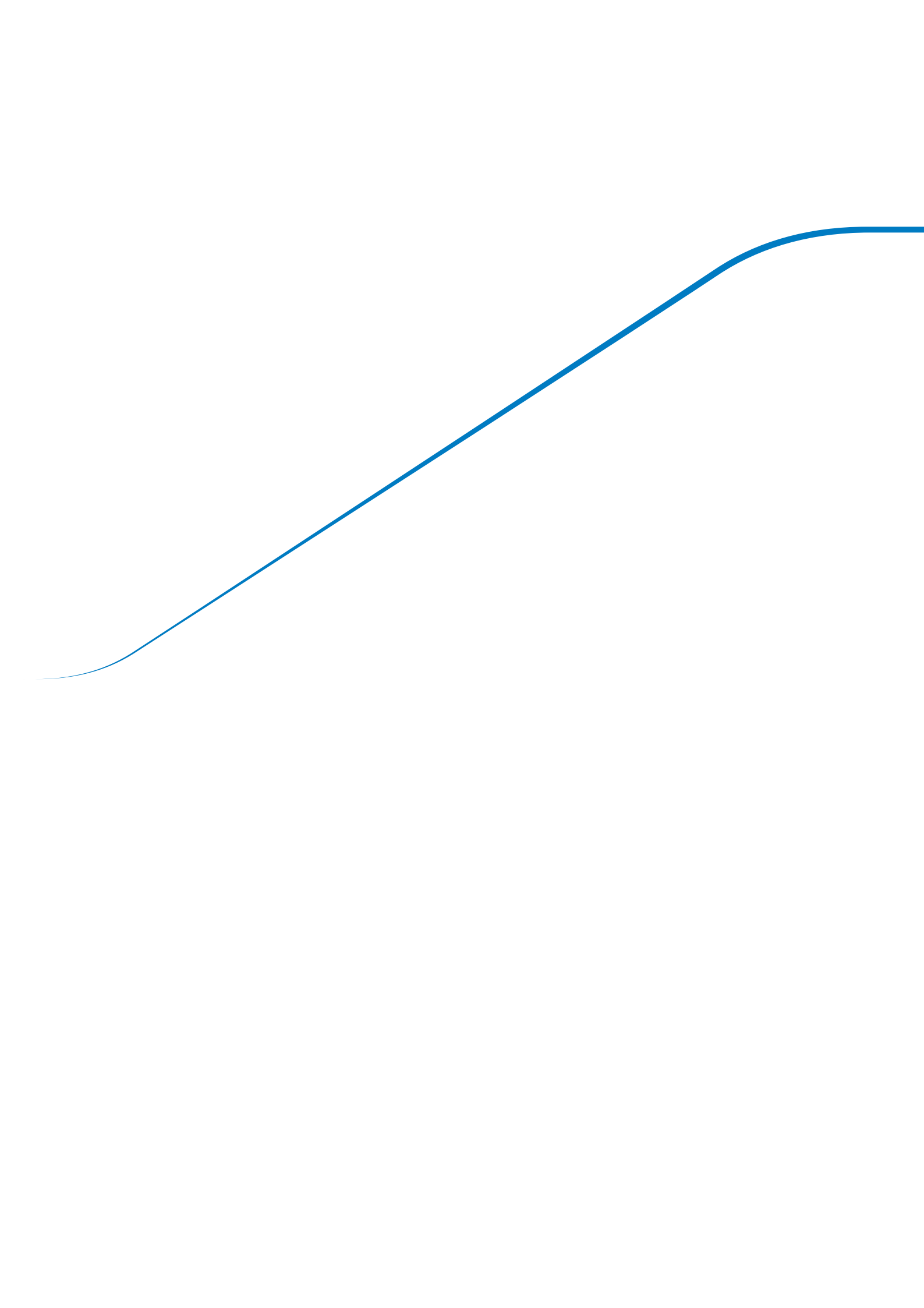




Expertise – Passion – Automation



Equipment for Machine Tools



Equipment for machine tools



The machine tools industry has evolved with the development of both hardware technology and software applications. This has resulted in machines becoming faster, intelligent, and versatile. At SMC, we have also been developing our solutions to enable them to rise to the challenge and provide our customers with that edge their machines need.

Solutions that ensure high precision, others that endure long periods of operation, or components with low energy consumption to contribute to a higher energy efficiency. From products that ensure that compressed

air, refrigerants or other fluids are properly filtered and monitored, to highly reliable temperature control chillers. Ultimately we try to cover all the different casuistries and challenges this industry faces on a daily basis.

What's more important is that our machinery tool customers have our global network of 500 SMC offices at their disposal in 83 countries throughout the world (find the full list on page 51). Because at SMC, we aim to be close to our customers so they get the best possible support.

Index by Model	P.3
Air Preparation Equipment	P.7
Air Pressure Supply Equipment	P.10
Sensing Equipment	P.15
Coolant Equipment	P.21
Automatic Doors/Transfer Equipment	P.25
Various Blow Equipment	P.34
Other Equipment (Special)	P.37
Piping Equipment	P.41
Temperature Control Equipment	P.45
Laser Beam Machine Equipment	P.45
Global Service Network	P.51

Index by Model

Equipment	Theme	Air Preparation Equipment	Air Pressure Supply Equipment	Sensing Equipment	Coolant Equipment	Automatic Doors/Transfer Equipment	Various Blow Equipment	Other Equipment (Special)	Piping Equipment	Temperature Control Equipment	Laser Beam Machine Equipment
Pneumatic Solenoid Valves											
Plug-in Type			P.13								
5 Port Solenoid Valve/SY3000/5000/7000			P.13								
5 Port Solenoid Valve/SY3000/5000/7000/9000			P.13								
Compliant with ISO13849-1 Categories: 3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position/VP/VG			P.13								
Modular Connection Type Residual Pressure Relief 3 Port Solenoid Valve/VP500/700			P.14								
Mechanical Valves											
Compliant with OSHA Standards: Pressure Relief 3 Port Valve with Locking Holes/VHS			P.11								
Air Cylinders											
Air Cylinder/JCM						P.27					
Air Cylinder/JMB						P.27					
Compact Cylinder/JCQ						P.27					
Water Resistant Cylinder					P.22	P.26					
Compact Guide Cylinder/JMGP						P.27					
Compact Guide Cylinder/MGP						P.26					
Cylinder with Lock/CNA2						P.26					
Cylinder with Lock/MWB						P.26					
Cylinder with Lock/CLS						P.26					
Cylinder with Lock/CNS						P.26					
Compact Cylinder with Lock/CLQ						P.26					
Compact Cylinder with Air Cushion and Lock/RLQ						P.26					
Compact Guide Cylinder with Lock/MLGP						P.26					
Auto Switch											
Water Resistant Solid State Auto Switch/D-M7BAL-1232					P.22						
Rodless Cylinders											
Mechanically Jointed Rodless Cylinder with Protective Cover/MY1□W						P.27					
Specialty Cylinders											
High Power Cylinder/RHC						P.27					
Rotary Clamp Cylinder/MK						P.27					
Stroke Reading Cylinders											
High Precision Stroke Reading Cylinder/CEP1				P.20							
Stroke Reading Cylinder/CE1				P.20							
Multi-counter/CEU5				P.20							
Card Motor/LAT3				P.20							
Air Grippers											
Linear Guide Parallel Type Air Gripper/MHZ□2						P.28					
Slide Guide Round Body Air Gripper: 2-Finger, 3-Finger, 4-Finger Type/MHS						P.28					
Air Gripper Reverse Unit Made to Order						P.28		P.38			
Vacuum Equipment											
Vacuum Unit/ZK2						P.32					
Body Ported Type Vacuum Ejector/ZH						P.32					

Equipment	Theme	Air Preparation Equipment	Air Pressure Supply Equipment	Sensing Equipment	Coolant Equipment	Automatic Doors/Transfer Equipment	Various Blow Equipment	Other Equipment (Special)	Piping Equipment	Temperature Control Equipment	Laser Beam Machine Equipment
Vacuum Pad/ZP3						P.32					
Vacuum Pad/ZP3E						P.32					
Compact, Short, Nozzle Pad/ZP2						P.32					
Electric Actuators											
Slider Type, Ball Screw Drive/LEFS						P.28					
Slider Type, Belt Drive/LEFB						P.28					
High Rigidity Slider Type, Ball Screw Drive/LEJS						P.28					
High Rigidity Slider Type, Belt Drive/LEJB						P.29					
Guide Rod Slider/LEL						P.29					
Low Profile Slider Type/LEM						P.29					
Rod Type/LEY						P.29					
Guide Rod Type/LEYG						P.29					
Electric Slide Table/LES/LESH						P.30					
Miniature Type/LEP□						P.30					
Electric Rotary Table/LER						P.30					
Electric Gripper/LEH						P.30					
Dust-tight/Water-jet-proof (IP65 Equivalent) Rod Type/LEY-X5						P.29					
Controller/Driver/LEC□/JXC□/LECS□/LECY□						P.31					
Motorless Type/LE						P.31					
Air Preparation Equipment											
Refrigerated Air Dryer/IDFA100F/125F/150F		P.9									
Refrigerated Air Dryer/IDFA□E		P.9									
Thermo-dryer with Air Temperature Adjustment Function/IDH□		P.9									
Membrane Air Dryer/IDG□A/IDG			P.12								P.50
Water Separator/AMG		P.8	P.12								
Main Line Filter/AFF		P.8	P.12								
Mist Separator/AM		P.9	P.12								
Micro Mist Separator/AMD		P.9	P.12								
Micro Mist Separator with Pre-filter/AMH			P.12								
Super Mist Separator/AME		P.9	P.12								
Odor Removal Filter/AMF		P.9	P.12								
Modular F.R.L.											
Modular F.R.L. Units/AC			P.11								
Regulator with Built-in Pressure Gauge/ARG			P.11								
Modular Adapter/E210/310/410			P.11								
Soft Start-up Valve/AV			P.11								
Pressure Control Equipment											
Precision Regulator/IR1000-A/2000-A/3000-A								P.38			
5.0 MPa Maximum Supply Pressure High Pressure Electro-Pneumatic Regulator/ITVX											P.48
Booster Regulator/VBA								P.38			
Air Tank/VBAT								P.38			
Lubrication Equipment											
Large Flow Lubricator/AL800/900								P.39			
Mist Spray Unit/LMU								P.39			
<Related Products> Mixing Valve/LMV								P.39			

Equipment	Theme	Air Preparation Equipment	Air Pressure Supply Equipment	Sensing Equipment	Coolant Equipment	Automatic Doors/Transfer Equipment	Various Blow Equipment	Other Equipment (Special)	Piping Equipment	Temperature Control Equipment	Laser Beam Machine Equipment
<Related Products> Magnet Holder/LMH								P.39			
<Related Products> Branch Pipe/LMD								P.39			
Lubrication Equipment											
Impulse Lubricator/ALIP								P.40			
Liquid Collector: Exhaust Pressure Type/AEP100								P.39			
Liquid Collector: Ejector Type/HEP500								P.39			
Fittings											
One-touch Fittings/KQ2									P.42		
Metal One-touch Fittings/KQB2									P.42		
Insert Fittings/KF									P.42		
Self-align Fittings/H/DL/L/LL									P.42		
S Couplers/KK									P.42		
S Couplers/KK130			P.14						P.42		
Stainless Steel 316 One-touch Fittings/KQG2									P.42		
Stainless Steel 316 Insert Fittings/KFG2									P.42		
S Couplers: Stainless Steel Type/KKA									P.42		
Tubing											
Polyurethane Tubing/TU/TIUB									P.43		
Wear Resistant Tubing/TUZ									P.43		
Polyurethane Coil Tubing/TCU							P.36				
FR Soft Nylon Tubing/TRS									P.43		P.49
FR Double Layer Tubing/TRB									P.43		P.49
FR Double Layer Polyurethane Tubing/TRBU									P.43		P.49
FR Three-layer Polyurethane Tubing/TRTU									P.44		P.49
Fluoropolymer Tubing/TL/TIL									P.44		P.49
Flow Control Equipment											
Speed Controller with One-touch Fittings Push-lock Type/AS									P.44		
Speed Controller with Indicator/AS-FS									P.44		
Dual Speed Controller/ASD									P.44		
Speed Controller with Pilot Check Valve/ASP									P.44		
Check Valve/AK											P.49
Blow Guns											
Blow Gun/VMG							P.35				
Nozzles for Blowing/KN							P.36				
Pressure Switches											
3-Screen Display High-Precision Digital Pressure Switch/ZSE20(F)/ISE20			P.14	P.16							
3-Screen Display High-Precision Digital Pressure Switch/ZSE20B(F)/ISE20B			P.14	P.16							
3-Screen Display High-Precision Digital Pressure Switch/ISE7□/7□G				P.16	P.23						
3-Screen Display High-Precision Digital Pressure Switch/ZSE20C(F)/ISE20C(H)				P.16	P.23						
3-Colour Display Digital Gap Checker/ISA3				P.17							
Compact Pneumatic Pressure Sensor/PSE54□				P.17							
Low Differential Pressure Sensor/PSE550				P.17							
Pressure Sensor for General Fluids/PSE57□				P.17	P.24						

Equipment	Theme	Air Preparation Equipment	Air Pressure Supply Equipment	Sensing Equipment	Coolant Equipment	Automatic Doors/Transfer Equipment	Various Blow Equipment	Other Equipment (Special)	Piping Equipment	Temperature Control Equipment	Laser Beam Machine Equipment
Multi-Channel Digital Pressure Sensor Controller/PSE200				P.18	P.24						
2-Colour Display Digital Pressure Sensor Controller/PSE300				P.18	P.24						
Pneumatic Pressure Switch/IS3000				P.18							
General Purpose Pressure Switch: Snap Switch Type/ISG				P.18							
Flow Switches											
2-Colour Display Digital Flow Switch/PFMB				P.18			P.36				
3-Colour Display Digital Flow Switch/PFMC				P.19			P.36				
Digital Flow Switch for Air/PF3A7□H				P.19							
3-Colour Display Digital Flow Switch for Water/PF3W				P.19							
3-Colour Display Electromagnetic Type Digital Flow Switch/LFE□				P.19	P.24						
2/3 Port Valves for Fluid Control											
Direct Operated 2 Port Solenoid Valve/VX2							P.35				P.48
Pilot Operated 2 Port Solenoid Valve/VXD							P.35				
Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve/VXZ							P.35				
5.0 MPa Pilot Operated 2/3 Port Solenoid Valve & Check Valve/VCH/VCHC											P.48
Direct Operated Regulator for 6.0 MPa (Relieving Type)/VCHR											P.48
Pilot Operated 2 Port Solenoid Valve for Dry Air/VQ20/30							P.35				
Coolant Valve/SGC					P.22						
High Pressure Coolant Valve/SGH					P.22						
4 Port Coolant Valve Made to Order					P.22						
Temperature Control Equipment											
Thermo-chiller: Standard Type/HRS										P.46	P.50
Thermo-chiller: Standard Type/HRS090										P.46	
Thermo-chiller: Standard Type/HRS100/150										P.46	
Thermo-chiller: Inverter Type/HRSH090										P.46	
Thermo-chiller: Inverter Type/HRSH										P.46	P.50
Thermo-chiller: Basic Type/HRSE										P.46	
Process Pumps											
Process Pump/Double Acting Pump/PA								P.40			
Process Pump/Single Acting Pump/PB								P.40			
Industrial Filters											
Vessel Series/FGD					P.23						
Bag Filter/FGF					P.23						
Quick Change Filter/FQ1					P.23						
Low Maintenance Filter/FN1/FN4					P.23						
Hydraulic Cylinders											
Compact Hydraulic Cylinder/CHQ/CHDQ						P.33					
Small Bore Hydraulic Cylinder/CHN						P.33					
Compliant with JIS Standards: Hydraulic Cylinder/CH2E/CH2F/CH2G/CH2H						P.32					
Compact Hydraulic Cylinder/CHK						P.33					
Air Hydro Converter/CCT						P.33					
Air-Hydro Booster Made to Order						P.33					
Hydraulic Equipment											
Line Filter/FH34/44/54/64					P.24						
Magnetic Separator/FHM					P.24						



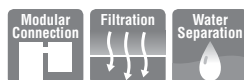
Air Preparation Equipment



Main Line Filter AFF Series

RoHS

- Nominal filtration rating:
1 to 3 μm (Filtration efficiency: 99 %)
- Rated flow: 300 to 14500 l/min (ANR)
- Port size: 1/8 to 2
- Modular connection (1/8 to 1)



Water Separator AMG Series

RoHS

- Water removal rate: 99 %
- Rated flow: 300 to 12000 l/min (ANR)
- Port size: 6A to 50A (1/8 to 2)
- Modular connection (1/8 to 1)



Refrigerated Air Dryer IDFA100F/125F/150F Series

- Exhaust heat: Reduced by up to 25 %
- Applicable compressor: 100, 125, 150 kW
- Air flow capacity: 860 to 1340 m³/h (ANR)
- Refrigerant: R407C (HFC)



Refrigerated Air Dryer IDFA□E Series

- Applicable compressor: 0.75 to 370 kW
- Air flow capacity: 12 to 822 m³/h (ANR)
- Refrigerant: R134a (HFC), R407C (HFC)
Zero ozone depletion potential



Thermo-dryer with Air Temperature Adjustment Function IDH□ Series

CE RoHS

- Provides a stable supply of temperature and pressure controlled dry clean air.
It is possible to supply compressed air with the same conditions and quality regardless of the season.
- Built-in filter
Filter nominal filtration rating: 0.01 μm (99.9 % filtration efficiency)
Outlet oil mist concentration: Max. 0.01 mg/m³ (ANR)
Outlet cleanliness:
Particles of 0.3 μm or more: 3.5 particles/L (ANR) or less
- Compatible with power supplies all over the world
Single-phase 100 VAC, 200 VAC, 230 VAC (50/60 Hz)



<Application Example>

Supplying compressed air with fixed conditions to air bearings mounted on a tool.



Mist Separator AM Series

- Nominal filtration rating:
0.1 (Filtration efficiency: 95 %) to 0.3 μm
(Filtration efficiency: 99.9 %)
- Rated flow: 300 to 14500 l/min (ANR)
- Port size: 1/8 to 2



RoHS

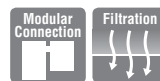


Super Mist Separator AME Series

- Nominal filtration rating:
0.01 μm (Filtration efficiency: 99.9 %)
- Rated flow: 200 to 12000 l/min (ANR)
- Port size: 6A to 50A (1/8 to 2)



RoHS

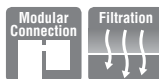


Micro Mist Separator AMD Series

- Nominal filtration rating:
0.01 μm (Filtration efficiency: 99.9 %)
- Rated flow: 200 to 14500 l/min (ANR)
- Port size: 1/8 to 2



RoHS



Odor Removal Filter AMF Series

- Nominal filtration rating:
0.01 μm (Filtration efficiency: 99.9 %)
- Rated flow: 200 to 12000 l/min (ANR)
- Port size: 6A to 50A (1/8 to 2)



RoHS





Air Pressure Supply Equipment



Modular F.R.L.

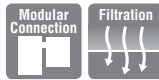
Modular F.R.L. Units

AC Series

- Better visibility & environmental resistance
- Easy element replacement
Integrated element and bowl.
Replacement can be done in hand.
- Reduced required maintenance space: Max. 46 % reduction
- Pressure gauge is selectable according to application.
Square embedded type pressure gauge, Round type pressure gauge, Digital pressure switch

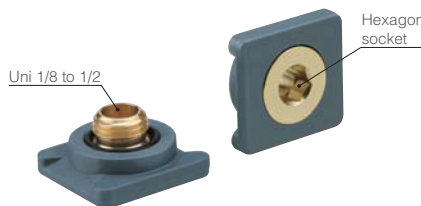


RoHS



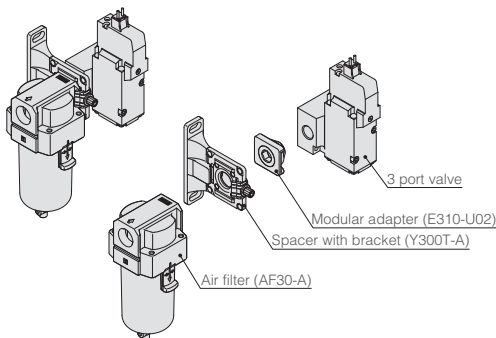
Modular Adapter

E210/310/410 Series



Modular Connection

Connects easily to current products!
Example) Air filter + 3 port valve



Flexible mounting

- Can be connected to current products such as 3 port valves and F.R.L. Units.
- Can be freely rotated, thus allowing a wide selection of mounting directions.
- Can be connected to current products of different sizes.
Example: AF30 + ARG20

Reduced space/piping maintenance cost

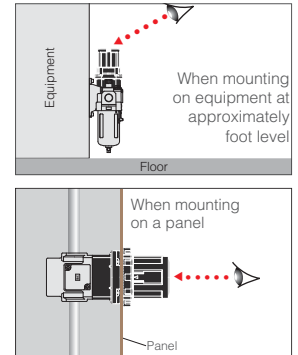
- Can be connected/disconnected without rotation.
- Fittings, tube, etc. are not required for connection.

Regulator with Built-in Pressure Gauge

ARG Series

Visibility of pressure gauge is improved in various installation places.

Modular Connection



Soft Start-up Valve

AV 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

CE RoHS



F.R.L. combination

Mechanical valves

Compliant with OSHA Standards: Pressure Relief 3 Port Valve with Locking Holes

VHS Series

RoHS

- Compliant with OSHA standards (Occupational Safety and Health Administration Department of Labour).
- Manually operated valve can be used to prevent accidents caused by residual pressure in pneumatic lines.
- It is possible to verify the supply and exhaust status of air flow at a glance.
- When in the exhaust position, the valve may be padlock secured. Prevents accidental start-ups while personnel are cleaning or servicing equipment.
- Push the handle and then turn.
2-step action prevents malfunction.



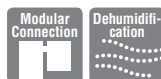
For pressure relief

Air preparation equipment

Membrane Air Dryer IDG□A/IDG Series

RoHS

- It is possible to easily supply dry air using the hollow fibre membrane.
- Non-fluorocarbon
- Power supply not required.
- Compatible with low dew points (-60 °C)
- No vibration or heat discharge.
- With a dew point indicator



Water Separator AMG Series

RoHS

- Eliminates water droplets in the compressed air.
- Water removal rate: 99 %
- Easy! Convenient! Eliminates water droplets just by connecting to air line!



Series	AMG
Air flow capacity [l/min (ANR)]	300 to 12000
Port size	1/8 to 2

Air Preparation Filters AFF/AM□ Series

RoHS



Main Line Filter AFF Series

Series	AFF
Nominal filtration rating [μm]	1 to 3 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	300 to 14500
Port size	1/8 to 2



Micro Mist Separator AMD Series

Series	AMD
Nominal filtration rating [μm]	0.01 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	200 to 14500
Port size	1/8 to 2



Super Mist Separator AME Series

Series	AME
Nominal filtration rating [μm]	0.01 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	200 to 12000
Port size	1/8 to 2



Mist Separator AM Series

Series	AM
Nominal filtration rating [μm]	0.1 (95 %) to 0.3 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	300 to 14500
Port size	1/8 to 2



Micro Mist Separator with Pre-filter AMH Series

Series	AMH
Nominal filtration rating [μm]	0.01 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	200 to 12000
Port size	1/8 to 2



Odor Removal Filter AMF Series

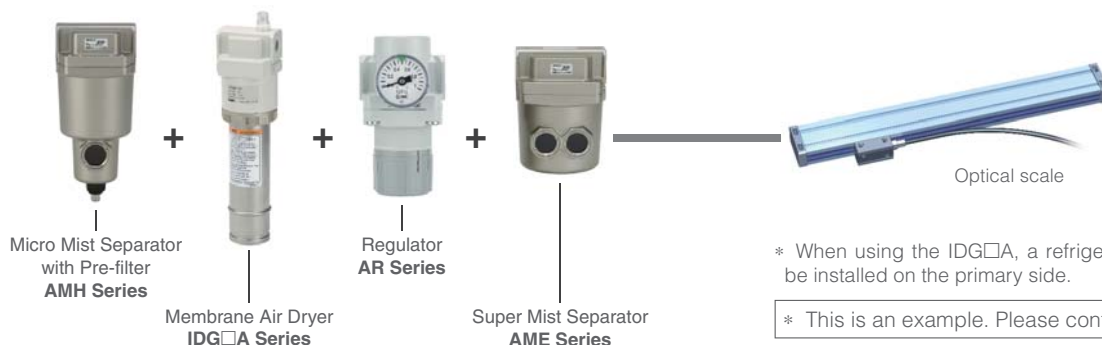
Series	AMF
Nominal filtration rating [μm]	0.01 (Filtration efficiency: 99.9 %)
Rated flow [l/min (ANR)]	200 to 12000
Port size	1/8 to 2

ISO Quality Class

Select equipment according to the compressed air quality class in ISO 8573-1:2010 (JIS B 8392-1:2012).

<Example of System>

Air of the quality class required by the application can be acquired.



* When using the IDG□A, a refrigerated air dryer should be installed on the primary side.

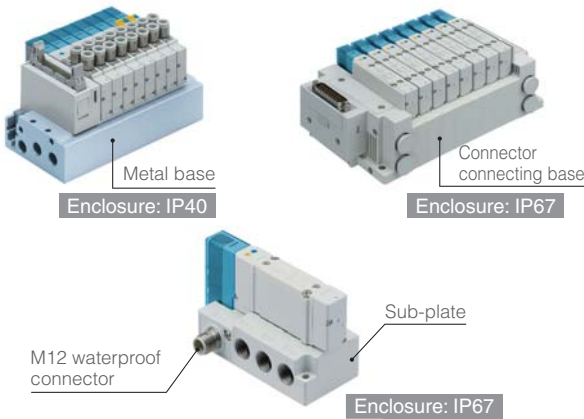
* This is an example. Please contact SMC for details.

Pneumatic Solenoid Valves

Plug-in Type

5 Port Solenoid Valve SY Series

- Power consumption: 0.1 W (With power saving circuit)/0.35 W (Standard)
- Service life: 200 million cycles (Metal seal)/70 million cycles (Rubber seal)

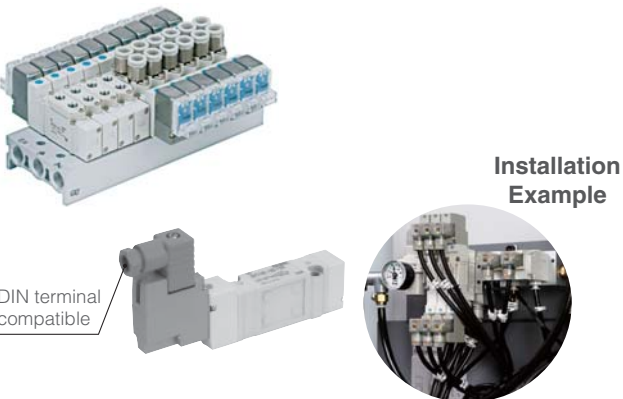


Series	Flow rate characteristics		Applicable cylinder size*1
	4/2→5/3 (A/B→EA/EB)		
	C[dm³/(s·bar)]	b	
SY3000	1.6	0.19	Ø 50
SY5000	3.6	0.17	Ø 63
SY7000	5.9	0.20	Ø 80

*1 Use as a guide for selection.
Please check the actual conditions with SMC Model Selection Software.

5 Port Solenoid Valve SY Series

- Power consumption: 0.1 W (With power saving circuit)/0.35 W (Standard)
- Combined mounting of 3 port valve and 5 port valve is possible.
- A wide variety of manifold options, such as aluminium body manifold, DIN rail, and stacking type manifold, are available.
- UL Standards compliant product is available. (30-SY)



Series	Flow rate characteristics		Applicable cylinder size*1
	4/2→5/3 (A/B→EA/EB)		
	C[dm³/(s·bar)]	b	
SY3000	1.1	0.30	Ø 40
SY5000	2.8	0.29	Ø 63
SY7000	4.5	0.27	Ø 80
SY9000	10	0.29	Ø 100

*1 Use as a guide for selection.
Please check the actual conditions with SMC Model Selection Software.

Compliant with ISO13849-1 Categories: 3 Port Solenoid Valve/Residual Pressure Release Valve with Detection of Main Valve Position VP/VG Series

With Detection of Main Valve Position **Category 2**

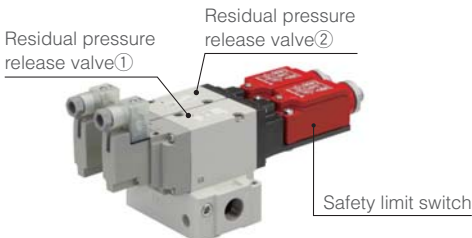
The detecting function of the main valve position detects inconsistencies between the input signal and valve operation.



Redundant system can be constructed easily. **Category 3, 4**

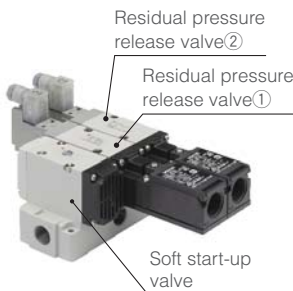
When the dual residual pressure release valve is used, if one of the valves fails to operate, the other one releases residual pressure.

Dual Residual Pressure Release Valve
VP544-X538



With Soft Start-up Function
VP544-X555

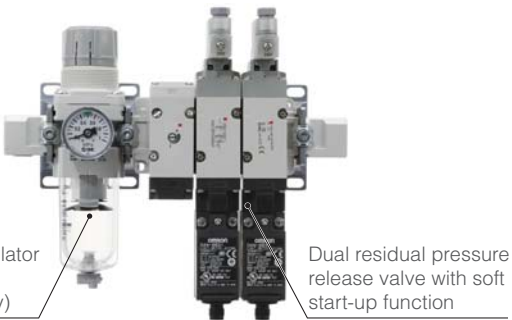
A function to gradually increase the initial pressure of the pneumatic system has been added to the dual residual pressure release valve.



Dual Residual Pressure Release Valve
VG342-X87



Can be connected to modular type F.R.L. units.



Products do not come assembled. They should be ordered separately and assembled by the customer.

Modular Connection Type Residual Pressure Relief 3 Port Solenoid Valve VP500/700 Series

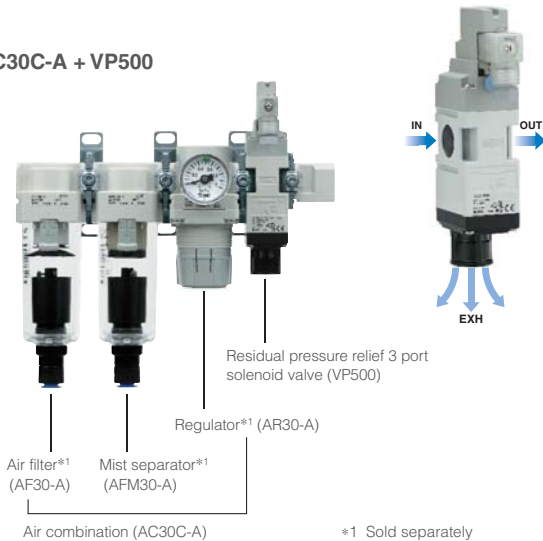


- Allows for space saving and reduced piping labour.
- Power consumption: 0.35 W (Without light)
- Can be connected to F.R.L. units.



Series	Applicable combination		
	AC25-A	AC30-A	AC40-A
VP500	●	●	
VP700			●

AC30C-A + VP500



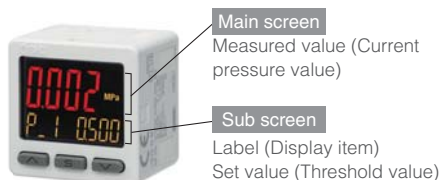
Products do not come assembled. They should be ordered separately and assembled by the customer.

Pressure switches

3-Screen Display High-Precision Digital Pressure Switch ISE20 Series



- Visualisation of setting items
- Simple 3-step setting
- Easy screen switching:
Setting is possible while checking the measured value.
- Delay time: Fastest 1.5 ms or less
- Current consumption: 25 mA or less
- Enclosure: IP40



Series	Type	Rated pressure range
ISE20	Positive pressure	-0.100 to 1.000 MPa

3-Screen Display High-Precision Digital Pressure Switch ISE20B Series



- Enclosure: IP65
- Can copy up to 10 switches simultaneously
- 3-step setting
- Setting is possible while checking the measured value
- Delay time: fastest 1.5 ms or less
- Current consumption: 35 mA or less.



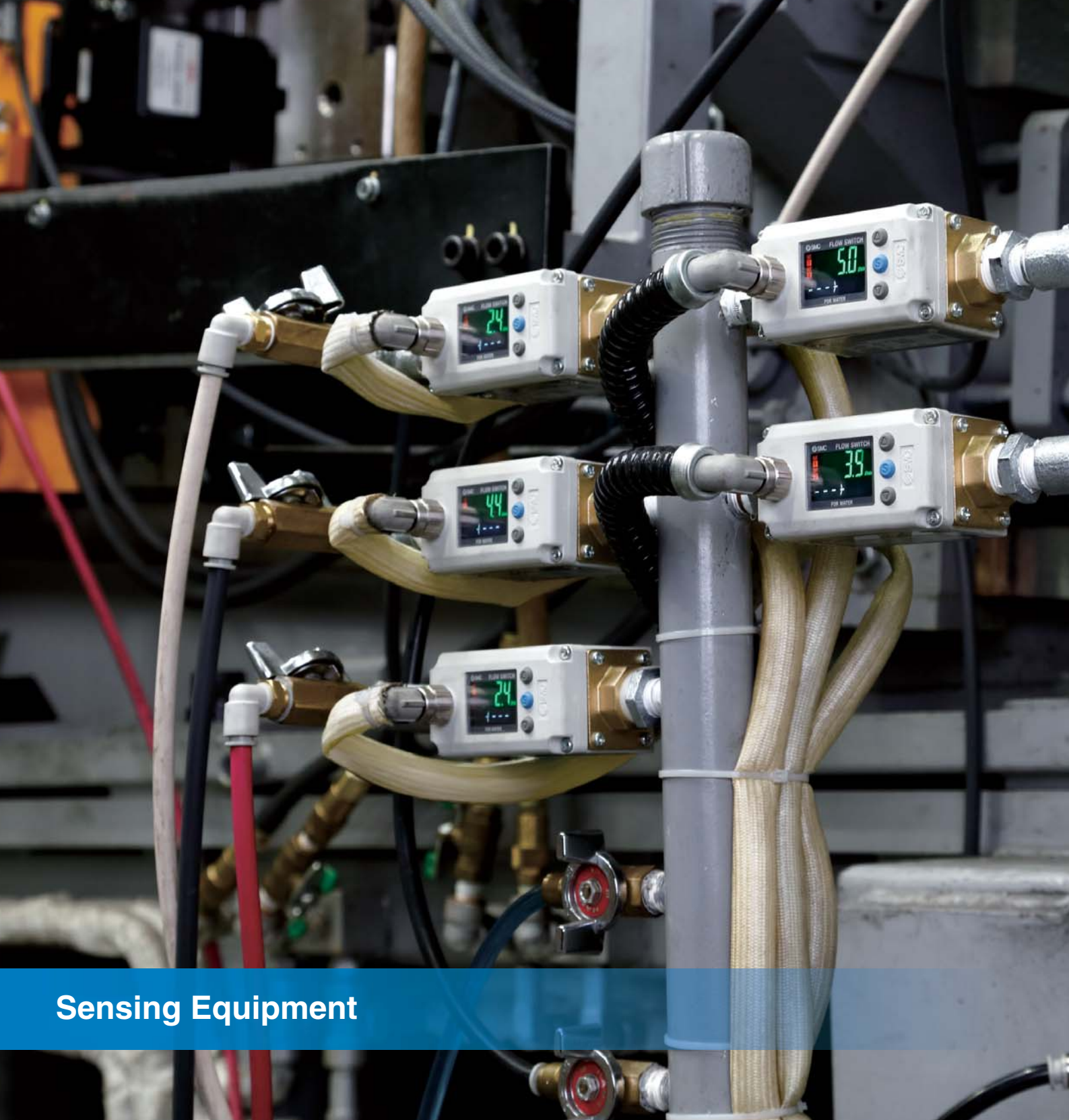
Series	Type	Rated pressure range
ISE20B	Positive pressure	-0.100 to 1.000 MPa

Fittings

S Couplers KK130 Series

- Pressure loss reduction leads to energy saving.
 - Cv factor: Increased by 34 %*1
 - Plug insertion force: Reduced by 22 % (20 N)*1
 - Lightweight: Reduced by 14 % (12 g)*1
- *1 Compared to the current KK13 series.





Sensing Equipment

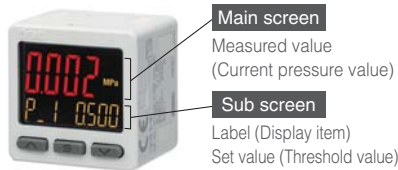


Pressure Switches

3-Screen Display High-Precision Digital Pressure Switch ZSE20(F)/ISE20 Series



- Visualisation of setting items
- Simple 3-step setting
- Easy screen switching:
Setting is possible while checking the measured value.
- Delay time: Fastest 1.5 ms or less
- Current consumption: 25 mA or less
- Enclosure: IP40



Series	Type	Rated pressure range
ZSE20F	Compound pressure	-100.0 to 100.0 kPa
ZSE20	Vacuum pressure	0.0 to -101.0 kPa
ISE20	Positive pressure	-0.100 to 1.000 MPa

3-Screen Display High-Precision Digital Pressure Switch ZSE20B(F)/ISE20B Series



- Enclosure: IP65
- Can copy up to 10 switches simultaneously
- 3-step setting
- Setting is possible while checking the measured value
- Visualisation of setting items
- Delay time: fastest 1.5 ms or less
- Current consumption: 35 mA or less.



Series	Type	Rated pressure range
ZSE20BF	Compound pressure	-100.0 to 100.0 kPa
ZSE20B	Vacuum pressure	0.0 to -101.0 kPa
ISE20B	Positive pressure	-0.100 to 1.000 MPa

Installation Examples



3-Screen Display High-Precision Digital Pressure Switch ISE7□/7□G Series



- Enclosure: IP67
- With M12 connector
- Angled display
- Rotating display
- IO-Link Compatible.



Series	Type	Rated pressure range
ISE70	Positive pressure (for air)	0 to 1 MPa
ISE71	Positive pressure (for air)	0 to 1.6 MPa
ISE70G	Positive pressure (for general fluids)	0 to 1 MPa
ISE75G	Positive pressure (for general fluids)	0 to 2 MPa
ISE76G	Positive pressure (for general fluids)	0 to 5 MPa
ISE77G	Positive pressure (for general fluids)	0 to 10 MPa

3-Screen Display High-Precision Digital Pressure Switch ZSE20C(F)/ISE20C(H) Series



- Enclosure: IP65
- 3-Step setting
- Setting is possible while checking the measured value
- Visualisation of setting items
- Can copy up to 10 switches simultaneously
- Delay time: fastest 1.5 ms or less
- Current consumption: 35 mA or less.



Series	Type	Rated pressure range
ZSE20CF	Compound pressure	-100.0 to 100.0 kPa
ZSE20C	Vacuum pressure	0.0 to -101.0 kPa
ISE20C	Positive pressure	-0.100 to 1.000 MPa
ISE20CH	Positive pressure	-0.100 to 2.000 MPa

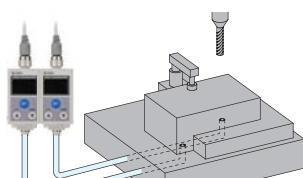
3-Colour Display Digital Gap Checker ISA3 Series



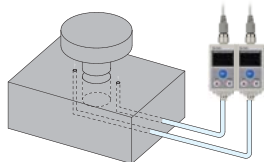
- Check at a glance if a workpiece is placed or not.
- The clearance distance between the detection surface and the workpiece can be found intuitively.
- Simple setting: Change the settings while checking the displayed value.
- Energy saving: Air consumption reduced by 60 %
- Improved drainage resistance: 10 times or more
- Enclosure: IP67 equivalent



Application Examples



Confirmation of close contact with the reference plane



Confirmation of close contact with the workpiece

Series	Rated distance range	Supply side piping specifications	Detection side piping specifications
ISA3-F	0.01 to 0.03 mm	Rc, G1/8	Ø 4, Ø 6 One-touch fitting, G1/8
ISA3-G	0.02 to 0.15 mm	Rc, G1/8	Ø 4, Ø 6 One-touch fitting, G1/8
ISA3-H	0.05 to 0.30 mm	Rc, G1/8	Ø 4, Ø 6 One-touch fitting, G1/8

Compact Pneumatic Pressure Sensor PSE54 Series



- Analogue output (voltage)
- Enclosure: IP40



Series	Type	Rated pressure range
PSE541	Vacuum pressure	0 to -101 kPa
PSE543	Compound pressure	-100 to 100 kPa
PSE540	Positive pressure	0 to 1 MPa

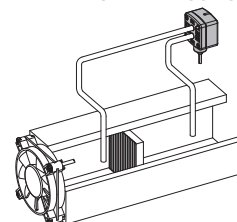
Low Differential Pressure Sensor PSE550 Series



- Suitable for applications such as air current volume maintenance, filter blockage, and liquid surface detection.
- Analogue output (voltage/current)
- Enclosure: IP40



Application Example Monitoring filter clogging



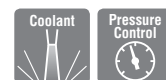
Series	Type	Rated pressure range
PSE550	Vacuum pressure	0 to 2 kPa

Pressure Sensor for General Fluids PSE57 Series



- Materials of parts in contact with fluid

Piping port	C3604 + Nickel plating
Pressure sensor	Al ₂ O ₃ (Alumina 96 %)



- Enclosure: IP65



Application Examples

Liquid coolant pressure control



Series	Type	Rated pressure range	Proof pressure
PSE570	Positive pressure	0 to 1 MPa	3.0 MPa
PSE573	Compound pressure	-100 to 100 kPa	600 kPa
PSE574	Positive pressure	0 to 500 kPa	1.5 MPa
PSE575	Positive pressure	0 to 2 MPa	5.0 MPa
PSE576	Positive pressure	0 to 5 MPa	12.5 MPa
PSE577	Positive pressure	0 to 10 MPa	30 MPa

Multi-Channel Digital Pressure Sensor Controller

PSE200 Series



- 4 inputs, 5 outputs
- Applicable sensor: PSE53□, 54□, 56□, 570/573
- Enclosure: IP65 (Front face), IP40 (Others)



Series	Set pressure range
PSE200	-101 to 101 kPa
	10 to -101 kPa
	-10 to 101 kPa
	-0.1 to 1 MPa

General Purpose Pressure Switch: Snap Switch Type

ISG Series



- For general fluids
- Equivalent to IP44 (Drip proof)
- With neon light



Open type Open and hysteresis scale plate type Drip proof

Series	Type	Set pressure range
ISG11□, 21□	Positive pressure	0.02 to 0.3 MPa
ISG12□, 22□	Positive pressure	0.05 to 0.7 MPa
ISG13□, 23□	Positive pressure	0.1 to 1.0 MPa
IS2761	Positive pressure	0.1 to 1.0 MPa
ISG19□, 29□	Vacuum pressure	-10 to -100 kPa

2-Colour Display Digital Pressure Sensor Controller

PSE300 Series



- 1 input, 2 outputs
- Applicable sensor: PSE53□, 54□, 550, 56□, 570/573/574
- Enclosure: IP40



Series	Set pressure range
PSE300	-101 to 101 kPa
	10 to -101 kPa
	-10 to 100 kPa
	-0.1 to 1 MPa
	-50 to 500 kPa
	-0.2 to 2 kPa

Flow Switches

2-Colour Display Digital Flow Switch

PFMB Series



- Dry air, N₂
- Grease-free
- Integrated flow adjustment valve
- Compact, Space saving
- Enclosure: IP40



Series	Rated flow range [l/min]
PFMB	2 to 200
	5 to 500
	10 to 1000
	20 to 2000

Pneumatic Pressure Switch

IS3000 Series



- Micro switch type
- Can be used for micro loads around 10 mA.
- With neon light



Series	Type	Set pressure range
IS3000	Positive pressure	0.1 to 0.7 MPa

3-Colour Display Digital Flow Switch PFMC Series



- Dry air, N₂
- 3-colour/2-screen display
- Expanded flow range: Wide range of flow measurement is possible with one product.
- Compact, Space saving
- Enclosure: IP65



Series	Rated flow range [l/min]
PFMC	5 to 500
	10 to 1000
	20 to 2000

Digital Flow Switch for Large Flow PF3A7□H Series



- 3-colour 2-line information display
- Measure and set value are displayed simultaneously
- Display rotates 90° and can be reversed
- Outputs: NPN/PNP and analogue/external input
- Port size: 1 to 2
- Enclosure: IP65



Series	Rated flow range [l/min]
PF3A7□H	30 to 3000
	60 to 6000
	120 to 12000

3-Colour Display Digital Flow Switch for Water PF3W Series



- Flow sensor with 3-colour/2-screen display
- Integrated temperature sensor
- 40 % smaller (compared with PF2W)
- Grease-free
- Fluid temperature: 0 to 90 °C
- PVC piping type: Applicable to deionised water and chemical liquids
- Enclosure: IP65



Series	Rated flow range [l/min]
PF3W	0.5 to 4
	2 to 16
	5 to 40
	10 to 100
	50 to 250

3-Colour Display Electromagnetic Type Digital Flow Switch LFE□ Series

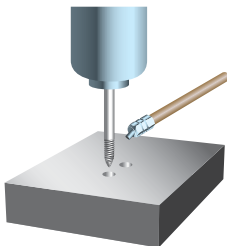


- Pressure loss: 0.02 MPa or less
- Reverse flow can be detected.
- Operating fluid temperature: 0 to 85 °C
- Applicable fluid: Water, Water-soluble coolant
- Enclosure: IP65



Application Example

Flow control for water-soluble coolant

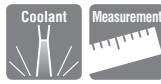


Series	Rated flow range [l/min]
LFE□	0.5 to 20
	2.5 to 100
	5 to 200

Stroke Reading Cylinders

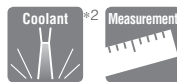
High Precision Stroke Reading Cylinder CEP1 Series

- Can be used in an environment where the product is exposed to fluids (water, oil, coolant, etc.).
- Resolution: 0.01 mm (Accuracy ± 0.02 mm)
- Standardly comes with special scraper.



Stroke Reading Cylinder CE1 Series

- Can be used in an environment where the product is exposed to fluids (water, oil, coolant, etc.). (Special order*2)
- Resolution: 0.1 mm (Accuracy ± 0.2 mm)



*2 The CE1 series does not standardly come with a scraper.
Please contact SMC to special order a cylinder with a scraper. (Exceptions: $\varnothing 12$, $\varnothing 20$)

Multi-counter CEU5 Series

- Counter for connecting the CE1 series or CEP1 series



Card Motor LAT3 Series

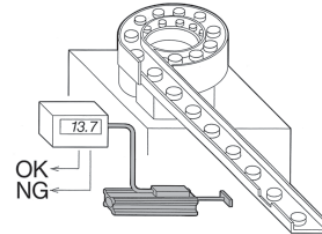
- Pushing measurement accuracy $\pm 10 \mu\text{m}$
- Positioning repeatability $\pm 5 \mu\text{m}$
- Maximum pushing force 6 N



Application Examples

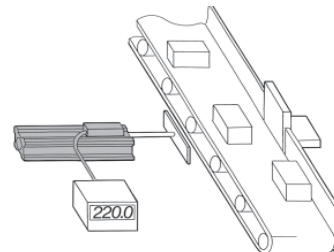
Parts inspection

Measures the dimensions of parts, discriminates between good and defective articles, prevents the mixing of different parts, etc.



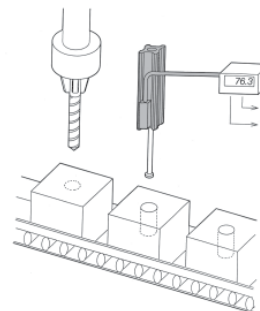
Length/width discrimination

Distinguishes between lengthwise or crosswise while correcting the position of a workpiece.



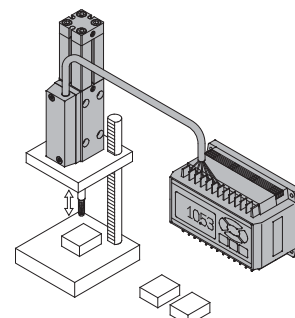
Inspection of machined holes

Can detect machined hole depth, burrs, foreign matter, etc.



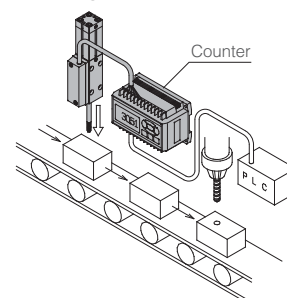
Measurement of dimensions

Can measure dimensions of parts.



Measurement of machining dimensions

Performs adjustment of machining depth, etc. by measuring the part dimensions before machining.





Coolant Equipment



2/3 Port Valves for Fluid Control

Coolant Valve SGC Series



- Low power consumption: 0.35 W (for 24 VDC/Y type)
- Max. operating pressure: 0.5 MPa, 1 MPa, 1.6 MPa
- Service life: 5 million cycles or more
(Based on SMC's test conditions)



Series	Valve type	Port size	Orifice dia. [mm Ø]
SGC	N.C./N.O.	3/8 to 2	9 to 51

Installation Example



High Pressure Coolant Valve SGH Series



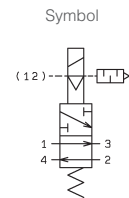
- Max. operating pressure: 3 MPa, 7 MPa
- Compatible with high-speed grinding and long drilling processes
- Coolant valve for high-pressure coolant liquid that is ideal for lubrication, dust blowing, and cooling
- Low power consumption: 0.35 W (for 24 VDC)
- Service life: 3 million cycles or more
(Based on SMC's test conditions)



Series	Valve type	Port size	Orifice dia. [mm Ø]
SGH	N.C./N.O.	3/8 to 1	6 to 15.4

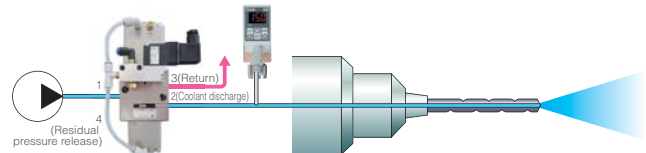
4 Port Coolant Valve Made to Order

- Can be used as a pressure relief valve when through coolant is used.
- Prevents malfunctions caused by residual pressure and improves cycle time.



DXT513H□-□□-□□□1 (7 MPa)
DXT544M□-□□-□□□1 (4 MPa)

Application Example



Air Cylinders

Water Resistant Cylinder

- Compatible with an operating environment using coolants
- Anti-coolant performance has been improved compared to the standard cylinders.
- With water resistant 2-colour indicator auto switch

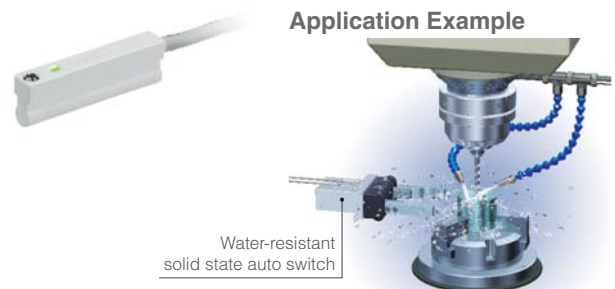


Auto Switch

Water Resistant Solid State Auto Switch D-M7BAL-1232 Series

- Improved water resistance due to reduced number of possible liquid entry points
- A liquid pool-free construction due to the electrical entry being located on the top of the switch body

Application Example

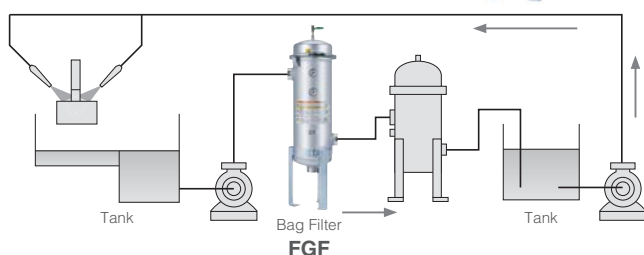


Industrial Filters

Bag Filter FGF Series

- Ideal for high flow filtration. (Max. 2000 l/min)
- Port size: Rc2, 100 (4^B)JIS10^KFF, 150 (6^B)JIS10^KFF

RoHS



Industrial Filter/Vessel Series FGD Series

- Ideal for low flow filtration. (Max. 60 l/min)
- Port size: Rc3/8, 1/2, 3/4

RoHS



Filter for Cleaning Fluid/Quick Change Filter FQ1 Series

- No tools required, easy element replacement
- Ideal for low flow filtration. (Max. 30 l/min)
- Port size: Rc1/2, 3/4, 1

RoHS



Low Maintenance filter FN1/FN4 Series

- Flow rate: FN1: 40 and 80 l/min; FN4: 250 l/min.
- Port size: Rc1 (FN1), Rc2 (FN2)

RoHS



Pressure Switches

3-Screen Display High-Precision Digital Pressure Switch/For General Fluids ISE7□G Series

CE c RU^{us} RoHS



- Rated pressure: 1 MPa/2 MPa/5 MPa/10 MPa
- Enclosure: IP67
- With M12 connector
- Angled display
- Rotating display
- IO-Link Compatible.



Series	Type	Rated pressure range
ISE70G	Positive pressure (for general fluids)	0 to 1 MPa
ISE75G	Positive pressure (for general fluids)	0 to 2 MPa
ISE76G	Positive pressure (for general fluids)	0 to 5 MPa
ISE77G	Positive pressure (for general fluids)	0 to 10 MPa

3-Screen Display High-Precision Digital Pressure Switch ISE20CH Series

CE c RU^{us} RoHS



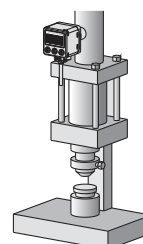
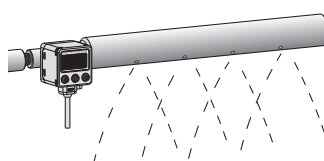
- Enclosure: IP65
- 3-Step setting
- Setting is possible while checking the measured value
- Visualisation of setting items
- Can copy up to 10 switches simultaneously
- Delay time: fastest 1.5 ms or less
- Current consumption: 35 mA or less.



Application Examples

Confirmation of supply pressure of cleaning lines

Confirmation of working pressure of hydraulic cylinder



Series	Type	Rated pressure range
ISE20CH	Positive pressure	-0.100 to 2.000 MPa

Pressure Sensor for General Fluids

PSE57□ Series

- Materials of parts in contact with fluid

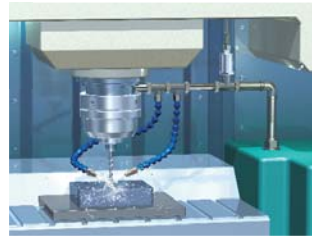
Piping port	C3604 + Nickel plating
Pressure sensor	Al ₂ O ₃ (Alumina 96 %)

- Enclosure: IP65



Application Example

Liquid coolant pressure control



Series	Type	Rated pressure range	Proof pressure
PSE570	Positive pressure	0 to 1 MPa	3.0 MPa
PSE573	Compound pressure	-100 to 100 kPa	600 kPa
PSE574	Positive pressure	0 to 500 kPa	1.5 MPa
PSE575	Positive pressure	0 to 2 MPa	5.0 MPa
PSE576	Positive pressure	0 to 5 MPa	12.5 MPa
PSE577	Positive pressure	0 to 10 MPa	30 MPa

Flow Switches

3-Colour Display Electromagnetic Type Digital Flow Switch

LFE□ Series



- Applicable fluid: Water, Water-soluble coolant
- Pressure loss: 0.02 MPa or less
- Reverse flow can be detected.
- Enclosure: IP65



Series	Rated flow range [l/min]
LFE□	0.5 to 20 2.5 to 100 5 to 200

Hydraulic Equipment

Multi-Channel Digital Pressure Sensor Controller

PSE200 Series

- Four sensors can be connected.
- Applicable sensor: PSE53□, 54□, 56□, 570/573
- A single controller can monitor various applications.
- 4 inputs, 5 outputs
- Enclosure: IP65 (Front face), IP40 (Others)



Series	Set pressure range
PSE200	-101 to 101 kPa 10 to -101 kPa -10 to 101 kPa -0.1 to 1 MPa

Line Filter

FH34/44/54/64 Series



- Operating pressure: 3.5, 7.0, 14.0, 21.0 MPa
- O-ring: Choice of NBR (Petroleum, Water-glycol, Emulsion) or FKM (Phosphoric ester)
- Paper element and micromesh element are selectable.
- Option: Differential pressure indicator.



2-Colour Display Digital Pressure Sensor Controller

PSE300 Series

- Applicable sensor: PSE53□, 54□, 550, 56□, 570/573/574
- Compatible with voltage input and current input
- Response time: 1 ms
- Space saving, capable of vertical and horizontal contact mounting
- Panel mounting, Bracket mounting, DIN rail mounting
- Enclosure: IP40



Series	Set pressure range
PSE300	-101 to 101 kPa 10 to -101 kPa -10 to 100 kPa -0.1 to 1 MPa -50 to 500 kPa -0.2 to 2 kPa

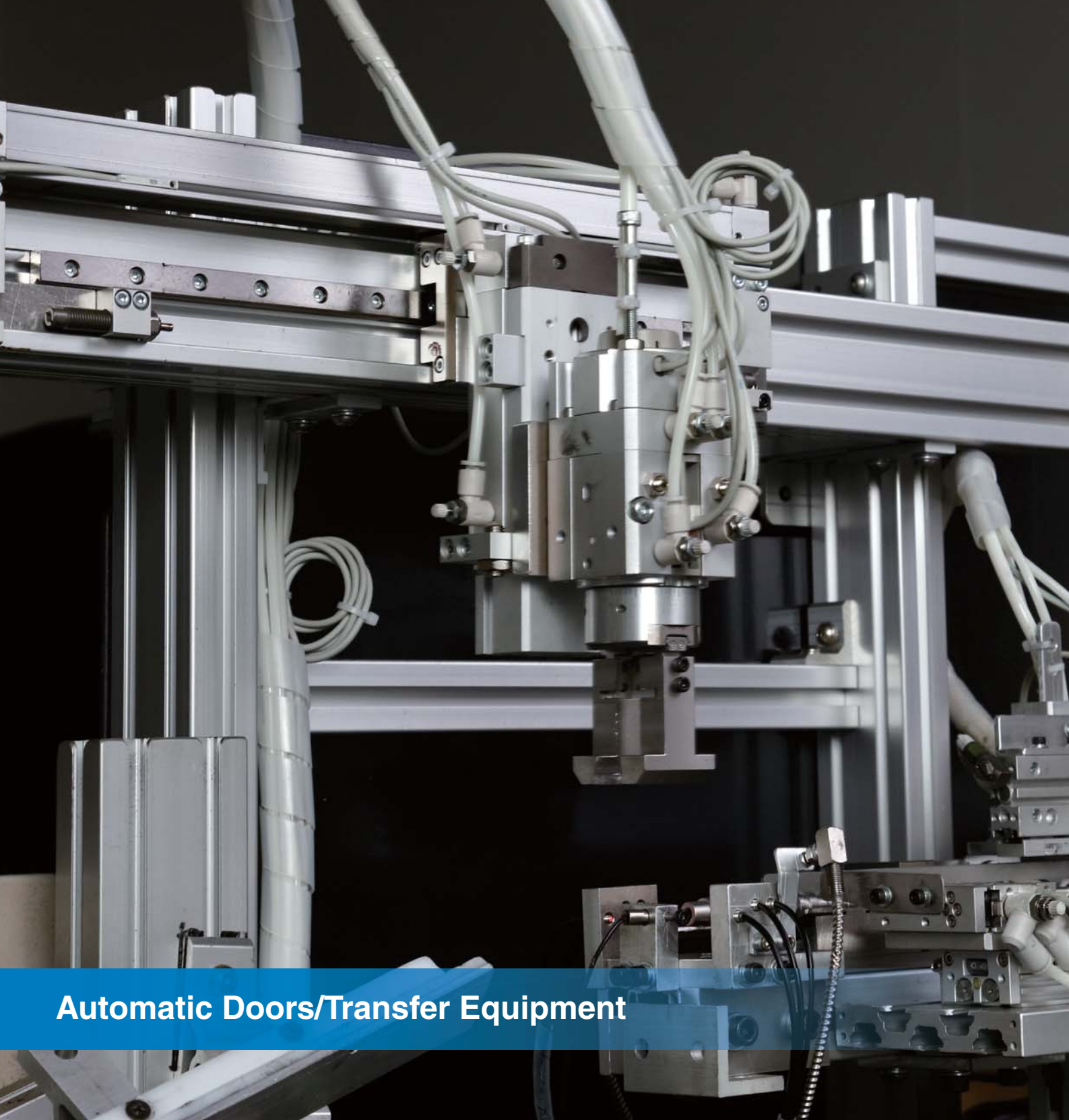
Magnetic Separator

FHM Series



- Adsorbs and eliminates contaminants in the fluid by means of magnetism.
- There are no consumable parts and the running cost is basically zero.
- Fluid: Petroleum, Water-glycol, Cutting oil, Emulsion, Phosphoric ester





Automatic Doors/Transfer Equipment



Air Cylinders

Water Resistant Cylinder

Compatible with an operating environment using coolants

- Anti-coolant performance has been improved compared to the standard cylinders.
- With water resistant 2-colour indicator auto switch



<Applicable Cylinders>

Air Cylinders

CM2 Series Ø 20 to Ø 40 / **CG1 Series** Ø 32 to Ø 100 / Air Cylinder **MB Series** Ø 32 to Ø 100 / Square Tube Type Air Cylinder **MB1 Series** Ø 32 to Ø 100 / Compact Cylinder **CQ2 Series** Ø 20 to Ø 100 / **CA2 Series** Ø 40 to Ø 100 / Compact Guide Cylinder **MGP Series** Ø 20 to Ø 100 / Guide Cylinder **MGG Series** Ø 32 to Ø 100



Hydraulic Cylinders

Compact Hydraulic Cylinder Compliant with JIS Standards (10 MPa)

CHKDB Series Ø 20 to Ø 100 / Hydraulic Cylinder Compliant with JIS Standards (7 MPa)
CH2F Series Ø 32 to Ø 100

Compact Guide Cylinder MGP Series

- Weight reduced by up to 24 % with a shorter guide rod and thinner plate.
- Space required between the bottom of the cylinder body and your equipment is reduced by max. 22 mm because of shortened guide rod.
- Round type and magnetic field resistant auto switches can be mounted directly without spacer.



Cylinder with Lock CNA2 Series

- Locking cylinders are ideal for intermediate stops, emergency stops, and drop prevention. (Bi-directional lock)
- Bore size: 40, 50, 63, 80, 100



Cylinder with Lock MWB Series

- Bore size: 32, 40, 50, 63, 80, 100



Cylinder with Lock CNS Series

- Bore size: 125, 140, 160



Compact Cylinder with Lock CLQ Series

- Bore size: 20, 25, 32, 40, 50, 63, 80, 100



Cylinder with Lock CLS Series

- Bore size: 125, 140, 160, 180, 200, 250



Compact Cylinder with Air Cushion and Lock RLQ Series

- Bore size: 32, 40, 50, 63



Compact Guide Cylinder with Lock MLGP Series

- Bore size: 20, 25, 32, 40, 50, 63, 80, 100



Air Cylinder JMB Series

RoHS

- Intermediary bore sizes: Ø 45, Ø 56, Ø 67, Ø 85
Air saving, Space saving
- Overall length shortened by 27 mm (Compared with MBB50-100)
- Weight reduced by up to 30 % (1.45 kg → 1.00 kg)
(Compared with MBB50-100)
- Air saving: Reduced by up to 29 %
Air consumption can be reduced by optimal size selection.
- Reduces labour time.
Air cushion adjustment is not required due to non-adjustable air cushion.



Air Cylinder JCM Series

RoHS

- Overall length shortened by up to 97 mm (Compared with the current CM2B40)
- Weight reduced by up to 54 % (0.69 kg → 1 0.32 kg)
(Compared with the current CM2B40-50Z)
- Various cover types available
- Port size: M5 and Rc1/8 available
- Male and female rod end available



Compact Cylinder JCQ Series

RoHS

- Compact: Reduced overall length 6.5 mm, width 6 mm, height 4 mm
- Weight reduced by up to 45 % (150 g → 1 82 g)
- Volume reduced by up to 40 % (Compared with the CDQS series)



Compact Guide Cylinder JMGP Series

RoHS

- Compact: Reduced overall length 30.5 mm, height 16 mm (Compared with the MGPM32-25Z)
- Weight reduced by up to 69 % (0.32 kg → 0.1 kg: Compared with the MGPM16-10Z)
- 3 mounting options:
Top mounting, Underside mounting, Bottom mounting
- Piping is possible in 4 directions.
- The solid state auto switch D-M9□ is mountable.
- Suitable for pushing, lifting, or clamping on a transport line



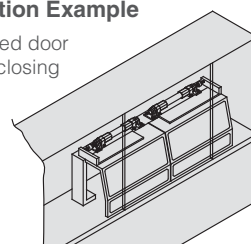
Specialty Cylinders

High Power Cylinder RHC Series

- For high-speed opening/closing of ATC doors
- Has the capacity to absorb 10 to 20 times more energy than general purpose cylinders (CG1 series)
- Smooth cushioning for high-speed operation (3000 mm/s) with light loads and low/medium-speed operation with heavy loads
- XC93: With improved water resistance + stable lubrication function
Equipped with an improved water resistant scraper (Fluororubber). The Lube-retainer creates a grease coating around the piston rod, which improves lubrication. Stainless steel can be selected for the piston rod and rod end nut.

Application Example

High-speed door opening/closing



Rotary Clamp Cylinder MK Series

- Allowable moment of inertia 3 times higher (Ø 20 to Ø 63)
(The same as the former heavy-duty MK2 series)
- It is possible to mount small auto switches on 4 surfaces.



Rodless Cylinders

Mechanically Jointed Rodless Cylinder with Protective Cover MY1□W Series

- Protective cover with improved water resistance and dust-proof construction. The side seal prevents water and dust from entering from the sides.



Air Grippers

Linear Guide Parallel Type Air Gripper MHZ□2 Series

- Linear guide improves rigidity and accuracy.
- Dust-proof and drip-proof construction
- Dust cover material is selectable.



Type	Series	Cylinder bore size [mm]
Compact	MHZA2-6	6
Compact, with dust cover	MHZAJ2-6	6
Standard	MHZ2	6, 10, 16, 20, 25, 32, 40
Long stroke	MHZL2	10, 16, 20, 25
With dust cover	MHZJ2	6, 10, 16, 20, 25

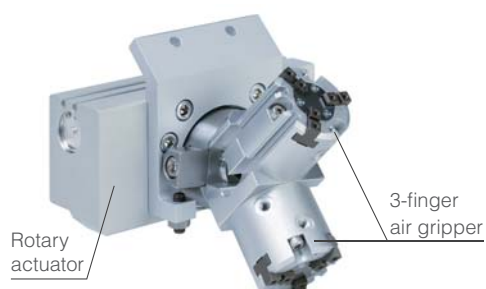
Slide Guide Round Body Air Gripper: 2-Finger, 3-Finger, 4-Finger Type MHS Series

- Vertically compact, lightweight due to the wedge-shaped cam construction
- Repeatability: ± 0.01 mm
- Long stroke type: Strokes two times longer than the standard type
- Reliable workpiece removal with through-holes and a centre pusher



Air Gripper Reverse Unit Made to Order

- For workpiece transfer with gantry loaders
- For loading/unloading workpieces from equipment



Electric Actuators

Electric Actuator: Slider Type Ball Screw Drive LEFS Series



- Step Motor (Servo/24 VDC), Servo Motor (24 VDC)
- Max. work load: 65 kg
- Positioning repeatability: ± 0.02 mm

- AC Servo Motor
- High-output motor (100/200/400 W)
- Improved high-speed transfer ability
- Max. speed: 1,500 mm/s
- High acceleration/deceleration (20,000 mm/s²)
- Positioning repeatability: ± 0.01 mm

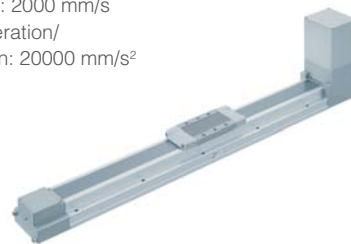


Electric Actuator: Slider Type Belt Drive LEFB Series



- Step Motor (Servo/24 VDC), Servo Motor (24 VDC)
- Max. stroke: 2000 mm
- Max. speed: 2000 mm/s

- AC Servo Motor
- Max. stroke: 3000 mm
- Max. speed: 2000 mm/s
- Max. acceleration/deceleration: 20000 mm/s²



Electric Actuator: High Rigidity Slider Type, Ball Screw Drive LEJS Series



- Low profile/Low centre of gravity: Height dimension reduced by approx. 36 % (Reduced by 32 mm)
- Max. work load: 85 kg
- Positioning repeatability: ± 0.01 mm
- Max. acceleration/deceleration: 20000 mm/s²



Electric Actuator: High Rigidity Slider Type, Belt Drive LEJB Series



- Max. stroke: 3000 mm
- Max. speed: 3000 mm/s
- Max. acceleration/deceleration: 20000 mm/s²



Electric Actuator: Low Profile Slider Type LEM Series



- Compact, Low profile
Table height: 28 mm
(For LEMC/H/HT, size 25)
- Can be connected to various types of guides.



Electric Actuator: Guide Rod Slider, Belt Drive LEL Series



- Low profile/Flat: Height 48 mm
- Profile reduced by side mounting of motor.
No interference with motor, even with large workpieces.
- Max. stroke: 1000 mm
- Transfer speed: 1000 mm/s



Electric Actuator: Rod Type Motor Top/Parallel, In-line Motor Type LEY Series



Step Motor (Servo/24 VDC), Servo Motor (24 VDC)

- Long stroke: Max. 500 mm
- Direct mounting: 3 directions
Bracket mounting: 3 types
- Auto switch mountable
- Speed control/
Positioning: Max. 64 points

AC Servo Motor

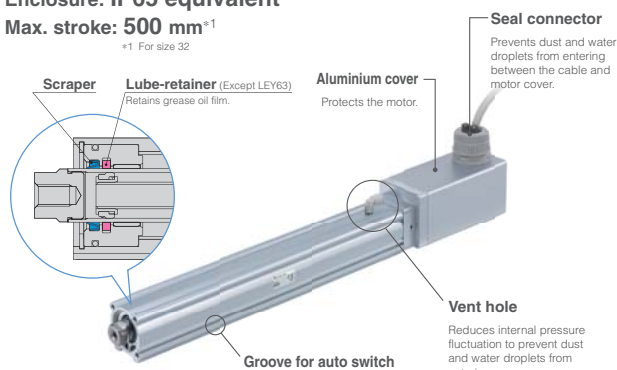
- High-output motor (100/200/400 W)
- Improved high-speed transfer ability
- High-acceleration compatible
(5,000 mm/s²)



Dust-tight/Water-jet-proof (IP65 Equivalent) **LEY-X5/LEY63**□□□□□P(Optional)

- Enclosure: IP65 equivalent

- Max. stroke: 500 mm*¹
*1 For size 32



* When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Electric Actuator: Guide Rod Type Motor Top Mounting, In-line Motor Type LEYG Series



Step Motor (Servo/24 VDC), Servo Motor (24 VDC)

- Compact integrated guide rods, lateral load resistance, high non-rotating accuracy
- Lateral end load: 5 times more (Compared with rod type, size 25 and 100 mm stroke)
- Compatible with sliding bearing and ball bushing bearing
Compatible with moment load and stopper (sliding bearing)

AC Servo Motor

- High-output motor (100/200 W)
- Improved high-speed transfer ability
- High-acceleration/deceleration compatible (5,000 mm/s²)



Electric Slide Table LES/LESH Series



- Max. pushing force: 180 N
- Positioning repeatability: ± 0.05 mm
- Cycle time can be reduced
- Max. acceleration/deceleration: $5,000 \text{ mm/s}^2$
- Max. speed: 400 mm/s



<Compact Type>

- Compact: Workpiece mounting height reduced by up to 12 % compared with the LESH
- Lightweight: Reduced by up to 29 % (Compared with the LESH16D-100)



<High Rigidity Type>

- Deflection: 0.016 mm (LESH16-50 Load: 25 N)
- Integrated guide rail and table. Uses a recirculating linear guide for high rigidity and high precision.

Electric Actuator: Miniature Type LEP□ Series



- Max. pushing force: 50 N
- Positioning repeatability: ± 0.05 mm



<Rod Type>

- Compact and lightweight
- W20.5 mm x H30 mm x L125.6 mm, Weight 240 g



<Slide Table Type>

- Compact and lightweight
- W21 mm x H41 mm x L138.6 mm, Weight 290 g

Electric Rotary Table LER Series



- Rotation angle: 360° , 320° (310°), 180° , 90°
The value indicated in brackets shows the value for the LER10.
- Low profile: Height dimension 42 mm (LER10)
- Space saving: Built-in step motor
- Shock-less/High-speed actuation
- Max. speed: $420^\circ/\text{sec}$ (7.33 rad/sec)
- Max. acceleration/deceleration: $3000^\circ/\text{sec}^2$ (52.36 rad/sec^2)



Electric Gripper LEH Series



- With drop prevention function (Self-lock mechanism is provided for all series.)
- Power consumption is reduced by self-lock mechanism.
- With gripping check function
- Position, speed, and force can be set. (64 points)

LEHZ Series

Compact and lightweight
Various gripping forces



LEHZJ Series

With dust cover (Equivalent to IP50)
3 types of cover material (Finger portion only)



LEHF Series

Can hold various types of
workpieces with a long stroke.



LEHS Series

Can hold round workpieces.



Controller/Driver



Step Motor (Servo/24 VDC) Servo Motor (24 VDC)

Step Data Input Type LECP6 Series LECA6 Series

- 64 points positioning
- Input using controller setting kit or teaching box



Step Motor (Servo/24 VDC)

Programless Type LECP1 Series

- 14 points positioning
- Control panel setting (PC is not required)



Programless Type (With Stroke Study) LECP2 Series

- End to end operation similar to an air cylinder
- 2 stroke end points + 12 intermediate points positioning



Pulse Input Type LECPA Series



Specialised for the LEM series

4 Axis Type

EtherNet/IP™ Type JXC93 Series



Parallel I/O Type JXC73/83 Series



3 Axis Type

EtherNet/IP™ Type JXC92 Series



Fieldbus-compatible Network Controller/Gateway Unit

IO-Link Direct Input Type JXCL1 Series



EtherNet/IP™ Direct Input Type JXC91 Series

EtherNet/IP



EtherCAT Direct Input Type JXCE1 Series

EtherCAT



DeviceNet™ Direct Input Type JXCD1 Series

DeviceNet



PROFINET™ Direct Input Type JXCP1 Series



LEC-G Series

CC-Link V2

DeviceNet
PROFINET
EtherNet/IP



AC Servo Motor*1

Pulse Input Type LECSA Series LECSB Series

- Absolute encoder (LECSB)
- Built-in positioning function (LECSA)



CC-Link Direct Input Type LECSC Series

CC-Link



SSCNET III Type LECSS Series

SSCNET III



MECHATROLINK II Type LECYM Series

MECHATROLINK - II



MECHATROLINK III Type LECYU Series

MECHATROLINK - III



SSCNET III/H Type LECSS-T Series

SSCNET III/H



Trademark

EtherNet/IP™ is a trademark of ODVA. DeviceNet™ is a trademark of ODVA.

Motorless Type LE□ Series

- Your motor and driver can be used together!
- Manufacturers of compatible motors: 15 companies
Mitsubishi Electric Corporation, YASKAWA Electric Corporation, SANYO DENKI CO., LTD., OMRON Corporation, Panasonic Corporation, FANUC CORPORATION, NIDEC SANKYO CORPORATION, KEYENCE CORPORATION, FUJI ELECTRIC CO., LTD., ORIENTAL MOTOR Co., Ltd., FASTECH Co., Ltd., Rockwell Automation, Inc. (Allen-Bradley), Beckhoff Automation GmbH, Siemens AG, Delta Electronics, Inc.



RoHS

Vacuum Equipment

Vacuum Unit ZK2 Series

- Digital pressure switch for vacuum with energy saving function cuts supply air when the pressure reaches the desired vacuum. Air consumption: 90 % reduction
- Improved ejector efficiency: Suction flow increased by 50 %
Air consumption reduced by 30 %
(Compared to other SMC single stage ejectors)
- Compact/Lightweight: Volume 88 cm³ (28 % reduction)
Weight 81 g (59 % reduction)
- Nozzle size: Ø 0.7, Ø 1.0, Ø 1.2, Ø 1.5



Body Ported Type Vacuum Ejector ZH Series

- Compact and lightweight
Overall length: Max. 11 % reduction (6.7 mm shorter)
Port height: Max. 25 % reduction (9.1 mm shorter)
Weight: Max. 74 % reduction (65.1 g lighter)
- 4 mounting types: Direct mounting, Standard bracket mounting, L-bracket mounting, DIN rail mounting



Vacuum Pad ZP3 Series

- Compact, Space saving, Overall shortened length.
- One-touch fitting and barb fitting for Ø 2 are available.
- Pad diameter: Ø 1.5 to Ø 16



Vacuum Pad ZP3E Series



- Stability of suction position, improved ease of removal
Dents and bumps on the adsorption surface expand the area which is in contact with the workpiece. Ribs reduce the inclinations during transport of workpiece.
- Reduced number of mounting screws (4 pcs. → 1 pc.)
- Pad and metal parts can be disposed of separately.
- Pad diameter: Ø 32 to Ø 125



Compact, Short, Nozzle Pad ZP2 Series



- Compact, Space saving
- Pad diameter: Ø 0.8 to Ø 15



Hydraulic Cylinder

JIS Standard Hydraulic Cylinder CH2/CHD2 Series

- Uses the cushion seal type cushion mechanism, reduces impact at the stroke end, improves durability
- Rod cover with block construction makes for easy disassembly and assembly.



CH2E
Tube material: Aluminum



CH2G
Tube material: Steel



CH2F
Tube material: Stainless steel



CH2H Tube material: Stainless steel

Small Bore Hydraulic Cylinder CHN Series

- Lightweight with a stainless steel tube and aluminium cover
- Uses the cushion seal system mechanism, reduces impact at the stroke end, improves durability
- Smaller cover section compared to tie-rod cylinders



Compact Hydraulic Cylinder CHK Series

- Light and compact aluminium body
- It is possible to mount auto switches
- Auto switch mounting does not affect overall length



Compact Hydraulic Cylinder CHQ/CHDQ Series

- Lightweight, compact aluminium body
- It is possible to mount auto switches.
- Same longitudinal dimensions for cylinders with/without auto switches



Air Hydro Converter CCT Series

- Converter size (mm): 63, 100, 160
- Stroke range (mm): 50 to 800
- Fluid: turbine oil (40 to 100cSt)



Air-Hydro Booster Made to Order

Converts air pressure to hydraulic pressure for high-pressure hydraulic cylinder actuation.

- Generates 3.5 to 14 MPa of hydraulic pressure with 0.5 MPa of air pressure.
- No hydraulic pump is required. High hydraulic pressure can easily be obtained.
- Hydraulic pressure can be steplessly controlled by only adjusting the air pressure using the regulator.
- No problems will occur due to temperature rise even under the condition of continuous pressurisation.
- You can select from two types of pressurisation methods (direct type and pre-load type) according to the application.
- No hydraulic unit is required.





Various Blow Equipment



2/3 Port Valves for Fluid Control

Direct Operated 2 Port Solenoid Valve VX2 Series



- For air, medium vacuum, water, oil, steam (Can be used with heated water.)
- Flow rate: 20 % more flow*1
- Height: 10 % smaller*1
- Weight: 30 % lighter*1
- Body material: Aluminium, Resin, C37, Stainless steel
- With One-touch fittings (resin body) type is available.
- Port size: 1/8 to 1/2, Ø 6 to Ø 12
- *1 Compared with SMC current model



Pilot Operated 2 Port Solenoid Valve for Dry Air VQ20/30 Series



- High-frequency operation possible: High-speed response 7 ms or less (VQ20), 20 ms or less (VQ30)
- Easy piping with One-touch fittings
- Dust-tight, water-jet-proof enclosure (IP65) compatible with DIN terminal type.
- Application: Air-blow, Blow-off of workpiece, etc.



Pilot Operated 2 Port Solenoid Valve VXD Series



- For air, water, heated water, oil, high-temperature oil
- Body material: Aluminum, Resin, C37, Stainless steel, CAC408
- With One-touch fittings (resin body) type is available.
- Enclosure: IP65*1
- Port size: Ø 10, Ø 12, Ø 3/8", 1/4 to 1
- *1 Electrical entry flat terminal type terminal is IP40.



Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve VXZ Series



- For air, water, heated water, oil, high-temperature oil
- Body material: Aluminium, Resin, C37, Stainless steel
- With One-touch fittings (resin body) type is available.
- Enclosure: IP65
- *Electrical entry flat terminal type terminal is IP40.



Blow Guns

Blow Gun VMG Series

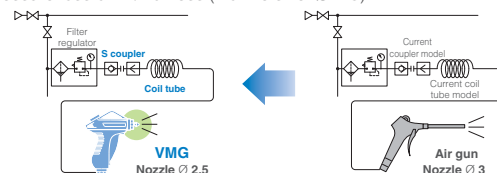


- Reduction of 2000 m³ per annum is possible. (Energy saving)
- Pressure loss: 1 % or less (Nozzle size: Ø 2.5)
- Available nozzle:
Male thread nozzle, High efficiency nozzle with male thread, Low noise nozzle with male thread, Copper extension nozzle



20% reduction in power consumption with the SMC "blow gun" + "S coupler" + "coil tube"

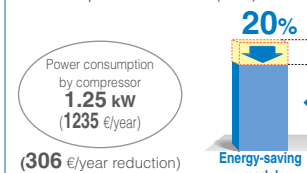
- Blow gun facilitates effective pressure use.
- Pressure loss of 1 % or less (Nozzle size: Ø 2.5)



Reduced power consumption

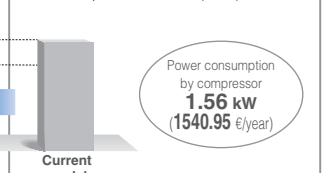
Energy-saving Circuit

Impact pressure: 0.011 MPa (Distance: 100 mm)
Blow time: 10 seconds (Frequency: 12 times/hour)
Working hours: 10 hours/day (250 days/year)
Total working hours: 8300 hours
Compressor pressure: **0.5 MPa**
Air consumption: **257 l/min (ANR)**



Current Circuit

Impact pressure: 0.011 MPa (Distance: 100 mm)
Blow time: 10 seconds (Frequency: 12 times/hour)
Working hours: 10 hours/day (250 days/year)
Total working hours: 8300 hours
Compressor pressure: 0.6 MPa
Air consumption: 287 l/min (ANR)



Corresponding value: Electricity unit 0.12 €/kWh
- For details, refer to the [Web Catalogue](#).

Nozzles for Blowing KN Series



Type	Nozzle size
Nozzle with male thread	Ø 1 to Ø 8
High efficiency nozzle	Ø 1 to Ø 2
Low noise nozzle with male thread	Ø 0.75 x 4 to Ø 1.1 x 8
Copper extension nozzle	Ø 1.5 to Ø 3
Pivoting nozzle	Ø 4, Ø 6
Nozzle with self-align fitting	Ø 1 to Ø 6
Nozzle for One-touch fitting	Ø 1 to Ø 3

RoHS



Flow Switches

2-Colour Display Digital Flow Switch PFMB Series



RoHS

- Dry air, N₂
- Grease-free
- Integrated flow adjustment valve
- Compact, Space saving
- Enclosure: IP40



Series	Rated flow range [l/min]
PFMB	2 to 200
	5 to 500
	10 to 1000
	20 to 2000

Tubing

Polyurethane Coil Tubing TCU Series

- Flexible
- Max. operating pressure: 0.8 MPa (at 20 °C)
- For moving applications



RoHS

3-Colour Display Digital Flow Switch PFMC Series

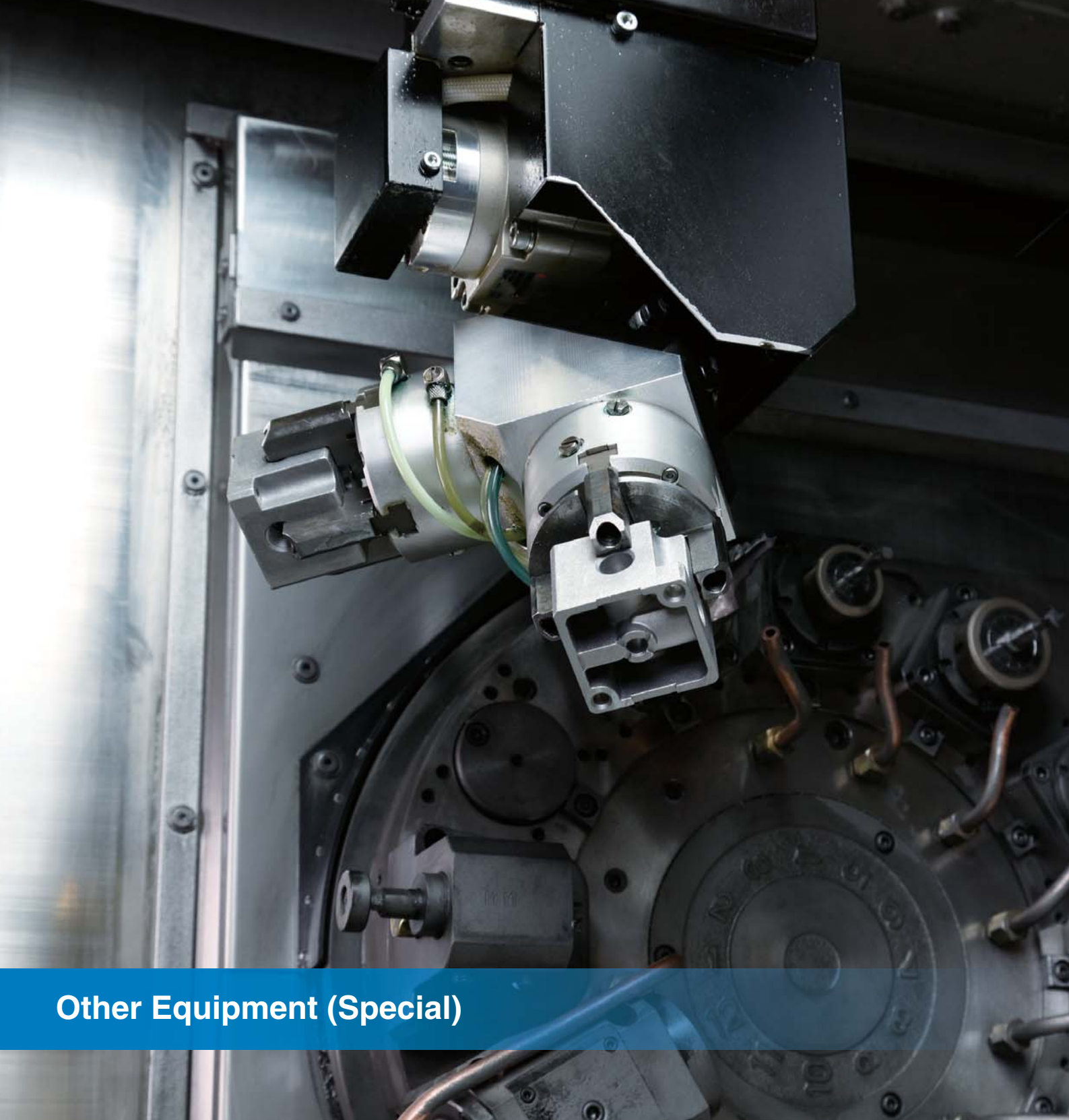


RoHS

- Dry air, N₂
- 3-colour/2-screen display
- Expanded flow range: Wide range of flow measurement is possible with one product.
- Compact, Space saving
- Enclosure: IP65



Series	Rated flow range [l/min]
PFMC	5 to 500
	10 to 1000
	20 to 2000



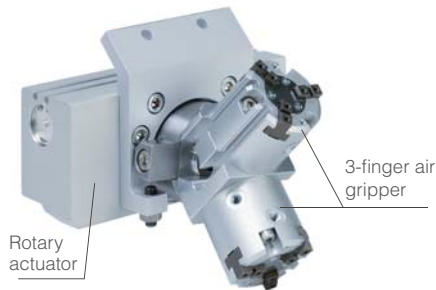
Other Equipment (Special)



Air Grippers

Air Gripper Reverse Unit Made to Order

- For workpiece transfer with gantry loaders
- For loading/unloading workpieces from equipment



Pressure Control Equipment

Precision Regulator IR1000-A/IR2000-A/IR3000-A Series

RoHS

- Air consumption: Reduced by up to approx. 90 %
(Compared with the current model)
- High flow rate: Up to approx. twice
(Compared with the current model)
- Lightweight: Reduced by up to approx. 27 %
(Compared with the current model)
- Sensitivity: 0.2 % (Full span)
- Repeatability: ± 0.5 % (Full span)

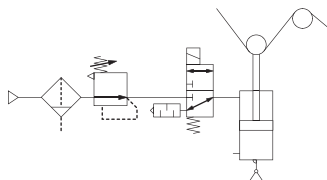


Application Example

Accurate pressure setting

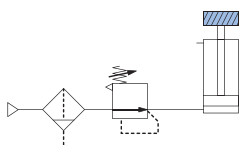
Sensitivity within 0.2 % F.S. (Full Span)

Tension control*1



Balance and drive

Accurate balance pressure setting*1



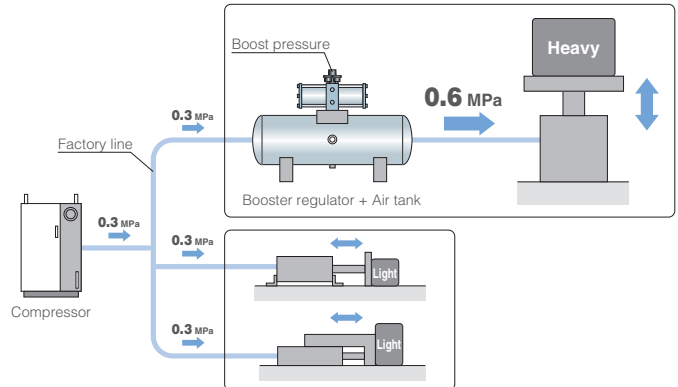
Limits pressure fluctuation when driving a cylinder, maintaining excellent static and dynamic balance.

*1 The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust the pressure with the knob.

Booster Regulator VBA Series

RoHS

- Can increase factory air by a maximum of 200 %. Power supply not required.
- It is possible to get a maximum of double pressure by connecting air with a factory line. (VBA11 A: maximum 4 times)



- Space-saving type that directly connects air tanks and booster regulators



Air Tank VBAT Series

RoHS

- Compact air tank that can be directly connected with a regulator
- Can be used as an independent tank.
- With a safety valve port (Option)



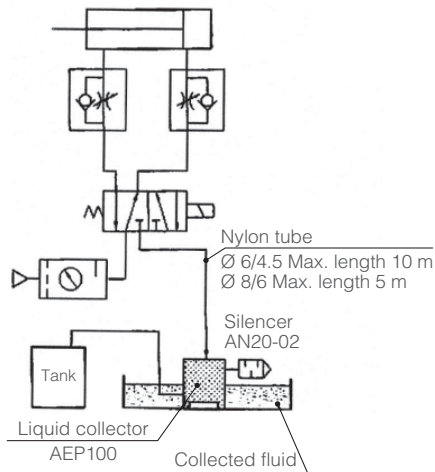
Lubrication Equipment

Liquid Collector: Exhaust Pressure Type AEP100 Series

- Collect and reuse the leaked lubricating oil or hydraulic fluid using exhaust pressure.
- Liquids are collected using only the exhausted air released from the switching valve. This leads to energy saving.
- Increase efficiency by eliminating the need to collect and wipe by hand.



Application Example

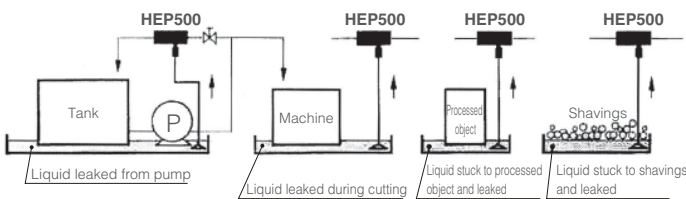


Liquid Collector: Ejector Type HEP500 Series

- Collects the leakage of expensive cutting and grinding oil.
- No need to collect the leaked liquid by hand.
- As it is possible to use the equipped pump, special driving force is not required.



Application Example



Large Flow Lubricator AL Series

- Individual lubrication
- Large flow type



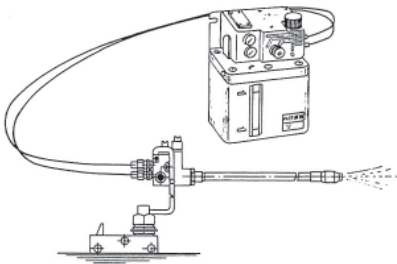
Series	Port size	Bowl capacity [cm³]
AL800/900	1 1/4, 1 1/2, 2	440, 1000

Mist Spray Unit LMU Series

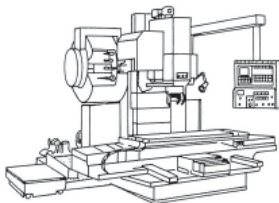
- Intermittent spray to cutting and press gear chains, etc.



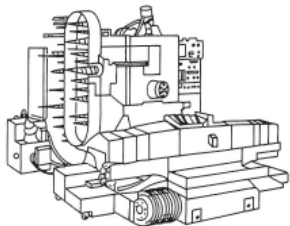
Application Examples



Standing type machining center
(Drilling center)



Horizontal machining center



<Related Products>

Mixing Valve/LMV Series



Magnet Holder/LMH Series



Branch Pipe/LMD Series



Impulse Lubricator ALIP Series

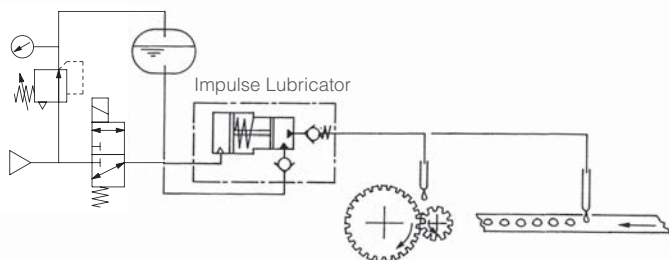
- Supplies a set volume of oil just before the lubrication point. It is possible to lubricate a constant volume of oil to circuits that are difficult for oil to reach, or places with little air consumption.



Series	Type	Port size	Feeding volume/cycle [cm³]
ALIP	Pressure type	1/8	0 to 0.04
ALT10	Oil tank	Air: 1/8	Tank capacity: 160 cm³
ALT20	Oil tank	Oil: 1/4	Tank capacity: 1000 cm³

Application Example

Intermittent lubrication and constant amount of oil dropping to the friction part of machines, such as gears.



Process Pumps

Process Pump/Double Acting Pump PA Series

RoHS



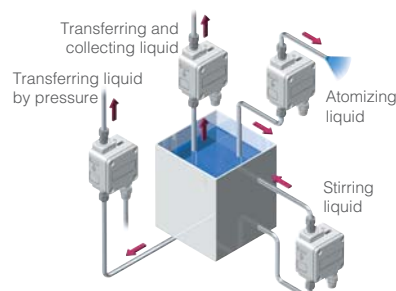
Series	Actuation	Discharge [l/min]	Wetted part material
PA3□□0	Automatically operated	1 to 20	ADC12 (Aluminium) SCS14 (Stainless steel)
PA3□13	Air operated	0.1 to 12	ADC12 (Aluminium) SCS14 (Stainless steel)
PA5□□0	Automatically operated	5 to 45	ADC12 (Aluminium) SCS14 (Stainless steel)
PA5□13	Air operated	1 to 24	ADC12 (Aluminium) SCS14 (Stainless steel)

Process Pump/Single Acting Pump PB Series

CE RoHS
[Built-in solenoid valve]



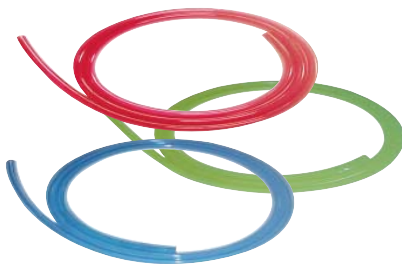
Application Example



Series	Actuation	Discharge [ml/min]	Wetted part material
PB1011A	Built-in solenoid valve	8 to 2000	Polypropylene Stainless steel 316
PB1013A	Air operated	8 to 1000	Polypropylene Stainless steel 316
PB1313A	Air operated	8 to 1000	New PFA (Fluororesin)



Piping Equipment



Fittings

S Couplers KK Series

RoHS

- Fluid: Air, Water
- Applicable tubing O.D.: Ø 3.2 to Ø 16
- Applicable hose I.D./O.D.: 5/8 to 11/16
- Port size: M5, R1/8 to 3/4, Rc1/8 to 1/2



S Couplers KK130 Series

- C factor: Increased by 34 % (Thread R1/4 type, compared to the current model*1)
- Plug insertion force: Reduced by 22 % (20 N) (Compared to the current model*1 at 0.5 MPa)
- Lightweight: Reduced by 14 % (12 g) (Compared to the current model*1)
- Fluid: Air
- Applicable tubing O.D.: Ø 6 to Ø 12, Ø 1/4" to Ø 1/2"
- Applicable hose I.D./O.D.: 5/8 to 11/16
- Hose nominal: 6 (1/4") to 12 (1/2")
- Port size: (R, Rc, NPT) 1/8 to 1/2



*1 Current model: KK13 series



S Couplers: Stainless steel 304 KKA Series

RoHS

- Fluid: Air, Water
- Port size: (R, Rc) 1/8 to 11/2



One-touch Fittings KQ2 Series

RoHS

- Fluid: Air, Water
- Applicable tubing O.D.: Ø 2 to Ø 16, Ø 1/8" to Ø 1/2"



Metal One-touch Fittings KQB2 Series

RoHS

- Fluid: Air, Water
- Applicable tubing O.D.: Ø 3.2 to Ø 16, Ø 1/8" to Ø 1/2"



Insert Fittings KF Series

- Fluid: Air, Steam (Brass sleeve)
Air, Water (Resin sleeve)
- Applicable tubing O.D.: Ø 4 to Ø 12



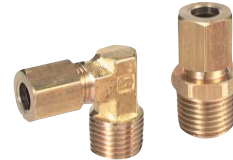
Brass sleeve



Resin sleeve

Self-align Fittings H/DL/L/LL Series

- Fluid: Air
- Applicable tubing O.D.: Ø 4 to Ø 12



Stainless Steel 316 One-touch Fittings KQG2 Series

RoHS

- Fluid: Air, Water, Steam
- Applicable tubing O.D.: Ø 3.2 to Ø 16, Ø 1/8" to Ø 1/2"



Stainless Steel 316 Insert Fittings KFG2 Series

RoHS

- Fluid: Air, Water, Steam
- Applicable tubing O.D.: Ø 4 to Ø 16, Ø 1/8" to Ø 1/2"



Tubing

Polyurethane Tubing

TU/TIUB Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 2 to Ø 16, Ø 1/8" to Ø 1/2"



Colour Variations*1: 29 colours



*1 Please contact SMC for the TIUB.

Wear Resistant Tubing

TUZ Series

- Fluid: Air, Water
- Tubing O.D.: Ø 2 to Ø 16
- Abrasion: Approx. 1/3 (Compared with SMC polyurethane tubing TU series)



Colour Variations



Flame Resistant (Equivalent to UL-94 Standard V-0)

FR Soft Nylon Tubing

TRS Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



Colour Variations



Flame Resistant (Equivalent to UL-94 Standard V-0)

FR Double Layer Tubing

TRB Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12

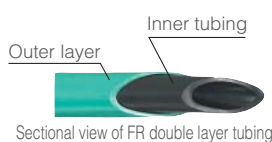
Flame Resistant (Equivalent to UL-94 Standard V-0)

FR Double Layer Polyurethane Tubing

TRBU Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



Colour Variations

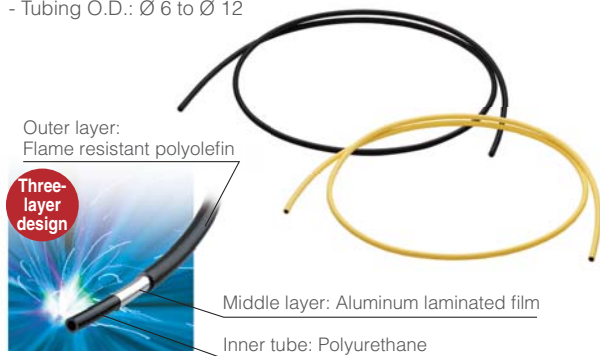


* Note that the tube colours are samples.

Flame Resistant (Equivalent to UL-94 Standard V-0) FR Three-layer Polyurethane Tubing TRTU Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



Colour Variations



Fluoropolymer Tubing (Super PFA) TL/TIL Series

RoHS

- Applicable tubing O.D.
Metric size: Ø 4, Ø 6, Ø 8, Ø 10, Ø 12, Ø 19
Inch size: Ø 1/8", Ø 3/16", Ø 1/4", Ø 3/8", Ø 1/2", Ø 3/4", Ø 1"
- Max. operating pressure: 1.0 MPa (at 20 °C)*1
- Max. operating temperature: 260 °C (This may vary according to operating pressure.)
- *1 This may vary according to size.



* Note that the tube colours are samples.

Flow Control Equipment

Speed Controller with One-touch Fittings Push-lock Type AS Series

RoHS

- Easy to lock push-lock type
- Larger knob
- Improved tube insertion/removal
Insertion force: Max. 30 % (8 N) reduction
Removal force: Max. 20 % (5 N) reduction*1
- *1 Tube pull-out strength is ensured to be equivalent to current model.

Elbow type/Universal type

In-line type



Speed Controller with Indicator AS-FS Series

RoHS

- Applicable tubing O.D.: Ø 2 to Ø 16 (Metric), Ø 1/8" to Ø 1/2" (Inch)
- Numerical indication of knob rotation for flow rate reduces flow setting time and setting errors! The value can be controlled via the indicator window.

Elbow type/Universal type

In-line type



Dual Speed Controller ASD Series

RoHS

- Applicable tubing O.D.: Ø 4 to Ø 12 (Metric), Ø 1/8" to Ø 3/8" (Inch)
- Enables bi-directional flow control with a speed controller (Meter-in and meter-out)
- Prevents cylinders from lurching

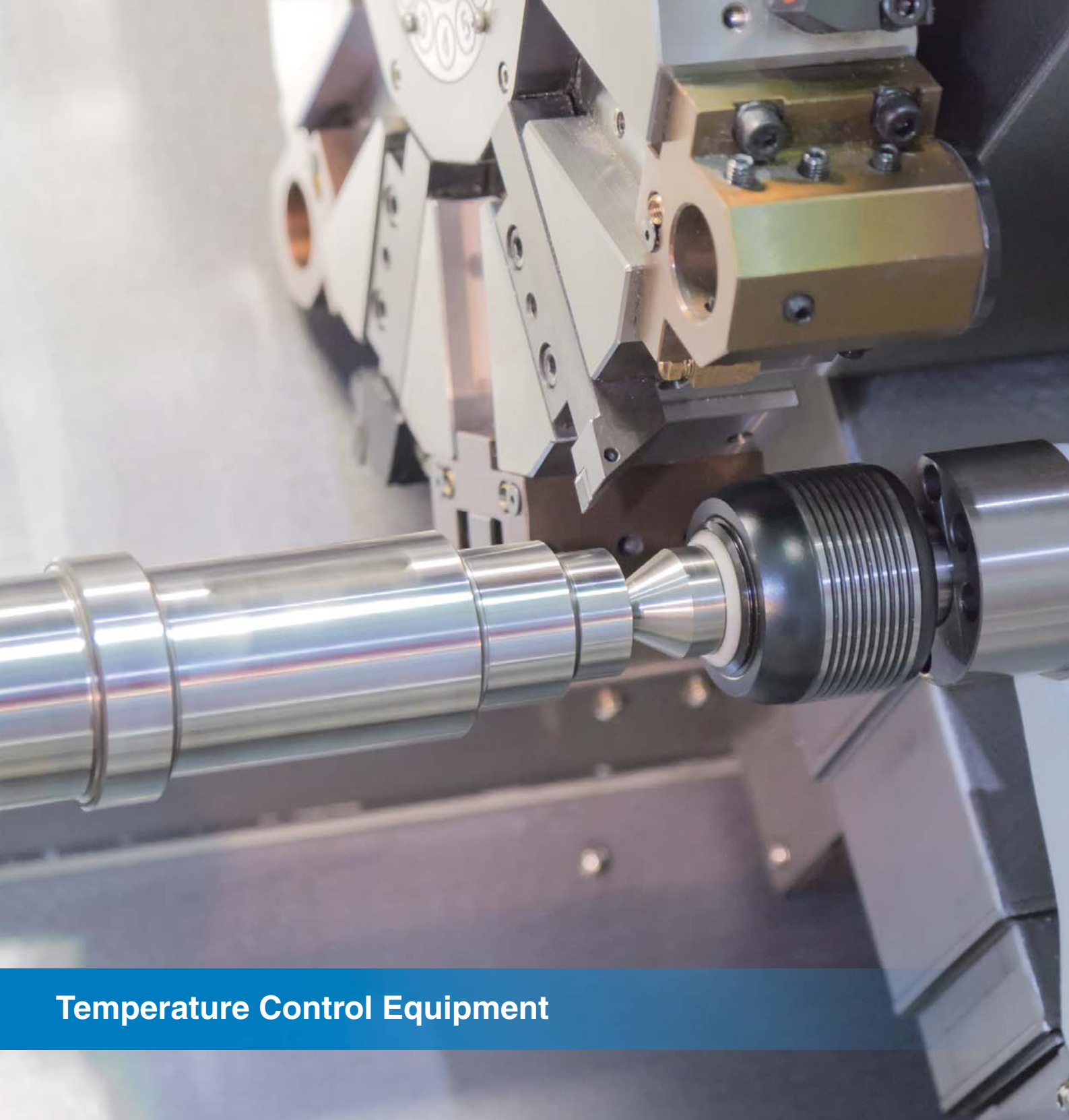


Speed Controller with Pilot Check Valve ASP Series

RoHS

- Applicable tubing O.D.: Ø 6 to Ø 12 (Metric), Ø 1/4" to Ø 1/2" (Inch)
- Integrated pilot check valve and speed controller.
- Realizes momentary intermediate stoppage of a cylinder and is able to adjust the speed control of it.





Temperature Control Equipment



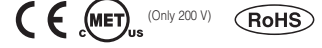
Thermo-chiller: Standard Type HRS Series



- With this chiller, cooling water can be obtained anywhere it is necessary because of easy installation and easy operation.
- For a wide range of applications such as laser machine tools, etc.
- Compact: W377 x H615 x D500 mm, 40 kg (HRS012/018/024)
- Timer function, Low liquid level protection, Power failure auto-restart, Anti-freezing function, etc.
- Self diagnosis function
- Ideal for overseas models (Single-phase 200 to 230 VAC, Single-phase 100, 115 VAC)



Thermo-chiller: Inverter Type HRSH090 Series



- Power consumption reduced by 53 %
Complete with energy-saving triple inverter!
- Cooling capacity: 9.5 kW (Air-cooled), 11.0 kW (Water-cooled)
- Temperature stability: ± 0.1 °C
- Set temperature range: 5 °C to 40 °C



Thermo-chiller: Standard Type HRS090 Series



- Compact and lightweight: 136 kg (Air-cooled type)
- Cooling capacity: 9 kW
- Temperature stability: ± 0.5 °C
- Set temperature range: 5 to 35 °C
- Max. ambient temperature: 45 °C
- Power supply: 3-phase 200 to 230 VAC, 380 to 415 VAC



Thermo-chiller: Inverter Type HRSH Series



- Complete with energy-saving triple inverter!
- Outdoor installation, Splashproof type (IPX4)
- Max. ambient temperature: 45 °C
- Temperature stability: ± 0.1 °C (when a load is stable)
- Space saving and lightweight: 280 kg (25 kW type)



Thermo-chiller: Standard Type HRS100/150 Series



- No heater required, as circulating fluid is heated using heat exhausted by refrigerating circuit.
- Compatible with power supplies in Europe, Asia, Oceania, North, Central, and South America
- Low-noise design: 70 dB(A)
- Outdoor installation: IPX4
- Compact, Space saving



Thermo-chiller: Basic Type HRSE Series



- Complete with energy-saving triple control!
Reduces power consumption by 35 %
- Compact and lightweight: 35 kg (230 VAC)
- Maintenance free: Magnet pump
- Low-noise design: 57 dB(A)



Application Examples

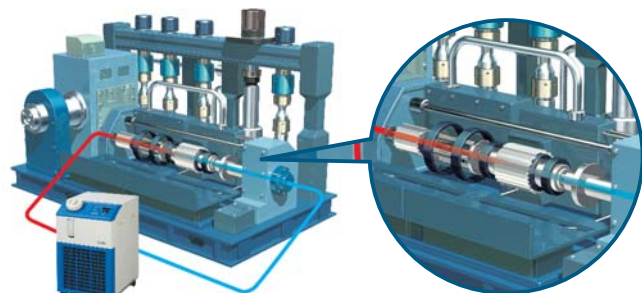
Cooling of built-in motors

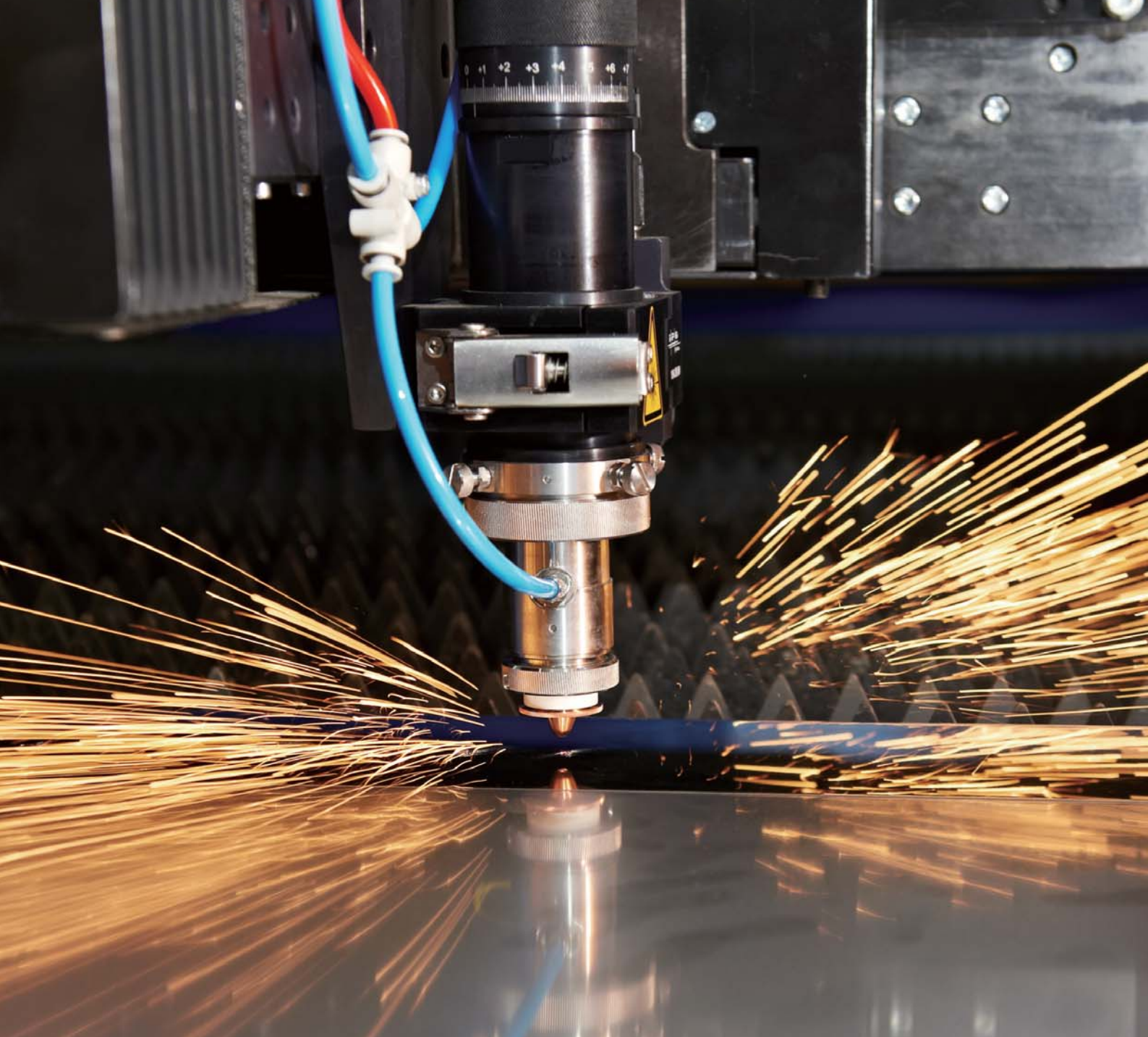
The use of water with a high efficiency ratio increases the cooling effect.



Cooling of ball screws

The cooling efficiency of hollow ball screws can be increased.





Laser Beam Machine Equipment



2/3 Port Valves for Fluid Control

Direct Operated 2 Port Solenoid Valve VX2 Series



- For air, medium vacuum, water, oil, steam (Can be used with heated water.)
- Flow rate: 20 % more flow*¹
- Height: 10 % smaller*¹
- Weight: 30 % lighter*¹
- Body material: Aluminium, Resin, C37, Stainless steel
- With One-touch fittings (resin body) type is available.
- Port size: 1/8 to 1/2, Ø 6 to Ø 12
- *¹ Compared with SMC current model



Please contact SMC in regards to the use of special fluids (O₂, N₂) in laser beam machines, etc.

5.0 MPa Pilot Operated 2/3 Port Solenoid Valve & Check Valve VCH/VCHC Series

- Service life: 10 million cycles
- Uses a polyurethane elastomer poppet in the valve seat
- Improved durability under high-pressure environments



Direct Operated Regulator for 6.0 MPa (Relieving Type) VCHR Series

- Service life: 10 million times
- Improved durability in high-pressure environments using a polyurethane elastomer poppet
- Improved durability using a metal seal type relief valve
- Uses special fluororesin seals for sliding parts
- Stable unattached response, not easily affected by pressure



Series	VCHR
Model	VCHR30/40
Type	Direct operated regulator (Relieving type)
Port size	G3/4, 1, 1 1/2
Max. operating pressure [MPa]	6.0
Set pressure range [MPa]	0.5 to 5.0

Pressure Control Equipment

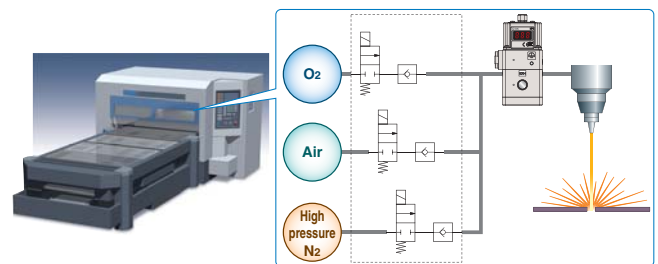
5.0 MPa Maximum Supply Pressure High Pressure Electro-Pneumatic Regulator ITVX Series



- Stepless control of air pressure proportional to an electrical signal
- Max. supply pressure: 5.0 MPa
- Set pressure range: 0.01 to 3.0 MPa
- Max. flow rate: 3000 l/min (ANR)
- Fluid: Air, N₂, O₂, Ar
- Wetted parts: Fluorine grease



Application Example



Flow Control Equipment/Related Equipment

Check Valve AK Series

- Oil-free compatible (Please contact SMC separately.)



Type	Series	Port size	Applicable tubing O.D.	
			Metric size	Inch size
In-line type	AK2000/AK4000 AK6000	1/8 to 1	—	—
Straight type	AKH	—	Ø 4 to Ø 12	Ø 5/32" to Ø 1/2"
Male connector type	AKH	M5 to 1/2	Ø 4 to Ø 12	Ø 5/32" to Ø 1/2"
Bushing type	AKB	1/8 to 1/2	—	—
Made to order for air/water	<ul style="list-style-type: none"> Body material: Brass INA-14-290/ XTO-674-□□ Body material: Stainless steel INA-14-□ Rubber material: NBR/ FKM/CR High temperature, low temperature Low cracking 	1/8 to 1/2	—	—

Also compatible with O₂ (Available as special order). Please contact SMC separately.

Fittings & Tubing

Fluoropolymer Tubing (Super PFA) TL/TIL Series

RoHS

- Applicable tubing O.D.
Metric size: Ø 4, Ø 6, Ø 8, Ø 10, Ø 12, Ø 19
Inch size: Ø 1/8", Ø 3/16", Ø 1/4", Ø 3/8", Ø 1/2", Ø 3/4", Ø 1"
- Max. operating pressure: 1.0 MPa (at 20 °C)*1
- Max. operating temperature: 260 °C (This may vary according to operating pressure.)
- *1 This may vary according to size.



Flame Resistant (Equivalent to UL-94 Standard V-0) FR Soft Nylon Tubing TRS Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



Colour Variations



Flame Resistant (Equivalent to UL-94 Standard V-0) FR Double Layer Tubing TRB Series

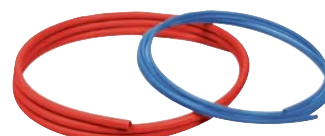
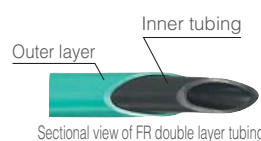
RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12

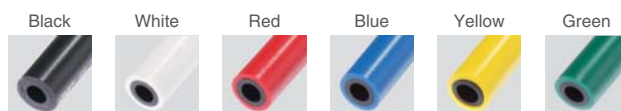
Flame Resistant (Equivalent to UL-94 Standard V-0) FR Double Layer Polyurethane Tubing TRBU Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



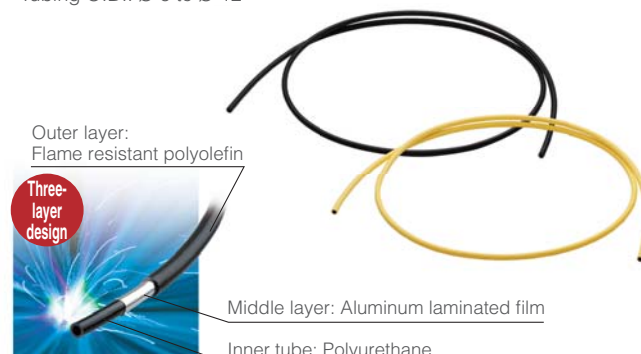
Colour Variations



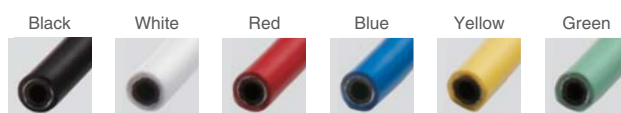
Flame Resistant (Equivalent to UL-94 Standard V-0) FR Three-layer Polyurethane Tubing TRTU Series

RoHS

- Fluid: Air, Water
- Tubing O.D.: Ø 6 to Ø 12



Colour Variations



* Note that the tube colours are samples.

Temperature Control Equipment

Thermo-chiller: Standard Type

HRS Series



us (Only 60 Hz)



- With this chiller, cooling water can be obtained anywhere it is necessary because of easy installation and easy operation.
- For a wide range of applications such as laser machine tools, etc.
- Compact: W377 x H615 x D500, 40 kg
- Timer function, Low liquid level protection, Power failure auto-restart, Anti-freezing function, etc.
- Self diagnosis function
- Ideal for overseas models (Single-phase 200 to 230 VAC, Single-phase 100, 115 VAC)



Series	HRS
Set temperature range	5 to 40 °C
Max. cooling capacity	5.9 kW
Temperature stability	±0.1 °C
Cooling method	Air-cooled refrigeration, Water-cooled refrigeration
Circulating fluid	Tap water, Ethylene glycol aqueous solution

Thermo-chiller: Inverter Type

HRSH Series



us (Only 200 V)



- Complete with energy-saving triple inverter!
- Outdoor installation, Splashproof type (IPX4)
- Max. ambient temperature: 45 °C
- Temperature stability: ±0.1 °C (when a load is stable)
- Space saving and lightweight: 280 kg (25 kW type)



Series	HRSH
Set temperature range	5 to 35 °C
Max. cooling capacity	25 kW
Temperature stability	±0.1 °C
Cooling method	Air-cooled refrigeration, Water-cooled refrigeration
Circulating fluid	Tap water, Deionised water, Ethylene glycol aqueous solution

Air Preparation Equipment

Membrane Air Dryer

IDG□A/IDG Series

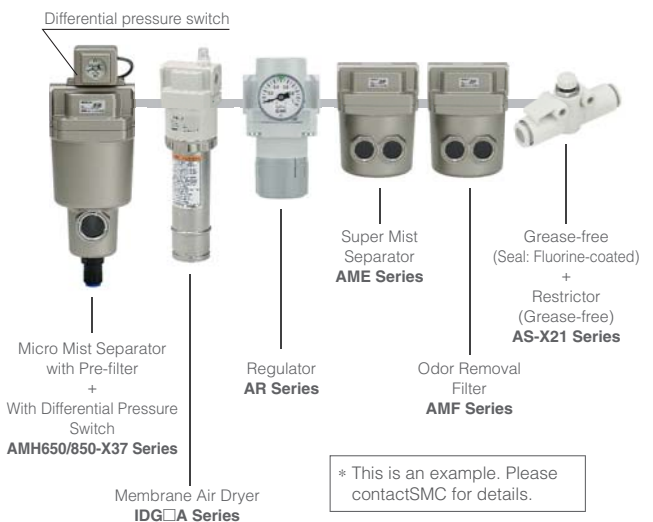


- It is possible to easily supply dry air using the hollow fibre membrane.
- Non-fluorocarbon
- Power supply not required.
- Compatible with low dew points (−60 °C)
- No vibration or heat discharge.
- With a dew point indicator



<Example of System>

Air purge applied continuously where laser beam passes through (light path)



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