Pneumatic Equipment for Food Industry

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U.S.C.

-+1









Process/Theme



SMC

These are examples. Customers are responsible for deciding on the application of the products.



Products



SMC

End Lock Cylinders CBJ2, CBM2, CBG1, CBA2, MBB, CBQ2, MGG, MGP CXS, CXW, MGZ, MTS, MXS, MXQ, MY1H-Z, MY1H CS1-X1347 (Made to Order)



Actuators						
Others Standards ▶P.18 Standard no. ISO6432 ISO15552 C85 CP96/C96 Series Image: Case of the series	2 ISO21287 5 C55	Specialized • Stainless Stee CQ2B32RD-W • External Stainless • Mechanically Jo • Improved Environme • Heat Resistan • Heat Resistan • Air-Hydro Boo	Products el Compact Cylinder: Water Resistant Type/ 4420/4491, etc. P11 s Steel Compact Guide Cylinder/MGPMX2532 P11 inted Rodless Cylinder/MY3B63DCJ6064J P12 ntal Resistance: Parallel Style Air Gripper/MHZL2X3361 P12 ntal Resistance: Parallel Style Air Gripper/MHZL2X3361 P12 ntal Cylinder with Auto Switch P14 t Auto Switch P14 oster P15	Actuators		
Valves						
Food Sanitation Hygienic ► P.19	Environmental Resistance	teel ► P.19,26	Energy Saving/ Reduced- wiring ► P.19	Vali		
Received and the second and the seco			Re Ce Lee	Fittings & Tubing Flow Control Equipment		
VFN2120N-X23/-X36	LVA	INA-14 XTO-674	VQ20/30	ntrol w Guns		
Energy Saving/ Reduced-wiring > P.19	High Speed High Speed	ed ►P.20	High Speed High Frequency/Long Service Life > P.20	Pressure Co Equipment/Blo		
EX260, EX250	SX10		VQC, VQZ	Static Neutralization Equipment		
Image: Product of the second secon	Safety Safety Standard ISO13849-1 (Control of the standard SO13849-1 (Control of the standard SO1384	S P.21 Certified	StatusP.22StatusP.23VisionP.23Vision </th <th>ol Vacuum Equipment Detection Switches</th>	ol Vacuum Equipment Detection Switches		
Safety Measures Lurch Prevention ►P.22	Safety Measures Drop Preven	ition ► P.23	Safety Measures Misoperation Prevention ► P.23	ctuators Temperature Contru Equipment		



AV



Double Check Spacer (With residual pressure release valve) SY3000/5000/7000 Double Check Block S0700, VQ, VQC, VQZ **SMC**

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VR51

Electric Actuators







Actuators

Food Sanitation Hygienic

A water resistant cylinder configured for easy cleaning

Five times increase in service life compared to current model (SMC ratio)

Water-proof examination result (Reference data)



Washing in water/Temperature: 30°C, Flow rate: 160 cc/min



Туре	Series	Action	Bore size [mm]	
Round type	HYB		20, 25, 32, 40, 50, 63, 80, 100	
Basic type	HYQ	Double	20, 25, 32, 40, 50, 63	
ISO standard type	HYC	acting	32, 40, 50, 63	
With guide	HYG		20, 25, 32, 40, 50, 63	
Features	Food grade grease (certified by NSF-H1) is available. Ambient and fluid temperature: 0 to 70°C (Without auto switch) 0 to 60°C (With auto switch)			





Grease for Food Processing Equipment

Certified by NSF-H1

Specifications

Seal material	Nitrile rubber
Grease	Grease for food
Auto switch	Mountable
Dimensions	Same as standard type
Specifications other than above	Same as standard type

A Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

<Not installable>

Food zone An environment where food which will be sold as

- merchandize, directly touches the cylinder's components. Splash zone.....An environment where food which will not be sold as
- enchandize, directly touches the cylinder's components.

Non-food zone...An environment where there is no contact with food.

		Not installab	le
Splash zone	~ — ———————————————————————————————————		
Not installable			
		1	
			Container
	F	ood	Installable
		-	

Food zone

- *: Avoid using this product in the food zone. (Refer to the figure above.)
- *: When the product is used in an area of liquid splash, or a water resistant function is required for the product, please consult with SMC.
- *: Operate without lubrication from a pneumatic system lubricator. *: Use the following grease pack for the maintenance work.
- GR-H-010 (Grease: 10 g) *: Please contact SMC for details about the maintenance intervals for this cylinder, which differ from those of the standard cylinder.

Made to Order

Grease for Food Processing Equipment <a>Applicable Series>

Food grade grease (certified by NSF-H1) is used for all parts that grease is applied.

a applicable cellec:				
Series	Symbol (Suffix)	Series	Symbol (Suffix)	
MXQ		CM2-Z		
MXF		CG1-Z		
MXW	vo	CA2-Z		
MXP	-79	CQ2	-XC85	
MXPJ		CQS		
MXY		MGP		
MIW		MGP-Z		
MIS	-X79			
MH	1			

Series other than the above are also available. Please contact SMC for details.

Actuators



Stainless Steel Cylinder CD5-S



Series	Action	Bore size [mm]
CJ5-S	Double esting	10,16
CG5-S	Double acting	20, 25, 32, 40, 50, 63, 80, 100
Features	Material External metal parts: Seal: Choose from N Ambient and fluid tem Food grade grease (ce	Stainless steel 304 BR/FKM perature: –10 to 70°C (Without auto switch), –10 to 60°C (With auto switch) ertified by NSF-H1)

Made to Order

Applicable for use under environments with water splashing. Stainless steel parts improve corrosion resistance.

Symbol

Suitable for the cases it is likely to generate rust by being immersed in the water and corrosion.

<Applicable Series>

CM2/CG1-Z/MB-Z*2/MB1-Z*2/CA2-Z*1, 2/CS1*2/CQS/CQ2/CV/MGP-Z/MGP/MGG/MGC/

CXS/CXSJ/RHC Series

*1: Only head end lock is available for the CBA2.

Made of Stainless Steel: -XC6

*2: There is a maximum stroke limit for CA2, MB, MB1 (ø100) and CS1 cylinders.

*3: The CS2 series, made of stainless steel, is applicable as -XC68.

The CA2-Z, MB-Z and MB1-Z series are applicable as -XC68. (-XC6 for ø125)

Tie-rod, Cushion Valve, Tie-rod Nut, etc. Made of Stainless Steel: -XC7

When using in locations where the rust generation or corrosion likelihood exists, the standard parts material have been partly changed to the stainless steel.

<Applicable Series> MB-Z/MB1-Z/CA2-Z/CA2/CV Series

Double Clevis and Double Knuckle Joint Pins Made of Stainless Steel: -XC27

To prevent the oscillating portion of the double clevis or the double knuckle joint from rusting, the material of the pin and the retaining ring has been changed to stainless steel.

<Applicable Series>

CM2/MB-Z/MB1-Z/CA2-Z/CS1/CS2/CV/CG1/CQS/CQ2 Series

Specialized Products

External Stainless Steel Compact Guide Cylinder MGPMD-X2532

- Stainless steel is used for all external metal parts.
- Improved corrosion resistance in environments exposed to water
- Food grade grease (certified by NSF-H1) is used.
- Laser marking (Cylinder plate)



Stainless Steel Compact Cylinder: Water Resistant Type CQ2B32RD-W4420-10 CQ2B32RD-W4491-20

- External parts (piston rod, body) are made of stainless steel 304.
- Using a special scraper improved water resistance.
- Interchangeable mounting pitch with the CQ2 standard product.
- Grease: Lithium soap based grease

Stainless Steel Compact Cylinder: Water Resistant Type CDQ2B32R-30-DCI7727I

- External parts (piston rod, body) are made of stainless steel 304.
- Using a special scraper improved water resistance.
- Interchangeable mounting pitch with the CQ2 standard product.
- Water resistant 2-color indicator solid state auto switch is mountable.
- Food grade grease (certified by NSF-H1) is used.

Water Resistant Compact Cylinder CQ2B20RD-W4419-15

- External parts (piston rod, body) are made of stainless steel 304.
- With special scraper
- Grease: Lithium soap based grease



Water Resistant

Water Resistant Cylinders

Applicable for use in environments exposed to coolant or with water splashing.



Dramatically improved water resistance Relation of Coolant Entry and Sliding Distance *: For rod size Ø20 [0] 15 Amount of coolant entry 10 Standard cylinder Water resistant cylinder 5 50 0 100 150 200 300 250 Sliding distance [km] Conditions



Description	Series	Bore size [mm]	
Air cylinder	CM2-Z	20, 25, 32, 40	
Air cylinder	CG1-Z	32, 40, 50, 63, 80, 100	
Compact cylinder	CQ2	20, 25, 32, 40, 50, 63, 80, 100	
Air cylinder	CA2-Z	40, 50, 63, 80, 100	
Air cylinder	MB-Z	32, 40, 50, 63, 80, 100	
Square tube type air cylinder	MB1-Z	32, 40, 50, 63, 80, 100	
Compact guide cylinder	MGPM	20, 25, 32, 40, 50, 63, 80, 100	
Guide cylinder	MGGM	32, 40, 50, 63, 80, 100	
Features	Using a special scraper improved water resistance, compared to standard cylinder		

Electric Actuator/Rod Type: Dust-tight/Water-jet-proof (IP65 Equivalent)



Specialized Products

- Water Resistant Compact Cylinder CQSB12RD-P6057-10
- With special scraper/Material: NBR

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Mechanically Jointed Rodless Cylinder MY3B63DCJ6064J

- Piston seal material changed to H-NBR.
- Application example: In the area around the ultrasonic cleaning machine in a high temperature region*1 (Hydrocarbon-based cleaning liquid atmosphere)
- *1: Do not use in locations where the product is directly exposed to cleaning liquid.

∕∂SMC

Improved Environmental Resistance Parallel Style Air Gripper MHZL2-10SF-X3361

- Dust cover prevents moisture from entering. Material: Fluororubber
 - O-ring/Seal material: Fluororubber
 - Fluorine grease
 - Magnet holder/Finger/ Piston material: Stainless steel

Electric Actuators

Actuators

Environmental Resistance

Paper Powder/Dust Resistant

Applicable to Operation in Micro-powder (10 to 100 μm) /General Environments: Cylinder with Stable Lubrication Function (Lube-retainer) CM2-Z/CG1-Z/CA2-Z/CDQS/CDQ2/MXQ_A/MGP/CXS

Durability is **4** times stronger

than the standard model in micro-powder environments.



Comparison with the standard model and model with heavyduty scraper (-XC4) (Relative ratio of B10)

*: The durability test is conducted in accordance with SMC test conditions.

As the Lube-retainer is mounted at two locations,

- Grease film is formed on the piston rod surface to improve the durability.
- Entry of dust and foreign matter is prevented.

Even with the built-in stable lubrication function (Lube-retainer), the overall length and

mounting are the same as those of the standard model.

*: Except for some models



• The number of operating cycles can be improved even in general environments.



Made to Order

Symbol Heat Resistant Cylinder (-10 to 150°C): -XB6

Seal material and grease have been changed, so that it could be used even at higher temperature up to 150 from -10°C.

Specifications

Ambient temperature range	-10°C to 150°C (CS1, CS2: 0°C to 150°C)
Seal material	Fluororubber
Grease	Heat resistant grease
Specifications other than above and external dimensions	Same as standard type

<Applicable Series>

CJP2/CJ2-Z/CM2-Z/CG1-Z/MB-Z/MB1-Z/CA2-Z/CUJ/CU/CQS/CG5/ CS1/CS2/CQ2/MGP/MGP-Z/MGQ/MGG/MGC/CXSJ/CXS/MK Series

CY3B Series

Piston speed

Specifications Applicable size CY3B Bore size ø6 to ø63 Ambient and fluid temperature 50 to 150°C*1 Maximum operating pressure 0.5 MPa

*1: When using in less than 100°C range, since it could make a difference in the maintenance cycle, depending on the operating speed, use it at 200 mm/s or less.

50 to 400 mm/s*1

Temperature Range for Operating Cylinder and Piston Speed

- ① When using with the operating temperature from 60 up to 100°C, and the piston speed of more than 200 mm/s, please consult with SMC separately. 2 When using with the operating temperature from 50 up to 100°C, and the
- piston speed of 200 mm/s or less, XB6 specifications can be used. ③ As for XB6, regarding the temperature range (over 50 to 60°C) which
- overlaps the one of standard products, consider the tendency of operating temperature (upper, lower limits), then choose a model.



When using with the operating temperature fluctuated between 50°C or less and 100°C or more, the operating speed, etc. will be largely restricted by the durability. Prior to use, please contact SMC.

Heat Resistant Air Gripper (–10 to 100°C): -X4

Seal material and grease have been changed, so that it could be used even at higher temperature up to 100 from -10°C.

Specifications

Ambient temperature range	-10°C to 100°C	
Seal material	Fluororubber	
Grease	Heat resistant grease (GR-F)	
Specifications other than above and external dimensions	Same as standard type	

<Applicable Series> MHC/MHF/MHK/MHL/MHS/MHT/MHW/MHY/MHZ Series

Cylinder with Heat Resistant Auto Switch (Max. 150°C): -XB14

Heat resistant compact cylinder which can mount heat resistant solid state switch (D-M9□J)

Specifications

Applicable cylinder	Compact cylinder/Standard type		
Series	CQ2		
Bore size [mm]	16, 20, 25, 32, 40, 50, 63		
Туре	Non-lube		
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Minimum operating pressure	0.05 MPa (For ø16 only, 0.07 MPa)		
Ambient and fluid temperature	0 to 150°C		
Rubber bumper	None		
Rod end thread	Male or female thread		
Stroke length tolerance	+1.0 0 mm		
Piston speed	50 to 500 mm/s		

Heat Resistant 2-Color Indicator Solid State Auto Switch (Single Unit)

- Heat resistant type
- The optimum operating range can be determined by the color of the light. (Red \rightarrow Green \leftarrow Red)



Specialized Products

Heat Resistant Cylinder with Auto Switch MGP20 to 63 Series

 The heat resistant solid state auto switch (D-F7NJL) can be mounted on the MGPM20/25/32/50/63.

Heat Resistant Auto Switch D-A73HM-536

Can be used in an atmosphere of 130°C.

Cannot be mounted on standard cylinders. Please contact SMC for applicable cylinders.



Detection Switches

Actuators

Valves

Flow Control Equipme Fittings & Tubing

Equipment/Blow Guns

Pressure Control

Static Neutralization

Equipment

Temperature Control

Equipment

Electric Actuators

Actuators



Cold Resistant

Made to Order

Symbol Cold Resistant Cylinder (-40 to 70°C): -XB7 Seal material and grease have been changed, so that it could be used even at lower temperature down to -40°C. Specifications

ŀ	Ambient temperature range	-40°C to 70°C	Auto switch	Not mountable	
	Seal material	Low nitrile rubber	Dimensions	Same as standard type	Applicable Carico
	Grease	Cold resistant grease			
5	pecifications other than above	S	Same as standard type	e	CU/CQS/CQ2 Series

High Speed High Speed

High Power Cylinder RHC

- The capacity to absorb 10 to 20 times more energy than general purpose cylinders (CG1 series). XC93: With greater water resistance
- Smooth cushioning for high speed operation (3000 mm/s) with light loads and low/medium
 + stable lubrication function

Service Life

High	High Frequency/Long
Speed	

Low Friction Cylinder/Metal Seal Type

High speed, High frequency actuation

H type achieves speeds up to 3000 mm/s (without fixed orifice), and continuous actuation up to 50 cycles per second. (MQML $\square\square$ H)

Lateral Load Resisting Low Friction Cylinder MQM

Series	Bore size [mm]	Operating pressure range [MPa]	Actuation speed [mm/s]
MQML	6 (Standard only)	ø6:0.02 to 0.7	0.5 to 1000
Standard type	10	ø10 to ø25: 0.005 to 0.7	
	16		
MQML□□H	20	0.01 to 0.7	5 to 3000
High speed/frequency	25		

Long service life

Long service life of 10000 km or 100 million full cycles.



High Pressure High Pressure

Specialized Products

Air-Hydro Booster: Hydraulic Cylinder Integrated CHDF50-A4954-30/-A7662-125

CHD2 -DCP8894P/-DCH7274H/-DCP1252P

- 11 tons (36 times pressure increase at 8 mm stroke)
- 1.9 tons (16 times pressure increase at 5 to 10 mm stroke)

Part number	Operating pressure range [MPa]	Pressure increase ratio	Full stroke [mm]	Pressure increase stroke [mm]
CHDF50-A4954-30	0.3 to 0.6	16 : 1	30	5
CHDF50-A7662-125	0.3 to 0.6	16 : 1	125	5
CHD2H100-100-DCP8894P	0.2 to 0.38	36 : 1	100	8
CHD2F50-40-DCH7274H	0.3 to 0.6	16 : 1	40	10
CHD2F50-100-DCP1252P	0.3 to 0.6	16 : 1	100	5







End Lock Cylinders

Drop prevention at the stroke end position

- When air is discharged at the stroke end position, the lock engages.
- Separate air piping for locking is not required.



SMC

Actuators

Flow Control Equipment

Equipment/Blow Guns

Equipment

Equipment

Actuators



Drop Prevention

Lock Cylinders

Locking is possible at any desired stroke position.

- Emergency stops and intermediate stops are possible.
- (The CLQ, RLQ, MLU, MLGP and CLK1 series cannot perform an intermediate stop.)
- Locking position can be changed in accordance with the external stopper position and the thickness of clamped workpieces.



Others

Standards

ISO cylinders are designed to meet with the international standard laid down by the International Organization for Standardization (ISO).

As long as the standard number is identical, the mounting sizes are applicable worldwide.



ISO Cylinder Series Variations

Standard no.	rd no. Series		Action	Bore size [mm]		
Stanuaru no.			Action	8 10 12 16 20 25 32 40 50 63 80 100 125	, Gur	
	Standard		Double acting, Single rod	00000	sure Cor nent/Blov	
		C85	Double acting, Double rod		Pres	
ISO 6432			Single acting, Single rod	00000	ization	
100 0102	Non-rotating rod	COEK	Double acting, Single rod		leutral	
		CODK	Single acting, Single rod		Static N Eq	
	Direct mount	C85R	Double acting, Single rod		tches	
	Standard	0.000	Double acting, Single rod	••••••	on Swit	
100 15550	4 4 40 40 40	CP96	Double acting, Double rod		Detecti	
150 15552	Non-rotating rod	CP96K	Double acting, Single rod		nent	
	as the second		Double acting, Double rod		Equipr	
	Standard	000	Double acting, Single rod	••••••	Vacuum	
	a the ability of the	C96	Double acting, Double rod	••••••	Itrol	
ISO 15552	Non-rotating rod	0001/	Double acting, Single rod		ture Col	
	C96I		Double acting, Double rod		empera Equ	
	Smooth Cylinder	C96Y	Double acting, Single rod		Drs D	
ISO 21287	Standard	C55	Double acting, Single rod		Actuati	
					Electric	

Valves

Food Sanitation

Hygienic

NAMUR Interface 3/5 Port Solenoid Valve IP67 Compliant, Hygienic Design Type VFN2120N-X23/ -X36



Series	Port size	Power consumption		
VFN2120N-X23/ -X36	1/4" (NPT, G)	0.5 W		
Features	Equivalent to IP67 Ambient and fluid temperature: -10 to 60°C Function plate realized 3/5 port selectable Electrical entry: M12 connector			



Series		valve type	Port size	Ornice dia. [mmø]
Threaded type		N.C./N.O./C.O.	1/8 to 1	2 to 22
Features		Fluid temperature Diaphragm mater	: 0 to 100°C (Diapl 0 to 60°C (Diaph ial: Choose from P	hragm: PTFE) ragm: NBR, EPR) TFE/NBR/EPR



Air Blow

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



Series	Valve type	Port size	Cv		
VQ20	N.C.	ø6 to ø12	0.33		
VQ30	N.C.	ø6 to ø12	0.80		
Features	Application: Air-blow, Blow-off of workpiece, etc. 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 (IP65) compliant in DIN terminal type Manifold model: VV/2022, VV/2023				

Energy Saving/ Reducedwiring

Serial Transmission System EX



Serial Transmission System EX



SeriesEnclosureCommunication protocol *1Applicable valveEX260IP67DeviceNet™ PROFIBUS DP CC-Link PROFINET EtherCAT® EtherNet/IP™SY3000, 5000, 7000 VQC1000, 2000, 4000, 5000 SV1000, 2000, 3000 S0700 (IP40)	For Output					
EX260 IP67 DeviceNet™ PROFIBUS DP CC-Link PROFINET EtherCAT® SY3000, 5000, 7000 VQC1000, 2000, 4000, 5000 SV1000, 2000, 3000 SV1000, 2000, 3000 SV1000, 2000, 3000	Series	Enclosure	Communication protocol *1	Applicable valve		
	EX260	IP67	DeviceNet™ PROFIBUS DP CC-Link PROFINET EtherCAT® EtherNet/IP™	SY3000, 5000, 7000 VQC1000, 2000, 4000, 5000 SV1000, 2000, 3000 S0700 (IP40)		

*1: The applicable protocols differ depending on the series. Refer to the catalog for details.

For Input/Output

Series	Enclosure	Communication protocol *1	Applicable valve		
EX250	IP67	DeviceNet™ PROFIBUS DP CC-Link EtherNet/IP™ AS-Interface CANopen	SY3000, 5000, 7000 VQC1000, 2000, 4000, 5000 SV1000, 2000, 3000 S0700 (IP40)		

*1: The applicable protocols differ depending on the series. Refer to the catalog for details.

Specialized Product

With M12 pre-wired connector/VQ4000

- With M12 (4-pin) pre-wired connector for ASi system
- IP65 compliant

Reduced-wiring

M8/M12 Connector PCA/EX9/EX500



- Communication cable/connector: CC-Link, DeviceNet[™], PROFIBUS DP, PROFINET, EtherCAT[®], EtherNet/IP[™]
- Conforming to IEC61076-2-101 and IEC60947-5-2
- IP67 (IEC60529)
- Fieldwireable connectors: No exclusive tools, reduction in wiring time
- SPEEDCON: Just insert the connector and make 1/2 rotation.

High	High Speed
Speed	

High Speed 2 Port Valve SX10



Series	Flow rate (L/min: at 0.25 MPa)	Power consumption [W]	Max. operating frequency [Hz]	
		80	1200	
CV10	50	40	1000	
3710	50	10	550	
		4	350	
		80	650	
SV10	100	40	550	
5710		10	300	
		4	200	
		80	600	
SV10	150	40	500	
3710		10	250	
		4	150	
Features	High speed response: ON 0.45 n OFF 0.4 n Long service life: 5 billion cycle	ns, (±0.05 ms) High frequence Width: 9 mm	cy: 1200 Hz	
i culuico	• The response time service life	and maximum operating frequency a	erating frequency are based on SMC's test conditions	

The response time, service life and maximum operating frequency are based on SMC's test conditions.
 Response time: The values at a flow rate of 50 L/min and power consumption of 80 W



High Frequency/Long Service Life

5 Port Solenoid Valve/Metal Seal Type VQC1000/2000



			-	
Series	Sonic conductance: C	Applicable cylinder size [mm]	Power consumption [W]	
VQC1000	0.72 dm ³ /(s·bar)	50	0.95 (High speed response)	
VQC2000	2.6 dm ³ /(s⋅bar)	80	0.4 (Standard)	
Features	Service life: 200 million cycles (Based on SMC's test conditions.) Response time: 10 ms (VQC1000), 20 ms (VQC2000) Accuracy: ±2 ms (VQC1000/2000) IP67			

5 Port Solenoid Valve/Metal Seal Type VQZ



e	VQZ					
	Series	Sonic conductance: C	Applicable cylinder size [mm]	Power consumption [W]		
	VQZ1000	0.7 dm³/(s⋅bar)	63	0.0 (Lligh around reasons)		
	VQZ2000	1.9 dm ³ /(s⋅bar)	80	0.9 (High speed response)		
	VQZ3000	3.0 dm ³ /(s⋅bar)	100			
	Features	Service life: 200 million cycles (Based on SMC's test conditions.) Response time: 10 ms (VQZ1000/2000/3000) Accuracy: ±2 ms				

SMC

Electric Actuators

Valves



High Pressure





VCH40		
Series	Maximum operating pressure [MPa]	Port size
VCH41 (N.C.) VCH42 (N.O.)	5.0	3/4, 1
Features	Service life: 10 million cycles (Bas Uses the polyurethane elastomer Improves durability at high pressu	eed on SMC's test conditions.) poppet for valve parts. re.

Pilot Operated 3 Port Solenoid Valve VCH400



Series	Maximum operating pressure [MPa]	Port size							
VCH410	5.0 1/2, 3/4, 1								
Features	Service life: 10 million cycles (Bas Uses the polyurethane elastomer Improves durability at high pressu	sed on SMC's test conditions.) poppet for valve parts. ire.							

Manifold (Made to Order)

Check Valve VCHC40



Series	Maximum operating pressure [MPa]	Port size		
VCHC40	HC40 5.0			
Features	Service life: 10 million cycles (Bas Uses the polyurethane elastomer Improves durability at high pressu	sed on SMC's test conditions.) poppet for valve parts. ire.		

Refer to page 34 for Direct Operated Regulator for 6.0 MPa and 5.0 MPa Silencer.



	~		Standards						
Sarias	Catego	Safety limit switch manufacturer	Machinery Directive 2006/42/EC		42/EC				Enclosure
ocites			Harmonized standards	EN ISO13849-1: 2008 EN ISO13849-2: 2012	EN ISO4414: 2010	CE	cUL	RoHS	Lineiosure
Residual Pressure	2	OMRON Corporation		•	•				ID65
VP542/742-X536	2	Rockwell Automation, Inc.							1600
Dual Residual Pressure	0.4	OMRON Corporation							IDee
VP544/744-X538	3, 4	Rockwell Automation, Inc.		•					1202
Dual Residual Pressure Release Valve	0.4	OMRON Corporation							IDOS
VP544/744-X555	3, 4	Rockwell Automation, Inc.							1202
Dual Residual Pressure	0.4	OMRON Corporation	<u> </u>						10.40
VG342-X87	3, 4	Rockwell Automation, Inc.							IP40
			_			1	×1: (, Only port	size 3/4



Measures against Residual Pressure

Conforming to OSHA Standard: Pressure Relief 3 Port Valve with Locking Holes VHS

- Conforming to OSHA standard (Occupational Safety and Health Administration Department of Labor).
- Manually operated valve can be used to prevent accidents caused by residual pressure in pneumatic lines.
- 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.

Aluminum handle and bonnet type is available.



IP67 compliant

With Residual Pressure Release Valve (SY5000/7000)

- The pressure of the 4 (A) and 2 (B) ports is also exhausted automatically at the same when the pressure of the 1 (P) port is exhausted.
- \cdot The pressure can be visualized using the indicator (red).



SUP Stop Valve Spacer with Residual Pressure Release Valve

Air supply to each valve can be stopped individually. The valve and cylinder can be replaced without stopping other devices and equipment.



Safety Measures

Soft Start-up Valve AV

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.



Series	Coil rated voltage		
AV	100, 200, 110 to 120, 220 VAC (50/60 Hz), 240 VAC (50/60 Hz), 12, 24 VDC		







Valves

Safety Measures

Drop Prevention

5 Port Solenoid Valve Manifold Options: Double Check Spacer/Double Check Block

Can hold an intermediate cylinder position for an extended time.

Combining with a 3-position exhaust center solenoid valve will enable the cylinder to stop in the middle or maintain its position for long periods of time. The combination with a 2-position single/double solenoid valve will prevent the dropping at the cylinder stroke end when the SUP residual pressure is released.



Safety Measures Misoperation Prevention

Two Hand Control Valve VR51 Series

When starting an operation, accidents such as fingers being caught can be prevented, by requiring both hands to start these push button operated valves.

Conforming to EN574



Synchronized, twohanded operation An output is not available if the time lag exceeds 0.5 seconds.



One-touch fitting



Others Steam						
For Steam Angle Seat Valve: Air Oper	rated Type	/ХВ			ators	
And the	Series	Valve type	Port size	Orifice diameter [mmø]	ctu	
ATT BOD	VXB	N.C.	3/8, 1/2, 3/4 10 A, 15 A, 20 A	11, 14, 18	A	
	Features	Low pressure loss due Reduced leakage with Long service life: 3 mill Low leakage: 10 cm ³ /n Space saving: Height 1 Body material: Stainles	to angle seat structure rubber seal lion cycles (Steam), 5 m nin or less 100 mm ss steel 316L equivalent	illion cycles (Air) , Bronze (CAC)	Valves	
For Steam Zero Differential Pressure	Type Pilot O	perated 2 Port Sol	lenoid Valve VXS)	Tubing	
	Series	Valve type	Port size	Orifice diameter [mmø]	s & .	
	vxs	N.C.	1/4 to 1	10 to 25	Fitting ow Cont	
Features Long service life: 3 million cycles (Based on SMC's test condition) Improved air filtration Reduced apparent power: 18 VA → 12 VA, 20 VA → 15 VA Reduced coil temperature rise: 120°C → 100°C IP65						
Others Maintenance						
SUP Stop Valve Spacer with Residual Pressure Release Valve						

SUP Stop Valve Spacer with Residual Pressure Release Valve

Air supply to each valve can be stopped individually. The valve and cylinder can be replaced without stopping other devices and equipment.



SMC

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Detection Switches

Vacuum Equipment

Temperature Control Equipment

Electric Actuators

Fittings/Tubing/Flow Control Equipment

Fittings

Environmental Resistance Stainless Steel

Stainless Steel 316 One-touch Fittings KQG2



Series		Applicable tubing O.D.	Connection thread			
KOCA	Metric	ø3.2, ø4, ø6, ø8, ø10, ø12, ø16	M5 R, Rc 1/8, 1/4, 3/8, 1/2			
RQGZ	Inch	ø1/8", ø5/32", ø1/4", ø5/16" ø3/8", ø1/2"	UNF10-32 NPT1/8, 1/4, 3/8, 1/2			
Features	 Compact and lightweight Fluid temperature: -5 to 150°C Material: Metal parts stainless steel 316, Seal parts special FKM Grease-free/Can be used with steam. Certified to meet current Food Sanitation Law standards 					

Stainless Steel 316 Insert Fittings
• Can be used with steam.

K	FG2			
	Series		Applicable tubing O.D.	Connection thread
	KFG2	Metric	ø4, ø6, ø8, ø10, ø12, ø16	R, Rc 1/8, 1/4, 3/8, 1/2
		Inch	ø1/8", ø5/32", ø1/4", ø5/16" ø3/8", ø1/2"	NPT1/8, 1/4, 3/8, 1/2
	Features	 Compa Fluid te Materia Grease Law state 	ct and lightweight mperature: -65 to 260°C (Swivel elbow: -5 I: Stainless steel 316. Rubber material is n -free/Can be used with steam. Certified t Indards.	i to 150°C) ot used. (Except swivel elbow) o meet current Food Sanitation

Clean One-touch Fittings for Driving	Air Piping	KPG		
	Series	Applicable tubing O.D.	Connection thread	
	KPG	ø4, ø6, ø8, ø10, ø12	M5, 1/8, 1/4, 3/8, 1/2	
	Features	 One-touch fittings suitable for drive air systems in clean room environments Resin parts: Polypropylene Metal parts: Stainless steel 304 		

Miniature Fittings: Stainless Steel 316 MS



Series	Applicable tubing O.D.	Connection thread			
MS	ø3.2, ø4, ø6 M5				
Features	 Possible to use in corrosive conditions. Compact piping space Hose nipple, Hose elbow, Barb 				

S Couplers: Stainless Steel Type KKA



Series	Connection thread
KKA	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2
Features	 Body material: Stainless steel 304 Seal material: Fluororubber (Special FKM) is employed. Grease-free Both plug and socket have an integral check valve.



Stainless Steel

Made to Order

INA-14-47 -All stainless steel

Check Valves Seal material and grease have been changed, so that it could be used even at higher temperature up to 100 from -10°C.

- Body material: All stainless steel (Main parts: Stainless steel)
- High temperature: 80°C/Low temperature: -30°C

• Low cracking pressure: 0.01 MPa

• Rubber material: NBR/FKM/CR

Specifications					
Мо	del	INA-14-47-□	INA-14-85-🗆		
Fluid		Air, Water			
Proof pressure	•	1.5	MPa		
Operating pres	sure range	0.05 to 1 MPa			
Ambient and fluid temperature		−5 to 60°C	−5 to 80°C		
Ambient and ht	Ambient and huid temperature		(No freezing)		
Valve seal mat	erial	NBR	FKM		
Port size		Rc1/4, Rc3/8, Rc1/2			
Sonic	Rc1/4	9.5 dm ³ /(s·bar)			
conductance	Rc3/8, Rc1/2	10.5 dm ³ /(s·bar)			
Critical pressure ratio		0.45			

INA-14-290 Main parts: Stainless steel Seal material: NBR

INA-14-



INA-14-290

XTO-674-□**A**□ Main parts: Stainless steel

Seal material: NBR/FKM/CR



specifications				
Model	INA-14-290			
Fluid	Air, Water			
Proof pressure	1.5 MPa			
Operating pressure range	0.02 to 1 MPa			
Ambient and fluid temperature	–5 to 60°C (No freezing)			
Port size	2 x Rc1/8			
Sonic conductance	1.25 dm³/(s⋅bar)			
Critical pressure ratio	0.45			

Specifications

Model		XTO-674-□A	XTO-674-	XTO-674-□AH	XTO-674-□AL	
Fluid		Air, Water		Air		
Proof pressure		1.5 MPa				
Operating pressure range 0.05 to 1 MPa 0.01 to 1 M		0.01 to 1 MPa	0.05 to 1 MPa			
Ambient and fluid temperature		–5 to 60°C (No freezing)		–5 to 80°C (No freezing)	–30 to 60°C (No freezing)	
Port size		Rc1/4, Rc3/8, Rc1/2				
Sonic	Rc1/4	9.5 dm ³ /(s·bar)				
conductance	Rc3/8, Rc1/2	10.5 dm		n ³ /(s·bar)		
Critical pressure ratio		0.45				



Heat Resistant

Fluoropolymer Fittings: Hyper Fittings/ **Insert Bushing Type** LQ1



Series	Maximum operating pressure	Operating temperature [°C]
LQ1	1.0 MPa	0 to 200
Features	Material: New PFA Quadruple seal construction Reducer enables tube si change of body required.	on ize changeability with no

Fluoropolymer Fittings: Hyper Fittings/ **Flare Type** LQ3



Series	Maximum operating pressure	Operating temperature [°C]	
LQ3	1.0 MPa	Nut material PVDF: 0 to 150 Nut material PFA: 0 to 200	
Features	Material: New PFA Triple seal construction Excellent and easy installation		

Actuators

Fittings/Tubing/Flow Control Equipment

Tubing

Food Sanitation Applicable Materials

Food-related laws and regulations compliant products

Compatible with Food Sanitation Law

Compatible with the test conforming to Japan's Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.

Complies with FDA (Food and Drug Administration) Complies with FDA (Food and Drug Administration) §177-1550 and §177-2600 dissolution tests.

Series		Compatible with Food Sanitation Law	Complies with FDA (Food and Drug Administration)
	TL/TIL	•	•
Tubing	TLM/TILM	•	•
	TH/TIH	•	•
	TD/TID	•	
	TU-X217		_
	TU-X214	_	•

the south EDA (Es est and Down Astronomic terms)

Fluoropolymer Tubing TL/TIL



	Compatible w	ith Food Sanitation Law	Complies with FDA (Food and	Drug Administration)	
Series		Applicable tubing O.D.			
	Metric	ø4, ø6, ø8	, ø10, ø12, ø19		
TL/TIL	Inch	ø1/8", ø3/16", ø1/4", ø3/8" ø1/2", ø3/4", ø1"		Translucent	
Features	 Materia Max. op Max. op *1: This ca 	 Material: Super PFA Max. operating pressure: 1.0 MPa (at 20°C)*1 Max. operating temperature: 260°C (This can vary according to operating pressure.) *1: This can vary according to size. 			

Fluoropolymer Tubing (PFA) TLM/TILM



	Companible w	Compiles with FDA (Food and	Drug Auministration)			
Series		Applicable tubing O.D. Color				
TLM/TILM	Metric	ø2, ø3, ø4, ø6, ø8, ø10 ø12, ø16, ø19, ø25	Translucent,			
	Inch	ø1/8", ø3/16", ø1/4", ø3/8" ø1/2", ø3/4", ø1", ø1 1/4"	Red			
Features	Materia Max. op Max. op Max. op *1: This ca	I: Super PFA erating pressure: 2.3 MPa (at 20°C) ^{*1} erating temperature: 260°C (This can vary according to p vary according to size	operating pressure.)			

FEP Tubing (Fluoropolymer) TH/TIH



	Compatible w	ith Food Sanitation Law Complies with FDA (Food and	Drug Administration)		
Series		Applicable tubing O.D.			
	Metric	ø4, ø6, ø8, ø10, ø12	Translucent,		
TH/TIH	Inch	ø1/8", ø3/16", ø1/4" ø3/8", ø1/2", ø3/4"	Black, Red, Blue		
Features	 Materia Max. op Max. op * 1: This ca 	I: FEP erating pressure: 2.3 MPa (at 20°C)*1 erating temperature: 200°C (This can vary according to n vary according to size.	operating pressure.)		

Soft Fluoropolymer Tubing TD/TID



	■ Max. Op *1: This car	 Max operating temperature. 200 C (This can vary according to operating pressure.) *1: This can vary according to size. 			
	Compatible w	ith Food Sanitation Law	Complies with FDA (Food and	Drug Administration)	
Series		Applicable tubing O.D. Color			
חוד/חד	Metric	ø4, ø6,	ø8, ø10, ø12	Tranclucant	
	Inch	ø1/8", ø3/16", ø1/4", ø3/8", ø1/2"		ITansiucent	
	 Material 	: Modified PTFE			

Features • Max. operating pressure: 1.6 MPa (at 20°C)*1

• Max. operating temperature: 260°C (This can vary according to operating pressure.) *1: This can vary according to size.

Applicable Materials

Compatible with Food Sanitation La	w: Polyureth	ane Tub	ing TU-X217 Compatible	e with Food Sanitation Law
	Series		Applicable tubing O.D.	Color
	TU-X217	Metric	ø4, ø6, ø8, ø10, ø12	Black, White, Blue, Clear

Polyurethane Tubing TU-X214



	Complies with PDA	(Food and Drug Administration)
Series	Applicable tubing O.D.	Color
TU-X214	ø4, ø6, ø8, ø10, ø12	Black, White, Red, Blue, Yellow, Green, Clear, Orange

Environmental Resistance

Food Sanitation

Made to Order

Double-layered Tubing for Instrumentation Device (Single-tubed/Double-tubed) IN-241 Series

T0604 to T1075-X120/121/166 Series

Double-layered tubing with an external layer of vinyl chloride or polyolefin to protect the inner tubing Inner tubing color: "Black" or "Black + White"

Medel	neter m]	Numl co	ber of res	Inner co	tubing Ior	Mat	erial	Outer thickne	r layer ss [mm]		Len	igth per	roll	
wodei	iam [m	4	0	Plack	Black	Vinyl	Doluciofin	0.5	4	100) m	200 m	300) m
			2	DIACK	White	chloride	Polyolelli	0.5		Reel	Roll	Reel	Reel	Roll
IN-241-2522-100		•		•			•	•		•				
IN-241-2522-300		•		•			•	•					•	
T0604-1-100-X120-A	ø6	۲		•		●			•	●				
T0604-1-300-X120-A		۲		•		●			•				•	
T0604-2-100-X120-A	I.D.		•		•	●			•	●				
T0604-2-100-X121-A	04		•		•	●			•	●				
IN-241-1047						●			•					
IN-241-2523-100		•		•			•	●		●				
IN-241-2523-300	O.D.	•		•			•	●					•	
T0806-1-100-X120-A	Ø8	•		•		•			•	•				
T0806-1-300-X120	I.D.	•		•		●			•					•
IN-241-2502-100	ø6		•	•			•	●			•			
IN-241-2593-100			•		•		•	●			•			
T1075-1-100-X120-A	ОП	•		•		●			•	•				
T1075-1-300-X120	ø10	•		•		●			•					•
IN-241-2503-100			•	•			•	●			•			
IN-241-2594-100	I.D.		•		•		•	●			•			
T1075-2-300-X166	01.5												●	

Actuators

*: If you need a different number of cores, different colors or lengths over 300 m, please contact our sales representatives.



Fittings/Tubing/Flow Control Equipment

Others

Maintenance

Longer Length Reel T0604/TH0604	-X64	Compatible with Food Sanitation Law Complies with FDA (Food and	Drug Administration)
in a	Series	Applicable tubing O.D.	Color
	T0604-X64 TH0604-X64	ø6	
	Features	 Length per roll: 500 m, 250 m Material: Nylon tubing/T Series, FEP tubing (Fluoropolymer)/TH Series Compatible with Food Sanitation Law (TH Series) Compatible with the test conforming to Japan's Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959. Complies with FDA (Food and Drug Administration) \$177-1550 and \$177-2600 dissolution tests. 	Black, White (Nylon) Translucent (FEP tubing)

Flow Control Equipment

nvironmental	Stainless Steel
Resistance	

Stainless Steel Speed Controller ASG



Series	Applicable tubing I.D. [mm]	Connection thread
ASG	4, 6, 8, 10, 12	M5, 1/8, 1/4, 3/8, 1/2
Features	Material · Metal parts: Stainless steel 316, Ambient and fluid temperature: -5	Seal parts: Special FKM to 60°C

Clean Speed Controller with One-touch Fitting AS-FPG



-	on i nang	Ao II G	
	Series	Port size	Applicable tubing O.D.
	AS-FPG	M5 x 0.8, R1/8, 1/4, 3/8, 1/2	ø4 to ø12
	Features	 Low particulate generating speed controllers desig Resin parts: Polypropylene Metal parts: Stainless steel 304 	gned for use in clean rooms

Specialized Products





Туре	Series	Applicable tubing O.D.
With One-touch fittings without a push button guard	KEA	~6 to ~10
With One-touch fittings with a push button guard	КЕВ	0010012
Rc thread with a push button guard	KEC	Connection thread: Rc1/4, 3/8

SMC

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Temperature Control Equipment

Electric Actuators

Fittings/Tubing/Flow Control Equipment

Flow Control Equipment

Safety Measures Lurch Prevention

Dual Speed Controller with One-touch Fittings ASD Series

Prevents sudden extensions with meter-in/meter-out control.

Two flow control valves and check valves have been integrated.

Turne	Sorioo	Port size in the	Applicable	tubing O.D.
Туре	Series	cylinder side	Metric size	Inch size
Dual speed controller	ASD	M5 to 1/2	ø4 to ø12	ø1/8" to ø3/8"

Dual Speed Controller for Low Speed Operation ASD-FM Series

0	Tuno	Soriaa	Port size in the	Applicable	tubing O.D.
	туре	Series	cylinder side	Metric size	Inch size
	Dual speed controller with One-touch fitting	ASD□30FM	M5 to 1/4	ø4 to ø10	ø1/8" to ø3/8"

Dual Speed Controller Adjustable by Flat Head Screwdriver ASD-D Series

1 H	Tuno	Type Series Port size		Applicable tubing O.D.		
Elat head serowdriver	Туре	Series	cylinder side	Metric size	Inch size	
	Dual speed controller with One-touch fitting	ASD	M5 to 1/2	ø4 to ø12	ø1/8" to ø3/8"	
<u>A</u>						

Tamper Proof Dual Speed Controller ASD-T Series

Туро	Sorios	Port size in the	Applicable	tubing O.D.
туре	Series	cylinder side	Metric size	Inch size
Dual speed controller with One-touch fitting	ASD	M5 to 1/2	ø4 to ø12	ø1/8" to ø3/8"

Safety Measures

Speed Controller with Pilot Check Valve ASP Series

Pilot check valve and speed controller are combined.

Realizes momentary intermediate stoppage of a cylinder and able to adjust speed control of it.

Tubing mount direction is 360° free.

Electroless nickel plated is provided as standard.

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Example of drop prevention circuit

Pressure Control Equipment/Blow Guns

Food Sanitation Grease for Food Processing Equipment

Specialized Products

Blow Gun Using Grease for Food Processing Machines/VMG-X7

Grease for food processing machines*1 is applied to wetted parts (sealing parts). *1: Grease meets NSF (USDA) H1 standards.

OR PEAK	All and a second second	12.00
Bow Dan Uning praces for 1985 Third Control Bit	Test machines	5.022-
Autors Space in	And parts in the	alates a
12-11		1
Anno 19 Anno 1	12/12	
- 20	100	1

Environmental Resistance

Clean Regulator SRH

Series	Relief mechanism	Port size	Set pressure [MPa]	
SRH	Non-relief	Rc1/8, 1/4, 3/8, 1/2 9/16-18UNF, 7/8-14UNF	Low pressure type: 0.02 to 0.2 High pressure type:0.05 to 0.7	
SRH	Relief	Rc1/8, 1/4, 3/8, 1/2		
Features	 Contamination controlled stainless steel regulator Oil-free Two types of diaphragm materials: PTFE, Fluororubber 			

Precision Clean Regulator SRP

Series	Port size	Set pressure [MPa]
SRP	M5, 1/8	Low pressure type: 0.005 to 0.2 High pressure type: 0.01 to 0.4
Features	 High precision low flow consumption stainless steel regulator Bleed air flow 0.5 L/min (ANR) or less (0.2 MPa at outlet pressure Setting sensitivity: 0.3% F.S. Repeatability: 1% F.S. 	

Filter Regulator AW30/40-X2622

Series	Port size	Set pressure [MPa]
AW30/40-X2622	1/4, 3/8, 1/2	0.05 to 0.85
Features	 Stainless steel 316 and special temperature environment (-40°C) specifications External parts material: Stainless steel 316 Ambient and fluid temperature: -40 to 80°C NACE International Standards compliant 	

Specialized Products

Blow Gun with Hook/VMG-X110

Install mounting hook in blow gun (Material: Stainless steel)

Series	Port size	Operating pressure range [MPa]	Effective area [mm ²]	Nozzle port size
VMG	Rc, NPT, G 1/4, 3/8	0 to 1.0	30	Rc1/4
Features	 Reduction of 2,000 m³ per annum is possible. (Energy saving) Pressure loss 1% or less (Nozzle diameter: ø2.5) 			

aving/ Air Blow

Nozzles for Blowing KN

Series	Туре	Nozzle size
	Nozzle with male thread	ø1 to ø8
	High efficiency nozzle	ø1 to ø2
KN	Low noise nozzle with male thread	ø0.75 x 4 to ø1.1 x 8
	Copper extension nozzle	ø1.5 to ø3
	Pivoting nozzle	ø4, ø6
	Nozzle with self-align fitting	ø1 to ø6
	Nozzle for One-touch fitting	ø1 to ø3

Vacuum Flow ZHD-D-X185

Series	Features
ZH□-□-X185	 By supplying compressed air, large blow and vacuum flow rate available A blow flow rate 4 times the supply air A vacuum flow rate 3 times the supply air Large passage diameter available for suction of machining chips, particles, etc. Maintenance free Mounting bracket available

Application Examples

High Pressure

Direct Operated Regulator for 6.0 MPa (Relieving Type) VCHR

N	3
	ott
-	
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/					
	Series	Туре	Port size	Set pressure [MPa]	
	VCHR30/40	Direct operated regulator (Relieving type)	G3/4,1,1 1/2	0.5 to 5.0 (Max. operating pressure 6.0)	
	Features	 Service life: 10 mill Improved durability in elastomer poppet. Uses NSF-H1 appr Improved durability Uses special fluoror response, and not 	ion times n high pressure environi roved grease at guide rusing a metal seal typ presin seal for sliding p easily affected by pres	nents using a polyurethane rings (sliding parts). pe relief valve. varts. Stable unattached ssure.	

5.0 MPa Silencer VCHN

Series	Features
VCHN	 Reduces clogging with the double-layer structure. Noise reduction: 35 dB (A)

Actuators

Pressure Control Equipment/Blow Guns

High Pressure

Made to Order

High Pressure

Strong materials are used in the manufacturing of regulators intended for high pressure operation. Also, construction modification allows a wider set pressure range.

Spe	ecific	ation	5
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Part number	AR20 to 60-B-X425
Proof pressure [MPa]	3.0
Maximum operating pressure [MPa]	2.0
Set pressure range [MPa]	0.1 to 1.7
Ambient and fluid temperature [°C]	-5 to 60 (No freezing)

Static Neutralization Equipment

Static Neutralization

Ionizer/Nozzle Type IZN10

Series	lon generation method	Offset voltage
IZN10	Corona discharge type	Energy saving static neutralization nozzle: Within ±10 V High flow rate nozzle: Within ±15 V
Features	 Nozzle type: Dust removal and static neutralization by air blow, spot type static neutralization Slim design: Thickness dimension 16 mm CE, UL, RoHS compliant Nozzle type can be selected according to applications. Energy saving static neutralization nozzle (Short range static neutralization nozzle High flow static neutralization nozzle High flow static neutralization nozzle 	

Static Neutralization Equipment

Environmental Resistance

Static Neutralization

Made to Order

IZE11 Series

Intermittent Contro	l Timer	IZE110-X238
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	1	
Series	Changeable frequency	
IZE110-X238	0.1 to 50.0 Hz	
Features	 A digital timer that can control ON/OFF switches of valves etc. Set individual ON and OFF times: 0.1 to 99.9 seconds Display of accumulated number of changes It can be used for maintaining valve or cylinder operation. Switch output (Output under timer control) 2 types of trigger input Repeat input (ON/OFF operation during trigger input) One-shot input (ON/OFF operation for a time set from trigger input) CE, RoHS compliant 	

Fan Type Ionizer IZF10

Series	Ion generation method	Offset voltage
IZF10	Corona discharge type (DC)	±13 V
Features	 Compact design: 80 mm x 11 Weight: 280 g Static neutralization time: 1.5 With alarm Incorrect high voltage, Emittee CE, RoHS compliant 	10 mm x 39 mm 5 seconds er dirt detection

Actuators

Valves

Flow Control Equipmen

Equipment/Blow Guns **Pressure Control**

Static Neutralization

Equipment

Detection Switches

Vacuum Equipment

Temperature Control

Equipment

Electric Actuators

Fittings & Tubing

Static Neutralization Equipment

Static Neutralization

Fan Type Ionizer IZF21/31

Series	Ion generation method	Offset voltage	Maximum air flow
IZF21	Corona discharge		1.8 m ³ /min
IZF31	type	±5 V	4.4 m ³ /min
Features	 Thickness: 40 mm Flow rate adjustmen Easier maintenance Emitter cartridge is Automatic cleaning CE, RoHS compliant 	• Extensive/rapid static t function (1 to 10 steps easily replaceable. function of emitters t	• neutralization •) • Averaging operation

Electrostatic Sensor IZD10/IZE11

Series	Measurement potential	Output voltage	Effective detection distance
IZD10-110	±0.4 kV (At detection distance 25 mm)	1 to 5 V	10 to 50 mm
IZD10-510	±20 kV (At detection distance 50 mm)	(Output impedance. Approx. 100 Ω)	25 to 75 mm
Series	Rated measurement range	Smallest settable increment	Output
IZE11	–0.4 kV to +0.4 kV –20 kV to +20 kV	0.001 kV (at ±0.4 kV) 0.1 kV (at ±20 kV) (1 to 5 V, 4 to	
Features	 Detects electrostatic potential of the workpiece, and is capable of switch output, analog output or output of current. CE, UL, ROHS compliant 		

Handheld Electrostatic Meter IZH10

Series	Rated charge amount range	Minimum display unit
IZH10	±20.0 kV	0.1 kV (±1.0 to ±20.0 kV) 0.01 kV (0 to ±0.99 kV)
Features	• Easy-to-use handheld electrostatic meter • CE, RoHS compliant	

Detection Switches

Environmental Resistance

Oself-contained Type

2-Color Display Digital Pressure Switch ZSE80(F)/ISE80(H)

Series	Туре	Rated pressure range
ZSE80F	Compound pressure	-100.0 to 100.0 kPa
ZSE80	Vacuum pressure	0.0 to –101.0 kPa
ISE80	Positive pressure	-0.100 to 1.000 MPa
ISE80H	Positive pressure	-0.100 to 2.000 MPa
• Wetted parts: Stainless steel 304/Stainless steel 630 • IP65 • Suitable for a wide variety of fluids • Low leakage. Choice of VCR® or Swagelok® fitting is available. • Rear ported, Bottom ported		

VCR® and Swagelok® are registered trademarks of Swagelok Company.

Remote Type

Pressure Sensor for General Fluids **PSE56**

*: Refer to page 38 for pressure sensor controller.

Series	Туре	Rated pressure range
PSE563	Compound pressure	-100 to 100 kPa
PSE561	Vacuum pressure	0 to –101 kPa
PSE564	Positive pressure	0 to 500 kPa
PSE560	Positive pressure	0 to 1 MPa
Features	 Wetted parts: Stainless steel 316L IP65 Suitable for a wide variety of fluids Analog output (Voltage/Current) Low leakage. Choice of VCR[®] or Swagelok[®] fitting is available. 	

Detection Switches

Pressure/Flow Rate Detection

Self-contained Type

3-Screen Display	High-Precision Digital Pressure Switch	ZSE20(F)/ISE20
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Series	Туре	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
Features	 Setting is possible while checking the measured value. Delay time: Fastest 1.5 ms or less Current consumption: 25 mA or less With a snapshot function 	

2-Color Display High-Precision Digital Pressure Switch ZSE30A(F)/ISE30A

Series	Туре	Rated pressure range
ZSE30AF	Compound pressure	-100.0 to 100.0 kPa
ZSE30A	Vacuum pressure	0.0 to -101.0 kPa
ISE30A	Positive pressure	-0.100 to 1.000 MPa
Features	 With One-touch fitting (Straight, Elbow) Space-saving, mountable side by side without clearance (Panel mount) With display calibration function Can copy to up to 10 switches simultaneously. 	

2-Color Display High-Precision Digital Pressure Switch ZSE40A(F)/ISE40A

Series	Туре	Rated pressure range
ZSE40AF	Compound pressure -100.0 to 100.0 kPa	
ZSE40A	Vacuum pressure	0.0 to –101.3 kPa
ISE40A	Positive pressure -0.100 to 1.000 MPa	
Features	 IP65 Fluid: Air, Non-corrosive gas, No Can copy to up to 10 switches s 3-step setting With One-touch fitting 	on-flammable gas imultaneously.

ORemote Type

Compact Pneumatic Pressure Sensor **PSE54**

υ	P3E34		
	Series	Туре	Rated pressure range
	PSE543	Compound pressure	–100 to 100 kPa
	PSE541	Vacuum pressure	0 to -101 kPa
	PSE540	Positive pressure	0 to 1 MPa
	Features	 Analog output (voltage) 	

Pressure Sensor Controller PSE200/300

Detection Switches

Pressure/Flow Rate Detection

2-Color Display Digital Flow Switch PFM

Series	Rated flow range [L/min]		
	0.2 to 10 (0.2 to 5)		
DEM	0.5 to 25 (0.5 to 12.5)		
FLINI	1 to 50 (1 to 25)		
	2 to 100 (2 to 50)	(): For CO ₂
Features	 Air, N2, Ar, CO2 Grease-free Integrated flow adjustment valve Compact, Lightweight, Space-saving 		

2-Color Display Digital Flow Switch

PFMB			
Series Rated flow range [L/min]			
	2 to 200		
DEMR	5 to 500		
FFIND	10 to 1000		
	20 to 2000		
Features	Air, N2 Grease-free Integrated flow adjustment valve (200 L type) Grease-free Compact, Space-saving		

3-Color Display Digital Flow Switch

PFMC		
Series Rated flow range [L/min]		
	5 to 500	
PFMC	10 to 1000	
	20 to 2000	
Features	 Enclosure: IP65 Dry air, N2 3-color/2-screen display Expanded flow range: Wide range of flow measurement with one product Compact, Space-saving 	

Digital Flow Switch for Air **PF2A**

Series	Rated flow range [L/min]		
	1 to 10		
	5 to 50		
	10 to 100		
DEOA	20 to 200		
FFZA	50 to 500		
	150 to 3000		
	300 to 6000		
	600 to 12000		
Features Integrated type and separate monitor type are available. Switch output, accumulated pulse output, analog output Capable of switching back and forth between cumulative and instantane IP65 			

Pressure/Flow Rate Detection

3-Color Display Digital Flow Switch for Water PF3W

Series	Rated flow range [L/min]
	0.5 to 4
	2 to 16
PF3W	5 to 40
	10 to 100
	50 to 250
	Flow sensor with 3-color/2-screen display
	 Integrated temperature sensor
Fosturos	 40% smaller (compared with PF2W)
reatures	 IP65 compliant, Grease-free
	 Fluid temperature: 0 to 90°C
	• PVC piping type: Applicable to deionized water and chemical liquids

3-Color Display Digital Flow Switch for PVC Piping PF3W

	0	
Series	Rated flow range [L/min]	
DE21//	10 to 100	
FF3W	30 to 250	
Features	 Applicable fluid: Deionized water, Chemical liquids, etc. Flow sensor with 3-color/2-screen display IP65 compliant, Grease-free Fluid temperature: 0 to 70°C PVC pipe O.D.: 25A 	

3-Color Display Electromagnetic Type Digital Flow Switch LFE

Series	Rated flow range [L/min]		
	0.5 to 20		
	2.5 to 100		
	5 to 200		
Features	 Compact and lightweight 56 mm x 40 mm x 90 mm (H x W x D) Weight: 340 g (LFE1□3) Reverse flow can be detected. Operating fluid temperature: 0 to 85°C Current consumption: 45 mA Applicable fluids: Water, Water-soluble coolant 		

High Pressure High Pressure

2-Color Display Digital Pressure Switch /1 1)

CN ISE/0/75(H)					
Series	Туре	Rated pressure range			
ISE70	Positive pressure (for air)	0 to 1 MPa			
ISE75	Positive pressure (for general fluids)	0 to 10 MPa			
ISE75H	Positive pressure (for general fluids)	0 to 15 MPa			
Features	 Metal body type (Die-cast aluminum) IP67 With M12 connector 				

SMC

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Vacuum Equipment

Stainless Steel

	Series	[mm]	[L/min (ANR)]	[L/min (ANR)]	applicable pad [mm]
	ZH05-X267	0.5	5	13	2 to 13
	ZH07-X267	0.7	12	23	2 to 20
	ZH10-X267	1.0	24	46	2 to 32
Features • All stainless steel (SCS13: Equivalent to stainless steel 304) • Sealant not required • Maximum operating temperature: 260				1) 60°C ● Grease-free	

Adsorption Transfer

Vacuum Unit ZK2

(IIII)	Ejector series	Nozzle diameter [mm]	Max. suction flow [L/min (ANR)]	Air consumption [L/min (ANR)]	Guidelines for applicable pad [mm]	Vacuum pump system series
	ZK2□07	0.7	29	24	2 to 40	
C C C C C C	ZK2□10	1.0	44	40	2 to 50	7 K2⊡00
	ZK2□12	1.2	61	58	2 to 125	2R2_00
- 16000 ···	ZK2□15	1.5	67	90	2 to 150	
	Features	 Compati Digital p when the More eff Compace 	ble with ejector sys ressure switch for v e pressure reached icient ejector Suct Air c (Cor ct/Lightweight: Volu Weig	tems and the vacu vacuum with energy I the desired vacuu ition flow: 50% incre consumption: 30% in mpared to other SM ime 88 cm ³ (28% in ght 81 g (59% red	um pump systems / saving function cu m. Air consumption vase reduction IC single stage ejec reduction) uction)	ts supply air : 90% reduction ctors)

Body Ported Type Vacuum Ejector ZH

*1: Supply pressure: 0.45 MPa

Vacuum Flow ZHD-D-X185

0)

Series	Passage diameter		
ZH10-X185	ø13		
ZH20-X185	ø21.6		
ZH30-X185	ø30		
ZH40-X185	ø42		
Features	 By supplying compressed air, large blow and vacuum flow rate available A blow flow rate 4 times the supply air A vacuum flow rate 3 times the supply air Large passage diameter available for suction of machining chips, particles, etc. Maintenance free Mounting bracket available Application examples Blow: Blowing away water droplets and machining chips. Vacuum: Vacuuming the smoke during soldering. Transferring materials such as pellets or fine particles. 		

w [L/min (ANR)

Туре

13

28

52

78

78

128

155

Air consum [L/min (Al

13

27

52

84

113

162

196

Others		dsorptio	n Transfer
			<u>M</u>
Vacuum	Pac	ZP3E	
Series		Туре	Pad diameter
ZP3E-DUM	-	Flat type with groove	ø32, ø40, ø50, ø63, ø80, ø100, ø125
ZP3E-DBM	-	Bellows type with groove	ø32, ø40, ø50, ø63, ø80, ø100, ø125
Features		 Stability of Groove on Ribs reduct The numbe Pad and me 	suction position, improved ease of removal. the adsorption surface secures the interior space. e the inclinations during transport of workpiece. er of mounting screws reduced (4 pcs. \rightarrow 1 pc.) etal parts can be disposed of separately.

Series	Туре	Pad diameter			
ZP3	Flat	ø1.5, ø2, ø3.5			
ZP3	Flat with groove	ø4, ø6, ø8, ø10, ø13, ø16			
ZP3	ZP3 Bellows Ø4, Ø6, Ø8, Ø10,				
Features	Space-saving, Overall length is shortened. In fitting and barb fitting for ø2 are available.				

4.5-Stage Bellows Pad ZP2

Series	Pad diameter
ZP2-TB15	ø15
ZP2-TB20	ø20
ZP2-TB30	ø30
ZP2-T40	ø40
ZP2-T46	ø46
	 For adsorbing workpieces flowing at high speeds
Features	 Follows various shapes of workpieces.
	 Pad material: Silicone rubber (Rubber hardness: A40, A50, A60)

Non-contact Gripper XT661

Cyclone type	one type ø20, ø40, ø60, ø80, ø100 High lifting			
Low profile cyclone type	ø20, ø25	Low profile: 1.8 mm		
Bernoulli type	ø40, ø60, ø80, ø100, □120, □150	Vibration reducing		
Features	 Assist in non-contact workpiece transfer. Max. workpiece suction distance: 10 mm Cyclone type: High lifting force: Max. 44 N 			

• Bernoulli type: Amplitude of the workpiece during gripping: ±0.01 mm or less

Specialized Products

Vacuum Pad for Soft Film ZP-606-25CS0J20

• Reduction of wrinkles made on thin workpieces, such as film or vinyl, during adsorption • Reliable suction of film or vinyl

Static Neutralization Equipment

Actuators

Valves

Flow Control Equipment Fittings & Tubing

Equipment/Blow Guns **Pressure Control**

Temperature Control Equipment Refer to Temperature Control Equipment Precautions for operating environment and storage environment.

Temperature Control

Thermo-chiller: Basic Type HRSE

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid	
HRSE	10 to 30°C	1.2 kW, 1.6 kW 2.2 kW (Air-cooled, 60 Hz)	±2.0°C	Air-cooled refrigeration	Tap water, Ethylene glycol aqueous solution (15%)	
Features	 Simple function and performance. Thermo-chiller of the basic type. Large energy saving by triple control! Power consumption 33% energy saving Compact/Lightweight 32 kg (100 VAC) Maintenance free: Magnet pump Low-noise design: 55 dB(A) 					

Thermo-chiller: Standard Type HRS

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid	
HRS012 to 060	5 to 40°C	1.3 kW, 1.9 kW 2.4 kW, 3.2 kW 5.1 kW, 5.9 kW (Air-cooled, 60 Hz)	±0.1°C	Air-cooled refrigeration Water-cooled refrigeration	Tap water, Deionized water, Ethylene glycol aqueous solution (15%)	
Features	 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 tool, analytical equipment, LCD manufacturing equipment, mold temperature control, etc Compact: W 377 x H 615 x D 500 mm (HRS012/018/024) Timer operation function, Low level in tank, Power failure auto-restart, Antifreezing operation function, etc. Self diagnosis function Available as overseas models (Single-phase 200 to 230 VAC, Single- 					

phase 100, 115 VAC) • Conforms to UL specifications, CE-marking. (Except 9 kW)

Thermo-chiller: Standard Type HRS090

0

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid			
	5 to 35°C	9 kW	+0 5°C	Air-cooled refrigeration	Tap water, Deionized water, Ethylene			
1113090	5 10 35 0	(Air-cooled, 60 Hz)	±0.5 C	Water-cooled refrigeration	glycol aqueous solution (15%)			
Features	 Lightweigh Cooling ca Temperatu Set temperatu Maximum Power sup 	 Lightweight and Compact Cooling capacity: 9 kW Temperature stability: ±0.5°C Set temperature range: 5 to 35°C Maximum ambient temperature: 45°C Power supply: 3-phase 200 to 230 VAC, 380 to 415 VAC 						

Thermo-chiller: Standard Type HRS100/150

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid			
HRS100	5 to 35°C	9.5 kW 14.5 kW (Air-cooled, 60 Hz)	±1.0°C	Air-cooled refrigeration	Tap water, Deionized water, Ethylene			
HRS150				Water-cooled refrigeration	glycol aqueous solution (15%)			
Features	 No heater required, circulating fluid is heated using heat exhausted by refrigerating circuit. Compatible power supplies in Europe, Asia, Oceania, North, Central and South America Low-noise design: 70 dB(A) 							
	• Outdoor installation: IPX4							

Temperature Control

Temperature Control

Thermo-chiller: Inverter Type HRSH090

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid	
HBSHUOU	5 to 40°C	9.5 kW	+0 1°C	Air-cooled refrigeration	Tap water, Deionized water, Ethylene	
	510400	(Air-cooled)	10.1 0	Water-cooled refrigeration	glycol aqueous solution (15%)	
Features	 Power consumption reduced by 53% Outstanding energy saving effect with the triple inverter! Cooling capacity: 9.5 kW (Air-cooled), 11.0 kW (Water-cooled) Low-noise design: Max. 66 dB(A) Maximum ambient temperature: 45°C 					

Thermo-chiller: Inverter Type HRSH

Thermo-dryer IDH

With air temperature adjustment function

Series	Set temperature range	Cooling capacity	Temperature stability	Cooling method	Circulating fluid
HRSH	5 to 35°C	10 kW, 15 kW 20 kW, 25 kW 28 kW	±0.1°C	Air-cooled refrigeration	Tap water, Deionized water, Ethylene
		(Air-cooled, 60 Hz)		refrigeration	solution (15%)
Features	 Outstanding energy saving effect with the triple inverter! Outdoor installation, Splashproof type (IPX4) Maximum ambient temperature: 45°C Temperature stability: ±0.1°C (when a load is stable) Space-saving and lightweight 280 kg (25 kW type) Conforms to UL specifications, CE-marking. 				

Corioo	Air flow capacity	Outlet air temperature	Outlet air set	Outlet air temperature	Cooling
Series	[L/min (ANR)]	adjustment range	pressure range	stability	method
IDH□4	100 to 500	15 to 30°C	0 15 to 0 85 MPa	+0.1°C	Heater operation
IDH⊡6	200 to 800	13 10 30 0	0.13 10 0.03 MF a	±0.1 C	PID control
Features	 Stable supply Possible to s quality regard Application e Supplying co mounted on Built-in filter Filter nomina Outlet oil mis Outlet cleanl or less Power supply Single-phase 	y of temperatu upply compre dless of the se xample mpressed air the tool. Il filtration ratio t concentratic iness: Particle y available all = 100, 200, 23	ure and pressure ssed air with the eason. with constant cong: 0.01 μm (99. on: Max. 0.01 mg es of 0.3 μm or n over the world to VAC (50/60 H	e controlled dr same conditi onditions to ai 9% filtration e g/m ³ (ANR) nore: 3.5 parti	y clean air! ions and r bearings ifficiency) cles/L (ANR)

Actuators

Valves

Fittings & Tubing Flow Control Equipment

Pressure Control Equipment/Blow Guns

Electric Actuators

Electric Actuators

Electric/Positioning Controller/Driver

Actuators
Valves
Fittings & Tubing Flow Control Equipment
Pressure Control Equipment/Blow Guns
Static Neutralization Equipment
Detection Switches
Vacuum Equipment
Temperature Control Equipment
Electric Actuators

SMC's unique production system achieves

Die Maintenance

NC Machinery Line

Aluminum Melting Furnace Line

Piston Rod Machinery Line

Impact Molding

Punching Press

high quality, low cost and a short lead time.

SMC products reflect a market trend towards greater diversification with a vast array of 12,000 basic models and over 700,000 variations. This is made possible by an integrated production system that includes casting, machining, surface treatment, coating, assembly and inspection, all performed in SMC's factories in order to supply our products with a high level of quality, reasonable pricing and shorter delivery times to our customers. Furthermore, we use a unique production control system in which instructions for all production operations are performed automatically based on information from orders received. As a result, SMC has achieved shorter lead times for its product.

Valve Body Machining

Plastics Molding

Coil Winding

Clean Room

Electronic Substrate Mounting

Automatic Assembly Equipment

Assembly/Inspection of Temperature Control Equipment

A global production network supports a stable & continuous supply of high quality products throughout the world.

SMC delivers products for world markets from five key factory locations in Japan, in the Tsukuba district of Ibaraki prefecture and the Soka district of Saitama prefecture, as well as from other key locations in China and Singapore. Additionally, to respond quickly and increase flexibility to the demands of the local market, overseas production facilities have been established in SMC subsidiaries around the world.

1 Production Facilities (Japan)

Soka Area (Saitama Pref.) Total land area: 31,757 m² Total floor area: 47,920 m²

Kamaishi Area (Iwate Pref.) Total land area: 86,196 m² Total floor area: 52,396 m²

Vamatsuri Factory (Fukushima Pref.) Total land area: 315,761 m² Total floor area: 44,362 m²

Total land area: 171,939 m² Total floor area: 79,884 m²

Tohno Factory (Iwate Pref.) Total land area: 78,845 m² Total floor area: 28,536 m²

Distribution Center (Ibaraki Pref.) Total land area: 32,207 m² Total floor area: 19,514 m²

2 Key Overseas Production Facilities

China Factory SMC (China) Co., Ltd. Total land area: 172,558 m² Total floor area: 115,389 m²

SMC (Beijing) Manufacturing Co., Ltd. Total land area: 315,857 m² Total floor area: 147,056 m²

Singapore Factory SMC Manufacturing (Singapore) Pte. Ltd. Total land area: 47,911 m² Total floor area: 37,800 m²

Pneumatic Equipment for Food Industry

