Copper/Fluorine-free Specifications 20-Series

Possible to use under the environment that copper and fluorine materials are unacceptable.

How to Order: 20- | **Standard part number**
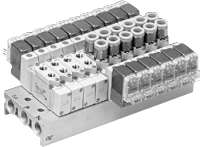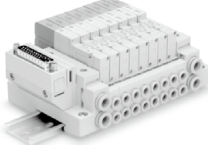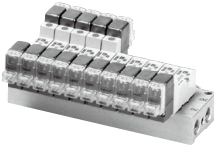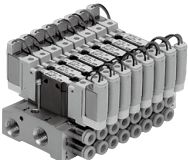
Dimensions: Same as the standard type
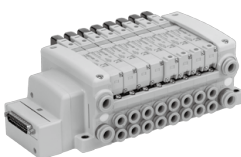
Note) Copper material is used for the electrical part of each equipment.
(Refer to the note column of each equipment for applicability.)

Copper/Fluorine-free Specifications

Directional Control Valves

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
5 Port Solenoid Valve	Rubber seal	**SY3000**	○*			∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Rubber seal	**SY5000**				
	Rubber seal	**SY7000**				
	Manifold base	**SS5Y3/5/7**				
5 Port Solenoid Valve	Rubber seal	**SV1000**	○*			∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Rubber seal	**SV2000**				
	Rubber seal	**SV3000**				
	Rubber seal	**SV4000**				
	Manifold base	**SS5V1/2/3/4**				
5 Port Solenoid Valve	Rubber seal	**SYJ3000**	○*			∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Rubber seal	**SYJ5000**				
	Rubber seal	**SYJ7000**				
	Manifold base	**SS5YJ3/5/7**				
5 Port Solenoid Valve	Rubber seal	**SZ3000**	○*			∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Manifold base	**SS5Z3**				
5 Port Solenoid Valve	Rubber seal	**S0700**		○*		∗ Copper material is not used for the wetted parts.
	Manifold base	**SS075 0/5**				
	Other parts	**SS0700**		○*		∗ Copper material is not used for the wetted parts.
5 Port Solenoid Valve	Metal/Rubber seal	**VQ1000**	○*			∗ Copper material is not used for the wetted parts. However, fluorine grease is used. ∗1 Copper material is not used for the wetted parts. ∗2 Except ejectors and regulators.
	Metal/Rubber seal	**VQ2000**				
	Manifold base	**VV5Q1/2**	○*1			
	Double check block (Separated type)	**VQ-FPG**		○*1		
	Metal/Rubber seal	**VQ4000**	○*	○*1		
	Metal/Rubber seal	**VQ5000**				
	Manifold base	**VV5Q4/5**	○*1			
	Other parts	**VQ/VVQ**		○*2		
5 Port Solenoid Valve	Metal/Rubber seal	**VQC1000**	○*	○*1		∗ Copper material is not used for the wetted parts. However, fluorine grease is used. ∗1 Copper material is not used for the wetted parts.
	Metal/Rubber seal	**VQC2000**				
	Manifold base	**VV5QC1/2**	○*1			
	Metal/Rubber seal	**VQC4000**	○*	○*1		
	Metal/Rubber seal	**VQC5000**				
	Manifold base	**VV5QC4/5**	○*1			
5 Port Solenoid Valve	Metal/Rubber seal	**SQ1000**		○*		∗ Copper material is not used for the wetted parts.
	Metal/Rubber seal	**SQ2000**				
	Manifold base	**SS5Q1/2**				
	Other parts	**SSQ**		○*		∗ Copper material is not used for the wetted parts.

® Back page 30

SMC

Copper/Fluorine-free Specifications

Directional Control Valves

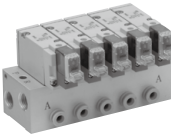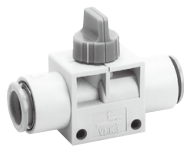○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
5 Port Solenoid Valve	Metal seal	**VFS2000**		○*		∗ Copper material is not used for the wetted parts.
	Metal seal	**VFS3000**				
	Metal seal	**VFS4000**				
	Manifold base	**VV5FS2/3/4**	○*			
5 Port Solenoid Valve	Rubber seal	**VFR2000**		○*		∗ Although copper material is used for the wetted parts, it is electroless nickel plated.
	Rubber seal	**VFR3000**				
	Rubber seal	**VFR4000**				
	Manifold base	**VV5FR2/3/4**	○			
5 Port Solenoid Valve/ISO Standard	Metal/Rubber seal	**VQ7-6**		○*		∗ Copper material is not used for the wetted parts.
	Metal/Rubber seal	**VQ7-8**				
	Manifold base	**VV71/VV72**				
3 Port Solenoid Valve	Rubber seal	**SYJ300**				∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Rubber seal	**SYJ500**	○*			
	Rubber seal	**SYJ700**				
3 Port Solenoid Valve	Metal/Rubber seal	**VQZ100**				∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Metal/Rubber seal	**VQZ200**	○*	○*1		∗1 Copper material is not used for the wetted parts.
	Metal/Rubber seal	**VQZ300**				
	Manifold base	**VV3QZ1/2/3**	○*1			
5 Port Solenoid Valve	Metal/Rubber seal	**VQZ1000**				∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Metal/Rubber seal	**VQZ2000**	○*	○*1		∗1 Copper material is not used for the wetted parts.
	Metal/Rubber seal	**VQZ3000**				
	Manifold base	**VV5QZ1/2/3**	○*1			
3 Port Solenoid Valve	Pilot/Poppet type	**VP300**				∗ Copper material is not used for the wetted parts. However, fluorine grease is used.
	Pilot/Poppet type	**VP500**	○*			
	Pilot/Poppet type	**VP700**				
3 Port Solenoid Valve	Direct operated poppet type	**S070**		○*		∗ Copper material is not used for the wetted parts.

Copper/Fluorine-free Specifications

Directional Control Valves

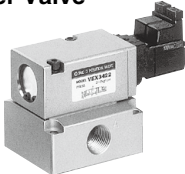| Series	Series/Variation	Model	Standard	20-	Special order	Note
4 Port Solenoid Valve	Direct operated poppet type	**VQD1000**		○∗		∗ Copper material is not used for the wetted parts.
3 Port Solenoid Valve	Rubber seal	**VK300**	○∗			∗ Copper material is not used for the wetted parts. Continuous duty type, E: Fluororubber is used.
3 Port Solenoid Valve	Direct operated poppet type	**VT307**		○∗		∗ Copper material is not used for the wetted parts.
	Direct operated poppet type	**VT317**				
3 Port Solenoid Valve	Direct operated poppet type	**VQ100**		○∗		∗ Copper material is not used for the wetted parts.
2/3/5 Port Mechanical Valve	Poppet type	**VM130-01-30GA**	○			Some actuators are available upon request for special order. Please contact SMC for model numbers other than mentioned at left.
	Poppet type	**VM131-01-01SA**		○		
	Poppet type	**VM220-02-30GA**		○		
	Rubber spool type	**VZM550-01-01S**		○		
	Rubber spool type	**VZM550-01-34□**				
Relay Valve	Shuttle valve	**VR1210-01**		○		
Finger Valve	Finger valve	**VHK**	○			
Pressure Relief Valve	Pressure relief 3 port valve with locking holes	**VHS20/30**		○		
	Pressure relief 3 port valve with locking holes	**VHS40/50**	○			

SMC

Copper/Fluorine-free Specifications

Directional Control Valves

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Power Valve	3 position valve	VEX322$_2^1$		○		
2 Port Solenoid Valve	Direct operated	VX2	△			Select stainless steel or resin for the body material and EPDM for the seal material. ∗ Copper material is not used for the wetted parts.
2 Port Solenoid Valve	Pilot operated Zero pressure differential operation	VXZ2	△			Select stainless steel or resin for the body material and EPDM for the seal material. ∗ Copper material is not used for the wetted parts.
2 Port Solenoid Valve	Pilot operated	VXD2	△			Select stainless steel for the body material and EPDM for the seal material. ∗ Copper material is not used for the wetted parts.
2 Port Solenoid Valve	Compact direct operated type for water/air	VDW	△			Select stainless steel or resin for the body material and EPDM for the seal material. ∗ Copper material is not used for the wetted parts.
	Compact direct operated type for water/air	VV2DW				
2 Port Solenoid Valve	Single/Manifold	VQ20	○			Suffix "-X2" to the part number for the oil-free type
	Single/Manifold	VQ30				
Silencer	Sintered silencer	AN120-M5		○		Stainless steel
	High noise reduction silencer 40dB (A)	ANA1	○			
	High noise reduction silencer 38dB (A)	ANB1				

Copper/Fluorine-free Specifications
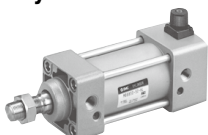
Actuators

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations / Note
Pin Cylinder	Double acting type	CJP2		○		ø4 (Double acting only) ø6, ø10, ø16 (Single acting: ø15) Although brass is used, the product is electroless nickel plated. (Refer to back page 56 for details.)
	Single acting type	CJP				
Air Cylinder	Standard type	CJ2-Z	○			ø10, ø16
	Double rod type	CJ2W-Z	○			
	Standard type/Single acting	CJ2-Z	○			
	Non-rotating rod type	CJ2K-Z	○			
	Non-rotating rod type/Single acting	CJ2K-Z	○			
	Built-in speed controller type	CJ2Z-Z	○			
	Built-in speed controller type/Double rod	CJ2ZW-Z	○			
	Direct mount type	CJ2R-Z	○			
	Direct mount type/Single acting	CJ2R-Z	○			
	Non-rotating rod/Direct mount type	CJ2RK-Z	○			
	Non-rotating rod, Direct mount type/Single acting	CJ2RK-Z	○			
Air Cylinder	Standard type	CJ2		○		ø6 The piston is electroless nickel plated and the mounting nut is nickel plated. (Refer to back page 56 for details.)
	Standard type/Single acting	CJ2				
	Double rod type	CJ2W				
Air Cylinder	Standard type	CM2-Z		○		
	Double rod type	CM2W-Z		○		
	Standard type/Single acting	CM2-Z		○		
	Not-rotating type	CM2K-Z		○		
	Not-rotating type/Double rod	CM2KW-Z		○		
	Direct mount type	CM2R-Z		○		
	Direct mount, Non-rotating rod type	CM2RK-Z		○		
Air Cylinder	With end lock	CBM2		○		ø20 to ø40
Air Cylinder	Standard type	CG1-Z1 / CG1-Z		○		* ø40 to ø63: Air cushion is available upon request for special order.
	Double rod type	CG1W-Z		○		
	Standard type/Single acting	CG1-Z			○	
	Non-rotating rod type	CG1K-Z		○	○*	
	Non-rotating rod type/Double rod	CG1KW-Z			○	
	Direct mount type	CG1R-Z1 / CG1R-Z		○		

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

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Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Air Cylinder	With end lock	**CBG1**			○	ø20 to ø100
Air Cylinder	Standard type	**MB-Z**	○			
	Double rod type	**MBW-Z**	○			
Air Cylinder	With end lock	**MBB**			○	ø32 to ø100
Air Cylinder	Standard type	**CA2-Z**	○			
	Double rod type	**CA2W-Z**	○			
Air Cylinder	Non-rotating rod type	**CA2K**		○		ø40 to ø63
	Non-rotating double rod type	**CA2KW**				
	With end lock	**CBA2**				ø40 to ø100
Large Bore Size Cylinder	Standard type	**CS2**		○		ø125 to ø160
	Double rod type	**CS2W**				

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Mini Free Mount Cylinder	Standard type	**CUJ**				ø4, ø6, ø8, ø10, ø12, ø16, ø20 Since fluorine grease is used, Series -20 cannot be manufactured.
Free Mount Cylinder	Standard type (Double acting)	**CU**		○		ø6 to ø32 Although brass is used for pistons and head covers for ø6 and ø10 cylinders, they are electroless nickel plated. (Refer to back page 56 for details.)
	Non-rotating rod type	**CUK**		○		
	Standard type (Single acting)	**CU**			○	
	Double rod type	**CUW**			○	
	Non-rotating rod type	**CUKW**			○	
Compact Cylinder	Standard type	**CQS**	○			ø12 to ø25
	Standard long stroke type	**CQS**		○		
	Double rod type	**CQSW**	○			
	Anti-lateral load type	**CQS□S**		○		
	Non-rotating rod type	**CQSK (ø12)**	○			ø12
	Non-rotating rod type	**CQSK**			○	ø16, ø20, ø25
Compact Cylinder	Standard type (Double acting, single rod)	**CQ2-Z**		○		ø12 to ø100
	Standard type (Double acting, double rod)	**CQ2W-Z**		○		ø12 to ø100
	Standard type (Single acting, single rod)	**CQ2-Z**		○		ø12 to ø50
	Large bore size (Double acting, single rod)	**CQ2-Z**		○		ø125 to ø200
	Large bore size (Double acting, double rod)	**CQ2W-Z**		○		ø125 to ø200
	Long stroke type (Double acting, single rod)	**CQ2-Z**		○		ø32 to ø100
	Non-rotating rod type	**CQ2K-Z**		○		ø16 to ø63
	Non-rotating rod type	**CQ2KW-Z**		○		ø16 to ø63
	Axial piping type (Double acting, single rod)	**CQ2P**		○		ø12 to ø100
	Axial piping type (Single acting, single rod)	**CQ2P**		○		ø12 to ø50
	Anti-lateral load type (Double acting, single rod)	**CQ2□S-Z**		○		ø32 to ø100
	With end lock (Double acting, single rod)	**CBQ2**			○	ø20 to ø100 Order with a suffix -X1454
Compact Cylinder	Guide rod type	**CQM**			○	ø12 to ø100

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

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Copper/Fluorine-free Specifications

Actuators
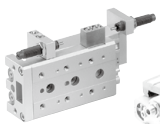
Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Compact Cylinder Plate Type	Standard type	**CQU**		○		ø20 to ø40
Plate Cylinder	Standard type	**MU-Z**		○		ø25 to ø63
	Double rod type	**MUW-Z**				
Mechanically Jointed Rodless Cylinder	Basic type	**MY1B-Z**		○		ø25 to ø40
	Linear guide/Single axis type	**MY1H-Z**		○		
Mechanically Jointed Rodless Cylinder	Basic type	**MY1B**	○			ø16L with unit only
		MY1B		○		ø10 to ø100 (Except ø25 to ø40)
	Slide bearing type	**MY1M**		○		ø16 to ø63
	Cam follower guide type	**MY1C**				
	Linear guide/Single axis type	**MY1H**				ø10 to ø20
	Linear guide/Double axis type	**MY1HT**				ø50, ø63
Mechanically Jointed Rodless Cylinder	Slide bearing type	**MY1MW**		○		ø16 to ø63 Series MY1□WK: Special order
	Cam follower guide type	**MY1CW**				
Mechanically Jointed Rodless Cylinder	Cam follower guide type	**MY2C**		○		ø16, ø25, ø40
	Linear guide/Single axis type	**MY2H**				
	Linear guide/Double axis type	**MY2HT**				
Mechanically Jointed Rodless Cylinder	Basic, short type	**MY3A**		○		ø16 to ø63
	Basic, standard type	**MY3B**				
	Slide bearing guide type	**MY3M**				ø16, ø25, ø40, ø63
Magnetically Coupled Rodless Cylinder	Basic type	**CY3B**	○			ø6 to ø63 ø6 and ø10: Fluorine grease used

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible
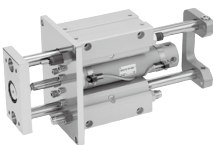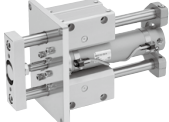
Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Magnetically Coupled Rodless Cylinder	Slide bearing type	CY1S-Z		○		
Magnetically Coupled Rodless Cylinder	Slider type/Ball bushing bearing	CY1L	○			ø6 to ø40 ø6 and ø10: Fluorine grease used
Magnetically Coupled Rodless Cylinder	Linear guide (Single axis type)	CY1H	○			ø10 to ø32 ø10: Fluorine grease used
	Linear guide (Double axis type)	CY1HT				
Magnetically Coupled Rodless Cylinder	Low profile guide type	CY1F			○	ø10 to ø25 ø10: Fluorine grease used
Compact Slide	MXH series	MXH			○	ø6 to ø20
Air Slide Table	MXQ□, A, B, C	MXQ□, A, B, C			○	ø6 to ø25
Air Slide Table	MXS series	MXS	○			ø6 to ø25* ∗ Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXQ series	MXQ				
	MXF series	MXF				ø8 to ø20* ∗ Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXW series	MXW				ø8 to ø25* ∗ Although brass is used for some plugs, they are electroless nickel plated.
	MXJ series	MXJ				ø4 to ø8* ∗ Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXP series	MXP				ø6 to ø16* ∗ Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXY series	MXY				ø6 to ø12* ∗ Although brass is used for some plugs, studs, etc., they are electroless nickel plated.

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

SMC

Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Compact Guide Cylinder	Standard type/Slide bearing	MGQM		○		ø12 to ø100
	Standard type/Ball bushing bearing	MGQL				
Precision Cylinder	Standard type	MTS	○			ø20 to ø40 Brass is used for the cap, but it is electroless nickel plated.
	With end lock	MTS-R	○			
Compact Guide Cylinder	Standard type/Slide bearing	MGPM-Z		○		
	Standard type/Ball bushing	MGPL-Z	○			
	Standard type/High precision ball bushing	MGPA-Z	○			
Compact Guide Cylinder	Heavy duty guide rod type	MGPS			○	ø50, ø80
	With an air cushion	MGPM		○		ø16 to ø100
		MGPL				
	With end lock	MGPM			○	ø20 to ø100
		MGPL				
Compact Guide Cylinder	Standard type/Slide bearing	MGPWM			○	
	Standard type/Ball bushing	MGPWL	○			
	Standard type/High precision ball bushing	MGPWA	○			
Guide Cylinder	Standard type/Slide bearing	MGGM		○		ø20 to ø100
	Standard type/Ball bushing bearing	MGGL				
	With end lock	MGG			○	
Guide Cylinder (Compact Type)	Standard type/Slide bearing	MGCM		○		ø20 to ø50
	Standard type/Ball bushing bearing	MGCL				

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

Copper/Fluorine-free Specifications

Actuators

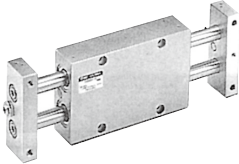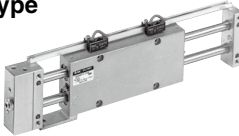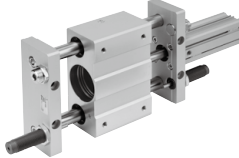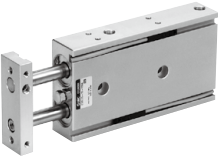○: Compatible   △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Slide Unit	Standard type/Slide bearing	CX2	△			ø10 to ø25 The unit with a shock absorber is available upon request for special order.
Slide Unit Built-in Shock Absorber Type	Standard type/Slide bearing	CXWM			○	ø10 to ø32
	Standard type/Ball bushing bearing	CXWL				
	With end lock/Slide bearing	CXWM				
	With end lock/Ball bushing bearing	CXWL				
Platform Cylinder	Standard type	CXT		○		ø12 to ø40
	With a shock absorber	CXT				
Dual Rodless Cylinder	Standard type/Slide bearing	CXSM	○			ø6 to ø32
	Standard type/ Ball bushing bearing	CXSL				
Lock-up Cylinder	Standard type	CL1		○		ø40 to ø160
Cylinder with Lock	Standard type	CNA2		○		ø40 to ø100
Sine Rodless Cylinder	Basic type	REA	○			ø25 to ø63
	Direct mount type	REAR	○			ø10 to ø40 ø10: Fluorine grease used
	Slider type (Slide bearing)	REAS			○	
	Slider type (Ball bushing bearing)	REAL	○			
	Linear guide (Single axis type)	REAH	○			ø10 to ø32 ø10: Fluorine grease used
	Linear guide (Double axis type)	REAHT	○			
	Direct mount type	REBR	○			ø15 to ø32
	Linear guide (Single axis type)	REBH	○			
	Linear guide (Double axis type)	REBHT	○			

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

Ⓐ Back page 40

SMC

Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations Note
Low Friction Cylinder (Metal Seal Type)	Compact low friction cylinder Metal seal	**MQQL**	○			ø10 to ø40
	Lateral load resisting low friction cylinder Metal seal	**MQM**				ø6 to ø25
	Low friction cylinder (Single acting)	**MQP**	○			ø4 to ø20
High Power Cylinder	Standard type	**RHC**		○		ø20 to ø100
Stopper Cylinder	Standard type/RSQ	**RSQ**			○	ø12 to ø50 Order with a suffix -X866
	Standard type/RSH	**RSH**				ø20, ø32 Order with a suffix -X866
	Standard type/RS2H	**RS2H**				ø50 to ø80 Order with a suffix -X866
Stroke Reading Cylinder	Special order	**CE1**			○*	ø12 to ø63 * Copper materials are used for the sensor unit.
Stroke Reading Cylinder with Brake	Special order	**CE2**			○*	ø40 to ø100 * Copper materials are used for the sensor unit.
Free Mount Cylinder for Vacuum	Standard type	**ZCUK□**			○	ø10 to ø32

Note) Copper base surface treated parts may be used as parts other than iron bearings are standard parts.

Copper/Fluorine-free Specifications

Related Products
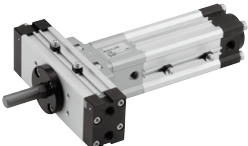
○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Size variations / Note
Floating Joint	Light weight type for light load	JC	○			ø20 to ø63
Floating Joint	Standard type	JA	○			ø6 to ø160 ∗ Symbol 6 to 15: Although brass is used, they are electroless nickel plated.
Floating Joint	For compact cylinder	JB	○			ø12 to ø100 ∗ Symbol 12 and 16: Although brass is used, they are electroless nickel plated.
Floating Joint	Stainless steel type	JS	○			ø10 to ø63 ∗ Silicone rubber only.
Shock Absorber	Soft type	RJ	○*			∗ M06: Available as standard, Others: Supported with the prefix "25-"
	Short stroke type	RJ	○*			∗ M06: Available as standard, Others: Supported with the prefix "25-"
	Replacement parts	RJ	○			Hexagon nut, Stopper nut, Cap, Foot bracket
Shock Absorber	Standard type	RB		○		O.D. thread: M8 to M27
	Replacement parts	RB	○			Hexagon nut, Stopper nut, Cap, Foot bracket
Shock Absorber	Coolant resistant type	RBL			○	O.D. thread: M10 to M27
Shock Absorber	Short type	RBQ			○	O.D. thread: M16 to M32

SMC

Copper/Fluorine-free Specifications

Rotary Actuators

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Rotary Actuator	Vane type	**CRB2-Z**	○			Sizes 10 to 40
	Vane type Free mount type	**CRBU2-Z**				
Rotary Actuator	Vane type	**CRB1**	○			Sizes 50 to 100
Rotary Table	Vane type	**MSUA**	○			Sizes 1, 3, 7, 20
	Vane type	**MSUB**				
Rotary Actuator	Rack & pinion type	**CRJ**			○	Sizes 05, 1 ∗ Grease: Fluorine included Available upon request Grease: Lithium grease
Rotary Actuator	Rack & pinion type	**CRA1-Z**	○			Sizes 30 to 100
Rotary Actuator	Rack & pinion type	**CRQ2**	○			Sizes 10 to 40
Rotary Table	Rack & pinion type	**MSQA**	○			Sizes 1 to 7
				○		Sizes 10 to 50
	Rack & pinion type	**MSQB**	○			Sizes 1 to 7
				○		Sizes 10 to 200
Rotary Cylinder	Rotary Cylinder	**MRQ**	○			Sizes 32, 40

Copper/Fluorine-free Specifications
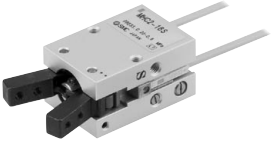
Air Grippers

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Parallel Style Air Gripper Standard type	Standard type	**MHZ2**	○ Except ø6	○ ø6 only		ø6: Supported with the prefix "20-" ø10 to ø40: Available as standard
	Long stroke	**MHZL2**				ø10 to ø25
Parallel Style Air Gripper	With a dust cover	**MHZJ2**	○ Except ø6	○ ø6 only		ø6: Supported with the prefix "20-" ø10 to ø40: Available as standard ∗ Fluororubber Except dust cover
Compact Air Gripper	2-finger type	**MHF2**	△∗	○		∗ Grease: Fluorine mixed
Parallel Style Air Gripper	Wide type	**MHL2**		○		ø10 to ø40 Although brass is used for plugs of ø32 and ø40, they are electroless nickel plated.
Parallel Style Air Gripper	2-finger type	**MHR2**	○			Nominal size 10 to 30
Parallel Style Air Gripper	Standard type	**MHK2**	△∗	○		ø12 to ø25 Although brass is used for needles, they are electroless nickel plated. ∗ Some parts have fluorine surface treatment. ∗ Fluororubber Except dust cover
	Long stroke	**MHKL2**				
Parallel Style Air Gripper	2-finger type	**MHS2**	△∗	○		ø16 to ø63 ∗ Some parts have fluorine surface treatment.
Parallel Style Air Gripper	3-finger type	**MHS3**	△∗	○		ø16 to ø125 ∗ Some parts have fluorine surface treatment.

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Copper/Fluorine-free Specifications
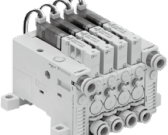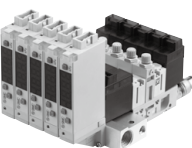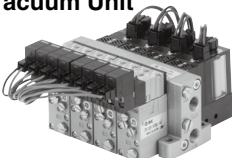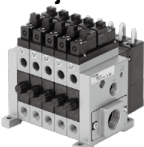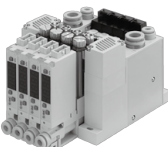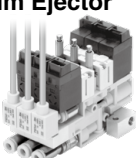
Air Grippers

Series		Model	Standard	20-	Special order	Size variations Note
Angular Style Air Gripper						
	Standard type	**MHC2**	○ Except ø6	○ ø6 only		ø6: Supported with the prefix "20-" ø10 to ø40: Available as standard Although brass is used for needles, they are electroless nickel plated.
Angular Style Air Gripper						
	Toggle type	**MHT2**		○		ø32 to ø63
Angular Style Air Gripper						
	180° angular type Cam type	**MHY2**	△*	○		ø10 to ø25 * Grease: Fluorine mixed
Angular Style Air Gripper						
	180° angular type Gear type	**MHW2**	△*	○		ø20 to ø50 * Some parts have fluorine surface treatment.
Parallel Style Air Gripper						
	Rotary gripper	**MRHQ**	*		○	ø10 to ø25 * Grease: Fluorine grease Available upon request Grease: Lithium grease (Characteristics can be changed.)

Copper/Fluorine-free Specifications

Vacuum Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Vacuum Unit	Ejector/Pump system	**ZK2**	△*			Although brass is used, the product is electroless nickel plated. * Grease: Fluorine grease
	Manifold base	**ZZK2**				
Vacuum Unit	Ejector/Pump system	**ZB**	△*			Although brass is used, the product is electroless nickel plated. * Fluororubber is used for the seal.
	Manifold base	**ZZB**				
Vacuum Unit	Ejector/Pump system	**ZX**	○			Although brass is used, the product is electroless nickel plated.
	Manifold base	**ZZX**				
Vacuum Unit	Ejector/Pump system	**ZR**	○			Although brass is used, the product is electroless nickel plated.
	Manifold base	**ZZR**				
Vacuum Ejector	Ejector system	**ZM**	○			Although brass is used, the product is electroless nickel plated.
	Manifold base	**ZZM**				
Vacuum Unit	Ejector/Pump system	**ZQ**	△*			Although brass is used, the product is electroless nickel plated. * Fluororubber is used for the seal.
	Manifold base	**ZZQ**				
Vacuum Ejector	Ejector system	**ZA**	△*			Although brass is used, the product is electroless nickel plated. * Fluororubber is used for the seal.
	Manifold base	**ZZA**				
Vacuum Ejector	Box type/Body ported	**ZH, ZU**	○			Although brass is used, the product is electroless nickel plated.
Vacuum Ejector	Multistage ejector	**ZL**	△*			Although brass is used, the product is electroless nickel plated. * Fluororubber is used for the check valve.

Ⓐ Back page 46

SMC

Copper/Fluorine-free Specifications

Vacuum Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Air Suction Filter	With One-touch fittings	**ZFB**	○			Although brass is used, the product is electroless nickel plated.
Air Suction Filter	With One-touch fittings In-line type	**ZFC5□**	○			
		ZFC7□				
Vacuum Pad	Pad only	**ZP** **ZP2** **ZP3**	○			· Pad material FKM is excluded.
Vacuum Pad	Vertical vacuum inlet (Without buffer)	**ZPT** **ZP2-T** **ZP3-T**	○			· Pad material FKM is excluded. · Ball joint type is excluded. · Although brass is used, the product is electroless nickel plated.
Vacuum Pad	Lateral vacuum inlet (Without buffer)	**ZPR** **ZPY** **ZPX** **ZP2-R** **ZP3-Y**	○			· Pad material FKM is excluded. · Ball joint type is excluded. · Although brass is used, the product is electroless nickel plated.
Vacuum Pad	Vertical vacuum inlet (With buffer)	**ZPT** **ZP2-T** **ZP3-T**	△*1			· Pad material FKM is excluded. · Ball joint type is excluded. · Although brass is used, the product is electroless nickel plated. *1 Fluorine grease is used for the buffer sliding part.
Vacuum Pad	Lateral vacuum inlet (With buffer)	**ZPR** **ZPY** **ZPX** **ZP2-R** **ZP3-Y**	△*1			· Pad material FKM is excluded. · Ball joint type is excluded. · Although brass is used, the product is electroless nickel plated. *1 Fluorine grease is used for the buffer sliding part.
Free Mount Cylinder for Vacuum	Standard type	**ZCUK□**			○	ø10 to ø32

Copper/Fluorine-free Specifications

Air Preparation Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Air Dryer	Membrane air dryer	IDG30A, 50A 30HA, 50HA 30LA, 50LA IDG60LA, 75LA 100LA 60SA, 75SA 100SA			○	
Water Separator	Water separator	AMG150C to 550C AMG650 (Without auto drain)	○			
		AMG850 (Without auto drain)		○		
		AMG150C to 550C AMG650 (With auto drain)		○		
Separator	Main line filter	AFF2C to 22C AFF37B (Without auto drain)	○			
		AFF75B (Without auto drain)		○		
		AFF2C to 22C AFF37B, 75B (With auto drain)		○		
	Mist separator	AM150C to 550C AM650 (Without auto drain)	○			
		AM850 (Without auto drain)		○		
		AM150C to 550C AM650, 850 (With auto drain)		○		
	Micro mist separator	AMD150C to 550C AMD650 (Without auto drain)	○			
		AMD850 (Without auto drain)		○		
		AMD150C to 550C AMD650, 850 (With auto drain)		○		
	Micro mist separator with a prefilter	AMH150C to 550C AMH650 (Without auto drain)	○			
		AMH850 (Without auto drain)		○		
		AMH150C to 550C AMH650, 850 (With auto drain)		○		
Oil Mist Separator	Super mist separator	AME150C to 550C AME650, 850	○			
	Odor removal filter	AMF150C to 550C AMF650, 850	○			
Related Products	Auto drain	AD402-04		○		

SMC

Copper/Fluorine-free Specifications

Air Line Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
F.R.L.	F.R.L. combination	AC20-A to 40-06-A			○	Seals for 30 to 40 auto drains are fluoro coated. Although brass is used for drain cocks and drain guides for 30 to 40, they are electroless nickel plated.
		AC20A-A to 40A-06-A			○	
		AC20B-A to 40B-06-A		○		
		AC20C-A to 40C-06-A		○		
		AC20D-A to 40D-06-A		○		
		AC10B-A	△			Products with a pressure gauge are not compatible.
Filter/ Separator	Air filter	AF20-A to 60-A		○		Seals for 30 to 60 auto drains are fluoro coated. Although brass is used for drain cocks and drain guides for 30 to 60, they are electroless nickel plated.
	Mist separator	AFM20-A to 40-06-A				
	Micro mist separator	AFD20-A to 40-06-A				
Pressure Control Equipment	Regulator	AR10-A	△			Products with a pressure gauge are not compatible.
		AR20-A to 40-06-A		○		
Filter/Pressure Control Equipment	Filter regulator	AW10-A	△			Products with a pressure gauge are not compatible.
		AW20-A to 40-06-A		○		Seals for 30 to 60 auto drains are fluoro coated. Although brass is used for drain cocks and drain guides for 30 to 60, they are electroless nickel plated.
F.R.L	F.R.L. combination	AC20-B to 60-B			○	Products with a square-shaped and embedded pressure gauge are not copper/fluorine-free Seals for 30 to 60 auto drains are fluoro coated. Although brass is used for drain cocks and drain guides for 30 to 60, they are electroless nickel plated.
		AC20A-B to 60A-B			○	
		AC20B-B to 60B-B		○		
		AC20C-B to 40C-06-B		○		
		AC20D-B to 40D-06-B		○		
		AC10B-A	△			Products with a pressure gauge are not compatible.
Pressure Control Equipment	Regulator	AR10-A	△			Products with a pressure gauge are not compatible.
	Regulator	AR20-B to 60-B		○		Products with a square-shaped and embedded pressure gauge are not copper/fluorine-free Although brass is used for check valves (AR20K to 60K), they are electroless nickel plated.
	Regulator with backflow function	AR20K-B to 60K-B				
Filter/Pressure Control Equipment	Filter regulator	AW10-A	△			Products with a pressure gauge are not compatible.
	Filter regulator	AW20-B to 60-B		○		Products with a square-shaped and embedded pressure gauge are not copper/fluorine-free Although brass is used for drain cocks and drain guides for 30 to 60, they are electroless nickel plated. Although brass is used for check valves (AW20K to 60K), they are electroless nickel plated.
	Filter regulator with backflow function	AW20K-B to 60K-B				
	Mist separator regulator	AWM20 to 40				
	Micro mist separator regulator	AWD20 to 40				

AWM/AWD

Copper/Fluorine-free Specifications

Air Line Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Pressure Control Equipment	Miniature regulator	**ARJ1020F**			○	
	Miniature regulator	**ARJ210**			○	Products with a pressure gauge are not compatible.
Pressure Control Equipment	Precision regulator	**IR1000**		○		Pressure gauge is changed to G43.
	Precision regulator manifold	**IRM10**		△		Products with a pressure gauge are not compatible.
	Precision regulator	**IR2000**				
	Precision regulator manifold	**IRM20**		○		
	Precision regulator	**IR3000**				
Pressure Control Equipment	Electro-pneumatic regulator	**ITV1000**	△			Since an electrical circuit is used, this equipment is not completely copper and fluorine-free.
	Electro-pneumatic regulator	**ITV2000**			△	
		ITV3000			△	
Booster Regulator	Booster regulator	**VBA1□A**				When the prefix is "20-", no pressure gauge options are available. The standard option pressure gauge is not copper/fluorine-free.
	Booster regulator	**VBA20A**		○		
	Booster regulator	**VBA40A**				
Air Tank	Air tank	**VBAT05□1**				When the prefix is "20-", no safety valve options are available. The standard option safety valve is not copper/fluorine-free.
	Air tank	**VBAT10□1**		○		
	Air tank	**VBAT20□1**				
	Air tank	**VBAT38□1**				
Pressure Gauge	Pressure gauge for general purpose	**G43**			○	For the stainless steel wetted parts, order with a suffix -X3.
	Pressure gauge for general purpose	**G46**				
Pressure Relief Valve	Pressure relief 3 port valve with locking holes	**VHS20/30/40/50**	○			

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Copper/Fluorine-free Specifications

Piping Equipment

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note
	Series/Variation					
Fittings	One-touch fittings (With thread)	**KQ2□-N** [Note 1] **KQ2□-NP**	○			
Fittings	One-touch fittings (Without thread)	**KQ2□-A**	○			
Fittings	One-touch fittings	**KQ2P**	○			
Fittings	Insert fittings	**KF** [Note 1]			○	For the electroless nickel plated specifications, order with a suffix -X2.
	Insert fittings	**KFS**	○			
Fittings	Stainless steel One-touch fittings	**KG** [Note 1]	○			
Low Rotating Torque Rotary Joint	Metal seal type	**MQR**	○			

Note 1) KQ2, KG, KF, KF-X2: Without sealant only

Copper/Fluorine-free Specifications

Flow Control Equipment

○: Compatible △: Partially compatible

Series		Port size		Model	Option symbol Part number suffix	Standard *3	20-	Special order	Note
	Series/Variation								
Speed Controller with One-touch Fittings Push-lock Type *1 *2	Elbow type	M thread	M 5	**AS12□1F-M5-□A**		○			
		R thread	R 1/8	**AS22□1F-01-□A**		○			Without thread seal
			R 1/4	**AS22□1F-02-□A**		○			
			R 1/4	**AS32□1F-02-□A**		○			
			R 3/8	**AS32□1F-03-□A**		○			
			R 1/2	**AS42□1F-04-□A**	**Nil**	○			
		G thread	G 1/8	**AS22□1F□-G01**		○			
			G 1/4	**AS22□1F□-G02**		○			
			G 1/4	**AS32□1F□-G02**		○			
			G 3/8	**AS32□1F□-G03**		○			
			G 1/2	**AS42□1F□-G04**		○			
		Uni thread	U 1/8	**AS22□1F-U01**		○			
			U 1/4	**AS22□1F-U02**		○			
			U 1/4	**AS32□1F-U02**		○			
			U 3/8	**AS32□1F-U03**		○			
			U 1/2	**AS42□1F-U04**		○			
Speed Controller with One-touch Fittings *1 *2	Elbow type	M thread	M 3	**AS12□1F-M3-□□**		○			
			M 5	**AS12□1F-M5-□□**		○			
		R thread	R 1/8	**AS22□1F-01-□□**	**Nil**	○			Without thread seal
			R 1/4	**AS22□1F-02-□□**		○			
			R 3/8	**AS32□1F-03-□□**		○			
			R 1/2	**AS42□1F-04-□□N**	**N**	○			
		Uni thread	U 1/8	**AS22□1F-U01-□□**	**Nil**	○			
			U 1/4	**AS22□1F-U02-□□N**		○			
			U 3/8	**AS32□1F-U03-□□N**	**N**	○			
			U 1/2	**AS42□1F-U04-□□N**		○			
Speed Controller with Indicator *1 *2	Elbow type	M thread	M 5	**AS12□1FS-M5**		○			
		R thread	R 1/8	**AS22□1FS-□01**		○			Without thread seal
			R 1/4	**AS22□1FS-□02**	**Nil**	○			
			R 3/8	**AS32□1FS-□03**		○			
			R 1/2	**AS42□1FS-□04**		○			

∗1) Applicable tubing O.D. for the speed controller with One-touch fittings is in metric size.
∗2) Although brass is used, the product is electroless nickel plated.
∗3) Standard part number is for copper and fluorine-free specifications.

Copper/Fluorine-free Specifications

Flow Control Equipment

○: Compatible　△: Partially compatible

Series		Port size		Model	Option symbol Part number suffix	Standard *3	20-	Special order	Note
	Series/Variation								
Speed Controller with One-touch Fittings *1 *2	Universal type	M thread	M 3	**AS13□1F-M3-□□**	Nil	○			Without thread seal
			M 5	**AS13□1F-M5-□□**		○			
		R thread	R 1/8	**AS23□1F-01-□□**		○			
			R 1/4	**AS23□1F-02-□□**		○			
			R 3/8	**AS33□1F-03-□□**		○			
			R 1/2	**AS43□1F-04-□□N**	N	○			
		Uni thread	U 1/8	**AS23□1F-U01-□□**	Nil	○			
			U 1/4	**AS23□1F-U02-□□N**		○			
			U 3/8	**AS33□1F-U03-□□N**	N	○			
			U 1/2	**AS43□1F-U04-□□N**		○			
Speed Controller with One-touch Fittings *1 *2	In-line type	—	—	**AS1002F-□□ to AS4002F-□□**	Nil	○			
Speed Controller	In-line type	M thread	M 3	**AS1000-M3**	Nil	○			*2
			M 5	**AS1000-M5-X95**	-X95			○	
		R thread	Rc 1/8 to Rc 1/4	**AS2000-□□-X95**	-X95			○	
			Rc 1/4 to Rc 3/8	**AS3000-□□-X95**				○	
			Rc 1/4 to Rc 1/2	**AS4000-□□**	Nil		○		
			Rc 1/4 to Rc 1/2	**AS5000-□□**		○			
Speed Controller with One-touch Fitting Stainless Steel Series Push-lock Type *1 *2	Elbow type	M thread	M 5	**AS12□1FG-M5-□A**	Nil	○			Without thread seal
		R thread	R 1/8	**AS22□1FG-01-□A**		○			
			R 1/4	**AS22□1FG-02-□A**		○			
			R 1/4	**AS32□1FG-02-□A**		○			
			R 3/8	**AS32□1FG-03-□A**		○			
			R 1/2	**AS42□1FG-04-□A**		○			
		G thread	G 1/8	**AS22□1FG□-G01**		○			
			G 1/4	**AS22□1FG□-G02**		○			
			G 1/4	**AS32□1FG□-G02**		○			
			G 3/8	**AS32□1FG□-G03**		○			
			G 1/2	**AS42□1FG□-G04**		○			
Speed Controller with One-touch Fittings *1 **/Stainless Steel**	Elbow type	M thread	M 5	**AS12□1FG-M5-□□**	Nil	○			Without thread seal
		R thread	R 1/8	**AS22□1FG-01-□□**		○			
			R 1/4	**AS22□1FG-02-□□**		○			
			R 3/8	**AS32□1FG-03-□□**		○			
			R 1/2	**AS42□1FG-04-□□**		○			

*1) Applicable tubing O.D. for the speed controller with One-touch fittings is in metric size.
*2) Although brass is used, the product is electroless nickel plated.
*3) Standard part number is for copper and fluorine-free specifications.

Copper/Fluorine-free Specifications

Flow Control Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Port size		Model	Option symbol Part number suffix	Standard *3	20-	Special order	Note
Speed Controller with One-touch Fittings*1/Stainless Steel	Universal type	M thread	M 5	**AS13☐1FG-M5-☐☐**	**Nil**	○			
		R thread	R 1/8	**AS23☐1FG-01-☐☐**		○			Without thread seal
			R 1/4	**AS23☐1FG-02-☐☐**		○			
			R 3/8	**AS33☐1FG-03-☐☐**		○			
			R 1/2	**AS43☐1FG-04-☐☐**		○			
Speed Controller with One-touch Fittings*1/Stainless Steel	In-line type	—	—	**AS1001FG-☐☐ to AS4001FG-☐☐**	**Nil**	○			
Quick Exhaust Valve	—	M thread	M 5	**AQ1500-M5**	**Nil**	○			*2
		R thread	Rc 1/8	**AQ1500-01**		○			*2
			Rc 1/8, R 1/4	**AQ2000-☐☐**		○			
			Rc 3/8, R 1/4	**AQ3000-☐☐**		○			
			Rc 1/2, R 3/4	**AQ5000-☐☐**		○			
Quick Exhaust Valve with One-touch Fittings *2	—	—	—	**AQ240F-☐☐-☐☐**	**Nil**	○			
				AQ340F-☐☐-☐☐		○			
Speed Exhaust Controller *2	—	M thread	M 3	**ASV120F-M3-☐☐**	**Nil**	○			
			M 5	**ASV220F-M5-☐☐**		○			
		R thread	R 1/8, Rc 1/4	**ASV310F-☐☐-☐☐**				○	Without thread seal
			R 1/8 to Rc 3/8	**ASV410F-☐☐-☐☐**				○	
			R 1/4 to Rc 1/2	**ASV510F-☐☐-☐☐**				○	
Check Valve	—	R thread	Rc 1/8 to Rc 1/4	**AK2000-☐☐**	**Nil**	○			
			Rc 1/4 to Rc 1/2	**20-AK4000-☐☐**			○		Order with a suffix 20-
			Rc 3/4 to Rc 1	**20-AK6000-☐☐**			○		
Check Valve with One-touch Fittings*2/Bushing Type	Straight type	—	—	**AKH☐☐-00**	**Nil**	○			
	Male connector type	M thread	M 5	**AKH☐☐-M5**		○			
		R thread	R 1/8 to R 1/2	**AKH☐☐-☐☐**				○	Without thread seal
	Bushing type	R thread	R 1/8 to R 1/2 Rc 1/8 to Rc 1/2	**AKB☐☐-☐☐**				○	

*1) Applicable tubing O.D. for the speed controller with One-touch fittings is in metric size.
*2) Although brass is used, the product is electroless nickel plated.
*3) Standard part number is for copper and fluorine-free specifications.

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Copper/Fluorine-free Specifications

Detection Equipment

○: Compatible △: Partially compatible

Series	Series/Variation	Model	Standard	20-	Special order	Note
Pressure Switch	2-color display High precision digital pressure switch	**ISE30A** **ZSE30A**			○	Only compatible with the wetted parts. Although brass is used, they are electroless nickel plated.
Pressure Switch	2-color display High precision digital pressure switch	**ISE40A** **ZSE40A**			○	Only compatible with the wetted parts. Although brass is used, they are electroless nickel plated.
Pressure Switch	2-color display digital pressure switch for general fluids	**ISE80** **ZSE80**			○	Only compatible with the wetted parts.
Pressure Switch	Pressure sensor	**PSE530**	○			Only compatible with the wetted parts.
Pressure Switch	Compact pressure sensor for pneumatics	**PSE540**	○			Only compatible with the wetted parts. Although brass is used, they are electroless nickel plated.
Pressure Switch	Pressure sensor for general fluids	**PSE560**	○			Only compatible with the wetted parts.
Flow Switch	Diaphragm style flow switch	**IFW5**			○	For the wetted parts, order with a suffix -X206. Electric parts include copper material.

Copper/Fluorine-free Specifications

Brass Usage for 20- Specifications
20-CJ2 Series

Parts for 20- specifications			Double acting (Single rod)	Double rod	Single
Description	Material	Surface treatment			
Piston *1	Brass	Electroless nickel plated	○	○	○
Spring seat *1	Brass	Electroless nickel plated			○
Spacer *1	Brass	Electroless nickel plated		○*2	○*2
Standard common parts			Double acting (Single rod)	Double rod	Single
Description	Material	Surface treatment			
Mounting nut *1	Brass	Nickel plated	○	○	○

∗1: ø6 only
∗2: Type with a ø6 switch only

20-CJP Single Acting Type

Parts for 20- specifications			Panel mount type	Embedded type
Description	Material	Surface treatment		
Collar	Wear-resistant aluminum	None	○	○
Standard common parts			Panel mount type	Embedded type
Description	Material	Surface treatment		
Cover	Brass	Electroless nickel plated	○	○
Hose nipple	Brass	Electroless nickel plated	○	
Mounting nut	Brass	Electroless nickel plated	○	○

20-CJP2 Double Acting Type

Parts for 20- specifications			Double acting (Single rod)
Description	Material	Surface treatment	
Piston *1	Brass	Electroless nickel plated	○
Magnet holder *2	Brass	Electroless nickel plated	○
Standard common parts			Double acting (Single rod)
Description	Material	Surface treatment	
Head cover *2	Brass	Electroless nickel plated	○
Mounting nut	Brass	Electroless nickel plated	○

∗1: ø6, ø10 only
∗2: ø4, ø6, ø10 only

20-CU Double Acting Type

Parts for 20- specifications			Double acting (Single rod)
Description	Material	Surface treatment	
Bushing	Oil-impregnated sintered alloy	—	○
Piston *3	Brass	Electroless nickel plated	○
Magnet holder *2	Brass	Electroless nickel plated	○
Standard common parts			Double acting (Single rod)
Description	Material	Surface treatment	
Head cover *1	Brass	Electroless nickel plated	○

∗1: ø6, ø10 only
∗2: CDU6 only
∗3: ø6 only

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