

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

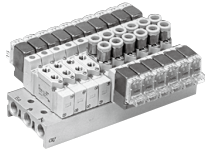
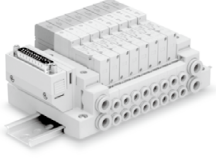


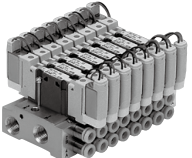
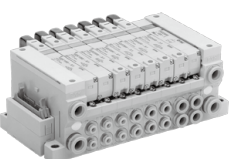
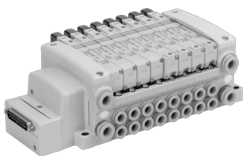

Note) Copper material is used for the electrical part of each equipment.
(Refer to the note column of each equipment for applicability.)

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Copper/Fluorine-free Specifications

Directional Control Valves




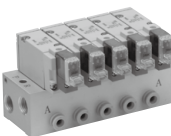
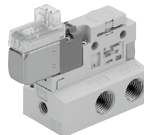
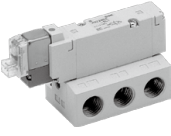

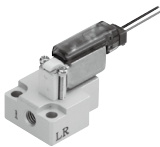
○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note	
	Series/Variation						
	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					
	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					
	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					
	Rubber seal	SZ3000	○*			* Copper material is not used for the wetted parts. However, fluorine grease is used.	
	Manifold base	SS5Z3					
	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.
	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				
	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				
	Metal/Rubber seal	SQ1000		○*		* Copper material is not used for the wetted parts.	
	Metal/Rubber seal	SQ2000					
	Manifold base	SS5Q1/2					
	Other parts	SSQ					○*

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Directional Control Valves







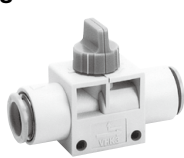

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Series		Model	Standard	20-	Special order	Note
	Series/Variation					
5 Port Solenoid Valve 	Metal seal	VFS2000				* Copper material is not used for the wetted parts.
	Metal seal	VFS3000		○*		
	Metal seal	VFS4000				
	Manifold base	VV5FS2/3/4	○*			
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. *1 Copper material is not used for the wetted parts.
	Metal/Rubber seal	VQZ200	○*	○*1		
	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. *1 Copper material is not used for the wetted parts.
	Metal/Rubber seal	VQZ2000	○*	○*1		
	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

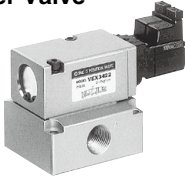






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Series		Model	Standard	20-	Special order	Note
	Series/Variation					
4 Port Solenoid Valve 	Direct operated poppet type	VQD1000		○*		* Copper material is not used for the wetted parts.
3 Port Solenoid Valve 	Rubber seal	VK300		○*		* Copper material 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		○		

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Directional Control Valves







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Series		Model	Standard	20-	Special order	Note
	Series/Variation					
Power Valve 	3 position valve	VEX322¹₂		○		
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				

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Actuators

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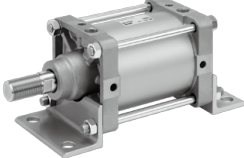
Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Pin Cylinder 	Double acting type	CJP2		○		ø4 (Double acting only) ø6, ø10, ø16 (Single acting: ø15) Although brass is used, the product is electroless nickel plated. (Refer to back page 56 for details.)
	Single acting 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-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-Z		○		

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Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Air Cylinder 	With end lock	CBG1			○	ø20 to ø100
	Standard type	MB-Z	○			
Air Cylinder 	Double rod type	MBW-Z	○			
	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				

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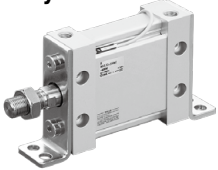

Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
	Standard type	CUJ				ø4, ø6, ø8, ø10, ø12, ø16, ø20 Since fluorine grease is used, Series -20 cannot be manufactured.
	Standard type (Double acting)	CU		○	○	ø6 to ø32 Although brass is used for pistons and head covers 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				
	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				○
	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				○
	Guide rod type	CQM			○	ø12 to ø100

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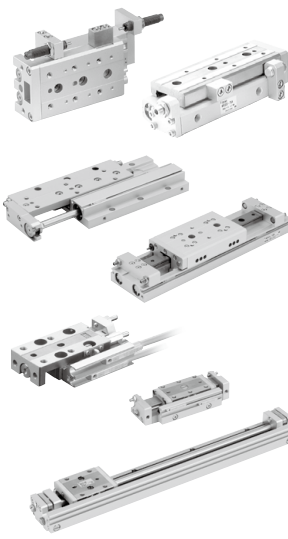
Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Compact Cylinder Plate Type 	Standard type	CQU		○		ø20 to ø40
	Plate Cylinder 	Standard type	MU-Z		○	
	Double rod type	MUW-Z				
Mechanically Jointed Rodless Cylinder 	Basic type	MY1B-Z		○		ø25 to ø40
	Linear guide/Single axis type	MY1H-Z		○		
Mechanically Jointed Rodless Cylinder 	Basic type	MY1B		○		ø10 to ø100 (Except ø25 to ø40)
	Slide bearing type	MY1M				ø16 to ø63
	Cam follower guide type	MY1C				ø10 to ø20
	Linear guide/Single axis type	MY1H				ø50, ø63
	Linear guide/Double axis type	MY1HT				
Mechanically Jointed Rodless Cylinder 	Slide bearing type	MY1MW		○		ø16 to ø63
	Cam follower guide type	MY1CW				Series MY1□WK: Special order
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

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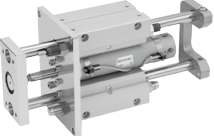
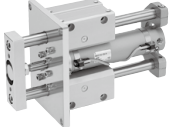
Series		Model	Standard	20-	Special order	Size variations Note	
	Series/Variation						
Magnetically Coupled Rodless Cylinder 	Slide bearing type	CY1S-Z		○			
	Slider type/Ball bushing bearing	CY1L		○		ø6 to ø40 ø6 and ø10: Fluorine grease used	
Magnetically Coupled Rodless Cylinder 	Linear guide (Single 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				○	
	MXW series	MXW					ø8 to ø20* * Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXJ series	MXJ					ø8 to ø25* * Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXP series	MXP					ø4 to ø8* * Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
	MXY series	MXY					ø6 to ø16* * Although brass is used for some plugs, studs, etc., they are electroless nickel plated.
			ø6 to ø12* * Although brass is used for some plugs, studs, etc., they are electroless nickel plated.				

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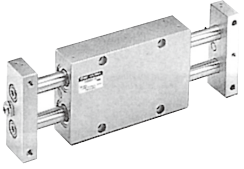
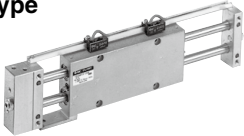
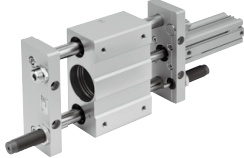
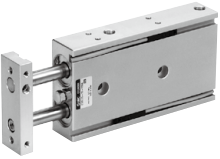



Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
Compact Guide Cylinder 	Standard type/Slide bearing	MGQM		○		ø12 to ø100
	Standard type/ Ball bushing bearing	MGQL				
Precision Cylinder 	Standard type	MTS	○			ø20 to ø40 Brass is used for the cap, but it is electroless 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				

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Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
	Standard type/Slide bearing	CX2	△			ø10 to ø25 The unit with a shock absorber is available upon request for special order.
	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				
	Standard type	CXT		○		ø12 to ø40
	With a shock absorber	CXT				
	Standard type/Slide bearing	CXSM	○			ø6 to ø32
	Standard type/Ball bushing bearing	CXSL				
	Standard type	CL1		○		ø40 to ø160
	Standard type	CNA2		○		ø40 to ø100
	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.

Copper/Fluorine-free Specifications

Actuators

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
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





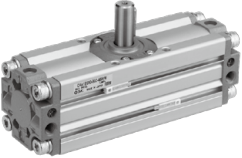


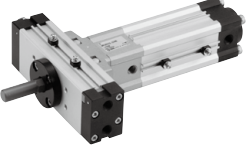
○: Compatible △: Partially compatible

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

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	MHZ2	○ Except ø6	○ ø6 only		ø6: Supported with the prefix "20-" ø10 to ø40: Available as standard
	Long stroke	MHZL2				
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.

Copper/Fluorine-free Specifications

Air Grippers

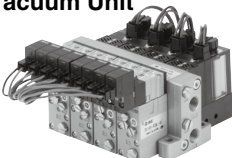
○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Size variations Note
	Series/Variation					
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		Model	Standard	20-	Special order	Note
	Series/Variation					
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.

Copper/Fluorine-free Specifications

Vacuum Equipment






○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note
	Series/Variation					
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		Model	Standard	20-	Special order	Note
	Series/Variation					
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		○		

Copper/Fluorine-free Specifications

Air Line Equipment








○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note
	Series/Variation					
F.R.L. 	F.R.L. combination	AC20-A to 40-06-A			○	Seals for 30 to 40 auto drains include fluoro coated material. 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 include fluoro coated material. 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 include fluoro coated material. 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 include fluoro coated material. 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  AWM/AWD	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		○*		

Copper/Fluorine-free Specifications

Air Line Equipment

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note
	Series/Variation					
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			○	

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	Nil	○			Without thread seal
		R thread	R 1/8	AS22□1F-01-□A		○			
			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		○			
		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-□□	Nil	○
M 5	AS12□1F-M5-□□				○				
R thread	R 1/8			AS22□1F-01-□□	○				
	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	N	○			
	U 3/8			AS32□1F-U03-□□N		○			
	U 1/2			AS42□1F-U04-□□N		○			
Speed Controller with Indicator *1 *2 	Elbow type	M thread	M 5	AS12□1FS-M5		Nil	○		Without thread seal
		R thread	R 1/8	AS22□1FS-□01	○				
			R 1/4	AS22□1FS-□02	○				
			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	○						
			M 5	AS13□1F-M5-□□		○						
		R thread	R 1/8	AS23□1F-01-□□		N	○			Without thread seal		
			R 1/4	AS23□1F-02-□□			○					
			R 3/8	AS33□1F-03-□□			○					
		R 1/2	AS43□1F-04-□□N	○								
		Uni thread	U 1/8	AS23□1F-U01-□□	Nil	○						
			U 1/4	AS23□1F-U02-□□N	N	○						
			U 3/8	AS33□1F-U03-□□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	○						
		R thread	R 1/8	AS22□1FG-01-□A		○			Without thread seal			
			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	○			
						R 1/8	AS22□1FG-01-□□		○			Without thread seal
				R thread		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		Port size		Model	Option symbol Part number suffix	Standard *3	20-	Special order	Note	
	Series/Variation									
Speed Controller with One-touch Fittings*1/Stainless Steel 	Universal type	M thread	M 5	AS13□1FG-M5-□□	Nil	○			Without thread seal	
		R thread	R 1/8	AS23□1FG-01-□□		○				
			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.

Copper/Fluorine-free Specifications

Detection Equipment

○: Compatible △: Partially compatible

Series		Model	Standard	20-	Special order	Note
	Series/Variation					
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