CKD

SM-234330-A

INSTRUCTION MANUAL

SUPER COMPACT CYLINDER

SSD-T Series

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- Before performing an overhaul inspection on the actuator, deactivate residual pressure completely.
- While the actuator is operating, do not step into or place hands in the driving mechanism.
- To prevent an electric shock, do not touch the electric wiring connections (exposed live parts) of the actuator equipped with a solenoid valve or switch.
  Perform an overhaul inspection with the power off. Also, do not touch these live parts with wet hands.

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SSD-T
Super Compact Cylinder
Double acting · Heat-resistance type
Manual No. SM-234330-A

NOTE : Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial symbols being unrelated with contents of the book.

1. UNPACKING

1) Make sure that the type No. on the nameplate of the delivered Rotary Clamp Cylinder matches the type No. you ordered.
2) Check the appearance for any damage.
3) Stop up the piping port with a sealing plug to prevent the entry of foreign substances into the cylinder.
   Remove the sealing plug before piping.

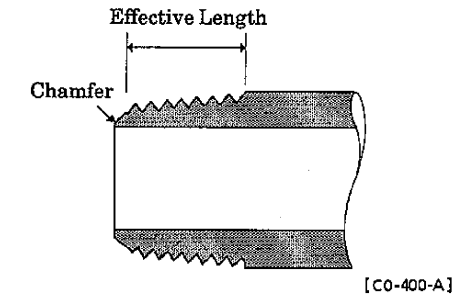
2. INSTALLATION

2.1 Installation

1) The ambient temperature range for this cylinder is −10~60°C.
2) Install cylinder body with a hexagon socket head cap screw directly.
3) As for the rod nose screw, there are internal thread type and external thread type. Use it to application.
4) Attach a guide so that no lateral load is exerted onto the piston rod.
(Example) Apply no lateral load at all for the purpose of a stopper.

2.2 Piping

1) For piping beyond the filter, use pipes that are tough against corrosion such as galvanized pipes, nylon tubes, rubber tubes, etc.
2) See to it that the pipe connecting cylinder and solenoid valve has an effective sectional area which is needed for the cylinder to drive at the specified speed.
3) Install filter preferably adjacent to the upper-stream to the solenoid valve for eliminating rust and foreign substances in the drain of the pipe.
4) Be sure to adhere to the effective thread length of gas pipe and make a chamfer of approx. 1/2 pitch from the threaded end.
5) Flush air into the pipe to blow out foreign substances and chips before piping.



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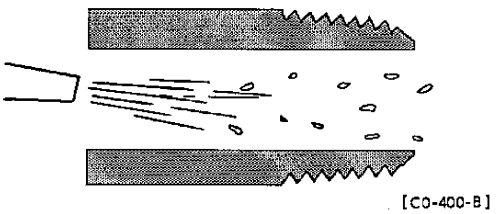
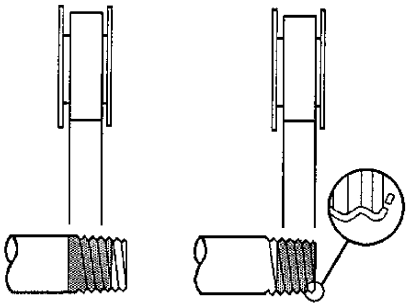

[C0-400-B]

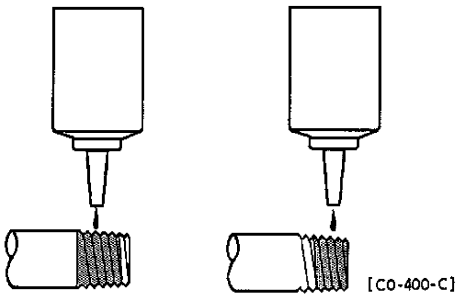
6) Refrain from mapplying sealant or sealing tape approx. two pitches of thread off the tip of the pipe to avoid residual substances from falling into the piping system.

● Seal Tape



(Right) (False)

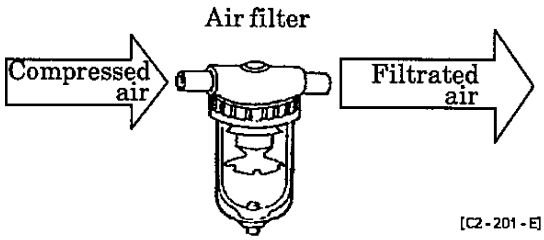
● Sealant (Paste or liquid)



(Right) (False)

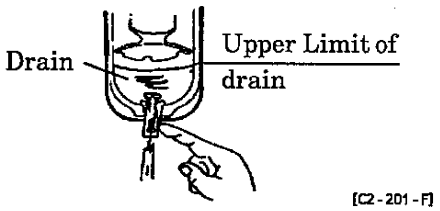
2.3 Fluid

1) Use the compressed air, filtrated and dehumidified. Carefully select a filter of an adequate filtration rating (5μm or lower preferred), flow rate and its mounting location (as closest to directional control valve as possible).



2) Be sure to drain out the accumulation in filter periodically.

3) Note that the intrusion of carbide of compressor oil (such as carbon or tarry substance) into the circuit causes malfunction of solenoid valve and cylinder.



Be sure to carry out thorough inspection and maintenance of compressor.

4) This cylinder does not require lubrication. It is recommended, however to use Turbine oil Grade 1, ISO VG32 as lubricant for the cylinders with the speed of 500 mm/sec and higher.

3. OPERATION

3.1 Operating the Cylinder

1) See to it that the air supply pressure to the cylinder is as shown in the "Specification". Operate the cylinder within this pressure range.
2) Install an external stopper when the dynamic energy is large, as it does not absorb the kinetic energy since it has no cushion.
3) Install a speed controller as shown in "Fundamental Circuit Diagram" on page 4 to control the piston speed.

4. MAINTENANCE

4.1 Periodical Inspection

1) In order to upkeep the cylinder in optimum condition, carry out periodic inspection once or twice a year.
2) Inspection items
   ⓐ Check the bolts and nuts fitting the piston rod end fittings and supporting fittings for slackening.
   ⓑ Check to see that the cylinder operates smoothly.
   ⓒ Check any change of the piston speed and cycle time.
   ⓓ Check for internal and / or external leakage.
   ⓔ Check the piston rod for flaw (scratch) and deformation.
   ⓕ Check the stroke for abnormality.
   See "Trouble shooting" 6.2, should there be any trouble found, also carry out additional tightening if bolts, nuts, etc. are slackened.

4.2 Disassembly

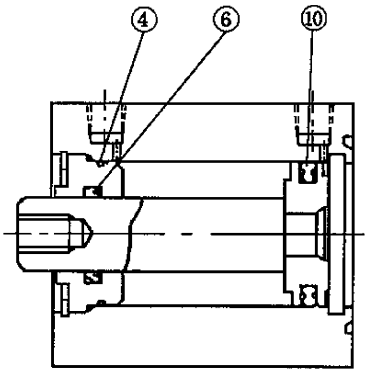
1) This cylinder is able to be disassembled.
   Replace component parts by disassembling cylinder referring to internal structure drawing when air leakage is ever occurred.
2) Remove piston rod and rod metal after removing C shape snap ring for the purpose of disassembly.

4.3 Assembly Procedure

1) Clean each component parts.
2) Take reversed sequence of disassembly to assemble cylinder after cleaning parts. Carefully avoid giving damage to packings to prevent malfunction or air leakage.
3) Apply a film of high grade grease (Flourine grease) over the inner surface of cylinder tube, outer surface of piston and packings.

4.4 Internal Structure Drawing And Expendable Parts List

● SSD-T-ϕ12~ϕ25
(Double acting,Heat resistance)



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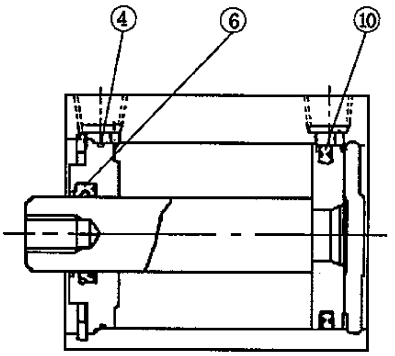
● SSD-T-ϕ32~ϕ50
(Double acting,Heat resistance)



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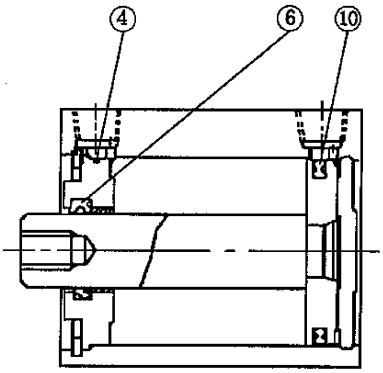
● SSD-T-ϕ63~ϕ100 (Double acting,Heat resistance)



[C4-503-H]

Expendable parts list (Specify the kit No. when ordering)

Tube bore (mm) \ Parts name / Kit No. \ Parts No.		④	⑥	⑩
		Rod metal gasket	Rod packing	Piston packing
ϕ12	SSD-T-12K	F4-660814-12	MYR-6F	PSD-12F
ϕ16	SSD-T-16K	F4-660814-16	MYR-8F	PSD-16F
ϕ20	SSD-T-20K	F4-165898	MYR-10F	PSD-20F
ϕ25	SSD-T-25K	F4-165899	MYR-12F	PSD-25F
ϕ32	SSD-T-32K	F4-660814-32	MYR-16F	PSD-32F
ϕ40	SSD-T-40K	F4-660814-40	PDU-16F	PSD-40F
ϕ50	SSD-T-50K	F4-660814-50	PDU-20F	PSD-50F
ϕ63	SSD-T-63K	AS568-035 Flourine	PDU-20F	PSD-63F
ϕ80	SSD-T-80K	AS568-041 Flourine	PDU-25F	PSD-80F
ϕ100	SSD-T-100K	AS568-044 Flourine	PDU-30F	PSD-100F

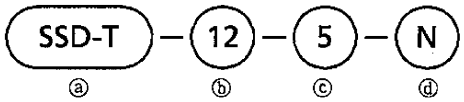
5. TROUBLE SHOOTING

1) Cylinder

Trouble	Cause	Countermeasure
Does not operate	No pressure or inadequate pressure	Provide an adequate pressure source.
	Signal is not transmitted to direction control valve	Correct the control circuit.
	Improper or misalignment of installation	Correct the installation state and / or change the supporting system.
	Broken packing	Replace the packing.
Does not function smoothly	Lowest speed than rated	Reduce the load. Consider the use of hydraulic cylinder.
	Improper or misalin\gnment of installation	Correct the installation state and / or change the supporting system.
	Exertion of transverse (lateral) load	Install a guide. Revise the installation state and / or change the supporting system.
	Excessive load	Increase the pressure itself and / or the inner diameter of the tube.
	Speed control valve is built in the way of "Meter in" circuit	Change the installation direction of the speed control valve.
Breakage and / or deformation	Impact force due to high speed operation	Turn the speed down. Reduce the load. Install cushion device with more efficiency. (External cushion)
	Exertion of transverse load	Install a guide. Revise the installation state and / or change the supporting system.

6. MODEL CODING

6.1 Model coding of Product



ⓐ Model		ⓑ Tube bore		ⓒ Standard stroke			ⓓ Option	
SSD-T	Double acting, Heat resistance	12	φ12	φ12~φ20	φ25~φ50	φ63~φ100	N	Male thread lod end
		16	φ16	5	5	5		
		20	φ20	10	10	10		
		25	φ25	15	15	20		
		32	φ32	20	20	30		
		40	φ40	25	25	40		
		50	φ50	30	30	50		
		63	φ63		40			
		80	φ80		50			
		100	φ100					

7. SPECIFICATION

7.1 Specifications

Model code / Item		SSD-T			
Action		Double Acting, Heat resistance			
Media		Compressed Air			
Max. working pressure	MPa {kgf/cm²}	1 {10.2}			
Min. working pressure	MPa{kgf/cm²}	0.1 {1} φ63 or more ··· 0.05 {0.5}			
Proof pressure	MPa {kgf/cm²}	1.6 {16.3}			
Ambient tempreature	℃	5~120			
Tube bore	mm	φ12, φ16, φ20, φ25	φ32, φ40	φ50, φ63	φ80, φ100
Port size		M5×0.8	Rc1/8	Rc1/4	Rc3/8
Stroke tolerance	mm	$^{+1.0}_{0}$			
Working piston speed	mm/s	50~500 (φ12~φ50)、50~300 (φ63~φ100)			
Cushioning		Without cushioning			
Lubrication		Not required			
Option		Nale thread rod end (N)			