CKD

SM－337073－A

INSTRUCTION MANUAL

SUPER COMPACT CYLINDER

SSD－KW, SSD-KWL 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

The 3rd edition

For Safety Use

To use this product safety, 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 applications, 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 operation manual carefully for proper operation.** Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ CAUTION :

- 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-KW, SSD-KWL

Super Compact Cylinder
Double-acting type , Two stage type , high load

Manual No. SM-337073-A

1. UNPACKING

1) Make sure that the type No. on the nameplate of the delivered Super Compact 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 for this cylinder is -10 to 60℃. Always operate the cylinder within this temperature range.

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.

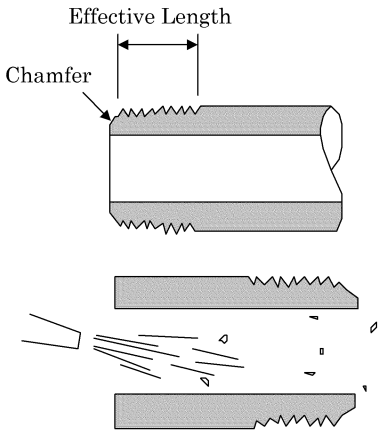
2.2 Piping

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 effective sectional area which is needed for the cylinder to drive at the specified speed.

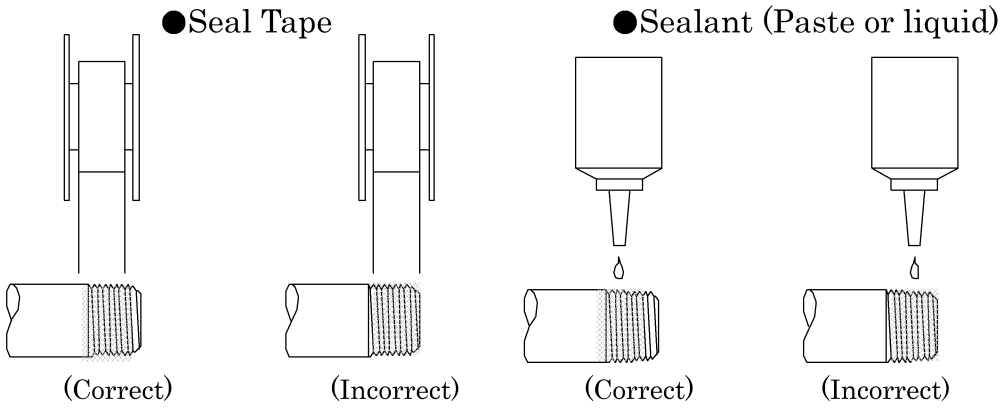
3) Install filter preferably adjacent to the upper-stream to the solenoid valve for eliminating rust, foreign substance in the drain of the pipe.

4) Be sure observe the effective thread length of gas pipe and give a chamger of approx. 1/2 pitch from the threaded end.

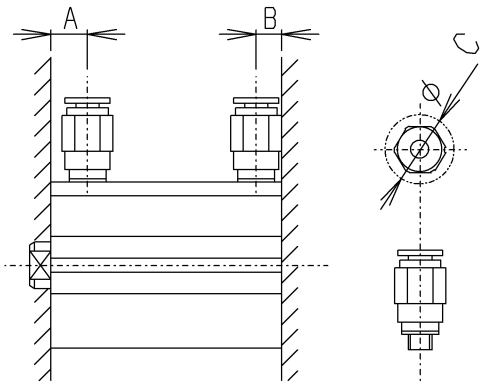
5) Flush air into the pipe to blow out foreign substances and chips before piping.



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

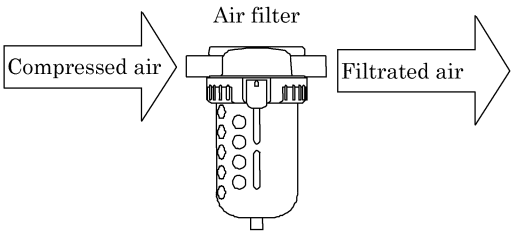


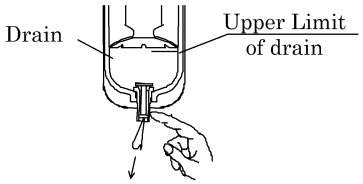
7) Because the usable piping joint has limitations, for using it, see the note below.



Item / Bore size (mm)	Port diam.	Port dimension A	Port dimension B	Available joints	Joint OD φC	Joint unsuitable
φ12	M5	5.5	5.5	SC3G-M5-4, SC3G-M5-6 GSS4-M5-S, GSS4-M5 GSL4-M5, GSL6-M5	φ11 or less	GSS6-M5
φ16						
φ20		8				
φ25		11	6			
φ32	Rc1/8	8	8	SC3G-6-4・6・8 GSS4-6, GSS6-6, GSS8-6 GSL4-6, GSL6-6	φ15 or less	GSS10-6 GSL8-6 GSL10-6
φ40		12	8.5			
φ50	Rc1/4	10.5	10.5	SC3G-8-6・8・10 GSS4-8, GSS6-8, GSS10-8 GSL4 to 12-8	φ21 or less	GSS-12-8
φ63		13	11			
φ80	Rc3/8	16	13	SC3G-10-8・10・12 GSS6-10, GSS8-10, GSS10-10 GSL6 to 12-10		—
φ100		23	15			

2.3 Fluid





1) It is necessary to use dehumidified air that has been filtered from compressed air. Carefully select an adequate filter that has an adequate filtration rate (preferably 5 μ m or less), flow rate and its mounting location (as nearest to the directional control valve as possible).

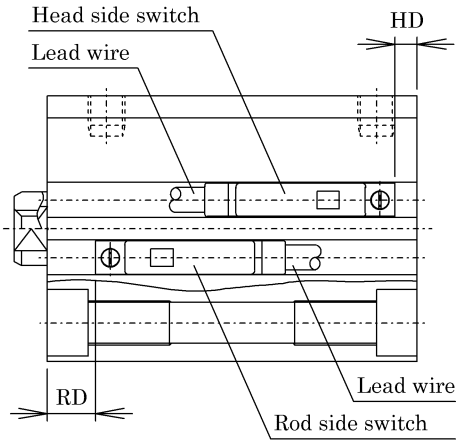
2) Be sure to drain out the accumulation in the filter periodically.

3) Note that the intrusion of carbide for the compressor oil (such as carbon or tarry substance) into the circuit causes malfunction of the solenoid valve and the cylinder. Be sure to carry out thorough inspection and maintenance of the compressor.

4) This cylinder does not require lubrication. It is recommended, however, to use Turbine oil Grade 1, ISO VG32 as a lubricant, if and when lubrication is needed.

2.4 Location of mounting Switches on a Cylinder

1) Location of mounting switches on a cylinder.
   (1) At the stroke end
   Refer the illustration above. Mount switches within the rod side dimension RD as well as the head side dimension HD for the purpose of having switches function at the points of the maximum sensitive position.



(2) Intermediate of stroke
Move the piston where it is anticipated to stop and fix it tentatively Slide a switch carefully along the side of cylinder over the piston to find out the spot where switch turns on. This type spot should be located on both side of piston. The intermediate spot between those posits is of the maximum sensitive position and where the switch is supposed to be installed.

(3) Relocation of switch
Slide switch body along cylinder tube after loosening mounting screws and tighten screws when located the maximum sensitive position.

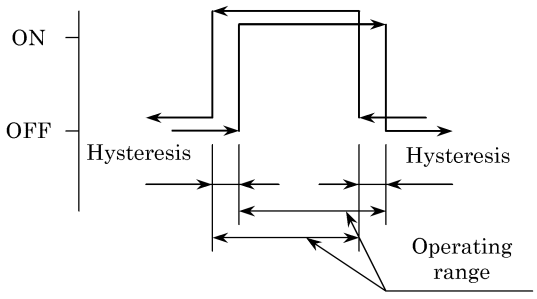
(4) Replacing switch
Take out switch out of groove after loosening mounting screws. Slide new replacing switch into groove and tighten screws upon placing the switch at the maximum sensitive position. (Apply tightening torque of 0.1 to 0.2N・m)

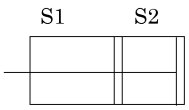
2) Operating range
The switch turns on first and turns off as the piston moves along its stroke. Precise operating range deviate slightly depending upon the direction of piston movement as shown right.
The center of the range is the mostly sensitive position. Setting switch at this point eliminates majority of external disturbance and provides the most stabile actuation of switch.

3) Hysteresis

(1) Precise operating range deviate slightly depending upon the direction of piston movement as shown right.

(2) Switch is apt to be disturbed its accuracy by external effect when piston stops within this range. Carefully avoid designing stopping location of piston.





S1 Maximum sensitive position (HD・RD), Operating range and Hysteresis (mm)

Item	Solid state (T2H/V, T3HV)				Reed switch (T0H/V, T5H/V)			
Bore size (mm)	Maximum sensitive position		Operating range	Hysteresis	Maximum sensitive position		Operating range	Hysteresis
	HD	RD			HD	RD		
φ12	7.5	4.5	2to6	1.5 or less	7.5	4.5	5to8	3 or less
φ16	8	4	2to5		8	4	4to9	
φ20	12.5	8.5	3to8		12.5	8.5	6to14	
φ25	14	12	3to9		14	12	5to14	
φ32	16	14	3to8		16	14	5to12	
φ40	19	19.5	3to9		19	19.5	6to14	
φ50	18.5	20	3to9		18.5	20	6to14	
φ63	22.5	18	3to9		22.5	18	7to15	
φ80	28.5	20.5	4to10		28.5	20.5	7to15	
φ100	43	24.5	4to10		43	24.5	9to15	

S2 Maximum sensitive position (HD・RD), Operating range and Hysteresis (mm)

Item	Solid state (T2H/V, T3HV)				Reed switch (T0H/V, T5H/V)			
Bore size (mm)	Maximum sensitive position		Operating range	Hysteresis	Maximum sensitive position		Operating range	Hysteresis
	HD	RD			HD	RD		
φ12	0	2.5	2to6	1.5 or less	0	2.5	5to8	3 or less
φ16	0	2	2to5		0	2	4to9	
φ20	3	6.5	3to8		3	6.5	6to14	
φ25	3	9.5	3to9		3	9.5	5to14	
φ32	3.5	9	3to8		3.5	9	5to12	
φ40	7	12	3to9		7	12	6to14	
φ50	7.5	12.5	3to9		7.5	12.5	6to14	
φ63	12.5	13	3to9		12.5	13	7to15	
φ80	17.5	15.5	4to10		17.5	15.5	7to15	
φ100	23	19.5	4to10		23	19.5	9to15	

※ Switches at ex-factory shipment are positioned at the maximum sensitive position (HD and RD).

Note: HD and RD for five strokes may vary from those stated in the above table since they are set every time the cylinder is installed.

3. OPERATION

3.1 Operating the Cylinder

1) The working pressure for this type of cylinder is specified in "Product Specifications". Operate the system within this 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 an appropriate speed controller to adjust the working piston speed.

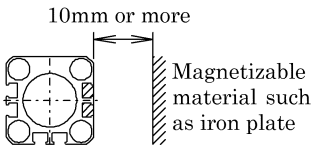
3.2 How to use the Switches

3.2.1 Common items

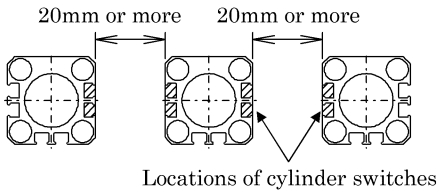
1) Magnetic environment
Do not operate this product in a place where a strong magnetic field or large current (large magnet or spot welder, etc.) exists. If a cylinder with the switch is installed in parallel to this product or the magnetic substance moves near the cylinder, the mutual interference may occur and affect the detection accuracy.

2) Protection of lead cord
Pay consideration to eliminate rapeating bending stress or stretching of lead cord while laying the cord.
To the moving portion, use such cord of flexibility as for building a robot.

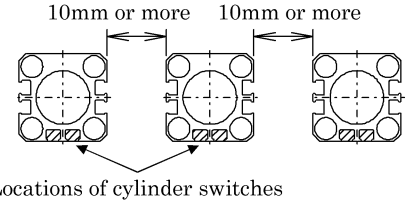
3) Operating temperature
Do not operate the product at a high temperature (60℃)
Always avoid operation of the product in a hot place due to temperature characteristics of magnetic and electronics parts.



4) Intermediate position detection
When activating the switch halfway of the stroke, the relay may not respond if the piston speed is too fast.
(Example) Operate cylinder with the speed of less than 500mm/s in case the relay actuation time is 20ms.



5) Shock resistance
Do not apply a large vibration or impact to the product when transporting the cylinder, or mounting or adjusting the switch.



6) Magnetizable material such as ironplate near by cylinder switch is apt to cause malfunction of cylinder switches. Keep it from cylinder surface at least10mm away (This is applicable for all bore sizes of tube).
7) It usually causes malfunction cylinder switches when plural cylinders are laid adjoining. Keep a space between each other as illustrated to right (This is applicable for all bore sizes of tube).
8) Changing switch lead wire colors
The colors of the switch lead wires have been changed, as shown in the following table, in response to the revision of the JIS standard and the subsequent revision of the NECA (Nippon Electric Controllers Association) standard.

		Before change	After change
M, S, R, A, T, K, V, H Series	2-wire type	White (+)	Brown (+)
		Black (-)	Blue (-)
	3-wire type	Red (+)	Brown (+)
		White (output)	Black (output)
		Black (-)	Blue (-)

3.2.2 Operational Cautions, Solid state switch (T2, T3)

1) Connection of lead cord
Comply with the color coding specified on the illustrations. Be sure to turn the power off before starting connecting work.
An erroneous wiring or short circuiting of load causes damage to not only switches, but also load side circuit. Wiring work without shutting electricity off may cause damage to the load side circuit

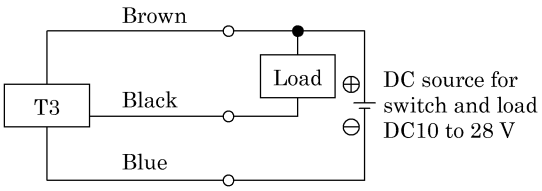


Fig.1 Fundamental circuit Example (1)
(In case the same source of power is used.)

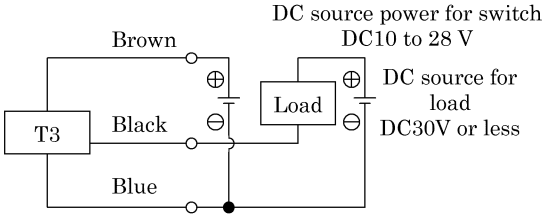


Fig.2 Fundamental circuit Example (2)
(In case individual sources of power are used.)

2) Protection of output circuit

Install some protective circuit as illustrated in Fig. 3 when inducing type load (Relay or solenoid valve) are to be used because those types apt to generate surge current switch off.

Install some protective circuit as illustrated in Fig. 4 when capacitor type load (Capacitor type) are to be used, because these types apt to generate a dash current when turning the switch ON.

Install some protective circuit as illustrated in Fig. 5 or 6 (in case of model T2) and Fig 7 (in case of model T3).

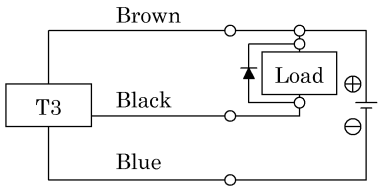
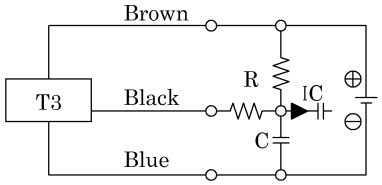


Fig.3 An example of using inducing load together with surge absorptive element (diode). (Hitachi Mfg. made diode V06C or equivalent is recommended.)



Flg.4 An example of using capacitor type load together with current regulating resister R.
Comply with the following formula to figure out required R.

$$\frac{V}{0.05}=R(\Omega)$$

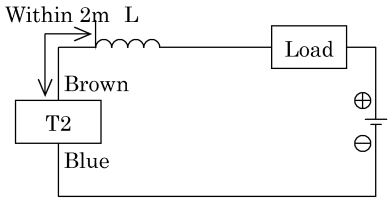


Fig.5 ・Choke coil
L= a couple hundred μH to a couple mH surpassing high frequency characteristic
・Install it near by a switch (within 2m).

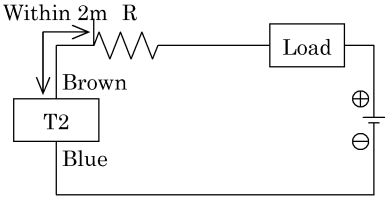


Fig.6 ・Dash current restriction resister.
R= As much large resister as the load circuit can afford.
・Install it near by a switch (within 2m).

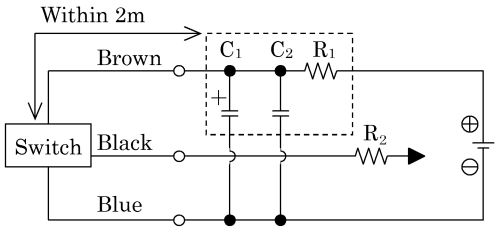


Fig7・ Electric power noise absorptive circuit.
C_1=20 to 50 μF electrolytic capacitor
(Withstand voltage 50V or more)
C_2=0.01 to 0.1 μF ceramic capacitor
R_1=20 to 30Ω

・Dash current restriction resister.
R_2=As much large resister as the load circuit can afford.
・Install it nearby the switch (Within 2m)

3) Connection to a programmable controller (Sequencer).
Type of connection varies depending upon the model of the programmable controller. Refer to the following Fig. 8 to 12 respectively.

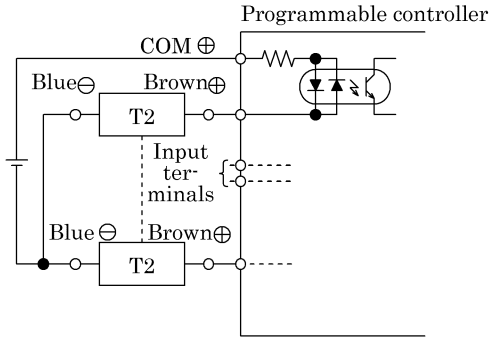


Fig.8 An example of T2 connection to source input type (an external power source)

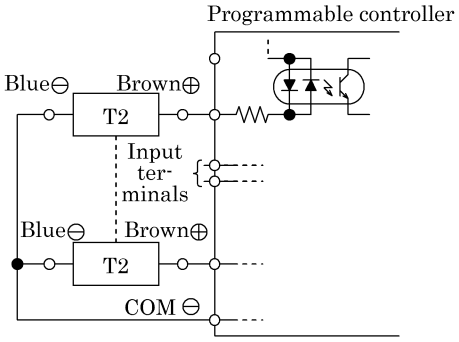


Fig.8 An example of T2 connection to source input type (an internal power source)

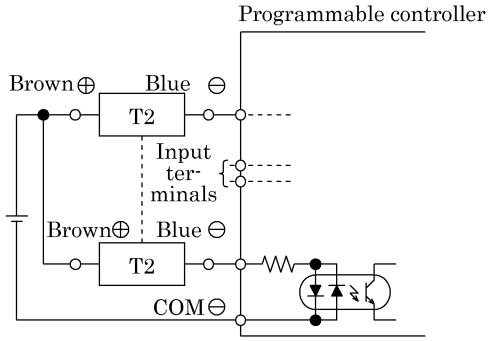


Fig.10 An example of T2 connection to source input type

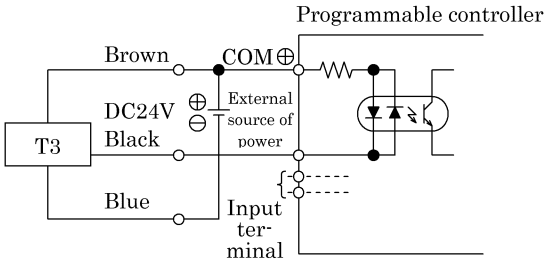


Fig.11 An example of T3 connection to source input type (an internal power source)

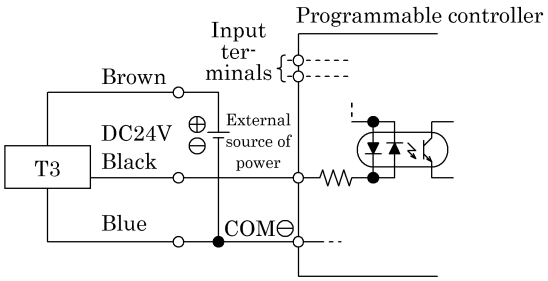


Fig.12 An example of T3 connection to source input type (an internal power source)

4) Series connection
The total voltage will decrease when the T2 switches connections have a leak. Therefore, confirm the input specifications for the programmable controllers, which are the connecting load. However, dimming or total failure of the indicator light may exist.
T3 switches hardly ever leak. When less than 10 μ A, then leakage may occur. Usually dimming and failure of the indicator light do not occur.

3.2.3 Reed switch (T0, T5)

1) Lead wire connections

Do not connect the lead wires of the switch to the power supply directly. Always connect the loads in series. For T0 switch, carefully check following items (1), (2).

(1) When using the switch for DC power supply, connect the brown and blue lines to the positive and negative sides, respectively. If these lines are connected reversely, the switch is activated, but the indicator light is not lit.

(2) When the switch is connected to an AC relay or a programmable controller input, the indicator light on the switch is not lit if the half-wave rectification is performed in the connected circuit. If this occurs, reverse the polarities of the switch lead wire connection. The indicator light may then be lit.

2) Contact capacity

Do not use a load exceeding the maximum contact capacity of the switch. Additionally, if the current is lower than the rated current value, the indicator light may not be lit.

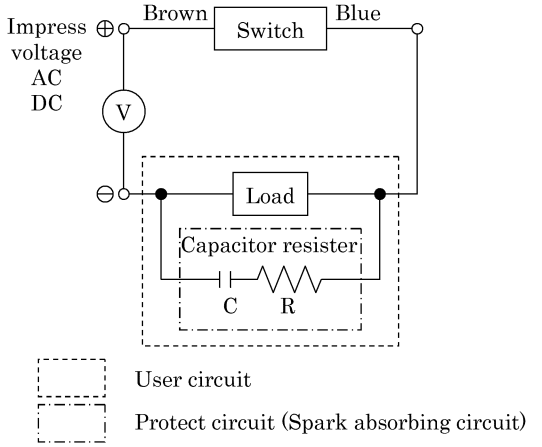
3) Contact protective measures

When an inductive load, such as relay is used or the wire length exceeds that stated in Table 1, always install a contact protective circuit.

Table 1

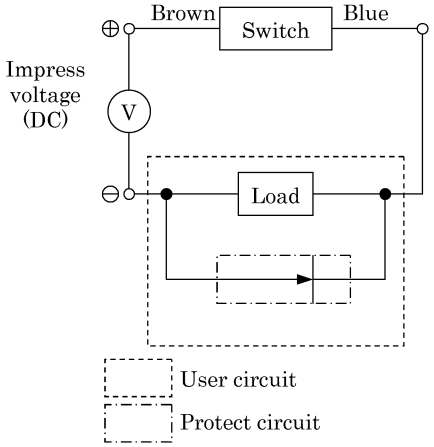
Electric power	Length of wire
DC	100m
AC	10m

(1) Protective circuit when connecting an inductive type load.



Recommended value
C (Capacitor) 0.033 to 0.1 μ F
R (Resister)1 to 3kΩ
XEB1K1 Okaya Denki Mfg or equivalent

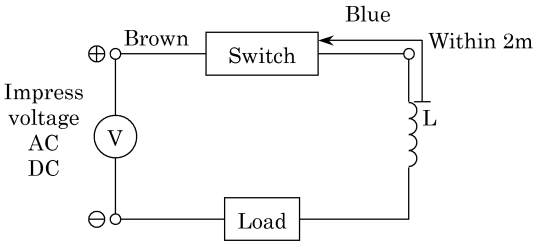
Fig.1 When capacitor resister is used.



Rectifying diode, general use
Hitachi Mfg. product V06C or equivalent

Fig.2 When diode is used.

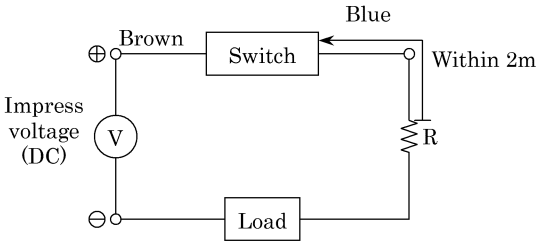
(2) Protective circuit when the wire length exceeds that stated Table 1



・ Choke coil
L=a couple hundred μH to a couple mH
surpassing high frequency characteristic

・ Install it near by a switch (within 2m).

Fig.3



・ Dash current restriction resister
R=As much large resister as the load circuit can afford.

・ Install it near by a switch (within 2m).

Fig.4

4) Relay
Always use the relays listed below.
Omron Corporation ····· MY type
Fuji Electric Co., Ltd. ····· HH5 type
Panasonic, Ltd. ····· HC type

5) Serial connection
Total voltage loss, when connected T0 switches in series, equals to the sum of respective voltage loss of each switch.
The total voltage loss becomes equivalent to one T0 (approx. 2.4V) when connecting the combination of one T0 for actuation confirming and rest of T5 switches. Indicator light is lit only when all switches turn on.

6) Parallel connection
There is no restriction in parallel connection number of switches of these types. Multi number connection of model T0, sometimes, cause a dimmed indicator light or complete indicator light failure.

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
   (1) Check the bolts and nuts fitting the piston rod end brackets and mounting brackets for slackening.
   (2) Check to see that the cylinder operates smoothly.
   (3) Check any change of the piston speed and cycle time.
   (4) Check for internal and/or external leakage.
   (5) Check the piston rod for flaw (scratch) and deformation.
   (6) Check the stroke for abnormality.

   See “Trouble shooting”, 5 should there be any trouble found, also carry out additional tightening if bolts, nuts, etc. are slackened.

4.2 Disassembly

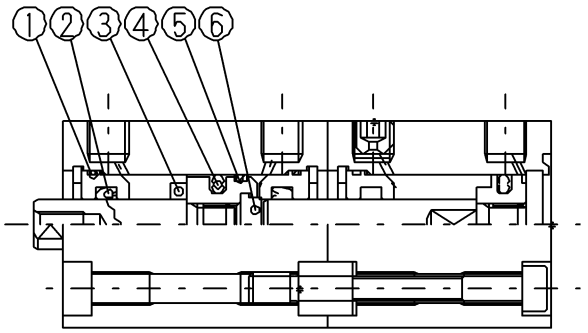
1) This cylinder is able to be disassembled.
   Replace component parts listed in Expendable parts List by disassembling cylinder referring to internal structure diagram when air leakage is ever occurred.
2) Remove piston rod and rod metal after removing C shape snap ring for the purpose of disassembly.

4.3 Assembly

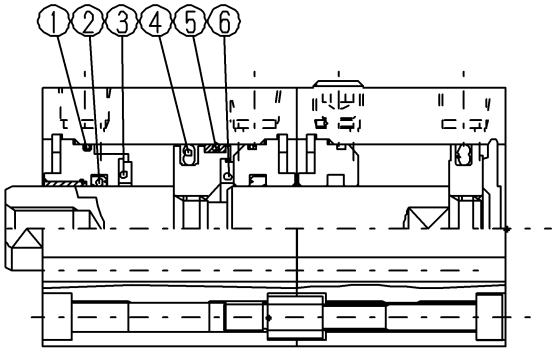
1) Clean each component parts.
2) Take reversed sequence of disassembly to assemble cylinder after cleaning parts. Carefully avoid giving damage to packings to prevent malfunction or air leakage.
3) Apply a film of high grade grease (Litium alkali base) over the inner surface of cylinder tube, outer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

4.4 Internal structure drawings and Expendable parts list

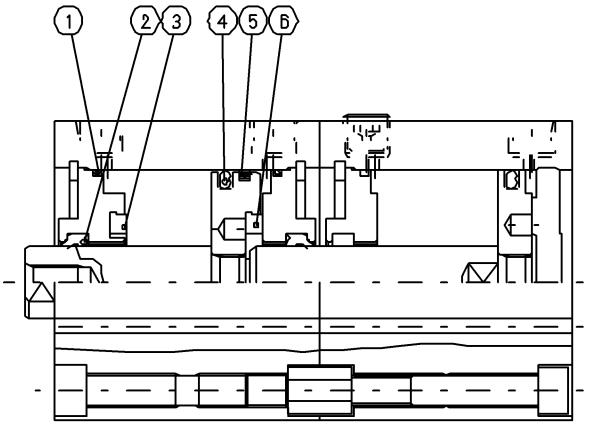
・ SSD-KW-12 to 25
(Double, Two stage type , high load)



・ SSD-KW-32 to 50
(Double, Two stage type , high load)



・ SSD-KW-63 to 100
(Double, Two stage type , high load)



Expendable parts list (Specify the kit No. on your purchase order.)

Parts No / Parts name / Bore size (mm) / Kit No.	①Note 1	② Note 1	③
ϕ 12	SSD-KW-12K	Rod metal gasket	Rod packing	Cushion rubber (R)
ϕ 16	SSD-KW-16K			
ϕ 20	SSD-KW-20K			
ϕ 25	SSD-KW-25K			
ϕ 32	SSD-KW-32K			
ϕ 40	SSD-KW-40K			
ϕ 50	SSD-KW-50K			
ϕ 63	SSD-KW-63K			
ϕ 80	SSD-KW-80K			
ϕ 100	SSD-KW-100K			

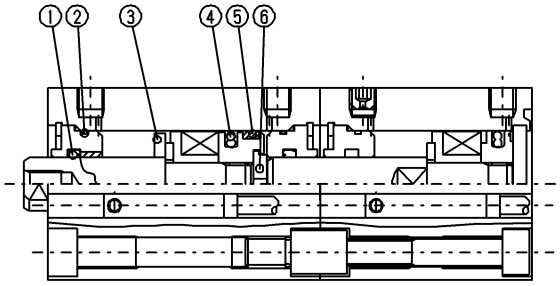
Expendable parts list (Specify the kit No. on your purchase order.)

Parts No / Parts name / Bore size (mm) / Kit No.	④ Note 1	⑤	⑥
ϕ 12	SSD-KW-12K	Piston packing	Wear ring	Cushion rubber (H)
ϕ 16	SSD-KW-16K			
ϕ 20	SSD-KW-20K			
ϕ 25	SSD-KW-25K			
ϕ 32	SSD-KW-32K			
ϕ 40	SSD-KW-40K			
ϕ 50	SSD-KW-50K			
ϕ 63	SSD-KW-63K			
ϕ 80	SSD-KW-80K			
ϕ 100	SSD-KW-100K			

Note 1： Part number ①,②,④ are used by two.

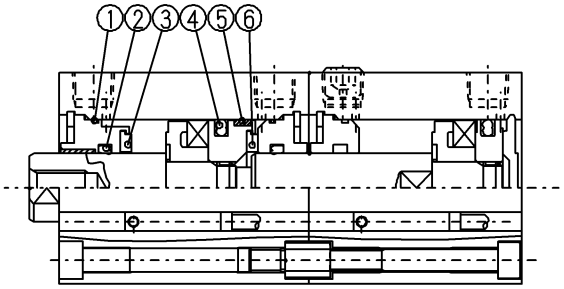
・ SSD-KWL-12 to 25

(Double, Two stage type , high load , With switch)



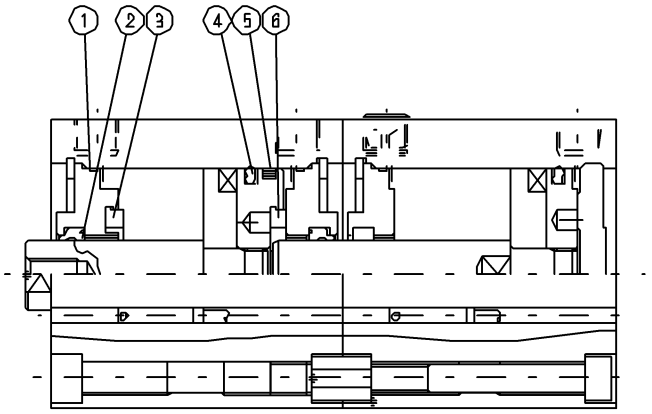
・ SSD-KWL-32 to 50

(Double, Two stage type , high load , With switch)



・ SSD-KWL-63 to 100

(Double, Two stage type , high load , With switch)



Expendable parts list (Specify the kit No. on your purchase order.)

Parts No / Parts name / Bore size (mm) / Kit No.	①Note 1	② Note 1	③
ϕ 12	SSD-KW-12K	Rod metal gasket	Rod packing	Cushion rubber (R)
ϕ 16	SSD-KW-16K			
ϕ 20	SSD-KW-20K			
ϕ 25	SSD-KW-25K			
ϕ 32	SSD-KW-32K			
ϕ 40	SSD-KW-40K			
ϕ 50	SSD-KW-50K			
ϕ 63	SSD-KW-63K			
ϕ 80	SSD-KW-80K			
ϕ 100	SSD-KW-100K			

Expendable parts list (Specify the kit No. on your purchase order.)

Parts No / Parts name / Bore size (mm) / Kit No.	④ Note 1	⑤	⑥
ϕ 12	SSD-KW-12K	Piston packing	Wear ring	Cushion rubber (H)
ϕ 16	SSD-KW-16K			
ϕ 20	SSD-KW-20K			
ϕ 25	SSD-KW-25K			
ϕ 32	SSD-KW-32K			
ϕ 40	SSD-KW-40K			
ϕ 50	SSD-KW-50K			
ϕ 63	SSD-KW-63K			
ϕ 80	SSD-KW-80K			
ϕ 100	SSD-KW-100K			

Note 1： Part number ①,②,④ are used by two.

5. TROUBLE SHOOTING

1) Cylinder

Trouble	Causes	Remedies
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 mounting style.
	Broken piston packing	Replace the cylinder.
Does not function smoothly.	Speed is below the low speed limit	Limit the load variation.
	Improper or misalignment of installation.	Correct the installation state and/or change the mounting style.
	Exertion of transverse (lateral) load.	Install a guide. Revise the installation state and/or change the mounting style.
	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 meter-out circuit of the speed control valve.
Breakage and / or deformation	Impact force due to high speed operation	Turn the speed down. Reduce the load and/or install a mechanism with more secured cushion effect (e.g.external cushion mechanism).
	Exertion of transverse load.	Install a guide. Reverse the installation state and/or change the mounting style.

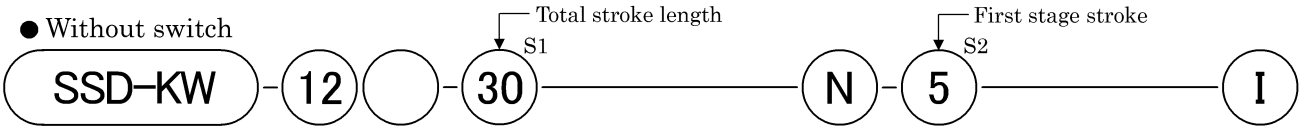
2) Switch

Troubles	Causes	Remedies
Indicator light is not lit.	Deposited contact point	Replace the switch.
	Excessive load than rated capacity	Replace the relay with a recommended one or replace the switch.
	Damaged indicator light	Replace the switch.
	Inadequate incoming signal	Review the external signal circuit and remove the causes.
Switch does not function right.	Broken circuit	Replace the switch.
	Inadequate incoming signal	Review the external signal circuit and remove the causes.
	Improper voltage	Correct voltage to specified.
	Incorrect location of switch	Correct its location.
	Aberrant position of switch	Set it back to original position and tighten the mounting device.
	Incorrect direction of switch mounting	Correct the direction of the switch mounting.
	Relay is unable to respond properly	Turn the speed down. Replace the relay with a recommended one.
	Excessive load than rated capacity	Replace the relay with a recommended one or replace the switch.
Switch does not return.	Piston is not moving	Make the piston move.
	Deposited contact point	Replace the switch
	Excessive load (relay) than rated capacity	Replace the relay with a recommended one or replace the switch.
	The ambient temperature is out of the specification range	Adjust the ambient temperature within the range of -10 to 60℃
	Existence of a foreign magnetic field	Shield the magnetic field.
	Inadequate incoming signal	Review the external signal circuit and remove the causes.

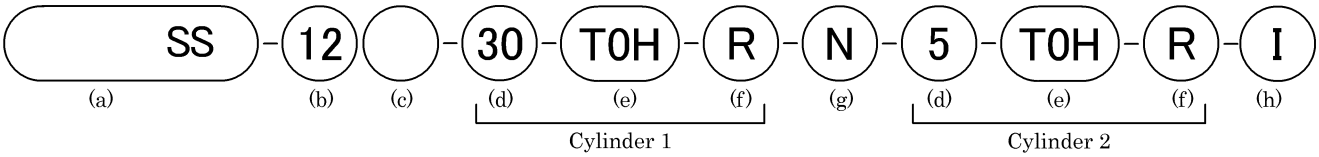
6. HOW TO ORDER

6.1 Product Number Coding

● Without switch



● With switch



(a) Model		(b) Bore size (mm)		(c) Pipe thread type	
SSD-KW	Double acting・Two stage type・high load	12	φ12	Blank	Rc
		16	φ16	NN	NPT（φ32 or more) (custom order)
SSD-KW L	Double acting・Two stage type・high load ・With switch	20	φ20	GN	G（φ32 or more) (custom order)
		25	φ25		
SSSD-KW L1	φ12、φ16、2 color indicator, preventive maintenance switch	32	φ32		
		40	φ40		
		50	φ50		
		63	φ63		
		80	φ80		
		100	φ100		

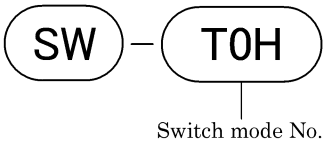
(d) Stroke length			(e) Switch model No.					(f) Switch quantity	
φ12 to φ20	φ25 to φ50	φ63 to φ100	Axial lead wire	Radial lead wire	Switch type	Indicator light	Lead wire	R	One on rod side
5	5	5						H	One on head side
10	10	10	T0H※	T0V※	Reed	1 color indicator	2 wire	D	Two
15	20	20	T5H※	T5V※					
20	30	30	T2H※	T2V※	Solid state	1 color indicator	2 wire		
25	40	40	T3H※	T3V※			3 wire		
30	50	50	T2YH※	T2YV※		2 color indicator	2 wire		
40	60	60	T3YH※	T3YV※			3 wire		
50	70	70	T2JH※	T2JV※		Off delay type	2 wire		
	80	80	T2YD※	—		Switch for strong magnetic field	2 wire		
	90	90							
	100	100							

※Lead wire length	
Blank	1m (standard)
5	
3	3m (option)
5	5m (option)

※mark shows lead wire length

(g) Option		(h) Accessory (When selecting rod end male thread "N")	
N	Rod end male thread	I	Rod eye
M	Piston rod material (stainless)	Y	Rod clevis

6.2 How to order switch



7. SPECIFICATION

7.1 Product Specifications

Model / Item		SSD-KW SSD-KWL (with switch)				
Bore size	mm	φ 12	φ 16	φ 20	φ 25	φ 32
Actuation		Double-acting type				
Working fluid		Compressed Air				
Max. working pressure	MPa	1.0				
Min. working pressure	MPa	0.15				
Proof pressure	MPa	1.6				
Ambient temperature	℃	-10 to 60 (No freezing)				
Port size		M5				Rc1/8
Stroke tolerance	mm	S1= $^{+2.0}_{0}$			S2= $^{0}_{-1.5}$	
Working piston speed	mm/s	50 to 500				
Cushion		Cylinder1:Rubber cushion Cylinder2:None				
Lubrication		Not required (Use Grade 1 ISO VG 32 Turbine oil, if lubrication is preferred)				
Option		Rod end male thread (N)				
Copper and PTFE free specification		Standard				
Allowable energy absorption	J	0.04	0.09	0.16	0.16	0.40

Model / Item		SSD-KW SSD-KWL (with switch)				
Bore size	mm	φ 40	φ 50	φ 63	φ 80	φ 100
Actuation		Double-acting type				
Working fluid		Compressed Air				
Max. working pressure	MPa	1.0				
Min. working pressure	MPa	0.15		0.1		
Proof pressure	MPa	1.6				
Ambient temperature	℃	-10 to 60 (No freezing)				
Port size		Rc1/8	Rc1/4		Rc3/8	
Stroke tolerance	mm	S1= $^{+2.0}_{0}$			S2= $^{0}_{-1.5}$	
Working piston speed	mm/s	50 to 500		50 to 300		
Cushion		Cylinder1:Rubber cushion Cylinder2:None				
Lubrication		Not required (Use Grade 1 ISO VG 32 Turbine oil, if lubrication is preferred)				
Option		Rod end male thread (N)				
Copper and PTFE free specification		Standard		Custom order		
Allowable energy absorption	J	0.63	0.98	1.56	2.51	3.92

7.2 Switch Specification

Type & Model / Item	Reed 2 wire			
	T0H/V		T5H/V	
Applications	Programmable controller, relay		Programmable controller, relay, IC circuit (without indicator light), series connection	
Power supply voltage	—			
Load Voltage	DC12/24V	AC110V	DC5/12/24V	AC110V
Load Current	5 to 50mA	7 to 20mA	50mA or less	20mA or less
Current consumption	—			
Internal voltage drop	2.4V or less		0V	
Indicator light	LED (ON lighting)		Without indicator light	
Leakage current	0mA			
Lead wire length (Note1)	Standard 1m (Oil resistant vinyl cabtire cord 2 conductor 0.2mm²)			
Shock resistance	294m/s²			
Insulation resistance	20MΩ over at DC500V megger			
Withstand voltage	No failure impressed at AC1000V for one minute			
Ambient temperature	-10 to 60℃			
Degree of protection	IEC Standards IP67, JIS C0920 (water tight type), oil resistance			

Type & Model / Item	Proximity 2 wire		
	T2H/V	T2JH/V	T2YH/V
Applications	Programmable controller		
Power supply voltage	—		
Load Voltage	DC10 to 30V		
Load Current	5 to 20mA (Note 2)		
Current consumption	—		
Internal voltage drop	4V or less		
Indicator light	LED (ON lighting)		Red/green LED (ON lighting)
Leakage current	1 mA or less		
Lead wire length (Note1)	Standard 1m (Oil resistant vinyl cabtire cord 2 conductor 0.2mm)	Standard 1m (Oil resistant vinyl cabtire cord 2 conductor 0.3mm)	
Shock resistance	980m/s²		
Insulation resistance	20MΩ over at DC500V meggeer	100MΩ over at DC500V megger	
Withstand voltage	No failure impressed at AC1000V for one minute		
Ambient temperature	-10 to 60℃		
Degree of protection	IEC Standards IP67, JIS C0920 (water tight type), oil resistance		

Type & Model / Item	Proximity 3 wire	
	T3H/V	T3YH/V
Applications	Programmable controller, relay	
Power supply voltage	DC10 to 28V	
Load Voltage	DC30V or less	
Load Current	100 mA or less	50mA or less
Current consumption	10mA or less at DC24V	
Internal voltage drop	0.5V or less	
Indicator light	LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	10μA or less	
Lead wire length (Note1)	Standard 1m (Oil resistant vinyl cabtire cord 3 conductor 0.2mm²)	
Shock resistance	980m/s²	294m/s²
Insulation resistance	20MΩ over at DC500V meggeer	100MΩ over at DC500V megger
Withstand voltage	No failure impressed at AC1000V for one minute	
Ambient temperature	-10 to 60℃	
Degree of protection	IEC Standards IP67, JIS C0920 (water tight type), oil resistance	

Type & Model / Item	Proximity 2 wire	
	T2YD	T2YDT
Applications	Programmable controller	
Load voltage	DC24V±10%	
Load current	5 to 20mA	
Internal voltage drop	6V or less	
Indicator light	Red/green LED (ON lighting)	
Leakage current	1.0mA or less	
Output delay time (Note3) (ON delay, OFF delay)	30 to 60ms	
Lead wire length (Note1)	Standard 1m (Oil resistant vinyl cabtire cord 2 conductor 0.5mm)	Standard 1m (Flame resistant vinyl cabtire cord 2 conductor 0.5mm)
Shock resistance	980m/s²	
Insulation resistance	100MΩ over at DC500V megger	
Withstand voltage	No failure impressed at AC1000V for one minute	
Ambient temperature	−10 to 60℃	
Degree of protection	IEC Standards IP67, JIS C0920 (water tight type), oil resistance	

Note1 : 3m or 5m long lead wire is optionally available.
Note2 : Maximum value, 20mA is at 25℃ of ambient temperature. Load current decreases less than 20mA when the ambient temperature exceeds 25℃. (For example: it may be 5 to 10mA at 60)