CKD

SM－7652－A

# INSTRUCTION MANUAL

## 2-Piston Cylinder

## CY·CYP·CYE·CYF·CYR

- 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 safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (ISO 4414 *1 JIS B 8370 *2). 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 operation manual carefully for proper operation.**

*1) ISO 4414 : Pneumatic fluid power ··· Recommendations for the application of equipment to transmission and control systems.

*2) JIS B 8370 : General rule for pneumatic systems

Thank you for purchasing CKD product. Read this manual through for upkeeping the equipment in the best condition and getting the best performance out of CKD product.

# INDEX

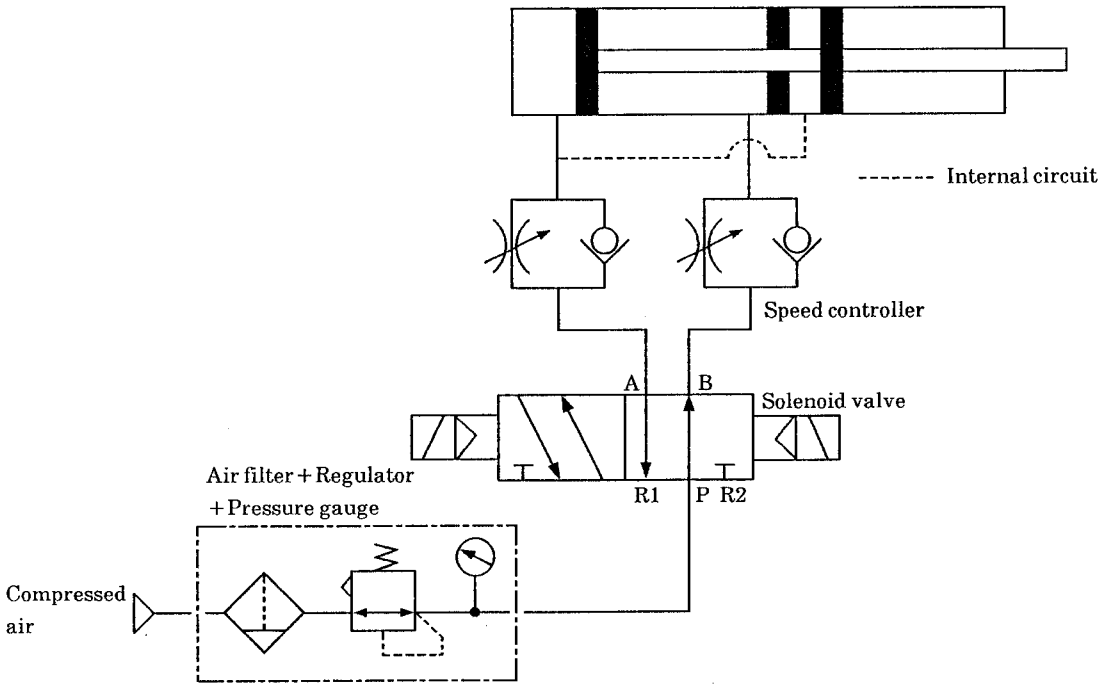
CY, CTP, CYE
SM7652-A

# 1. PRODUCT

## 1-1. Specifications

| Model No. / Item | CY, CYP, CYE CYF. CYR |
|---|---|
| Service Fluid | Compressed air |
| Lubrication | Not required (Use class 1, ISO VG32 Turbine oil, if lubrication is preferred.) |
| Max. operating pressure | 0.8 MPa {8 kgf/cm²} (Provided, 0.5 MPa {5 kgf/cm²} for Models CY-100 and CYE-80) |
| Min. operating pressure | 0.1 MPa {1 kgf/cm²} |
| Withstanding pressure | 1.5 MPa {15 kgf/cm²} |
| Cushion | Without Cushion |
| Ambient temperature range | 5 ~ 60°C |

## 1-2. Fundamental circuit (Non-lubrication case)



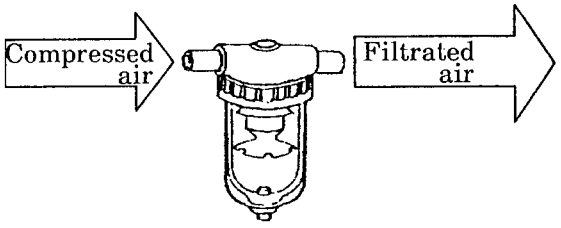

## FUNCTIONAL FEATURE

High output of Cylinder is expected because of almost double as much increased piston area because of dual connection of two pistons. It is the most effective to adopt such cylinder where installation the cylinder of larger diameter is virtually inhibited due to limited available space.

## 2. CAUTION

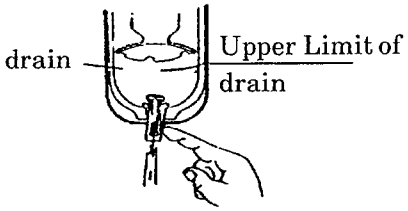
### 2-1. FLUID

1) Use the compressed air, filtrated and dehumidified. Carefully select a filter of an adequate filtration rate (5$\mu$m 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, if lubrication is preferred.

## 3. OPERATION

1) Keep operating pressure within the following range to operate cylinders efficiently.

0.1 ~ 0.8 MPa {1 kgf/cm² ~ 8 kgf/cm²}

(Provided 0.1 ~ 0.5 MPa {1 ~ 5 kgf/cm²} for model CY-100 and CYE-80)

2) Provide controlling measure of the piston speed by installing controller as illustrated in the Fundamental Circuit drawing.

3) Avoid to utilize the full stroke of cylinder because the cylinders of these models have been designed for the purpose of increasing pressing force during the process of welding. (Recommended stroke: −3mm)

# 4. INSTALLATION

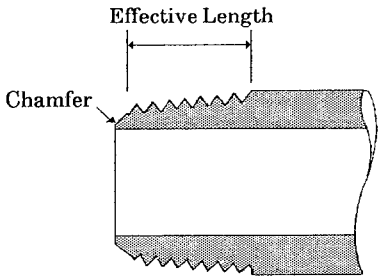
## 4-1. Piping

1) For piping beyond the filter, use pipes that hardly get corroded such as galvanized pipes, nylon tubes, rubber tubes, etc.

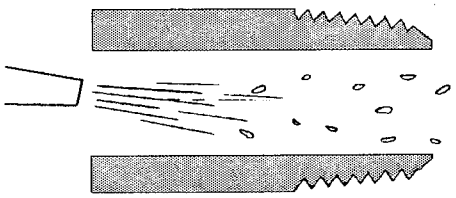
2) See to it that the pipe connecting cylinder and solenoid valve has effective sectional area needed for the cylinder to drive at specified speed.

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

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

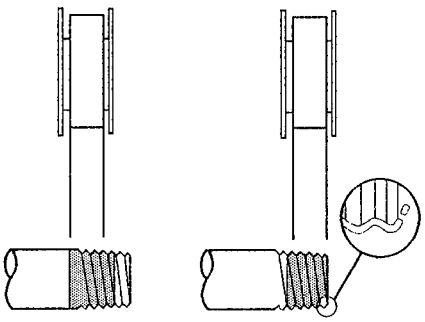



5) Flush air into the pipe to blow out foreign substances and chips before piping.



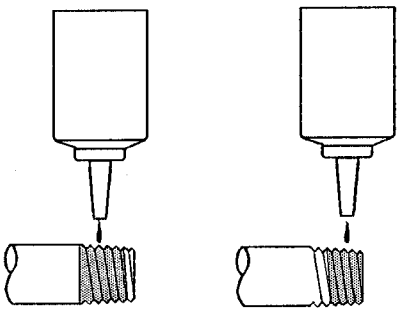
6) Refrain applying sealant or sealing tape approx. two pitches of thread off the tip of pipe to avoid residual substances from falling into piping system.

● Seal Tape



Right False

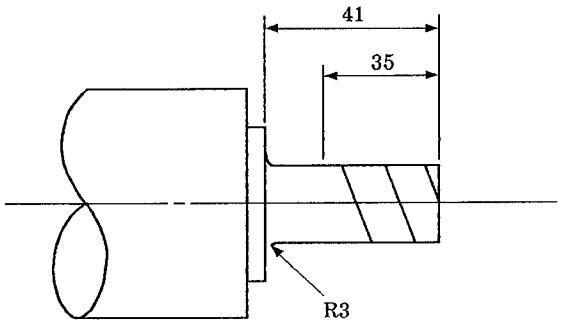
● Sealant (Paste or liquid)



Right False

## 4-2. Installation

1) The ambient temperature range for this cylinder is 5~60°C
2) Carefully avoid causing distortion of cylinder by tightening it excessively or by allowing some object hitting cylinder resulting its malfunction
3) Insert electrode holder over 35mm and tighten it.




Give a chamfer of either R3 or C3 or more around the open edge of electrode holder in case of intending to insert it up to 41mm.

4) Try to retain as less eccentric of tip as possible. (Max. permissible eccentric: 15mm)
5) Keep as possibly less tension to electric cable as possible.

# 5. MAINTENANCE

## 5-1. Periodic 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.

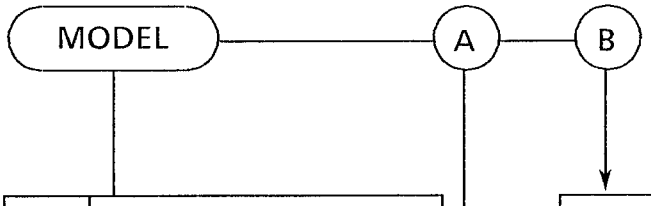
See 5-2, "Trouble shooting", should there be any trouble found, also carry out additional tightening if bolts, nuts, etc.are slackened.

## 5-2. Trouble Shooting

| 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 piston packing | Replace the cylinder. ※ |
| Does not function smoothly | Improper or misalignment 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. |
| | Exertion of transverse load | Install a guide. Reverse the installation state and/or change the supporting system. |

※ Note: Being a caulked type, this cylinder is unable to be overhauled; hence, replace the cylinder if duly trouble occurs to the cylinder itself.

# 6. MODEL CODING




| Model | Type · Classification |
|---|---|
| CY | Double action · High output type · Basic model |
| CYP | Double action · High output type · Trunnion mounting model |
| CYE | Double action · High output type · Spindle mounting model |
| CYF | Double action · High output type · Front hairpin model |
| CYR | Double action · High output type · Rear hairpin model |

| Ⓑ Stroke (mm) | |
|---|---|
| CY | CYP · CYE · CYF · CYR |
| 38 | 50 |
| 50 | 63 |
| 63 | 76 |
| 76 | 102 |
| 102 | 127 |
| 127 | 152 |
| 152 | |

| Ⓐ Tube bore (mm) | | | |
|---|---|---|---|
| CY · CYP | | CYE · CYF · CYR | |
| 44 | ø44 | 44 | ø44 |
| 50 | ø50 | 50 | ø50 |
| 56 | ø56 | 56 | ø56 |
| 60 | ø60 | 60 | ø60 |
| 63 | ø63 | 63 | ø63 |
| 70 | ø70 | 70 | ø70 |
| 80 | ø80 | 80 | ø80 |
| 100 | ø100 | | |

- Remarks: CYP, CYE, CYF & CYR are of order production.