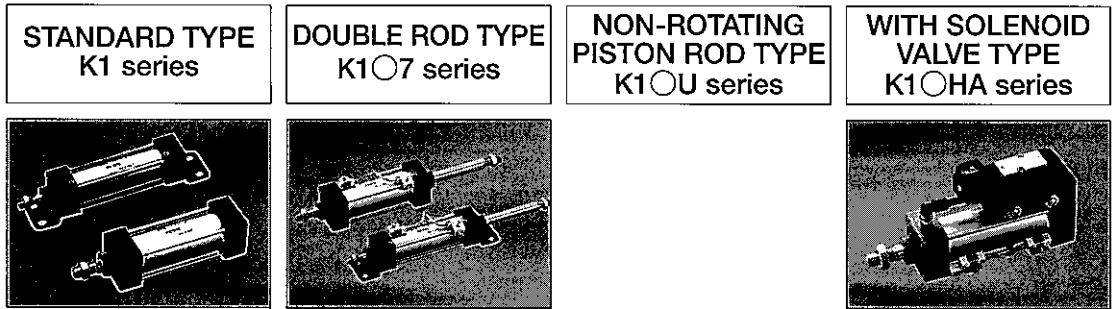


# AIR CYLINDER/K1 series

Bore/  $\phi$  32,  $\phi$  40,  $\phi$  50,  $\phi$  63,  $\phi$  80,  $\phi$  100,  $\phi$  125



## Type of Action

Double-acting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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## Bore

$\phi$ 32	<input type="radio"/>	<input type="radio"/>	—	—
$\phi$ 40	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\phi$ 50	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\phi$ 63	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\phi$ 80	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\phi$ 100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\phi$ 125	<input type="radio"/>	<input type="radio"/>	—	—

## Cushion

Air cushion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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## Mounting

Basic type	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Axial foot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Side lug	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rod side flange	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head side flange	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>
Eye	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>
Short eye	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>
Clevis	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>
Center trunnion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Model With Switch

AX type	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SR type	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Accessories

[Standard] ●Rod end nut

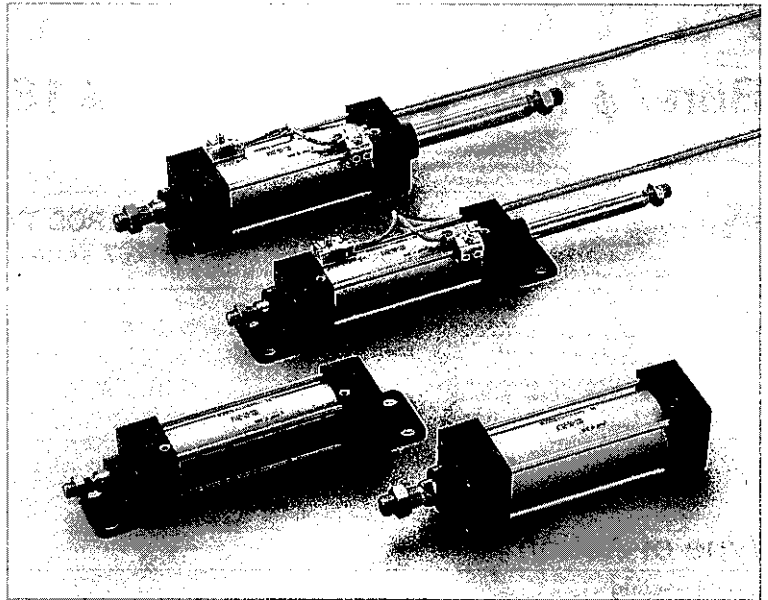
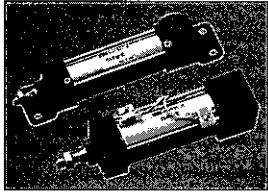
[Option] ●Rod end clevis ●Rod end eye

## Custom-made Cylinder

●Single rod, dual stroke cylinder ●Double rod, dual stroke cylinder ●Adjustable stroke cylinder with rod extended

●Adjustable stroke cylinder with rod retracted ●Hollow rod type cylinder ●Heat-resisting cylinder ●Air-hydro cylinder

WITH LOCK  
MECHANISM TYPE  
K1○L series



- New-type cushion valve
- Large bearing made of sintered oil-impregnated copper alloy
- Rod cover and head cover with faucet boss
- Rod diameter for general purpose
- Rod packing and piston packing conforming to JPAS

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## FOR SAFETY USE

Be sure to read the following instructions before use.  
For common and individual instructions, refer to the text of this catalogue.

The following safety precautions are provided to prevent damage and danger to personnel and to provide instructions on the correct usage of this product. These precautions are classified into 3 categories; "CAUTION", "WARNING" and "DANGER" according to the degree of possible injury or damage and the degree of impendence of such injury or damage.

Be sure to comply with all precautions along with JIS B8370<sup>(※1)</sup> and ISO 4414<sup>(※2)</sup>, as they include important content regarding safety.

- |                  |  |
|------------------|--|
| <b>⚠ CAUTION</b> | <ul style="list-style-type: none"><li>• Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damage-only accidents.</li></ul> |
| <b>⚠ WARNING</b> | <ul style="list-style-type: none"><li>• Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.</li></ul>                  |
| <b>⚠ DANGER</b>  | <ul style="list-style-type: none"><li>• Indicates an impending hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.</li></ul>                   |

(※1) JIS B8370 : General Rules for Pneumatic Systems

(※2) ISO 4414 : Pneumatic fluid power-General rules relating to systems

### ⚠ WARNING

- **The applicability of pneumatic equipment to the intended system should be judged by the pneumatic system designer or the personnel who determined specifications for such system.**

As operating conditions for products contained in this catalogue are diversified, the applicability of pneumatic equipment to the intended system should be determined by the pneumatic system designer or the personnel who determined specifications for such system after conducting an analysis or testing as necessary.

The system designer shall be responsible for assuring the intended system performance and safety.

Before making a system, the system designer should thoroughly examine all specifications for such a system and also take into consideration the possibility of any trouble with the equipment.

- **The pneumatic equipment should be handled by persons who have sufficient knowledge and rich experience.**

Inproper handling of compressed air will result in danger.

Assembling, operation and maintenance of machinery using pneumatic equipment should be performed by persons who have sufficient knowledge and rich experience.

- **Never operate machinery nor remove the equipment until safety is assured.**

- Before checking or servicing machinery and equipment, be sure to check that steps for prevention of dropping or runaway of the driven component have been completely taken.

- When removing the equipment, make sure that the above-mentioned safety measures have been done beforehand.

Then turn off air supply and power to the system and purge compressed air in the system.

- When restarting machinery and equipment, check that proper prevention of malfunction has been provided for and then restart carefully.

- **When using the pneumatic equipment in the following conditions or environments, take the proper safety measures and consult KURODA beforehand.**

- Conditions and environments other than specified and outdoor use.

- Applications to nuclear power equipment, railroads, aircraft, vehicles, medical equipment, equipment connected with food and drink, amusement facilities and safety devices such as emergency interruption devices, clutch/brake circuits for a press and the likes.

- Applications which require extreme safety and will also greatly affect men and property.



# AIR CYLINDER/COMMON INSTRUCTIONS ①

Be sure to read them before use.

Also refer to Par."For Safty Use"and instructions mentioned for each series of air cylinders.

## DESIGN

### ! WARNING

- **When exerting force changes due to a twist or other accident in the sliding part of the machine, the air cylinder may produce a shockable action.**

In this case, the air cylinder may catch the human body such as hands and feet or the machine may suffer a damage. Therefore, it is necessary to adjust the machine and make a design so that the air cylinder can smoothly operate without injuring the human body.

- **Especially when there is the possibility that the human body is endangered, fit a protective cover.**

When there is the possibility that applied load or the moving part of the air cylinder endangers the human body, design the system so that the huan body cannot directly touch these parts.

- **Firmly clamp the air cylinder to prevent the fixed part and connection of the air cylinder from loosening.**

Especially when using the air cylinder in a place where it is frequently operated or in a vibratory place, use a firm clamping method.

- **A decelerating circuit or shock absorber may be required according to circumstances.**

When the load moves at high speed or the mass is large, it is difficult to absorb a shock only by the built-in cushion.

Provide a circuit to decelerate the cylinder before the piston enters cushion stroke or a shock absorber on the load side.

In this case, fully take into consideration the rigidity of the machine.

- **Take into consideration the possibility of pressure failure in the circuit due to outage etc.**

For an air cylinder used in the clamping mechanism, if clamping pressure in the circuit lowes due to outage etc., clamping force will reduce, so that the load may sometimes come off. To avoid such danger, design the system to incorporate a safty device to protect the human body and machine. Also provide the hanger and lift with proper prevention against dropping.

- **Take into consideration the possibility of power failure.**

Take proper countermeasures against equipment controlled by air pressure, electricity, hydraulic pressure, etc. so as to protect the human body and machine even if these power sources are faulty.

- **Design a circuit to prevent the load and piston rod from sudden protrusion.**

When the air cylinder is driven with a 3-position exhaust center type solenoid valve or when the air cylinder is started after air pressure is applied to one side of the piston after exhausting residual air from the cylinder, the load and piston rod may sometimes suddenly protrude. In this case, the air cylinder may the human body such as hands and feet or damage the machine.

Select a device to prevent the sudden protrusion of the piston rod and design a proper circuit.

## DESIGN

### ! WARNING

- **Take into consideration the action of air cylinders in an emergency.**

When the machine is stopped by a person in an emergency or stopped by the safety device due to the occurrence of outage, system trouble, etc., the air cylinder may catch the human body or damage the machine according to circumstances. To avoid such an accident, take into consideration the action of air cylinder in designing a system so as to prevent an injury to the human body and a damage to the machine.

- **Take into consideration the action of an air cylinder when it restarts from stoppage in an emergency or abnormal state.**

Make a design to prevent an injury to the human body and a damage to the machine when the air cylinder is restarted.

When it is necessary to reset the air cylinder to the starting position, make a design to incorporate a safety manual control unit.

- **Stopping at intermediate position**

When stopping the air cylinder piston at an intermediate position using a 3-position closed center type solenoid valve, it is difficult to stop it accurately because of its compressibility, unlike a hydraulic cylinder can does. In addition, as the solenoid valve and air cylinder allow a certain degree of air leak, they cannot stop at the fixed position for a long period of time according to circumstances.

When it is required to stop them at the fixed position for a long period of time, contact KURODA.

- **Remodeling air cylinders**

Do not remodel air cylinders.

### ! CAUTION

- **When adjusting the driving speed of an air cylinder, install a speed controller.**

Adjust the driving speed on the low speed side and then adjust it gradually until the prescribed speed is attained.

## SELECTION

### ! WARNING

- **Refer to specifications.**

Air cylinders listed in this catalog are designed for compressed air.

When using other fluid than compressed air, contact KURODA beforehand.

Do not use the air cylinder outside the specified pressure and temperature range; this may result in a breakdown or faulty opration.



# AIR CYLINDER/Common INSTRUCTIONS ②

Be sure to read them before use.

Also refer to Par. "For Safty Use" and instructions mentioned for each series of air cylinders.

## INSTALLATION

### ! CAUTION

- **Avoid applying eccentric load and lateral load to the piston rod.**

Applying eccentric load and lateral load to the piston rod causes a faulty operation and a damage to the packing.

- **For a long stroke cylinder, provide a reinforcing ring.**

For a long stroke cylinder, provide a reinforcing ring to prevent droop of rod, deflection of tube and damage to rod by vibration and external load.

- **Do not flaw and dent the cylinder tube and piston rod sliding part.**

Even a slight flaw or dent will cause a faulty operation and a damage to the packing.

- **Prevent seizure of rotating parts.**

Apply grease to the rotating parts (pin etc.) to prevent seizure.

- **Do not start the system before making sure that equipment is properly operated.**

After installing the air cylinder, connect compressed air and power supply. Perform functional test and leak test properly and check that the system is correctly operated with safety. Then start the system.

## PIPING

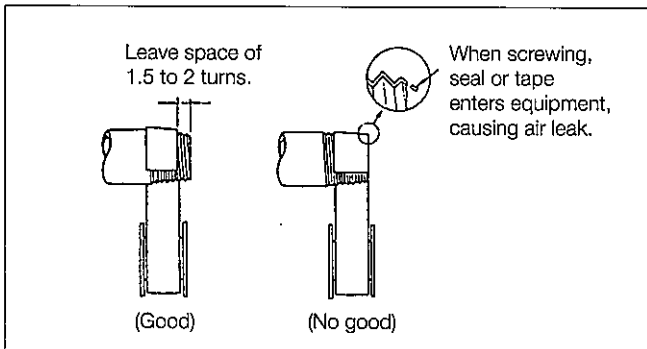
### ! CAUTION

- **Before piping**

Thoroughly flush the inside of each pipe to remove chips, coolant, dust, etc. before piping.

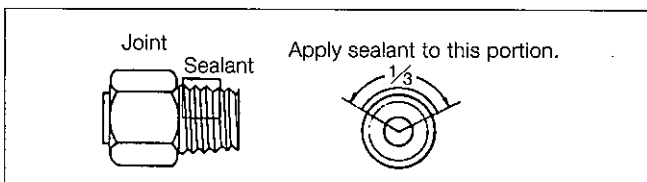
- **How to wind a seal tape**

When winding a seal tape around the threaded portion, leave space of 1.5 to 2 thread turns.



- **How to apply liquid sealant**

When applying liquid sealant to the threaded portion, apply a proper amount to about  $\frac{1}{3}$  of the periphery of the threaded portion and then screw it.



## PIPING

### ! CAUTION

- **Screw of pipe and joint**

When screwing the pipe and joint, use care to prevent chips and sealant from entering the pipe and joint.

Tighten them within a proper range of clamping torque.

Port size	Clamping torque (N·m)
M3	0.3~ 0.5
M5	1.5~ 2.0
R, Rc $\frac{1}{8}$	7.0~ 9.0
R, Rc $\frac{1}{4}$	12 ~14
R, Rc $\frac{3}{8}$	22 ~24
R, Rc $\frac{1}{2}$	28 ~30
R, Rc $\frac{3}{4}$	28 ~30
R, Rc1	36 ~38

- **Avoid wrong piping.**

When connecting a pipe to a air cylinder, be careful not to mistake the supply port by referring to the nameplate affixed to the product or the product catalogue.

## CUSHION (For air cylinder with built-in cushion)

### ! CAUTION

- **Adjust the cushion by rotating the cushion needle.**

The cushion has been properly adjusted before it has leaves our factory. When using the air cylinder, readjust the cushion to meet the applied load and the driving speed of the cylinder.

Rotating the cushion needle clockwise makes small the throttle to increase cushioning performance.

- **After adjusting the cushion, be sure to tighten the lock nut.**

- **Do not use the air cylinder with the cushion needle fully opened:**

otherwise causing a damage to the packing.



# AIR CYLINDER/COMMON INSTRUCTIONS ③

Be sure to read them before use.

Also refer to Par."For Safty Use"hand instructions mentioned for each series of air cylinders.

## LUBRICATION

### ! CAUTION

- **Oil supply to lubricated air cylinders**  
Set an air lubricator in the pneumatic circuit and supply Class 1 turbine oil ISO VG32 (containing no additive). Do not use other oils (sprindle oil, machine oil, etc.), otherwise causing a damage to the sealed part.
- **Oil supply to non-lubricated air cylinders**  
The non-lubricated air cylinder can be used without lubrication, but can be used with lubrication.  
When using it with lubrication, do not discontinue supplying oil. Otherwise, the applied lubricant may run off, sometimes resulting in an operation failure.  
When using a lubricant, Class 1 turbine oil ISO VG32 (containing no additive) is recommended.

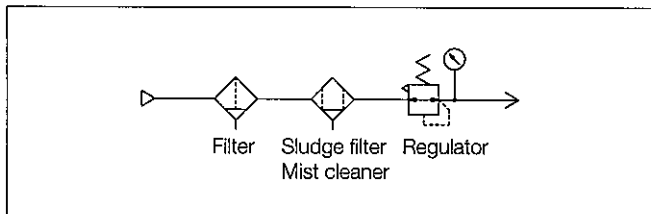
## QUALITY OF AIR

### ! WARNING

- **Use pure air**  
Compressed air containing corrosive gases, chemicals, salt, etc. causes a breakdown or operation ailure. So do not use such air.

### ! CAUTION

- **Fit an air filter with filtration of 5 μm or fine.**
- **Install an air dryer.**  
Compressed air containing much drainage causes the operation failure of pneumatic equipment. Install an air dryer, lower the temperature and reduce drainage.
- **Take proper countermeasures against sludge.**  
If sludge produced in compressor oil enters pneumatic equipment, it will cause the operation failure of pneumatic equipment. It is recommendable to use compressor oil (NISSEKI FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a sludge filter or mist cleaner to prevent sludge from entering the pneumatic equipment.



- **Use at low temperature**  
When using pneumatic equipment at temperature of 5 °C or below, install an air dryer or take other countermeasures to prevent drainage and moisture in compressed air from freezing or solidifying.

## OPERATING ENVIRONMENT

### ! DANGER

- Do not use air cylinders in a explosive environment.

### ! WARNING

- Do not use air cylinders in a corrosive environment.
- When using air cylinders in a place attended with much dust, water drops or oil drops, fit bellows or other proper means to the piston rod.  
For use in a dusty place, use an air cylinder with powerful scraper.

## MAINTENANCE AND INSPECTION

### ! WARNING

- **Inspection before maintenance**  
Check that proper prevention against the dropping and runaway of load has been provided. Then turn off air and power supply to the system and discharge residual air in the system before doing maintenance.  
For 3-position closed center type, compressed air is contained between solenoid valve and air cylinder. Discharge the residual air.
- **Inspection after maintenance**  
When restarting the system, check that protrusion prevention has been provided. Then connect compressed air supply and power supply to the pneumatic system, and perform functional and leak tests to make sure that the air cylinder is properly installed and works safety withouty fail.
- **Disassembling the air cylinder**  
As the cover and tube are fixed with adhesives, they cannot be disassembled.  
When disassembling is required, contact KURODA beforehand.

### ! CAUTION

- **Draining**  
To maintain constant air quality, drain the air filter periodically.



# MAGNETIC PROXIMITY SWITCH/Common INSTRUCTIONS ①

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of switches.

## DESIGN AND SELECTION

### ! WARNING

- Use the switch within the range of specifications described in this catalogue.

Applying load current, voltage, temperature and shock exceeding the range of specifications will cause a damage to the switch and a faulty operation.

Thoroughly read the specifications and use the switch within the range of the specifications.

Especially, be sure to use the switch within the maximum contact capacity and load current range.

- Be careful of distance between adjacent cylinders.

When 2 or more cylinders, each of switch is equipped with a switch are close installed or a magnetic material moves very close to the cylinders, there is the possibility that the switch malfunctions due to magnetic interference between the switch and magnetic material.

- Pay attention to switch-on time at the center of stroke.

Example : The piston is set at the center of stroke and load is driven when the piston passes the switch. In this case, if piston speed is extremely high, operating time is short even when the switch is turned on.

As a result, load cannot be fully moved according to circumstances.

In this case, piston speed is expressed as follows :

$$V = \frac{\text{Operating range of switch (mm)}}{\text{Operating time of load (ms)}} \times 1000 \quad (\text{mm/s})$$

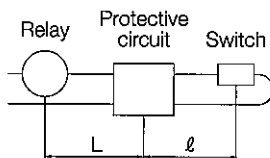
- Reduce the length of wiring as much as practicable.

<Reed switch>

When capacitive load is driven or the wiring from switch to load is long, inrush current increases due to line floating capacity at the time of switch-on ; this results in a damage to the switch or shortens the switch service life.

- ① When using a switch with built-in contact protective circuit and the length of wiring is more than 5 m, be sure to connect a protective circuit near to the switch in series.

### In case of capacitive load :



When "L" is longer than 10 m, set "l" at 100 to 200 mm.

- ② Even when using a switch with built-in contact protective circuit and length of wiring is more than 30 m, the protective circuit may not fully absorb inrush current according to circumstances ; this sometimes shortens the switch service life.

For how to connect a protective circuit contact KURODA.

<Solid-state switch>

When inrush current caused by line floating capacity occurs, take a proper countermeasure to absorb the rush current.

## DESIGN AND SELECTION

### ! WARNING

- Be careful of leak current.

For a 2-wire solid-state switch, current (leak current) flows in it to operate the internal circuit even if the switch is turned off.

When 2 or more switches are connected in parallel, leak current increases corresponding to the number of connected switches.

When leak current is larger than operating current for turning off load, the load is not turned off.

- Be careful of internal voltage drop of switch.

<Reed switch>

When 2 or more switches with LED are connected in series, voltage drop occurs by the number of connected switches due to the resistance of light emitting diode. (Refer to "Internal Voltage Drop" described in "Specifications for Switch".)

Note that load may not be sometimes moved even if the switch operates normally.

When the voltage drop of light emitting diode becomes a problem, use a switch without LED.

<Solid-state switch>

When connecting 2-wire solid-state switches in series, pay attention to the same points as those for connecting reed switches. However, note that the internal voltage drop is generally larger than that of reed switches.

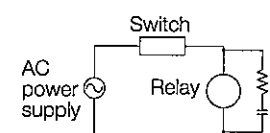
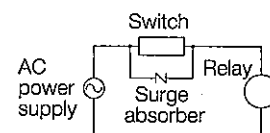
- Do not use load that produces surge voltage.

<Reed switch>

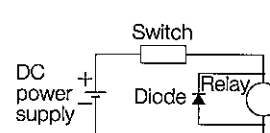
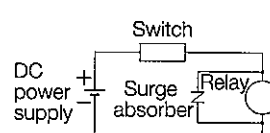
When driving a relay or other load that produces surge voltage, use a switch with built-in contact protective circuit or connect a protective circuit to the switch.

### In case of inductive load

#### Load at 100 V AC



#### Load at DC



<Solid-state switch>

A zener diode for surge protection is connected to the output side of a solid-state switch. However, it may be broken if surge is repeatedly applied to it.

When directly driving a relay, solenoid valve or other load that produces surge, use a switch with built-in surge absorbing element.



# MAGNETIC PROXIMITY SWITCH/COMMON INSTRUCTIONS ②

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of switches.

## DESIGN AND SELECTION

### ! WARNING

- **When using the switch in an interlock circuit, pay attention to the following points;**

When a switch for cylinder is used for interlock signals requiring high degree of reliability, provide the switch with a mechanical protective function against trouble and malfunction or use a double-interlock system by using the switch together with other switch (sensor etc.).

In addition, check the switch periodically to make sure that it works normally.

- **Provide space for maintenance.**

In designing a system, take into account space for maintenance and inspection.

## INSTALLATION AND ADJUSTMENT

### ! WARNING

- **Do not drop or hit the switch.**

When handling the switch, do not drop or hit it or do not apply an excessive shock to it (refer to specification for each switch).

- **Do not swing around the switch while holding the lead wire.**

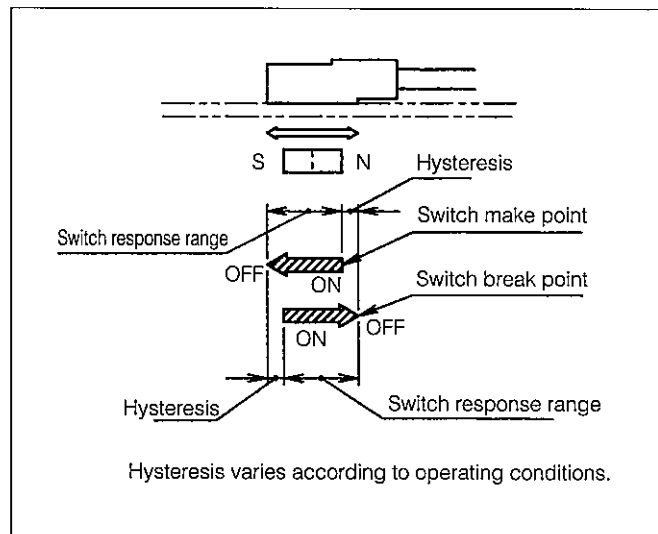
If excessive tensile force is applied to the lead wire, the inside wire may be broken or the internal mechanism of the switch may suffer a damage.

- **Fix the switch with prescribed clamping torque.**

When the switch is fixed with clamping torque exceeding the prescribed value, the set screw, metal fixture, switch, etc. may be broken.

- **Set the switch at the center of its response range.**

The magnet (piston) moves to a point at which it turns on the switch and then it moves in opposite direction to other point at which it turns off the switch. The distance between these points is called hysteresis. When the switch is installed within this distance, its operation may be sometimes unstable. Set the switch so that magnet is located at the center of its response range (within which the switch is turned on). (Set positions described in this catalog are the most suitable positions at the stroke end.)







# MAGNETIC PROXIMITY SWITCH/COMMON INSTRUCTIONS ③

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of switches.

## WIRING

### ! WARNING

- Properly wire in accordance with each lead wire color or terminal No.

In this case, be sure to turn off power to the electric circuit on the connection side.

- Do not make wrong wiring.

As DC current has polarity, do not confuse (+) with (-).

<Reed switch>

When the connection of wiring is reversed, the switch is operated but the lamp is not on.

If current exceeding the prescribed operating range flows to the switch, the lamp will be broken and the switch fails.

<Solid-state switch>

Even if the connection of wiring of a 2-lead wire switch is reversed, the protective circuit prevents the breakdown of the switch. In this case, however, the switch is left turned on. Note that, if the connection of wiring of a 2-lead wire switch is reversed with load short-circuited, the switch will be broken.

If the power line of a 3-lead wire switch is reversely wired ("+" replaces with "-"), the protective circuit will protect the switch. However, note that, if the power line is replaced with the output line by mistake, the switch will be broken.

- Do not wire the switch together with the power line and high voltage line.

Wire the switch by keeping away from the power line and high voltage line.

Otherwise, the control circuit including the switch may malfunction due to noise.

- Avoid applying repetitive bending stress and tensile force to the lead wire.

When setting the switch in a moving part, sag the wiring so that repetitive stress and tensile force will not be applied to the lead wire.

Wiring that produces repetitive bending stress and tensile force cause the breaking of wire.

- Check for poor insulation.

Check lead wire connection, extension cable and terminal base for poor insulation. If poor insulation occurs, excess current will flow to the switch, sometimes resulting in a damage to the switch.

- Be sure to connect load before turning on power supply.

When a 2-lead wire switch is turned on without connecting load such as relay, PLC, etc., excess current will momentarily flow to the switch, resulting in a damage to the switch.

- Do not turn on the switch with load short-circuited.

If the switch is turned on with load short-circuited, excess current will flow to the switch, sometimes resulting in a damage to the switch.

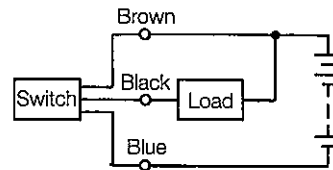
## WIRING

### ! WARNING

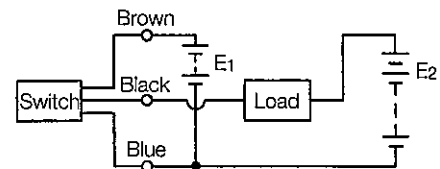
- It is possible to provide power supply to load and power supply to switches individually and also to use them in common.

When power supplies are individually provided, they should have the same voltage.

Where power supply to load and power supply to switch are commonly used :



Where power supply to load and power supply to switch are not commonly used :



E<sub>1</sub> and E<sub>2</sub> should be the same voltage.



# MAGNETIC PROXIMITY SWITCH/COMMON INSTRUCTIONS ④

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of switches.

## OPERATING ENVIRONMENT

### ! DANGER

- **Never use the switch in an explosive or ignitable atmosphere.**

As the switch is not proof against explosion, never use it in an explosive gas atmosphere or ignitable atmosphere ; otherwise causing an explosion or fire.

### ! WARNING

- **Do not use the switch in a place where there is a strong magnetic field or a large current.**

If the switch is used in a place where there is a strong magnetic field or a large current (large magnet, spot welding machine, etc.), the switch will malfunction or the magnet in the cylinder will be demagnetized.

- **Do not use the switch in a place where it is always splashed with water.**

The switch is designed to meet structural requirements IP67 prescribed by IEC Standard. However do not use the switch in a place where it is always splashed with water; otherwise causing an insulation failure or malfunction.

- **Do not use the switch in an environment containing oil and chemicals.**

When the switch is used in an environment containing coolant, washings, oils and chemicals, the inside of the switch is adversely affected even if it is used for a short period of time. When it is necessary to use the switch in such an environment, contact KURODA.

- **Do not use the switch in a place where an extreme temperature change occurs.**

Using the switch in a place attended with an unusual temperature change will adversely affect the inside of the switch. When it is necessary to use the switch in such an environment, contact KURODA.

- **Do not use the switch in a place where an excessive shock occurs.**

〈Reed switch〉

For a reed switch, if an excessive shock (over 980m/s<sup>2</sup>) is applied to it during operation, the contact may malfunction according to circumstances.

When a proximity switch is used in place of a reed switch, the deficiency can be reduced. In this case, check shock resistance given in specifications.

- **Do not use the switch in a place where surge is produced.**

〈Solid-state switch〉

When there is a large surge source around the solid-state switch, the circuit element in the switch may be adversely affected.

## OPERATING ENVIRONMENT

### ! WARNING

- **Be careful of adjacent magnetic material. Keep the switch away from magnetic material by more than 3.5 mm.**

When there is magnetic material such as iron close to the cylinder with a built-in magnet is absorbed and thus the switch may not operate according to circumstances.

Note that, when chips and iron powder such as weld spatters accumulate during operation, the same situation as above-mentioned will also occur.

## MAINTENANCE AND INSPECTION

### ! WARNING

Perform the following maintenance and inspection periodically.

- **Check the switch set screw and metal fixture for looseness and retighten as necessary.**

If the switch set screw and metal fixture are loosened, the switch set position will shift, resulting in an unstable operation or malfunction.

Readjust the set position and tighten the set screw and fixture.

- **Check the lead wire for damage.**

A damage to the coating of the lead wire may lead to insulation failure and breaking of wire.

When a damage is found, change the switch and repair the lead wire immediately.



# HI-PAL CYLINDER/INDIVIDUAL INSTRUCTIONS

Be sure to read before use.

Also read both "For Safety Use" and common instructions.

## HANDLING

### ! CAUTION

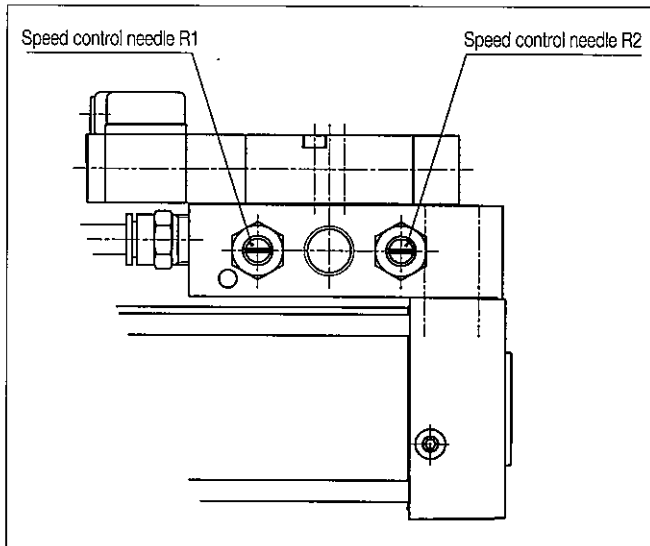
#### • Controlling piston speed

When controlling piston speed, do so gradually from the low speed side until the prescribed speed is attained by means of the speed control needle provided in the solenoid valve.

Turning the needle clockwise reduces piston speed and turning it counterclockwise increases piston speed.

For air cylinders with rod extended at the time of power on, R1 needle is used to control rod-extending speed and R2 needle is used to control rod-retracting speed.

For air cylinders with rod retracted at the time of power on, R1 needle is used to control rod-retracting speed and R2 needle is used to control rod-extending speed.

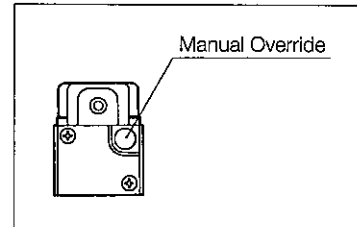


## HANDLING

### ! CAUTION

#### • Manual operation of solenoid valve

The solenoid valve can be manually operated by pressing Manual Override provided on the solenoid valve.



#### • Changing rod-extending type cylinder for rod retracting type cylinder

It is not possible to change a cylinder designed for rod extension at the time of power on for a cylinder designed for rod retraction at the time of power on.

Specify either of the two clearly when ordering.



# CYLINDERS WITH LOCK MECHANISM/INDIVIDUAL INSTRUCTIONS ①

Be sure to read before use.

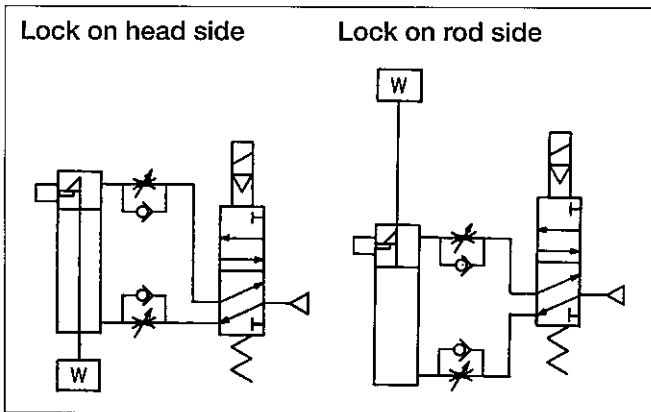
Also read both "For Safety Use" and common instructions.

## PRECAUTIONS FOR PNEUMATIC CIRCUITS

### ! WARNING

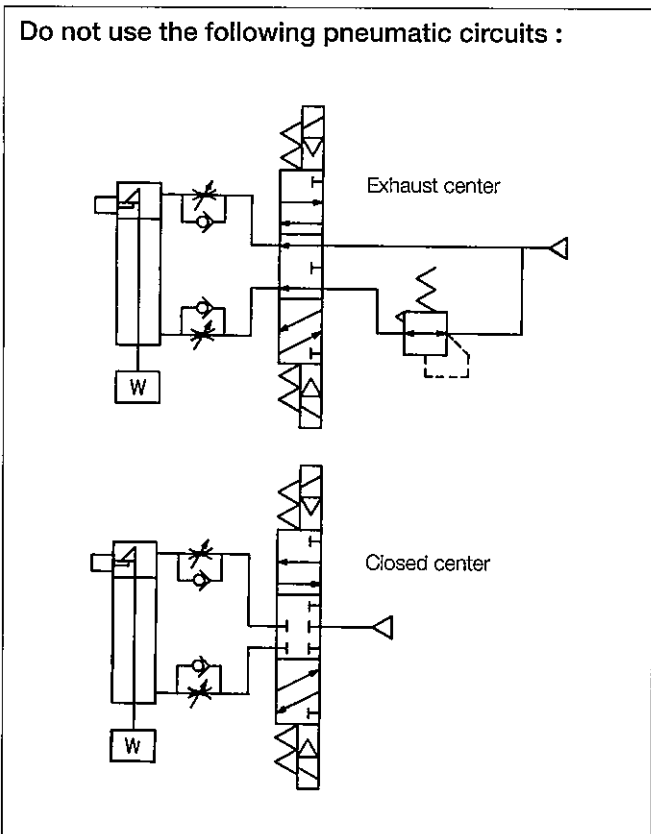
- When controlling a cylinder equipped with a locking mechanism, do so in the pneumatic circuit mentioned below :

Before starting operation, make sure that the circuit is such that air may be supplied to the port without a locking mechanism. In other pneumatic circuits, there is the possibility that the locking mechanism does not work or runaway occurs.



- Especially, never control the cylinder in a pneumatic circuit combined with a 3-position solenoid valve. If air is not exhausted from the port equipped with a locking mechanism, the lock will not be actuated.

Do not use the following pneumatic circuits :



## OPERATION PRESSURE

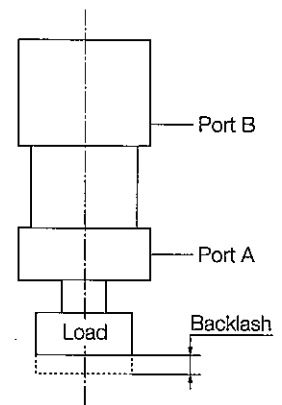
### ! CAUTION

- Apply air pressure of higher than 0.15 MPa to the port equipped with a locking mechanism. Applying a lower pressure will not unlock the piston.

## BACKLASH AT LOCKING SIDE STROKE END

### ! CAUTION

The cylinder is so designed that there is backlash when locking at the stroke end as shown in the drawing. Note that, when air pressure is released from port A, load will drop by an amount equivalent to backlash.



(Unit : mm)

Series	Bore	Backlash at locking
K1OL	$\phi 40 \sim \phi 100$	Below 1



## CYLINDERS WITH LOCK MECHANISM/INDIVIDUAL INSTRUCTIONS ②

Be sure to read before use.

Also read both "For Safety Use" and common instructions.

### MANUAL UNLOCKING

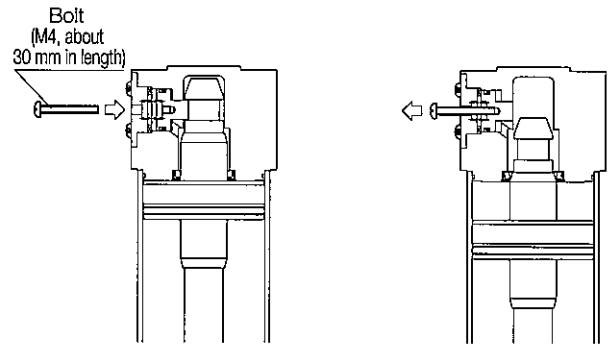
#### WARNING

- Before unlocking manually, be sure to supply air to the port without a locking mechanism.

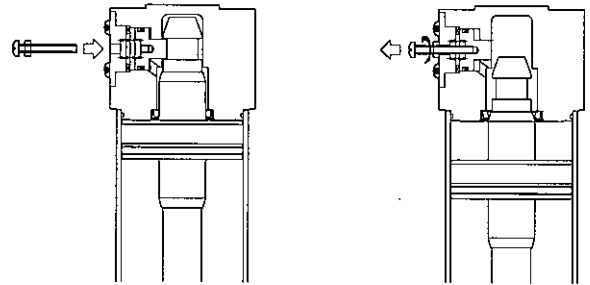
If unlocked with air exhausted from the port without a locking mechanism, excessive force will be applied to the locking mechanism or the piston rod will suddenly move (drop) due to dead load, causing an accident.

#### • Manual unlocking

To unlock manually, insert an M4 bolt (length : about 30mm) from the manual unlock port, screw it into the internal lock piston and pull out the bolt.



To keep the unlocked state, fit a nut to the bolt to be manually unlocked beforehand and then tighten the nut to the cover, with the bolt pulled. Thus, it is possible to prevent the bolt from returning.



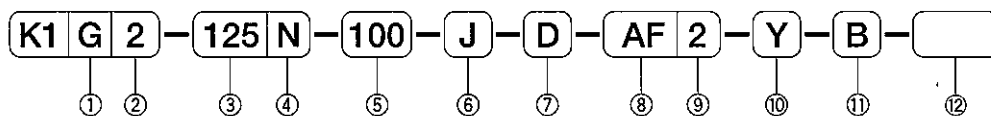
Remove the bolt and nut during ordinary operation beforehand.

# AIR CYLINDER/STANDARD TYPE

# K1 series

φ 32, φ 40, φ 50, φ 63, φ 80, φ 100, φ 125

## ORDERING INSTRUCTIONS



### ①Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

### ②Action

2	Double acting, single rod
---	---------------------------

### ③Bore (mm)

32	φ 32
40	φ 40
50	φ 50
63	φ 63
80	φ 80
100	φ 100
125	φ 125

### ④Cushion

No symbol	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

### ⑤Stroke (mm)

Refer to Standard Strokes (Page 17).

### ⑥Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows (Nylon tarpaulin)
JN	With bellows (Chloroprene)
JK	With bellows (CONEX)

CONEX : Registered trademark of Teijin Ltd.

### ⑦Mounting

N	Basic type
L	Axial foot
M	Side lug
A	Rod side flange
B	Head side flange
C	Eye (φ 40 to φ 100)
D	Short eye
W	Clevis
T	Center trunnion

### ⑧Type of switch

No symbol	No switch		Reed switch
AF	AX101		
AG	AX105	DC5~30V	Reed switch
AH	AX111	AC5~120V	
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	Reed switch
AK	AX11A	AC5~120V	
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	Solid-state switch
BE	AX201	DC5~30V	
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

### ⑨Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

### ⑩Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye

(Note) Y : Provided with pin

### ⑪Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : W and T

### ⑫Special shape of rod end

No symbol	Standard
-----------	----------

(Note) Refer to Pages 37 and 38.

## Model No. of Mounting Bracket

Bore (mm)	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125
Axial foot mount bracket	K132-L	K140-L	K150-L	K163-L	K180-L	K1100-L	K1125-L
Side lug mount bracket	K132-M	K140-M	K150-M	K163-M	K180-M	K1100-M	K1125-M
Flange mount bracket	K132-A	K140-A	K150-A	K163-A	K180-A	K1100-A	K1125-A
Eye mount bracket	—	K140-C	K150-C	K163-C	K180-C	K1100-C	—
Short eye mount bracket	K132-D	K140-D	K150-D	K163-D	K180-D	K1100-D	K1125-D
Clevis mount bracket	K132-W	K140-W	K150-W	K163-W	K180-W	K1100-W	K1125-W
Trunnion mount bracket	K132-T	K140-T	K150-T	K163-T	K180-T	K1100-T	K1125-T
Bracket for clevis	K132-BA	K140-BA	K140-BA	K140-BA	K180-BA	K180-BA	K1125-BA
Bracket for trunnion	K132-BC	K140-BC	K140-BC	K140-BC	K180-BC	K180-BC	K1125-BC

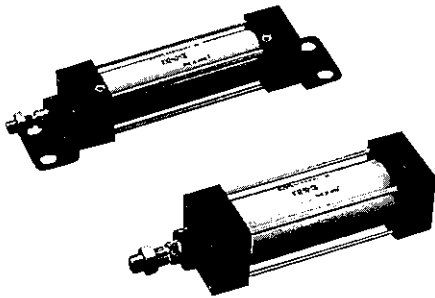
(Note) Bracket for clevis : With pin, snap ring

## Model No. of Packing Kit

Bore (mm)	Packing kit
φ 32	K132-PS
φ 40	K140-PS
φ 50	K150-PS
φ 63	K163-PS
φ 80	K180-PS
φ 100	K1100-PS
φ 125	K1125-PS

# AIR CYLINDER/STANDARD TYPE K1 series

φ 32, φ 40, φ 50, φ 63, φ 80, φ 100, φ 125



## SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.05~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	φ 32 : 30~800 φ 40~125 : 30~700
Cushion		Air cushion
Piston stroke allowance	mm	~250 : $+1.0_0$ 251~1000 : $+1.5_0$ 1001~ : $+2.0_0$
Mounting		Basic type, Axial foot, Side lug, Rod side flange, Head side flange, Eye, Short eye, Clevis, Center trunnion

(Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.

•Use the cylinder within a temperature range where it is not frozen.

## STANDARD STROKE

(Unit : mm)

Bore	Standard stroke												Max. stroke	
	50	75	100	125	150	200	250	300	350	400	450	500		
φ 32	○	○	○	○	○	○	○	○	○	○	○	○	○	700
φ 40	○	○	○	○	○	○	○	○	○	○	○	○	○	1000
φ 50	○	○	○	○	○	○	○	○	○	○	○	○	○	1500
φ 63	○	○	○	○	○	○	○	○	○	○	○	○	○	
φ 80	○	○	○	○	○	○	○	○	○	○	○	○	○	
φ 100	○	○	○	○	○	○	○	○	○	○	○	○	○	
φ 125	○	○	○	○	○	○	○	○	○	○	○	○	○	

## CYLINDER FORCE (THEORETICAL OUTPUT)

(Unit : N)

Bore (mm)	Rod outside dia. (mm)	Direction of rod	Operating pressure (MPa)										
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
φ 32	φ 12	Out stroke	80.4	161	241	322	402	483	563	643	724	804	
		In stroke	69.1	138	207	276	345	414	484	553	622	691	
φ 40	φ 16	Out stroke	126	251	377	503	628	754	880	1005	1131	1257	
		In stroke	106	211	317	422	528	633	739	844	950	1055	
φ 50	φ 20	Out stroke	196	393	589	785	982	1178	1374	1571	1767	1963	
		In stroke	165	330	495	660	825	990	1155	1319	1484	1649	
φ 63	φ 20	Out stroke	312	623	935	1247	1559	1870	2182	2494	2806	3117	
		In stroke	280	561	841	1121	1402	1682	1962	2242	2523	2803	
φ 80	φ 25	Out stroke	503	1005	1508	2011	2513	3016	3519	4021	4524	5027	
		In stroke	454	907	1361	1814	2268	2721	3175	3629	4082	4536	
φ 100	φ 30	Out stroke	785	1571	2356	3142	3927	4712	5498	6283	7069	7854	
		In stroke	715	1429	2144	2859	3574	4288	5003	5718	6432	7147	
φ 125	φ 35	Out stroke	1227	2454	3682	4909	6136	7363	8590	9817	11045	12272	
		In stroke	1131	2262	3393	4524	5655	6786	7917	9048	10179	11310	

(Note) Cylinder output force (Effective output)=Cylinder force (Theoretical output)×0.85

# AIR CYLINDER/STANDARD TYPE K1 series

## CUSHION STROKE (Unit : mm)

Bore (mm)	Cushion stroke
φ 32	16
φ 40	
φ 50	20
φ 63	
φ 80	25
φ 100	
φ 125	

## CYLINDER MASS

### ●Aluminium tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass									Rod end bracket mass	
			Axial foot	Side lug	Flange	Eye	Short eye	Clevis	Trunnion	Bracket		Eye	Clevis
										For W	For T		
φ 32	0.57	0.00218	0.11	0.14	0.20	—	0.12	0.19	0.30	0.46	0.22	0.16	0.22
φ 40	0.65	0.00300	0.13	0.20	0.37	0.38	0.18	0.27	0.48	0.70	0.50	0.16	0.27
φ 50	1.02	0.00428	0.17	0.32	0.39	0.50	0.26	0.39	0.55	0.70	0.50	0.21	0.34
φ 63	1.36	0.00515	0.23	0.52	0.53	0.67	0.42	0.48	0.70	0.70	0.50	0.21	0.34
φ 80	2.32	0.00834	0.38	0.85	1.60	1.76	1.08	0.92	1.16	0.72	0.72	0.62	0.87
φ 100	2.94	0.01061	0.47	1.28	2.22	2.04	1.39	1.24	1.53	0.72	0.72	0.62	0.87
φ 125	4.43	0.01490	0.47	1.38	2.87	—	2.45	1.97	3.41	2.81	1.55	1.24	1.47

### ●Iron tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass									Rod end bracket mass	
			Axial foot	Side lug	Flange	Eye	Short eye	Clevis	Trunnion	Bracket		Eye	Clevis
										For W	For T		
φ 32	0.61	0.00329	0.11	0.14	0.20	—	0.12	0.19	0.30	0.46	0.22	0.16	0.22
φ 40	0.70	0.00436	0.13	0.20	0.37	0.38	0.18	0.27	0.48	0.70	0.50	0.16	0.27
φ 50	1.09	0.00641	0.17	0.32	0.39	0.50	0.26	0.39	0.55	0.70	0.50	0.21	0.34
φ 63	1.45	0.00780	0.23	0.52	0.53	0.67	0.42	0.48	0.70	0.70	0.50	0.21	0.34
φ 80	2.49	0.01307	0.38	0.85	1.60	1.76	1.08	0.92	1.16	0.72	0.72	0.62	0.87
φ 100	3.15	0.01648	0.47	1.28	2.22	2.04	1.39	1.24	1.53	0.72	0.72	0.62	0.87
φ 125	4.85	0.02490	0.47	1.38	2.87	—	2.45	1.97	3.41	2.81	1.55	1.24	1.47

## SWITCH MASS

(Unit : kg)

Bore (mm)	AX type			SR type
	Cord length 1.5m	Cord length 5m	Connector type	Cord length 5m
φ 32	0.05	0.13	0.04	0.22
φ 40				
φ 50				
φ 63				
φ 80				
φ 100	0.07	0.14	0.06	
φ 125				

[Example of calculation]

$$\begin{aligned} & \text{K1G2-80-200-A-AF2} \\ & 2.32 + (0.00834 \times 200) + 1.6 + (0.05 \times 2) \\ & = 5.69\text{kg} \end{aligned}$$

(Note) Switch mass includes the mass of switch mount bracket.



# AIR CYLINDER/STANDARD TYPE K1 series

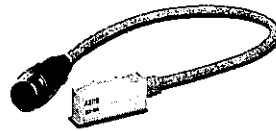
MODEL WITH SWITCH/For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

## •AX Type Switch

## •SR Type Switch

Cord type

Connector type



## LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load	
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC	
	AG AX105							5m		
	AH AX111				1.5m					
	AJ AX115				5m					
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	4-pin connector Cord direction : Axial	5m		
	AK AX11A	5~40mA						1.5W		Provided
	AL AX11B	DC5~30V			5~40mA	1.5W		Provided		LED (Red LED lights up at ON.)
	S SR405	AC80~220V	2~300mA	30VA	Provided	Neon lamp (Red lights up at OFF.)	0.5 mm <sup>2</sup> 2-core, OD $\phi$ 6 mm Cord direction : Axial	5m		
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC	
	BF AX205							5m		
	CE AX211					LED (Dual light : Red/green)		1.5m		
	CF AX215							5m		
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 3-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC IC circuit	
	BJ AX225							5m		

(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.  
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

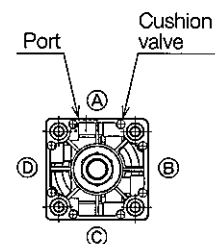
## MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

Type	AX type	SR type
1 unit mounted	25	15 ( 25)
2 units mounted on same surface	25	15 ( 25)
2 units mounted on opposite surface	25	15 ( 25)
Center trunnion type (T)	120	90 (130)

(Note) •Bracketed figures : Bores for  $\phi$  80 to  $\phi$  125.  
•Stroke of SR type of  $\phi$  32 with 2 units on same surface : 50mm

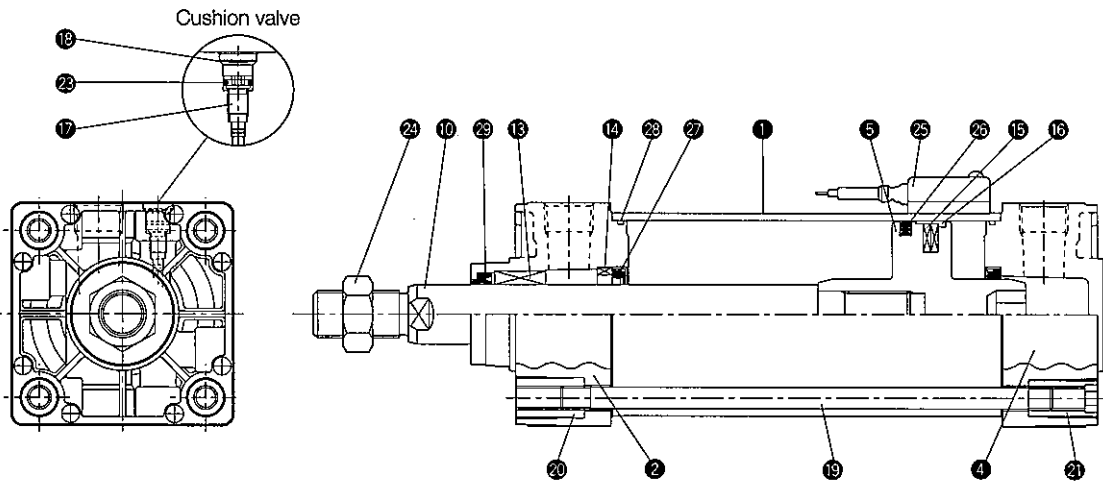
## CUSHION POSITION

- Standard type cylinder has cushion valve on both rod side and head side on surface (A) with port position.
- For specific requirements for other type cylinder of which port position is different from the standard type, consult KURODA.



# AIR CYLINDER/STANDARD TYPE K1 series

## CONSTRUCTIONS AND PARTS LIST



No.	Description	Material
1	Cylinder tube	Aluminium alloy or carbon steel tube for machine structure
2	Rod cover	Aluminium alloys die casting
4	Head cover	Aluminium alloys die casting
5	Piston	Aluminium alloy
10	Piston rod	$\phi 32$ : Stainless steel $\phi 40 \sim 125$ : Carbon steel for machine structure
13	Bushing	Sintered oil-impregnated bearing
14	Keep ring	Aluminium alloy
15	Magnet	—
16	Wear ring	Synthetic resins
17	Cushion needle	Carbon steel for machine structure
18	Snap ring	Spring steel
19	Tie rod	Carbon steel for machine structure
20	Tie rod nut R	Rolled steel for general structure
21	Tie rod nut H	Chromium molybdenum steel
23	O-ring for cushion valve	Nitril rubber
24	Rod end nut	Rolled steel for general structure
25	Switch	—

## PACKING LIST

No.	Description	Material	Q'ty	Model No.						
				$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$
26	Piston packing	Nitril rubber	1	PWP-32N	PWP-40N	PWP-50N	PWP-63N	PWP-80N	PWP-100N	PWP-125N
27	Cushion packing	Nitril rubber	2	CPF-15	CPF-20	CPF-24	CPF-24	CPF-30	CPF-35	CPF-45
28	O-ring for cover	Nitril rubber	2	1.5×32	1.5×40	1.5×50	1.5×63	1.5×80	1.5×100	2×125
29	Rod packing	Nitril rubber	1	DRP-12	DRP-16	DRP-20	DRP-20	DRP-25	DRP-30	DRP-35

(Note) •Cover O-rings are made to our standard.

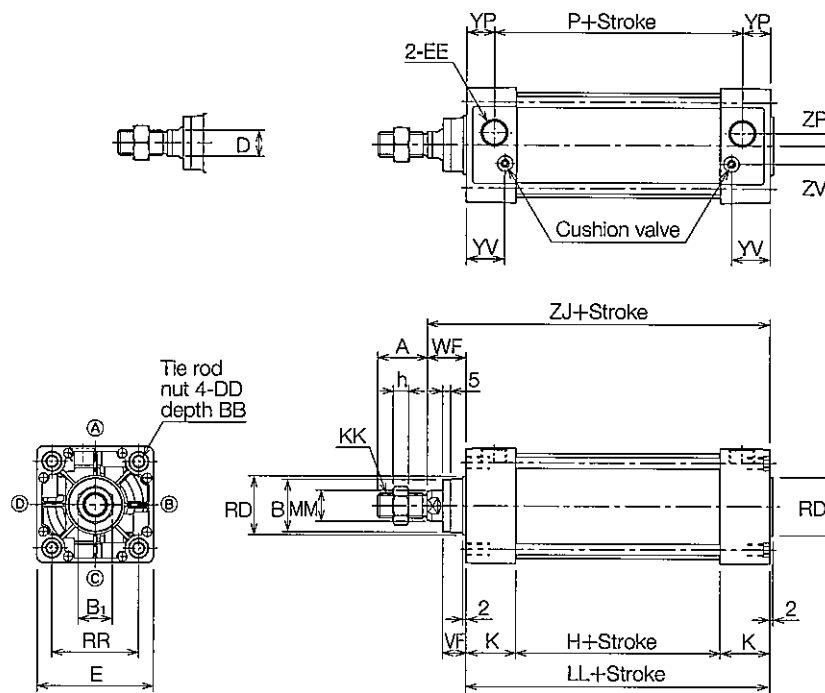
•Packing set contains the wearing.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

Basic type/N



Bore	A	B	B1	BB	D	DD	E	EE	H	K	KK	LL	MM	P	RD	RR	VF
φ 32	22 (19)	φ 24	17	14	10	M6×1	□44	Rc1/8	31	31	M10×1.25	93	φ 12	61	φ 26	□33	15
φ 40	30 (27)	φ 30	22	14	14	M6×1	□50	Rc1/4	31	31	M14×1.5	93	φ 16	57	φ 32	□37	15
φ 50	35 (32)	φ 34	27	14	17	M6×1	□62	Rc1/4	31	31	M18×1.5	93	φ 20	57	φ 38	□47	15
φ 63	35 (32)	φ 34	27	14	17	M8×1.25	□75	Rc3/8	32	32	M18×1.5	96	φ 20	60	φ 38	□56	15
φ 80	40 (36)	φ 39	32	15	21	M10×1.5	□94	Rc3/8	36	36	M22×1.5	108	φ 25	68	φ 44	□70	21
φ 100	40 (36)	φ 46	36	15	26	M10×1.5	□112	Rc1/2	36	36	M26×1.5	108	φ 30	68	φ 50	□84	21
φ 125	54 (50)	φ 55	46	15	32	M12×1.75	□136	Rc1/2	42	36	M30×1.5	114	φ 35	74	φ 60	□104	21

Bore	WF	YP	YV	ZJ	ZP	ZV	h
φ 32	25	16	25.5	118	3	7	6
φ 40	25	18	25.5	118	4	10	8
φ 50	25	18	24	118	7	12	11
φ 63	25	18	25	121	8	12	11
φ 80	35	20	29	143	11	16	13
φ 100	35	20	29	143	12	18	14
φ 125	35	20	29	149	14	20	18

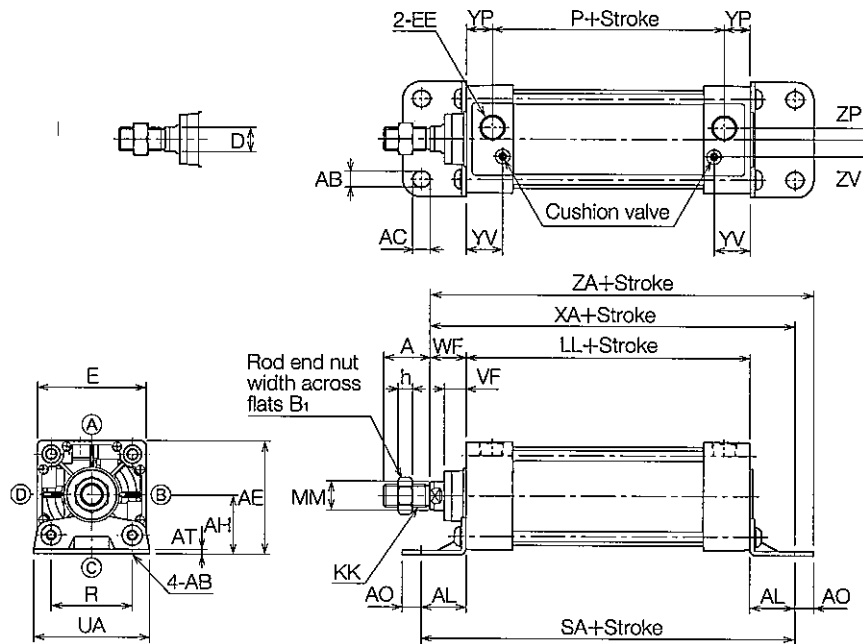
(Note) • Bracketed figures in size A columns are thread lengths.  
 • For rod end bracket dimensions, refer to page 31.  
 • For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Axial foot mounting/L



Bore	A	AB	AC	AE	AH	AL	AO	AT	B1	D	E	EE	KK	LL	MM	P	R	SA
φ 32	22 (19)	9	11	50	28	20.5	9.5	3.2	17	10	□44	Rc½	M10×1.25	93	φ 12	61	33	134
φ 40	30 (27)	11	13	55	30	23.5	12.5	3.2	22	14	□50	Rc¼	M14×1.5	93	φ 16	57	36	140
φ 50	35 (32)	11	13	67.5	36.5	28	12	3.2	27	17	□62	Rc¼	M18×1.5	93	φ 20	57	47	149
φ 63	35 (32)	11	13	78.5	41	31	13	3.2	27	17	□75	Rc¾	M18×1.5	96	φ 20	60	56	158
φ 80	40 (36)	14	16	96	49	30	16	4	32	21	□94	Rc¾	M22×1.5	108	φ 25	68	70	168
φ 100	40 (36)	14	16	113	57	30	16	4	36	26	□112	Rc½	M26×1.5	108	φ 30	68	84	168
φ 125	54 (50)	18	20	138	70	35	18	6	46	32	□136	Rc½	M30×1.5	114	φ 35	74	104	184

Bore	UA	VF	WF	XA	YP	YV	ZA	ZP	ZV	h
φ 32	50	15	25	138.5	16	25.5	148	3	7	6
φ 40	57	15	25	141.5	18	25.5	154	4	10	8
φ 50	68	15	25	146	18	24	158	7	12	11
φ 63	80	15	25	152	18	25	165	8	12	11
φ 80	97	21	35	173	20	29	189	11	16	13
φ 100	112	21	35	173	20	29	189	12	18	14
φ 125	136	21	35	184	20	29	202	14	20	18

(Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

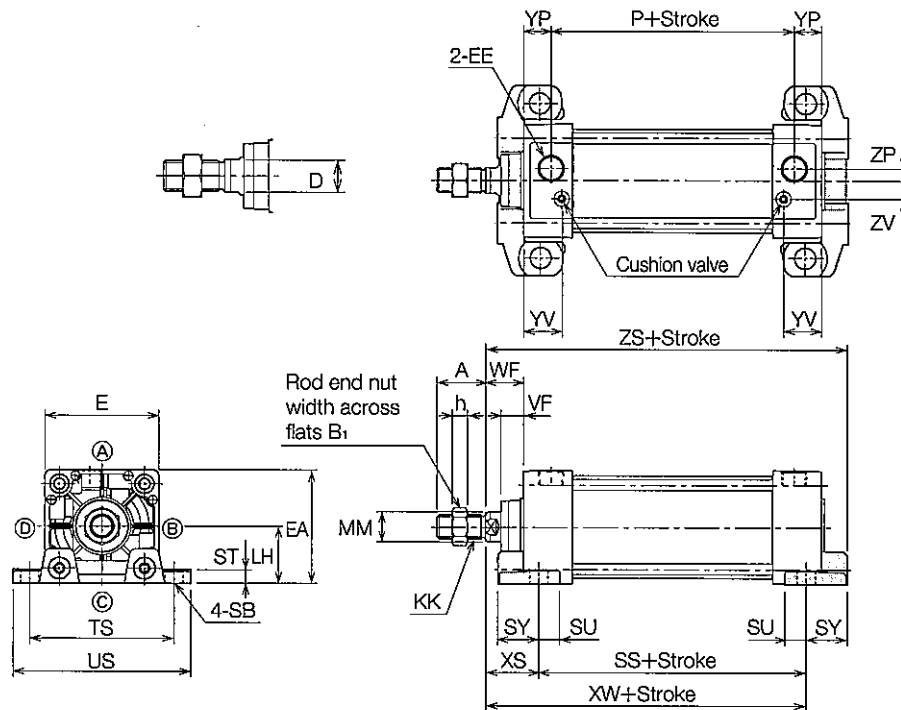
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Side lug mounting/M



Bore	A	B1	D	E	EA	EE	KK	LH	MM	P	SB	SS	ST	SU	SY	TS	US
φ 32	22 (19)	17	10	□44	44	Rc½	M10×1.25	22	φ 12	61	φ 19	73	8	14	23	63	81
φ 40	30 (27)	22	14	□50	50	Rc¼	M14×1.5	25	φ 16	57	φ 12	73	8	14	23	70	92
φ 50	35 (32)	27	17	□62	62	Rc¼	M18×1.5	31	φ 20	57	φ 12	73	9	14	25	83	105
φ 63	35 (32)	27	17	□75	75.5	Rc¾	M18×1.5	38	φ 20	60	φ 12	76	9	14	27	95	117
φ 80	40 (36)	32	21	□94	94	Rc¾	M22×1.5	47	φ 25	68	φ 14	82	13	18	34	121	147
φ 100	40 (36)	36	26	□112	113	Rc½	M26×1.5	57	φ 30	68	φ 14	82	14	18	38	140	168
φ 125	54 (50)	46	32	□136	137	Rc½	M30×1.5	69	φ 35	74	φ 18	80	18	21	46	175	213

Bore	VF	WF	XS	XW	YP	YV	ZP	ZS	ZV	h
φ 32	15	25	35	108	16	25.5	3	131	7	6
φ 40	15	25	35	108	18	25.5	4	131	10	8
φ 50	15	25	35	108	18	24	7	133	12	11
φ 63	15	25	35	111	18	25	8	138	12	11
φ 80	21	35	48	130	20	29	11	164	16	13
φ 100	21	35	48	130	20	29	12	168	18	14
φ 125	21	35	52	132	20	29	14	178	20	18

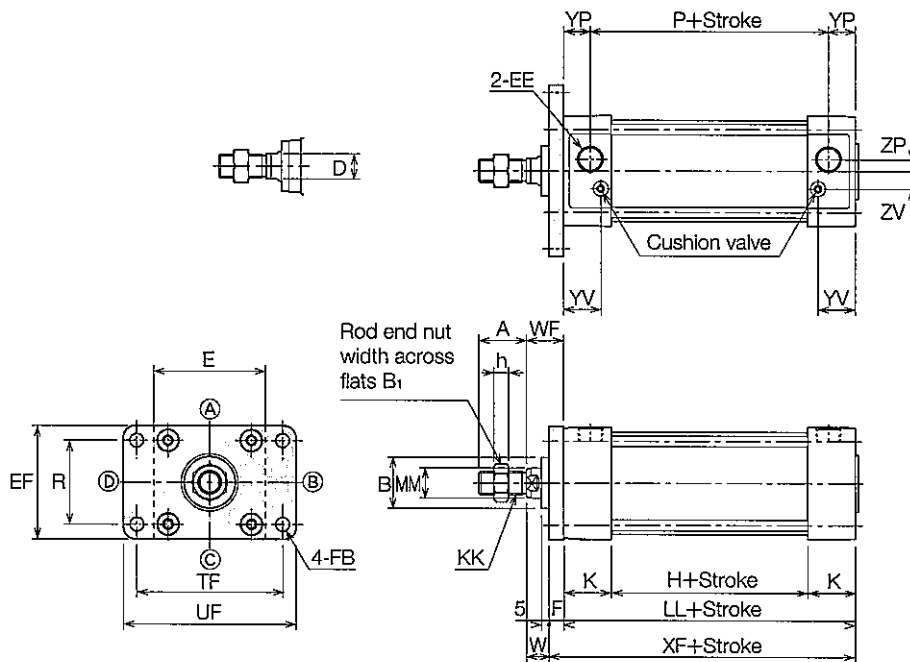
- (Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).  
 •Bracketed figures in size A columns are thread lengths.  
 •For rod end bracket dimensions, refer to page 31.  
 •For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Rod side flange mounting/A



Bore	A	B	B1	D	E	EE	EF	F	FB	H	K	KK	LL	MM	P	R	TF	UF
φ 32	22 (19)	φ 24	17	10	□44	Rc $\frac{1}{8}$	47	10	φ 7	31	31	M10×1.25	93	φ 12	61	33	58	72
φ 40	30 (27)	φ 30	22	14	□50	Rc $\frac{1}{4}$	52	10	φ 7	31	31	M14×1.5	93	φ 16	57	36	70	84
φ 50	35 (32)	φ 34	27	17	□62	Rc $\frac{1}{4}$	65	10	φ 9	31	31	M18×1.5	93	φ 20	57	47	86	104
φ 63	35 (32)	φ 34	27	17	□75	Rc $\frac{3}{8}$	76	10	φ 9	32	32	M18×1.5	96	φ 20	60	56	98	116
φ 80	40 (36)	φ 39	32	21	□94	Rc $\frac{3}{8}$	95	16	φ 12	36	36	M22×1.5	108	φ 25	68	70	119	143
φ 100	40 (36)	φ 46	36	26	□112	Rc $\frac{1}{2}$	115	16	φ 12	36	36	M26×1.5	108	φ 30	68	84	138	162
φ 125	54 (50)	φ 55	46	32	□136	Rc $\frac{1}{2}$	138	16	φ 14	42	36	M30×1.5	114	φ 35	74	104	168	196

Bore	W	WF	XF	YP	YV	ZP	ZV	h
φ 32	15	25	103	16	25.5	3	7	6
φ 40	15	25	103	18	25.5	4	10	8
φ 50	15	25	103	18	24	7	12	11
φ 63	15	25	106	18	25	8	12	11
φ 80	19	35	124	20	29	11	16	13
φ 100	19	35	124	20	29	12	18	14
φ 125	19	35	130	20	29	14	20	18

(Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).

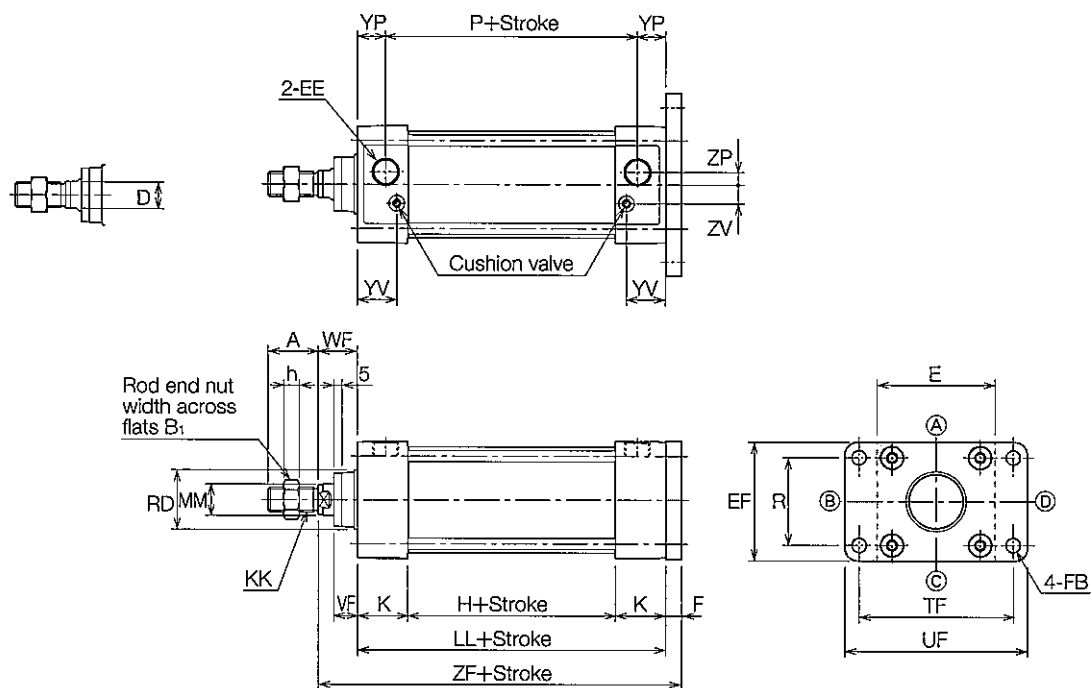
- Bracketed figures in size A columns are thread lengths.
- For rod end bracket dimensions, refer to page 31.
- For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Head side flange mounting/B



Bore	A	B1	D	E	EE	EF	F	FB	H	K	KK	LL	MM	P	R	RD	TF
φ 32	22 (19)	17	10	□44	Rc1/8	47	10	φ 7	31	31	M10×1.25	93	φ 12	61	33	φ 26	58
φ 40	30 (27)	22	14	□50	Rc1/4	52	10	φ 7	31	31	M14×1.5	93	φ 16	57	36	φ 32	70
φ 50	35 (32)	27	17	□62	Rc1/4	65	10	φ 9	31	31	M18×1.5	93	φ 20	57	47	φ 38	86
φ 63	35 (32)	27	17	□75	Rc3/8	76	10	φ 9	32	32	M18×1.5	96	φ 20	60	56	φ 38	98
φ 80	40 (36)	32	21	□94	Rc3/8	95	16	φ 12	36	36	M22×1.5	108	φ 25	68	70	φ 44	119
φ 100	40 (36)	36	26	□112	Rc1/2	115	16	φ 12	36	36	M26×1.5	108	φ 30	68	84	φ 50	138
φ 125	54 (50)	46	32	□136	Rc1/2	138	16	φ 14	42	36	M30×1.5	114	φ 35	74	104	φ 60	168

Bore	UF	VF	WF	YP	YV	ZF	ZP	ZV	h
φ 32	72	15	25	16	25.5	128	3	7	6
φ 40	84	15	25	18	25.5	128	4	10	8
φ 50	104	15	25	18	24	128	7	12	11
φ 63	116	15	25	18	25	131	8	12	11
φ 80	143	21	35	20	29	159	11	16	13
φ 100	162	21	35	20	29	159	12	18	14
φ 125	196	21	35	20	29	165	14	20	18

(Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).

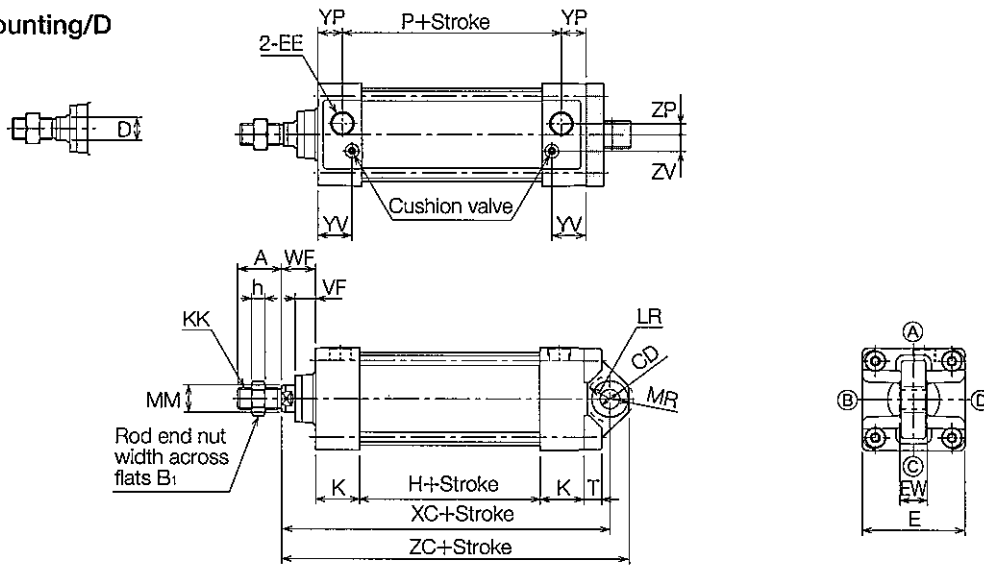
- Bracketed figures in size A columns are thread lengths.
- For rod end bracket dimensions, refer to page 31.
- For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

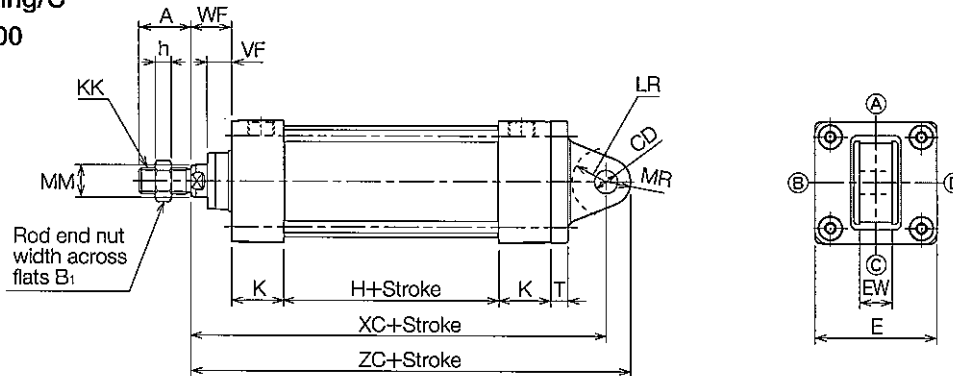
(Unit : mm)

### Short eye mounting/D



### Eye mounting/C

$\phi 40 \sim \phi 100$



Bore	A	B1	CD		D	E	EE	EW		H	K	KK	LR		MM
			C type	D type				C type	D type				C type	D type	
$\phi 32$	22 (19)	17	—	$\phi 12^{H9}$	10	$\square 44$	Rc $\frac{1}{4}$	—	$16 \begin{smallmatrix} 0 \\ -0.070 \end{smallmatrix}$	31	31	M10X1.25	—	R16	$\phi 12$
$\phi 40$	30 (27)	22	$\phi 14^{H9}$	$\phi 14^{H9}$	14	$\square 50$	Rc $\frac{1}{4}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$20 \begin{smallmatrix} 0 \\ -0.084 \end{smallmatrix}$	31	31	M14X1.5	R21	R17	$\phi 16$
$\phi 50$	35 (32)	27	$\phi 14^{H9}$	$\phi 14^{H9}$	17	$\square 62$	Rc $\frac{1}{4}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$20 \begin{smallmatrix} 0 \\ -0.084 \end{smallmatrix}$	31	31	M18X1.5	R21	R17	$\phi 20$
$\phi 63$	35 (32)	27	$\phi 14^{H9}$	$\phi 14^{H9}$	17	$\square 75$	Rc $\frac{3}{8}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$20 \begin{smallmatrix} 0 \\ -0.084 \end{smallmatrix}$	32	32	M18X1.5	R21	R17	$\phi 20$
$\phi 80$	40 (36)	32	$\phi 20^{H9}$	$\phi 20^{H9}$	21	$\square 94$	Rc $\frac{3}{8}$	$32 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$32 \begin{smallmatrix} 0 \\ -0.100 \end{smallmatrix}$	36	36	M22X1.5	R25	R25	$\phi 25$
$\phi 100$	40 (36)	36	$\phi 20^{H9}$	$\phi 20^{H9}$	26	$\square 112$	Rc $\frac{1}{2}$	$32 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$32 \begin{smallmatrix} 0 \\ -0.100 \end{smallmatrix}$	36	36	M26X1.5	R25	R26	$\phi 30$
$\phi 125$	54 (50)	46	—	$\phi 20^{H9}$	32	$\square 136$	Rc $\frac{1}{2}$	—	$32 \begin{smallmatrix} 0 \\ -0.100 \end{smallmatrix}$	42	36	M30X1.5	—	R30	$\phi 35$

Bore	MR		P	T		VF	WF	XC		YP	YV	XC		ZP	ZV	h
	C type	D type		C type	D type			C type	D type			C type	D type			
$\phi 32$	—	R16	61	—	8	15	25	—	137	16	25.5	—	150	3	7	6
$\phi 40$	R14	R17	57	11	8	15	25	152	137	18	25.5	166	151	4	10	8
$\phi 50$	R15	R17	57	11	10	15	25	152	137	18	24	167	151	7	12	11
$\phi 63$	R15	R17	60	11	13	15	25	155	140	18	25	170	154	8	12	11
$\phi 80$	R20	R24	68	15	18	21	35	191	175	20	29	211	196	11	16	13
$\phi 100$	R20	R24	68	15	18	21	35	191	175	20	29	211	195	12	18	14
$\phi 125$	—	R25	74	—	21	21	35	—	181	20	29	—	201	14	20	18

- (Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).  
 •Bracketed figures in size A columns are thread lengths.  
 •For rod end bracket dimensions, refer to page 31.  
 •For model with switch dimensions, refer to page 30.

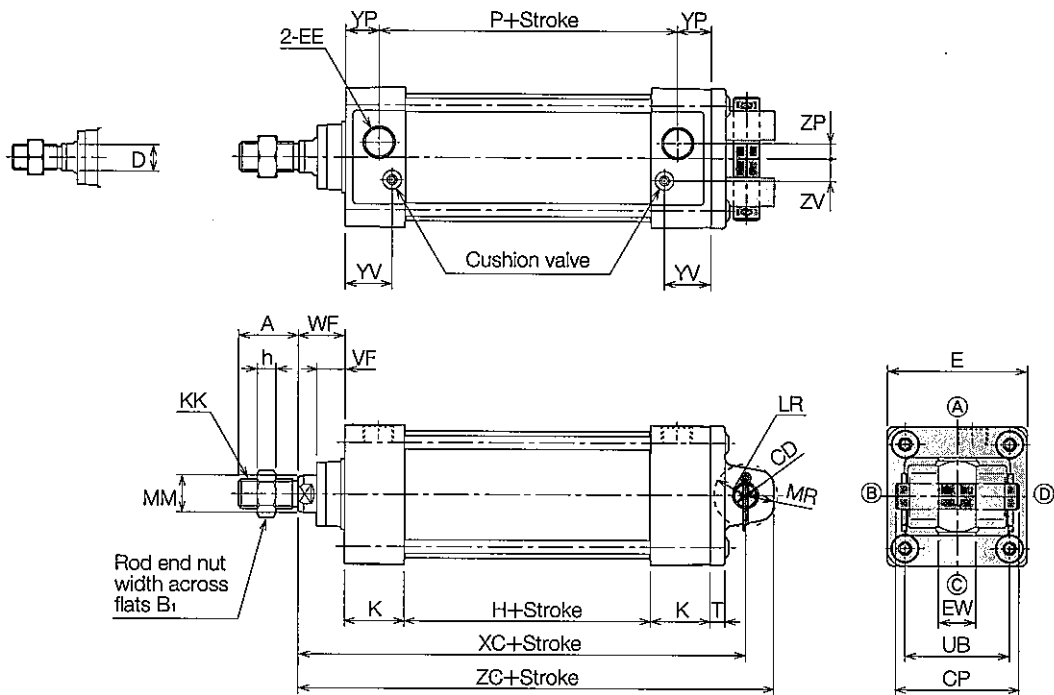


# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Clevis mounting/W



Bore	A	B1	CD	CP	D	E	EE	EW	H	K	KK	LR	MM	MR	P	T	UB
φ 32	22 (19)	17	φ 12 <sup>H9/18</sup>	46	10	□44	Rc <sup>3</sup> / <sub>8</sub>	16 <sup>+0.7/+0.5</sup>	31	31	M10×1.25	R17	φ 12	R15	61	8	33
φ 40	30 (27)	22	φ 14 <sup>H9/18</sup>	58	14	□50	Rc <sup>1</sup> / <sub>4</sub>	20 <sup>+0.7/+0.5</sup>	31	31	M14×1.5	R17	φ 16	R15	57	8	45
φ 50	35 (32)	27	φ 14 <sup>H9/18</sup>	66	17	□62	Rc <sup>1</sup> / <sub>4</sub>	20 <sup>+0.7/+0.5</sup>	31	31	M18×1.5	R17	φ 20	R17	57	8	53
φ 63	35 (32)	27	φ 14 <sup>H9/18</sup>	66	17	□75	Rc <sup>3</sup> / <sub>8</sub>	20 <sup>+0.7/+0.5</sup>	32	32	M18×1.5	R17	φ 20	R17	60	8	53
φ 80	40 (36)	32	φ 20 <sup>H9/18</sup>	78	21	□94	Rc <sup>3</sup> / <sub>8</sub>	32 <sup>+0.7/+0.5</sup>	36	36	M22×1.5	R30	φ 25	R24	68	11	67
φ 100	40 (36)	36	φ 20 <sup>H9/18</sup>	78	26	□112	Rc <sup>1</sup> / <sub>2</sub>	32 <sup>+0.7/+0.5</sup>	36	36	M26×1.5	R30	φ 30	R24	68	11	67
φ 125	54 (50)	46	φ 20 <sup>H9/18</sup>	78	32	□136	Rc <sup>1</sup> / <sub>2</sub>	32 <sup>+0.7/+0.5</sup>	42	36	M30×1.5	R30	φ 35	R22	74	14	65

Bore	VF	WF	XC	YP	YV	ZC	ZP	ZV	h
φ 32	15	25	137	16	25.5	150	3	7	6
φ 40	15	25	137	18	25.5	150	4	10	8
φ 50	15	25	137	18	24	152	7	12	11
φ 63	15	25	140	18	25	155	8	12	11
φ 80	21	35	175	20	29	196	11	16	13
φ 100	21	35	175	20	29	196	12	18	14
φ 125	21	35	181	20	29	197	14	20	18

(Note) • For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).

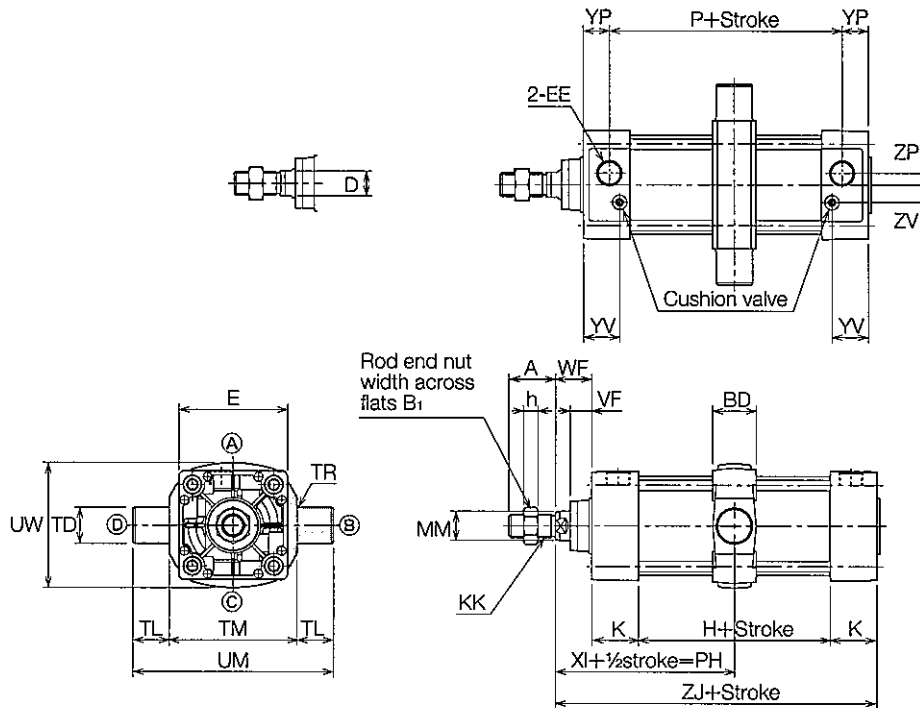
- Bracketed figures in size A columns are thread lengths.
- For rod end bracket dimensions, refer to page 31.
- For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

### Center trunnion mounting/T



Bore	A	B1	BD	D	E	EE	H	K	KK	MM	P	PH (min)	TD	TL	TM	TR	UM	UW
φ 32	22 (19)	17	30	10	□44	Rc1/4	31	31	M10×1.25	φ 12	61	71	φ 16 <sup>e9</sup>	16	55	R1	87	53
φ 40	30 (27)	22	30	14	□50	Rc1/4	31	31	M14×1.5	φ 16	57	71	φ 25 <sup>e9</sup>	25	63	R1.6	113	60
φ 50	35 (32)	27	30	17	□62	Rc1/4	31	31	M18×1.5	φ 20	57	71	φ 25 <sup>e9</sup>	25	76	R1.6	126	72
φ 63	35 (32)	27	30	17	□75	Rc3/8	32	32	M18×1.5	φ 20	60	72	φ 25 <sup>e9</sup>	25	88	R1.6	138	87
φ 80	40 (36)	32	35	21	□94	Rc3/8	36	36	M22×1.5	φ 25	68	88.5	φ 25 <sup>e9</sup>	25	114	R1.6	164	105
φ 100	40 (36)	36	40	26	□112	Rc1/2	36	36	M26×1.5	φ 30	68	91	φ 25 <sup>e9</sup>	25	132	R2	182	129
φ 125	54 (50)	46	43	32	□136	Rc1/2	42	36	M30×1.5	φ 35	74	92.5	φ 25 <sup>e9</sup>	25	158	R2	208	159

Bore	VF	WF	XI	YP	YV	ZJ	ZP	ZV	h
φ 32	15	25	71.5	16	25.5	118	3	7	6
φ 40	15	25	71.5	18	25.5	118	4	10	8
φ 50	15	25	71.5	18	24	118	7	12	11
φ 63	15	25	73	18	25	121	8	12	11
φ 80	21	35	89	20	29	143	11	16	13
φ 100	21	35	89	20	29	143	12	18	14
φ 125	21	35	92	20	29	149	14	20	16

(Note) •For other sizes than mentioned in this drawing, refer to Basic type/N (Page 21).

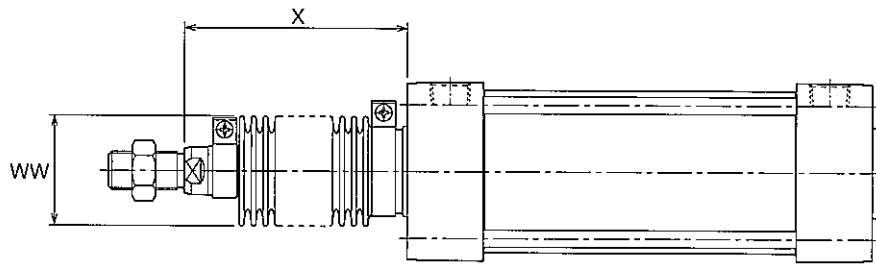
- Bracketed figures in size A columns are thread lengths.
- For rod end bracket dimensions, refer to page 31.
- For model with switch dimensions, refer to page 30.

# AIR CYLINDER/STANDARD TYPE K1 series

## DIMENSIONS

(Unit : mm)

With dustproof cover



	Standard	Custom-made	
Material	Nylon tarpaulin	Chloroprene	CONEX
Heat resistance temp.	80°C	100°C	200°C

(Note) • CONEX is a registered trademark of Teijin Ltd.

• Heat resistance temperature is not that of the cylinder body but that of the dustproof cover.

• The cylinder is delivered with the dustproof cover fitted.

### Nylon tarpaulin/J and Chloroprene/JN

Bore	WW	X (Standard stroke)												X (Other stroke than standard)
		50	75	100	125	150	200	250	300	350	400	450	500	
φ 32	φ 36	62	70	79	87	95	112	129	145	162	179	195	212	1/3stroke+45
φ 40	φ 41	62	70	79	87	95	112	129	145	162	179	195	212	
φ 50	φ 47	67	75	84	92	100	117	134	150	167	184	200	217	1/3stroke+50
φ 63	φ 47	67	75	84	92	100	117	134	150	167	184	200	217	
φ 80	φ 56	68	74	80	87	93	105	118	130	143	155	168	180	1/4stroke+55
φ 100	φ 61	68	74	80	87	93	105	118	130	143	155	168	180	
φ 125	φ 71	68	74	80	87	93	105	118	130	143	155	168	180	

(Note) Round off fractions below the decimal point.

### CONEX/JK

Bore	WW	X (Standard stroke)												X (Other stroke than standard)
		50	75	100	125	150	200	250	300	350	400	450	500	
φ 32	φ 61	70	83	95	108	120	145	170	195	220	245	270	295	1/2stroke+45
φ 40	φ 61	70	83	95	108	120	145	170	195	220	245	270	295	
φ 50	φ 61	75	88	100	113	125	150	175	200	225	250	275	300	1/2stroke+50
φ 63	φ 61	75	88	100	113	125	150	175	200	225	250	275	300	
φ 80	φ 61	75	85	95	105	115	135	155	175	195	215	235	255	2/3stroke+55
φ 100	φ 61	75	85	95	105	115	135	155	175	195	215	235	255	
φ 125	φ 71	75	85	95	105	115	135	155	175	195	215	235	255	

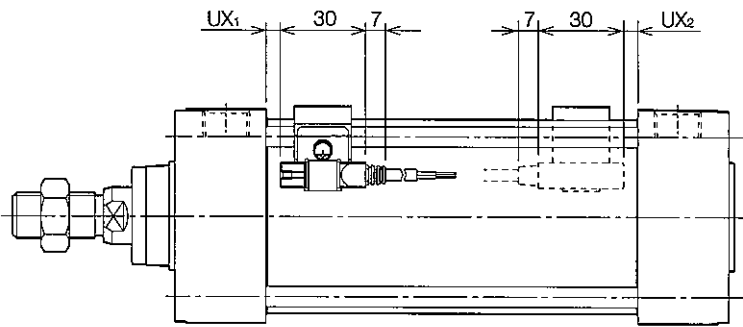
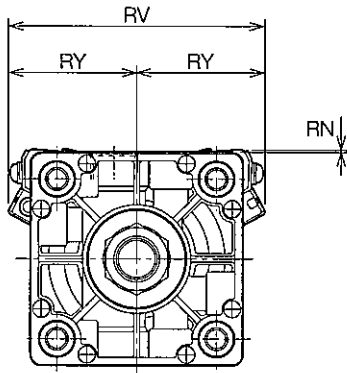
(Note) Round off fractions below the decimal point.

# AIR CYLINDER/STANDARD TYPE K1 series

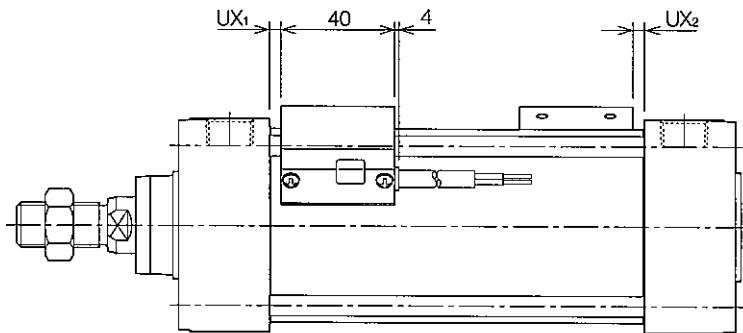
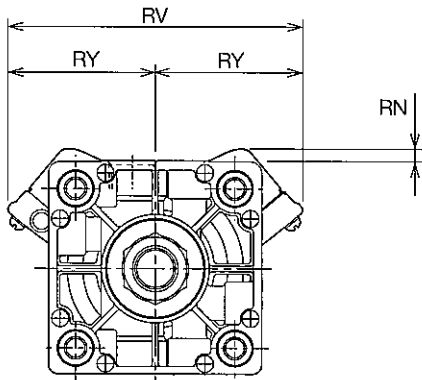
## SWITCH SET POSITION

(Unit : mm)

### With AX type switch



### With SR type switch



Bore	RY		RV		RN		UX1		UX2	
	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type
φ 32	32	38	64	76	4	5	8	2	4	0
φ 40	36	40	72	80	3	4	8	2	4	0
φ 50	40	45	80	90	2	3	9	2	5	0
φ 63	47	52	94	104	2	5	9	2	5	0
φ 80	52	60	104	120	0	2	11	4	6	0
φ 100	60	67	120	134	0	0	11	4	6	0
φ 125	72	76	144	152	0	0	13	4	9	3

(Note) UX : Most suitable position for mounting switch when stroke end is detected.

## HYSTERESIS AND RESPONSE RANGE OF SWITCHES (Unit : mm)

Bore	Reed switch				Solid-state switch	
	AX1□□ type		SR type		AX2□□ type	
	Response range	Hysteresis	Response range	Hysteresis	Response range	Hysteresis
φ 32	5~10	Below 1	8~12	Below 2	3~6	Below 1
φ 40			9~13		4~8	
φ 50	6~12					
φ 63			8~14			
φ 80						
φ 100						
φ 125						

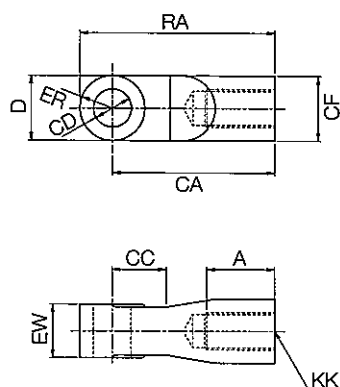
# AIR CYLINDER/STANDARD TYPE K1 series

## ACCESSORIES

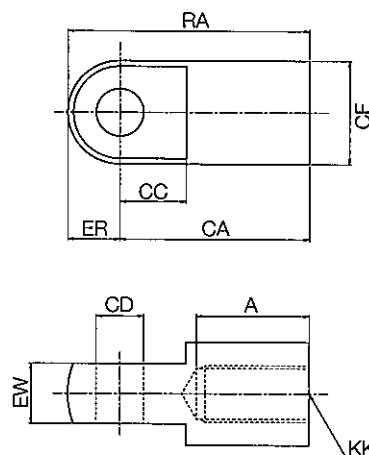
Rod end eye

(Unit : mm)

$\phi 32, \phi 40$



$\phi 50 \sim \phi 125$

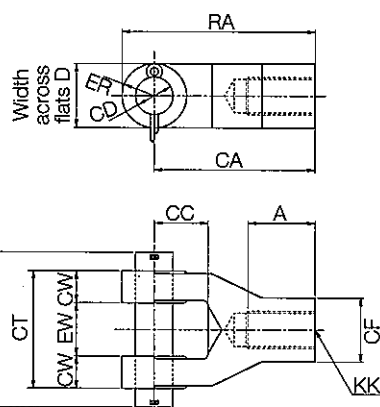


Model No.	Applicable bore	A	CA	CC	CD	CF	D	ER	EW	KK	RA
K132-I	$\phi 32$	23	55	20	$\phi 12^{H9}$	$\phi 24$	24	R12	16 $^{0}_{-0.1}$	M10X1.25	67
K140-I	$\phi 40$	25	60	20	$\phi 14^{H9}$	$\phi 24$	24	R12.5	20 $^{0}_{-0.4}$	M14X1.5	72
K150-I	$\phi 50$	22	46	16	$\phi 12^{H9}$	$\phi 25$	—	R12.5	18 $^{0}_{-0.4}$	M18X1.5	58.5
K150-I	$\phi 63$	22	46	16	$\phi 12^{H9}$	$\phi 25$	—	R12.5	18 $^{0}_{-0.4}$	M18X1.5	58.5
K180-I	$\phi 80$	30	75	25	$\phi 20^{H9}$	$\phi 40$	—	R20	28 $^{0}_{-0.4}$	M22X1.5	95
K1100-I	$\phi 100$	34	75	25	$\phi 20^{H9}$	$\phi 40$	—	R20	28 $^{0}_{-0.4}$	M26X1.5	95
K1125-I	$\phi 125$	55	100	35	$\phi 20^{H10}$	$\phi 55$	—	R27.5	32 $^{0}_{-0.4}$	M30X1.5	127.5

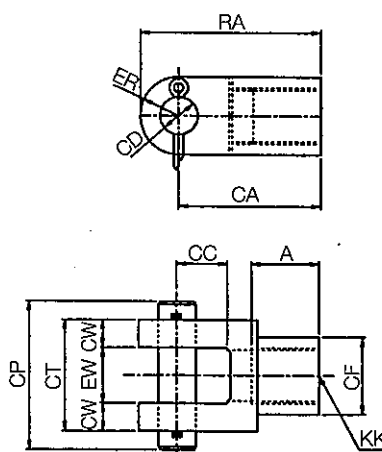
Rod end clevis

(Unit : mm)

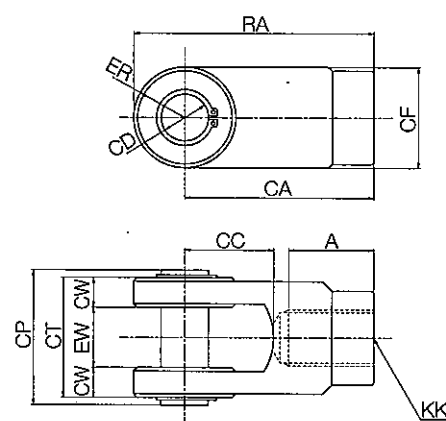
$\phi 32, \phi 40$



$\phi 50 \sim \phi 100$



$\phi 125$



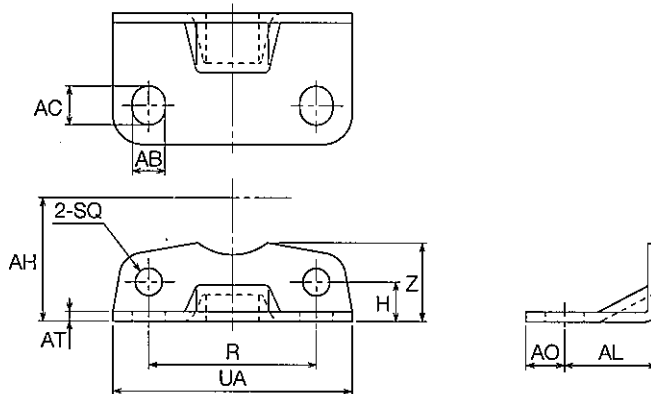
Model No.	Applicable bore	A	CA	CC	CD	CF	CP	CT	CW	D	ER	EW	KK	RA
K132-Y	$\phi 32$	23	55	20	$\phi 12^{H9}_{f8}$	$\phi 24$	46	32	8	24	R12	16 $^{+1.5}_{-0.5}$	M10X1.25	67
K140-Y	$\phi 40$	25	60	20	$\phi 14^{H9}_{f8}$	$\phi 24$	58	44	12	24	R12.5	20 $^{+0.4}_{+0.1}$	M14X1.5	72
K150-Y	$\phi 50$	22	46	16	$\phi 12^{H9}_{f8}$	$\phi 25$	48	36	9	—	R12.5	18 $^{+0.4}_{+0.1}$	M18X1.5	58.5
K150-Y	$\phi 63$	22	46	16	$\phi 12^{H9}_{f8}$	$\phi 25$	48	36	9	—	R12.5	18 $^{+0.4}_{+0.1}$	M18X1.5	58.5
K180-Y	$\phi 80$	30	75	25	$\phi 20^{H9}_{f8}$	$\phi 40$	68	56	14	—	R20	28 $^{+0.4}_{+0.1}$	M22X1.5	95
K1100-Y	$\phi 100$	34	75	25	$\phi 20^{H9}_{f8}$	$\phi 40$	68	56	14	—	R20	28 $^{+0.4}_{+0.1}$	M26X1.5	95
K1125-Y	$\phi 125$	55	100	42	$\phi 20^{H9}_{f8}$	$\phi 55$	73	64	16	—	R27	32 $^{+0.4}_{+0.1}$	M30X1.5	127

# AIR CYLINDER/STANDARD TYPE K1 series

## Axial foot mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$



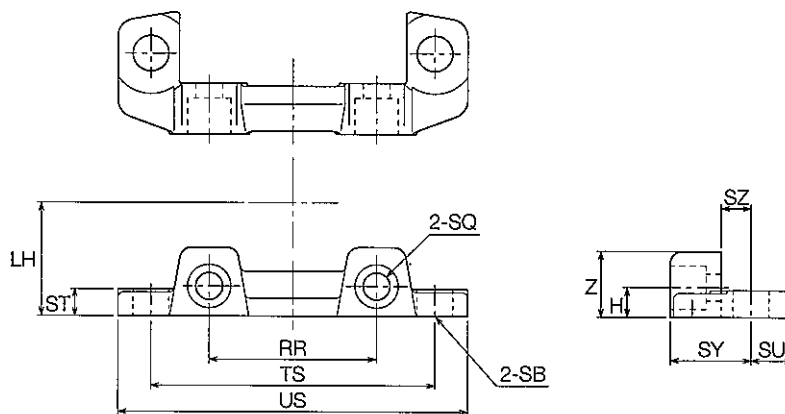
Bracket is a 2-piece set.  
(With cylinder set bolt)

Model No.	Applicable bore	AB	AC	AH	AL	AO	AT	H	R	UA	SQ	Z
K132-L	$\phi 32$	9	11	28	20.5	9.5	3.2	11.5	33	50	$\phi 7$	20
K140-L	$\phi 40$	11	13	30	23.5	12.5	3.2	11.5	36	57	$\phi 7$	21
K150-L	$\phi 50$	11	13	37	28	12	3.2	13	47	68	$\phi 7$	23
K163-L	$\phi 63$	11	13	41	31	13	3.2	13	56	80	$\phi 9$	26
K180-L	$\phi 80$	14	16	49	30	16	4	14	70	97	$\phi 11$	30
K1100-L	$\phi 100$	14	16	57	30	16	4	15	84	112	$\phi 11$	35
K1125-L	$\phi 125$	18	20	70	35	18	6	18	104	136	$\phi 13$	45

## Side lug mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$



Bracket is a 2-piece set.  
(With cylinder set bolt)

Model No.	Applicable bore	H	LH	RR	SB	SQ	ST	SU	SY	SZ	TS	US	Z
K132-M	$\phi 32$	5.5	22	33	$\phi 9$	$\phi 7$	8	14	23	10	63	81	14
K140-M	$\phi 40$	6.5	25	36	$\phi 12$	$\phi 7$	8	14	23	10	70	92	16
K150-M	$\phi 50$	7.5	31	47	$\phi 12$	$\phi 7$	9	14	25	10	83	105	17
K163-M	$\phi 63$	10	38	56	$\phi 12$	$\phi 9$	9	14	27	10	95	117	22
K180-M	$\phi 80$	12	47	70	$\phi 14$	$\phi 11$	13	18	34	13	121	147	28
K1100-M	$\phi 100$	15	57	84	$\phi 14$	$\phi 11$	14	18	38	13	140	168	30
K1125-M	$\phi 125$	17	69	104	$\phi 18$	$\phi 13$	18	21	46	17	175	213	35

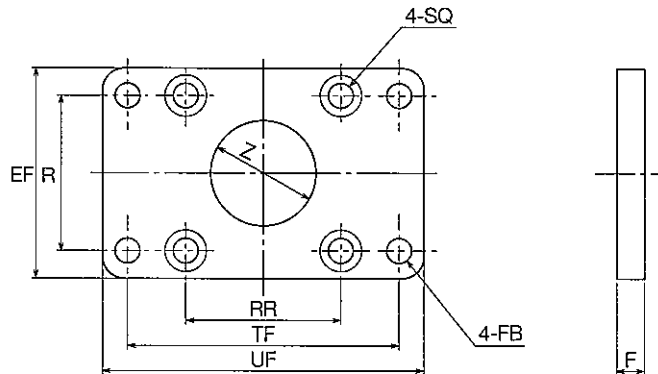
# AIR CYLINDER/STANDARD TYPE K1 series

## ACCESSORIES

### Flange mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$

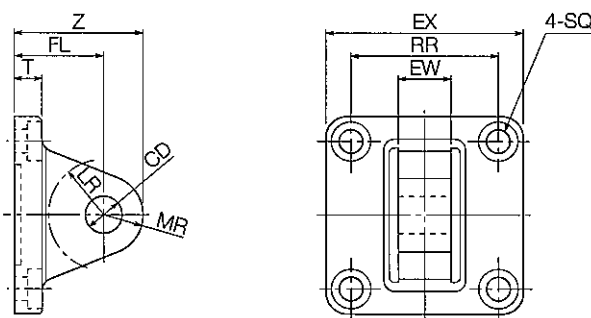


Model No.	Applicable bore	EF	F	FB	R	RR	SQ	TF	UF	Z
K132-A	$\phi 32$	47	10	$\phi 7$	33	$\square 33$	$\phi 6.6$	58	72	$\phi 26$
K140-A	$\phi 40$	52	10	$\phi 7$	36	$\square 37$	$\phi 6.6$	70	84	$\phi 32$
K150-A	$\phi 50$	65	10	$\phi 9$	47	$\square 47$	$\phi 6.6$	86	104	$\phi 38$
K163-A	$\phi 63$	76	10	$\phi 9$	56	$\square 56$	$\phi 9$	98	116	$\phi 38$
K180-A	$\phi 80$	95	16	$\phi 12$	70	$\square 70$	$\phi 11$	119	143	$\phi 44$
K1100-A	$\phi 100$	115	16	$\phi 12$	84	$\square 84$	$\phi 11$	138	162	$\phi 50$
K1125-A	$\phi 125$	138	16	$\phi 14$	104	$\square 104$	$\phi 13$	168	196	$\phi 60$

### Eye mount bracket

(Unit : mm)

$\phi 40 \sim \phi 100$



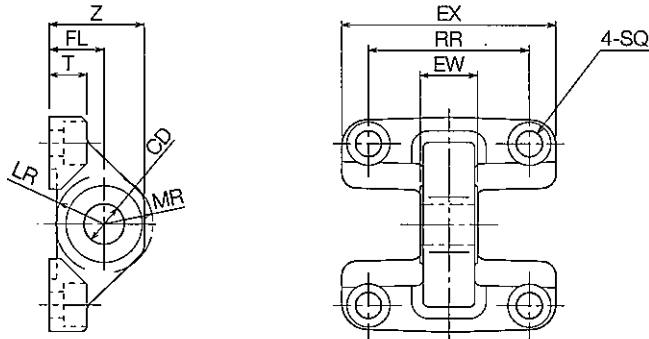
Model No.	Applicable bore	CD	EW	EX	FL	LR	MR	RR	SQ	T	Z
K140-C	$\phi 40$	$\phi 14^{H9}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$\square 50$	34	R21	R14	$\square 37$	$\phi 6.6$	11	48
K150-C	$\phi 50$	$\phi 14^{H9}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$\square 62$	34	R21	R15	$\square 47$	$\phi 6.6$	11	49
K163-C	$\phi 63$	$\phi 14^{H9}$	$20 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$\square 75$	34	R21	R15	$\square 56$	$\phi 9$	11	49
K180-C	$\phi 80$	$\phi 20^{H9}$	$32 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$\square 94$	48	R25	R20	$\square 70$	$\phi 11$	15	68
K1100-C	$\phi 100$	$\phi 20^{H9}$	$32 \begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	$\square 112$	48	R25	R20	$\square 84$	$\phi 11$	15	68

# AIR CYLINDER/STANDARD TYPE K1 series

## Short eye mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$



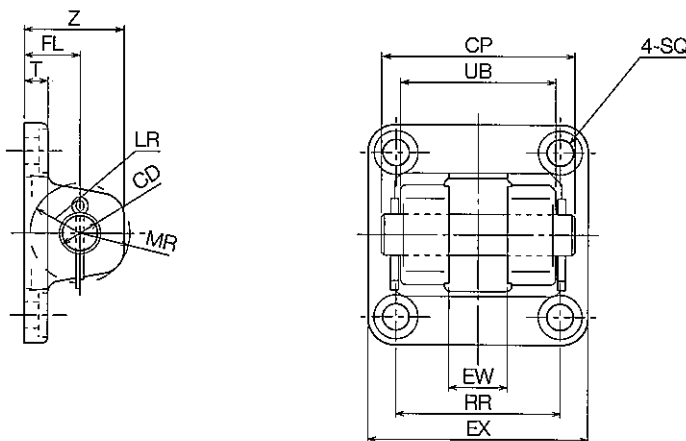
With cylinder set bolt

Model No.	Applicable bore	CD	EW	EX	FL	LR	MR	RR	SQ	T	Z
K132-D	$\phi 32$	$\phi 12^{H9}_{f8}$	16 <sup>0</sup> <sub>-0.070</sub>	□44	19	R16	R16	□33	$\phi 6.6$	8	32
K140-D	$\phi 40$	$\phi 14^{H9}_{f8}$	20 <sup>0</sup> <sub>-0.084</sub>	□50	19	R17	R17	□37	$\phi 6.6$	8	33
K150-D	$\phi 50$	$\phi 14^{H9}_{f8}$	20 <sup>0</sup> <sub>-0.084</sub>	□60	19	R17	R17	□47	$\phi 6.6$	10	33
K163-D	$\phi 63$	$\phi 14^{H9}_{f8}$	20 <sup>0</sup> <sub>-0.084</sub>	□75	19	R17	R17	□56	$\phi 9$	13	33
K180-D	$\phi 80$	$\phi 20^{H9}_{f8}$	32 <sup>0</sup> <sub>-0.100</sub>	□94	32	R25	R24	□70	$\phi 11$	18	53
K1100-D	$\phi 100$	$\phi 20^{H9}_{f8}$	32 <sup>0</sup> <sub>-0.100</sub>	□111	32	R26	R24	□84	$\phi 11$	18	52
K1125-D	$\phi 125$	$\phi 20^{H9}_{f8}$	32 <sup>0</sup> <sub>-0.100</sub>	□135	32	R30	R25	□104	$\phi 13$	21	52

## Clevis mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$



With cylinder set bolt

Model No.	Applicable bore	CD	CP	EW	EX	FL	LR	MR	T	SQ	RR	UB	Z
K132-W	$\phi 32$	$\phi 12^{H9}_{f8}$	46	16 <sup>+0.7</sup> <sub>+0.5</sub>	□44	19	R17	R15	8	$\phi 6.6$	□33	33	32
K140-W	$\phi 40$	$\phi 14^{H9}_{f8}$	58	20 <sup>+0.7</sup> <sub>+0.5</sub>	□50	19	R17	R15	8	$\phi 6.6$	□37	45	32
K150-W	$\phi 50$	$\phi 14^{H9}_{f8}$	66	20 <sup>+0.7</sup> <sub>+0.5</sub>	□60	19	R17	R17	8	$\phi 6.6$	□47	53	34
K163-W	$\phi 63$	$\phi 14^{H9}_{f8}$	66	20 <sup>+0.7</sup> <sub>+0.5</sub>	□75	19	R17	R17	8	$\phi 9$	□56	53	34
K180-W	$\phi 80$	$\phi 20^{H9}_{f8}$	78	32 <sup>+0.7</sup> <sub>+0.5</sub>	□94	32	R30	R24	11	$\phi 11$	□70	67	53
K1100-W	$\phi 100$	$\phi 20^{H9}_{f8}$	78	32 <sup>+0.7</sup> <sub>+0.5</sub>	□111	32	R30	R24	11	$\phi 11$	□84	67	53
K1125-W	$\phi 125$	$\phi 20^{H9}_{f8}$	78	32 <sup>+0.7</sup> <sub>+0.5</sub>	□136	32	R30	R22	14	$\phi 13$	□104	65	48



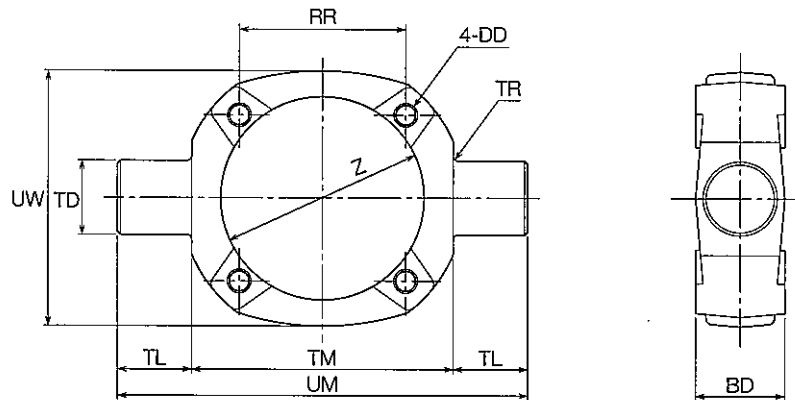
# AIR CYLINDER/STANDARD TYPE K1 series

## ACCESSORIES

### Trunnion mount bracket

(Unit : mm)

$\phi 32 \sim \phi 125$

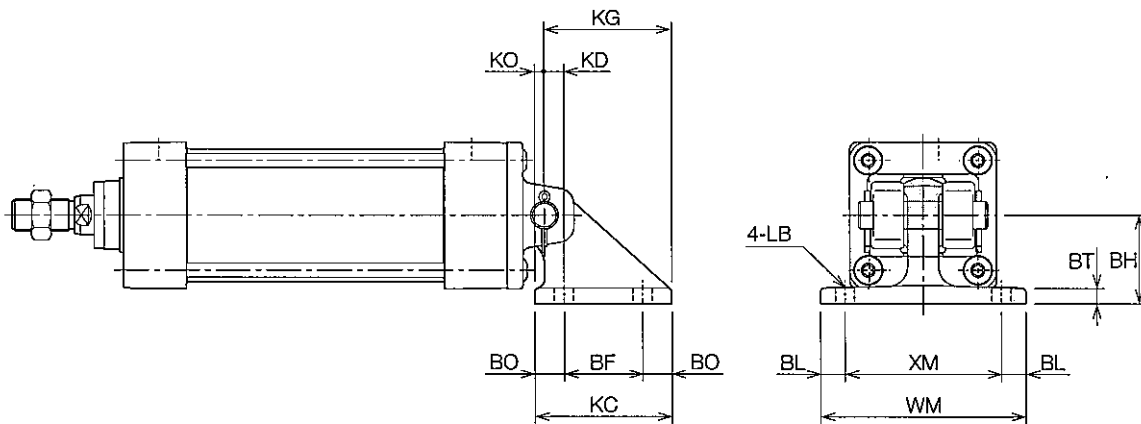


Model No.	Applicable bore	BD	DD	RR	TD	TL	TM	TR	UM	UW	Z
K132-T	$\phi 32$	30	M6×1	□33	$\phi 16^{e9}$	16	55	R1	87	53	$\phi 36.5$
K140-T	$\phi 40$	30	M6×1	□37	$\phi 25^{e9}$	25	63	R1.6	113	60	$\phi 44.5$
K150-T	$\phi 50$	30	M6×1	□47	$\phi 25^{e9}$	25	76	R1.6	126	72	$\phi 55.5$
K163-T	$\phi 63$	30	M8×1.25	□56	$\phi 25^{e9}$	25	88	R1.6	138	87	$\phi 68.5$
K180-T	$\phi 80$	35	M10×1.5	□70	$\phi 25^{e9}$	25	114	R1.6	164	105	$\phi 87.5$
K1100-T	$\phi 100$	40	M10×1.5	□84	$\phi 25^{e9}$	25	132	R2	182	129	$\phi 107.5$
K1125-T	$\phi 125$	43	M12×1.75	□104	$\phi 25^{e9}$	25	158	R2	208	159	$\phi 133.5$

# AIR CYLINDER/STANDARD TYPE K1 series

## Bracket for clevis

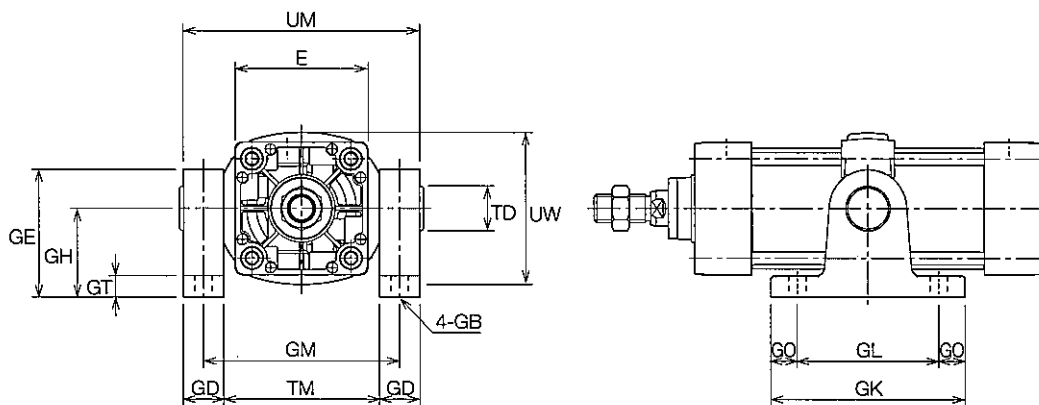
(Unit : mm)



Model No.	Applicable bore	BF	BH	BL	BO	BT	KC	KD	KG	KO	LB	WM	XM
K132-BA	φ 32	40	35	10	11.5	8	63	5	56.5	5	φ 9	85	65
K140-BA	φ 40	40	45	12.5	16.5	8	73	10	66.5	5	φ 11	105	80
	φ 50												
	φ 63												
K180-BA	φ 80	65	60	15	16.5	12	98	5	86.5	10	φ 14	135	105
	φ 100												
K125-BA	φ 125	77	75	17.5	20	15	117	17.5	115	2.5	φ 18	145	110

## Bracket for trunnion

(Unit : mm)



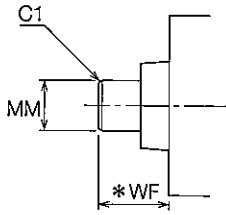
Model No.	Applicable bore	E	GB	GD	GE	GH	GK	GL	GM	GO	GT	TD	TM	UM	UW
K132-BC	φ 32	□44	φ 9	15	56	40	81	60	70	10.5	12	φ 16	55	87	53
K140-BC	φ 40	□50	φ 12	23	74	50	111	80	86	15.5	14	φ 25	63	113	60
	φ 50	□62	φ 12	23	74	50	111	80	99	15.5	14	φ 25	76	126	72
	φ 63	□75	φ 12	23	74	50	111	80	111	15.5	14	φ 25	88	138	87
K180-BC	φ 80	□94	φ 14	23	92	70	121	85	137	18	14	φ 25	114	164	105
	φ 100	□112	φ 14	23	92	70	121	85	155	18	14	φ 25	132	182	129
K125-BC	φ 125	□136	φ 18	25	116	85	145	105	183	20	27	φ 25	158	208	159

# AIR CYLINDER/STANDARD TYPE K1 series

## SPECIAL ROD END SHAPES (Custom-made)

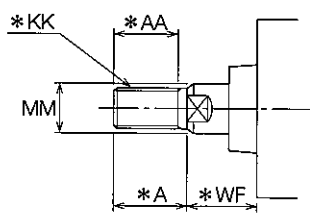
(Unit : mm)

**Designation Mark**  
**A10**



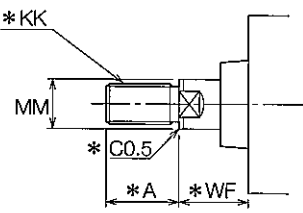
Bore	MM	WF
φ 32	φ 12	25
φ 40	φ 16	25
φ 50	φ 20	25
φ 63	φ 20	25
φ 80	φ 25	35
φ 100	φ 30	35
φ 125	φ 35	35

**Designation Mark**  
**A12**



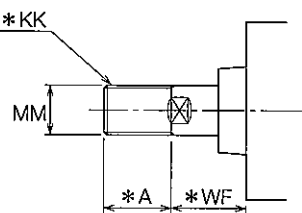
Bore	A	AA	KK	MM	WF
φ 32	22	19.5	M10×1.25	φ 12	25
φ 40	24	21.5	M12×1.25	φ 16	25
φ 50	32	29	M16×1.5	φ 20	25
φ 63	32	29	M16×1.5	φ 20	25
φ 80	40	37	M20×1.5	φ 25	35
φ 100	40	37	M20×1.5	φ 30	35
φ 125	54	50	M27×2	φ 35	35

**Designation Mark**  
**A14**



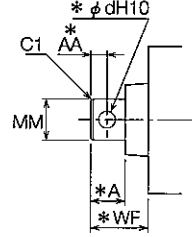
Bore	A	KK	MM	WF
φ 32	22	M10×1.25	φ 12	25
φ 40	24	M12×1.25	φ 16	25
φ 50	32	M16×1.5	φ 20	25
φ 63	32	M16×1.5	φ 20	25
φ 80	40	M20×1.5	φ 25	35
φ 100	40	M20×1.5	φ 30	35
φ 125	54	M27×2	φ 35	35

**Designation Mark**  
**A16**



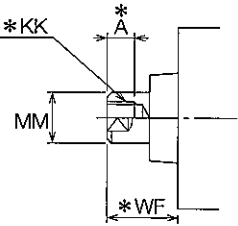
Bore	A	KK	MM	WF
φ 32	22	M12×1.25	φ 12	25
φ 40	24	M16×1.5	φ 16	25
φ 50	32	M20×1.5	φ 20	25
φ 63	32	M20×1.5	φ 20	25
φ 80	40	M25×1.5	φ 25	35
φ 100	40	M30×2	φ 30	35
φ 125	54	M35×1.5	φ 35	35

**Designation Mark**  
**A20**



Bore	A	AA	d	MM	WF
φ 32	18	7	φ 6	φ 12	33
φ 40	24	8	φ 8	φ 16	39
φ 50	30	12	φ 10	φ 20	45
φ 63	30	12	φ 10	φ 20	45
φ 80	36	14	φ 12	φ 25	57
φ 100	36	14	φ 12	φ 30	57
φ 125	45	18	φ 14	φ 35	66

**Designation Mark**  
**A27**



Bore	A	KK	MM	WF
φ 32	9	M6×1	φ 12	33
φ 40	12	M8×1.25	φ 16	33
φ 50	18	M10×1.5	φ 20	35
φ 63	18	M10×1.5	φ 20	35
φ 80	20	M16×2	φ 25	45
φ 100	20	M16×2	φ 30	45
φ 125	25	M20×2.5	φ 35	45

# AIR CYLINDER/STANDARD TYPE K1 series

## SPECIAL ROD END SHAPES (Custom-made)

(Unit : mm)

**Designation Mark**  
**A29**

Bore	A	KK	L	MM	WF
φ 32	22	M10×1.25	8	φ 12	33
φ 40	24	M12×1.25	8	φ 16	33
φ 50	32	M16×1.5	10	φ 20	35
φ 63	32	M16×1.5	10	φ 20	35
φ 80	40	M20×1.5	10	φ 25	45
φ 100	40	M20×1.5	10	φ 30	45
φ 125	54	M27×2	10	φ 35	45

**Designation Mark**  
**A30**

Bore	A	AA	d	ML	MM	WF
φ 32	18	7	φ 6	7 <sup>0</sup> <sub>-0.1</sub>	φ 12	20
φ 40	24	8	φ 8	10 <sup>0</sup> <sub>-0.1</sub>	φ 16	20
φ 50	30	12	φ 10	12 <sup>0</sup> <sub>-0.1</sub>	φ 20	20
φ 63	30	12	φ 10	12 <sup>0</sup> <sub>-0.1</sub>	φ 20	20
φ 80	36	14	φ 12	14 <sup>0</sup> <sub>-0.1</sub>	φ 25	26
φ 100	36	14	φ 12	14 <sup>0</sup> <sub>-0.1</sub>	φ 30	26
φ 125	45	18	φ 14	20 <sup>0</sup> <sub>-0.1</sub>	φ 35	26

**Designation Mark**  
**A37**

Bore	A	KK	d	L	MM	WF
φ 32	9	M6×1	φ 8	5	φ 12	33
φ 40	12	M8×1.25	φ 10	7	φ 16	33
φ 50	18	M10×1.5	φ 12	10	φ 20	35
φ 63	18	M10×1.5	φ 12	10	φ 20	35
φ 80	20	M16×2	φ 18	10	φ 25	45
φ 100	20	M16×2	φ 18	10	φ 30	45
φ 125	25	M20×2.5	φ 22	10	φ 35	45

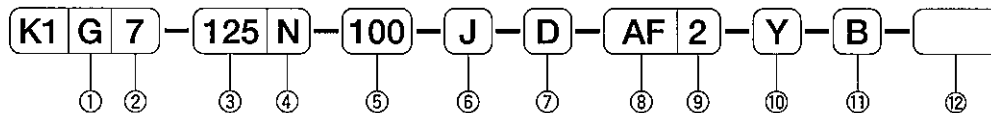
(Note) When ordering other size than standard for asterisked items, consult KURODA beforehand.

# AIR CYLINDER/DOUBLE ROD TYPE

# K1○7 series

φ 32, φ 40, φ 50, φ 63, φ 80, φ 100, φ 125

## ORDERING INSTRUCTIONS



### ①Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

### ②Action

2	Double acting, double rod
---	---------------------------

### ③Bore (mm)

32	φ 32
40	φ 40
50	φ 50
63	φ 63
80	φ 80
100	φ 100
125	φ 125

### ④Cushion

No symbol	Both-side air cushion
R	Rod side air cushion
N	No cushion

### ⑤Stroke (mm)

Refer to Standard Strokes (Page 40).

### ⑥Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows on one side (Nylon tarpaulin)
JN	With bellows on one side (Chloroprene)
JK	With bellows on one side (CONEX)
JJ	With bellows on both side (Nylon tarpaulin)
JJN	With bellows on both side (Chloroprene)
JJK	With bellows on both side (CONEX)

CONEX : Registered trademark of Teijin Ltd.

### ⑦Mounting

N	Basic type
L	Axial foot
M	Side lug
A	Rod side flange
T	Center trunnion

### ⑧Type of switch

No symbol	No switch		
AF	AX101	DC5~30V AC5~120V	Reed switch
AG	AX105		
AH	AX111		
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	Solid-state switch
AK	AX11A	AC5~120V	
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	
BE	AX201	DC5~30V	Solid-state switch
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

### ⑨Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

### ⑩Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye
YY	With two rod end clevis
II	With two rod end eye

(Note) Y, YY : Provided with pin

### ⑪Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : T alone

### ⑫Special shape of rod end

No symbol	Standard
-----------	----------

(Note) Refer to Pages 37 and 38.

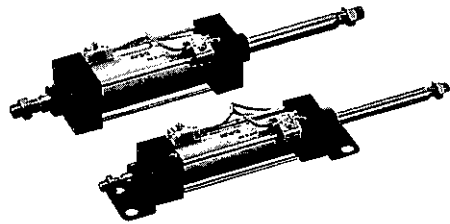
## Model No. of Mounting Bracket

Bore (mm)	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125
Axial foot mount bracket	K132-L	K140-L	K150-L	K163-L	K180-L	K1100-L	K1125-L
Side lug mount bracket	K132-M	K140-M	K150-M	K163-M	K180-M	K1100-M	K1125-M
Flange mount bracket	K132-A	K140-A	K150-A	K163-A	K180-A	K1100-A	K1125-A
Trunnion mount bracket	K132-T	K140-T	K150-T	K163-T	K180-T	K1100-T	K1125-T
Bracket for trunnion	K132-BC	K140-BC	K140-BC	K140-BC	K180-BC	K180-BC	K1125-BC

## Model No. of Packing Kit

Bore (mm)	Packing kit
φ 32	K132-PS
φ 40	K140-PS
φ 50	K150-PS
φ 63	K163-PS
φ 80	K180-PS
φ 100	K1100-PS
φ 125	K1125-PS

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series



## SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.1~1
Proof pressure	MPa	1.5
Temperature range	℃	-10~70
Piston speed range	mm/s	$\phi 32$ : 30~800 $\phi 40$ ~125 : 30~700
Cushion		Air cushion
Piston stroke allowance	mm	$\sim 250$ : ${}^{+1.0}_0$ 251~1000 : ${}^{+1.5}_0$
Mounting		Basic type, Axial foot, Side lug, Rod side flange, Center trunnion

(Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.  
•Use the cylinder within a temperature range where it is not frozen.

## STANDARD STROKE

(Unit : mm)

Bore	Standard stroke												Max. stroke	
	50	75	100	125	150	200	250	300	350	400	450	500		
$\phi 32$	○	○	○	○	○	○	○	○	○	○	○	○	○	500
$\phi 40$	○	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 50$	○	○	○	○	○	○	○	○	○	○	○	○	○	800
$\phi 63$	○	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 80$	○	○	○	○	○	○	○	○	○	○	○	○	○	1000
$\phi 100$	○	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 125$	○	○	○	○	○	○	○	○	○	○	○	○	○	

## CUSHION STROKE (Unit : mm)

Bore (mm)	Cushion stroke
$\phi 32$	16
$\phi 40$	
$\phi 50$	20
$\phi 63$	
$\phi 80$	25
$\phi 100$	
$\phi 125$	

## CYLINDER FORCE (THEORETICAL OUTPUT)

(Unit : N)

Bore (mm)	Rod outside dia. (mm)	Operating pressure (MPa)										
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
$\phi 32$	$\phi 12$	69.1	138	207	276	345	414	484	553	622	691	
$\phi 40$	$\phi 16$	106	211	317	422	528	633	739	844	950	1055	
$\phi 50$	$\phi 20$	165	330	495	660	825	990	1155	1319	1484	1649	
$\phi 63$	$\phi 20$	280	561	841	1121	1402	1682	1962	2242	2523	2803	
$\phi 80$	$\phi 25$	454	907	1361	1814	2268	2721	3175	3629	4082	4536	
$\phi 100$	$\phi 30$	715	1429	2144	2859	3574	4288	5003	5718	6432	7147	
$\phi 125$	$\phi 35$	1131	2262	3393	4524	5655	6786	7917	9048	10179	11310	

(Note) Cylinder output force (Effective output)=Cylinder force (Theoretical output) $\times 0.85$

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## CYLINDER MASS

### ●Aluminium tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass					Rod end bracket mass	
			Axial foot	Side lug	Flange	Trunnion	Bracket for trunnion	Eye	Clevis
φ 32	0.68	0.00306	0.11	0.14	0.20	0.30	0.22	0.16	0.22
φ 40	0.84	0.00457	0.13	0.20	0.37	0.48	0.50	0.16	0.27
φ 50	1.35	0.00673	0.17	0.32	0.39	0.55	0.50	0.21	0.34
φ 63	1.86	0.00760	0.23	0.52	0.53	0.70	0.50	0.21	0.34
φ 80	3.16	0.01217	0.38	0.85	1.60	1.16	0.72	0.62	0.87
φ 100	4.22	0.01612	0.47	1.28	2.22	1.53	0.72	0.62	0.87
φ 125	9.48	0.02240	0.47	1.38	2.87	3.41	1.55	1.24	1.47

### ●Iron tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass					Rod end bracket mass	
			Axial foot	Side lug	Flange	Trunnion	Bracket for trunnion	Eye	Clevis
φ 32	0.72	0.00417	0.11	0.14	0.20	0.30	0.22	0.16	0.22
φ 40	0.89	0.00593	0.13	0.20	0.37	0.48	0.50	0.16	0.27
φ 50	1.42	0.00886	0.17	0.32	0.39	0.55	0.50	0.21	0.34
φ 63	1.95	0.01025	0.23	0.52	0.53	0.70	0.50	0.21	0.34
φ 80	3.33	0.01690	0.38	0.85	1.60	1.16	0.72	0.62	0.87
φ 100	4.43	0.02199	0.47	1.28	2.22	1.53	0.72	0.62	0.87
φ 125	9.90	0.03240	0.47	1.38	2.87	3.41	1.55	1.24	1.47

## SWITCH MASS

(Unit : kg)

Bore (mm)	AX type			SR type
	Cord length 1.5m	Cord length 5m	Connector type	Cord length 5m
φ 32	0.05	0.13	0.04	0.22
φ 40				
φ 50				
φ 63				
φ 80				
φ 100	0.07	0.14	0.06	
φ 125				

[Example of calculation]

K1G7-80-200-A-AF2

$$3.16 + (0.01217 \times 200) + 1.6 + (0.05 \times 2) = 7.29 \text{kg}$$

(Note) Switch mass includes the mass of switch mount bracket.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

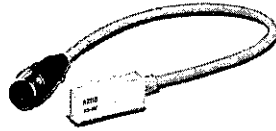
**MODEL WITH SWITCH/**For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

## •AX Type Switch

## •SR Type Switch

Cord type

Connector type



## LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load		
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	AG AX105							5m			
	AH AX111				1.5m						
	AJ AX115				5m						
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	5m				
	AK AX11A	AC5~120V					5~40mA	1.5W		Provided	LED (Red LED lights up at ON.)
	AL AX11B	DC5~30V			5~40mA	1.5W	Provided	LED (Red LED lights up at ON.)		4-pin connector Cord direction : Axial	0.5m
	S SR405	AC80~220V	2~300mA	30VA	Provided	Neon lamp (Red lights up at OFF.)	0.5 mm <sup>2</sup> 2-core, OD $\phi$ 6 mm Cord direction : Axial	5m			
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	BF AX205							5m			
	CE AX211					1.5m					
	CF AX215					5m					
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 3-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC IC circuit		
	BJ AX225							5m			

(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.  
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

## MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

Type	AX type	SR type
1 unit mounted	25	15 ( 25)
2 units mounted on same surface	25	15 ( 25)
2 units mounted on opposite surface	25	15 ( 25)
Center trunnion type (T)	120	90 (130)

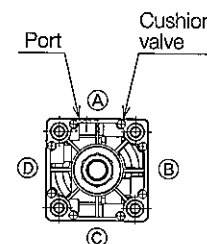
(Note) •Bracketed figures : Bores for  $\phi$  80 to  $\phi$  125.  
•Stroke of SR type of  $\phi$  32 with 2 units on same surface : 50mm

## SWITCH SET POSITION

Same as Standard Type K1 series See Page 30.

## CUSHION POSITION

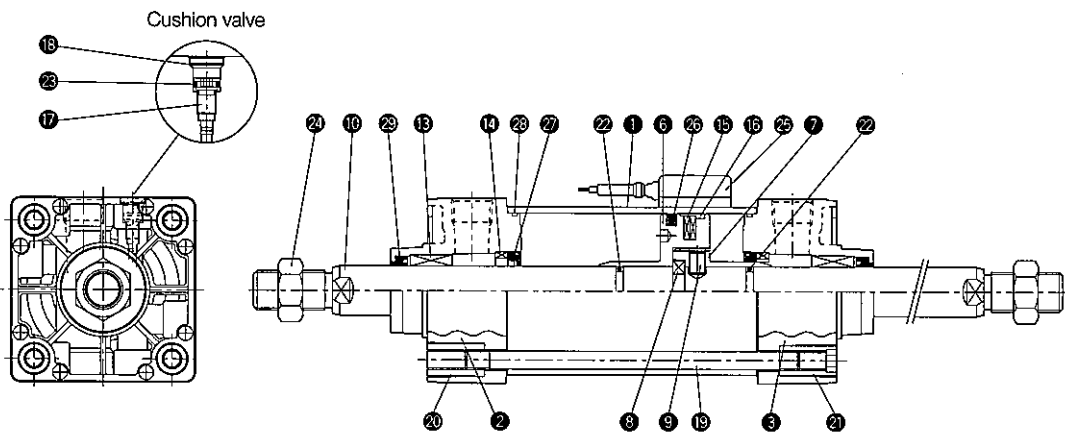
- Standard type cylinder has cushion valve on both rod side and head side on surface (A) with port position.
- For specific requirements for other type cylinder of which port position is different from the standard type, consult KURODA.





# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## CONSTRUCTIONS AND PARTS LIST



No.	Description	Material
1	Cylinder tube	Aluminium alloy or carbon steel tube for machine structure
2	Rod cover	Aluminium alloys die casting
3	Rod cover D	Aluminium alloys die casting
6	Piston A	Aluminium alloy
7	Piston B	Aluminium alloy
8	Split ring	$\phi$ 32~ 63 : Stainless steel $\phi$ 80~125 : Carbon steel for machine structure
9	Parallel pin	$\phi$ 32~ 50 : Stainless steel $\phi$ 63~125 : Carbon steel for machine structure
10	Piston rod	$\phi$ 32 : Stainless steel $\phi$ 40~125 : Carbon steel for machine structure
13	Bushing	Sintered oil-impregnated bearing
14	Keep ring	Aluminium alloy
15	Magnet	—
16	Wear ring	Synthetic resins
17	Cushion needle	Carbon steel for machine structure
18	Snap ring	Spring steel
19	Tie rod	Carbon steel for machine structure
20	Tie rod nut R	Rolled steel for general structure
21	Tie rod nut H	Chromium molybdenum steel
22	O-ring for piston	Nitril rubber
23	O-ring for cushion valve	Nitril rubber
24	Rod end nut	Rolled steel for general structure
25	Switch	—

### PACKING LIST

No.	Description	Material	Q'ty	Model No.						
				$\phi$ 32	$\phi$ 40	$\phi$ 50	$\phi$ 63	$\phi$ 80	$\phi$ 100	$\phi$ 125
26	Piston packing	Nitril rubber	1	PWP-32N	PWP-40N	PWP-50N	PWP-63N	PWP-80N	PWP-100N	PWP-125N
27	Cushion packing	Nitril rubber	2	CPF-15	CPF-20	CPF-24	CPF-24	CPF-30	CPF-35	CPF-45
28	O-ring for cover	Nitril rubber	2	1.5×32	1.5×40	1.5×50	1.5×63	1.5×80	1.5×100	2×125
29	Rod packing	Nitril rubber	1	DRP-12	DRP-16	DRP-20	DRP-20	DRP-25	DRP-30	DRP-35

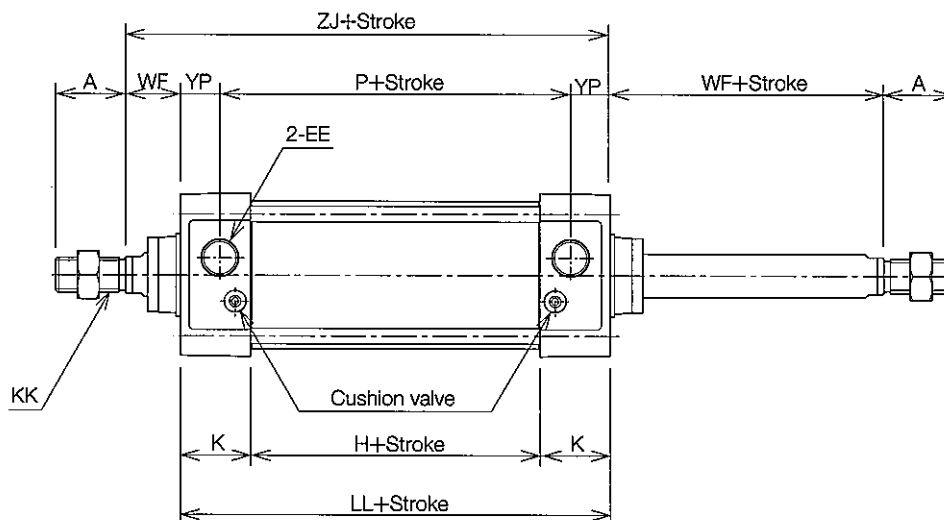
(Note) •Cover O-rings are made to our standard.  
•Packing set contains the wearing.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## DIMENSIONS

(Unit : mm)

Basic type/N



Bore	A	EE	H	K	KK	LL	P	RR	WF	YP	ZJ
φ 32	22 (19)	Rc1/8	31	31	M10×1.25	93	61	□33	25	16	118
φ 40	30 (27)	Rc1/4	31	31	M14×1.5	93	57	□37	25	18	118
φ 50	35 (32)	Rc1/4	31	31	M18×1.5	93	57	□47	25	18	118
φ 63	35 (32)	Rc3/8	32	32	M18×1.5	96	60	□56	25	18	121
φ 80	40 (36)	Rc3/8	36	36	M22×1.5	108	68	□70	35	20	143
φ 100	40 (36)	Rc1/2	36	36	M26×1.5	108	68	□84	35	20	143
φ 125	54 (50)	Rc1/2	42	36	M30×1.5	114	74	□104	35	20	149

(Note) •For other sizes than mentioned in this drawing, refer to Double-acting, single rod (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

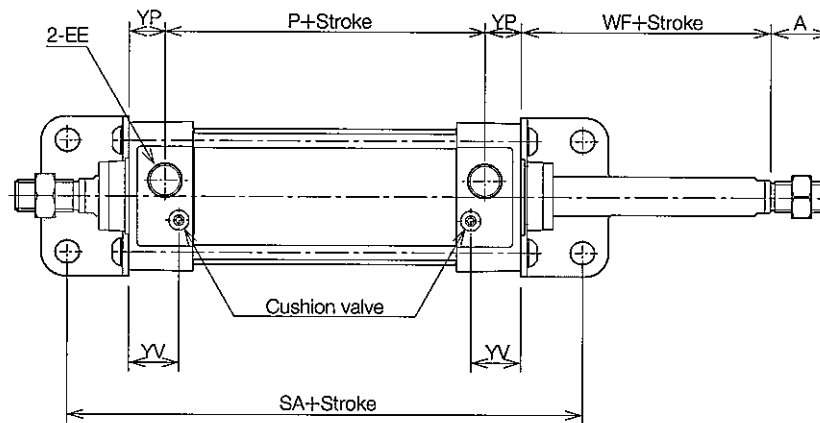
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## DIMENSIONS

(Unit : mm)

Axial foot mounting/L



Bore	A	EE	P	SA	WF	YP	YV
φ 32	22 (19)	Rc1/8	61	134	25	16	25.5
φ 40	30 (27)	Rc1/4	57	140	25	18	25.5
φ 50	35 (32)	Rc1/4	57	149	25	18	24
φ 63	35 (32)	Rc3/8	60	158	25	18	25
φ 80	40 (36)	Rc3/8	68	168	35	20	29
φ 100	40 (36)	Rc1/2	68	168	35	20	29
φ 125	54 (50)	Rc1/2	74	184	35	20	29

(Note) •For other sizes than mentioned in this drawing, refer to Double-acting, single rod (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

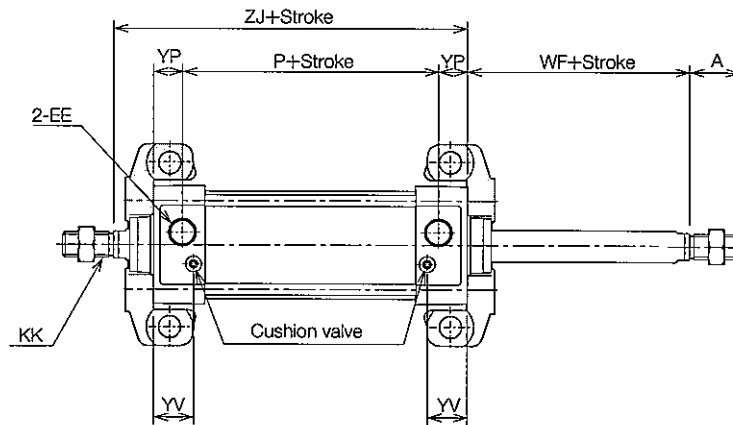
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## DIMENSIONS

(Unit : mm)

### Side lug mounting/M



Bore	A	EE	KK	P	WF	YP	YV	ZJ
φ 32	22 (19)	Rc $\frac{1}{8}$	M10×1.25	61	25	16	25.5	118
φ 40	30 (27)	Rc $\frac{1}{4}$	M14×1.5	57	25	18	25.5	118
φ 50	35 (32)	Rc $\frac{1}{4}$	M18×1.5	57	25	18	24	118
φ 63	35 (32)	Rc $\frac{3}{8}$	M18×1.5	60	25	18	25	121
φ 80	40 (36)	Rc $\frac{3}{8}$	M22×1.5	68	35	20	29	143
φ 100	40 (36)	Rc $\frac{1}{2}$	M26×1.5	68	35	20	29	143
φ 125	54 (50)	Rc $\frac{1}{2}$	M30×1.5	74	35	20	29	149

(Note) •For other sizes than mentioned in this drawing, refer to Double-acting, single rod (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

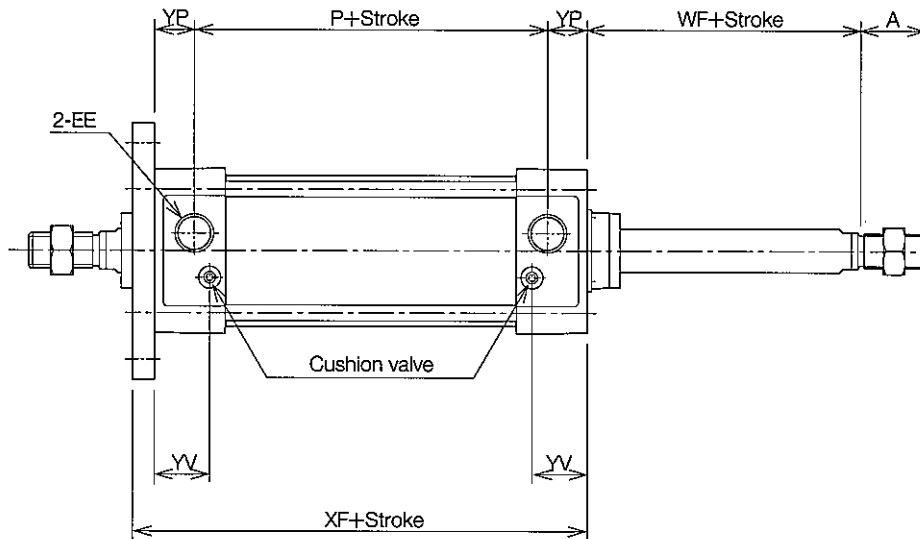
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## DIMENSIONS

(Unit : mm)

Rod side flange mounting/A



Bore	A	EE	P	WF	XF	YP	YV
φ 32	22 (19)	Rc1/8	61	25	103	16	25.5
φ 40	30 (27)	Rc1/4	57	25	103	18	25.5
φ 50	35 (32)	Rc1/4	57	25	103	18	24
φ 63	35 (32)	Rc3/8	60	25	106	18	25
φ 80	40 (36)	Rc3/8	68	35	124	20	29
φ 100	40 (36)	Rc1/2	68	35	124	20	29
φ 125	54 (50)	Rc1/2	74	35	130	20	29

(Note) •For other sizes than mentioned in this drawing, refer to Double-acting, single rod (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

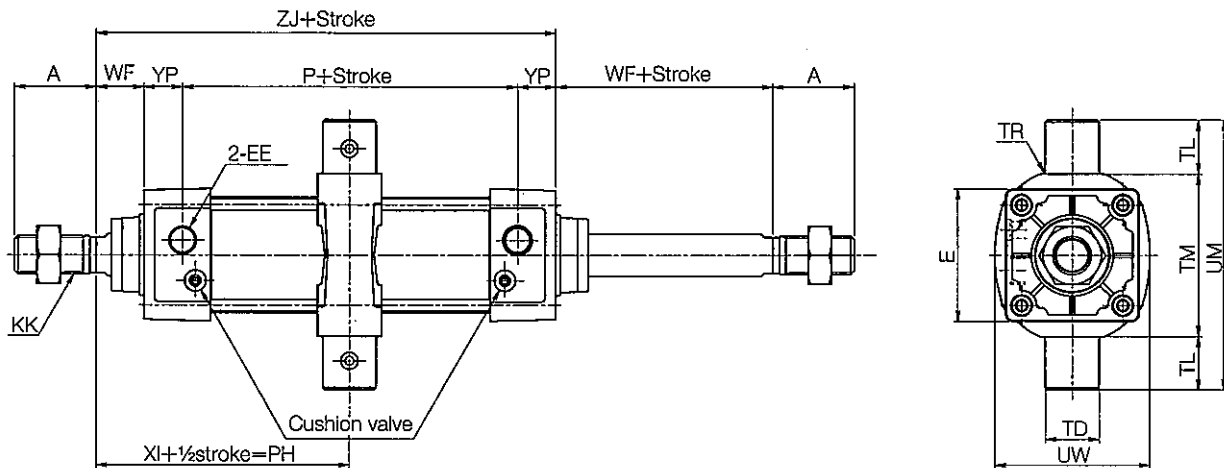
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/DOUBLE ROD TYPE K1○7 series

## DIMENSIONS

(Unit : mm)

Center trunnion mounting/T



Bore	A	E	EE	KK	P	PH (min)	TD	TL	TM	TR	UM	UW	WF	XI	YP	ZJ
φ 32	22 (19)	□44	Rc1/4	M10×1.25	61	71	φ 16 <sup>e9</sup>	16	55	R1	87	53	25	71.5	16	118
φ 40	30 (27)	□50	Rc1/4	M14×1.5	57	71	φ 25 <sup>e9</sup>	25	63	R2	113	60	25	71.5	18	118
φ 50	35 (32)	□62	Rc1/4	M18×1.5	57	71	φ 25 <sup>e9</sup>	25	76	R2	126	72	25	71.5	18	118
φ 63	35 (32)	□75	Rc3/8	M18×1.5	60	72	φ 25 <sup>e9</sup>	25	88	R2	138	87	25	73	18	121
φ 80	40 (36)	□94	Rc3/8	M22×1.5	68	88.5	φ 25 <sup>e9</sup>	25	114	R2	164	105	35	89	20	143
φ 100	40 (36)	□112	Rc1/2	M26×1.5	68	91	φ 25 <sup>e9</sup>	25	132	R2	182	129	35	89	20	143
φ 125	54 (50)	□136	Rc1/2	M30×1.5	74	92.5	φ 25 <sup>e9</sup>	25	158	R2	208	159	35	92	20	149

(Note) •For other sizes than mentioned in this drawing, refer to Double-acting, single rod (Page 21).

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

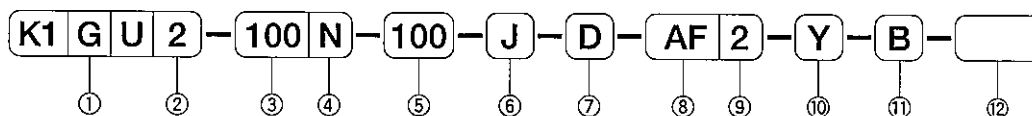
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/NON-ROTATING PISTON ROD TYPE

# K1○U series

φ 40, φ 50, φ 63, φ 80, φ 100

## ORDERING INSTRUCTIONS



### ①Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

### ②Action

2	Double acting, single rod
7	Double acting, double rod

### ③Bore (mm)

40	φ 40
50	φ 50
63	φ 63
80	φ 80
100	φ 100

### ④Cushion

No symbol	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

### ⑤Stroke (mm)

Refer to Standard Strokes (Page 50).

### ⑥Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows on one side (Nylon tarpaulin)
JN	With bellows on one side (Chloroprene)
JK	With bellows on one side (CONEX)
JJ	With bellows on both side (Nylon tarpaulin)
JJN	With bellows on both side (Chloroprene)
JJK	With bellows on both side (CONEX)

CONEX : Registered trademark of Teijin Ltd.

### ⑦Mounting

N	Basic type
L	Axial foot
M	Side lug
A	Rod side flange
B	Head side flange
C	Eye
D	Short eye
W	Clevis
T	Center trunnion

(Note) Double rod : N, L, M, A and T alone

### ⑧Type of switch

No symbol	No switch		Reed switch
AF	AX101	DC5~30V AC5~120V	
AG	AX105		
AH	AX111		
AJ	AX115	DC5~50V AC5~120V	
AE	AX125		
AK	AX11A		
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	
		DC5~30V	
BE	AX201		
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

### ⑨Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

### ⑩Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye
YY	With two rod end clevis
II	With two rod end eye

(Note) Y, YY : Provided with pin

### ⑪Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : W and T alone

### ⑫Special shape of rod end

No symbol	Standard
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(Note) Refer to Pages 53.

## Model No. of Mounting Bracket

Bore (mm)	φ 40	φ 50	φ 63	φ 80	φ 100
Axial foot mount bracket	K140-L	K150-L	K163-L	K180-L	K1100-L
Side lug mount bracket	K140-M	K150-M	K163-M	K180-M	K1100-M
Flange mount bracket	K140-A	K150-A	K163-A	K180-A	K1100-A
Eye mount bracket	K140-C	K150-C	K163-C	K180-C	K1100-C
Short eye mount bracket	K140-D	K150-D	K163-D	K180-D	K1100-D
Clevis mount bracket	K140-W	K150-W	K163-W	K180-W	K1100-W
Trunnion mount bracket	K140-T	K150-T	K163-T	K180-T	K1100-T
Bracket for clevis	K140-BA	K140-BA	K140-BA	K180-BA	K180-BA
Bracket for trunnion	K140-BC	K140-BC	K140-BC	K180-BC	K180-BC

## Model No. of Packing Kit

Bore (mm)	Packing kit
φ 40	K1U40-PS
φ 50	K1U50-PS
φ 63	K1U63-PS
φ 80	K1U80-PS
φ 100	K1U100-PS

# AIR CYLINDER/NON-ROTATING PISTON ROD TYPE K1○U series

## SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.1~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	50~500
Cushion.		Air cushion
Piston stroke allowance	mm	~250 : $+1.0_0$ 251~500 : $+1.5_0$
Rod non-rotational accuracy	Degree	$\phi 40 : \pm 1$ $\phi 50, 63 : \pm 0.8$ $\phi 80, 100 : \pm 0.5$
Allowable torque	N·m	$\phi 40 : 1$ $\phi 50, 63 : 3.4$ $\phi 80, 100 : 10$
Mounting		Basic type, Axial foot, Side lug, Rod side flange, Head side flange, Eye, Short eye, Clevis, Center trunnion

- (Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.  
•Use the cylinder within a temperature range where it is not frozen.  
•Rod non-rotational accuracy means the rotational angle (gap) of piston rod at the stroke end.  
•When using together with other guide, use a round rod.

## STANDARD STROKE

(Unit : mm)

Bore	Standard stroke												Max. stroke
	50	75	100	125	150	200	250	300	350	400	450	500	
$\phi 40$	○	○	○	○	○	○	○	○	○	○	○	○	500
$\phi 50$	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 63$	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 80$	○	○	○	○	○	○	○	○	○	○	○	○	
$\phi 100$	○	○	○	○	○	○	○	○	○	○	○	○	

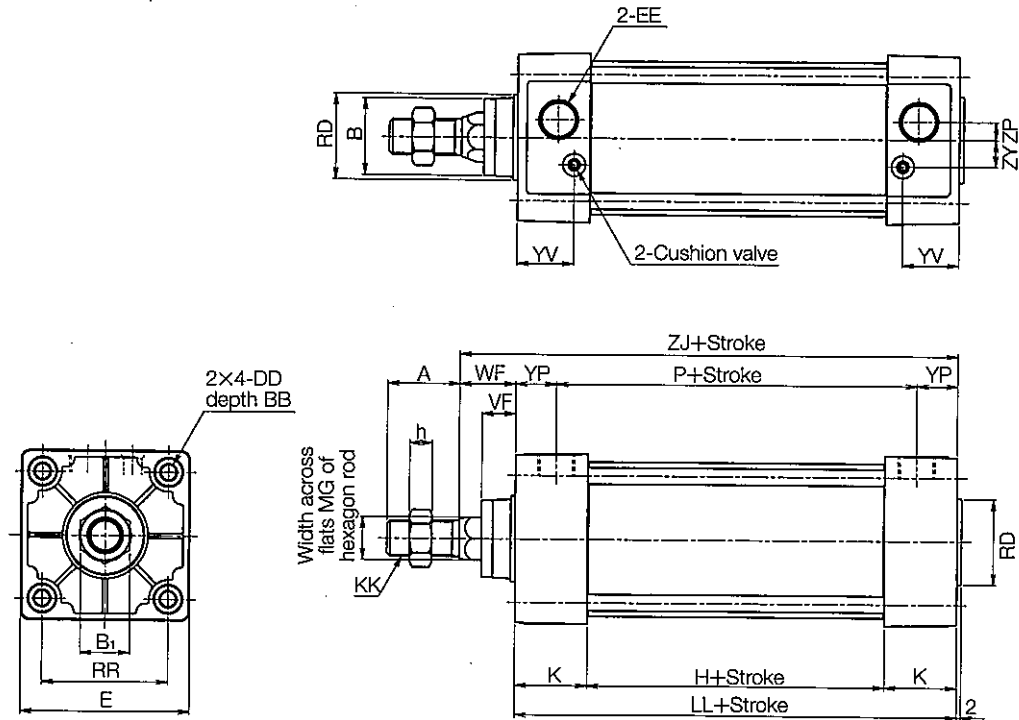


# AIR CYLINDER/NON-ROTATING PISTON ROD TYPE K1○U series

## DIMENSIONS

(Unit : mm)

Double-acting, single rod Basic type/N



Bore	A	B	B1	BB	DD	E	EE	H	K	KK	LL	MG	P	RD	RR	VF	WF
φ 40	30 (27)	φ 30	22	14	M6×1	□50	Rc¼	31	31	M14×1.5	93	14	57	φ 32	□37	15	25
φ 50	35 (32)	φ 34	27	14	M6×1	□62	Rc¼	31	31	M18×1.5	93	19	57	φ 38	□47	15	25
φ 63	35 (32)	φ 34	27	14	M8×1.25	□75	Rc⅜	32	32	M18×1.5	96	19	60	φ 38	□56	15	25
φ 80	40 (36)	φ 39	32	15	M10×1.5	□94	Rc⅝	36	36	M22×1.5	108	23	68	φ 44	□70	21	35
φ 100	40 (36)	φ 46	36	15	M10×1.5	□112	Rc½	36	36	M26×1.5	108	23	68	φ 50	□84	21	35

Bore	YP	YV	ZJ	ZP	ZV	h
φ 40	18	25.5	118	4	10	8
φ 50	18	24	118	7	12	11
φ 63	18	25	121	8	12	11
φ 80	20	29	143	11	16	13
φ 100	20	29	143	12	18	14

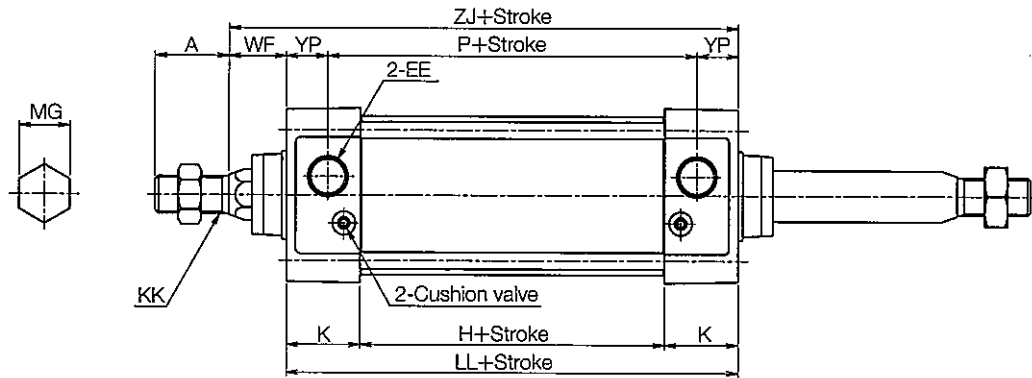
- (Note) •Except for rod end, all of them are the same dimensions as those of standard type.  
 As to other mounting types, they are also the same dimensions as those of standard type.  
 •Bracketed figures in size A columns are thread lengths.  
 •For rod end bracket dimensions, refer to page 31.  
 •For model with switch dimensions, refer to page 30.

# AIR CYLINDER/NON-ROTATING PISTON ROD TYPE K1○U series

## DIMENSIONS

(Unit : mm)

Double-acting, double rod Basic type/N



Bore	A	EE	H	K	KK	LL	MG	P	WF	YP	ZJ
φ 40	30 (27)	Rc1/4	31	31	M14×1.5	93	14	57	25	18	118
φ 50	35 (32)	Rc1/4	31	31	M18×1.5	93	19	57	25	18	118
φ 63	35 (32)	Rc3/8	32	32	M18×1.5	96	19	60	25	18	121
φ 80	40 (36)	Rc3/8	36	36	M22×1.5	108	23	68	35	20	143
φ 100	40 (36)	Rc1/2	36	36	M26×1.5	108	23	68	35	20	143

(Note) •Except for rod end, all of them are the same dimensions as those of standard type.

As to other mounting types, they are also the same dimensions as those of standard type.

•Bracketed figures in size A columns are thread lengths.

•For rod end bracket dimensions, refer to page 31.

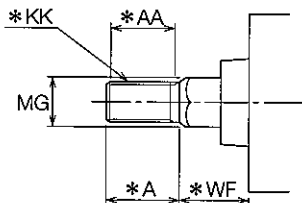
•For model with switch dimensions, refer to page 30.

# AIR CYLINDER/NON-ROTATING PISTON ROD TYPE K1○U series

## SPECIAL ROD END SHAPES (Custom-made)

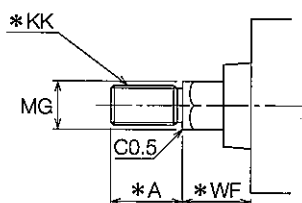
(Unit : mm)

**Designation Mark**  
**G12**



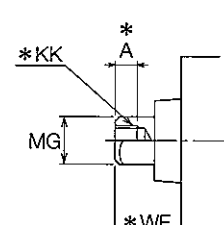
Bore	A	AA	KK	MG	WF
φ 40	24	21.5	M12×1.25	14	25
φ 50	32	29	M16×1.5	19	25
φ 63	32	29	M16×1.5	19	25
φ 80	40	37	M20×1.5	23	35
φ 100	40	37	M20×1.5	23	35

**Designation Mark**  
**G14**



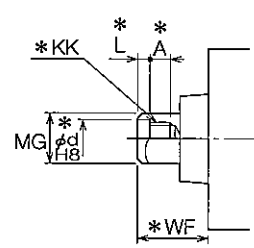
Bore	A	KK	MG	WF
φ 40	24	M12×1.25	14	25
φ 50	32	M16×1.5	19	25
φ 63	32	M16×1.5	19	25
φ 80	40	M20×1.5	23	35
φ 100	40	M20×1.5	23	35

**Designation Mark**  
**G27**



Bore	A	KK	MG	WF
φ 40	12	M 8×1.25	14	33
φ 50	18	M10×1.5	19	35
φ 63	18	M10×1.5	19	35
φ 80	20	M16×2	23	45
φ 100	20	M16×2	23	45

**Designation Mark**  
**G37**



Bore	A	KK	d	L	MG	WF
φ 40	12	M 8×1.25	φ 10	7	14	33
φ 50	18	M10×1.5	φ 12	10	19	35
φ 63	18	M10×1.5	φ 12	10	19	35
φ 80	20	M16×2	φ 18	10	23	45
φ 100	20	M16×2	φ 18	10	23	45

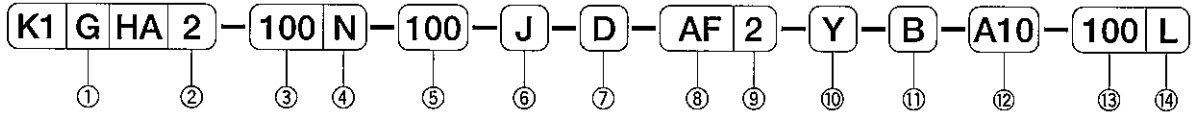
(Note) When ordering other size than standard for asterisked items, consult KURODA beforehand.

# HI-PAL CYLINDER/WITH SOLENOID VALVE

# K1 ○ HA series

φ 40, φ 50, φ 63, φ 80, φ 100

## ORDERING INSTRUCTIONS



### ① Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

### ② Action

2	Double acting, single rod Rod extends at power on.
4	Double-acting, single rod Rod retracts at power on.

### ③ Bore (mm)

40	φ 40
50	φ 50
63	φ 63
80	φ 80
100	φ 100

### ④ Cushion

No symbol	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

### ⑤ (mm)

Refer to Standard Strokes (Page 62).

### ⑥ Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows (Nylon tarpaulin)
JN	With bellows (Chloroprene)
JK	With bellows (CONEX)

CONEX : Registered trademark of Teijin Ltd.

### ⑦ Mounting

N	Basic type
L	Axial foot
M	Side lug
A	Rod side flange
B	Head side flange
C	Eye
D	Short eye
W	Clevis
T	Center trunnion

### ⑧ Type of switch

No symbol	No switch		Reed switch
AF	AX101		
AG	AX105	DC5~30V	
AH	AX111	AC5~120V	
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	
AK	AX11A	AC5~120V	Solid-state switch
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	
BE	AX201		
BF	AX205		
BH	AX221	DC5~30V	
BJ	AX225		
CE	AX211		
CF	AX215		

### ⑨ Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

### ⑬ Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

### ⑩ Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye

(Note) Y : Provided with pin

### ⑭ Wiring

L	Lead wire
G	Terminal grommet
C	Terminal conduit

### ⑪ Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : W and T

### ⑫ Special shape of rod end

No symbol	Standard
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(Note) Refer to Pages 37 and 38.

## Model No. of Mounting Bracket

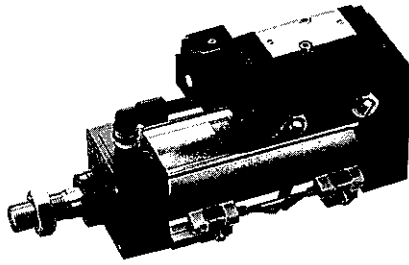
Bore (mm)	φ 40	φ 50	φ 63	φ 80	φ 100
Axial foot mount bracket	K140-L	K150-L	K163-L	K180-L	K1100-L
Side lug mount bracket	K140-M	K150-M	K163-M	K180-M	K1100-M
Flange mount bracket	K140-A	K150-A	K163-A	K180-A	K1100-A
Eye mount bracket	K140-C	K150-C	K163-C	K180-C	K1100-C
Short eye mount bracket	K140-D	K150-D	K163-D	K180-D	K1100-D
Clevis mount bracket	K140-W	K150-W	K163-W	K180-W	K1100-W
Trunnion mount bracket	K140-T	K150-T	K163-T	K180-T	K1100-T
Bracket for clevis	K140-BA	K140-BA	K140-BA	K180-BA	K180-BA
Bracket for trunnion	K140-BC	K140-BC	K140-BC	K180-BC	K180-BC

(Note) Bracket for clevis : With pin, snap ring

## Model No. of Packing Kit

Bore (mm)	Packing kit
φ 40	K140-PS
φ 50	K150-PS
φ 63	K163-PS
φ 80	K180-PS
φ 100	K1100-PS

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series



## SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.2~0.8
Proof pressure	MPa	1.5
Temperature range	°C	5~50
Piston speed range	mm/s	50~500
Cushion		Air cushion
Piston stroke allowance	mm	~250 : $^{+1.0}_0$ 251~1000 : $^{+1.5}_0$ 1001~ : $^{+2.0}_0$
Mounting		Basic type, Axial foot, Side lug, Rod side flange, Head side flange, Eye, Short eye, Clevis, Center trunnion

Solenoid valve		PCS2408			
Rated voltage	V	AC100/110, 200/220 DC24			
Insulation grade		JIS B			
Permissible voltage fluctuation	%	AC : $\pm 10$ DC : $+10$ $^{-15}_0$			
Frequency	Hz	50/60			
Apparent power	AC	Hold	50Hz	VA	(100/200) 3.2
			60Hz	VA	(100/200) 2.6
		Start	50Hz	VA	(100/200) 5.0
			60Hz	VA	(100/200) 4.5
Power consumption DC	W	2			

(Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.

•Use the cylinder within a temperature range where it is not frozen.

## STANDARD STROKE

(Unit : mm)

Bore	Standard stroke										Max. stroke	
	100	125	150	200	250	300	350	400	450	500		
φ 40	○	○	○	○	○	○	○	○	○	○	○	1500
φ 50	○	○	○	○	○	○	○	○	○	○	○	
φ 63	○	○	○	○	○	○	○	○	○	○	○	
φ 80	○	○	○	○	○	○	○	○	○	○	○	
φ 100	○	○	○	○	○	○	○	○	○	○	○	

## CUSHION STROKE

(Unit : mm)

Bore (mm)	Cushion stroke
φ 40	16
φ 50	20
φ 63	
φ 80	25
φ 100	

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

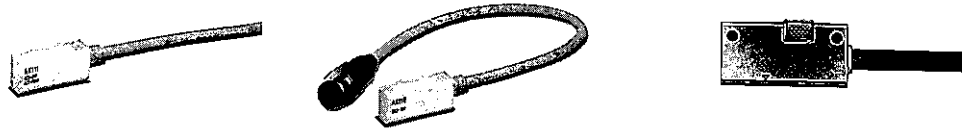
MODEL WITH SWITCH/For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

●AX Type Switch

●SR Type Switch

Cord type

Connector type



## LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load		
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	AG AX105							5m			
	AH AX111				1.5m						
	AJ AX115				5m						
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	4-pin connector Cord direction : Axial	5m			
	AK AX11A	AC5~120V						Provided		LED (Red LED lights up at ON.)	0.5m
	AL AX11B	DC5~30V			5~40mA	1.5W		Provided		LED (Red LED lights up at ON.)	0.5m
	S SR405	AC80~220V			2~300mA	30VA		Provided		Neon lamp (Red lights up at OFF.)	0.5 mm <sup>2</sup> 2-core, OD φ 6 mm Cord direction : Axial
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	BF AX205							5m			
	CE AX211					LED (Dual light : Red/green)		1.5m			
	CF AX215							5m			
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 3-core, OD φ 4 mm Cord direction : Axial	1.5m		Miniature relay PLC IC circuit	
	BJ AX225							5m			

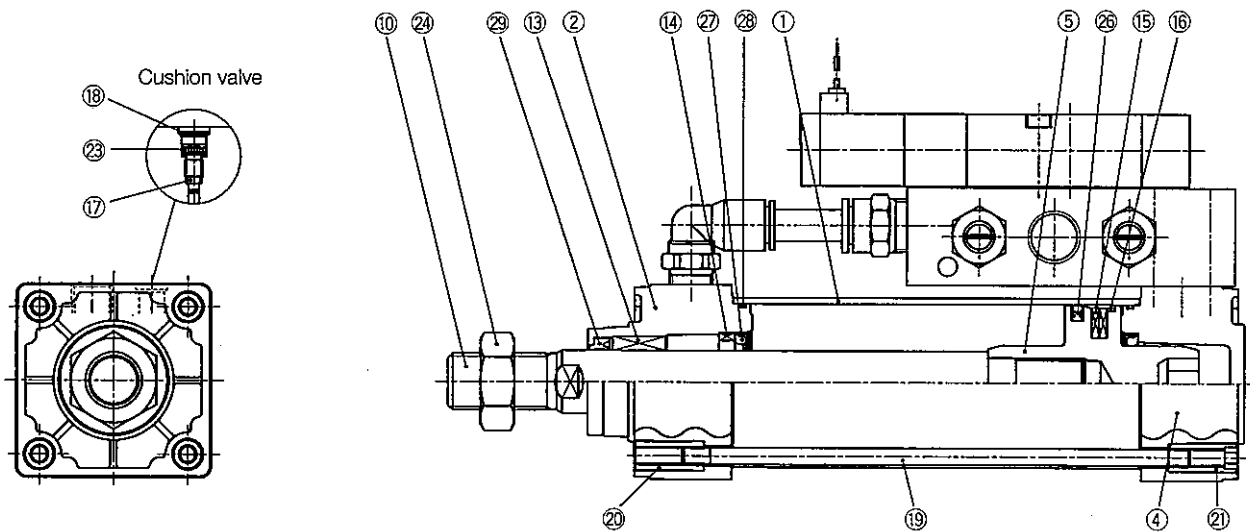
(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.  
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

## MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

Type	AX type	SR type
1 unit mounted	100	100
2 units mounted on same surface	100	100
2 units mounted on opposite surface	100	100
Center trunnion type (T)	120	125

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## CONSTRUCTIONS AND PARTS LIST



No.	Description	Material
①	Cylinder tube	Aluminium alloy or carbon steel tube for machine structure
②	Rod cover	Aluminium alloys die casting
④	Head cover	Aluminium alloys die casting
⑤	Piston	Aluminium alloy
⑩	Piston rod	$\phi 32$ : Stainless steel $\phi 40\sim 125$ : Carbon steel for machine structure
⑬	Bushing	Sintered oil-impregnated bearing
⑭	Keep ring	Aluminium alloy
⑮	Magnet	—
⑯	Wear ring	Synthetic resins
⑰	Cushion needle	Carbon steel for machine structure
⑱	Snap ring	Spring steel
⑲	Tie rod	Carbon steel for machine structure
⑳	Tie rod nut R	Rolled steel for general structure
㉑	Tie rod nut H	Chromium molybdenum steel
㉓	O-ring for cushion valve	Nitril rubber
㉔	Rod end nut	Rolled steel for general structure

## PACKING LIST

No.	Description	Material	Q'ty	Model No.				
				$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
㉖	Piston packing	Nitril rubber	1	PWP-40N	PWP-50N	PWP-63N	PWP-80N	PWP-100N
㉗	Cushion packing	Nitril rubber	2	CPF-20	CPF-24	CPF-24	CPF-30	CPF-35
㉘	O-ring for cover	Nitril rubber	2	1.5×40	1.5×50	1.5×63	1.5×80	1.5×100
㉙	Rod packing	Nitril rubber	1	DRP-16	DRP-20	DRP-20	DRP-25	DRP-30

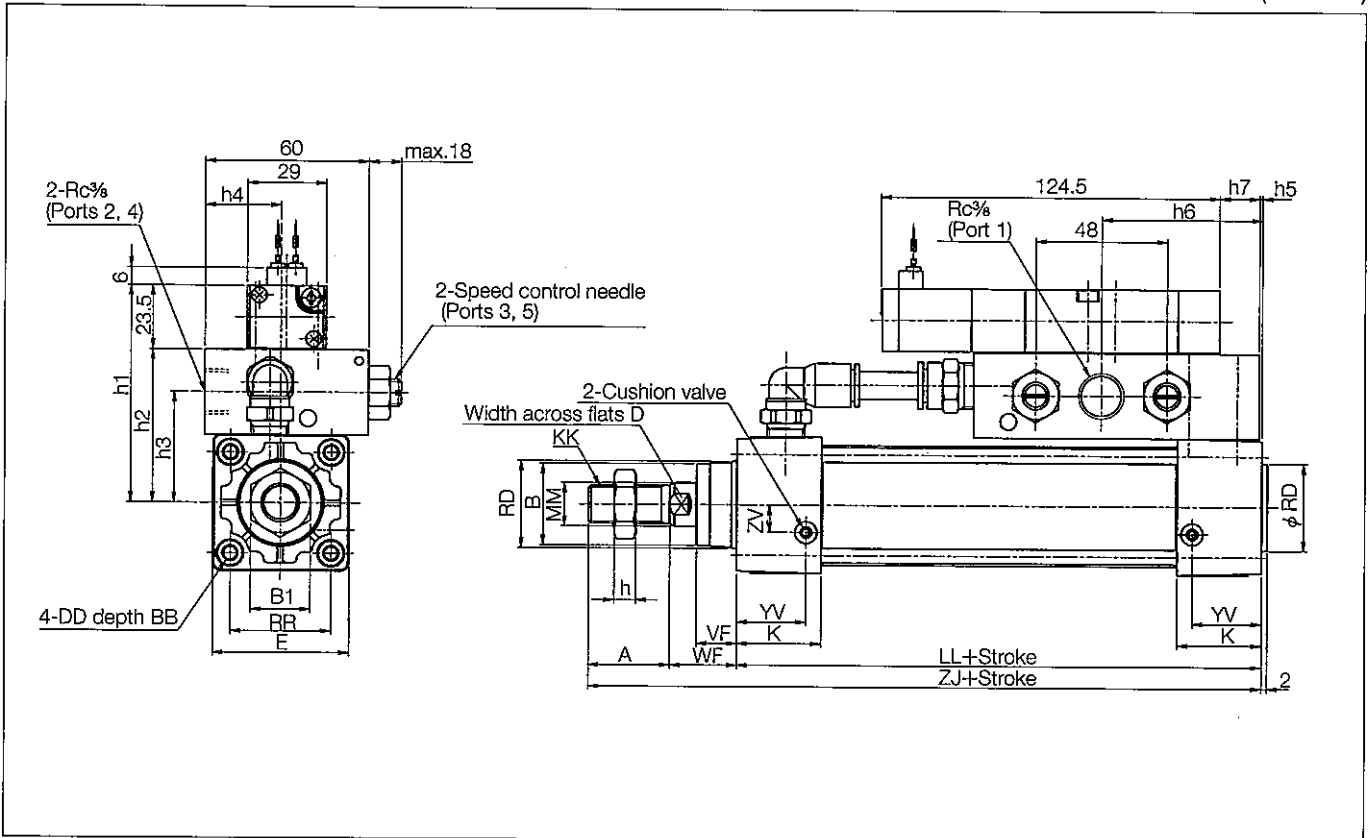
(Note) •Cover O-rings are made to our standard.  
•Packing set contains the wearing.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Basic type/N

(Unit : mm)



Bore	A	B	B1	BB	D	DD	E	K	KK	LL	MM	RD	RR	VF	WF	YV	ZJ
φ 40	30 (27)	φ 30	22	14	14	M6×1	□50	31	M14×1.5	93	φ 16	φ 32	□37	15	25	25.5	148
φ 50	35 (32)	φ 34	27	14	17	M6×1	□62	31	M18×1.5	93	φ 20	φ 38	□47	15	25	24	153
φ 63	35 (32)	φ 34	27	14	17	M8×1.25	□75	32	M18×1.5	96	φ 20	φ 38	□56	15	25	25	156
φ 80	40 (36)	φ 39	32	15	21	M10×1.5	□94	36	M22×1.5	108	φ 25	φ 44	□70	21	35	29	183
φ 100	40 (36)	φ 46	36	15	26	M10×1.5	□112	36	M26×1.5	108	φ 30	φ 50	□84	21	35	29	183

Bore	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	10	8	79.5	56	40.5	28	1	59	15
φ 50	12	11	85.5	62	46.5	31	1	59	15
φ 63	12	11	92	68.5	53	35	1	59	15
φ 80	16	13	101.5	78	62.5	38	3	61	15
φ 100	18	14	110.5	87	71.5	39	1	64	20

(Note) Bracketed figures in size A columns are thread lengths.

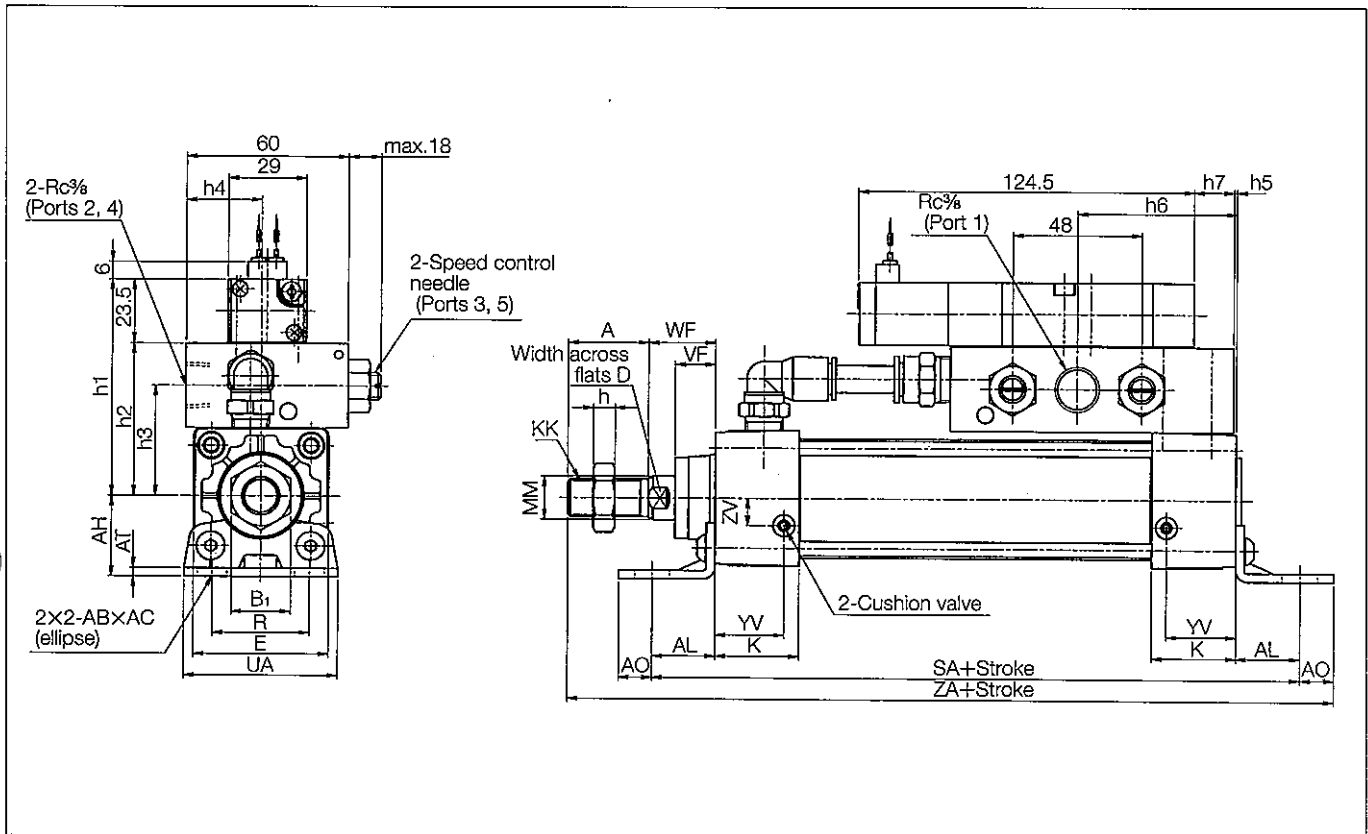


# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Axial foot mounting/L

(Unit : mm)



Bore	A	AC	AH	AL	AO	AT	B1	D	E	K	KK	MM	R	SA	UA	VF	WF	YV
φ 40	30 (27)	13	30	23.5	12.5	3.2	22	14	□50	31	M14×1.5	φ 16	36	140	57	15	25	25.5
φ 50	35 (32)	13	36.5	28	12	3.2	27	17	□62	31	M18×1.5	φ 20	47	149	68	15	25	24
φ 63	35 (32)	13	41	31	13	3.2	27	17	□75	32	M18×1.5	φ 20	56	158	80	15	25	25
φ 80	40 (36)	16	49	30	16	4	32	21	□94	36	M22×1.5	φ 25	70	168	97	21	35	29
φ 100	40 (36)	16	57	30	16	4	36	26	□112	36	M26×1.5	φ 30	84	168	112	21	35	29

Bore	ZA	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	184	10	8	79.5	56	40.5	28	1	59	15
φ 50	193	12	11	85.5	62	46.5	31	1	59	15
φ 63	200	12	11	92	68.5	53	35	1	59	15
φ 80	229	16	13	101.5	78	62.5	38	3	61	15
φ 100	229	18	14	110.5	87	71.5	39	1	64	20

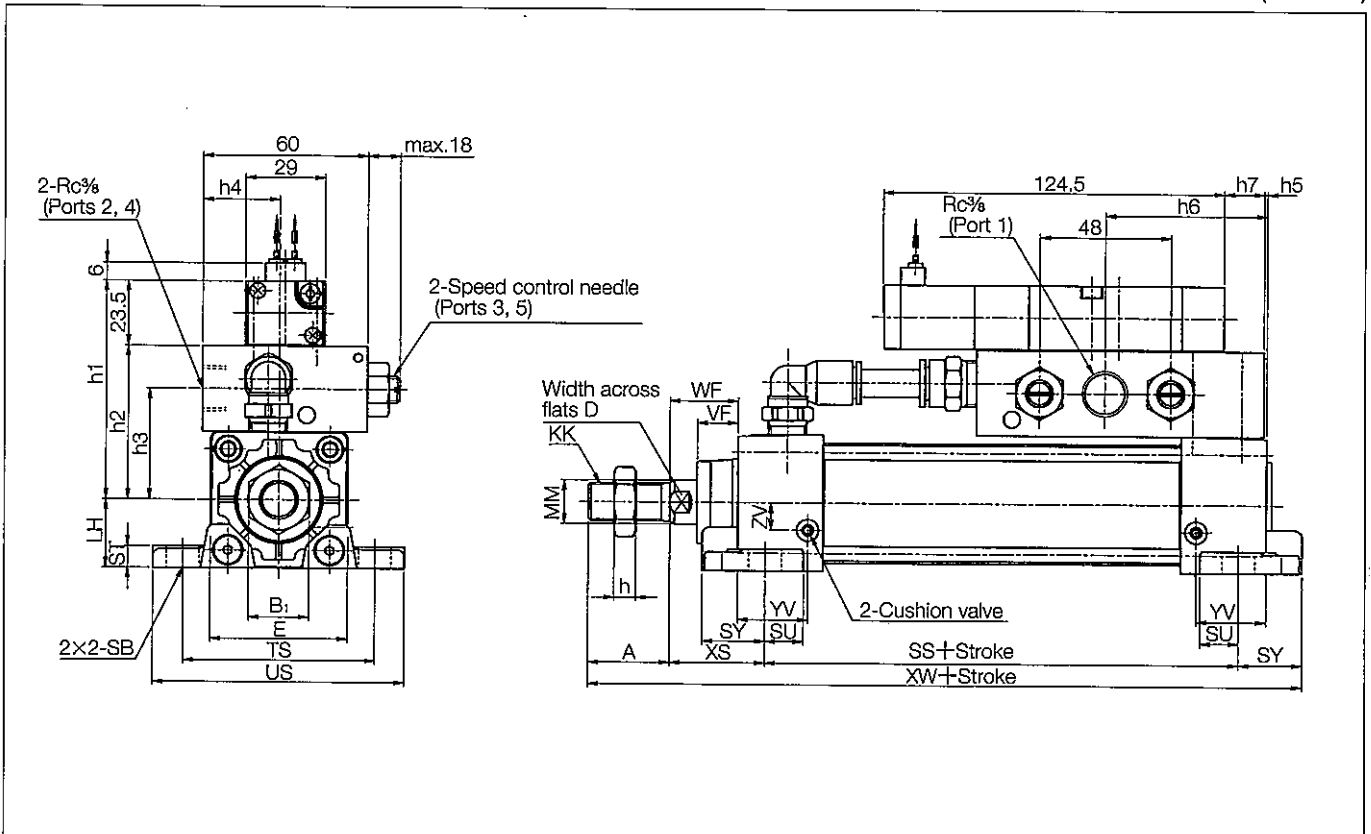
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Side lug mounting/M

(Unit : mm)



Bore	A	B <sub>1</sub>	D	E	KK	LH	MM	SB	SS	ST	SU	SY	TS	US	VF	WF	XS	XW	YV
$\phi 40$	30 (27)	22	14	□50	M14×1.5	25	$\phi 16$	$\phi 12$	73	8	14	23	70	92	15	25	35	161	25.5
$\phi 50$	35 (32)	27	17	□62	M18×1.5	31	$\phi 20$	$\phi 12$	73	9	14	25	83	105	15	25	35	168	24
$\phi 63$	35 (32)	27	17	□75	M18×1.5	38	$\phi 20$	$\phi 12$	76	9	14	27	95	117	15	25	35	173	25
$\phi 80$	40 (36)	32	21	□94	M22×1.5	47	$\phi 25$	$\phi 14$	82	13	18	34	121	147	21	35	48	204	29
$\phi 100$	40 (36)	36	26	□112	M26×1.5	57	$\phi 30$	$\phi 14$	82	14	18	38	140	168	21	35	48	208	29

Bore	ZV	h	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	h <sub>7</sub>
$\phi 40$	10	8	79.5	56	40.5	28	1	59	15
$\phi 50$	12	11	85.5	62	46.5	31	1	59	15
$\phi 63$	12	11	92	68.5	53	35	1	59	15
$\phi 80$	16	13	101.5	78	62.5	38	3	61	15
$\phi 100$	18	14	110.5	87	71.5	39	1	64	20

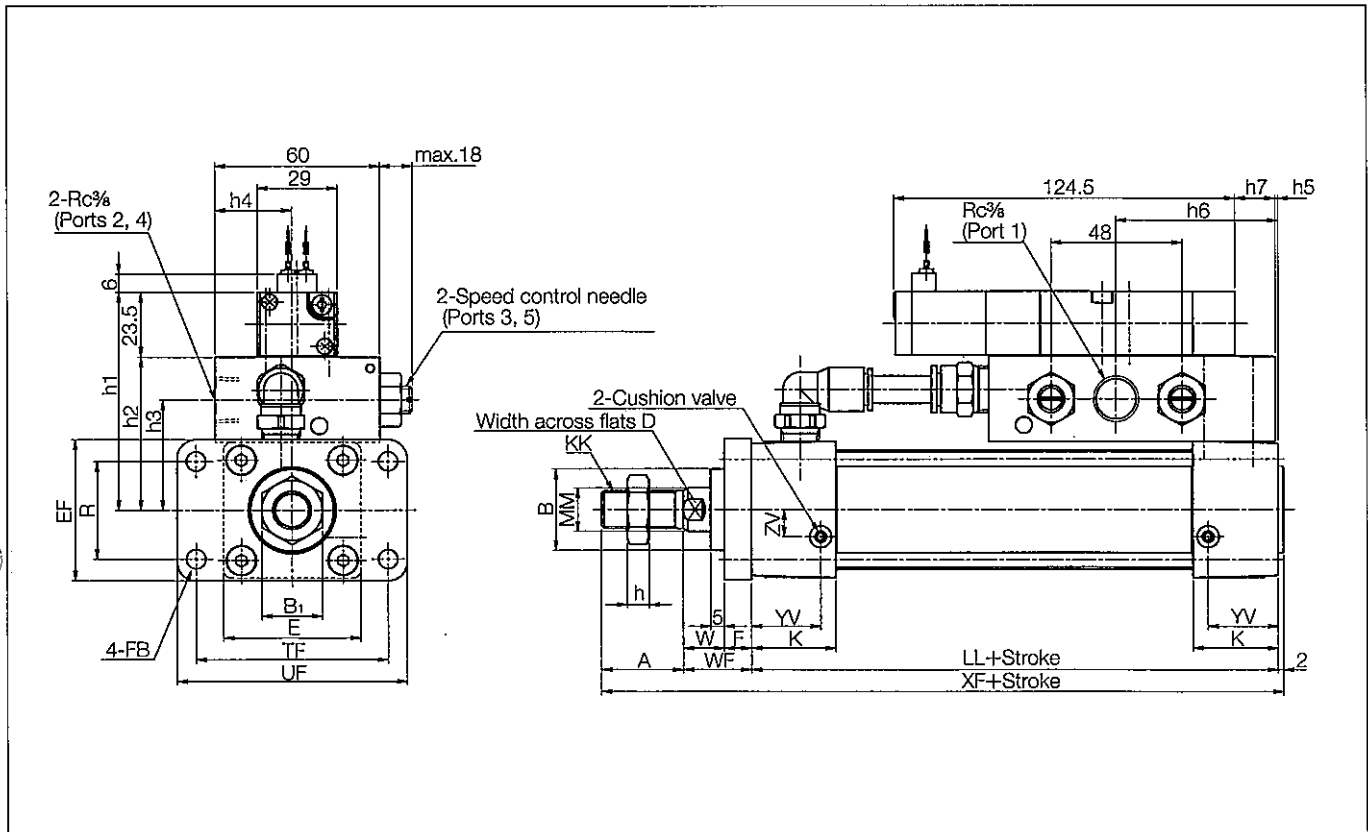
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Rod side flange mounting/A

(Unit : mm)



Bore	A	B	B1	D	E	EF	F	FB	K	KK	LL	MM	R	TF	UF	W	WF	XF	YV
φ 40	30 (27)	φ 30	22	14	□50	52	10	φ 7	31	M14×1.5	93	φ 16	36	70	84	15	25	150	25.5
φ 50	35 (32)	φ 34	27	17	□62	65	10	φ 9	31	M18×1.5	93	φ 20	47	86	104	15	25	155	24
φ 63	35 (32)	φ 34	27	17	□75	76	10	φ 9	32	M18×1.5	96	φ 20	56	98	116	15	25	158	25
φ 80	40 (36)	φ 39	32	21	□94	95	16	φ 12	36	M22×1.5	108	φ 25	70	119	143	19	35	185	29
φ 100	40 (36)	φ 46	36	26	□112	115	16	φ 12	36	M26×1.5	108	φ 30	84	138	162	19	35	185	29

Bore	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	10	8	79.5	56	40.5	28	1	59	15
φ 50	12	11	85.5	62	46.5	31	1	59	15
φ 63	12	11	92	68.5	53	35	1	59	15
φ 80	16	13	101.5	78	62.5	38	3	61	15
φ 100	18	14	110.5	87	71.5	39	1	64	20

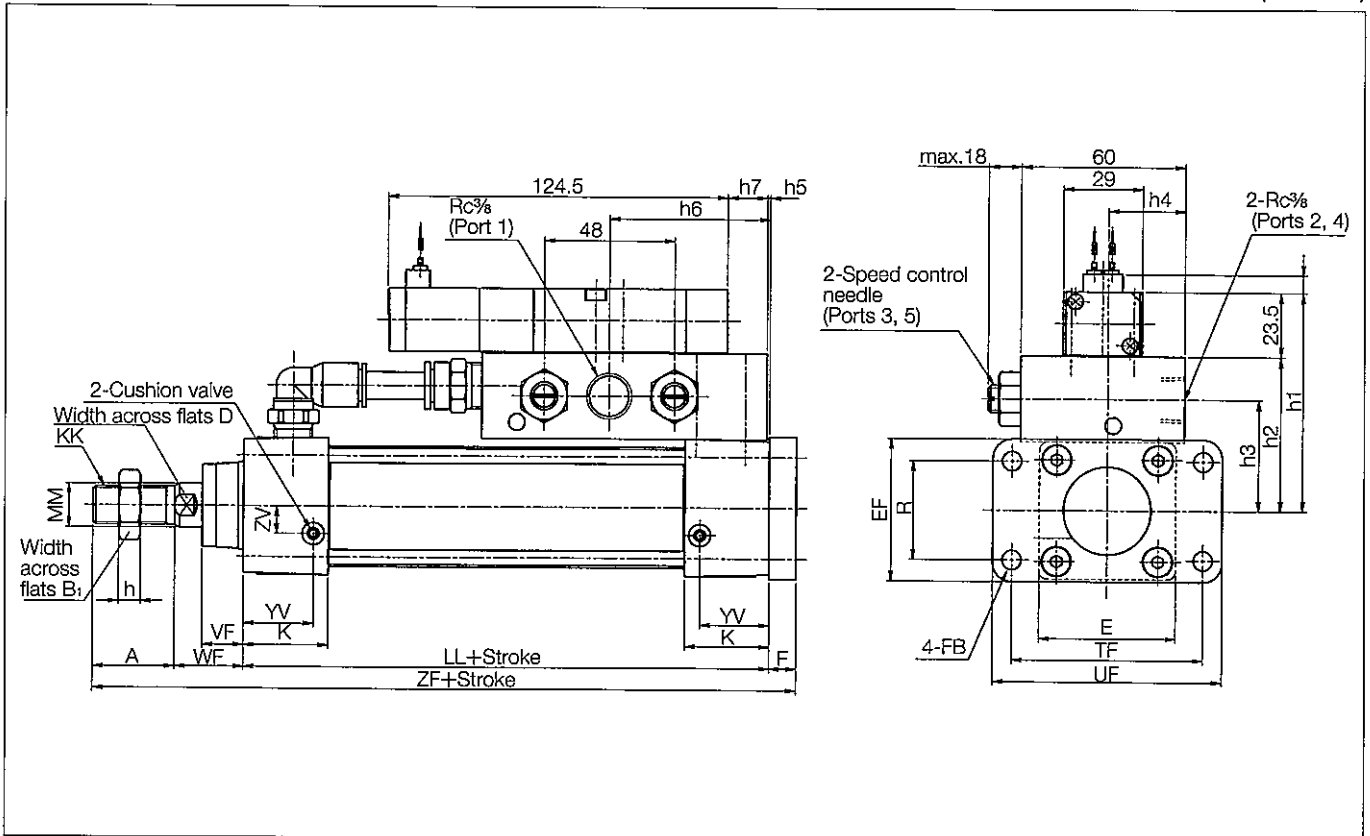
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Head side flange mounting/B

(Unit : mm)



Bore	A	B1	D	E	EF	F	FB	K	KK	LL	MM	R	TF	UF	VF	WF	YV	ZF	ZV
φ 40	30 (27)	22	14	□50	52	10	φ 7	31	M14×1.5	93	φ 16	36	70	84	15	25	25.5	158	10
φ 50	35 (32)	27	17	□62	65	10	φ 9	31	M18×1.5	93	φ 20	47	86	104	15	25	24	163	12
φ 63	35 (32)	27	17	□75	76	10	φ 9	32	M18×1.5	96	φ 20	56	98	116	15	25	25	166	12
φ 80	40 (36)	32	21	□94	95	16	φ 12	36	M22×1.5	108	φ 25	70	119	143	21	35	29	199	16
φ 100	40 (36)	36	26	□112	115	16	φ 12	36	M26×1.5	108	φ 30	84	138	162	21	35	29	199	18

Bore	h	h1	h2	h3	h4	h5	h6	h7
φ 40	8	79.5	56	40.5	28	1	59	15
φ 50	11	85.5	62	46.5	31	1	59	15
φ 63	11	92	68.5	53	35	1	59	15
φ 80	13	101.5	78	62.5	38	3	61	15
φ 100	14	110.5	87	71.5	39	1	64	20

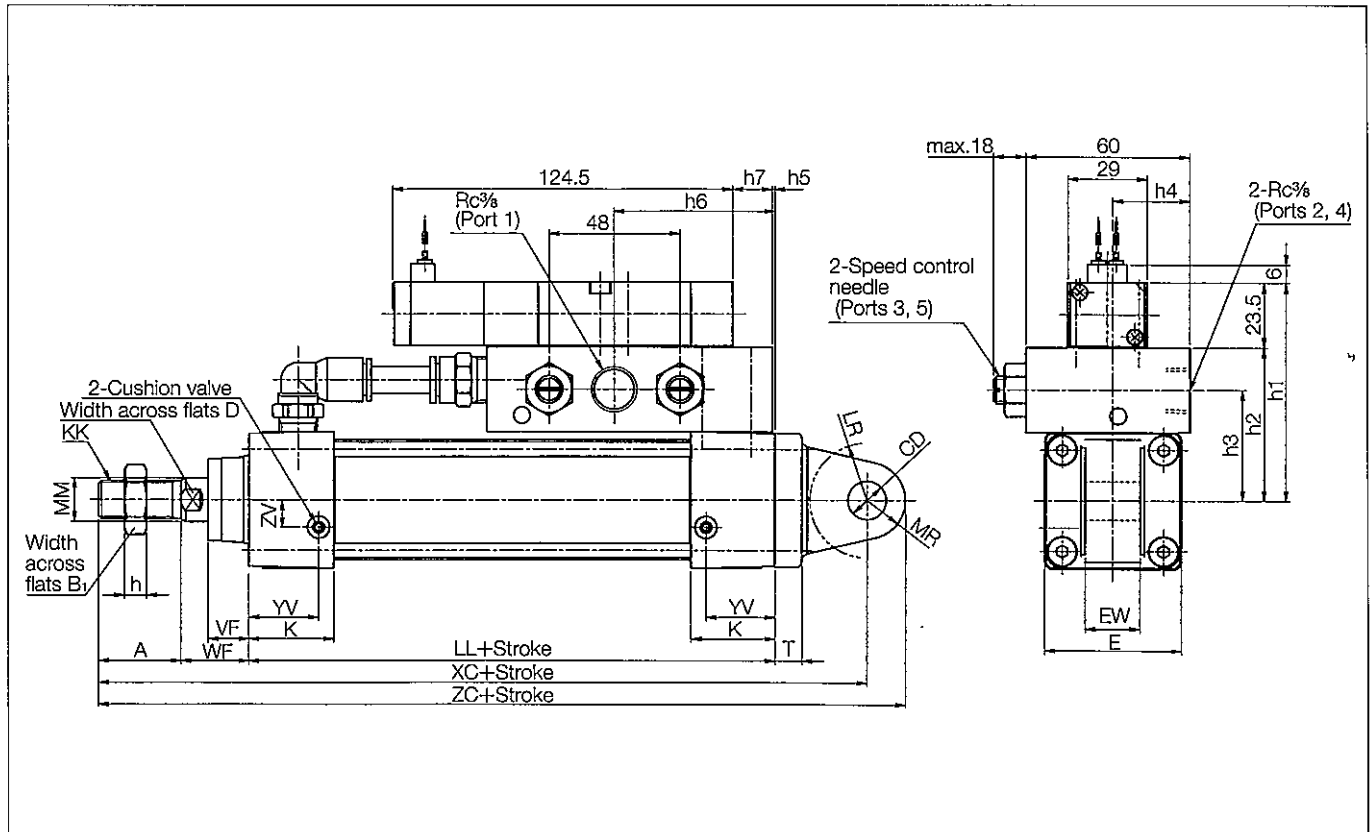
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Eye mounting/C

(Unit : mm)



Bore	A	B1	CD	D	E	EW	K	KK	LR	LL	MM	MR	T	VF	WF	XC	YV	ZC	ZV
φ 40	30 (27)	22	φ 14 <sup>H9</sup>	14	□50	20 <sup>0</sup> <sub>-0.3</sub>	31	M14×1.5	R21	93	φ 16	R14	11	15	25	182	25.5	196	10
φ 50	35 (32)	27	φ 14 <sup>H9</sup>	17	□62	20 <sup>0</sup> <sub>-0.3</sub>	31	M18×1.5	R21	93	φ 20	R15	11	15	25	187	24	202	12
φ 63	35 (32)	27	φ 14 <sup>H9</sup>	17	□75	20 <sup>0</sup> <sub>-0.3</sub>	32	M18×1.5	R21	96	φ 20	R15	11	15	25	190	25	205	12
φ 80	40 (36)	32	φ 20 <sup>H9</sup>	21	□94	32 <sup>0</sup> <sub>-0.3</sub>	36	M22×1.5	R25	108	φ 25	R20	15	21	35	231	29	251	16
φ 100	40 (36)	36	φ 20 <sup>H9</sup>	26	□112	32 <sup>0</sup> <sub>-0.3</sub>	36	M26×1.5	R25	108	φ 30	R20	15	21	35	231	29	251	18

Bore	h	h1	h2	h3	h4	h5	h6	h7
φ 40	8	79.5	56	40.5	28	1	59	15
φ 50	11	85.5	62	46.5	31	1	59	15
φ 63	11	92	68.5	53	35	1	59	15
φ 80	13	101.5	78	62.5	38	3	61	15
φ 100	14	110.5	87	71.5	39	1	64	20

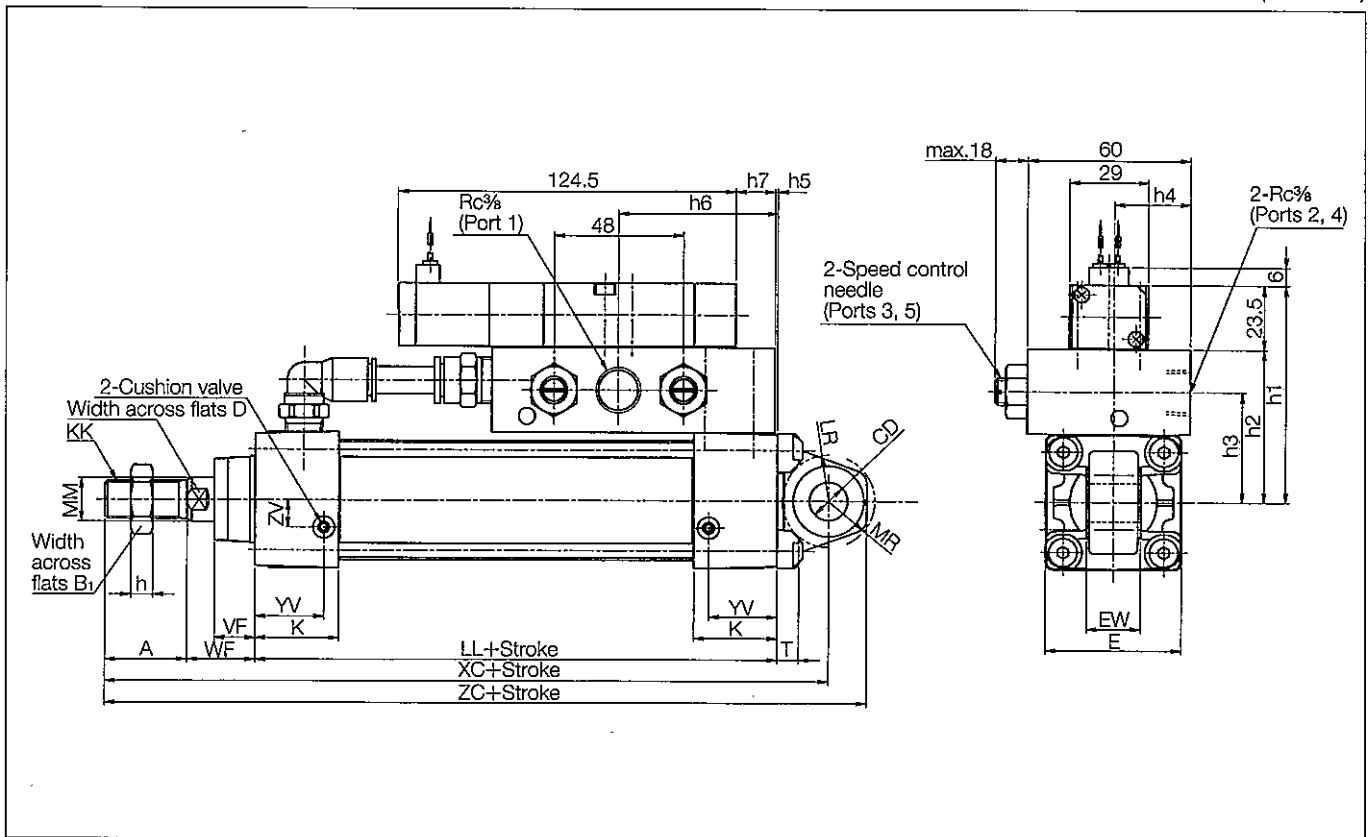
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Short eye mounting/D

(Unit : mm)



Bore	A	B1	CD	D	E	EW	K	KK	LR	LL	MM	MR	T	VF	WF	XC	YV	ZC
φ 40	30 (27)	22	φ 14 <sup>H9</sup>	14	□50	20 <sup>0</sup> <sub>-0.084</sub>	31	M14×1.5	R17	93	φ 16	R17	8	15	25	167	25.5	181
φ 50	35 (32)	27	φ 14 <sup>H9</sup>	17	□62	20 <sup>0</sup> <sub>-0.084</sub>	31	M18×1.5	R17	93	φ 20	R17	10	15	25	172	24	186
φ 63	35 (32)	27	φ 14 <sup>H9</sup>	17	□75	20 <sup>0</sup> <sub>-0.084</sub>	32	M18×1.5	R17	96	φ 20	R17	13	15	25	175	25	189
φ 80	40 (36)	32	φ 20 <sup>H9</sup>	21	□94	32 <sup>0</sup> <sub>-0.100</sub>	36	M22×1.5	R25	108	φ 25	R24	18	21	35	215	29	236
φ 100	40 (36)	36	φ 20 <sup>H9</sup>	26	□112	32 <sup>0</sup> <sub>-0.100</sub>	36	M26×1.5	R26	108	φ 30	R24	18	21	35	215	29	235

Bore	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	10	8	79.5	56	40.5	28	1	59	15
φ 50	12	11	85.5	62	46.5	31	1	59	15
φ 63	12	11	92	68.5	53	35	1	59	15
φ 80	16	13	101.5	78	62.5	38	3	61	15
φ 100	18	14	110.5	87	71.5	39	1	64	20

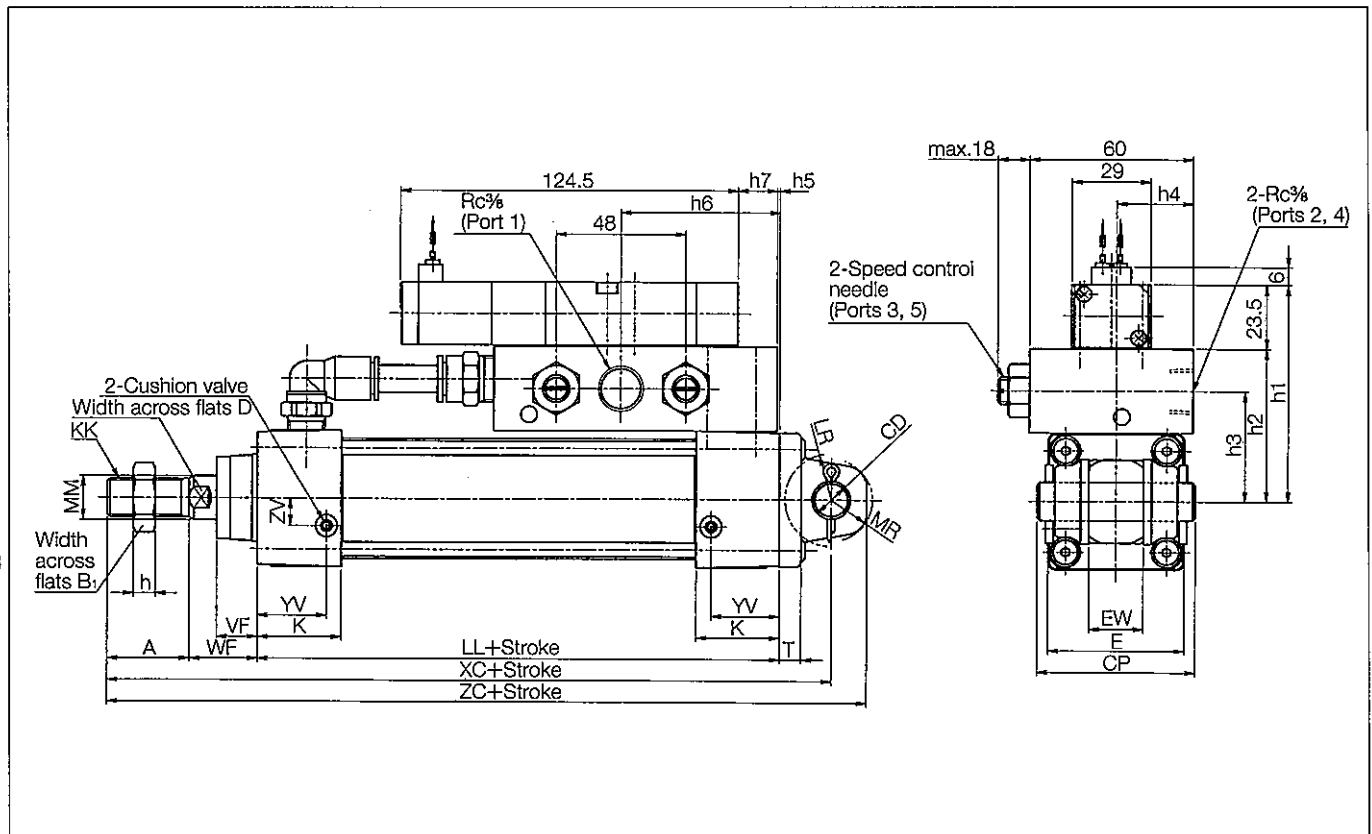
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Clevis mounting/W

(Unit : mm)



Bore	A	B1	CD	CP	D	E	EW	K	KK	LR	MM	MR	T	VF	WF	XC	YV	ZC
φ 40	30 (27)	22	φ 14 <sup>H9/f8</sup>	58	14	□50	20 <sup>+0.7/+0.5</sup>	31	M14×1.5	R17	φ 16	R15	8	15	25	167	25.5	180
φ 50	35 (32)	27	φ 14 <sup>H9/f8</sup>	66	17	□62	20 <sup>+0.7/+0.5</sup>	31	M18×1.5	R17	φ 20	R17	8	15	25	172	24	187
φ 63	35 (32)	27	φ 14 <sup>H9/f8</sup>	66	17	□75	20 <sup>+0.7/+0.5</sup>	32	M18×1.5	R17	φ 20	R17	8	15	25	175	25	190
φ 80	40 (36)	32	φ 20 <sup>H9/f8</sup>	78	21	□94	32 <sup>+0.7/+0.5</sup>	36	M22×1.5	R30	φ 25	R24	11	21	35	215	29	236
φ 100	40 (36)	36	φ 20 <sup>H9/f8</sup>	78	26	□112	32 <sup>+0.7/+0.5</sup>	36	M26×1.5	R30	φ 30	R24	11	21	35	215	29	236

Bore	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	10	8	79.5	56	40.5	28	1	59	15
φ 50	12	11	85.5	62	46.5	31	1	59	15
φ 63	12	11	92	68.5	53	35	1	59	15
φ 80	16	13	101.5	78	62.5	38	3	61	15
φ 100	18	14	110.5	87	71.5	39	1	64	20

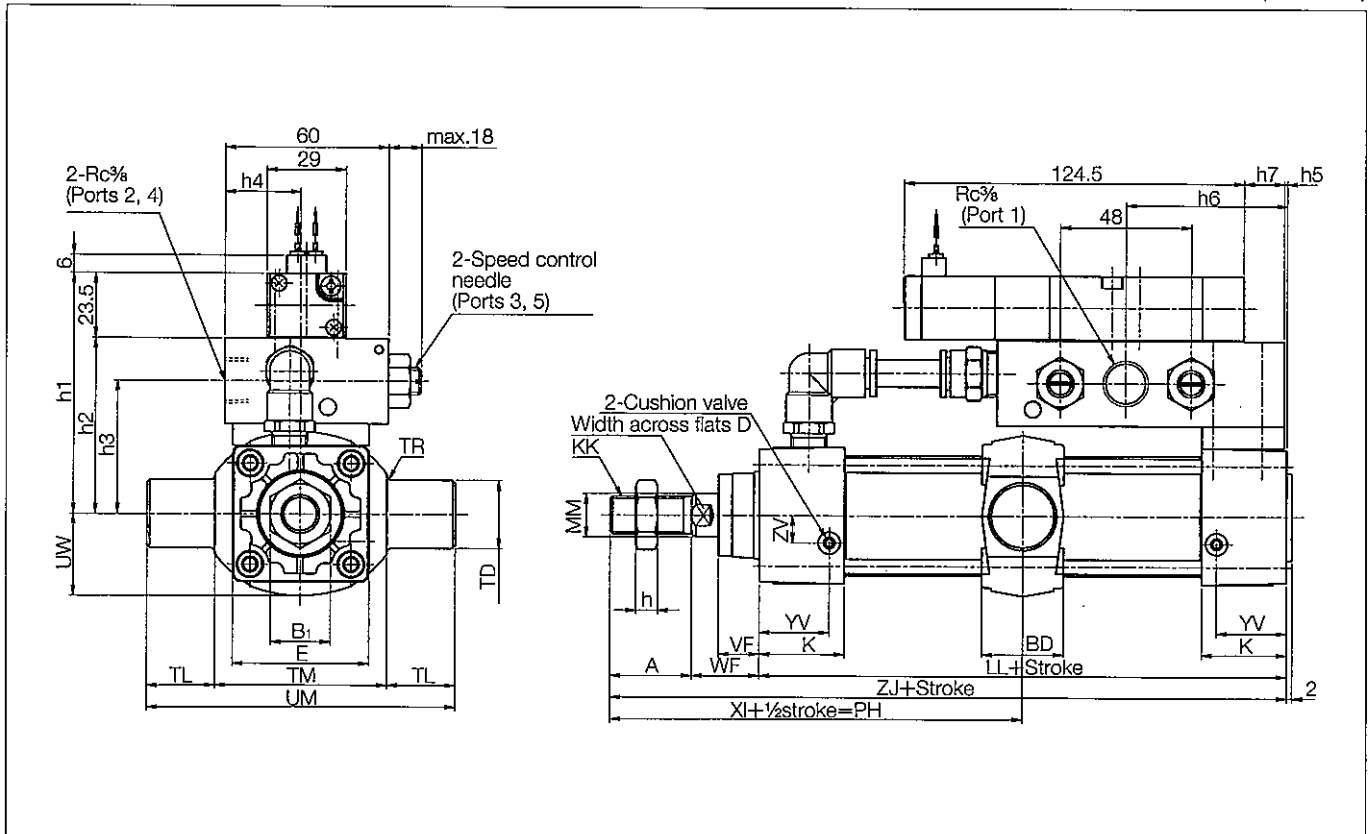
(Note) Bracketed figures in size A columns are thread lengths.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

Center trunnion mounting/T

(Unit : mm)



Bore	A	B1	BD	D	E	K	KK	LL	MM	PH(min)	TD	TL	TM	TR	UM	UW	VF	WF	XI
φ 40	30 (27)	22	30	14	□50	31	M14×1.5	93	φ 16	71	φ 25 <sup>e9</sup>	25	63	R1.6	113	30	15	25	101.5
φ 50	35 (32)	27	30	17	□62	31	M18×1.5	93	φ 20	71	φ 25 <sup>e9</sup>	25	76	R1.6	126	36	15	25	106.5
φ 63	35 (32)	27	30	17	□75	32	M18×1.5	96	φ 20	72	φ 25 <sup>e9</sup>	25	88	R1.6	138	43.5	15	25	108
φ 80	40 (36)	32	35	21	□94	36	M22×1.5	108	φ 25	88.5	φ 25 <sup>e9</sup>	25	114	R1.6	164	52.5	21	35	129
φ 100	40 (36)	36	40	26	□112	36	M26×1.5	108	φ 30	91	φ 25 <sup>e9</sup>	25	132	R2	182	64.5	21	35	129

Bore	YV	ZJ	ZV	h	h1	h2	h3	h4	h5	h6	h7
φ 40	25.5	148	10	8	87.5	64	48.5	28	1	59	15
φ 50	24	153	12	11	93.5	70	54.5	31	1	59	15
φ 63	25	156	12	11	101	77.5	62	35	1	59	15
φ 80	29	183	16	13	110.5	87	71.5	38	3	61	15
φ 100	29	183	18	14	121.5	98	82.5	39	1	64	20

(Note) Bracketed figures in size A columns are thread lengths.

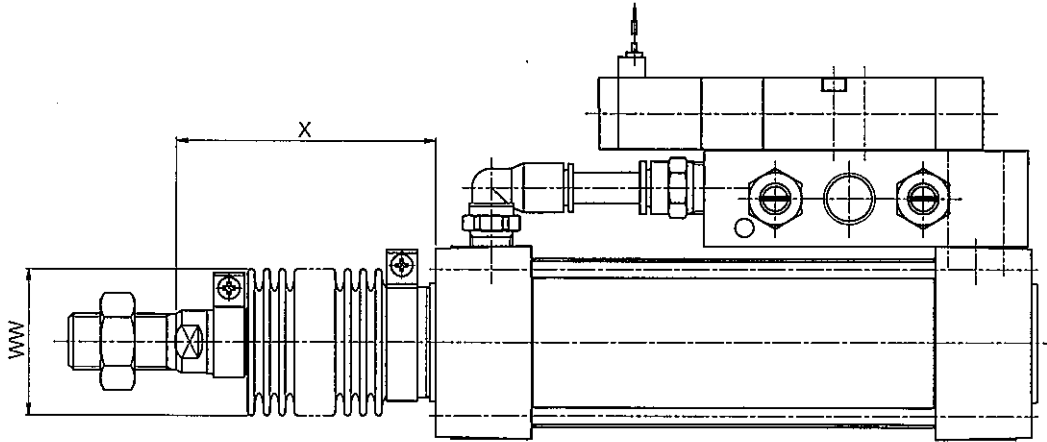


# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

## DIMENSIONS

With dustproof cover

(Unit : mm)



	Standard	Custom-made	
Material	Nylon tarpaulin	Chloroprene	CONEX
Heat resistance temp.	80°C	100°C	200°C

- (Note) •CONEX is a registered trademark of Teijin Ltd.  
 •Heat resistance temperature is not that of the cylinder body but that of the dustproof cover.  
 •The cylinder is delivered with the dustproof cover fitted.

### Nylon tarpaulin/J and Chloroprene/JN

Bore	WW	X (Standard stroke)												X
		50	75	100	125	150	200	250	300	350	400	450	500	(Other stroke than standard)
φ 40	φ 41	62	70	79	87	95	112	129	145	162	179	195	212	1/3stroke+45
φ 50	φ 47	67	75	84	92	100	117	134	150	167	184	200	217	
φ 63	φ 47	67	75	84	92	100	117	134	150	167	184	200	217	1/3stroke+50
φ 80	φ 56	68	74	80	87	93	105	118	130	143	155	168	180	
φ 100	φ 61	68	74	80	87	93	105	118	130	143	155	168	180	1/3stroke+55

(Note) Round off fractions below the decimal point.

### CONEX/JK

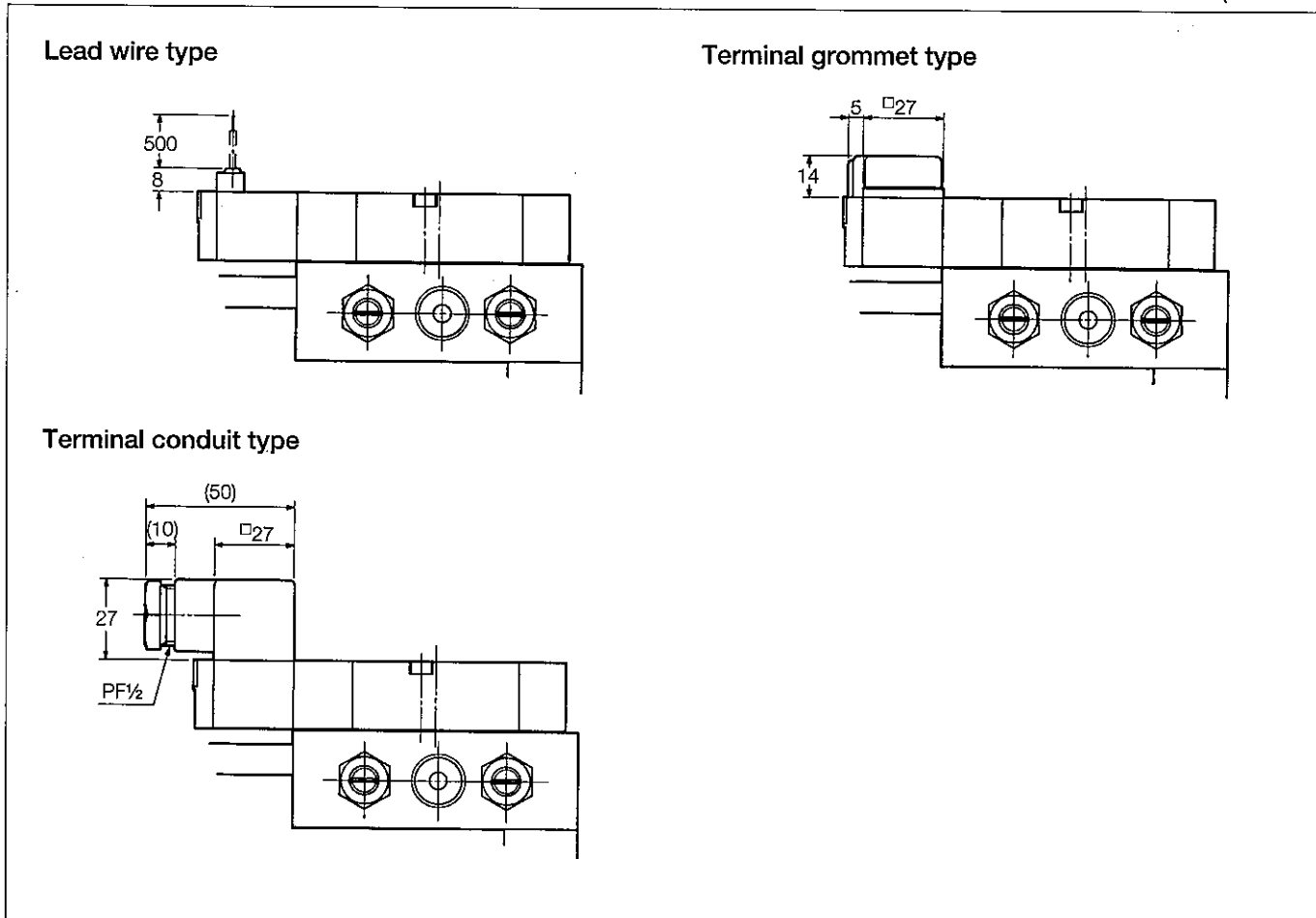
Bore	WW	X (Standard stroke)												X
		50	75	100	125	150	200	250	300	350	400	450	500	(Other stroke than standard)
φ 40	φ 61	70	83	95	108	120	145	170	195	220	245	270	295	1/2stroke+45
φ 50	φ 61	75	88	100	113	125	150	175	200	225	250	275	300	
φ 63	φ 61	75	88	100	113	125	150	175	200	225	250	275	300	1/2stroke+50
φ 80	φ 61	75	85	95	105	115	135	155	175	195	215	235	255	
φ 100	φ 61	75	85	95	105	115	135	155	175	195	215	235	255	2/3stroke+55

(Note) Round off fractions below the decimal point.

# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

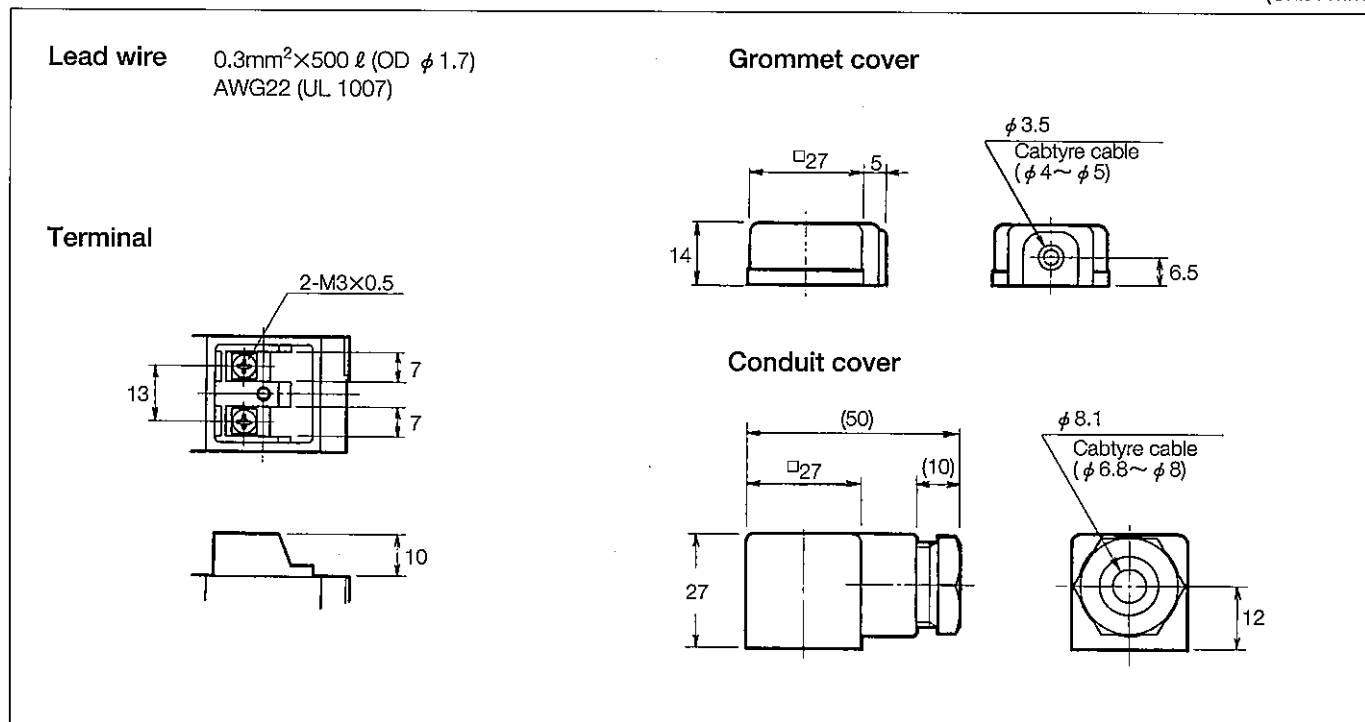
## DIMENSIONS OF SOLENOID VALVES CLASSIFIED BY TYPE OF WIRING

(Unit : mm)



## WIRING OF SOLENOID VALVE

(Unit : mm)

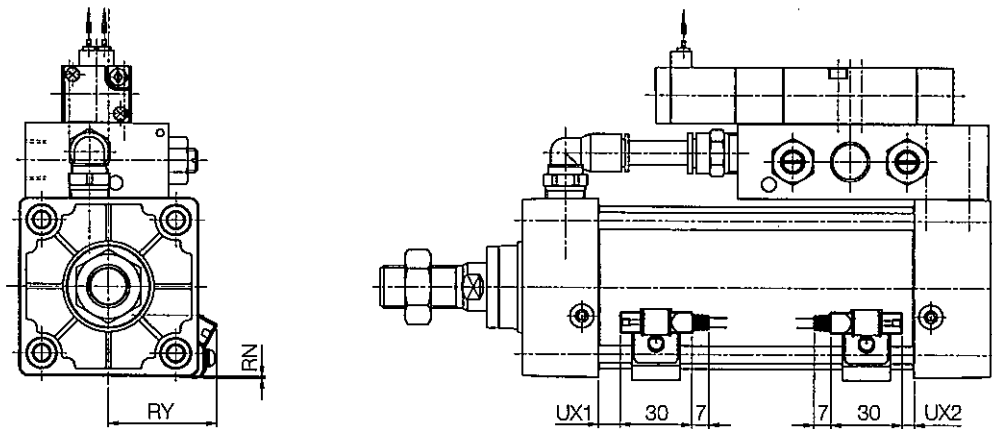


# HI-PAL CYLINDER/WITH SOLENOID VALVE K1○HA series

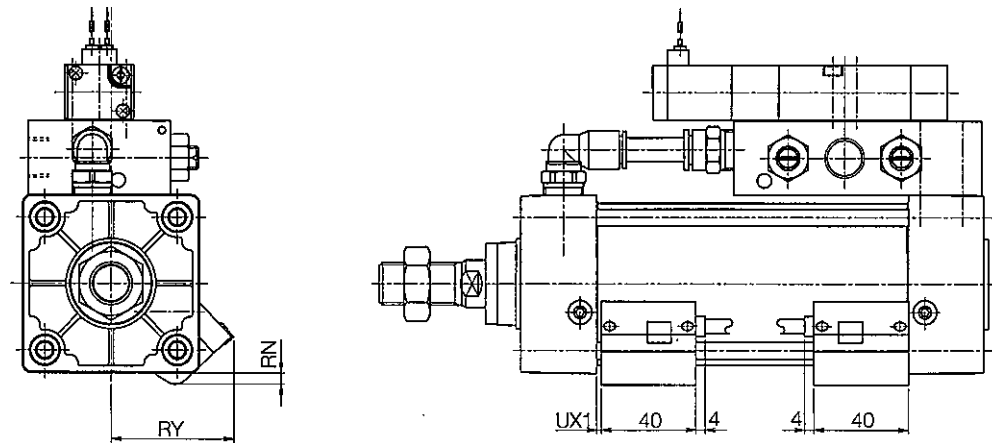
## SWITCH SET POSITION

(Unit : mm)

With AX type switch



With SR type switch



Bore	RY		RN		UX1		UX2	
	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type
φ 40	36	40	3	4	8	2	4	0
φ 50	40	45	2	3	9	2	5	0
φ 63	47	52	2	5	9	2	5	0
φ 80	52	60	0	2	11	4	6	0
φ 100	60	67	0	0	11	4	6	0

## HYSTERESIS AND RESPONSE RANGE OF SWITCHES (Unit : mm)

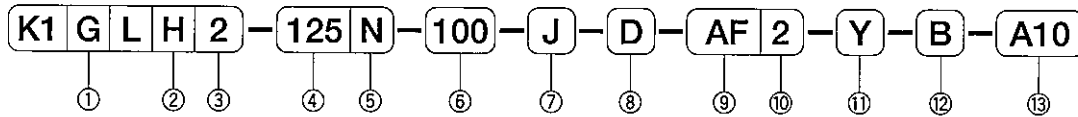
Bore	Reed switch				Solid-state switch	
	AX1□□ type		SR type		AX2□□ type	
	Response range	Hysteresis	Response range	Hysteresis	Response range	Hysteresis
φ 40	6~12	Below 1	8~12	Below 2	3~6	Below 1
φ 50			9~13		4~8	
φ 63						
φ 80						
φ 100						

# AIR CYLINDER/WITH LOCK MECHANISM

# K1○L series

φ 40, φ 50, φ 63, φ 80, φ 100

## ORDERING INSTRUCTIONS



### ①Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

### ②Lock position

H	Head side
R	Rod side

### ③Action

2	Double acting, single rod
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### ④Bore (mm)

40	φ 40
50	φ 50
63	φ 63
80	φ 80
100	φ 100

### ⑤Cushion

No symbol	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

### ⑥Stroke (mm)

Refer to Page 78.

### ⑦Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows (Nylon tarpaulin)
JN	With bellows (Chloroprene)
JK	With bellows (CONEX)

CONEX : Registered trademark of Teijin Ltd.

### ⑧Mounting

N	Basic type
L	Axial foot
M	Side lug
A	Rod side flange
B	Head side flange
C	Eye
D	Short eye
W	Clevis
T	Center trunnion

### ⑪Bracket at rod end

No symbol	No bracket
I	With rod end clevis
Y	With rod end eye

(Note) Y : Provided with pin

### ⑫Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : W and T

### ⑬Special shape of rod end

No symbol	Standard
-----------	----------

(Note) Refer to Pages 37 and 38.

### ⑨Type of switch

No symbol	No switch		
AF	AX101	DC5~30V AC5~120V	Reed switch
AG	AX105		
AH	AX111		
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	Reed switch
AK	AX11A		
AL	AX11B	DC5~30V	Solid-state switch
S	SR405	AC80~220V	
BE	AX201	DC5~30V	
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

### ⑩Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

## Model No. of Mounting Bracket

Bore (mm)	φ 40	φ 50	φ 63	φ 80	φ 100
Axial foot mount bracket	K140-L	K150-L	K163-L	K180-L	K1100-L
Side lug mount bracket	K140-M	K150-M	K163-M	K180-M	K1100-M
Flange mount bracket	K140-A	K150-A	K163-A	K180-A	K1100-A
Eye mount bracket	K140-C	K150-C	K163-C	K180-C	K1100-C
Short eye mount bracket	K140-D	K150-D	K163-D	K180-D	K1100-D
Clevis mount bracket	K140-W	K150-W	K163-W	K180-W	K1100-W
Trunnion mount bracket	K140-T	K150-T	K163-T	K180-T	K1100-T
Bracket for clevis	K140-BA	K140-BA	K140-BA	K180-BA	K180-BA
Bracket for trunnion	K140-BC	K140-BC	K140-BC	K180-BC	K180-BC

(Note) Bracket for clevis : With pin, snap ring

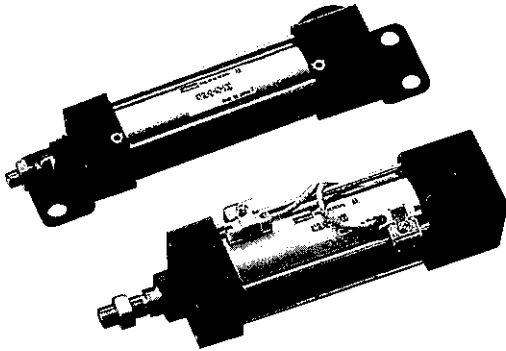
## Model No. of Packing Kit

Bore (mm)	Packing kit
φ 40	K1L40-PS
φ 50	K1L50-PS
φ 63	K1L63-PS
φ 80	K1L80-PS
φ 100	K1L100-PS

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

Each air cylinder is equipped with a magnet.

When compressed air discharges at the stroke end, a locking mechanism is actuated to lock the piston, thereby preventing the cylinder from dropping and also preventing a trouble when restarting operation.



## SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.05~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	30~700
Cushion		Air cushion
Piston stroke allowance	mm	~250 : ${}^{+1.0}_0$ 251~1000 : ${}^{+1.5}_0$ 1001~ : ${}^{+2.0}_0$
Lock position		Head side, rod side
Travel at the time of locking	mm	Less than 1
Mounting		Basic type, Axial foot, Side lug, Rod side flange, Head side flange, Eye, Short eye, Clevis, Center trunnion

(Note) \*When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.

\*Use the cylinder within a temperature range where it is not frozen.

### MAXIMUM STROKE (Unit : mm)

Bore (mm)	Max. stroke
φ 40	1000
φ 50	1500
φ 63	
φ 80	
φ 100	

### CUSHION STROKE (Unit : mm)

Bore (mm)	Cushion stroke
φ 40	16
φ 50	20
φ 63	
φ 80	25
φ 100	

### HOLDING POWER (Unit : N)

Bore (mm)	Holding power
φ 40	880
φ 50	1374
φ 63	2182
φ 80	3519
φ 100	5498

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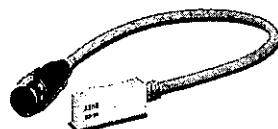
MODEL WITH SWITCH/For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

## •AX Type Switch

## •SR Type Switch

Cord type

Connector type



## LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC
	AG AX105							5m	
	AH AX111				1.5m				
	AJ AX115				5m				
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	5m		
	AK AX11A	AC5~120V					5m		
	AL AX11B	DC5~30V			5~40mA	1.5W	Provided	LED (Red LED lights up at ON.)	
	S SR405	AC80~220V	2~300mA	30VA	Provided	Neon lamp (Red lights up at OFF.)	0.5 mm <sup>2</sup> 2-core, OD $\phi$ 6 mm Cord direction : Axial	5m	
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 2-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC
	BF AX205							5m	
	CE AX211							1.5m	
	CF AX215							5m	
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm <sup>2</sup> 3-core, OD $\phi$ 4 mm Cord direction : Axial	1.5m	
	BJ AX225							5m	

(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.  
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

## MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

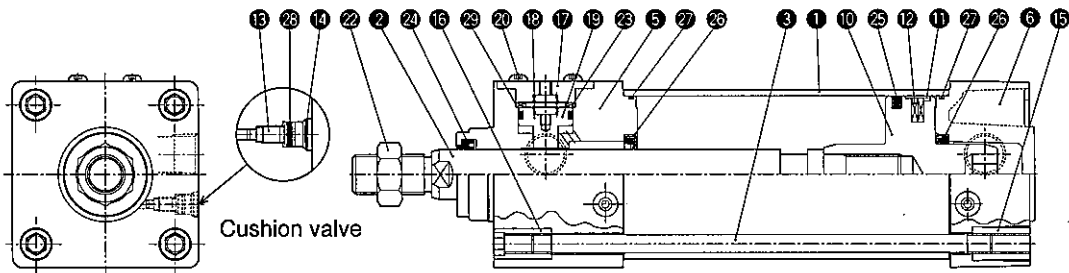
Type	AX type	SR type
1 unit mounted	25	15 ( 25)
2 units mounted on same surface	25	15 ( 25)
2 units mounted on opposite surface	25	15 ( 25)
Center trunnion type (T)	120	90 (130)

(Note) Bracketed figures : Bores for  $\phi$  80 to  $\phi$  100.

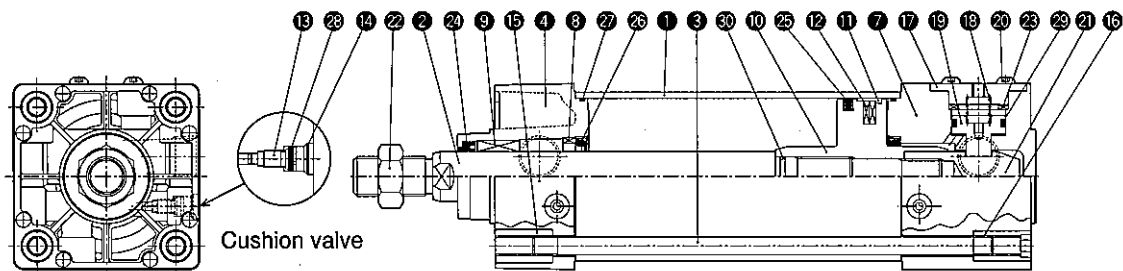
# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

## CONSTRUCTIONS AND PARTS LIST

Rod side lock type



Head side lock type



No.	Description	Material	No.	Description	Material
①	Cylinder tube	Aluminium alloy or carbon steel tube for machine structure	⑫	Magnet	—
②	Piston rod	Carbon steel for machine structure	⑬	Cushion needle	Carbon steel for machine structure
③	Tie rod	Carbon steel for machine structure	⑭	Snap ring	Spring steel
④	Rod cover	Aluminium alloys die casting	⑮	Tie rod nut R	Rolled steel for general structure
⑤	Rod cover (For lock)	Aluminium alloy	⑯	Tie rod nut H	Chromium molybdenum steel
⑥	Head cover	Aluminium alloys die casting	⑰	Lock cover	Aluminium alloy
⑦	Head cover (For lock)	Aluminium alloy	⑱	Spring for lock	Spring steel
⑧	Keep ring	Aluminium alloy	⑲	Piston for lock	Carbon steel for machine structure
⑨	Rod bushing	Sintered oil-impregnated bearing	⑳	Button bolt	Chromium molybdenum steel
⑩	Piston	Aluminium alloy	㉑	Globe pin	Carbon steel for machine structure
⑪	Wear ring	Synthetic resins	㉒	Rod end nut	Rolled steel for general structure
			㉓	Damper	Urethane rubber

## PACKING LIST

No.	Description	Material	Q'ty	Model No.				
				φ 40	φ 50	φ 63	φ 80	φ 100
㉔	Rod packing	Nitril rubber	1	DRP-16	DRP-20	DRP-20	DRP-25	DRP-30
㉕	Piston packing	Nitril rubber	1	PWP-40N	PWP-50N	PWP-63N	PWP-80N	PWP-100N
㉖	Cushion packing	Nitril rubber	2	CPF-20	CPF-24	CPF-24	CPF-30	CPF-35
㉗	O-ring for cover	Nitril rubber	2	1.5×40	1.5×50	1.5×63	1.5×80	1.5×100
㉘	O-ring for cushion valve	Nitril rubber	1	S-5	S-6	S-6	S-6	S-6
㉙	O-ring for lock piston	Nitril rubber	1	MYA-18	MYA-18	MYA-18	MYA-24	MYA-24
㉚	O-ring for piston	Nitril rubber	1	S-10	S-14	S-14	S-18	S-18

(Note) •Cover O-rings are made to our standard.  
•Packing set contains the wearing.

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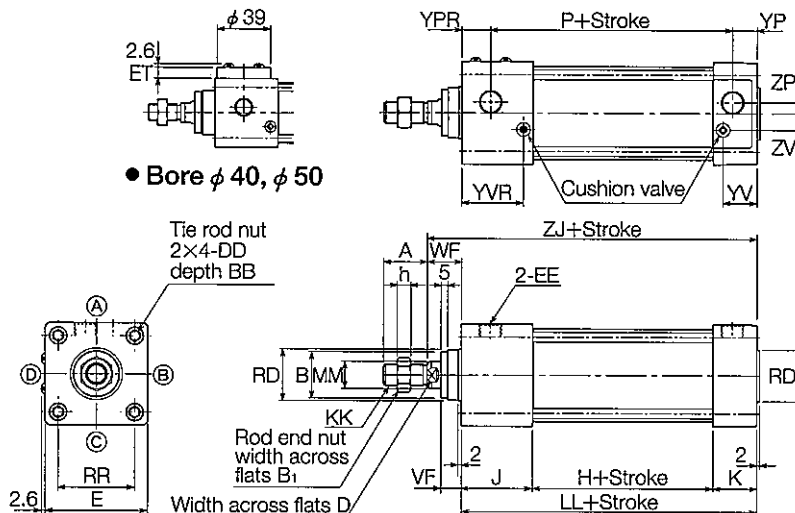


## DIMENSIONS

Basic type/N

### Rod side lock type

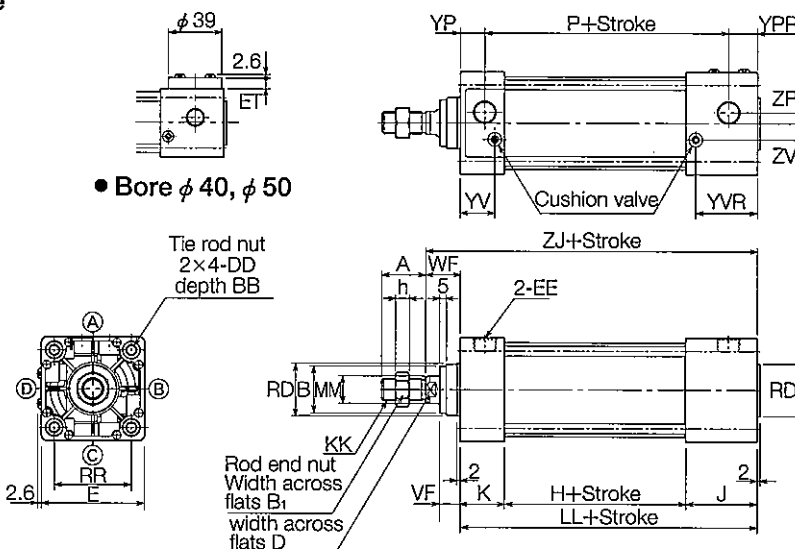
Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50

Bore	A	B	B1	BB	D	DD	E	EE	H	J	K	KK	LL	MM	P	RD	RR
φ 40	30 (27)	φ 30	22	14	14	M6×1	□50	Rc¼	31	46	31	M14×1.5	108	φ 16	69	φ 32	□37
φ 50	35 (32)	φ 34	27	14	17	M6×1	□62	Rc¼	31	51	31	M18×1.5	113	φ 20	74	φ 38	□47
φ 63	35 (32)	φ 34	27	14	17	M8×1.25	□75	Rc⅜	32	52	32	M18×1.5	116	φ 20	77	φ 38	□56
φ 80	40 (36)	φ 39	32	15	21	M10×1.5	□94	Rc⅝	36	61	36	M22×1.5	133	φ 25	89	φ 44	□70
φ 100	40 (36)	φ 46	36	15	26	M10×1.5	□112	Rc½	36	61	36	M26×1.5	133	φ 30	89	φ 50	□84

Bore	VF	WF	YP	YPR	YV	YVR	ZJ	ZP	ZV	h
φ 40	15	25	18	21	25.5	40.5	133	4	10	8
φ 50	15	25	18	21	24	44	138	7	12	11
φ 63	15	25	18	21	25	45	141	8	12	11
φ 80	21	35	20	24	29	54	168	11	16	13
φ 100	21	35	20	24	29	54	168	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.



# AIR CYLINDER/WITH LOCK MECHANISM K1○L series



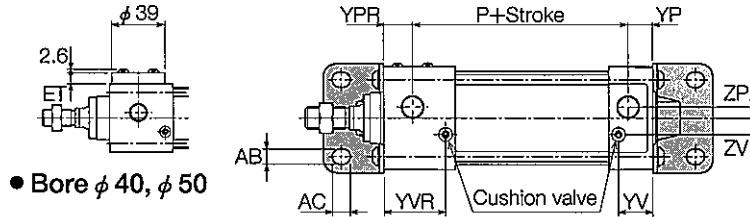
(Unit : mm)

## DIMENSIONS

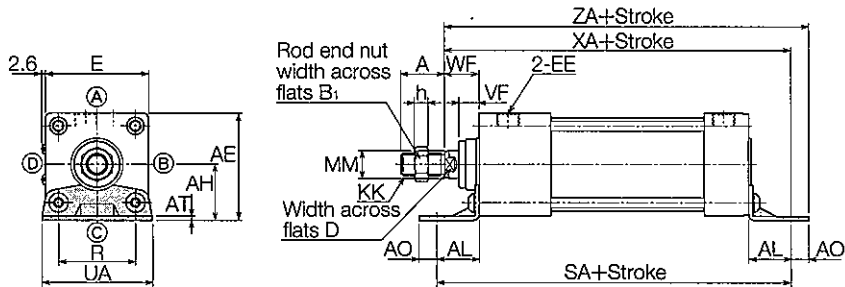
### Axial foot mounting/L

#### Rod side lock type

Bore	ET
φ 40	8
φ 50	4



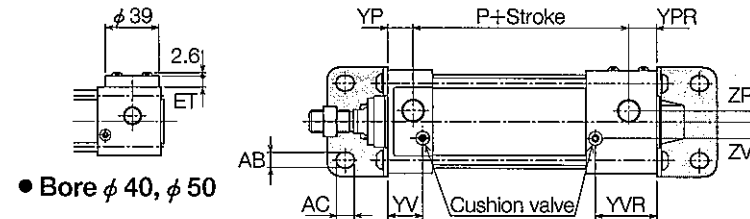
• Bore φ 40, φ 50



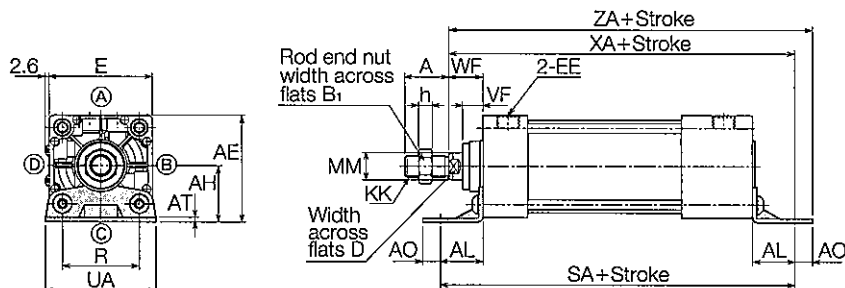
•For other sizes than mentioned in this drawing, refer to Basic type/N

#### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50



•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	AB	AC	AE	AH	AL	AO	AT	B1	D	E	EE	KK	MM	P	R	SA	UA
φ 40	30 (27)	11	13	55	30	23.5	12.5	3.2	22	14	□50	Rc¼	M14×1.5	φ 16	69	36	155	57
φ 50	35 (32)	11	13	67.5	36.5	28	12	3.2	27	17	□62	Rc¼	M18×1.5	φ 20	74	47	169	68
φ 63	35 (32)	11	13	78.5	41	31	13	3.2	27	17	□75	Rc⅝	M18×1.5	φ 20	77	56	178	80
φ 80	40 (36)	14	16	96	49	30	16	4	32	21	□94	Rc⅝	M22×1.5	φ 25	89	70	193	97
φ 100	40 (36)	14	16	113	57	30	16	4	36	26	□112	Rc½	M26×1.5	φ 30	89	84	193	112

Bore	VF	WF	XA	YP	YPR	YV	YVR	ZA	ZP	ZV	h
φ 40	15	25	156.5	18	21	25.5	40.5	169	4	10	8
φ 50	15	25	166	18	21	24	44	178	7	12	11
φ 63	15	25	172	18	21	25	45	185	8	12	11
φ 80	21	35	198	20	24	29	54	214	11	16	13
φ 100	21	35	198	20	24	29	54	214	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

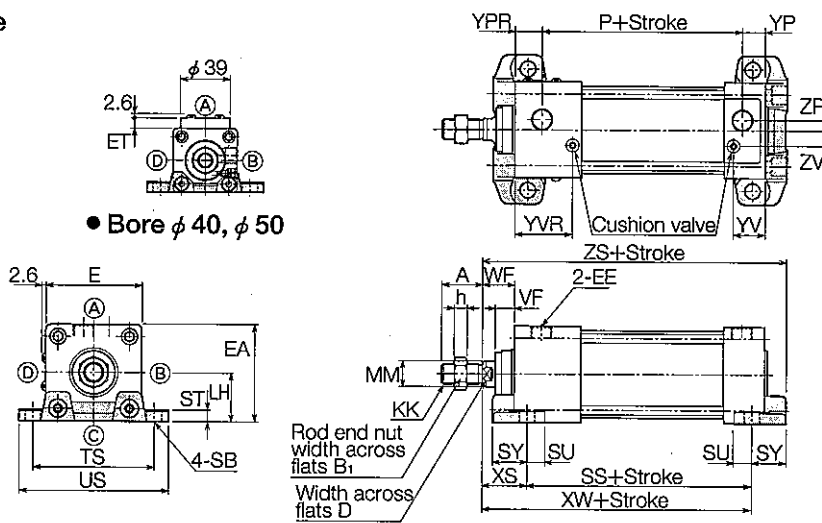


## DIMENSIONS

### Side lug mounting/M

#### Rod side lock type

Bore	ET
φ 40	8
φ 50	4

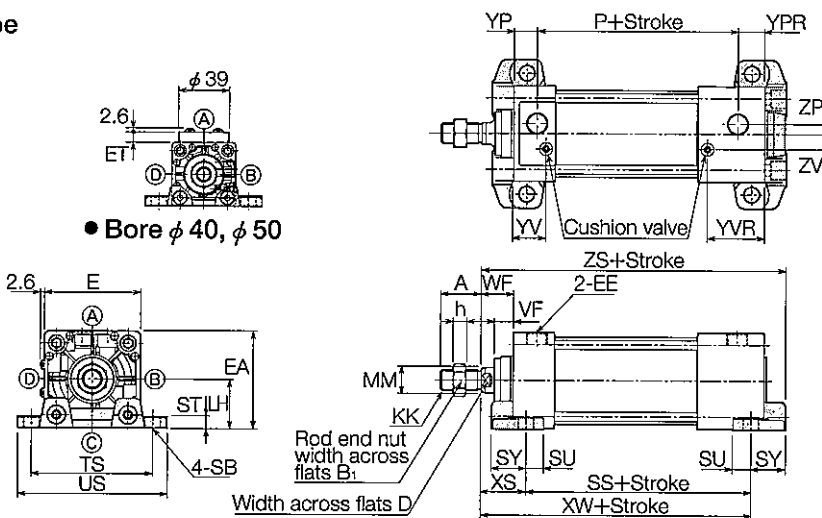


• Bore φ 40, φ 50

- For other sizes than mentioned in this drawing, refer to Basic type/N
- The standard port and cushion valve position for φ 40 and φ 50 is (B). (Port and cushion valve cannot be provided at position (A).)

#### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50

- For other sizes than mentioned in this drawing, refer to Basic type/N
- The standard port and cushion valve position for φ 40 and φ 50 is (B). (Port and cushion valve cannot be provided at position (A).)

Bore	A	B1	D	E	EA	EE	KK	LH	MM	P	SB	SS	ST	SU	SY	TS	US
φ 40	30 (27)	22	14	□50	50	Rc1/4	M14×1.5	25	φ 16	69	φ 12	88	8	14	23	70	92
φ 50	35 (32)	27	17	□62	62	Rc1/4	M18×1.5	31	φ 20	74	φ 12	93	9	14	25	83	105
φ 63	35 (32)	27	17	□75	75.5	Rc3/8	M18×1.5	38	φ 20	77	φ 12	96	9	14	27	95	117
φ 80	40 (36)	32	21	□94	94	Rc3/8	M22×1.5	47	φ 25	89	φ 14	107	13	18	34	121	147
φ 100	40 (36)	36	26	□112	113	Rc1/2	M26×1.5	57	φ 30	89	φ 14	107	14	18	38	140	168

Bore	VF	WF	XS	XW	YP	YPR	YV	YVR	ZP	ZS	ZV	h
φ 40	15	25	35	123	18	21	25.5	40.5	4	146	10	8
φ 50	15	25	35	128	18	21	24	44	7	153	12	11
φ 63	15	25	35	131	18	21	25	45	8	158	12	11
φ 80	21	35	48	155	20	24	29	54	11	189	16	13
φ 100	21	35	48	155	20	24	29	54	12	193	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series



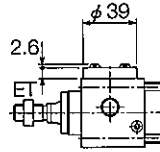
(Unit : mm)

## DIMENSIONS

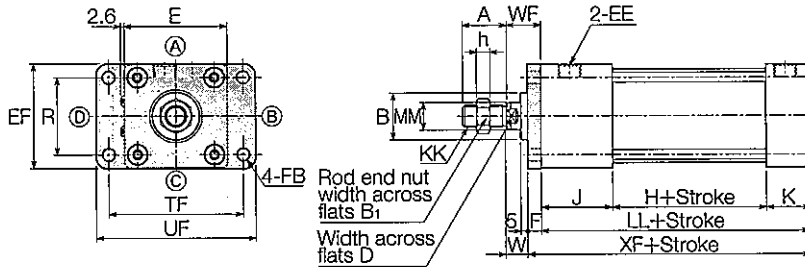
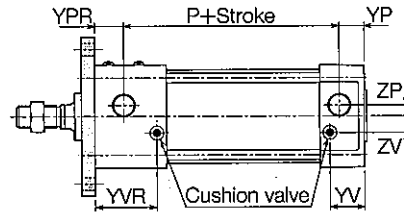
Rod side flange mounting/A

### Rod side lock type

Bore	ET
φ 40	8
φ 50	4



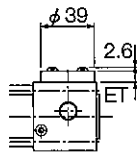
• Bore φ 40, φ 50



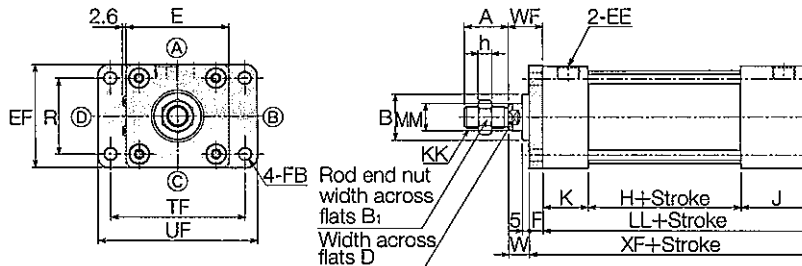
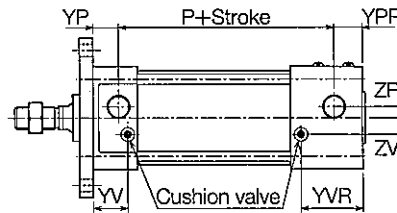
•For other sizes than mentioned in this drawing, refer to Basic type/N

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50



•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	B	B1	D	E	EE	EF	F	FB	H	J	K	KK	LL	MM	P	R	TF
φ 40	30 (27)	φ 30	22	14	□50	Rc1/4	52	10	φ 7	31	46	31	M14×1.5	108	φ 16	69	36	70
φ 50	35 (32)	φ 34	27	17	□62	Rc1/4	65	10	φ 9	31	51	31	M18×1.5	113	φ 20	74	47	86
φ 63	35 (32)	φ 34	27	17	□75	Rc3/8	76	10	φ 9	32	52	32	M18×1.5	116	φ 20	77	56	98
φ 80	40 (36)	φ 39	32	21	□94	Rc3/8	95	16	φ 12	36	61	36	M22×1.5	133	φ 25	89	70	119
φ 100	40 (36)	φ 46	36	26	□112	Rc1/2	115	16	φ 12	36	61	36	M26×1.5	133	φ 30	89	84	138

Bore	UF	W	WF	XF	YP	YPR	YV	YVR	ZP	ZV	h
φ 40	84	15	25	103	18	21	25.5	40.5	4	10	8
φ 50	104	15	25	103	18	21	24	44	7	12	11
φ 63	116	15	25	106	18	21	25	45	8	12	11
φ 80	143	19	35	124	20	24	29	54	11	16	13
φ 100	162	19	35	124	20	24	29	54	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

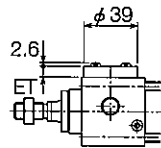


## DIMENSIONS

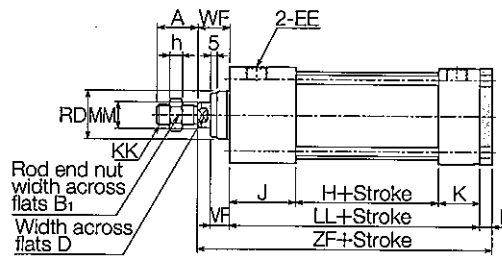
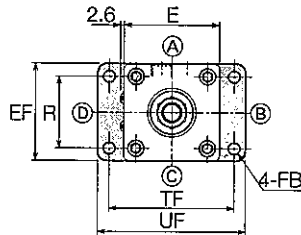
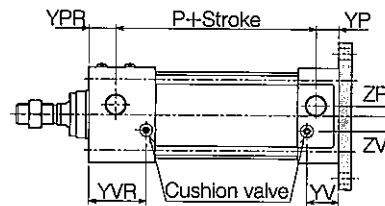
### Head side flange mounting/B

#### Rod side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50

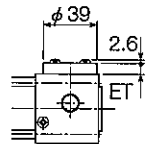


Rod end nut width across flats B<sub>1</sub>  
Width across flats D

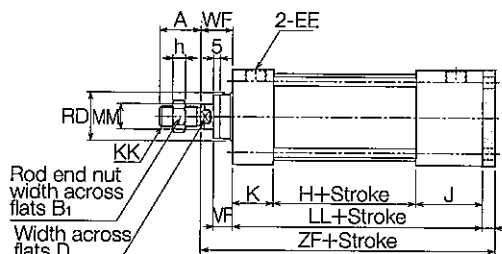
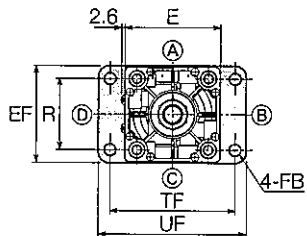
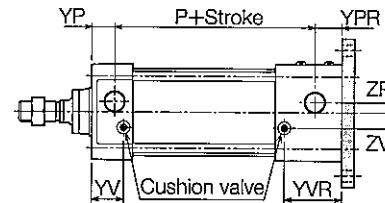
•For other sizes than mentioned in this drawing, refer to Basic type/N

#### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50



Rod end nut width across flats B<sub>1</sub>  
Width across flats D

•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	B <sub>1</sub>	D	E	EE	EF	F	FB	H	J	K	KK	LL	MM	P	R	RD
φ 40	30 (27)	22	14	□50	Rc1/4	52	10	φ 7	31	46	31	M14×1.5	108	φ 16	69	36	φ 32
φ 50	35 (32)	27	17	□62	Rc1/4	65	10	φ 9	31	51	31	M18×1.5	113	φ 20	74	47	φ 38
φ 63	35 (32)	27	17	□75	Rc3/8	76	10	φ 9	32	52	32	M18×1.5	116	φ 20	77	56	φ 38
φ 80	40 (36)	32	21	□94	Rc3/8	95	16	φ 12	36	61	36	M22×1.5	133	φ 25	89	70	φ 44
φ 100	40 (36)	36	26	□112	Rc1/2	115	16	φ 12	36	61	36	M26×1.5	133	φ 30	89	84	φ 50

Bore	TF	UF	VF	WF	YP	YPR	YV	YVR	ZF	ZP	ZV	h
φ 40	70	84	15	25	18	21	25.5	40.5	143	4	10	8
φ 50	86	104	15	25	18	21	24	44	148	7	12	11
φ 63	98	116	15	25	18	21	25	45	151	8	12	11
φ 80	119	143	21	35	20	24	29	54	184	11	16	13
φ 100	138	162	21	35	20	24	29	54	184	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series



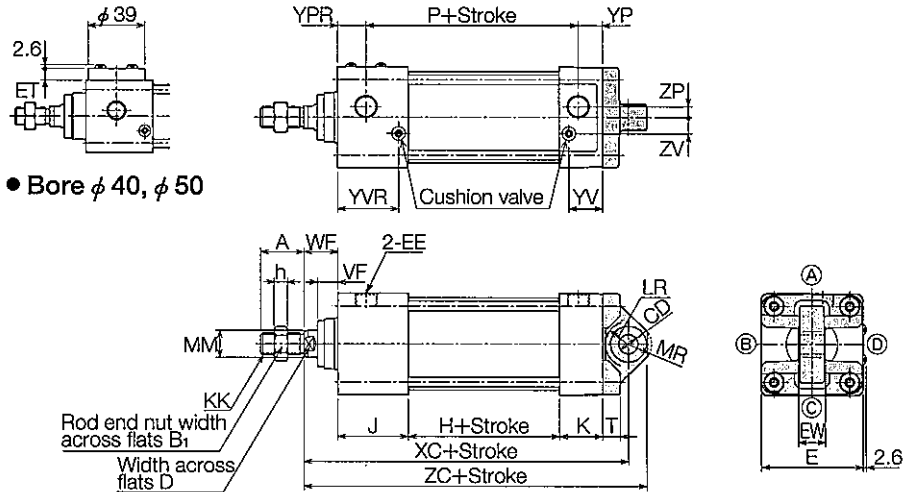
(Unit : mm)

## DIMENSIONS

Eye mounting/C

### Rod side lock type

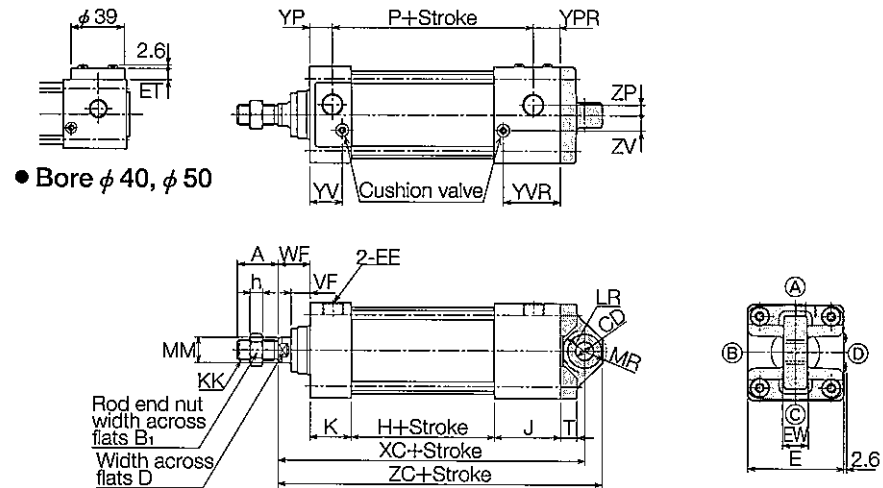
Bore	ET
φ 40	8
φ 50	4



•For other sizes than mentioned in this drawing, refer to Basic type/N

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	B1	CD	D	E	EE	EW	H	J	K	KK	LR	MM	MR	P	T	VF
φ 40	30 (27)	22	φ 14 <sup>H9</sup>	14	□50	Rc¼	20 <sup>0</sup> <sub>-0.3</sub>	31	46	31	M14×1.5	R21	φ 16	R14	69	11	15
φ 50	35 (32)	27	φ 14 <sup>H9</sup>	17	□62	Rc¼	20 <sup>0</sup> <sub>-0.3</sub>	31	51	31	M18×1.5	R21	φ 20	R15	74	11	15
φ 63	35 (32)	27	φ 14 <sup>H9</sup>	17	□75	Rc¾	20 <sup>0</sup> <sub>-0.3</sub>	32	52	32	M18×1.5	R21	φ 20	R15	77	11	15
φ 80	40 (36)	32	φ 20 <sup>H9</sup>	21	□94	Rc¾	32 <sup>0</sup> <sub>-0.3</sub>	36	61	36	M22×1.5	R25	φ 25	R20	89	15	21
φ 100	40 (36)	36	φ 20 <sup>H9</sup>	26	□112	Rc½	32 <sup>0</sup> <sub>-0.3</sub>	36	61	36	M26×1.5	R25	φ 30	R20	89	15	21

Bore	WF	XC	YP	YPR	YV	YVR	ZC	ZP	ZV	h
φ 40	25	167	18	21	25.5	40.5	181	4	10	8
φ 50	25	172	18	21	24	44	187	7	12	11
φ 63	25	175	18	21	25	45	190	8	12	11
φ 80	35	216	20	24	29	54	236	11	16	13
φ 100	35	216	20	24	29	54	236	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

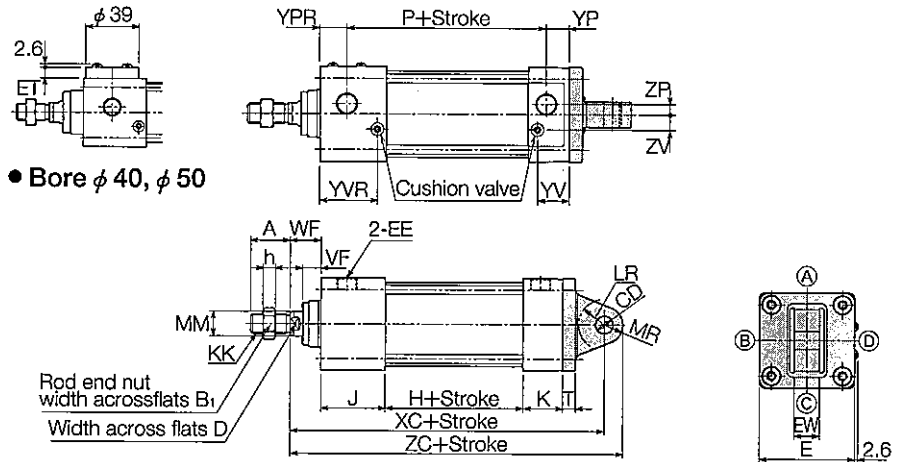


## DIMENSIONS

Short eye mounting/D

### Rod side lock type

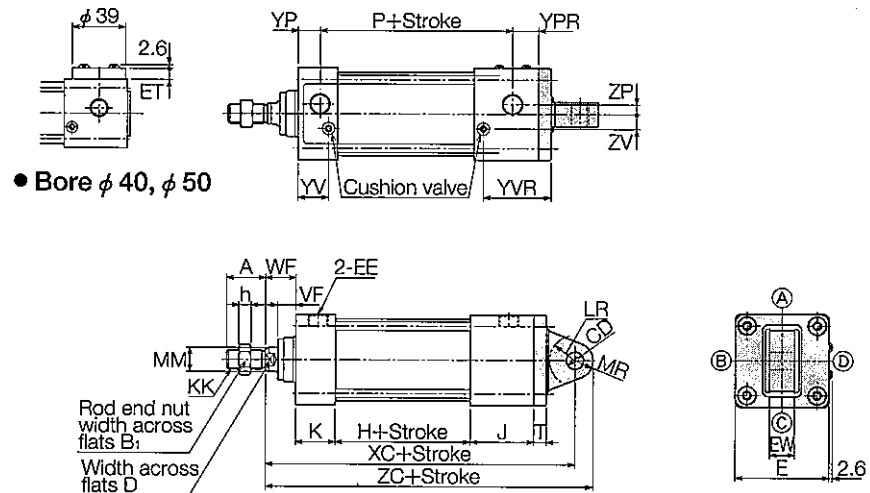
Bore	ET
φ 40	8
φ 50	4



•For other sizes than mentioned in this drawing, refer to Basic type/N

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	B1	CD	D	E	EE	EW	H	J	K	KK	LR	MM	MR	P	T	VF
φ 40	30 (27)	22	φ 14 <sup>H9</sup>	14	□50	Rc1/4	20 <sup>0</sup> <sub>-0.084</sub>	31	46	31	M14X1.5	R17	φ 16	R17	69	8	15
φ 50	35 (32)	27	φ 14 <sup>H9</sup>	17	□62	Rc1/4	20 <sup>0</sup> <sub>-0.084</sub>	31	51	31	M18X1.5	R17	φ 20	R17	74	10	15
φ 63	35 (32)	27	φ 14 <sup>H9</sup>	17	□75	Rc3/8	20 <sup>0</sup> <sub>-0.084</sub>	32	52	32	M18X1.5	R17	φ 20	R17	77	13	15
φ 80	40 (36)	32	φ 20 <sup>H9</sup>	21	□94	Rc3/8	32 <sup>0</sup> <sub>-0.100</sub>	36	61	36	M22X1.5	R25	φ 25	R24	89	18	21
φ 100	40 (36)	36	φ 20 <sup>H9</sup>	26	□112	Rc1/2	32 <sup>0</sup> <sub>-0.100</sub>	36	61	36	M26X1.5	R26	φ 30	R24	89	18	21

Bore	WF	XC	YP	YPR	YV	YVR	ZC	ZP	ZV	h
φ 40	25	152	18	21	25.5	40.5	166	4	10	8
φ 50	25	157	18	21	24	44	171	7	12	11
φ 63	25	160	18	21	25	45	174	8	12	11
φ 80	35	200	20	24	29	54	221	11	18	13
φ 100	35	200	20	24	29	54	220	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series



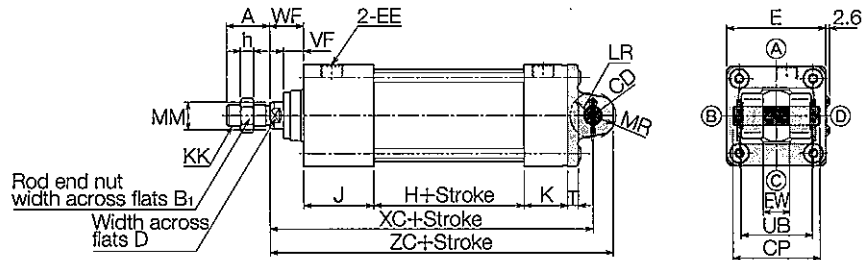
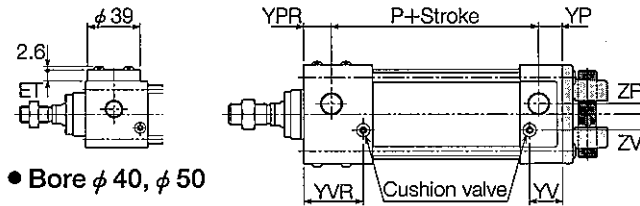
(Unit : mm)

## DIMENSIONS

Clevis mounting/W

### Rod side lock type

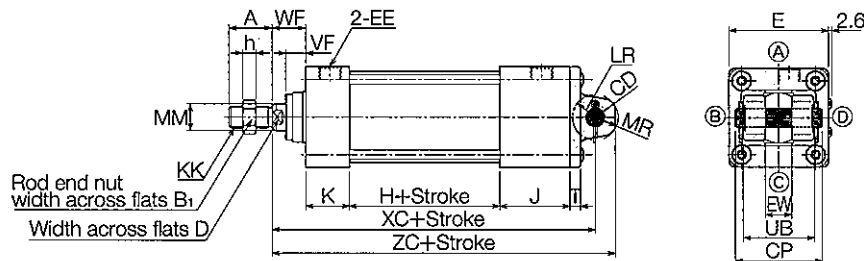
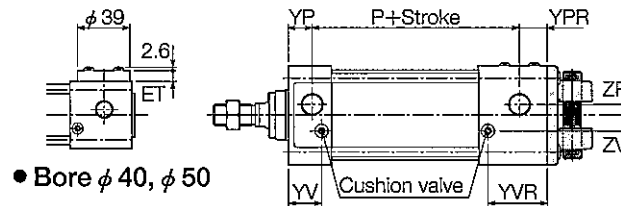
Bore	ET
φ 40	8
φ 50	4



•For other sizes than mentioned in this drawing, refer to Basic type/N

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



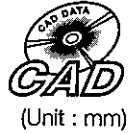
•For other sizes than mentioned in this drawing, refer to Basic type/N

Bore	A	B1	CD	CP	D	E	EE	EW	H	J	K	KK	LR	MM	MR	P	T
φ 40	30 (27)	22	φ 14 <sup>H9/18</sup>	58	14	□50	Rc1/4	20 <sup>+0.7/-0.5</sup>	31	46	31	M14×1.5	R17	φ 16	R15	69	8
φ 50	35 (32)	27	φ 14 <sup>H9/18</sup>	66	17	□62	Rc1/4	20 <sup>+0.7/-0.5</sup>	31	51	31	M18×1.5	R17	φ 20	R17	74	8
φ 63	35 (32)	27	φ 14 <sup>H9/18</sup>	66	17	□75	Rc3/8	20 <sup>+0.7/-0.5</sup>	32	52	32	M18×1.5	R17	φ 20	R17	77	8
φ 80	40 (36)	32	φ 20 <sup>H9/18</sup>	78	21	□94	Rc3/8	32 <sup>+0.7/-0.5</sup>	36	61	36	M22×1.5	R30	φ 25	R24	89	11
φ 100	40 (36)	36	φ 20 <sup>H9/18</sup>	78	26	□112	Rc1/2	32 <sup>+0.7/-0.5</sup>	36	61	36	M26×1.5	R30	φ 30	R24	89	11

Bore	UB	VF	WF	XC	YP	YPR	YV	YVR	ZC	ZP	ZV	h
φ 40	45	15	25	152	18	21	25.5	40.5	165	4	10	8
φ 50	53	15	25	157	18	21	24	44	172	7	12	11
φ 63	53	15	25	160	18	21	25	45	175	8	12	11
φ 80	67	21	35	200	20	24	29	54	221	11	16	13
φ 100	67	21	35	200	20	24	29	54	221	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

# AIR CYLINDER/WITH LOCK MECHANISM K1○L series



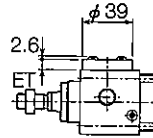
## DIMENSIONS

Center trunnion mounting/T

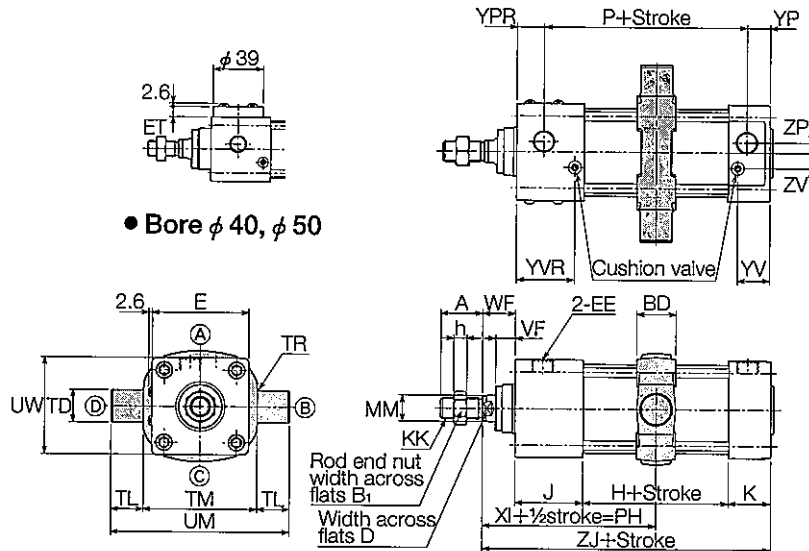
(Unit : mm)

### Rod side lock type

Bore	ET
φ 40	8
φ 50	4



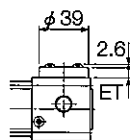
• Bore φ 40, φ 50



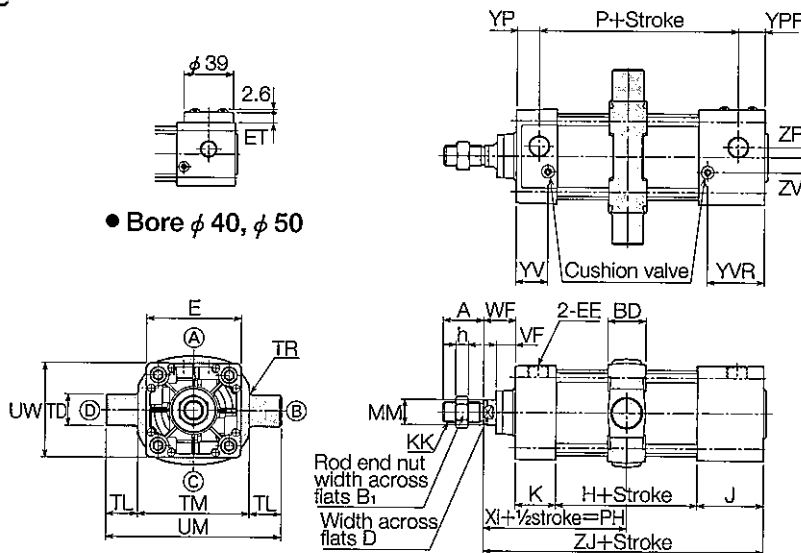
•For other sizes than mentioned in this drawing, refer to Basic type/N  
 (Note) In case of a small stroke for bore φ 40, specify position ② as port and cushion valve position to prevent interference with the lock cover.

### Head side lock type

Bore	ET
φ 40	8
φ 50	4



• Bore φ 40, φ 50



•For other sizes than mentioned in this drawing, refer to Basic type/N  
 (Note) In case of a small stroke for bore φ 40, specify position ② as port and cushion valve position to prevent interference with the lock cover.

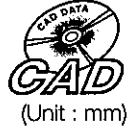
Bore	A	B1	BD	D	E	EE	H	J	K	KK	MM	P	PH (min)		TD	TL	TM
													Rod side lock	Head side lock			
φ 40	30 (27)	22	30	14	□50	Rc1/4	31	46	31	M14×1.5	φ 16	69	86	71	φ 25 <sup>e9</sup>	25	63
φ 50	35 (32)	27	30	17	□62	Rc1/4	31	51	31	M18×1.5	φ 20	74	91	71	φ 25 <sup>e9</sup>	25	76
φ 63	35 (32)	27	30	17	□75	Rc3/8	32	52	32	M18×1.5	φ 20	77	92	72	φ 25 <sup>e9</sup>	25	88
φ 80	40 (36)	32	35	21	□94	Rc3/8	36	61	36	M22×1.5	φ 25	89	113.5	88.5	φ 25 <sup>e9</sup>	25	114
φ 100	40 (36)	36	40	26	□112	Rc1/2	36	61	36	M26×1.5	φ 30	89	116	91	φ 25 <sup>e9</sup>	25	132

Bore	TR	UM	UW	VF	WF	XI		YP	YPR	YV	YVR	ZJ	ZP	ZV	h
						Rod side lock	Head side lock								
φ 40	R1.6	113	60	15	25	86.5	71.5	18	21	25.5	40.5	133	4	10	8
φ 50	R1.6	126	72	15	25	91.5	71.5	18	21	24	44	138	7	12	11
φ 63	R1.6	138	87	15	25	93	73	18	21	25	45	141	8	12	11
φ 80	R1.6	164	105	21	35	114	89	20	24	29	54	168	11	16	13
φ 100	R2	182	129	21	35	114	89	20	24	29	54	168	12	18	14

(Note) Bracketed figures in size A columns are thread lengths.

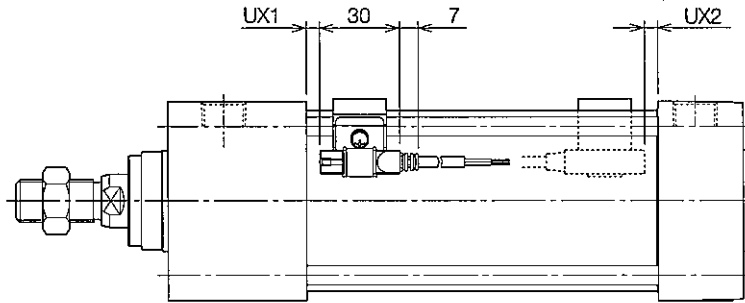
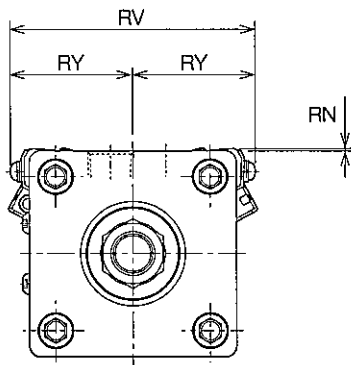


# AIR CYLINDER/WITH LOCK MECHANISM K1○L series

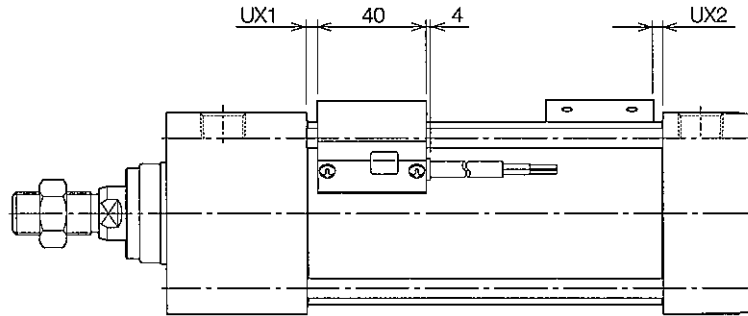
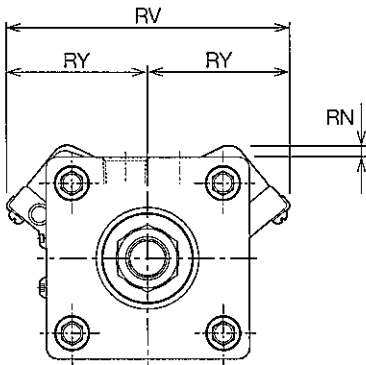


## SWITCH SET POSITION

With AX type switch



With SR type switch

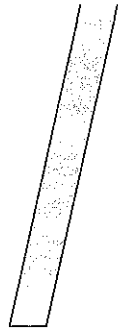


Bore	RY		RV		RN		UX1		UX2	
	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type
φ 40	36	40	72	80	3	4	8	2	4	0
φ 50	40	45	80	90	2	3	9	2	5	0
φ 63	47	52	94	104	2	5	9	2	5	0
φ 80	52	60	104	120	0	2	11	4	6	0
φ 100	60	67	120	134	0	0	11	4	6	0

(Note) UX : Most suitable position for mounting switch when stroke end is detected.

## HYSTERESIS AND RESPONSE RANGE OF SWITCHES (Unit : mm)

Bore	Reed switch				Solid-state switch	
	AX1□□ type		SR type		AX2□□ type	
	Response range	Hysteresis	Response range	Hysteresis	Response range	Hysteresis
φ 40	5~10	Below 1	8~12	Below 2	3~6	Below 1
φ 50	6~12		9~13		4~8	
φ 63						
φ 80						
φ 100						



# MAGNETIC PROXIMITY SWITCH

FOR CYLINDER

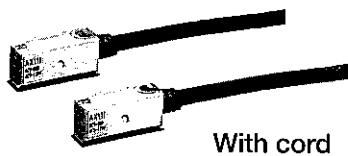
AX Type/AZ Type Switches ————— P.117

SR Type Switch ————— P.126

# AX TYPE/AZ TYPE SWITCHES

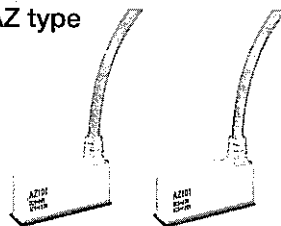
## REED SWITCH

AX type



With cord

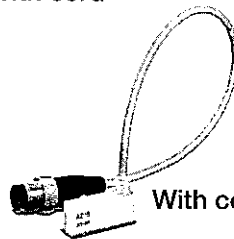
AZ type



With cord



With connector



With connector

### Applicable cylinders

Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

## SPECIFICATIONS

Model No.	With cord (1.5m)	AX101, AZ101	AX111, AZ111	—	—	—
	With cord (5m)	AX105, AZ105	AX115, AZ115	—	—	AX125, AZ125
	With connector (For AC)	—	—	AX11A, AZ11A	—	—
	With connector (For DC)	—	—	—	AX11B, AZ11B	—
Load voltage	AC5~120V DC5~30V		AC5~120V	DC5~30V	AC5~120V DC5~50V	
Load current	AC : 5~20mA DC : 5~40mA		AC : 5~20mA	DC : 5~40mA	AC : 5~20mA DC : 5~40mA	
Max. Switching capacity	AC : 2VA DC : 1.5W					
Internal voltage drop	TYP : 2V (At 10mA) Below 3V (At 40mA)					0V
Leak current	0mA	Below 10 μA				0mA
Response time	Below 1ms					
Reset time	Below 1ms					
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)					
Withstand voltage	AC1500V for one minute (Between case and cord)					
Shock resistance	294m/s <sup>2</sup> (No repeating)					
Impact resistance	Double amplitude 1.5mm, 10 to 55Hz (One sweep, one minute), 2 hours in each of X, Y, Z directions					
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)					-10~+100°C (No dew condensation shall occur.)
Connection	0.3mm <sup>2</sup> , 2-core, OD φ 4mm, oil-resistant cabtyre cord					
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)					
Contact protective circuit	Not provided	Provided				Not provided
Pilot lamp	LED (Red LED lights up at ON)					Not provided
Electric circuit						<p>No positive/negative polarity</p>
Applicable load	Miniature relay, PLC					Miniature, relay, PLC, IC circuit

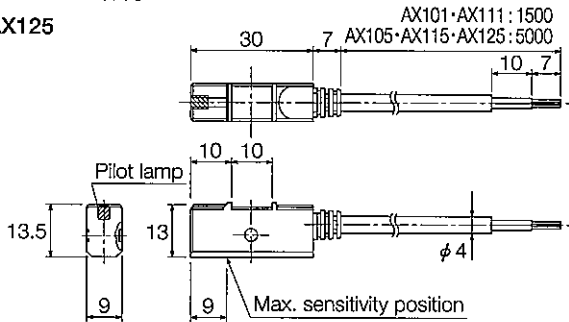
(Note) •When applying inductive load (miniature relay etc.) to a switch without a protective, be sure to fit a protective circuit (SK-100) to the load.  
 •For the cord length of a switch with connector and the connector pin arrangement, refer to DIMENSIONS.  
 •When using a programmable controller for AC voltage input as load, select a switch with a contact protection circuit.

# AX TYPE/AZ TYPE SWITCHES

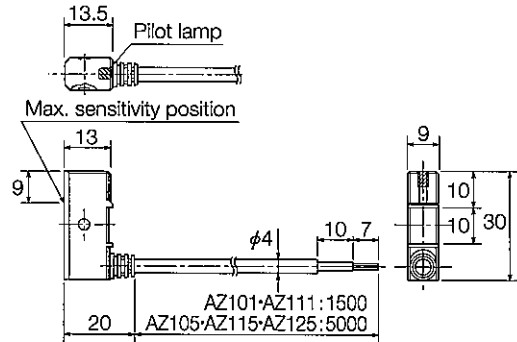
## DIMENSIONS

(Unit : mm)

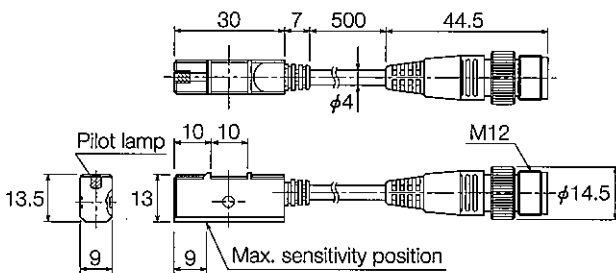
●With cord  
AX101 · AX105  
AX111 · AX115  
AX125



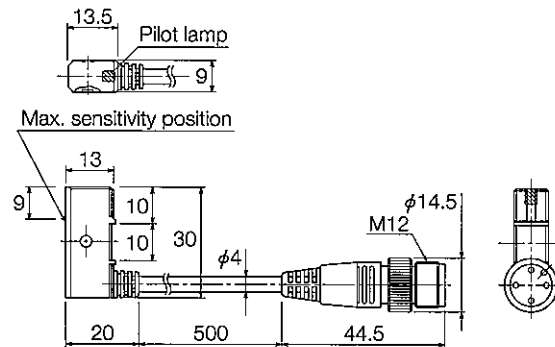
●With cord  
AZ101 · AZ105  
AZ111 · AZ115  
AZ125



●With connector  
AX11A · AX11B



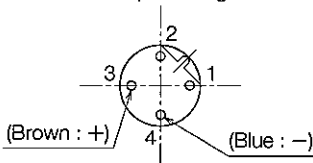
●With connector  
AZ11A · AZ11B



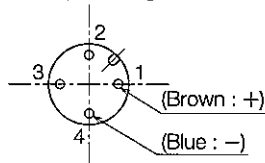
AX11A (For AC)  
AZ11A (For AC)

AX11B (For DC)  
AZ11B (For DC)

Connector pin arrangement



Connector pin arrangement



### Applicable Connectors

Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

•For detailed information, refer to catalogs supplied from each maker.

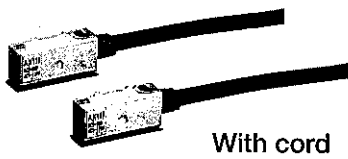
### ●Standard No. for Connector

- Models M12X1 screw locking
- EIEC 947-5-2
- DIN/VDE 0660 part208 A2
- NECA (Nippon Electric Control Equipment Industries Association) 4202 Connector for FA Sensors

# AX TYPE/AZ TYPE SWITCHES

## SOLID-STATE PROXIMITY SWITCH (2-wire, one-light type)

AX type

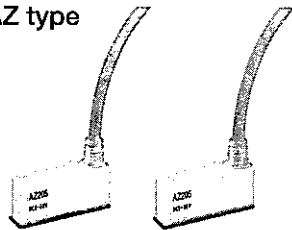


With cord

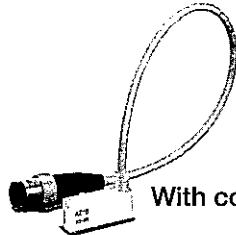


With connector

AZ type



With cord



With connector

### Applicable cylinders

Series	Bore (mm)
X1G	$\phi$ 125, $\phi$ 140, $\phi$ 160
J1G	$\phi$ 20, $\phi$ 25, $\phi$ 32, $\phi$ 40, $\phi$ 50, $\phi$ 63
K1G	$\phi$ 32, $\phi$ 40, $\phi$ 50, $\phi$ 63, $\phi$ 80, $\phi$ 125
A1G	$\phi$ 125, $\phi$ 140, $\phi$ 160

(Note) AZ type switch applicable X1G series alone.

## SPECIFICATIONS

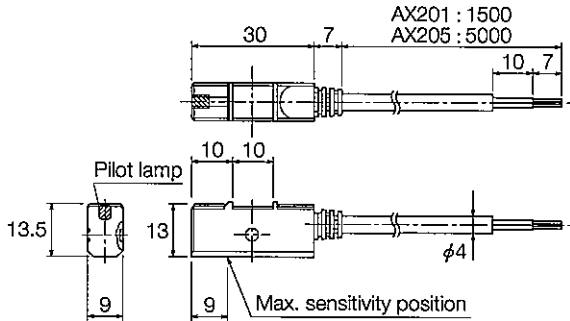
Model No.	With cord (1.5m)	AX201	AZ201
	With cord (5m)	AX205	AZ205
	With connector	AX20B	AZ20B
Wire direction	Axial		Perpendicular to axis
Load voltage	DC5~30V		
Load current	DC : 5~40mA		
Internal voltage drop	Below 3V (At 40mA)		
Leak current	Below 1mA		
Response time	Below 1ms		
Reset time	Below 1ms		
Insulation resistance	100M $\Omega$ or more at DC500V megger (Between case and cord)		
Withstand voltage	AC1500V for one minute (Between case and cord)		
Shock resistance	490m/s <sup>2</sup> (No repeating)		
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions		
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)		
Connection	0.3mm <sup>2</sup> , 2-core, OD $\phi$ 4mm, oil-resistant cabtyre cord		
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)		
Output protective circuit	Provided		
Pilot lamp	LED (Red LED lights up at ON)		
Electric circuit			
Applicable load	Miniature relay, PLC		

# AX TYPE/AZ TYPE SWITCHES

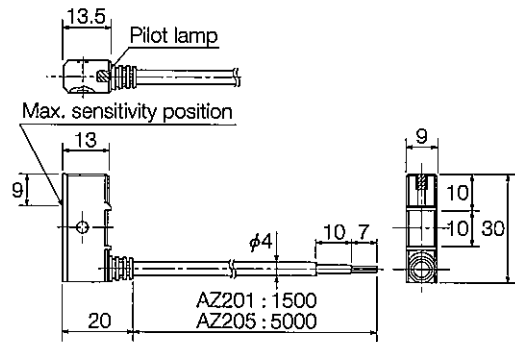
## DIMENSIONS

(Unit : mm)

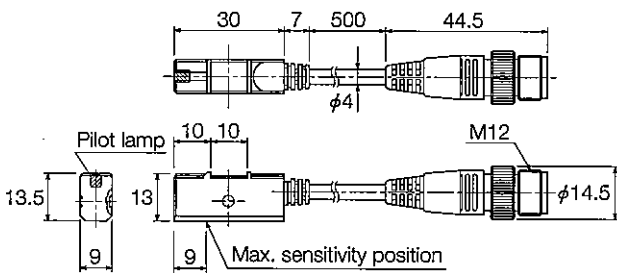
●With cord  
AX201 · AX205



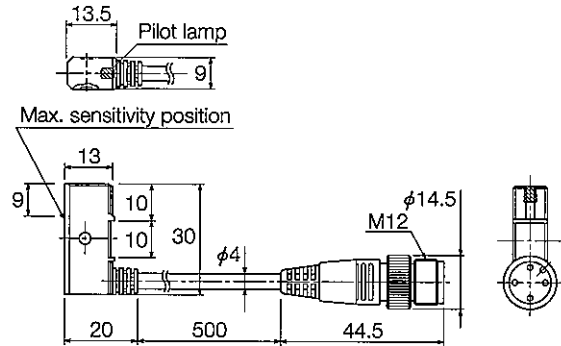
●With cord  
AZ201 · AZ205



●With connector  
AX20B

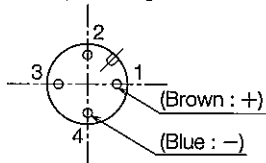


●With connector  
AZ20B



AX20B (For DC)  
AZ20B (For DC)

Connector pin arrangement



●Standard No. for Connector

Models M12X1 screw locking

- IEC 947-5-2
- DIN/VDE 0660 part208 A2
- NECA (Nippon Electric Control Equipment Industries Association)  
4202 Connector for FA Sensors

### Applicable Connectors

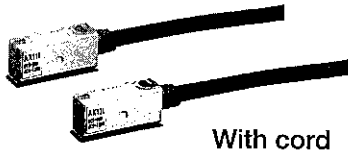
Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

•For detailed information, refer to catalogs supplied from each maker.

# AX TYPE/AZ TYPE SWITCHES

## SOLID-STATE PROXIMITY SWITCH (2-wire, dual light type)

AX type

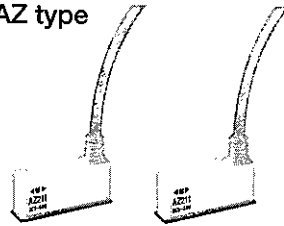


With cord

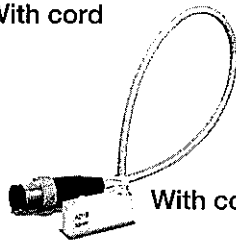


With connector

AZ type



With cord



With connector

### Applicable cylinders

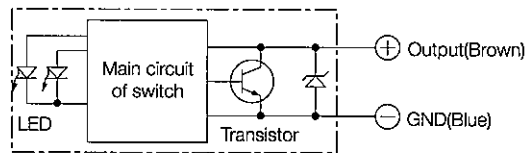
Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

## SPECIFICATIONS

Model No.	With cord (1.5m)	AX211, AZ211
	With cord (5m)	AX215, AZ215
	With connector	AX21C, AZ21C
		AX21D, AZ21D
Wire direction	Axial	
Load voltage	DC5~30V	
Load current	DC : 5~40mA	
Internal voltage drop	Below 3V (At 40mA)	
Leak current	Below 1mA	
Response time	Below 1ms	
Reset time	Below 1ms	
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)	
Withstand voltage	AC1500V for one minute (Between case and cord)	
Shock resistance	490m/s <sup>2</sup> (No repeating)	
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions	
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)	
Connection	0.3mm <sup>2</sup> , 2-core, OD φ 4mm, oil-resistant cabtyre cord	
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)	
Output protective circuit	Provided	
Pilot lamp	Switch response range : Red/green LED lights up. Optimum adjusting range : Green LED lights up.	

Electric circuit

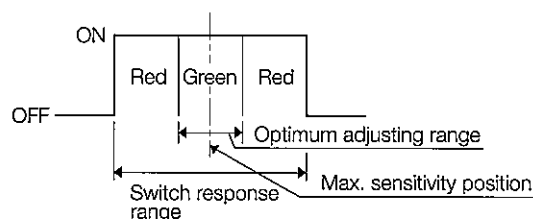


Applicable load

Miniature relay, PLC

(Note) AX211CE, AX215CE and AX21BCE conforming to CE mark are available.

## INDICATION BY LED

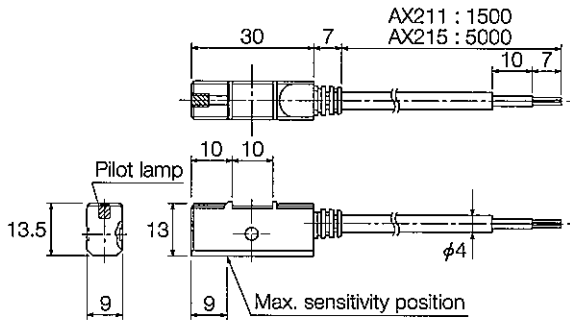


# AX TYPE/AZ TYPE SWITCHES

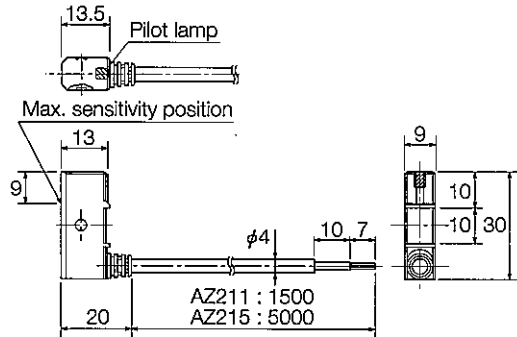
## DIMENSIONS

(Unit : mm)

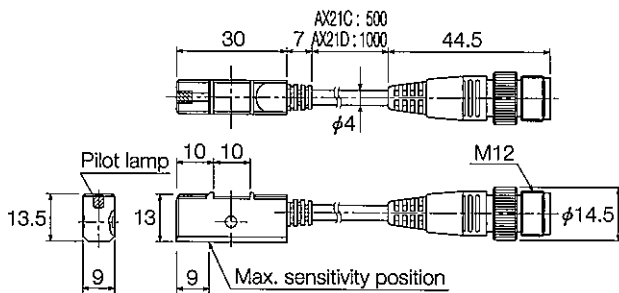
●With cord  
AX211 · AX215



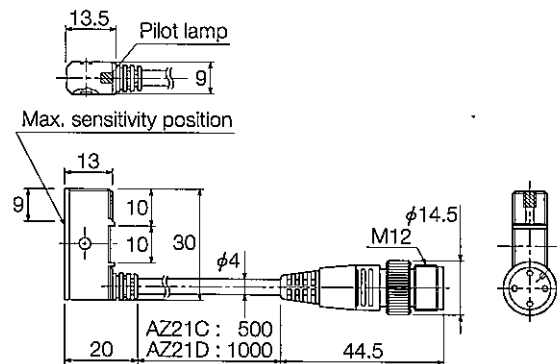
●With cord  
AZ211 · AZ215



●With connector  
AX21C · AX21D

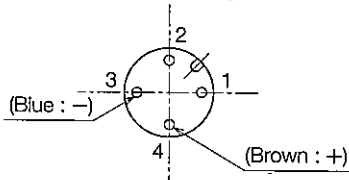


●With connector  
AZ21C · AZ21D



AX21C · AX21D (For DC)  
AZ21C · AX21D (For DC)

Connector pin arrangement



- As to connector pin arrangement (1 : +, 4 : -) for IEC Standard, contact KURODA.
- AX21B conforming to TMS Standard is also available.

### Applicable Connectors

Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

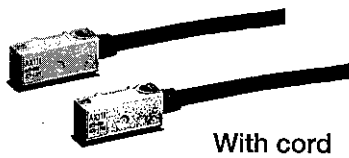
•For detailed information, refer to catalogs supplied from each maker.



# AX TYPE/AZ TYPE SWITCHES

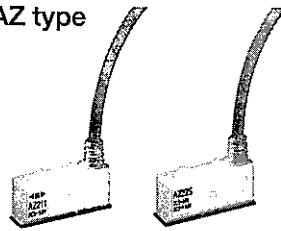
## SOLID-STATE PROXIMITY SWITCH (3-wire type)

AX type



With cord

AZ type



With cord

### Applicable cylinders

Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

## SPECIFICATIONS

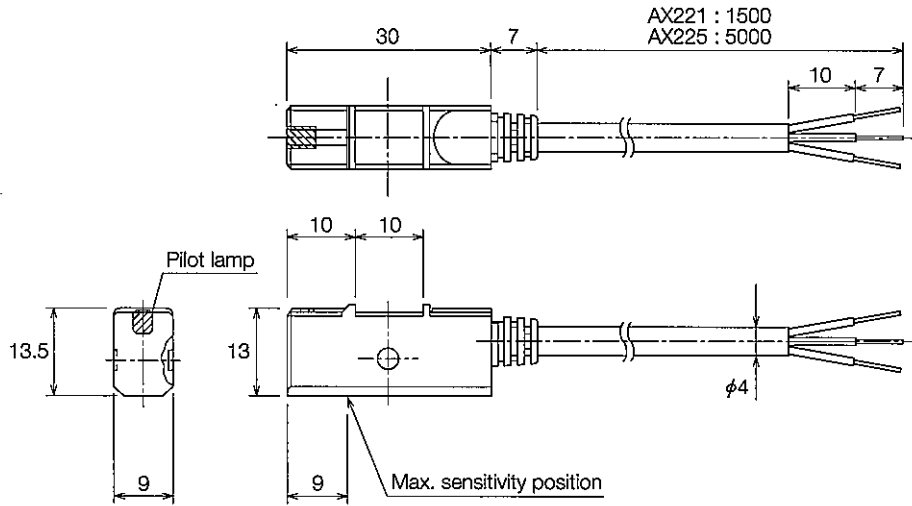
Model No.	With cord (1.5m)	AX221	AZ221
	With cord (5m)	AX225	AZ225
Wire direction	Axial		Perpendicular to axis
Power voltage	DC5~30V		
Load voltage	DC : 5~30V		
Load current	Max. 200mA (NPN open collector output)		
Current consumption	Max. 15mA		
Internal voltage drop	Max. 0.6V at 200mA		
Leak current	Max. 10 μA at DC30V		
Response time	Below 1ms		
Reset time	Below 1ms		
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)		
Withstand voltage	AC1500V for one minute (Between case and cord)		
Shock resistance	490m/s <sup>2</sup> (No repeating)		
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions		
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)		
Connection	0.3mm <sup>2</sup> , 3-core, OD φ 4mm, oil-resistant cabtyre cord		
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)		
Output protective circuit	Provided		
Pilot lamp	LED (Red LED lights up at ON)		
Electric circuit			
Applicable load	Miniature, relay, PLC, IC circuit		

# AX TYPE/AZ TYPE SWITCHES

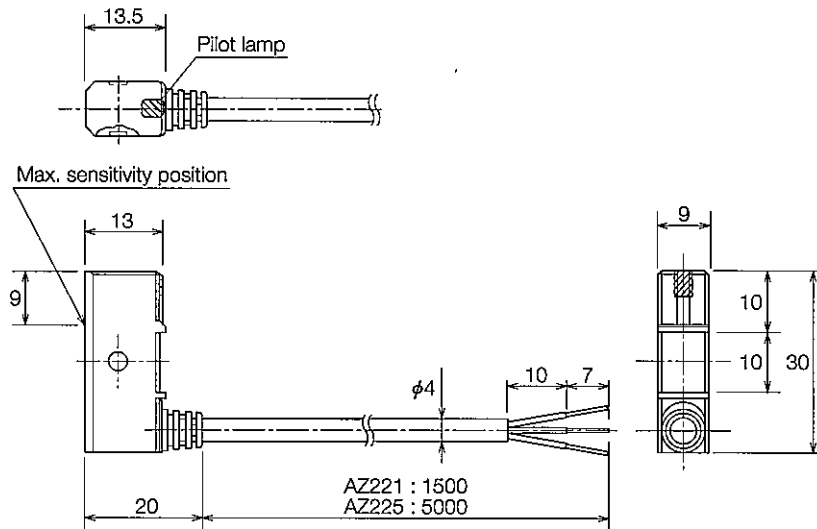
## DIMENSIONS

(Unit : mm)

●With cord  
AX221 · AX225

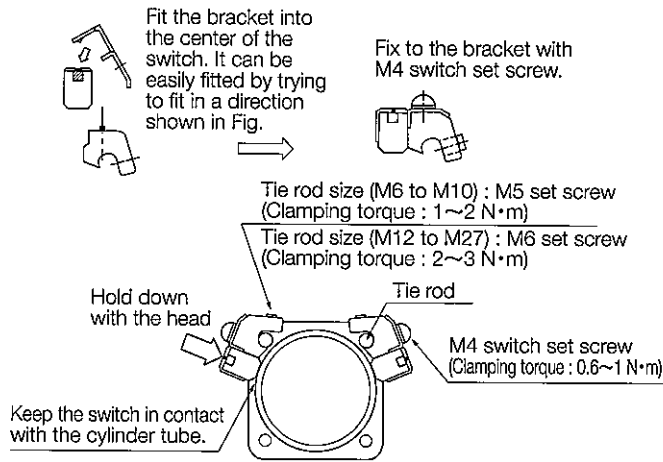


●With cord  
AZ221 · AZ225



# AX TYPE/AZ TYPE SWITCHES

## MOUNTING THE SWITCH



1. Loosen 2 set screws with a hexagonal wrench and move along the tie rod.
2. Set the switch position so that the detecting position (at which green LED is on in case of dual light type) comes 2 to 5 mm on this side (proper range : about half of the operating range) from a position at which the switch pilot lamp is on at the intended position. Then hold down the top of the switch lightly and tighten the set screw at proper clamping torque with the cylinder tube keeping in contact with the detecting surface of the switch.  
(Note) Improper clamping torque may shift the switch position.
3. The pilot lamp is on when the switch turns on.
4. The switch can be mounted on any of 4 tie rods. Therefore, it can be repositioned at the most suitable location according to the mounting space and wiring method.
5. For mounting the switch at the most suitable position to detect the stroke end, refer to "Mounting the switch" (UX size).

### Model No. of switch mounting bracket for K1 series

Model No. for AX type switch	Applicable bore (mm)
K132-AJ	φ 32
K140-AJ	φ 40
K150-AJ	φ 50
K163-AJ	φ 63
K180-AJ	φ 80
K1100-AJ	φ 100
K1125-AJ	φ 125

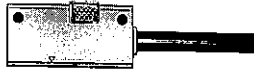
### Model No. of switch mounting bracket for A1 series

Model No. for AX type switch	Applicable bore (mm)
A1125-AJ	φ 125
A1140-AJ	φ 140
A1160-AJ	φ 160

(Note) Switch is not available for φ 180 to φ 250 of the A1 series.

# SR TYPE SWITCHES

## REED SWITCH



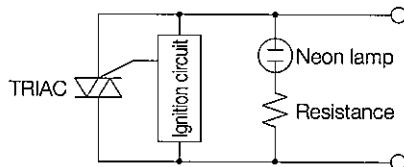
### Applicable cylinders

Series	Bore (mm)
J1G	$\phi$ 20, $\phi$ 25, $\phi$ 32, $\phi$ 40, $\phi$ 50, $\phi$ 63
K1G	$\phi$ 32, $\phi$ 40, $\phi$ 50, $\phi$ 63, $\phi$ 80, $\phi$ 100, $\phi$ 125
A1G	$\phi$ 125, $\phi$ 140, $\phi$ 160

## SPECIFICATIONS

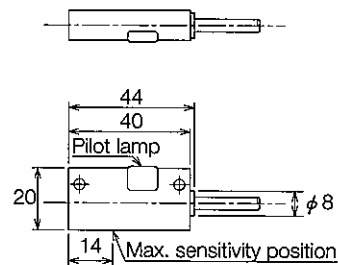
Model No.	SR405 (With cord 5m)
Load voltage	AC80~220V
Load current	2~300mA
Max. Switching capacity	30VA
Internal voltage drop	Below 2V
Leak current	Below 1mA
Response time	Below 1ms
Reset time	Below 11ms
Insulation resistance	100M $\Omega$ or more at DC500V megger (Between case and cord)
Withstand voltage	AC1500V for one minute (Between case and cord)
Shock resistance	294m/s <sup>2</sup> (No repeating)
Impact resistance	98m/s <sup>2</sup> , 10 to 55Hz (log sweep, 10 minutes), 2 hours in each of X, Y, Z directions
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)
Connection	0.5mm <sup>2</sup> , 2-core, OD $\phi$ 6mm, oil-resistant cabtyre cord (Gray)
Protection grade	IP67 (IEC Standard), JIS C0920 (Shock-and vibration-proof type)
Pilot lamp	Neon lamp (Lights up at OFF)
Applicable load	Miniature relay, PLC, Miniature solenoid, Pilot lamp

## ELECTRIC CIRCUIT



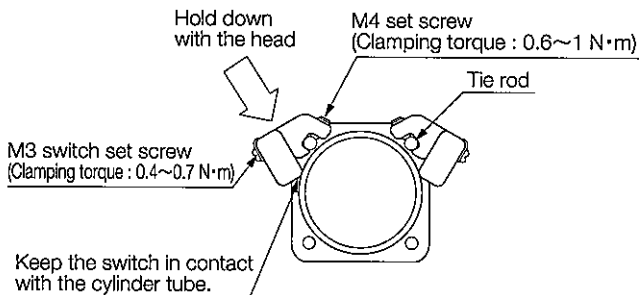
## DIMENSIONS

(Unit : mm)



# SR TYPE SWITCHES

## MOUNTING THE SWITCH



1. Loosen 2 set screws with a hexagonal wrench and move along the tie rod.
2. Set the switch position so that the detecting position (at which green LED is on in case of dual light type) comes 2 to 5 mm on this side (proper range : about half of the operating range) from a position at which the switch pilot lamp is on at the intended position. Then hold down the top of the switch lightly and tighten the set screw at proper clamping torque with the cylinder tube keeping in contact with the detecting surface of the switch.  
(Note) Improper clamping torque may shift the switch position.
3. The pilot lamp is off when the switch turns on.
4. The switch can be mounted on any of 4 tie rods. Therefore, it can be repositioned at the most suitable location according to the mounting space and wiring method.
5. For mounting the switch at the most suitable position to detect the stroke end, refer to "Mounting the switch" (UX size).

### Model No. of switch mounting bracket for K1 series

Model No. for SR type switch	Applicable bore (mm)
K132-SJ	φ 32
K140-SJ	φ 40
K150-SJ	φ 50
K163-SJ	φ 63
K180-SJ	φ 80
K1100-SJ	φ 100
K1125-SJ	φ 125

### Model No. of switch mounting bracket for A1 series

Model No. for SR type switch	Applicable bore (mm)
A1125-SJ	φ 125
A1140-SJ	φ 140
A1160-SJ	φ 160

(Note) Switch is not available for φ 180 to φ 250 of the A1 series.

 **WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

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