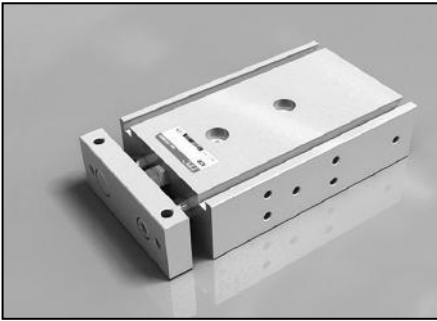


# Double Rod Cylinder Series ADR

Bore Size: Ø10, Ø16, Ø20, Ø25, Ø32

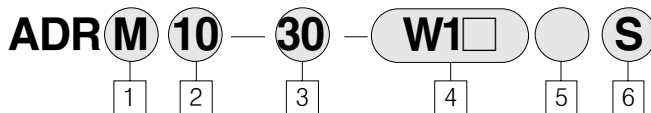


- High lateral load capability
- Adjustable stroke is available
- Auto switch available
- Non-lube service standard.

| Action   | Series | Bore Size (mm) | Port Size | Standard Stroke (mm)                                  | Description                          | Operating Pressure kgf/cm <sup>2</sup> (psi) |
|--|--------|----------------|-----------|---|--------------------------------------|--|
| Double Acting/Single Rod-Ball Bushing Bearing Type | ADRL   | Ø10            | M5×0.8    | 10,15,20,25,30,40,50                                  | Built-in Magnet<br>Bumper<br>Cushion | 1~7.0(14~100)                                |
|  |        | Ø16            |           | 10,15,20,25,30, 35,40,45, 50, 60, 70, 80, 90, 100     |                                      |  |
|  |        | Ø20            |           | 10,15,20,25,30, 35,40,45, 50, 60, 70, 75, 80, 90, 100 |                                      |  |
|  |        | Ø25            |           | 10,15,20,25,30,35,40,45,50,60,70,75,80,90,100         |                                      |  |
|  |        | Ø32            |           | 10,15,20,25,30,35,40,45,50,60,70,75,80,90,100         |                                      |  |
| Double Acting/Single Rod-Sliding Bearing Type      | ADRM   | Ø10            | M5×0.8    | 10,15,20,25,30,40,50                                  | Built-in Magnet<br>Bumper<br>Cushion | 1~7.0(14~100)                                |
|  |        | Ø16            |           | 10,15,20,25,30, 35,40,45, 50, 60, 70, 80, 90, 100     |                                      |  |
|  |        | Ø20            |           | 10,15,20,25,30, 35,40,45, 50, 60, 70, 75, 80, 90, 100 |                                      |  |
|  |        | Ø25            |           | 10,15,20,25,30,35,40,45,50,60,70,75,80,90,100         |                                      |  |
|  |        | Ø32            |           | 10,15,20,25,30,35,40,45,50,60,70,75,80,90,100         |                                      |  |

- ACP
- UACP
- APM
- AS
- AX
- AM
- AM2
- AL
- ALX
- (U)AQ
- ADQ
- ADQCP
- (U)AQ2
- ADQ2
- AG
- UAG
- NGQ
- UNGQ
- AJ
- AJM
- ABK
- ACK1
- NSK
- GX
- AGX
- NDC
- NDM
- ADR
- NP
- NBP
- AMR
- UAMR
- ARD
- UARD
- NST
- NST2
- AST
- ASTH
- NLPD
- NLCD
- NLCS
- ASL
- NRP
- NRT
- NRC
- NFH2
- NFHL2
- NFW2
- NFP2
- NFS
- NFC3
- SB
- ABC
- SAH
- NBU
- ACU
- SE
- ARM

## How to Order



### 1 Type of Bearing

M : Slide Bearing  
L : Ball Bushing Bearing

### 2 Bore Size

10 : Ø10mm  
16 : Ø16mm  
20 : Ø20mm  
25 : Ø25mm  
32 : Ø32mm

### 3 Stroke(mm)

※ Refer to the above table

### 4 Auto Switch

Blank : None  
W1H : Solid State Switch (DC24V)  
W13 : Reed Switch (AC110V, DC24V)

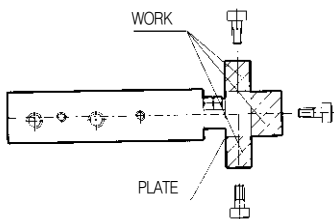
### 5 Lead Wire Length

Blank : 0.5m  
L : 3m

### 6 Number of Switches

Blank : 2 pcs.  
S : 1 pc.  
N : N pcs.

Plate Can be Mounted From Three Faces



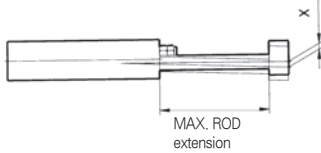
## Standard Specifications

|                               |  |
|-------------------------------|--|
| Action                        | Double Acting Double Rod                                 |
| Fluid                         | Air  |
| Max. Operating Pressure       | 10 kgf/cm <sup>2</sup> (142 psi)                         |
| Proof Pressure                | 7 kgf/cm <sup>2</sup> (100 psi)                          |
| Min. Operating Pressure       | 1 kgf/cm <sup>2</sup> (14 psi)                           |
| Ambient and Fluid Temperature | -10°C~+60°C (14~140 °F)                                  |
| Piston Speed                  | 30~300 mm/s  |
| Cushion                       | Rubber Cushion   |
| Lubrication                   | Non-Lube   |
| Stroke Adjustment Range       | 0~-5mm   |
| Bearing                       | Slide bearing, Ball Bushing Bearing<br>(Same Dimensions) |

## Operating Conditions

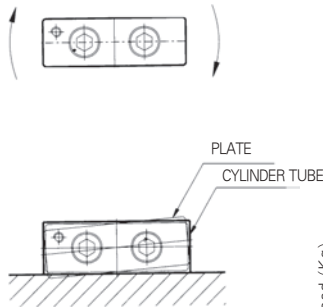
### Inclination of plate end

The standard amount of inclination  $X$  of the plate end with no load applied is shown in the graph below.



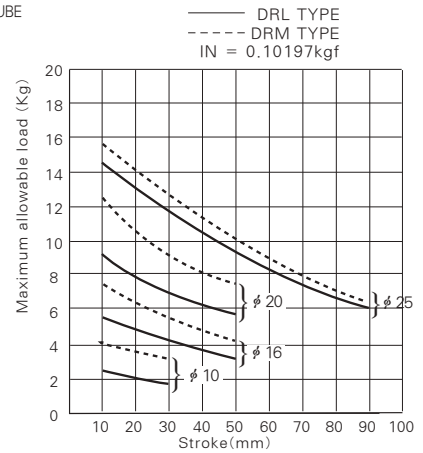
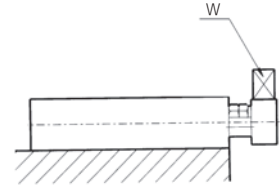
### Non-rotating accuracy

Standards of non-rotating accuracy  $\theta^\circ$  are values lower than those shown in the table below.



### Maximum allowable load

The maximum allowable load will be lower than the values shown in the graph below when the cylinder is mounted as shown below.



### Non-Rotating Accuracy

| Cylinder Bore Size (mm) | ADRM (Slide bearing) | ADRL (Ball bush bearing) |
|-------------------------|----------------------|--------------------------|
| φ 10                    | ±0.15°               | ±0.15°                   |
| φ 16, φ 20              | ±0.15°               | ±0.15°                   |
| φ 25                    | ±0.15°               | ±0.15°                   |

## Precautions

### Mounting

- The Double rod cylinder can be mounted on three sides. However, the mating surface must be flat (Flatness : 0.05 (reference value) max.). Otherwise desired piston rod operation and a malfunction may result.
- Mount the cylinder while the piston is retracted. Pay attention not to scratch or dent the slide part of the piston rod treatment. Air leaks due to damaged packings may result in faulty operation.
- Cylinder mounting face has hard alumite treatment but care should still be taken to avoid damaging it as this would result in loss of durability and faulty operation.

### Piping

- The Double rod cylinder is provided with two supply ports in respective directions of operation. Change the plug position according changed, be

- sure to check that no air leaks from the plug. When a little amount of air still leaks, remove the plug and check the seat before reassembly.
- At the time of pipe-laying, thoroughly flush pipes and joints with air and then connect them.
  - Provide an air filter to supply sufficiently purified compressed air.
  - Cylinder tube can be used without oiling, but if you oil it, use turbine oil class-1 (ISO VG32). (Do not use machine oil or spindle oil.)

### Adjustment of stroke

- The Double rod cylinder is provided with a bolt to adjust the stroke within the range of 0 to -5mm on the piston rod return side (IN). Loosen the hexagon head bolt for adjustment. After adjustment, completely tighten the hexagon head bolt and apply a stopper to it.
- Never use the cylinder without a damper bolt.

### Ambient atmosphere

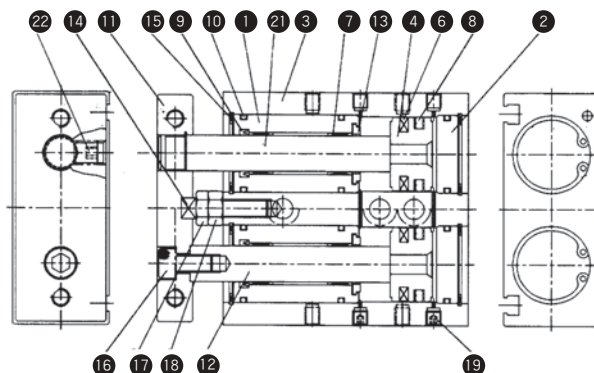
- Use the cylinder as little as possible in ambient atmospheres where the cylinder is exposed to water (hot water) or coolant. When it is inevitable to use it in such atmospheres, protect the cylinder with a cover.
- Some atmospheres or fluids are harmful to the main body of the cylinder or packing. Please contact us when special use is desired.

### Disassembly and maintenance

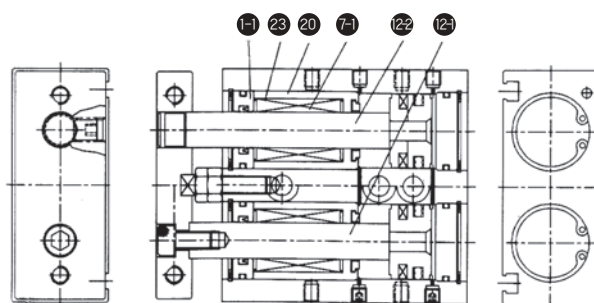
- Remove the plate at the end for disassembling. Disassembling is permitted only for replacement of packing or other necessary operations to prevent malfunction.
- Please contact us for the method of disassembly or reassembly, or refer to the manual for disassembly.

Construction/Parts List, Packing List

ADRM(Slide Bearing)



ADRL(Ball Bush Bearing)



Slide Bush Type

| No. | Description    | Material       | Note           |
|-----|----------------|----------------|----------------|
| ①   | Rod Cover      | Aluminum Alloy | Allumite       |
| ②   | Head Cover     | "              | "              |
| ③   | Cylinder Tube  | "              | "              |
| ④   | Piston         | "              | Chromate       |
| ⑥   | Magnet         | Ba-Ferrite+NBR |                |
| ⑦   | Slide Bush     | Aluminum Alloy | White Allumite |
| ⑧   | Piston Packing | NBR            |                |
| ⑨   | Rod Packing    | NBR            |                |
| ⑩   | Tube Gasket    | NBR            |                |
| ⑪   | Plate          | Aluminum Alloy | White Allumite |

| No. | Description         | Material          | Note               |
|-----|---------------------|-------------------|--------------------|
| ⑫   | Piston Rod          | Stainless Steel   | Hard Chrome Plated |
| ⑬   | Bumper-A            | Urethane          |                    |
| ⑭   | Bumper-B            | Urethane          | DRM010-34B1760     |
| ⑮   | Snap Ring           | Carbon Tool Steel | Nickel Plated      |
| ⑯   | Plate Bolt          | Chrome Steel      | "                  |
| ⑰   | Stroke Control Bolt | Carbon Steel      | "                  |
| ⑱   | Stroke Control Nut  | "                 |                    |
| ⑲   | Plug                | "                 |                    |
| ⑳   | Piston Rod-A        | Bearing Steel     |                    |
| ㉑   | Detent Screw        | "                 |                    |

Ball Bush Type

| No. | Description  | Material |
|-----|--------------|----------|
| ①-① | Rod Cover    | Aluminum |
| ⑦-① | Ball Bearing | -        |
| ⑫-① | Piston Rod   | SUJ2     |

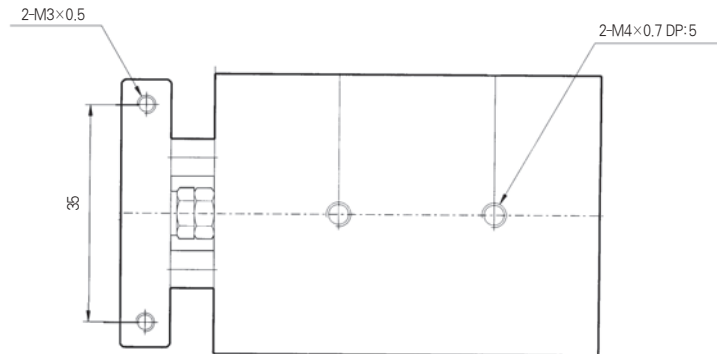
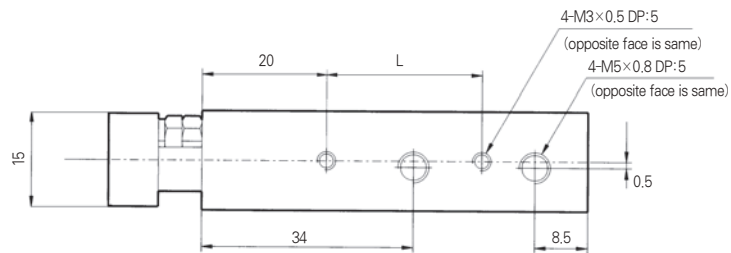
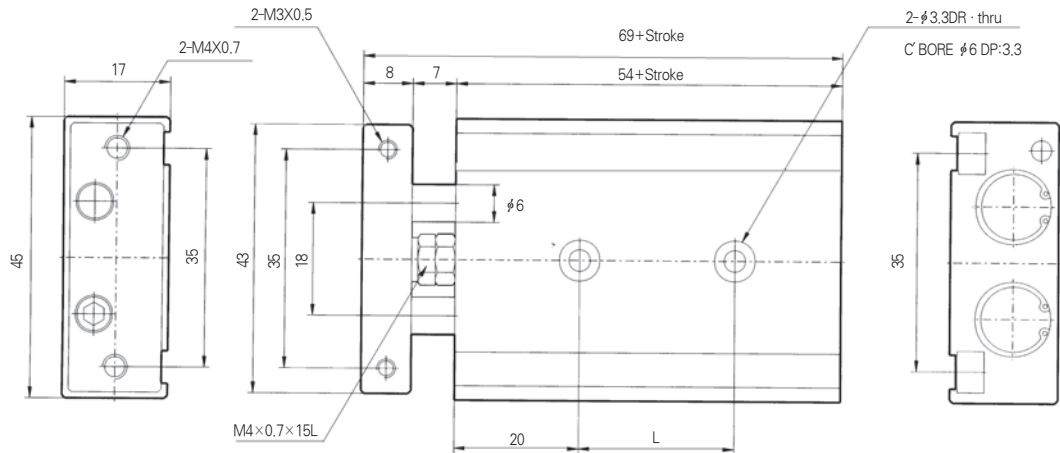
| No. | Description     | Material |
|-----|-----------------|----------|
| ⑫-② | Piston Rod-A    | SUJ2     |
| ⑳   | Bearing Stopper | Aluminum |
| ㉓   | Gasket          | NBR      |

- ACP
- APM
- AS
- AX
- AM2
- AM
- AL
- ALX
- AQ
- ADQ
- AQ2
- ADQ2
- AJ
- AJM
- ABK
- ACK1
- NSK
- AG
- NGQ
- AGX
- GX
- NP
- ADR
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

# Series ADR

## Dimensions

ADR  $\phi$  10

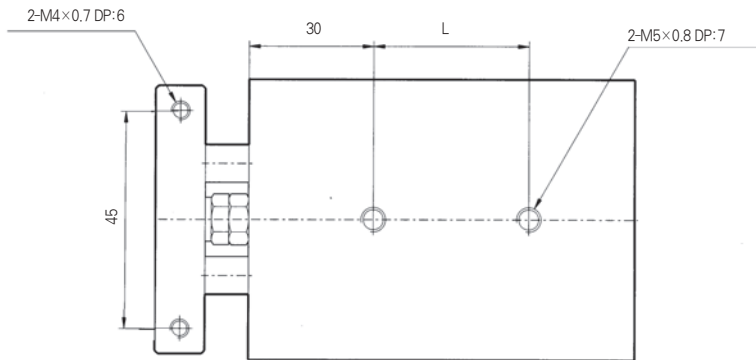
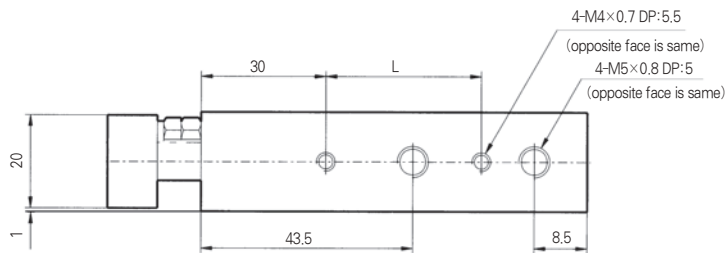
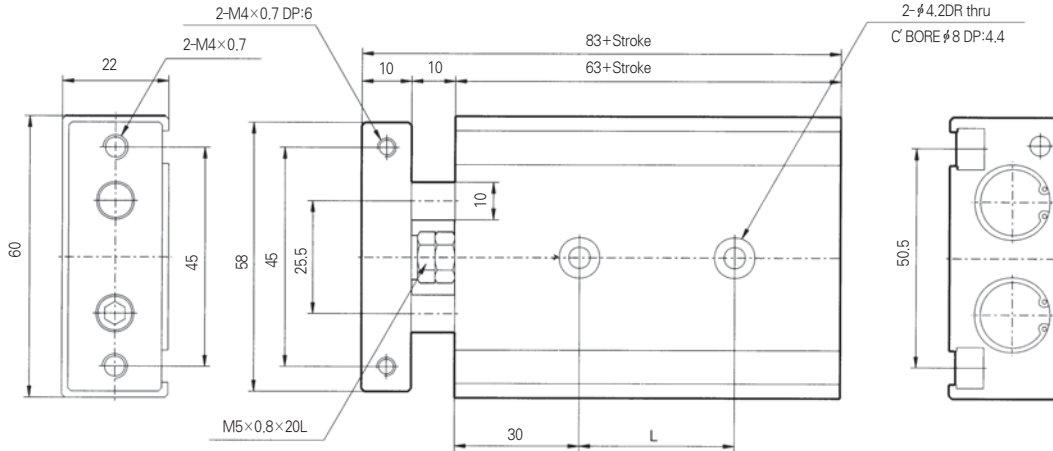


| Stroke (mm) | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L           | 25 | 30 | 30 | 30 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 60 | 60 | 60 |

(mm)

Dimensions

ADR  $\phi$  16



| Stroke (mm) | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 | 80 | 90 | 100 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| L           | 25 | 25 | 25 | 25 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 80 | 80 | 80  |

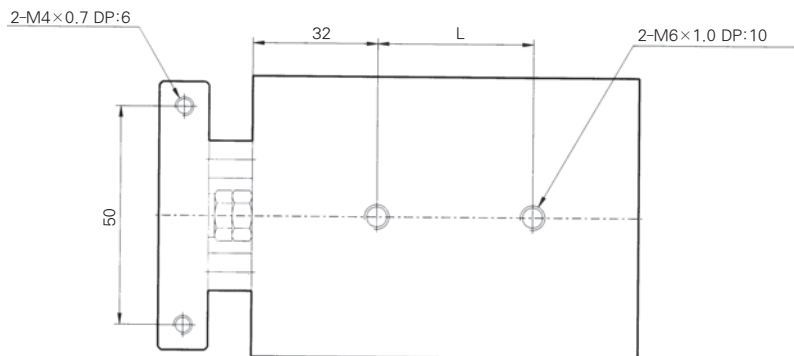
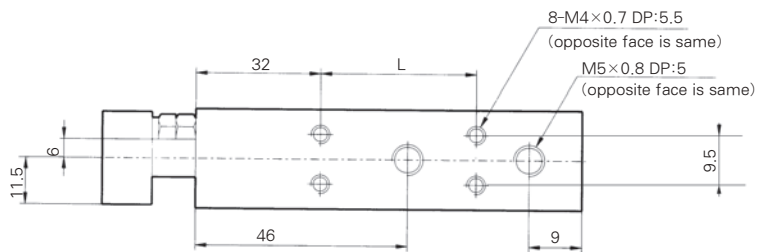
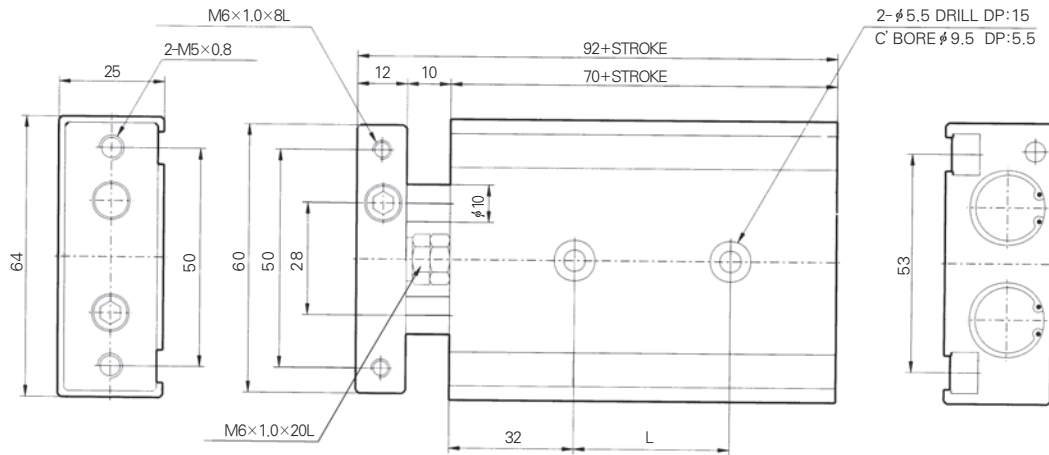
(mm)

- ACP
- APM
- AS
- AX
- AM2
- AM
- AL
- ALX
- AQ
- ADQ
- AQ2
- ADQ2
- AJ
- AJM
- ABK
- ACK1
- NSK
- AG
- NGQ
- AGX
- GX
- NP
- ADR**
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

# Series ADR

## Dimensions

ADR  $\phi 20$

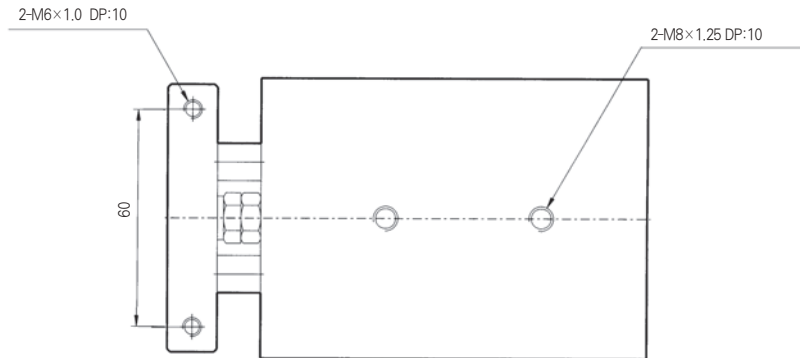
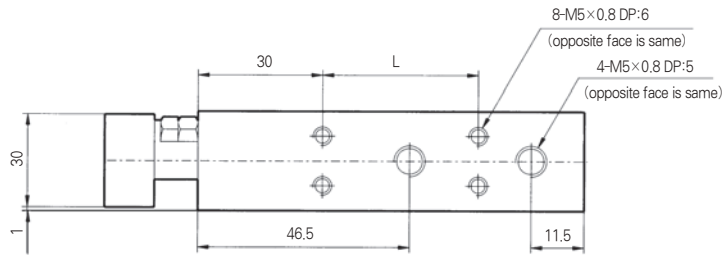
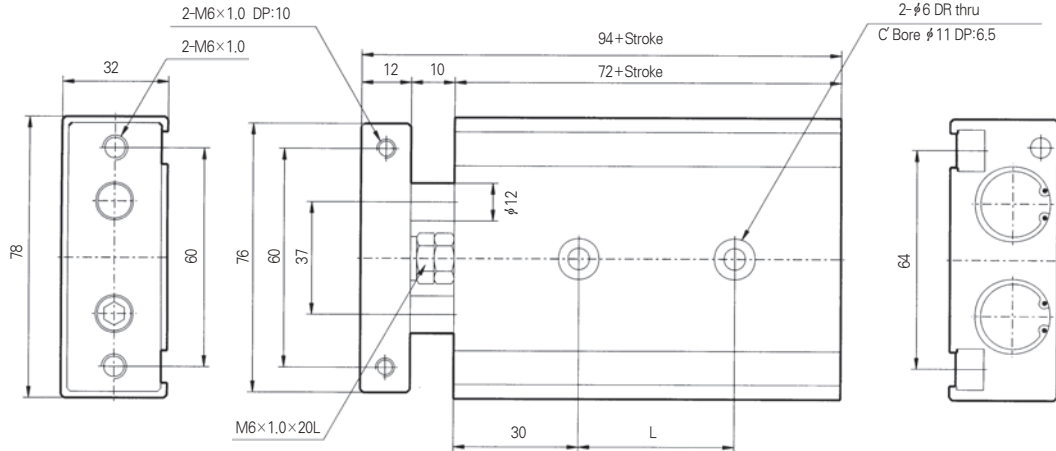


(mm)

| Stroke | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| L      | 30 | 30 | 30 | 30 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 60 | 60 | 60 | 80 | 80 | 80 | 80 | 80  |

Dimensions

ADR  $\phi 25$



| Stroke (mm) | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 90 | 100 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| L           | 30 | 30 | 30 | 30 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 60 | 60 | 60 | 80 | 80 | 80  |

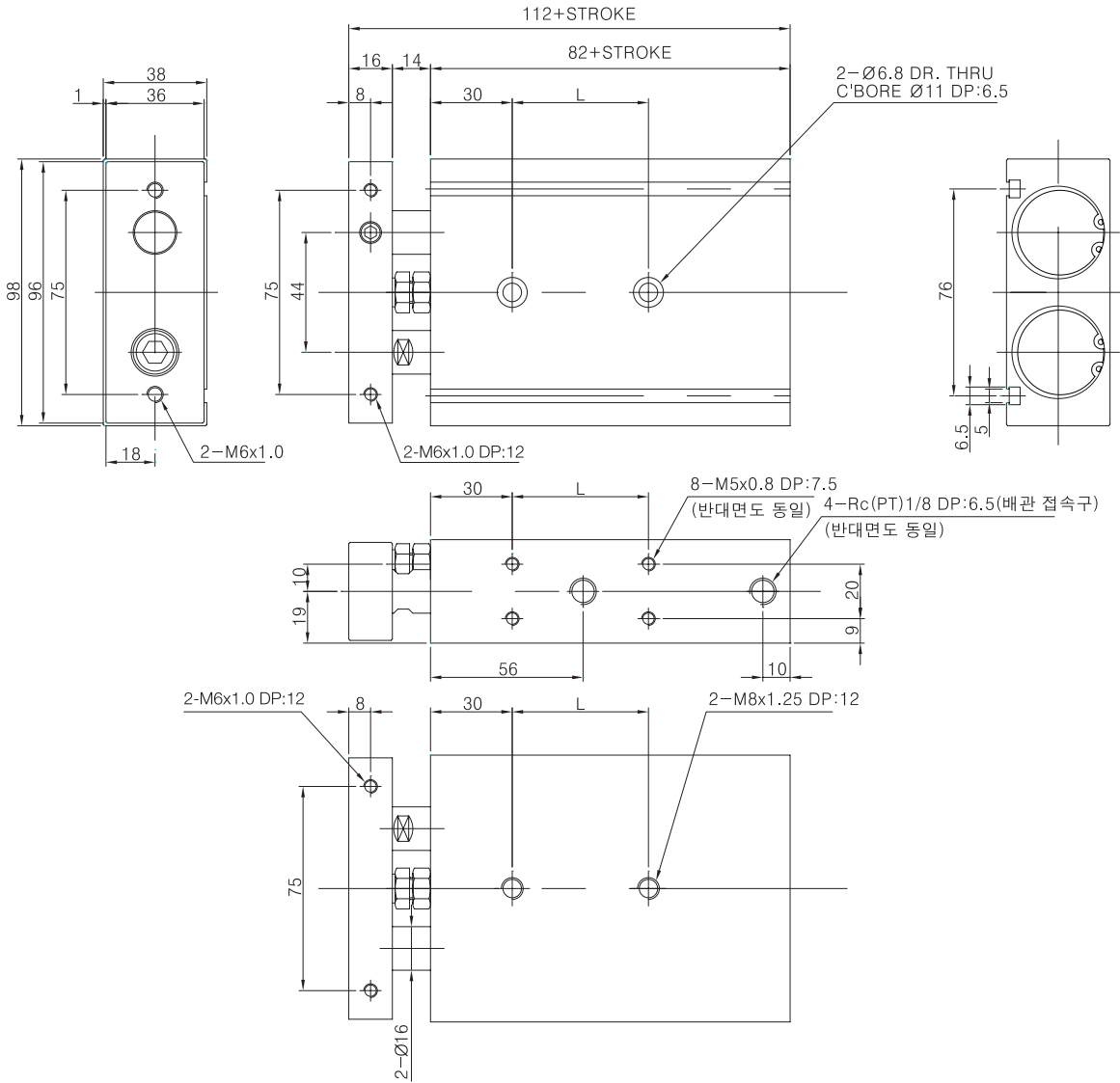
(mm)

- ACP
- APM
- AS
- AX
- AM2
- AM
- AL ALX
- AQ ADQ
- AQ2 ADQ2
- AJ AJM
- ABK
- ACK1
- NSK
- AG
- NGQ
- AGX GX
- NP
- ADR**
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

# ADR 시리즈

## 외형치수도

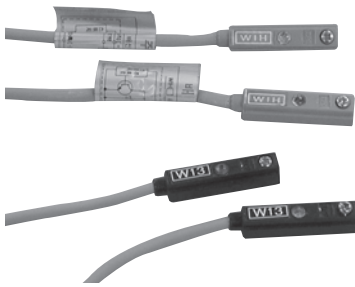
ADR Ø32



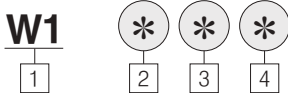
\* 본 도면치수는 당사 사정에 의해 약간의 변경이 있을수 있음.

| STROKE | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 | 75 | 80 | 90 | 100 |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| L      | 40 | 40 | 40 | 40 | 50 | 50 | 50 | 50 | 50 | 70 | 70 | 70 | 70 | 70 | 70  |



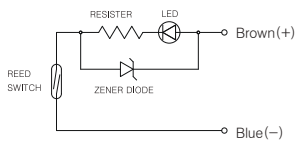


## How to Order

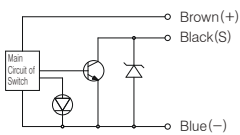


- 1 TPC Auto Switch Model
- 2 3 : Reed 2 wire AUTO S/W  
H : Solid State 3 wire AUTO S/W
- 3 N : 3 wire(NPN)  
P : 3 wire(PNP)
- 4 Blank : LEAD WIRE(0.5m)  
M : LEAD WIRE(1m)  
L : LEAD WIRE(3m)

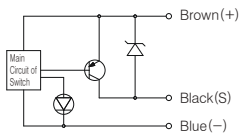
## Internal Circuit



2 wire reed circuit



3 wire NPN solid state circuit



3 wire PNP solid state circuit

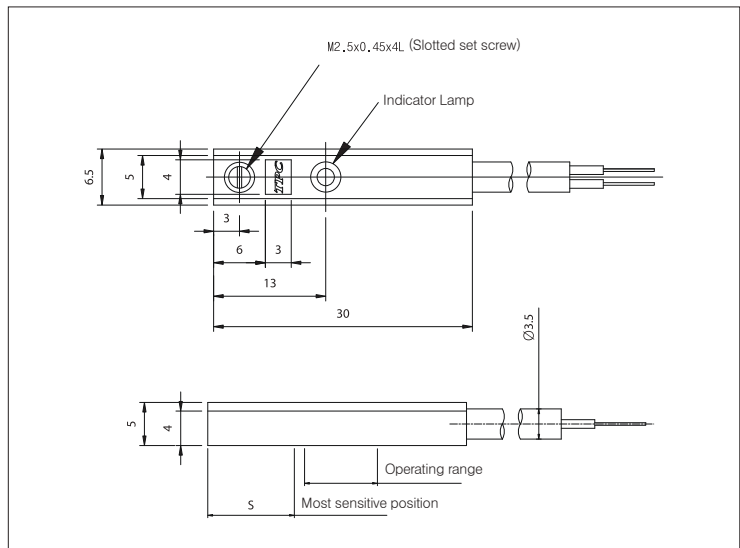
## Caution

Please read and understand the instructions before use. Refer to the auto switch precautions before using auto switches.

## Specifications

| Part No.                   | W13   | W1HN(P)            |
|----------------------------|---|--------------------|
| Contact wiring             | Reed Switch 2 wire  | Solid State 3 wire |
| Application                | Relay, Sequence Control                                     |                    |
| Voltage                    | DC24V   | AC100V DC24V       |
| Current                    | 5~40mA  | 5~20mA ≤40mA       |
| Contact Protection Circuit | None  | Built-in           |
| Internal Voltage Drop      | Under 2.4V  | ≤1.5V              |
| Indicator Lamp             | ON : When Red LED   |                    |
| Output                     | -   | NPN(PNP)           |
| Current Consumption        | -   | ≤5mA               |
| Current Leakage            | None  | ≤100μA             |
| Operation Time             | ≤1ms  | ≤2ms               |
| Lead Wire                  | Oil Resistant Vinyl Code                                    |                    |
| Shock Resistance           | 30G   | 100G               |
| Insulation Resistance      | 100MΩ or more (500DVC Mega) between lead wire and case      |                    |
| Voltage Resistance         | For 1 min. (in AC1500V/between a lead wire case)            |                    |
| Temperature                | -10 ~ 60°C  |                    |
| Protection Structure       | IEC Standard IP67, Water Proof, and(JISC0920),Oil Structure |                    |

## Protection Structure



## Operating Range

| Section                    | W13      | W1HN(P)  |
|----------------------------|----------|----------|
| Most sensitive position(S) | 10mm     | 1 ~ 2mm  |
| Operation range(L)         | 6 ~ 12mm | 4 ~ 10mm |