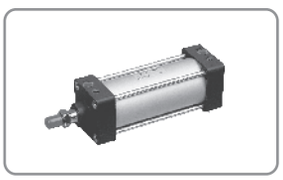
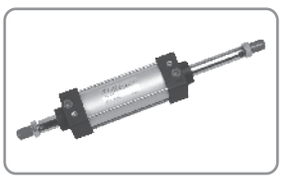
# AL Tie-rod Cylinders

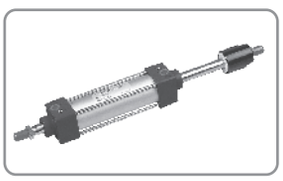
## SERIES Products Content



ALA Double acting cylinders Ø32~Ø100 ..... P.022

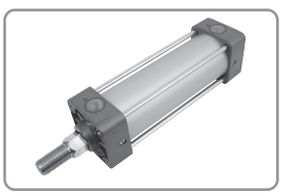


ALC Double rods cylinders Ø32~Ø100 ..... P.034



ALD Double rods with forward alignment cylinders Ø32~Ø100 ..... P.036

ALTK Air/oil converter Ø50~Ø 100 ..... P.038



ALR Non-rotating Tie-rod Cylinders Ø40~Ø100 ..... P.219

*(Detail and dimensions please prefer P.219)*

# Feature

## ■ Cylinder Bore Selection Instructions

- Determine whether the cylinder outputs power on the push side (air intake from the rear cover) Or the pull side (air intake from the front cover)
- set the working pressure of the supply cylinder ($kgf/cm^2$)
- actual output size(kg)
- select the appropriate bore size from the theoretical output table
  Note: values in the theoretical output table x 60% (cylinder mechanical efficiency) = actual effort

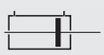
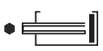
| | | |
|---|---|---|
| Bore (Mm) | 32、40、50、63、80、100 | |
| Fluid | Filter compressed air (need lubricating oil/ iso-vg32) | |
| Working Pressure ($Kgf/cm^2$) | 0.5~9.9 | |
| Temperature (°c) | 0~+60 | |
| Piston Speed (M/s) | Max.1 | |
| Stroke | (1) S≤500: +2.0~0<br>(2) 501≤S≤1250: +3.2~0 | |
| Cushion Length (Mm) | Ø32、Ø40、Ø50、Ø63 | 20 |
| | Ø80、Ø100 | 25 |

# Theoretical Output Table

Units:kg

| Bore (Mm) | Rod (Mm) | Action | Pressure Area ($Cm^2$) | Working Pressure($Kgf/cm^2$) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3 | 4 | 5 | 6 | 7 | 8 |
| 32 | 12 | Push | 8.04 | 24 | 32 | 40 | 48 | 56 | 64 |
| | | Pull | 6.91 | 21 | 27 | 34 | 41 | 48 | 55 |
| 40 | 16 | Push | 12.56 | 38 | 50 | 63 | 75 | 88 | 100 |
| | | Pull | 10.56 | 32 | 42 | 53 | 63 | 74 | 84 |
| 50 | 20 | Push | 19.63 | 59 | 79 | 98 | 118 | 137 | 157 |
| | | Pull | 16.49 | 49 | 66 | 82 | 99 | 115 | 132 |
| 63 | 20 | Push | 31.16 | 93 | 125 | 156 | 187 | 218 | 249 |
| | | Pull | 28.02 | 84 | 112 | 140 | 168 | 196 | 224 |
| 80 | 25 | Push | 50.24 | 151 | 201 | 251 | 301 | 352 | 402 |
| | | Pull | 45.34 | 136 | 181 | 227 | 272 | 317 | 363 |
| 100 | 25 | Push | 78.5 | 236 | 314 | 393 | 471 | 550 | 628 |
| | | Pull | 73.6 | 221 | 294 | 368 | 442 | 515 | 589 |

## Type

| Type | Mark | Graphics | Sensor | Heat Resistance | Dust Cover | Bore (Mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 32 | 40 | 50 | 63 | 80 | 100 |
| Double Acting Cylinders | AL-A |  | AL-AG | AL-AJ | AL-AH | ● | ● | ● | ● | ● | ● |
| Double Rods Cylinders | AL-C |  | AL-CG | AL-CJ | AL-CH | ● | ● | ● | ● | ● | ● |
| Double Rods With Forward Alignment Cylinders | AL-D |  | AL-DG | AL-DJ | AL-DH | ● | ● | ● | ● | ● | ● |
| Air/ Oil Converter | **AL-TK** |  | – | **AL-LJ** | – | – | – | ● | ● | ● | ● |
| Non-rotating Tie-rod Cylinders | **AL-R** |  | ***Detail and dimensions please prefer P.219*** | | | | | | | | |

## Weight

Units:g

| Bore | 40 | 50 | 63 | 80 | 100 |
|---|---|---|---|---|---|
| SD Type,stroke St = 0 | 720 | 1040 | 1380 | 2420 | 3180 |
| Add Weight For Every 50mm Increase In Stroke | 80 | 100 | 120 | 200 | 200 |

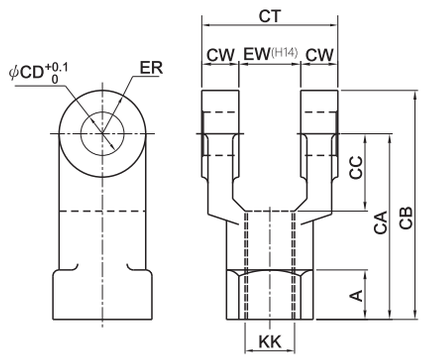
## Parts Weight

Units:g

| Symbol / Bore | FA/FB | LB | LA | CA | CB | CC | TC | CB-BK | TC-BK | Y | I | P | KGT | KGF | KGL | PHS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 220 | 120 | 200 | 320 | 160 | 170 | 540 | 400 | 1120 | 320 | 280 | 70 | 142 | 252 | 412 | 114 |
| 50 | 340 | 160 | 280 | 420 | 300 | 250 | 660 | 660 | 1120 | 320 | 280 | 80 | 552 | 1086 | 1208 | 200 |
| 63 | 480 | 220 | 400 | 540 | 400 | 400 | 740 | 660 | 1120 | 320 | 280 | 80 | 552 | 1086 | 1208 | 200 |
| 80 | 1260 | 360 | 780 | 1400 | 800 | 900 | 1240 | 2020 | 1580 | 700 | 720 | 192 | 808 | 2269 | 1992 | 372 |
| 100 | 1840 | 480 | 1220 | 1820 | 1320 | 1600 | 1580 | 2020 | 1580 | 700 | 720 | 192 | 808 | 2269 | 1992 | 372 |

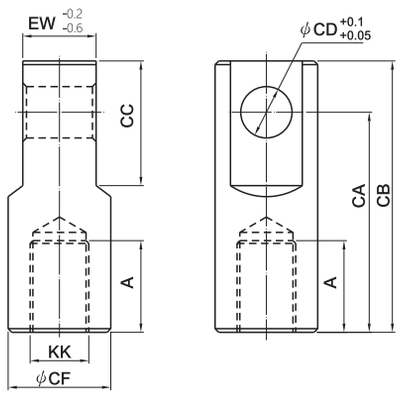
## Connector Dimensions

### ● Y Connector



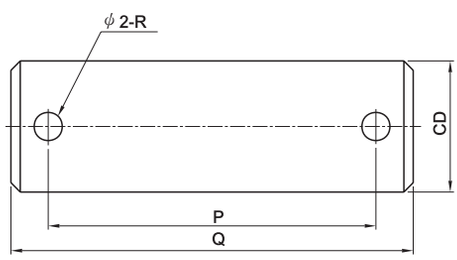

| Bore \ Symbol | KK | A | CA | CB | CC | CD | CT | CW | EW | ER |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | M10×P1.25 | 16 | 55 | 67 | 20 | 12 | 32 | 8 | 16 | 12 |
| 40 | M12×P1.25 | 16 | 60 | 74 | 25 | 14 | 44 | 12 | 20 | 14 |
| 50 | M16×P1.5 | 16 | 60 | 74 | 25 | 14 | 44 | 12 | 20 | 14 |
| 63 | | | | | | | | | | |
| 80 | M20×P1.5 | 20 | 85 | 103 | 35 | 20 | 62 | 16 | 30 | 18 |
| 100 | | | | | | | | | | |

### ● I Connector



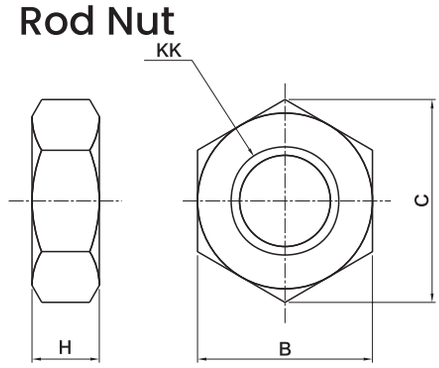

| Bore \ Symbol | KK | A | CA | CB | CC | CD | CF | EW |
|---|---|---|---|---|---|---|---|---|
| 32 | M10×P1.25 | 20 | 55 | 67 | 32 | 12 | 25 | 16 |
| 40 | M12×P1.25 | 20 | 60 | 74 | 34 | 14 | 28 | 20 |
| 50 | M16×P1.5 | 25 | 60 | 74 | 34 | 14 | 28 | 20 |
| 63 | | | | | | | | |
| 80 | M20×P1.5 | 30 | 85 | 105 | 50 | 20 | 38 | 30 |
| 100 | | | | | | | | |

### ● Pin



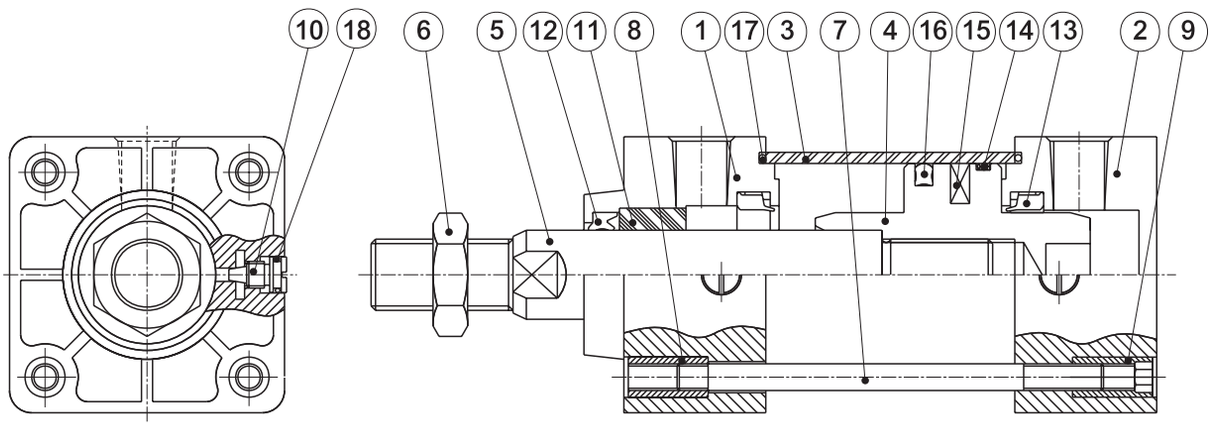

| Bore \ Symbol | | CD | P | Q | R |
|---|---|---|---|---|---|
| 40 | | 14 | 50 | 58 | 3 |
| 50 63 | Y | 14 | 50 | 58 | 3 |
| | CB | 14 | 58 | 66 | 3 |
| | CBBK | | | | |
| 80 | | 20 | 70 | 78 | 3 |
| 100 | | | | | |

### ● Rod Nut




| Bore \ Symbol | KK | B | C | H |
|---|---|---|---|---|
| 32 | M10×P1.25 | 17 | 19 | 6 |
| 40 | M12×P1.25 | 19 | 22 | 7 |
| 50 | M16×P1.5 | 24 | 27 | 8 |
| 63 | | | | |
| 80 | M20×P1.5 | 30 | 34 | 9 |
| 100 | | | | |

## Internal Structure And Parts Name




| Item | Part Name | Qty | Item | Part Name | Qty |
|---|---|---|---|---|---|
| ① | Rod Cover | 1 | ⑩ | Cushion Screw | 2 |
| ② | Head Cover | 1 | ⑪ | Powder Brozen Bushing | 1 |
| ③ | Tube | 1 | ⑫ | Piston Rod Seal | 1 |
| ④ | Piston | 1 | ⑬ | Cushion Seal | 2 |
| ⑤ | Piston Rod | 1 | ⑭ | Piston Wear-ring | 1 |
| ⑥ | Piston Rod Nut | 1 | ⑮ | Induction Magnet | 1 |
| ⑦ | Tie-rod | 4 | ⑯ | Piston Seal | 1 |
| ⑧ | Rod Cover Tie-rod Nut (Inner Teeth) | 4 | ⑰ | Cover O-ring | 2 |
| ⑨ | Head Cover Tie-rod Nut (Inner Hax.) | 4 | ⑱ | Cushion Screw O-ring | 2 |

## ALA Double Acting Cylinders

1. Al series of pneumatic cylinders is made of aluminum alloy rod and head cover, piston and steel pipe.

2. It is lightness and high efficiency.

3. All standard products are equipped with cushion devices.

4. Magnets can be attached to the piston, and magnetic sensors can be installed in all cylinders.

5. It adopts international brand sealing components to ensure excellent life.

## Standard Stroke

| Bore (Mm) | Stroke (Mm) |
|---|---|
| 32 | 50、75、100、125、200、250、300、350、400、450、500、550、600、650、700、750、800、850、900、950、1000 |
| 40 | |
| 50 | |
| 63 | |
| 80 | |
| 100 | |

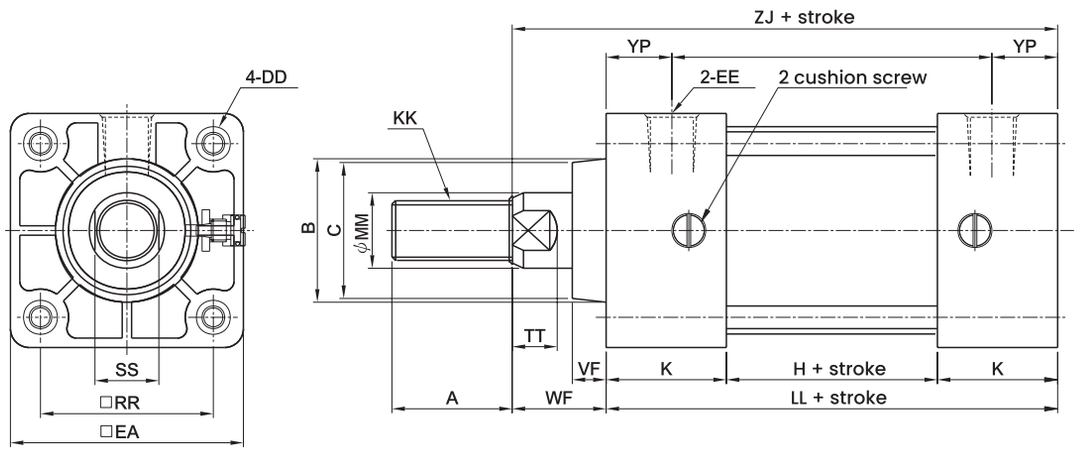
## Order Indication

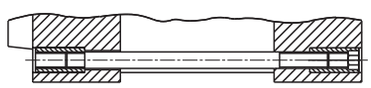
| ALA | | SD | 40 | 100ST | | | T×n |
|---|---|---|---|---|---|---|---|
| Series | Performance | Installation Type | Bore | Stroke | Bracket | End Connectors | Magnetic Sensor |
| Double Acting Tie-rod Cylinders | Blank: Indicates Standard | Sd: Basic | 32:32mm | Refer To Standard Stroke | Cb-bk: Double Clevis Bracket | Y : Y Connector | **JFS01** T: 2 Outgoing Lines, Standard Line Is 2 M |
| | G: Sensor | Fa: Front Flange | 40:40mm | | Tc-bk: Mid Trunnion Bracket | I : I Connector | P:pnp 3 Outgoing Lines, Standard Line Is 2 M |
| | H: Shaft With Dust Cover | Fb: Rear Flange | 50:50mm | | | Pin: Pin | N:npn 3 Outgoing Lines, Standard Line Is 2 M |
| | J: Heat/ Acid & Alkali Resistance | La: Foot Flange | 63:63mm | | | Kgt: Floating Joint | N: Qty |
| | Q: Low Friction Oil Seal | Lb: End Flange | 80:80mm | | | Phs: Fish Eye | *the Order With G Mark But No T X N Mark Indicates That Only Induction Magnet Is Attached Without Magnetic Sensor |
| | | Ca: Clevis | 100:100mm | | | | JFS01  |
| | | Cb: Double Clevis | | | | | |
| | | Cc: Short Clevis | | | | | |
| | | Tc: Mid Trunnion | | | | | |

⚠ *Blank = indicates standard, no need to specify when order*

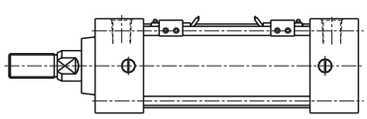
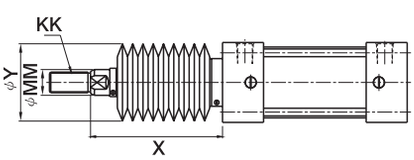
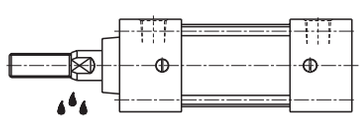
# External Dimensions

## • ALA-SD Basic



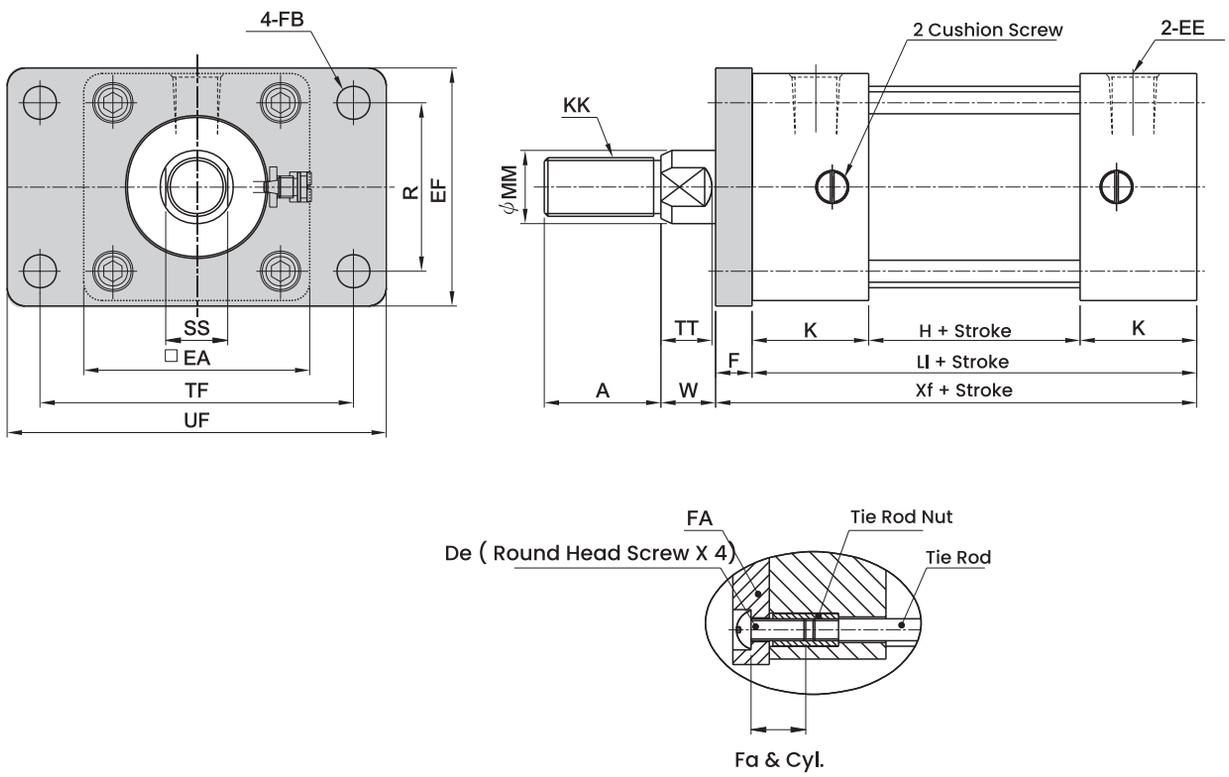
SD type installation method of column caps fixed at both ends

| Sensor (ala-g) | Shaft with dust cover (ala-h) | Heat/acid &alkali resist. (ala-j) |
|---|---|---|
|  *external dimension same as above |  *x= piston rod retracted length |  *external dimension same as above |
| ● Magnet is attached on piston<br>● Sensor is attached on tube | ● Specify material when ordering:<br>(1) n: rubber<br>(2) v: heat resist.≤200°c | ● Temperature: ≤200°c |

| Symbol / Bore | A | MM | KK | B | C | DD | EA | EE | H | K | LL | P | RR | SS | TT | VF | WF | YP | ZJ | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | 28 | 28 | M6×P1.0 | 45 | RC1/8 | 29 | 32 | 93 | 58 | 33 | 10 | 7 | 15 | 25 | 17.5 | 118 | 1/3 stroke + 45 | 60 |
| 40 | 24 | 16 | M12×P1.25 | 32 | 30 | M6×P1.0 | 50 | RC1/4 | 28 | 32 | 92 | 57 | 37 | 14 | 12 | 9 | 25 | 17.5 | 117 | | |
| 50 | 32 | 20 | M16×P1.5 | 38 | 36 | M6×P1.0 | 62 | RC1/4 | 28 | 32 | 92 | 57 | 46 | 17 | 12 | 9 | 25 | 17.5 | 117 | 1/3 stroke + 50 | 60 |
| 63 | 32 | 20 | M16×P1.5 | 38 | 36 | M8×P1.25 | 75 | RC3/8 | 31 | 32 | 95 | 60 | 56 | 17 | 12 | 9 | 25 | 17.5 | 120 | | |
| 80 | 40 | 25 | M20×P1.5 | 47 | 43 | M10×P1.5 | 94 | RC3/8 | 31 | 38 | 107 | 64 | 70 | 21 | 14 | 14 | 35 | 21.5 | 142 | 1/3 stroke + 55 | 70 |
| 100 | 40 | 25 | M20×P1.5 | 47 | 43 | M10×P1.5 | 112 | RC1/2 | 39 | 38 | 115 | 72 | 84 | 21 | 14 | 14 | 35 | 21.5 | 150 | | |

## External Dimensions

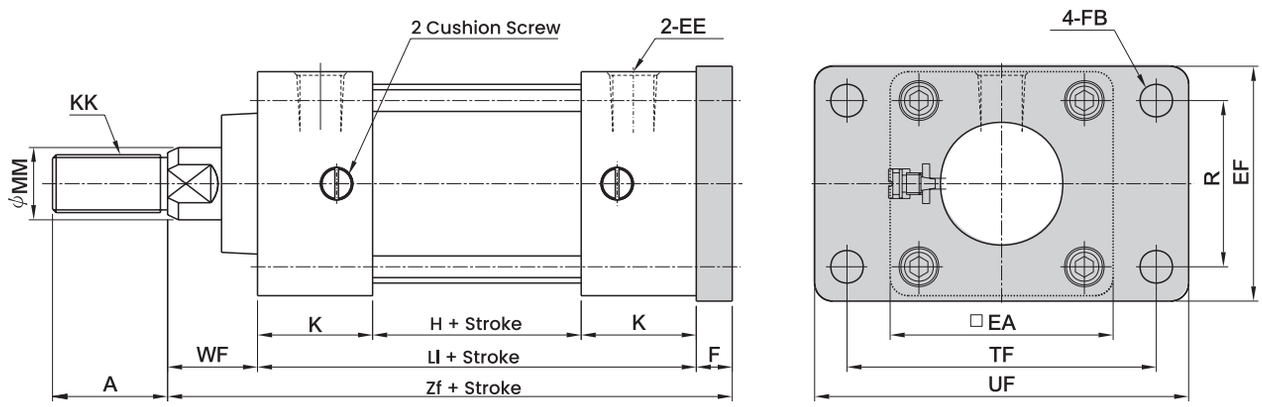
### • ALA-FA Front Flange

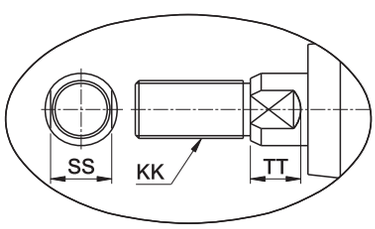


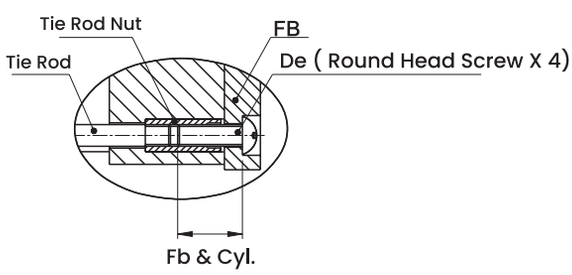

| Symbol / Bore | A | MM | KK | DE | EA | EE | EF | F | FB | H | K | LL | R | SS | TF | TT | UF | W | XF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | M6×P1.0 | 45 | RC1/8 | 47 | 10 | φ7 | 29 | 32 | 93 | 33 | 10 | 58 | 7 | 72 | 15 | 103 |
| 40 | 24 | 16 | M12×P1.25 | M6×P1.0 | 50 | RC1/4 | 52 | 10 | φ7 | 28 | 32 | 92 | 36 | 14 | 70 | 12 | 91 | 15 | 103 |
| 50 | 32 | 20 | M16×P1.5 | M6×P1.0 | 62 | RC1/4 | 65 | 10 | φ9 | 28 | 32 | 92 | 46 | 17 | 86 | 12 | 104 | 15 | 102 |
| 63 | 32 | 20 | M16×P1.5 | M8×P1.25 | 75 | RC3/8 | 76 | 10 | φ9 | 31 | 32 | 95 | 56 | 17 | 98 | 12 | 116 | 15 | 105 |
| 80 | 40 | 25 | M20×P1.5 | M10×P1.5 | 94 | RC3/8 | 95 | 16 | φ12 | 31 | 38 | 107 | 70 | 21 | 119 | 14 | 146 | 19 | 123 |
| 100 | 40 | 25 | M20×P1.5 | M10×P1.5 | 112 | RC1/2 | 115 | 16 | φ12 | 39 | 38 | 115 | 84 | 21 | 138 | 14 | 165 | 19 | 131 |

## External Dimensions

### • ALA-FB Rear Flange



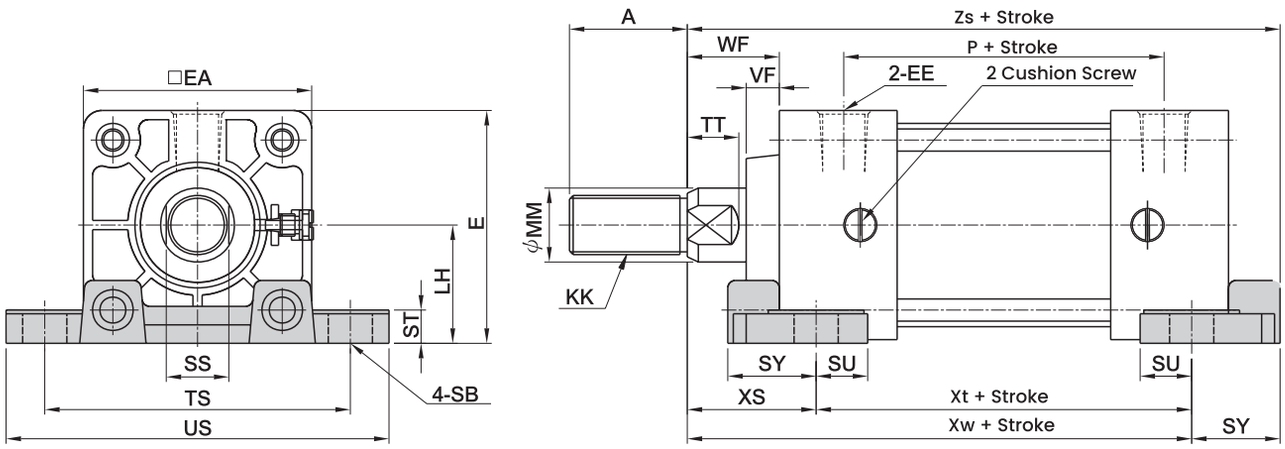



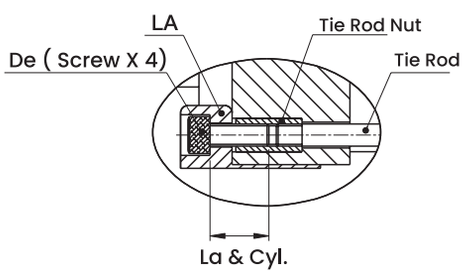




| Symbol / Bore | A | MM | KK | DE | EA | EE | EF | F | FB | H | K | LL | R | SS | TF | TT | UF | WF | ZF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | M6×P1.0 | 45 | RC1/8 | 47 | 10 | φ7 | 29 | 32 | 93 | 33 | 10 | 58 | 7 | 72 | 25 | 128 |
| 40 | 24 | 16 | M12×P1.25 | M6×P1.0 | 50 | RC1/4 | 52 | 10 | φ7 | 28 | 32 | 92 | 36 | 14 | 70 | 12 | 91 | 25 | 127 |
| 50 | 32 | 20 | M16×P1.5 | M6×P1.0 | 62 | RC1/4 | 65 | 10 | φ9 | 28 | 32 | 92 | 46 | 17 | 86 | 12 | 104 | 25 | 127 |
| 63 | 32 | 20 | M16×P1.5 | M8×P1.25 | 75 | RC3/8 | 76 | 10 | φ9 | 31 | 32 | 95 | 56 | 17 | 98 | 12 | 116 | 25 | 130 |
| 80 | 40 | 25 | M20×P1.5 | M10×P1.5 | 94 | RC3/8 | 95 | 16 | φ12 | 31 | 38 | 107 | 70 | 21 | 119 | 14 | 146 | 35 | 158 |
| 100 | 40 | 25 | M20×P1.5 | M10×P1.5 | 112 | RC1/2 | 115 | 16 | φ12 | 39 | 38 | 115 | 84 | 21 | 138 | 14 | 165 | 35 | 166 |

## External Dimensions

### • ALA-LA Foot Flange

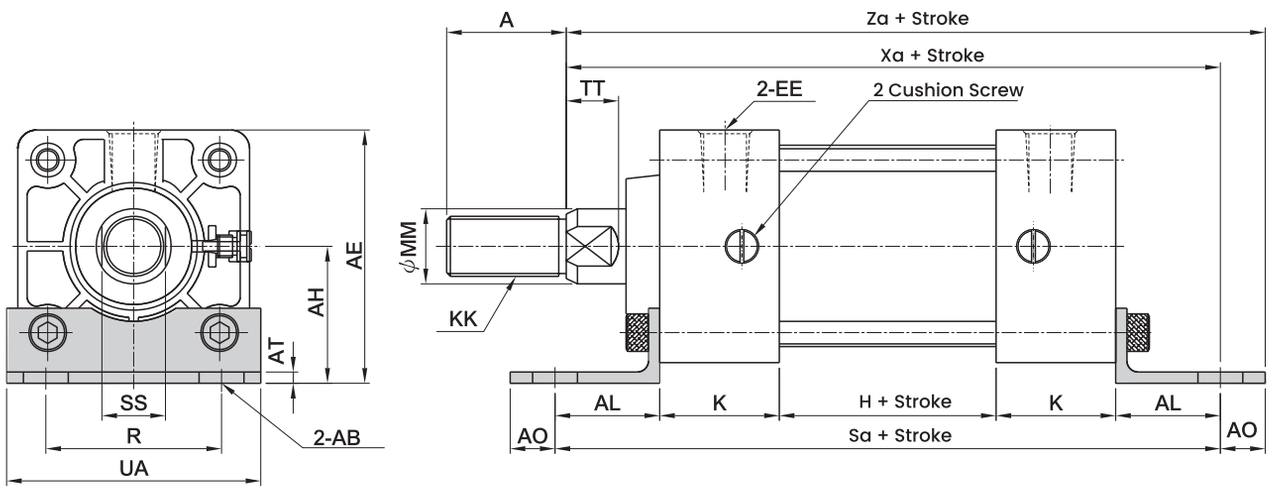


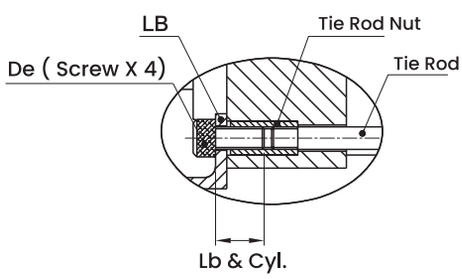




| Symbol / Bore | A | MM | KK | DE | E | EA | EE | LH | P | SB | SS | ST | SU | SY | TS | TT | US | VF | WF | XS | XT | XW | ZS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | M6XP1.0 | 45 | 45 | Rc1/8 | 22.5 | 58 | 9 | 10 | 8 | 13 | 22 | 63 | 7 | 80 | 15 | 25 | 35 | 73 | 108 | 130 |
| 40 | 24 | 16 | M12×P1.25 | M6×P1.0 | 53 | 50 | RC1/4 | 27 | 57 | 12 | 14 | 8 | 14 | 23 | 70 | 12 | 91 | 9 | 25 | 35 | 72 | 107 | 129 |
| 50 | 32 | 20 | M16×P1.5 | M6×P1.0 | 63 | 62 | RC1/4 | 32 | 57 | 12 | 17 | 9 | 14 | 24 | 83 | 12 | 104 | 9 | 25 | 35 | 72 | 107 | 131 |
| 63 | 32 | 20 | M16×P1.5 | M8×P1.25 | 75.5 | 75 | RC3/8 | 38 | 60 | 12 | 17 | 9 | 14 | 26 | 95 | 12 | 116 | 9 | 25 | 35 | 75 | 110 | 136 |
| 80 | 40 | 25 | M20×P1.5 | M10×P1.5 | 95 | 94 | RC3/8 | 48 | 64 | 14 | 21 | 12 | 18 | 33 | 121 | 14 | 146 | 14 | 35 | 48 | 81 | 129 | 162 |
| 100 | 40 | 25 | M20×P1.5 | M10×P1.5 | 115 | 112 | RC1/2 | 58 | 72 | 14 | 21 | 14 | 18 | 37 | 140 | 14 | 165 | 14 | 35 | 48 | 89 | 137 | 174 |

## External Dimensions

### • ALA-LB End Flange

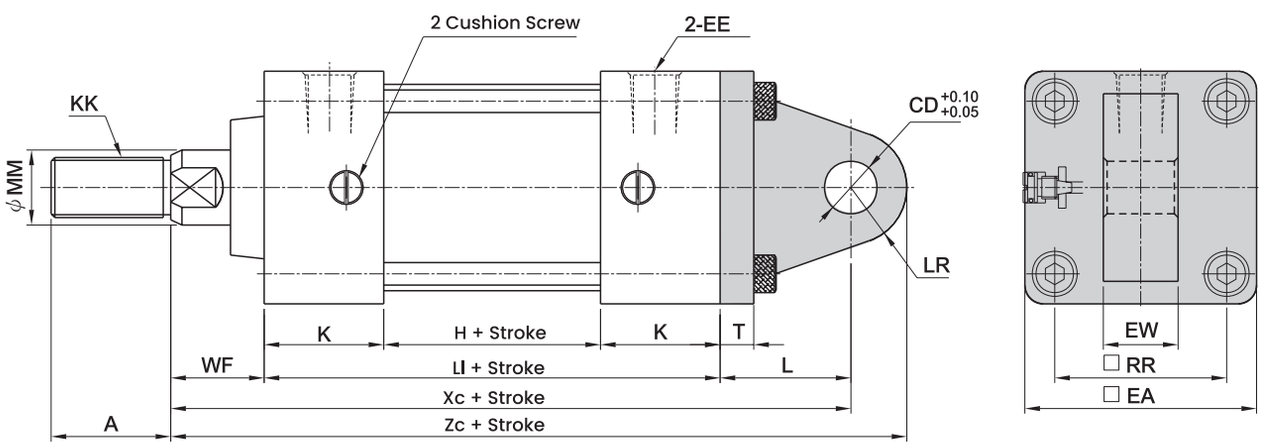


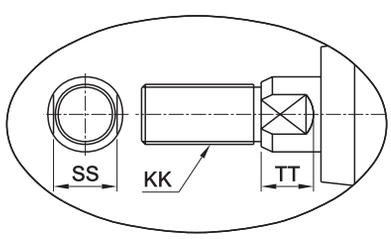



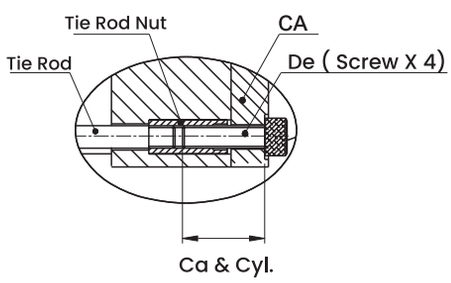

| Symbol / Bore | A | MM | KK | AB | AE | AH | AL | AO | AT | DE | EE | H | K | R | SA | SS | TT | UA | XA | ZA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | φ9 | 50.5 | 28 | 20.5 | 9.5 | 3 | M6×P1.0 | RC1/8 | 29 | 32 | 33 | 134 | 10 | 7 | 50 | 138.5 | 148 |
| 40 | 24 | 16 | M12×P1.25 | φ12 | 56 | 30 | 23.5 | 12.5 | 3 | M6×P1.0 | RC1/4 | 28 | 32 | 36 | 139 | 14 | 12 | 57 | 140.5 | 153 |
| 50 | 32 | 20 | M16×P1.5 | φ12 | 67.5 | 36.5 | 28 | 12 | 3 | M6×P1.0 | RC1/4 | 28 | 32 | 47 | 148 | 17 | 12 | 68 | 145 | 157 |
| 63 | 32 | 20 | M16×P1.5 | φ12 | 79 | 41 | 31 | 14 | 3 | M8×P1.25 | RC3/8 | 31 | 32 | 56 | 157 | 17 | 12 | 80 | 151 | 164 |
| 80 | 40 | 25 | M20×P1.5 | φ14 | 96 | 49 | 30 | 15 | 4 | M10×P1.5 | RC3/8 | 31 | 38 | 70 | 167 | 21 | 14 | 97 | 172 | 188 |
| 100 | 40 | 25 | M20×P1.5 | φ14 | 112 | 57 | 30 | 15 | 4 | M10×P1.5 | RC1/2 | 39 | 38 | 84 | 175 | 21 | 14 | 112 | 180 | 196 |

## External Dimensions

### • ALA-CA Clevis



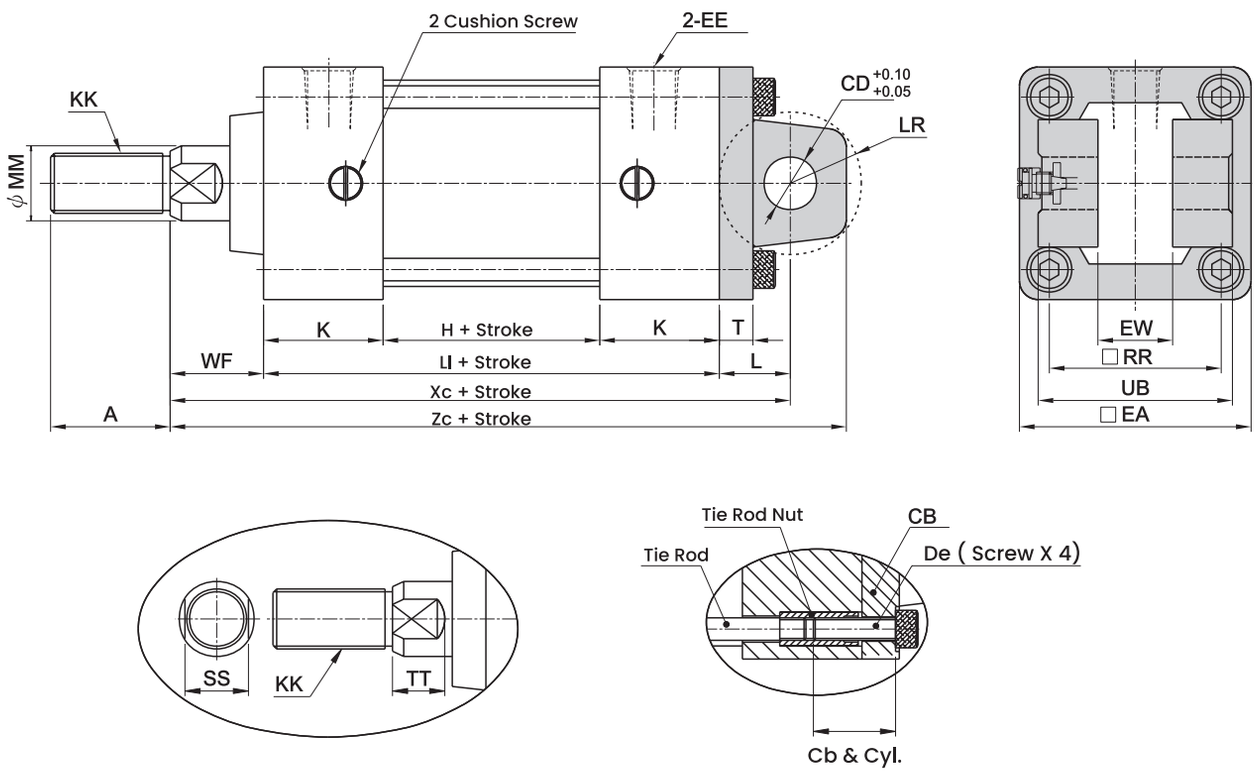

**Note :** (1)$\phi$CD $^{+0.10}_{+0.05}$

(2)EW $^{-0.30}_{-0.60}$

| Symbol / Bore | A | MM | KK | CD | DE | EA | EE | EW | H | K | L | LL | LR | RR | SS | T | TT | WF | XC | ZC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 24 | 16 | M12×P1.25 | φ14 | M6×P1.0 | 50 | RC1/4 | 20 | 28 | 32 | 34.5 | 92 | R14 | 37 | 14 | 9 | 12 | 25 | 151.5 | 165 |
| 50 | 32 | 20 | M16×P1.5 | φ14 | M6×P1.0 | 62 | RC1/4 | 20 | 28 | 32 | 34.5 | 92 | R15 | 46 | 17 | 9 | 12 | 25 | 151.5 | 166 |
| 63 | 32 | 20 | M16×P1.5 | φ14 | M8×P1.25 | 75 | RC3/8 | 20 | 31 | 32 | 34.5 | 95 | R15 | 56 | 17 | 9 | 12 | 25 | 154.5 | 169 |
| 80 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 94 | RC3/8 | 30 | 31 | 38 | 50 | 107 | R24 | 70 | 21 | 14 | 14 | 35 | 192 | 210 |
| 100 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 112 | RC1/2 | 30 | 39 | 38 | 50 | 115 | R25 | 84 | 21 | 14 | 14 | 35 | 200 | 218 |

## External Dimensions

### • ALA-CB Double Clevis



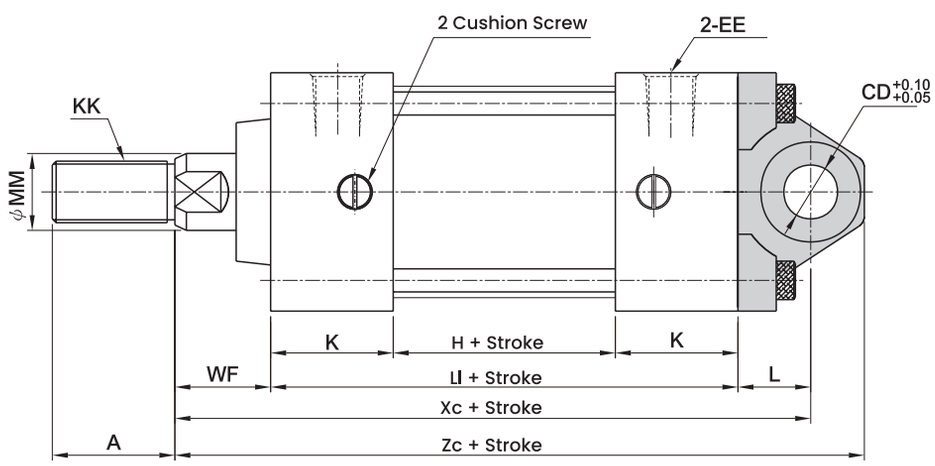

**Note :** (1) $\phi CD^{+0.10}_{+0.05}$

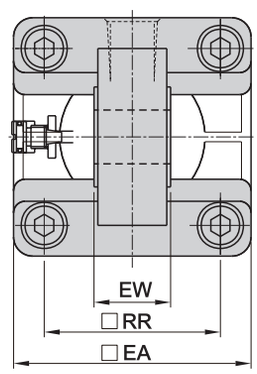
(2)EW(H14)

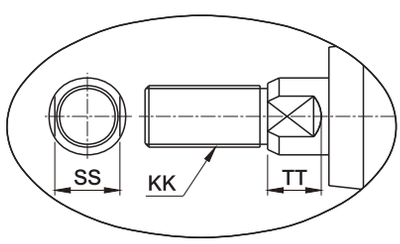
| Symbol / Bore | A | MM | KK | CD | DE | EA | EE | EW | H | K | L | LL | LR | RR | SS | T | TT | UB | WF | XC | ZC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | φ12 | M6XP1.0 | 45 | Rc1/8 | 16 | 29 | 32 | 19 | 93 | R16 | 33 | 10 | 8 | 7 | 32 | 25 | 137 | 149 |
| 40 | 24 | 16 | M12×P1.25 | φ14 | M6×P1.0 | 50 | RC1/4 | 20 | 28 | 32 | 19 | 92 | R16 | 37 | 14 | 9 | 12 | 44 | 25 | 136 | 151 |
| 50 | 32 | 20 | M16×P1.5 | φ14 | M6×P1.0 | 62 | RC1/4 | 20 | 28 | 32 | 19 | 92 | R16 | 46 | 17 | 9 | 12 | 52 | 25 | 136 | 151 |
| 63 | 32 | 20 | M16×P1.5 | φ14 | M8×P1.25 | 75 | RC3/8 | 20 | 31 | 32 | 19 | 95 | R16 | 56 | 17 | 9 | 12 | 52 | 25 | 139 | 154 |
| 80 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 94 | RC3/8 | 30 | 31 | 38 | 32 | 107 | R24 | 70 | 21 | 12 | 14 | 64 | 35 | 174 | 195 |
| 100 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 112 | RC1/2 | 30 | 39 | 38 | 32 | 115 | R24 | 84 | 21 | 12 | 14 | 64 | 35 | 182 | 203 |

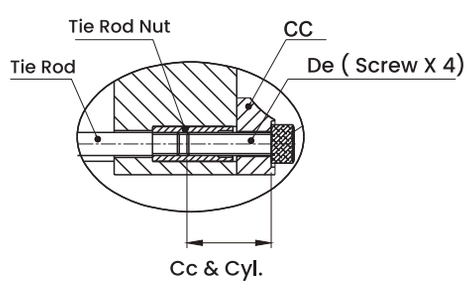
## External Dimensions

### • ALA-CC Short Clevis



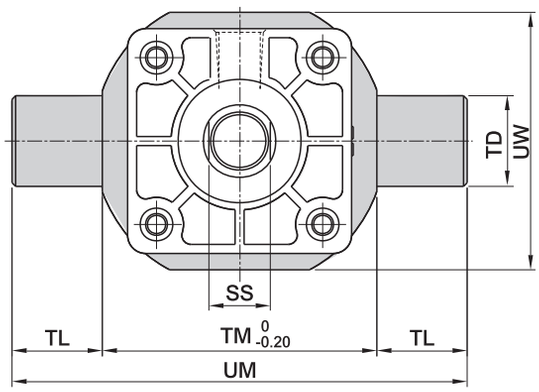

**Note:** (1)$\phi$CD $^{+0.10}_{+0.05}$

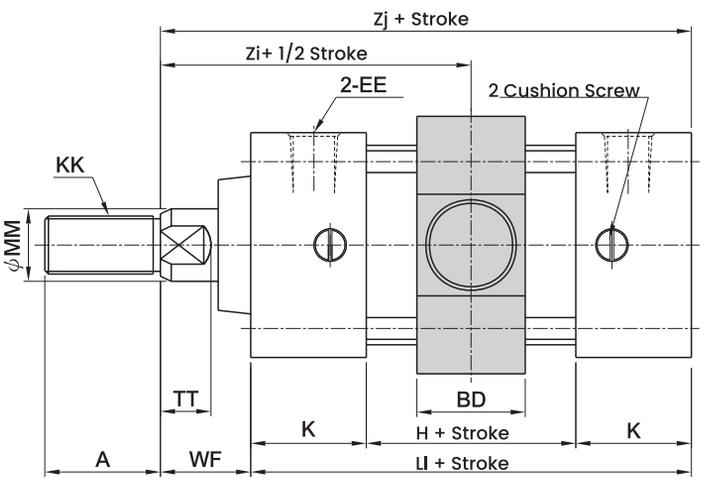
(2)EW $^{-0.30}_{-0.60}$

| Symbol / Bore | A | MM | KK | CD | DE | EA | EE | EW | H | K | L | LL | RR | SS | TT | WF | XC | ZC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | φ12 | M6XP1.0 | 45 | Rc1/8 | 16 | 29 | 32 | 19 | 93 | 33 | 10 | 7 | 25 | 137 | 149 |
| 40 | 24 | 16 | M12×P1.25 | φ14 | M6×P1.0 | 50 | RC1/4 | 20 | 28 | 32 | 19 | 92 | 37 | 14 | 12 | 25 | 136 | 150 |
| 50 | 32 | 20 | M16×P1.5 | φ14 | M6×P1.0 | 62 | RC1/4 | 20 | 28 | 32 | 19 | 92 | 46 | 17 | 12 | 25 | 136 | 150 |
| 63 | 32 | 20 | M16×P1.5 | φ14 | M8×P1.25 | 75 | RC3/8 | 20 | 31 | 32 | 19 | 95 | 56 | 17 | 12 | 25 | 139 | 153 |
| 80 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 94 | RC3/8 | 30 | 31 | 38 | 32 | 107 | 70 | 21 | 14 | 35 | 174 | 194 |
| 100 | 40 | 25 | M20×P1.5 | φ20 | M10×P1.5 | 112 | RC1/2 | 30 | 39 | 38 | 32 | 115 | 84 | 21 | 14 | 35 | 182 | 202 |

## External Dimensions

### • ALA-TC Mid Trunnion




note: (1)TM(h14)

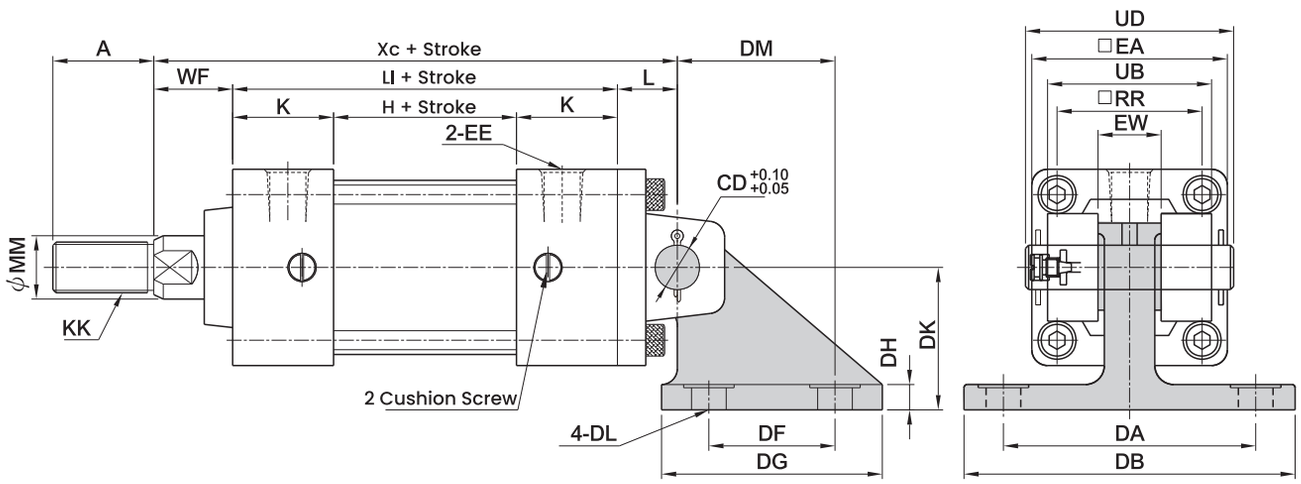
(2) $\phi$TD $^{-0.05}_{-0.10}$

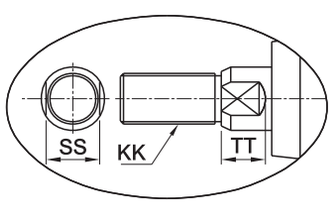
| Symbol / Bore | A | MM | KK | BD | EE | H | K | LL | SS | TD | TL | TM | TT | UM | UW | WF | ZI | ZJ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | 30 | Rc1/8 | 29 | 32 | 93 | 10 | 16 | 16 | 55 | 7 | 87 | 52 | 25 | 71.5 | 118 |
| 40 | 24 | 16 | M12×P1.25 | 30 | RC1/4 | 28 | 32 | 92 | 14 | 25 | 25 | 63 | 12 | 113 | 59 | 25 | 71 | 117 |
| 50 | 32 | 20 | M16×P1.5 | 30 | RC1/4 | 28 | 32 | 92 | 17 | 25 | 25 | 76 | 12 | 126 | 71 | 25 | 71 | 117 |
| 63 | 32 | 20 | M16×P1.5 | 30 | RC3/8 | 31 | 32 | 95 | 17 | 25 | 25 | 88 | 12 | 138 | 86 | 25 | 72.5 | 120 |
| 80 | 40 | 25 | M20×P1.5 | 35 | RC3/8 | 31 | 38 | 107 | 21 | 25 | 25 | 114 | 14 | 164 | 104 | 35 | 88.5 | 142 |
| 100 | 40 | 25 | M20×P1.5 | 40 | RC1/2 | 39 | 38 | 115 | 21 | 25 | 25 | 132 | 14 | 182 | 128 | 35 | 92.5 | 146 |

*Note: Stroke must more than 100ST (excluding 100ST) if need to add an induction switch.*

# External Dimensions

## • ALA-CBBK Double Clevis Bracket

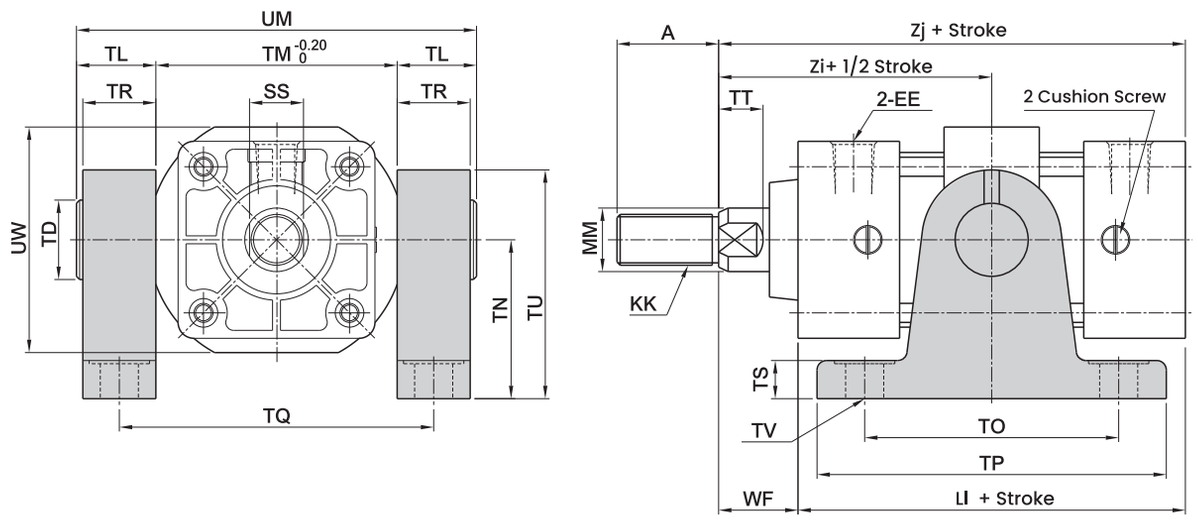



| Symbol / Bore | A | MM | KK | CD | DA | DB | DF | DG | DH | DK | DL | DM | EA | EE | EW | H | K | L | LL | RR | SS | TT | UB | UD | WF | XC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | 12 | 65 | 85 | 40 | 60 | 8 | 35 | ϕ9 | 45 | 45 | Rc1/8 | 16 | 29 | 32 | 19 | 93 | 33 | 10 | 7 | 32 | 46 | 25 | 137 |
| 40 | 24 | 16 | M12×P1.25 | 14 | 80 | 105 | 40 | 70 | 8 | 45 | ϕ11 | 50 | 50 | RC1/4 | 20 | 28 | 32 | 19 | 92 | 37 | 14 | 12 | 44 | 58 | 25 | 136 |
| 50 | 32 | 20 | M16×P1.5 | 14 | 80 | 105 | 40 | 70 | 8 | 45 | ϕ11 | 50 | 62 | RC1/4 | 20 | 28 | 32 | 19 | 92 | 46 | 17 | 12 | 52 | 66 | 25 | 136 |
| 63 | 32 | 20 | M16×P1.5 | 14 | 80 | 105 | 40 | 70 | 8 | 45 | ϕ11 | 50 | 75 | RC3/8 | 20 | 31 | 32 | 19 | 95 | 56 | 17 | 12 | 52 | 66 | 25 | 139 |
| 80 | 40 | 25 | M20×P1.5 | 20 | 105 | 135 | 65 | 95 | 12 | 60 | ϕ14 | 70 | 94 | RC3/8 | 30 | 31 | 38 | 32 | 107 | 70 | 21 | 14 | 64 | 78 | 35 | 174 |
| 100 | 40 | 25 | M20×P1.5 | 20 | 105 | 135 | 65 | 95 | 12 | 60 | ϕ14 | 70 | 112 | RC1/2 | 30 | 39 | 38 | 32 | 115 | 84 | 21 | 14 | 64 | 78 | 35 | 182 |

# External Dimensions

## • ALA-TCBK Mid Trunnion Bracket




| Symbol / Bore | A | MM | KK | EE | LL | SS | TD | TL | TM | TN | TO | TP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10XP1.25 | Rc1/8 | 93 | 10 | 16 | 16 | 55 | 40 | 60 | 80 |
| 40 | 24 | 16 | M12×P1.25 | RC1/4 | 92 | 14 | 25 | 25 | 63 | 50 | 80 | 110 |
| 50 | 32 | 20 | M16×P1.5 | RC1/4 | 92 | 17 | 25 | 25 | 76 | 50 | 80 | 110 |
| 63 | 32 | 20 | M16×P1.5 | RC3/8 | 95 | 17 | 25 | 25 | 88 | 50 | 80 | 110 |
| 80 | 40 | 25 | M20×P1.5 | RC3/8 | 107 | 21 | 25 | 25 | 114 | 70 | 85 | 120 |
| 100 | 40 | 25 | M20×P1.5 | RC1/2 | 115 | 21 | 25 | 25 | 132 | 70 | 85 | 120 |

| Symbol / Bore | TQ | TR | TT | TS | TU | TV | UM | UW | WF | ZI | ZJ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 70 | 15 | 7 | 12 | 56 | 9 | 87 | 52 | 25 | 71.5 | 118 |
| 40 | 86 | 23 | 12 | 12 | 72 | 12 | 113 | 59 | 25 | 71 | 117 |
| 50 | 99 | 23 | 12 | 12 | 72 | 12 | 126 | 71 | 25 | 71 | 117 |
| 63 | 111 | 23 | 12 | 12 | 72 | 12 | 138 | 86 | 25 | 72.5 | 120 |
| 80 | 137 | 23 | 14 | 12 | 92 | 14 | 164 | 104 | 35 | 88.5 | 142 |
| 100 | 155 | 23 | 14 | 12 | 92 | 14 | 182 | 128 | 35 | 92.5 | 146 |

*Note: Stroke must more than 100ST (excluding 100ST) if need to add an induction switch.*

## ALC Double Rods Cylinders

1. Al series of pneumatic cylinders is made of aluminum alloy rod and head cover, piston and steel pipe.

2. It is lightness and high efficiency.

3. All standard products are equipped with cushion devices.

4. Magnets can be attached to the piston, and magnetic sensors can be installed in all cylinders.

5. It adopts international brand sealing components to ensure excellent life.

## Order Indication

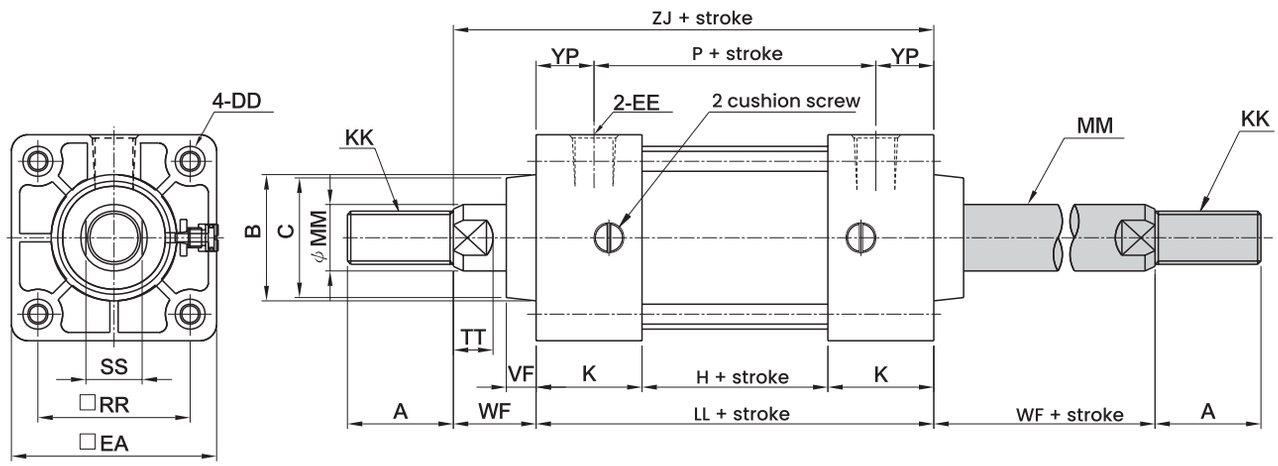
| ALC | | SD | 40 | 100ST | | T×n |
|---|---|---|---|---|---|---|
| Series | Performance | Installation Type | Bore | Stroke | End Connectors | Magnetic Sensor |
| Double Rods Tie-rod Cylinders | Blank: Indicates Standard | Sd: Basic | 32:32mm | | Y : Y Connector | JFS01 |
| | G: Sensor | Fa: Front Flange | 40:40mm | | I : I Connector | T: 2 Outgoing Lines, Standard Line Is 2 M |
| | H: Shaft With Dust Cover | Fb: Rear Flange | 50:50mm | | Pin: Pin | P:pnp 3 Outgoing Lines, Standard Line Is 2 M |
| | J: Heat/ Acid & Alkali Resistance | La: Foot Flange | 63:63mm | | Kgt: Floating Joint | N:npn 3 Outgoing Lines, Standard Line Is 2 M |
| | Q: Low Friction Oil Seal | Lb: End Flange | 80:80mm | | Phs: Fish Eye | N: Qty |
| | | Tc: Mid Trunnion | 100:100mm | | | *the Order With G Mark But No T X N Mark Indicates That Only Induction Magnet Is Attached Without Magnetic Sensor |

JFS01

⚠ *blank = indicates standard, no need to specify when order*

## External Dimensions

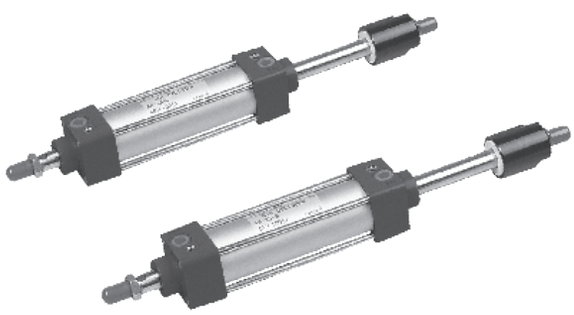
### • ALC-SD Basic




| Symbol / Bore | A | MM | KK | B | C | DD | EA | EE | H | K | LL | P | RR | SS | TT | VF | YP | ZJ | Wf |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | 28 | 28 | M6×P1.0 | 45 | RC1/8 | 29 | 32 | 93 | 58 | 33 | 10 | 7 | 15 | 17.5 | 118 | 20 |
| 40 | 24 | 16 | M12×P1.25 | 32 | 30 | M6×P1.0 | 50 | RC1/4 | 28 | 32 | 92 | 57 | 37 | 14 | 12 | 9 | 17.5 | 117 | 14 |
| 50 | 32 | 20 | M16×P1.5 | 38 | 36 | M6×P1.0 | 62 | RC1/4 | 28 | 32 | 92 | 57 | 46 | 17 | 12 | 9 | 17.5 | 117 | 14 |
| 63 | 32 | 20 | M16×P1.5 | 38 | 36 | M8×P1.25 | 75 | RC3/8 | 31 | 32 | 95 | 60 | 56 | 17 | 12 | 9 | 17.5 | 120 | 14 |
| 80 | 40 | 25 | M20×P1.5 | 47 | 43 | M10×P1.5 | 94 | RC3/8 | 31 | 38 | 107 | 64 | 70 | 21 | 14 | 14 | 21.5 | 142 | 19 |
| 100 | 40 | 25 | M20×P1.5 | 47 | 43 | M10×P1.5 | 112 | RC1/2 | 39 | 38 | 115 | 72 | 84 | 21 | 14 | 14 | 21.5 | 150 | 19 |

⚠ *note: For external dimensions of other accessories, please refer to P.022～P.033 ALA double-acting cylinder.*

## AId Double Rods Cylinders (With Forward Alignment)



1. AL series of pneumatic cylinders is made of aluminum alloy rod and head cover, piston and steel pipe.

2. It is lightness and high efficiency.

3. All standard products are equipped with cushion devices.

4. Magnets can be attached to the piston, and magnetic sensors can be installed in all cylinders.

5. It adopts international brand sealing components to ensure excellent life.

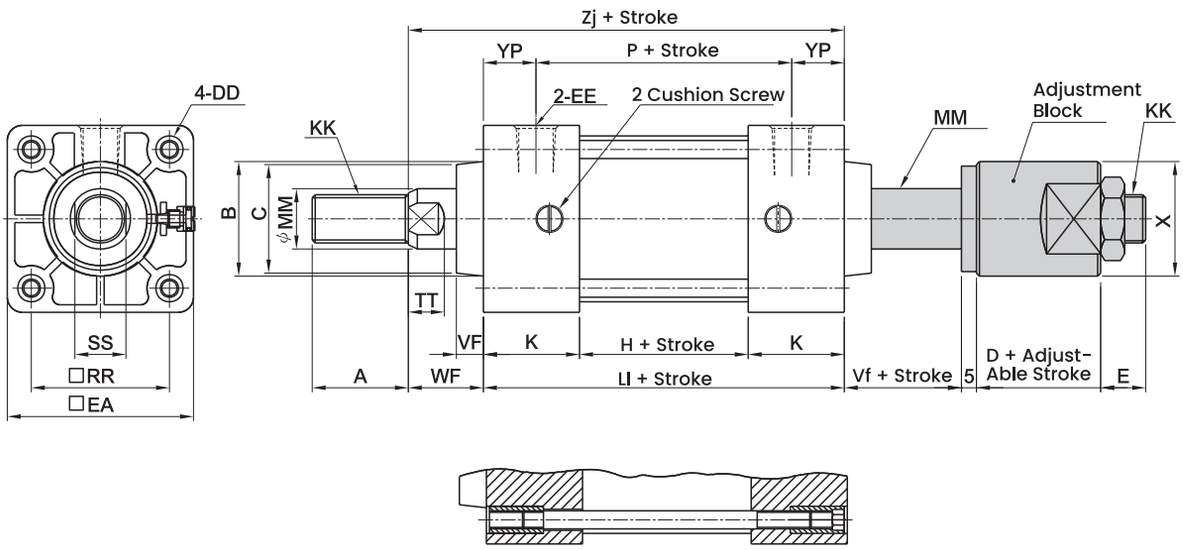
## Order Indication

| AId | | Sd | 40 | 100st | | 25mm | T×n |
|---|---|---|---|---|---|---|---|
| Series | Performance | Installation Type | Bore | Stroke | End Connectors | Adjustable Stroke | Magnetic Sensor |
| Double Rods Tie-rod Cylinders (With Forward Alignment) | Blank: Indicates Standard | Sd: Basic | 32:32mm | | Y : Y Connector | Basic Types: 25mm & 50mm | JFS01 |
| | G: Sensor | Fa: Front Flange | 40:40mm | | I : I Connector | | T: 2 Outgoing Lines, Standard Line Is 2 M |
| | H: Shaft With Dust Cover | Fb: Rear Flange | 50:50mm | | Pin: Pin | | P:pnp 3 Outgoing Lines, Standard Line Is 2 M |
| | J: Heat/ Acid & Alkali Resistance | La: Foot Flange | 63:63mm | | Kgt: Floating Joint | | N:npn 3 Outgoing Lines, Standard Line Is 2 M |
| | Q: Low Friction Oil Seal | Lb: End Flange | 80:80mm | | Phs: Fish Eye | | N: Qty |
| | | Tc: Mid Trunnion | 100:100mm | | | | *the Order With G Mark But No T X N Mark Indicates That Only Induction Magnet Is Attached Without Magnetic Sensor |
| | | | | | | | JFS01  |

⚠ *blank = indicates standard, no need to specify when order*

# External Dimensions

## • ALD-SD Basic

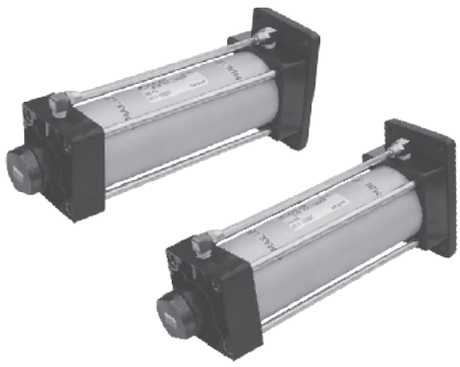



SD type installation method of column caps fixed at both ends

| Symbol / Bore | A | MM | KK | B | C | D | DD | E | EA | EE | H | K | LL | P | RR | SS | TT | VF | WF | X | YP | ZJ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 12 | M10×P1.25 | 28 | 28 | 20 | M6×P1.0 | 15 | 45 | RC1/8 | 29 | 32 | 93 | 33 | 10 | 10 | 7 | 15 | 25 | 28 | 17.5 | 118 |
| 40 | 24 | 16 | M12×P1.25 | 32 | 30 | 20 | M6×P1.0 | 15 | **50** | RC1/4 | 28 | 32 | 92 | 57 | 37 | 14 | 12 | 9 | 25 | 32 | 17.5 | 117 |
| 50 | 32 | 20 | M16×P1.5 | 38 | 36 | 20 | M6×P1.0 | 15 | 62 | RC1/4 | 28 | 32 | 92 | 57 | 46 | 17 | 12 | 9 | 25 | 38 | 17.5 | 117 |
| 63 | 32 | 20 | M16×P1.5 | 38 | 36 | 25 | M8×P1.25 | 15 | 75 | RC3/8 | 31 | 32 | 95 | 60 | 56 | 17 | 12 | 9 | 25 | 38 | 17.5 | 120 |
| 80 | 40 | 25 | M20×P1.5 | 47 | 43 | 25 | M10×P1.5 | 15 | 94 | RC3/8 | 31 | 38 | 107 | 64 | 70 | 21 | 14 | 14 | 35 | 44 | 21.5 | 142 |
| 100 | 40 | 25 | M20×P1.5 | 47 | 43 | 25 | M10×P1.5 | 15 | **112** | RC1/2 | 39 | 38 | 115 | 72 | 84 | 21 | 14 | 14 | 35 | 44 | 21.5 | 150 |

⚠ *note: For external dimensions of other accessories, please refer to P.022～P.033 ALA double-acting cylinder.*

## Altk Air/ Oil Converter



1.Air pressure is used to push the hydraulic oil in the cylinder to switch to the same pressure.

2.Utilizes the principle of incompressibility of hydraulic oil to drive the air-oil conversion cylinder.

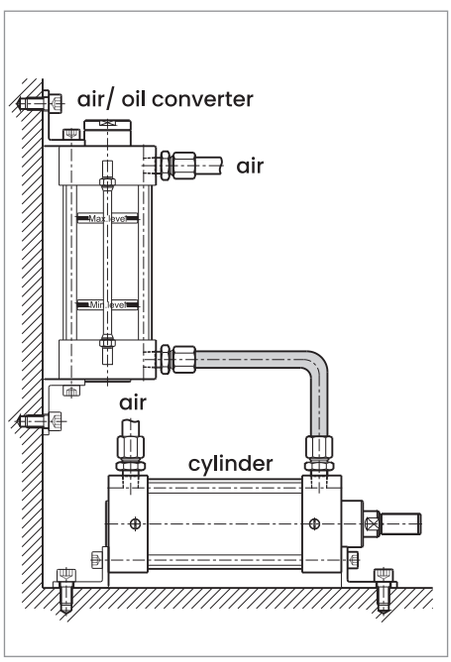
3.The action is slow and steady.

## Order Indication

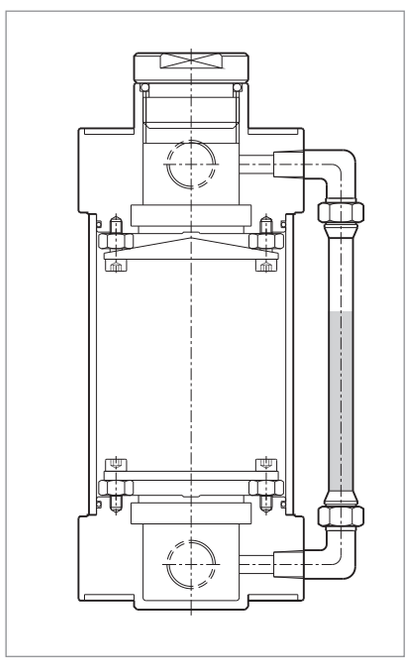
| AL | TK | SD | 50 | 200ST |
|---|---|---|---|---|
| Series | Type | Installation Type | Bore | Stroke |
| Tie-rod Cylinders | Air/ Oil Converter | Sd: Basic<br>Lb: End Flange<br>Fb: Rear Flange | 50 : 50 mm<br>63 : 63 mm<br>80 : 80 mm<br>100 : 100 mm | 150mm ~ 500mm |

## Installation

- Converter must be installed vertically And higher than acting cylinder.

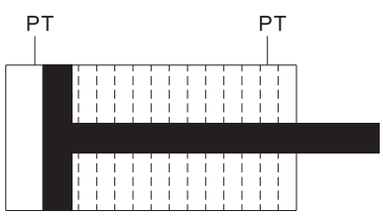
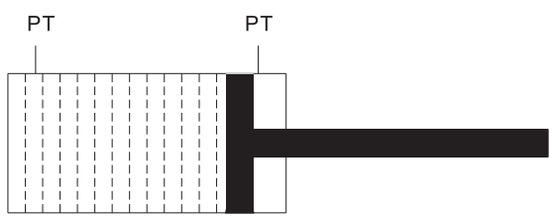



- Structure of converter



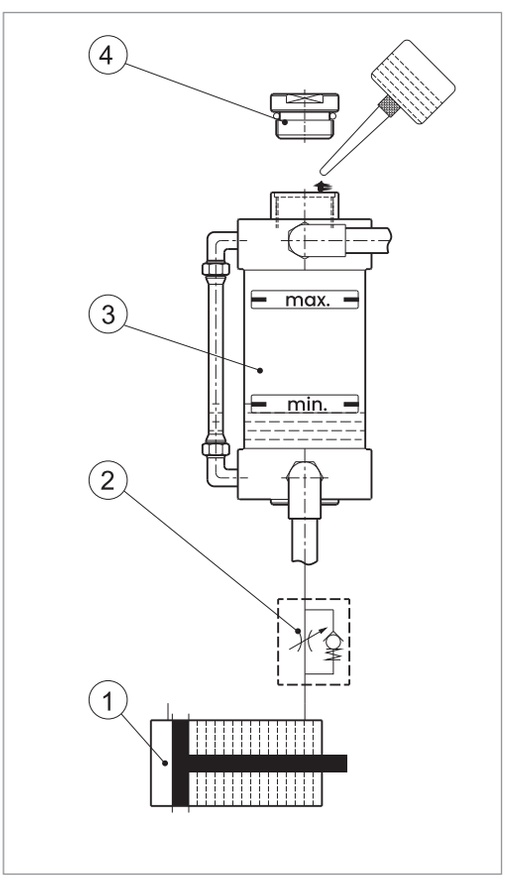
## Selection Instructions

- Bore and stroke of converter is based on the needed volume of acting cylinder.
- Calculation of volume:

| forward with stable speed | backward with stable speed |
|---|---|
|  |  |
| volume $V=\pi/4\times(D^2-d^2)\times L$ | |
| $=0.785\times(D^2-d^2)\times L$ | |
| note: V=cm³(CC) D=bore(cm) d=rod(cm) L=stroke(cm) π/4=0.785 | |

- Converter volume(v) ≥ 1.5 x cylinder volume(v)

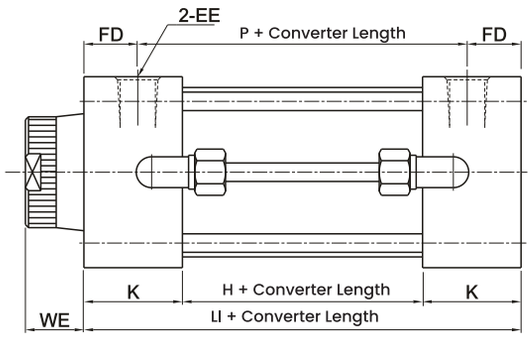
## Oil Injection Instructions



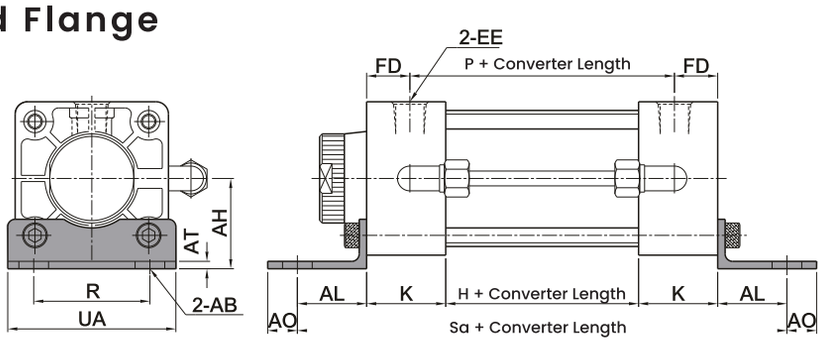

- Set acting cylinder (1) at the end point.
- Align the flow control valve (2) to the full open position.
- Release the inlet cover (3) of converter (4).
- Inject oil into coverter (3) from the top until reach the minimum oil point.
- Lock inlet cover (4).
- Apply pressure to acting cylinder (1) to move back and forward 3~5 times to eject airs inside of cylinder (1) and flow control valve (2).

# External Dimensions

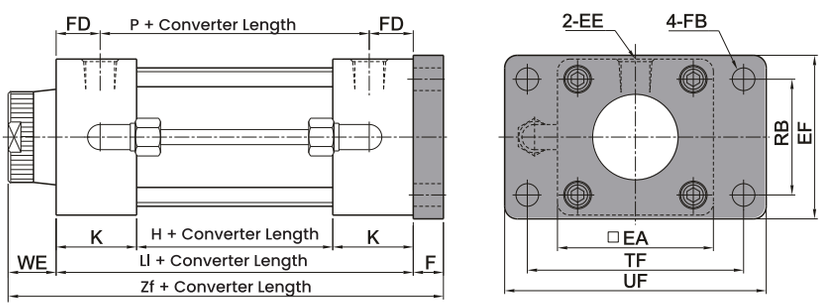
## • SD Basic




## • LB End Flange




## • FB Rear Flange




| Symbol / Bore | H | K | P | WE | LL | EE | FD | R | EA | AB | AH | AT | AL | AO | UA | SA | F | FB | RB | EF | TF | UF | ZF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 28 | 32 | 57 | 19 | 92 | RC1/4 | 17.5 | 47 | 62 | 12 | 36.5 | 3 | 28 | 12 | 68 | 148 | 10 | 9 | 46 | 65 | 86 | 104 | 121 |
| 63 | 31 | 32 | 60 | 19 | 95 | RC3/8 | 17.5 | 56 | 75 | 12 | 41 | 3 | 31 | 14 | 80 | 157 | 10 | 9 | 56 | 76 | 98 | 116 | 124 |
| 80 | 31 | 38 | 64 | 24 | 107 | RC3/8 | 21.5 | 70 | 94 | 14 | 49 | 4 | 30 | 15 | 97 | 167 | 16 | 12 | 70 | 95 | 119 | 146 | 147 |
| 100 | 39 | 38 | 72 | 24 | 115 | RC1/2 | 21.5 | 84 | 112 | 14 | 57 | 4 | 30 | 15 | 112 | 175 | 16 | 12 | 84 | 115 | 138 | 165 | 155 |