# Air Cylinders

## Pen-Style Type (Double Acting)

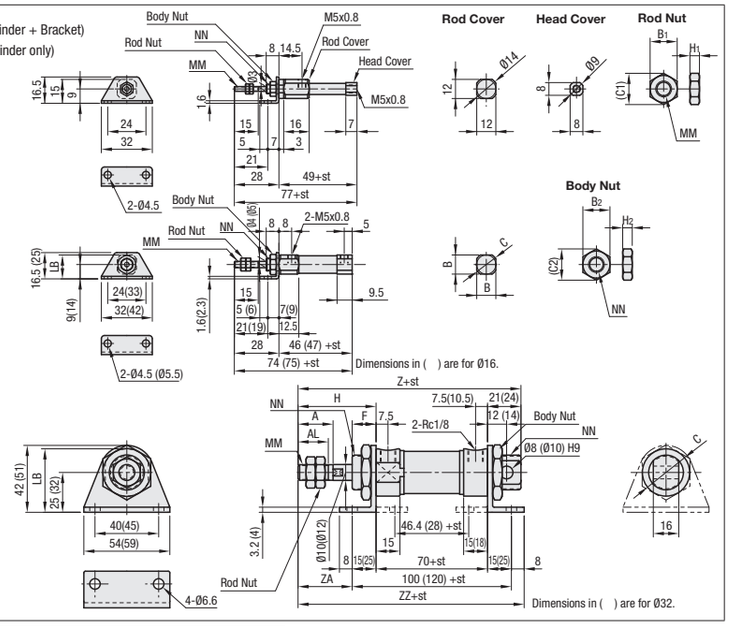
# Coupling Rods for Air Cylinders / Thread Conversion Adapters

## L Selectable / L Configurable / L and F Configurable

### Pen-Style Type

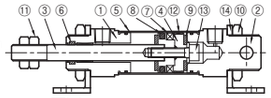
RoHS10

**MSPCB** (Cylinder + Bracket)
**MSPCN** (Cylinder only)




| Tube I.D. (mm) | A | AL | B | B1 | B2 | C | C1 | C2 | F | H | H1 | H2 | LB | MM | NN | Z | ZA | ZZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | - | - | - | 5.5 | 8 | - | 6.4 | 9.2 | - | - | 2.4 | 4 | - | M3x0.5 | M6x1.0 | - | - | - |
| 10 | - | - | 12 | 7 | 11 | 14 | 8.1 | 12.7 | - | - | 3.2 | 4 | 15 | M4x0.7 | M8x1.0 | - | - | - |
| 16 | - | - | 18 | 8 | 14 | 20 | 9.2 | 16.2 | - | - | 4 | 4 | 23 | M5x0.8 | M10x1.0 | - | - | - |
| 20 | 20 | 18 | - | 13 | 30 | 28 | 15 | 34.6 | 12 | 38 | 5 | 6 | 38.4 | M8x1.25 | M22x1.5 | 129 | 23 | 131 |
| 25 | 22 | 20 | - | 17 | 30 | 33.5 | 19.6 | 34.6 | 15 | 49 | 6 | 6 | 39.9 | M10x1.25 | M22x1.5 | 140 | 34 | 142 |
| 32 | 22 | 20 | - | 17 | 32 | 37.5 | 19.6 | 37 | 18 | 52 | 6 | 8 | 50 | M10x1.25 | M24x2.0 | 146 | 27 | 155 |

### Air Cylinder - Pen-Style - Structure Diagram



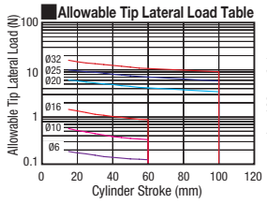
### Pen-Style Type : Parts List

| Number | Part Name | Ø6 | Ø10 | Ø16 | Ø20 | Ø25 | Ø32 |
|---|---|---|---|---|---|---|---|
| ① | Rod Cover | EN AW-6061 Equiv. | | | | | |
| ② | Head Cover | EN AW-6061 Equiv. | | | | | |
| ③ | Piston Rod | EN 1.4305 Equiv. | | | EN 1.1191 Equiv. | | |
| ④ | Piston | EN AW-6061 Equiv. (Note) | | | | | |
| ⑤ | Tube | EN 1.4301 Equiv. | | | | | |
| ⑥ | Rod Gasket | NBR | | | | | |
| ⑦ | Magnet | Plastic Magnet | | | | | |
| ⑧ | Piston Gasket | NBR | | | | | |
| ⑨ | Cushion | NBR | | | | | |
| ⑩ | Body Nut | EN CW614N Equiv. | | | EN 1.0038 Equiv. | | |
| ⑪ | Rod Nut | EN CW614N Equiv. | | | EN 1.0038 Equiv. | | |
| ⑫ | Wear Contact | Teflon | | | | | |
| ⑬ | Piston Bolt | EN 1.7220 Equiv. | | | | | |
| ⑭ | Foot | EN 1.0038 Equiv. | | | | | |

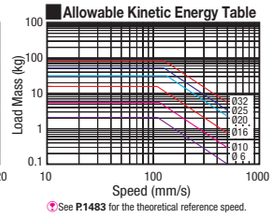
(Note) JIS-EN CW614N Equiv. is for Ø10 and Ø16, POM is for Ø25.

| Part Number Type | Tube I.D. (mm) | St Stroke (mm) | MSPCB Unit Price Stroke (mm) 15 | 25 | 30 | 45 | 50 | 60 | 100 | MSPCN Unit Price Stroke (mm) 15 | 25 | 30 | 45 | 50 | 60 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (Cylinder + Bracket) MSPCB | 6 | 15 30 45 60 | | - | | | - | | - | | - | | | - | | - |
| | 10 | 15 30 45 60 | | - | | | - | | - | | - | | | - | | - |
| | 16 | 15 30 45 60 | | - | | | - | | - | | - | | | - | | - |
| (Cylinder only) MSPCN | 20 | 15 25 50 100 | | | - | - | | - | | | | - | - | | - | |
| | 25 | 15 25 50 100 | | | - | - | | - | | | | - | - | | - | |
| | 32 | 15 25 50 100 | | | - | - | | - | | | | - | - | | - | |

### Allowable Tip Lateral Load Table




### Allowable Kinetic Energy Table




See P1483 for the theoretical reference speed.

### Theoretical Output

Unit (N)

| Tube I.D. (mm) | Operating Direction | Operating Pressure (MPa) 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 |
|---|---|---|---|---|---|---|---|
| 6 | Push | 5.7 | 8.5 | 11.3 | 14.1 | 17 | 19.8 |
| | Pull | 4.2 | 6.4 | 8.5 | 10.6 | 12.7 | 14.8 |
| 10 | Push | 15.7 | 23.6 | 31.4 | 39.3 | 47.1 | 55 |
| | Pull | 13.2 | 19.8 | 26.4 | 33 | 39.6 | 46.2 |
| 16 | Push | 40 | 60 | 80 | 101 | 121 | 141 |
| | Pull | 36 | 54 | 73 | 91 | 109 | 127 |
| 20 | Push | 63 | 94 | 126 | 157 | 189 | 220 |
| | Pull | 47 | 71 | 94 | 118 | 141 | 165 |
| 25 | Push | 98 | 147 | 196 | 245 | 295 | 344 |
| | Pull | 83 | 124 | 165 | 206 | 247 | 289 |
| 32 | Push | 161 | 241 | 322 | 402 | 483 | 563 |
| | Pull | 138 | 207 | 277 | 346 | 415 | 484 |

### Pen-Style Type : Basic Specification

| | | |
|---|---|---|
| Tube I.D. (mm) | 6 | 10, 16 / 20~32 |
| Operating Type | Double Acting | |
| Applicable Fluid | Air | |
| Min. Operating Pressure (MPa) | 0.12 | 0.06 |
| Max. Operating Pressure (MPa) | 0.7 | |
| Pressure Resistance (MPa) | 1.0 | |
| Operating Temp. Range (°C) | 5~60 | |
| Piston Speed (mm/s) | 50~500 | |
| Cushion Mechanism | NBR | |
| Stroke Tolerance (mm) | 0~+1.5 | 0~+2.0 |
| Lubrication | Lubrication Free | |
| Pipe Connection Bore Dia. | M5x0.8 | Rc1/8 |

See P1483 for the theoretical reference speed.

### Pen-Style Sensors for Cylinders

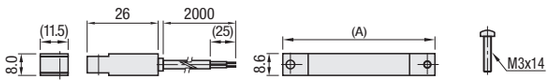
RoHS10

**MSRNS** (No Contact Type)

Accessory : 1 pc. (Mounting Brackets)

| No. | Ø6 | Ø10 | Ø16 | Ø20 | Ø25 | Ø32 |
|---|---|---|---|---|---|---|
| A | 41.5 | 53 | 71 | 84 | 100 | 123 |

(No.6~32)




### Specifications : Special Sensor for Pen-Style Type

| | |
|---|---|
| Type | MSRNS |
| No. | 6~32 |
| Contact Type | No Contac |
| Contact Structures | Normally Open |
| Operating Supply Voltage Range | DC5~28V |
| Load Current Range | 50mA or Less |
| Impact Resistance | 50G |
| Internal Voltage Drop | 1.5V or Less |
| Operating Temperature | 5 ~ 60°C |
| Lead Wire | 3 Conductors Ø3.3 |
| Lead Wire Length | 2m |
| Protection Structure | IP66 |
| Indicator Light | Lights when ON |
| Indicator Light Color | Red |

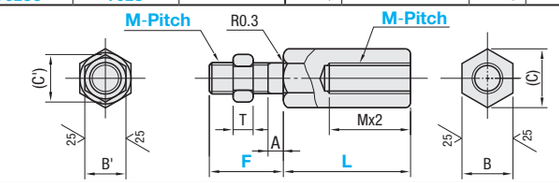
| Part Number Type | No. | Applicable Cylinder | Unit Price MSRNS |
|---|---|---|---|
| MSRNS | 6 | MSPC□6-□ | |
| | 10 | MSPC□10-□ | |
| | 16 | MSPC□16-□ | |
| | 20 | MSPC□20-□ | |
| | 25 | MSPC□25-□ | |
| | 32 | MSPC□32-□ | |

Ordering Example: Part Number - Stroke
MSPCB6 - 30

### Extension Rod for Air Cylinders

RoHS10

| Type: L Selectable | L Configurable | L and F Configurable | Material | Surface Treatment | Accessory Material | Accessory Surface Treatment |
|---|---|---|---|---|---|---|
| FJEBC | FJEB | FJEBF | EN 1.1191 Equiv. | Black Oxide | EN 1.0038 Equiv. | Trivalent Bright Chromate |
| FJERC | FJER | FJERF | | Electroless Nickel Plating | | |
| FJESC | FJES | - | EN 1.4301 Equiv. | - | EN 1.4301 Equiv. | - |




| Part Number Type | M-Pitch | L Selectable | L Configurable (1mm Increment) | F Standard | F Configurable (1mm Increment) | A | B | (C) | Included Nut B' | (C') | T | Qty. | Unit Price FJEBC | FJERC | FJESC | FJEB | FJER | FJES | FJEBF | FJERF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L Selectable FJEBC FJERC FJESC | 3-0.5 | 20 25 30 35 40 50 75 100 | 20~100 | 17.5 | 10~15 | 2.5 | 6 | 6.9 | 5.5 | 6.4 | 2.4 | 2 pcs. | | | | | | | | |
| | 4-0.7 | | | | 12~20 | | 8 | 9.2 | 7 | 8.1 | 3.2 | | | | | | | | | |
| | 5-0.8 | | | | 14~20 | | | | 8 | 9.2 | 4 | | | | | | | | | |
| | 6-1.0 | | 24~100 | | 14~30 | | 10 | 11.5 | 10 | 11.5 | 5 | 1 pc. | | | | | | | | |
| L Configurable FJEB FJER FJES | 8-1.0 | *30 35 40 50 75 100 150 200 | 32~200 | 18 | 14~40 | | 14(13) | 16.2(15) | 13 | 15 | | | | | | | | | | |
| | 8-1.25 | | | | | | | | | | | | | | | | | | | |
| | 10-1.25* | | 40~200 | 22 | 14~50 | | 17 | 19.6 | 17 | 19.6 | 6 | | | | | | | | | |
| | 10-1.5* | | | | | | | | | | | | | | | | | | | |
| L and F Configurable FJEBF FJERF | 12-1.25 | *40 50 75 100 150 200 | 48~200 | 24 | 16~60 | 3 | 21(19) | 24.2(21.9) | 19 | 21.9 | 7 | | | | | | | | | |
| | 12-1.5 | | | | | | | | | | | | | | | | | | | |
| | 14-1.5* | | 56~200 | | 17~70 | | 23(22) | 26.6(25.4) | 22 | 25.4 | 8 | | | | | | | | | |
| | 18-1.5* | | 72~200 | 30 | 25~80 | | 26(27) | 30(31.2) | 27 | 31.2 | 15 | | | | | | | | | |
| | 20-1.5 | 75 100 150 200 | 80~200 | 35 | 30~80 | 5 | 30 | 34.6 | 30 | 34.6 | 16 | | | | | | | | | |
| | 22-1.5 | | | 40 | | | 32 | 37 | 32 | 37 | 18 | | | | | | | | | |

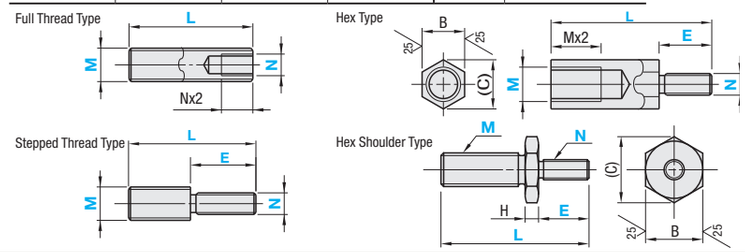
The dimension in the brackets ( ) is for FJEBC, FJEB, FJESC, FJES.

* For M Pitch 10-1.25(M10-1.5)L=30, M Pitch 14-1.5 L=40 and M Pitch 18-1.5 L=40, the effective thread length of Tap is Mx1.5.

### Thread Conversion Adapters

RoHS10

| Type: Full Thread | Stepped Thread | Hex | Hex Shoulder | Material | Surface Treatment |
|---|---|---|---|---|---|
| SAA | SAB | SAC | SAD | EN 1.1191 Equiv. | Black Oxide |
| SAAM | SABM | SACM | SADM | | Electroless Nickel Plating |
| SAAS | SABS | SACS | SADS | EN 1.4301 Equiv. | - |




| Part Number Type | M Coarse | M Fine Thread | M Fine (Nominal) | L 1mm Increment | N (Coarse) | NS (Fine) | E 1mm Increment | H | B | (C) |
|---|---|---|---|---|---|---|---|---|---|---|
| SAA SAB SAC SAD | 5 | - | - | 20~100 | 3 4* | - | 5~16 | 3 | 8 | 9.2 |
| | 6 | - | - | 20~100 | 3 4 5* | - | 6~20 | | 10 | 11.5 |
| | 8 | 8S | M8x1.0 | 30~150 | 4 5 6* | - | 8~24 | | 13 | 15 |
| SAAM SABM SACM SADM | 10 | 10S | M10x1.25 | 30~150 | 5 6* 8* | 8* | 10~32 | 4 | 17 | 19.6 |
| | 12 | 12S | M12x1.25 | 40~200 | 6 8 10* | 8 10* | 12~40 | 5 | 19 | 21.9 |
| | 14 | 14S | M14x1.5 | 40~200 | 6 8 10* 12* | 8 10* 12* | 14~48 | 6 | 22 | 25.4 |
| SAAS SABS SACS SADS | 16 | 16S | M16x1.5 | 40~200 | 8 10 12* 14* | 8 10 12* 14* | 16~56 | 7 | 24 | 27.7 |
| | 18 | 18S | M18x1.5 | 50~200 | 10 12 14* 16* | 10 12 14* 16* | 18~64 | 8 | 27 | 31.2 |
| | 20 | 20S | M20x1.5 | 50~200 | 10 12 14 16* 18* | 10 12 14 16* 18* | 20~72 | 10 | 30 | 34.6 |

* marked dimensions are not available for SAA, SAAM and SAAS. NS (Fine Thread) pitch is same as M Fine Thread (Nominal Thread Dia.).

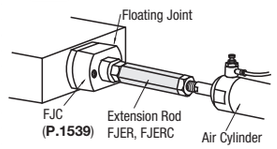
SAA, SAAM, SAAS are L≥Nx4 SAB, SABM, SABS are L≥Mx2+E SAC, SACM, SACS are L≥Mx4+E SAD, SADM, SADS are M+H+E≤L≤Mx4+H+N(NS)x4

Part Number - L - N - E - F
FJERC10-1.5 - 30
FJEBF14-1.5 - 100 - 50
SAB16 (Coarse) - 50 - NS10 (Fine) - E20

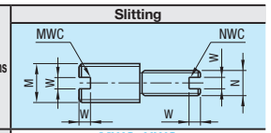
Alterations: Part Number - L - N - E - (MWC, NWC)
SABS14 - 100 - N6 - E18 - NWC

| M Coarse | M Fine Thread | SAA | SAB | SAC | SAD | SAAM | SABM | SACM | SADM | SAAS | SABS | SACS | SADS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | - | | | | | | | | | | | | |
| 6 | - | | | | | | | | | | | | |
| 8 | 8S | | | | | | | | | | | | |
| 10 | 10S | | | | | | | | | | | | |
| 12 | 12S | | | | | | | | | | | | |
| 14 | 14S | | | | | | | | | | | | |
| 16 | 16S | | | | | | | | | | | | |
| 18 | 18S | | | | | | | | | | | | |
| 20 | 20S | | | | | | | | | | | | |

Example




Alterations: Slitting




Code: MWC, NWC

Spec.: Ordering Code MWC, NWC
For W dimensions, refer to the table on the right.
Applicable to SAA, SAAM, SAAS, SAB, SABM and SABS.

| M, N | W |
|---|---|
| 3 | 0.6 |
| 4, 5 | 1 |
| 6, 8 | 1.5 |
| 10 | 2 |
| 12, 14, 16 | 2.5 |
| 18, 20 | 3 |