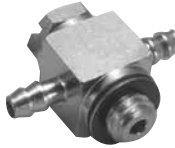


# F Miniature fitting

## Port size M3 to 1/8 (Rc or R)



- 44 miniature fittings are available with port size M3, M5, bore size ø3.2, ø4, ø6

| ■ Barbed fitting                                                                    |                                                                                     |                                                                                     |                                                                                      | ■ Clamp fitting                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Straight/FTS                                                                        | Elbow/FTL                                                                           | Tee/FTT                                                                             | Barbed nipple/FTS-0                                                                  | Straight/FCS                                                                          |
|    |    |    |    |    |
| · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 818                          | · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 818                          | · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 818                          | · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 818                           | · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 819                            |
| ■ Double screw nipple                                                               |                                                                                     | ■ Socket                                                                            |                                                                                      |                                                                                       |
| Elbow/FCL                                                                           | Straight/FNS                                                                        | Straight/FSS                                                                        | Elbow/FSL                                                                            | Tee/FST                                                                               |
|   |   |   |   |   |
| · Compatible tube O.D.: ø3.2 to ø6<br>· Refer to page: 819                          | · Refer to page: 819                                                                | · Refer to page: 819                                                                | · Refer to page: 820                                                                 | · Refer to page: 820                                                                  |
| ■ Adjustable socket                                                                 |                                                                                     |                                                                                     |                                                                                      | ■ Bush                                                                                |
| Elbow/FAL                                                                           | Tee/FAT                                                                             | Cross/FAX                                                                           | Modified tee/FAY                                                                     | FBS                                                                                   |
|  |  |  |  |  |
| · Refer to page: 820                                                                | · Refer to page: 820                                                                | · Refer to page: 821                                                                | · Refer to page: 821                                                                 | · Refer to page: 821                                                                  |
| ■ Bulkhead                                                                          | ■ Plug                                                                              | ■ Extension                                                                         | ■ Manifold                                                                           |                                                                                       |
| FWS Sales unit: 5                                                                   | FPL                                                                                 | FLS                                                                                 | FMB Sales unit: 1                                                                    | FMH Sales unit: 1                                                                     |
|  |  |  |  |  |
| · Refer to page: 821                                                                | · Refer to page: 822                                                                | · Refer to page: 822                                                                | · Refer to page: 822                                                                 | · Refer to page: 822                                                                  |
| ■ Gasket                                                                            |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
| FGS Sales unit: 100                                                                 |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|  |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
| · Refer to page: 822                                                                |                                                                                     |                                                                                     |                                                                                      |                                                                                       |

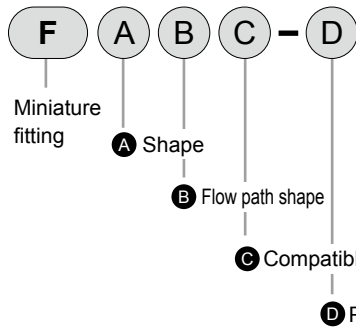
- If the quantity of units is not specified in the chart, the product is packed as 10 pcs/bag.

### Specifications

| Item                         | F                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------|
| Working fluid                | Compressed air                                                                                       |
| Max. working pressure MPa    | 0.7 (≈100 psi, 7 bar) or less                                                                        |
| Ambient/fluid temperature °C | -5 (23°F) to 60 (140°F) (no freezing)                                                                |
| Tube used                    | Soft nylon tube (model No. FH-3224, F-1504, F-1506)<br>Urethane tube (model No. U-9504, U-9506) Note |

Note: Use urethane tube within 0 to 60°C.  
(Refer to page 902 for tube dimensions and working pressure.)

### How to order



- \*1: Refer to the model No. on the dimensions page (pages 818 to 822) for details on model combinations.  
\*2: Sales unit is 10 pcs./bag.  
For the sales unit of each model, refer to the series variation on page 816.

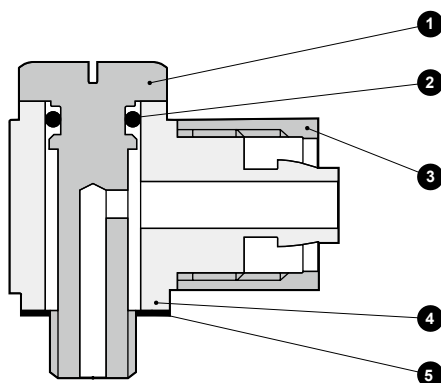
### Ozone-proof specifications (Ending Page 9)

F ..... - **P11**

### Clean-room specifications (Catalog No. CB-033SA)

F ..... - **P80**

### Internal structure and parts list



The figure shows FCL type.

| No. | Part name  | Material             | Treatment                  |
|-----|------------|----------------------|----------------------------|
| 1   | Bolt       | Copper alloy         | Electroless nickel plating |
| 2   | O-ring     | Nitrile rubber       | —                          |
| 3   | Clamp ring | Copper alloy         | Electroless nickel plating |
| 4   | Body       | Copper alloy         | Electroless nickel plating |
| 5   | Gasket     | Nitrile rubber/steel | —                          |

### ⚠ Safety precautions

- If urethane tube is used with 40°C or more, use a clamp fitting.
- For compatible tube O.D. tolerance, use an item within  $\pm 0.1$  for nylon, or  $^{+0.1}_{-0.15}$  for urethane.
- Type with slit on clamp ring of clamp fitting is for tube O.D. 3.2 mm.
- If elbows, tees, crosses, irregular tees or barbed fittings are used at frequently moving tube sections, trouble may occur. Avoid this kind of usage.
- Bending radius of tube is to be the right value or more near a fitting.

| Min. bending radius mm | Barbed fitting | Clamp fitting |
|------------------------|----------------|---------------|
| ø3.2                   | Soft nylon     | 20            |
|                        | Urethane       | 10            |
| ø4                     | Soft nylon     | 20            |
|                        | Urethane       | 10            |
| ø6                     | Soft nylon     | 40            |
|                        | Urethane       | 20            |

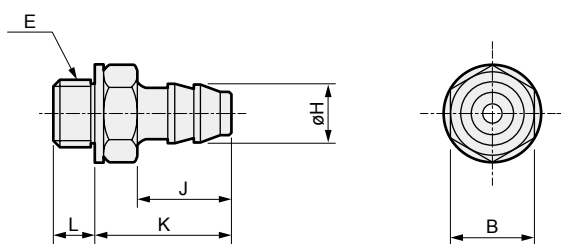


## F.R.L. Dimensions: Barbed fitting (straight, elbow, tee, barbed nipple)

### F.R. Barbed fitting

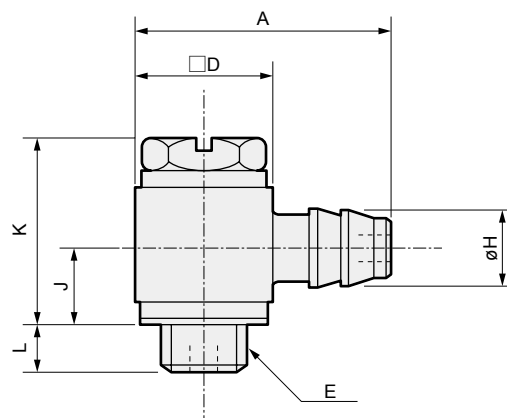
[Sales unit is 10 pcs./bag]

#### F (Filtr) ● Straight/FTS



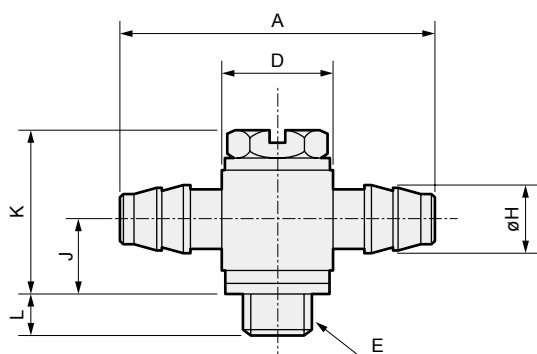
| Model No. | Compatible tube O.D. ø | B   | E      | Min. bore size | H   | J   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------------------------|-----|--------|----------------|-----|-----|------|-----|------------------------------------------|----------|
| FTS4-M3   | ø3.2,ø4                | 4.5 | M3×0.5 | 0.8            | 2.9 | 5.5 | 7.9  | 2.6 | 0.4                                      | 0.8      |
| FTS4-M5   | ø3.2,ø4                | 7   | M5×0.8 | 1.8            | 2.9 | 5.5 | 8.6  | 2.9 | 2.1                                      | 1.5      |
| FTS4-6    | ø3.2,ø4                | 10  | R1/8   | 1.8            | 2.9 | 5.5 | 9.5  | 8   | 2.1                                      | 5.9      |
| FTS6-M5   | ø6                     | 7   | M5×0.8 | 2.5            | 4.7 | 7   | 10.1 | 2.9 | 4.1                                      | 1.8      |
| FTS6-6    | ø6                     | 10  | R1/8   | 2.5            | 4.7 | 7   | 11   | 8   | 4.1                                      | 6.2      |

#### ● Elbow/FTL



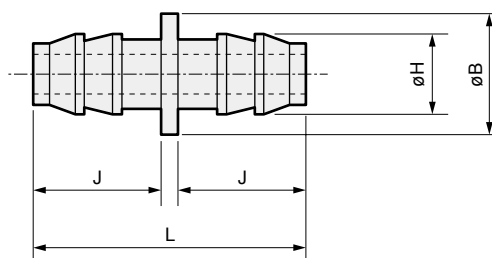
| Model No. | Compatible tube O.D. ø | A    | D | E      | Min. bore size | H   | J   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------------------------|------|---|--------|----------------|-----|-----|------|-----|------------------------------------------|----------|
| FTL4-M3   | ø3.2,ø4                | 10.5 | 5 | M3×0.5 | 1              | 2.9 | 2.9 | 6.8  | 2.6 | 0.4                                      | 1.5      |
| FTL4-M5   | ø3.2,ø4                | 13.5 | 8 | M5×0.8 | 1.8            | 2.9 | 5.1 | 11.6 | 2.9 | 1.3                                      | 5.3      |
| FTL6-M5   | ø6                     | 15   | 8 | M5×0.8 | 1.8            | 4.7 | 5.1 | 11.6 | 2.9 | 1.5                                      | 5.6      |

#### ● Tee/FTT



| Model No. | Compatible tube O.D. ø | A  | D | E      | Min. bore size | H   | J   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------------------------|----|---|--------|----------------|-----|-----|------|-----|------------------------------------------|----------|
| FTT4-M3   | ø3.2,ø4                | 16 | 5 | M3×0.5 | 1              | 2.9 | 2.9 | 6.8  | 2.6 | 0.4                                      | 1.6      |
| FTT4-M5   | ø3.2,ø4                | 19 | 8 | M5×0.8 | 1.8            | 2.9 | 5.1 | 11.6 | 2.9 | 1.3                                      | 5.3      |
| FTT6-M5   | ø6                     | 22 | 8 | M5×0.8 | 1.8            | 4.7 | 5.1 | 11.6 | 2.9 | 1.5                                      | 6.0      |

#### ● Barbed nipple/FTS\*-0

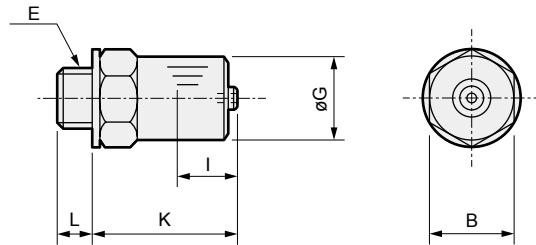


| Model No. | Compatible tube O.D. ø | B | Min. Hole diameter | H   | J   | L  | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------------------------|---|--------------------|-----|-----|----|------------------------------------------|----------|
| FTS4-0    | ø3.2,ø4                | 5 | 1.8                | 2.9 | 5.5 | 12 | 2.1                                      | 0.5      |
| FTS6-0    | ø6                     | 7 | 2.5                | 4.7 | 7   | 15 | 4.1                                      | 1.5      |

### Dimensions: Clamp fitting (straight, elbow)/double screw nipple (straight)/socket (straight)

#### Clamp fitting

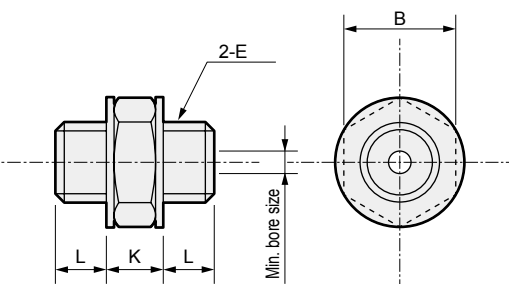
##### ● Straight/FCS



| Model No. | Tube O.D. ø | B  | E      | Min. bore size | G | I   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|-------------|----|--------|----------------|---|-----|------|-----|------------------------------------------|----------|
| FCS3-M5   | ø3.2        | 7  | M5×0.8 | 1.8            | 7 | 4.3 | 11.7 | 2.9 | 2.1                                      | 3.2      |
| FCS3-6    | ø3.2        | 10 | R1/8   | 1.8            | 7 | 4.3 | 12.1 | 8   | 2.1                                      | 7.2      |
| FCS4-M5   | ø4          | 7  | M5×0.8 | 1.8            | 7 | 4.3 | 11.7 | 2.9 | 2.1                                      | 3.1      |
| FCS4-6    | ø4          | 10 | R1/8   | 1.8            | 7 | 4.3 | 12.1 | 8   | 2.1                                      | 7.2      |
| FCS6-M5   | ø6          | 8  | M5×0.8 | 2.5            | 9 | 5   | 12.4 | 2.9 | 4.1                                      | 4.4      |
| FCS6-6    | ø6          | 10 | R1/8   | 2.5            | 9 | 5   | 12.8 | 8   | 4.1                                      | 8.3      |

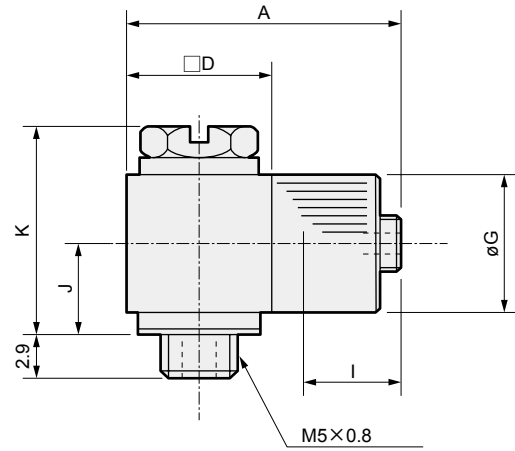
#### Double screw nipple

##### ● Straight/FNS



| Model No. | B   | E      | Min. bore size | K   | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|-----|--------|----------------|-----|-----|------------------------------------------|----------|
| FNS-M3    | 4.5 | M3×0.5 | 0.8            | 2.8 | 2.6 | 0.4                                      | 0.6      |
| FNS-M5    | 7   | M5×0.8 | 1.8            | 3.7 | 2.9 | 2.1                                      | 1.9      |

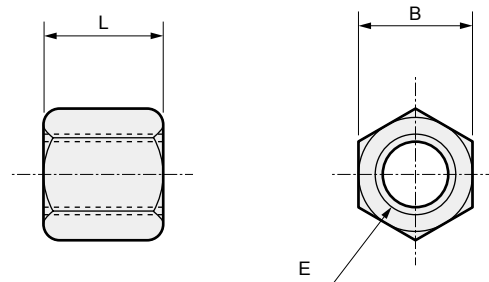
##### ● Elbow/FCL



| Model No. | Compatible tube O.D. ø | A    | D | Min. bore size | G | I   | J   | K    | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------------------------|------|---|----------------|---|-----|-----|------|------------------------------------------|----------|
| FCL3-M5   | ø3.2                   | 16.1 | 8 | 1.8            | 7 | 4.3 | 5.1 | 11.6 | 1.3                                      | 6.7      |
| FCL4-M5   | ø4                     | 16.1 | 8 | 1.8            | 7 | 4.3 | 5.1 | 11.6 | 1.3                                      | 6.7      |
| FCL6-M5   | ø6                     | 17.8 | 9 | 1.8            | 9 | 5   | 6.1 | 13.6 | 1.5                                      | 10       |

#### Socket

##### ● Straight/FSS



| Model No. | B   | E      | L | Effective cross-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|-----|--------|---|---------------------------------------------------|----------|
| FSS-M3    | 4.5 | M3×0.5 | 7 | 4                                                 | 0.7      |
| FSS-M5    | 7   | M5×0.8 | 8 | 9                                                 | 1.8      |

|                            |
|----------------------------|
| F.R.L.                     |
| F.R.                       |
| F (Filtr)                  |
| R (Reg)                    |
| L (Lub)                    |
| Drain Separ                |
| Mech Press SW              |
| Res press exh valve        |
| SlowStart                  |
| Anti-bac/Bac-remove Filt   |
| Film Resist FR             |
| Oil-ProhR                  |
| Med Press FR               |
| No Cu/ PTFE FRL            |
| Outdrs FRL                 |
| Adapter Joiner Press Gauge |
| CompFRL                    |
| LgFRL                      |
| PrecsR                     |
| VacF/R                     |
| Clean FR                   |
| ElecPneuR                  |
| AirBoost                   |
| Speed Ctrl                 |
| Silncr                     |
| CheckV/ other              |
| Fit/Tube                   |
| Nozzle                     |
| Air Unit                   |
| PresCompn                  |
| Electro Press SW           |
| ContactSW                  |
| AirSens                    |
| PresSW Cool                |
| Air Flo Sens/Ctrl          |
| WaterRISens                |
| TotAirSys (Total Air)      |
| TotAirSys (Gamma)          |
| Gas generator              |
| RefrDry                    |
| DesicDry                   |
| HiPolymDry                 |
| MainFiltr                  |
| Dischrg etc                |
| Ending                     |

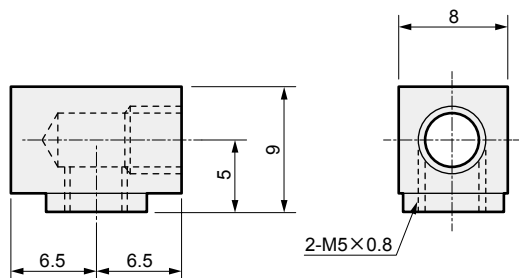


## Dimensions: Socket (elbow, tee)/adjustable socket (elbow, tee)

[Sales unit is 10 pcs./bag]

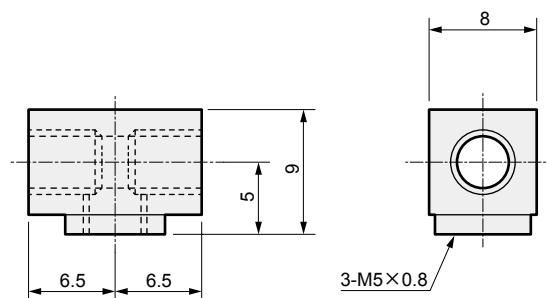
### Socket

#### ● Elbow/FSL-M5



Effective cross-sectional area 8 mm<sup>2</sup>  
Weight: 5.9g

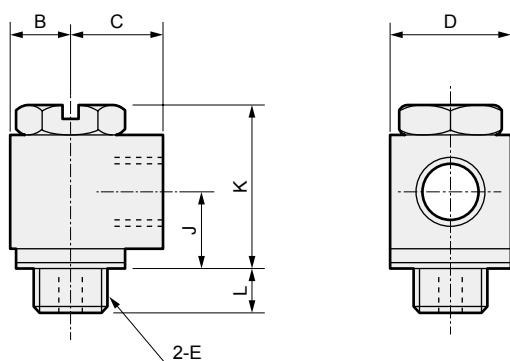
#### ● Tee/FST-M5



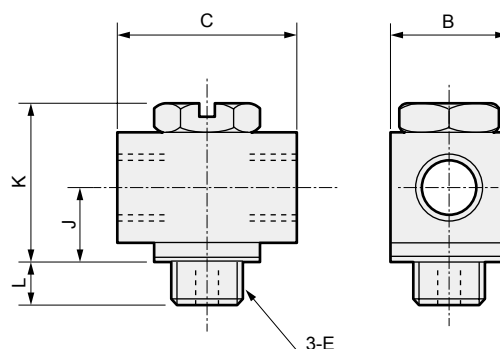
Effective cross-sectional area 8 mm<sup>2</sup>  
Weight: 5.1g

### Adjustable socket

#### ● Elbow/FAL



#### ● Tee/FAT



| Model No. | B   | C   | D | E      | Min. bore size | J   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|-----|-----|---|--------|----------------|-----|------|-----|------------------------------------------|----------|
| FAL-M3    | 2.5 | 4.5 | 5 | M3×0.5 | 1              | 2.9 | 6.8  | 2.6 | 0.5                                      | 1.7      |
| FAL-M5    | 4   | 6.5 | 8 | M5×0.8 | 1.8            | 5.6 | 11.6 | 2.9 | 1.7                                      | 6.0      |

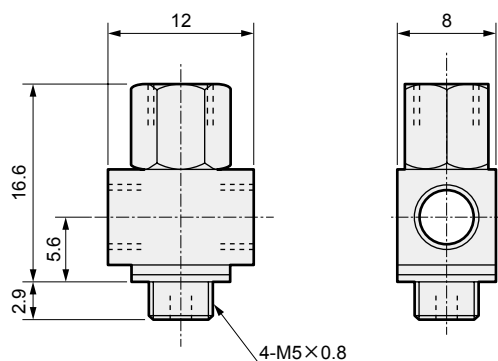
| Model No. | B | C  | E      | Min. bore size | J   | K    | L   | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|---|----|--------|----------------|-----|------|-----|------------------------------------------|----------|
| FAT-M3    | 5 | 9  | M3×0.5 | 1              | 2.9 | 6.8  | 2.6 | 0.5                                      | 1.9      |
| FAT-M5    | 8 | 12 | M5×0.8 | 1.8            | 5.6 | 11.6 | 2.9 | 1.7                                      | 6.4      |



## Adjustable socket

- Cross/FAX-M5

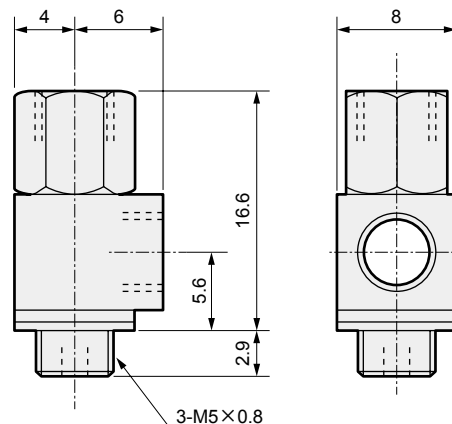
- Sales unit is 10 pcs./bag



Min. bore size 1.8 mm  
Effective cross-sectional area 1.7 mm<sup>2</sup>  
Weight: 7.4g

- Modified tee/FAY-M5

· Sales unit is 10 pcs./bag

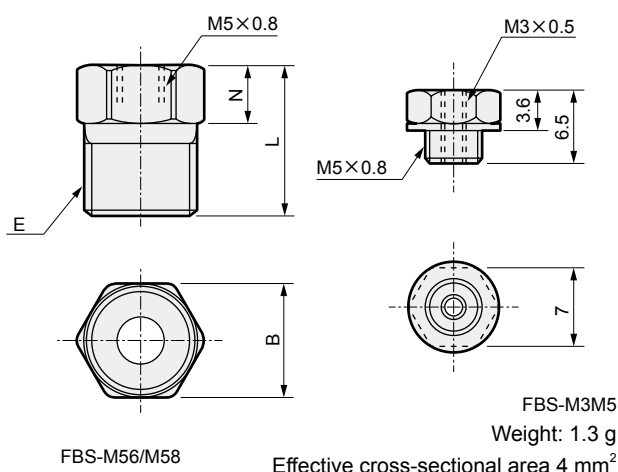


Min. bore size 1.8 mm  
Effective cross-sectional area 1.7 mm<sup>2</sup>  
Weight: 7.0g

Bush

- FBS

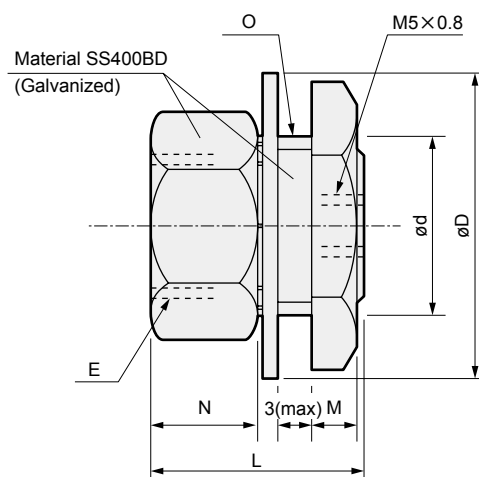
- Sales unit is 10 pcs./bag



## Bulkhead

- FWS

- Sales unit is 5 pcs./bag



| Model No. | B  | E    | L  | N | Effective cross-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|----|------|----|---|---------------------------------------------------|----------|
| FBS-M56   | 10 | R1/8 | 12 | 4 | 9                                                 | 6.0      |
| FBS-M58   | 14 | R1/4 | 16 | 5 | 9                                                 | 16       |

| Model No. | D    | d  | E      | L  | M | N | O     | Eff. X-sectional area (mm <sup>2</sup> ) | Weight g |
|-----------|------|----|--------|----|---|---|-------|------------------------------------------|----------|
| FWS-M5    | 15   | 8  | M5×0.8 | 11 | 3 | 4 | M8×1  | 9                                        | 5.5      |
| FWS-M56   | 15.2 | 12 | Rc1/8  | 14 | 5 | 7 | M12×1 | 9                                        | 15       |

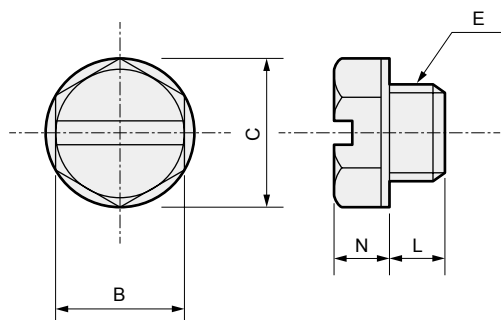
## Dimensions: Plug/extension/manifold/gasket



### Plug

● FPL

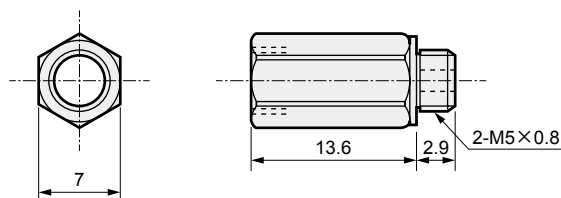
· Sales unit is 10 pcs./bag



### Extension

● FLS-M5

· Sales unit is 10 pcs./bag



Effective cross-sectional area 2.1mm<sup>2</sup>

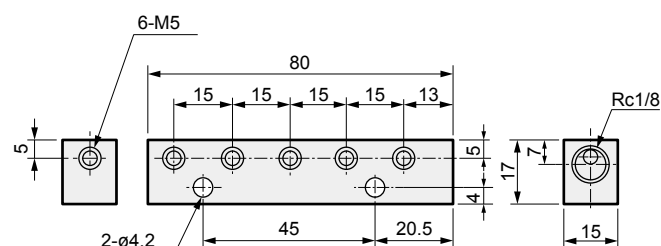
Weight: 3.7g

| Model No. | B   | C   | E      | N   | L   | Weight g |
|-----------|-----|-----|--------|-----|-----|----------|
| FPL-M3    | 4.5 | 4.9 | M3×0.5 | 2.4 | 2.6 | 0.5      |
| FPL-M5    | 7   | 7.8 | M5×0.8 | 3.1 | 2.9 | 1.5      |

### Manifold

● FMB-M56

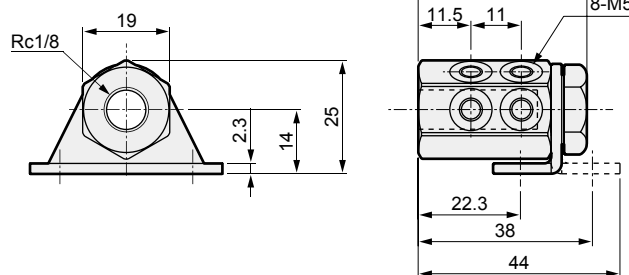
· Sales unit is 1 pcs./bag



Weight: 50g

● FMH-M56

· Sales unit is 1 pcs./bag

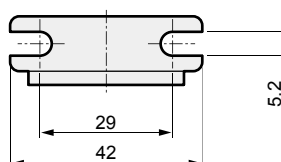
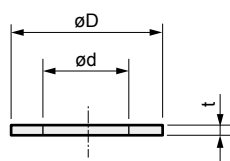


Weight: 82g

### Gasket

● FGS

· Sales unit is 100 pcs./bag



| Model No. | D   | d   | t   | Weight g |
|-----------|-----|-----|-----|----------|
| FGS-M3    | 4.8 | 2.8 | 0.4 | 0.02     |
| FGS-M5    | 7.8 | 4.8 | 0.6 | 0.1      |