

# Limit Switch Connectors

## Connectors (SC Series)

Cabtire cables and flexible tubes with various diameters are used to connect machine tools and controllers with Limit Switches. To ensure the watertightness of the edges of the conduits, use an SC Connector that is suitable for the external diameter of cable and model of Limit Switch.

## Ordering Information

### Connector for Cabtire Cable

| Conduit       | Applicable cable                | Inner diameter (D) of seal rubber | External diameter of cable |        | Model  | Applicable model                             |
|---------------|---------------------------------|-----------------------------------|----------------------------|--------|--------|--|
|               |                                 |                                   | Min.                       | Max.   |        |  |
| JIS B 0202 G½ | Cabtire cable (general-purpose) | 7 mm                              | 5.5 mm                     | 7.5 mm | SC-1M  | WL, D4A-□N, D4B-□N, ZE, ZV, ZV2, XE, XV, XV2 |
|               |                                 | 9 mm                              | 7.5 mm                     | 9.5 mm | SC-2M  |  |
|               |                                 | 12.5 mm                           | 11 mm                      | 13 mm  | SC-3M  |  |
|               |                                 | 14 mm                             | 12 mm                      | 14 mm  | SC-4M  |  |
|               |                                 | 11 mm                             | 9 mm                       | 11 mm  | SC-5M  |  |
|               | Cabtire cable (anti-corrosive)  | 7 mm                              | 5.5 mm                     | 7.5 mm | SC-21  |  |
|               |                                 | 9 mm                              | 7.5 mm                     | 9.5 mm | SC-22  |  |
|               |                                 | 12.5 mm                           | 11 mm                      | 13 mm  | SC-23  |  |
|               |                                 | 14 mm                             | 12 mm                      | 14 mm  | SC-24  |  |
|               |                                 | 11 mm                             | 9 mm                       | 11 mm  | SC-25  |  |
| ½-14NPT       | Cabtire cable                   | 7 mm                              | 5.5 mm                     | 7.5 mm | SC-1PT | D4A-□N                                       |
|               |                                 | 9 mm                              | 7.5 mm                     | 9.5 mm | SC-2PT |  |
|               |                                 | 12.5 mm                           | 11 mm                      | 13 mm  | SC-3PT |  |
|               |                                 | 14 mm                             | 12 mm                      | 14 mm  | SC-4PT |  |
|               |                                 | 11 mm                             | 9 mm                       | 11 mm  | SC-5PT |  |

Note: 1. Use SC-21 to SC-25 together with the rubber ring and conduit washer for the SC-P2.

2. It is necessary to use sealing tape with SC Connectors. SC-1M to SC-5M, however, are provided with an O-ring (NBR) and therefore sealing tape is not necessary to ensure a proper seal.

## Simple Connector

| Conduit       | Applicable cable | Inner diameter (D) of seal rubber | External diameter of cable |         | Model | Applicable model  |
|---------------|------------------|-----------------------------------|----------------------------|---------|-------|---|
|               |                  |                                   | Min.                       | Max.    |       |   |
| JIS B 0202 G½ | Cabtire cable    | 10.6 mm                           | 8.5 mm                     | 10.5 mm | SC-P2 | WL, D4A-□N, D4B-□N, ZE, ZV, ZV2, XE, XV, XV2                |
| Pg13.5        |                  | 9.6 mm                            | 7.5 mm                     | 9.5 mm  | SC-P3 | WL□-G, D4B-□N   |
| JIS B 0202 G½ |                  | 9 mm                              | 7.5 mm                     | 9 mm    | SC-6  | WL, D4A-□N, D4N*, D4N-□R*, D4B-□N, ZE, ZV, ZV2, XE, XV, XV2 |

Note: The casings for SC-P2, -P3 and -6 are made of resin. If more sealing capability is required, use one of SC-1M to SC-5M, which have metal casings. Models marked with an asterisk (\*) however, can only be used with resin connectors.

(Unit: mm)

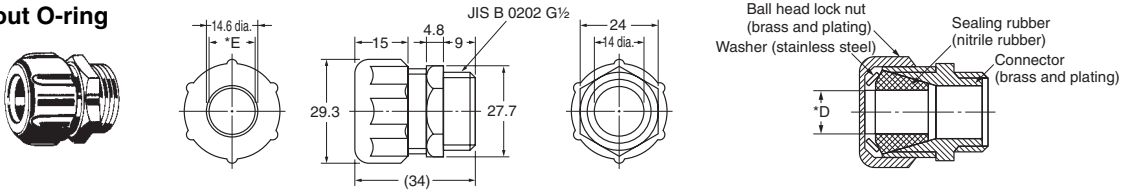
**Dimensions and Structure**

**Connectors for Cabtire Cable**

SC-P2 accessories and sealing tape must be used together with models without an O-ring in order to prevent ingress of oil or water. Follow the instructions given under Conduits on page 4.

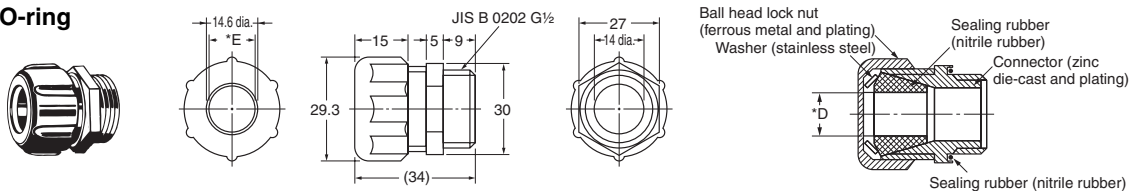
**Metal Models without O-ring**

**G $\frac{1}{2}$**   
**SC-21 to 25**



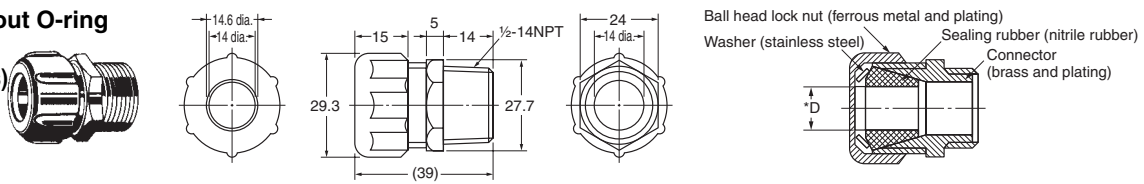
**Metal Models with O-ring**

**G $\frac{1}{2}$**   
**SC-1M to 5M**



**Metal Models without O-ring**

**1/2-14NPT**  
**(U.S.-standard screws)**  
**SC-1PT to 5PT**

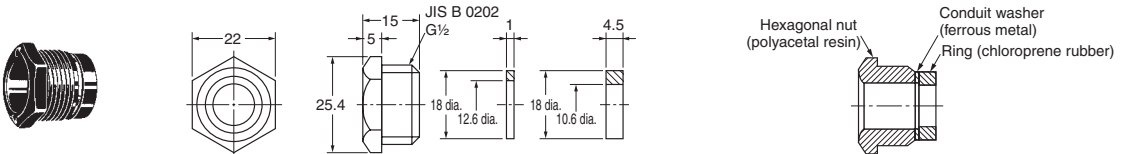


Note: Dimensions not shown in the above diagrams have a variation of  $\pm 0.4$  mm.

**Simple Connectors (Not Suitable for Locations Subject to Oil or Water)**

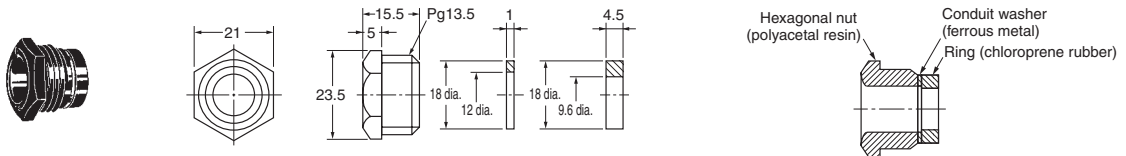
**Resin Models**

**G $\frac{1}{2}$**   
**SC-P2**



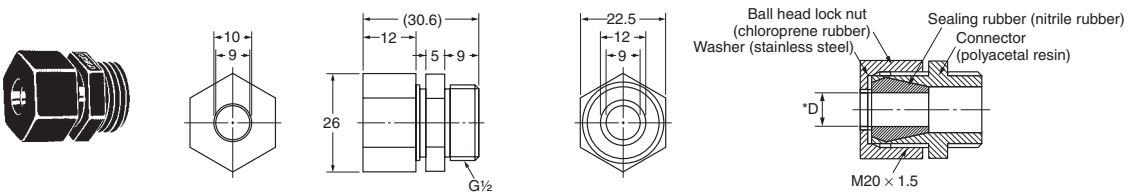
**Resin Models**

**Pg13.5**  
**SC-P3**



**Resin Models**

**G $\frac{1}{2}$**   
**SC-6**



Note: Dimensions not shown in the above diagrams have a variation of  $\pm 0.4$  mm.

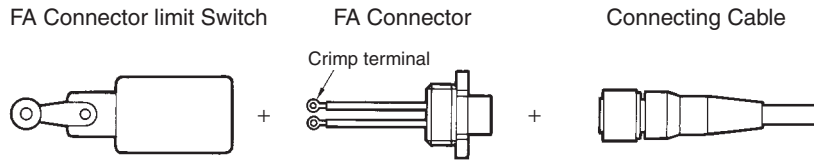
\* Diameter of Part Marked with Asterisk

| Model            | Inner diameter (D) of sealed rubber | Internal diameter (E) of washer | Applicable cable   |
|------------------|-------------------------------------|---------------------------------|--------------------|
| SC-21, -1M, -1PT | 7 mm                                | 10.4 mm                         | 5.5 to 7.5-mm dia. |
| SC-22, -2M, -2PT | 9 mm                                | 13.2 mm                         | 7.5 to 9.5-mm dia. |
| SC-23, -3M, -3PT | 12.5 mm                             | 14.6 mm                         | 11 to 13-mm dia.   |
| SC-24, -4M, 4PT  | 14 mm                               | 14.6 mm                         | 12 to 14-mm dia.   |
| SC-25, -5M, -5PT | 11 mm                               | 13.2 mm                         | 9 to 11-mm dia.    |
| SC-6             | 9 mm                                | 10 mm                           | 7.5 to 9-mm dia.   |

**SC-□F□ FA Connectors**

The SC-□F□ is a snap-on connecting model that greatly reduces the time-consuming effort for wiring the Limit Switch. The SC-□F□ is easily and quickly connected or disconnected and its degree of protection is IP67.

**Ordering Information**



**FA Connectors**

| Model    | Number of conductors | Voltage specification | Size of conduit  | Size of crimp terminal | Applicable model |
|----------|----------------------|-----------------------|------------------|------------------------|------------------|
| SC-2F    | 2                    | 125 VDC               | JIS B 0202<br>G½ | M4                     | WL               |
| SC-2FAD  | 2                    | 250 VAC               |                  |                        |                  |
| SC-4F4D  | 4                    | 125 VDC               |                  |                        |                  |
| SC-4F4AD | 4                    | 250 VAC               |                  |                        |                  |

**Connecting Cables**



| Voltage specification | Number of conductors | Cable length | Model           |
|-----------------------|----------------------|--------------|-----------------|
| AC                    | 2                    | 2 m          | XS2F-A421-DB0-A |
|                       |                      | 5 m          | XS2F-A421-GB0-A |
|                       | 4                    | 2 m          | XS2F-A421-D90-A |
|                       |                      | 5 m          | XS2F-A421-G90-A |
| DC                    | 2                    | 2 m          | XS2F-D421-DD0   |
|                       |                      | 5 m          | XS2F-D421-GD0   |
|                       | 4                    | 2 m          | XS2F-D421-D80-A |
|                       |                      | 5 m          | XS2F-D421-G80-A |

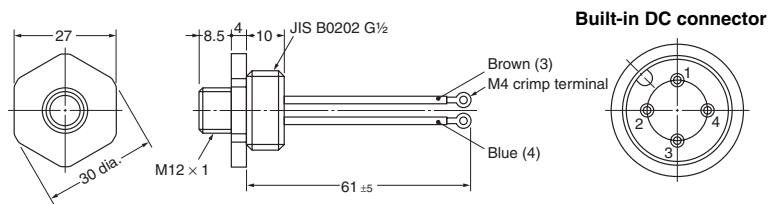
**Connections to Sensor I/O Connectors**

| Voltage specification | Number of conductors | FA Connector | Sensor I/O Connector                               | Connection |
|-----------------------|----------------------|--------------|--|------------|
| AC                    | 2                    | SC-2FAD      | XS2F-A421-□B0-A<br>↑<br>D: 2-m cord<br>G: 5-m cord |            |
|                       | 4                    | SC-4F4AD     | XS2F-A421-□90-A<br>↑<br>D: 2-m cord<br>G: 5-m cord |            |
| DC                    | 2                    | SC-2F        | XS2F-D421-□D0<br>↑<br>D: 2-m cord<br>G: 5-m cord   |            |
|                       | 4                    | SC-4F4D      | XS2F-D421-□80-A<br>↑<br>D: 2-m cord<br>G: 5-m cord |            |

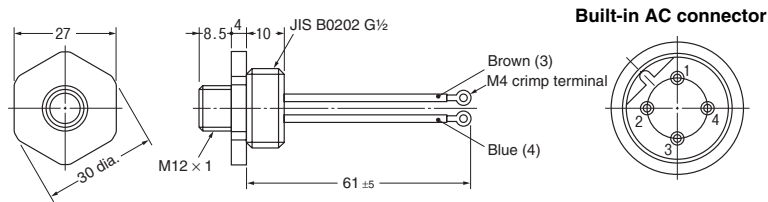
Dimensions

(Unit: mm)

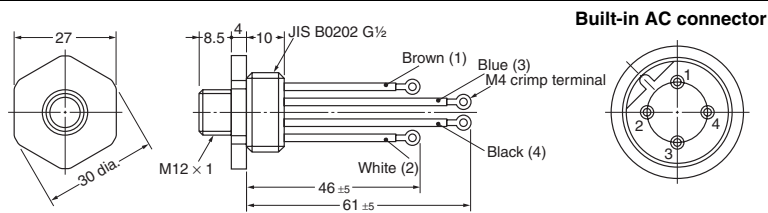
SC-2F



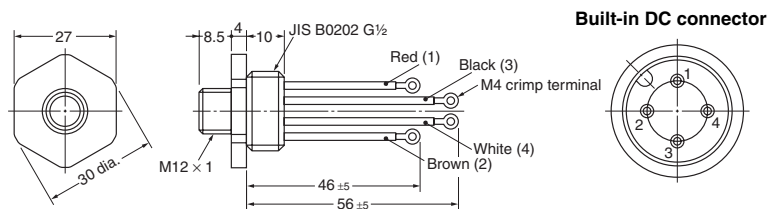
SC-2FAD



SC-4F4AD



SC-4F4D



Note: 1. Each dimension has a tolerance of  $\pm 0.4$  mm unless otherwise specified.  
 2. Figures in parentheses are connector pin numbers.

Safety Precautions

Precautions for Correct Use

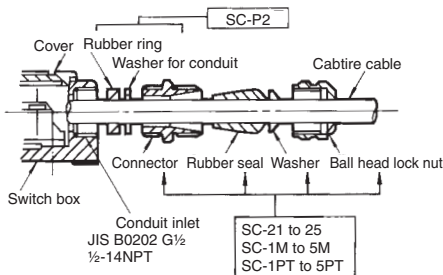
Conduits

Connector for Cabtire Cable/Flexible Tube

G $\frac{1}{2}$ ,  $\frac{1}{2}$ -14NPT

To connect a Limit Switch with a connector, insert a rubber ring first and then a washer into the conduit inlet of the switch body, put a rubber seal, washer, and nut in this order onto the tapered part of the connector and tighten the nut securely. Then tighten the conduit inlet with the connector to maintain high sealing capability. Apply sealing tape to the edge of the connector on the conduit inlet side to increase sealing capability.

The SC-1M to SC-5M are provided with an O-ring, and so the rubber ring, conduit washer, and sealing tape are not required.



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