

Miniature Pre-Leaded Vertical Enclosed Switches

14CE Series

Miniature enclosed switches with outstanding harsh environment resistance, ideal for compact machinery and equipment.



- Easy mounting by tightening two M5 screws.
- Superior seal
(JIS: oil-resistant, immersion-proof type, IEC: IP67)
- AC-DC model with LED that can be seen from any direction is also available.
- Standard load and low current load types available.
- Suitable for high-density gang mounting.
- Optimum overtravel can be set by the setting position indication.
- CE/CCC-approved models are available

PERFORMANCE

| | Item | Details |
|---|--|--|
| Standards | Compliance | NECA C4508 |
| Structure | Contact form | Single-pole double-throw (SPDT). |
| | Contact type | Standard load: pure silver rivet Low current load: gold alloy cross point |
| | Terminal type | Preleaded and connector |
| | Protective structure | IP67 (IEC60529, JIS C 0920) |
| Electrical performance | Electrical rating | See table. |
| | Dielectric strength | Between non-live terminals 600Vac, 50/60Hz for 1 minute |
| | | Between each terminal and ground: 1,500Vac, 50/60Hz for 1 minute |
| | | Between each terminal and non-conducting metal part: 1,500Vac, 50/60Hz for 1 minute |
| | Insulation resistance | 100MΩ Max.(by 500Vdc megger) |
| | Initial contact resistance <small>Note 1</small> | Standard load type: 50mΩ Max. (6 to 8Vdc-1A, voltage drop method) Low current load type: 100mΩ Max. (6 to 8Vdc-0.1A, voltage drop method) Connector section: 40mΩ Max. |
| Recommended min. voltage/current | Standard load type: 24V-10mA Low current load type: 5V-10mA | |
| Mechanical performance | Actuator strength | Withstands load 5 times O.F. (operating direction for 1 minute) |
| | Cable tensile strength | Min. 100N |
| | Impact resistance (malfunction) <small>Note 2</small> | 500m/s ² , contact opening for 1ms max. in free position and total travel positions |
| | Vibration resistance (malfunction) | Frequency 10 to 55Hz, 1.5mm peak-to-peak amplitude for 2 continuous hours Contact opening for 1ms max. in free position and total travel position |
| | Allowable operating speed <small>Note 2</small> | 0.02mm/s to 0.5m/s Min. speed: Unstable state of contacts 0.1s max. Max. speed: Actuator damage not allowed |
| | Operating frequency | Max. 120 operations/minute |
| Life | Mechanical | Min. 5 million operations. Overtravel (O.T.) is 70 to 100% of standard value. |
| | Electrical | Standard load type: Min. 200,000 operations (250Vac-3A resistive load) Low current load type: Min. 2 million operations (125Vac-0.1A, 30Vdc-0.1A resistive load) |
| Ambient operating conditions | Temperature | -10 to +70°C (freezing not allowed) |
| | Humidity | Max. 98%RH <small>Note 3</small> |
| Recommended tightening torque | Body | 5 to 6N-m (M5 hexagon socket head bolt) |
| | Roller lever | 4 to 5.2N-m (M5 hexagon socket head bolt) |
| | Connector | 0.4 to 0.6N-m (Tighten firmly by hand without using a tool.) |

Note 1: In the case of the preleaded type, add 50mΩ per 1m of cable.

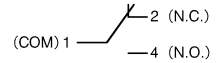
Note 2: This is the value for the representative 14CE2 model (roller plunger type).

Note 3: Max. 95%RH for connector and preleaded connector types.

● Electrical rating, circuit configuration and lead color

Prelead type

| Item | Contact material | Electrical rating | | | | |
|--------------------------------------|---------------------------|-----------------------------|---------------------------------|-----------------------------------|---------------------------------|-----------------------------------|
| | | Without indicator lamp | With indicator lamp | | | |
| | | | E1 lamp (lit during standby) | E2 lamp (lit during operation) | E5 lamp (lit during standby) | E8 lamp (lit during operation) |
| Standard load type | Silver | AC 250V-3A DC 30V-1A | AC 100V-3A | AC 100V-3A | AC 24V-3A DC 24V-1A | AC 24V-3A DC 24V-1A |
| Low current load type | Class 1 alloy cross point | AC 125V-0.1A DC 30V-0.1A | AC 100V-0.1A | AC 100V-0.1A | AC/DC 24V-0.1A | AC/DC 24V-0.1A |
| Circuit configuration and lead color | — | | | | | |



Connector/prelead connector

Note that the ratings of connector type switches are determined by the ratings of both the switch and the connector.

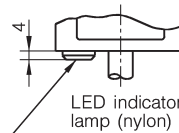
| Item | Contact material | Electrical rating | | Connector type | Contact pin positions (male contact) |
|-----------------------|---------------------------|---|---------------------------------|---------------------------------|---|
| | | Without indicator lamp | With indicator lamp | | |
| | | | E1 lamp (lit during standby) | E5 lamp (lit during standby) | |
| Standard load type | Silver | AC 250V-3A DC 30V-1A | AC 100V-3A | AC 24V-3A DC 24V-1A | |
| Low current load type | Class 1 alloy cross point | AC 125V-0.1A DC 30V-0.1A | AC 100V-0.1A | AC/DC 24V-0.1A | |
| Standard load type | Silver | AC 125V-3A DC 30V-1A | AC 100V-3A | DC 24V-1A | |
| Low current load type | Class 1 alloy cross point | AC 125V-0.1A DC 30V-0.1A | AC/DC 24V-0.1A | AC/DC 24V-0.1A | |
| Circuit configuration | — | | | | — |
| Connector lead colors | — | Contact 1: Brown, Contact 2: White, Contact 3: Blue, Contact 4: Black | | | (Female side) For AC: For DC: |

The contact assignments of limit switches comply with NIPPON Electric Control Equipment Industries Association standards (NECA 4202).

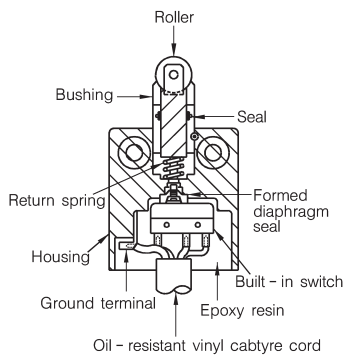
● With LED indicator lamp

(For details on catalog listings, see the Order Guide.)



On the AC/DC model, two LEDs light when AC power is used, and only one when DC is used.



STRUCTURE

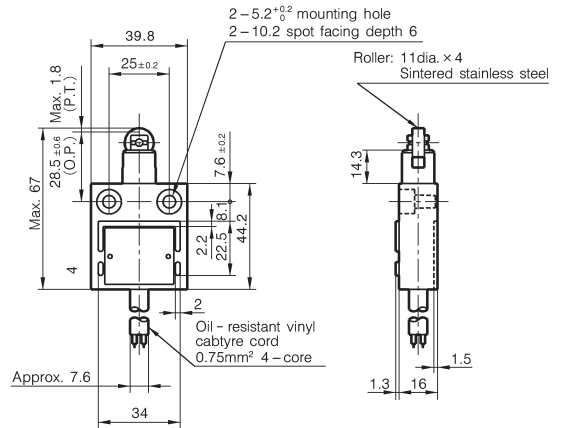


● Connector/prelead connector

| Actuator | | Basic catalog listing | Options | | | | |
|---|----------------------|-----------------------|-----------------------|---|---|--|--|
| | | | Low current load K | 100Vac/dc LED lit during standby (N.O.) E1 | 100Vac/dc LED lit during standby (N.O.) + low current load KE1 | 24Vac/dc LED lit during standby (N.O.) E5 | 24Vac/dc LED lit during standby (N.O.) + low current load KE5 |
| Name/appearance | Connector type | | | | | | |
| Roller plunger  | AC connector | 14CE2-J-PA | 14CE2-JK-PA | 14CE2-JE1-PA | 14CE2-JKE1-PA | — | — |
| | AC prelead connector | 14CE2-J-PA03 | 14CE2-JK-PA03 | 14CE2-JE1-PA03 | — | — | — |
| | DC connector | 14CE2-J-PD | 14CE2-JK-PD | — | — | 14CE2-JE5-PD | 14CE2-JKE5-PD |
| | DC prelead connector | 14CE2-J-PD03 | 14CE2-JK-PD03 | — | — | 14CE2-JE5-PD03 | 14CE2-JKE5-PD03 |
| Roller lever  | AC connector | 14CE6-J-PA | 14CE6-JK-PA | 14CE6-JE1-PA | — | — | — |
| | AC prelead connector | 14CE6-J-PA03 | 14CE6-JK-PA03 | 14CE6-JE1-PA03 | — | — | — |
| | DC connector | 14CE6-J-PD | 14CE6-JK-PD | — | — | 14CE6-JE5-PD | 14CE6-JKE5-PD |
| | DC prelead connector | 14CE6-J-PD03 | 14CE6-JK-PD03 | — | — | 14CE6-JE5-PD03 | 14CE6-JKE5-PD03 |

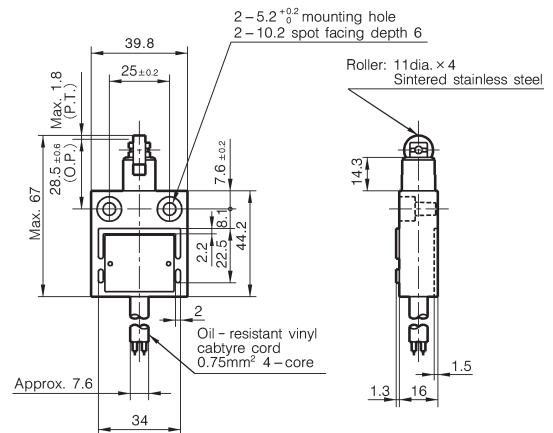
● Preleaded type
Roller plunger type

| Catalog listing | | 14CE2-□J□□ |
|-----------------|-----------|------------|
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



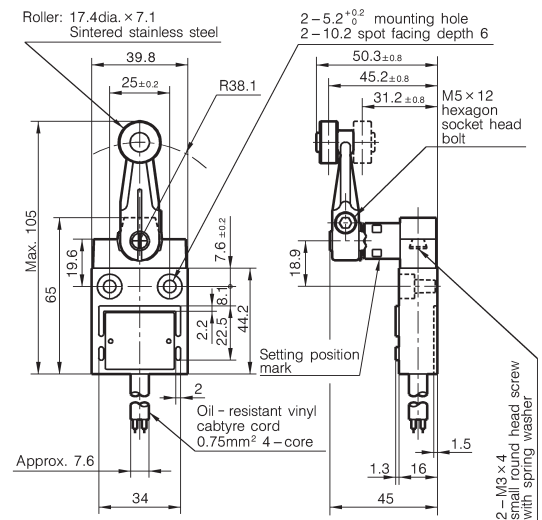
Cross roller plunger type

| Catalog listing | | 14CE3-□J□□ |
|-----------------|-----------|------------|
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Roller lever type

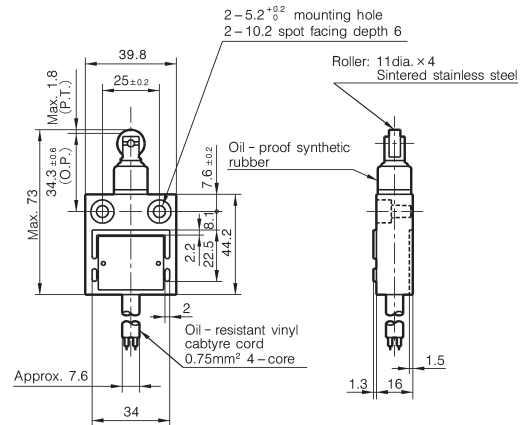
| Roller lever type | | 14CE6-□J□□ |
|-------------------|----------|------------|
| O.F. | (N max.) | 8.9 |
| R.F. | (N min.) | 1.4 |
| P.T. | (° max.) | 10±3.0 |
| O.T. | (° min.) | 50 |
| M.D. | (° max.) | 3 |



Boot roller plunger type

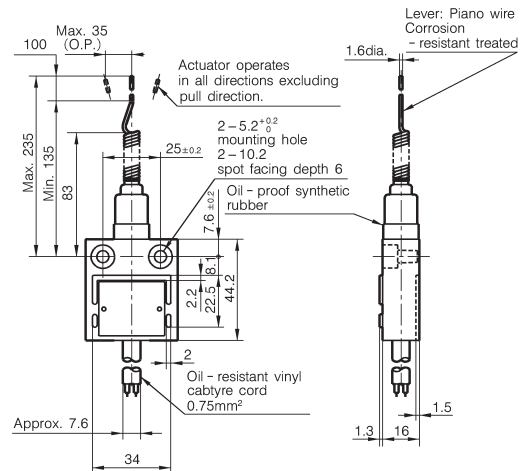
(unit: mm)

| Catalog listing | | 14CE8-□□□□ |
|-----------------|-----------|------------|
| O.F. | (N max.) | 17.7 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Wire spring non-directional operation type

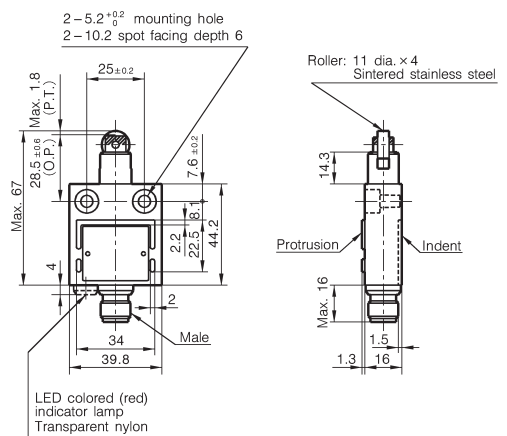
| Catalog listing | | 14CE9-□□J□□□ |
|-----------------|----------|--------------|
| O.F. | (N max.) | 0.49 |
| R.F. | (N min.) | 0.09 |
| P.T. | (° max.) | 35 |
| O.T. | (min.) | — |
| M.D. | (max.) | — |



● Connector type

Roller plunger type

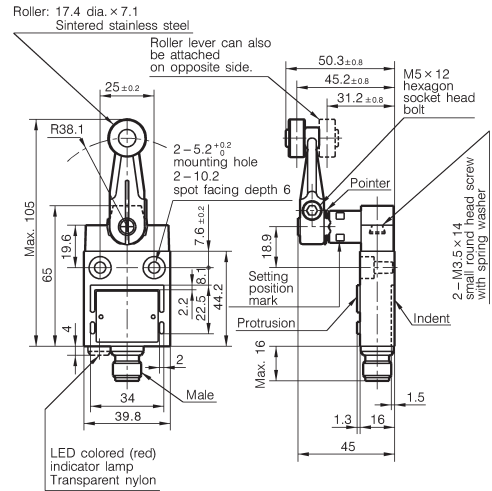
| Catalog listing | DC type | 14CE2-J□□-PD |
|-----------------|-----------|--------------|
| | AC type | 14CE2-J□□-PA |
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Roller lever type

(unit: mm)

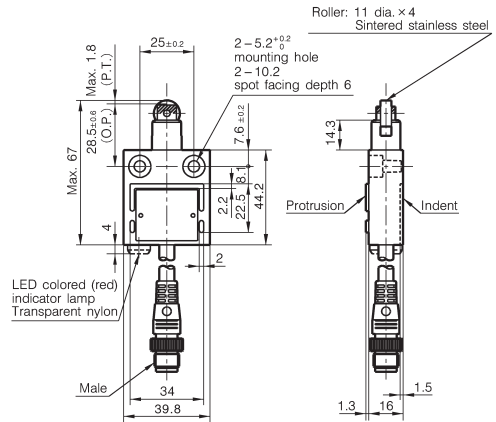
| Catalog listing | DC type | 14CE6-J□□-PD |
|-----------------|----------|--------------|
| | AC type | 14CE6-J□□-PA |
| O.F. | (N max.) | 8.9 |
| R.F. | (N min.) | 1.4 |
| P.T. | (° max.) | 10±3 |
| O.T. | (° min.) | 50 |
| M.D. | (° max.) | 3 |



● Preloaded connector type

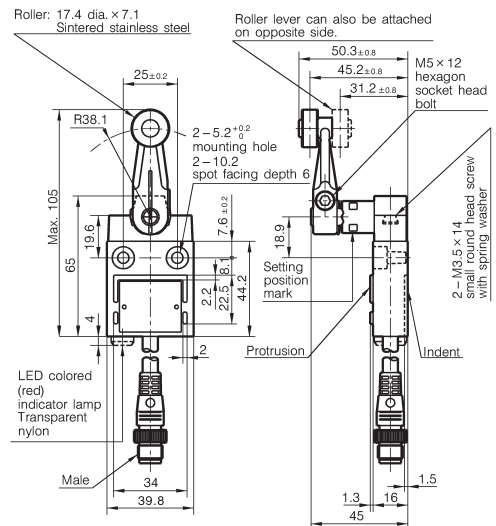
Roller plunger type

| Catalog listing | DC type | 14CE2-J□□-PD03 |
|-----------------|-----------|----------------|
| | AC type | 14CE2-J□□-PA03 |
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Roller lever type

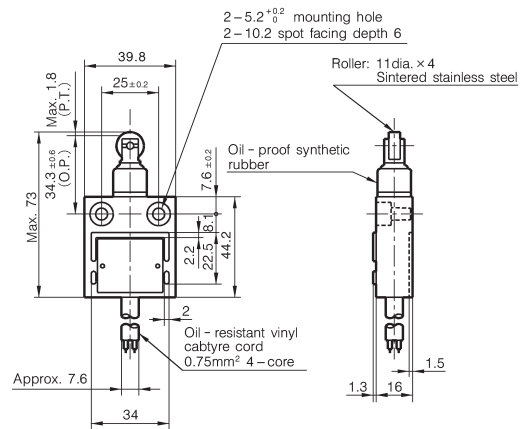
| Catalog listing | DC type | 14CE6-J□□-PD03 |
|-----------------|----------|----------------|
| | AC type | 14CE6-J□□-PA03 |
| O.F. | (N max.) | 8.9 |
| R.F. | (N min.) | 1.4 |
| P.T. | (° max.) | 10±3 |
| O.T. | (° min.) | 50 |
| M.D. | (° max.) | 3 |



Boot roller plunger type

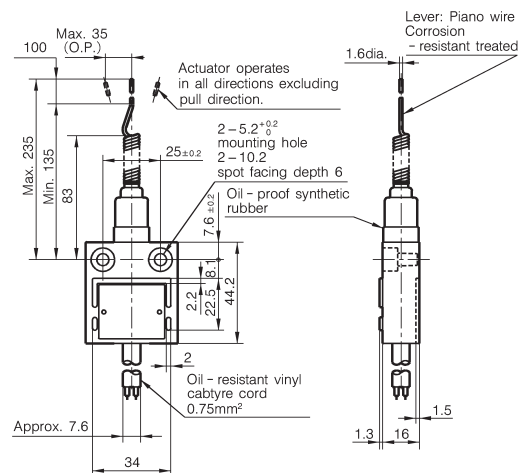
(unit: mm)

| Catalog listing | 14CE8-□J□□ | |
|-----------------|------------|------|
| O.F. | (N max.) | 17.7 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Wire spring non-directional operation type

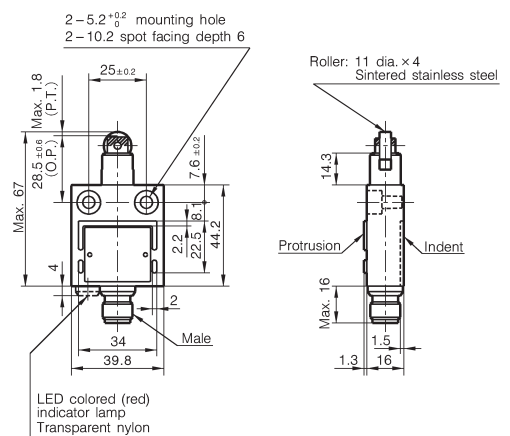
| Catalog listing | 14CE9-□J□□ | |
|-----------------|------------|------|
| O.F. | (N max.) | 0.49 |
| R.F. | (N min.) | 0.09 |
| P.T. | (° max.) | 35 |
| O.T. | (min.) | — |
| M.D. | (max.) | — |



● Connector type

Roller plunger type

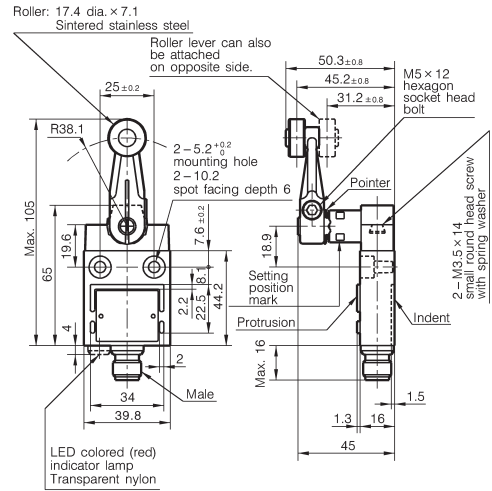
| Catalog listing | DC type | 14CE2-J□□-PD |
|-----------------|-----------|--------------|
| | AC type | 14CE2-J□□-PA |
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |



Roller lever type

(unit: mm)

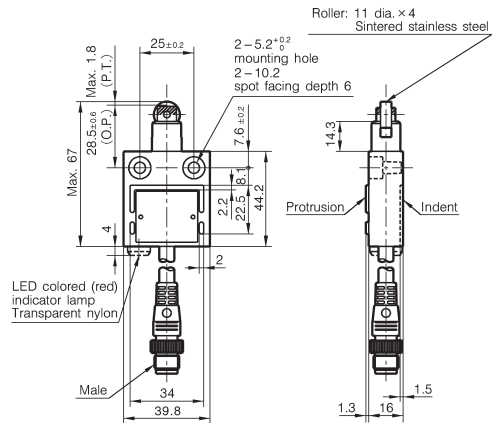
| Catalog listing | DC type | 14CE6-J□□-PD |
|-----------------|----------|--------------|
| | AC type | 14CE6-J□□-PA |
| O.F. | (N max.) | 8.9 |
| R.F. | (N min.) | 1.4 |
| P.T. | (° max.) | 10±3 |
| O.T. | (° min.) | 50 |
| M.D. | (° max.) | 3 |



● Preloaded connector type

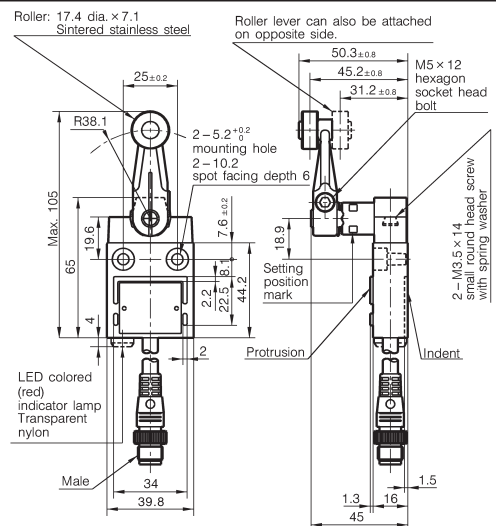
Roller plunger type

| Catalog listing | DC type | 14CE2-J□□-PD03 |
|-----------------|-----------|----------------|
| | AC type | 14CE2-J□□-PA03 |
| O.F. | (N max.) | 11.8 |
| R.F. | (N min.) | 4.4 |
| P.T. | (mm max.) | 1.8 |
| O.T. | (mm min.) | 3 |
| M.D. | (mm max.) | 0.15 |

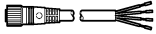


Roller lever type

| Catalog listing | DC type | 14CE6-J□□-PD03 |
|-----------------|----------|----------------|
| | AC type | 14CE6-J□□-PA03 |
| O.F. | (N max.) | 8.9 |
| R.F. | (N min.) | 1.4 |
| P.T. | (° max.) | 10±3 |
| O.T. | (° min.) | 50 |
| M.D. | (° max.) | 3 |



COMBINED PA5 SERIES CABLE WITH CONNECTOR

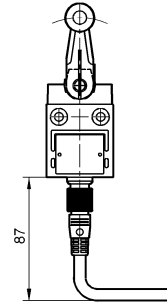
| Shape | Power supply | Cable features | Cable length | Catalog listing | Lead color |
|---|--------------|---|--------------|-----------------|-----------------------------------|
|  | DC | Oil-resistant, flexible UL2464 flame-resistant cable EN-approved | 2m | PA5-4ISX2MK-E | 1-Brown, 2-White, 3-Blue, 4-Black |
| | | | 5m | PA5-4ISX5MK-E | 1-Brown, 2-White, 3-Blue, 4-Black |
| | AC | | 2m | PA5-4JSX2MK-E | 1-Brown, 2-White, 3-Blue, 4-Black |
| | | | 5m | PA5-4JSX5MK-E | 1-Brown, 2-White, 3-Blue, 4-Black |

ASSEMBLY METHOD FOR CONNECTOR TYPE SWITCHES

(unit: mm)

(The below dimension is the dimension when the connector is assembled.)
 Add the insertion/removal (approx. 15mm) space during actual fitting.)

● Example connector type limit switch and straight type PA5



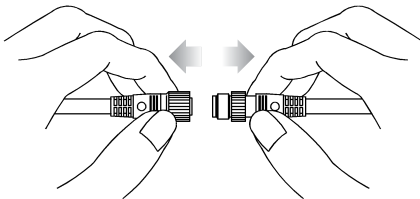
PRECAUTIONS FOR USE

1. Tightening the fixing cap ring and outside screw locking

- When the screw of the mating part is made of resin, the threads may be damaged when the connector is first tightened. When assembling the connector, align the center of the cores, push in as far as possible, and tighten.
- The recommended tightening torque is 0.4 to 0.6N-m. Use of a tightening tool may damage the connector.
- Also, if the connector is not tightened firmly, IP67 protection may become insufficient, or may result in the connector becoming loose.

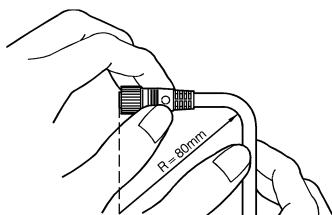
2. Inserting and Removing Connectors

- Before inserting and removing connectors, be sure to turn the power OFF.
- When removing connectors, do not pull the cord.
- Be sure to hold the connector by its body when removing.



3. Cautions when folding and bending cords

- The minimum bending radius (R) of the cord is 80mm.
- Provide sufficient margin when bending cords.



4. Protective structure

- IP67 protection does not assure watertightness (complete waterproofing). Avoid use accompanied by constant contact with water.
- Avoid use in a state where external force is applied at all times on the connector connecting section.
- The body is a resin integrated formed part. Do not use the body as a step or place heavy objects on the body.

5. Cautions during replacement

- When removing connectors to replace the sensor or cord, fully wipe the connector and the surrounding area to remove any water. After removing the connector, prevent the connector from being immersed in chemicals or in powder, or being dropped.
- If the connector is immersed in a fluid, allow the connector to fully dry before connecting again.
- If the connector is dropped in powder, fully wipe off any powder before connecting again. Failure to observe the above may result in short circuits or prevent the connector from being connected.