

CS-Touch Switch

High-precision positioning switch series
www.metrol.co.jp/en

CS / CSJ / CSS / CSK / CSP

1-signal plunger type

Straight touch type (Metal bearing)



Features

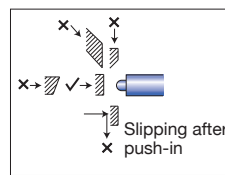
■ **Slim design allows side by side installation, wide range of variations.**

From M5 / Long stroke / Water-resistant

■ **High performance at reasonable price**

5 micron in repetitive accuracy

《Application》



Standard specification

unit:mm

	Product name	Output mode	Stroke	Size	Contacting part	Protective structure	with LED
Cylinder type (Threaded / Non-threaded)	CSJ055A	A : NO	2.8	M5×0.5	φ2 plunger, SR1.5 SUS, Hardened HRC50	IP65	CSJ055A-L
	CSJS50A			φ5			CSJS50A-L
	CS065A	A : NO		M6×0.5			CS065A-L
	CSS60 A / B	A : NO		φ6			CSS60A / B -L
	CS067 A / B	B : NC		M6×0.75			CS067A / B -L
	CSS80A	A : NO		φ8			CSS80A-L
	CS087A			M8×0.75			CS087A-L
Long stroke	CSK087 A / B	A : NO	5	M8×0.75	φ3.5 plunger, SR3 SUS, Hardened HRC50	CSK087A / B -L	
Waterproof	CSP087 A / B-A	B : NC	2.8			Sφ2 SUS, Hardened HRC50	IP67

-A : Contacting part φ2 ball, SUS, Hardened HRC50

-L : LED indicator (120mm from the switch)

Common specification

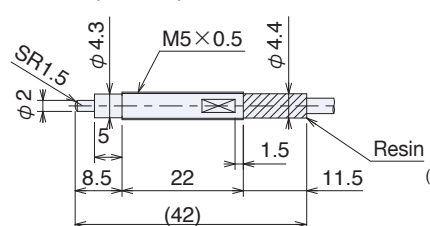
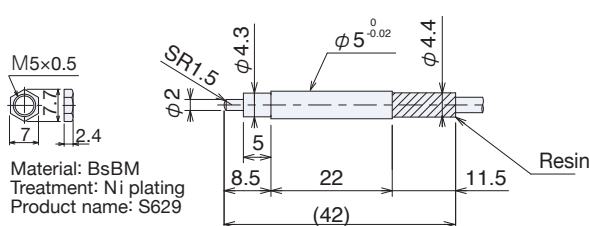
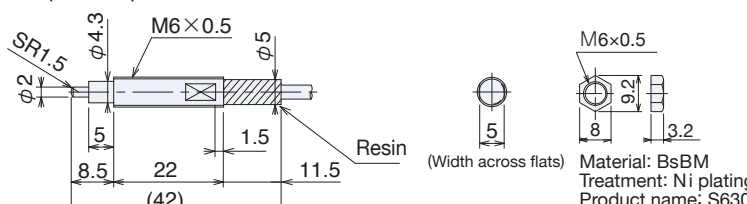
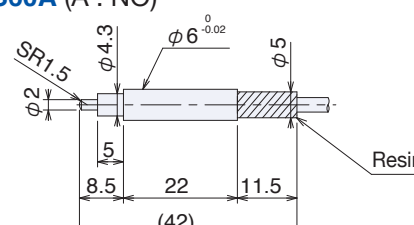
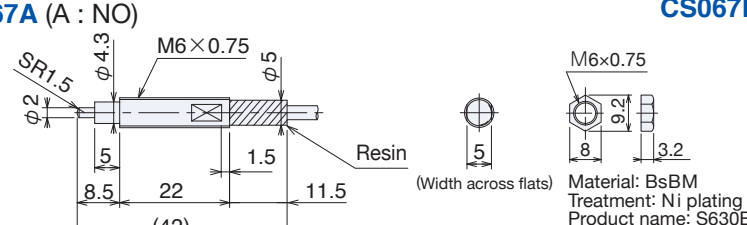
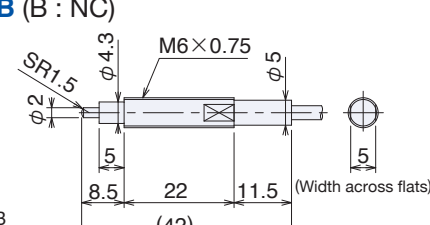
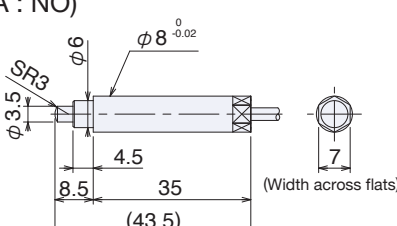
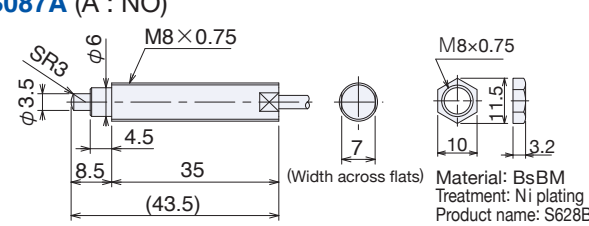
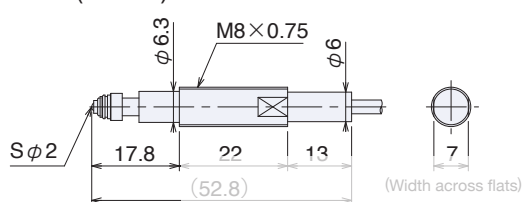
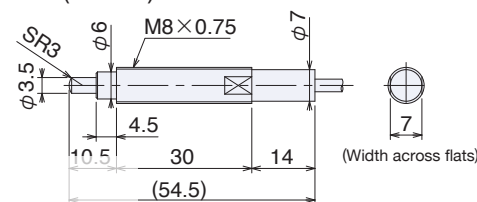
unit:mm

Switch structure	Dry contact	Cable (Refer to P7-5)	Standard length 3m Oil resistant φ2.8 / 2 cores, Tensile strength 30N, minimum bending R7
Output mode	A : Normally open / B : Normally close	Operating temperature range	0°C-80°C (Ice-free)
Pretravel	0.3	Temperature drift	0 (because of no amplifier)
Repeatability	Both On→Off, Off→On/ 0.005 (range) (At operating speed 50-200mm/min) *	Oscillation	10-55Hz total amplitude 1.5 for X,Y,Z each direction
Movement differential	0	Impact	300m/s ² for X,Y,Z each direction
Contact life time	10million (If no specified bungle caused by vibration and used under voltage and current rating)	Contact rating (Refer to P14-3)	DC5V-DC24V Steady current: 10 mA or less (rush current: 20 mA or less) When using the switch with LED, limit the current below 10mA.
Contact force	1N	<p>◎The following options are available.</p> <ul style="list-style-type: none"> • Transistor output (Refer to P7-3) • Shape of contacting part • Protective cover • LED indicator • Contact force • Cable direction • Heat-resistance (P6-4) 	
Contact material	SUS HRC50	<ul style="list-style-type: none"> • Reverse connect protection. • Level conversion. • Output current is increased to 100mA. 	
Standard accessory	Two fixing nuts for threaded type		

* Operating speed slower than 10mm/min is not recommended.

GRUPO ELECTROSÓN

Outer dimension

M5 / $\phi 5$	<p>CSJ055A (A : NO)</p> 	<p>CSJS50A (A : NO)</p> 
	<p>CS065A (A : NO)</p> 	<p>CSS60A (A : NO)</p> 
M6 / $\phi 6$	<p>CS067A (A : NO)</p> 	<p>CS067B (B : NC)</p> 
	<p>CSS80A (A : NO)</p> 	<p>CS087A (A : NO)</p> 
M8 / $\phi 8$	<p>Waterproof type (IP67)</p> <p>CSP087A-A (A : NO) CSP087B-A (B : NC)</p> 	<p>Long stroke type (Stroke 5mm)</p> <p>CSK087A (A : NO) CSK087B (B : NC)</p> 

Cable direction 90°(Option)

Features

- **Slim design allows side by side installation, wide range of variations.**

From M5 / long stroke / water-resistant

- **High performance at reasonable price**

5 micron in repetitive accuracy without an amplifier



■ Representative specification (Cable direction 90°)

unit:mm

	Product name	Output mode	Stroke	Size	Contacting part	Protective structure	with LED
Cylinder type (Threaded/ Non-threaded)	CSJ055A-R	A : NO	2.8	M5×0.5	φ2 plunger, SR1.5 SUS, Hardened HRC50	IP65	CSJ055A-LR
	CSJS50A-R			φ5			CSJS50A-LR
	CS065A-R	A : NO	2.8	M6×0.5	φ2 plunger, SR1.5 SUS, Hardened HRC50	IP65	CS065A-LR
	CSS60A-R			φ6			CSS60A-LR
	CS067A-R			M6×0.75			CS067A-LR
		CSS80A-R	A : NO	2.8	φ8	φ3.5 plunger, SR3 SUS, Hardened HRC50	IP65
CS087A-R		M8×0.75			CS087A-LR		
Long stroke	CSK087 A / B -R	A : NO B : NC	5	M8×0.75			CSK087 A / B -LR

-R: Cable direction 90°

-L: LED indicator (120mm from the switch)

Caution: If the shape of contact is larger than the screw or case diameter,

it cannot be inserted through the installation hole. In such case, please use either a split bush or by a bracket U-cut, etc.

■ Common specification

unit:mm

Switch structure	Dry contact
Output mode	A : Normally open / B : Normally close
Pretravel	0.3
Repeatability	Both On→Off, Off→On/ 0.005(range) (At operating speed 50~200mm/min)*
Movement differential	0
Contact life time	10million (If no specified bungle caused by vibration and used under voltage and current rating)
Contact force	1N
Contact material	SUS HRC50
Standard accessory	Two fixing nuts for threaded type

Cable (Refer to P7-5)	Standard length 3m Oil resistant φ2.8 / 2 cores, Tensile strength 30N, minimum bending R7 Cable protector (Detachable)
Operating temperature range	0°C~80°C (Ice-free)
Temperature drift	0
Vibration	10-55Hz total amplitude 1.5 for X,Y,Z each direction
Shock	300m/s ² for X,Y,Z each direction
Contact rating (Refer to P14-3)	DC5V-DC24V Steady current: 10 mA or less (rush current: 20 mA or less) When using the switch with LED, limit the current below 10mA.

◎The following options are available.

• Transistor output (Refer to P7-3)

• Reverse connect protection.

• Level conversion.

• Output current is increased to 100mA.

• Shape of contacting part

• Protective cover

• LED indicator

• Contact force

• Cable direction

• Heat-resistance (P6-4)

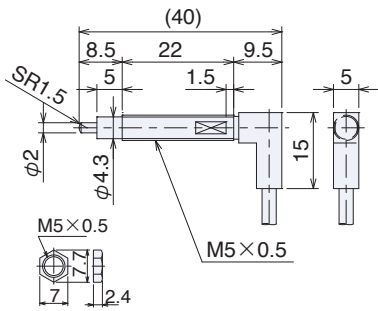
*Operating speed slower than 10mm/min is not recommended.

GRUPO ELECTROSON

Outer dimension

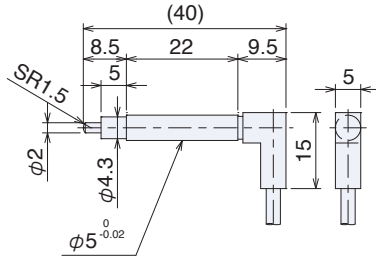
M5 / φ5 Threaded / Non-threaded Cable direction: -R (90°)

CSJ055A - R (A: NO)

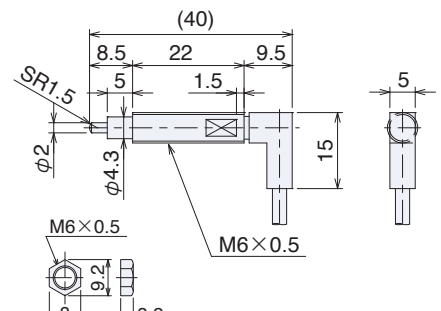


Material: BsBM
Treatment: Ni plating
Product name: S629

CSJS50A - R (A: NO)



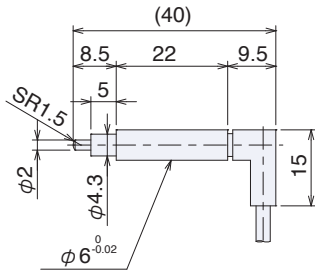
CS065A - R (A: NO)



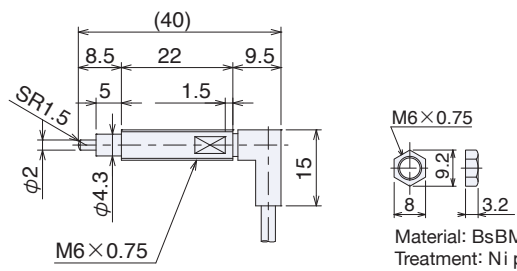
Material: BsBM
Treatment: Ni plating
Product name: S630

M6 / φ6 Threaded / Non-threaded Cable direction: -R (90°)

CSS60A - R (A: NO)



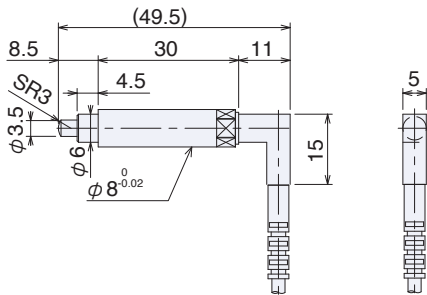
CS067A - R (A: NO)



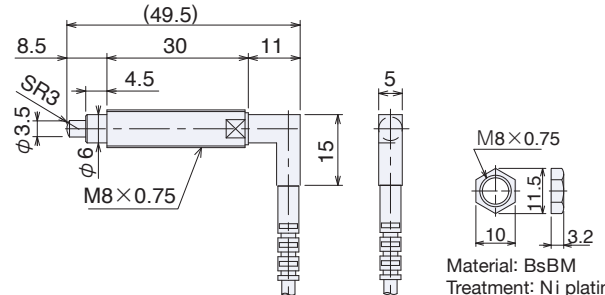
Material: BsBM
Treatment: Ni plating
Product name: S630B

M8 / φ8 Threaded / Non-threaded Cable direction: -R (90°)

CSS80A - R (A: NO)



CS087A - R (A: NO)



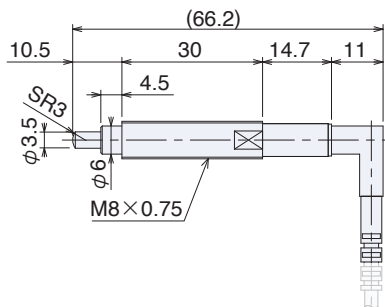
Material: BsBM
Treatment: Ni plating
Product name: S628B

Long stroke type Cable direction: -R (90°)

CSK087A - R (A: NO)

CSK087B - R (B: NC)

Stroke 5mm

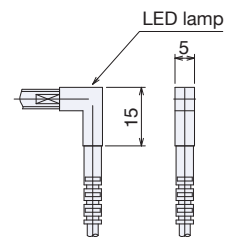
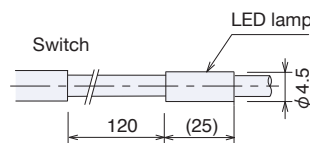


LED indicator

-L□R: Specify the position >120mm

LED indicator

-LD□R: Switch

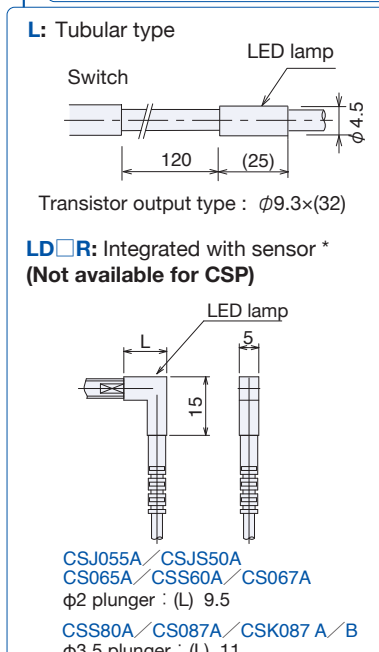
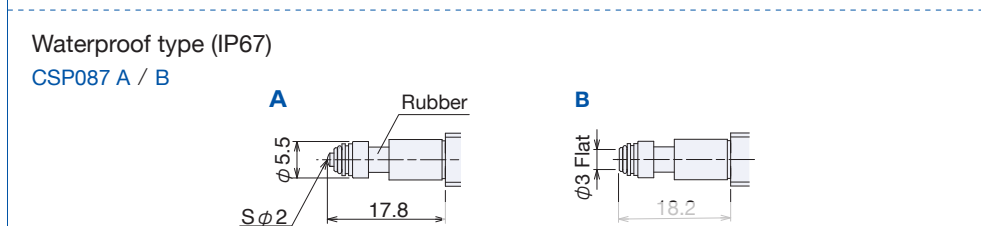
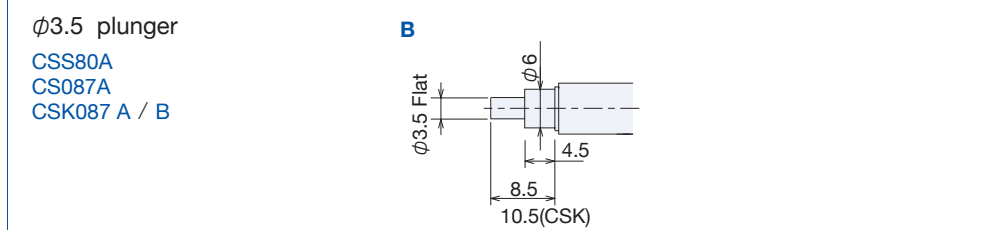
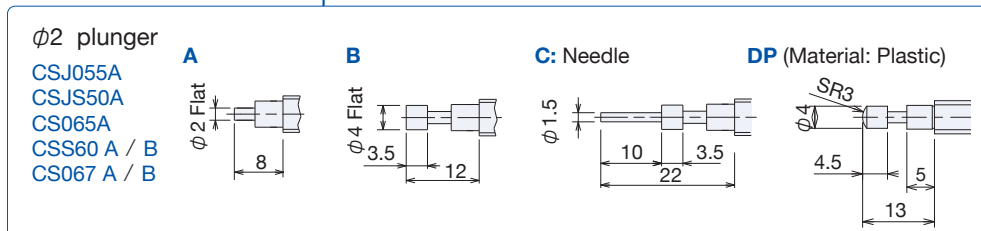
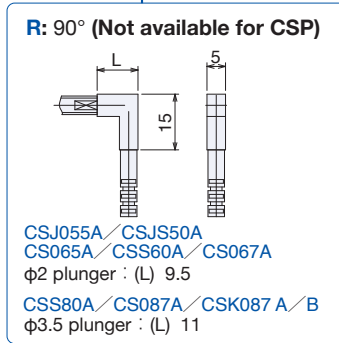
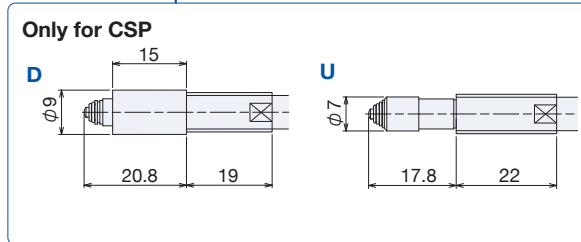


Options

Product name	Shape of contacting part	Protective cover	LED indicator	Contact force	Cable direction
ϕ2 plunger CSJ055A CSJS50A CS065A CSS60 A / B CS067 A / B	Blank: ϕ2 plunger SR1.5 A: ϕ2 flat B: ϕ4 flat C: Needle DP: Plastic	Blank: Not required	Blank: No LED L: 120mm from the switch LD *: Attached to the switch *Available only when perpendicular cable direction R is selected.	Blank: 1N S: 0.3N G: 0.5N H: 1.5N (The rubber scraper is not provided for "S". IP40) (Normally close type not acceptable for S and G)	Blank: Straight R: 90° (Normally close type not acceptable for R)
ϕ3.5 plunger CSS80A CS087A CSK087 A / B	Blank: ϕ3.5 plunger SR3 B: ϕ3.5 flat			Blank: 1N S: 0.3N G: 0.5N H: 1.5N (The rubber scraper is not provided for S,G. IP40) (Normally close type not acceptable for S and G)	Blank: Straight R: 90°
Water resistant type CSP087 A / B	A(Standard): Sϕ2 ball SUS, Hardened steel B: ϕ3 flat	Blank: No protective D: Downward U: Upward	Blank: No LED L: 120mm from the switch	Blank: 1N	Blank: Straight

Transistor output
TNA Added to standard product name
TNB
TPA
TPB
 (Refer to P7-3)

- ▶ e.g.) CSJ055A-ALSR
- ▶ Transistor output e.g.) CSJ055ATNA



*Available only when perpendicular cable direction R is selected.

Options

Shape of contacting part

Product name	Mark: Shape	Shape of detected objects
ϕ 2 plunger CSJ055A CSJS50A CS065A CSS60 A/B CS067 A/B	Blank: ϕ 2 plunger SR1.5 A: ϕ 2 flat B: ϕ 4 flat C: Needle DP: ϕ 3.5, SR3	Flat Convex, ball (Cutters, drills) The bottom of the deep hole, Small detected surface Flat
ϕ 3.5 plunger CSS80A CS087A CSK087 A/B	Blank: ϕ 3.5 plunger SR3 B: ϕ 3.5 flat	Flat Convex, ball (Cutters, drills)

Product name	Mark: Shape	Shape of detected objects
Waterproof (IP67) CSP087 A/B	A: S ϕ 2 ball carbide B: ϕ 3 flat	Flat Convex, ball (Cutters, drills)

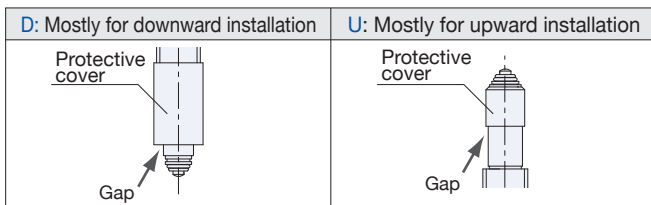
Contact force (Not available for CSP)

Mark: Shape	Operating condition
S: 0.3N	No chattering caused by vibration or impact
G: 0.5N	(No rubber boot is provided for "S", IP40)
H: 1.5N	Intense vibration or impact

Refer to P6-2 for low contact force type (0.1N)

Protective covers (CSP only)

Choose the suitable cover according to switch mounting direction so that the metal cuttings and coolant can't enter from the gaps. (Refer to P14-5)



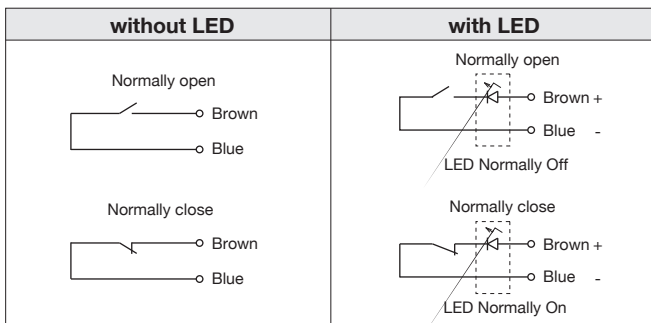
Note when installing on brackets, etc. :

When the diameter is large or a D shaped protection boot or special contact is used, pass the switch from the front side of the installation hole (remove the relay connector before installation).

Tightening torque for case screws and nuts

	Screw / Nut	Tightening torque	Applicable models
CS-Touch Switch	M5x0.5	2N · m	CSJ055
	M6x0.5	4N · m	CS065
	M6x0.75	4N · m	CS067
	M8x0.75	7N · m	CSP087

Circuit diagram

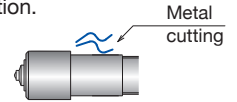


Electrical specification / circuit diagram. (Refer to P7-2)

When using the switches with LED option, limit the current below 10mA. (Refer to P14-3 "Confirmation of switch operation")

For metal cuttings and coolant (CSP only)

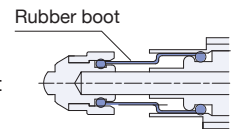
- Protective cover is strongly recommended to avoid damage from cuttings and coolant when the switch is used in machining environment. In addition, an extra cover is recommended to avoid direct hit by high-pressure coolant or heavy cuttings.
- For horizontal mounting, an extra cover prevents coolant or cuttings from entering inside and getting piled up on the body.
- Fabricate and place an extra cover to avoid metal chips adhering to the rubber boots during the grinding operation.



Protective structure

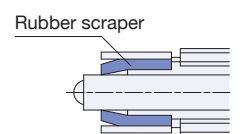
CSP type (IP67)

A rubber boot is applied to the plunger. As it has no rotation stopper, please do not twist the rubber boot by rotating the shaft.



Product other than CSP (IP65)

Rubber scraper is applied to the plunger. When the lip of the scraper is damaged by cuttings, the water resistance becomes impaired.



How to use

Make contact with detected objects at right angle (within deflection angle $\pm 3^\circ$)

If there is a possibility to press the plunger to the stroke end, install a stopper separately to prevent the malfunction.

