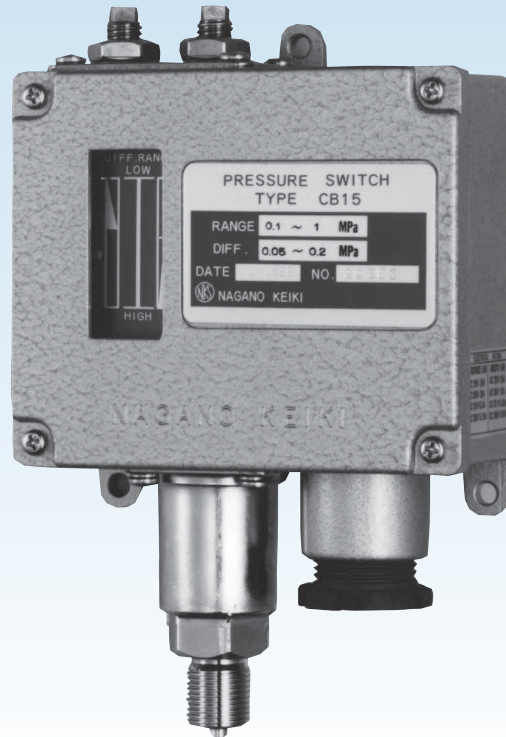


# CB15

## Pressure Switch



### Outline

This pressure switch is suitable for direct control of field equipment by designing and manufacturing with a focus on durability and reliability. It has a stable switching by snap actions of the microswitch.

### Features

- External adjustment of set value and dead band can easily be performed.
- The dead band can be selected either adjustable or fixed according to use.
- The setting scale is without divisions as standard or with divisions optionally.

#### Range of recommended pressure setting

Upper limit type: (10%max.P.+Dead band)~90%max.P.  
Lower limit type: 10%max.P.~(90%max.P.-Dead band)

\* When selecting pressure switches, Please select a pressure range with normal operation pressure within 30 to 65% of full span to get full performance. Also check whether wetted parts material could be used for gases or liquids to be measured.

# CB15

## Pressure Switch

### Specifications 1

Item	Description
Fluid	Gas or Liquid (No freezing)
Operating environment	Places where there are no inflammable liquids or gases which may cause ignition or explosion under normal conditions.
Mounting	Panel mounting
Connection	G3/8B, G1/2B, R3/8, R1/2, 3/8NPT, 1/2NPT Please contact us about connection without the description.
Wetted parts material	General use Bellows: C5212R Tank, socket: C3771 * Available up to 5MPa range. Corrosion-proof use Bellows: SUS316L Tank, socket: SCS14
Pressure range	0.01 to 0.1 → 1 to 10 MPa
Proofpressure	0.15 to 15 MPa (Depends on the pressure range.)
Operating temperature	-5 to 40 °C
Accuracy	±1%max.P., two contact (simultaneous operation): ±1%max.P.
Setting accuracy (Option)	±3%max.P. (Setting scale divisions type)
Dead band	Specification 2 references.
Switch	Micro switch
Quantity of switch	One contact (General use, DC use) or two contacts (simultaneous operation)
Setting system	External adjustment type, with setting lock (The set adjustment axis is locked at the set value specification.)
Outlet for electric wire	Conduit type: G3/4 female (Standard), Others Gland: JIS 20b (Standard), Others
Case material, finishing	Aluminium alloy die casting (ADC12), Gray crystal paint
Case structure	Drip-proof type (Equivalent to IP43)
Weight	Approx. 1.2 kg

### Specifications 2

#### Electrical characteristics: (Standard specification)

Switch	Rating			Withstand voltage	Insulation resistance
		Load resistance	Inductive load		
1 contact standard	125V AC	20 A	20 A	2000V AC Between terminals and case for 1 minute	500V DC 100MΩ or over Between terminals and case
	250V AC	20 A	20 A		
	125V DC	0.5 A	0.05 A		
	250V DC	0.25 A	0.03 A		
1 contact direct current	125V AC	10 A	6 A	1500V AC Between terminals and case for 1 minute	
	250V AC	3 A	1.5 A		
	125V DC	10 A	6 A		
	250V DC	3 A	1.5 A		
2 contacts simultaneous operation	125V AC	10 A	6 A	Between terminals and case for 1 minute	
	250V AC	10 A	4 A		
	125V DC	0.5 A	0.05 A		
	250V DC	0.25 A	0.03 A		
· Inductive load: Power factor 0.4 or over (AC) Time constant 7ms or less (DC)					

### Specifications 2

Pressure range, dead band and proofpressure:

Pressure range MPa	Dead band MPa		Proofpressure MPa
	Fixed	Adjustable	
0.01~0.1	0.005 or less	0.005~0.02	0.15
0.02~0.2	0.01 or less	0.01 ~0.04	0.3
0.04~0.4	0.02 or less	0.02 ~0.08	0.6
0.06~0.6	0.03 or less	0.03 ~0.12	0.9
0.1~1	0.05 or less	0.05 ~0.2	1.5
0.15~1.5	0.075 or less	0.075~0.3	2.25
0.2~2	0.1 or less	0.1 ~0.4	3
0.35~3.5	0.175 or less	0.175~0.7	5.25
0.5 ~ 5	0.25 or less	0.25 ~1	7.5
*0.7 ~ 7	0.35 or less	0.35 ~1.4	10.5
*1 ~10	0.5 or less	0.5 ~2	15

\* Wetted parts material: Corrosion-proof applications only.

#### How to choose pressure

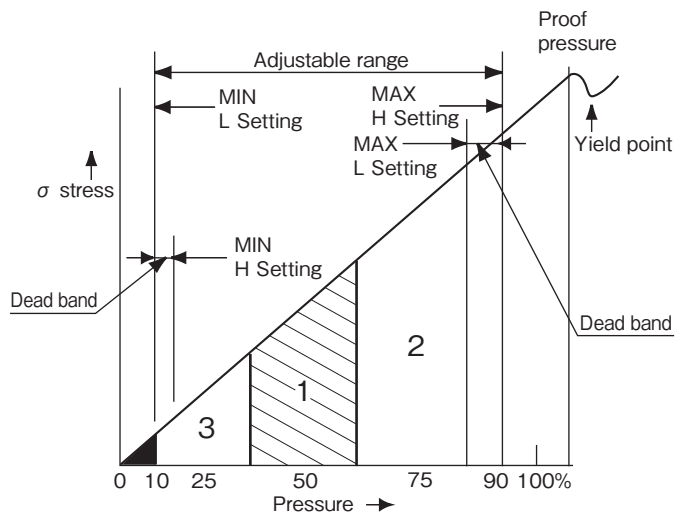
- Set value is steady, accurately: 30%max.P. or over
- Longevity is good: 65%max.P. or less
- Accuracy, Longevity is good [Ideal]:  
About 30 to 65% of the adjustable ranges

In the right figure

- Range 1: Selection of both accuracy and longevity
- Range 2: Selection of valuing accuracy
- Range 3: Selection of valuing longevity

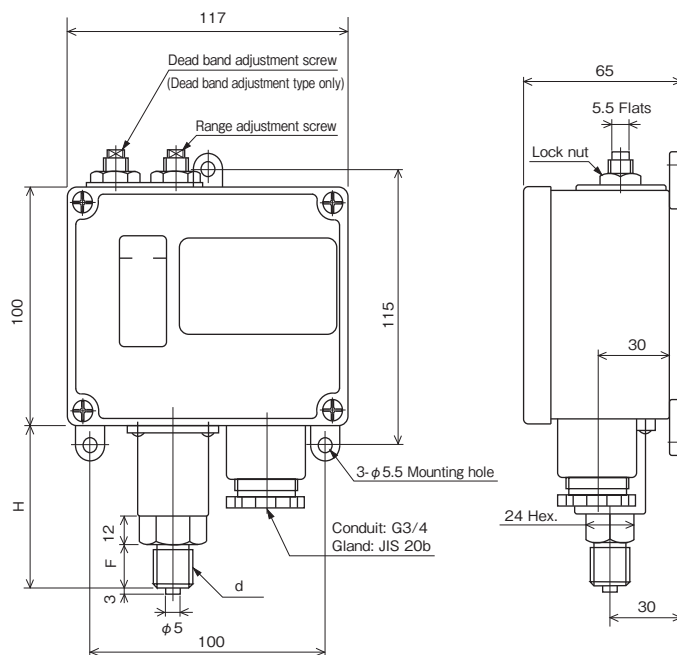
#### Range of recommended pressure adjustment

- Upper limit type: (10%max.P.+Dead band)~90%max.P.
- Lower limit type: 10%max.P.~(90%max.P.-Dead band)



### Dimensions

Unit: mm



Range MPa	G3/8B		G1/2B	
	H	F	H	F
0.01~0.1	76	18	78	20
0.02~0.2	68	18	70	20
0.04~0.4	68	18	70	20
0.06~0.6	68	18	70	20
0.1~1	68	18	70	20
0.15~1.5	54	18	56	20
0.2~2	54	18	56	20
0.35~3.5	54	18	56	20
0.5~5	54	18	56	20
0.7~7	54	18	56	20
1~10	54	18	56	20

### Type of contacts and wiring system

Type of contacts	Mark	Operation system		Contact terminal number	
S.P.D.T.	Upper limit type with one contact	H	When the pressure reaches the set pressure or higher, the contacts operate and turn on a circuit.		N01 – COM1
	Lower limit type with one contact	L	When the pressure drops below the set pressure, the contacts operate and turn on a circuit.		NC1 – COM1
D.P.D.T.	Upper limit type with two contacts	WH	Combines two upper limit types which operate simultaneously.		N01 – COM1 N02 – COM2
	Lower limit type with two contacts	WL	Combines two lower limit types which operate simultaneously.		NC1 – COM1 NC2 – COM2

\* Please connect the (+) polarity with common terminal COM1 at SPDT specification for one contact DC.

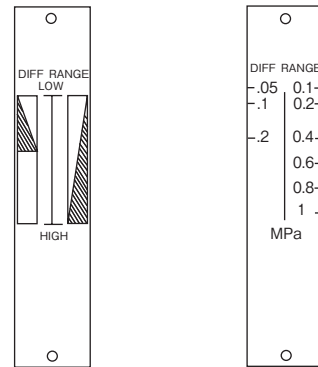
### Conditions for application

Pressure changing speed, Number of switching times, Permissible frequency

Microswitch contacts type	Pressure changing speed	Number of switching times (Electric)	Permissible frequency (Electric)
Standard S.P.D.T.	Within 15 minutes	250,000 times or over	20 times/minute
Direct current type S.P.D.T.	Within 10 minutes	100,000 times or over	
Simultaneous operation D.P.D.T.		250,000 times or over	

Note: The pressure changing speed refers to the time required for the pressure to go from 0 to a pressure corresponding to the highest range.

### Setting scale



Setting scale without divisions

Setting scale with divisions (option)

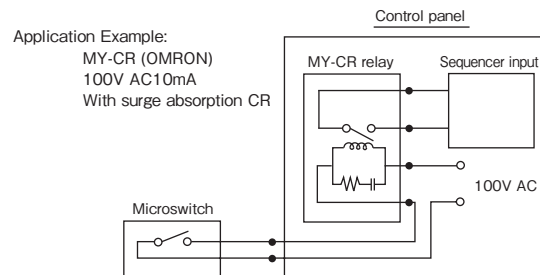
(Example) Pressure range 0.1 to 1MPa

### Remarks

#### 1. As a sequencer input

The contact resistance of the microswitch increases gradually as time passes. When used in an atmosphere, especially atmospheres containing Si, SiO<sub>2</sub> accumulates at the contact part as the switch is operated and the contact resistance increases in a short time.

Therefore, use the gauge in a clean and well-ventilated atmosphere. When the gauge is used as sequencer input for control use, input it through a 100V AC relay, because the contacts may be fail for these reasons.



#### 2. Insertion of contact protection circuit

With an inductive load switching circuit, insert a protection circuit to protect the contacts. When using a relay, select the type with a built-in contact protection circuit.

