CQ20
Pressure Switch

Outline

This pressure switch uses a Bourdon tube as the pressure sensing element. Displacement of the Bourdon tube is directly transferred to the microswitch to open or close. This switch is suitable for liquid-level control, flow control and controls of various fluid pressure, air, water, oil etc.

Features

- Stable switching by snap actions of the microswitch.
- Setting values can be easily adjusted by removing the plug of acrylic glass without removing the lid on the front of the case and aligning the needle with the setting scale using a flat-blade screwdriver.

Range of recommended pressure setting
Upper limit type: (10%max.P.+Dead band) to 90%max.P.
Lower limit type: 10%max.P. to (90%max.P.-Dead band)
Compound: %max.P. → %F.S.

＊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.

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 Bourdon tube: SUS316 Socket: CAC203 ＊Available up to 35MPa range. Corrosion-proof use Bourdon tube: SUS316 Socket: SCS14
Pressure range	0 to 0.1 → 0 to 70 MPa -0.1 to 0 MPa → -0.1 to 2 MPa ＊20 to 100 kPa (Receiver) also available. Contact NKS for details.
Proof pressure	150% of rated pressure
Operating temperature	-20 to 60 ℃
Accuracy	±1%max.P. (Compound: ±1%F.S.)
Setting accuracy	±3%max.P. (Compound: ±3%F.S.)
Temperature coefficient	0.05%max.P./℃ (Compound: 0.05%F.S./℃)
Dead band	Specification 2 references.
Switch	Micro switch
Quantity of switch	One contact
Setting system	External adjustment type, with setting scale and setting lock (However, when the set value is specified, the setting adjustment screw is locked.)
Outlet for electric wire	Standard: Resin Cable Gland (Applicable diameter: ϕ6 to 11)＊
Case material, finishing	ADC12, Black
Case structure	Drip-proof type (Equivalent to IP43)
Weight	Approx. 1kg

＊Enclosure has ϕ17 bore for Cable Gland port.

Specifications 2

Electrical characteristics: (Standard specification)

Rating			Withstand voltage	Insulation resistance
	Resistance load	Inductive load		
125V AC	15A	15A	1500V AC Between terminals and case for 1 minute	500V DC 100MΩ or higher Between terminals and case
250V AC	15A	15A		
30V DC	2A	1A		
125V DC	0.5A	0.05A		
･Inductive load: Power factor 0.4 or higher (AC) Time constant 7ms or lower (DC)				

Specifications 2

Pressure range, dead band and proofpressure:

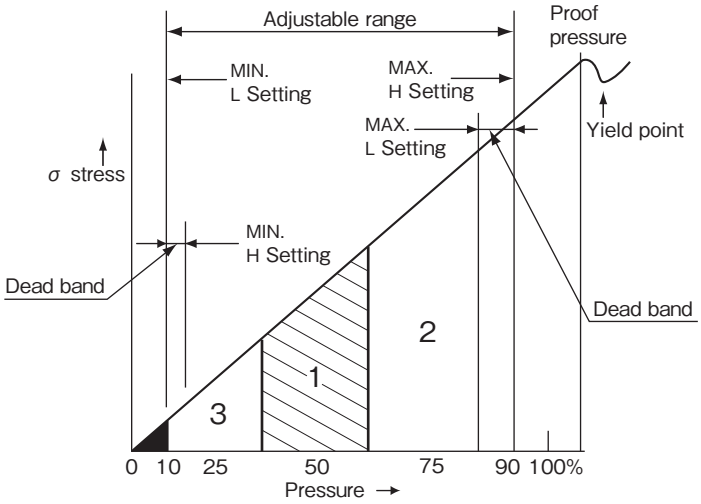
Pressure range MPa	Dead band MPa	Proofpressure MPa
-0.1 to 0.1	0.016 or lower	0.15
to 0.2	0.024 or lower	0.3
to 0.3	0.024 or lower	0.45
to 0.4	0.033 or lower	0.6
to 0.6	0.046 or lower	0.9
to 1	0.06 or lower	1.5
to 1.5	0.068 or lower	2.25
to 2	0.08 or lower	3
-0.1 to 0	0.01 or lower	0.15
0 to 0.1	0.01 or lower	0.15
to 0.2	0.016 or lower	0.3
to 0.3	0.024 or lower	0.45
to 0.4	0.024 or lower	0.6
to 0.6	0.039 or lower	0.9

Pressure range MPa	Dead band MPa	Proofpressure MPa
0 to 1	0.06 or lower	1.5
to 1.5	0.068 or lower	2.25
to 2	0.08 or lower	3
to 2.5	0.15 or lower	3.75
to 3.5	0.14 or lower	5.25
to 5	0.175 or lower	7.5
to 7	0.24 or lower	10.5
to 10	0.65 or lower	15
to 15	0.52 or lower	22.5
to 25	1.25 or lower	37.5
to 35	1.05 or lower	52.5
to 50	2.2 or lower	75
to 70	3.1 or lower	105

How to choose pressure
- Set value is steady, accurately: 30%max.P. or higher
- Longevity is good: 65%max.P. or lower
- Accuracy, Longevity is good [Ideal]:
  About 30 to 65% of the adjustable ranges

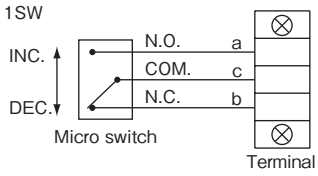
In the right figure
Range 1: Selection of both accuracy and longevity
Range 2: Selection of valuing accuracy
Range 3: Selection of valuing longevity

Range of recommended pressure adjustment
Upper limit type: (10%max.P.+Dead band) to 90%max.P.
Lower limit type: 10%max.P. to (90%max.P.-Dead band)
Compound: %max.P. → %F.S.



Wiring

CQ20



Terminal division
a: N.O.
b: N.C.
c: COM.

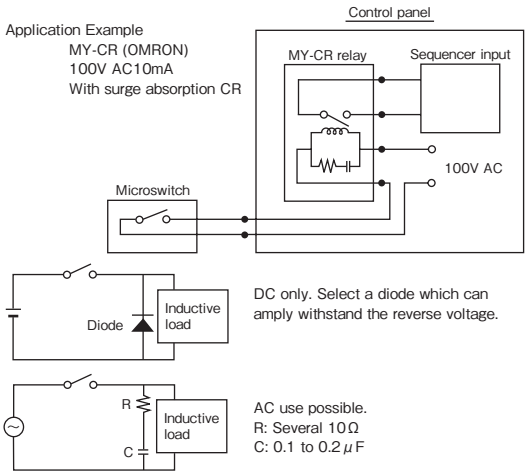
Remarks

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_2 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

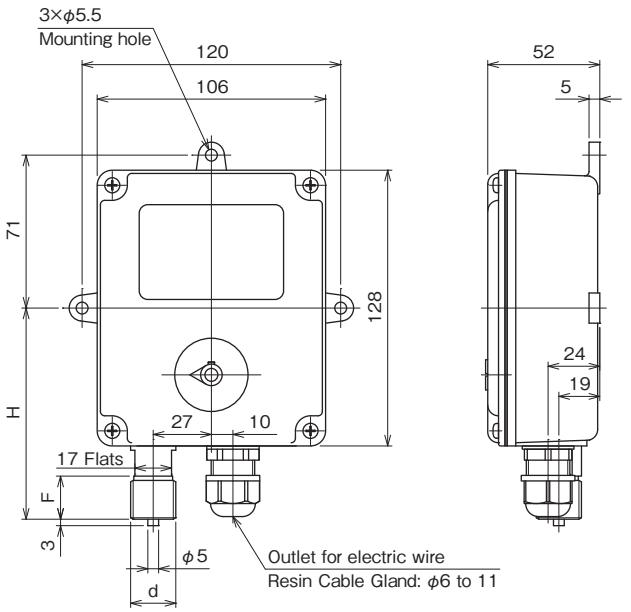
With an inductive load switching circuit, insert a protection circuit to protect the contacts.When using a relay, select the type with a built-in contact protection circuit.



Dimensions

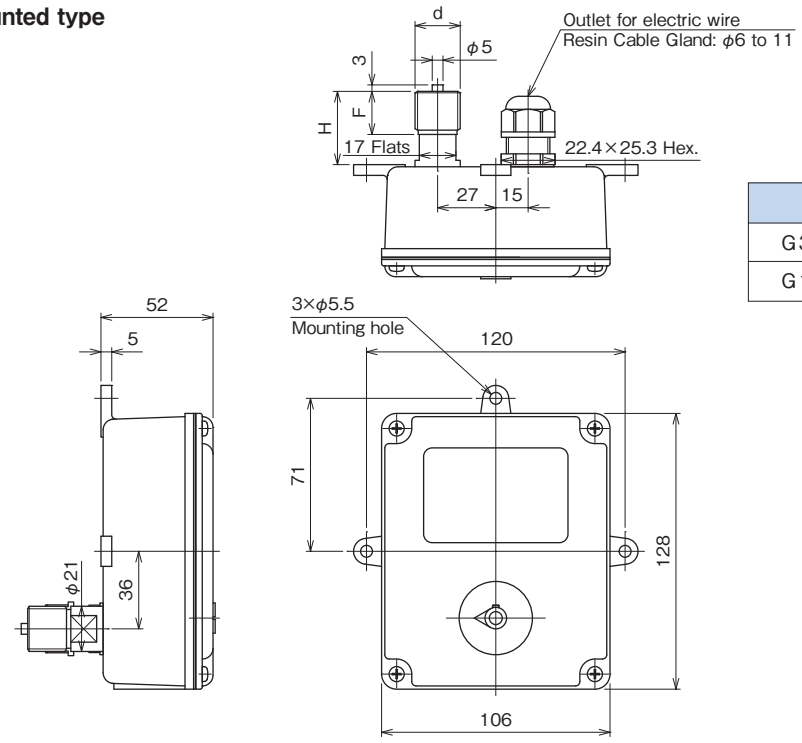
Unit: mm

Stem



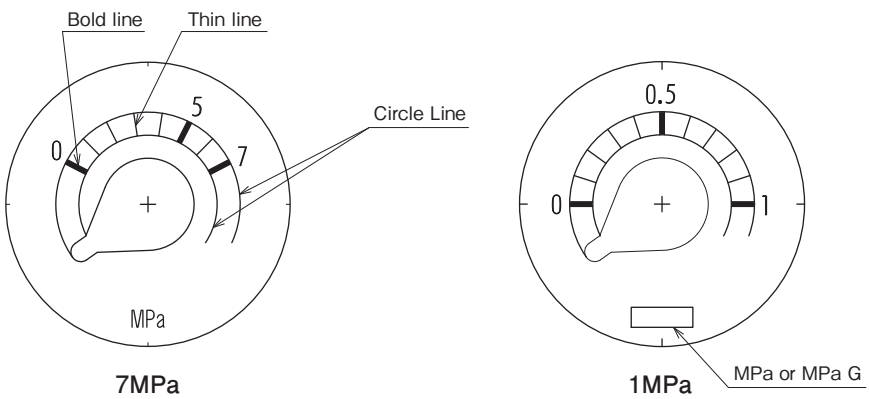
d	F	H
G3/8B	18	96
G1/2B	20	98

Panel mounted type



d	F	H
G3/8B	18	32
G1/2B	20	34

Scale



Note: The range of the scale at different angles.

Model number configuration

For ordering, please specify the model number, each specs and the range.

Model

C Q 2 0	—	①	②	③	—	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Pressure Switch									1			×	×	×	×	×	

Model number		Selective spec.	Additional spec. (Option)
① Mounting	3	Panel mounting, Drip-proof type, Stem	
	7	Panel mounting, Drip-proof type, Panel mounted type	
② Connection	3	G3/8B	
	4	G1/2B	
	G	R3/8	
	H	R1/2	
	L	3/8NPT	
	M	1/2NPT	
		Others	
③ Wetted parts materials	1	Bourdon tube: SUS316 Socket: CAC203 Available up to 35MPa range	
	3	Bourdon tube: SUS316 Socket: SCS14	
④ Pressure range (MPa)	1	-0.1 to 0.1, 0.2, 0.3, 0.4, 0.6, 1, 1.5, 2	
	2	-0.1 to 0	
	3	20 to 100kPa (Receiver)	
	4	0 to 0.1, 0.2, 0.3, 0.4	
	5	0 to 0.6, 1, 1.5, 2, 2.5, 3.5, 5, 7	
	6	0 to 10, 15, 25, 35	
	7	0 to 50, 70	
⑤ Type of contacts	A	H: Upper limit type with 1 contact	
	B	L : Lower limit type with 1 contact	
		Others	
⑥ Switch	0	Standard	
	1	Ultra high sensitivity type	
	3	Standard + gold plated	
	4	Ultra high sensitivity type + gold plated	
⑦ Outlet for electric wire	1	Resin Cable Gland φ6 to 11	
⑧ Treatment	0	Nil	
	1	Use no oil	
	2	Use no water	
	3	Use no oil & water	
⑨ Additional specifications	0	Nil	
	1	Coating specification	
⑮ Documents	0	Nil	
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, strength calculation, attended inspection	

Please specify applicable range code as well as pressure range and engineering unit.

Range of recommended pressure setting
Upper limit type: (10%max.P.+Dead band) to 90%max.P.
Lower limit type: 10%max.P. to (90%max.P.-Dead band)
Compound: %max.P. → %F.S.

Manufacturing range
- Accuracy: ±1% max.P. (Compound: ±1%F.S.)
- Setting accuracy: ±3% max.P. (Compound: ±3%F.S.)
- Setting system: External adjustment type, with setting scale and setting lock.
- Use no oil & water: Available up to 50MPa range (Use no water: available up to 70MPa range)

○Setting dial includes the setting error. Therefore, for accurate adjustment, always compare with a master gauge and base pressure gauge and set.

＊Specify by code "X" if there is no applicable specification.