



Pressure switches

Diaphragm sensor
Weatherproof
Flameproof

SERIES 020

- **Very low ranges** ● **Vacuum pick-ups** ●
- **Air purge systems** ● **Drying ovens** ●



Model 020 in GM Weatherproof Enclosure



Model 020 in GK Flameproof Enclosure

SWITZER Series 020 pressure switches are specially designed for very low input pressure from mmWC and upto 4 bar for use in varied applications. Switzer's time proven Series 200 mechanisms are employed to ensure reliable switching.

A precision contoured synthetic elastomer diaphragm senses low pressures applied to it and actuates a snap-acting microswitch when the input pressure is above or below the pre-set value.

The instrument is available both in weatherproof and flameproof housings. Enclosures, sensing element materials, microswitches and switching modes can be combined to offer the variety needed to suit the demands of ever expanding industrial processes.

Setpoint is continuously adjustable over the instrument range and can be set precisely against a master gauge. A scale is provided for approximate switch setting.

General Specifications

Enclosure		Wetted Parts	Aluminum standard. 304 / 316 SS optional
GM	GM style aluminium pressure die cast, weatherproof to IP66 with nitrile gasket	Mounting	Vertical only (Note 5)
GA	GA style 304 stainless steel casting, weatherproof to IP66, fit for off shore	Repeatability	±2 % FSR (Note 4)
GA6	GA style 316 stainless steel casting, weatherproof to IP66, fit for off shore	Scale Accuracy	±5 % FSR (Note 6)
GK	GK style aluminium pressure die cast, weatherproof to IP66 and flameproof to group IIC as per IS/IEC 60079	Ambient Temp.	- 10°C to + 60°C (Note 12)
Ranges	Refer Table	Max. Working Pr.	Refer Range Table
Sensor	Neoprene Diaphragm Std. Nitrile, EPDM & Silicone are optional. Nitrile Diaphragm standard for range codes M047, B025, B024 & B030. Options not available.	Max. Working Temp.	95°C for Neoprene 110°C for Nitrile; 130°C for EPDM 200°C for Silicone (Note 13)
		Switching element	Instrument quality snap acting SPDT microswitch
		Switching diff.	Fixed, Wideband adj. For values refer Tables
		Process connection	1/4" NPT or 1/2" NPTF Std. Others through Adaptor.
		Electrical connection	1/2" NPTF Std. Dual entry on request
		Conformity	Generally to BS:6134 : 1991

Ordering matrix

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enclosure										
GM style aluminium pressure die cast, weatherproof to IP66 with Buna-N gasket	—									GM
GA style 304 stainless steel casting, weatherproof to IP66, fit for off shore	—									GA
GA style 316 stainless steel casting, weatherproof to IP66, fit for off shore	—									GA6
GK style aluminium pressure die cast, weatherproof to IP66 and flameproof to group IIC as per IS/IEC 60079	—									GK
Model										
Pressure Switch meant for low/ultra low range spans having very low non-adjustable fixed switching differential.	—									021
Same as 021 but with auxiliary mechanism providing adjustment of switching differential between 5 to 10% min and 60% of max. FSR	—									023
A variant of series 021, employs twin levers each operating a SPDT microswitch actuated by a single sensor through a unique linkage thereby providing two independent adjustable set points, each with its own setting scale, spring and switch. Minimum separation between setpoints must be more than sum of on-off differentials or 10% of FSR whichever is higher.	—									028
Sensor materials										
Neoprene	—									N
Silicone	—									S
EPDM	—									E
Buna-N	—									B
316L SS	—									3
Wetted part										
Aluminium	—									5
316 SS	—									2
304 SS	—									4
(Note : M047, B025, B024 & B030 ranges are available only with Buna-N diaphragm. For Ammonia service : EPDM diaphragm only.										
Range code										
Refer Table-1	—									<input type="checkbox"/>
Switch code and rating										
Refer Table-2	—									<input type="checkbox"/>
Electrical entry code										
Refer Table-3	—									<input type="checkbox"/>
Process connection										
1/4" NPTF	—									S1
1/2" NPTF	—									S2
Mounting										
On-line	—									Z
Wall	—									W
2" pipe	—									2
Universal	—									U
Mounting material										
Not applicable	—									0
Mild steel	—									C
316 SS	—									2
CE Conformity										
Non Conformity	—									ZZ
CE Conformity	—									CE

For Options refer table-4

Table-1 : Range code and availability

RANGE CODE	RANGE	MWP	021	023	028 *
M011	0 to 2.5 mbar	0.5	✓	X	X
M036	0.5 to 5 mbar	0.5	✓	X	X
M037	1 to 10 mbar	0.5	✓	✓	X
M038	2.5 to 15 mbar	0.5	✓	✓	X
M039	2.5 to 25 mbar	0.5	✓	✓	X
M041	5 to 50 mbar	0.5	✓	✓	X
M045	7.5 to 75 mbar	0.5	✓	✓	X
M046	10 to 100 mbar	0.5	✓	✓	X
M047	40 to 400 mbar	1	✓	✓	X
B025	0.2 to 1 bar	4	✓	✓	X
B024	0.16 to 1.6 bar	4	✓	✓	X
B030	0.4 to 4 bar	7	✓	✓	X
M008	-5 to 0 mbar	0.5	✓	✓	X
M007	-10 to 0 mbar	0.5	✓	✓	X
M004	-20 to 0 mbar	0.5	✓	✓	X
M003	-25 to 0 mbar	0.5	✓	✓	X
M001	-50 to 0 mbar	0.5	✓	✓	X
M049	-100 to 0 mbar	0.5	✓	✓	X
M009	-2.5 to +2.5 mbar	0.5	✓	X	X
M007	-10 to +10 mbar	0.5	✓	✓	X
M005	-20 to +20 mbar	0.5	✓	✓	X
M002	-50 to +50 mbar	0.5	✓	✓	X
W188 §	-30 to +250 mmWC	0.5	X	X	✓

- Full vacuum available for M047, B025, B024, B030 only
- Chemical seal not available in this model.
- 316L SS diaphragm is available in the ranges M038, M039, M041, M045 and M046 only.
- ★ Refer Differential Chart for range availability.
- § Available in GM, GA enclosure only.

Table-2: Switch code, rating and availability

Switch code (SPDT)	AC Rating	DC Rating in MPS						Availability of SPDT in models	Availability of DPDT in models
		Resistive			Inductive				
		220V	110V	24V	220V	110V	24V		
D	15A 250 / 125V	0.2	0.4	2.0	0.02	0.03	1.0	021 & 028	021
3	15A 250 / 125V	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	021	021
W	15A 250 / 125V	0.3	0.5	6.0	0.05	0.1	4.0	023	023
4	1A 125V	N.A.	0.5	0.5	N.A.	0.25	0.25	021	021
5	5A 250 / 125V	0.2	0.4	4.0	0.2	0.4	3.0	021	021
J	5A 250V	N.A.	N.A.	5.0	N.A.	N.A.	3.0	021	021
K	1A 125V	N.A.	N.A.	1.0	N.A.	N.A.	0.5	021	021
9	1A 115V	N.A.	N.A.	3.0	N.A.	N.A.	1.0	021	021
G	N.R.	N.R.	N.R.	1.0	N.R.	N.R.	0.25	021	021

Codes D, 3 & W – For General purpose usages.
Code 4 – With Gold alloy contact.
Code 5 – For General purpose with good DC rating.
Code J – Argon sealed micro switch with Silver contact.

Code K – Argon sealed micro switch with Gold contact.
Code 9 – Hermetically sealed, inert gas filled with Silver alloy contact.
Code G – Hermetically sealed, inert gas filled with Gold plated contact.

For DPCO, change switch code to "33", "44", etc., while ordering

N.A. – Not Available **N.R.** – Not Recommended

Table 3 : Electrical entry code

Size	Single Entry		Dual Entry	
	GM/GA	GK	GM/GA	GK
1/2" NPTF	A	A	N	N
3/4" NPTF ★	L	---	O	---
M20 × 1.5 ★★	E	E	EB	EB
Through Connector				
7 pin plug	C	---	---	---
9 pin plug	D	---	---	---
★ Cable gland available on request. ★★ Cable entry is optional through adaptor. M20×1.5 direct is possible in GK.				

Table 4: Options

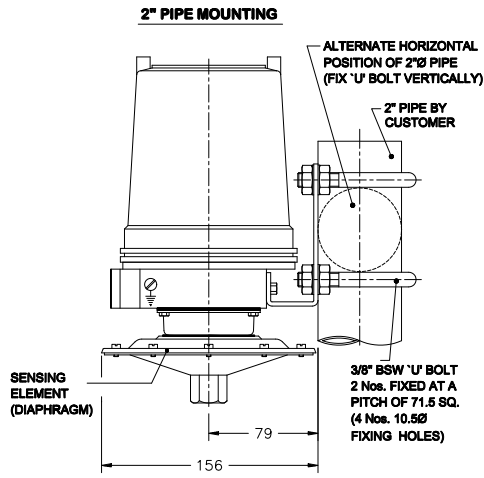
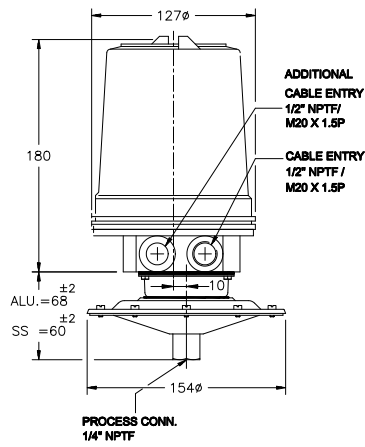
Details	Models		
	021	023	028
Ammonia Service (available only with 'E4 and E2' wetted parts)	✓	✓	X
Nuclear Service	✓	✓	✓
Full Vacuum withstandability	✓	✓	X
Optional scale accuracy ±2%	✓	✓	X
CE conformity	✓	✓	✓
1/2" NPTF Process connection	✓	✓	✓
Blow out disc	✓	✓	✓

NOTES

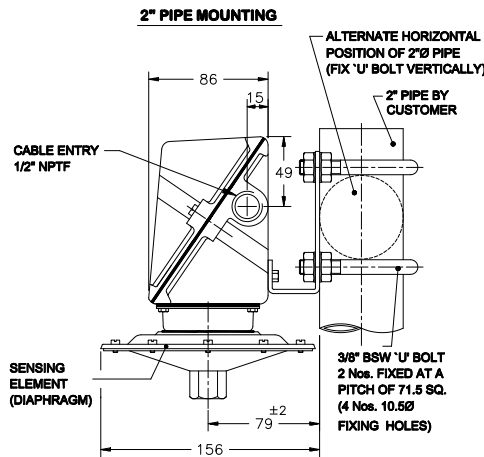
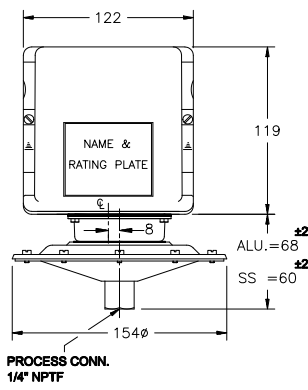
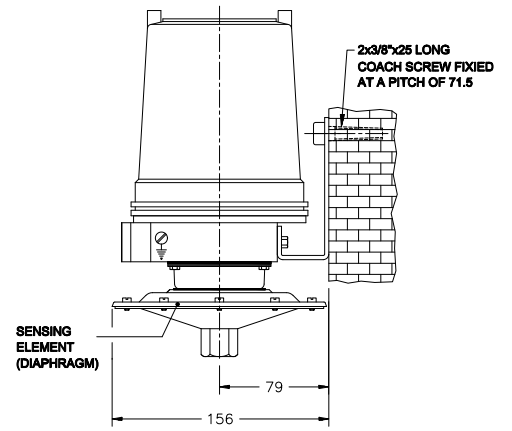
1. Gr.IIC of IS/IEC 60079–1 is equivalent to NEC CL.1, DIV.1, Gr.A & B.
2. Style GM/GA is weatherproof only if all entries and joint faces are properly sealed. Style GK is weatherproof only if cover 'O' ring is retained in position and flameproof only if proper FLP cable gland is used. It is recommended to procure cable glands along with GK instruments to avoid neglect of it while installation.
3. Intrinsic Safety (Exi) — Pressure switches are classified as simple apparatus as they neither generate nor store energy. Hence pressure switches in weatherproof (GM / GA) enclosures also may be used in intrinsically safe systems without certification provided the power source is certified Intrinsic Safe. Because of the low voltages and currents it is recommended to use gold contact and / or sealed contacts.
4. Accuracy & Repeatability are not different for all blind pressure switches. A shift of $\pm 2\%$ may be observed in setpoint when pressure falls from full static pressure. Settings will also shift with varying temperature.
5. The instrument is calibrated in the mounting position depicted in the drawing. Mounting in any other direction will cause a minor range shift, especially in low and compound ranges. Ranges above 1 bar will not experience this shift.
6. A pressure switch is a switching device and not a measuring instrument — eventhough it has a scale to assist setting. For this reason, Test Certificates will not contain individual ON-OFF switching values at different scale readings. Maximum differential obtained alone will be declared, besides other specifications.
7. Select working range of the instrument such that the set value lies in the mid 35% of the range i.e., between 35% and 70% of range span.
8. For switching differential values please refer respective Differential Table. Switching differentials furnished are nominal values under test conditions at mid-scale and will vary with range settings and operating conditions.
9. On and off settings should not exceed the upper or lower range value.
10. DPDT action is achieved by two SPDT switches synchronised to practical limits i.e., $\pm 2\%$ of FSR. Deadband for DPDT contacts are higher than that of SPDT as force required to actuate the contacts are more. Please refer respective differential table for exact values.
11. Contact life of microswitches are 5×10^5 switching cycles for nominal load. To quench DC sparks, use diode in parallel with inductance, ensuring polarity. A 'R-C' network is also recommended with 'R' value in Ohms equal to coil resistance and 'C' value in micro Farads equal to holding current in Amps.
12. Ambient temperature range: All models are suitable for operating within a range of ambient temperature from (–) 10°C to (+) 60°C provided the process does not freeze within this range. Below 0°C , precautions should be taken in humid atmospheres to prevent frost formation inside the instrument from jamming the mechanism. Occasional excursions beyond this range are possible but accuracy might be impaired. The microswitch is the limiting factor which should never exceed the limits (–) 25°C to (+) 80°C .
13. Fluid Temperature: A pressure switch when connected to the process is not subjected to through flow and therefore is not fully exposed to the fluid temperature. Use of adequate length of impulse piping will greatly reduce excessive heating of the sensing element. For e.g., connection of 7.5 cm of 12 mm dia impulse piping will reduce water temperature of 100°C to 65°C at an ambient temperature of 50°C . Ask sales for piping nomogram #441184-4 for different temperatures.
14. Ensure that impulse pipework applies no stress on sensing element housing and use spanners to hold pressure port / housing when connections are made.
15. Custom built instruments are available for special service requirements under Special Engineering Category.
- 16. Accuracy figures are exclusive of test equipment tolerance on the claimed values.**
- 17. All performance data are guaranteed to $\pm 5\%$.**

DIMENSIONS IN mm

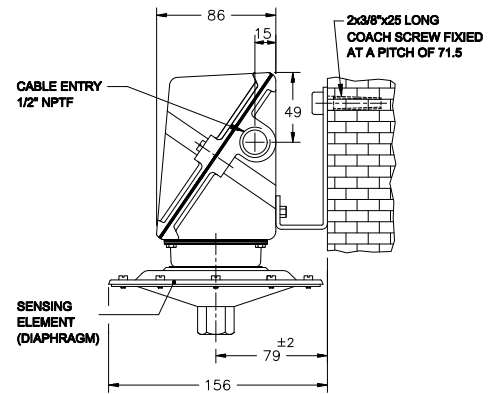
All range codes except M047, B025, B030, B024



ALTERNATE SURFACE MOUNTING

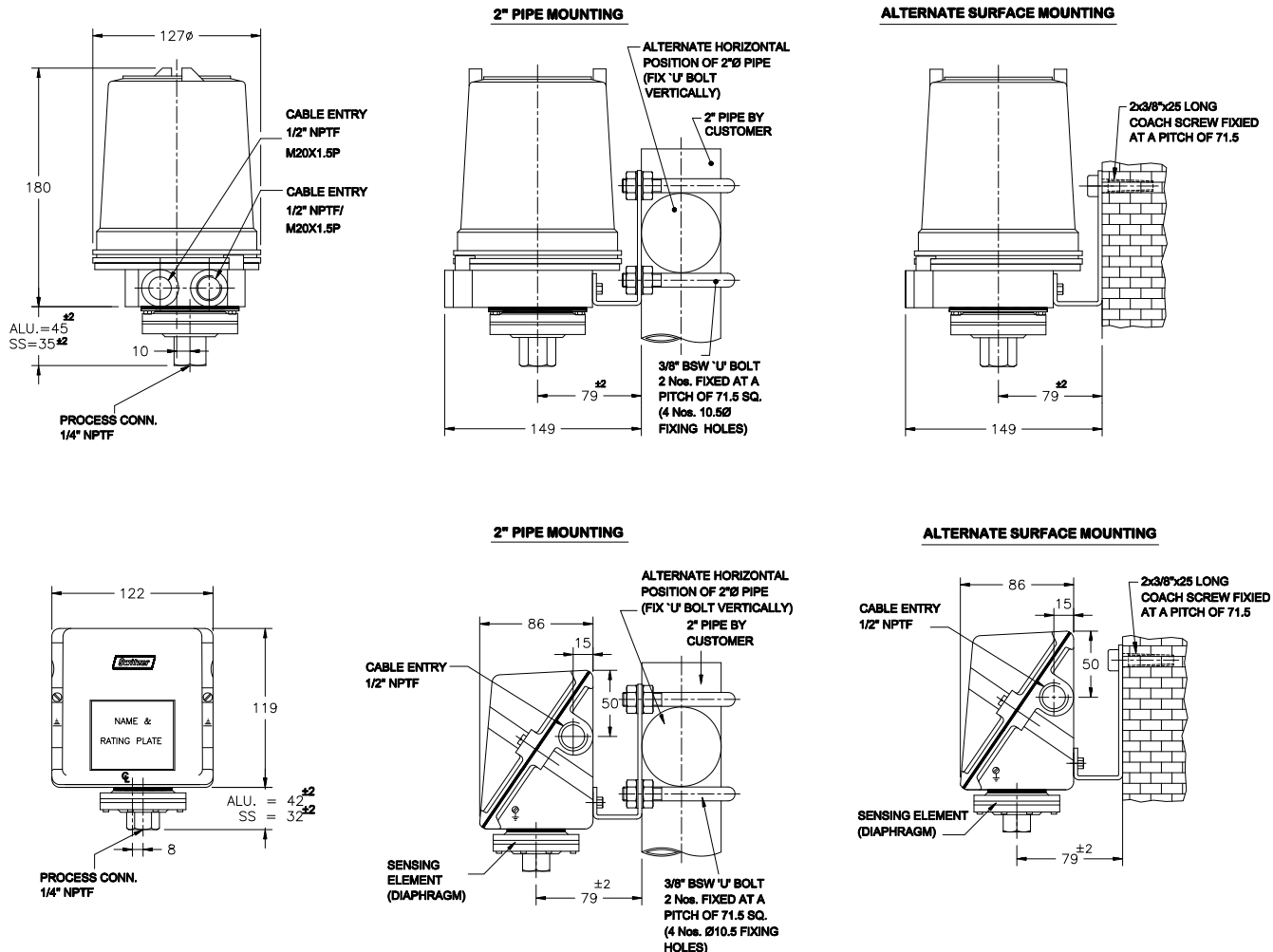


ALTERNATE SURFACE MOUNTING



DIMENSIONS IN mm

Range codes M047, B025, B030, B024



This is not a contractual document. Prior notification of changes in specifications is impracticable due to continuous improvement



Switzer Process Instruments Pvt. Ltd.

REGD. OFFICE : 128, SIDCO North Phase, Ambattur Industrial Estate, Chennai 600 098 CIN : U29255TN2014PTC095662

WORKS & SALES OFFICE

128, SIDCO North Phase, Ambattur Industrial Estate, Chennai 600 098
 Ph : 044-2625 2017 / 2018 / 4324 / 4991 Fax : 044-2624 8849
 e-mail : works@switzerprocess.co.in; sales@switzerprocess.co.in

www.switzerprocess.co.in

SALES OFFICES

Bangalore Phone: 080-42044350
 e-mail : bangalorebr@switzerprocess.co.in

Chennai Phone: 044-2625 2017 / 2018 / 4991 Fax : 044-26248849
 e-mail : chennaibr@switzerprocess.co.in

Hyderabad Phone: 040-27006201
 e-mail : hyderabadbr@switzerprocess.co.in

Kolkata Phone: 033-40052616
 e-mail : kolkatabr@switzerprocess.co.in

Mumbai Phone: 022-28575915 / 28575916
 e-mail : mumbaibr@switzerprocess.co.in

New Delhi Phone: 011-42331470 / 42331478
 e-mail : delhibr@switzerprocess.co.in

Pune Phone: 020-66293362 to 3367
 e-mail : punebr@switzerprocess.co.in

Vadodara Mobile: 265-2323315
 e-mail : vadodara.ag@switzerprocess.co.in