



FLOW SWITCHES

**BM, BGM, BGA
GK-BM, AM & AGM**

- BELLOWS SEALED ● INTERCHANGEABLE PADDLES ●
- WEATHERPROOF / FLAMEPROOF ● COMPACT SIZE ●
- 15 MM TO 300 MM LINES OR DUCTS ●



MODEL BM



MODEL GK-BM

SWITZER style BM/BGM/BGA/GK-BM flow switches are versatile instruments designed to accept different paddle sizes to handle any line size. Materials of construction and glandless design render the switches compatible with most of the corrosive and toxic fluids. The easy-to-fix design reduces installation costs and time. Simple mechanical parts ensure high reliability and near-zero failures.

The microswitch of the instrument is operated by the deflection of the paddle assembly due to velocity of flowing fluid against the restraining force of the range spring

through a bellows sealed lever at a pre-determined flow rate.

SWITZER style AM/AGM flow switch is similar in design to style BM but without bellows seal. It senses air flow or no flow responding only to the velocity of air movement in a duct. Provides a positive signal to detect change or loss of air flow velocity caused by a closed damper, a loose fan wheel, a slipped or broken fan belt, a dirty or clogged filter or even an overload to a fan motor. Large paddles are used for reliable switching.

GENERAL SPECIFICATION

Enclosure		Max. Working Temp.	70°C for AM version 110°C for Brass body 170°C for SS body
BM & AM	ABS plastic weatherproof to IP:65	Pressure Loss	60 to 80 mbar at maximum flow
BGM & AGM	Pressure die cast Aluminium, weatherproof to IP:66	Connection	
BGA	304/316 SS Investment cast, weatherproof to IP:66	Process	For AM version, Fixing plate—Std.
GK-BM	Die cast Aluminium, weatherproof to IP:66 & flameproof to Gr.IIA,IIB or IIC (<i>Note 1</i>)	BM – Threaded	Integral Tee 1" BSPM is std.
Sensor & Wetted Parts	Refer ordering matrix	Line size upto 1"	
Ranges	Refer Tables 1 & 2	Line size above 1"	
Repeatability	± 2% FSR (<i>Note 3</i>)	BM – Flanged	Refer Page 2. 1½" or 2" ANSI # 150 RF are available (<i>Note 2</i>).
Switching	Instrument quality SPDT microswitch (<i>Note 8</i>)	From 40mm	
Differential	≤ 25% of Max. flow for 15 NB line ≤ 10% for all other line sizes	Electrical	
Max. Line Pressure	15 bar for Brass body 30 bar for SS body 0.2 bar for Duct mount AM version	AM & BM	M16 Nylon Cable gland suitable for 8 mm OD cable.
		BGM, BGA & GK-BM	3/4" ET std & 1/2" NPTF optional; dual entry on request.
		Gr.IIC Enclosure	1/2" NPTF
		Mounting	On Line - Horizontal or Vertical (For vertical pipes, flow should be from bottom to top only)

ORDERING MATRIX

BASIC MODEL NO.

Weatherproof switches for circular pipes with ABS plastic enclosure and threaded / flanged / integral tee connection	_____	BM	<input type="checkbox"/>
Weatherproof switches for circular pipes with pressure die cast Al. enclosure and threaded / flanged / integral tee connection	_____	BGM	<input type="checkbox"/>
Weatherproof switches for circular pipes with Investment casting 304 / 316 enclosure and threaded / flanged / integral tee connection	_____	BGA	<input type="checkbox"/>
Flameproof switches for circular pipes with die cast Al. enclosure and threaded / flanged / integral tee connection	_____	GK-BM	<input type="checkbox"/>
Non-weatherproof switches for square / rectangular ducts with ABS plastic enclosure and MS fixing plate	_____	AM	<input type="checkbox"/>
Weatherproof switches for square / rectangular ducts with pressure die cast Al. enclosure and MS fixing plate for DPDT facility	_____	AGM	<input type="checkbox"/>

LINE SIZE (Refer Table-3 & 4)

For Duct (Model AM & AGM only)	_____	000
For other models specify nominal line size in "mm" [Eg. 015 for 15 mm NB (or 150 for 150 mm NB)]	_____	015
Standard line sizes are 15,20,25,32,40,50,65,80,100,125,150,200,250 & 300 NB		

WETTED PARTS

Brass body, MS fixing plate & 316 SS paddle (for model AM & AGM)	_____	S
Brass body, Ph. Bronze bellows & 316 SS paddle (for all except AM & AGM)	_____	M
304 SS body, 316L SS bellows & 316 SS paddle (for all except AM & AGM)	_____	J
316 SS body, 316L SS bellows & 316 SS paddle (for all except AM & AGM)	_____	K

PROCESS CONNECTION

Fixing plate (Model AM & AGM only)	_____	PP
Integral Tee, Mild steel (upto 1" line size)	_____	SLM
Integral Tee, 304 SS (upto 1" line size)	_____	SL4
Integral Tee, 316 SS (upto 1" line size)	_____	SL6
Threaded to 1" BSPM	_____	TH
Flanged to 1½" ANSI 150 RF for line size 40 mm and above	_____	FA *
Flanged to 2" ANSI 150 RF for line size 40 mm and above	_____	FB *
Flanged to non-standard size for line size 40 mm and above	_____	FX *

* ADD 'M' for MS Flange, '4' for 304 SS Flange, '6' for 316 SS Flange -- FAM for MS, FA4 for 304 SS etc

SWITCH CODE AND RATING

Refer Table-1

ELECTRICAL ENTRY CODE

Refer Table-2

Table-1 : SWITCH CODE, RATING & AVAILABILITY

SWITCH CODE (SPDT)	AC RATING	DC RATING IN AMPS						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	6.0	0.02	0.05	5.0	AM, AGM, BM, BGM, BGA & GK-BM	AGM, BGM*, BGA & GKBM
J	5A 250 V	N.A.	N.A.	5.0	N.A.	N.A.	3.0	BM & GK-BM	BM & GK-BM
K	1A 125 V	N.A.	N.A.	1.0	N.A.	N.A.	0.5		
9	1A 115V	N.A.	N.A.	3.0	N.A.	N.A.	1.0	BM, BGM, BGA & GK-BM	BGM, BGA & GK-BM
G	N.R.	N.R.	N.R.	1.0	N.R.	N.R.	0.25	BM, BGM, BGA & GK-BM	BGM, BGA & GK-BM
Code D - For general purpose usages Code 9 & J - Hermetically sealed, inert gas filled Silver Alloy contact Code G & K - Hermetically sealed, inert gas filled Gold plated contact (Note 5)									
For DPDT, change switch code 'D' to 'DD' etc., while ordering * DPDT versions will be introduced in BM instead of BGM shortly Codes 'J', 'JJ', 'K', 'KK', will be introduced shortly in place of codes '9', '99', 'G', 'GG' - consult factory									

Table-2 : ELECTRICAL ENTRY CODE

Size *	Single Entry			Dual Entry	
	BGM / BGA / AGM	GKBM	BM / AM	BGM / BGA / AGM	GKBM
3/4" ETF	A	A	---	M	M
1/2" NPTF	B	B	---	N	N
3/4" NPTF	C	---	---	O	---
M20 x 1.5 **	D	D	---	P	P
M16 x 1.5	E	---	---	Q	---
M16 Nylon Elbow Cable Gland	---	---	F	---	---
Through Connector					
3 pin plug	2	---	---	---	---
7 pin plug	3	---	---	---	---
9 pin plug	4	---	---	---	---
* Cable gland available on request.					
** Cable Entry is optional. Available on request.					

Table-3

LINE SIZE NB mm	SWITCHING RANGE-LPM				MAX FLOW (LPM WATER)
	ON FALLING FLOW		ON RISING FLOW		
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	
15	3	9	8	12	21
20	4	11	9	14	38
25	10	30	16	33	60
32	13	50	23	52	100
40	16	60	30	70	150
50	36	90	60	95	250
65	45	120	85	135	400
80	65	175	120	200	600
100	190	460	290	500	1000
	100	280	190	310	1000
125	380	890	530	930	1500
	150	420	300	470	1500
150	600	1360	800	1400	2000
	200	510	400	600	2000
200	1210	2760	1580	2900	3700
	650	1510	1020	1700	3700
250	1970	3830	2600	4200	6000
	1240	2410	1850	2800	6000
300	2600	4830	3500	5300	8500
	2000	3080	2800	3600	8500

Table-4

FLOW RANGES FOR AM & AGM		
PADDLE SIZE mm	ADJ.RANGE INC.FLOW AT VELOCITY Mtr/Sec.	ADJ.RANGE DEC.FLOW AT VELOCITY Mtr/Sec.
175 x 80	2.0 to 5.0	1.0 to 4.0
175 x 54	3.5 to 9.0	2.5 to 8.0
Max. recommended flow velocity -- 10 Mtr/Sec		

Other Models Available :

- HR** : For Viscous and high pressure.
- FM** : Low flow and small line sizes with fixed setting.
- HM** : For Aggressive Liquids
- PM** : OEM version, low range with adjustable setting.
- CM** : OEM version, high range.
- SM** : Water sprinkler application.
- UZ** : Flow switch with indicator of 6" Dial.
- HRM** : Flow switch with indicator of 2½" Dial.

For further details consult Sales H.O. / Branch.

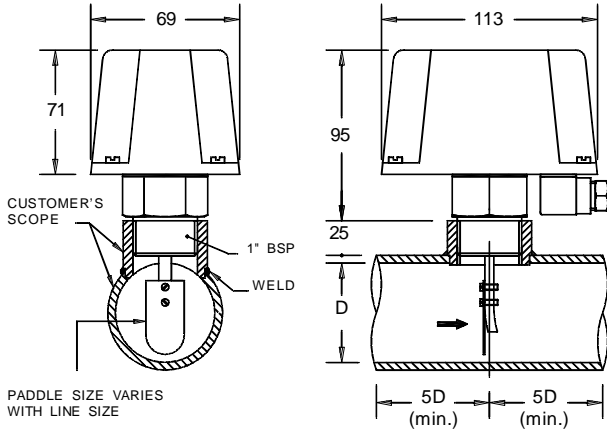
NOTES

1. Gr.IIA & IIB of IS:2148 is equivalent to NEC CL.1, Gr.C & D. Gr.IIC of IS:2148 is equivalent to NEC CL.1, DIV.1, Gr.A & B.
2. The maximum line pressure is the limiting value for flanged versions irrespective of the flange ratings. The flange is not integral, but screwed on to the body with a lock nut. Flange mounting is not available upto 32 mm.
3. Accuracy & Repeatability are one and the same for all blind switches. Settings will slightly shift with varying temperature.
4. All models can be supplied with PVC paddles instead of 316SS paddles if required. Add suffix 'X' in the model number.
5. Instruments can be supplied with hermetically sealed microswitches other than Code 'D' general purpose microswitch. On-off differentials will be different. *Consult factory.*
6. All the ranges are in LPM water. For calculating equivalent airflow in NM³/Hr. consult factory. For any liquid other than water, the setting range depends on the viscosity and specific gravity of the fluid at flow conditions. To get equivalent ranges for such liquids, a viscosity correction factor has to be applied. *Consult factory.*
7. Maximum flow setting range is referred to as FSR herein. The maximum flow value mentioned in the table 3 is based on a nominal flow velocity of 2.0 metre/second. The instrument can handle higher flow if the process flow velocity is more than 2.0 metre/second. For special ranges, *consult factory.*
8. DPDT action is achieved by two SPDT switches synchronized to practical limits i.e., ±2% of FSR. ON-OFF differentials of DPDT contacts are 1.5 times than that of SPDT as force required to actuate the contacts are more.
9. Contact life of microswitches are 5 × 10⁵ switching cycles for nominal load. To quench DC sparks, use a 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.
10. Different lengths of paddles are used for different line sizes and ranges. Refer Instruction Manual for details.
11. Accuracy figures are exclusive of test equipment tolerance on the claimed values.
12. All performance data are guaranteed to ±5 %.

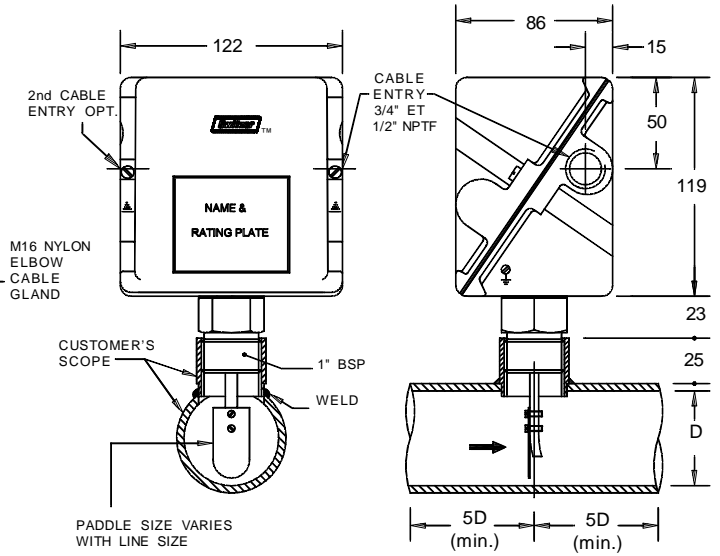


MOUNTING DIMENSIONS

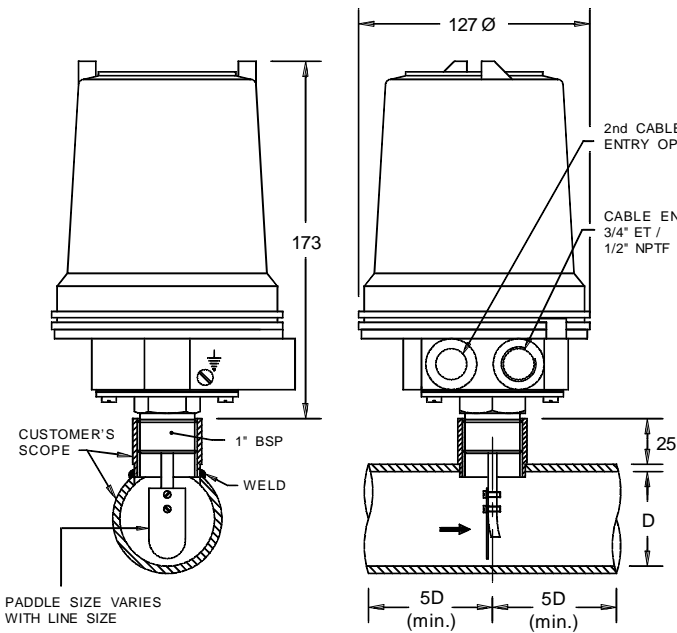
BM



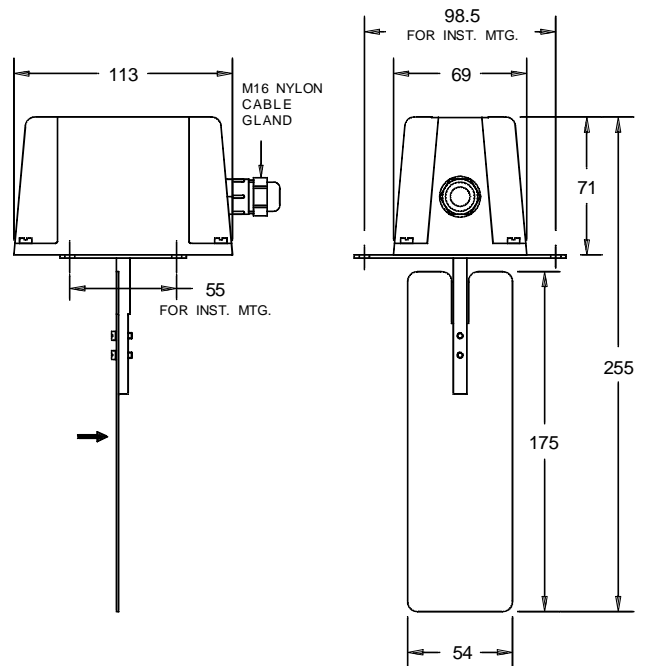
BGM



GK-BM



AM



All dimensions are in mm

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

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<http://www.switzerinstrument.com/offices.htm>