MODEL 621 INLINE BODY FLOW SWITCH
PRECALIBRATED SWITCH POINT – HIGH RELIABILITY MECHANICAL TYPE

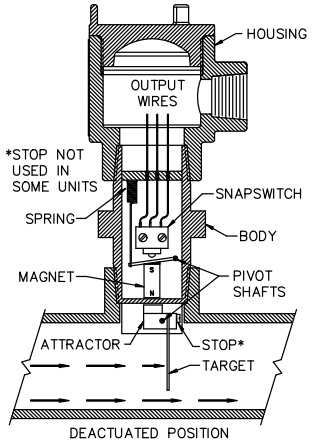
APPLICATION

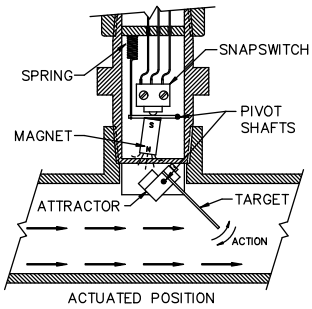
The Delta Controls Model 621 target actuated flow switch is equipped with a body that fits directly in and becomes part of the pipeline. The inside body dimensions and end connections conform to those of the pipeline. These switches protect pumps, blowers, heat exchangers, etc. They are factory calibrated to switch at the specified flowrate. An internal adjustment allows small switchpoint changes to be made in the field. Large changes require changing the size of the target.

Connection of the target to the output switch is done magnetically. A heavy-duty solid sealing tube separates the process fluid from the switch mechanism. Failures due to seal, diaphragm, and bellows leaks are eliminated.

OPERATING PRINCIPLE

A pivoted target extends down into the flowing stream. A force is created by the flowing fluid as it strikes the target. At a predetermined velocity, the force becomes great enough to cause the target and the attractor to rotate about the pivot point. The magnet reacts to the new attractor position and the output switch operates. The target rotates back to its original position as the flow decreases; and the output switch then returns to its original ...





FLANGED BODY AND PIPELINE CONNECTIONS – FABRICATED STYLE SHOWN

HARDWARE MODEL NUMBER*

* Application and Service Number must also be provided.

Actuation Point: Within 10% basic, closer optional
Housing: Class 1, Division 1, Groups BCD, X-Proof, also 4X, IP64. Third Party Listed by CSA; NRTL/C (USA & Canada)
Body/Tube Connection: NPT; flanged, pipeline weld stub

BASIC TYPE	-	WETTED MATERIALS	-	OUTPUT SWITCH	-	PIPELINE I.D./O.D.	-	PIPELINE CONN	-	OPTIONS
EXAMPLE MODEL 621	-	LCY	-	A	-	2.06"ID\2.37"OD	-	2"NPTF	-	AA

BASIC TYPE
M/N
621

WETTED MATERIALS				PIPELINE CONN							
	Wetted Material			(Pipeline Size) Model Number							Body
M/N	Body	Trim	Target	½"	¾"	1"	1.5"	2"	2.5"	3"	4"	Conn
LCY	Brass	416SS	316SS									FPT
SCY	Steel	416SS	316SS									FPT 150#R
YYY	316SS	316SS	316SS									FPT 150#R
ZZ	OTHER SIZES & MAT'LS (HASTELLOY, MONEL, PVC) C/F											

* Higher Pressures Available; C/F.
PRESSURE RATINGS (HIGHER AVAILABLE)
FPT; ½", ¾", and 1" sizes and all brass: 275# @ 100ºF
FPT; Greater than 1" size: 2000# @ 100ºF
150#R: 275# @ 100ºF

OUTPUT SWITCH					
M/N	Contacts	Amps *	Max ºF	Usage	
A	SPDT	10	220	Gen'l Purpose	
B	SPDT	10	220	High Temp	
C	DPDT	10	220	Gen'l Purpose	
H	DPDT	5	450*	High Temp*	

NOTE: LIMITED TO 320ºF FOR ½", ¾", 1" SIZE
* AT 240 VOLTS AC

OPTIONS		
M/N	OPTIONS FOR 1 1/2" AND LARGER SIZES	ADD $
AA	NONE	
AS	ASSIST SPRING FOR SETPOINTS AT EXTRA HIGH FLOW RATES	
RB	NEOPRENE RUBBER PIVOT BOOT (3" & LARGER PIPE SIZE ONLY)	
TH	HINGED TARGET TO WITHSTAND 12 FPS REVERSE FLOW VELOCITY (3" & LARGER PIPE SIZE ONLY)	
VU	VERTICAL UPFLOW (INCREASES MINIMUM FLOW SETPOINT BY 20%)	
FJ	FLANGED BODY TO SWITCH UNIT CONNECTION	
SH	STAINLESS STEEL HOUSING	
TS	WIRING TERMINALS	
TC	TRACABLE CALIBRATION	

PIPELINE I.D./O.D.	
Specify In Inches	N/C

NOTE (1) "BODY JOINT" IS THE TYPE SEAL USED TO CONNECT THE UPPER SWITCHING UNIT TO THE LOWER INLINE BODY. NPT IS STANDARD. FLANGED CONNECTIONS ARE OPTIONAL; BUT ARE NOT AVAILABLE ON ½", ¾" OR 1" BODY SIZE UNITS.

"FPT"= NATIONAL PIPE THREAD; FEMALE
"150R" = 150# RAISED FACE FLANGE
"300R" = 300# RAISED FACE FLANGE
"WE" = BUTT WELD ENDS
"ZZ" =OTHERS AVAILABLE

Note:
Both Model and Application Numbers Must Be Specified. See Next Page.

Approx. Weight:
1" =3# Net; 4# Boxed
2"=10# Net; 13# Boxed
Add for Flanges from General Section Page 16

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APPLICATION AND SERVICE NUMBER

Complete information is required to calibrate the flow switch.
Provide the service details by building up an application number as shown below:

	Basic Type		Switch Point		Switch Action		Flow Direction		Max Pressure		Fluid SPG		Fluid Viscosity		Name of Fluid		Max. Flow
Application Example	621	-	5.5G	-	D	-	U	-	110	-	1.03	-	2CP	-	Boric Acid Solution	-	25G

SPECIFY IN FLOW RATE UNITS AS:
"G" GALLONS PER MINUTE
"L" LITERS PER MINUTE
"S" STANDARD CUBIC FEET PER MINUTE
"M" M3 PER MINUTE

SPECIFY THE PSIG

SPECIFY THE SPECIFIC GRAVITY OF FLUID AT OPERATING TEMPERATURE

SPECIFY NAME OF FLUID

MAXIMUM EXPECTED FLOW RATE:
G=GALLONS PER MINUTE
S=STANDARD CUBIC FEET
M=M^3/MINUTE

A/N	SWITCH ACTION OCCURS
D	DEACTUATE ON DECREASING FLOW
N	ACTUATE ON INCREASING FLOW

A/N	* DIRECTION THAT FLUID IS MOVING
H	HORIZONTAL FLOW (STANDARD)
U	VERTICAL UPFLOW (SEE OPTION "VU")

* NOT AVAILABLE FOR VERTICAL DOWNFLOW

SPECIFY VISCOSITY, OF FLUID IN CENTIPOISE, "CP" AT OPERATING TEMPERATURE C/F IF OVER 8 CP

Select the Switch Point Flow Rate between the maximum and minimum values shown in the range table below:

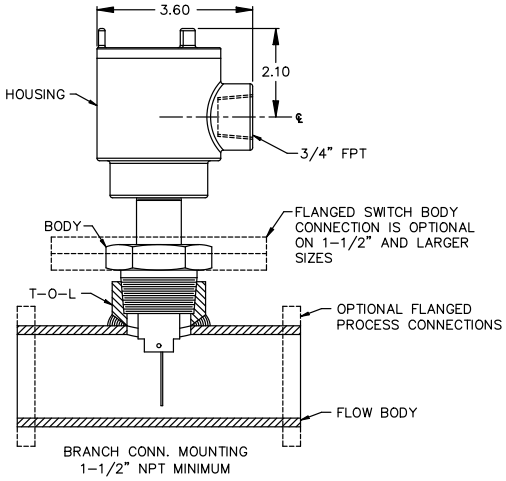
MEDIA	SWITCH ACTION AT FLOW RATE	BODY SIZE (EQUAL TO ANSI SCHEDULE 40 PIPE)								
		½	¾	1	1 ¼	1 ½	2	2 ½	3	4
Water at 77 °F	Min Actuate – GPM	1.6	2.0	2.8	5.0	5.0	7.0	14	21	32
	Min Deactuate - GPM	1.3	1.5	2.5	4.5	2.8	3.9	7.7	12	18
	Max Actuate – GPM	3.0	10	9.0	12	12	60	80	130	220
	Max Deactuate - GPM	2.4	8.0	8.2	10	8.4	42	56	91	154
	GPM @ 3 PSI Drop	10	15	30	60	100	150	225	350	650
Air at STP (1 Atmosphere and 77 °F)	Min Actuate – SCFM	6.4	8.0	12	21	30	40	50	60	70
	Min Deactuate - SCFM	3.8	6.5	10	18	17	22	28	33	39
	Max Actuate – SCFM	12.0	39	32	43	70	115	200	310	440
	Max Deactuate – SCFM	9	36	30	40	49	83	140	220	310
	SCFM @ 3 PSI Drop	100	150	250	400	550	650	800	1000	1421

Maximum Flow Rate Limit is 10 feet per second.

1" Size with Butt Weld Ends

FACTORS FOR LIQUIDS OR GASES WITH DENSITIES DIFFERENT FROM WATER OR AIR AT STP

Density	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50
Multiply by	1.41	1.35	1.29	1.24	1.19	1.15	1.12	1.08	1.05	1.02	0.97	0.95	0.93	0.91	0.90	0.88	0.86	0.84	0.82	0.80



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Face To Face Dimensions (150# Rating NPT Body)

Body Size	½	¾	1	1 ½	2	2 ½	3
Brass Flow Body	2.0	2.4	2.9	3.7	4.2	5.4	6.2
150# Steel or SS Body	2.25	2.62	3.00	3.90	4.50	5.45	6.12
2000# Steel or SS Body	2.25	2.32	3.00	4.00	4.75	6.00	6.75

"B" Laying Length Dimension For Flanged Pipeline Connections

Body Size	½ to 1	1 ½	2	3	4	6	8	*
150# & 300#	7.5	7.5	8.0	8.0	8.0	10.0	10.0	4.0
600#	7.5	7.5	8.0	9.0	9.0	10.0	11.0	5.0
900# & 1500#	7.5	7.5	9.0	10.0	10.0	12.0	13.0	6.0

Note: Deduct 1.0 inch (25 mm) from above laying lengths for butt weld ends.

* Add this amount to laying length if switch body connection is a 2" flange.

Engineered Reliability

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