

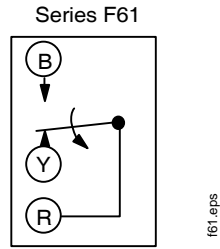
F61 Series

Flow Switch (Standard Flow Rate – SPDT)

Description

The F61 Series Flow Switches are Single-Pole, Double-Throw (SPDT) flow switches used on fluid lines carrying water, ethylene glycol, or other fluids not classified as hazardous. They can be wired to energize one device and de-energize another device powered from the same source when fluid flow either exceeds or drops below the set flow rate.

The F61MG type flow switches are used for low-energy loads to operate small relays, solenoid valves, and electronic control circuits. These flow switches have gold-plated contacts for improved electrical performance in low voltage, low current circuits.



Action on Increase of Flow

F61 Series Action Diagram



F61KB-11

F61MB-1

Features

- stainless steel paddle has three segments for use in pipes from 1 in. to 3 in. (25 mm to 75 mm) diameter
- paddle segments can be removed or trimmed as needed
- F61KB-11 and F61MB-1 include a 6 in. (152 mm) paddle for pipes 4 in. to 6 in. (102 mm to 152 mm)
- gold-plated contacts on F61MG-1 reduce intermittent contact problems in low-voltage and low-current circuits

Applications

- use on lines carrying water or ethylene glycol
- not for use with hazardous fluids or in hazardous atmospheres

Selection Charts

F61 Series Flow Switch (Standard Flow Rate – SPDT)

Code Number	Enclosure	Bellows	Paddle
F61KB-11C	NEMA 1	Phosphor Bronze	Stainless Steel; 3-piece Paddle (3 in., 2 in., and 1 in. Segments) Installed; 6 in. Paddle Supplied Uninstalled
F61LB-1C	NEMA 3R	Phosphor Bronze	Stainless Steel; 3-piece Paddle (3 in., 2 in., and 1 in. Segments) Installed
F61MB-1C	NEMA 3R	Phosphor Bronze	Stainless Steel; 3-piece Paddle (3 in., 2 in., and 1 in. Segments) Installed; 6 in. Paddle Supplied Uninstalled
F61MB-5C	NEMA 3R	Stainless Steel	Stainless Steel; 3-piece Paddle (3 in., 2 in., and 1 in. Segments) Installed; 6 in. Paddle Supplied Uninstalled
F61MG-1C ¹	NEMA 3R	Phosphor Bronze	Stainless Steel; 3-piece Paddle (3 in., 2 in., and 1 in. Segments) Installed; 6 in. Paddle Supplied Uninstalled

1. Gold-Plated Contacts

Replacement Kits

Code Number	Description
KIT21A-600	Stainless Steel 3-piece Paddle (3 in., 2 in., and 1 in. Segments)
KIT21A-601	Stainless Steel 6 in. Paddle
PLT52A-600R	Stainless Steel 3-piece Paddle (3 in., 2 in., and 1 in. Segments) and 6 in. Paddle
CVR62A-600R	Replacement Cover Assembly for F61MB-1, F61MB-5, and F61MG-1

Technical Specifications

F61 Series Standard Flow Rate Switch (Part 1 of 2)	
Maximum Fluid Pressure	160 psig (1103 kPa)
Fluid Temperature	Minimum
	Maximum
Wiring Connections	F61KB, F61LB: Screw Type Terminal F61MB, F61MG: Four Color-coded No. 14 AWG Solid Conductor Wire Leads, 7 in. (178 mm) Long
Pipe Connector	1 in. 11-1/2 NPT Threads
Conduit Connection	F61KB: One 7/8 in. (22 mm) Hole for 1/2 in. Conduit with 1-3/32 in. (28 mm) Knockout Ring for 3/4 in. Conduit F61LB, F61MB, F61MG: Female Hub for 1/2 in. Conduit, 1/2-14 NPSM Threads
Paddle	Installed Stainless Steel 3-piece Paddle (3 in., 2 in., and 1 in. Segments); Stainless Steel 6 in. Paddle Supplied w/ F61MB and F61KB
Switch	SPDT Snap-acting Pennswitch

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2009 Johnson Controls, Inc. www.johnsoncontrols.com



Flow Switch (Standard Flow Rate – SPDT) (Continued)

Technical Specifications (Continued)

F61 Series Standard Flow Rate Switch (Part 2 of 2)		
Enclosure	Case	F61KB: 0.062 in. (1.57 mm) Steel F61LB, F61MB, F61MG: 0.062 in. (1.57 mm) Cold Drawn Steel
	Cover	F61KB: 0.028 in. (0.7 mm) Steel (NEMA 1) F61LB: 0.062 in. (1.57 mm) Cold Drawn Steel, (NEMA 3R) F61MB, F61MG: 0.062 in. (1.57 mm); Cold Drawn Steel, Gasketed (NEMA 3R Rain-tight)
Agency Listings	UL Listed	All models: E5368, CCN NMFT
	CSA Certified	F61KB: LR948, Class 3211 06, Class 4813 02, Class 1222 01 F61LB: Not CSA Certified F61MB, F61MG: LR948, Class 3211 06
Shipping Weight		2.8 lb (1.3 kg)

Electrical Ratings for F61KB, F61LB, and F61MB Models

Electrical Ratings	120 VAC	208 VAC	240 VAC	277 VAC
Horsepower	1	1	1	-
Full Load Amperes	16.0	8.8	8.0	-
Locked Rotor Amperes	96.0	52.8	48.0	-
Non-inductive Amperes	16.0	16.0	16.0	16.0
Pilot Duty	125 VA at 24/277 VAC			

Electrical Ratings for F61MG Models

Electrical Ratings	120 VAC
Full Load Amperes	1
Locked Rotor Amperes	6
Non-inductive Amperes	2
Pilot Duty	125 VA at 24/277 VAC

Typical Flow Rates for Switches with 1 to 3 in. paddles

GPM (m ³ /hr) Required to Actuate Switch											
Pipe Size (in.)		1	1-1/4 ¹	1-1/2	2	2-1/2 ²	3	4 ³	5 ³	6 ³	8 ³
F61KB, F61LB, and F61MB Models, 1 to 3 in. Paddles											
Minimum Adjustment	Flow Increase (R to Y Closes)	4.2 (0.95)	5.8 (1.32)	7.5 (1.70)	13.7 (3.11)	18.0 (4.09)	27.5 (6.24)	65.0 (14.8)	125.0 (28.4)	190.0 (43.2)	375.0 (85.2)
	Flow Decrease (R to B Closes)	2.5 (0.57)	3.7 (0.84)	5.0 (1.14)	9.5 (2.16)	12.5 (2.84)	19.0 (4.32)	50.0 (11.4)	101.0 (22.9)	158.0 (35.9)	320.0 (72.7)
Maximum Adjustment	Flow Increase (R to Y Closes)	8.8 (2.0)	13.3 (3.02)	19.2 (4.36)	29.0 (6.6)	34.5 (7.84)	53.0 (12.0)	128.0 (29.1)	245.0 (55.6)	375.0 (85.2)	760.0 (172.6)
	Flow Decrease (R to B Closes)	8.5 (1.93)	12.5 (2.84)	18.0 (4.09)	27.0 (6.13)	32.0 (7.27)	50.0 (11.4)	122.0 (27.7)	235 (53.4)	360.0 (81.8)	730.0 (165.8)
F61MG Models, 1 to 3 in. Paddles											
Minimum Adjustment	Flow Increase (R to Y Closes)	3.8 (0.9)	5.3 (1.2)	6.9 (1.6)	12.7 (2.88)	16.7 (3.79)	24.3 (5.52)	61.0 (13.8)	118.0 (26.80)	183.0 (41.56)	362.0 (82.22)
	Flow Decrease (R to B Closes)	2.5 (0.6)	3.7 (0.8)	5.0 (1.1)	9.5 (2.2)	12.5 (2.84)	19.0 (4.32)	50.0 (11.4)	101.0 (22.94)	158.0 (35.88)	320.0 (72.68)
Maximum Adjustment	Flow Increase (R to Y Closes)	8.7 (2.0)	13.1 (2.98)	18.8 (4.27)	28.9 (6.56)	33.7 (7.65)	52.1 (11.8)	126.0 (28.62)	243.0 (55.19)	372.0 (84.49)	753.0 (171.0)
	Flow Decrease (R to B Closes)	8.5 (1.9)	12.5 (2.84)	18.0 (4.09)	27.0 (6.13)	32.0 (7.27)	50.0 (11.4)	122.0 (27.71)	235.0 (53.37)	360.0 (81.76)	730.0 (165.8)

1. Flow rates for two inch paddle trimmed to fit pipe.
2. Flow rates for three inch paddle trimmed to fit pipe.
3. Flow rates are calculated for factory-installed set of one, two, and three inch paddles.

Typical Flow Rates for Switches with 6 in. paddles (Part 1 of 2)

GPM (m ³ /hr) Required to Actuate Switch					
Pipe Size (in.)		4	5	6	8
F61KB, F61LB, and F61MB Models, 6 in. Paddles					
Minimum Adjustment	Flow Increase (R to Y Closes)	37.0 (8.40)	57.0 (12.9)	74.0 (16.81)	205.0 (46.56)
	Flow Decrease (R to B Closes)	27.0 (6.13)	41.0 (9.31)	54.0 (12.26)	170.0 (38.61)
Maximum Adjustment	Flow Increase (R to Y Closes)	81.0 (13.4)	118.0 (26.80)	144.0 (32.70)	415.0 (94.26)
	Flow Decrease (R to B Closes)	76.0 (17.3)	111.0 (25.21)	135.0 (30.66)	400.0 (90.85)

Typical Flow Rates for Switches with 6 in. paddles (Part 2 of 2)

GPM (m ³ /hr) Required to Actuate Switch					
Pipe Size (in.)		4	5	6	8
F61MaaG Models, 6 in. Paddles					
Minimum Adjustment	Flow Increase (R to Y Closes)	35.0 (7.95)	53.0 (12.0)	69.0 (15.7)	197.0 (44.74)
	Flow Decrease (R to B Closes)	27.0 (6.13)	41.0 (9.31)	54.0 (12.3)	170.0 (38.61)
Maximum Adjustment	Flow Increase (R to Y Closes)	80.0 (18.2)	116.0 (26.34)	142.0 (32.25)	412.0 (93.58)
	Flow Decrease (R to B Closes)	76.0 (17.3)	111.0 (25.21)	135.0 (30.66)	400.0 (90.85)

Note: Flow rates for these sizes are calculated. Where paddle size is larger than pipe size, flow rates are for 6 in. paddle trimmed to fit pipe.