

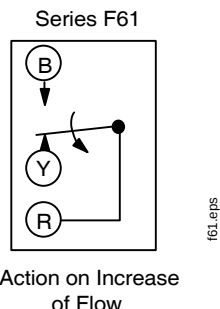
F61 Series

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.



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	F61KB, F61LB: 32°F (0°C) F61MB, F61MG: -20°F (-29°C)
	Maximum	250°F (121°C) for all models
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

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.