FS-550 Series – High Pressure, Metal Paddle Switch

Pipe Line Size: 1-1/4″ and Up
Primary Construction Material: Stainless Steel or Brass
Setting Type: Fixed

Standard FS-550 switches sense liquid flow in either direction to monitor flow/no-flow conditions. They are supplied in two paddle lengths. The paddle is trimmed during installation to permit switch actuation at the desired flow rate. As flow increases in a pipe, the paddle of the switch pivots to move out of the liquid path, producing less than 3 PSIG of pressure drop regardless of pipe size.

U.L. Recognized
File No. E31926
CSA Listed —
File No. LR30200
and LR22666
FM Approved —
File No. 0A8A3.AE
and 1H3A2.AX

Specifications

Wetted Materials	
Housing	Brass or 316 Stainless Steel
Paddle	302 Stainless Steel
Spring	316 Stainless Steel
Other Wetted Parts	Ceramic and Teflon®
Operating Pressure, Maximum	2000 PSIG (138 bar)
Pressure Drop	3 PSIG (0.2 bar) Maximum
Operating Temperature	-30°F to + 300°F (-34.4°C to + 148.9°C)
Set Point Accuracy	± 25%
Switch*	SPDT, 20 VA
Repeatability	± 5%
Electrical Termination	No. 18 AWG, 24″ L., Polymeric Lead Wires

*See "Electrical Data" on Page X-5 for more information.

Standard Actuation and De-actuation Set Points

The Table below indicates paddle lengths which achieve switch actuation for specific flow rates. Approximate pipe line sizes are marked on paddle.

	Pipe Size Marked at Paddle Cut-Off Point	Pipe Line Sizes					
		1-1/4″	1-1/2″	2″	2-1/2″	3″	4″
		Approximate Actuation and (De-Actuation) Flow Rates GPM Water					
Short Paddle Unit	1-1/4″	5 (3)	13 (8)	22 (15)	29 (22)	—	—
Long Paddle Unit	1-1/2″	—	15 (11)	28 (21)	38 (30)	—	—
	2″	—	—	22 (15)	27 (20)	48 (38)	—
	2-1/2″	—	—	—	21 (14)	40 (26)	52 (39)
	3″	—	—	—	—	31 (20)	45 (32)
	4″	—	—	—	—	—	39 (25)

All flow rate tests for the above table were conducted with the switch installed in a standard "T" fitting. For calculation of flow rates in pipe sizes larger than 5″, a flow velocity of approximately 0.5 ft. per sec. actuates the switch with a full length (5″) paddle. The paddle can be trimmed to achieve different actuation points.

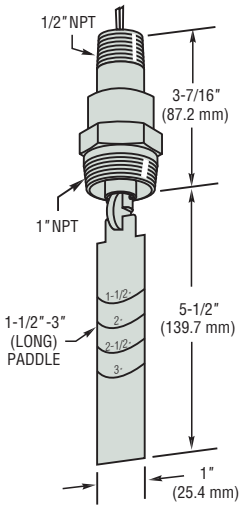
How To Order – Standard Models

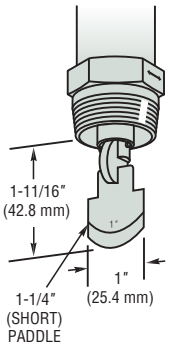
Select switch type, paddle length and housing material, then specify adjacent part number.

Switch Type	Paddle Length	Housing Material	Switch Operation	Part Numbers	
				Standard	3-Pin J-Box
SPDT Standard Unit	Long	Brass	N.O. or N.C.	**29609** ⚡	**56730**
		316 S.S.		**29608** ⚡	**56729**
	Short	Brass		**30641** ⚡	**66914**
		316 S.S.		**30640** ⚡	**61189**

Note: The FS-550 Switch is not recommended for use with 1″ plastic tees.

Dimensions

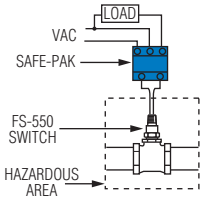




FS-550 switches are U.L. Approved for Class I, Division 2, Groups A, B, C, D hazardous areas.

They are also available as FM-approved when used with GEMS Junction Boxes which are explosion-proof for Class I, Division 1, Groups B, C, D, E, F, G hazardous locations.

Using GEMS SAFE-PAK Relays and barriers, these switches provide automatic flow/no flow interlock and are intrinsically-safe without explosion-proof housing and piping.



U.L. Approved — File No. E183854

Paddle Type Flow Switches – For Flow/ No-Flow Detection in Large Line Sizes

- Engineered for positive liquid flow detection at pressures to 2000 PSIG (138 bar)
- Unique, patented cam design assures low pressure drop and does not require bellows, seals, or mechanical linkages
- Minimum in-line restriction; paddle pivots to move out of liquid path with increasing flow

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FS-550 Series
High Pressure, Metal Version G-26

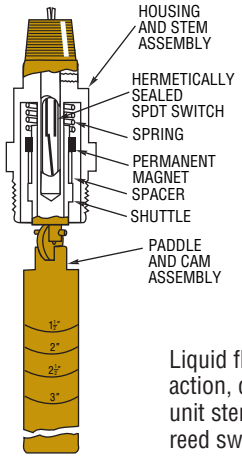
Typical Applications

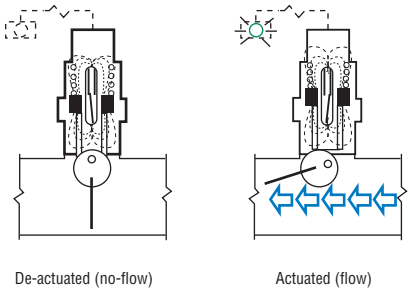
Assure flow and/or leak detection in large, high pressure in...
• Compressors • Heat Exchangers • Turbines • Engines • Boilers • Chillers

Protect high or low pressure pumps from cavitation, sense critical, reverse flow and protect...
• Valves • Pumps • Regulators

Design Data

General Operating Principle





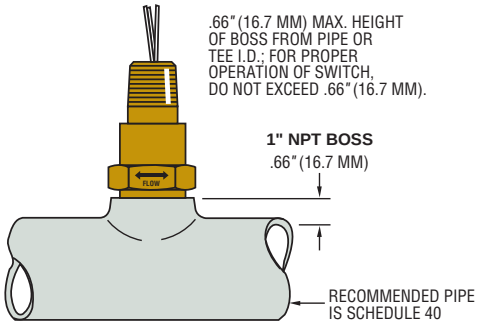
Liquid flow in either direction deflects the paddle which, by cam action, displaces a permanent-magnet-equipped shuttle along the unit stem. The magnet actuates a hermetically sealed, magnetic reed switch within the stem to operate a remote alarm or indicator.

Simple Installation and Easy Maintenance

Installs in a standard pipe tee or reducing fitting. If excessive particle build-up necessitates occasional cleaning, simply remove the unit and manually remove particles actuate paddle for free movement.

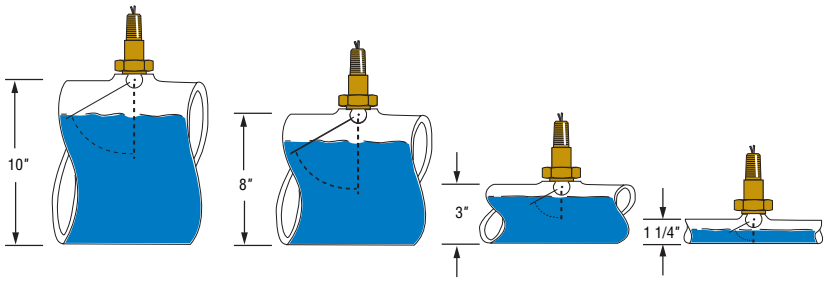
Easy Installation

Installs in a standard pipe tee or reducing fitting.



Paddles Cut-to-Length For Broad Range of Pipe Sizes

Cutting the paddle to length selects a standard flow rate as shown on the tables on the following pages. Approximate pipe sizes are marked on the paddle. These units can be used in pipe with diameters greater than the 5˝ paddle length. They provide flow/ no-flow detection where there is a velocity of 0.5 ft. per second.



Control Components
Ph: +61 (0)2 9542 8977
Fx: +61 (0)2 9542 7978
www.ccezy.com.au

Junction box alternatives for flow and level switch units

Small size housings for max 32V, IP65 rating, ¼ and ½" connections □ internal terminal strip □ Dims: 60mm dia x 80 mm high		
Aluminium Small 32V IP65	**JB-ALS-32V-65-1** (1/4") **JB-ALS-32V-65-2** (1/2") □ Painted aluminium case □ M16 NPB cable gland supplied	
Stainless Small 32V IP65	**JB-SSS-32V-65-2** □ Full 316SS case □ M16 SS cable gland supplied	
Medium size housings for max 32V, IP65 rating, 1/2" connection □ internal terminal strip on SS bracket □ Dims: 70mm dia x 75 mm high		
Aluminium Medium 32V IP65	**JB-ALM-32V-65-2** □ Painted aluminium case □ M20 cable entry (no gland)	
Stainless Medium 32V IP65	**JB-SSM-32V-65-2** □ Full 316SS case □ M20 SS cable gland supplied	
Large size housings for max 250V, IP65 rating, 1/2" connection □ Painted earth terminals both inside and outside housing. □ Cover locking screw □ internal terminal strip on SS bracket □ Dims: 82mm dia x 94 mm high		
Aluminium Large 240V IP65	**JB-ALL-240V-65-2** □ Painted aluminium case □ M20 cable entry (no gland)	
Stainless Large 240V IP65	**JB-SSL-240V-65-2** □ Full 316SS case □ M20 SS cable gland supplied	

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Junction box alternatives for flow and level switch units

FS-200 with JB-ALL-240V-65-2

FS-550 with JB-SSL-240V-65-2

Typical Gems flow switch fitted with large 240V junction box

Typical Gems level sensors with junction box fitted