

# Safgard™

Model FS204

## General Purpose Liquid Flow Switch Indoor/Outdoor

- **Universal Design** – Replaces switches by McDonnell & Miller, Taco, Penn and others
- **Suitable for 1" to 6" Pipe Diameters**
- **Adjustable Sensitivity**
- **Includes Four Heavy Duty Stainless Steel Paddles**



The **Safgard FS204 Flow Switch** is used to start or stop electrically operated equipment such as burners, pumps or alarms by detecting liquid flow through piping. It is designed for use in water media applications and is not intended for use in hazardous or corrosive fluids. The FS204 is suitable for wet locations.

**⚠ WARNING** **Electrical shock hazard.** To prevent electrical shock, death or equipment damage, disconnect power supply before installing or servicing control. Only qualified personnel may install or service this control in accordance with local codes and ordinances. Read instructions completely before proceeding.

**⚠ CAUTION** • To prevent serious burns, boiler should be thoroughly cooled before installing or servicing control.

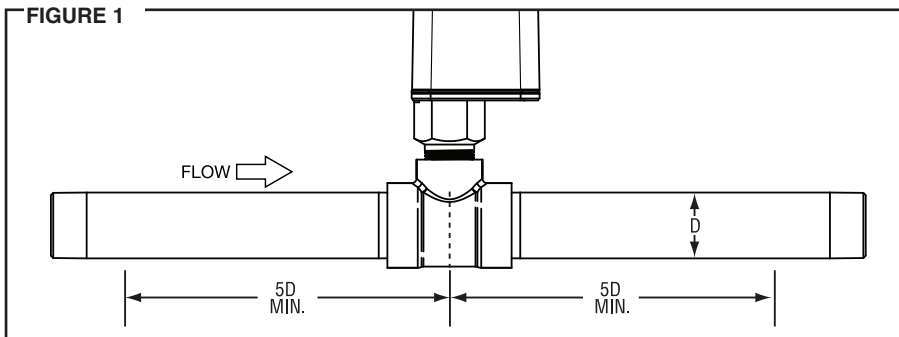
- The FS204 is designed as an operating control. It is the responsibility of the installer to provide safety or limit control on installations where an operating control failure would result in personal injury and/or property loss.
- The FS204 is not intended for use in explosive environments.

**⚠ WARNING** **Frozen pipes/water damage.** Central heating systems are prone to shut down as a result of power or fuel outages, safety related fault conditions or equipment failure. Installation of freeze protection monitoring or other precautions is recommended for unattended dwellings in climates subject to sustained below-freezing temperatures.

### FLOW SWITCH LOCATION

The preferred installation of the FS204 is in a horizontal pipe with a straight run of at least 5 pipe diameters on each side of the paddle (**Figure 1**). There should be no restrictions from elbows, valves, orifices, etc. Refer to Table 1 below for flow rates.

The Flow Switch can be installed in a vertical pipe *only if the flow direction of the liquid is upward*. Table 1 does not apply to vertical installations.

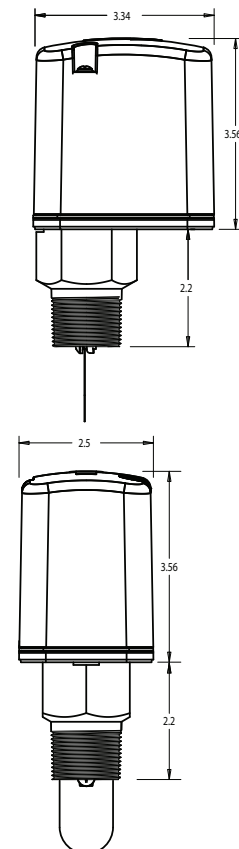


**Table 1 FLOW SPECIFICATIONS**

Pipe Size		1"	1½"	1½"	2"	2½"	3"	4"	5"	6"
Minimum Adjustment	Flow Increases	4.5	8.1	11.8	16.5	25	33	51	85*	120*
	Flow Decreases	2.2	6.8	7.6	9.3	19	22	38	75*	100*
Maximum Adjustment	Flow Increases	14.8	22.1	25.7	32.3	75	90*	110*	170*	240*
	Flow Decreases	13.8	20.1	23.7	30.5	72	85*	100*	155*	220*

\*Calculated for various pipe sizes. Flow rates may vary ±10% from values above.

### DIMENSIONS



**HYDROLEVEL  
COMPANY**

126 Bailey Road, North Haven, CT 06473 • Phone (203) 776-0473 • FAX (203) 764-1711 • [www.hydrolevel.com](http://www.hydrolevel.com)

# INSTALLATION

## Step 1 Trimming the Paddles

The stainless steel paddles (set of 4 supplied) must be trimmed to the appropriate length for the pipe diameter being used. Use the template at the right of this page as a cutting guide. Follow the curve indicated as closely as possible. Standard shears or tin snips can be used.

## Step 2 Stacking the Paddles

After trimming, the paddles must be stacked as shown in **Figure 2** and then screwed onto the stem of the flow switch. **IMPORTANT:** The correct orientation of the paddles to the flow of the fluid is essential.

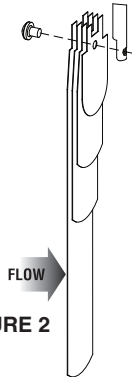


FIGURE 2

## Step 3 Installing in Tee

The Flow Switch must be installed in a 1" NPT threaded pipe fitting. If a reducing bushing or welded fitting is required, the length must be kept to a minimum to insure that the paddle can move freely in the run of the pipe without coming in contact with the bushing or fitting. Tighten the Flow Switch with a 1 1/2" box wrench or adjustable wrench applied to the brass nut only. *Do not tighten by grasping the enclosure.* Allow a 1 3/4" space from the bottom of the enclosure to the top of the tee (**Figure 3**) and be sure that the arrow on the side of the enclosure is in the direction of the flow.

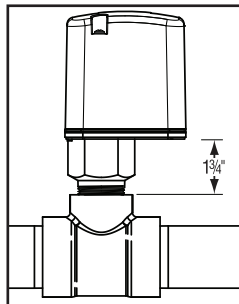


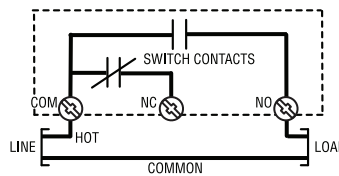
FIGURE 3

### IMPORTANT:

The paddle must not touch the inside wall of the opposite side of the pipe. If there is any contact, additional trimming is required.

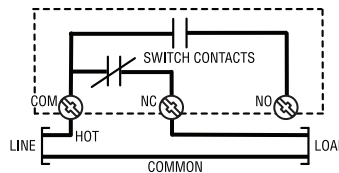
## Step 4 Wiring

### ENERGIZE CIRCUIT UPON FLOW

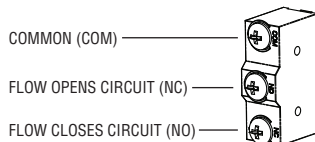


Flow Switch will activate load (alarm, light, relay, motor starter, etc.) when flow occurs.

### ENERGIZE CIRCUIT UPON NO FLOW



Flow Switch will activate load (alarm, light, relay, motor starter, etc.) when no flow occurs.



## Step 5 Adjusting Sensitivity

To **INCREASE** sensitivity (switch activates at a lower flow rate), turn the adjustment screw counter-clockwise. To **DECREASE** sensitivity (switch activates at a higher flow rate), turn the adjustment screw clockwise.

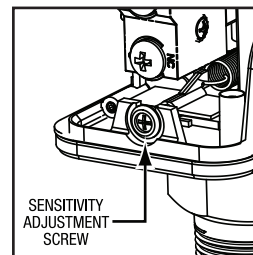
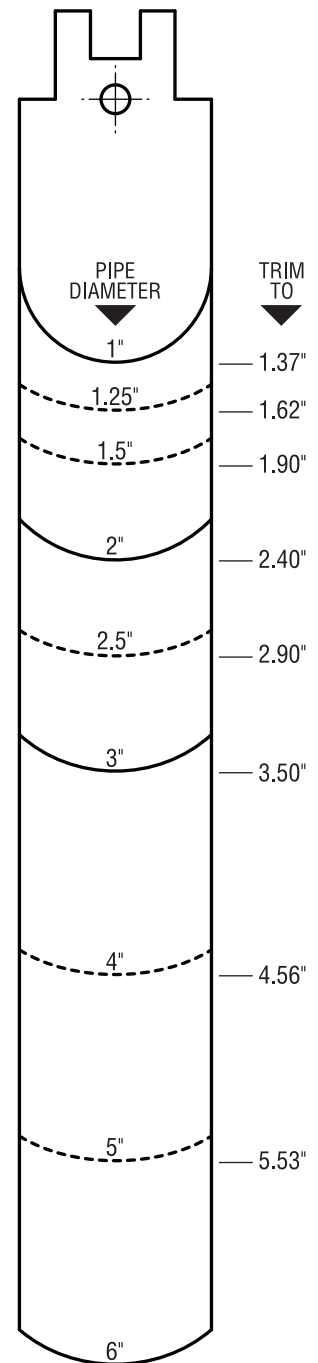


FIGURE 4



# SPECIFICATIONS - FLOW SWITCH MODEL FS204

**Maximum Service Pressure:** 160 psi  
**Maximum Temperature:** 250°F  
**Enclosure:** NEMA type 4 (for wet locations).  
**Contacts:** SPDT switch  
 7.4 FLA, 44.4 LRA@120VAC Motor Duty  
**Pilot Duty Rating:** 125VA@120/240VAC

**Ambient Temperature Range:** 32°F-176°F (0°C-80°C)  
**Media Temperature Range:** 32°F-250°F (0°C-121°C)  
**Pipe Connection:** 1"NPT - Brass  
**Conduit Access:** 2 openings for 1/2" conduit  
**Usage:** 1" to 6" pipe sizes (see Flow Chart - Table 1)



## LIMITED MANUFACTURER'S WARRANTY

We warrant products manufactured by Hydrolevel Company to be free from defects in material and workmanship for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first. In the event of any claim under this warranty or otherwise with respect to our products which is made within such period, we will, at our option, repair or replace such products or refund the purchase price paid to us by you for such products. In no event shall Hydrolevel

Company be liable for any other loss or damage, whether direct, indirect, incidental or consequential. This warranty is your EXCLUSIVE remedy and shall be IN PLACE OF any other warranty or guarantee, express or implied, including, without limitation, any warranty of MERCHANTABILITY or fitness for a particular purpose. This warranty may not be assigned or transferred and any unauthorized transfer or assignment thereof shall be void and of no force or effect.



126 Bailey Road, North Haven, CT 06473 • Phone (203) 776-0473 • FAX (203) 764-1711 • www.hydrolevel.com