

MODEL Q-16

HARWIL CORPORATION

541 KINETIC DRIVE, OXNARD, CA 93030
TEL: (805) 988-6800

FIGURE 3. FLOW RANGE TABLE

Pipe Size NPT	Switchpoint Range (GPM)				Paddle Size (inches)
	Min. Adjust.		Max. Adjust.		
	ON	OFF	ON	OFF	
1"	4	2	8	7	1.30"
1½"	7	5	13	11	1.85"
2"	12	7	27	26	2.30"
2½"	18	12	35	32	2.83"
3"	27	19	52	49	3.40"
4"	63	50	123	120	4.50"
5"	125	100	238	232	5.50"
6"	190	158	350	338	6.50"

Consult the factory for larger pipes and additional switch points.

FIGURE 4. PADDLE SIZES

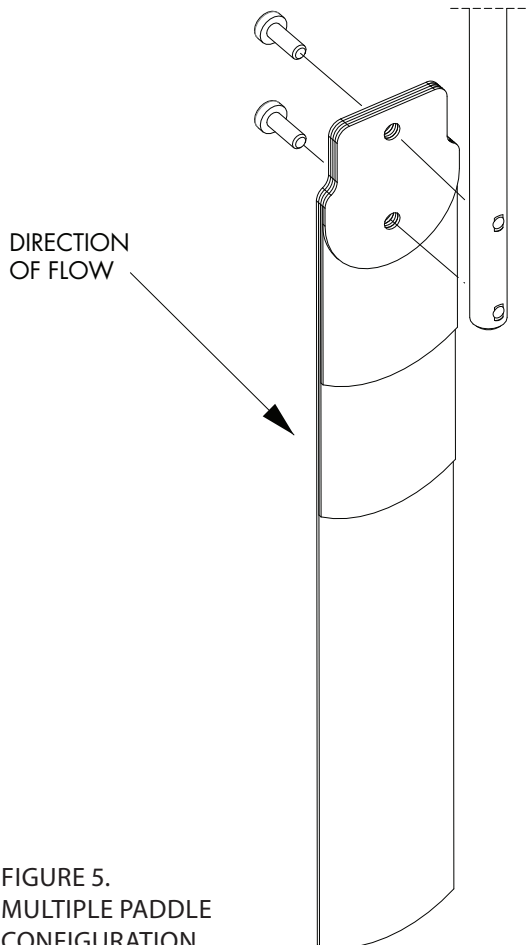
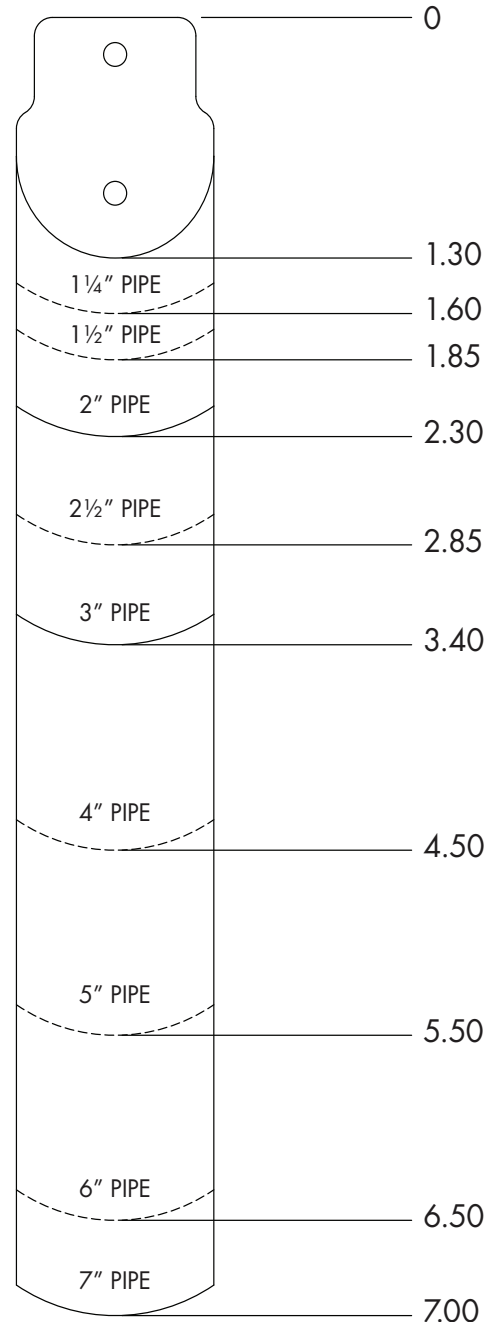
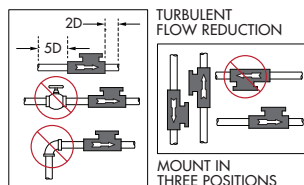


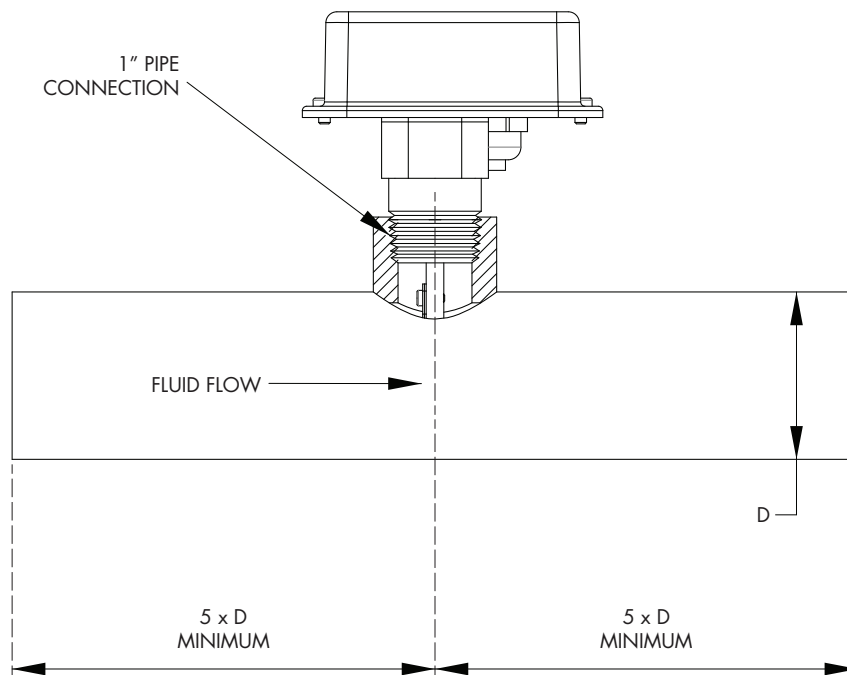
FIGURE 5. MULTIPLE PADDLE CONFIGURATION



INSTALLATION INSTRUCTIONS

The Model Q-16 should be mounted on the top of a horizontal section of pipe. If it is mounted in a vertical pipe, the switch points will deviate from those published. If the flow is DOWNWARD, switch points will be LOWER than published. If flow is UPWARD, switch points will be HIGHER than published.

FIGURE 6. Q-16 IN PIPE



D = PIPE DIAMETER

The flow switch should be located in a straight run of at least 5 pipe diameters.

1. Determine the proper paddle length from the chart next to the "Flow Range" Table [FIGURE 3]. For intermediate sizes, trim the next largest paddle to the correct length. The paddle must not touch the inside of the pipe. If more than one paddle is being installed, stack one on top of the other with the larger ones first in line with the flow. [FIGURE 5.]
2. Use a reducing tee for pipe sizes larger than 1" to provide adequate paddle length in the liquid flow. A weldolet or half coupling may also be used. If a reducing tee is not available, use a bushing to reduce the tee outlet to 1" pipe thread.
3. Be sure the flow switch is mounted such that the flow direction is perpendicular to the paddle and that it activates the flow switch when there is flow and de-activates at rest when there is no flow.

CAUTION: DO NOT TIGHTEN BY GRASPING THE SWITCH ENCLOSURE. USE THE HEX FLATS AND WRENCH.

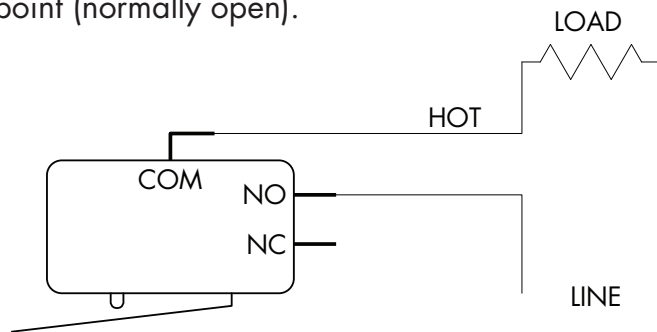
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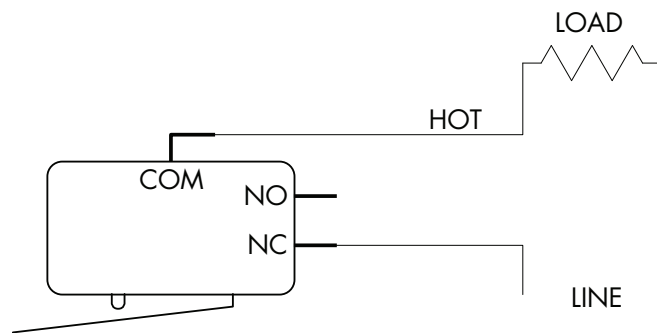
Power applied to load when flow is GREATER than set point, interrupted when flow is LESS than set point (normally open).

FIGURE 8.



Power applied to load when flow is LESS than set point, interrupted when flow is GREATER than set point (normally closed).

FIGURE 9.



SWITCH POINT ADJUSTMENT

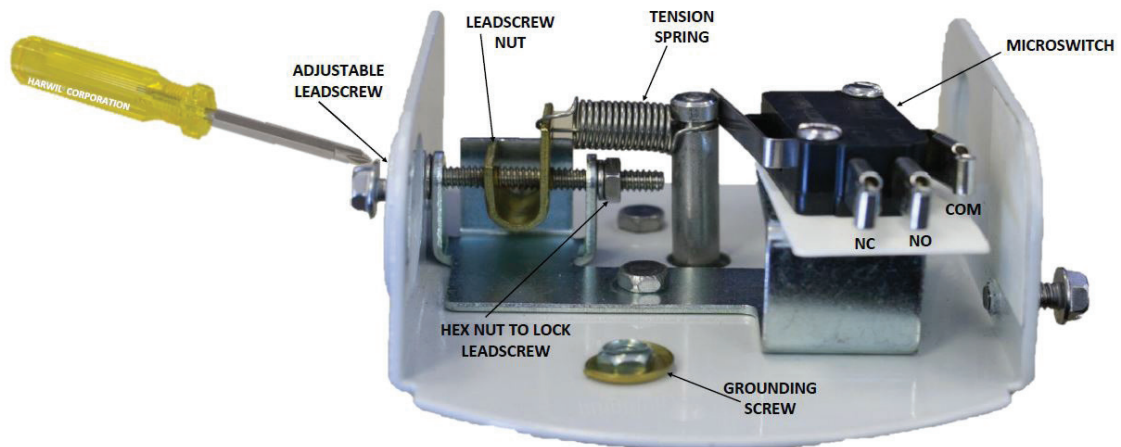


FIGURE 10.

1. TURN OFF POWER.
2. Remove cover.
3. Adjust fluid flow in system to desired rate WITHOUT regard to Q-16 switch point setting.
4. The switch point adjusting mechanism consists of an adjusting screw, a "U" shaped nut, a hexnut and washer, and a helical spring.

CLOCKWISE rotation of the adjusting screw changes the microswitch actuation point toward HIGHER flow rates.

NOTES: All Q-16 units are factory set at the lower end of the flow range, e.g. the adjusting screw is set at the low flow counter-clockwise position.

The lead screw nut and hex nut lock the adjusting screw in position, maintaining the flow switch set point under all environmental conditions.

5. Starting with the nut in low-flow position (tension spring relaxed), loosen the hex nut on the lead screw, then turn the adjusting screw in a clockwise direction until the microswitch is actuated, while maintaining the desired fluid flow rate in the system. Turn the adjusting screw TWO (2) additional turns in the clockwise direction and then slowly back off in a counter-clockwise direction, until the microswitch is de-actuated. The Q-16 flow switch is now set at maximum sensitivity for detecting small flow changes.
6. When set at maximum sensitivity (100% point) as described above, flow turbulence may cause rapid on/off switching (dithering) of the microswitch contacts, resulting in reduced switch contact life and "noise" in the electrical circuit. This is eliminated by turning the adjusting screw in a counter-clockwise direction.

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7. Microswitch actuation point may be monitored during the adjustment procedure detail in steps 5 and 6 by an audible click, with an ohmmeter, or with other continuity tester before connecting line power to the microswitch.
8. If the system flow rate is changed, the Q-16 can be adjusted to monitor the new flow rate by turning the adjusting screw in a counter-clockwise direction to the minimum flow position and then proceeding as in 5 and 6 above. Once the set point is achieved, tighten the hex nut to lock in the adjusted set point.
9. Place cover on the flow switch and turn on power.
10. Test the operation of the flow switch after each adjustment.

TESTING

Place cover on flow switch and turn on power. Observe whether the flow switch is being activated by the flow. Turn off fluid flow to determine if the device is operating as required.

Repeat initiating and turning off fluid flow several times. If operating as required, put system into service. If not operating as required, flow switch may need to be adjusted.