

REMOTE MOUNT INSTALLATION

PLUMBING REQUIREMENTS

- A **straight length of pipe five pipe diameters long** helps take out turbulence and will improve valve performance. See Figure 1. Excessive turbulence caused by fittings, pipe size changes, flow meters, and/or pumps immediately upstream of the valve can have a negative impact on valve performance or even damage the flow-sensing paddle.
- Do not mount the pilot downstream of the valve.
- For applications where the pilot will not fit upstream of the valve, an after-market, in-valve model is available (6" and 8" valves only). Contact factory for details.
- The rate-of-flow pilot is intended to be installed in steel pipe. If attempting to install in PVC pipe, be cautious of saddles or fittings that will prevent the paddle from moving freely or being entirely inserted into the flow path. This may cause the valve to regulate at a flow rate that is different than the indicated value on the pilot calibration stem.
- The rate-of-flow pilot is not intended to replace a flowmeter; having a flowmeter nearby will assist in setting the pilot.
- Install continuous acting air vents upstream of the rate-of-flow valve to prevent air entrapment and water hammer.

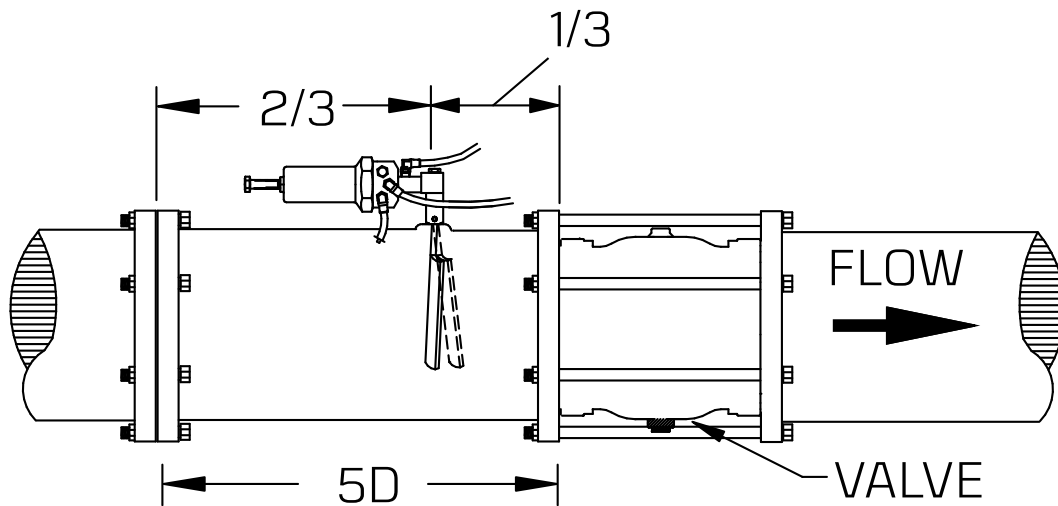


Figure 1. Five pipe diameters upstream are required for best performance.

INSTALLATION STEPS

1. After selecting an installation location that meets the plumbing requirements, cut a hole in the top of the steel pipe so that a 1" half coupler can be welded to it. The hole should be 1.25"-1.5" in diameter, with no burrs or obstructions.
2. Remote mounted rate-of-flow pilots include one or two 1" FNPT threaded half couplers, depending on the model. High-flow models (D18-4 and D18-6) include just one coupler and can skip this step. The two couplers included with low-flow models are to accommodate different thickness of pipe. The short coupler (0.68" / 1.7 cm) is used with thick-walled pipe, and the tall coupler (0.96" / 2.4 cm) is used with thin-walled pipe. To determine which coupler to use with low-flow models:
 - a. Measure from *bottom of inside* of pipe to *top of outside* of pipe (dimension A, see Figure 2).
 - b. With shorter half coupler installed on the paddle assembly, measure distance from end of paddle to bottom end of half coupler (dimension B, see Figure 3).
 - c. If the paddle length "B" is shorter than the pipe depth "A", then use this shorter coupler. Otherwise, use the taller coupler (you may wish to repeat step 2b with the taller coupler to double check). If the paddle is too long it will not function correctly. Double check your measurements and that you have the right model of rate-of-flow pilot.

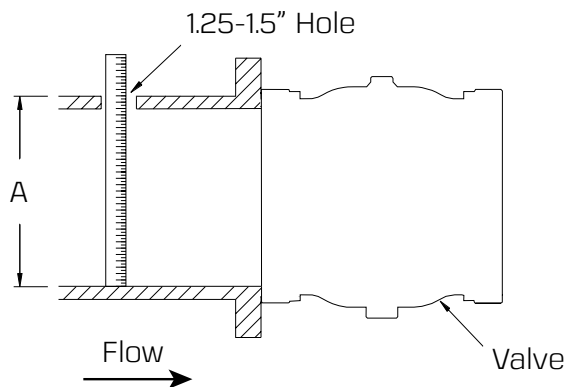


Figure 2. Pipe depth measurement.

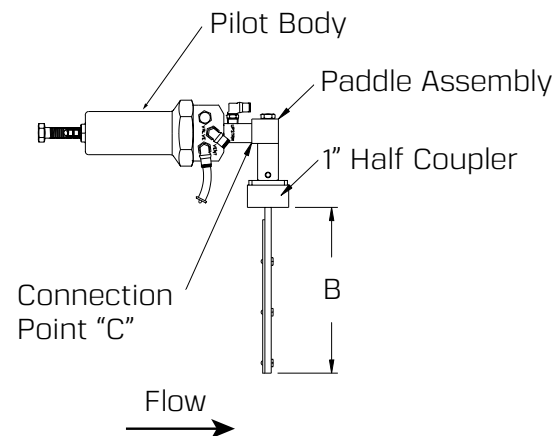


Figure 3. Paddle length measurement.

3. Weld the coupler onto the pipe. Be sure to remove the coupler from the paddle assembly before doing so. Discard the unused coupler. Wait for the weld to cool before proceeding.
4. Unthread the pilot body from the paddle assembly at point "C" as indicated in Figure 3. Take care not to lose the rubber washer between the pilot body and paddle assembly.
5. Thread the paddle assembly into the coupler on the pipe. Be sure that the hole where the pilot body attaches is pointed directly upstream. It is critical that the pilot body be parallel with the pipeline.
6. Reattach the pilot body to the paddle assembly.
7. Connect the control tubes to their respective ports on the valve. If you purchased the rate-of-flow pilot as part of the valve configuration, these ports/tubes will be labeled "1" and "2". If you purchased the rate-of-flow pilot as a retrofit kit to install on an existing valve, refer to the corresponding plumbing diagram for your application.

SETTING AND INITIAL START-UP

With the control tubing correctly connected, the valve will be controlled by the rate-of-flow pilot when the valve's manual selector is in the AUTO position. The following guidelines will help ensure a smooth initial startup.

- The setting on the control pilot calibration label is read with the locknut backed off.
 - For applications where the rate-of-flow valve is used to control pipe fill rate, the pilot should be set to **110-120% of the system design flow**. This allows the system to fill in a timely manner without inducing water hammer or taking excessive flow from other zones on the system.
 - For applications where the rate-of-flow valve is used to limit flow to a reservoir, the pilot should be set to the desired fill rate.
- If starting a new system that is completely full of air, do not start with the valve's manual selector in the AUTO position as the initial rush of water could damage the paddle and may exceed the pilot setting until the valve can slowly begin to throttle.
 - It is best to first set the manual selector to CLOSE to allow the valve control chamber to fill with water. Install a continuous acting air vent upstream of the valve to help remove air from the system upon startup. Once the upstream pipe and control chamber are full of water, the manual selector may be turned to "AUTO" to allow the valve to open.
- Note that the rate-of-flow works as a flow limiting device, and it will not prevent flows less than the setting on the pilot from occurring. When the flow drops below the setting on the pilot, the rate-of-flow pilot stops controlling the valve, allowing it to either go fully open or to respond to a pressure control pilot (if equipped).

FINE TUNING AND TROUBLESHOOTING

- The calibration label on the pilot is there to assist in achieving the *approximate* target flow.
- A nearby inline flowmeter can be used to more precisely set the pilot.
- Whenever adjusting the calibrated stem on the pilot, allow ample time for the valve to respond and the system to stabilize before making other adjustments. Be patient.
- If the system never reaches full operating pressure the pilot may be set too high.
- Setting the rate-of-flow pilot too high can cause water hammer, and is the same as allowing the system to fill unchecked.
- Be sure the upstream pressure is within the limits of the valve sleeve rating.
- See the "Operation and Maintenance" brochure of the respective valve function for additional troubleshooting.