



ARB® UTILITY MANAGEMENT SYSTEMS™ WATER | GAS | ELECTRIC

# HP Fire Service Turbine Installation and Maintenance Guide



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## CHAPTER 1 OVERVIEW

The High Performance Fire Service Turbine is designed to measure water usage through a designated fire service line or through a single line that serves both fire and domestic use where flow rates are moderate to high. In order to achieve maximum performance in actual service, it is essential that these installation and maintenance instructions be followed.

### CONTACTING TECHNICAL SUPPORT

If you encounter any problems with the installation or operation of your HP Fire Service Turbine, please call Neptune at (334) 283-6555 or 1-800-645-1892 and ask to speak with Customer Support.



## CHAPTER 2 INSTALLATION INSTRUCTIONS

This chapter is designed to take you through the installation process for the HP Fire Service Turbine.

### INSTALLATION INSTRUCTIONS

The HP Fire Service Turbine meter will operate more accurately and reliably if installed and maintained properly. Fire Service Turbine meter performance is directly related to the flow conditions of the water entering the turbine measuring element. The entering flow is properly conditioned by a strainer installed immediately upstream of the turbine meter.

The HP Fire Service Turbine meter includes the required UL listed and FM approved basket-type strainer attached to the inlet of the fire service turbine. The strainer, in addition to protecting the meter from rocks and debris in the line, also corrects the velocity profile of the flow to the turbine meter reducing the effects of upstream piping variations. Proper service and cleaning of the strainer is important for long term reliability and performance of the turbine measuring element.

### RECOMMENDED INSTALLATION

The recommended installation of the fire service turbine meter is in a horizontal position with its arrow pointing in the direction of the water flow.

When installing Neptune meters with a strainer, a minimum of two (2) to four (4) pipe diameters of straight run pipe (can include components that are fully open in their normal operating position) is required upstream and downstream of the meter/strainer assembly.

If a Neptune meter is installed without a strainer, a minimum of eight (8) pipe diameters of straight run pipe (can include components that are fully open in their normal operating position) is required upstream and two (2) to four (4) pipe diameters of straight run pipe downstream of the meter/strainer assembly.

Installation of a test tee is advised as it provides a means to field test the meter without removing it from the line. The test tee may be installed where the test outlet is at least two pipe diameters or more downstream of the water meter outlet. A full size bypass around the meter is also recommended as it provides uninterrupted service capability during meter servicing periods.



When installing a fire service turbine meter, normal good piping practice should always be followed. In particular, all gaskets should be centrally located on their flanges with no overlap or interference with the pipe diameter.

The fire service turbine meter must operate in a completely filled line at all times. The downstream piping must always provide sufficient back pressure to maintain a full line at the meter.

Caution should be exercised to avoid air in the line, or excessive flow rates for extended periods of time.



### BEFORE OPERATION

Before putting the fire service turbine meter into service, follow these steps:

- 1 Close both the inlet and outlet gate valves.
- 2 Turn air bleed screw on strainer cover counter-clockwise one to two turns.
- 3 Slowly open inlet side gate valve to pressurize meter.
- 4 Close air bleed screw (clockwise) when air is completely vented and no “spitting” occurs.
- 5 Slowly open outlet side gate valve until downstream line is pressurized.



After installation, it is important that the upstream (inlet) valve be put in the “full open” position during service. All throttling should be done only on the downstream (outlet) side of the meter.

## CHAPTER 3 MAINTENANCE

If you find that your HP Fire Service Turbine is not operating as expected when installed, use the following guidelines to try to determine the source of the problem.

### MAINTENANCE INSTRUCTIONS

#### TURBINE

When maintenance is necessary, the complete unitized measuring element (UME) may be quickly and easily interchanged with a factory-calibrated unit by following these steps:

- 1 Close both the inlet and outlet gate valves.
- 2 Remove cover bolts from the turbine.
- 3 Remove cover and turbine measuring element from maincase.
- 4 Install factory-calibrated UME into maincase.
- 5 Replace cover bolts.
- 6 Tighten cover bolts.
- 7 Follow steps 2 through 5 from “Before Operation” section above.

All UMEs have been factory-calibrated and should not require field calibration.

The complete UME should be tapped and returned for service to the Neptune factory. If the customer does not have a spare unit, a factory-calibrated UME may be purchased directly from Neptune or one of its authorized distributors. Neptune encourages all customers to purchase either a spare UME or a blank cover to enable them to avoid service interruptions.

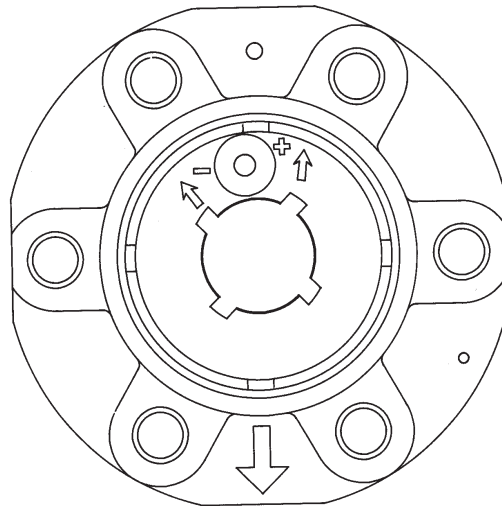
**ADJUSTING THE CALIBRATION VANE**

Neptune equips all new turbine meters and UMEs with a calibration vane. Should field calibration of the turbine element be required, the following steps should be followed:

- 1 Remove seal pin from register and twist off register.
- 2 Loosen lock nut on adjusting stem by turning counter-clockwise.
- 3 Insert slotted screwdriver into slot in top of adjusting stem, and (a) turn clockwise to decrease registration, or (b) turn counter-clockwise to increase registration.



Turning the adjustment stem  $15^\circ$  in either direction results in approximately one percent change in registration. The full range of the calibration vane is  $180^\circ$ .



**Figure 3.1 Calibration Vane**

**STRAINER**

For maximum efficiency, determine length of time it takes for baskets to become approximately one-third clogged. Remove top cover and clean basket. Replace basket in strainer in original position and tighten cover. Replace gasket if necessary. Spare gaskets will facilitate shorter "shutdown time." Pressure gauge installed before and after strainer in line will indicate pressure loss due to clogging and may be used as a guide to determine when cleaning is required. Strainer is equipped with a flushing port and open bottom basket for removal of sediment. In addition, strainer may be equipped with a "blow-down valve" to facilitate easier cleaning







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