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Installation, Operating, & Maintenance Instructions



Models 8500-02, 8500-03, 8500-03X, 8593-02,
8593-03/294-11REV.06 and 8593-03X/294-11REV.06X

VULCAN

and

COPPERHEAD

98428000 Rev. A

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8500-03
8500-03X



8500-02



8593-03/294-11REV.06
8593-03X/294-11REV.06X



8593-02

I. PRODUCT SAFETY



Important:

Before installing and operating this equipment, read & study this manual thoroughly. Proper installation is essential to safe operation. In addition, the following points should be adhered to in order to ensure the safety of equipment and personnel:

1. All personnel who may be expected to use this equipment must be thoroughly trained in its safe and proper use.
2. Before flowing water from this device, check that all personnel (fire service and civilian) are out of the stream path. Also, check to make sure stream direction will not cause avoidable property damage.
3. Become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. To produce effective fire streams, operating personnel must be properly trained.
4. Open water valve supplying this equipment slowly, so that the piping fills slowly, thus preventing possible water hammer occurrence.
5. After each use, and on a scheduled basis, inspect equipment per instructions in Maintenance & Inspection on page 6.



Warning: The piping must be able to withstand a horizontal reaction force of at least 950 lbs at the height of the discharge elbow and from any angle of rotation that the monitor is capable of turning. Serious injury to personnel and equipment can result from improper installation.

II. INSTALLATION INSTRUCTIONS

1. 3" NPT Base

Apply an appropriate thread sealant to the 3" NPT nipple. Thread the monitor base onto the nipple. Ensure that the alignment of the fixed monitor base for the 8500-03X and 8593-03X/294-11REV.06X is in the correct position for access to the left/right hand wheel. Alignment for other monitors is not critical as the monitor is capable of 360° continuous rotation.

2. 3" 150# Flat Faced Flange

Attach a 3" 150 lb. class ANSI pattern companion flange to the water supply pipe. Elkhart Brass recommends using the 81315001 Companion Flange Kit. Ensure that the alignment of the fixed monitor base for the 8500-03X and 8593-03X/294-11REV.06X is in the correct position for access to the left/right hand wheel. Attach the monitor inlet flange to the companion flange on the water supply pipe with four (4) 5/8-11 UNC grade 5 carbon steel or stainless steel bolts, 2-1/2 inches long, with nuts. If a wafer type butterfly valve is installed between the monitor and the companion flange, required bolt length will be 4-1/2 inches. Seal the flange joint with a gasket, or suitable flange sealant. Most wafer type butterfly valves have seats that serve as flange gaskets, and separate gaskets or sealant is not required. Apply Loctite® #242 to the bolt threads, then thread on the nuts, and torque them to 60-70 ft-lbs uniformly in increments of approximately 20ft-lbs.

3. 4" 150# Flat Faced Flange

Ensure that the alignment of the fixed monitor base for the 8500-03X and 8593-03X/294-11REV.06X is in the correct position for access to the left/right hand wheel. Attach 4" 150 lb. class ANSI pattern companion flange to water supply pipe. Elkhart Brass recommends using the 81317001 Companion Flange Kit. Attach monitor inlet flange to companion flange on water supply pipe with eight (8) 5/8-11 UNC grade 5 carbon steel or stainless steel bolts, 2-1/2 inches long, with nuts. If a wafer type butterfly valve is installed between the monitor and the companion flange, required bolt length will be 4-1/2 inches. Seal flange joint with gasket, or suitable flange sealant. Most wafer type butterfly valves have seats that serve as flange gaskets, and separate gaskets or sealant is not required. Apply Loctite® #242 to bolt threads, then thread on nuts, and torque to 60-70 ft-lbs uniformly in increments of approximately 20ft-lbs.



Warning: When installing monitor on a raised face companion flange or butterfly valve, it is critical that bolts be tightened uniformly to prevent cocking of the monitor relative to the flange or valve. If the monitor becomes cocked, (see Figure 1) the monitor cast flange base will fracture and fail when the bolts on the "high" side are tightened.

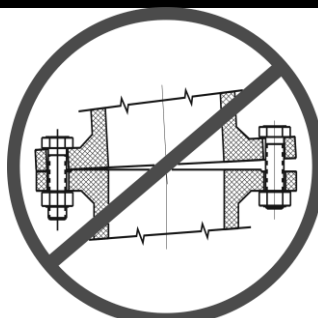


Figure 1
Improper Flange Installation

III. OPERATING

1. Tiller Handle Monitor 8500-02 and 8593-02

Turn both left/right and up/down lock handles counterclockwise to disengage lock. Move tiller handle to desired left/right and up/down positions. Turn both lock handles clockwise to engage lock.

2. Dual Hand Wheel Monitor 8500-03 and 8593-03/294-11REV.06

The left/right and up/down hand wheels will rotate with the monitor. Turn the up/down hand wheel clockwise to lower nozzle or counterclockwise to raise nozzle. Turn the left/right hand wheel clockwise to move nozzle left or counterclockwise to move nozzle right.

3. Dual Hand Wheel Fixed Base Monitor 8500-03X and 8593-03X/294-11REV.06X

The left/right hand wheel remains fixed while the up/down hand wheel will rotate with the monitor. Turn the up/down hand wheel clockwise to lower nozzle or counterclockwise to raise nozzle. Turn the left/right hand wheel clockwise to move nozzle left or counterclockwise to move nozzle right.

IV. MAINTENANCE & INSPECTION

The monitor should be inspected regularly. Careful inspection for damage to the monitor or nozzle is especially important after use in emergency operations.

Flow water to check nozzle pattern. If pattern is disrupted, remove nozzle and check for debris lodged between the nozzle stem and body, or in the stream shaper inlet.

During nozzle flow test, inspect monitor swivel joints for leaks.

Note: Although grease fittings are provided for the up-down and left-right gear cases, routine greasing should not be necessary. If the monitor is exposed to a high level of radiant heat for a prolonged period, it may be possible for the factory grease to thin and run out of the gear cases. In such an event, fresh grease should be applied.

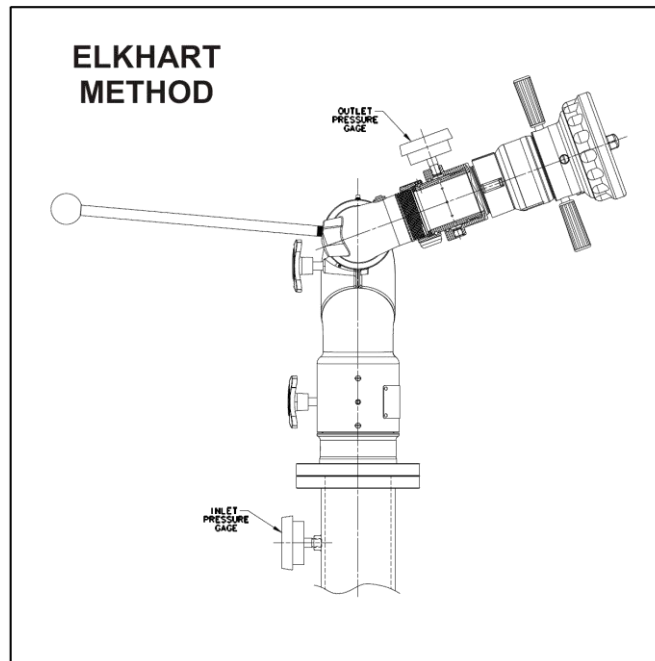
V. PARTS DRAWINGS

To view the most current parts list, drawings, or demonstrations of common EXM commands, please visit www.elkhartbrass.com.

VI. MONITOR & STREAM SHAPER

1. Interpreting Flow Data

The following graphs offer the pressure losses for the monitor (and other devices) in terms of Total Static Pressure Drop. This Total Static Pressure Drop can be found by measuring the difference between the static inlet pressure and the static outlet pressure. The static pressure at either of these points can be found using a simple pressure gauge. An illustration of this method can be seen below.



In mathematical terms, the Total Static Pressure Drop is the change in Velocity Pressure plus Friction Loss. The change in Velocity Pressure results from the change in velocity of water caused by the change in the cross section of a waterway. Friction Loss results from the drag and sidewall interference of the water through a device. A simple equation can be seen below.

$$\Delta P_S = H_F + \Delta P_V$$

ΔP_S = Total Static Pressure Drop
 H_F = Friction Loss
 ΔP_V = Velocity Pressure Loss

In the firefighting industry, the terms Total Static Pressure Drop and Friction Loss tend to be used interchangeably. However, these are significantly different measurements. This misconception could ultimately lead to lower than anticipated performance from equipment.

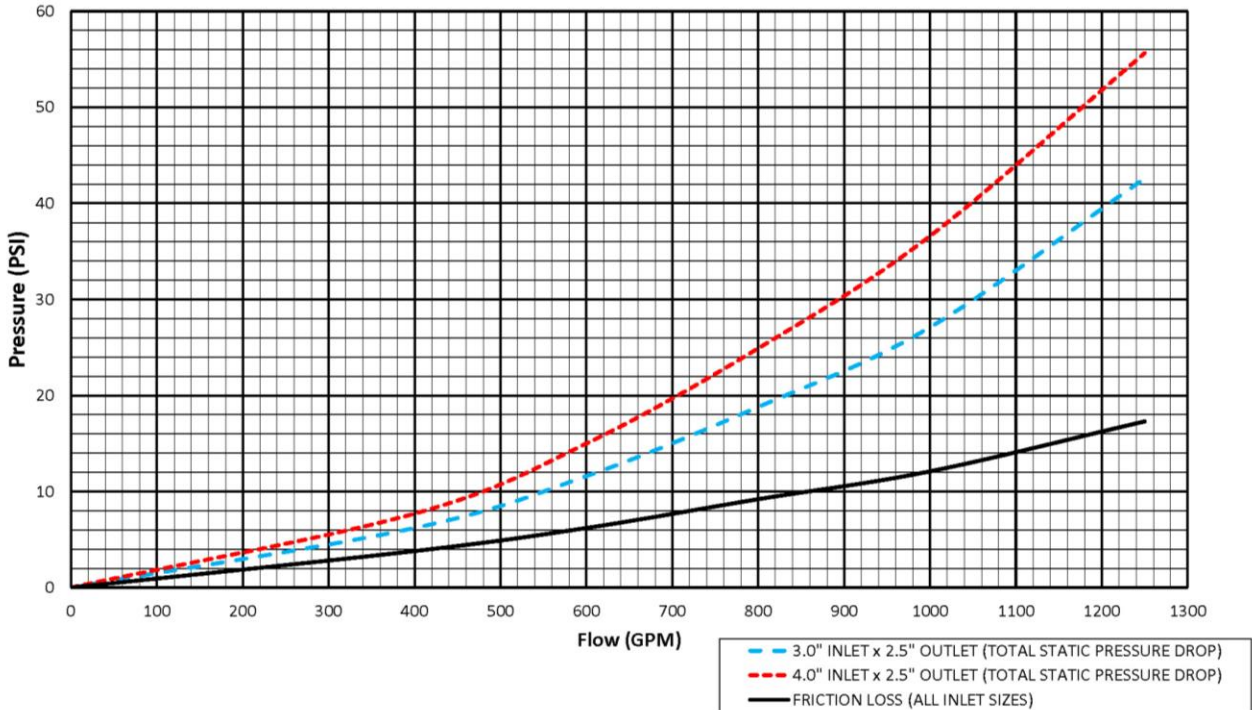
When designing a system and determining performance, **Total Static Pressure Drop is the value that should always be used.** The Friction Loss curve is also supplied in order to make a comparison with competitor products that may only supply Friction Loss curves. If there are any further questions regarding this matter, please contact Elkhart Brass.

2. Monitor and Stream Shaper Hydraulic Data

MODELS;
8500-01, -02, -03, & -03X
8593-02, -02N, -03/294-11REV.06, -03X/294-11REV.06X, & -04

8500 VULCAN & 8593 COPPERHEAD PRESSURE LOSS

Revised 11/13/15



282-A, 282-B Stream Shaper Losses

