



M A N U A L
EXTENDER

Installation, Operating
& Maintenance Instruction

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I. Product Safety



Important: Before installing and operating this equipment, read and 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. Never exceed a moment of 9,480 in lbs at the outlet connection (see section V. Mounting Structure Requirements).
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. Do not needlessly expose personnel to dangerous fire conditions.
5. Open water valve supplying this equipment slowly, so that the piping fills slowly, thus preventing possible water hammer occurrence.
6. After each use, and on a scheduled basis, inspect equipment per instructions (see section VIII. Maintenance and Inspection)
7. Never supply pressure to the extender when the device is not in the fully extended or fully retracted position.

II. System Features

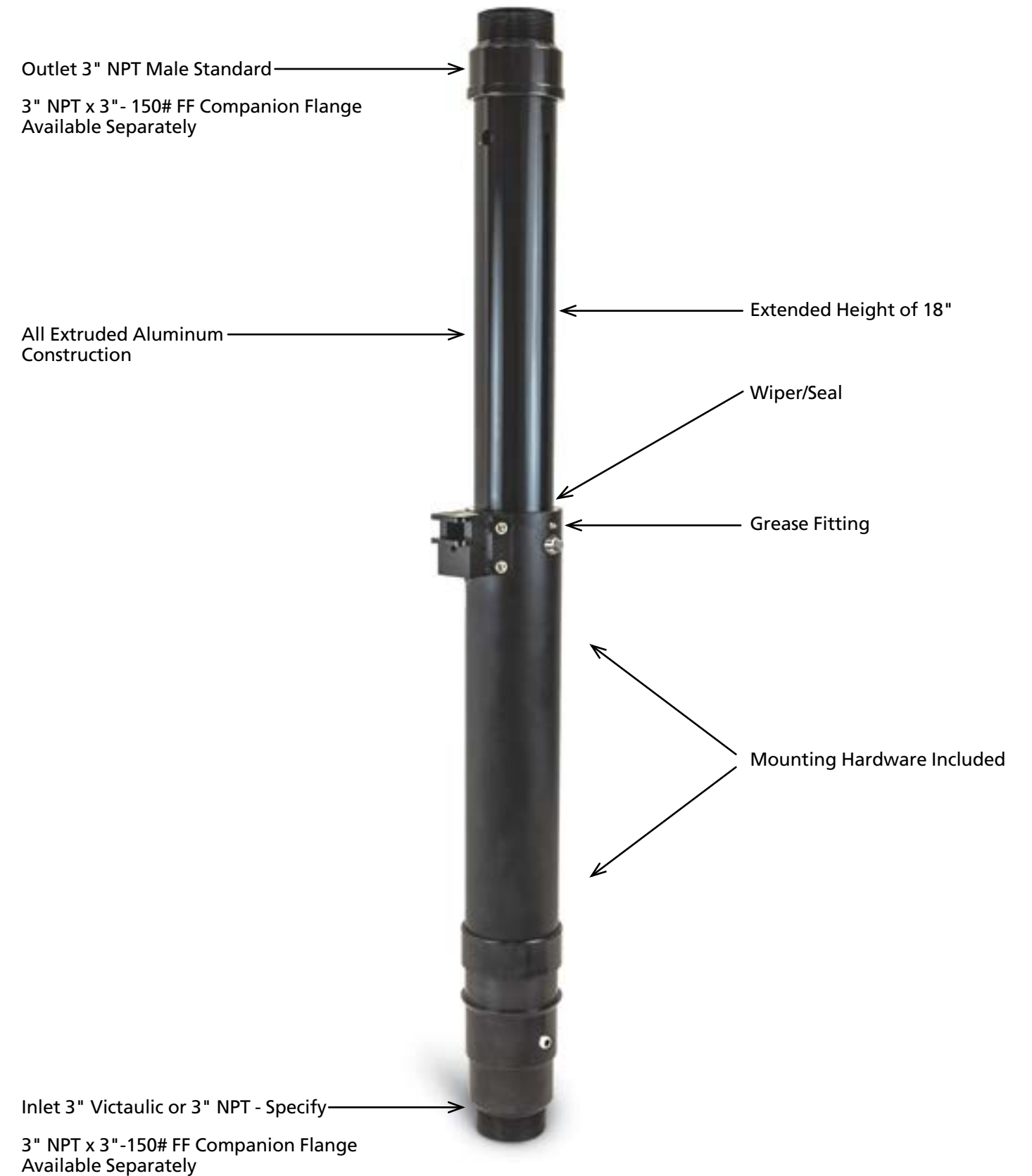


Figure 1 - Manual Extender 8599 Features

III. System Component Descriptions

A. 8599 Manual Extender

The Extender is a telescoping waterway. It is designed to elevate a deck monitor 18 inches so the stream path can clear obstructions like truck cab, lights, hose bed, etc. It is designed to be used in full up position, but can be used in the full down position. The water supply connection is 3 inch Victaulic or 3 inch NPT male thread. The discharge connection is 3 inch NPT male threads. A 3"-150# ANSI FF Companion flange is available separately.

The maximum flow capacity is 1250 gallons per minute. The maximum inlet pressure is 200 psi. Note: To help prevent damage or injury, the latch mechanism includes a safety lock feature that prevents the latch from being operated when internal pressure exceeds 8 (psi). The safety lock will disengage allowing the latch to operate once the pressure is removed and Extender is in the fully retracted position. Also, to unlatch and lower the Extender from the extended position, the operator must lift the extender upwards slightly thereby allowing the latch to operate and release.

B. Warning Light for Extended Waterway

An optional in-cab warning lamp (supplied by the OEM) shows if the Extender is not fully retracted. The proximity sensor (normally closed) and magnet that triggers the warning lamp are located beneath the latch housing.

IV. Specifications

Recommended Ratings

Position warning output fuse rating - 125mA

Manual Extender

Maximum flow capacity is 1250 gpm

Maximum inlet pressure rating is 200 psi

Maximum moment is 9,480 in/lbs at the outlet connection

Moment = $RF \times H$

Where RF = Reaction Force (Pounds)

H=Height of vertical discharge pivot (Inches) (See Figure 3)

V. Mounting Structure Requirements

The mounting structure must be able to safely withstand the forces shown in **Figure 3**. For monitor and nozzle combinations other than Elkhart Stinger 2.0 and SM-1250 consult Elkhart Brass engineering department or calculate moment at monitor inlet.



Warning: Moment must not exceed 9480 in/lb or 790 ft/lb.
(See nozzle reaction formulas on page 5.)

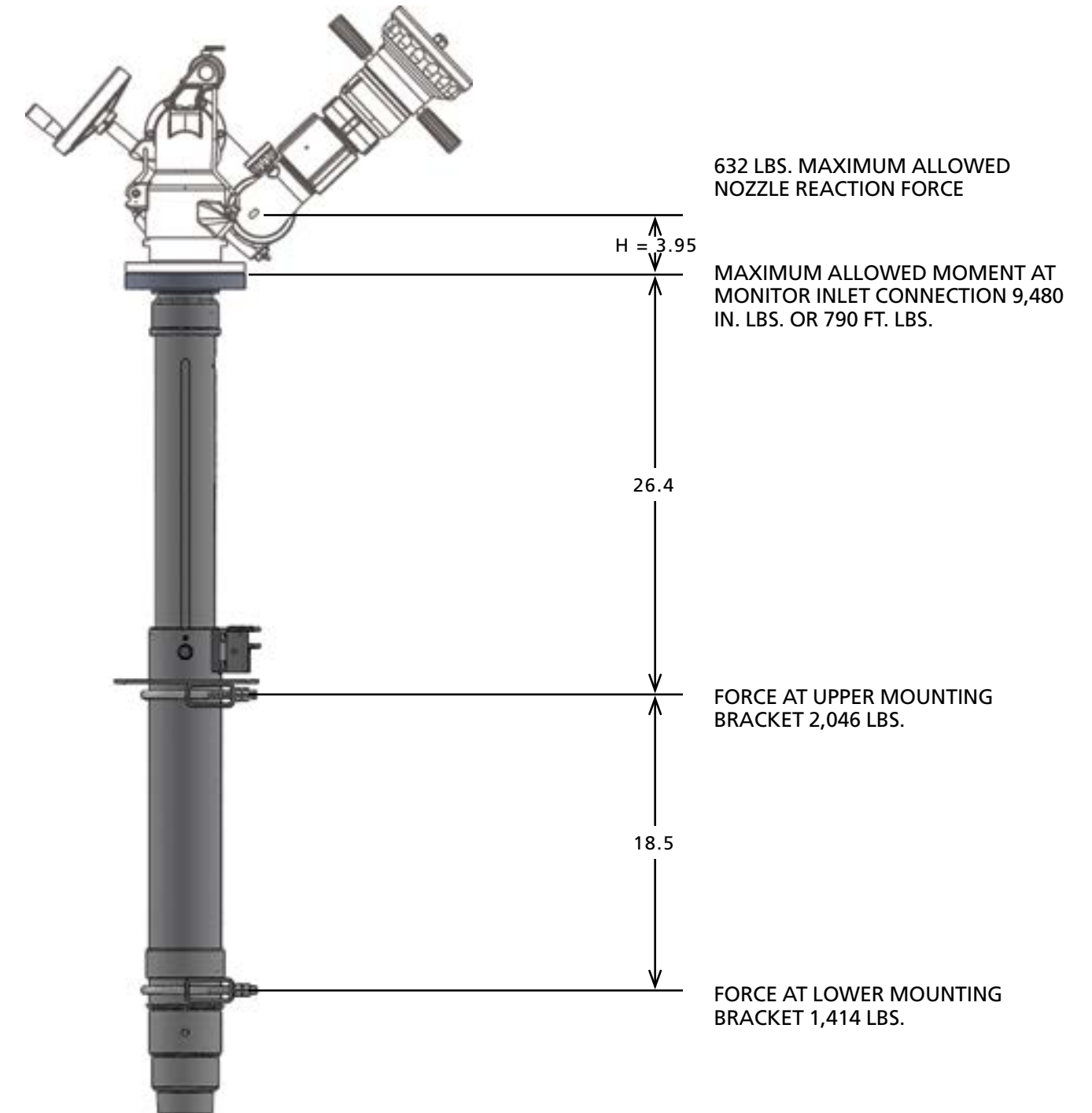


Figure 3 - Forces

Nozzle Reaction Formula

STRAIGHT BORE NOZZLES

$$NR = 1.5 d^2 NP$$

Where NR = Nozzle Reaction (Pounds)

d=Nozzle Diameter (Inches)

NP = Nozzle Pressure (psi)

1.5 is a constant

COMBINATION FOG NOZZLES

$$NR = 0.0505 Q \sqrt{P}$$

Where NR = Nozzle Reaction (Pounds) Q = Flow (GPM) P =

Nozzle Pressure (psi at base of nozzle) 0.0505 is a constant

This formula is with nozzle set on straight stream. Reaction will decrease as pattern is widened to fog.

Notes:

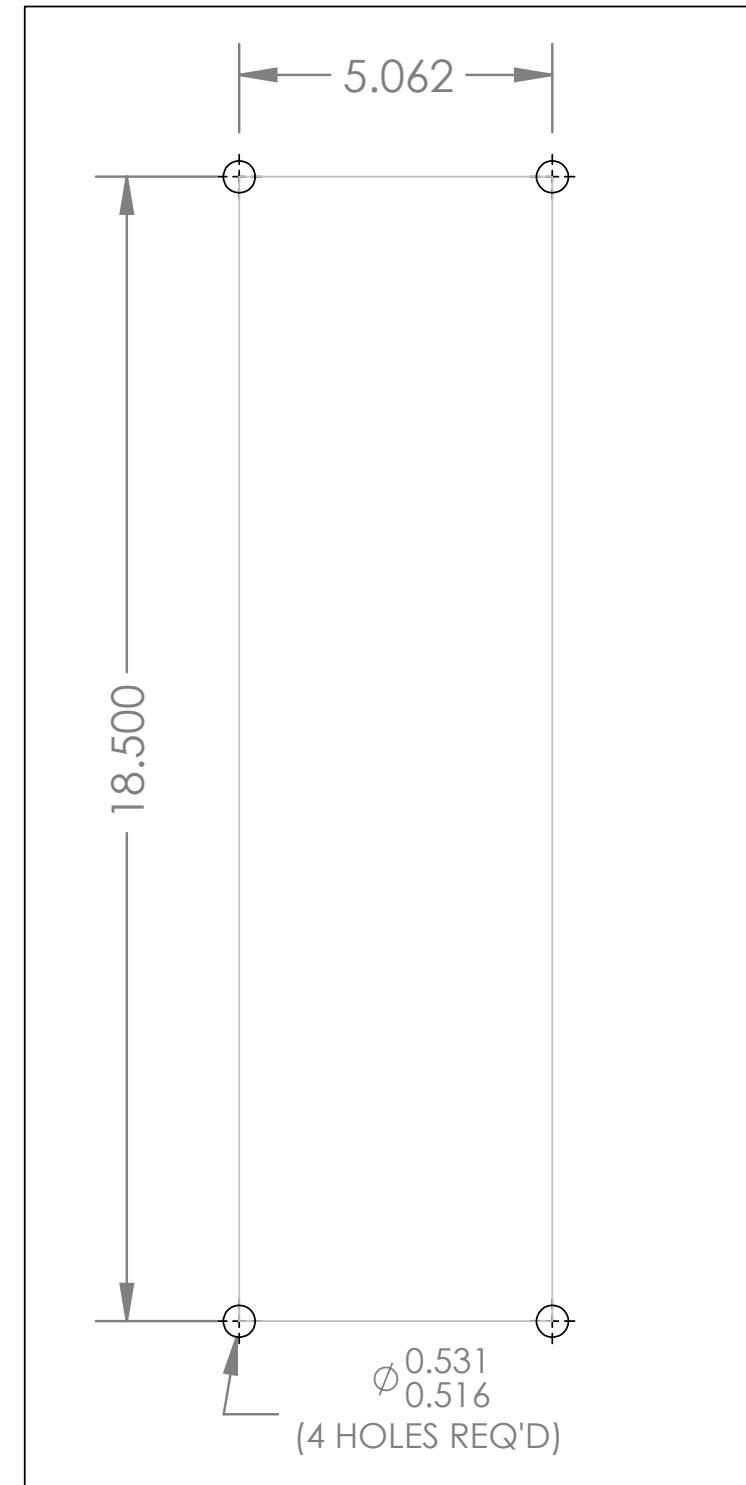
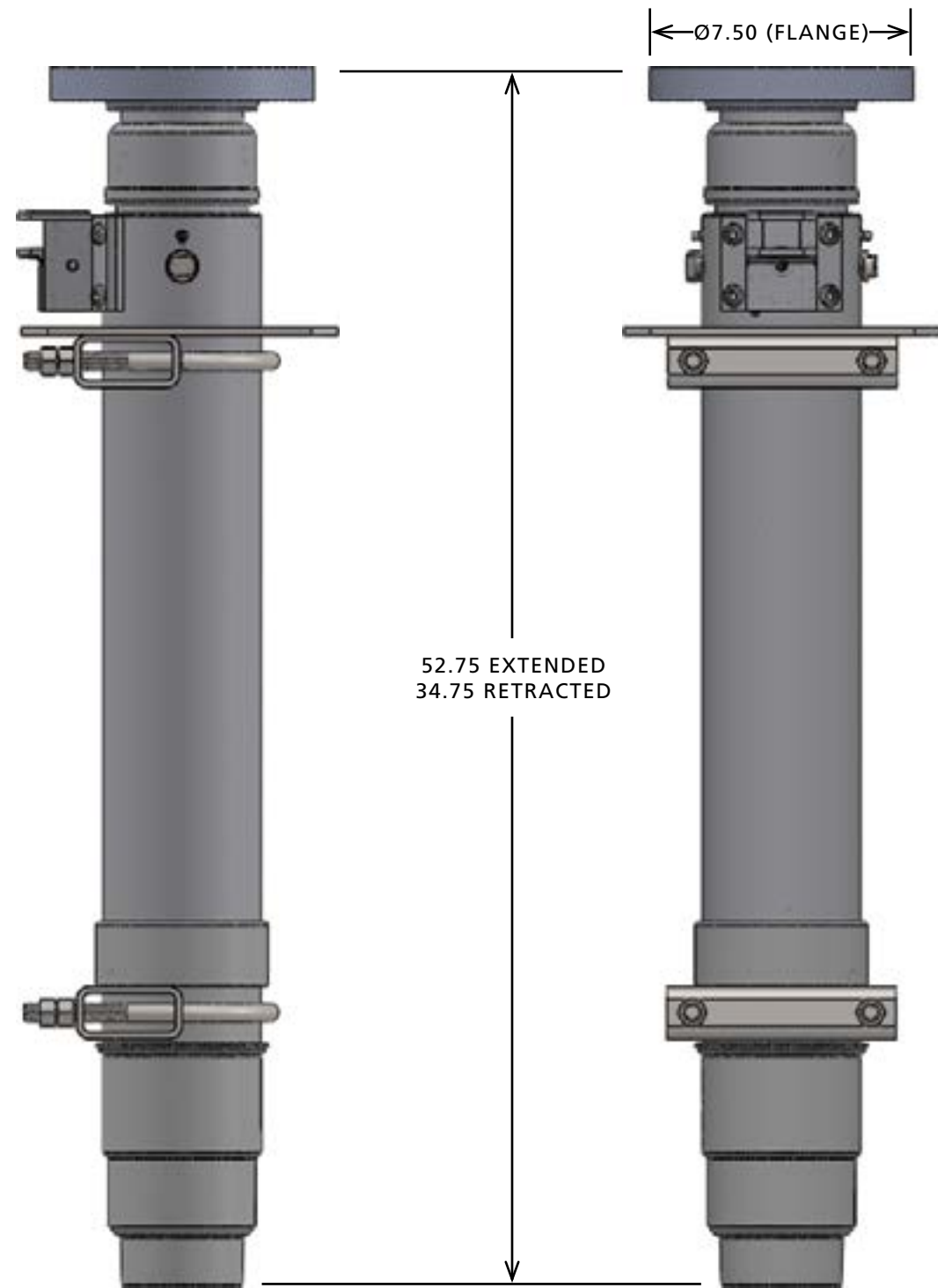


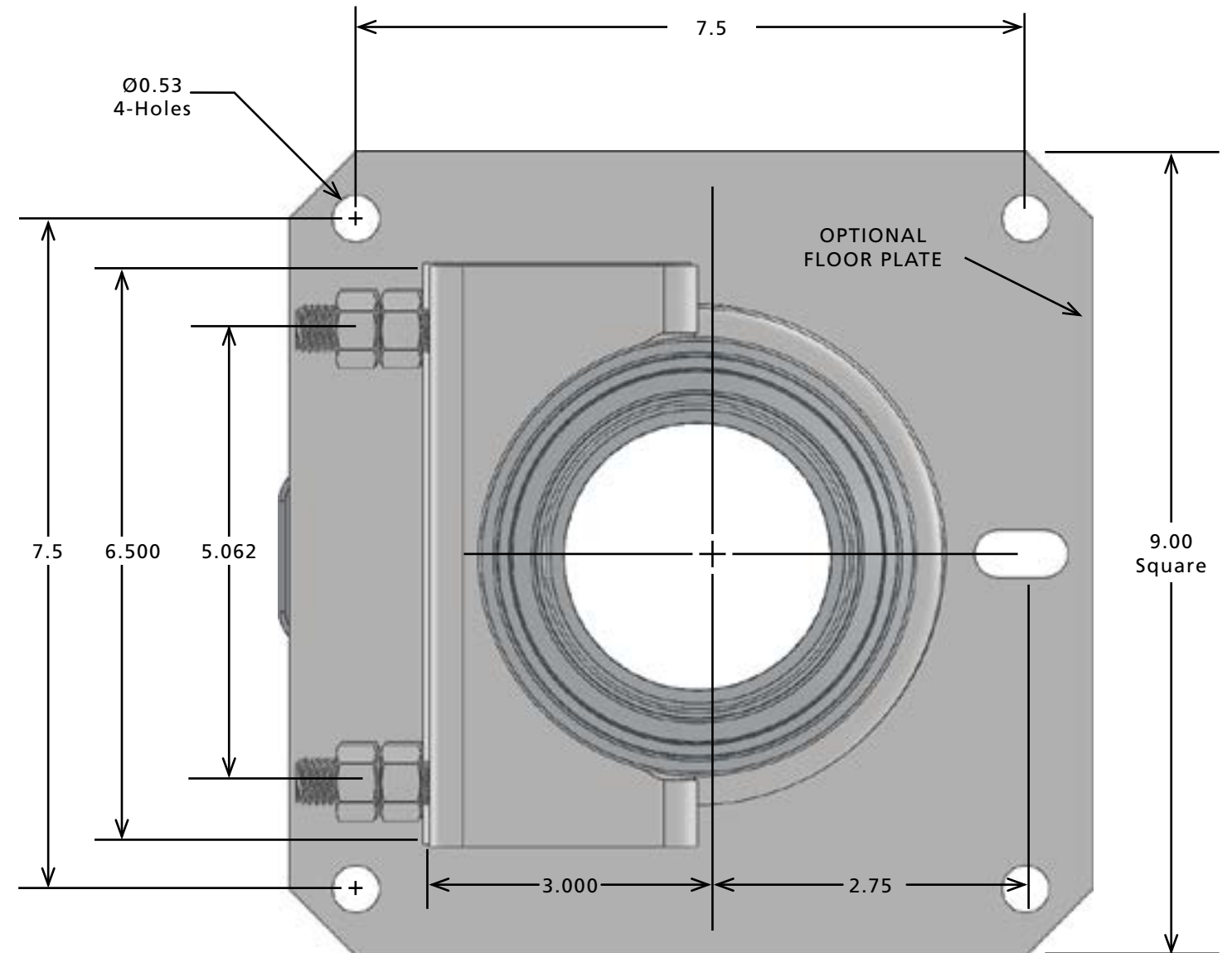
Figure 4 - Mounting Hole Pattern for 8599 Extender U-Bolts

Side View

Mounting Surface View



Side View Unit Dimensions



Top or Bottom Dimensions of Saddle Bracket and Optional Floor Plate

VI. Installation Instructions



Warning: Mounting System not intended to support plumbing or absorb stress from plumbing. See Figure 3.

A. Extender (2 Saddle Clamps)

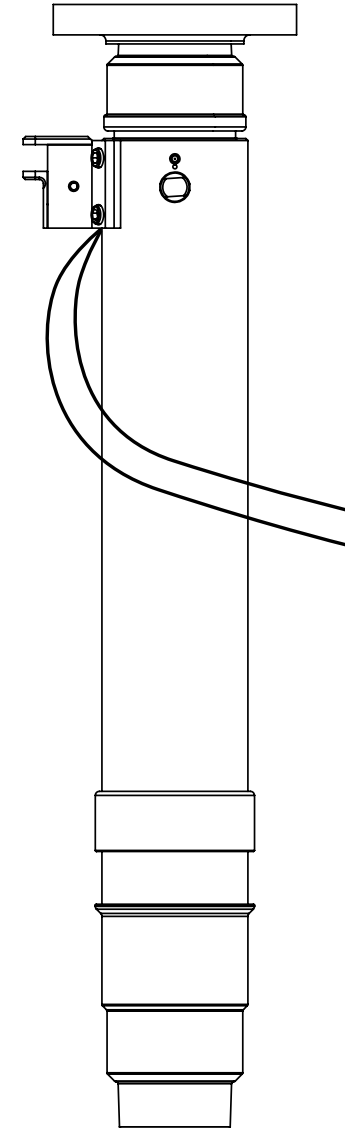
1. Remove all nuts from upper and lower mounting clamp/bracket U-bolts.
2. Position unit onto the support structure (recommended clearance hole size for upper and lower u-bolt is 0.516-0.531 diameter) making sure the surface of both the upper mounting clamp and the lower bracket/clamp fully contact the support structure. Make sure that the clamp at the bottom end is positioned in the retention groove of the inlet adapter. Reinstall 1 each upper and lower mounting bracket U-bolt nuts and tighten to around 5 ft/lbs.
3. Tighten lower mounting bracket U-bolt nuts to 70 ft/lbs in a gradual back and forth pattern.
4. Tighten upper mounting bracket U-bolt nuts to 70 ft/lbs in a gradual back and forth pattern.
5. Test up and down movement of the extender to insure there is no binding and the unit moves freely up and down.
6. Lock a second u-bolt nut tightly against each of the four previously tightened u-bolt nuts to secure them in place.
7. Minimize stress to mounting system by connecting inlet to water supply with flexible hose.

B. Extender (1 Plate Clamp & 1 Saddle Clamp)

1. Remove all nuts from plate clamp and saddle U-bolts.
2. Position unit onto the support structure (recommended clearance hole size for upper and lower u-bolt is 0.516-0.531 diameter) making sure the surface plate clamp and saddle clamp fully contact the support structure. Make sure that the clamp at the bottom end is positioned in the retention groove of the inlet adapter. Reinstall 1 each upper and lower mounting bracket U-bolt nuts and tighten to around 5 ft/lbs.
3. Tighten lower mounting bracket U-bolt nuts to 70 ft/lbs in a gradual back and forth pattern.
4. Tighten upper mounting bracket U-bolt nuts to 70 ft/lbs in a gradual back and forth pattern.
5. Test up and down movement of the extender to insure there is no binding and the unit moves freely up and down.
6. Lock a second u-bolt nut tightly against each of the four previously tightened u-bolt nuts to secure them in place.
7. Minimize stress to mounting system by connecting inlet to water supply with flexible hose.

B. Wiring

(See Figure 1 for connections).



Power		Watts - maximum	3
Voltage	Switching	VDC - maximum	120
	Breakdown	VDC - minimum	300
Current	Switching	Amp - maximum	0.25
	Carry	Amp - maximum	2.6
Resistance	Initial Contact Resistance	Ohm - maximum	0.25
	Insulation Resistance	Ohm - minimum	1E9
Capacitance	Contact	pF - typical	1.7
Temperature	Operating	C - maximum	+105
	Storage	C	-40 + 140



Caution: Route wires away from sharp objects and heat sources. Support with ties as needed to reduce stress on connectors and wiring.

VII. Operating Instructions



Warning: Never attempt to raise or lower the extender under pressure or while flowing water.

The Extender is the perfect accessory for monitors used on pumpers where the monitor needs to clear an obstruction.

NOTE: Both positions of the Manual Extender, at either the extended or retracted position, include a safety lock feature. The safety lock is to prevent accidental deployment from the latched retracted position when the waterway is pressurized.

The safety lock should engage when internal pressure is present. (The latch is normally free to disengage when upward pressure is not present).

The safety lock should also engage from the weight of the waterway at the extended position. To disengage, lift the waterway upwards until the latch is free to actuate. While holding the latch open, carefully lower the waterway approximately an inch and then release the latch and allow to fully retract. Do not let the waterway drop to the retracted position.

Whenever the Extender is NOT fully retracted (down), a warning indicator, provided by the OEM, will come on. The ground is only available when the unit is NOT in the fully retracted position, in the fully retracted (down) position the ground is switched off.

VIII. Maintenance and Inspection

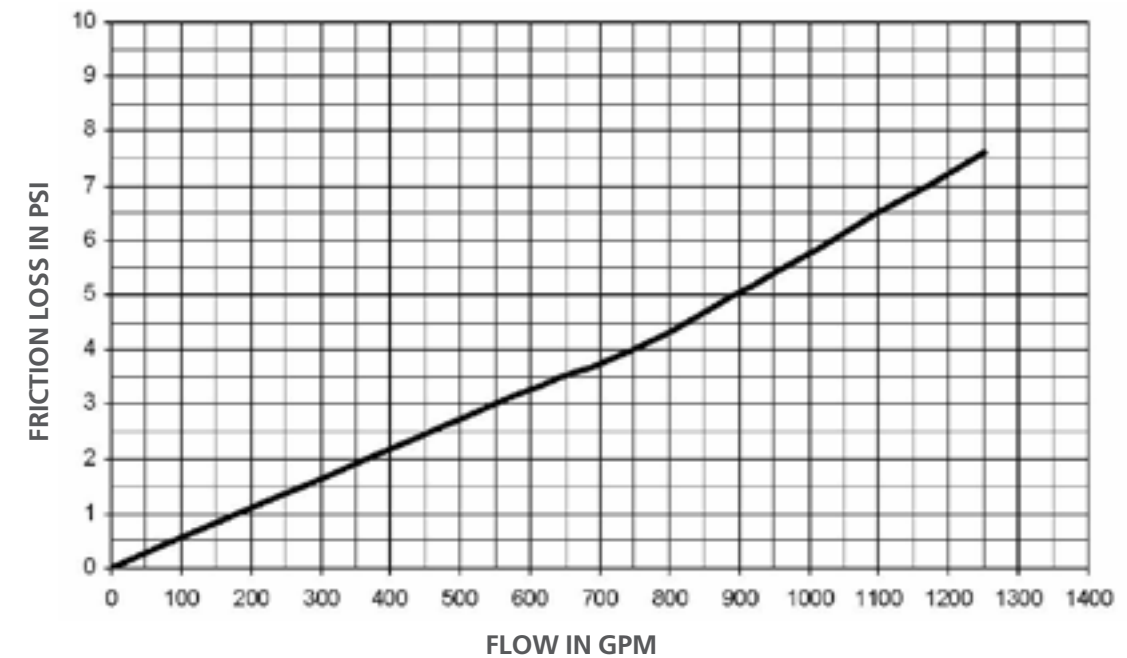
A. Extender

The complete Extender system should be inspected during each apparatus check. Careful inspection for damage to the Extender is especially important after use in emergency operations.

1. Check that the extender latches at each position (Up-Down). Reference page 14 for details.
2. Inspect all exposed wiring for signs of damage.
3. Inspect nuts and bolts for signs of damage.
4. Grease as needed to maintain a thin film of grease on the extension tube. Grease with unit down. Wipe off excess grease and grit that accumulates at the top of the outer tube and wiper.

IX. Hydraulic Data

8599 IN EXTENDED POSITION





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