



# Extend-A-Gun VP™

## Remote Control Pneumatic Telescoping Waterway with Integrated Valve for Deck Mounted Monitors

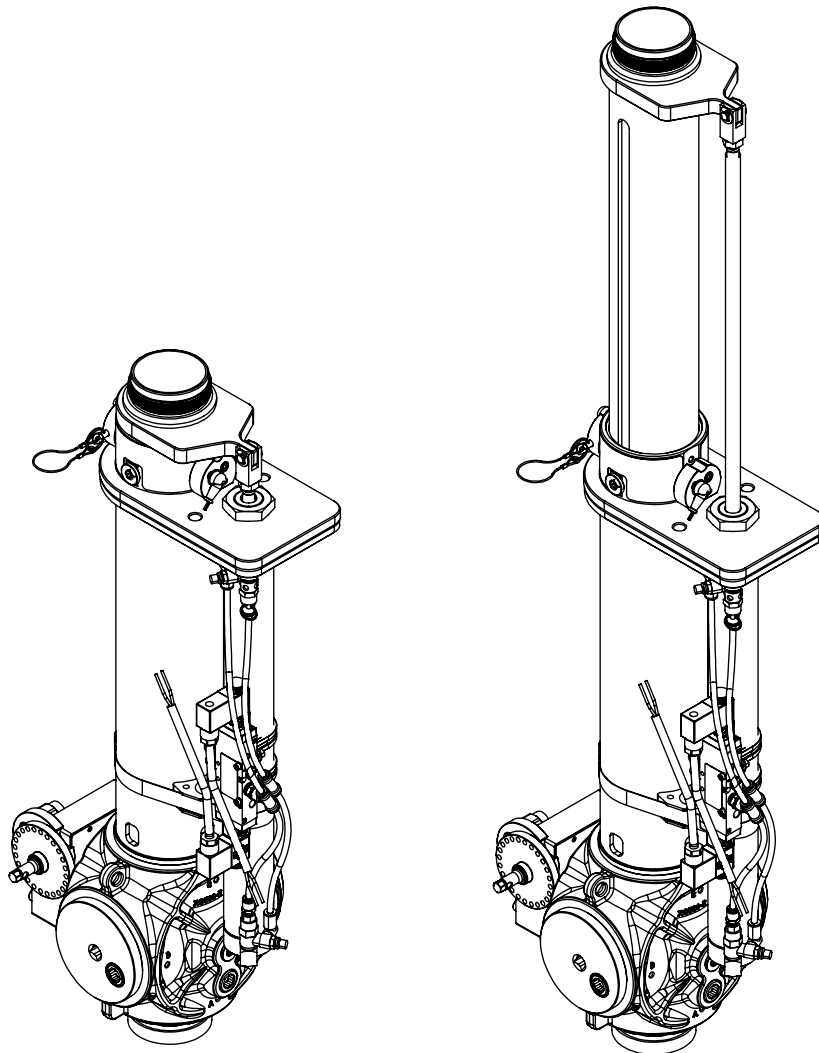
### INSTRUCTION FOR SAFE INSTALLATION, OPERATION, AND MAINTENANCE

#### **⚠ DANGER**

Understand manual before use. Operation of this device without understanding the manual and receiving proper training is a misuse of this equipment. Obtain safety information at [tft.com/](http://tft.com/) serial-number.

This equipment is intended for use by trained and qualified emergency services personnel for firefighting. All personnel using this equipment shall have completed a course of education approved by the Authority Having Jurisdiction (AHJ).

This instruction manual is intended to familiarize firefighters and maintenance personnel with the operation, servicing, and safety procedures associated with this product. This manual should be kept available to all operating and maintenance personnel.



**TASK FORCE TIPS LLC**  
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# DANGER

## PERSONAL RESPONSIBILITY CODE

The member companies of FEMSA that provide emergency response equipment and services want responders to know and understand the following:

1. Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.
2. **IT IS YOUR RESPONSIBILITY** to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called on to use.
3. **IT IS YOUR RESPONSIBILITY** to know that you have been properly trained in Firefighting and/or Emergency Response and in the use, precautions, and care of any equipment you may be called upon to use.
4. **IT IS YOUR RESPONSIBILITY** to be in proper physical condition and to maintain the personal skill level required to operate any equipment you may be called upon to use.
5. **IT IS YOUR RESPONSIBILITY** to know that your equipment is in operable condition and has been maintained in accordance with the manufacturer's instructions.
6. Failure to follow these guidelines may result in death, burns or other severe injury.

Fire and Emergency Manufacturers and Service Association, Inc.  
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**FEMSA**

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## 1.0 MEANING OF SAFETY SIGNAL WORDS

A safety related message is identified by a safety alert symbol and a signal word to indicate the level of risk involved with a particular hazard. Per ANSI Z535.6, the definitions of the four signal words are as follows:



**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION** indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



**NOTICE** is used to address practices not related to physical injury.

## 2.0 SAFETY



Working from an elevated position increases the risk of falling. Wet or slippery surfaces add to this risk. Serious injury or death could occur. Watch footing when working on top of apparatus.



This equipment is intended for use by trained personnel for firefighting. Use of this equipment for other purposes may involve hazards not addressed by this manual. Seek appropriate guidance and training to reduce risk of injury.



The stream exiting a nozzle is very powerful and capable of causing injury and property damage. Make sure the nozzle is securely attached and pointing in a safe direction before water is turned on. Do not direct water stream to cause injury or damage to persons or property.



Equipment may be damaged if frozen while containing significant amounts of water. Such damage may be difficult to detect visually. Subsequent pressurization can lead to injury or death. Any time the equipment is subject to possible damage due to freezing, it must be tested and approved for use by qualified personnel before being considered safe for use.



Service technicians bear responsibility for ensuring use of appropriate protective clothing and equipment. The chosen protective clothing and equipment must provide protection from potential hazards users may encounter while servicing equipment. Requirements for protective clothing and equipment are determined by the Authority Having Jurisdiction (AHJ).



Damage may occur if the truck drives under a low hanging object while the Extend-A-Gun VP is extended. Drain water from the piping and retract the Extend-A-Gun VP before moving the apparatus.



The Extend-A-Gun VP may be remotely operated. The pneumatic lift and lowering may produce enough force to cause injury. Keep hands and fingers away from pinch points surrounding the Extend-A-Gun, Monitor, Nozzle, and deck.

### 3.0 GENERAL INFORMATION

The Extend-A-Gun VP is a remote controlled telescoping waterway with integrated shutoff valve designed to maximize firefighter safety while expanding the capabilities of deck mounted Master Stream devices. Its function is to elevate a mounted Master Stream device above other equipment on the apparatus, providing greater clearance and freedom of movement to the device. Operator controls for both the telescoping waterway and integrated valve may be installed either at the pump panel or on the deck.

### 3.1 SPECIFICATIONS

| <b>MECHANICAL</b>  |  |
|--|--|
| Waterway Size  | 3" (76mm)                                    |
| Safe Operating Range for Monitor Outlet:   | 2010 gpm @ 80 psi<br>(7600 L/min @ 5.5 bar)  |
| Maximum flow rates at specified nozzle inlet pressures are based on 950 lb (430 kg) maximum nozzle reaction force. Read section 5.0 for installation requirements. | 1800 gpm @ 100 psi<br>(6800 L/min @ 7 bar)   |
|  | 1600 gpm @ 120 psi<br>(6000 L/min @ 8.5 bar) |
|  | 1250 gpm @ 200 psi<br>(4700 L/min @ 14 bar)  |
| Maximum Pressure while flowing   | 250 psi (17 bar)                             |
| Maximum Hydrostatic Test Pressure with valve closed  | 600 psi (42 bar)                             |
| Travel   | 18" (457mm)                                  |
| Valve gear ratio   | 36:1 (9 turns to close)                      |
| Lifting Capability   | 100 lbs (46 kg)                              |
| Lifting Time   | 5 sec  |
| Lowering Time  | 10 sec                                       |
| Air Supply Pressure  | 80 psi to 130 psi                            |
| Temperature Range  | -25° to 135°F (-32° to 57°C)                 |
| *For temperatures below 32°F (0°C), valve must be drained after use to avoid damage.   |  |
| <b>ELECTRICAL</b>  |  |
| Nominal Operating Voltage  | 12 VDC                                       |
| Voltage Range  | 9 to 15 VDC                                  |
| Maximum Current Draw   | 2 amp @ 12 VDC                               |

Table 3.1

### 3.2 USE WITH SALT WATER

Use with salt water is permissible provided the equipment is thoroughly cleaned with fresh water after each use. The service life of the equipment may be shortened due to the effects of corrosion, and is not covered under warranty.

### 3.3 PARTS IDENTIFICATION

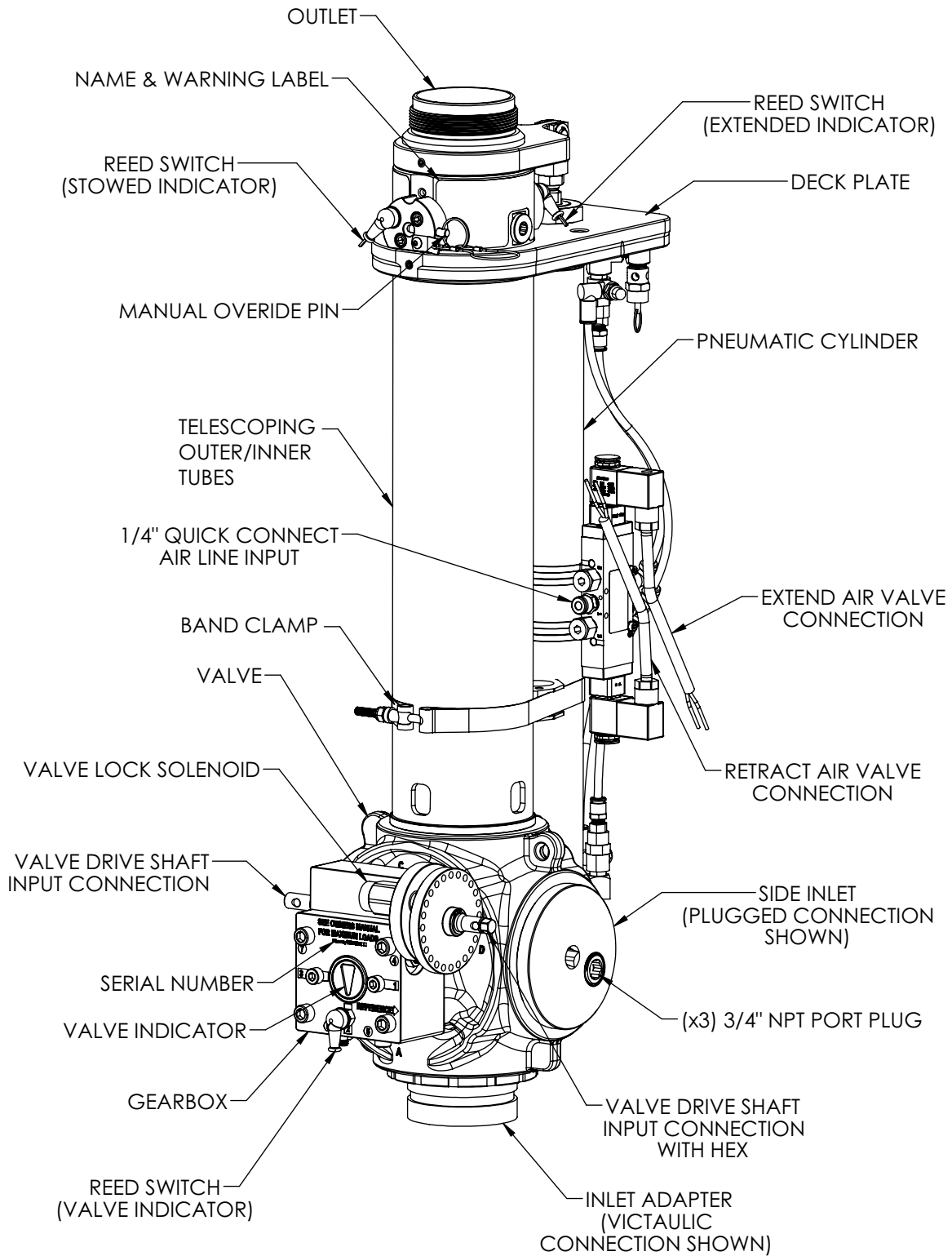


Figure 3.3

### 3.4 OVERALL DIMENSIONS

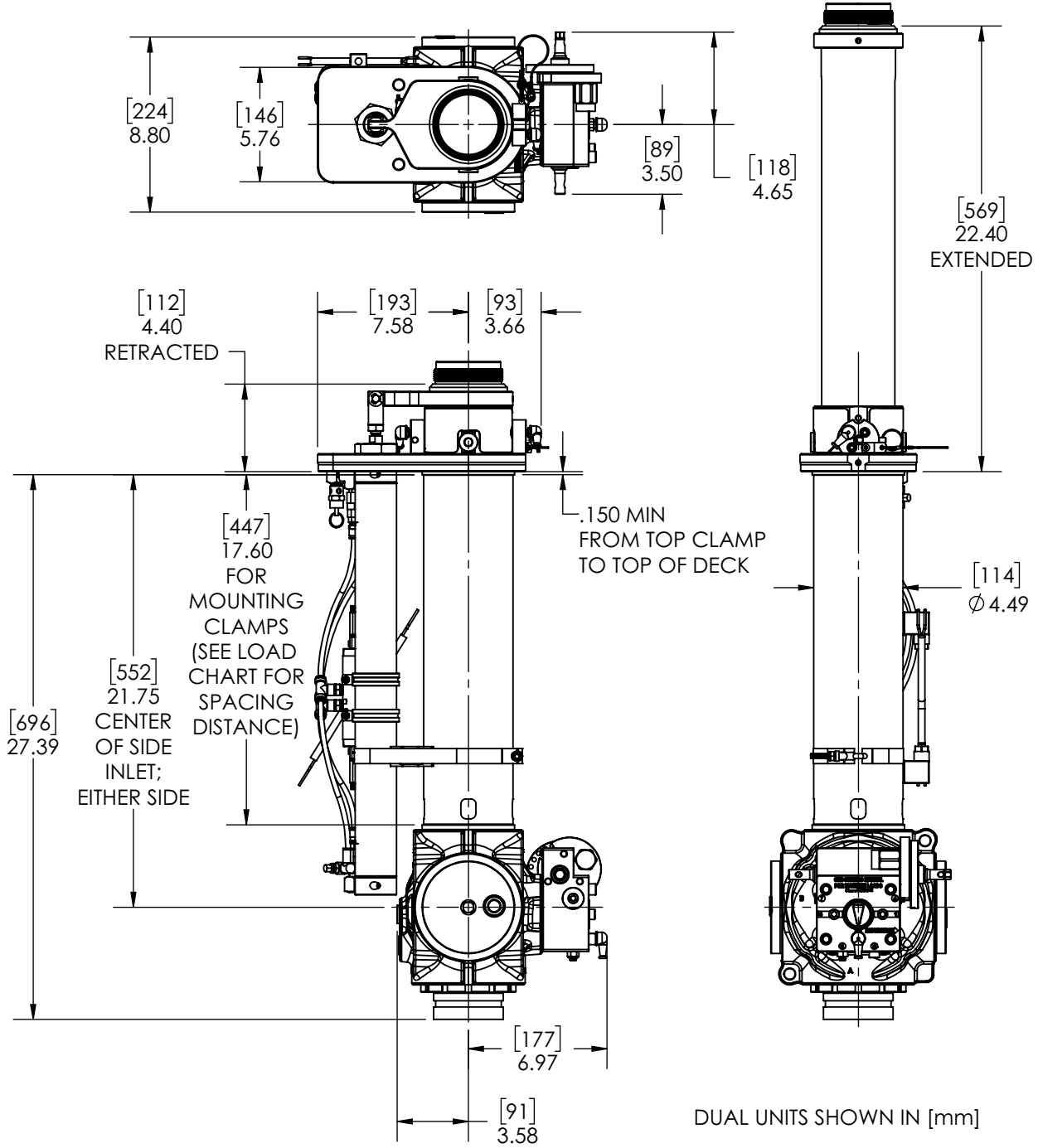


Figure 3.4

## 4.0 OPERATING INSTRUCTIONS

To deploy the Extend-A-Gun VP:

1. Raise the waterway by selecting the UP position of the Deck Monitor Switch on the pump panel. This will unlock the valve hand wheel and illuminate the Deck Monitor Extended indicator light in the cabin.
2. Open the valve using the manual hand wheel.

To stow the Extend-A-Gun VP:

1. Fully close the valve using the manual hand wheel. This will unlock the waterway control.
2. Retract the waterway by selecting the DOWN position of the Deck Monitor Switch on the pump panel. When the waterway is fully retracted, the Deck Monitor Extended indicator light will shut off.
3. Verify water is fully drained following use to avoid possible damage due to freezing ([see section 10.0](#)).

### NOTICE

Do not exceed 10 ft-lb / 13.5 N-m torque to the valve driveshaft (60 lb / 27 kg applied to the knob of a 4" hand wheel). Excessive torque may damage the driveshaft and render the valve inoperable.

### NOTICE

Built in safety devices prevent the valve from being opened unless the waterway is fully raised, and prevent the waterway from retracting unless the valve is fully closed.

## 4.1 OPERATION BELOW FREEZING TEMPERATURES

The apparatus that the Extend-A-Gun VP is mounted to may be stored in sub-freezing conditions. Ice may temporarily prevent the Extend-A-Gun VP from extending until heat in the pump compartment has melted the ice.

## 4.2 MANUAL OVERRIDE

The Extend-A-Gun VP is equipped with a manual override pin to lock the waterway in the raised position in the event of damage to the Truck or Air System to which the unit is connected.

To engage the Manual Override:

1. Remove one E-Clip and the clevis pin from the clevis at the top of the pneumatic cylinder. Store these parts in a safe place.
2. Lift the monitor by hand to the fully raised position.
3. Remove the manual override pin from the STORED position.
4. While holding the monitor in the fully raised position, insert the pin through the center hole of the bracket and into a small pocket on the inner tube (LOCK position).

To disengage the Manual Override:

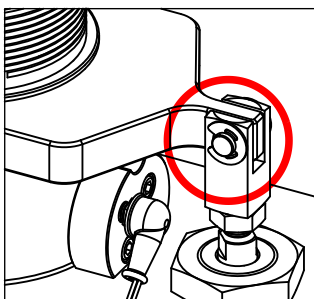
1. Support the monitor.
2. While continuing to support the monitor, remove the manual override pin from the LOCK position.
3. Slowly lower the monitor by hand to the fully retracted position and set the upper bracket into the clevis of the pneumatic cylinder.
4. Install the manual override pin back into the STORED position.
5. Install the clevis pin through the holes in the clevis and upper bracket, then install the E-Clip.

### CAUTION

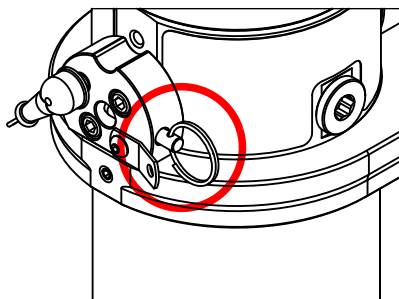
Failure to support the weight of the monitor while installing or removing the override pin may result in injury or equipment damage due to uncontrolled movement. Always support the monitor and slowly raise and lower when installing or removing the manual override pin.

### CAUTION

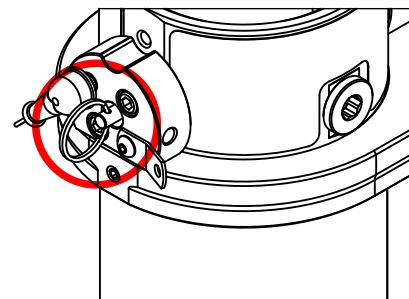
Damage may occur if the truck drives under a low hanging object while the Extend-A-Gun VP is extended. Drain water from the piping and retract the Extend-A-Gun VP before moving the apparatus.



E-CLIP AND  
CLEVIS PIN



MANUAL OVERRIDE PIN  
IN STORED POSITION



MANUAL OVERRIDE PIN  
IN LOCK POSITION

Figure 4.2



## 5.0 SIDE LOADS AT MOUNTING POINTS WORKSHEET

An interactive version of this worksheet is available at [tft.com](http://tft.com).



Reaction forces generated by master stream flows are capable of causing injury and property damage if not properly supported. The Extend-A-Gun VP must be securely mounted to rigid truck structural members.

Before installing the Extend-A-Gun VP, qualified persons **MUST** determine the forces that will be exerted and select suitable structural members and bracket mounting locations.

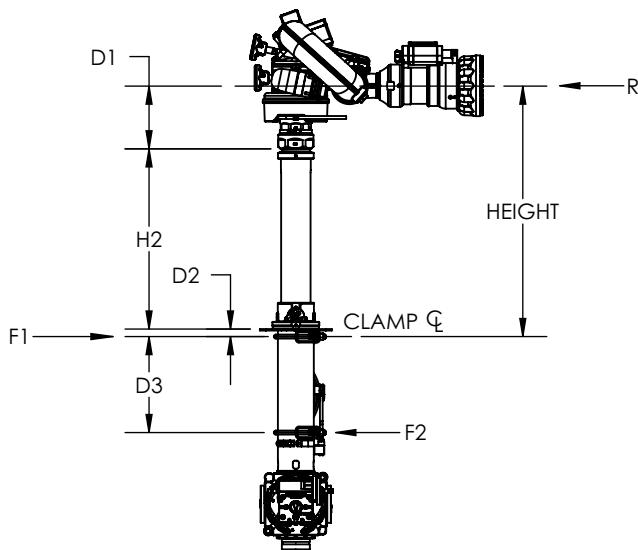
- Nozzle reaction force which can be as high as 950 lbf (430 kg).
- The forces acting on the mounting brackets when the Extend-A-Gun VP is in the extended position are higher than the forces in a normal deck gun installation. Use **SIDE LOADS AT MOUNTING POINTS** worksheets for calculations
- Install the upper and lower brackets as far apart as possible to minimize the amount of stress on the brackets.

Qualified individuals should install mounting brackets, Extend-A-Gun VP and monitor.

- The Extend-A-Gun VP must be securely mounted to rigid truck support members.
- Do not use flanges or pipe made from plastic for monitor mounting.
- Inferior welding or poor plate installation could result in serious injury or equipment damage.
- Torque all fasteners to specified values.

I certify I have accurately and completely worked through the *Extend-A-Gun VP Side Load Worksheet* prior to Extend-A-Gun installation.

NAME: \_\_\_\_\_ DATE: \_\_\_\_ / \_\_\_\_ / \_\_\_\_\_



**D1:** Distance from the center of the monitor elevation joint to the bottom of the threads in the monitor inlet

**H2:** Distance from bottom in the monitor inlet to the bottom of the lower bracket for the air cylinder

**D2:** Distance from bottom of the lower bracket for the air cylinder to the center of the upper mounting bracket

**F1:** Force exerted on the upper mounting bracket

**D3:** Distance from the center of the upper mounting bracket to the center of the lower mounting bracket

**F2:** Force exerted on the lower mounting bracket

**Height:** Desired distance from the center of the upper bracket to the center of the stream

**R:** Nozzle reaction force

- 1) Determine the value of **H2** using the table below.

**H2** =  inches [in]

|       |   |
|-------|---|
| Model | Extend-A-Gun VP<br>3" Waterway<br>XGC38 |
| H2    | 22.4"                                   |

- 2) Determine the value of **D1** for you installation. Values of **D1** for the most common installations are listed in the table below.  
*Note: D1 varies between monitors as well as monitor inlet options. Verify the value of D1 is correct before using it for calculations.*

**D1** =  inches [in]

| D1 for Most Common Installations |                              |                            |                            |                            |                           |
|----------------------------------|------------------------------|----------------------------|----------------------------|----------------------------|---------------------------|
| Task Force Tips<br>CROSSFIRE     | Task Force Tips<br>Hurricane | Task Force Tips<br>Monsoon | Task Force Tips<br>Tornado | Task Force Tips<br>Typhoon | Task Force Tips<br>Radius |
| D1 = 1"                          | D1 = 6"                      | D1 = 12.5"                 | D1 = 15.5"                 | D1 = 19.0"                 | D1 = 22.0"                |

- 3) Locate the value of **D1** on the appropriate side load chart for your installation and select a desired installation **Height**.  
*Note: There are four side load charts, one corresponding to each combination of waterway diameter and extension height. These side load charts are located on the following pages.*

- 4) Locate the value of **D2** on the appropriate side load chart corresponding to the selected installation **Height**.

$$D2 = \boxed{\phantom{000}} \text{ inches [in]}$$

- 5) Determine the value of **D3** for the proposed installation.

$$D3 = \boxed{\phantom{000}} \text{ inches [in]}$$

- 6) Calculate the forces that will be exerted on the mounting brackets by the force of nozzle reaction with the proposed installation.

- 6A) Calculate the moment arm about the lower mounting bracket, **L**, by adding together **D1**, **D2**, **D3**, and **H2**:

$$L = D1 + D2 + D3 + H2$$

$$L = \boxed{\phantom{000}} + \boxed{\phantom{000}} + \boxed{\phantom{000}} + \boxed{\phantom{000}}$$

$$L = \boxed{\phantom{000}} \text{ inches [in]}$$

- 6B) Determine **R** using the same side load chart referenced in *Step 3*.

$$R = \boxed{\phantom{000}} \text{ pound-force [lbf]}$$

- 6C) Calculate the torque exerted about the lower bracket by multiplying together **L** and **R**:

$$M = L \times R$$

$$M = \boxed{\phantom{000}} \times \boxed{\phantom{000}}$$

$$M = \boxed{\phantom{000}} \text{ pound-foot [lbf}\cdot\text{ft]}$$

- 6D) Calculate the force on the upper bracket by dividing **M** by **D3**:

$$F1 = M / D3$$

$$F1 = \boxed{\phantom{000}} / \boxed{\phantom{000}}$$

$$F1 = \boxed{\phantom{000}} \text{ pound-force [lbf]}$$

- 6E) Calculate the force on the lower bracket by subtracting **R** from **F1**:

$$F2 = F1 - R$$

$$F2 = \boxed{\phantom{000}} - \boxed{\phantom{000}}$$

$$F2 = \boxed{\phantom{000}} \text{ pound-force [lbf]}$$

- 7) Verify the forces calculated in Step 6 are LESS THAN the maximum ratings for **F1** and **F2** listed in the table below.

|        |                                       |
|--------|---------------------------------------|
| Model  | XGC38<br>3" Waterway<br>18" Extension |
| F1 Max | 3100 lbf                              |
| F2 Max | 2200 lbf                              |

The proposed installation **MUST** be capable of withstanding forces of these magnitudes.

If either value for **F1** and **F2** exceed the maximum rating, **DO NOT PROCEED WITH INSTALLATION**.

Select new values for installation **Height** and **D3** and repeat *Step 6* until the values for **F1** and **F2** fall below the maximum rating.

## 5.1 18" EXTEND-A-GUN VP (XGC38 SERIES) LOAD CHART

### LOAD CHART FOR 18" Extend-A-Gun VP (XGC38 SERIES) ONLY 3" WATERWAY WITH 18" EXTENSION

**Maximum Nozzle Reaction R = 950 lbf\***

Equivalent to 1250 gpm at 200 psi, 1600 gpm at 120 psi, 2010 gpm at 80 psi

**F1 MUST be less than 3100 lbf. F2 MUST be less than 2200 lbf.**

The proposed installation MUST be capable of withstanding forces of this magnitude.

| TFT Crossfire Monitor |     |        |        |        |
|-----------------------|-----|--------|--------|--------|
| D1                    | D2  | Height | D3 Min | D3 Max |
| 1.0                   | 1.0 | 24.4   | 10.8   | 16.0   |
|                       | 2.0 | 24.4   | 11.3   | 15.0   |
|                       | 3.0 | 25.4   | 11.7   | 14.0   |
|                       | 4.0 | 26.4   | 12.2   | 13.0   |
|                       | 4.5 | 26.9   | 12.4   | 12.5   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 2.0 | 1.0 | 25.4   | 11.3   | 16.0   |
|     | 1.0 | 26.4   | 11.7   | 15.0   |
|     | 2.0 | 26.4   | 11.7   | 15.0   |
|     | 3.0 | 27.4   | 12.2   | 14.0   |
|     | 4.0 | 28.4   | 12.6   | 13.0   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 3.0 | 1.0 | 26.4   | 11.7   | 16.0   |
|     | 2.0 | 27.4   | 12.2   | 15.0   |
|     | 3.0 | 28.4   | 12.6   | 14.0   |
|     | 3.0 | 28.4   | 12.6   | 14.0   |
|     | 4.0 | 29.4   | 13.1   | 13.0   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 4.0 | 1.0 | 27.4   | 12.2   | 16.0   |
|     | 2.0 | 28.4   | 12.6   | 15.0   |
|     | 3.0 | 29.4   | 13.1   | 14.0   |
|     | 3.0 | 29.4   | 13.1   | 14.0   |
|     | 3.5 | 29.9   | 13.3   | 13.5   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 5.0 | 1.0 | 28.4   | 12.6   | 16.0   |
|     | 2.0 | 29.4   | 13.0   | 15.0   |
|     | 3.0 | 30.4   | 13.5   | 14.0   |

| TFT Hurricane Monitor |     |        |        |        |
|-----------------------|-----|--------|--------|--------|
| D1                    | D2  | Height | D3 Min | D3 Max |
| 6.0                   | 1.0 | 29.4   | 13.1   | 16.0   |
|                       | 2.0 | 30.4   | 13.5   | 15.0   |
|                       | 3.0 | 31.4   | 13.9   | 14.0   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 7.0 | 1.0 | 29.9   | 13.5   | 16.0   |
|     | 2.0 | 30.9   | 13.9   | 15.0   |
|     | 2.5 | 31.4   | 14.2   | 14.5   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 8.0 | 1.0 | 31.4   | 13.9   | 16.0   |
|     | 2.0 | 32.4   | 14.4   | 15.0   |

| D1  | D2  | Height | D3 Min | D3 Max |
|-----|-----|--------|--------|--------|
| 9.0 | 1.0 | 32.4   | 14.4   | 16.0   |
|     | 2.0 | 33.4   | 14.8   | 15.0   |

| D1   | D2  | Height | D3 Min | D3 Max |
|------|-----|--------|--------|--------|
| 10.0 | 1.0 | 33.4   | 14.8   | 16.0   |
|      | 1.5 | 33.9   | 15.0   | 15.5   |

| D1   | D2  | Height | D3 Min | D3 Max |
|------|-----|--------|--------|--------|
| 11.0 | 1.0 | 34.4   | 15.2   | 16.0   |
|      | 1.5 | 34.9   | 15.5   | 15.5   |

| D1   | D2  | Height | D3 Min | D3 Max |
|------|-----|--------|--------|--------|
| 12.0 | 1.0 | 35.9   | 15.9   | 16.0   |

| TFT Monsoon Monitor |     |        |        |        |
|---------------------|-----|--------|--------|--------|
| D1                  | D2  | Height | D3 Min | D3 Max |
| 12.5                | 1.0 | 35.9   | 15.9   | 16.0   |

| TFT Tornado Monitor Only<br>Maximum 500 gpm at 200 psi<br>Maximum Nozzle Reaction R = 400 lbf* |     |        |        |        |
|--|-----|--------|--------|--------|
| D1   | D2  | Height | D3 Min | D3 Max |
| 15.5   | 1.0 | 38.9   | 10.8   | 16.0   |
|  | 2.0 | 24.4   | 10.8   | 15.0   |
|  | 3.0 | 25.4   | 10.8   | 14.0   |
|  | 4.0 | 26.4   | 10.8   | 13.0   |
|  | 5.0 | 27.4   | 10.8   | 12.0   |

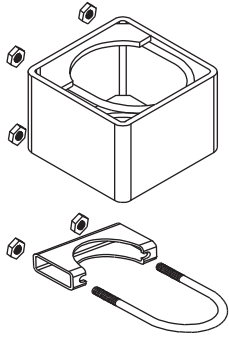
| TFT Typhoon Monitor Only<br>Maximum 1500 gpm at 100 psi<br>Maximum Nozzle Reaction R = 800 lbf* |     |        |        |        |
|---|-----|--------|--------|--------|
| D1  | D2  | Height | D3 Min | D3 Max |
| 19.0  | 1.0 | 42.4   | 14.8   | 16.0   |
|   | 1.5 | 42.9   | 15.0   | 15.5   |

| TFT Radius Monitor Only<br>Maximum 1500 gpm at 100 psi<br>Maximum Nozzle Reaction R = 800 lbf* |     |        |        |        |
|--|-----|--------|--------|--------|
| D1   | D2  | Height | D3 Min | D3 Max |
| 22.0   | 1.0 | 42.4   | 15.9   | 16.0   |

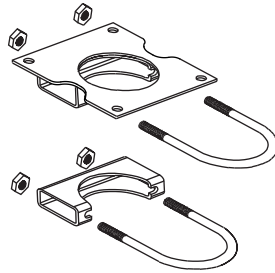
\*D1 or D2 may be greater if nozzle reaction is reduced, per provided side load worksheet.

## 6.0 BRACKET SETS

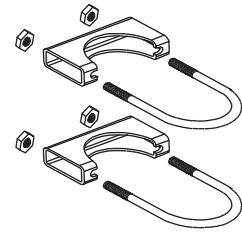
For safe dependable service, the Extend-A-Gun VP must be securely mounted. To make the Extend-A-Gun VP as versatile as possible, three mounting bracket kits are offered. Each kit has a different upper bracket. The lower bracket is the same in all three.



TUBE/SADDLE BRACKET SET  
XGB-13  
Figure 6.0A



PLATE/SADDLE BRACKET SET  
XGB-23  
Figure 6.0B



SADDLE/SADDLE BRACKET SET  
XGB-33  
Figure 6.0C

Task Force Tips strongly recommends that Extend-A-Gun VP be installed using the bracket sets sold by Task Force Tips that are designed for this purpose. The Task Force Tips bracket sets are designed to fit the Extend-A-Gun VP outer tube very closely to prevent distortion of the outer tube and to give it adequate support.

## 6.2 SELECTION OF STRUCTURAL SUPPORT ON FIRE TRUCKS

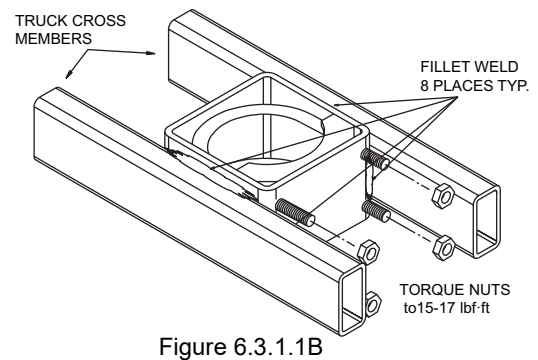
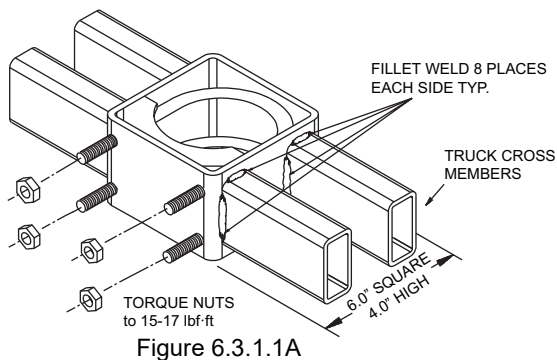
The loads on the mounting brackets can exceed 3000 lbs as a factor of the nozzle reaction force and the height of the fully extended waterway. These loads are transferred directly to the mounting brackets and the structural members to which they are attached. It is crucial that the structural members selected can withstand these forces.

## 6.3 BRACKET INSTALLATION

### 6.3.1 TUBE BRACKET INSTALLATION

This kit contains a six inch square steel tube with two U-bolts to be used as the upper bracket, and a saddle bracket similar to a heavy duty muffler clamp for the lower bracket. Both brackets must be used. This kit is designed for factory installation on new equipment. The tube bracket is welded onto the truck tubular framework as shown on the Tube Bracket Welding Diagram. (see section 6.3.1.1) The lower bracket, as shown in the Saddle Bracket Welding Diagram (see section 6.3.2.1), is welded to an additional support and clamped as low as possible on the bottom of the Extend-A-Gun VP tube. Make sure the welds are capable of withstanding the forces shown on the SIDE LOADS AT MOUNTING POINTS worksheet. (see section 5.0) The Extend-A-Gun VP may be installed in the brackets after the truck is painted. Use Loctite supplied in the kit on U-bolt threads. Torque the nuts on the U-bolts used in the tube (upper) to 15-17 lbf-ft. Torque the nuts on the U-bolts used in the saddle (lower) to 36-40 lbf-ft.

#### 6.3.1.1 TUBE BRACKET WELDING



### 6.3.2 SADDLE BRACKET INSTALLATION

This kit contains two steel saddle brackets and U-bolts, and is designed for factory installation on new equipment. Both brackets must be used. To minimize stress, the brackets should be as far apart as possible when clamped to the Extend-A-Gun VP tube. The welds must be able to withstand the forces shown on the SIDE LOADS AT MOUNTING POINTS worksheet. (see section 5.0) The Extend-A-Gun VP may be installed in the brackets after the truck is painted. Use Loctite® supplied in the kit on U-bolt threads. Torque the nuts used on the U-bolts to 36-40 lbf-ft.

#### 6.3.2.1 SADDLE BRACKET WELDING

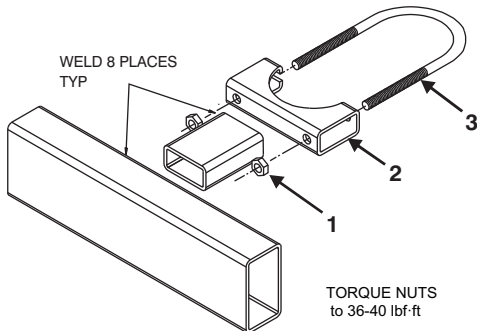


Figure 6.3.2.1A

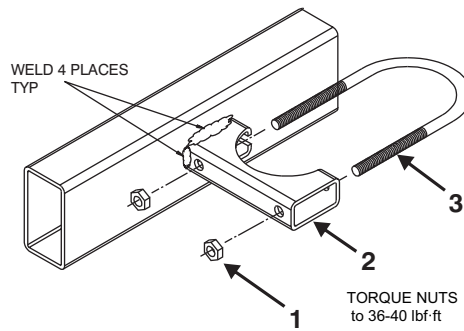


Figure 6.3.2.1B

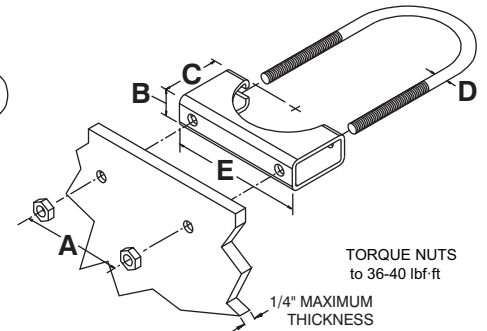


Figure 6.3.2.1C

### 6.3.3 PLATE BRACKET INSTALLATION

This kit may be used in either new or retro-fit installations. The top plate with its bracket may be bolted above or below an existing deck.

The lower saddle bracket is installed as shown in the Saddle Bracket Welding Diagram. (see section 6.3.2.1) Both brackets must be used. To minimize stress, the brackets should be as far apart as possible when clamped to the Extend-A-Gun VP tube.

Refer to the SIDE LOADS AT MOUNTING POINTS worksheet (see section 5.0) to ensure the mounting points can withstand these forces. Use Loctite supplied in the kit on U-bolt threads. Torque the nuts used on the U-bolts to 36-40 lbf-ft.

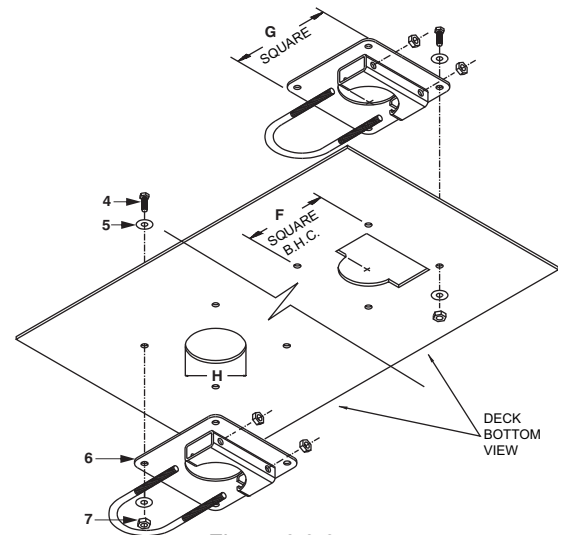


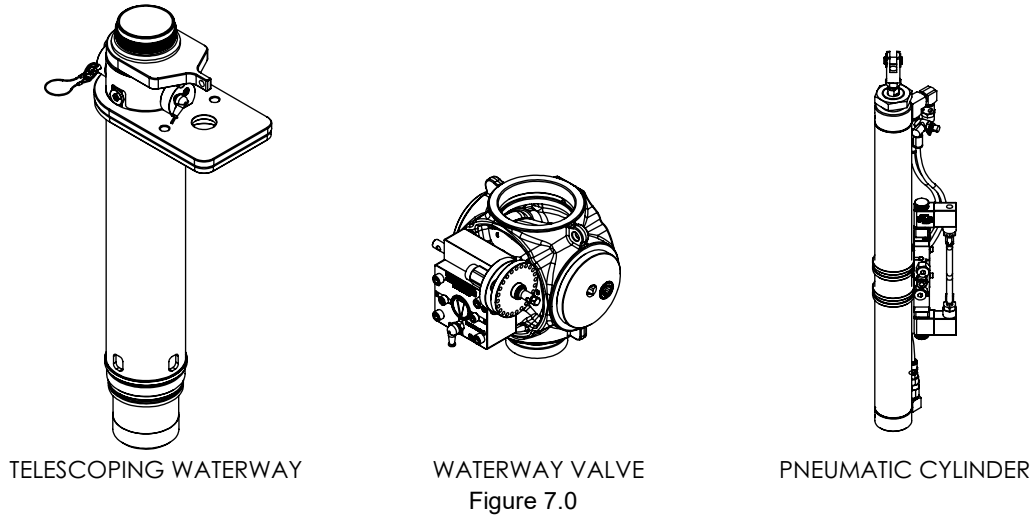
Figure 6.3.3

|                             |                 |                 |
|-----------------------------|-----------------|-----------------|
| TORQUE U-BOLTS              | 30-40 lbf-ft    | (49-54 N·m)     |
| A = Center Distance         | 5.0"            | (127mm)         |
| B = Height                  | 1.5"            | (38mm)          |
| C = Width                   | 3.0"            | (76mm)          |
| D = U-Bolt Size             | 1/2-13 UNC      |                 |
| E = Length                  | 6.0"            | (152mm)         |
| F = Square Pattern on Plate | 7.5"            | (191mm)         |
| G = Plate Length and Width  | 9.0" x 9.0"     | (288mm x 288mm) |
| H = Hole Diameter           | 4-5/8"          | (117mm)         |
| 1 = Hex Nut (2 rqd)         | VT50-13NT       |                 |
| 2 = Saddle Bracket          | XG486           |                 |
| 3 = U-Bolt                  | XG476           |                 |
| 4 = Deck Bolt               | 1/2-13 Hex Bolt |                 |
| 5 = Washer                  | 1/2" I.D.       |                 |
| 6 = Plate Bracket           | XG485           |                 |
| 7 = Deck Nut                | 1/2-13 Hex Nut  |                 |

Table 6.3.3

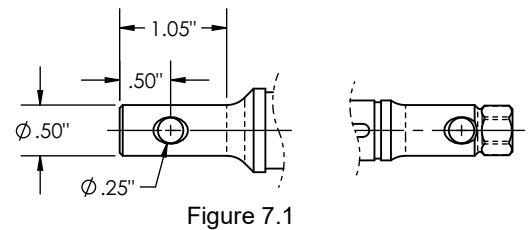
## 7.0 EXTEND-A-GUN VP INSTALLATION OVERVIEW

Section 7.0 is an overview for planning the equipment layout, followed by detailed assembly instructions in Section 8.0. This device is received in 3 subassemblies: the telescoping waterway, the waterway valve, and the pneumatic cylinder. These subassemblies allow assembly through the deck of the truck and selection of the appropriate orientations for the valve inlet and driveshaft. The telescoping waterway must be oriented vertically with the outlet facing upwards.



### 7.1 POSITION INDICATING HANDWHEEL (NOT INCLUDED)

The waterway valve in this device will be hidden within the vehicle, and thus requires a position indicating handwheel to show the valve position from the pump panel. The position indicating handwheel must be 9 turns from closed to open, with a counterclockwise opening direction per NFPA 1901. A 4" handwheel is recommended due to the low operating torque of this valve design. The driveshaft for the valve handwheel is intended to be extended with 1/2" rod and universal joints that are compatible with the driveshaft geometry, see Figure 7.1. Trident Emergency Products item 19.409 is a suitable handwheel that includes 2 universal joints.



### 7.2 DECK MONITOR UP/DOWN TOGGLE SWITCH (NOT INCLUDED)

The telescoping waterway is intended to be driven by a single pole, single throw switch chosen by the installer, which will toggle the input of an electrical relay. This toggle switch will only function when the valve is closed and should be mounted adjacent to the valve handwheel.

### 7.3 PNEUMATIC REQUIREMENTS

The telescoping waterway of this device is driven up and down by a pneumatic cylinder. It is intended to be installed on vehicles that include an air compressor to supply the air brake system. To protect the air brake system as well as this device, the system must include the following:

1. An air compressor governor switch calibrated to a maximum of 130 psi
2. A safety relief valve calibrated to a maximum of 150 psi

In addition, the system must include the following per NFPA 1901, 2016 edition:

3. A pressure protection valve (PPV) calibrated to a minimum of 80 psi, installed between the air supply tank and the pneumatic directional control valve of the Extend-A-Gun VP
4. An air dryer installed between the compressor and wet air tank
5. An automatic moisture ejector connected to the bottom of the wet air tank

## NOTICE

**This device includes a smaller air pressure relief valve, with a capacity of 130 scfm. This relief valve cannot relieve overall system pressure and does not take the place of the mandatory air pressure regulator and safety relief valve that are required by the air brake system. This relief valve is only intended to relieve unintended overloads exceeding 150 psi in the extend circuit of the air cylinder itself.**

## 7.4 ABOVE DECK CLEARANCE

Figure 7.4 shows a template for the clearance holes through the deck of the truck. A deck plate surrounding the outer tube of the telescoping waterway is intended to neatly cover the holes. The hole shape is not critical, provided it is not smaller than the circles shown and not larger than the perimeter of the deck plate.

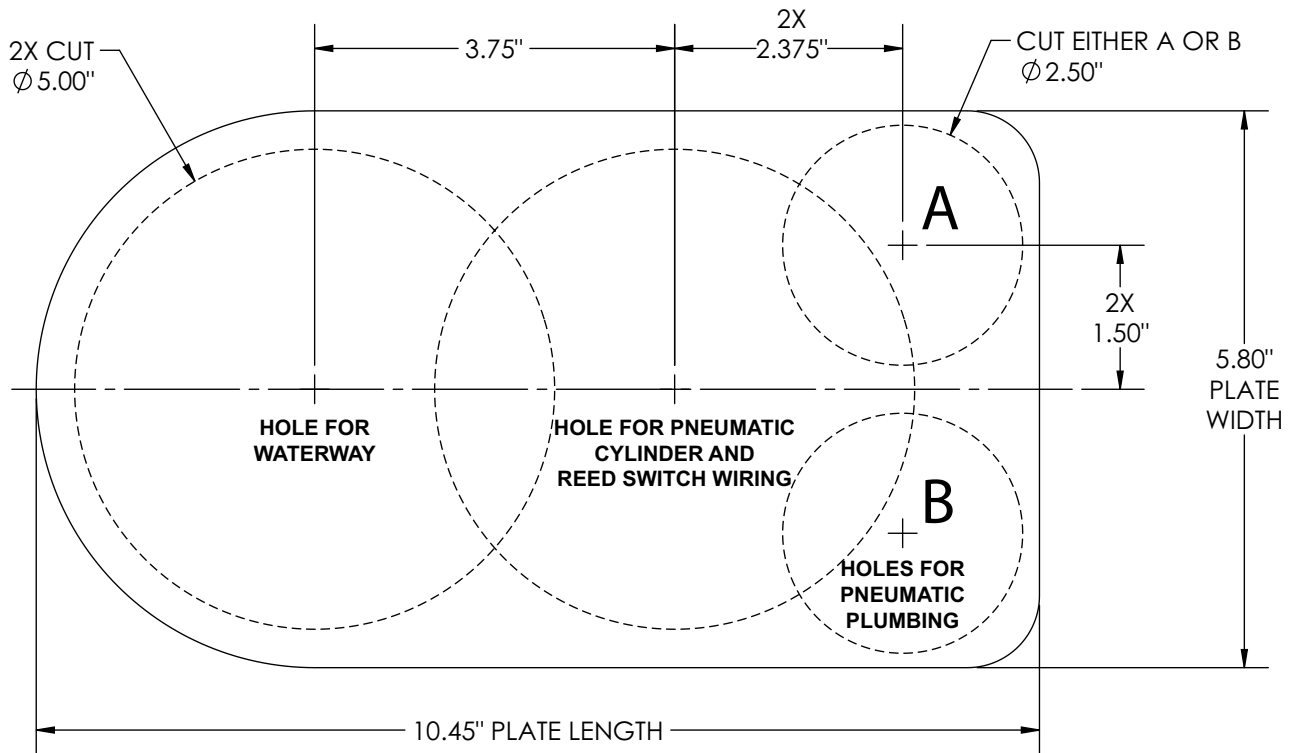


Figure 7.4

## 7.5 BELOW DECK CLEARANCE

When determining the locations of the mounting brackets shown ([see section 6.0](#)), it is critical to verify adequate clearance for the deck plate and pneumatic cylinder. It is also critical to verify clearance for the swing radius of the valve, which must be spun onto a threaded connection during installation. Ideally the valve will remain fully assembled for a 7.2" swing radius if there is adequate clearance, however it is possible to temporarily remove the gearbox and Victaulic inlet for a reduced 5.0" swing radius. These swing radius values apply regardless of the orientation of the inlet and gearbox.

## 7.6 CONFIGURABLE ORIENTATION OF COMPONENTS

The valve inlet can be mounted either at the bottom of the valve (facing down), or on the side of the valve (facing any orientation with the inlet axis horizontal). The chosen inlet direction will affect the required orientation of the valve gearbox and the required location of the pneumatic cylinder.

Table 7.6 lists 9 configurations of inlet orientation and gearbox orientation that will allow proper operation of the valve with a counter-clockwise opening direction of the valve per NFPA. The valve is supplied in configuration 1 by default.

To use this table:

First choose the Roman numeral subheading (I through V) that describes the directions the hand-wheel and inlet will face relative to the truck. Then, choose the configuration number (1 through 9) that describes the desired side of the truck the handwheel and gearbox will face. The four columns to the right will be referenced in the assembly instructions ([see section 8.0](#)) and Figure 8.2A Valve Components.

Additional guidelines applicable to the configurations of Table 7.6:

1. For simplicity, this table assumes a hand-wheel on the left side of the truck, as noted by a single asterisk (\*). For a handwheel on the right side of the truck, the gearbox must face the opposite front/rear direction from what is shown in the table. This will maintain the required counter-clockwise handwheel rotation to open the valve.
2. Configuration 8 (noted \*\*) has the gearbox facing forward when the inlet is on the left side.
3. Configuration 9 (noted \*\*\*) has the gearbox facing rearward when the inlet is on the left side.
4. As viewed from the outlet end of the device, the pneumatic cylinder must always be mounted approximately 180° from the valve gearbox to allow clearance for the telescoping stroke. This 180° can be infinitely adjusted  $\pm 30^\circ$  as needed, with the exception for a side inlet that the pneumatic cylinder can only be biased away from the inlet, not towards it.
5. When universal joints are used to extend the valve driveshaft, it is not necessary for the valve inlet to be perfectly parallel/perpendicular to the handwheel axis. This allows infinite adjustment of the side inlet orientation, within angle limits provided by the universal joint manufacturer.
6. Dual handwheels on both the side and top of the truck can be applied to any of the 9 configurations with the addition of a right-angle bevel/miter gearbox that allows a through-shaft connection.

| Valve configuration number   | Handwheel facing which side of truck | Gearbox facing which side of truck | Reed switch and trunnion arrow near hole # | Travel Stop set screw/nut near hole #s | REFERENCE arrow to port letter | Blind plugs in port letters | Solenoid near hole number |
|--|--------------------------------------|------------------------------------|--|--|--------------------------------|-----------------------------|---------------------------|
| <b>I. Valve hand-wheel facing side of truck, valve inlet facing down</b>                   |                                      |                                    |  |  |                                |                             |                           |
| 1  | left*                                | rear*                              | 2  | 4, 6                                   | D                              | B,D                         | 4                         |
| 2  | left*                                | front*                             | 2  | 5, 7                                   | D                              | B,D                         | 4                         |
| <b>II. Valve hand-wheel facing same side of truck as valve inlet (left/right)**</b>        |                                      |                                    |  |  |                                |                             |                           |
| 3  | left*                                | rear*                              | 1  | 4, 6                                   | A                              | C,D                         | 4                         |
| 4  | left*                                | front*                             | 3  | 5, 7                                   | C                              | B,C                         | 4                         |
| <b>III. Valve hand-wheel facing opposite side of truck from valve inlet (left/right)**</b> |                                      |                                    |  |  |                                |                             |                           |
| 5  | left*                                | rear*                              | 3  | 5, 7                                   | A                              | C,D                         | 4                         |
| 6  | left*                                | front*                             | 1  | 4, 6                                   | C                              | B,C                         | 4                         |
| <b>IV. Valve hand-wheel facing top of truck, valve inlet facing down</b>                   |                                      |                                    |  |  |                                |                             |                           |
| 7  | top                                  | any                                | 3  | 5, 7                                   | A                              | B,D                         | 4                         |
| <b>V. Valve hand-wheel facing top of truck, valve inlet facing any side of truck</b>       |                                      |                                    |  |  |                                |                             |                           |
| 8**  | top                                  | any**                              | 2  | 4, 6                                   | B                              | B,C                         | 4                         |
| 9***   | top                                  | any***                             | 2  | 5, 7                                   | B                              | C,D                         | 7                         |

Table 7.6



## 8.0 INSTALLATION INSTRUCTIONS

### 8.1 WATERWAY INSTALLATION

1. Install the mounting brackets according to structural requirements ([see section 5.0](#)) and ([see section 6.0](#)).
2. Install the top deck, with clearance hole(s) for the telescoping waterway and reed switch wiring per Figure 7.4.
3. Loosen the set screw on the deck plate of the telescoping waterway. This will allow the plate to rotate freely, since the correct orientation cannot be determined until the valve is installed.
4. Install the telescoping waterway through the clearance hole, keeping the reed switch wiring above the deck.
5. Install the U-bolts in the mounting brackets and torque the nuts per Section 6.0, which varies by bracket type.

### 8.2 VALVE CONFIGURATION

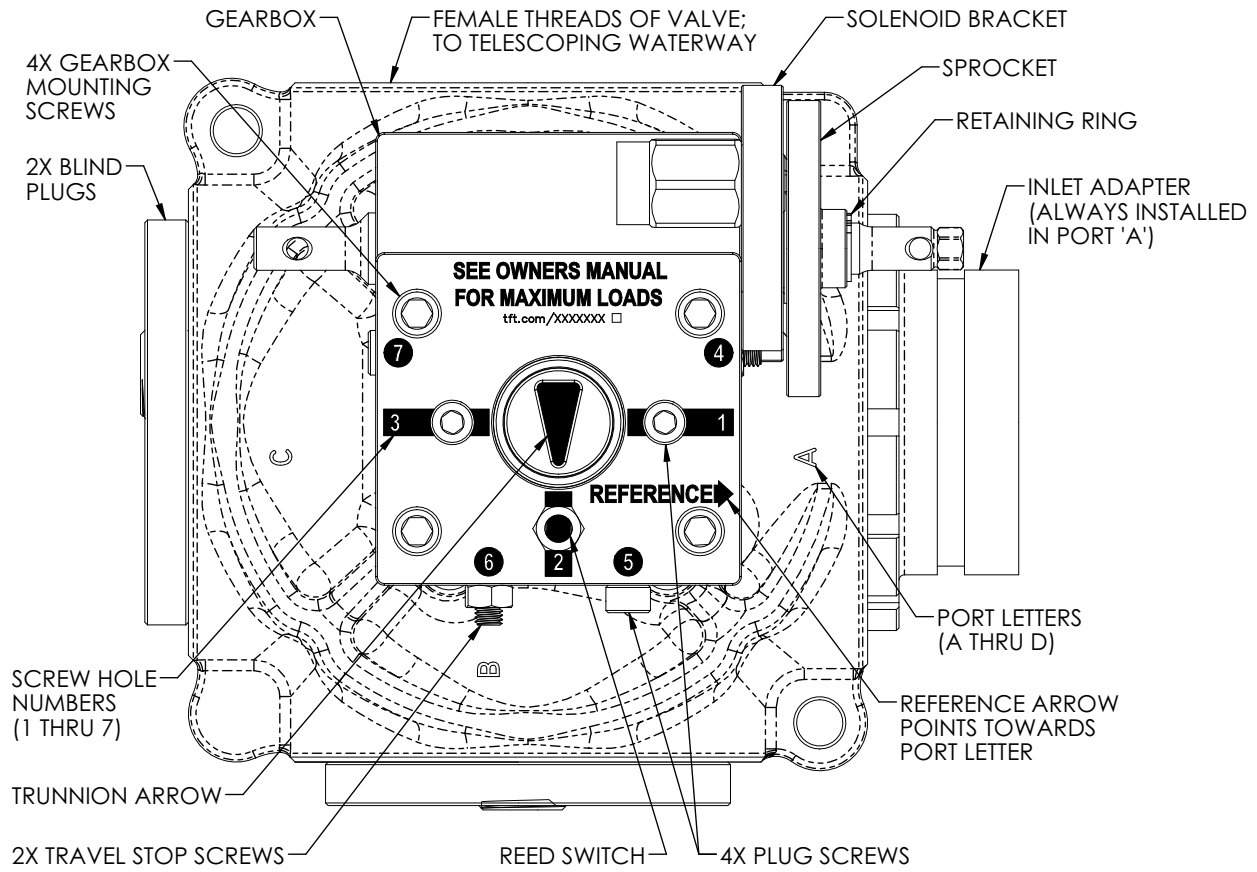


Figure 8.2A

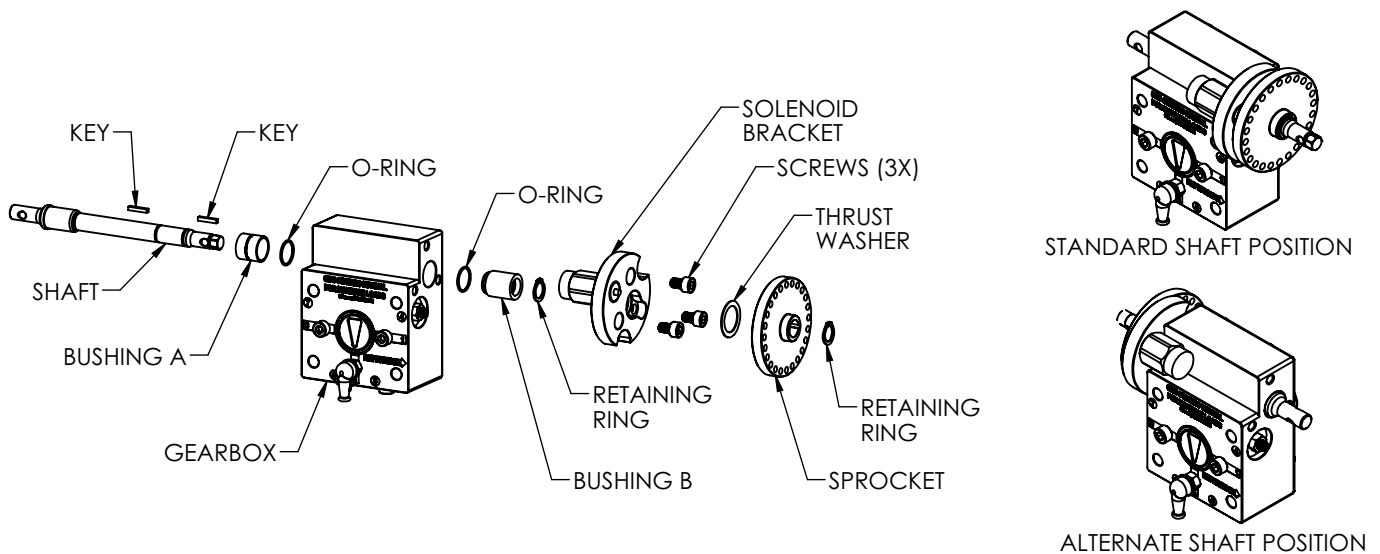


Figure 8.2B

1. Find the desired valve configuration number in Table 7.6. With the valve on a workbench, examine it and make changes as needed according to the following steps. Any step may be skipped if that aspect of the desired configuration already matches the physical unit. Refer to Figure 8.2A to identify the components of the valve and gearbox.
2. Find the number listed under “**REED SWITCH**” in the desired row of the table. Configuration # \_\_\_\_\_. If this **does not match** the reed switch location on the gearbox:
  - A. Using a 7/16” wrench, rotate the driveshaft until the trunnion arrow points towards the number 2 position.

## NOTICE

**Do not exceed 10 ft-lb / 13.5 N-m torque to the valve driveshaft (60 lb / 27 kg applied to the knob of a 4” hand wheel). Excessive torque may damage the driveshaft and render the valve inoperable.**

- B. Change the screw location using a 13 mm wrench for the reed switch nut and a 6 mm hex driver for the 2 plug screws. The nuts are permanently adhered to the reed switch, so it is not necessary to adjust the switch.
  - C. Apply blue Loctite sparingly to the reed switch and 2 plug screws. Install in locations per Table 7.6 and torque these three items to 110 in-lb.
3. Find the numbers listed under “**TRAVEL STOP...**” in the desired row of the table. Configuration # \_\_\_\_\_. If these numbers **do not match** the locations of set screws with nuts on sides of the gearbox:
  - A. Using a 7/16” wrench, rotate the driveshaft until the trunnion arrow points towards the number listed under “Reed switch and trunnion arrow...”.
  - B. Referring to Figure 8.2B, remove retaining ring, sprocket, thrust washer and key. Avoid overstretching the retaining ring.
  - C. Change the screw locations using a 13 mm wrench for the nuts and a 6 mm hex driver for the 2 plug screws. The nuts are permanently adhered to the set screws, so it is not necessary to adjust the screws. Apply blue Loctite sparingly to all screws and torque to 110 in-lb.
  - D. Reinstall the sprocket and thrust washer over the shaft and key, then install retaining ring.
4. Find the letter listed under “**REFERENCE ARROW...**” in the desired row of the table. Configuration # \_\_\_\_\_. If this letter **does not match** the letter embossed on the valve body port nearest the REFERENCE arrow on the gearbox:
  - A. Using a 7/16” wrench, rotate the driveshaft until the trunnion arrow points towards the number listed under “Reed switch and trunnion arrow...”.
  - B. Remove the four gearbox mounting screws using a 5/16” hex driver, then rotate the gearbox until the REFERENCE ARROW points towards the letter from the table. If resistance is encountered, rotate the opposite direction instead to avoid valve seat friction. Relocate the gearbox by rotating the gearbox only, do not remove and reorient the gearbox.
  - C. Apply blue Loctite sparingly to the four screws, then reinstall them and torque to 200 in-lb.
5. Find the letters listed under “**BLIND PLUGS...**” in the desired row of the table. Configuration # \_\_\_\_\_. If these letters **do not match** the current port locations of the blind plugs:
  - A. Verify bore and thread of the unused port are clean and dry. Clean with acetone if needed.
  - B. Using a 1/8” hex driver, remove set screw from cross-holes of port that does not match.
  - C. Using a 1/2” square drive socket wrench (no socket installed), remove the blind plug and install it in the desired port until it bottoms out snugly.
  - D. Apply blue Loctite sparingly to the set screw. Install in port cross-hole and torque to 56 in-lb.
6. **Note - this step is rarely needed.** Find the number listed under “**SOLENOID...**” in the desired row of the table. Configuration # \_\_\_\_\_. If this **does not match** the solenoid location on the gearbox:
  - A. Referring to Figure 8.2B, remove retaining ring, sprocket, thrust washer and key. Avoid overstretching the retaining ring.
  - B. Using 6 mm hex driver, remove 3 screws from solenoid bracket, then remove bracket.
  - C. Remove a 2nd retaining ring, then push the shaft out of the gearbox. When resistance is encountered, twist the shaft until it continues to push through.
  - D. Remove the shaft bushings from each side of the gearbox shaft bore, then install them in the opposite sides of the gearbox.
  - E. Verify a key is seated firmly in the shaft midway down the length. Slide the shaft into the opposite side of the gearbox. When resistance is encountered, twist the shaft until it continues to push through. This may occur twice before the shaft is all the way through.
  - F. Reinstall retaining ring and key on shaft, immediately adjacent to the gearbox.
  - G. Reinstall the solenoid bracket on the same side as the key. Apply blue Loctite sparingly to 3 screws and torque to 110 in-lb.
  - H. Reinstall the sprocket and thrust washer over the shaft and key, then install retaining ring.

### 8.3 VALVE INSTALLATION

1. Below the deck, at the bottom of the telescoping waterway, verify the external O-ring groove, male threads and composite bearing ring are clean and dry, using acetone to clean if needed. Apply silicone grease (Moly-Kote 112) to the O-ring groove and threads only. Install size 242 O-ring in the groove, then apply silicone grease over it.
2. Verify threaded port of valve body is clean with a thin layer of silicone grease applied to the bore and female threads. Install the valve body onto the waterway threads until it bottoms out snugly. Apply blue Loctite sparingly to the set screw. Install in port cross-hole and torque to 56 in-lb.
3. Loosen the nuts slightly on the U-bolts of the upper and lower mounting clamps, then rotate the valve to the desired orientation. Tighten and torque the nuts per Section 6.0, which varies by bracket type.

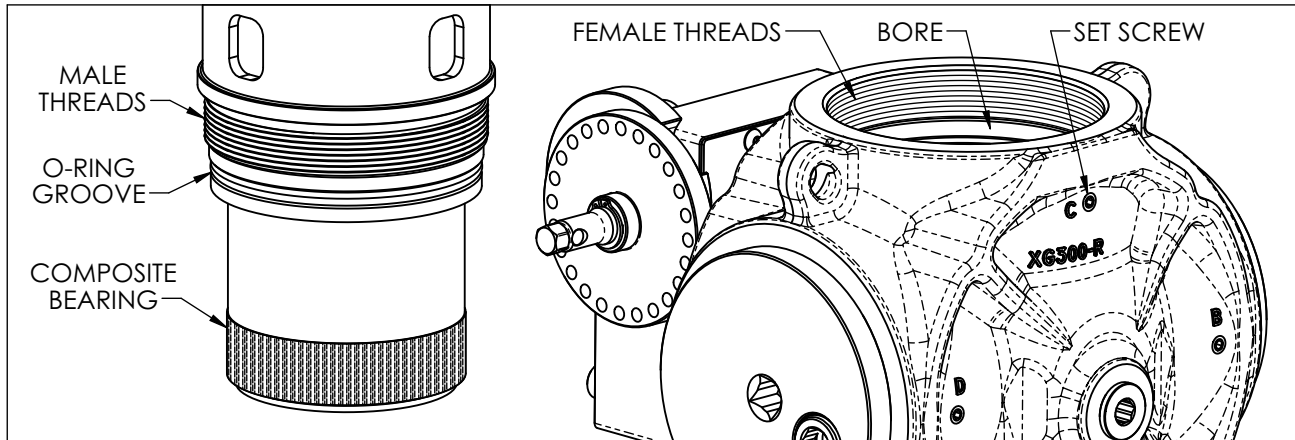


Figure 8.3

### 8.4 PNEUMATIC CYLINDER INSTALLATION

1. Above the deck, rotate the deck plate to an orientation that aligns with the hole in the deck and will allow the pneumatic cylinder to clear the valve body.
2. Apply blue Loctite sparingly to set screw and begin to install it in the deck plate. With the deck plate pressed down firmly against the shoulder in the outer tube, torque set screw to 56 in-lb.
3. Loosen the set screw on the upper bracket nearest the outlet of the telescoping waterway, then rotate the bracket until the tab is facing away from the cylinder mounting hole in the deck plate.
4. Below the deck, install the pneumatic cylinder through the deck and deck plate. The cylinder must be oriented such that the plumbing falls into one of the two notches on the bottom of the deck plate. While holding the cylinder up against the deck plate, install the band clamp spacer as low as practical between the telescoping waterway and the pneumatic cylinder.
5. Above the deck, have an assistant apply blue Loctite to the cylinder threads and tighten the nut until it is snug. Torque the nut to 130 ft-lb using a 1-7/8" wrench.
6. Below the deck, wrap the band clamp around the pneumatic cylinder, spacer and telescoping waterway such that the two ends are touching the telescoping waterway. Tighten the nut and torque it to 43 in-lb.
7. Above the deck, apply a linear stripe of blue Loctite along the threads of rod on the pneumatic cylinder, from the end of the rod up to the jam nut. Twist the upper bracket to align the clevis with the rod, then tighten the rod into the clevis two turns using a 1/2" open-end wrench.
8. Apply blue Loctite sparingly to set screw of the upper bracket and begin to install it. With the bracket lifted firmly against the shoulder of the inner tube, torque set screw to 56 in-lb.
9. Continue to tighten the rod counter-clockwise into the clevis. Stop when the upper bracket lowers to contact the outer tube, then tighten the rod counter-clockwise an additional 1/4-turn.
10. With a wrench on the shaft to prevent rotation, tighten the jam nut and torque it to 40 ft-lb using a 3/4" wrench.
11. Provide the directional control valve inlet with a pneumatic hose having a pressure between 80 PSI and 130 PSI.
12. Verify that the LOCK position of the manual override pin ([see section 4.2](#)) is not obstructed by the pneumatic cylinder. If it is obstructed, use 1/8" hex driver to loosen the button head screw on the cable tether bracket. Apply blue Loctite to screw and install the tether bracket, screw and override pin on the opposite side of the waterway.

## 8.5 ELECTRICAL INSTALLATION



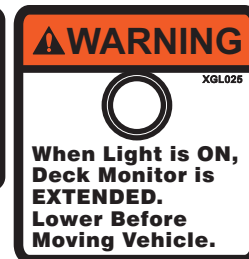
**Injury from electrocution or damage to equipment can occur when working around live circuits. To reduce the risk of injury or damage to equipment, always disconnect power before installing or servicing electrical components.**

The power supply for the Extend-A-Gun VP will need to be connected to a protected circuit from the truck power distribution center. Good mechanical connections on the wires are absolutely necessary and should be checked periodically.

- Poor electrical connections are a fire hazard and can cause intermittent operation or power loss to the Extend-A-Gun VP.
  - Be careful to route cables in a protected area away from high heat sources.
  - Always use grommets whenever wires pass through holes to prevent damage.
  - Secure cables with plastic wire ties or cable clamps to relieve stress on the cables.
1. Install a two-position switch in the pump panel in the vertical orientation, labeled “Deck Monitor UP” and “Deck Monitor DOWN”. Wire the switch to the device circuitry (refer to wiring diagram [\(see section 8.5.1\)](#)).
  2. To install the indicator light (supplied), drill a ½” diameter hole in the dashboard. Leave enough room for a 1-13/16” diameter label around the light, or a 2” wide x 1-1/2” high label next to the light. Apply one of the two warning labels (supplied) and push the panel light through the hole in the dashboard.
  3. There are three magnetic switches on the device; two are sensors for the up and down positions, and the other is to determine if the valve is closed. All magnetic switches terminate in Deutsch® connectors with labels. Refer to the wiring diagram for proper installation.
  4. There is also an electrically actuated pneumatic directional control valve that raises and lowers the device via the pneumatic cylinder. The cylinder UP and DOWN electrical connections are both terminated in Deutsch connectors with labels. Refer to the wiring diagram for proper installation.
  5. A safety interlock solenoid is installed on the gearbox. The safety interlock solenoid terminates in a Deutsch connector with label. Refer to the wiring diagram for proper installation.
  6. Three relays are provided to complete the electrical assembly. Refer to the wiring diagram to complete and verify the device wiring.
  7. A set of warning labels is provided. Attach the warning labels in the following areas:



Attach the warning label (XGL040) near the valve control hand wheel.



Attach the warning label (XGL020) next to the indicator light or warning label (XGL025) around the indicator light on the truck dashboard.

Figure 8.5

## 8.5.1 WIRING DIAGRAM

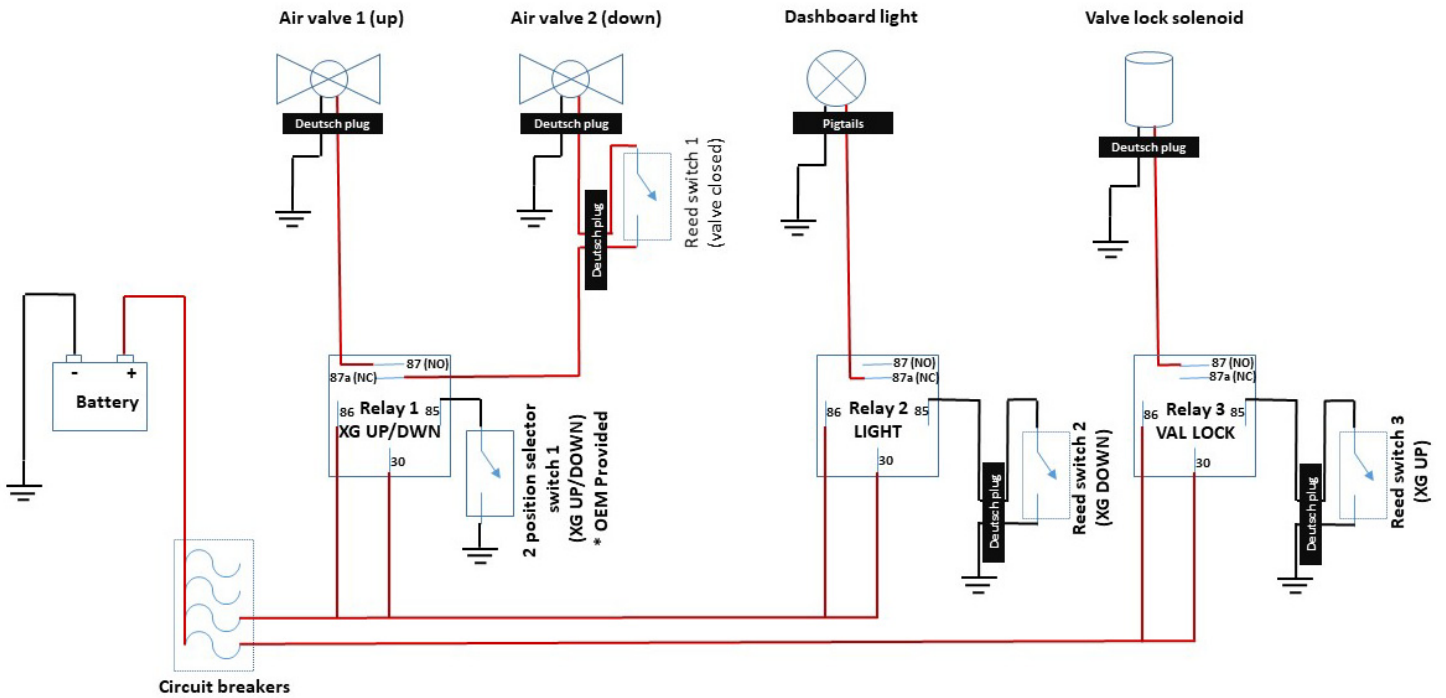


Figure 8.5.1

## 8.5.2 PLUG REFERENCE

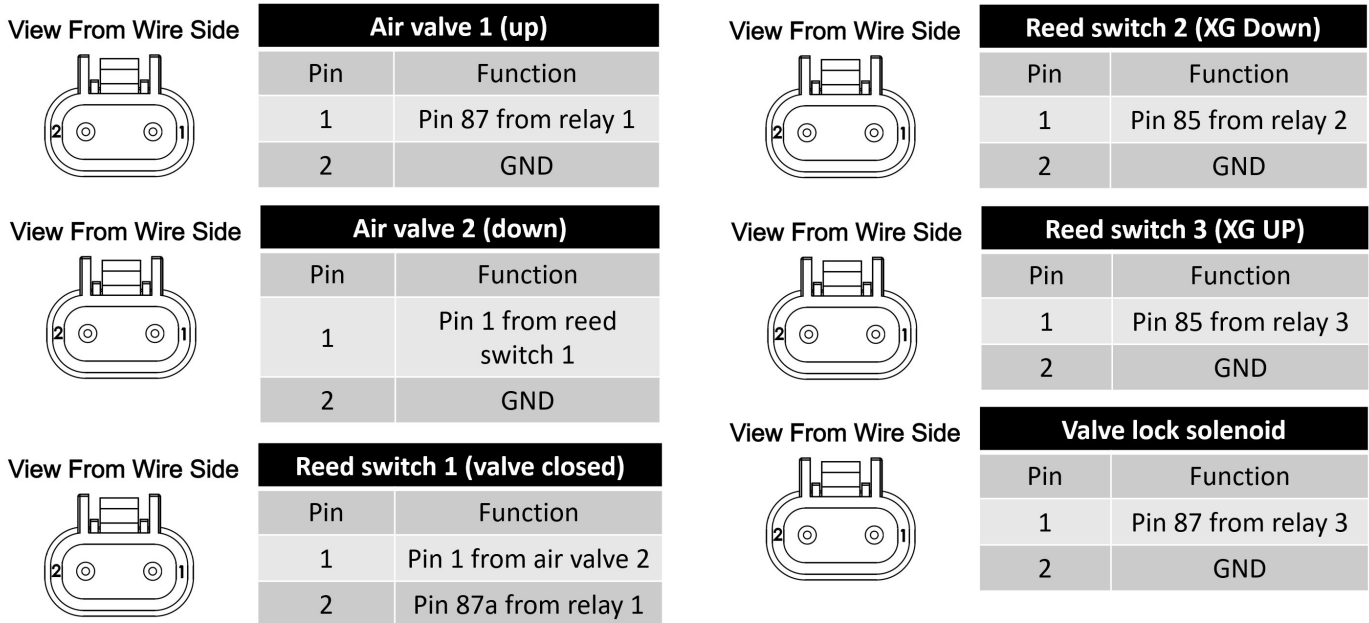


Figure 8.5.2

## 8.6 PNEUMATIC CALIBRATION

### NOTICE

Damage to equipment may occur when operated with low clearance. Always ensure there is adequate clearance before attempting to raise the waterway.

1. Raise the waterway by pressing the built in switch on the upper valve (A).
2. Measure the amount of time it takes the waterway to reach the fully extended position.
3. If the duration is not about 5 seconds, adjust the timing.
  - A. Loosen the Jam Nut on the upper flow control (B) to adjust the timing.
  - B. Turn flow control knob clockwise for longer duration or counter-clockwise for shorter duration.
  - C. After adjusting, tighten the jam nut until snug.
4. Lower the device by pressing the built in switch on the lower valve (C).
5. Measure the amount of time it takes the waterway to reach the fully retracted position.
6. If the duration is not about 10 seconds, adjust the timing.
  - A. Loosen the Jam Nut on the lower flow control (D) to adjust the timing.
  - B. Turn flow control knob clockwise for longer duration or counter-clockwise for shorter duration.
  - C. After adjusting, tighten the jam nut until snug.

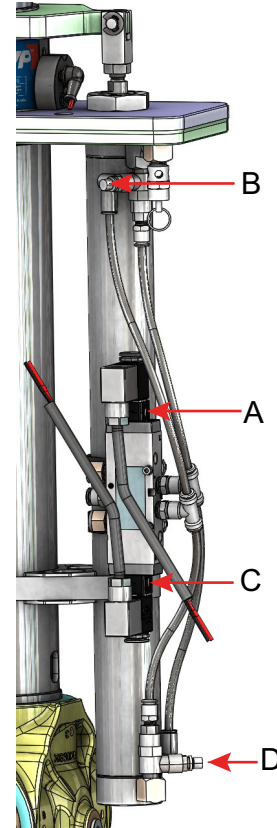


Figure 8.6

### 8.6.1 TESTING THE INSTALLATION

To ensure proper operation of the controls and related safety devices, after complete installation, perform the following actions in order.

| <b>Begin with the valve in the CLOSED position and the telescoping waterway fully RETRACTED. The system must be powered up with the two-position switch on the pump panel in the DOWN position.</b> |  |
|---|--|
| <b>ACTION</b>   | <b>EXPECTED RESULT</b>                         |
| 1. Verify INDICATOR LIGHT in the cab  | Powered OFF (dark)                             |
| 2. Open the VALVE using the manual hand wheel   | VALVE will not open                            |
| 3. Raise the WATERWAY using the TWO-POSITION SWITCH   | WATERWAY fully raised in 5 seconds             |
| 4. Verify INDICATOR LIGHT in the cab  | Powered ON (illuminated)                       |
| 5. Open the VALVE using the manual hand wheel   | VALVE opens smoothly                           |
| 6. Retract the WATERWAY using the TWO-POSITION SWITCH   | WATERWAY will not move                         |
| 7. Close the VALVE using the manual hand wheel  | VALVE closes smoothly                          |
| 8. Retract the WATERWAY using the TWO-POSITION SWITCH   | WATERWAY fully retracted in 10 seconds         |
| 9. Verify INDICATOR LIGHT in the cab  | Powered OFF (dark)                             |
| 10. Move the VALVE position   | VALVE moves slightly until the lock is engaged |
| <b>If an unexpected result occurs, do not use the Extend-A-Gun VP. Verify proper wiring and/or contact TFT Customer Service for assistance.</b>   |  |

## 9.0 MOUNTING THE MONITOR

A Task Force Tips Crossfire® monitor may be mounted in one of two ways. We recommend that it be mounted directly on Extend-A-Gun model XGC38VL-XL, which has an integral Crossfire base built in. Alternatively, it can be mounted on Extend-A-Gun model XGC38VL-PL using Task Force Tips part XFF-APL Truck Mount Base, which fits only the Task Force Tips Crossfire.

A Task Force Tips Radius® monitor may be mounted directly to an Extend-A-Gun with a -PL outlet.

A Task Force Tips monitor with an -RL inlet may be mounted directly to an Extend-A-Gun with a -RL outlet.

Any monitor with a 3" NPTF inlet may be mounted directly to an Extend-A-Gun with a -PL outlet.

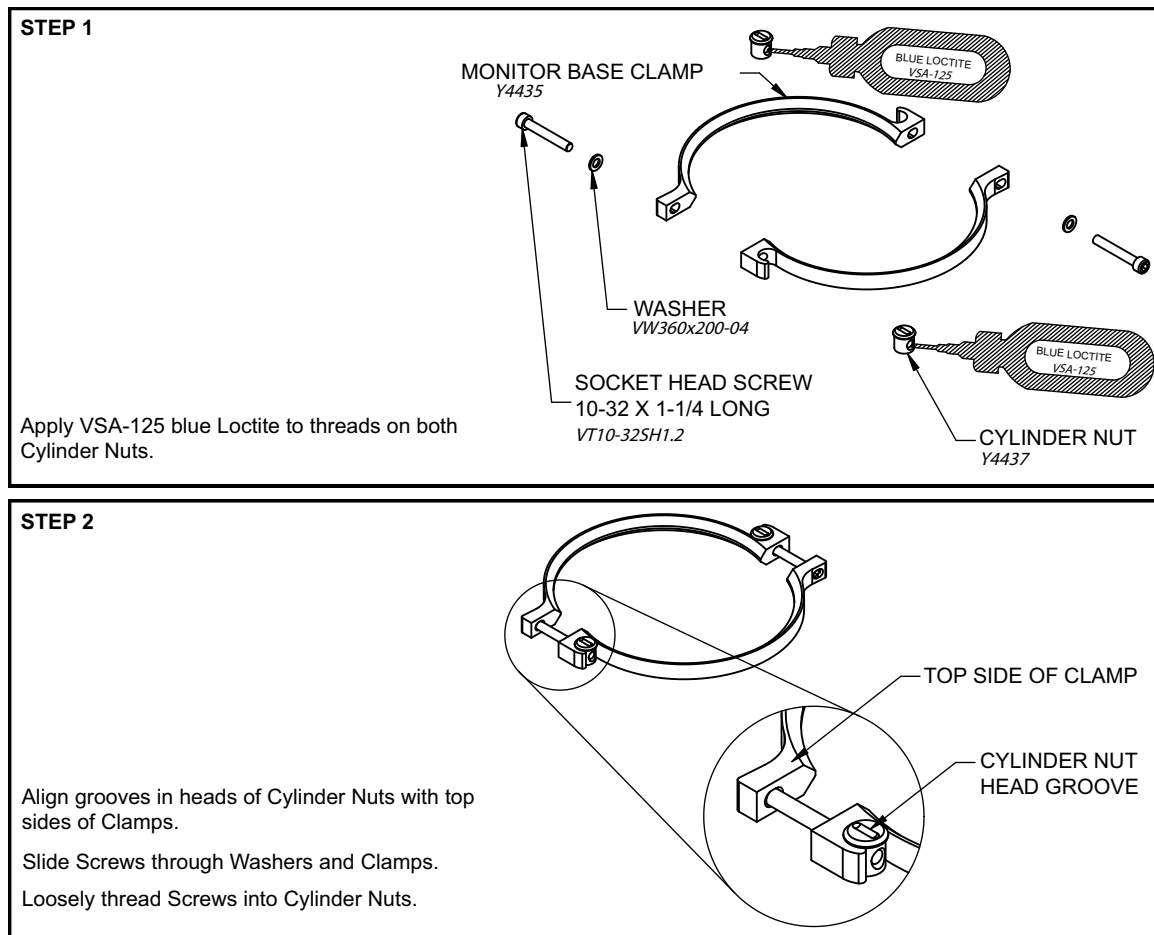
Any monitor with 3" 4-Bolt ANSI flange inlet may be mounted to an Extend-A-Gun with a -PL outlet with the addition of an XFF-CPL Companion Flange Kit.



**Injury or damage can occur from an inadequately supported monitor. The mounting must be capable of supporting the nozzle reaction force which can be as high as 950 lbs (430 kg).**

## 9.1 TWO PIECE CLAMP ROTATIONAL LOCK INSTALLATION FOR -RL OUTLETS

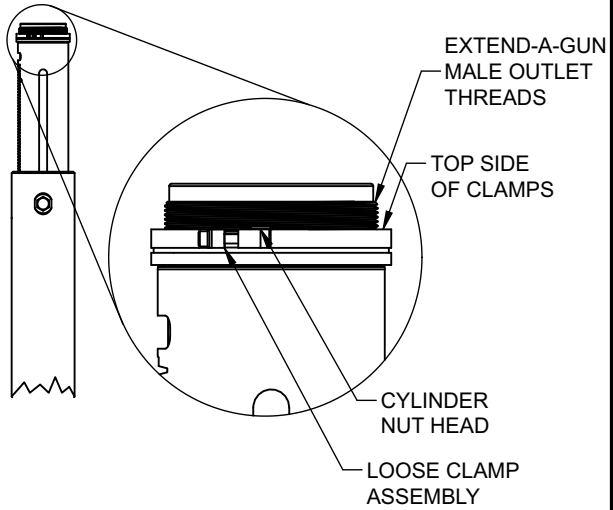
Task Force Tips monitors with -RL inlet are attached to the Extend-A-Gun VP by a threaded joint with an O-ring seal. The joint between the Extend-A-Gun VP and monitor is locked rotationally by a two piece clamp rotational lock.



**STEP 3**

Place Clamp assembly over male threads of outlet.

Cylinder Nut heads **MUST** be on top side of Clamps.

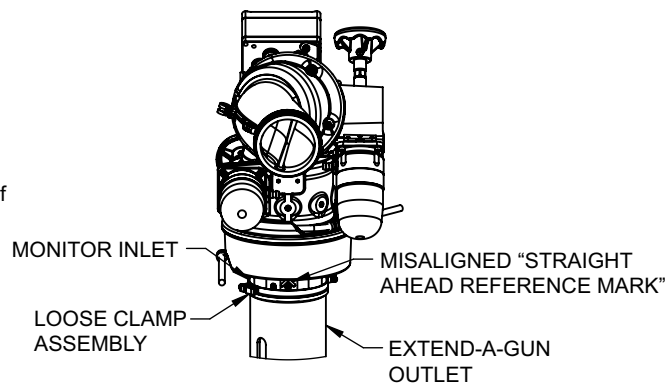


**STEP 4**

Screw monitor onto Extend-A-Gun until monitor base bottoms out against Extend-A-Gun outlet.

Threaded joint seals with an O-ring and will leak if monitor base bottoms out on Clamp assembly instead of Extend-A-Gun outlet.

Do not use pipe dope or Loctite on threads. Use of tread locking compounds is unnecessary and will make removal difficult.

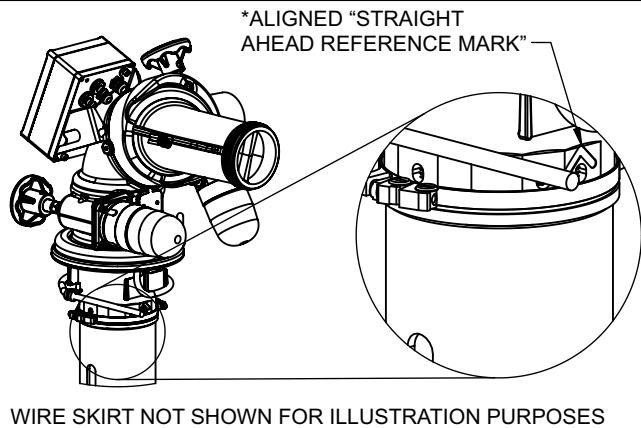


**STEP 5**

Unscrew monitor base from Extend-A-Gun outlet until "Straight Ahead Reference Mark" is facing desired direction.\*

Monitor may be unscrewed up to one full rotation from bottomed-out condition. Monitor will leak if unthreaded more than one rotation (360°) from bottomed-out condition.

\* "Straight Back Reference Mark" on Hurricane RC monitors.

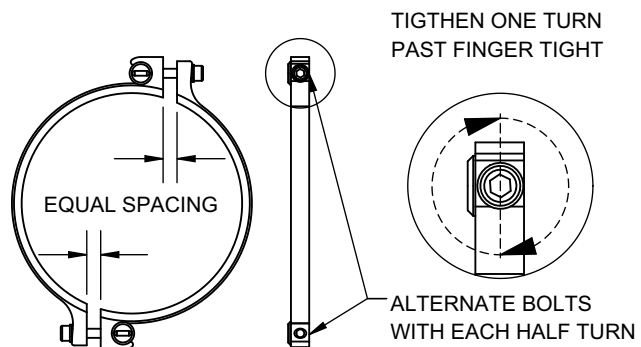


**STEP 6**

Rotate clamps to desired position and tighten Screws until finger tight. Maintain equal spacing between Clamp ends.

Tighten Screws one additional turn using a 5/32" (4mm) hex wrench. Alternate Screws each half-turn.

To avoid damage to the monitor, ensure Clamps do not interfere with RC monitor Power/Com cable and that Screws are not overtightened.





## 10.0 USE OF DRAIN

The Extend-A-Gun comes with (3) 3/4" NPT holes on the valve inlet. The holes are designed to be used as a drain, or plugged if a drain is used elsewhere. A drain must be employed to remove excess water from the system. This prevents freezing and allows the unit to be parked.

Always use the lowest drain port per the valve configuration:

- When the valve inlet is configured on the bottom, the 3/4"NPT port on the valve body shown in DETAIL A is the lowest drain port.
- When the valve inlet is configured on the side, use a 3/4"NPT port in one of the 2 blind plugs (as shown in Detail B). The port in the blind plug on the bottom of the valve is the lowest drain port.

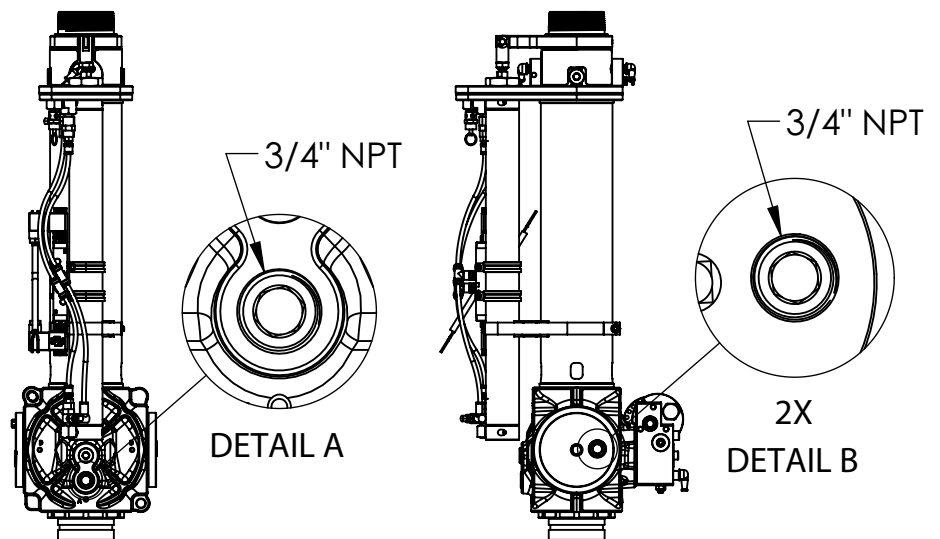


Figure 10.0



**Equipment may be damaged if frozen while containing significant amounts of water. Such damage may be difficult to detect visually. Subsequent pressurization can lead to injury or death. Any time the equipment is subject to possible damage due to freezing, it must be tested and approved for use by qualified personnel before being considered safe for use.**

## 11.0 WARRANTY

Task Force Tips LLC, 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA ("TFT") warrants to the original purchaser of its products ("equipment"), and to anyone to whom it is transferred, that the equipment shall be free from defects in material and workmanship during the five (5) year period from the date of purchase. TFT's obligation under this warranty is specifically limited to replacing or repairing the equipment (or its parts) which are shown by TFT's examination to be in a defective condition attributable to TFT. To qualify for this limited warranty, the claimant must return the equipment to TFT, at 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA, within a reasonable time after discovery of the defect. TFT will examine the equipment. If TFT determines that there is a defect attributable to it, TFT will correct the problem within a reasonable time. If the equipment is covered by this limited warranty, TFT will assume the expenses of repair.

If any defect attributable to TFT under this limited warranty cannot be reasonably cured by repair or replacement, TFT may elect to refund the purchase price of the equipment, less reasonable depreciation, in complete discharge of its obligations under this limited warranty. If TFT makes this election, claimant shall return the equipment to TFT free and clear of any liens and encumbrances.

This is a limited warranty. The original purchaser of the equipment, any person to whom it is transferred, and any person who is an intended or unintended beneficiary of the equipment, shall not be entitled to recover from TFT any consequential or incidental damages for injury to person and/or property resulting from any defective equipment manufactured or assembled by TFT.

It is agreed and understood that the price stated for the equipment is in part consideration for limiting TFT's liability. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above may not apply to you.

TFT shall have no obligation under this limited warranty if the equipment is, or has been, misused or neglected (including failure to provide reasonable maintenance) or if there have been accidents to the equipment or if it has been repaired or altered by someone else.

**THIS IS A LIMITED EXPRESS WARRANTY ONLY. TFT EXPRESSLY DISCLAIMS WITH RESPECT TO THE EQUIPMENT ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THERE IS NO WARRANTY OF ANY NATURE MADE BY TFT BEYOND THAT STATED IN THIS DOCUMENT.**

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## 12.0 MAINTENANCE

The Extend-A-Gun VP requires little maintenance. The Extend-A-Gun VP should be kept clean and free of dirt. All controls should be checked for freedom of movement and proper operation before each use. Any inoperable or damaged parts should be repaired or replaced immediately. Consult factory for recommended service procedure.

### 12.1 LUBRICATION

The Extend-A-Gun VP is permanently lubricated on the cup seal. If lubricant has been removed during service, apply a thin film of White Lithium Grease on seal surfaces.

### 12.2 VALVE SEAT REPLACEMENT

The valve seat may be replaced in the field if it becomes a source of leakage due to harsh environmental conditions or excessive age. A hook type spanner wrench sized to fit a 4.8" diameter may be used to remove and install the valve seat.

Follow the steps below to replace the valve seat:

1. Toggle the switch to the UP position to raise the telescoping waterway.
2. Fully open the valve to ensure pressure has been relieved and to protect the half ball while the valve seat is being removed.
3. Drain the pipe immediately upstream of the valve, then loosen or remove the pipe to allow a minimum of 2" of working clearance adjacent to the Victaulic inlet adapter. This inlet adapter shown in Figure 3.3 (bottom inlet configuration) and Figure 8.2A (side inlet configuration) also serves as the valve seat retainer.
4. Near the "A" port marking, on the opposite side of the valve body from the gearbox, loosen the set screw by 4 full turns.
5. Using hook type spanner wrench, remove the inlet adapter.
6. Using pliers, pull old valve seat out of groove in valve body.
7. Close the valve and clean all sealing surfaces of the half ball, valve body and inlet adapter. Also clean all debris from threads of valve body and inlet adapter using acetone. Verify all sealing surfaces are smooth and intact. If significant damage is visible, consult Task Force Tips Service Department.
8. Apply light coat of silicone based grease such as Moly-Kote 112 to all sealing surfaces and threads of half ball, valve body, and inlet adapter. Open valve so half ball is out of the way.
9. Install new valve seat into groove in valve body with wider side facing the half ball. Apply silicone grease to the bore of the valve seat.
10. Install inlet adapter until it is snug against the valve seat, then adjust it so the nearest wrenching notch in the O.D. is aligned with the set screw hole.
11. Apply blue Loctite to set screw and torque to 56 in-lb.
12. Reassemble the upstream plumbing and test the valve. If leaks are observed through the valve seat, try tightening the inlet adapter until it has advanced two additional notches with respect to the set screw hole (60° rotation).

### 13.0 TROUBLE SHOOTING

| SYMPTOM  | POSSIBLE CAUSE  | REMEDY   |
|--|---|--|
| Flow through monitor with valve in closed position   | 1. Debris or damage to the valve seat or half ball  | 1. Clean out debris or replace damaged parts.  |
| Leaks on exterior                                    | 2. Debris or damage in an O-ring seal area  | 2. Clean out debris or replace damaged parts.  |
| Valve will not open with telescoping waterway raised | 3. Poor connection from UP reed switch<br>4. Poor connection to valve lock solenoid   | 3. Per Figure 8.5.1, verify continuity from Relay 3 terminal 85 to ground.<br>4. Verify 9 to 15 volts from Relay 3 terminal 87 to ground.  |
| Does not raise                                       | 5. Mechanical binding<br>6. Improper pressure balance at pneumatic cylinder.<br>7. Poor UP electrical connection  | 5. With switch in DOWN position and power off, manually lift/lower telescoping waterway several times per Section 10.3. Turn power on and switch UP/DOWN several times to verify pneumatic cylinder rod moves smoothly. Reassemble.<br>6. Per Section , press the built-in switch on the upper solenoid valve (A) and verify less than 10 seconds to raise. If not, verify 80+ psi, then follow the pneumatic calibration instructions.<br>7. Per Figure 8.5.1, with switch in UP position, verify continuity from terminal 85 to ground, then verify 10+ volts from ground to the following 3 terminals on Relay 1: 30, 86, and 87 (NO). Next, verify 9 to 15 volts at UP solenoid connection of direction control valve by removing the Phillips head screw from the connector and sliding it off the control valve. |
| Does not lower                                       | 8. Valve is OPEN<br>9. Improper pressure balance at pneumatic cylinder.<br>10. Poor connection from VALVE CLOSED reed switch<br>11. Poor DOWN electrical connection | 8. Close the valve before lowering the waterway.<br>9. Per Section , press the built-in switch on the upper solenoid valve (B) and verify less than 10 seconds to lower. If not, then verify 80+ psi then follow the pneumatic calibration instructions.<br>10. Per Figure 8.5.1, verify continuity through the 2 pins of the Reed Switch 1 Deutsch plug.<br>11. Per Figure 8.5.1, with switch in DOWN position, verify no continuity from terminal 85 to ground, then verify 9 to 15 volts from ground to the following 3 terminals on Relay 1: 30, 86, and 87a (NC). Next, verify 9 to 15 volts at DOWN solenoid connection of direction control valve by removing the Phillips head screw from the connector and sliding it off the control valve.  |

Table 13.0

## 13.1 REPAIR

Factory service is available with repair time seldom exceeding one day in our facility. Factory serviced equipment is repaired by experienced technicians, wet tested to original specifications, and promptly returned. Any returns should include a note as to the nature of the problem and whom to reach in case of questions.

Repair parts and service procedures are available for those wishing to perform their own repairs. Task Force Tips assumes no liability for damage to equipment or injury to personnel that is a result of user service. Contact the factory or visit the web site at [tft.com](http://tft.com) for parts lists, exploded views, test procedures and troubleshooting guides.

Performance tests shall be conducted on the equipment after a repair, or anytime a problem is reported to verify operation in accordance with TFT test procedures. Consult factory for the procedure that corresponds to the model and serial number of the equipment. Any equipment which fails the related test criteria should be removed from service immediately. Troubleshooting guides are available with each test procedure or equipment can be returned to the factory for service and testing.



**Service technicians bear responsibility for ensuring use of appropriate protective clothing and equipment. The chosen protective clothing and equipment must provide protection from potential hazards users may encounter while servicing equipment. Requirements for protective clothing and equipment are determined by the Authority Having Jurisdiction (AHJ).**



**Any alterations to the product or its markings could diminish safety and constitutes a misuse of this product.**



**All replacement parts must be obtained from the manufacturer to assure proper operation of the device.**

## 14.0 EXPLODED VIEWS AND PARTS LISTS

Exploded views and parts lists are available at [tft.com/serial-number](http://tft.com/serial-number).

## 15.0 OPERATION AND INSPECTION CHECKLIST

**BEFORE EACH USE**, the Extend-A-Gun VP must be inspected to this checklist:

1. There is no obvious damage such as missing, broken or loose parts, damaged labels, etc.
2. All controls move freely and operate properly.
3. The Extend-A-Gun VP operates freely without binding throughout its range of travel.
4. There are no leaks when the Extend-A-Gun VP is flowing water.

**BEFORE BEING PLACED BACK IN SERVICE**, the Extend-A-Gun VP must be inspected to this list:

1. All controls and adjustments are operational.
2. There are no broken or missing parts.
3. There is no damage to the Extend-A-Gun VP or attached monitor that could impair safe operation (e.g. detents, cracks, corrosion, or other defects).
4. The waterway is clear of obstructions.
5. The Extend-A-Gun VP is clean and markings are legible.



**Equipment failing any part of the checklist is unsafe for use and must have the problem corrected before use or being placed back into service. Operating equipment that has failed the checklist is a misuse of this equipment.**