TASK FORCE TIPS®
FIRE FIGHTING EQUIPMENT

BOOSTER and BOOSTER OSC SECONDARY LDH INLET FOR MONITORS

INSTRUCTION FOR INSTALLATION, SAFE 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/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.

RATED OPERATING PRESSURE: 200 PSI (14 BAR)

SAFE OPERATING RANGE FOR MONITOR OUTLET:

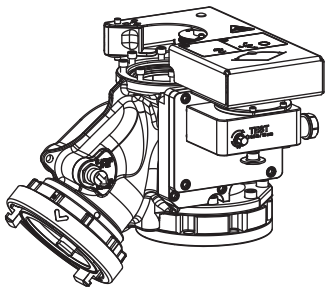
Booster and Booster OSC: 2000 gpm @ 200 psi (8000 l/min @ 14 bar).

Booster only (not OSC): 2500 gpm @ 130 psi (9500 l/min @ 9 bar).

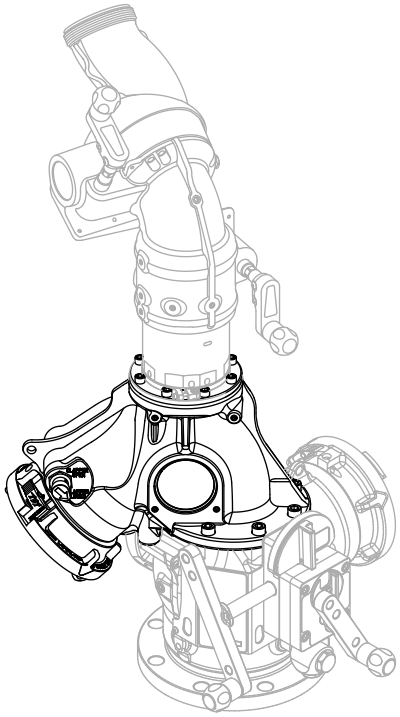
HYDROSTATIC PROOF TEST: 800 psi (55 bar)*

*Do not exceed the rated operating pressure of 200 psi (14 bar). Per FM 1421 the hydrostatic proof test is performed on a sample valve to ensure it does not visibly rupture, crack or permanently distort at 4 times the rated operating pressure. The purpose of the proof test is to be confident the valve design may be safely operated at the rated operating pressure.

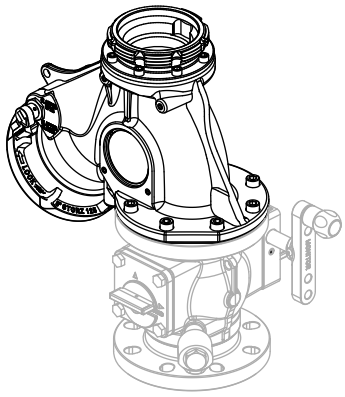
SAMPLE CONFIGURATIONS



Model ZCH1T1-OSC
for attachment to Hydrants, Valves and Monitors with 4" ANSI 150 connections



Model ZCF1T3
integrated with
TFT Hydrant Under Monitor and TFT Monsoon Monitor



Model ZCH1TQ
integrated with
TFT Industrial Valve Under Monitor and 4.5" NH Quick Connect for TFT monitor

TASK FORCE TIPS LLC
MADE IN USA · tft.com

3701 Innovation Way, Valparaiso, IN 46383-9327 USA
800-348-2686 · 219-462-6161 · Fax 219-464-7155

⚠ DANGER

PERSONAL RESPONSIBILITY CODE

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

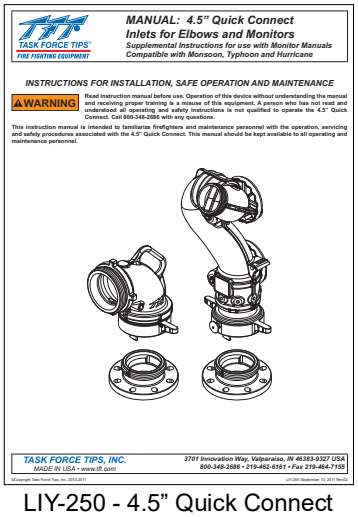
1. Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.
2. It is your responsibility to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called upon 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.

FEMSA

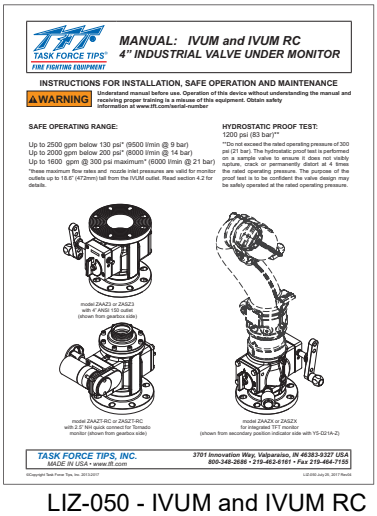
Fire and Emergency Manufacturers and Service Association
P.O. Box 147, Lynnfield, MA 01940 • www.FEMSA.org

SUPPORTING MATERIALS

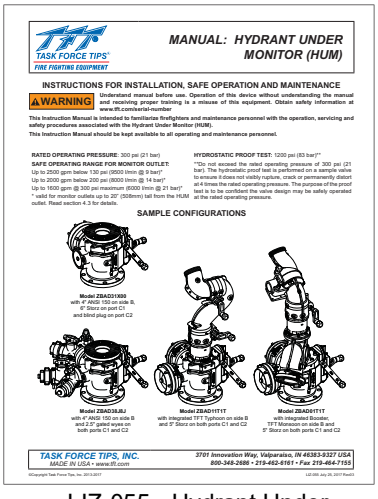
The following documents contain supporting safety and operating information pertaining to the equipment described in this manual.



LIY-250 - 4.5" Quick Connect Inlets for Elbows and Monitors



LIZ-050 - IVUM and IVUM RC 4" Industrial Valve Under Monitor



LIZ-055 - Hydrant Under Monitor (HUM)

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

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

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

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

2.0 SAFETY

⚠DANGER **An inadequate supply of pressure and/or flow will cause an ineffective stream and can result in injury or death. Choose operating conditions to deliver adequate fire suppression. See flow graphs.**

⚠WARNING **Kinks in supply hose may reduce water flow and cause injury or death to persons dependent on water flow. Avoid tight bends to minimize risk of hose line kinks.**

⚠WARNING **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 1500 lbs.**

⚠WARNING **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.**

⚠WARNING **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.**

⚠CAUTION **The oscillator unit contains moving parts that can pinch fingers and hands when the unit is in operation. Keep hands and fingers away from the moving parts of the oscillating unit when water is flowing.**

3.0 GENERAL INFORMATION

The Booster provides a secondary supply inlet for monitors rated up to 2500 gpm (2000 gpm for Booster OSC models), allowing pressure to be boosted using a pump and/or foam to be introduced. A large diameter hose or in-line foam injection device may be connected to the secondary inlet with optional Storz or female hose threads ranging from 3.5” up to 6.0”. A swing check valve within the secondary inlet allows connections to be made while the monitor is flowing from the main inlet (standpipe or hydrant).

All models are equipped with an external automatic drain valve. This allows the monitor and Booster to be fully drained after each use when pressure drops below 5 psi, thus minimizing susceptibility to damage from corrosion and freezing water.

The main inlet can be configured either for direct connection to a TFT Hydrant Under Monitor (HUM) or Industrial Valve Under Monitor (IVUM), or adapted to a 4” ANSI 150 bolt pattern. Several options are available for monitor connection.

The Booster OSC adds the capability to oscillate a TFT monitor horizontally up to 120 degrees using energy from a water-driven turbine. All of the turbine water exits the monitor nozzle; which avoids having the water expelled below the monitor. Oscillation is activated by water flow from 1000 gpm to 2000 gpm (3800 to 7600 l/min), supplied either from the main inlet or secondary inlet of the Booster. Oscillating sweep angle can be adjusted from zero to 120 degrees in 10 degree increments at any time while oscillating or stationary, without removing the safety guard that encloses the oscillating mechanism. Oscillating pattern can be verified without flowing water, using a ½” hex wrench. Oscillating speed is directly proportional to flow rate, and is 4 cycles per minute at 2000 gpm (7600 l/min) with the default pulley set installed. An alternate pulley set stored within the safety guard allows the oscillating speed to be doubled by exchanging the pulleys using common hand tools.

The Booster OSC is compatible with TFT Monsoon, Typhoon and Hurricane monitors that are specified with inlet option W, swivel base for Booster OSC.

3.1 SPECIFICATIONS

Main Waterway Diameter	3.65" (93mm)
C3 LDH Port Diameter	3.65" (93mm)
Safe Operating Range for Side B Monitor Outlet: Maximum flow rates at specified nozzle inlet pressures are based on 1500 lb (680 kg) maximum nozzle reaction force at 20” (508mm) monitor height. Read section 4.3 Monitor Installation and Compatibility.	Booster and Booster OSC: 2000 gpm @ 200 psi (8000 l/min @ 14 bar); Booster only (not OSC): 2500 gpm @ 130 psi (9500 l/min @ 9 bar).
Rated Operating Pressure	200 psi (14 bar)
Hydrostatic Proof Test	800 psi (55 bar)*
Temperature Rating **	-25° to 135°F (-32° to 57°C)
* Do not exceed the rated operating pressure of 200 psi (14 bar). The hydrostatic proof test is performed on a sample valve to ensure it does not visibly rupture, crack or permanently distort at 4 times the rated operating pressure. The purpose of the proof test is to be confident the valve design may be safely operated at the rated operating pressure.	
** For temperatures below 32°F (0°C), Booster and upstream devices must be drained after use to avoid damage. Read section 5.3 Draining Residual Water.	

Table 3.1

3.2 CORROSION RESISTANCE

All Booster bodies are hard anodized aluminum which is powder coated inside and out to help prevent corrosion. Galvanic corrosion due to dissimilar metals can be minimized by using flange isolation kits and an anti-corrosive lubricant such as Dow Corning 112 Silicone Grease. Upstream equipment such as standpipes and hydrants should be drained while not in use to eliminate a path of conduction. Do not install brass fittings or monitors onto the Booster.

3.3 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.

3.4 PARTS IDENTIFICATION AND INTENDED ORIENTATION

Figure 3.4 identifies the typical functional components of the Booster. The Booster is intended to be installed in the orientation shown, with the inlet flange facing towards the earth below. This orientation allows the monitor and Booster to fully drain after use, as described in Section 5.3.

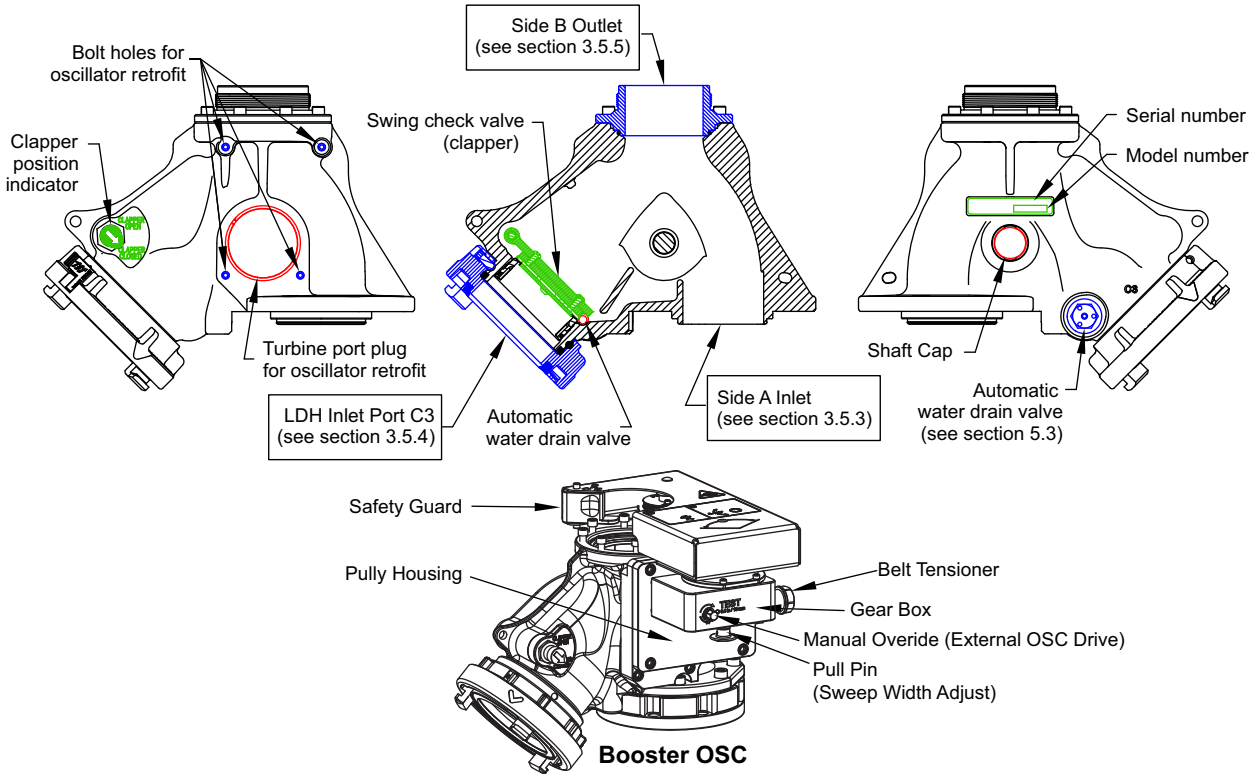


Figure 3.4

3.5 OPTIONS, DIMENSIONS, AND WEIGHTS

Several options are available for valve control, monitor mounting, and the two LDH ports. Each option is described in Section 3.5.3 through Section 3.5.5. The dimensions and approximate weights of the individual options can be added together to calculate the overall size and weight of the Booster with the desired options installed, as shown in Table 3.5.1. All weights include supplied caps and adapters.

3.5.1 MODEL NUMBERS AND SERIAL NUMBERS

Model numbers can be specified by combining 9 characters in the sequence shown below. The unique characters for each component option are presented in Section 3.5.3 through Section 3.5.5, along with the corresponding weights and dimensions. The model number and unique serial number of each Booster are located on the label above the external automatic drain, as shown in Figure 3.4. Go to tft.com/serial-number for additional information about this product.

Character Position	**1**	**2**	**3**	**4**	**5**	**6**
Component	**ZC** (same prefix for all models)		**SIDE A INLET OPTION** (3.65" I.D.)	**LDH INLET PORT C3** (3.65" I.D.)		**SIDE B OPTION** (monitor, 3.65" I.D.)
				STYLE	**SIZE**	

Example Model #	**ZCF1T1**	**Character Sequence**	**Weight (lb)**
Booster Body:	Same for all models	prefix ZC same for all models	20.7
Side A Inlet:	4" ANSI 150 Flange	Character "F" in position 3	+ 7.7
Port C3 Style:	Storz	Character "1" in position 4	
Port C3 Size:	5.0"	Character "T" in position 5	+ 3.2
Side B (monitor)	CODE-RPM Direct Connection	Character "1" in position 6	+ 1.8
Net Weight:	**33.4 lb (15.15 kg)**		**= 33.4**

Table 3.5.1

3.5.2 BOOSTER AND BOOSTER OSC BODY

The Booster body weighs 20.7 lb (9.37 kg), including the clapper (swing check valve), the turbine port plug, the external automatic drain, and all fasteners that are shared by every Booster model. Dimensions are shown in Figure 3.5.2 below. Portions of the Booster body that overlap with installed couplings and adapters are excluded from these dimensions. The Booster OSC body weighs 41.1 lb (18.64 kg) including the clapper (swing check valve), the turbine, the external automatic drain, oscillating components, and all fasteners that are shared by every Booster OSC model. Portions of the Booster body that overlap with installed couplings and adapters are excluded from these dimensions.

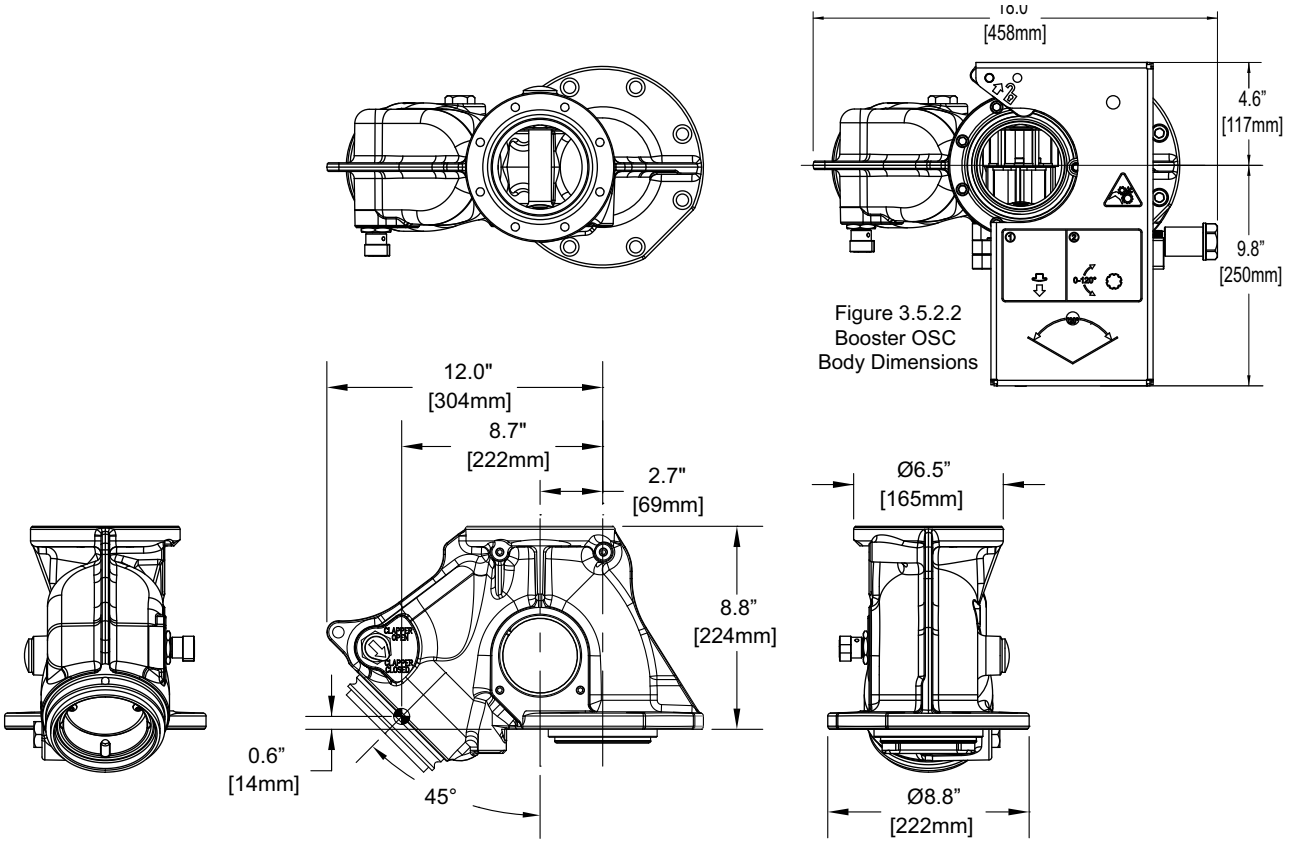


Figure 3.5.2.2
Booster OSC
Body Dimensions

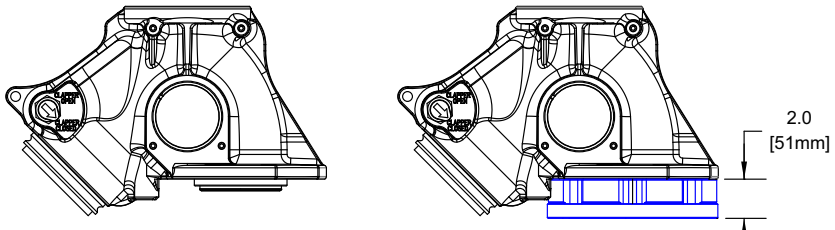
Figure 3.5.2

3.5.3 SIDE A INLET OPTION (CHARACTER POSITION 3)

The Side A Inlet with no adapter installed is designed for direct connection to the Task Force Tips Industrial Valve Under Monitor (IVUM) and Hydrant Under Monitor (HUM). Either of these products provide the valve needed to shut off the supply from the Side A Inlet in order to use an alternate supply of water or foam solution from LDH Inlet Port C3.

The Side A Inlet is also available with a 4” or 3” ANSI 150 flange adapter to allow the booster to be mounted directly on a typical standpipe or hydrant. In this case, a separate valve must be present to shut off the Side A Inlet when LDH Port C3 is used.

SIDE A OPTIONS (character position 3)	CHARACTERS	WEIGHT (LB)	WEIGHT (KG)
Direct connection to IVUM or HUM (no adapter installed)	H	N/A	N/A
4” ANSI 150 flange inlet adapter	G	7.7	3.5
3” ANSI 150 flange inlet adapter	F	9.0	4.1



Option H
Direct connection to IVUM or HUM
(no adapter installed)

Option F and G
4" and 3" ANSI 150
Flange Inlet Adapter

Figure 3.5.3

3.5.4 LDH INLET PORT C3 OPTIONS (CHARACTER POSITIONS 4 AND 5)

The LDH Inlet Port C3 can be configured with a Storz coupling or female threaded coupling. Hose connection size options range from 3.5” to 6”. A cap is not needed for this port since the clapper closes Port C3 when it is not in use. The dimensions below indicate the distance each option protrudes from the Booster body.

PORT C3 OPTIONS (char. positions 4 & 5)	CHARACTERS	SUBASSEMBLY #	WEIGHT (lb)	WEIGHT (kg)
4.0” Storz	1P	ZCC3-1P	3.3	1.5
5.0” Storz	1T	ZCC3-1T	3.2	1.4
6.0” Storz	1X	ZCC3-1X	8.7	4.0
3.5” NH female thread	4N	ZCC3-4N	3.1	1.4
4.0” NH female thread	4P	ZCC3-4P	2.2	1.0
4.5” NH female thread	4R	ZCC3-4R	3.6	1.6
5.0” NH female thread	4T	ZCC3-4T	3.1	1.4
6.0” NH female thread	4X	ZCC3-4X	4.0	1.8

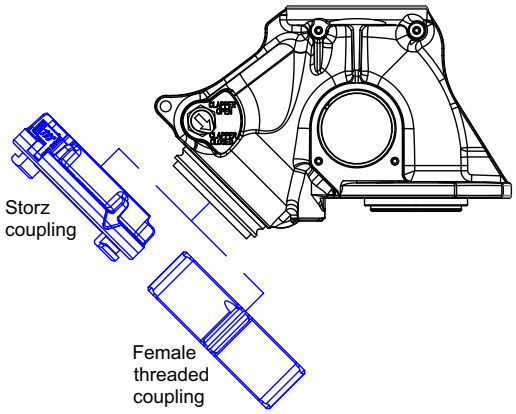


Figure 3.5.4A

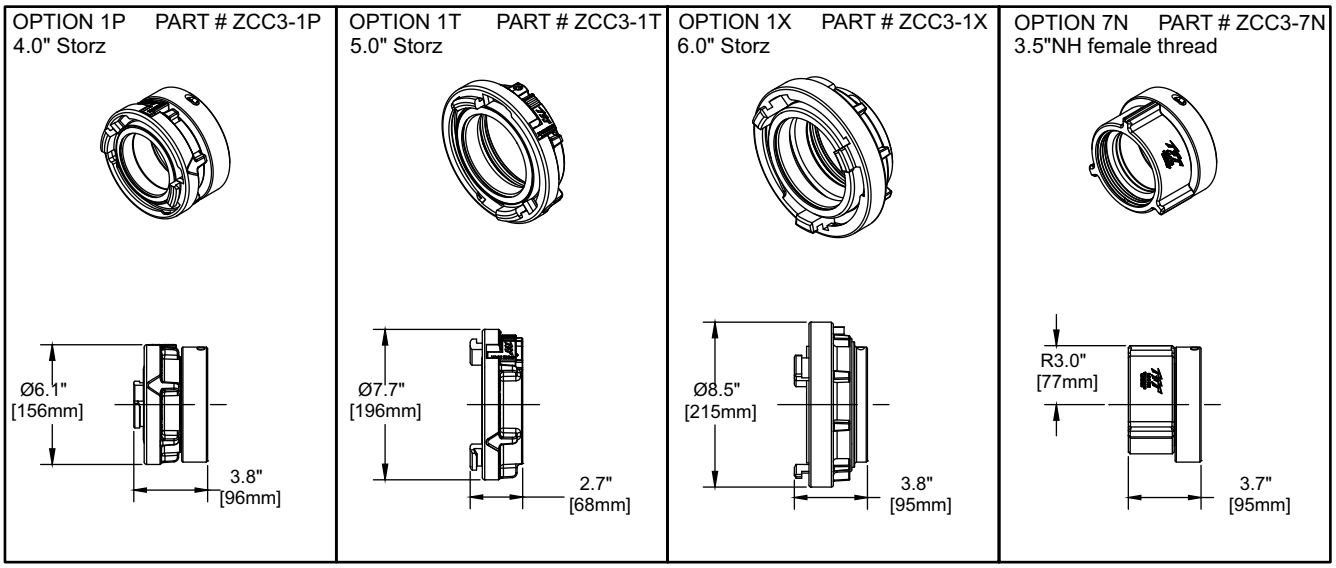


Figure 3.5.4B

3.5.5 OPTIONS FOR SIDE B OUTLET TO MONITOR (CHARACTER POSITION 6)

The side B outlet is intended to be connected directly to the inlet of a deluge monitor. The industry standard 4” ANSI 150 and DN 100 PN16 bolt patterns are available combined into a single flange (options 3 and 4). The other options allow unique capabilities when combined with Task Force Tips monitors, such as direct connection for reduced height and cost (options 1 and 2) or a secure quick connection (options Q and T). The dimensions below indicate the distance each option protrudes from the main valve body. Portions of the graphics that overlap with the main valve body are excluded from these dimensions.

SIDE B OPTIONS (character position 6)	CHARACTER	PART NUMBER	WEIGHT (lb)	WEIGHT (kg)
CODE-RPM DIRECT CONNECTION, STRAIGHT	1	A1026	1.8	0.8
CODE-RPM DIRECT CONNECTION, ANGLED 22.5°	2	A1040	2.8	1.3
4" ANSI 150 / DN 100 PN16 FLANGE, STRAIGHT	3	A1039.1	6.5	3.0
4" ANSI 150 / DN 100 PN16 FLANGE, ANGLED 22.5°	4	A1039.2	7.5	3.4
QUICK CONNECT - 4.5”NHM (for Monsoon, Typhoon, Hurricane & 90° Elbow)	Q	Y4484	2.3	1.0
QUICK CONNECT - 2.5"NHM (for Tornado)	T	Y2432A.1	2.1	1.0
BOOSTER OSC CONNECTION (integrated into monitor)	-OSC	N/A	N/A	N/A

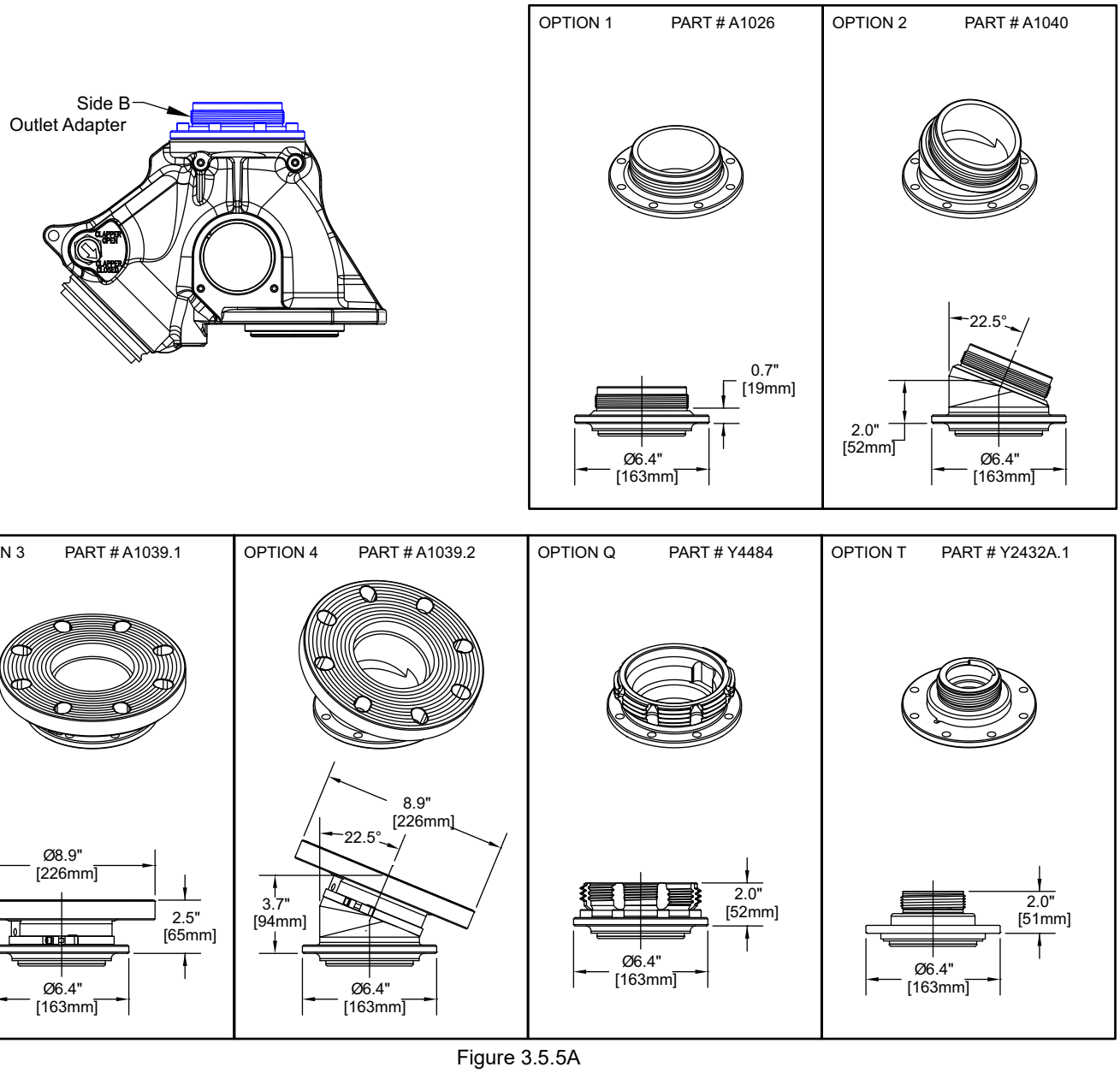


Figure 3.5.5A

4.0 INSTALLATION

⚠CAUTION **Mismatched or damaged waterway connections may cause equipment to leak or uncouple under pressure. Failure could result in injury. Equipment must be mated to matched connections.**

⚠CAUTION **Dissimilar metals coupled together can cause galvanic corrosion that can result in the inability to uncouple the connection, or complete loss of engagement over time. Failure could cause injury. Per NFPA 1962, if dissimilar metals are left coupled together, an anti-corrosive lubricant should be applied to the connection and the coupling should be disconnected and inspected at least quarterly.**

4.1 STRUCTURAL REQUIREMENTS

⚠WARNING **Reaction forces generated by master stream flows are capable of causing injury and property damage if not properly supported. Monitors should be securely installed by qualified individuals.**

- **Mounting objects must be capable of withstanding maximum nozzle reaction force listed in SPECIFICATIONS.**
- **The monitor must be securely mounted to rigid support members.**
- **Do not use flanges or pipe made from plastic for monitor mounting.**
- **Torque all fasteners to specified values.**

4.2 CONNECTION TO WATER SUPPLY

4.2.1 INSTALLATION ON HUM OR IVUM (SIDE A OPTION H)

1. Install the supplied O-ring onto the barb that protrudes from the bottom flange of the Booster. Apply silicone grease over the O-ring.
2. Align the Booster with the HUM or IVUM as shown.
3. For the IVUM only, the IVUM Flange Adapter must be oriented such that the non-threaded counter-bored holes are aligned with screw locations 3 and 5, and the threaded holes are aligned with the other six screw locations. Orientation of the Booster to the IVUM is flexible; however it is critical to choose an orientation such that the LDH Inlet Port C3 on the Booster will not interfere with the crank handle on the IVUM.
4. Apply Loctite 242 (blue) thread-locking adhesive to (8) supplied ½-13 x 1.5" screws, then hand tighten into the locations shown until the screw heads are bottomed out. Screw numbers 3 and 5 are inserted up thru the HUM or IVUM, then into the Booster. The other six screws are inserted through the Side A Inlet flange of the Booster.
5. Tighten the (8) screws to 40 to 45 ft-lb (54-61 N-m) torque in the alternating sequence shown on Figure 4.2.1. Tighten at graduated intervals of 30%, then 60%, and finally 100% of the specified torque.
6. To install the monitor, (see section 4.3).

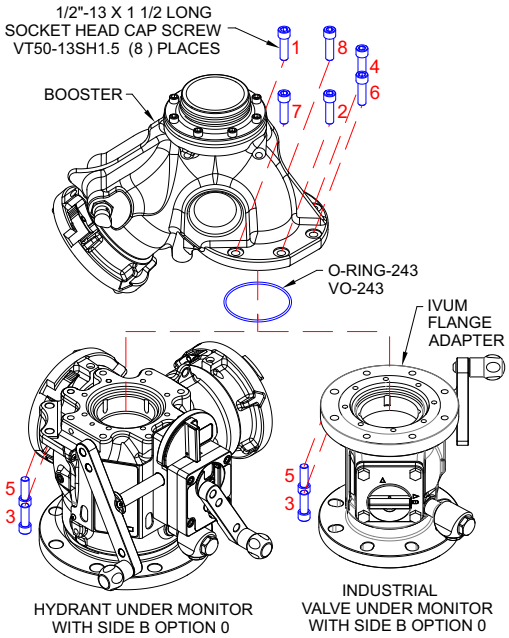


Figure 4.2.1

4.2.2 BOOSTER OSC INSTALLATION ON HUM OR IVUM (SIDE A OPTION H)

1. Depress the red latch and remove the safety Guard from Oscillating Booster.
2. Use 5/16" hex key to remove four 3/8"-16 x 1" long socket head cap screws from the cover plate surrounding the oscillating gearbox. Remove gearbox from Oscillating Booster and set it aside.
3. Loosen the belts by using an adjustable wrench to tighten the belt tensioner. Remove the top belt from the pulleys first, then remove the bottom belt. Set parts aside.
4. Use 5/16" hex key to remove four 3/8"-16 x 1.5" long socket head cap screws from the pulley housing. Lift pulley housing away from Booster body. It may be necessary to pry gently to overcome the adhesion of residual Loctite in the screw holes.
5. Follow steps 1 through 5 in Section 4.2.1.
6. Install pulley housing using the four 3/8"-16 x 1.5" long screws that were originally installed. Apply Loctite 242 blue to screws, then tighten snug against pulley housing. Maximum torque allowed is 200 in-lb (17 ft-lb, 23 N-m).
7. The two belts are identical. Install one belt over silver-colored input shaft and lower-right pulley. Install other belt between upper left pulley and lower-right pulley. Back the belt tensioner out until it bottoms out. Verify that belts are seated properly and are taut between pulleys.
8. Install gearbox over pulleys by pivoting gearbox until the gearbox shaft slides into the socket of the top pulley. Then, pivot the cover plate until it seats flush against the pulley housing.
9. Apply blue Loctite to four 3/8-16 x 1" long screws and install snug against cover plate. Maximum torque allowed is 200 in-lb (17 ft-lb, 23 N-m).
10. To install the monitor, (see section 4.3).

4.2.3 INSTALLATION USING 4” ANSI 150 FLANGE INLET ADAPTER (SIDE A OPTION F)

When Side A option F is specified, the 4” ANSI 150 Flange Inlet Adapter is pre-installed on side A of the Booster. Eight 5/8-11 x 3” bolts, thick washers, and nuts are supplied. One of the nuts and an O-ring seal are pre-installed between the Inlet Adapter and Booster body. To install the Booster on a 4” ANSI 150 flange, refer to Figure 4.2.3 and the instructions below.

1. Install a ring gasket between the Booster and the mating flange.
2. Slide (7) 5/8-11 nuts into the notches on the outside of the Flange Adapter. Washers are not necessary under these nuts. The close fit achieved by the notches and hole diameters results in sufficient load bearing area without washers.
3. Slide thick washers over 5/8-11 x 3” bolts. Slide (8) bolts through flanges and tighten into nuts until snug against mating flange. To prevent damage, verify that no bolt ends are close to contacting the Booster body. If they are close, then stack additional thick washers under the bolt heads or substitute studs with nuts. Stainless steel hardware is recommended.
4. Tighten (8) bolts or studs to 76-80 ft-lb (100-110 N-m) torque in the alternating sequence shown in Figure 4.2.3. Tighten at graduated intervals of 30%, then 60%, and finally 100% of the specified torque.
5. To install the monitor, (see section 4.3).

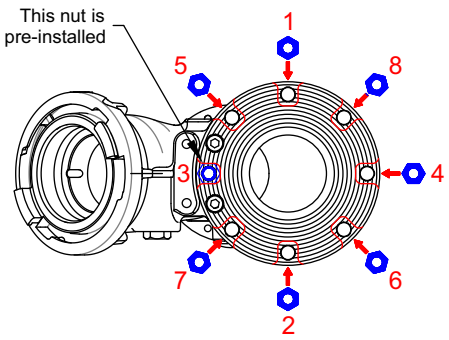


Figure 4.2.3

NOTICE

If flange isolation washers are desired for the ANSI 150 flange joint, It is recommended to install them under the bolt heads or nuts on the mating flange (standpipe or hydrant) rather than within the notches on the Booster Inlet Adapter. It is not necessary to install isolation washers on both flanges.

4.2.4 INSTALLATION USING 3 ANSI 150 FLANGE INLET ADAPTER (SIDE A OPTION G)

When Side A option G is specified, the 3” ANSI 150 Flange Inlet Adapter is pre-installed on side A of the Booster. Four 5/8-11 x 3” bolts and thick washers are supplied. One of the bolts and an O-ring seal are pre-installed between the Inlet Adapter and Booster body. To install the Booster on a 3” ANSI 150 flange, refer to Figure 4.2.4 and the instructions below.

1. Install a ring gasket between the Booster and the mating flange.
2. Slide thick washers over 5/8-11 x 3” bolts. Slide (4) bolts through flanges and tighten until snug against mating flange. To prevent damage, verify that no bolt ends are close to contacting the Booster body. If they are close, then stack additional thick washers under the bolt heads or substitute studs with nuts. Stainless steel hardware is recommended.
3. Tighten (4) bolts or studs to 76-80 ft-lb (100-110 N-m) torque in the alternating sequence shown in Figure 4.2.4. Since only 4 bolts are required, either the 1-2-3-4 sequence or the 5-6-7-8 sequence may be used depending on desired orientation. Tighten at graduated intervals of 30%, then 60%, and finally 100% of the specified torque.
4. To install the monitor, (see section 4.3).

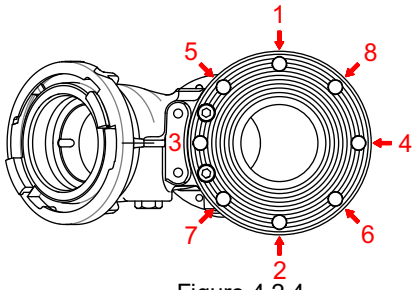


Figure 4.2.4

4.3 MONITOR COMPATIBILITY AND INSTALLATION

A series of TFT Industrial Monitors has been created specifically for use with the Booster, Hydrant Under Monitor, and Industrial Valve Under Monitor. These monitors are specified by adding the –Z suffix to the desired model of TFT Monsoon, Typhoon or Hurricane (e.g. Y5-DP1A-Z). Models with –Z suffix are the only monitors verified to be compatible with the Booster. All TFT Industrial Monitors feature American Red powder coating and monitor base heights chosen to work well with the Booster, HUM and IVUM. In addition, all Industrial Monsoons and Typhoons include aluminum crank handles on each worm-drive control.

⚠WARNING

Exceeding safe operating range could cause pressure vessels to rupture and result in injury.

- **Do not install shutoff valves downstream of Booster.**
- **Do not exceed the lowest maximum operating pressure rating of any devices assembled together.**
- **Do not exceed the lowest maximum flow of any of the devices assembled together.**
- **Do not install monitor extension pipes between Booster and monitor such as Task Force Tips Extend-A-Gun, Akron 3406, or Elkhart Extender.**
- **Do not exceed 20” (508 mm) monitor height measured from bottom edge of monitor inlet (flange or female thread) to centerline of monitor outlet. Examples of acceptable and forbidden monitors are illustrated below.**

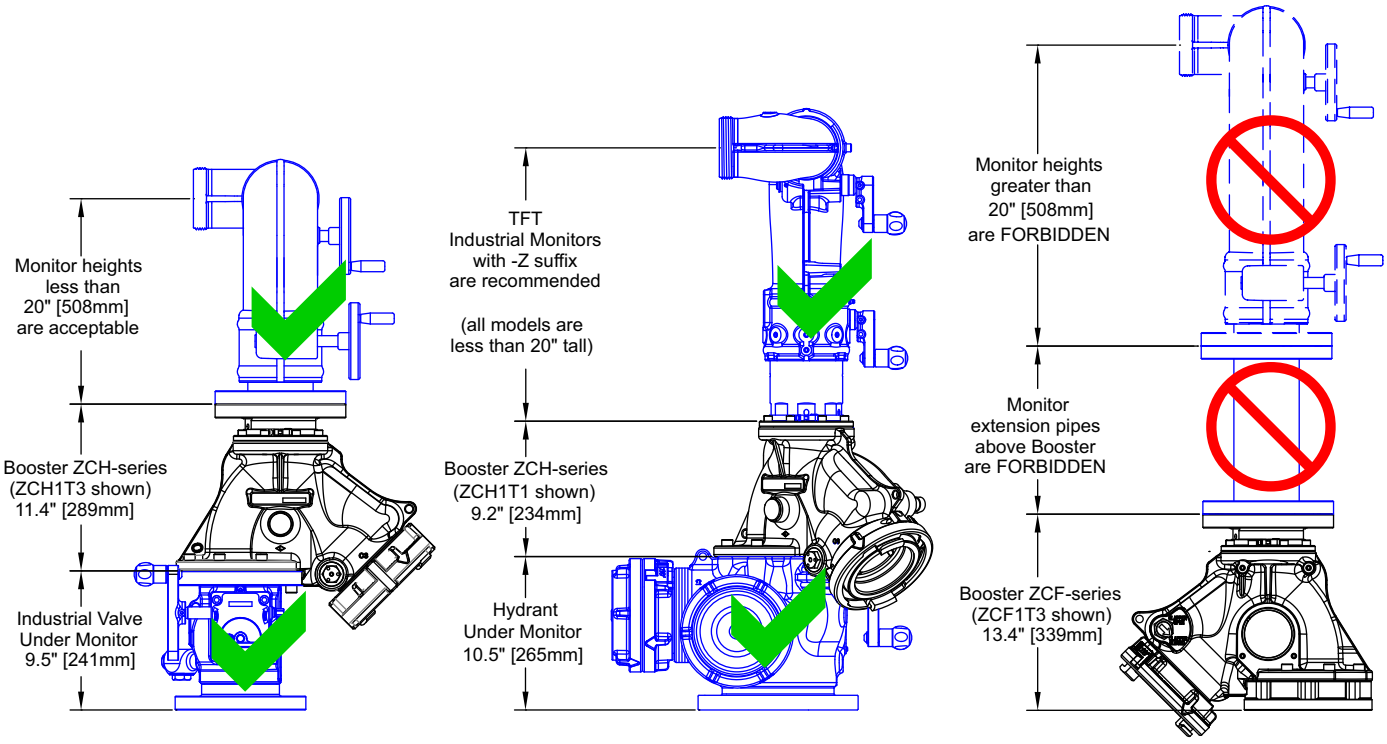


Figure 4.3

4.3.1 MONITOR INSTALLATION USING CODE-RPM DIRECT CONNECTION (SIDE B OPTIONS 1 AND 2)

1. Assemble Monitor Base Clamp loosely per instructions from monitor manual. Place clamps over HUM outlet, in an orientation that allows access to tighten the Clamp screws.

2. Screw monitor onto HUM until threaded joint bottoms out. The monitor will leak if it is not bottomed out in this step. Do not use pipe dope or Loctite on the monitor base threads. These threads are sealed with the O-ring shown, which is installed in the monitor at the factory. The use of thread locking compounds will make removal difficult.

3. Unscrew monitor until the “Straight Ahead Reference Mark” is facing the desired direction. Monitor may be unscrewed up to one full rotation (360°) from the bottomed out position. The monitor will leak if unthreaded more than one rotation from the bottomed out condition.

4. Ensure that Clamp assembly does not interfere with RC monitor Power/Com Cable (if applicable). Reposition Clamp if needed.

5. Tighten each screw gradually until both are finger tight with approximately equal spacing between opposite ends of Clamp.

1. Carefully tighten each screw one additional turn using a 5/32 hex wrench by alternating to the opposite screw in half turn increments until tight. Over tightening screws will damage the screws and distort the clamps.

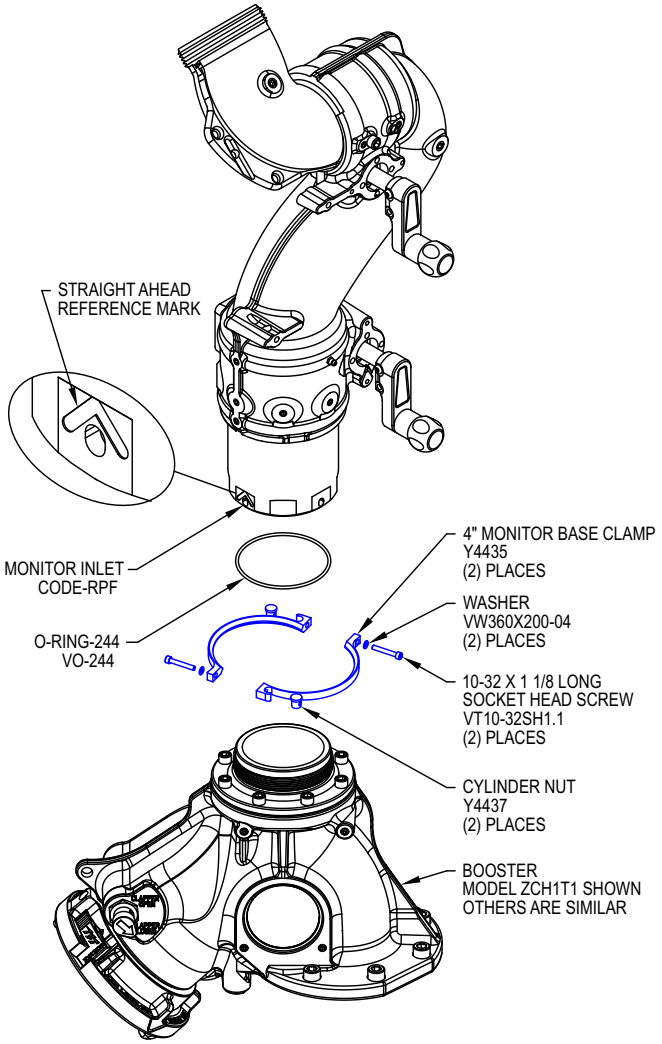


Figure 4.3.1

4.3.2 MONITOR INSTALLATION USING 4” ANSI 150 FLANGE (SIDE B OPTIONS 3 AND 4)

1. Install a ring gasket between the monitor and Booster.

2. Hand tighten all nuts until snug against the flanges.

3. For 4” ANSI 150 flanges with 5/8-11 bolts or studs, tighten to 76-80 ft-lb (100-110 N-m) torque in the alternating sequence shown in Figure 4.3.2. Tighten at graduated intervals of 30%, then 60%, and finally 100% of the specified torque.

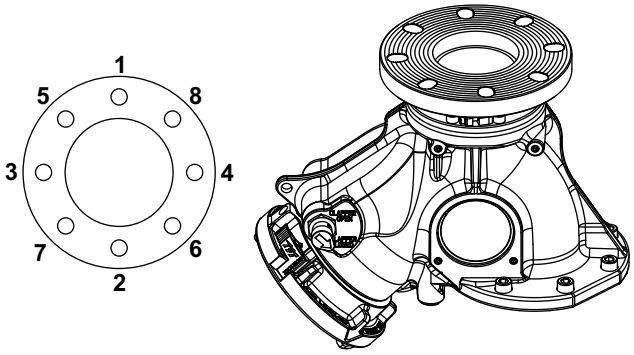


Figure 4.3.2

4.3.3 MONITOR/ELBOW INSTALL USING QUICK CONNECT COUPLING (SIDE B OPTIONS Q AND T)

Boosters with Side B options Q and T are supplied with the male threaded side of the quick connect installed. A Booster with side B option Q is shown with a 4.5”NH quick connect monitor. Side B option T for the 2.5”NH Quick Connect is similar, but only has one tongue and slot rather than two. The female coupling of the appropriate monitor or elbow can be installed using these instructions. For additional details, refer to documents LIY-250 for 4.5”NH quick connect and LIY-300 for Tornado with 2.5”NH inlet.

1. For female couplings with locking pins, hold pin out and push coupling up as far as it will go, then release the pin. This will hold the coupling out of the way while mounting the monitor on the Booster. For elbows or other devices that do not include a locking pin on the female coupling, omit this step.

2. Align tongue(s) of female inlet into notches within male threaded outlet. This feature is a rotational lock to prevent loosening of the coupling when the device is swiveled. Slide tongue(s) into slots(s) until the threads make contact.

3. Rotate coupling clockwise until threads engage on male threaded outlet, then release locking pin (if so equipped). Continue to rotate coupling until tight. Locking pin will ratchet across detents, but it is not necessary to over-tighten the coupling if locking pin ends up between detent positions. To prevent damage, do not use locking pin as a lever to tighten or loosen coupling.

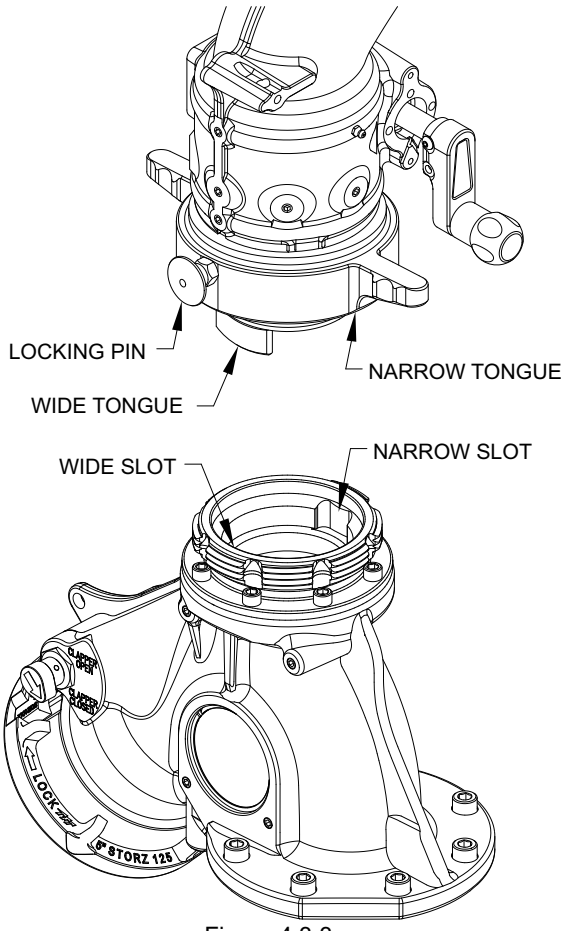


Figure 4.3.3

4.3.4 MONITOR INSTALLATION ON BOOSTER OSC

The Booster OSC is compatible with TFT Monsoon, Typhoon and Hurricane monitors that are specified with inlet option W swivel base for Booster OSC only.

1. Verify O-ring (size -243) is installed on monitor inlet barb and is free of debris. Apply silicone grease over O-ring.
2. Depress the red latch and remove the safety guard from Oscillating Booster.
3. Use 5/16” hex key to remove eight 3/8”-16 x 1.25” screws from outlet of Oscillating Booster. Set screws aside. Apply blue Loctite to the eight screw holes.
4. Insert barb on Monitor inlet into outlet bore of Oscillating Booster and press down until feeling the O-ring seat into the bore. Rotational orientation does not matter. To make installation easier, it is recommended to adjust the monitor elevation so that the outlet is pointing straight up. This will balance the outlet over the inlet.
5. Install eight screws finger tight, then continue to tighten all eight screws in an alternating opposing pattern until snug. Maximum torque allowed is 200 in-lb (17 ft-lb, 23 N-m). It may be necessary to pivot the monitor horizontally by hand to access one of the screw holes that is covered by the oscillating yoke on the monitor base.
6. Using a 3/16” hex key, remove four ¼-20 x .75” long socket head cap screws and the two yoke pieces from the side of the monitor base. Set these parts aside temporarily. Apply blue Loctite to the four screw holes.
7. Pivot monitor by hand until vertical pin of oscillating linkage is able to slip into notch in monitor base.
8. Install two yoke pieces and ¼-20 screws over pin on linkage. Maximum torque allowed is 76 in-lb (6 ft-lb, 8 N-m).
9. Rest top of safety guard over angle indicator disc. Slide the fork on the bottom of the safety guard around the groove on the top of the gearbox, then pivot the safety guard until it slides around the monitor base. A spring-loaded latch will snap over a screw on the monitor base. Verify the red latch is secure against the screw.

5.0 USING THE BOOSTER/BOOSTER OSC

5.1 OPERATION AND CLAPPER POSITION INDICATOR

The Booster has no user controls since it functions automatically when water is supplied from either the Side A Inlet or LDH Inlet Port C3. Flow through LDH Inlet Port C3 can be immediately verified by observing the clapper position indicator that is rigidly connected to the swing-check valve. Gravity holds the check valve closed unless water pressure is supplied to LDH Inlet Port C3.

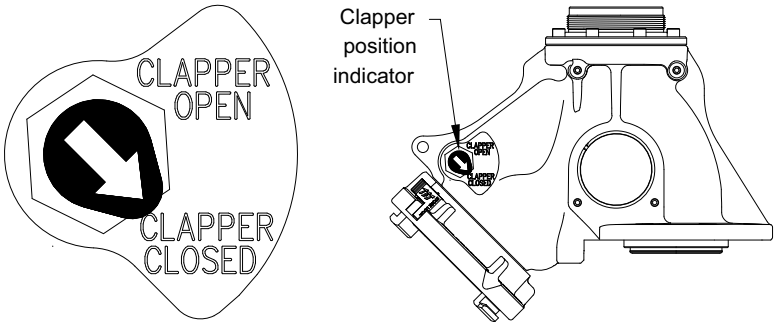


Figure 5.1

5.2 TYPICAL USE SCENARIOS

The Booster allows a monitor to receive water from either a standpipe or hydrant below using the Side A Inlet, or from another source that is connected to the LDH Inlet Port C3. Port C3 allows a pump to be connected in line with the source to boost the pressure available to the monitor. Port C3 also allows an inline eductor or other foam injection system to be attached to supply foam solution to the monitor. See Section 6.0 on page 21. to estimate the performance of each inlet used independently. Port C3 can serve as the primary inlet to the monitor during periods when water mains are not operational by providing fire protection using above ground hoses.

NOTICE

To avoid back flow into the water supply:

- **The Side A Inlet and LDH Inlet Port C3 must not be used simultaneously.**
- **Install the TFT Hydrant Under Monitor or Industrial Valve Under Monitor upstream of the Side A Inlet to isolate it from the water supply when LDH inlet Port C3 is used.**
- **In addition, the Hydrant Under Monitor offers two LDH outlets that can be used to supply a pump or foam eductor. See documents LIZ-055 and LIZ-050 for additional information regarding the TFT Hydrant Under Monitor and Industrial Valve Under Monitor.**

5.2.1 SUPPLY MONITOR FROM THE SIDE A INLET

Blue shading in Figure 5.2.1 indicates water delivered to the monitor from the Side A Inlet. When a water supply is introduced from a standpipe or hydrant below the Booster, the swing-check valve (clapper) within the Booster will remain closed to keep Port C3 sealed. Clapper position can be verified visually by viewing the position indicator shown in Figure 5.1. The water supply will flow through the Booster to the monitor with minimal pressure loss as described in Section 6.0.

To boost the discharge pressure or introduce foam solution to the monitor, (see section 5.2.2).

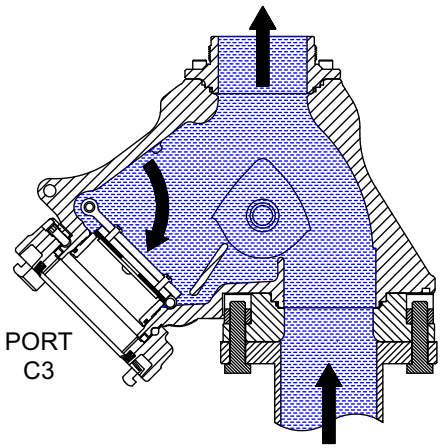


Figure 5.2.1

5.2.2 SUPPLY MONITOR FROM LDH INLET PORT C3 (BOOST PRESSURE OR INTRODUCE FOAM)

NOTICE

To avoid back flow into the water supply, a valve must be closed upstream of the Side A Inlet. The TFT HUM and IVUM are suitable valves for this purpose.

Blue shading in Figure 5.2.2A and B indicates water delivered from the standpipe or hydrant below, and purple shading indicates water that has been supplemented by a pump and/or foam injection device. To boost the discharge pressure or introduce foam solution to the monitor, follow the steps below.

When the water supply is from an HUM installed below the Booster, see LIZ-055 for complete instructions. For water supplies from other sources, follow the instructions below.

1. Close valve installed upstream of the Booster Side A Inlet.

2. Connect a hose from the water supply to LDH Inlet Port C3 of the Booster. Pumps and/or foam injection devices should be connected in this hose line.

3. After all connections have been made, introduce the water supply. When water reaches the Booster, the swing-check valve (clapper) will swing open and the monitor will begin to flow. Clapper position can be verified visually by viewing the position indicator shown in Figure 5.1.

4. The pump may now be throttled to achieve the desired nozzle performance. The pressure ratings of the Booster and the monitor must not be exceeded. To estimate pressure loss through the Booster (see section 6.0).

5. When operation is completed, shut off the water supply and disconnect all hoses. The Side A Inlet of the Booster must be drained through the upstream device to which it is mounted. See Section 5.3 on page 19.

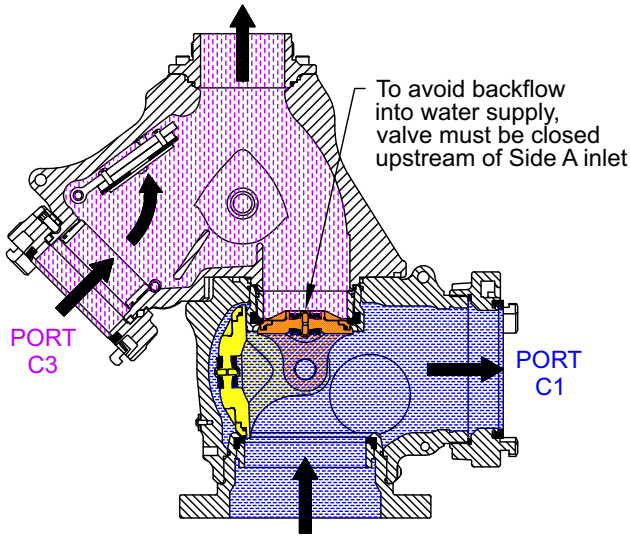


Figure 5.2.2A

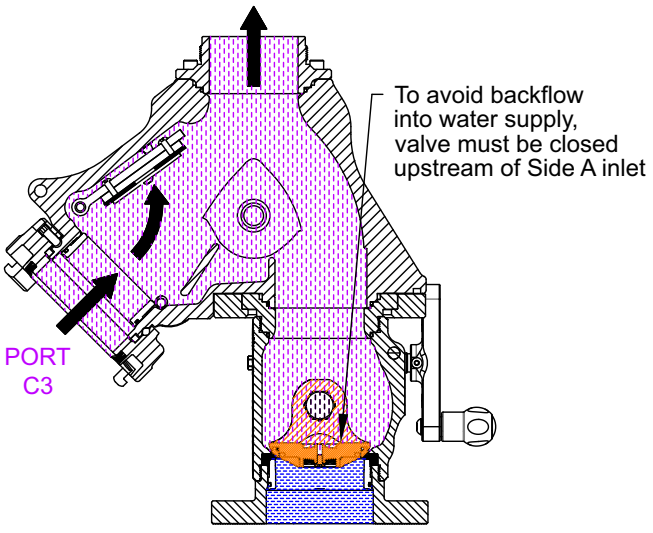


Figure 5.2.2B

5.2.3 TEMPORARY FIRE PROTECTION

The Booster is able to provide uninterrupted fire protection during times when water mains are inoperable. The Booster, monitor and nozzle can be installed on riser flanges, manifolds, and hydrant elbows. Hose can be laid for a period of weeks or months with vehicle access routs maintained using hose bridges when needed. The Booster and monitor can be relocated again and again to coordinate with re-construction progress of fire main replacement programs, outages, and for protection of temporary fire hazards.

5.2.3.1 TEMPORARY FIRE PROTECTION USING HOSE

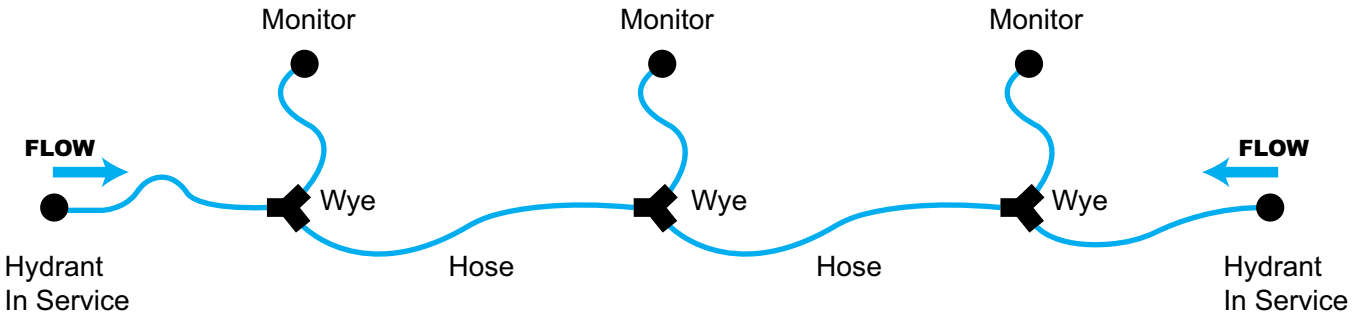


Figure 5.2.3.1

5.2.3.2 DIRECT CONNECTION WITH BROKEN WATER MAIN

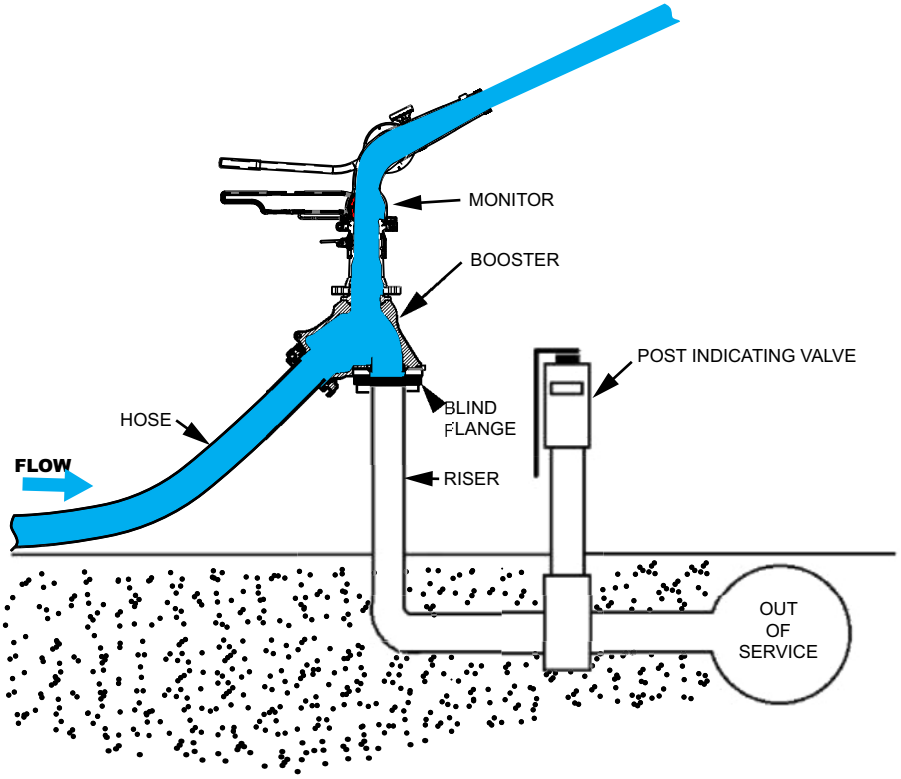


Figure 5.2.3.2

5.2.3.3 DIRECT CONNECT WITH BROKEN HYDRANT

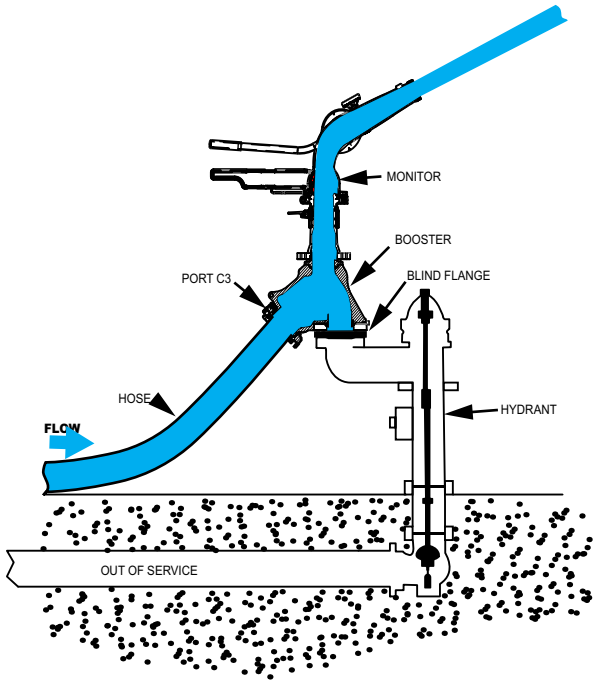


Figure 5.2.3.3

5.2.3.4 CONNECTION WHEN THERE IS NO WATER MAIN

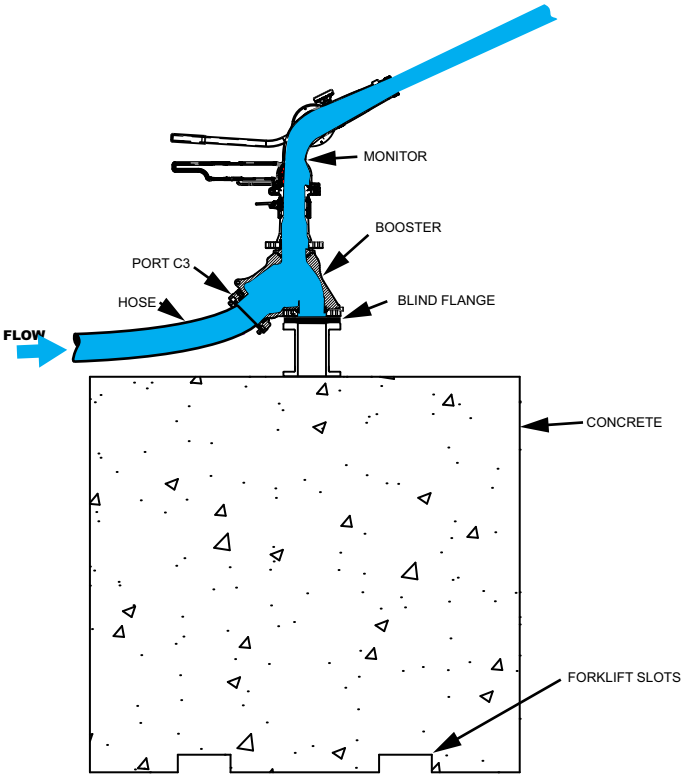


Figure 5.2.3.4

5.3 DRAINING RESIDUAL WATER

⚠WARNING **Monitors, valves, and piping may be damaged if frozen while containing sufficient amounts of water. Such damage may be difficult to detect visually and can lead to possible damage, injury, or death. Equipment that may be exposed to freezing conditions must be drained immediately following use to prevent damage.**

⚠CAUTION **Structural damage from corrosion can result from failure to drain appliance between uses. Damage from corrosion can cause injury due to equipment failure. Always drain appliance between uses.**

The automatic water drain valve allows the monitor and Booster body to drain after the upstream water supply is shut off, even with the swing-check valve closed. This minimizes susceptibility to damage from corrosion and freezing water. The drain valve seal membrane is designed to close automatically when pressure exceeds 5 psi. When pressure drops below 5 psi, the seal membrane will open to allow drainage. Proper function must be verified prior to fireground use.

To fully drain the Side A Inlet of the Booster, the upstream device to which it is mounted must also be drained. The TFT Hydrant Under Monitor and Industrial Valve Under Monitor include additional automatic drain valves that serve this purpose.

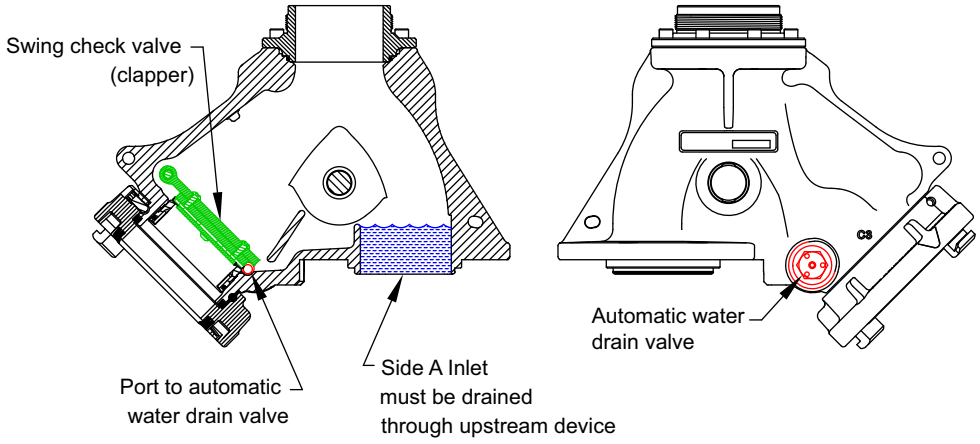


Figure 5.3

5.4 ADJUSTING SWEEP ANGLE

Oscillating sweep angle can be adjusted from zero to 120 degrees in 10 degree increments at any time while oscillating or stationary, without removing the safety guard that encloses the oscillating mechanism. From the 0° OFF setting (screw head showing through safety guard), turning clockwise allows angles of 20°, 40°, 60°, 80°, 100° or 120°. Turning counter-clockwise allows angles of 30°, 50°, 70°, 90°, or 110°. DO NOT REMOVE THE SAFETY GUARD WHILE FLOWING. A padlock can be attached to the safety guard to prevent removal.

To adjust the sweep angle:

1. Pull the pin on the bottom of the gearbox and pivot the monitor by hand clockwise or counter-clockwise. IF RESISTANCE IS FELT, DO NOT ATTEMPT TO FORCE THE MONITOR BEYOND THAT POINT.
2. To reach a setting beyond the toggle point:
   A. Without flowing: use a ½" wrench to manually rotate the external OSC drive hex shaft and then pivot the monitor by hand.
   B. When flowing: Continue to gently push the monitor against the toggle point. As the oscillating mechanism continues to rotate, it will eventually allow the angle adjustment disc to reach the desired setting.
3. When desired setting is reached, release pull pin and adjust the monitor slightly until pull pin snaps into place.
4. Center the sweep pattern on the target using the horizontal adjustment (IE: tiller, handwheel or crank) on the monitor.
5. The sweep angle range, centering, and discharge elevation can be verified "dry" (without flowing water) by rotating the external OSC drive hex shaft throughout the complete sweep range. Final verification is made by operating under actual flowing conditions.

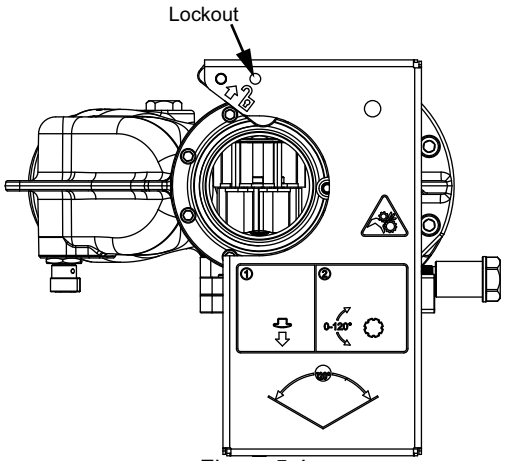


Figure 5.4

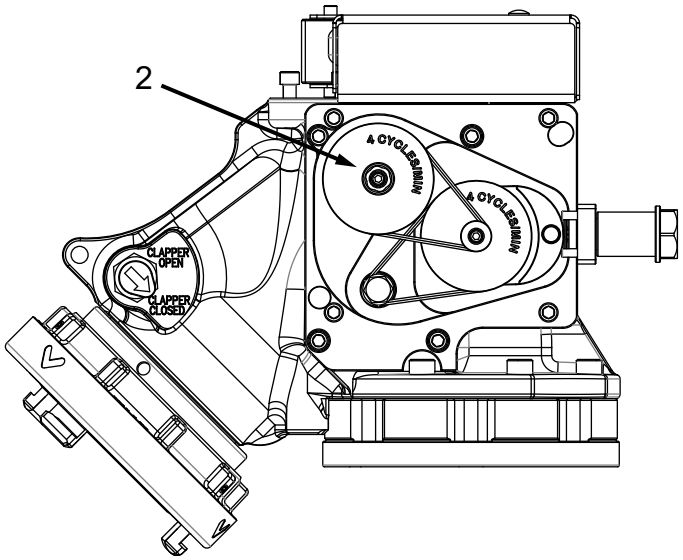
To make a fine adjustment of 10° wider or narrower than the current setting, it is necessary to reach an adjustment on the opposite side of the adjustment disc. To avoid the nozzle stream striking objects away from the intended target, it is always safest to reduce the angle towards the 0° OFF position, then increase the angle towards the desired setting.

5.5 CHANGING OSCILLATION SPEED

The Booster OSC comes with the 4 cycles per minute pulley set installed. To increase the oscillation speed, the 4 cycle per minute pulley set may be exchanged for the 8 cycle per minute set that is stored within the safety guard. The pulleys will need to be changed as follows:

1. To access pulleys, follow steps 1 to 3 in Section 4.2.2.

2. Grasp one pulley. Using a 3/16” hex key, remove ¼-20 x .75” long screw from center of one pulley and set the parts aside temporarily. Repeat for other pulley.



3. Loosen thumb nut (Section 8.2 number 9) on bottom of safety guard (section 8.2 number 2). Remove 8 cycle/ min pulleys from safety guard and slide original 4 cycle/ min pulleys into safety guard instead. Install thumb nut snug against bottom pulley.

4. Slide screws into pulleys and apply blue Loctite to the screw threads. Install pulley with socket in the upper-left position and install double pulley in the lower-right position. Tighten the ¼-20 screws snug. Maximum torque allowed is 76 in-lb (6 ft-lb, 9 N-m).

5. To reassemble, follow steps 6 to 10 in section Section 4.2.2.

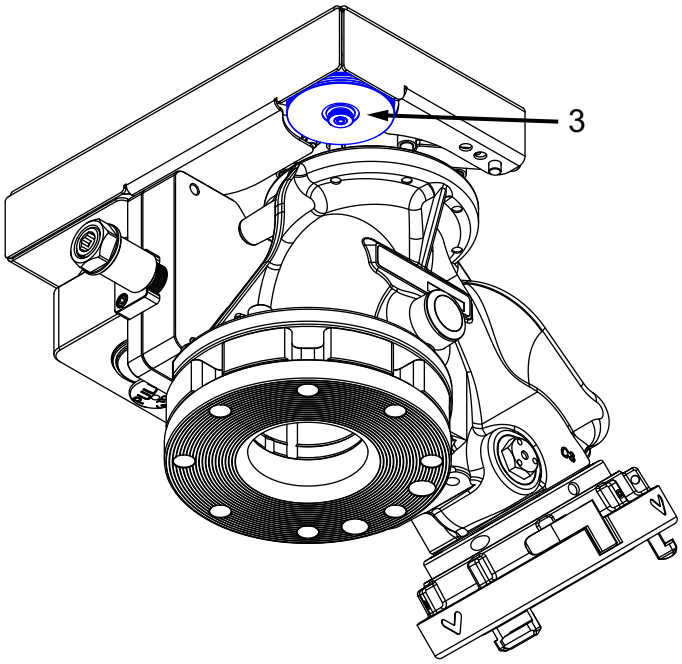


Figure 5.5

6.0 PRESSURE LOSS

The flow coefficients below and curves in figure 8.0 represent all models of the Booster. All data is estimated from the designated inlet to the side B outlet of the Booster only and does not include pressure losses of any upstream or downstream equipment such as hoses, monitors and nozzles.

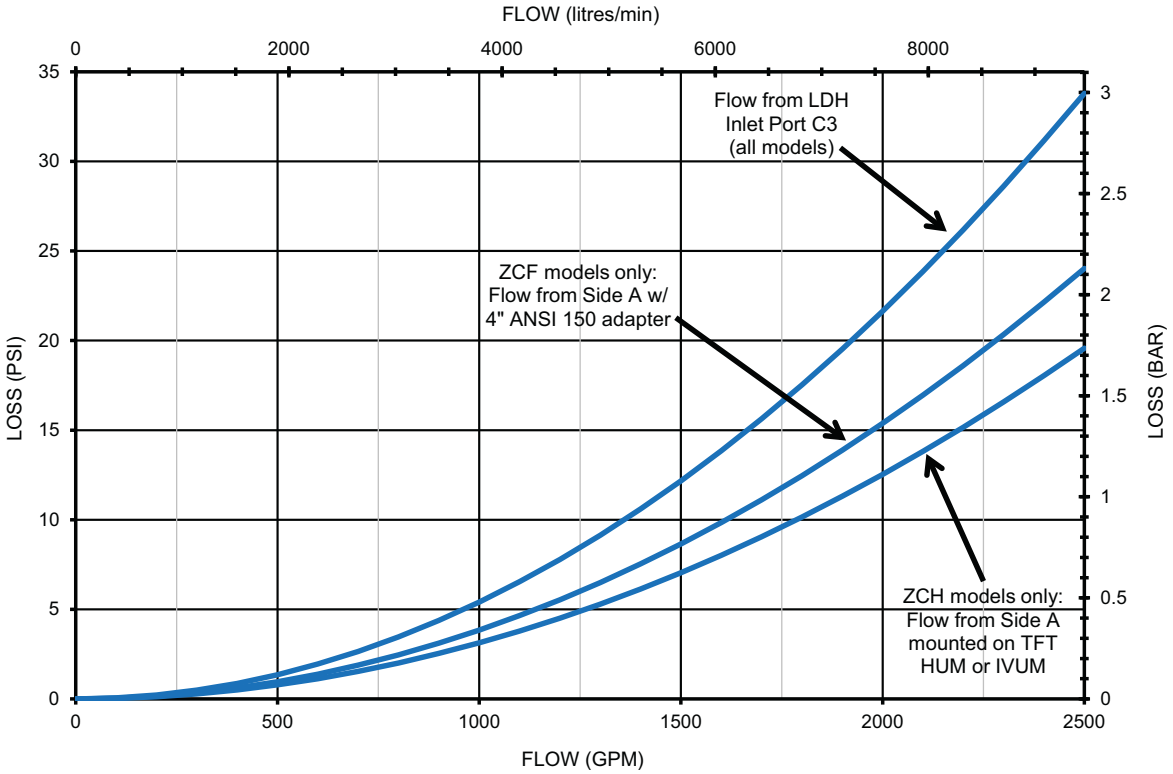


Figure 6.0

7.0 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.

8.0 MAINTENANCE

TFT products are designed and manufactured to be damage resistant and require minimal maintenance. However, as the primary firefighting tool upon which your life depends, it should be treated accordingly. The unit should be kept clean and free of dirt by rinsing with water after each use. Any inoperable or damaged parts should be repaired or replaced before placing the unit in service. To help prevent mechanical damage, do not drop or throw equipment.

In applications where appliances are left continuously connected to the apparatus or other devices or are used where water is trapped inside the appliance, the appliance must be flushed with fresh water following each use and inspected for damage.

This appliance should be cleaned and visually inspected inside and out at least quarterly, or as water quality and use may require. Moving parts such as handles, valve ball and couplings should be checked for smooth and free operation. Seals shall be greased as needed with Silicone based grease such as Molykote 112. Any scrapes that expose bare aluminum should be cleaned and touched up with enamel paint such as Rust-Oleum. Replace any missing or damaged parts before returning to service.

Any equipment taken out of service due to failure should be returned to the factory for repair or replacement. If you have any questions regarding the testing or maintenance of your valve, please call Task Force Tips at 800-348-2686.

8.1 SERVICE TESTING

In accordance with NFPA 1962, equipment must be tested a minimum of annually. Units failing any part of this test must be removed from service, repaired and retested upon completion of the repair.

8.2 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 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.

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

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

9.0 EXPLODED VIEWS AND PARTS LISTS

Exploded views and parts lists are available at tft.com/serial-number.

10.0 OPERATION AND INSPECTION CHECKLIST

BEFORE EACH USE, appliances must be inspected to this checklist:

1. There is no obvious damage such as missing, broken or loose parts, dents, cracks, corrosion, or other defects that could impair operation
2. The waterway is clear of obstructions
3. Monitor is securely attached to the mount
4. Hose and nozzle are securely attached
5. All swiveling elements rotate freely
6. Monitor is pointed in a safe direction

BEFORE BEING PLACED BACK IN SERVICE, appliances must be inspected to this list:

1. There is no obvious damage such as missing, broken or loose parts, dents, cracks, corrosion, or other defects that could impair operation
2. The waterway is clear of obstructions
3. Valves opens and closes smoothly and fully
4. There is no damage to any thread or other type connection
5. All locks and hold-down devices work properly
6. Internal gaskets are in good condition
7. All swiveling connections rotate freely
8. There are no missing parts or components
9. The marking for maximum operating pressure is visible
10. There are no missing, broken, or worn lugs on couplings

⚠WARNING **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.**