

PROTECTOR™ STATION MONITOR SERIES

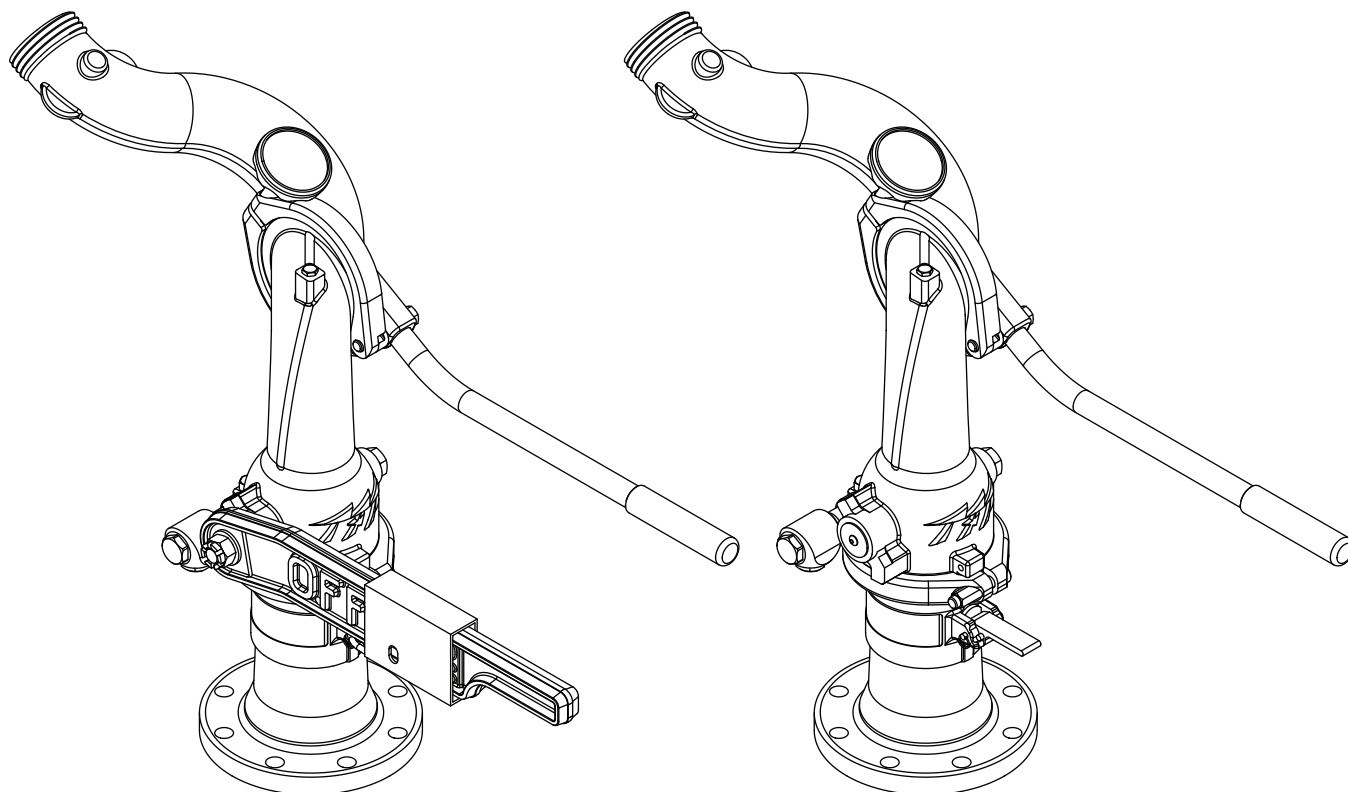
INSTRUCTION FOR INSTALLATION, OPERATION, AND MAINTENANCE

⚠ 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/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.



Shown with Optional Valve

[See section 3.2](#) for Flow/Pressure Operations Envelope



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.







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

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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

	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.
	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.
	Injury or damage can occur from an inadequately supported monitor. The mounting must be capable of supporting the nozzle reaction force.
	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.
	To prevent mechanical damage, do not drop or throw equipment.

3.0 GENERAL INFORMATION

The Task Force Tips Protector is a simple and rugged fixed station monitor with many unique features. Its patented waterway gives low friction loss and delivers water to the nozzle with fewer twists and turns than a conventional monitor. The optional built-in on/off valve with position indicator eliminates the need to add a costly valve to the monitor installation. The Protector is capable of flowing up to 1250 gpm (4800 L/min) while maintaining a FULL 360° rotational ability. The lever-action rotational lock is activated in one motion, visually confirmed, and securely holds the monitor's horizontal position. The Protector can be directly bolted to many common pipe flanges. The outlet is available with various 2.5" (65 mm) male threads. The simple and basic design requires no grease application or other maintenance. Swiveling elements and seals (including valve seat) can be replaced within a few minutes with common hand tools. All models are equipped with an automatic drain valve to fully drain the monitor after each use. A threaded pipe port (1/4" NPT) (6 mm) is provided for pressure gauge installation.

3.1 SPECIFICATIONS

	MANUAL	
	US	METRIC
Weight (with optional shut off valve)	35.2 lbs	15.7 kg
Weight (without optional shut off valve)	27.8 lbs	12.5 kg
Minimum Flow Area	4.36 in ²	28.1 cm ²
Maximum Operating Pressure	250 psi	17 bar
Maximum Flow	1250 gpm	4800 l/min
Operating Temperature Range of Fluid	33°F to 120°F / 1°C to 50°C	
Storage Temperature Range	-40° to 150°F / -40° to 65°C	
Materials	ANSI A356.0-T6 Aluminum, 6000-series Aluminum, 18-8 Stainless Steel, Nylon, acrylonitrile rubber, Dupont Alcryn 2080BK	

Table 3.1

3.2 OPERATING ENVELOPE



Damage or injury could result from operating the monitor beyond the safe operating envelope. Do not operate the monitor outside the envelope in the following graph(s).

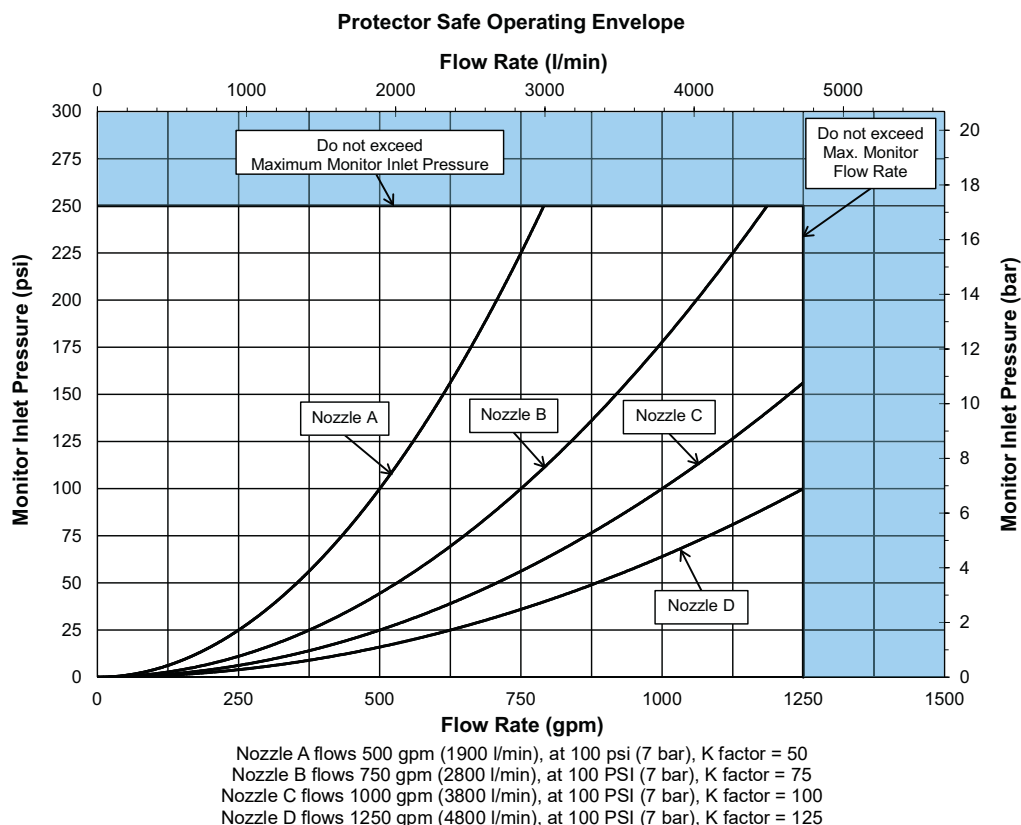


Figure 3.2A

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.

To reduce galvanic corrosion, it is highly suggested to use galvanic isolator kits between the monitor & mounting flange. Order Part # Z-G4A150 (4") or Z-G3A150 (3").

3.4 VARIOUS MODELS AND TERMS

The Protector monitor is available in several different models and inlet connections. The two body styles are shown below.

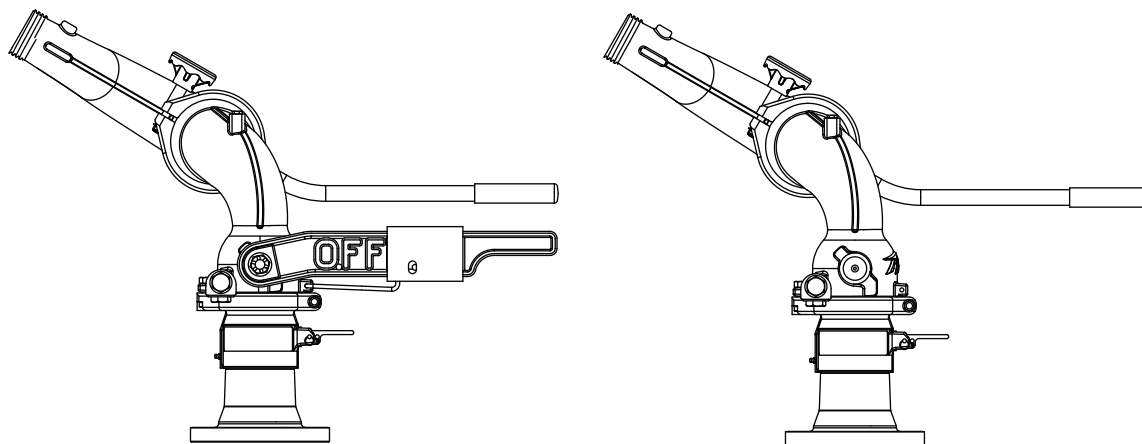


Figure 3.4A

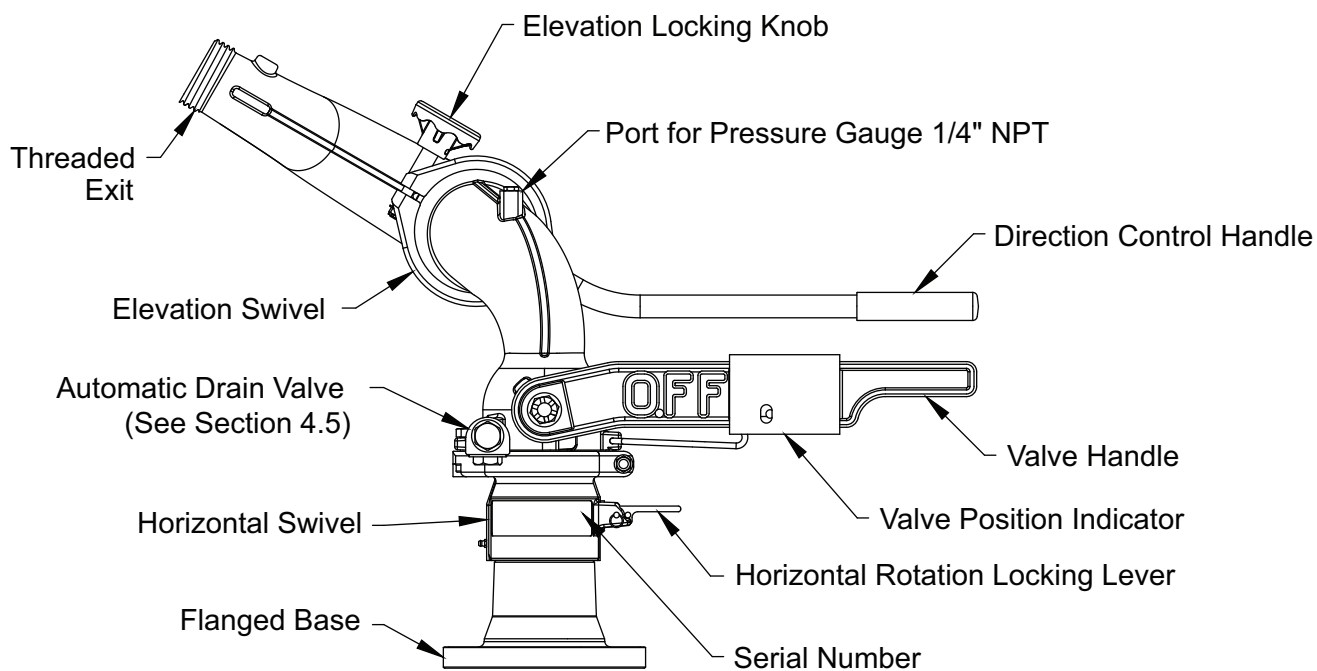


Figure 3.4B

3.5 INLETS AND OUTLETS

There is a wide variety of inlet and outlet options for the Protector monitor. Monitor height varies depending on whether the flange inner diameter is 4" (100 mm) or 3" (80 mm), as shown below. Monitor height is measured from the bottom of the inlet flange to the centerline of the elevation swivel.

3.5.1 INLET FLANGES

Inlet Flange Option	Monitor Height (inlet to elevation swivel)	Height at +30° Elevation	Maximum Height at +80° Elevation
3" ANSI 125/150 (also DN80 PN20)	16.2 in (41.1 cm)	24.7 in (62.7 cm)	31.0 in (78.7 cm)
DN80 P16	16.2 in (41.1 cm)	24.7 in (62.7 cm)	31.0 in (78.7 cm)
4" ANSI 150 (also DN100 PN20)	19.1 in (48.5 cm)	27.6 in (70.1 cm)	33.9 in (86.1 cm)
DN100 PN16	19.1 in (48.5 cm)	27.6 in (70.1 cm)	33.9 in (86.1 cm)

Table 3.5.1

3.5.2 OUTLET OPTIONS

Three options are available for the 2.5 inch male threaded outlet:

- National Hose Thread (NH, also referred to as National Standard Thread)
- National Pipe Straight Hose (NPSH, also referred to as Iron Pipe Thread)
- British Standard Pipe Thread (BSP)

3.6 OVERALL DIMENSIONS

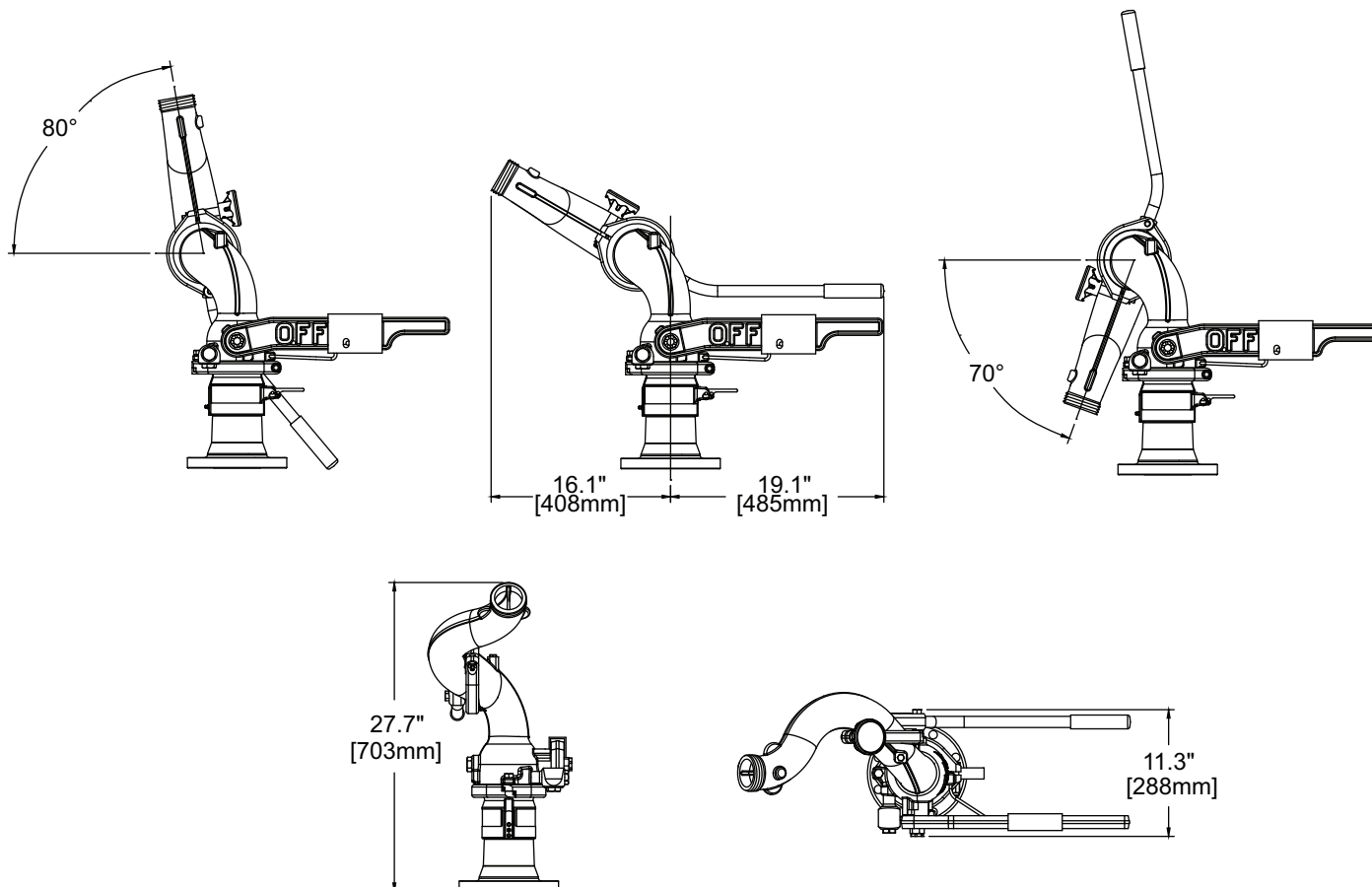


Figure 3.6A

4.0 INSTALLATION

The Protector station monitor is installed to a riser pipe by a bolted flange joint. Verify that no interference exists between the Protector and surrounding hardware that would limit its usefulness. If a valve is to be mounted under the Protector, verify that no interference exists with the valve handle. If a butterfly valve is to be mounted under the Protector, verify that no interference exists between the butterfly and the flanged base of the Protector when the valve is in its open position.

4.1 STRUCTURAL REQUIREMENTS

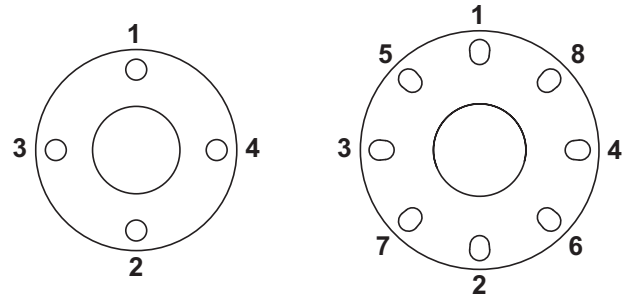


Reaction forces generated by master stream flows are capable of causing injury and property damage if not properly supported. Monitors should be securely installed by qualified individuals.

- 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.

The structure that the monitor is mounted to must withstand the internal pressure of the monitor as well as shear and bending forces due to nozzle reaction. Nozzle reaction can be as high as 1050 lbs (480 kg) (1250 gpm at 250 psi).

For flanged connections, the use of flat flanges without raised faces is recommended. Use a ring gasket as defined in ASME 16.21 or ISO 7483. Tighten flange bolts in an alternating sequence as shown below. Tighten sequentially each bolt or stud three times to 30%, then 60%, and finally 100% of the specified torque. Tighten to a total of 76-80 ft-lb (100-110 N·m).



Tighten Sequentially Each Bolt Three Times
to a Total of 76-80 ft-lb (100-110 N·m)

Figure 4.1

NOTICE

If equipped with a TFT Corrosion Isolation Sleeve, the use of a gasket on either side of the sleeve is required. Do not use a TFT Corrosion Isolation Sleeve as a gasket replacement.

FLANGE TYPE	OPTION #	OUTSIDE DIAMETER		THICKNESS		BOLT HOLE CIRCLE		# OF BOLTS	SIZE OF BOLTS	
		in	mm	in	mm	in	mm		in	mm
3" ANSI 125/150-DN80 PN20	1	7.5	190	0.75	20	6.0	152.5	4	5/8	16
4" ANSI 150-DN100 PN20	2	9.0	230	0.94	23	7.5	190	8	5/8	16
DN80, PN16 Flange	4	7.9	200	0.87	22	6.3	160	8	5/8	16
DN100, PN16 Flange	5	8.7	220	0.87	22	7.1	180	8	5/8	16

Table 4.1

4.2 NOZZLE INSTALLATION

The nozzle is simply screwed onto the monitor's exit threads.



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.



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.

4.3 PRESSURE GAUGE PORT

There is a 1/4" NPT female threaded hole adjacent to the elevation swivel. The hole is plugged from the factory. If a pressure gage is desired, unscrew the plug and install the gage using pipe sealant. Make sure the gage does not interfere with operation.

4.4 HANDLE INSTALLATION

For tiller models, the handle is shipped loose from the monitor and must be installed to complete the installation process. When installing the tiller handle, be sure to coat the threads of the mounting screw with the Loctite supplied in the hardware packet.

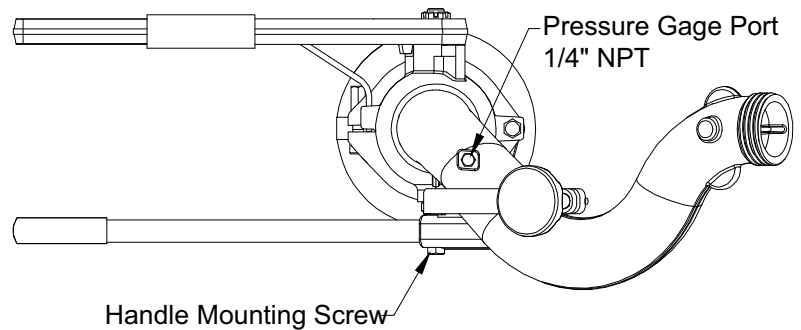


Figure 4.3

4.5 DRAINING RESIDUAL WATER

All Protector station monitors are equipped with an automatic drain valve attached to a port located just above the valve seat and/or lower seal. The automatic drain valve ensures the monitor is completely drained following use, which 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. If the automatic drain valve is omitted or disabled, then the monitor must be manually drained after use to prevent damage.

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.

NOTICE

All monitors, valves and standpipes exposed to freezing conditions must be drained immediately following use to prevent damage. To drain a standpipe, a drainage port must be opened underground below the frost depth to keep water out of the standpipe until the next use.

5.0 OPERATING INSTRUCTIONS

5.1 VALVE OPERATION

For models equipped with a built-in valve, the flow is OFF when the valve handle is horizontal and ON when the handle is vertical. The valve is manufactured so that it cannot be assembled out of phase. A position indicator shows the valve position as “OFF” or “ON”. The position that the valve is normally left in will depend upon your particular location’s standard operating procedure.



Sudden changes in valve position can cause pressure spikes (water hammer) and could lead to hose failure or an out of control monitor. Open and close the valve slowly to avoid water hammer.

5.2 HORIZONTAL ROTATION CONTROL

To rotate the Protector from side to side on its swivel base:

1. Lift the rotation lock lever
2. Rotate the monitor right or left using the directional control handle.

To lock the monitor in position:

1. Depress the rotation lock lever.

A small spring holds the rotation lock lever in the unlocked position when it is disengaged. When the monitor is not in use, the rotation lock lever should be kept in the locked position.

5.3 ELEVATION CONTROL

To change the up and down direction (elevation) of the stream:

1. Push or pull vertically on the directional control handle.

To lock the monitor in position:

1. Twist the elevation locking knob clockwise to increase the drag on the upper swivel joint and “lock” the monitor at a particular elevation.



Debris in the nozzle may cause off center nozzle reaction. Injury or damage from spinning or sudden movement of the monitor could occur. To reduce the risk of an out of control monitor:

- Always check for waterway obstructions before flowing water
- Always keep the rotation lock tight when not rotating the monitor
- Always keep one hand on the tiller handle when loosening the rotation lock
- When 360° rotation is not needed, install horizontal rotation stop bolts to limit monitor travel

NOTICE

Select discharge devices that do not exceed the 70 ft-lb locking capability of the elevation lock. For a typical fog nozzle, the maximum allowable weight is about 40 lbs (18.1 kg).

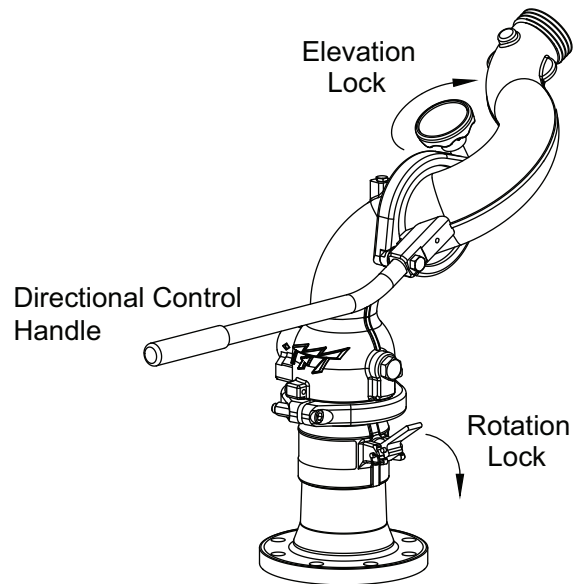


Figure 5.2

6.0 FLOW CHARACTERISTICS

6.1 AUTOMATIC NOZZLES

Automatic nozzles maintain a constant pressure by adjusting their orifice to match the available flow. Consult the nozzle manufacturer for maximum flow and pressure range. In all cases do not exceed 1250 gpm (4800 L/min) and 250 psi (17 bar).

6.2 MST-4NJ STACKED TIPS FLOW AND REACH

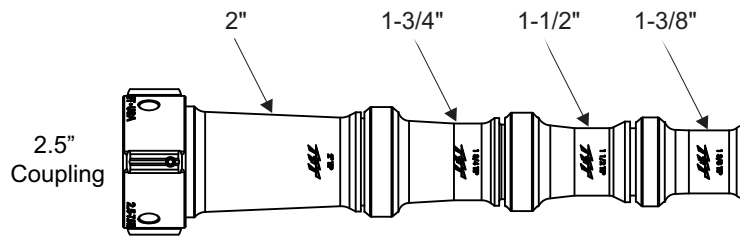


Figure 6.2A

NOZZLE DIAMETER	NOZZLE INLET PRESSURE							
	40 PSI		60 PSI		80 PSI		100 PSI	
	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)
1.375"	360	120	440	180	500	240	560	300
1.5"	420	140	520	210	500	280	670	350
1.75"	580	190	700	290	810	380	910	480
2.00"	750	250	920	380	1000	500	1190	630

NOZZLE DIAMETER	NOZZLE INLET PRESSURE							
	2.8 BAR		4.1 BAR		5.5 BAR		7 BAR	
	FLOW (L/min)	REACTION (KG)	FLOW (L/min)	REACTION (KG)	FLOW (L/min)	REACTION (KG)	FLOW (L/min)	REACTION (KG)
35 mm	1360	50	1670	80	1890	110	2120	140
38 mm	1590	60	1970	100	2270	130	2540	160
45 mm	2200	90	2650	130	3070	170	3440	220
50 mm	2840	110	3480	170	4010	230	4500	290

Table 6.2

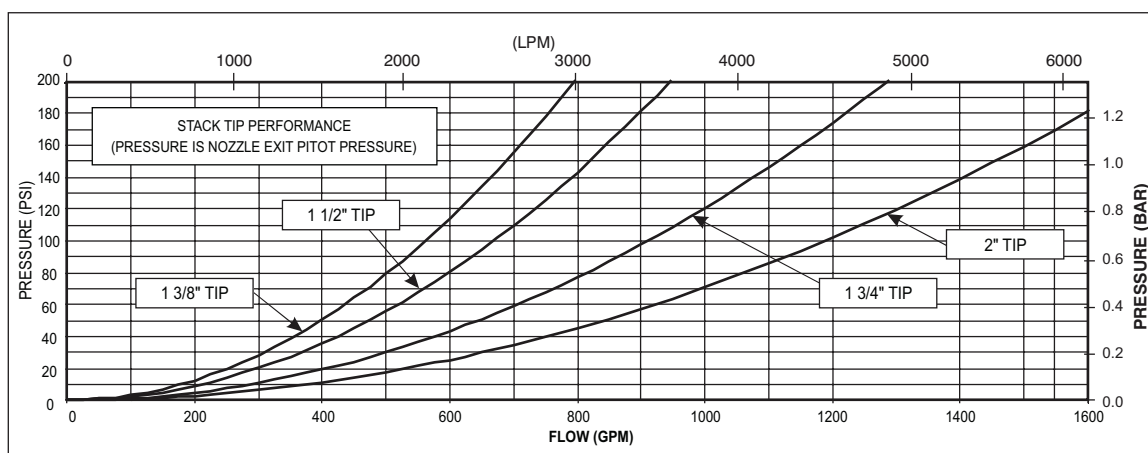


Figure 6.2B

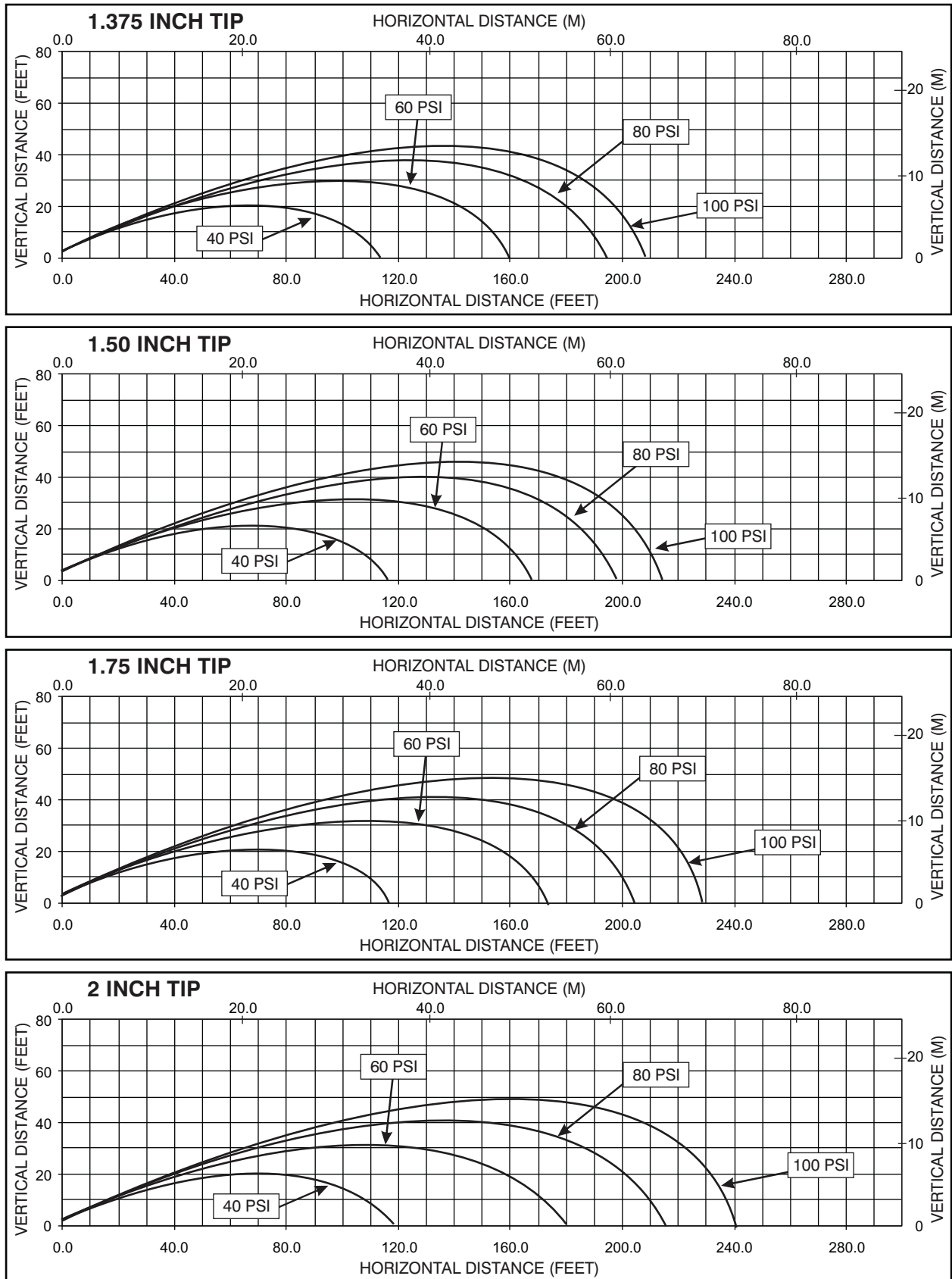


Figure 6.2C

6.3 EFFECTS OF ELEVATION ANGLE ON STREAM REACH

This graph shows approximately how differences in elevation angle can affect stream reach. Critical applications should be tested in actual conditions to verify adequate reach.

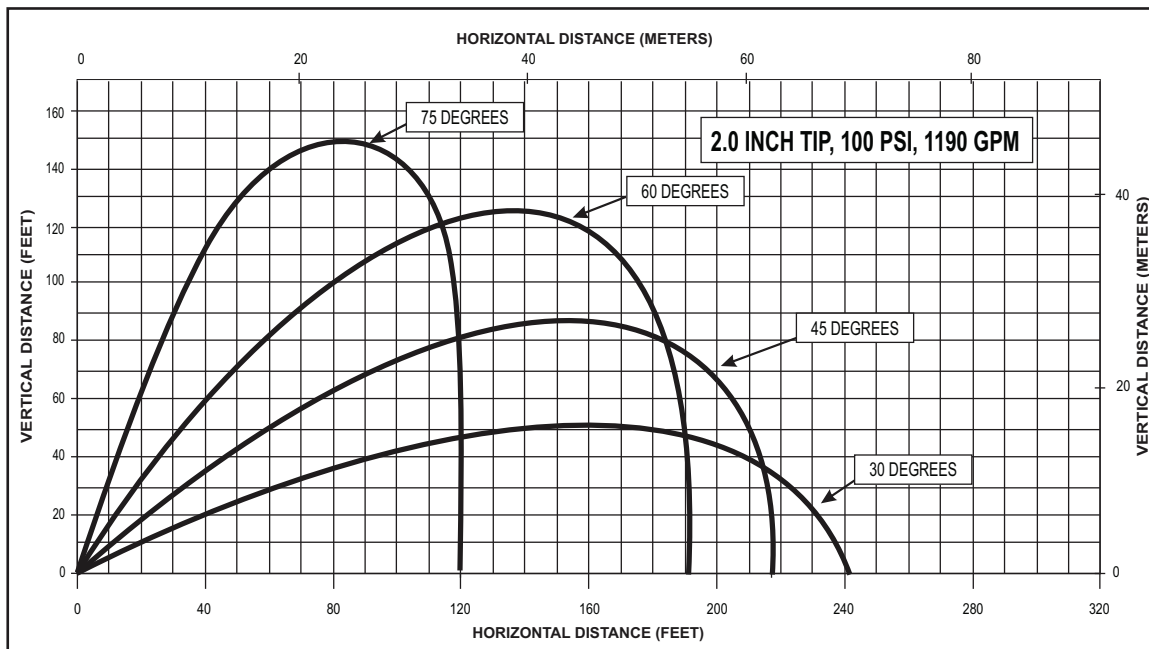


Figure 6.2A

This graph shows approximately how a moderate wind can affect stream reach.

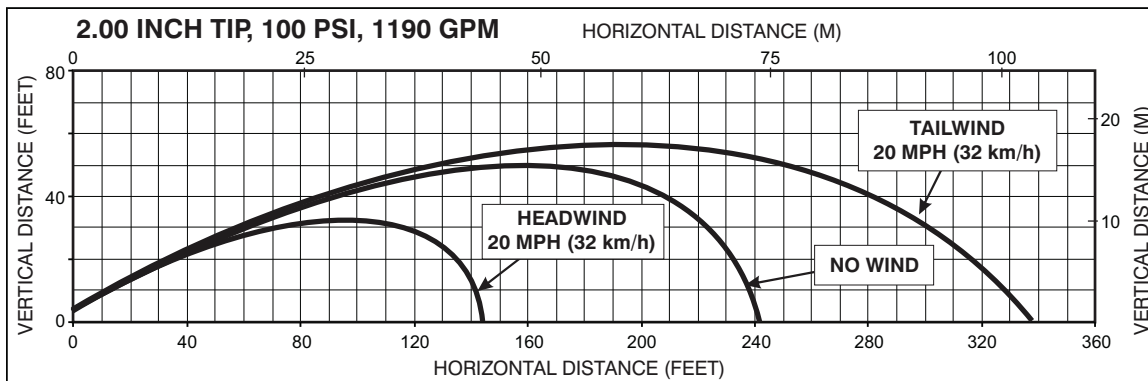


Figure 6.2B

6.4 PRESSURE LOSS

The discharge size of the monitor determines maximum flow. Excessive turbulence will result if maximum flow is exceeded.

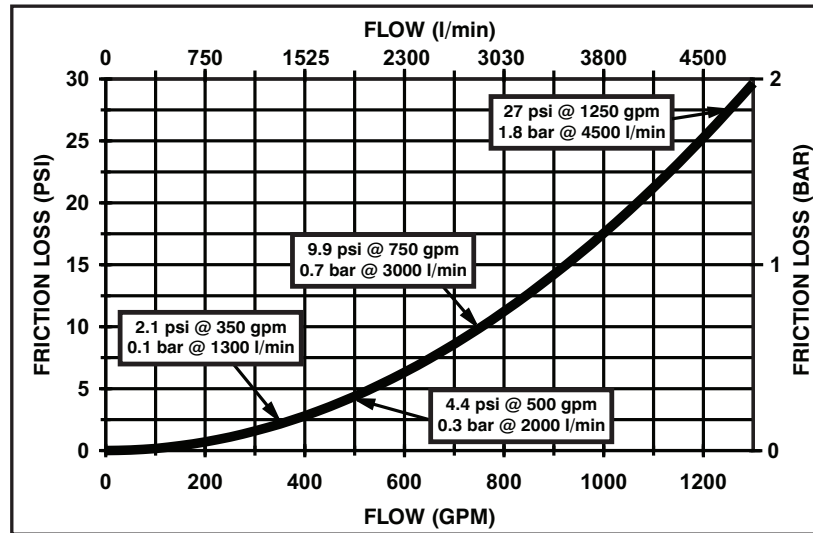


Figure 6.4A

6.5 STREAM STRAIGHTENERS

6.5.1 STREAM STRAIGHTENERS WITH STACKED TIPS

Turbulence through the Protector station monitor is very low, but stream quality and reach can be improved with the use of the integral stream straightener on the TFT stacked tip nozzle. Stream straighteners will add some friction loss as indicated below.

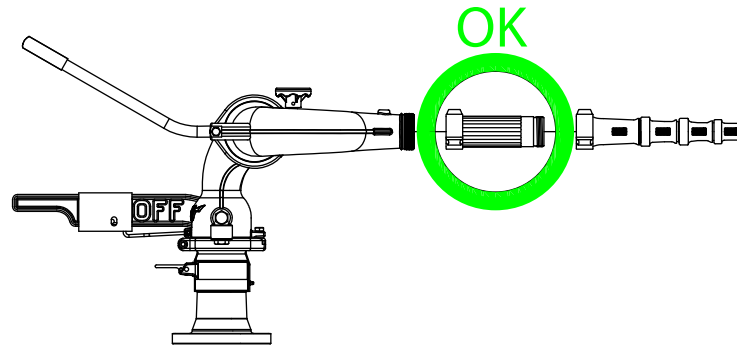


Figure 6.5.1

6.5.2 STREAM STRAIGHTENERS WITH FOG NOZZLES

NOTICE

The fog nozzle's flow path generally serves as a stream straightener. Use of a stream straightener with a fog nozzle will increase the stresses on the elevation locking clamp due to the greater cantilevered weight. When using a fog nozzle, it is recommended that no stream straightener be used.

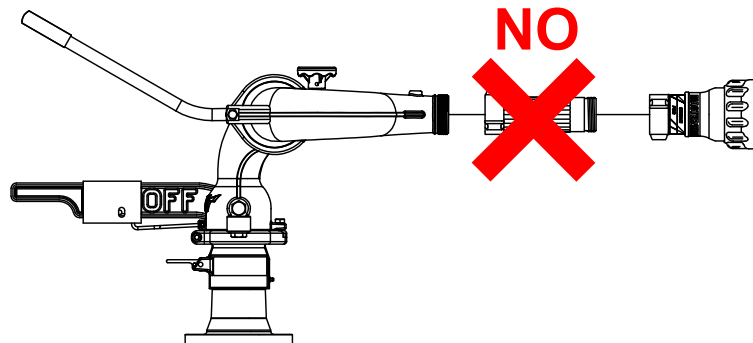


Figure 6.5.2

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 disconnected, 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.



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.

8.3 LOWER SEAL AND VALVE SEAT REPAIR

If the lower joint leaks externally or the valve does not fully shut off, then the lower seal and/or valve seat may need to be replaced.

To replace these parts:

1. Turn off the water.
2. Remove coupling nut from lower clamp using 5/8" (16 mm) wrench or socket.
3. Remove socket head cap screw from lower clamp using 3/8" (10 mm) male hex wrench.
4. Separate the joint by pivoting the clamp piece off of the flanged section.
5. Pry out the swivel inserts and inspect for damage.
6. Pull out the valve seat and lower seal.
7. Clean away dirt on flanges and clamps.
8. Inspect seal and sealing surfaces of valve seat and flange.
9. Replace damaged parts as needed.
10. Apply silicone grease to surface of seal. Moly-Kote 112 is preferred.
11. Snap black seal into groove on white valve seat.
12. Insert assembly into monitor, white end first.
13. Reassemble joint.
14. Torque socket head cap screw to 50 ft-lbs prior to installing coupling nut.
15. Torque coupling nut to 50 ft-lbs while preventing socket head cap screw from rotating.

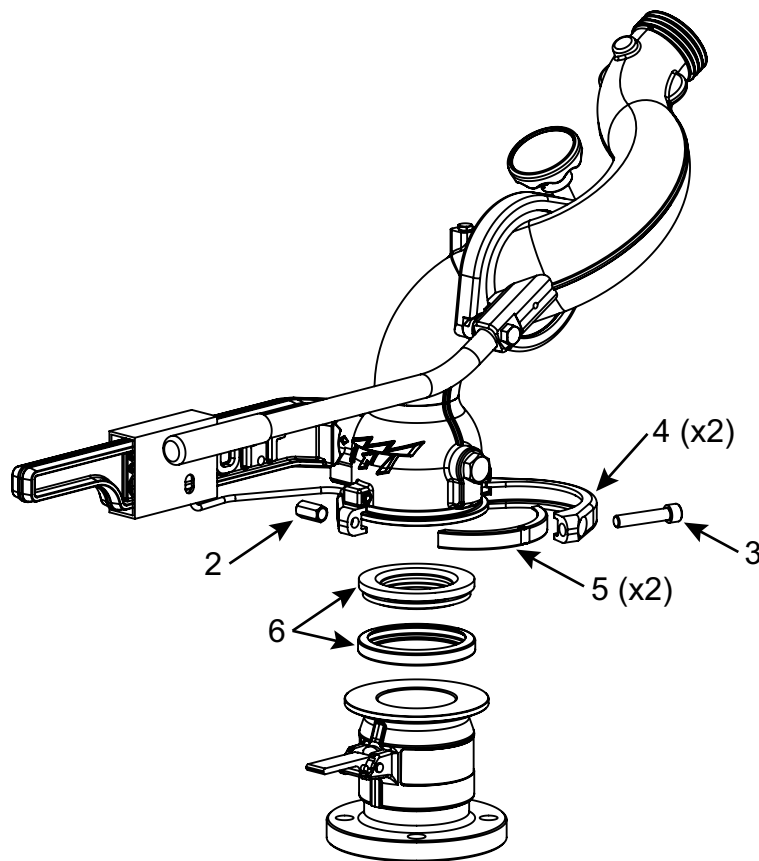


Figure 8.3

8.4 UPPER SWIVEL AND SWIVEL INSERT REPAIR

If the upper swivel leaks or requires excessive force to swivel, then the upper swivel seal and/or plastic swivel inserts may need to be replaced.

To replace these parts:

1. Turn off water.
2. Remove the cotter pin and then the nut and washer on the locking knob with a ½ inch (13 mm) socket.
3. Remove the locking knob.
4. Separate the joint by pivoting the clamp piece off of the flanged section.
5. Pry out the swivel inserts and inspect for damage.
6. Clean away dirt on flanges and clamps.
7. Inspect the seal and sealing surface.
8. Replace damaged parts as needed.
9. Apply silicone grease to surface of seal. Moly-Kote 112 is preferred.
10. Reassemble joint.

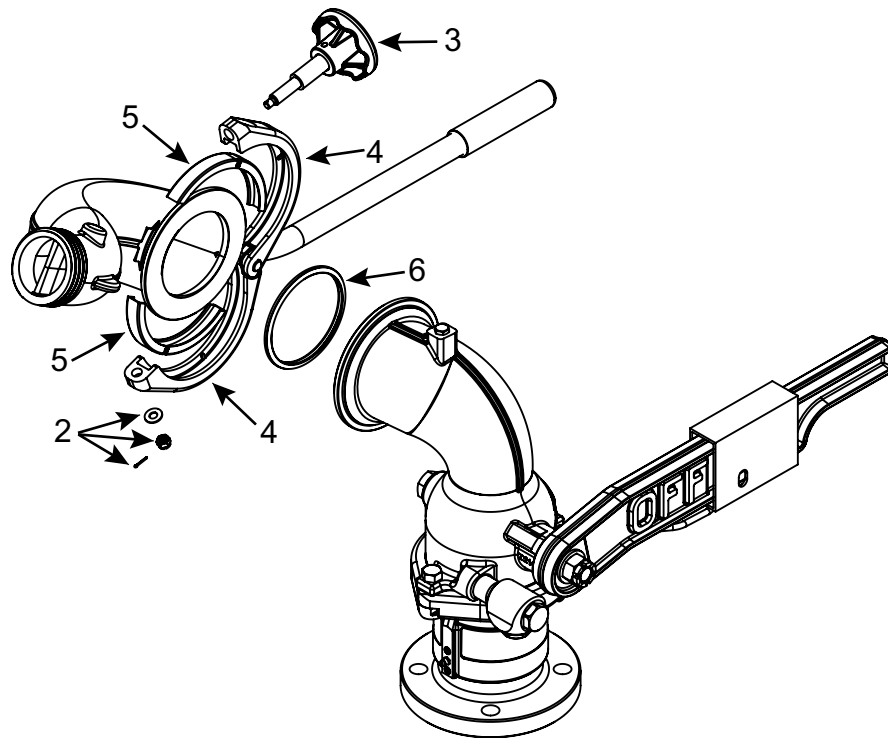


Figure 8.4

9.0 EXPLODED VIEWS AND PARTS LISTS

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

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10.0 OPERATION AND INSPECTION CHECKLIST

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

11. All valves (if so equipped) open and close fully and smoothly
12. Waterway is clear of obstructions
13. There is no damage to any thread or other connection
14. All locks and hold-down devices work properly
15. The pressure setting on the relief valve (if so equipped) is set correctly
16. Gaskets are in good repair
17. There is no obvious damage such as missing, broken or loose parts
18. There is no damage to the appliance that could impair safe operation (e.g. dents, cracks, corrosion, or other defects)
19. All swiveling elements rotate freely
20. Nozzle is securely attached

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

1. All valves (if so equipped) open and close smoothly and fully
2. The waterway is clear of obstructions
3. There is no damage to any thread or other type connection
4. The pressure setting of the relief valve, if any, is set correctly
5. All locks and hold-down devices work properly
6. Internal gaskets are in accordance with NFPA 1962
7. There is no damage to the appliance that could impair safe operation (e.g. dents, cracks, corrosion, or other defects)
8. All swiveling connections rotate freely
9. There are no missing parts or components
10. The marking for maximum operating pressure is visible
11. There are no missing, broken, or worn lugs on couplings

NFPA 1962: Standard for the care, use, inspection, service testing, and replacement of fire hose, couplings, nozzles and fire hose appliances. Quincy, MA: National Fire Protection Agency



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.

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