TSUNAMI™ MONITOR

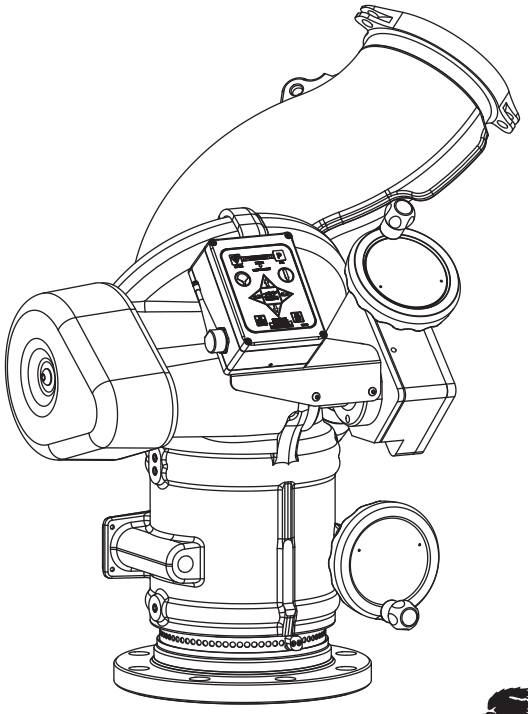
INSTRUCTION FOR INSTALLATION, SAFE OPERATION, AND MAINTENANCE

⚠ 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.



TSUNAMI™ RC

(see section Table 3.1.2) for Flow/Pressure Operations Envelope

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:

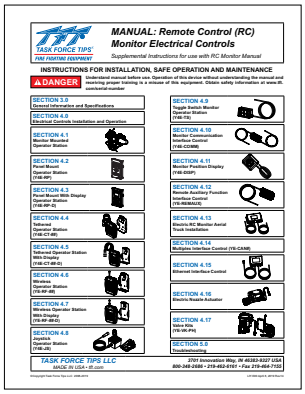
1. **Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.**
2. **IT IS YOUR RESPONSIBILITY to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called 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.
PO Box 147, Lynnfield, MA 01940 • www.FEMSA.org

FEMSA

SUPPORTING MATERIALS

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



LIY-500 - Remote Control (RC)
Monitor Electrical Controls

TABLE OF CONTENTS

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 **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 6000 lbs (3000 kg).**

⚠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.**

⚠WARNING **On many vehicle installations, the monitor is the highest point on the apparatus. Damage or injury could occur if there is not sufficient clearance to safely pass under doors or overhead obstructions. Always check stowed position of the monitor before moving.**

⚠WARNING **This device is not rated as ignition proof, explosion proof, or intrinsically safe. Use only in locations with adequate ventilation and no hazard of flammable vapor buildup.**

⚠CAUTION **The electric drives are current limited but may still produce enough force to cause injury. To avoid injury from moving equipment:**

- **Be aware that equipment may be remotely operated**
- **Keep hands and fingers away from pinch points**
- **Never operate the manual override while electric controls are in operation**

3.0 GENERAL INFORMATION

The Tsunami Monitor series is designed for master stream flows. The segmented waterway allows water to make very few turns as it travels through the monitor, resulting in low friction loss and a far reaching effective stream. Tsunami RC has 320 degrees of horizontal rotation 160 degrees from center each way.

3.1 SPECIFICATIONS

3.1.1 MECHANICAL

	US	METRIC
Weight	169 lbs	76.6 kg
Minimum Flow Area (8” Inlet)	36.3 in^2	234 cm^2
Maximum Flow	See Section Table 3.1.2 on page 5.	
Maximum Operating Pressure	175 psi	12 bar
Hydrostatic Proof Test Pressure	700 psi	48 bar
Materials	ANSI A356.0-T6 Aluminum, Stainless, HDPE	

Table 3.1.1

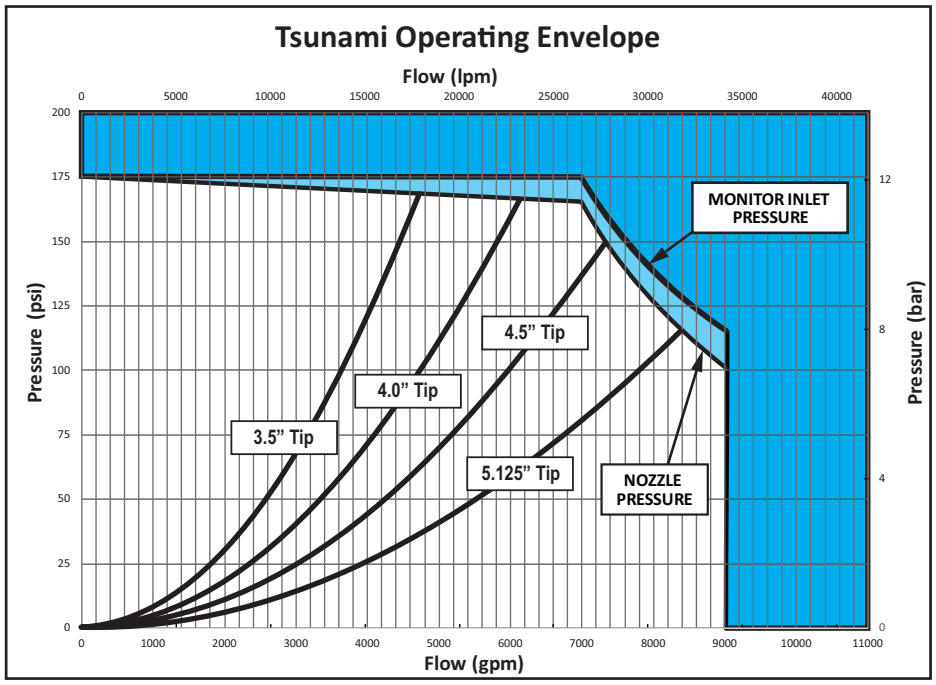
3.1.2 ELECTRICAL

Nominal Operating Voltage	12 or 24 VDC (auto sense)	
Minimum Voltage	12 VOLT System 10 VDC at the monitor 24 VOLT System 18 VDC at the monitor	
Maximum Voltage	32 VDC	
Operating Temperature Range	-30°F to +120°F (-34°C to +49°C)	
Maximum Torque (Elevation)	350 ft·lbs	480 N·m
Maximum Torque (Horizontal)	110 ft·lbs	150 N·m
Speed (Elevation)	1.5 deg/sec	
Speed (Horizontal)	4.5 deg/sec	

Table 3.1.2

3.2 OPERATING ENVELOPE

⚠WARNING **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).**



3.5” smoothbore flows 3600 gpm (13800 l/min), at 100 psi (7 bar), K factor = 360
4.0” smoothbore flows 4700 gpm (18000 l/min), at 100 psi (7 bar), K factor = 470
4.5” smoothbore flows 6000 gpm (13800 l/min), at 100 psi (7 bar), K factor = 600
5.125” smoothbore flows 7800 gpm (29500 l/min), at 100 psi (7 bar), K factor = 780

Figure 3.2

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 VARIOUS MODELS AND TERMS

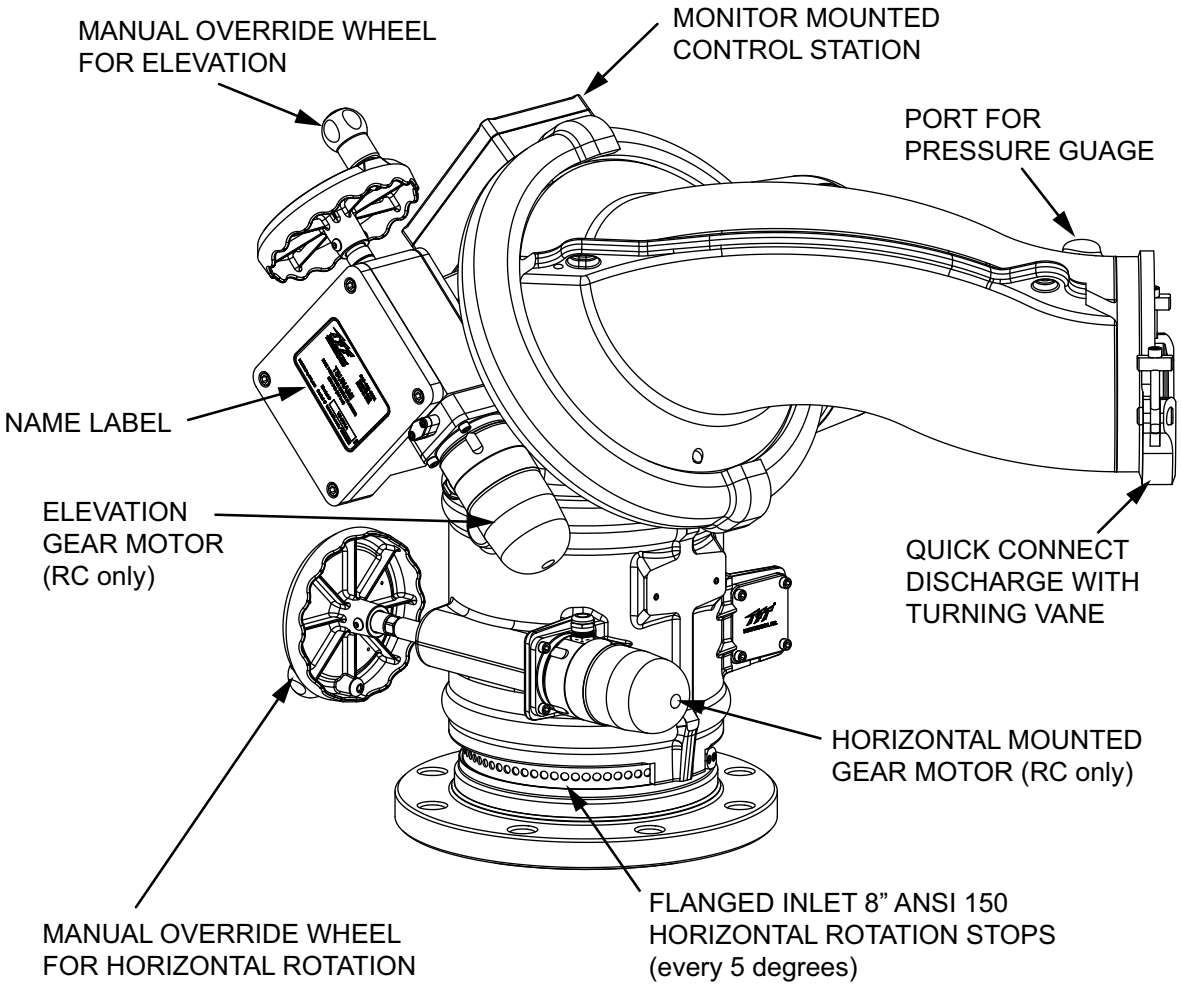


Figure 3.4

3.5 OVERALL DIMENSIONS

TSUNAMI RC MONITOR

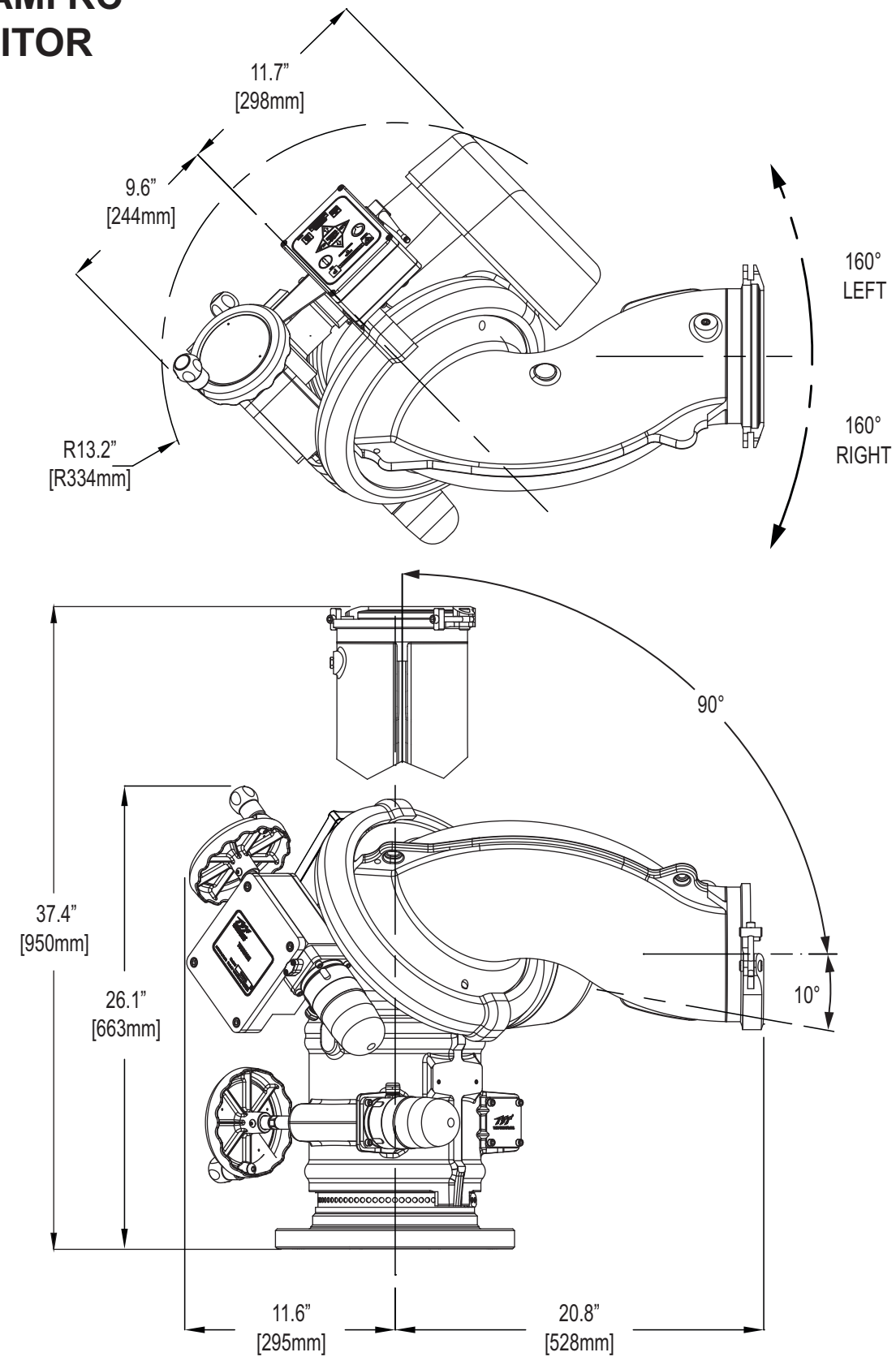


Figure 3.6B

4.0 INSTALLATION

NOTICE

The Tsunami monitor is designed to be mounted in a vertical orientation only (with the inlet flange horizontal). Aerial or other applications requiring the monitor flange to tilt more than 10 degrees from horizontal represent a misuse of this product.

4.1 ELECTRICAL INSTALLATION

See Remote Control (RC) Monitor Electrical Controls Supplemental Instructions LIY-500.

4.2 STRUCTURAL REQUIREMENTS

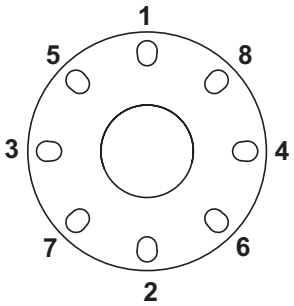
⚠WARNING

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.**
- **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 6000 lbs (3000 kg).

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 150-200 ft-lb (200-270 N·m).



Tighten Sequentially Each Bolt Three Times to a Total of 150-200 ft-lb (200-270 N·m)
Figure 4.2

FLANGE TYPE	OPTION #	OUTSIDE DIAMETER		THICKNESS		BOLT HOLE CIRCLE		# OF BOLTS	SIZE OF BOLTS	
		in	mm	in	mm	in	mm		in	mm
8” ANSI 150 Flange	1	13.5	342.9	1.125	28.6	11.75	298.5	8	3/4	19.1

Table 4.2

⚠WARNING

Nozzle reaction force can be as high as 6000 lbs (3000 kg). To avoid the risk of injury or death due to an out of control monitor:

- **Determine safe tipping moments before installing monitor on vehicles, wheeled trailers, or bases.**
- **Mobile installations may require additional restraint against sliding when necessary.**

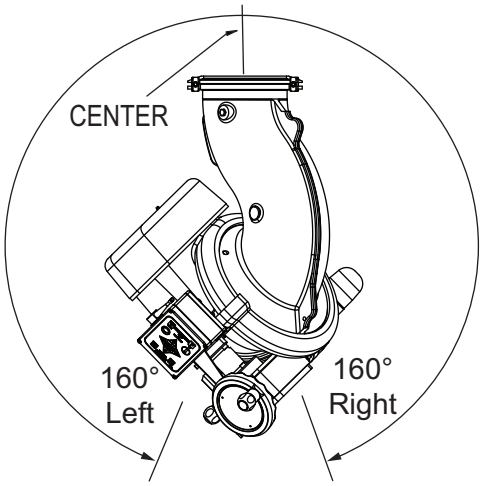
4.3 TRAVEL STOPS

4.3.1 HORIZONTAL ROTATION TRAVEL STOPS

NOTICE

The power cord on the RC TSUNAMI must be installed with adequate slack to allow for the full range of horizontal rotation.

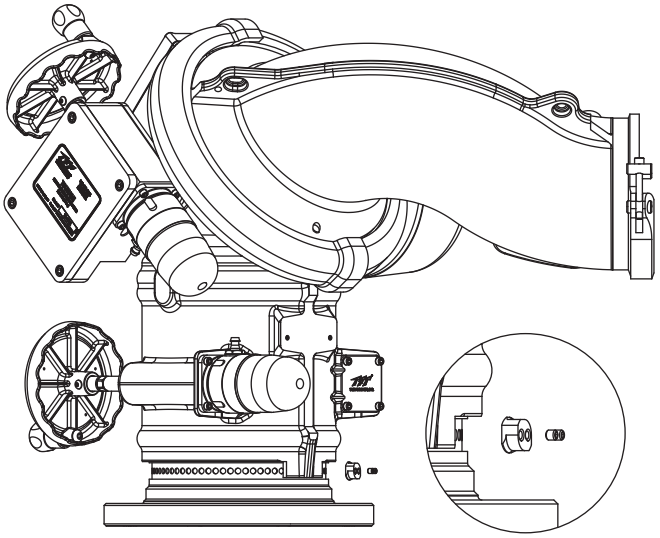
Horizontal rotation travel stops may be installed in the monitor to limit travel. Horizontal travel stops can be set up in 5° increments from 0° to 160° left or right by removing the stop screw and re-installing the stops in desired positions. Apply a drop of Loctite 242 (blue) VSA-125 to the threads and tighten securely.



MODELS WITH NO STOP BOLTS INSTALLED HAVE A HORIZONTAL ROTATIONAL TRAVEL LIMIT OF 160° LEFT AND RIGHT OF CENTER

Figure 4.3.1A

To change the HORIZONTAL travel range:



1. Rotate horizontal travel stop 90° one direction and insert into coupling track.
2. Rotate back to original position ensuring the letter is located at the top of the travel stop.
3. Rotate the monitor to the desired position, position the travel stop next to the Monitor's Stop Ear.
4. Tighten set screws to lock the travel stop position.

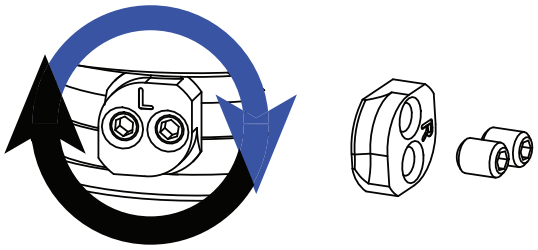


Figure 4.3.1B

4.3.2 ELEVATION TRAVEL STOPS

The range of elevation travel for the Tsunami Monitor is 90 degrees above horizontal to 10 degrees below zero. The elevation range may be reduced in the field by using optional stop disks. Consult factory for disks and procedure.

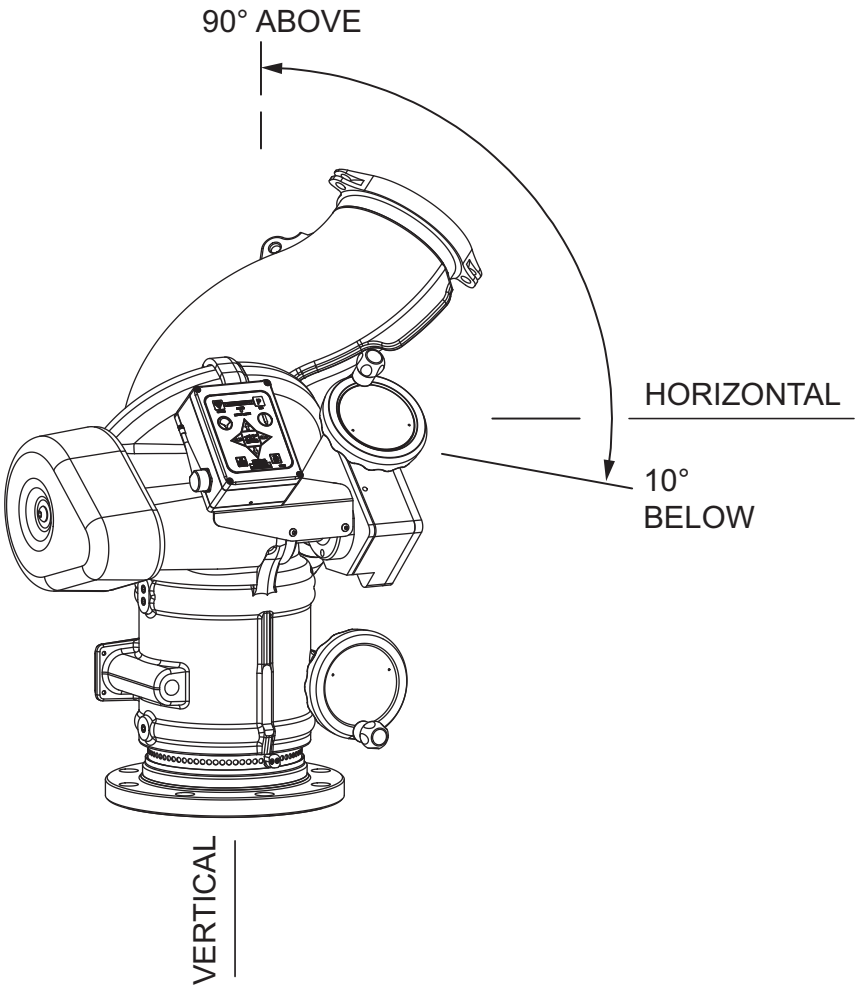


Figure 4.3.2

4.4 NOZZLE INSTALLATION

To install the nozzle:

1. Position the monitor as shown in figure 4.4.
2. Insert the nozzle into the quick connect on the monitor.
3. Latch the two products together by tightening the latch pin screws.
4. Torque latch pin screws to 11 lb-ft (14.9 N·m).

⚠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 1930, 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.**

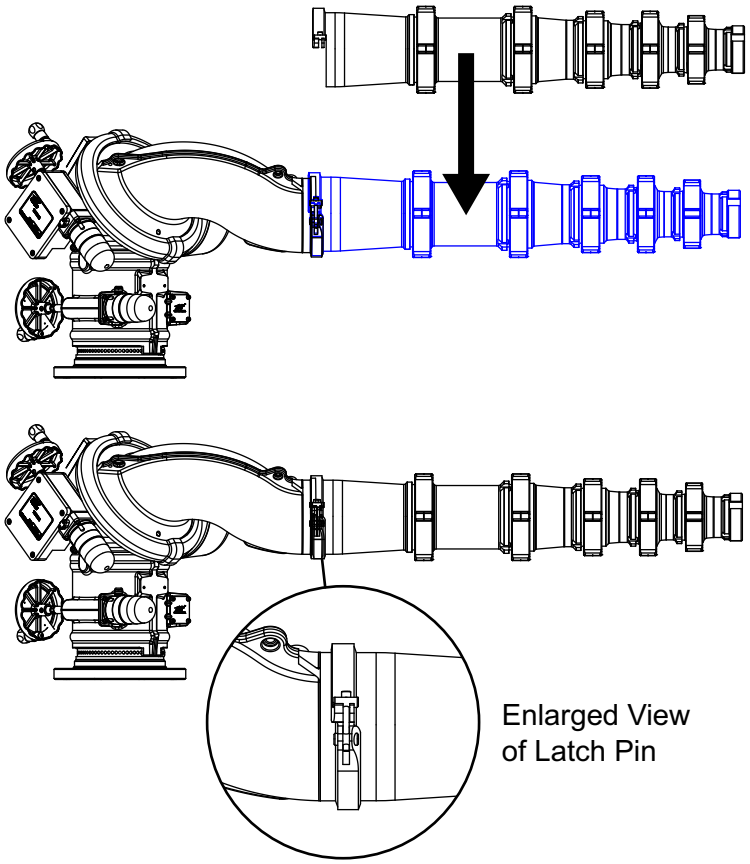


Figure 4.4

4.5 PRESSURE GAUGE PORT

There is a ¼" NPT female threaded hole on the elbow of the monitor. The hole is plugged from the factory. If a pressure gauge is desired, unscrew the plug (using a 9/16" socket) and install the gauge using pipe sealant.

4.6 DRAINING RESIDUAL WATER

There is no drain on the monitor itself. A drain valve should be installed on the piping to which the monitor is attached.

⚠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.**

5.0 OPERATING INSTRUCTIONS

See Remote Control (RC) Monitor Electrical Controls Supplemental Instructions LIY-500 for operation of the Typhoon RC Monitors.

RC monitors will electronically synchronize the horizontal axis to move in combination with the vertical axis to keep the monitor pointing in a constant horizontal direction.

5.1 HORIZONTAL ROTATIONAL MANUAL OVERRIDE

A handwheel controls the monitor's horizontal rotation direction. Clockwise rotation of the handwheel moves the nozzle to the left and counter-clockwise rotation to the right. Approximately 28 turns of the handwheel will give a 90 degree change in horizontal rotation direction.

5.2 ELEVATION MANUAL OVERRIDE

A handwheel controls the monitor's elevation direction. Clockwise rotation of the handwheel lowers the elevation and counterclockwise raises it. About 37 turns of the handwheel will give the complete 100 degree elevation travel range of the monitor.

5.3 RECOMMENDED PARK POSITION

For truck mounted applications, it is recommended that the monitor be parked in a position such that the monitor's nozzle rests against a bracket or support surface. If a support surface is not available, run the elevation against one of the travel stops to take some of the backlash out of the gear drive. This will minimize bouncing of the nozzle when the apparatus is traveling. Always be sure the monitor is properly parked before moving the truck and know the overall height to avoid damage from overhead obstructions such as doors or bridges. See LIY-500 for information on programming PARK position.

6.0 FLOW CHARACTERISTICS

6.1 YST-8NX STACKED TIPS FLOW AND REACTION

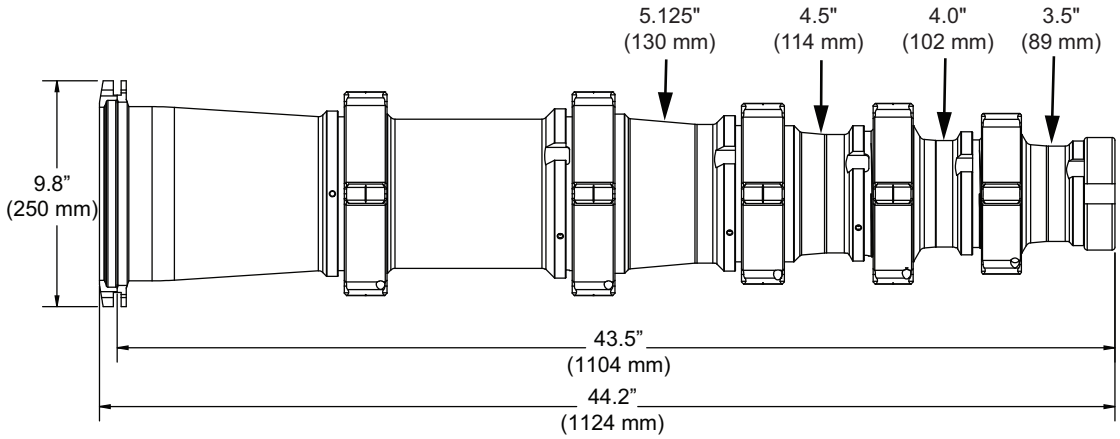


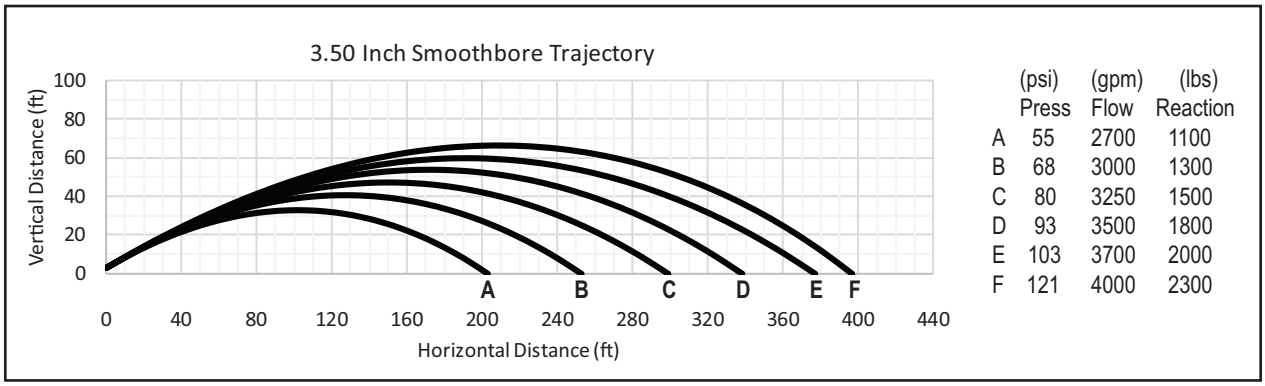
Figure 6.1

NOZZLE DIAMETER	NOZZLE INLET PRESSURE							
	50 PSI		60 PSI		80 PSI		100 PSI	
	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)	FLOW (GPM)	REACTION (LBS)
3.5””	2570	960	2820	1160	3260	1540	3640	1930
4.0””	3360	1260	3680	1510	4250	2010	4750	2510
4.5””	4250	1590	4660	1910	5380	2550	6020	3180
5.125”	5520	2060	6040	2470	6980	3300	7800	4130

NOZZLE DIAMETER	NOZZLE INLET PRESSURE							
	3.5 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)
89 mm	9730	440	10670	530	12340	700	13780	880
102 mm	12720	570	13930	690	16090	910	17980	1140
114 mm	16090	720	17640	870	20360	1160	22790	1450
130 mm	20890	940	22860	1120	26420	1500	29520	1880

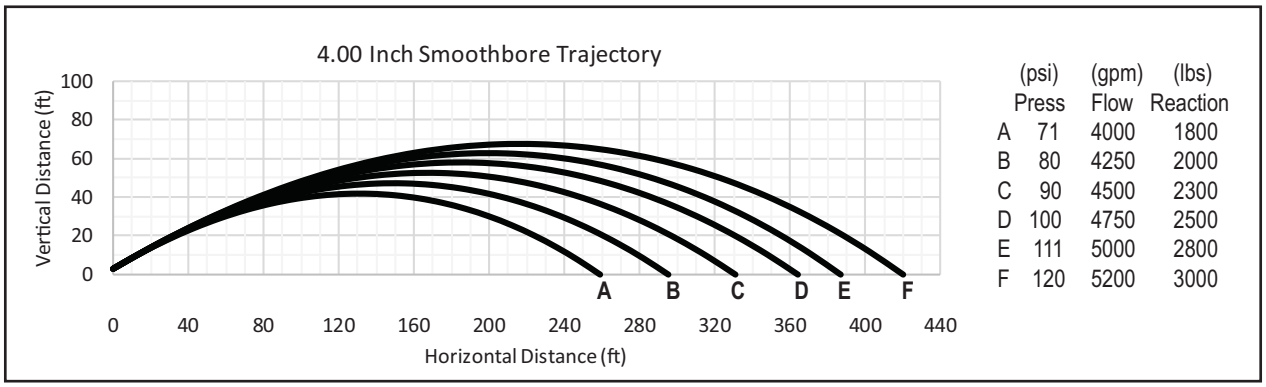
Table 6.1

6.2 YST-8NX STACKED TIPS REACH AND TRAJECTORY (STANDARD UNITS)



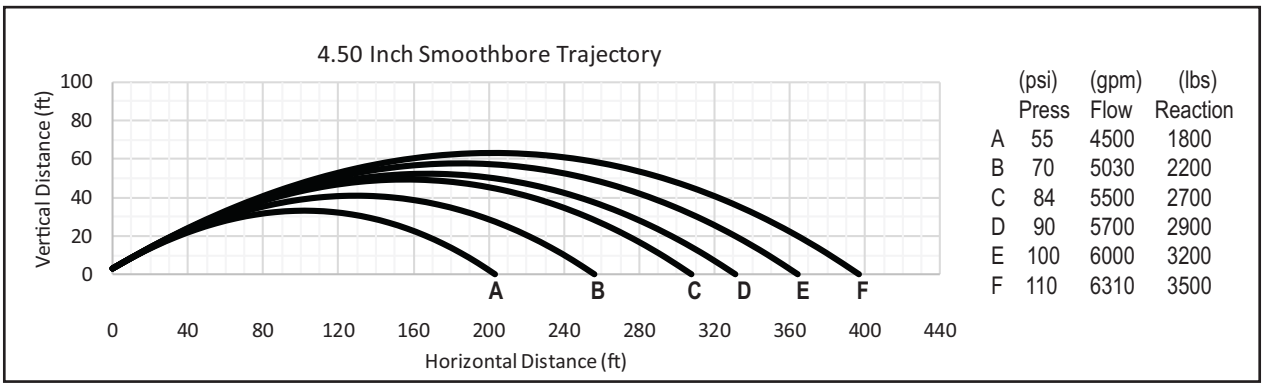
	(psi) Press	(gpm) Flow	(lbs) Reaction
A	55	2700	1100
B	68	3000	1300
C	80	3250	1500
D	93	3500	1800
E	103	3700	2000
F	121	4000	2300

Figure 6.2A



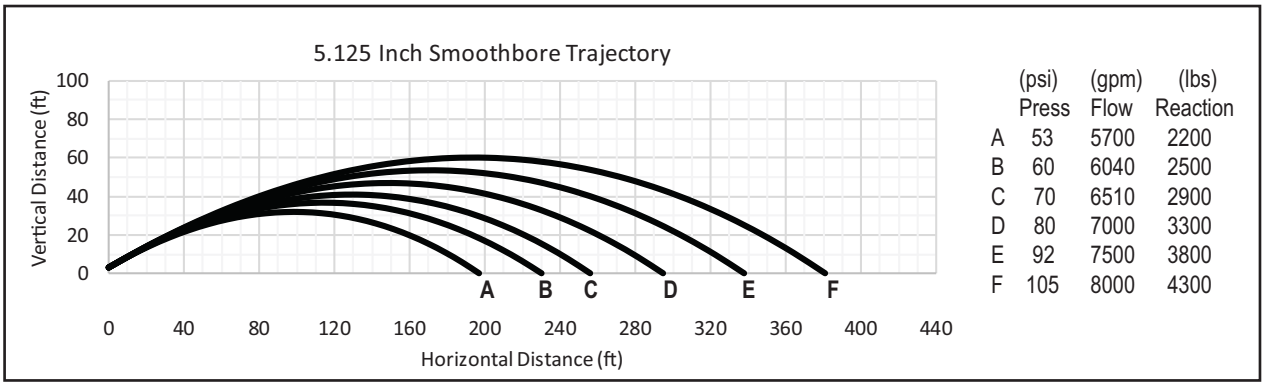
	(psi) Press	(gpm) Flow	(lbs) Reaction
A	71	4000	1800
B	80	4250	2000
C	90	4500	2300
D	100	4750	2500
E	111	5000	2800
F	120	5200	3000

Figure 6.2B



	(psi) Press	(gpm) Flow	(lbs) Reaction
A	55	4500	1800
B	70	5030	2200
C	84	5500	2700
D	90	5700	2900
E	100	6000	3200
F	110	6310	3500

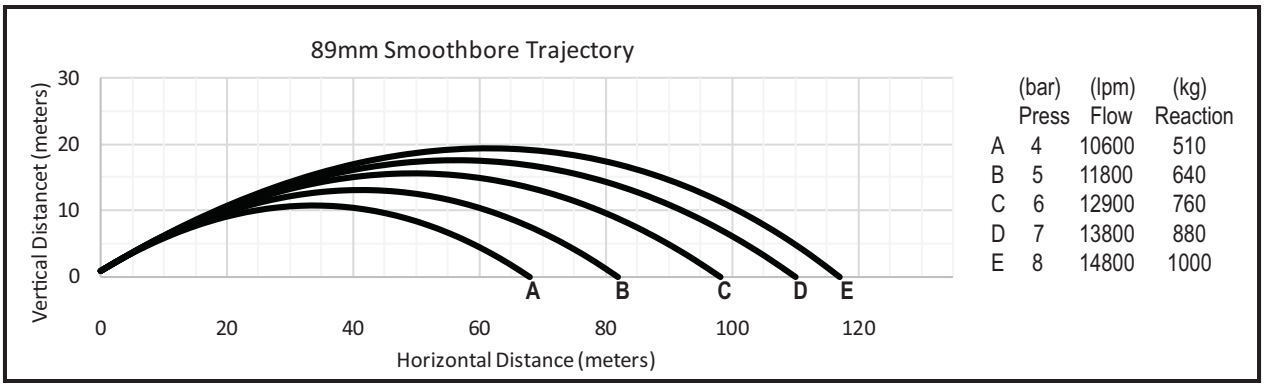
Figure 6.2C



	(psi) Press	(gpm) Flow	(lbs) Reaction
A	53	5700	2200
B	60	6040	2500
C	70	6510	2900
D	80	7000	3300
E	92	7500	3800
F	105	8000	4300

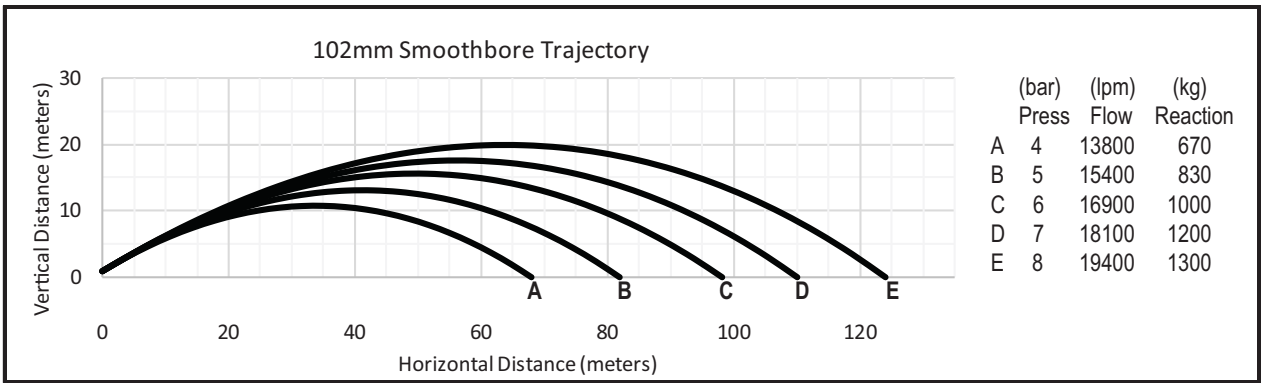
Figure 6.2D

6.3 YST-8NX STACKED TIPS REACH AND TRAJECTORY (METRIC UNITS)



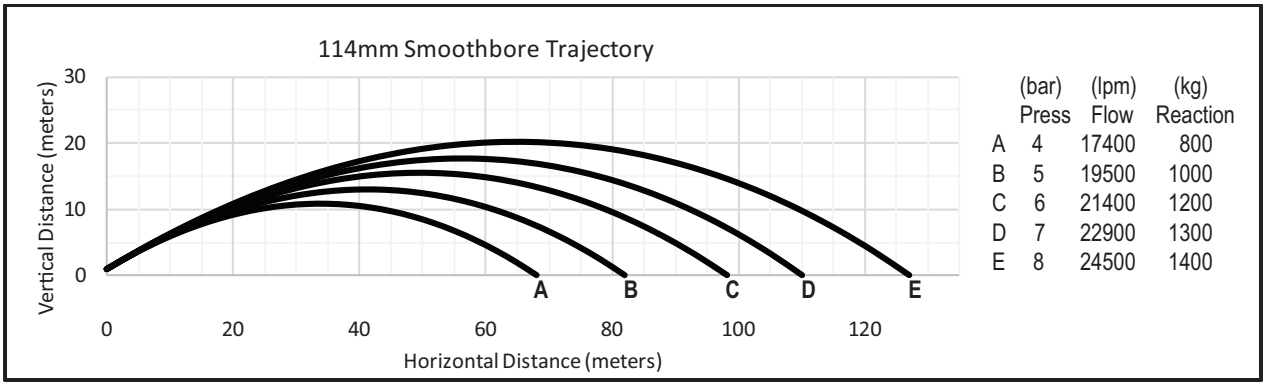
	(bar) Press	(lpm) Flow	(kg) Reaction
A	4	10600	510
B	5	11800	640
C	6	12900	760
D	7	13800	880
E	8	14800	1000

Figure 6.3A



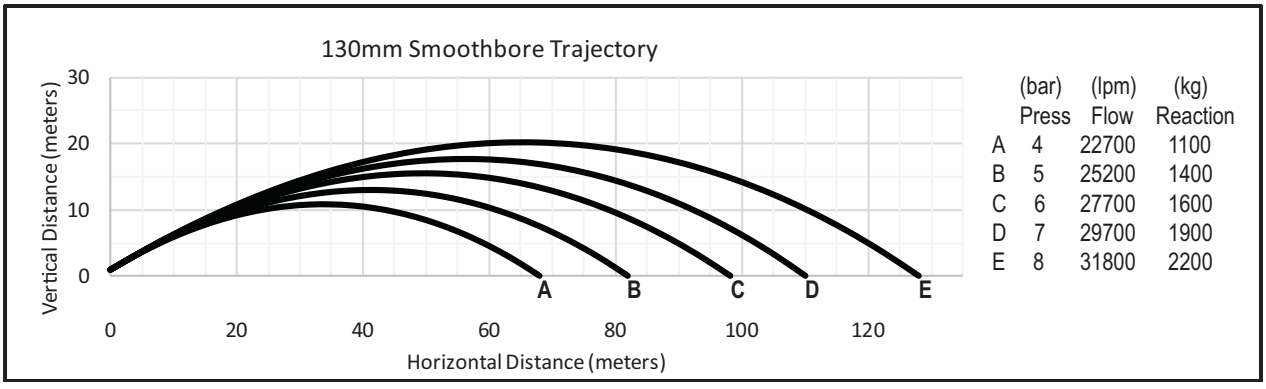
	(bar) Press	(lpm) Flow	(kg) Reaction
A	4	13800	670
B	5	15400	830
C	6	16900	1000
D	7	18100	1200
E	8	19400	1300

Figure 6.3B



	(bar) Press	(lpm) Flow	(kg) Reaction
A	4	17400	800
B	5	19500	1000
C	6	21400	1200
D	7	22900	1300
E	8	24500	1400

Figure 6.3C



	(bar) Press	(lpm) Flow	(kg) Reaction
A	4	22700	1100
B	5	25200	1400
C	6	27700	1600
D	7	29700	1900
E	8	31800	2200

Figure 6.3D

6.3.5 EFFECTS OF ELEVATION AND WIND 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.

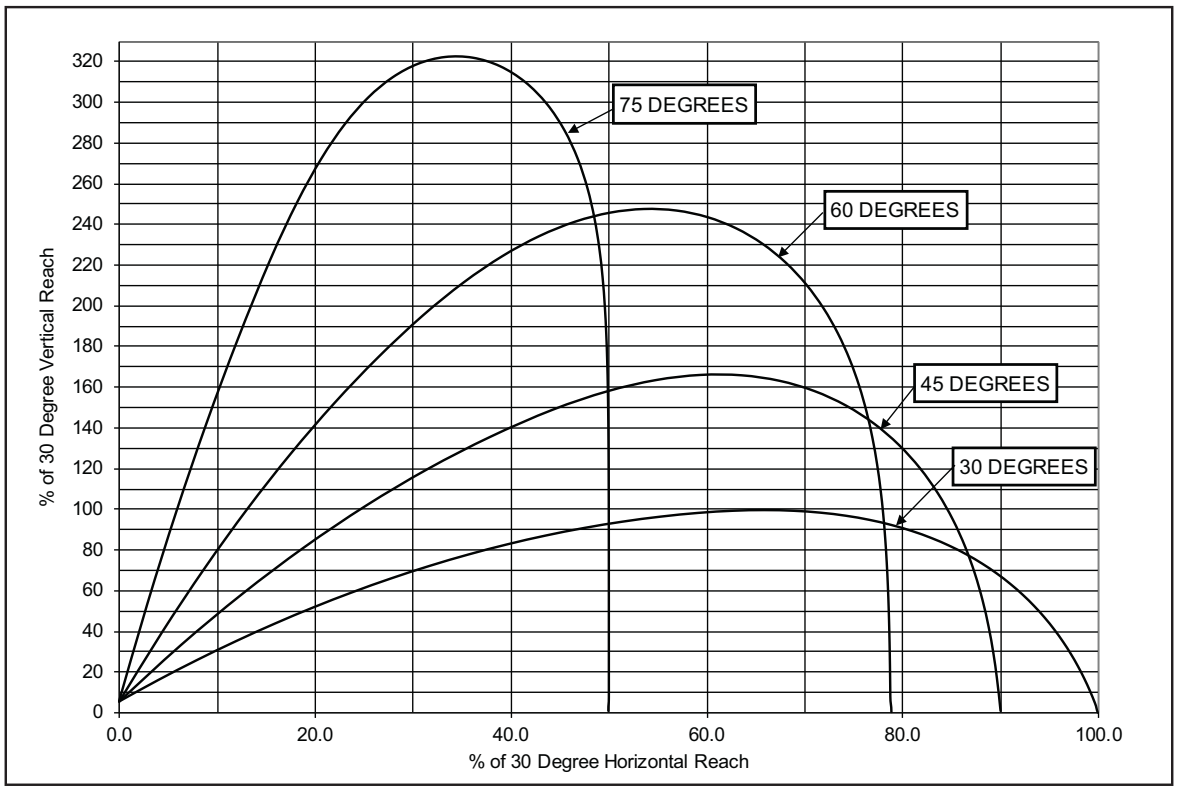


Figure 6.3.5A

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

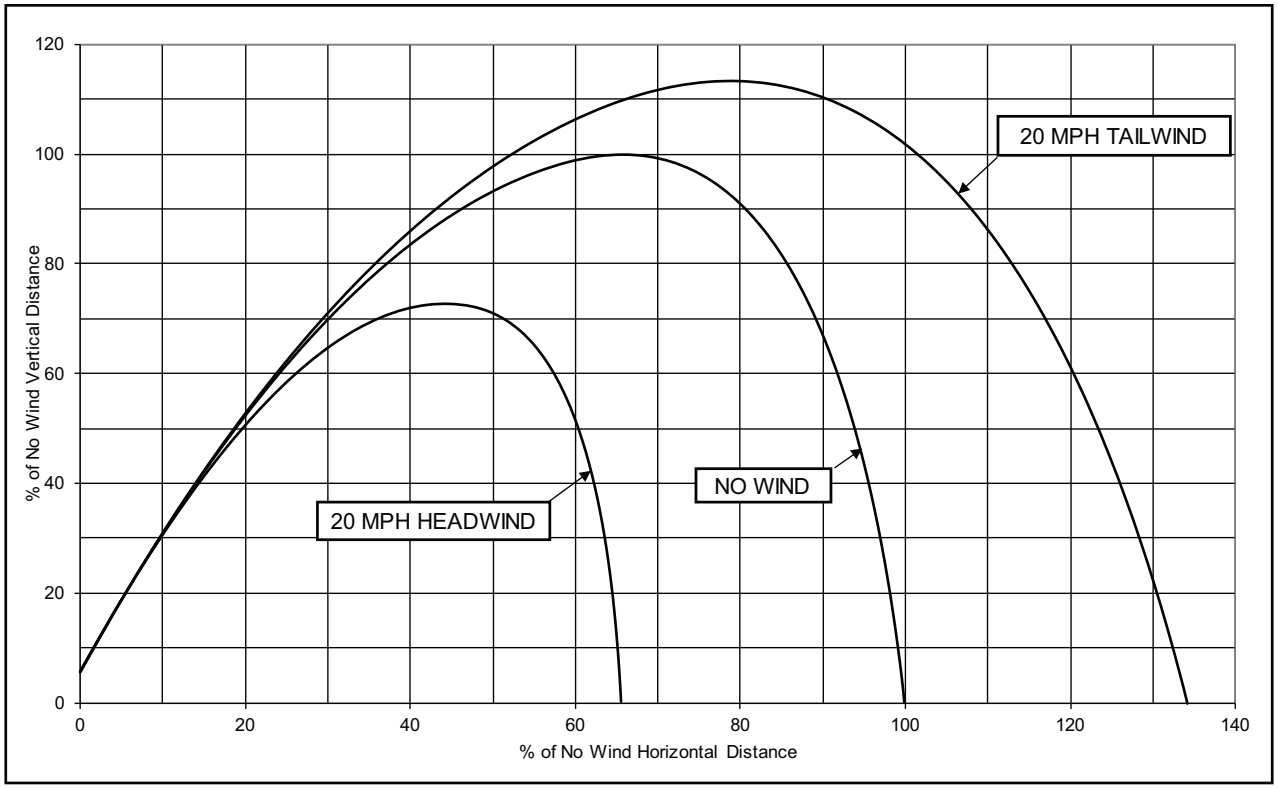


Figure 6.3.5B

6.4 FRICTION LOSS

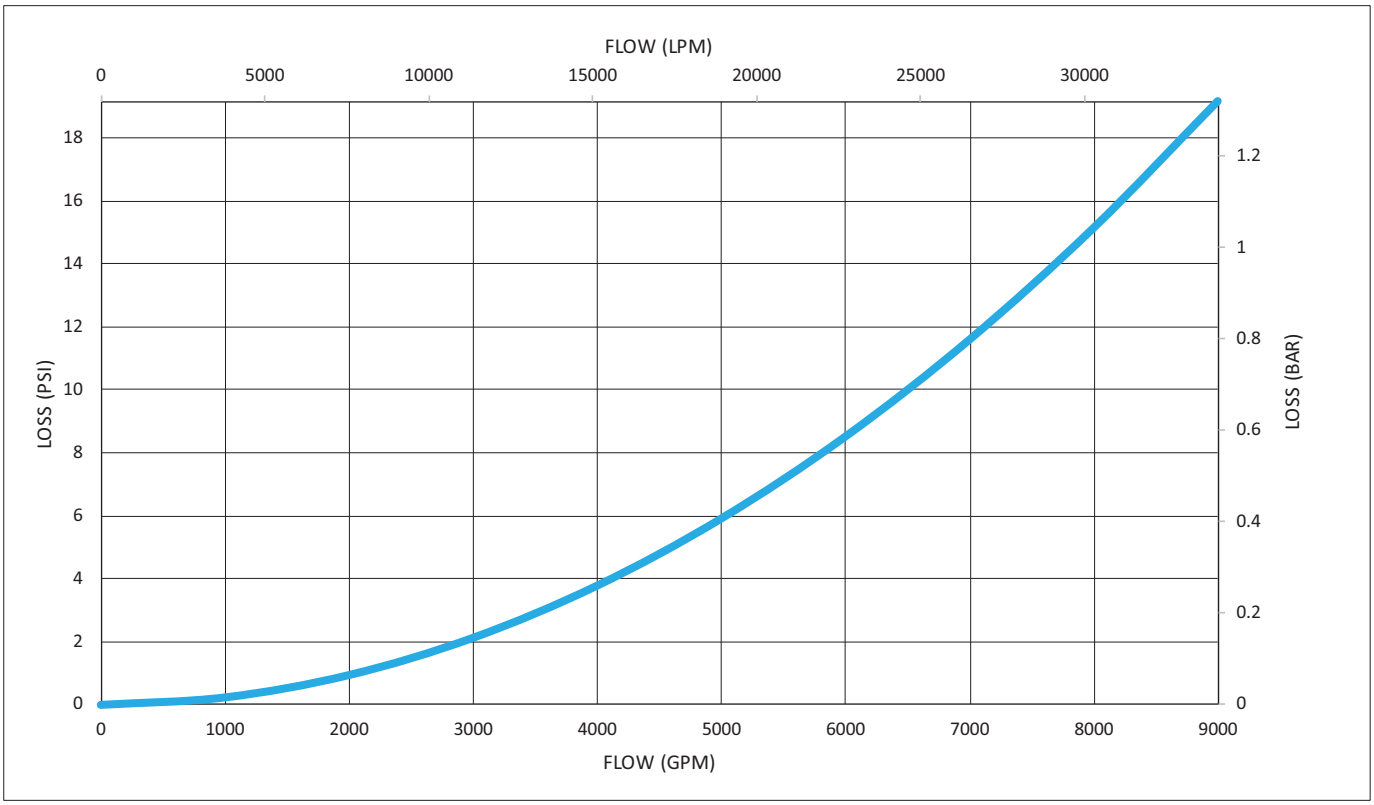


Figure 6.4

7.0 WARRANTY

Go to tft.com for all warranty information.

8.0 MAINTENANCE

The Tsunami Monitor requires little maintenance. The monitor 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.

Do not physically move the Tsunami RC Monitor with the power off .

⚠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 performance and operation of the device.**

8.1 SERVICE TESTING

In accordance with NFPA 1930, 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 LUBRICATION

The Tsunami monitor generally should not require greasing. In the event that the operation becomes stiff grease may be applied to the elevation worm gear. Use medium viscosity automotive chassis grease. Apply only enough grease to restore normal operation. If normal operation is not restored by greasing, inspect for other causes of stiff operation.

NOTICE

Do not over pump grease. The monitor's greased areas lead to large chambers that could trap several pounds of grease before becoming visible.

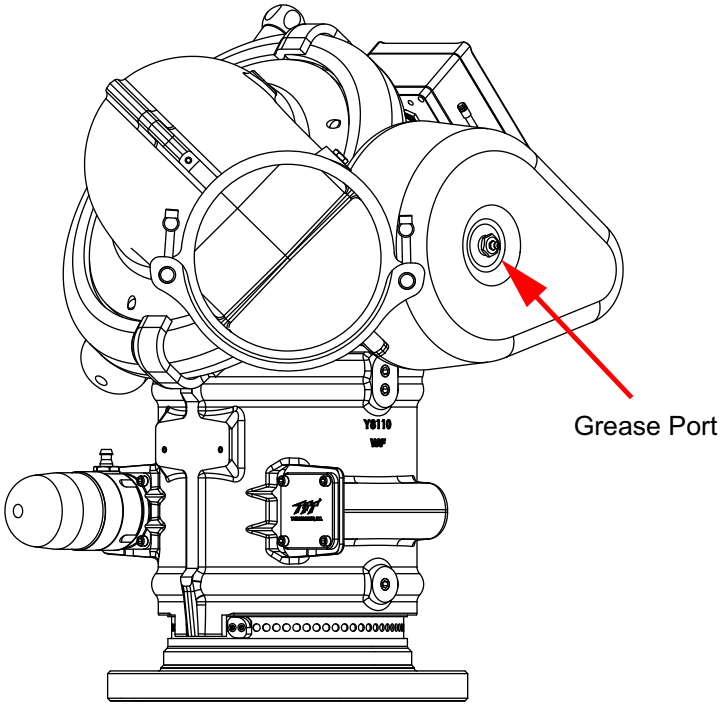


Figure 8.2

8.3 TROUBLESHOOTING (IF NEEDED)

SYMPTOM	POSSIBLE CAUSE	REMEDY
Leaks	Debris or damage in the seal area	Clean out debris or replace damaged parts
Elevation Binding	Debris or damage to the elevation drive parts	Clean out debris or replace damaged parts
	Lack of lubricant	Grease, (see section 8.2)
Horizontal Rotation Binding	Debris or damage to the horizontal drive parts	Clean out debris or replace damaged parts
	Lack of lubricant	Grease, (see section 8.2)

8.4 REPAIR

Factory service is available. Factory serviced equipment is repaired by experienced technicians, wet tested to original specifications, and promptly returned. Call TFT service department at 1-800-348-2686 to troubleshoot and, if needed, directions for return. A return for service form can also be obtained at tft.com/Support/Returning-an-Item-for-Service.

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.

⚠WARNING **It is the responsibility of service technicians to ensure the 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).**

⚠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 performance and 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. All valves (if so equipped) open and close fully and smoothly
2. Waterway is clear of obstructions
3. There is no damage to any thread or other connection
4. All locks and hold-down devices work properly
5. The pressure setting on the relief valve (if so equipped) is set correctly
6. Gaskets are in good repair
7. There is no obvious damage such as missing, broken or loose parts
8. There is no damage to the appliance that could impair safe operation (e.g. dents, cracks, corrosion, or other defects)
9. All swiveling elements rotate freely
10. 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 good condition
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

⚠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.**