TASK FORCE TIPS®
FIRE FIGHTING EQUIPMENT

Z Series Nozzles

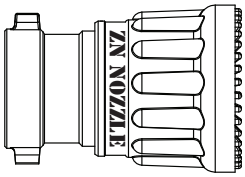
INSTRUCTIONS FOR INSTALLATION, OPERATION, AND MAINTENANCE

⚠WARNING

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.

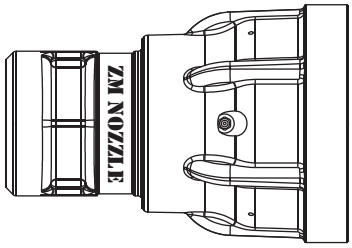
This equipment is intended for use by trained and qualified emergency services personnel for firefighting. All personnel using this equipment shall have completed a course of education approved by the Authority Having Jurisdiction (AHJ).

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.



ZN NOZZLE

250, 350, 500, or 750 GPM @ 100 PSI
950, 1300, 2000, or 3000 L/min @ 7 BAR (700 kPa)

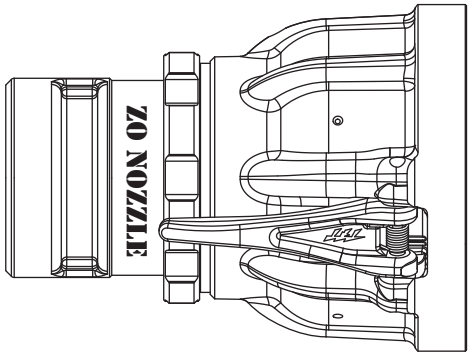


FM APPROVED

ZM NOZZLE

500 or 750 GPM @ 100 PSI
2000 or 3000 L/min @ 7 BAR (700 kPa)

1000 or 1250 GPM @ 100 PSI
3800 OR 4750 L/min @ 7 BAR (700 kPa)



FM APPROVED

ZO NOZZLE

1250 or 1500 GPM @ 100 PSI
4750 or 5700 L/min @ 7 BAR (700 kPa)

1750 or 2000 GPM @ 100 PSI
6600 OR 7500 L/min @ 7 BAR (700 kPa)

TASK FORCE TIPS LLC
MADE IN USA · tft.com

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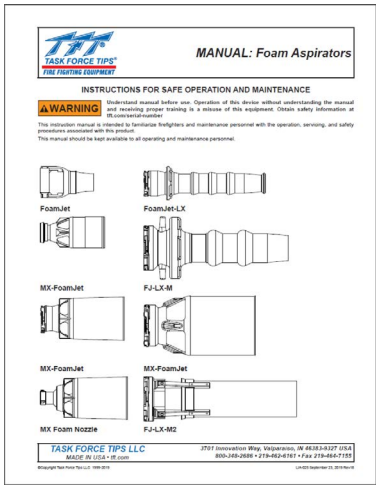
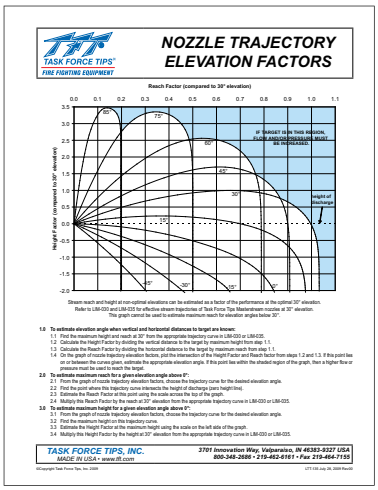
SUPPORTING MATERIALS

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



LIA-025

Manual: Foam Aspirators



LTT-135

Nozzle Trajectory Elevation

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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 **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.**

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 **Some volatile liquids can be ignited by static discharge, which can occur during application of foam or water. Fire or explosion can result in injury or death. Follow procedures established by the AHJ to reduce risk of fire or explosion caused by static discharge.**

WARNING **Application of water or foam solutions on energized electrical equipment could cause electrocution. Serious injury or death could result. Assume circuits are energized until confirmed to be de-energized. Do not apply water or foam to energized electrical equipment.**

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.**

NOTICE **To prevent mechanical damage, do not drop or throw equipment.**

3.0 GENERAL INFORMATION

The Task Force Tips ZN, ZM, and ZO Series nozzles are deluge nozzles with clean, far reaching straight stream. Nozzles are adjustable from straight stream to a dense fog pattern. Their rugged construction is compatible with the use of fresh water as well as fire fighting foam solutions.

3.1 VARIOUS MODELS AND TERMS

NOZZLE SERIES	FLOW		PRESSURE		K FACTOR	STANDARD COUPLING
	GPM	L/min	PSI	BAR, kPa/100		
ZN	250, 350, 500, 750	1000, 1500, 2000, 3000	100	7	15 - 75	2.5" NH FEMALE
ZM	500, 750	2000, 3000			50 - 125	
ZM FM APPROVED	1000, 1250	3800, 4750			50 - 125	
ZO FM APPROVED	1250, 1500	4750, 5700			125 - 150	3.5" NH FEMALE
ZO FM APPROVED	1750, 2000	6600, 7500			175 - 200	

NOTES ON ABOVE TABLE

- FM Approved nozzles are identified with the symbol FM APPROVED on their label.
- All models with FM Approval have been tested to FM Approval Class 5511-Firefighting Nozzles for Use with Hose, Monitor Assemblies and other Firefighting Equipment.
- FM Approved nozzles are not FM Approved for use with foam.

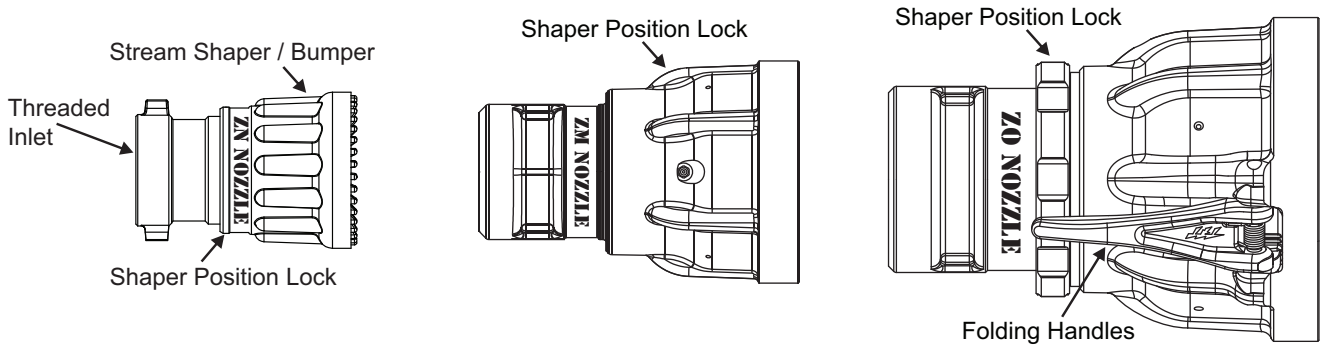


Figure 3.1

3.2 SPECIFICATIONS

	US	METRIC
Operating temperature of fluid	33 to 120°F	1 to 50°C
Storage temperature range	-40 to 150°F	-40 to 65°C
Materials used	Aluminum 6000 series hard anodized MIL 8625 class 3 type 2, stainless steel 300 series, nylon 6-6, nitrile rubber	

Table 3.2

3.3 NOZZLE COUPLINGS

NH (National Hose) threads are standard on all nozzles. Other threads such as NPSH (National Pipe Straight Hose) may be specified at time of order.

⚠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.**

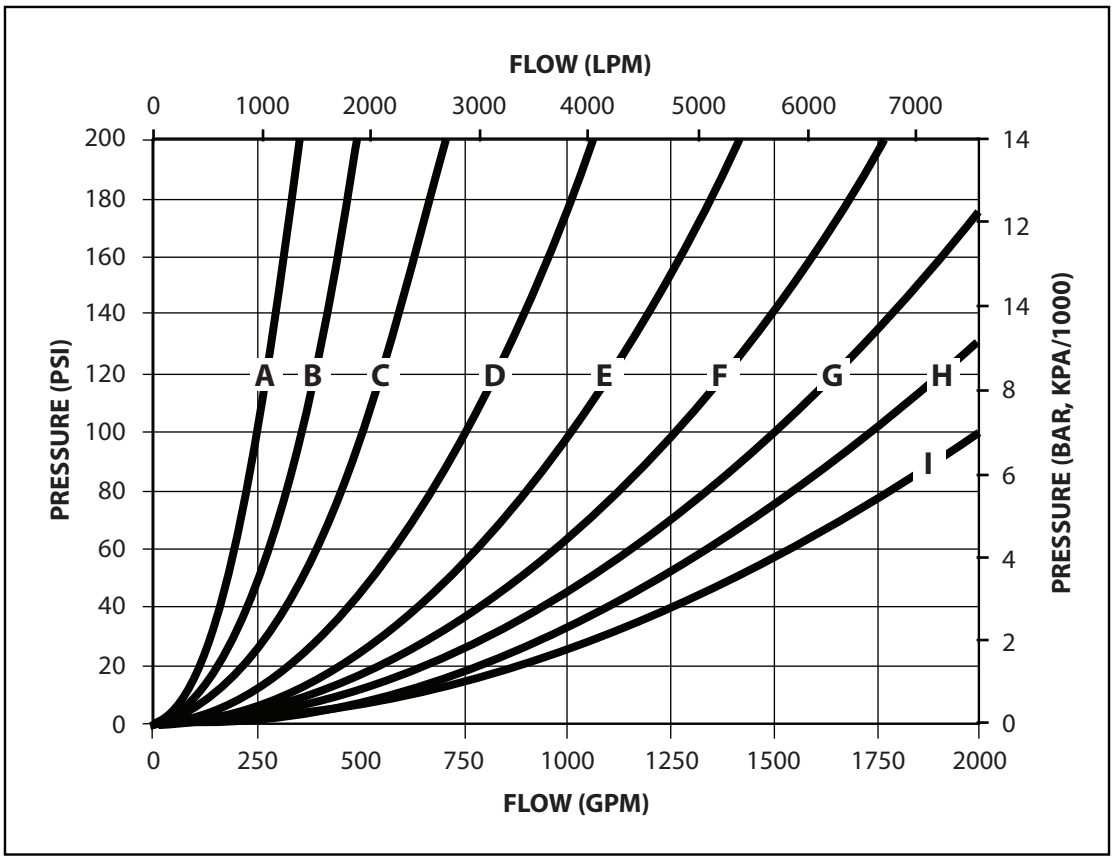
3.4 USE WITH SALT WATER

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.

4.0 FLOW CHARACTERISTICS

4.1 PRESSURE AND FLOW

The ZN, ZM & Z0 Nozzles are manufactured to a predetermined fixed orifice. The orifice size is not adjustable and is specified at time of order. The flow rate is marked on the nozzle's baffle. The graph below shows the relationship of flow and pressure for various orifice sizes.



LINE	Baffle
A	250 GPM @ 100 PSI
B	350 GPM @ 100 PSI
C	500 GPM @ 100 PSI
D	750 GPM @ 100 PSI
E	1000 GPM @ 100 PSI

LINE	Baffle
F	1250 GPM @ 100 PSI
G	1500 GPM @ 100 PSI
H	1750 GPM @ 100 PSI
I	2000 GPM @ 100 PSI

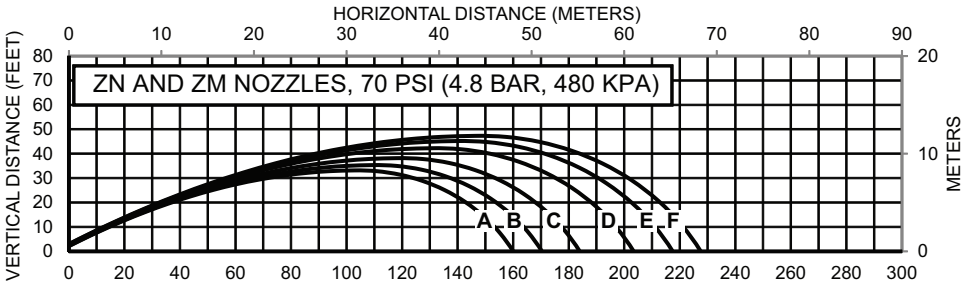
Figure 4.1

4.2 REACH AND TRAJECTORY

⚠CAUTION **Dents or nicks in the nozzle tip can seriously affect the stream reach or pattern, which may increase the risk of injury due to exposure. Care must be taken to avoid dents or nicks in the nozzle tip.**

Notes on trajectory graphs:

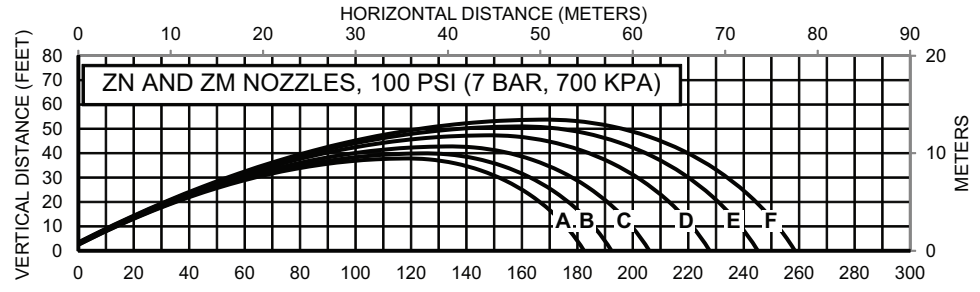
- Graphs show approximate effective stream trajectory at 30 degrees elevation in no wind conditions. Distance to last water drops approximately 10% farther.
- To estimate trajectories at elevations other than 30 degrees, refer to document LTT-135, available at tft.com/library.
- Trajectories shown are for water. The addition of foam is expected to decrease the reach by 10%.
- Tail or head winds of 20 MPH (30 KPH) may increase or decrease the range approximately 30%.



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	25	210	90
B	35	290	130
C	50	420	180
D	75	630	290
E	100	840	370
F	125	1050	460

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	25	800	40
B	35	1100	60
C	50	1600	80
D	75	2400	130
E	100	3200	170
F	125	4000	210

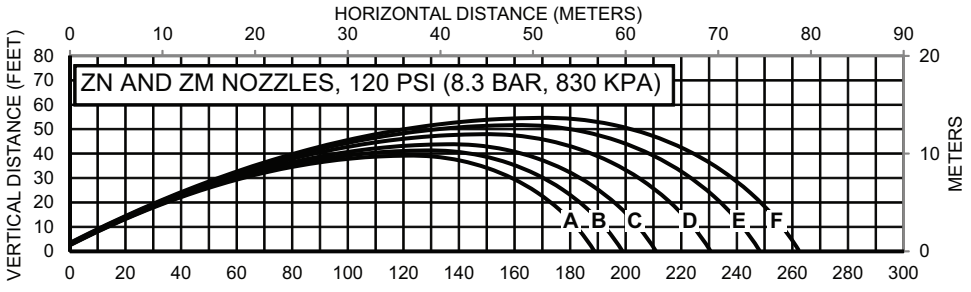
Figure 4.2A



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	25	250	130
B	35	350	180
C	50	500	260
D	75	750	400
E	100	1000	530
F	125	1250	660

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	25	1000	60
B	35	1300	80
C	50	1900	120
D	75	2900	180
E	100	3800	240
F	125	4800	300

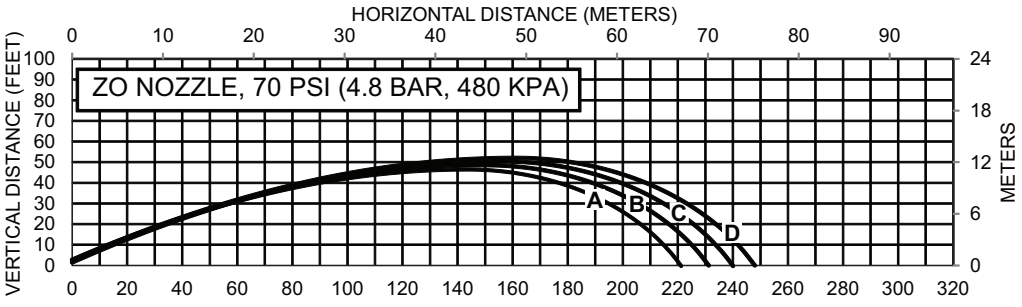
Figure 4.2B



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	25	270	160
B	35	380	220
C	50	550	320
D	75	820	480
E	100	1100	630
F	125	1370	790

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	25	1000	70
B	35	1500	100
C	50	2100	140
D	75	3100	220
E	100	4200	290
F	125	5200	360

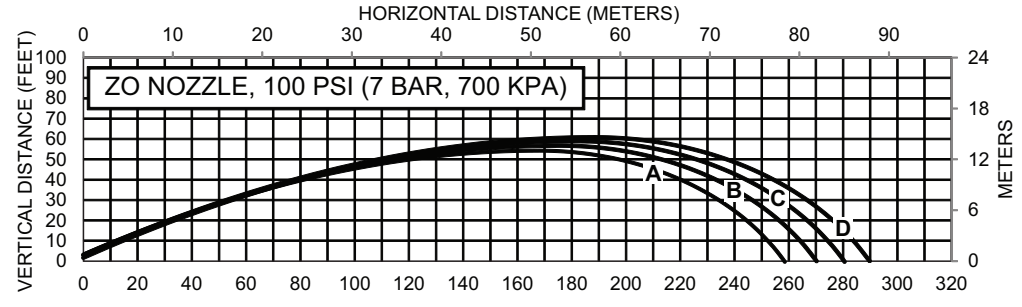
Figure 4.2C



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	125	1050	460
B	150	1260	560
C	175	1460	650
D	200	1670	740

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	125	4000	210
B	150	4700	250
C	175	5500	290
D	200	6300	330

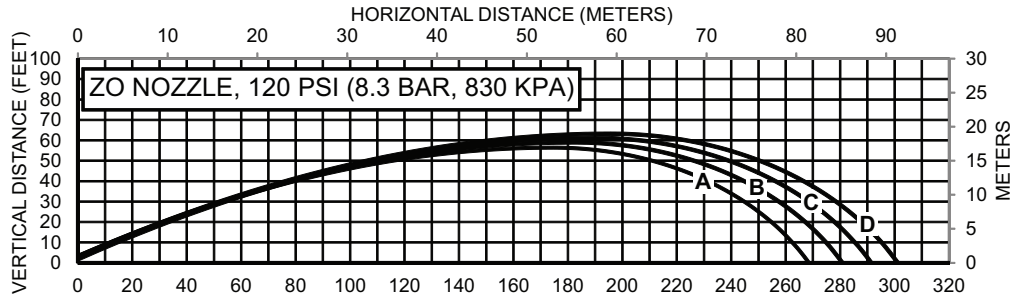
Figure 4.2D



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	125	1250	660
B	150	1500	790
C	175	1750	930
D	200	2000	1060

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	125	4800	300
B	150	5700	370
C	175	6700	430
D	200	7600	490

Figure 4.2E



CURVE	K FACTOR	GPM FLOW	LBS REACTION
A	125	1370	790
B	150	1640	950
C	175	1920	1110
D	200	2190	1270

CURVE	K FACTOR	LPM FLOW	KGF REACTION
A	125	5200	360
B	150	6200	430
C	175	7300	510
D	200	8300	580

Figure 4.2F

5.0 OPERATION

5.1 PATTERN CONTROL

TFT's nozzles have full pattern control from straight stream to wide fog.

Turning the stream shaper clockwise (as seen from the operating position behind the nozzle) moves the shaper to the straight stream position. Turning the shaper counterclockwise will result in an increasingly wider pattern.

Since the stream trim point varies with flow, the nozzle should be "trimmed" after changing the flow to obtain the straightest and farthest reaching stream. To properly trim a stream, first open the pattern to narrow fog. Then close the stream to parallel to give maximum reach. Note: Turning the shaper further forward will cause stream crossover and reduce the effective reach of the nozzle.

5.2 SHAPER LOCK POSITION

ZN and ZM nozzles offer a shaper lock that can be engaged by tightening a set screw. This will lock the shaper into any given fog position.

ZO nozzles offer a shaper lock that can be engaged by turning and tightening the shaper position lock ring. This will lock the shaper into any given fog position.

(see Figure 3.1) for the location of the shaper lock for each model.

6.0 FLUSHING DEBRIS

Debris in the water may get caught inside the nozzle. This trapped material will cause poor stream quality, shortened reach and reduced flow. To remove debris trapped in the nozzle:

1. Shut off flow to the nozzle.
2. Move the stream shaper to the wide fog position.

For ZN Nozzles: Unscrew the baffle using a 1-1/8" (28mm) socket.
For ZM Nozzles: Unscrew the bolt using a 7/8" socket and remove the baffle.
For ZO Nozzles: Unscrew the bolt using a large adjustable wrench and remove the baffle.

3. Remove/flush debris. Flow water if necessary.
4. Reassemble the nozzle.

⚠WARNING **Large amounts or pieces of debris may be unflushable and can reduce the flow of the nozzle resulting in an ineffective flow. In the event of a blockage, it may be necessary to retreat to a safe area, uncouple the nozzle and remove debris.**

7.0 USE WITH FOAM

The nozzle may be used with foam solutions. Refer to fire service training by the Authority Having Jurisdiction (AHJ) for the proper use of foam.

⚠WARNING **For Class B fires, lack of foam or interruption in the foam stream can cause a break in the foam blanket and greatly increase the risk of injury or death. Follow procedures established by the AHJ for the specific fuel and conditions.**

⚠WARNING **Improper use of foam or using the wrong type of foam can result in illness, injury, or damage to the environment. Follow foam manufacturer's instructions and fire service training as directed by the AHJ.**

7.1 FOAMJET MX WITH MASTERSTREAM NOZZLE

To increase the expansion ratio and drain time, Task Force Tips "Foamjet MX" (model FJ-MX-MD) may be used with the ZN nozzle. This multi-expansion foam tube attaches and detaches quickly from the nozzle. As expansion ratio is increased, the reach of the stream will be decreased due to the greater amount of bubbles in the stream and their inability to penetrate the air. Generally, the reach with foam is approximately 10% less than with water only. Actual results will vary based on brand of foam, hardness of water, temperature, etc. For specific information, see LIA-025 (MANUAL: Foam Attachments for TFT Nozzles).

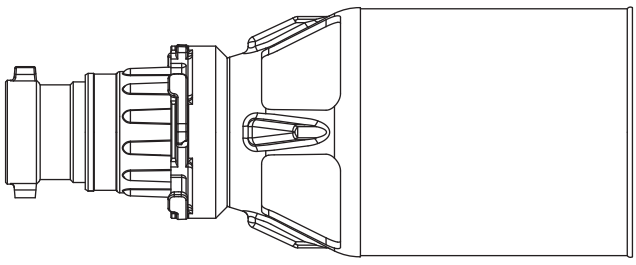


Figure 7.1

8.0 WARRANTY

Go to tft.com for all warranty information.

9.0 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. To help prevent mechanical damage, do not drop or throw equipment.

9.1 FIELD LUBRICATION

All Task Force Tips nozzles are factory lubricated with high quality silicone grease. This lubricant has excellent wash out resistance, providing long term performance. If your agency has unusually hard or sandy water, the moving parts of the nozzle may be affected. Foam agents and water additives contain soaps and chemicals that may break down the factory lubrication.

The moving parts of the nozzle should be checked on a regular basis for smooth and free operation, and for signs of damage. IF THE NOZZLE IS OPERATING CORRECTLY, THEN NO ADDITIONAL LUBRICANT IS NEEDED. Any nozzle that is not operating correctly should be immediately removed from service. The nozzle can be returned to the factory at any time for a complete checkup and re-lubrication with silicone grease.

The field use of Break Free CLP (spray or liquid) lubricant will help to temporarily restore the smooth and free operation of the nozzle. These lubricants do not have the washout resistance and long-term performance of the silicone grease. Once Break Free CLP is applied, re-application will be needed on a regular basis until the nozzle can be returned to the factory for a complete checkup and re-lubrication with silicone grease.

⚠CAUTION **Aerosol lubricants contain solvents that can swell O-Rings if applied in excess. The swelling can inhibit smooth operation of the moving parts. When used in moderation, as directed, the solvents quickly evaporate without adversely swelling the O-Rings.**

9.2 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.

9.3 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.**

10.0 EXPLODED VIEWS AND PARTS LISTS

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

11.0 OPERATION AND INSPECTION CHECKLIST

BEFORE EACH USE, the nozzle must be inspected to this checklist:

1. There is no obvious damage such as missing, broken or loose parts, damaged labels etc.
2. Waterway is clear of obstructions
3. Coupling is tight and leak free
4. Gaskets are in good condition.
5. Nozzle flow is adequate as indicated by pump pressure and nozzle reaction
6. Shaper turns freely and adjusts pattern through full range
7. Nozzle smoothly moves throught the full pattern range

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

1. All controls and adjustments are operational
2. There are no broken or missing parts
3. There is no damage to the nozzle that could impair safe operation (e.g. dents, cracks, corrosion or other defects)
4. The thread gasket is in good condition
5. The waterway is clear of obstructions
6. Nozzle is clean and markings are legible
7. Coupling is retightened properly
8. Shaper is set to desired pattern

⚠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.**

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