TASK FORCE TIPS®
FIRE FIGHTING EQUIPMENT

VORTEX™ NOZZLE

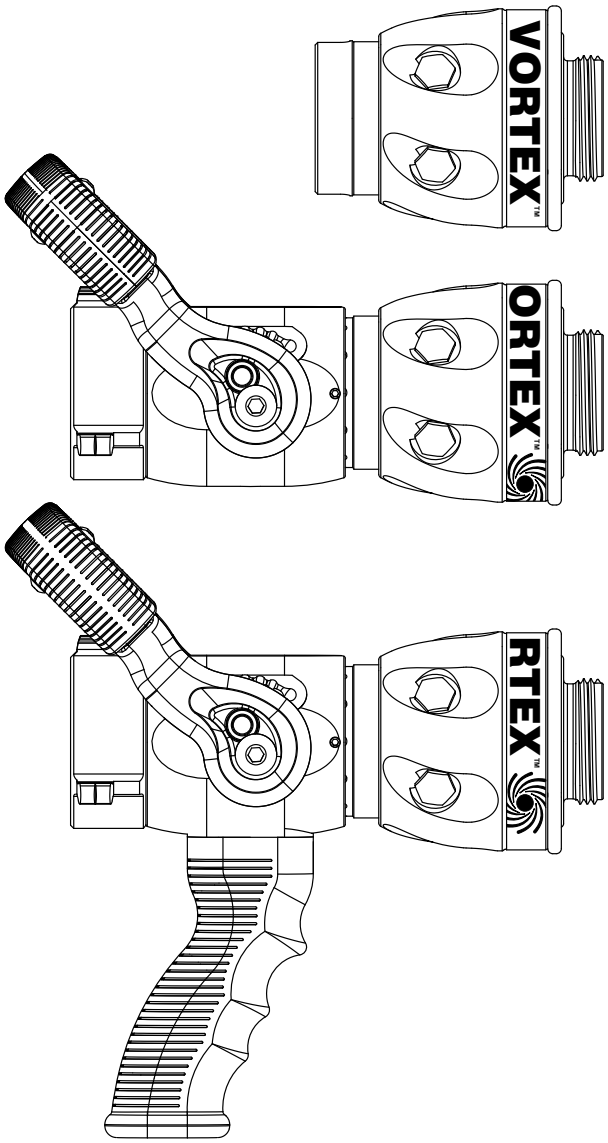
INSTRUCTION FOR INSTALLATION, OPERATION, AND MAINTENANCE

⚠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.



TASK FORCE TIPS LLC
MADE IN USA · tft.com

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DANGER

PERSONAL RESPONSIBILITY CODE

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

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

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

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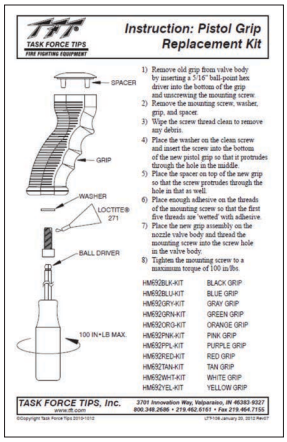
FEMSA

SUPPORTING MATERIALS

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



TASK FORCE TIPS
FIRE FIGHTING EQUIPMENT

Instruction: Pistol Grip Replacement Kit

1) Remove old grip from valve body by inserting a 5/16" ball-point hex driver into the bottom of the grip and unscrewing the mounting screw.
2) Remove the mounting screw, washer, grip, and spacer.
3) Wipe the screw thread clean to remove any debris.
4) Place the washer on the clean screw and insert the screw into the bottom of the new pistol grip so that it protrudes through the hole in the middle.
5) Place the spacer on top of the new grip so that the screw protrudes through the hole in that as well.
6) Place enough adhesive on the threads of the mounting screw so that the first five threads are 'wetted' with adhesive.
7) Place the new grip assembly on the nozzle valve body and thread the mounting screw into the screw hole in the valve body.
8) Tighten the mounting screw to a maximum torque of 100 in/lbs.

HMI92BLK-KIT	BLACK GRIP
HMI92BLU-KIT	BLUE GRIP
HMI92GRY-KIT	GRAY GRIP
HMI92GRN-KIT	GREEN GRIP
HMI92ORG-KIT	ORANGE GRIP
HMI92PNK-KIT	PINK GRIP
HMI92PPL-KIT	PURPLE GRIP
HMI92RED-KIT	RED GRIP
HMI92TAN-KIT	TAN GRIP
HMI92WHT-KIT	WHITE GRIP
HMI92YEL-KIT	YELLOW GRIP

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(TFT-108 January 30, 2012 Rev01)

LTT-108 Instruction:
Pistol Grip Replacement Kit

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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 **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 **Failure to restrain nozzle reaction can cause injury from loss of footing and/or stream protection. Opening and closing other nozzles, hose line kinks, changes in pump settings, nozzle pattern, or flushing will cause changes in nozzle reaction. Nozzle operator must always be prepared in the event of these changes.**

WARNING **If nozzle gets out of control while flowing, violent whipping motion will occur. Serious injury or death could result. Retreat from the nozzle immediately. Do not attempt to regain control of nozzle while flowing.**

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 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.**

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

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3.0 GENERAL INFORMATION

The TFT Vortex enhances the use of a smooth bore nozzle. It is intended for installation behind a smooth bore nozzle for use with water or fire fighting foam solutions. Six short vanes in the bore of the Vortex reduce turbulence in straight stream. Twisting the Stream Shaper from “STREAM” to “VORTEX” causes the vanes to pivot proportionally. This induces a gentle spin in the water to create a uniformly dispersed Vortex stream pattern. The vanes are less obtrusive than a typical stream straightener, resulting in virtually no friction loss regardless of which stream pattern is selected. The vanes also allow large debris to easily pass through the Vortex.

A 1-3/8” waterway is integrated into every Vortex 1.5” & 2.5” model. For lower flow rates, any smaller sized smooth-bore tip may be attached to the 1.5” NH male outlet threads.

3.1 VARIOUS MODELS AND TERMS

Vortex 1.5” models are configured with 1.5”NH female threaded non-full time swivel couplings on the inlet and 1.5”NH male threads on the outlet for connecting to a smaller tip. Other threads are available by request. Three Vortex 1.5” models are available:

- SVFT Vortex Tip Only
- SVFV Vortex with integrated detent ball valve
- SVFG Vortex with integrated detent ball valve and pistol grip

Vortex 2.5” models are configured with 2.5”NH female threaded full time swivel couplings on the inlet and 1.5”NH male threads on the outlet for connecting to a smaller tip. Other threads are available by request. Two Vortex 2.5” models are available:

- SVFV-NJ Vortex with integrated detent ball valve
- SVFG-NJ Vortex with integrated detent ball valve and pistol grip

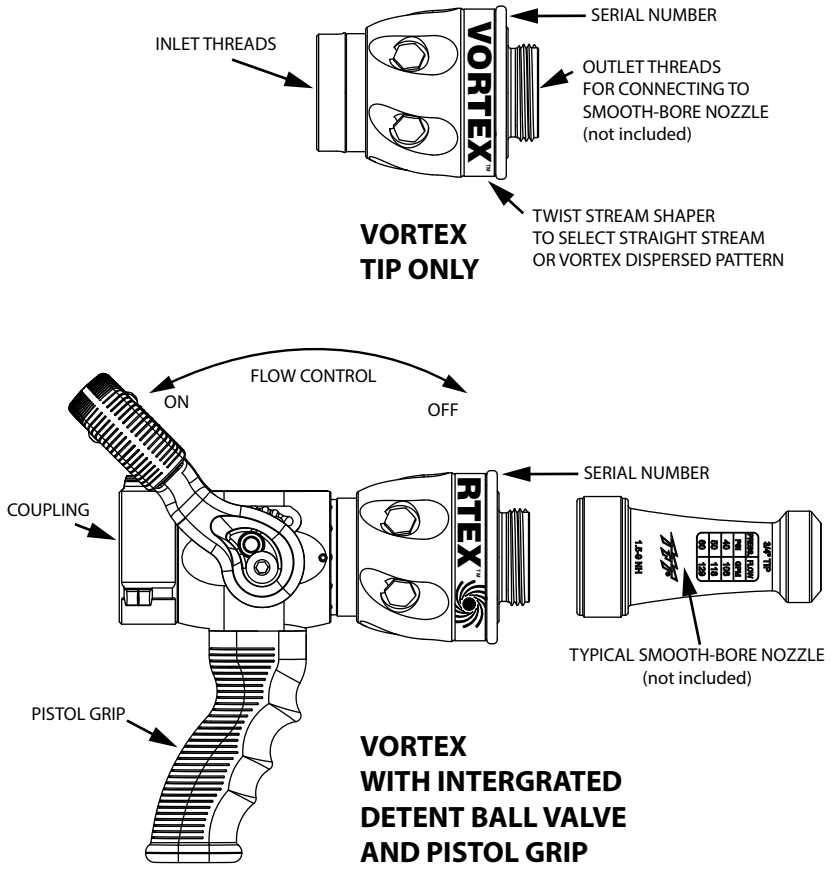

Figure 3.1

3.2 SPECIFICATIONS

Maximum operating pressure (with valve shut off)	300 psi / 21 bar
Operating temperature range 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 MIL8625 class 3 type 2, stainless steel 300 series, nylon 6-6, nitrile rubber

Table 3.2

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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

The Vortex 1.5” and 2.5” have a 1-3/8” waterway integrated into the outlet. The flow/pressure graph for the 1-3/8" waterway is shown below. If a smaller smooth bore is attached to the outlet, follow the appropriate flow chart for the smaller orifice size.

SPECIAL CONFIGURATIONS If nozzles are made according to the special marking or performance requirements of the fire department, the characteristics may differ from the published data in this manual. Repair parts specific to each serial number may differ from those shown in the service procedure. The required parts for each serial number are available online by entering tft.123456 with the numbers corresponding to the serial number engraved on the product.

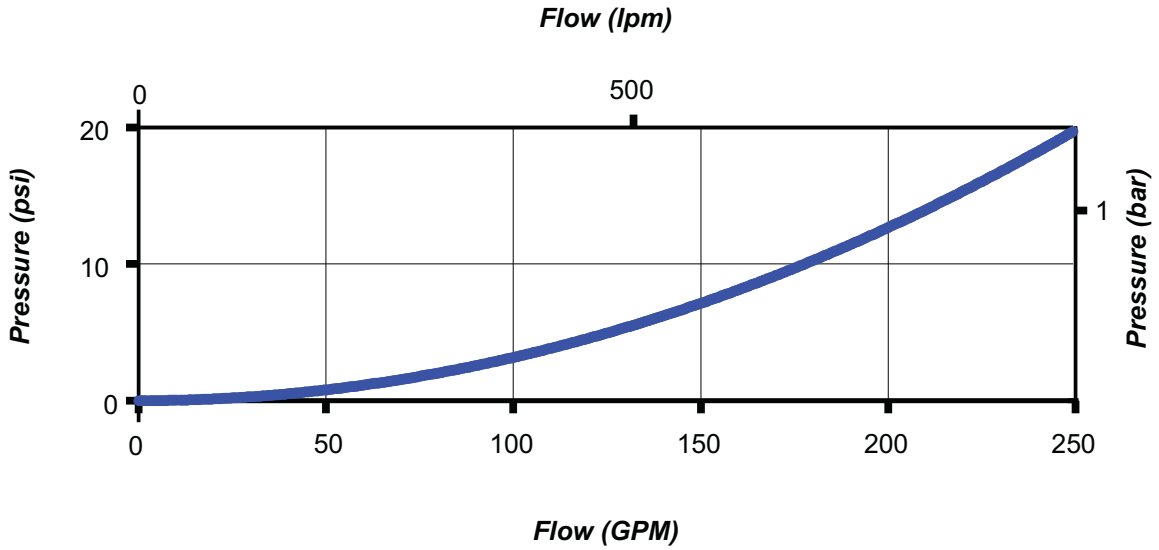

Figure 4.0

Flows at specific pressures for each orifice size are as follows:

7/8” TIP	
PRESSURE	FLOW
PSI	GPM
40	144
50	161
60	176
70	190
80	203

15/16” TIP	
PRESSURE	FLOW
PSI	GPM
40	165
50	185
60	202
70	218
80	234

1” TIP	
PRESSURE	FLOW
PSI	GPM
40	188
50	210
60	230
70	249

1-1/16” TIP	
PRESSURE	FLOW
PSI	GPM
40	212
50	237
60	260

1-1/8” TIP	
PRESSURE	FLOW
PSI	GPM
40	238
50	266

1-3/16” TIP	
PRESSURE	FLOW
PSI	GPM
40	265
50	296

1-1/4” TIP	
PRESSURE	FLOW
PSI	GPM
40	294
50	328

1-3/8” TIP	
PRESSURE	FLOW
PSI	GPM
40	355
50	397

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5.0 NOZZLE CONTROLS

5.1 FLOW CONTROL

NOTICE

Control valves must be opened slowly to eliminate unnecessary strain on the hose and couplings, and reduce pressure surges.

NOTICE

Nozzles attached to an in-service hose shall be stored in the off position.

5.1.1 TIP ONLY

Tip Only nozzles have NO shut-off valve within the nozzle and MUST be used with a separate ball valve attached to the nozzle.

5.1.2 LEVER TYPE FLOW CONTROL (BALL VALVE)

Models with a ball valve are shut off when the valve handle is fully forward. Pulling back on the handle opens the valve. TFT recommends the use of a pistol grip for easier handling. For additional stress reduction, a hose rope or strap may also be used. This permits more effective use and ease of advancement, while minimizing strain and fatigue.

NOTICE

In partially open positions, a ball valve will cause turbulence and adversely affect stream quality.

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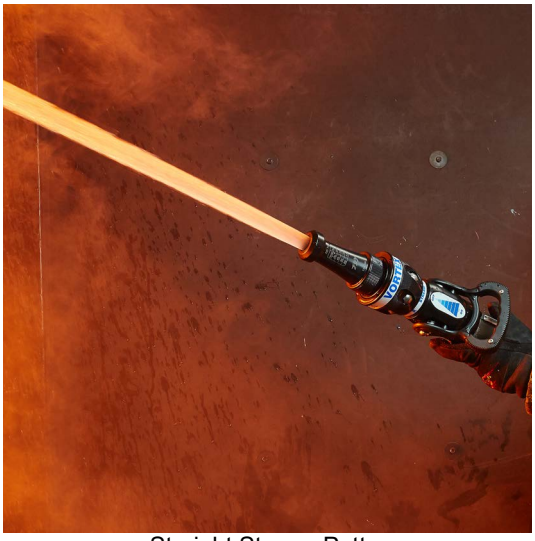
5.2 PATTERN CONTROL

The TFT Vortex nozzle allows the stream pattern to be infinitely varied from a straight stream to a uniformly dispersed Vortex pattern.

Typical stream results are shown below.



Straight Stream Pattern

Full Vortex Pattern

Figure 5.2A

The Shaper includes a tactile detent at the straight stream and full Vortex dispersed positions as a secure confirmation that the desired setting has been achieved. As seen from the operating position behind the nozzle, twisting the stream shaper clockwise moves the shaper to the straight stream position. Twisting the shaper counterclockwise will result in an increasingly wider pattern until reaching the full Vortex pattern.

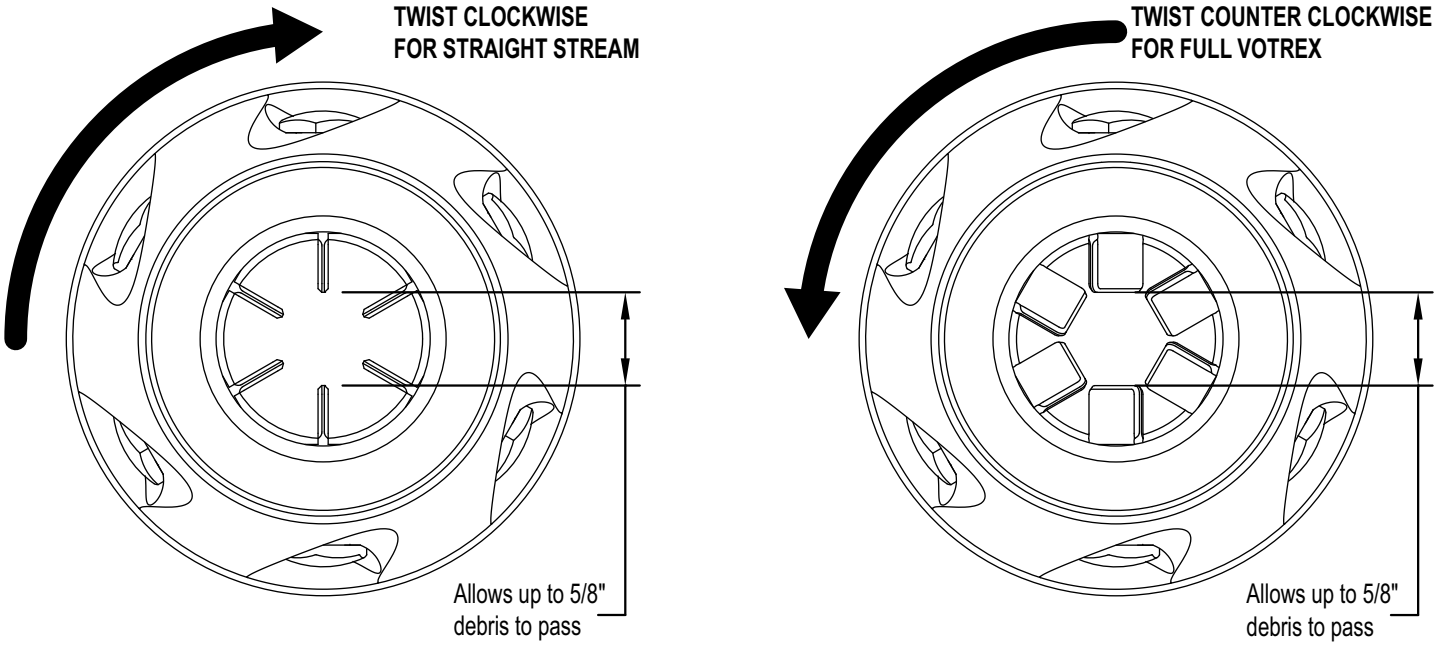


Figure 5.2B

Pivoting the vanes has virtually no effect on the flow area or ability to pass debris up to 5/8”. As a result, the nozzle reaction of the full Vortex pattern in about 10% less than the straight stream pattern. The nozzle reaction is greatest when the shaper is in the straight stream position.

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6.0 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.**

⚠WARNING **Use of compressed air foam (CAF) with hand held nozzles can cause sudden surges in nozzle reaction force resulting in risk of injury or death from loss of footing or hose whipping. Be prepared for sudden changes in nozzle reaction caused by:**

- **Slug loading (Loss of foam concentrate sends slugs of air and water into the nozzle)**
- **Sudden release of built-up pressure in the hose when opening a nozzle**

7.0 COLOR CODED HANDLE COVER AND PISTOL GRIPS

Nozzles with lever type valve handles are supplied with black valve handle covers and pistol grips. The handle covers and pistol grips are available from TFT in various colors for those departments wishing to color code the nozzle to the discharge controls.

Handle covers are replaceable by removing the four screws that hold the handle covers in place. Use a 3/32" hex key when removing and replacing screws. Pistol grip is replaceable by following TFT instruction sheet LTT-108.

For standardization NFPA 1900 recommends the following color code scheme:

Preconnect #1 or Jump Line	Orange	Other Colors Available:
Preconnect #2	Red	- Gray
Preconnect #3	Yellow	- Pink
Preconnect #4	White	- Purple
Preconnect #5	Blue	- Tan
Preconnect #6	Black	
Preconnect #7	Green	
Foam Lines	Red w/ White Border (Red/White)	

8.0 WARRANTY

Go to tft.com for all warranty information.

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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.

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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. Valve operates freely through full range and regulates flow
5. “OFF” position shuts off fully and flow is stopped
6. Nozzle flow is adequate as indicated by pump pressure and nozzle reaction
7. Shaper turns freely and adjusts pattern through full range
8. Nozzle smoothly moves into full flush and out of flush with normal flow and pressure restored
9. Shaper detent (if so equipped) operates smoothly and positively.

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

1. All controls and adjustments are operational
2. Shut off valve (if so equipped) closes off the flow completely
3. There are no broken or missing parts
4. There is no damage to the nozzle that could impair safe operation (e.g. dents, cracks, corrosion or other defects)
5. The thread gasket is in good condition
6. The waterway is clear of obstructions
7. Nozzle is clean and markings are legible
8. Coupling is tightened properly
9. Shaper is set to desired pattern
10. Shutoff handle (if so equipped) is stored in the OFF position

⚠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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