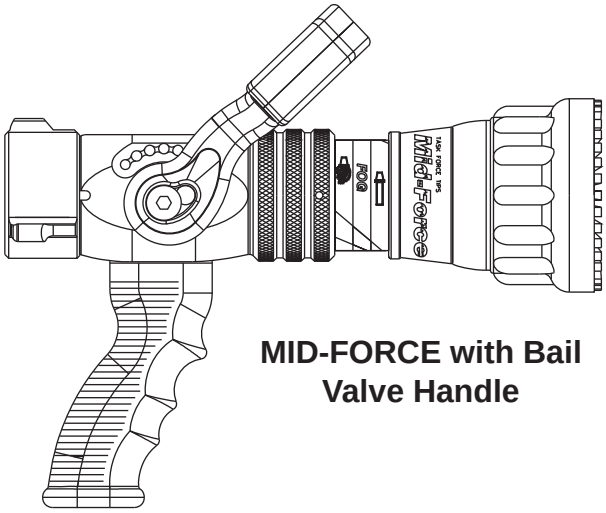
TASK FORCE TIPS®
FIRE FIGHTING EQUIPMENT

MANUAL: Hand Held Automatic Dual Pressure Nozzles

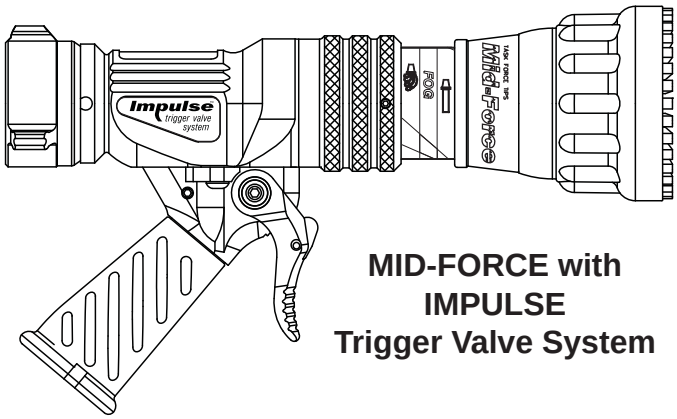
Mid-Force, CAFS-Force and Dual-Force

INSTRUCTIONS FOR SAFE OPERATION AND MAINTENANCE

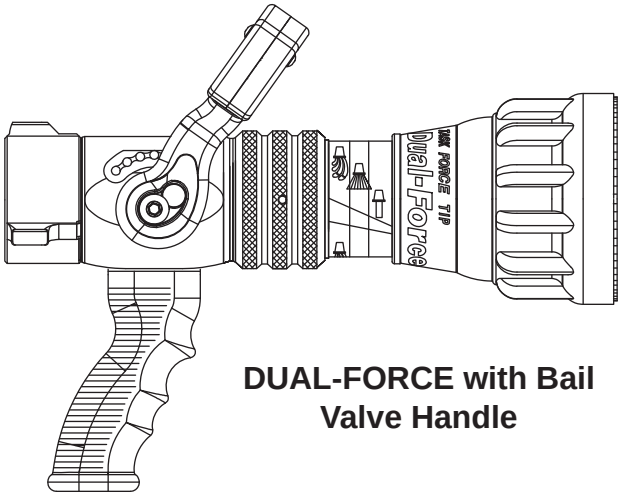
⚠WARNING **Understand manual before use. Operation of this device without understanding the manual and receiving proper training is a misuse of this equipment. Obtain safety information at www.tft.com/serial-number**



MID-FORCE with Bail Valve Handle



MID-FORCE with IMPULSE Trigger Valve System



DUAL-FORCE with Bail Valve Handle

⚠DANGER

PERSONAL RESPONSIBILITY CODE

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

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

FEMSA

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

TASK FORCE TIPS, INC.
MADE IN USA • www.tft.com

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

Table Of Contents

1.0 MEANING OF SAFETY SIGNAL WORDS
2.0 SAFETY
3.0 GENERAL INFORMATION
- 3.1 VARIOUS MODELS AND TERMS
- 3.2 SPECIFICATIONS
  - 3.2.1 MECHANICAL
- 3.3 NOZZLE COUPLINGS
- 3.4 USE WITH SALT WATER

4.0 FLOW CHARACTERISTICS
- 4.1 FLOW GRAPHS
- 4.2 FLOW AND RECTION CHARTS
- 4.3 REACH AND TRAJECTORY

5.0 NOZZLE CONTROLS
- 5.1 FLOW CONTROL
  - 5.1.1 LEVER TYPE FLOW CONTROL
  - 5.1.2 TIP ONLY
  - 5.1.3 BALL SHUT-OFF
  - 5.1.4 TWIST SHUT-OFF
  - 5.1.5 IMPULSE TRIGGER HLOW CONTROL
    - 5.1.5.1 IMPULSE TRIGGER LOCK
    - 5.1.5.2 TRIGGER FLOW CONTROL SPEED ADJUSTMENT
  - 5.2 PATTERN CONTROL ADJUSTMENT
    - 5.2.1 PATTERN CONTROL
    - 5.2.2 FLUSH CONTROL
  - 5.3 STANDARD/LOW PRESSURE KNOB MID-FORCE & DUAL-FORCE

6.0 USE WITH FOAM
- 6.1 FOAM ASPIRATING ATTACHMENTS

7.0 USE OF NOZZLES
- 7.1 MID-FORCE AND DUAL-FORCE NOZZLES
- 7.2 CAFS-FORCE 1 AND CAFS-FORCE 2 NOZZLES

8.0 APPROVALS
9.0 COLOR CODED VALVE HANDLE AND PISTOL GRIP
- 9.1 IMPULSE TRIGGER VALVE SYSTEM NOZZLE COLORED PISTOL GRIPS

10.0 WARRANTY
11.0 MAINTENANCE
- 11.1 FIELD LUBRICATION
- 11.2 IMPULSE TRIGGER VALVE LUBRICATION
- 11.3 SERVICE TESTING
  - 11.3.1 HYDROSTATIC TESTING
  - 11.3.2 FLOW TESTING
  - 11.3.3 RECORDS
- 11.4 REPAIR

12.0 OPERATION and INSPECTION CHECKLIST

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 standard Z535.6-2011, 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 nozzle pressure and/or flow will cause an ineffective stream and can result in injury, death, or loss of property. See flow graphs or call 800-348-2686 for assistance.**

⚠WARNING **The nozzle may be damaged if frozen while containing significant amounts of water. Such damage may be difficult to detect visually and can lead to possible injury or death. Any time the nozzle is subject to possible damage due to freezing, it must be tested by qualified personnel before being considered safe for use.**

⚠WARNING **This equipment is intended for use by trained personnel for firefighting. Their use for other purposes may involve hazards not addressed by this manual. Seek appropriate guidance and training to reduce risk of injury.**

⚠WARNING **Failure to restrain nozzle reaction can cause firefighter injury from loss of footing and/or stream protection. Nozzle reaction will vary as supply conditions change: such as opening or closing other nozzles, hose line kinks, changes in pump settings, etc. Changes in spray pattern or flushing will also affect nozzle reaction. The nozzle operator must always be prepared in the event of these changes.**

⚠WARNING **If nozzle gets out of control or away from operator, retreat from nozzle immediately. Do not attempt to regain control of nozzle while flowing water. Injury from whipping can occur.**

⚠WARNING **Water is a conductor of electricity. Application of water on high voltage equipment can cause injury or death by electrocution. The amount of current that may be carried back to the nozzle will depend on the following factors:**

- **Voltage of the line or equipment**
- **Distance from the nozzle to the line or equipment**
- **Size of the stream**
- **Whether the stream is solid or broken**
- **Purity of the water1**

1 The Fire Fighter and Electrical Equipment, The University of Michigan Extension Service, Fourth Printing 1983. Page 47

⚠CAUTION **Fire streams are capable of injury and damage. Do not direct water stream to cause injury or damage to persons or property.**

3.0 GENERAL INFORMATION

The Task Force Tips nozzles are designed to provide excellent performance under most firefighting conditions. Their rugged construction is compatible with the use of fresh water as well as firefighting foam solutions. Other important operating features are:

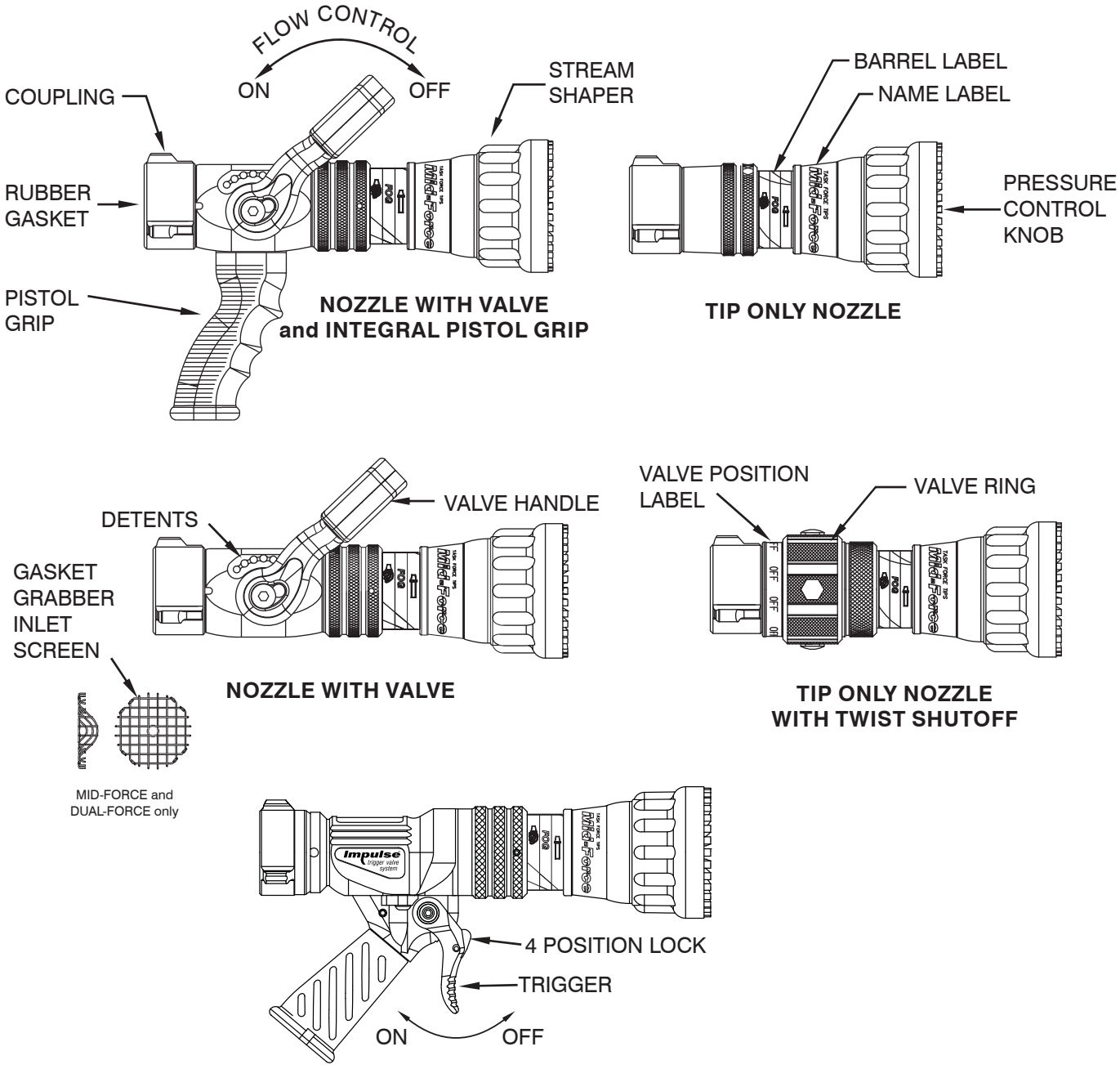
- Switchable from standard operation to low pressure
- Automatic pressure regulation (meets NFPA 1964 automatic nozzle pressure requirements)
- Slide valve for excellent stream quality at all valve positions
- Quick-acting pattern control from straight stream to wide fog
- “Power fog teeth” for full-fill fog
- “Gasket grabber” inlet screen to keep large debris from entering nozzle
- Easily flushable while flowing to clear trapped debris
- TFT’s five-year warranty and unsurpassed customer service

3.1 VARIOUS MODELS AND TERMS

The nozzle is available in several different models and inlet connections. Basic body styles are shown in figure 3.1A

SERIES	FLOW RANGE		NOMINAL PRESSURE		STANDARD COUPLING*
	GPM	L/min	PSI	BAR	
MID-FORCE	70-200	265-760	100	7	1-1/2 NH
MID-FORCE	70-200	265-760	75	5	1-1/2 NH
DUAL-FORCE	95-300	360-1150	100	7	1-1/2 NH
DUAL-FORCE	95-300	360-1150	75	5	1-1/2 NH
CAFS-FORCE1	70-200	265-760	75	5	1-1/2 NH
CAFS-FORCE2	95-250	360-950	75	5	1-1/2 NH

* Other threads, coupling sizes, or connector styles can be specified at time of order.



3.1A COMMON MODELS AND TERMS

3.2 SPECIFICATIONS

3.2.1 MECHANICAL

Maximum nozzle inlet pressure with valve shutoff	300 psi	21 bar
Operating temperature range of fluid	33 to 120º F	1 to 50º C
Storage temperature range	-40 to 150º F	-40 to 65º C
Materials used	Aluminum 6000 series hard anodized MIL8625 class 3 type 2, stainless steel 300 series, nylon 6-6, nitrile rubber	

3.3 NOZZLE COUPLINGS

Many inlet couplings such as NH (National Hose) or NPSH (National Pipe Straight Hose) can be specified at time of order.

⚠CAUTION **Nozzle must be mated to a hose line with matched threads. Mismatched or damaged threads may cause nozzle to leak or uncouple under pressure and could cause injury.**

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

3.4 USE WITH SALT WATER

Use with saltwater is permissible provided nozzle is thoroughly cleaned with fresh water after each use. The service life of the nozzle may be shortened due to the effects of corrosion and is not covered under warranty.

4.0 FLOW CHARACTERISTICS

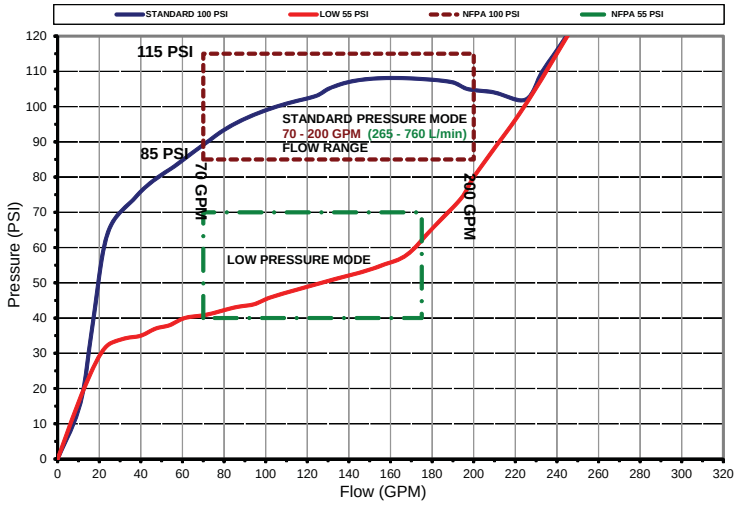
The following graphs show the typical performance of MID-FORCE, CAFS-FORCE and DUAL-FORCE nozzles.

SPECIAL CONFIGURATIONS - If nozzles are made according to the special marking or performance requirements of the fire department then the operating 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 on-line by entering www.tft.123456 with the numbers corresponding to the serial number engraved on the product.

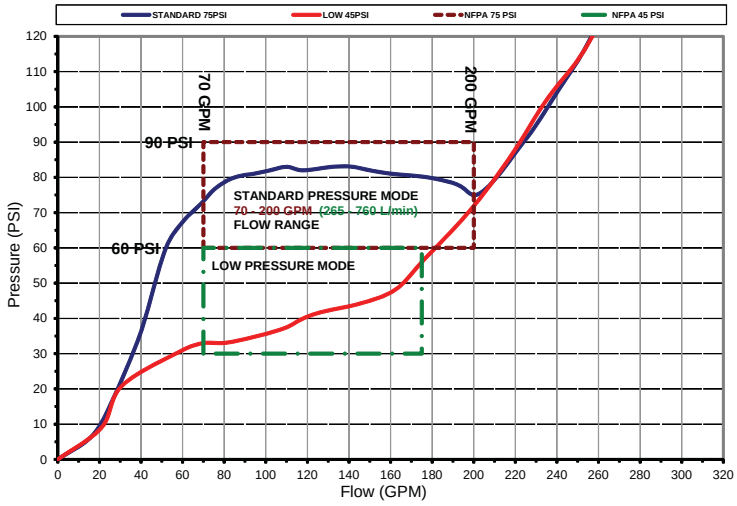
4.1 FLOW GRAPHS

Mid-Force *meets NFPA flow requirements.*

MID-FORCE 100/55 PSI (7/4 BAR)

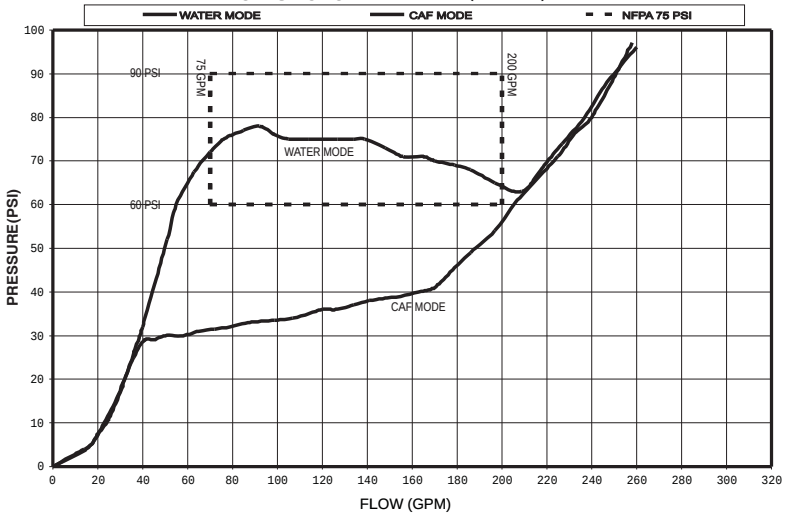


MID-FORCE 75/45 PSI (5/3 BAR)



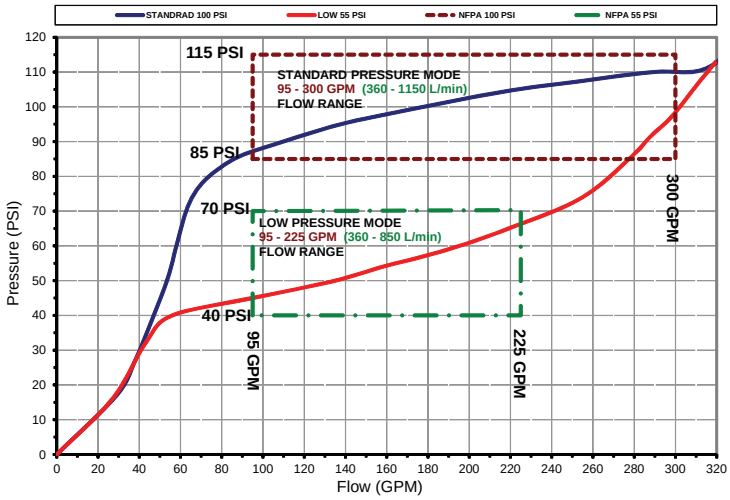
CAFS-Force 1

CAFS-FORCE 1 75/45 PSI (5/3 BAR)

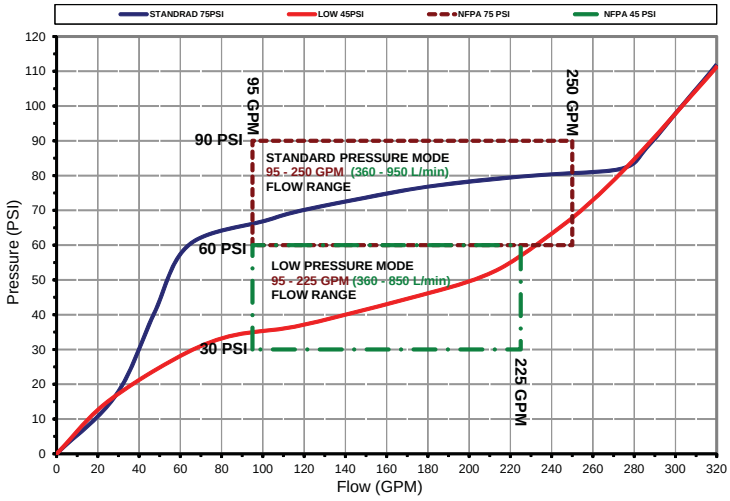


The charts in section 4.2 of this document give specific examples of maximum flow rates for particular situations. Friction losses may vary due to differences in hose construction resulting in flows different than those shown. For situations or lengths of hose not listed on the chart, approximate flows can be calculated using conventional hydraulics. NOTE: Within the flow range, the nozzle inlet pressure may be approximated to be 100 or 75 PSI, when used in the standard pressure mode, and 55 or 45 PSI in low pressure mode.

New DUAL-FORCE 100/55 PSI (7/4 BAR) meets NFPA - For Nozzles Manufactured After December 1, 2003



New DUAL-FORCE 75/45 PSI (5/3 BAR) meets NFPA - For Nozzles Manufactured after December 1, 2003



CAFS-Force 2

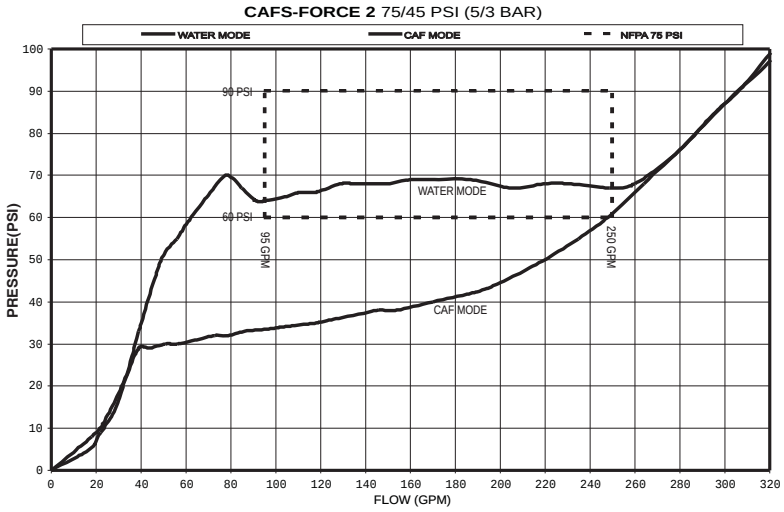


FIGURE 3 - NOZZLE PERFORMANCE
(on pages 6 - 7)

Mid-Force 100/55 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

PUMP DISCHARGE PRESSURE (PSI) / FLOW (GPM) REACTION (LBS)	1 1/2" HOSE						1 3/4" HOSE						2" HOSE					
	150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.	
	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP
50	21 8	55 17	21 7	50 16	21 7	46 14	21 8	65 21	21 8	60 19	21 7	54 17	22 8	82 27	22 8	75 24	22 8	68 22
75	31 13	93 31	29 12	83 27	28 12	75 24	32 14	111 38	32 14	100 33	31 13	91 30	36 15	141 51	35 15	128 45	34 15	119 41
100	65 30	121 42	59 27	107 36	55 25	97 32	72 34	143 52	67 32	129 45	63 29	117 40	84 41	184 72	79 38	167 63	75 36	153 56
125	93 45	143 52	84 40	126 44	77 37	114 39	108 54	172 65	97 48	152 56	91 44	138 50	135 69	213 90	122 62	198 79	113 57	182 70
150	117 59	163 61	105 52	143 52	96 47	130 46	141 72	195 77	125 63	174 66	114 57	158 58	196 101	--- ---	168 87	220 95	151 78	205 84
175	140 72	180 69	124 63	159 59	112 57	143 52	174 90	213 90	151 78	192 76	136 70	175 66	--- ---	--- ---	212 109	--- ---	187 97	223 98
200	162 84	196 78	141 73	173 66	128 65	156 58	204 105	228 102	175 91	207 86	157 81	189 75	--- ---	--- ---	--- ---	--- ---	222 113	--- ---
225	183 94	209 87	158 82	186 72	142 73	168 63	--- ---	--- ---	198 102	221 96	176 91	203 83	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top in each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

Mid-Force 7/4 BAR
Flow And Nozzle Reaction Chart

7 bar = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

FLOW (LPM) / REACTION (KG)		38mm HOSE						45mm HOSE						50mm HOSE					
		45M		60M		75M		45M		60M		75M		45M		60M		75M	
		7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP
PUMP DISCHARGE PRESSURE (BAR)	3.5	**80** 4	**210** 8	**80** 3	**190** 7	**80** 3	**175** 6	**80** 4	**245** 10	**80** 4	**225** 9	**80** 3	**205** 8	**85** 4	**310** 12	**85** 4	**285** 11	**85** 4	**225** 10
	5.2	**115** 6	**350** 14	**110** 5	**315** 12	**105** 5	**285** 11	**85** 6	**420** 17	**120** 6	**380** 15	**115** 6	**345** 14	**135** 175	**535** 23	**130** 7	**485** 20	**130** 7	**450** 19
	7.0	**245** 14	**460** 19	**225** 12	**405** 16	**210** 11	**365** 15	**275** 15	**540** 24	**255** 15	**490** 20	**240** 13	**445** 18	**320** 19	**695** 33	**300** 17	**630** 29	**285** 16	**580** 25
	8.6	**350** 20	**540** 24	**320** 18	**475** 20	**290** 17	**430** 18	**410** 25	**650** 30	**365** 22	**575** 25	**345** 20	**520** 23	**510** 31	**805** 41	**460** 28	**750** 36	**430** 26	**690** 32
	10.0	**445** 27	**615** 28	**395** 24	**540** 24	**365** 21	**490** 21	**535** 33	**740** 35	**475** 29	**660** 30	**430** 26	**600** 26	**740** 46	**---** ---	**635** 40	**---** --	**570** 35	**775** 38
	12.0	**530** 33	**680** 31	**470** 29	**600** 27	**425** 26	**540** 24	**660** 41	**805** 41	**570** 35	**725** 35	**515** 32	**660** 30	**---** ---	**---** ---	**800** 50	**---** ---	**710** 44	**845** 45
	14.0	**615** 38	**740** 35	**535** 33	**655** 30	**485** 30	**590** 26	**770** 48	**---** ---	**660** 41	**785** 39	**595** 37	**715** 34	**---** ---	**---** ---	**---** ---	**---** ---	**840** 51	**---** ---
	15.5	**695** 43	**790** 40	**600** 37	**705** 33	**535** 33	**635** 29	**---** ---	**---** ---	**750** 46	**835** 44	**665** 41	**770** 38	**---** ---	**---** ---	**---** ---	**---** ---	**---** ---	**---** ---

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top in each box indicates flow (LPM), and number on bottom indicates nozzle reaction (KG). (2) In Standard mode, the average nozzle pressure is 7 bar. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

LIN-035 June 16, 2015 Rev15

Mid-Force 75/45 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

PUMP DISCHARGE PRESSURE (PSI) / FLOW (GPM) REACTION (LBS)	1 1/2" HOSE						1 3/4" HOSE						2" HOSE					
	150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.	
	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP
50	**43** 14	**69** 20	**43** 14	**62** 18	**42** 13	**57** 16	**45** 15	**84** 25	**44** 15	**74** 21	**43** 14	**67** 19	**45** 15	**84** 25	**45** 16	**97** 29	**45** 15	**89** 26
75	**55** 22	**104** 32	**53** 21	**92** 27	**51** 20	**83** 24	**59** 24	**121** 39	**57** 23	**110** 34	**55** 22	**101** 30	**64** 27	**155** 53	**62** 26	**140** 47	**60** 25	**128** 42
100	**78** 35	**127** 42	**72** 32	**113** 35	**68** 29	**103** 31	**91** 41	**153** 52	**82** 37	**136** 45	**77** 34	**123** 40	**122** 56	**182** 71	**105** 48	**171** 63	**97** 44	**162** 56
125	**108** 50	**149** 50	**96** 43	**131** 43	**86** 39	**119** 38	**134** 62	**174** 65	**118** 54	**159** 55	**105** 48	**145** 48	**203** 89	**204** 89	**166** 75	**192** 79	**146** 67	**181** 70
150	**136** 63	**166** 60	**119** 54	**148** 50	**106** 49	**134** 44	**173** 78	**191** 78	**148** 68	**174** 66	**132** 60	**162** 57	**ó** ó	**ó** ó	**210** 95	**210** 95	**189** 85	**199** 85
175	**162** 73	**180** 70	**138** 64	**163** 57	**124** 57	**147** 50	**206** 91	**206** 91	**175** 79	**189** 77	**155** 71	**175** 66	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**215** 99	**214** 99
200	**183** 82	**192** 79	**157** 72	**174** 65	**140** 64	**160** 55	**220** 104	**220** 104	**201** 88	**202** 87	**176** 80	**188** 76	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó
225	**204** 90	**204** 89	**174** 79	**184** 73	**155** 71	**170** 62	**---** ---	**---** ---	**214** 98	**214** 98	**196** 86	**199** 85	**ó** ---	**---** ---	**ó** ---	**ó** ---	**ó** ---	**ó** ---

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top in each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4)

Mid-Force 5/3 BAR
Flow And Nozzle Reaction Chart

7 bar = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

PUMP DISCHARGE PRESSURE (BAR) / FLOW (LPM) REACTION (KG)	38mm HOSE						45mm HOSE						50mm HOSE					
	45M		60M		75M		45M		60M		75M		45M		60M		75M	
	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP
3.5	**163** 6	**261** 9	**163** 6	**235** 8	**159** 6	**216** 7	**170** 7	**318** 11	**167** 7	**280** 10	**163** 6	**254** 9	**170** 7	**318** 11	**170** 7	**367** 13	**170** 7	**337** 12
5.2	**208** 10	**394** 15	**201** 10	**348** 12	**193** 9	**314** 11	**223** 11	**458** 18	**216** 12	**416** 15	**208** 10	**382** 14	**242** 12	**587** 24	**235** 12	**530** 21	**227** 11	**484** 19
7.0	**295** 16	**481** 19	**273** 15	**428** 16	**257** 13	**390** 14	**344** 19	**579** 24	**310** 19	**515** 20	**291** 15	**466** 18	**462** 25	**689** 32	**397** 22	**647** 29	**367** 20	**613** 25
8.6	**409** 23	**564** 23	**363** 20	**496** 20	**326** 18	**450** 17	**507** 28	**659** 29	**447** 25	**602** 25	**397** 22	**549** 22	**768** 40	**772** 40	**628** 34	**727** 36	**553** 30	**685** 32
10.0	**515** 29	**628** 27	**450** 24	**560** 23	**401** 22	**507** 20	**655** 35	**723** 35	**560** 31	**659** 30	**500** 27	**613** 26	**ó** ó	**ó** ó	**795** 43	**795** 43	**715** 39	**753** 39
12.0	**613** 33	**681** 32	**522** 29	**617** 26	**469** 26	**556** 23	**780** 41	**780** 41	**662** 36	**715** 35	**587** 32	**662** 30	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**814** 45	**810** 45
14.0	**693** 37	**727** 36	**594** 33	**659** 29	**530** 29	**606** 25	**833** 47	**833** 47	**761** 40	**765** 39	**666** 36	**712** 34	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó
15.5	**772** 41	**772** 40	**659** 36	**696** 33	**587** 32	**643** 28	**---** ---	**---** ---	**810** 44	**810** 44	**742** 39	**753** 39	**ó** ---	**ó** ---	**ó** ---	**ó** ---	**ó** ---	**ó** ó

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top in each box indicates flow (LPM), and number on bottom indicates nozzle reaction (KG). (2) In Standard mode, the average nozzle pressure is 7 bar. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

LIN-035 June 16, 2015 Rev15

For Nozzles with: Serial # TFT-H465101 and over or Manufactured after 12/01/2003

Dual-Force 100/55 PSI
Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

PUMP DISCHARGE PRESSURE (PSI)	FLOW (GPM) / REACTION (LBS)	1 1/2" HOSE						1 3/4" HOSE						2" HOSE						2 1/2" HOSE					
		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.	
		STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP
	50	48 16	54 17	47 15	50 15	45 14	47 14	50 17	62 20	49 16	56 18	48 15	53 17	51 18	76 25	51 17	70 23	50 17	65 21	53 19	107 37	53 19	102 35	53 19	97 33
	75	59 23	91 31	57 22	80 27	56 21	72 24	61 25	110 38	60 24	98 33	59 23	89 30	63 27	141 51	62 26	127 45	61 25	116 40	65 28	206 82	65 28	194 76	65 28	184 71
	100	74 33	118 41	69 30	104 36	65 28	94 32	83 38	144 52	77 35	128 45	73 33	116 40	99 47	185 71	91 43	166 62	86 40	152 56	135 66	265 119	128 62	254 110	122 59	242 103
	125	100 47	141 51	89 42	124 44	82 38	112 39	119 58	172 65	107 51	152 56	98 46	138 50	152 76	221 90	136 67	199 78	126 61	182 70	245 128	299 149	223 115	288 139	207 106	279 130
	150	124 60	160 60	110 53	141 51	100 47	128 45	151 75	196 77	134 66	174 66	122 59	157 58	198 101	252 108	176 89	227 93	160 80	208 80	328 179	326 179	312 166	315 167	283 149	306 156
	175	146 72	178 68	128 63	157 58	116 56	142 51	179 91	217 88	158 79	193 75	143 71	175 66	238 124	274 126	210 108	251 108	190 97	230 95	--- ---	--- ---	340 195	340 195	331 183	329 182
	200	165 83	194 76	145 72	171 64	131 64	154 57	204 105	237 99	179 91	210 84	162 81	190 74	273 144	294 144	240 125	270 123	217 112	250 108	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---
	225	183 93	209 84	160 80	184 71	144 71	166 62	227 117	255 110	199 101	226 93	179 91	205 81	307 163	311 163	268 141	287 138	242 126	268 121	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---
	250	199 102	223 91	174 88	196 77	157 81	177 67	248 129	269 122	216 112	241 102	195 100	218 89	329 181	328 181	293 155	303 154	264 139	283 134	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top of each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

For Nozzles with: Serial # TFT-H465101 and over or Manufactured after 12/01/2003

Dual-Force 7/4 BAR
Flow And Nozzle Reaction Chart

7 bar = *STANDARD PRESSURE MODE*
LP = *LOW PRESSURE MODE*

PUMP DISCHARGE PRESSURE (bar) / FLOW (l/min) REACTION (KG)	38mm HOSE						45mm HOSE						50mm HOSE						64mm HOSE					
	45M		60M		75M		45M		60M		75M		45M		60M		75M		45M		60M		75M	
	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP	7 bar	LP
3.5	**182** 7	**204** 8	**178** 7	**189** 7	**170** 6	**178** 6	**189** 8	**235** 9	**185** 7	**212** 8	**182** 7	**201** 8	**193** 8	**288** 11	**193** 8	**265** 10	**189** 8	**246** 10	**201** 9	**405** 17	**201** 9	**386** 16	**201** 9	**367** 15
5.2	**223** 10	**344** 14	**216** 10	**303** 12	**212** 10	**273** 11	**231** 11	**416** 17	**227** 11	**371** 15	**223** 10	**337** 14	**238** 12	**534** 23	**235** 12	**481** 20	**231** 11	**439** 18	**246** 13	**780** 37	**246** 13	**734** 34	**246** 13	**696** 32
7.0	**280** 15	**447** 19	**261** 14	**394** 16	**246** 13	**356** 15	**314** 17	**545** 24	**291** 16	**484** 20	**276** 15	**439** 18	**375** 21	**700** 32	**344** 20	**628** 28	**326** 18	**575** 25	**511** 30	**1003** 54	**484** 28	**961** 50	**462** 27	**916** 47
8.6	**379** 21	**534** 23	**337** 19	**469** 20	**310** 17	**424** 18	**450** 26	**651** 29	**405** 23	**575** 25	**371** 21	**522** 23	**575** 34	**836** 41	**515** 30	**753** 35	**477** 28	**689** 32	**927** 58	**1132** 68	**844** 52	**1090** 63	**783** 48	**1056** 59
10.0	**469** 27	**606** 27	**416** 24	**534** 23	**379** 21	**484** 20	**572** 34	**742** 35	**507** 30	**659** 30	**462** 27	**594** 26	**749** 46	**954** 49	**666** 40	**859** 42	**606** 36	**787** 38	**1241** 81	**1234** 81	**1181** 75	**1192** 76	**1071** 68	**1158** 71
12.0	**553** 33	**674** 31	**484** 29	**594** 26	**439** 25	**537** 23	**678** 41	**821** 40	**598** 36	**731** 34	**541** 32	**662** 30	**901** 56	**1037** 57	**795** 49	**950** 49	**719** 44	**871** 43	**ó** ó	**ó** ó	**1287** 88	**1287** 88	**1253** 83	**1245** 83
14.0	**625** 38	**734** 34	**549** 33	**647** 29	**496** 29	**583** 26	**772** 48	**897** 45	**678** 41	**795** 38	**613** 37	**719** 34	**1033** 65	**1113** 65	**908** 57	**1022** 56	**821** 51	**946** 49	**ó** ó	**ó** ó	**---** ó	**ó** ó	**ó** ó	**ó** ó
15.5	**693** 42	**791** 38	**606** 36	**696** 32	**545** 32	**628** 28	**859** 53	**965** 50	**753** 46	**855** 42	**678** 41	**776** 37	**1162** 74	**1177** 74	**1014** 64	**1086** 63	**916** 57	**1014** 55	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó	**ó** ó
17.0	**753** 46	**844** 41	**659** 40	**742** 35	**594** 35	**670** 30	**939** 59	**1018** 55	**818** 51	**912** 46	**738** 45	**825** 40	**1245** 82	**1241** 82	**1109** 70	**1147** 70	**999** 63	**1071** 61	**ó** ---	**---** ---	**---** ---	**ó** ---	**---** ---	**---** ---

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top of each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

For Nozzles with: Serial # TFT-H465101 and over or Manufactured after 12/01/2003

Dual-Force 75/45 PSI

Flow And Nozzle Reaction Chart

STD = *STANDARD PRESSURE MODE*
LP = *LOW PRESSURE MODE*

PUMP DISCHARGE PRESSURE (PSI)	FLOW (GPM) / REACTION (LBS)	1 1/2" HOSE						1 3/4" HOSE						2" HOSE						2 1/2" HOSE					
		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.		150 ft.		200 ft		250 ft.	
		STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP	STD	LP
	50	48 16	71 20	47 15	65 18	45 14	60 16	50 17	84 25	49 16	75 22	48 15	70 20	51 18	107 33	51 17	96 29	50 17	88 26	53 19	157 52	53 19	148 48	53 18	140 45
	75	64 25	104 31	60 23	91 27	58 22	82 24	73 29	126 39	67 26	112 34	63 25	101 30	88 36	162 54	81 33	145 47	76 31	133 42	123 52	230 89	116 49	221 83	111 46	212 77
	100	96 39	130 41	85 34	114 35	77 31	103 31	115 48	157 52	103 42	139 44	93 38	126 39	148 64	203 72	132 57	182 63	121 51	166 56	252 114	269 120	224 101	260 112	206 92	251 105
	125	122 52	151 49	108 45	133 42	98 40	120 37	149 64	183 63	131 56	162 54	119 50	147 48	197 88	232 90	173 76	212 77	158 69	194 68	300 150	300 150	290 140	290 140	282 131	281 131
	150	145 63	170 57	124 54	149 48	115 48	135 43	177 78	206 74	156 68	182 63	141 61	165 55	239 108	256 108	210 94	234 92	189 84	218 81	343 185	341 185	317 167	335 173	307 157	307 157
	175	165 72	187 65	144 62	164 55	130 56	148 48	203 91	225 86	178 79	201 71	160 70	182 63	276 127	276 127	242 109	255 108	217 98	236 94	356 210	355 209	349 198	348 197	343 186	342 186
	200	183 81	202 72	160 70	178 61	144 62	160 53	227 102	241 98	198 88	217 80	178 79	197 70	295 145	295 145	270 123	272 123	243 110	254 107	369 235	368 234	362 222	361 221	356 210	354 209
	225	200 89	216 80	174 77	190 66	157 68	172 58	249 113	257 109	216 97	231 90	195 87	211 77	312 163	313 163	289 138	288 138	266 121	269 120	ó ó	ó ó	375 245	373 245	368 232	367 232
	250	216 97	229 88	188 83	202 72	169 74	182 63	269 123	271 122	234 106	244 99	210 94	223 85	329 181	336 180	304 154	304 154	284 133	284 134	--- ---	--- ---	ó ---	ó ---	380 255	378 255

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top of each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

LIN-035 June 16, 2015 Rev15

For Nozzles with: Serial # TFT-H465101 and over or Manufactured after 12/01/2003

Dual-Force 5/3 BAR

Flow And Nozzle Reaction Chart

7 bar = *STANDARD PRESSURE MODE*
LP = *LOW PRESSURE MODE*

PUMP DISCHARGE PRESSURE (bar)	FLOW (l/min) REACTION (KG)	38mm HOSE						45mm HOSE						50mm HOSE						64mm HOSE					
		45M		60M		75M		45M		60M		75M		45M		60M		75M		45M		60M		75M	
		5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	5 bar	LP	7 bar	LP	5 bar	LP	5 bar	LP
	3.5	182 7	269 8	178 7	246 8	170 6	227 7	189 8	318 11	185 7	284 10	182 7	265 9	193 8	405 15	193 8	363 13	189 8	333 12	201 9	594 24	201 9	560 22	201 8	530 20
	5.2	242 11	394 14	227 10	344 12	220 10	310 11	276 13	477 18	254 12	424 15	238 11	382 14	333 16	613 24	307 15	549 21	288 14	503 19	466 24	871 40	439 22	836 38	420 21	802 35
	7.0	363 18	492 19	322 15	431 16	291 14	390 14	435 22	594 24	390 19	526 20	352 17	477 18	560 29	768 33	500 26	689 29	458 23	628 25	954 52	1018 54	848 46	984 51	780 42	950 48
	8.6	462 24	572 23	409 20	503 19	371 18	454 17	564 29	693 29	496 25	613 24	450 23	556 22	746 40	878 41	655 34	802 35	598 31	734 31	1136 68	1136 68	1098 64	1098 64	1067 59	1064 59
	10.0	549 29	643 27	481 24	564 22	435 22	511 20	670 35	780 34	590 31	689 29	534 28	625 25	905 49	969 49	795 43	886 42	715 38	825 37	1298 84	1291 84	1200 76	1268 78	1162 71	1162 71
	12.0	625 33	708 31	545 28	621 25	492 25	560 22	768 41	852 39	674 36	761 32	606 32	689 29	1045 58	1045 58	916 49	965 49	821 44	893 43	1347 95	1344 95	1321 90	1317 89	1298 84	1294 84
	14.0	693 37	765 34	606 32	674 28	545 28	606 24	859 46	912 44	749 40	821 36	674 36	746 32	1117 66	1117 66	1022 56	1030 56	920 50	961 49	1397 107	1393 106	1370 101	1366 100	1347 95	1340 95
	15.5	757 40	818 38	659 35	719 30	594 31	651 26	942 51	973 49	818 44	874 41	738 39	799 35	1181 74	1185 74	1094 63	1090 63	1007 55	1018 54	ó ó	ó ó	1419 111	1412 111	1393 105	1389 105
	17.0	818 44	867 41	712 38	765 33	640 34	689 29	1018 56	1026 55	886 48	924 45	795 43	844 39	1245 82	1272 82	1151 70	1151 70	1075 60	1075 61	ó ---	--- ---	--- ---	ó ---	1438 116	1431 116

CAUTION: Changing to Low Pressure mode will typically increase nozzle reaction.

(1) Number on top of each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS). (2) In Standard mode, the average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose. (4) Flows are approximate and do not reflect losses in preconnect piping.

4.3 REACH AND TRAJECTORY

Care must be taken to avoid dents or nicks in the nozzle tip because they can seriously affect the stream reach.

The following are specific examples of maximum flow rates for particular situations. Friction losses may vary due to differences in hose construction resulting in flows different than those shown. For situations or lengths of hose not listed on the chart, approximate flows can be calculated using conventional hydraulics.

All reach testing was taken in still air conditions at an elevation of 30 degrees.

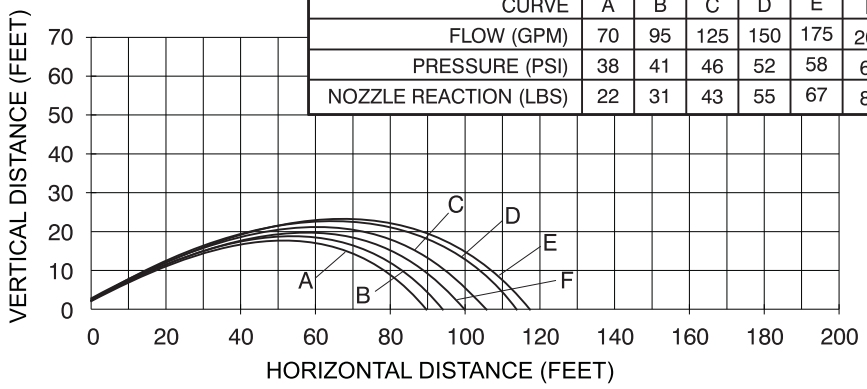
MID-FORCE

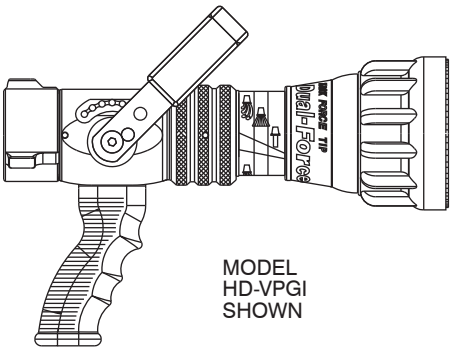
Flow range 70-200 GPM, automatic pressure control at emergency low pressure mode.

NOZZLE TESTED
Mid-Force
Model: HM-VPGI
Serial #: TFTH-145249

MID-FORCE in Low Pressure Mode

CURVE	A	B	C	D	E	F
FLOW (GPM)	70	95	125	150	175	200
PRESSURE (PSI)	38	41	46	52	58	64
NOZZLE REACTION (LBS)	22	31	43	55	67	81

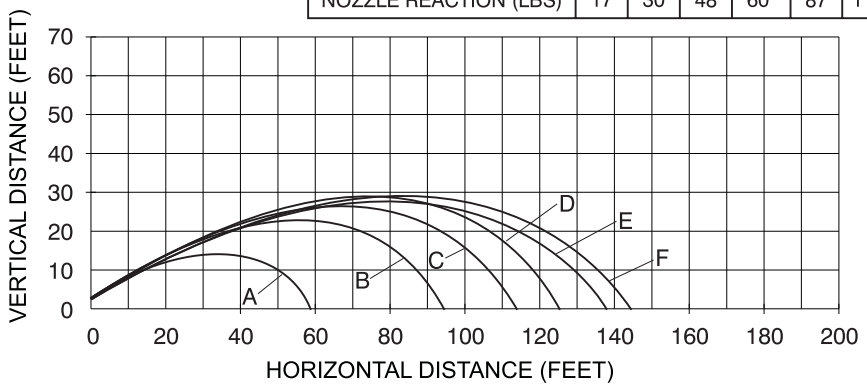




MODEL
HD-VPGI
SHOWN

DUAL-FORCE Low Pressure Mode

CURVE	A	B	C	D	E	F
FLOW (GPM)	70	95	125	150	200	250
PRESSURE (PSI)	22	40	58	63	74	87
NOZZLE REACTION (LBS)	17	30	48	60	87	118



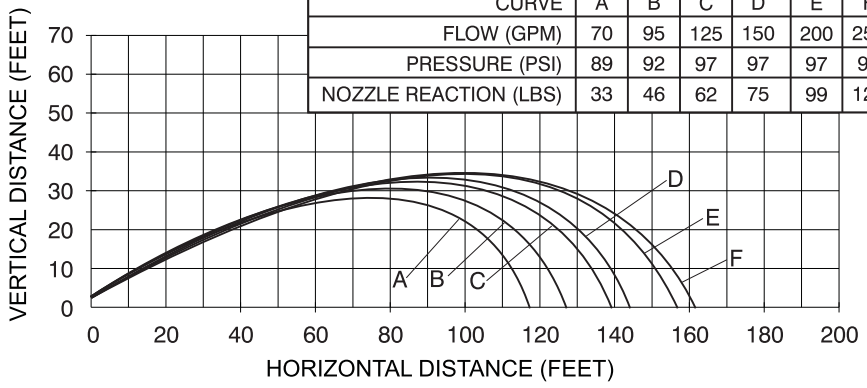
DUAL-FORCE

Flow range 70-250 GPM, automatic pressure control with 100 PSI and emergency low pressure mode.

NOZZLE TESTED
DUAL-FORCE
Model: HD-VPGI
Serial #: TFTH-041501

DUAL-FORCE Standard Pressure Mode

CURVE	A	B	C	D	E	F
FLOW (GPM)	70	95	125	150	200	250
PRESSURE (PSI)	89	92	97	97	97	96
NOZZLE REACTION (LBS)	33	46	62	75	99	124



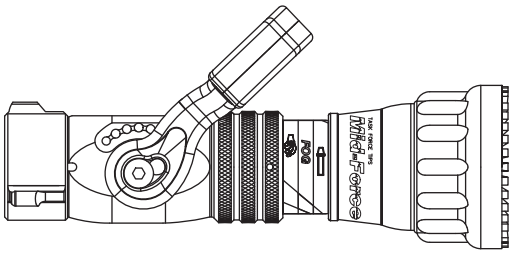
5.0 NOZZLE CONTROLS

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

5.1 FLOW CONTROL

5.1.1 LEVER TYPE FLOW CONTROL

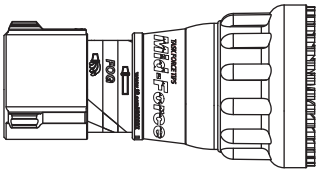
On models that use a lever type valve handle, the nozzle is shut off when the handle is fully forward. The valve handle has detented flow positions. These detent positions allow the nozzle operator to regulate the flow of the nozzle depending on the need or what can be safely and effectively handled. 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.



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

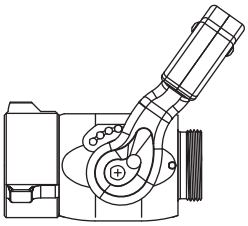
5.1.2 TIP ONLY

Tip only nozzles have NO shut-off valve within the nozzle and MUST be used with a separate ball valve attached to the nozzle. Using a nozzle without a shutoff is an unsafe practice and should never be done.



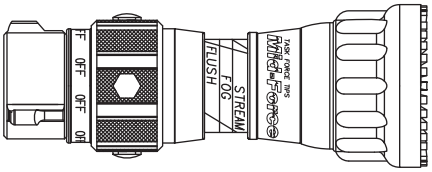
5.1.3 BALL SHUT-OFF

A separate ball valve for use with Tip Only nozzles is shut off when the valve handle is fully forward. Pulling back on the handle opens the valve. Open valve slowly to avoid sudden changes in nozzle reaction. Close valve slowly to prevent water hammer. Note: In partially open positions a ball valve will cause turbulence and adversely affect stream quality. Nozzles attached to an in-service hose shall be stored in the off position.

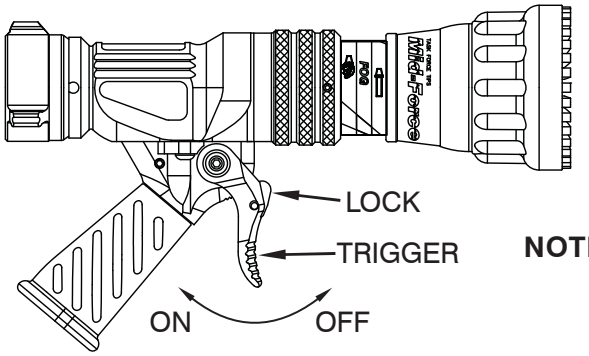


5.1.4 TWIST SHUT-OFF

On models that use a twist flow control, the valve is opened or closed by rotating the valve ring. Rotating the ring clockwise (as seen from the operating position behind the nozzle) closes the valve, while counterclockwise rotation opens it. Detents are provided at four intermediate positions and the position of the valve is shown by the exposed valve position label. Nozzles attached to an in-service hose shall be stored in the off position.



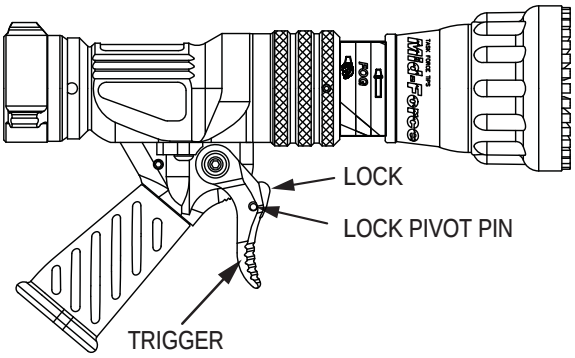
5.1.5 IMPULSE TRIGGER HLOW CONTROL



NOTE: THE TRIGGER RETURNS TO OFF IF NOT HELD OR LOCKED

⚠WARNING **Do not intentionally release the nozzle while fl owing and trust the valve to shut off automatically. The trigger nozzle's ability to shut off by itself represents an extra level of safety when following normal nozzle handling procedures. To rely on it as the sole means of safety increases the risk of injury from an out of control nozzle. Release nozzle when flow has stopped.**

5.1.5.1 IMPULSE TRIGGER LOCK



To Lock: Push on the lock while pulling back the trigger to engage one of the four locked positions.

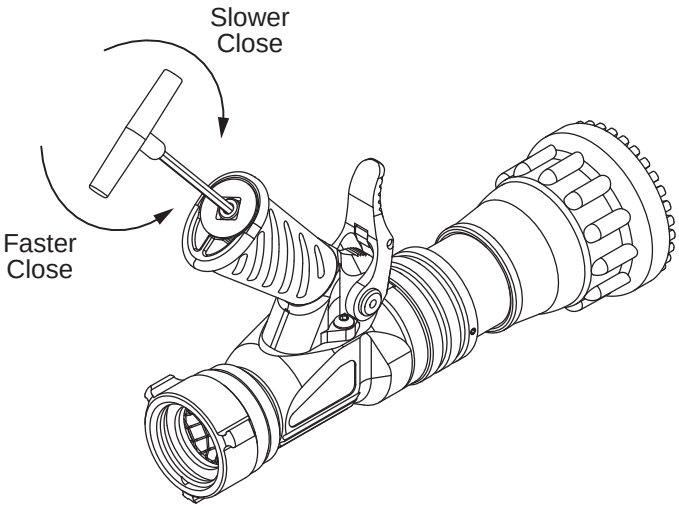
To Release: Pull back slightly on trigger without any pressure on the lock. The spring loaded lock will automatically move to the unlocked position.

Use an 1/8" (3mm) punch to push out pin and remove lock if the lock is not desired.

⚠WARNING **When the trigger lock is engaged, the nozzle will not shut off if dropped. Always shut off nozzle before releasing the pistol grip to avoid injury from an out of control nozzle.**

5.1.5.2 TRIGGER FLOW CONTROL SPEED ADJUSTMENT

The IMPULSE valve contains a slow close mechanism to prevent the nozzle from slamming off if the trigger is suddenly released. The closing speed is set at the factory to be slow enough to reduce water hammer, ("water hammer" is always present in any valve when it is shut off. The slow close mechanism will reduce this but cannot eliminate it completely) but fast enough to reduce the potential danger of hose whipping from a dropped nozzle. The closing speed may be adjusted as shown in the figure.5.1.5.2.



Do not unscrew the adjuster past the end of the hand grip (to unscrew it too far could result in the loss of dampening fluid.)

⚠WARNING **As the closing time is increased so does the risk of injury from an out of control nozzle. A flowing nozzle can cause injury within the first second of lost control. Use caution when adjusting the closing speed and always verify performance after adjustment.**

5.2 PATTERN AND FLUSH CONTROL

5.2.1 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.

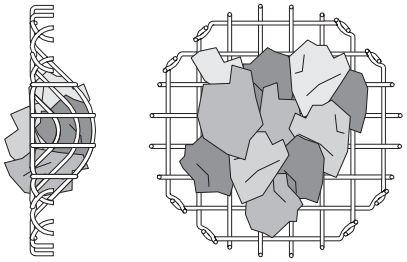
Since the stream trim point varies with flow, the stream should be "trimmed" after changing the flow to obtain the straightest and farthest reaching stream. To properly trim the stream, first open the pattern to narrow fog. Then close the stream to parallel to give maximum reach. **Note: Turning the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

The nozzle reaction is greatest when the shaper is in the straight stream position. The nozzle operator must be prepared for a change in reaction as the pattern is changed.

5.2.2 FLUSH CONTROL

Small debris passes through the debris screen (if equipped) and may get caught inside the nozzle. This trapped material will cause poor stream quality, shortened reach, and reduced flow. To remove small debris, the nozzle may be flushed as follows:

- While still flowing water, rotate the SHAPER counterclockwise (as viewed from behind the nozzle) to the flush position. (increased resistance will be felt on the SHAPER or RING as the nozzle goes into flush) This will open the nozzle allowing debris to pass through.
- During flush the nozzle reaction will decrease as the pattern becomes wider and the pressure drops. The nozzle operator must be prepared for an increase of nozzle reaction when returning the nozzle from the flush position to retain control of the nozzle.
- Rotate the SHAPER out of flush to continue normal operations.

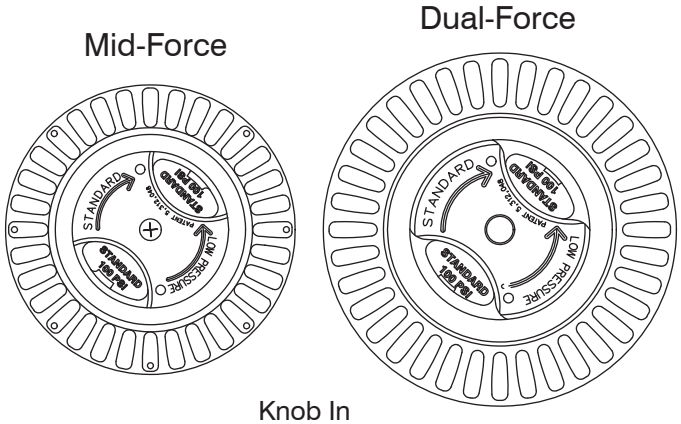


⚠WARNING Large amounts or pieces of debris may be unflushable and can reduce the flow of the nozzle resulting in an ineffective flow. In the event of a blockage, it may be necessary to retreat to a safe area, uncouple the nozzle and remove debris.

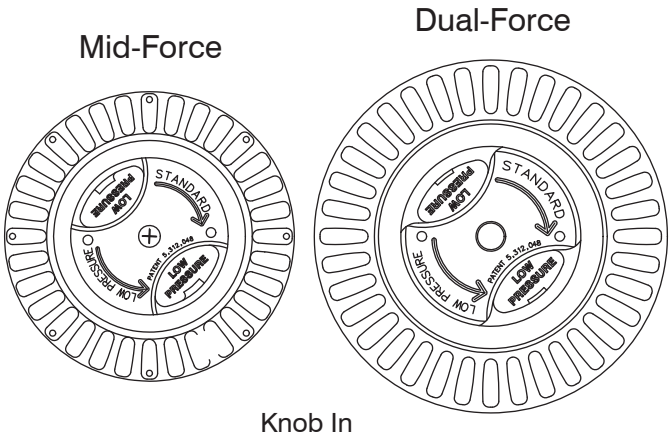
5.3 STANDARD/LOW PRESSURE KNOB MID-FORCE & DUAL-FORCE

For situations where the standard pressure setting at the nozzle is impractical, the MID-FORCE or DUAL-FORCE may be switched to a low pressure mode. In the low pressure mode the nozzle pressure is reduced by about 50% while maintaining a usable stream and increasing the flow. The nozzle operator must be prepared for a change in reaction when changing modes. See the flow chart in section 4.2 for actual performance.

To switch to the low pressure mode, shut off water flow with valve and turn knob at front of nozzle (see figure 4) counterclockwise (when viewed from front). Reopen valve to flow water at reduced pressure. Repeat the process, except turn knob clockwise, to return to standard pressure operation



Knob In
Standard Operating Mode



Knob In
Low Pressure Mode

6.0 USE WITH FOAM

The nozzle may be used with foam solutions. Refer to fire service training 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.**

Assure that:

- **Application rate is sufficient (see NFPA 11 or foam manufacturer's recommendations)**
- **Enough concentrate is on hand to complete task (see NFPA for minimum duration time requirements)**
- **Foam logistics have been carefully planned.**

Allow for such things as:

- **Storage of foam in a location not exposed to the hazard it protects**
- **Personnel, equipment and technique to deliver foam at a rapid enough rate**
- **Removal of empty foam containers**
- **Clear path to deliver foam, as hoses and other equipment and vehicles are deployed**

⚠WARNING **Improper use of foam can result in injury or damage to the environment. Follow foam manufacturer's instructions and fire service training to avoid:**

- **Using wrong type of foam on a fire, i.e. Class A foam on a Class B fire**
- **Plunging foam into pools of burning liquid fuels**
- **Causing environmental damage**
- **Directing stream at personnel**

⚠WARNING **There are a wide variety of foam concentrates. Each user is responsible for verifying that any foam concentrate chosen to be used with this unit has been tested to assure that the foam obtained is suitable for the purpose intended.**

⚠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**

6.1 FOAM ASPIRATING ATTACHMENTS

Multi-expansion or low expansion aspirating attachments may be used with nozzles to increase the expansion ratio. These foam tubes attach and detach quickly from the nozzle. As expansion ratio is increased, the reach of the nozzle will be decreased due to the greater amount of bubbles in the stream and their ability to penetrate the air. Generally the straight stream 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).

7.0 USE OF NOZZLES

7.1 MID-FORCE AND DUAL-FORCE NOZZLES

Many factors contribute to the extinguishment of a fire. Among the most important is delivering water at a flow rate sufficient to absorb heat faster than it is being generated. The flow rate depends largely on the pump discharge pressure and hose friction loss. It can be calculated using a hydraulic equation such as:

PDP = NP + FL + DL + EL

PDP = Pump discharge pressure in PSI
NP = Nozzle pressure in PSI
FL = Hose friction loss in PSI
DL = Device loss in PSI
EL = Elevation loss in PSI

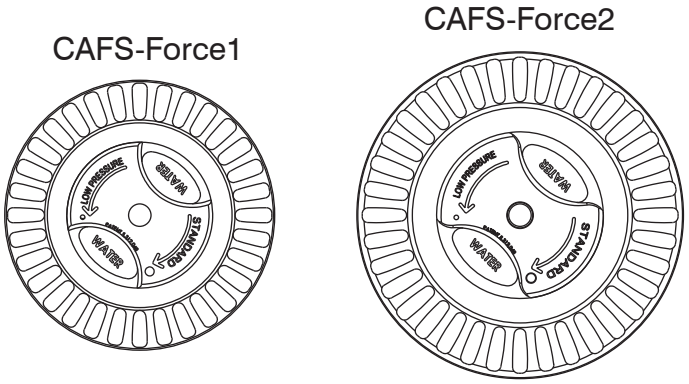
This manual is not intended to act as a training guide for safe fireground tactics and operations. For additional information visit www/tft.com or contact customer service at 800-348-2686.

IT IS THE RESPONSIBILITY OF THE INDIVIDUAL FIRE DEPARTMENT OR AGENCY TO DETERMINE PHYSICAL CAPABILITIES AND SUITABILITY FOR AN INDIVIDUAL'S USE OF THIS EQUIPMENT.

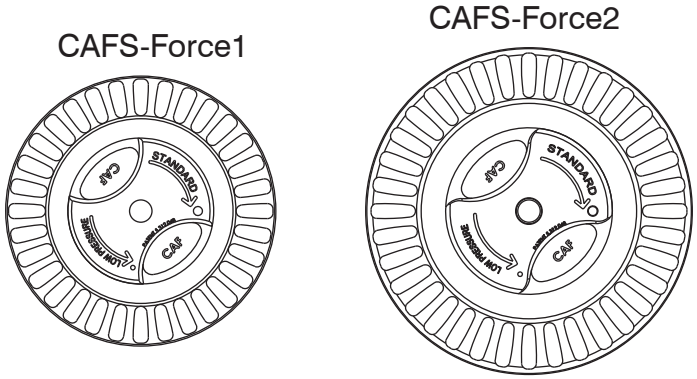
7.2 CAFS-FORCE 1 AND CAFS-FORCE 2 NOZZLES

The CAFS-FORCE 1 and CAFS-FORCE 2 nozzles are optimized for use with compressed air foam systems, CAFS. They have a streamlined flow path with no gasket grabber. The CAFS-FORCE nozzles have two settings: Standard pressure/Water and Low Pressure/CAFS. The CAFS-FORCE tip can be removed to use the valve as a smoothbore. See Section 4.0 Flow Characteristics for CAFS-FORCE Nozzle flow characteristics.

Hose handling techniques with compressed air foam (CAF) differ considerably from liquid filled hoses as a result of the added energy stored by pressurized air. The authority having jurisdiction must establish safe CAF operational procedures and insure appropriate training.



Knob In Standard Pressure Water Mode



Knob In Low Pressure CAFS Mode

⚠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

8.0 APPROVALS

Many nozzle configurations carry the FM Approval rating, NFPA certification, or EN certification.

9.0 COLOR CODED VALVE HANDLE AND PISTOL GRIP

The TFT nozzle 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. A colored handle cover set will be sent upon receipt of the warranty card by TFT. Your department's name can also be engraved on the covers (see warranty card for more information).

Handle covers are replaceable by removing the four screws that hold the handle covers in place. Use a 3/32" Allen wrench when replacing screws. Pistol grip is replaceable by following TFT instruction sheet LTT-108 for standard grips or LTT-115 for Trigger Controlled Valves.

For standardization NFPA 1901 (A-4-9.3) recommends the following color code scheme:

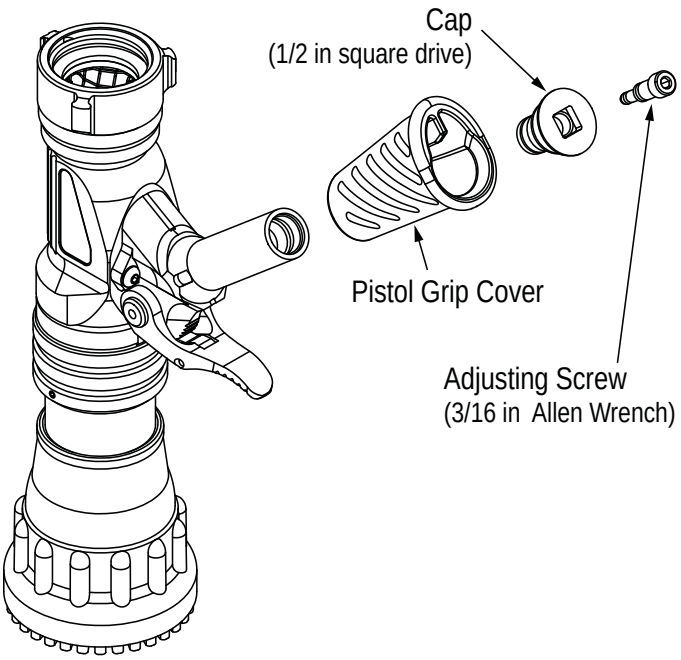
Preconnect #1 or Bumper Jump Line	Orange
Preconnect or discharge #2	Red
Preconnect or discharge #3	Yellow
Preconnect or discharge #4	White
Preconnect or discharge #5	Blue
Preconnect or discharge #6	Black
Preconnect or discharge #7	Green
Foam Lines	Red w/ White border (Red/White)

Other Colors Available:

- Gray
- Pink
- Purple
- Tan

9.1 IMPULSE TRIGGER VALVE SYSTEM NOZZLE COLORED PISTOL GRIPS

The TFT Impulse Trigger Valve System nozzles are supplied with black pistol grip covers. The pistol grip covers are available from TFT in various colors for those departments wishing to color code the nozzle to the discharge controls. Follow the steps below to change the pistol grip cover.



1) Orient nozzle vertically. This keeps the dampening fluid in the pistol grip from spilling out.
2) Remove the Cap. (1/2 in square drive) The Adjusting Screw (3/16 in Allen Wrench) may need to be turned in or removed to be able to engage the square pocket in the cap. Note the position of the Adjusting Screw before moving it.
3) Slide off the Pistol Grip Cover and install a new one. Be sure the Pistol Grip Cover's internal rib is toward the back of the nozzle.
4) Reinstall the Cap until it bottoms out on its shoulder.
5) Reinstall or reposition the Adjusting Screw if it has been moved from its original location.
6) Flow nozzle to check performance of slow closer. Adjust as needed (see section 5.1.5.2).

10.0 WARRANTY

Task Force Tips, Inc., 3701 Innovation Way, Valparaiso, Indiana 46383-9327 (“TFT”) warrants to the original purchaser of its nozzles and other equipment (“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, 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

11.0 MAINTENANCE

TFT nozzles 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. Do not drop or throw equipment.

11.1 FIELD LUBRICATION

All Task Force Tip nozzles are factory lubricated with high quality silicone grease. This lubricant has excellent washout resistance and long term performance. If your department has unusually hard or sandy water, the moving parts 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 signs of damage. IF THE NOZZLE IS OPERATING CORRECTLY, THEN NO ADDITIONAL LUBRICATION IS NEEDED. Any nozzle that is not operating correctly should be immediately removed from service.

The field use of Break Free CLP (spray or liquid) lubricant will help to restore the smooth and free operation of the nozzle. However, these lubricants do not have the washout resistance and long-term performance of the silicone grease. Therefore, re-application of Break Free CLP will be needed on a regular basis. 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.

The nozzle can be returned to the factory for a complete checkup and re-lubrication with silicone grease

PART ONE — COUPLING DOWN

Position the nozzle at a 45-degree angle with the COUPLING end down. CLOSE the valve handle and set the pattern to STRAIGHT STREAM. Then spray a short burst into these areas:

#1 FRONT PATTERN CONTROL SEAL

Spray in between the pattern control and the barrel.

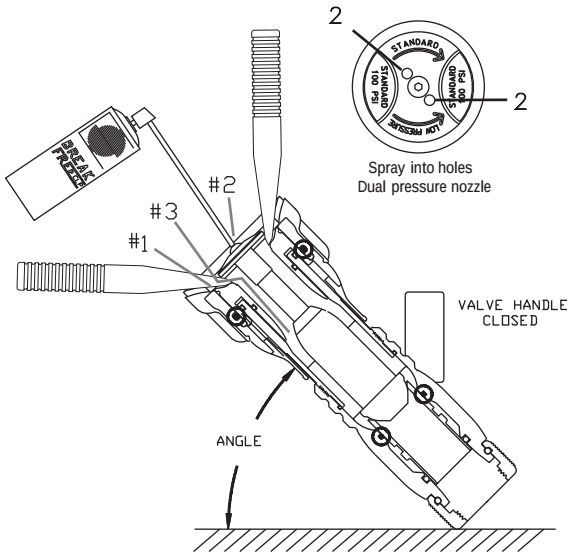
#2 PRESSURE CONTROL UNIT

Place check sticks behind baffle while shaper is in flush. Cycle baffle in and out using check sticks several times to work lubrication into o-rings.

#3 FRONT SLIDER SEAL

a) Rotate shaper into FLUSH position.

b) Spray down the front end of the nozzle to dribble lubricant into the clearances between the shaper and the valve body.



While holding nozzle at the angle, wait 30 seconds for the lubricant to penetrate into the clearances. Cycle the valve handle and rotate the shaper from straight stream to full flush several times, and then proceed to the next section.

PART TWO — COUPLING UP

Position the nozzle at a 45-degree angle with the BUMPER end down. OPEN the valve handle and set the pattern to FLUSH. Spray a short burst in these areas:

#4 REAR SHAPER SEAL

Spray down the clearance between the label and the shaper guide.

#5 REAR SLIDER SEAL

Spray into the clearance between the slider and the valve body.

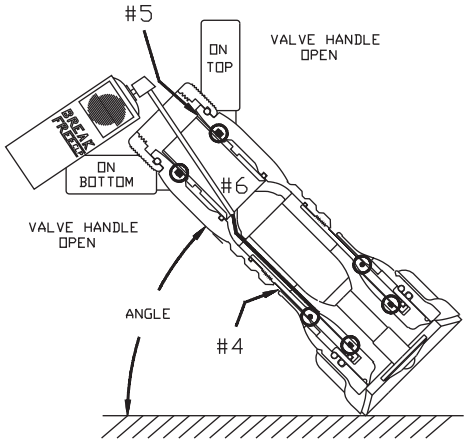
#6 FLUSH MECHANISM SEAL

a) With the handle on the top, spray down into the nozzle. The aerosol extension tip will help direct the spray into clearances leading to the O-Ring.

b) Rotate nozzle so the valve is on the bottom and spray another short burst.

#7 DETENTS IN THE HANDLE

Spray a small amount on the detent followers located in the handle.



While holding nozzle at the angle, wait 30 seconds, then cycle the valve handle several times. Rotate the pattern control from straight stream to full flush several times. The pattern control should move freely and easily. The barrel cone should move forward to within 1/16” of the baffle before the shaper reaches straight stream position. Wipe off excess lubricant.

IF THIS PROCEDURE DOES NOT RESTORE SMOOTH AND FREE OPERATION OF ALL THE MOVING PARTS, THEN FACTORY SERVICE IS NEEDED. • 24-HOUR HOT LINE — 800-348-2686 • www.tft.com

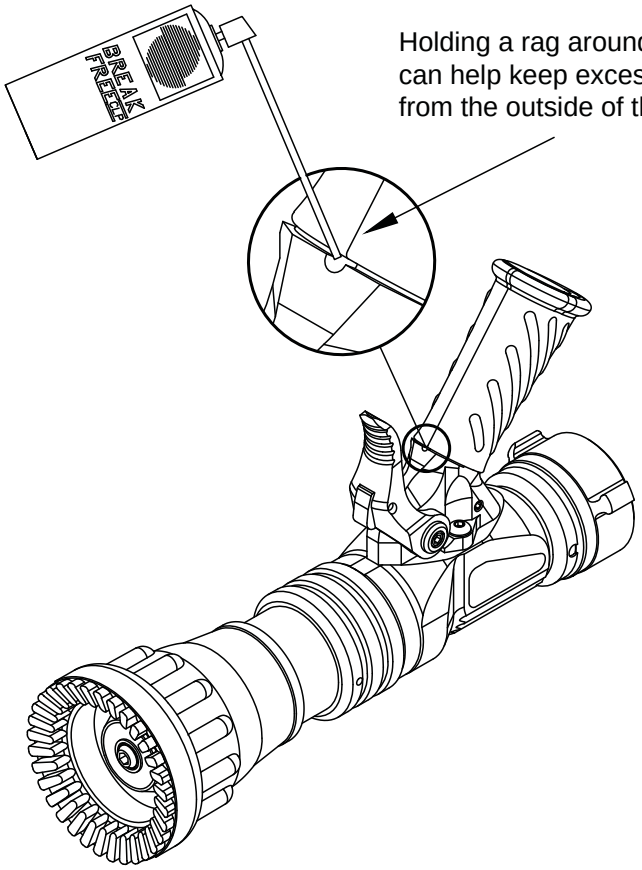
11.2 IMPULSE TRIGGER VALVE LUBRICATION

1) Insert tube from BreakFree into drain hole in pistol grip.

2) With nozzle upside down spray a 2 second burst into the pistol grip. Holding a rag around the tube here can help keep excess BreakFree from the outside of the nozzle.

3) Keep nozzle upside down for at least 10 seconds to allow the BreakFree to flow into the valve area.

4) Check for smooth and free operation of the trigger. Repeat a second time if needed.



Holding a rag around the tube here can help keep excess BreakFree from the outside of the nozzle.

If this procedure does not restore trigger operation then factory service is needed.
24 hour Technical Service and Support - 800-348-2686 - www.tft.com

11.3 SERVICE TESTING

In accordance with NFPA 1962 (2013), nozzles must be tested a minimum of annually. Nozzles failing any part of this test must be removed from service, repaired and retested upon completion of the repair.

11.3.1 HYDROSTATIC TESTING

Each nozzle with a shut off mechanism shall be tested in the following manner.

1. *The nozzle shall be placed in a device capable of holding it and the shut off shall be closed.*
2. *A device capable of exerting a hydrostatic pressure of 300 psi (2070 kPa) or 1.5 times the maximum operating pressure, whichever is higher, shall be attached to the nozzle.*
3. *All air shall be bled from the system.*
4. *The gage pressure shall be increased by 50 psi (3.5 bar or 345 kPa) increments, held for 30 seconds at each pressure up to the maximum pressure for which the nozzle is being tested, and then held for one minute without leakage.*
5. *There shall be no sign of leakage through the valve or shut off.*

11.3.2 FLOW TESTING

Flow testing must be conducted in the following manner.

1. *The nozzle shall be mounted so that the flow rate and pressure through the nozzle and the pressure at the inlet can be accurately measured.*
2. *With the shut off fully open, the inlet pressure shall be adjusted to the rated pressure ±2 percent.*
3. *The valve or shut off and pattern controls shall be operated through their full range of motion at 100 psi (6.9 bar or 690 kPa) with no signs of leaking, binding or other problems.*
4. *Evaluate the flow of nozzles as defined by NFPA 1964 in the following manner:*

    Automatic (Constant Pressure) Spray Nozzles

    1. *The flow rate shall slowly be increased to the maximum rated flow, and the minimum and maximum pressures through the flow range recorded.*
    2. *Nozzles shall maintain their rated pressure ±15 psi (±1 bar or ±100 kPa) throughout the rated flow range.*

11.3.3 RECORDS

A record of testing and repairs must be maintained from the time the nozzle is purchased until it is discarded. Each TFT nozzle is engraved with a unique serial number which, if so desired, can be used to identify nozzle for documentation purposes.

The following information, if applicable, must be included on the test record for each nozzle:

1. *Assigned identification number*
2. *Manufacturer*
3. *Product or model designation*
4. *Vendor*
5. *Warranty*
6. *Hose connection size*
7. *Maximum operating pressure*
8. *Flow rate or range*
9. *Date received and date put in service*
10. *Date of each service test and service test results*
11. *Damage and repairs, including who made the repairs and the cost of repair parts*
12. *Reason removed from service*

NFPA 1962: Standard for the care, use, inspection, service testing, and replacement of fire hose, couplings, nozzles and fire hose appliances. (2013 ed., Section 5.5.4). Quincy, MA: National Fire Protection Agency.

11.4 REPAIR

Factory service is available with repair time seldom exceeding one day in our facility. Factory-serviced nozzles are repaired by experienced technicians, wet tested to original specifications, and promptly returned. Repair charges for non-warranty items are minimal. 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 www.tft.com for parts lists, exploded views, test procedures and troubleshooting guides.

Performance tests shall be conducted on the nozzle 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 nozzle. Any equipment which fails the related test criteria should be removed from service immediately. Troubleshooting guides are available with each test procedure or equipment can be returned to the factory for service and testing.

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

12.0 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) Debris screen is free of debris
3) Coupling is tight and leak free
4) Valve operates freely through full range and regulates flow
5) “OFF” position does fully shut off 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) Shaper turns 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 retightened properly
9) Shaper is set to desired pattern
10) Shutoff handle is stored in the OFF position

NFPA 1962: Standard for the care, use, inspection, service testing, and replacement of fire hose, couplings, nozzles and fire hose appliances. (2013 ed., Section 5.2.2). Quincy, MA: National Fire Protection Agency.

⚠WARNING **Any nozzle 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 a nozzle that has failed the checklist is a misuse of this equipment.**

TASK FORCE TIPS, INC.
MADE IN USA • www.tft.com
3701 Innovation Way, Valparaiso, IN 46383-9327 USA
800-348-2686 • 219- 462-6161 • Fax 219-464-7155