



TASK FORCE TIPS
FIRE FIGHTING EQUIPMENT

MANUAL: Hand Held Automatic Dual Pressure Nozzles

Mid-Force® and Dual-Force® INSTRUCTIONS FOR SAFE OPERATION AND MAINTENANCE

⚠ WARNING

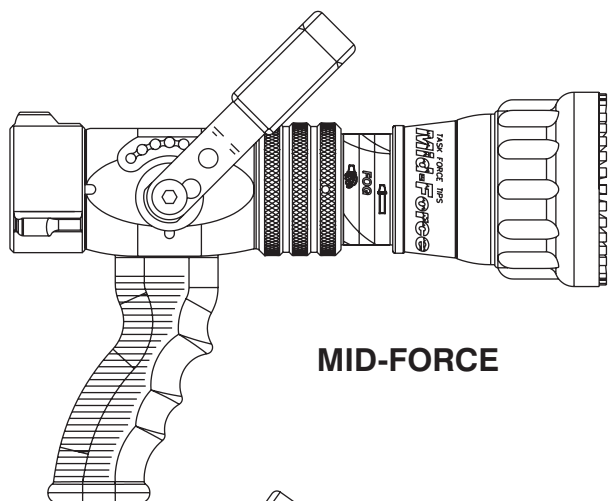
Read instruction manual before use. Operation of this nozzle without understanding the manual and receiving proper training can be dangerous and is a misuse of this equipment. Call 800-348-2686 with any questions.

⚠ WARNING

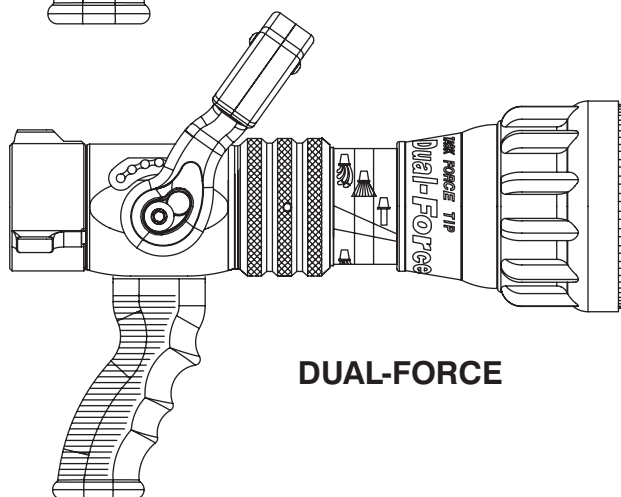
This instruction manual is intended to familiarize firefighters and maintenance personnel with the operation, servicing and safety procedures associated with the Mid-Force and Dual-Force fire fighting nozzles.

⚠ WARNING

This manual should be kept available to all operating and maintenance personnel.



MID-FORCE



DUAL-FORCE

⚠ 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 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.



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1.0 GENERAL INFORMATION

The Task Force Tips MID-FORCE and DUAL-FORCE nozzles are designed to provide excellent performance under most fire fighting conditions. Their rugged construction is compatible with the use of fresh water (see section 5.0 for saltwater use) as well as fire fighting foam solutions. Other important operating features are:

- Switchable from standard operation to low pressure
- Automatic pressure regulation at (meets NFPA 1964 automatic nozzle pressure requirements)
- Slide valve with valve handle detent flow control 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

1.1 VARIOUS MODELS AND TERMS

The TFT MID-FORCE and DUAL-FORCE nozzles are available in several different models. Some common models and operating features are shown in figure 1.

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	95-250	360-950	75	5	1-1/2 NH

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

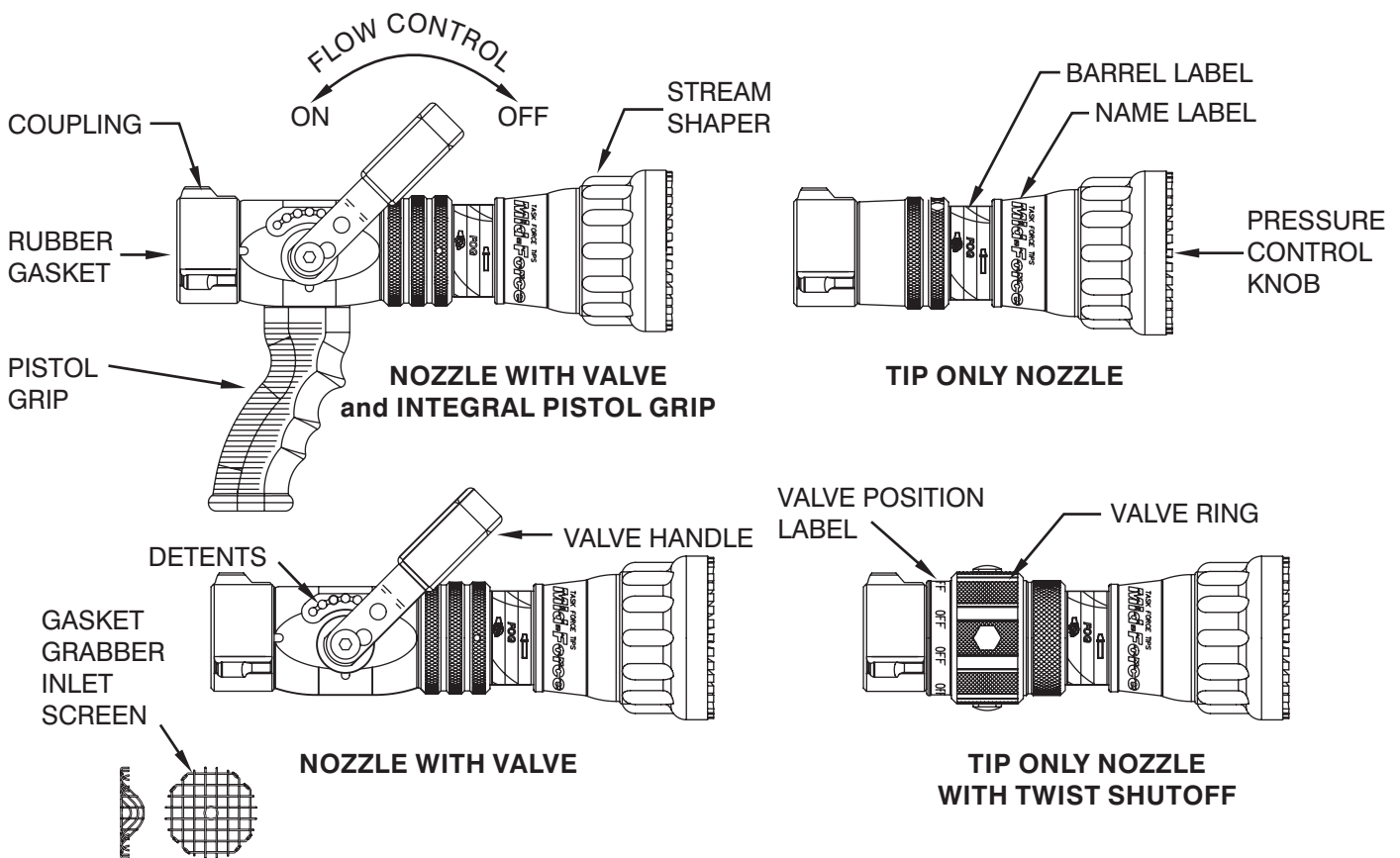


FIGURE 1 - COMMON MODELS AND TERMS

1.2 COLOR CODED VALVE HANDLE COVERS

The TFT MID-FORCE and DUAL-FORCE with lever type valve handles are supplied with black valve handle covers. The handle covers 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.

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

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

1.3 NOZZLE COUPLING

Rocker lug 1-1/2" NH full-time swivel is standard on models with lever type flow control. The coupling is the same on other models except it does not swivel. Other threads such as 1-1/2" NPSH can be specified at time of order.

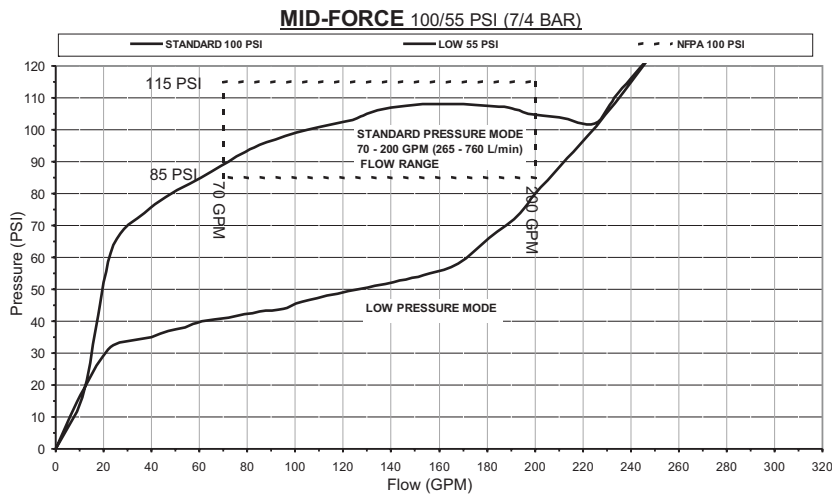


Nozzle must be mated to a hose line with matched threads. Mismatched or damaged threads may cause nozzle to leak or uncouple from hose under pressure and could cause injury.

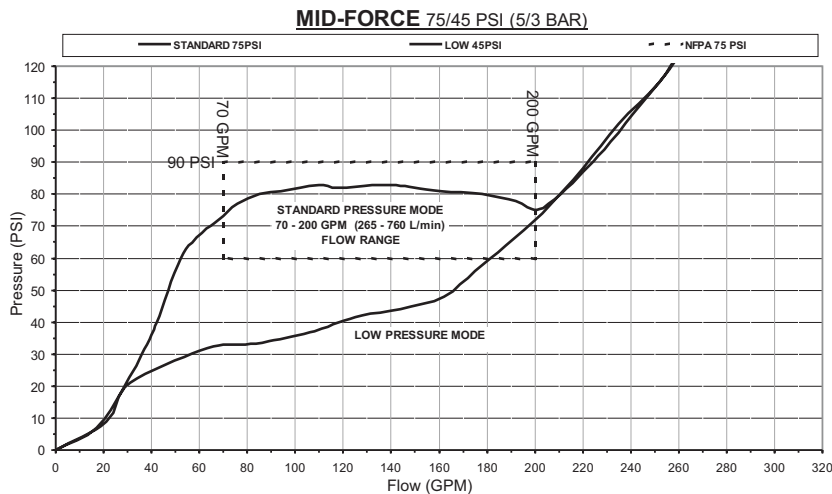
2.0 FLOW CHARACTERISTICS

The graphs in figure 2 show the typical performance of MID-FORCE and DUAL-FORCE nozzles.

Mid-Force meets NFPA flow requirements.



The charts in section 8.0 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 PSI when used in the standard pressure mode.**



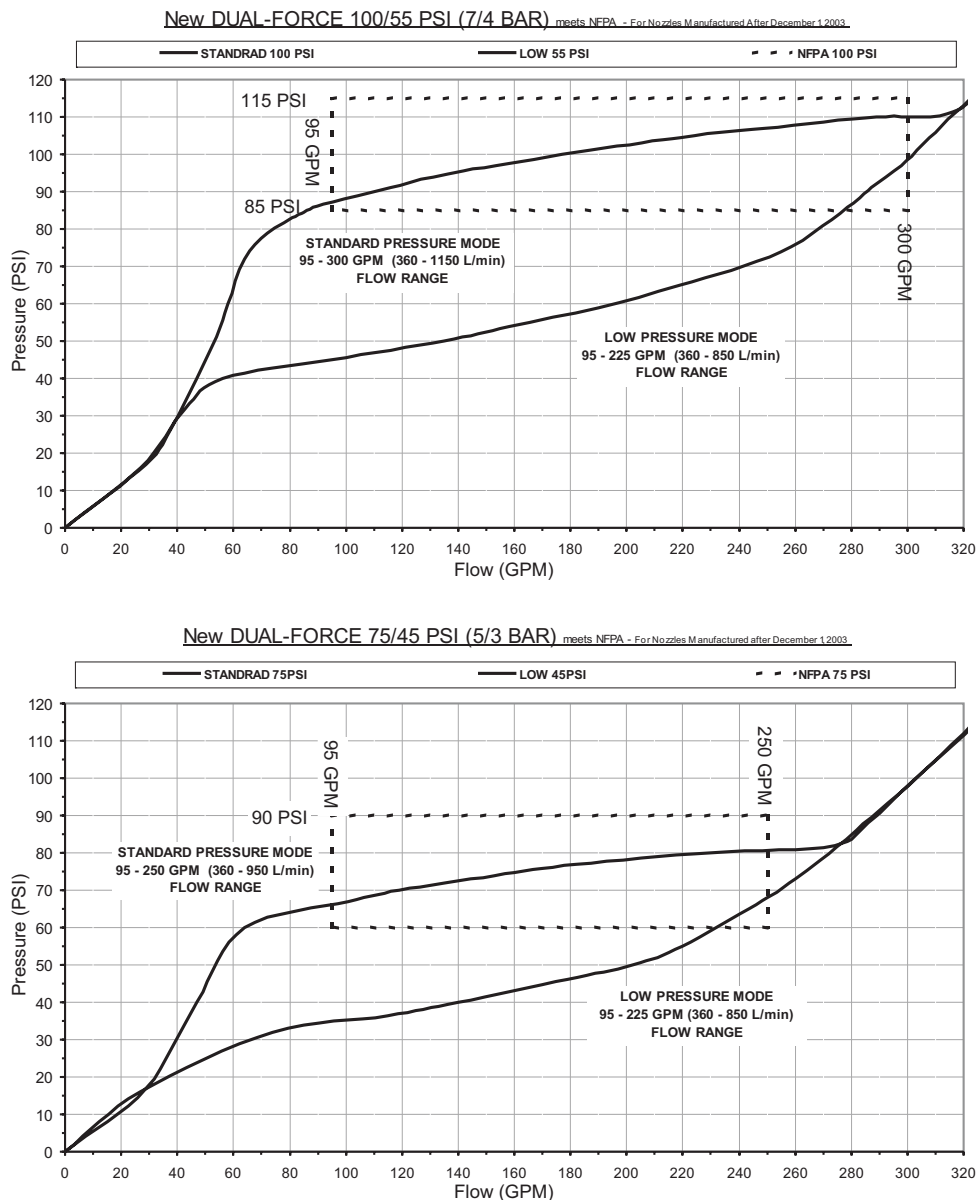


FIGURE 2 - NOZZLE PERFORMANCE



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 chart in section 8.0 or call 800-348-2686 for assistance.



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, flushing, or pressure control knob will also affect nozzle reaction. The nozzle operator must always be positioned to restrain the nozzle reaction in the event of those changes.



Injury from whipping can occur. 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.



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

3.0 NOZZLE CONTROLS

3.1 FLOW CONTROL

3.1.1 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 six detent 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.

3.1.2 TWIST SHUTTOFF

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.

3.1.3 TIP ONLY NOZZLES

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

3.2 PATTERN AND FLUSH CONTROL

3.2.1 PATTERN CONTROL

The TFT's MID-FORCE and DUAL-FORCE 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 the flow, the stream 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 a 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.

3.2.2 FLUSH CONTROL

Small debris passes through the gasket grabber and may get caught inside the nozzle. This trapped material will cause poor stream quality, shortened reach and reduced flow. To remove this trapped debris the nozzle can be flushed as follows; while still flowing water, turn the SHAPER counterclockwise past the full fog position (increased resistance will be felt on the SHAPER as the nozzle goes into flush). This will open the nozzle allowing debris to pass through. Rotate the SHAPER clockwise and out of flush to continue normal operation. 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.



Large amounts of debris 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 nozzle and remove debris.

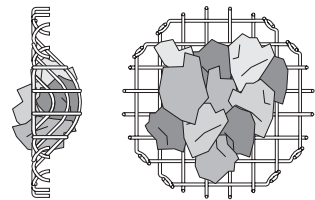
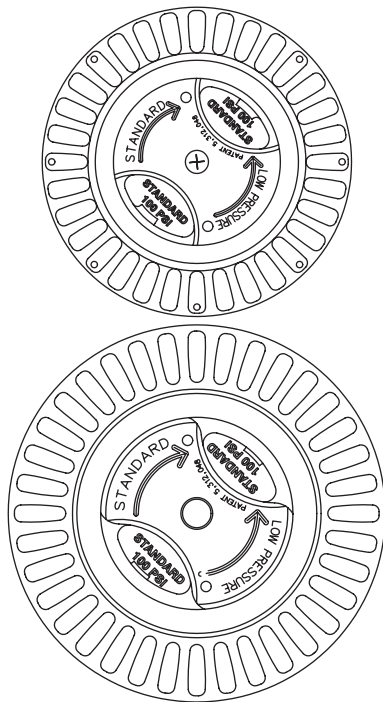


FIGURE 3 - GASKET GRABBER

3.3 STANDARD/LOW PRESSURE KNOB

For situations where the standard pressure setting at the nozzle is impractical, the MID-FORCE or DUAL-FORCE may be switched to an 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 figure 2 or the flow chart in section 8.0 for actual performance.

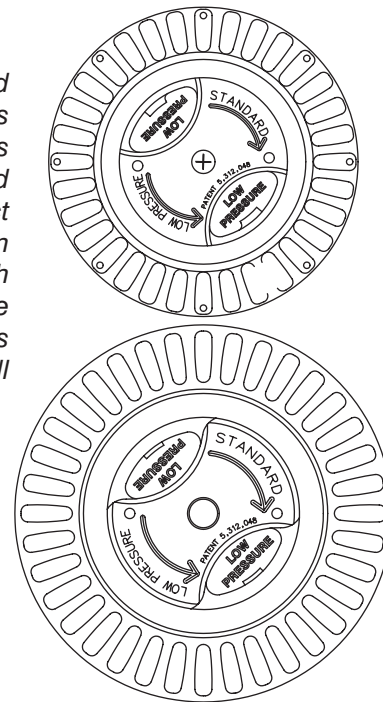
To switch to the low pressure mode, shut off water flow with valve and turn knob at front of nozzle (see figure 4) counterclockwise (when viewed from front). Reopen valve to flow water at reduced pressure. Repeat the process, except turn knob clockwise, to return to standard pressure operation.



Knob In
Standard Operating Mode

To obtain dual pressure capability, a knob is added to the front end of the baffle. This knob protrudes past the end of the nozzle when the shaper is rotated back. As a consequence, the knob and baffle may be damaged if subjected to impact such as from a drop. The knob and baffle portion of the nozzle does NOT meet NFPA 1964's rough usage requirement of a six foot drop onto concrete (paragraph 4-7.1). In the event of damage to this section the stream quality may be affected as well as nozzle pressure regulation.

FIGURE 4



Knob In
Low Pressure Mode

4.0 USE OF 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. The pump discharge pressure may be found by use of the chart in section 8.0. It can also be calculated using a hydraulic equation such as:

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.

Within its flow range, the nozzle pressure (NP) of the MID-FORCE or DUAL-FORCE nozzle may be approximated as 100 or 75 PSI in the standard mode. For additional information on calculating specific hose layouts, consult an appropriate fire service training manual, *A Guide to Automatic Nozzles*, or call TFT's "Hydraulics Hotline" at 800-348-2686.

$$PDP = NP + FL + DL + EL$$

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

5.0 FIELD INSPECTION

TFT's MID-FORCE and DUAL-FORCE are designed and manufactured to be damage resistant and require minimal maintenance. However, as the primary fire fighting tools upon which your life depends, they should be treated accordingly. 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.



Nozzle must be inspected for proper operation and function according to inspection checklist on the last page before each use. Any nozzle that fails inspection is dangerous to use and must be repaired before using.

Performance tests shall be conducted on the Mid-Force and Dual-Force 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. Factory service is available with repair time seldom exceeding one day in our facility.

Factory serviced nozzles are repaired by experienced technicians to original specifications, fully tested and promptly returned. Any returns should include a note as to the nature of the problem, who to reach in case of questions and if a repair estimate is required.

Repair parts and service procedures are available for those wishing to perform their own repairs.

TFT Item#	Title
LHM-020	Mid-Matic & Mid-Force Service Procedure
LHD-020	Handline & Dual-Force Service Procedure

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

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 and the problem corrected.

6.0 WARRANTY

Task Force Tips, Inc., 2800 East Evans Avenue, Valparaiso, Indiana 46383 ("TFT") warrants to the original purchaser of its Dual-Force and Mid-Force 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 2800 East Evans Avenue, Valparaiso, Indiana 46383, 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.

7.0 ANSWERS TO YOUR QUESTIONS

We appreciate the opportunity of serving you and making your job easier. If you have any problems or questions, our toll-free "Hydraulics Hotline", 800-348-2686, is normally available to you 24 hours a day, 7 days a week.

Mid-Force 100/55 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE

LP = LOW PRESSURE MODE

FLOW (GPM)
REACTION
(LBS)

PUMP DISCHARGE PRESSURE (PSI)	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	---	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	---	---	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
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 7	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.

Mid-Force 75/45 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE

LP = LOW PRESSURE MODE

FLOW (GPM)
REACTION
(LBS)

PUMP DISCHARGE PRESSURE (PSI)	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	—	—	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	—	—	—	—	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	—	—	—	—	—	—
225	204 90	204 89	174 79	184 73	155 71	170 62	—	—	214 98	214 98	196 86	199 85	—	—	—	—	—	—

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 5/3 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	
	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 10	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 15	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 20	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 30	659 30	500 27	613 26	—	—	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 35	715 35	587 32	662 30	—	—	—	—	814 45	810 45
14.0	693 37	727 36	594 33	659 29	530 29	606 25	833 47	833 47	761 39	765 39	666 36	712 34	—	—	—	—	—	—
15.5	772 41	772 40	659 36	696 33	587 32	643 28	—	—	810 44	810 44	742 39	753 39	—	—	—	—	—	—

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.

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

DualForce 100/55 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

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	54	47	50	45	47	50	62	49	56	48	53	76	51	70	50	65	53	107	53	102	53	97	
	16	17	15	14	14	14	17	20	16	18	15	17	25	17	23	17	21	19	37	19	35	19	33	
75	59	91	57	80	56	72	61	110	60	98	59	89	141	62	127	61	116	65	206	65	194	65	184	
	23	31	22	27	21	24	25	38	24	33	23	30	51	26	45	25	40	28	82	28	76	28	71	
100	74	118	69	104	65	94	83	144	77	128	73	116	185	91	166	86	452	135	265	128	254	122	242	
	33	41	30	36	28	32	38	52	35	45	33	40	71	43	62	40	56	66	119	62	110	59	103	
125	100	141	89	124	82	112	119	172	107	152	98	138	221	136	199	126	182	245	299	223	288	207	279	
	47	51	42	44	38	39	58	65	51	56	46	50	90	67	78	61	70	128	149	115	139	106	130	
150	124	160	110	141	100	128	151	196	134	174	122	157	252	176	227	160	208	328	326	312	315	283	306	
	60	60	53	51	47	45	75	77	66	66	59	58	108	89	93	80	80	179	179	166	167	149	156	
175	146	178	128	157	116	142	179	217	158	193	143	175	274	210	251	190	230	—	—	—	—	—	—	
	72	68	63	58	56	51	91	88	79	75	71	66	126	108	108	97	95	—	—	—	—	—	—	
200	165	194	145	171	131	154	204	237	179	210	162	190	294	240	270	217	250	—	—	—	—	—	—	
	83	76	72	64	64	57	105	99	91	84	81	74	144	125	123	112	108	—	—	—	—	—	—	
225	183	209	160	184	144	166	227	255	199	226	179	205	311	268	287	242	268	—	—	—	—	—	—	
	93	84	80	71	71	62	117	110	101	93	91	81	163	141	138	126	121	—	—	—	—	—	—	
250	199	223	174	196	157	177	248	269	216	241	195	218	328	293	303	264	283	—	—	—	—	—	—	
	102	91	88	77	81	67	129	122	112	102	100	89	181	155	154	139	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

DualForce 7/4 BAR

Flow And Nozzle Reaction Chart

7 bar = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

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

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

DualForce 75/45 PSI

Flow And Nozzle Reaction Chart

STD = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

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

DualForce 5/3 BAR

Flow And Nozzle Reaction Chart

7 bar = STANDARD PRESSURE MODE
LP = LOW PRESSURE MODE

FLOW 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	269	178	246	170	227	189	318	185	284	193	405	193	363	189	333	201	594	201	560	201	530
5.2	242	394	227	344	220	310	276	477	254	424	333	613	307	549	288	503	466	871	439	836	420	802
7.0	363	492	322	431	291	390	435	594	390	526	560	768	500	689	458	628	954	1018	848	984	780	950
8.6	462	572	409	503	371	454	564	693	496	613	746	878	655	802	598	734	1136	1098	1098	1098	1067	1064
10.0	549	643	481	564	435	511	670	780	590	689	905	969	795	886	715	825	1298	1291	1200	1268	1162	1162
12.0	625	708	545	621	492	560	768	852	674	761	1045	1045	916	965	821	893	1347	1344	1321	1317	1298	1294
14.0	693	765	606	674	545	606	859	912	749	821	1117	1117	1022	1030	920	961	1397	1393	1370	1366	1347	1340
15.5	757	818	659	719	594	651	942	973	818	874	1185	1185	1094	1090	1007	1018	1419	1412	1412	1393	1389	1389
17.0	818	867	712	765	640	689	1018	1026	886	924	1245	1245	1151	1151	1075	1075	1438	1431	1431	1431	1431	1431
PUMP DISCHARGE PRESSURE (bar)	37	41	38	33	34	29	56	55	48	45	82	82	70	70	60	61	---	---	---	---	---	---

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.

9.0 INSPECTION CHECKLIST

Nozzle must be inspected for proper operation and function according to this checklist before each use.

Check that:

- 1) There is no obvious damage such as missing, broken or loose parts, damaged labels etc.
- 2) Gasket grabber 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) Standard/low pressure knob turns freely and changes nozzle pressure.



Any Mid-Force or Dual-Force nozzle failing any part of the inspection checklist is unsafe and must have the problem corrected before use. Operating a nozzle that fails any of the above inspections is a misuse of this equipment.

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