



TFT HAND HELD AUTOMATIC PRESSURE CONTROL NOZZLES

ULTIMATIC, MID-MATIC & HANDLINE INSTRUCTIONS FOR SAFE OPERATION AND MAINTENANCE

⚠ WARNING

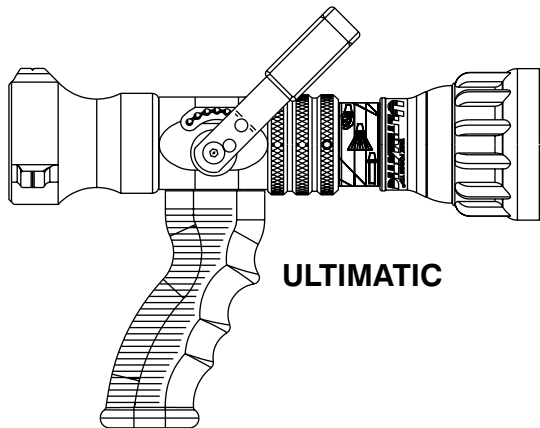
Read instruction manual before use. Operation of this nozzle without understanding the manual and receiving proper training can be dangerous and is a misuse of this equipment. Call 800-348-2686 with any questions.

⚠ WARNING

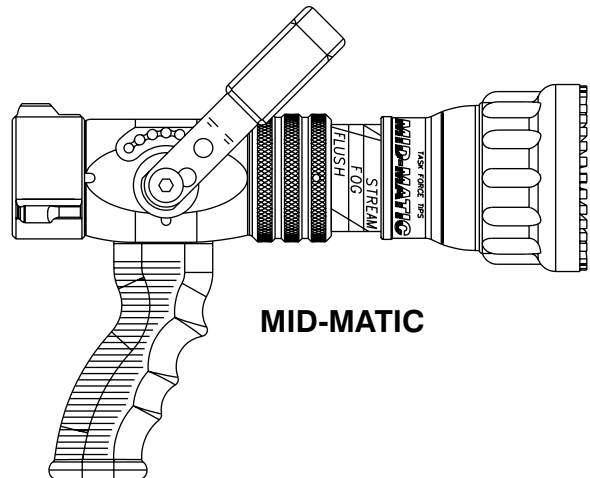
This instruction manual is intended to familiarize firefighters and maintenance personnel with the operation, servicing and safety procedures associated with the Ultimatic, Mid-Matic and Handline fire fighting nozzles.

⚠ WARNING

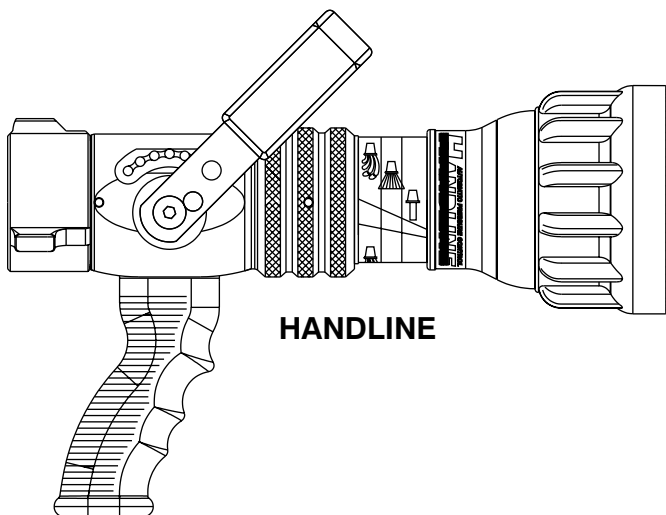
This manual should be kept available to all operating and maintenance



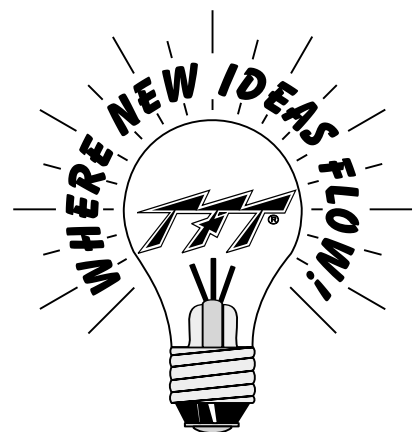
ULTIMATIC



MID-MATIC



HANDLINE



TASK FORCE TIPS




TASK FORCE TIPS • 800.348.2686 • www.tft.com

TABLE OF CONTENTS

- 1.0 MEANING OF SIGNAL WORDS
- 2.0 GENERAL INFORMATION
 - 2.1 VARIOUS MODELS AND TERMS
 - 2.2 COLOR CODED VALVE HANDLE COVERS - MIDMATIC ONLY
- 3.0 FLOW CHARACTERISTICS
- 4.0 NOZZLE CONTROLS
 - 4.1 FLOW CONTROL
 - 4.1.1 LEVER TYPE FLOW CONTROL
 - 4.1.2 TWIST SHUTOFF
 - 4.1.3 TIP ONLY NOZZLES
 - 4.2 PATTERN AND FLUSH CONTROL
 - 4.2.1 PATTERN CONTROL
 - 4.2.2 FLUSH CONTROL5
- 5.0 USE OF ULTIMATIC, MIDMATIC & HANDLINE NOZZLES
- 6.0 FIELD INSPECTION
- 7.0 WARRANTY
- 8.0 ANSWERS TO YOUR QUESTIONS
- 9.0 NOZZLE FLOW CHARTS
- 10.0 INSPECTION CHECKLIST

1.0 MEANING OF 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 Z535.4-1998 the definitions of the three signal words are as follows:

- | | |
|--|---|
|  DANGER | DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
|  WARNING | WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
|  CAUTION | CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. |

2.0 GENERAL INFORMATION

The Task Force Tips Ultimatic, MID-MATIC and Handline 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:

- 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

2.1 VARIOUS MODELS AND TERMS

SERIES	FLOW RANGE (GPM)	NOMINAL PRESSURE (PSI)	STANDARD COUPLING*
ULTIMATIC	10-125	100	1, 1-1/2 NH or 1-1/4 NPSH
	10-100	75	1 or 1-1/2 NH or 1-1/4 NPSH
MID-MATIC	70-200	100	1-1/2 NH
	70-200	75	1-1/2 NH
HANDLINE	50-350	100	1-1/2 or 2-1/2 NH

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

Ultimatic, MID-MATIC and Handline nozzles are available in several models. Some common models are shown in figure 1.

CAUTION 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.

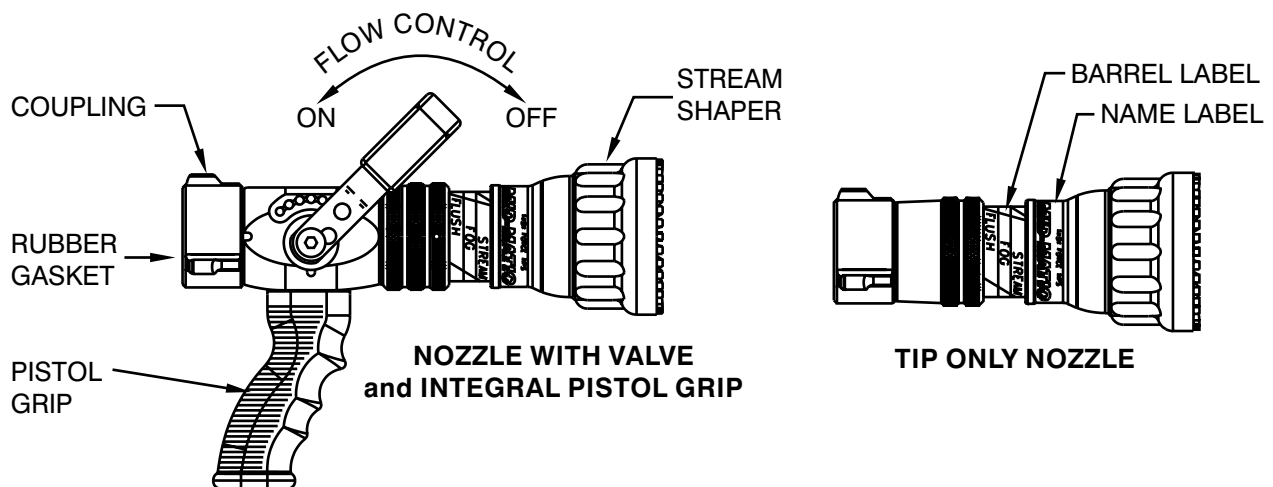


FIGURE 1 COMMON MODELS AND TERMS

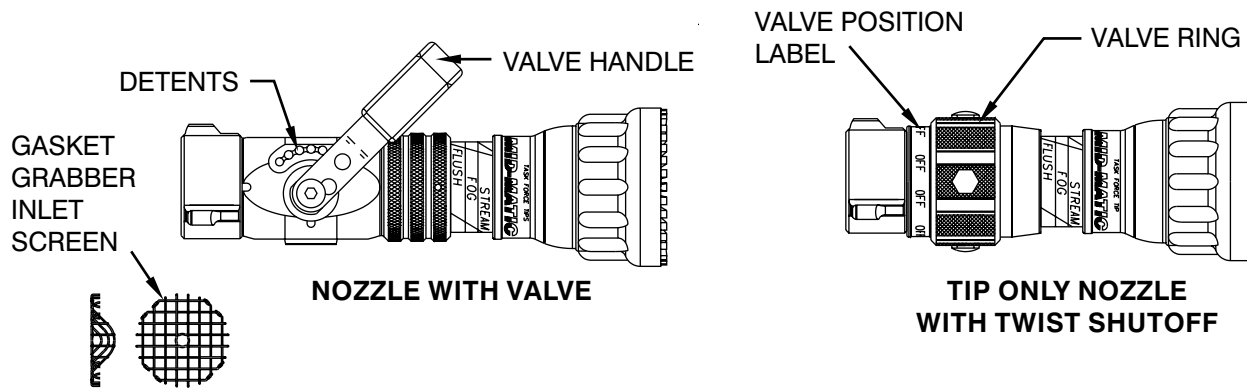


FIGURE 1 COMMON MODELS AND TERMS

2.2 COLOR CODED VALVE HANDLE COVERS — MID-MATIC ONLY

The TFT MID-MATIC 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).

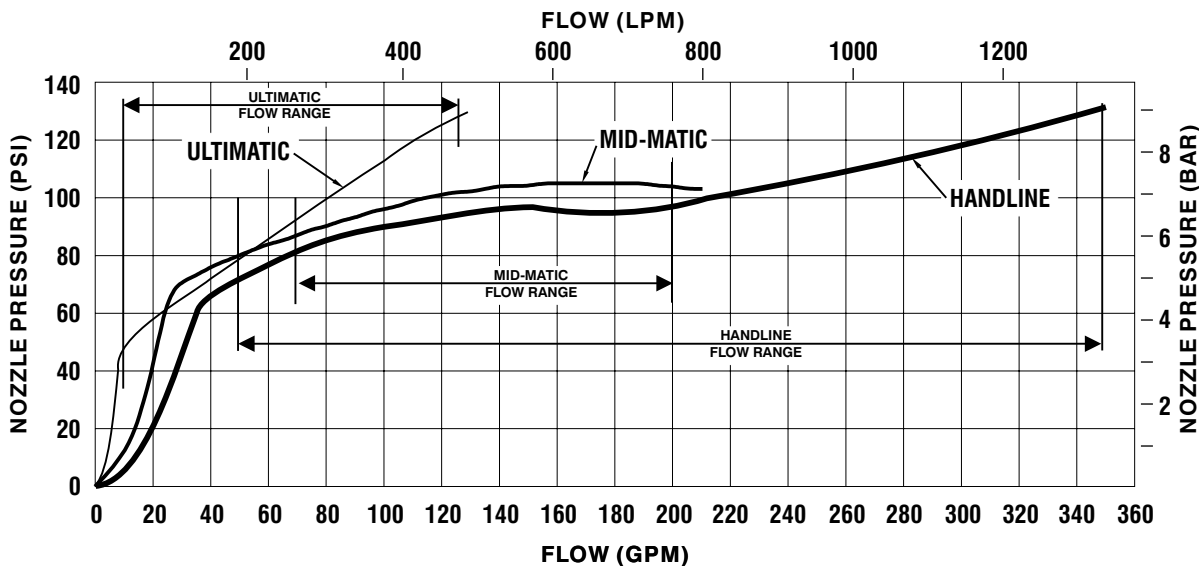
Handle covers are replaceable by removing the four screws that hold the handle covers in place. Use a 3/32" allen wrench and #242 Loctite® or equivalent when replacing screws.

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

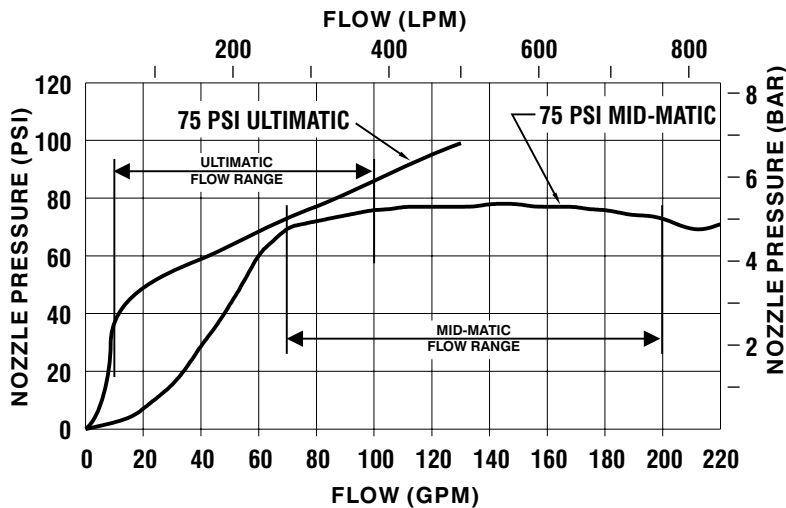
Preconnect #1 or Bumper Jump Line	Orange
Preconnect or discharge #2	Red
Preconnect or discharge #3	Yellow
Preconnect or discharge #4	White
Preconnect or discharge #5	Blue
Preconnect or discharge #6	Black
Preconnect or discharge #7	Green
Foam Lines	Red w/ White border (Red/White)

3.0 FLOW CHARACTERISTICS

The graphs in figure 2 show the typical performance of ULTIMATIC, MID-MATIC and HANDLINE nozzles.



100 PSI ULTIMATIC, MID-MATIC & HANDLINE



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.

75 PSI ULTIMATIC & MID-MATIC

FIGURE 2

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

⚠ CAUTION

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

⚠ 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 positioned to restrain the nozzle reaction in the event of those changes.

⚠ WARNING

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.

4.0 NOZZLE CONTROLS

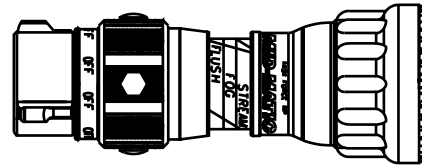
4.1 FLOW CONTROL

4.1.1 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.

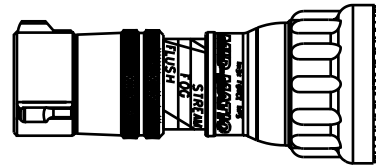
4.1.2 TWIST SHUTTOFF

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.



4.1.3 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.



4.2 PATTERN AND FLUSH CONTROL

4.2.1 PATTERN CONTROL

TFT's ULTIMATIC, MID-MATIC and HANDLINE 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.

4.2.2 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.

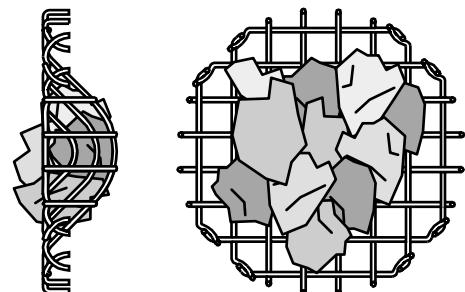


FIGURE 3 - GASKET GRABBER

5.0 USE OF ULTIMATIC, MID-MATIC and HANDLINE NOZZLES

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.

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:

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

6.0 FIELD INSPECTION

TFT's ULTIMATIC, MID-MATIC and HANDLINE 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.

⚠ WARNING Nozzle must be inspected for proper operation and function according to inspection checklist on 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 Ultimatic, Mid-Matic and Handline 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. Task Force Tips assumes no liability for damage to equipment or injury to personnel that is a result of user service.

TFT Item#	Title
LIB-020	Ultimatic 125 Service Procedure
LHM-020	Mid-Matic & Mid-Force Service Procedure
LIH-020	Handline 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.

7.0 WARRANTY

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

8.0 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.

9.0 NOZZLE FLOW CHARTS

100 PSI = 100 PSI ULTIMATIC

75 PSI = 75 PSI ULTIMATIC

ULTIMATIC 125 Flow Chart

FLOW (GPM)		3/4" HOSE						1" HOSE						1 1/2" HOSE					
		150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.		150 ft.		200 ft.		250 ft.	
		100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI
PUMP DISCHARGE PRESSURE (PSI)	125	10	22	—	19	—	17	23	53	20	47	18	42	70	108	60	97	50	89
	150	16	25	13	21	11	19	34	61	29	54	26	49	100	125	85	114	75	106
	175	20	27	17	24	15	21	42	68	36	60	32	55	125	—	110	—	95	118
	200	23	30	20	26	18	23	50	75	42	66	38	60	—	—	125	—	110	—
	225	26	32	22	28	20	25	56	82	48	71	42	65	—	—	—	—	125	—
	250	29	34	25	30	22	27	62	88	52	77	46	69	—	—	—	—	—	—
	300	34	38	29	33	26	30	72	99	62	86	54	78	—	—	—	—	—	—
	350	38	42	33	37	29	33	80	109	70	95	62	85	—	—	—	—	—	—
	400	42	45	36	39	32	35	90	117	78	103	68	93	—	—	—	—	—	—
	450	46	49	39	42	34	38	98	—	84	110	74	99	—	—	—	—	—	—
	500	49	52	42	45	37	40	105	—	90	117	80	106	—	—	—	—	—	—
	600	55	57	48	50	42	44	120	—	100	—	90	117	—	—	—	—	—	—

(1) Number in each box indicates flow (GPM). (2) Flows may vary with brand or condition of hose.
 (3) Flows are approximate and do not reflect losses in preconnect piping.

7 BAR = 7 BAR ULTIMATIC

6 BAR = 6 BAR ULTIMATIC

ULTIMATIC 125 Flow Chart

FLOW (LPM)		19mm HOSE						25mm HOSE						38mm HOSE					
		45M		60M		75M		45M.		60M		75M		45M		60M		75M	
		7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR
PUMP DISCHARGE PRESSURE (BAR)	8.6	40	85	----	70	----	65	85	200	75	180	70	160	265	410	225	365	190	335
	10	60	95	50	80	40	70	130	230	110	205	100	185	380	475	320	430	285	400
	12	75	100	65	90	55	80	160	255	135	225	120	210	475	----	415	----	360	445
	14	85	115	75	100	70	85	190	285	160	250	145	225	----	----	475	----	415	----
	15.5	100	120	85	105	75	95	210	310	180	270	160	245	----	----	----	----	475	----
	17	110	130	95	115	85	100	235	335	195	290	175	260	----	----	----	----	----	----
	21	130	145	110	125	100	115	275	375	235	325	205	295	----	----	----	----	----	----
	24	145	160	125	140	110	125	305	415	265	360	235	320	----	----	----	----	----	----
	28	160	170	135	150	120	130	340	445	295	390	255	350	----	----	----	----	----	----
	31	175	185	150	160	130	145	370	----	320	415	280	375	----	----	----	----	----	----
	34	185	195	160	170	140	150	395	----	340	445	305	400	----	----	----	----	----	----
	41	210	215	180	190	160	165	455	----	380	----	340	445	----	----	----	----	----	----

(1) Number in each box indicates flow (LPM). (2) Flows may vary with brand or condition of hose.
 (3) Flows are approximate and do not reflect losses in preconnect piping. (4) 1 BAR = 100 KPA

MID-MATIC Flow & Nozzle Reaction Chart

100 PSI = 100 PSI MID-MATIC 75 PSI = 75 PSI MID-MATIC

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.	
		100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI	100 PSI	75 PSI
50	21	49	21	48	21	46	21	51	21	50	21	49	22	52	22	52	22	51	
	8	16	7	15	7	14	8	17	8	16	7	16	8	18	8	18	8	17	
	75	31	61	29	59	28	57	23	65	32	62	31	60	36	69	35	68	34	66
		13	24	12	23	12	21	14	27	14	25	13	24	15	29	15	28	15	27
	100	65	86	59	77	55	71	72	102	67	91	63	84	84	137	79	120	75	108
		30	37	27	33	25	30	34	45	32	40	29	36	41	61	38	35	36	48
	125	93	115	84	101	77	92	108	142	97	124	91	111	135	216	122	175	113	155
		45	51	40	44	37	40	54	63	48	55	44	49	69	91	62	77	57	69
	150	117	141	105	123	96	110	141	178	125	153	114	137	196	---	168	221	151	195
59		63	52	55	47	49	72	79	63	68	57	61	101	---	87	95	78	85	
175	140	165	124	142	112	128	174	214	151	179	136	159	---	---	212	---	187	224	
	72	73	63	63	57	57	90	90	78	79	70	70	---	---	109	---	97	98	
200	162	187	141	160	128	143	204	---	175	204	157	179	---	---	---	---	222	---	
	84	81	73	71	65	64	105	---	91	87	81	79	---	---	---	---	113	---	
225	183	208	158	176	142	157	---	---	198	222	176	198	---	---	---	---	---	---	
	94	88	82	78	73	70	---	---	102	95	91	86	---	---	---	---	---	---	
250	202	221	174	198	155	179	---	---	218	---	194	215	---	---	---	---	---	---	
	104	96	90	79	80	69	---	---	112	---	100	91	---	---	---	---	---	---	

(1) Number on top in each box indicates flow (GPM), and number on bottom indicates nozzle reaction (LBS).
 (2) Flows may vary with brand or condition of hose. (3) Flows are approximate and do not reflect losses in preconnect piping.

MID-MATIC Flow & Nozzle Reaction Chart

7 BAR = 7 BAR MID-MATIC 6 BAR = 6 BAR MID-MATIC

PUMP DISCHARGE PRESSURE (BAR)		38mm HOSE						45mm HOSE						50mm HOSE					
		45M		60M		75M		45M		60M		75M		45M		60M		75M	
		7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR	7 BAR	6 BAR
3.5	80	210	80	190	80	175	80	245	80	225	80	205	85	310	85	285	85	255	
	4	8	3	7	3	6	4	10	4	9	3	8	4	12	4	11	4	10	
5.2	115	350	110	315	105	285	85	420	120	380	115	345	135	535	130	485	130	450	
	6	14	5	12	5	11	6	17	6	15	6	14	7	23	7	20	7	19	
7	245	460	225	405	210	365	275	540	255	490	240	445	320	695	300	630	285	580	
	14	19	12	16	11	15	15	24	15	20	13	18	19	33	17	29	16	25	
8.6	350	540	320	475	290	430	410	650	365	575	345	520	510	805	460	750	430	690	
	20	24	18	20	17	18	25	30	22	25	20	23	31	41	28	36	26	32	
10	445	615	395	540	365	490	535	740	475	660	430	600	740	---	635	---	570	775	
	27	28	24	24	21	21	33	35	29	30	26	26	46	---	40	---	35	38	
12	530	680	470	600	425	540	660	805	570	725	515	660	---	---	800	---	710	845	
	33	31	29	27	26	24	41	41	35	35	32	30	---	---	50	---	44	45	
14	615	740	535	655	485	590	770	---	660	785	595	715	---	---	---	---	840	---	
	38	35	33	30	30	26	48	---	41	39	37	34	---	---	---	---	51	---	
15.5	695	790	600	705	535	635	---	---	750	835	665	770	---	---	---	---	---	---	
	43	40	37	33	33	29	---	---	46	44	41	38	---	---	---	---	---	---	
17	765	835	660	750	585	680	---	---	825	---	735	815	---	---	---	---	---	---	
	47	44	41	36	36	31	---	---	51	---	45	41	---	---	---	---	---	---	

(1) Number on top in each box indicates flow (LPM), and number on bottom indicates nozzle reaction (KG).
 (2) Flows may vary with brand or condition of hose. (3) Flows are approximate and do not reflect losses in preconnect piping.

HANDLINE Flow Chart

For Various Pump Discharge Pressures And Hoselays

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.	
PUMP DISCHARGE PRESSURE (PSI)	RECOMMENDED PRESSURE	50	30 10	30 9	30 9	30 10	30 10	30 10	30 28	30 10	30 10	30 10	30 10	
		75	35 15	35 15	35 15	40 16	35 16	35 15	40 17	40 16	40 16	40 18	40 18	
		100	60 29	55 26	50 24	70 33	65 31	60 28	80 39	75 36	70 35	105 52	100 50	95 48
		125	90 44	80 39	75 36	110 55	95 47	90 44	160 79	125 63	115 58	225 120	210 110	200 103
		150	120 61	105 52	95 47	155 76	125 63	115 58	195 100	180 90	165 82	285 161	265 147	255 140
		175	150 74	125 63	115 58	180 90	160 79	140 70	230 123	205 106	190 97	345 206	320 186	300 172
		200	170 85	150 74	130 66	200 103	180 90	165 82	260 143	235 126	215 113	----	370 226	350 210
		225	185 94	165 82	145 72	220 116	200 103	180 90	290 165	260 143	235 126	----	----	390 240
		250	200 103	180 90	160 79	240 129	215 113	195 100	315 184	280 158	255 140	----	----	----

- NOTE: (1) Number on top in each box indicates flow, and number on bottom indicates nozzle reaction.
 (2) The average nozzle pressure is 100 PSI. (3) Flows may vary with brand or condition of hose.
 (4) Flows are approximate (nearest 5 GPM) and do not reflect losses in preconnect piping.

HANDLINE Flow Chart

For Various Pump Discharge Pressures And Hoselays

FLOW (LPM) REACTION (KG)		38mm HOSE			45mm HOSE			50mm HOSE			65mm HOSE			
		45M	60M	75M	45M	60M	75M	45M	60M	75M	45M	60M	75M	
PUMP DISCHARGE PRESSURE (BAR)	RECOMMENDED PRESSURE	3.5	115 5	115 4	115 4	115 5	115 5	115 5	115 13	115 5	115 5	115 5	115 5	
		5.2	130 7	130 7	130 7	150 7	130 7	130 7	150 8	150 7	150 7	150 8	150 8	
		7	225 13	210 12	190 11	265 15	245 14	225 13	305 18	285 16	265 16	395 24	380 23	360 22
		8.6	340 20	305 18	285 16	415 25	360 21	340 20	605 36	475 29	435 26	850 54	795 50	755 47
		10	455 28	395 24	360 21	585 34	475 29	435 26	740 45	680 41	625 37	1080 73	1005 67	965 63
		12	570 34	475 29	435 26	680 41	605 36	530 32	870 56	775 48	720 44	1305 93	1210 84	1135 78
		14	645 39	570 34	490 30	755 47	680 41	625 37	985 65	890 57	815 51	----	1400 102	1325 95
		15.5	700 43	625 37	550 33	835 53	755 47	680 41	1100 75	985 65	890 57	----	----	1475 109
		17	755 47	680 41	605 36	910 59	815 51	740 45	1190 83	1060 72	965 63	----	----	----

- NOTE: (1) Number on top in each box indicates flow, and number on bottom indicates nozzle reaction.
 (2) The average nozzle pressure is 7 BAR. (3) Flows may vary with brand or condition of hose.
 (4) Flows are approximate (nearest 5 LPM) and do not reflect losses in preconnect piping.

10.0 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.

▲WARNING

Any Ultimatic, Mid-Matic or Handline 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.