ATTACK 500 PRO NOZZLE

Reference:
OMATTACK500PRO_NOZZLE
Rev: E

20th July 2023

Delta Fire Ltd

2 Burtt Way
Broadland Business Park
Norwich
NR7 0FE
UNITED KINGDOM

ASSISTANCE

For all technical queries and any assistance, contact us as follows:

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IN LINE WITH OUR POLICY OF CONTINUOUS IMPROVEMENT, WE RESERVE THE RIGHT TO AMEND ANY SPECIFICATION WITHOUT NOTICE

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Operating Manual Contents

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1.0 Introduction

WARNING

This manual is intended to provide the basic instructions for the operation and maintenance of Delta Nozzles. Please carefully study and understand these operating instructions before use since they contain important safety information.

Operating this Nozzle without understanding the manual and receiving proper training can be dangerous.

All Delta Nozzles should only be operated by trained personnel who are familiar with the potential hazards in using this type of equipment.

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- The Delta Attack 500 Pro Nozzle is suited to a wide range of firefighting scenarios and if maintained properly will provide the user with many years of trouble free service.
- For use with fresh water, sea water and standard fire fighting foam compound.
- Specially profiled Stainless Steel Ball Valve provides ease of rapid nozzle opening & closing (pulsing).
- Pattern Shaper/Front Bumper twists to adjust the stream pattern from wide spray to straight stream. Raised Pattern Indicator allows for ease of selecting 30 degree spray position aiding limited visibility operations.
- Raised stainless steel Flow Indicator.
- Stainless Steel Spinning Turbine Teeth producing high performance spray patterns.
- ‘Click’ setting ensures that the narrow spray angle is easily held and identified.
- An optional stainless steel inlet filter prevents debris entering the Nozzle. Finer particles can be eliminated by flush setting.

Low Maintenance

Stainless Steel Spinning Teeth

A Ten Year Warranty backed up by excellent customer service and support

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STAINLESS STEEL SPINNING TEETH

The stainless steel spinning teeth produce uniform dense spray with optimum droplet size for heat absorption. The stainless steel spinning teeth are not only extremely efficient in generating these high performance uniform sprays, are of rugged construction therefore reducing maintenance and downtime significantly over the life of the nozzle.

LOW MAINTENANCE & RUGGED CONSTRUCTION

The computer-aided design means that all Delta Attack Nozzles requires only minimal maintenance.

POWERFUL FOG PATTERN

Very fine central water droplets are carried by heavier outside droplets.

TEN YEAR WARRANTY

Manufactured in the United Kingdom under an ISO 9001 Quality System
Each Delta Nozzle is flow & pressure tested prior to shipment and is guaranteed against manufacturing defect for 10 years.

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1.2 Model Types

Construction & Specification

SPECIFICATION	A500-S EN15182-2 TYPE 3	A500-S EN15182-2 TYPE 3	A500-C EN15182-2 TYPE 3	
MAIN BODY / BARREL	ALUMINIUM HARD ANODISED	ALUMINIUM HARD ANODISED	ALUMINIUM HARD ANODISED	
SPINNING TEETH	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	
FRONT BUMPER	SHOCKPROOF POLYURETHANE	SHOCKPROOF POLYURETHANE	SHOCKPROOF POLYURETHANE	
WEIGHT	1.6 Kg	1.5 Kg	1.5 Kg	
INLET TYPE	2.5” Inst Male Other inlet options are available	2.5” Inst Male Other inlet options are available	2.5” Inst Male Other inlet options are available	
FLOW RATE	115-230-360-475 LPM @ 6 bar	100-250-350-500 LPM @ 6 bar	70-130-230-400 LPM @ 6 bar	Bespoke flow options available upon request
MAX USE PRESSURE	16 bar	16 bar	40 bar	
RECOMMENDED INLET PRESSURE	5-8 bar	5-8 bar	5-8 bar	
MIN OPERATIONAL PRESSURE [1]	3 bar	3 bar	3 bar	

[1] Recommended only – Nozzle will function down to 1 bar.

Use extra caution at higher pressures

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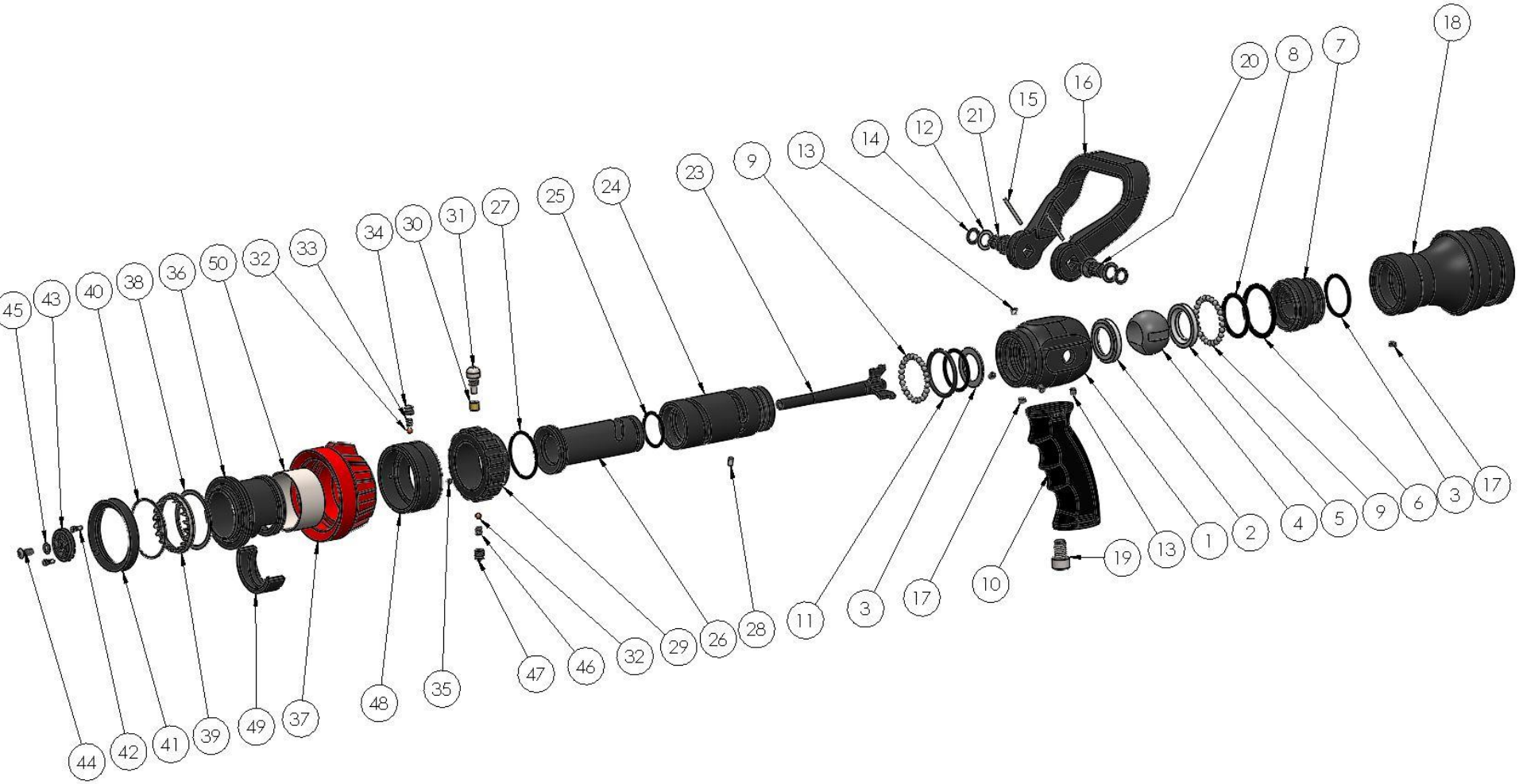
1.3 Illustrated Parts Breakdown



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1.4 Spare Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	XNPF500099	A500 PUSH FIT BODY	1
2	XNAT500105	FRONT BALL 6.7mm PTFE SEAL	1
3	XOR000080	REAR SEAL O-RING 34.6X2.4	2
4	XNAT500110	STAINLESS STEEL BALL VALVE	1
5	XNAT500106	REAR BALL 7.00 PTFE SEAL	1
6	XOR000125	O-RING 42.86 X 3.53	1
7	XNAT500107	REAR SEAL HOLDER	1
8	XOR000090	O-RING 35 X 3	1
9	XCL000002	3/16" STAINLESS STEEL BALL	51
10	XPG000002	PISTOL GRIP HANDLE (BLACK)	1
11	XOR000098	39 X 3 O-RING	1
12	XNPF100206	CONTROL HANDLE PTFE BEARING	2
13	XSC050503	BODY GRUB SCREW M5 X 5 A4	4
14	XOR000015	HANDLE DRIVE SPINDLE O-RING 9.6 X 2.4	2
15	XCL000008	3/32" X 1 1/4" SPRING TENSION SPRING	2
16	XNPF500201	NEW CONTROL HANDLE - BLACK	1
17	XSC060413	GRUB SCREW M6 X 4 A4	2
18	XNAT500050	2.5 INCH INST. MALE TO BS336	1
19	XSC101602	M10 X 16 CHS	1
20	XNPF500205L	CONTROL HANDLE DRIVE SPINDLE LH	1
21	XNPF500205R	CONTROL HANDLE DRIVE SPINDLE RH	1
22	XNPF100323	STEM STABILISING WASHER	1
23	XNPF500320	A500 PUSH FIT STEM	1
24	XNPF500300	A500 PUSH FIT BARREL ALUMINIUM	1
25	XOR000070	29 X 2 O-RING (REAR IBS)	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
26	XNPF500299(S)	A500-S PUSH IBS	1
27	XOR000105	40 X 2 O-RING (FRONT IBS)	1
28	XNAT500296	A500 ANTI SPIN PIN	1
29	XNPF500343	A500 PUSH FIT DIAL COLLAR - ALUMINIUM	1
30	XNPF500345	A500 PF DRIVE PIN BUSH	1
31	XNPF500344	DIAL COLLAR DRIVE PIN	1
32	XCL000005	CLICK BALL 3/16TH TORLON	2
33	XCL000021	SHAPER GUIDE SPRING SHORT	1
34	XCL000030	SHAPER GUIDE CLICK HOLDER SHORT	1
35	XSC040403	M4 X 4 SCKT GRUB SCREW A4/316	2
36	XNPF500340	A500 PUSH FIT SHAPER - ALUMINIUM	1
37	XNPF500339R	A500 PRO PUSH FIT BUMPER - RED	1
38	XNAT5003361	A500 ST REAR BEARING	1
39	XNAT500336	A 500 SPINNING TEETH	1
40	XNAT5003362	A500 PTFE FRONT BEARING	1
41	XNPF500337	A500 PUSH FIT RETAINING RING	1
42	XSC031012	RETAINING RING SHCS M3 X10 316/A4	2
43	XNPF500325	A500 PUSH FIT BAFFLE - ALUMINIUM	1
44	XSC051201	M5 X 12 SHBS	1
45	XWD000005	M5 WASHER - GRADE A4	1
46	XCL000025	DIAL COLLAR CLICK SPRING	1
47	XCL000035	DIAL COLLAR CLICK HOLDER STANDARD	1
48	XNPF500330	A500 PUSH FIT SHAPER GUIDE - ALUMINIUM	1
49	XNAT5003351	A500 SHAPER INSERT	1
50	XNPF500341	SHAPER INSERT RETAINING SPRING	1

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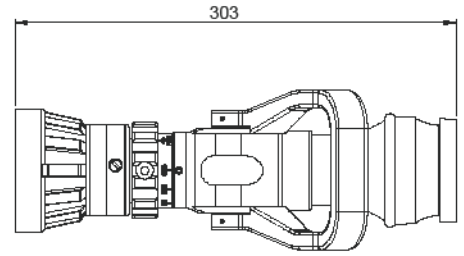
1.5 G A Drawing

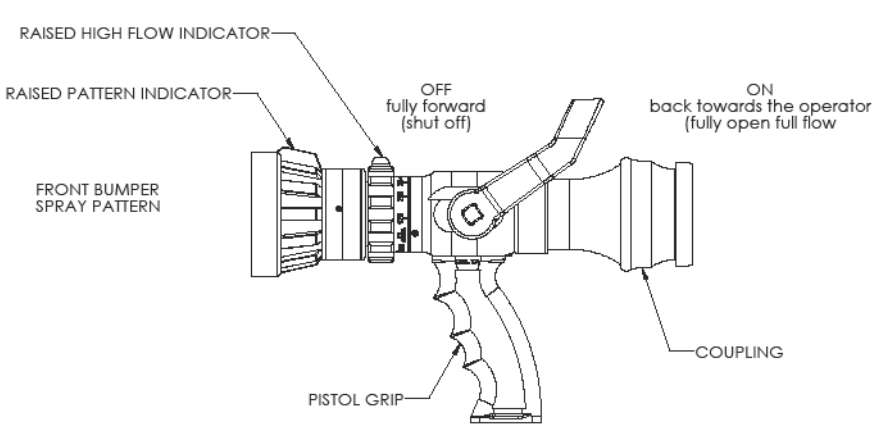
General Assembly Drawing

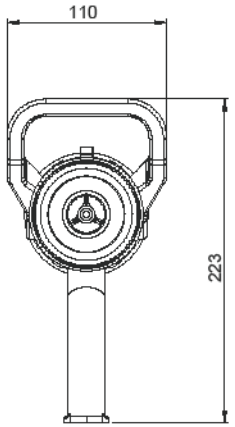
3rd ANGLE PROJECTION

A3



APPROXIMATE WEIGHT - 1.6KGS





REV.	DESCRIPTION	ECR	DATE	SIG.
A	Initial Release	1775	18/03/2021	PTJ

DELTA FIRE
WENDOVER ROAD
RACKHEATH INDUSTRIAL ESTATE
NORWICH
NR13 6LH
TEL: (+44 (0)1603 735000)
FAX: (+44 (0) 1603 735009)

MATERIAL	AS PARTS
FINISH	AS PARTS
DRAWN	PTJ
DATE	18/03/2021
CHECKED	PAF

TOLERANCES (UNLESS OTHERWISE STATED)
0. - ±0.2mm
0.0 - ±0.1mm
0.00 - ±0.05mm
ANGULAR - ±0.5°

TITLE: A500-S PRO NOZZLE
DRAWING No. N2A110002 - GA
REV. A

(1) ALL BURRS AND SHARP EDGES TO BE REMOVED.
(2) DO NOT SCALE DRAWING.

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BS EN 15182-1:2019
BS EN 15182-2:2019
BS EN 15182-4:2019

DELTA FIRE

ANNEX C (normative)

Datasheet for hand-held branchpipes for fire service use - Part 2 & Part 4 Combination Branchpipe PN16/PN40

General Data

Manufacturer	Delta Fire Limited
Type	Type 3, variable pattern at selectable flow

Type according to	Style A100-S, A100-RN, A500-S and A500-SM
	EN15182-1:2019 - type 3
	EN15182-2:2019 - type 3
	EN15182-4:2019 - type 3

Flow Rate settings	A100-S at [Pr] 6 bar	A100-RN at [Pr] 6 bar	A500-S at [Pr] 6 bar	A500-SM at [Pr] 6 bar
	50-100-150-230 LPM	50-100-150-230 LPM	125-250-350-450 LPM	125-250-350-450 LPM

Type of spray	Hollow cone spray

Operational Devices	
Fitting System	Full Time restricted swivel
Gripping device	Pistol grip
Open / shut-off device	Hand operated ball valve
Jet / spray system	Rotating element
Flow adjustment system	Rotating element

Requirements

	Number of the relevant subclause of this part of this Standard	Item	BS EN 15182-4:2019 A100-S Test result 6 bar	BS EN 15182-4:2019 A100-RN Test result 6 bar	BS EN 15182-2:2019 A500-S Test result 6 bar	BS EN 15182-2:2019 A500-SM Test result 6 bar
OPERATING AND HANDLING		Dimension (mm) (Max)	270 x 240 x 100	270 x 240 x 100	280 x 240 x 100	280 x 240 x 100
		Mass (Kg)	1.6	1.6	1.6	1.7
		Torques needed for moving operating elements (N-m)				
		Lever				
		Valve Handle	1.6 Nm	1.6 Nm	1.6 Nm	1.6 Nm
		Flow adjustment element	0.7 Nm	0.7 Nm	0.7 Nm	0.7 Nm
		Jet adjustment element	0.7 Nm	0.7 Nm	0.7 Nm	0.7 Nm
		Rotating inlet element	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
		Flow adjustment Rotation from minimal to maximal flow	95°	95°	95°	95°
		Jet adjustment Rotation from straight jet to wide spray jet with a minimal spray angle of 100°	160°	160°	158°	158°
PERFORMANCE		Effective throw (m)				
		Spray jet (m)	30	30	45	45
		Wide spray jet: angle	120°	180°	120°	120°
		Narrow spray jet: angle	30°	30°	30°	30°
PHYSICS		Sensitivity to frost (°C)	Passed	Passed	Passed	Passed
		Sensitivity to heat (°C)	Passed	Passed	Passed	Passed
		Non-obstruction test (mm)	Passed	Passed	Passed	Passed
		Burst pressure (bar)	Passed	Passed	Passed	Passed

BS EN 15182-1:2019
BS EN 15182-2:2019
BS EN 15182-4:2019

DELTA FIRE

ANNEX C (normative)

Datasheet for hand-held branchpipes for fire service use - Part 2 & Part 4 Combination Branchpipe PN16/PN40

General Data

Manufacturer	Delta Fire Limited
Type	Type 2, variable pattern at constant flow

Type according to	Style A100-C, A500-C, A500-CM and A500-CM+
	EN15182-1:2019 - type 2
	EN15182-2:2019 - type 2
	EN15182-4:2019 - type 2

Flow Rate settings	A100-C at [Pr] 6 bar	A500-C at [Pr] 6 bar	A500-CM at [Pr] 6 bar	A500-CM+ at [Pr] 6 bar
	230 LPM	450 LPM	450 LPM	550 LPM

Type of spray	Hollow cone spray

Operational Devices	
Fitting System	Full Time restricted swivel
Gripping device	Pistol grip
Open / shut-off device	Hand operated ball valve
Jet / spray system	Rotating element
Flow adjustment system	Rotating element

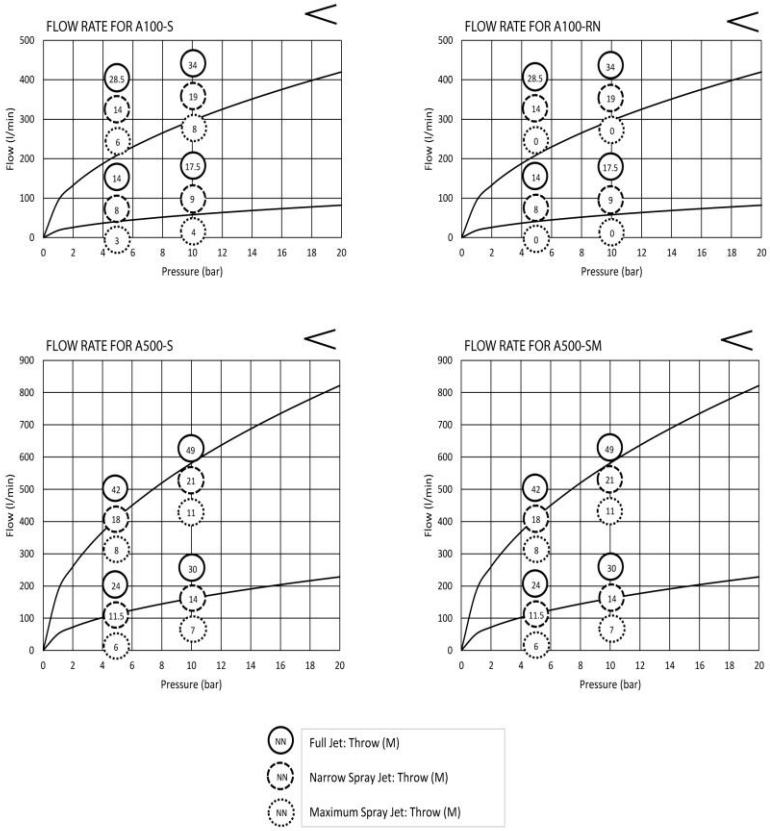
Requirements

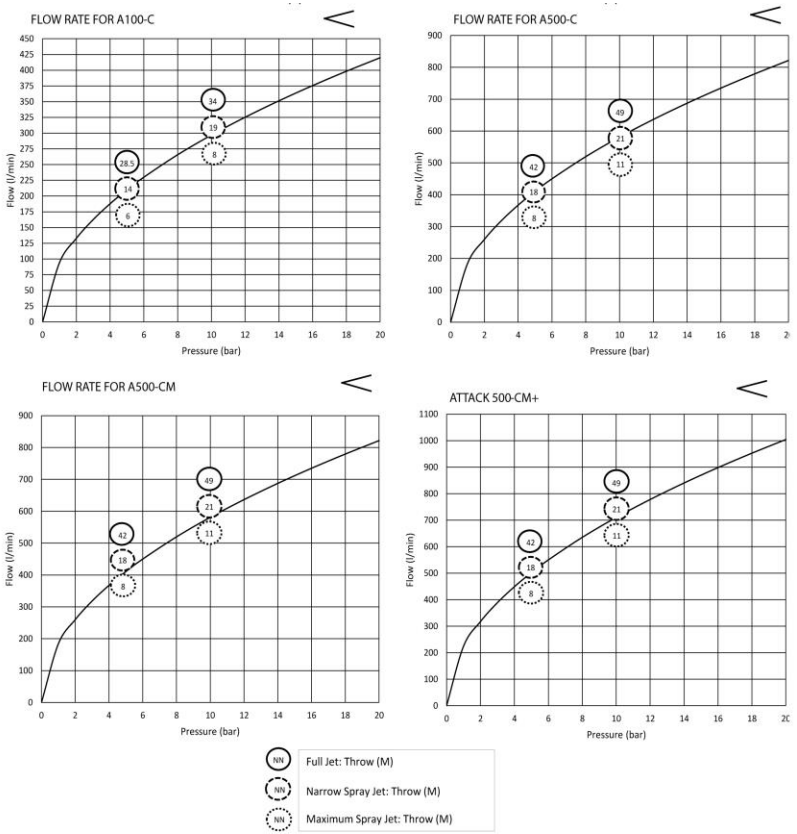
	Number of the relevant subclause of this part of this Standard	Item	BS EN 15182-4:2019 A100-C Test result 6 bar	BS EN 15182-2:2019 A500-C Test result 6 bar	BS EN 15182-2:2019 A500-CM Test result 6 bar	BS EN 15182-2:2019 A500-CM+ Test result 6 bar
OPERATING AND HANDLING		Dimension (mm) (Max)	270 X 240 X 100	280 X 240 X 100	280 X 240 X 100	280 X 240 X 100
		Mass (Kg)	1.6	1.6	3.7	3.7
		Torques needed for moving operating elements (N-m)				
		Lever				
		Valve Handle	1.6 Nm	1.6 Nm	1.6 Nm	1.6 Nm
		Flow adjustment element	0.7 Nm	0.7 Nm	0.7 Nm	0.7 Nm
		Jet adjustment element	0.7 Nm	0.7 Nm	0.7 Nm	0.7 Nm
		Rotating inlet element	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm
		Flow adjustment Rotation from minimal to maximal flow	95°	95°	95°	95°
		Jet adjustment Rotation from straight jet to wide spray jet with a minimal spray angle of 100°	160°	158°	158°	158°
PERFORMANCE		Effective throw (m)				
		Spray jet (m)	30	45	45	45
		Wide spray jet: angle	120°	120°	120°	120°
		Narrow spray jet: angle	30°	30°	30°	30°
PHYSICS		Sensitivity to frost (°C)	Passed	Passed	Passed	Passed
		Sensitivity to heat (°C)	Passed	Passed	Passed	Passed
		Non-obstruction test (mm)	Passed	Passed	Passed	Passed
		Burst pressure (bar)	Passed	Passed	Passed	Passed

Flow - Pressure Chart

1.6 Annex C

EN15182-1 2019, EN15182-2 2019





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PRODUCT CAUTIONS

For use with water or standard fire fighting foams only.

Flush immediately after use with fresh water after using with foam, salt or brackish water.

Delta Fire Nozzles are configured for optimum performance and must never be altered in any way unless authorized by the manufacturer in writing.

PRODUCT WARNINGS

The Nozzles should only be operated by trained personnel who are fully conversant with the reaction forces that all Nozzles with similar flows exhibit. Rapid charging with water may cause a pressure surge which has the potential to cause an injury and damage the Nozzle and associated equipment. Always aim the Nozzle in a safe direction before pressurizing with water. **Use extreme caution at higher pressures particularly near the maximum recommended use pressure.**

DO NOT exceed the maximum pressure rating of the Nozzle. Exceeding this has the potential to cause an injury or damage the Nozzle.

Delta Attack Nozzles require an adequate supply of Nozzle pressure and / or flow in order to provide an effective fire fighting stream. An inadequate water supply will produce an ineffective water stream, and could result in injury, death or loss of property.

Water is a conductor of electricity and the application of water on to 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:

- Whether the stream is solid jet or broken spray pattern.
- The line voltage or equipment voltage.
- Distance from the Nozzle.
- Volume of the stream.

The purity of the water - foam solutions and brackish or salt water may be more conductive. Some guidance is given in BS EN 15182-1 : 2007.

Operatives should always inspect their Delta Attack Nozzle prior to and after each use; to ensure it is in good operating condition. See Section 3.0 Field Maintenance for further details.

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Flow Control Ring with Incorporated Flush

The Delta Attack Pro Branch has up to four operating flow rates plus a flush position. Rotating the Flow Control Ring counter clockwise (viewed from the operative's position) increases the flow with each position held by a détente click. There is deliberately engineered significant resistance after the maximum flow position to enter flush. The flush position is designed to clear small debris, which has by passed the branch's inlet filter (if fitted) and is interfering with the spray pattern. The flush position should be entered when the branch is in a spray setting to reduce the potential change in branch reaction.

Flush Setting

Debris may become trapped in the branch which will affect both jet and spray patterns with shortened reach and reduced flow.

In order to remove trapped debris, the branch can be flushed by rotating the flow control ring counter clockwise from the operator position into the flush position whilst maintaining water flow. The flush position should be entered when the branch is in a spray setting to reduce the potential change in branch reaction.

If large amounts of debris, or if for any reason the debris, is unflushable the operator may have to retreat to a safe area for the branch to be manually cleared.

Changes in spray pattern or flushing will also affect branch reaction. The branch operator must always be prepared and trained for these branch reaction changes. Failure to restrain the branch can cause fire fighter injury from loss of footing and/or stream projection.

The release of a trapped hose or the sudden kinking or unkinking of a hose can cause rapid changes in pressure and flow and resultant rapid changes in branch reaction which the operatives must always be ready to accommodate safely.

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Front Bumper Spray Pattern

The Delta Nozzles have full water stream pattern control from straight stream to wide spray/fog.

A. Delta Attack Nozzles have full pattern control from straight stream to wide fog. Turning the Bumper head clockwise (as seen from the operating position behind the Nozzle) moves the Nozzle to straight stream full jet position. Turning the Front Bumper counter clockwise will result in an increasingly wider spray pattern.

B. The Nozzle reaction is greatest when the Nozzle is in the full jet position. The Nozzle operator must be prepared for a change in reaction as the pattern is changed.

C. Special care should be taken when the branch is flushed to remove debris. It is recommended that personnel are trained to always flush the branch in a spray setting rather than the full jet position.

D. If the Nozzle gets out of control or away from the operator, retreat from the Nozzle immediately and DO NOT attempt to regain control whilst flowing water.

Optional click positions can be incorporated to assist fire service personnel to locate and hold special spray angle positions. These angles can be specified by an individual fire brigade to suit operational techniques adopted by the brigade.

The jet reaction will vary with the inlet pressure and it is the responsibility of the individual Fire Service or equivalent agency to determine the physical capability and suitability of any individual to operate this Branch.

The volume of water delivered onto the fire is one of the key factors in extinguishing a fire, and this flow will vary with inlet pressure. This in turn is mainly dependent on the pump appliance pressure/flow output and the friction loss in the delivery hose(s) system. Changes in height relative to the pump will also produce pressure gains or losses according to change in the elevation. These factors should all be considered in the correct use of the branch and appropriate training given.

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Maintenance Checks

WARNING

Operatives should always inspect their Delta Attack Nozzle prior to and after each use; to ensure it is in good operating condition.

All Delta Nozzles are designed to provide years of reliable low maintenance use and are designed to resist the rigors of operational use. However, as a primary operational fire fighting tool on which fire fighter safety and life depends, they must be properly maintained and periodically inspected at intervals according to use and must always be inspected for proper function before each and every operational use.

As a minimum the following should always be checked before use:-

- ✓ There is no obvious damage such as missing, broken or loose parts, damaged labels etc.
- ✓ The Front Bumper Pattern Shaper turns freely and adjusts pattern through the full jet/spray range.
- ✓ No excessive wear or play on the controls.
- ✓ No water leaks.
- ✓ Dial Collar moves smoothly in & out of both click flow positions and enters and completes the flush position operation.
- ✓ The Branch flow is adequate + commensurate with the pump pressure & the Branch reaction is as expected.
- ✓ The Control Handle moves freely and shuts off flow completely.

If any of the above or any other abnormal characteristics are observed, or any controls are either inoperable or difficult to operate, then the Nozzle should be immediately withdrawn from service. The Nozzle must not be used in operational service until the problem has been corrected.

Additional periodic checks are also recommended.

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WARNING

Delta Nozzles should always only be used for their intended purpose of water delivery and the following should be avoided:

- ❑ Using the Nozzle as a forcible entry tool.
- ❑ Operating above the maximum rated pressure.
- ❑ Prolonged exposures to temperatures above +55° C or below -25° C.
- ❑ Not draining and allowing water to freeze inside the Nozzle.
- ❑ Dropping the Nozzle from excessive height.
- ❑ Operating in a corrosive environment.

Any Nozzle removed from service for repair and or maintenance should be fully tested by a qualified Nozzle technician prior to placing the Nozzle back into service.

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3.2 Maintenance

Routine Ongoing Maintenance & Inspection

The Delta Attack Pro Nozzle is manufactured in the UK to the very highest engineering standards under an ISO9001 Quality Management Standard and will provide years of valuable service with occasional inspection and service.

Delta Fire will fully maintain all Nozzles in a factory service at minimal cost.

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INSPECTION

The Nozzle should always be examined before each operational use in accordance with the field inspection procedures described in section 4. In addition it is recommended that there is a routine inspection program which covers all these points in a secondary inspection which also ensures that the Nozzle is kept clean and all normal functions are checked.

CLEANING

Delta Nozzles should be kept clean by wiping off any dirt and grease. Diluted detergent in warm water may be used to assist removing external dirt and grease with a stiff brush but the Nozzle should never be soaked in detergent since this will remove all the internal lubrication. The Nozzle should be washed down with clean water and dried with a clean cloth.

Tar can be removed with non-hazardous commercial tar removers.

The Spinning Teeth can be cleaned by removal of the Spinning Teeth Retaining Ring. No lubrication is necessary.

Any other maintenance work should be carried out by trained personnel.

Additional guidance on the level of training required for each level is available from Delta Fire Technical Support Services. Support and comprehensive training courses are actively encouraged in order for Fire Services and other users to ensure the best performance of Delta Fire Nozzles.

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Routine Ongoing Maintenance & Lubrication

The Nozzle should be fully inspected and serviced at least annually. It is unlikely that a full service will be required less than every 12 months, but depending on usage periodic lubrication may be required.

The Attack branch should be lubricated periodically according to use.
Delta Fire recommends the use of Silicon spray lubricant – Ambersil AMS4 or similar.

- Between the Inlet Coupling and the Main Body. Rotate the Inlet Coupling a few times to ensure that the lubricant is evenly distributed.
- Beneath the Control Handle where it fits over the Control Handle Drive Spindle. Move the Control Handle between the open and closed positions a few times. This action rotates the Control Handle Drive Spindle and ensures that the lubricant is evenly distributed.
- Between the Dial Collar and the Barrel. Rotate the Dial Collar a few times to ensure that the lubricant is evenly distributed around the O-Ring at the rear of the Inner Barrel Slider.
- Between the Shaper Guide and the Barrel. Rotate the Shaper Bumper a few times to ensure that the lubricant is evenly distributed.
- The tip of the Branch between the Shaper Bumper and the Inner Barrel Slider. Rotate the Dial Collar back and forth a few times to ensure that the lubricant is evenly distributed around the O-Ring at the front of the Inner Barrel Slider.

Always be sure to wipe off any excess lubricant.

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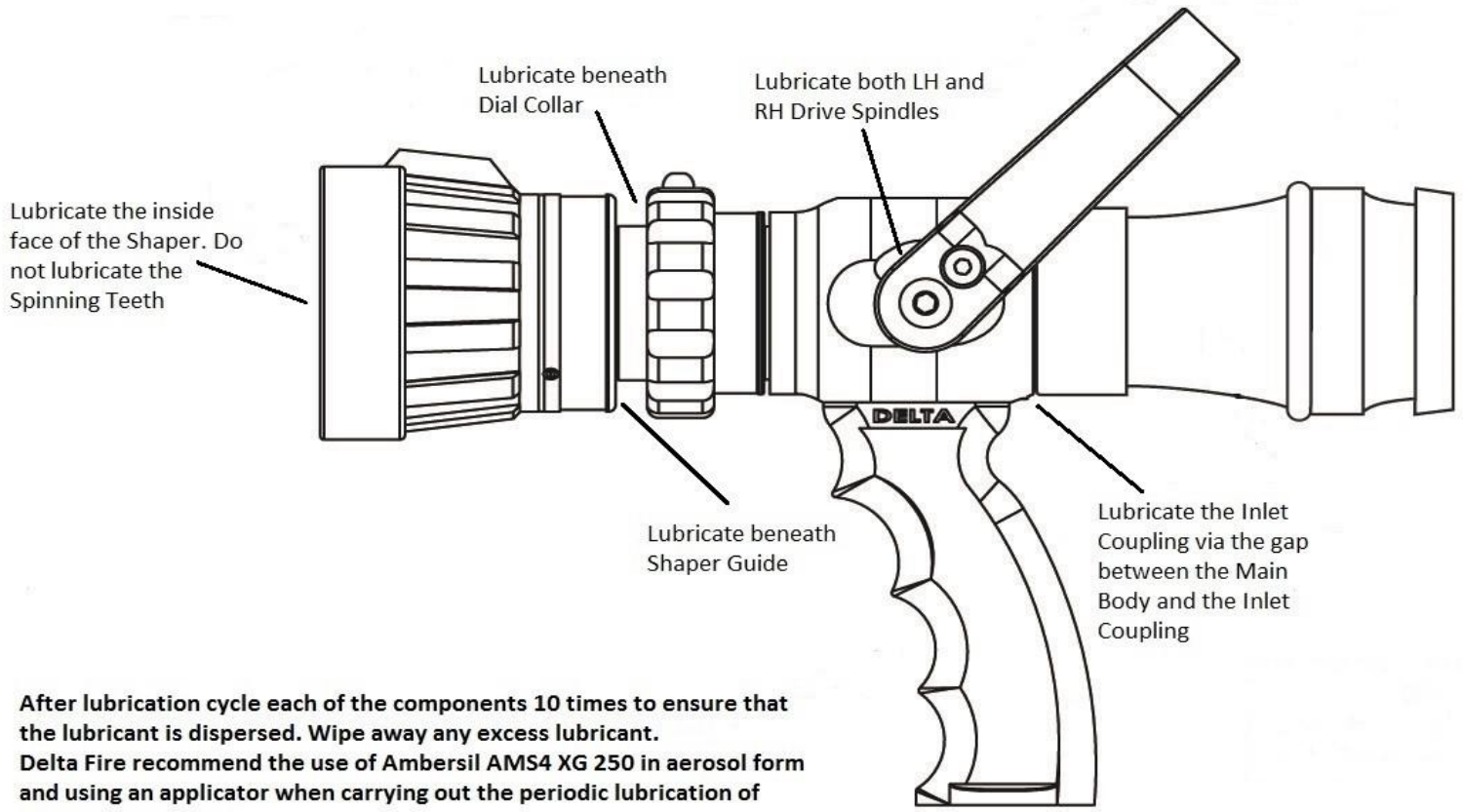
3.2.2 Maintenance

Routine Ongoing Maintenance & Lubrication



After lubrication cycle each of the components 10 times to ensure that the lubricant is dispersed. Wipe away any excess lubricant.
Delta Fire recommend the use of Ambersil AMS4 XG 250 in aerosol form and using an applicator when carrying out the periodic lubrication of moving components.

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4.1 Full Service Procedure

Maintenance & Lubrication

Tools Required

- Allen Key No. 2.0
- Allen Key No. 2.5
- Allen Key No. 3
- Allen Key No. 5
- Allen Key No. 8
- Torque Driver
- 2.5mm Pin Punch
- Small / Medium Screwdriver
- Small Lightweight Hammer
- Rear Seal Holder Tool
- Loctite 222 Light Duty
- Silicone Grease Lubricant

All threads must be thoroughly degreased before re-applying Loctite

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4.2 Full Service Procedure

Unscrew 3 x M5 Grub Screw from the Main Body. Unscrew M6 Grub Screw in the Main Body and remove all 27 Stainless Steel Balls. Remove O ring and discard.

Unscrew M6 Grub Screw from the Inlet Coupling. Remove all 26 Stainless Steel Balls. Remove O ring and discard. Unscrew M6 Grub Screw until the Rear Seal Holder can be removed from the Main Body using the special tool.

Remove the Control Handle Retaining Pins and remove the Control Handle by carefully pulling the handle apart and lifting it off the Main Body.

Remove Stainless Steel Ball Valve and Control Drive Spindles and replace the O rings. Take note to identify the left and right Control Drive Spindle assemblies.

Re-fit a new Front PTFE Seal and check that the O ring is in position.

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4.2 Full Service Procedure

Clean and apply silicone grease to the left and right Control Drive Spindle O rings and reposition inside the Main Body. Refit the Stainless Steel Ball Valve ensuring that the profiled part of the Ball Valve is at the bottom of the Main Body.

Refit the Control Handle ensuring that the orientation is correct. With the Control Handle fully open, reposition the Rear Seal Holder. Move the Control Handle to the closed position and tighten a further ¼ turn.

Apply Loctite 222 to the M5 Grub Screw. Tighten to 1.6Nm. Carefully replace the Control Handle Retaining Pins taking care not to damage the anodising.

Refit new O-Ring to the Rear Seal Holder, apply silicone grease and push Coupling into position. Secure Coupling by refitting 26 Stainless Steel Balls. Degrease threaded hole and new M6 Grub Screw. Apply Loctite 222 and refit M6 Grub Screw until slightly proud.

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4.2 Full Service Procedure

Remove the Baffle Screw. Separate the Baffle from the Stem. Unscrew the Indicator Drive Pin and the Click Holder from the Dial Collar and slide the Dial Collar off the Barrel Assembly.

Remove the Shaper Guide Screws and the Click Holder and slide the Shaper Guide off the Barrel Assembly.

Unscrew the Retaining Ring Screws and remove the Retaining Ring, Stainless Steel Spinning Teeth and both PTFE Bearings.

Apply light pressure to the Bumper to push it off of the Barrel Assembly. Remove Stainless Steel Retaining Band and the Shaper Drive Insert.

Remove the Shaper. Remove both the Brass Bush and the Anti Spin Pin. The Inner Barrel Slider can now be removed from the Barrel Assembly. Clean thoroughly and replace and re-grease both O rings. Re-grease the groove.

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4.2 Full Service Procedure

Align the slot in the Inner Barrel Slider with the hole in the Barrel for the Anti Spin Pin. Apply pressure to the Inner Barrel Slider and re-locate the Brass Bush and Anti Spin Pin.

Fit the Shaper to the Barrel and secure by refitting the Shaper Drive Insert and the Stainless Steel Retaining Band. The Shaper should now rotate smoothly.

Align the location keys on the Bumper with the recesses on the Shaper. Push the Bumper into position by sliding it over the Shaper ensuring that it's pushed fully forward.

Align the narrow spray indicator on the Shaper Guide with the raised bumper indicator. To secure the Shaper Guide, apply Loctite 222 to the 3 screws and tighten to 1.2Nm. Place firstly the Spring and then the Torlon Ball inside the Small Click Holder, apply Loctite 222 and refit.

Re-position the Dial Collar so that the larger hole is over the Brass Bush. Apply Loctite 222 to the Indicator Drive Pin and tighten to 2.5Nm. Place firstly the Spring and then the Torlon Ball inside the Standard Click Holder, apply Loctite 222 and refit.

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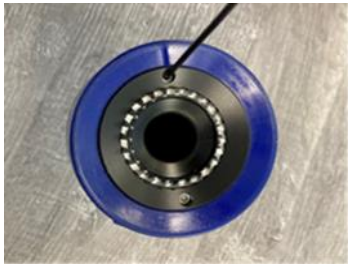
4.2 Full Service Procedure

Refit both PTFE Bearings, Stainless Steel Spinning teeth and the Retaining Ring. Apply Loctite 222 to Retaining Ring screws and tighten to a torque of 1.6 Nm. Check that the Spinning Teeth rotate freely.



Reposition the Stem ensuring that it is seated in the recess of the Barrel correctly. Secure Baffle to Stem by applying Loctite 222 and tightening to 2.5Nm.

Fit a new Stem Stabilising Washer & push the assembled Front End into the Main Body and reintroduce 27 Stainless Steel Balls via the M6 hole. Apply Loctite 222 and refit the M6 Retaining Grub Screw.

Ensure that the high flow position and the narrow spray angle have been selected. Rotate the assembled front end until the Indicator Drive Pin and Bumper Indicator are correctly aligned with the Main Body. Secure in position by applying Loctite 222 to the 3 x M5 Grub Screws. Tighten screws to 2.5 Nm.

Leave to stand for 1 hour before performing a full test.

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5.0 Warranty

Delta Fire Fighting Nozzles

Delta Fire Ltd, 2 Burtt Way, Broadland Business Park, NR7 0FE, warrants the original purchaser of its Delta fire fighting Nozzles and to any beneficiary to whom legal title of the Nozzles is transferred, that the Nozzles shall be free from defect in either parts, material or workmanship for a period of ten years from the date of purchase.

The obligation of Delta Fire Ltd under this warranty is limited to the replacing or repairing of the Nozzles, at the option of Delta Fire Ltd, which are shown by the company to be in a defective condition through either a material or workmanship fault. In order to claim under this warranty the claimant must return the Nozzles for examination by Delta Fire Ltd within a reasonable period.

If Delta Fire Ltd determines that there is a defect attributable to Delta Fire Ltd then it shall repair or replace, at its option, the Nozzle within a reasonable time and assume the cost of the repair or replacement.

Delta Fire Ltd shall have no obligation under the limited warranty if the Nozzles have been misused or neglected. This includes failure to provide reasonable maintenance or if the Nozzles have been altered in any way without the permission of Delta Fire Ltd.

This is a limited express warranty only and Delta Fire Ltd disclaims any implied warranties of merchantability or of fitness for any particular purpose. Since Delta Fire Ltd cannot control the manner or use of its products after their sale, Delta Fire Ltd will not be responsible for any consequential or indirect damages whether to person and/or property due to improper service or misuse.

There is no warranty of any nature by Delta Fire Ltd beyond that stated in this document unless agreed in writing.

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