

**DELTA
FIRE**



FOAM TOP POURERS

KEY USERS

- Petrochemicals
- Fuel Storage Sites
- Oil & Gas
- Marine
- Major Industrials
- Aviation
- Chemical Facilities
- Nuclear

KEY FACTS

- Manufactured in the UK
- ISO9001 Quality Controlled
- Factory Calibrated for Optimum Performance
- Flow Engineered to suit Client
- Carbon Steel Body with 316 Stainless Steel Orifice Plate
- Flows from 120 litres/min to 3,600 litres/min
- Single Integral Unit
- Optional Shell Fixing Kit



DFPS-8 Foam Top Pouter

Doc Ref: DDS001

DELTA FIRE

Broadland Business Park, Norwich, Norfolk, UK, NR7 0FE

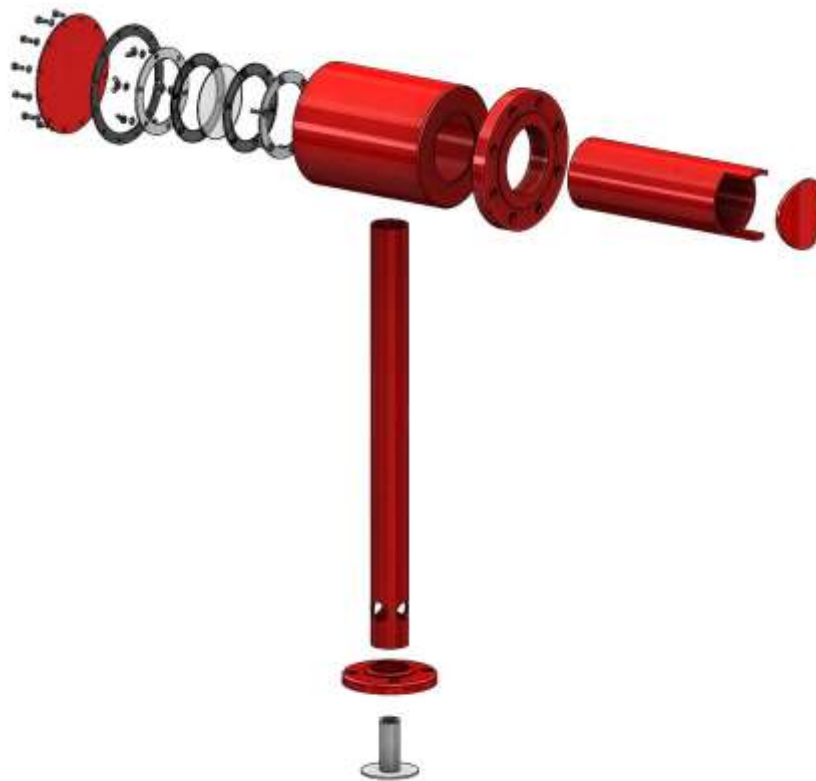
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GENERAL DESCRIPTION

Delta Foam Top Pourers are integrated units designed for use in fixed foam systems for flammable liquid (hydrocarbon and polar solvent) storage protection and comprise a combined foam maker, vapour seal box and pourer. Available in four size options with individual flow capacities from 120 to 3600 litres per minute at inlet pressures of between 3 and 10 bar each unit is pre-engineered and factory calibrated to provide precise flow and pressure characteristics. Flow rates are optimised to provide the correct minimum application rate to the specific hazard being protected. These units are available with either frangible glass or carbon impregnated low pressure 316 stainless steel Teflon burst discs which are designed to break under pressure from the foam which is then deflected onto the tank shell cooling it and gently pouring onto the fuel surface. Each unit has an easily removable cover allowing for testing of the system without breaking the seal also facilitating inspection and maintenance of the burst disc.

Manufactured with a carbon steel body and 316 stainless steel orifice plate the Top Pourers are finished in a choice of red oxide primer or red polyester powder coat (RAL 3000). Inlets and Outlets are ASA 150lb raised face flanges.



Designed and Manufactured by Delta Fire in the UK the DFPS Top Pourer range is built to exacting standards under an ISO9001 Quality Management Standard from top quality materials.

Offering bespoke flow engineering to meet each customer's specific requirements the Delta DFPS Series of Foam Top Pourers are widely used across a broad range of Industry sectors globally providing high performance, cost-effective protection of stored flammable liquids.

Delta's team of highly experienced design engineers boast a wealth of accumulated knowledge in the production of world class fixed foam firefighting products and are on hand to offer advice and technical support to ensure every brief is met fully.



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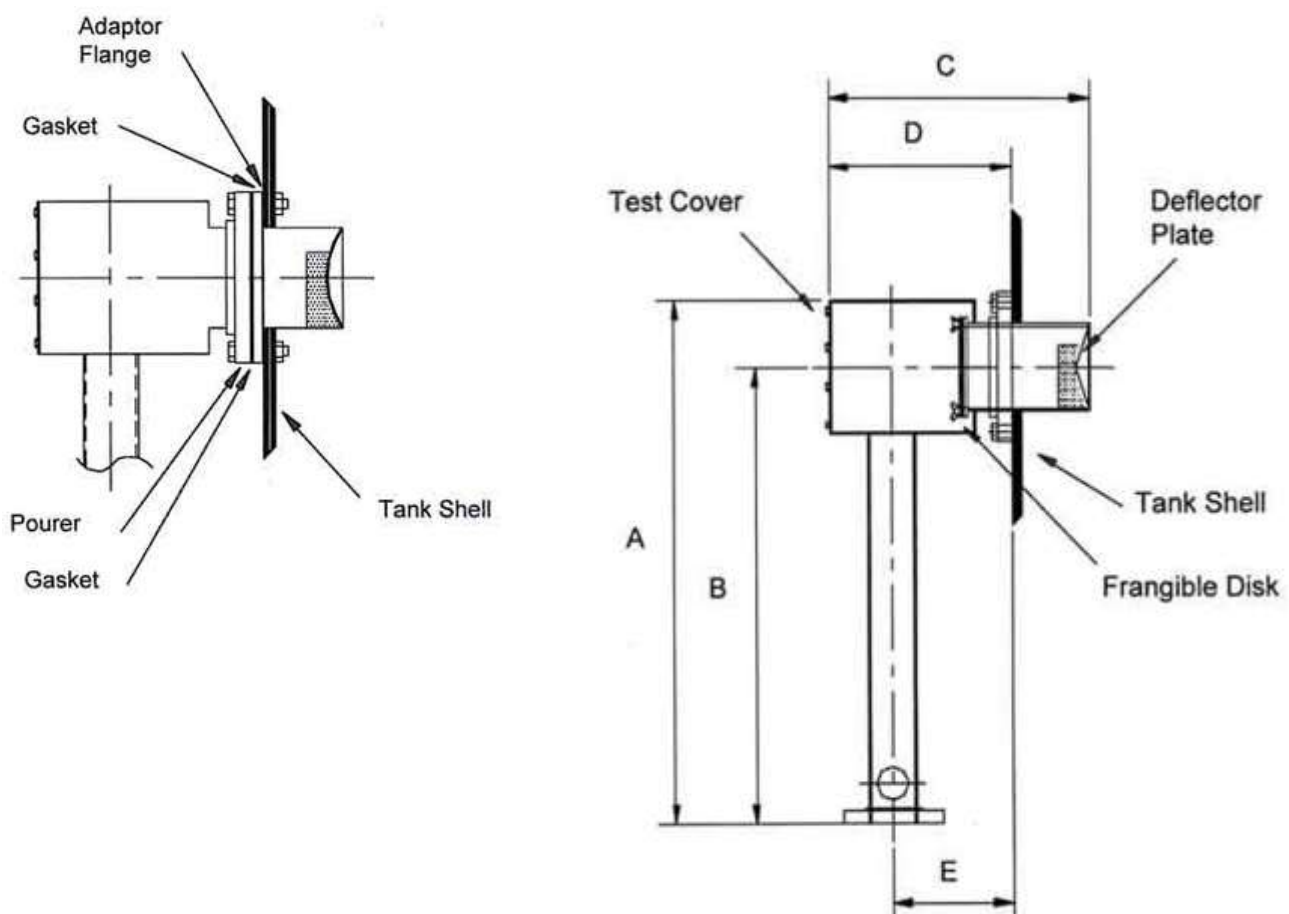
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GENERAL DESIGN

The Delta Foam Pourers consist of a foam maker with a flanged inlet producing foam via a stainless steel double orifice plate injecting produced foam into a chamber with an outlet which penetrates the side of the tank shell. The inlet sprays foam solution creating a venturi effect and air is induced and drawn in through the four aeration holes aerating the foam. The discharge plate ensures the foam is deflected to the sides of the tank.

Between the chamber and the discharge outlet there is a frangible glass (or Teflon) membrane which prevents fumes being discharged to the atmosphere when the tank is in use. The frangible membrane should be checked to ensure it is intact before closing the cover on initial installation and also during testing. Once the system is activated the force of the foam discharge solution ruptures the frangible membrane allowing the foam to gently pour down the tank sides on to the surface of the stored liquid. The Foam Pourers are designed for use in conjunction with a suitable foam induction/proportioning system and suitably sized foam tank to ensure successful installation and operation. The size of foam tank will be dependent on the nature of flammable liquid stored.



DESIGN CODES

There are several International Codes covering the requirements for Foam Top pourers but the actual flow rate and number of units installed to adequately protect the risk is governed by the Authority having jurisdiction. For example the NFPA 11 Standard quotes 4.1 lpm/M^2 could be 6.5 lpm/M^2 (depending on the type of chemical/fuel stored) x the surface area. This calculation provides the amount of foam required.



THE RANGE

The Delta Foam Pourers are available in four basic models with flow rates ranging from 120 to 3600 litres per minute (32 to 951 US gallons). Whilst our standard range fulfils the criteria of the vast majority of our customers we also appreciate that there are often bespoke variations of our Pourers required to fulfil a specific design or installation brief. As our range is manufactured by us in the UK we have the unique ability to fabricate and flow engineer our Pourers to suit individual customer needs, tailored specifically to protect the risk requiring protection.

Delta Fire manufactures their products under an ISO9001 Quality Management System ensuring the very highest standards of quality and performance are met at all times. Rigorous multi-stage QA assessment and testing guarantees that every Pourer is flow-engineered correctly.

Delta Fire only use high quality, certificated materials in the construction of our products and are pleased to offer fully traceable Western sourced materials where specified within a project design specification.

Product Code	FEF512100	FEF513100	FEF514100	FEF515100
Model	DFPS2	DFPS4	DFPS8	DFPS16
Dimension A	900	1000	1300	1600
Dimension B	800	875	1120	1400
Dimension C	550	550	675	800
Dimension D	350	350	450	520
Dimension E	230	230	275	300
Inlet Connection	2"ASA RF Flange	3"ASA RF Flange	4"ASA RF Flange	6"ASA RF Flange
Outlet Connection	4"ASA RF Flange	6"ASA RF Flange	8"ASA RF Flange	10"ASA RF Flange
Flow Range litres/min @ 10 bar	120 to 350	225 to 1200	850 to 2500	1500 to 3600
Flow Range USG/min @ 10 bar	32 to 98	59 to 317	225 to 660	396 to 951

All Dimensional Measurements are in MM

Individual Performance Curves are available on request for each of the four models. Every Delta Foam Top Pourer is factory calibrated to produce an optimised flow/pressure characteristic.



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MODEL SELECTION & APPLICATION

The main criteria in selecting the correct size/model of Top Pourer is governed by two principle calculations – firstly the required application rate of foam to suit the specific risk and surface area to be protected (see NFPA 11 example under ‘Design Codes’ above) and secondly the number of units required which is determined by the diameter of the storage tank. For example:

	No. Required
Up to 24 metre Tank Diameter	1
24 metre to 36metre Diameter	2
36 metre to 42 metre Diameter	3
42 metre to 48 metre Diameter	4
48 metre to 54 metre Diameter	5
54 metre to 60 metre Diameter	6

FRANGIBLE BURST DISCS – GLASS OR TEFLON?

Delta Fire Foam Top Pourers are available with a choice of either frangible glass burst discs or carbon impregnated low pressure 316 stainless steel Teflon burst discs. Whilst the glass option provides a lower cost solution they are more susceptible to accidental damage and additional care should be taken in rigidly following the installation, testing and maintenance procedures to avoid accidental damage or inadequate installation. The newer concept of using Teflon burst discs as an alternative to glass are far less prone to damage and easier to install and maintain providing significant advances in reliability and safety over the lower cost options.

Burst Discs	Model DFPS2	Model DFPS4	Model DFPS8	Model DFPS16
Glass Product Code	GD-02	GD-04	GD-08	GD-16
Teflon Product Code	TD-02	TD-04	TD-08	TD-16

INSTALLATION GUIDENCE

The Delta Top Pourers are affixed to the tank shell by using standard ASA 150lb raised face flanges fastened using appropriate sized threaded stud bolts. The installation should only be carried out by a suitably trained/qualified pipework engineer and it is essential that the correct gaskets are fitted to both the inlet and outlet flanges to ensure leak free operation. NB- the removable stainless steel inlet double orifice plate requires a suitable gasket on both sides and is designed to be located between the foam pourer inlet flange and matching upstream pipe flange.

An adaptor fixing kit is available to facilitate easy installation of the Delta Top Pourer Set to the external wall of the tank consisting of a special flange adaptor with fixed threaded studs. An appropriate ANSI 150lb flanges size hole is cut into the tank shell and the adaptor is bolted into place. The matching Foam Pourer flange can then easily be offered up to the locating studs and secured into position. All nuts, washers and gaskets are included.

Fixing Kits	Model DFPS2	Model DFPS4	Model DFPS8	Model DFPS16
Product Code	FK-02	FK-04	FK-08	FK-16

Delta Fire has more than 25 years industry experience in the design, manufacture and engineering of Foam Top Pourers and are proud to supply them to major industries around the world. The Delta Team boasts an accumulated wealth of industry knowledge and expertise offering both on and off-site technical support to their customers throughout the installation process.



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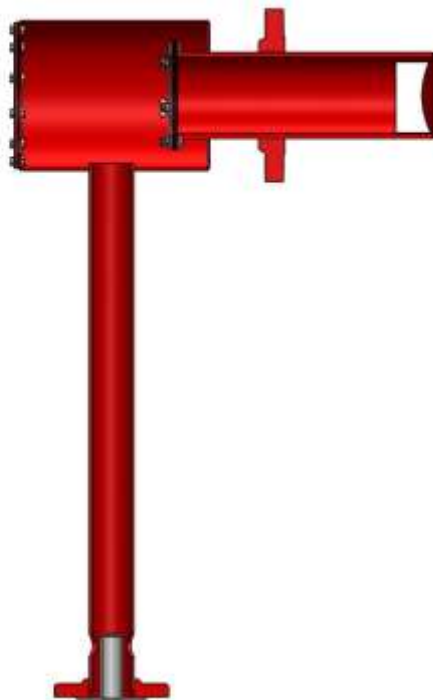
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MAINTENANCE GUIDANCE

All Delta Foam Top Pourers should be visually inspected for corrosion and other damage and if necessary any paintwork repaired. Visual inspection should be conducted to the four air inlet holes to ensure that the mesh is not blocked by debris thus preventing aeration of foam.

The units should be fully function tested immediately after initial installation and then periodically according to the owner/operator's scheduled maintenance programme. The chamber has a removable cover facilitating system activation without the need to introduce foam into the tank. In order to carry out a full function test please see guidance notes below:

1. Remove the inspection cover
2. Check the frangible burst disc seal is firm, secure and fully intact with no signs of cracking or fracture
3. If the frangible burst disc is damaged in any way it should be carefully removed and replaced. Ensure that the gaskets are in good condition and replace if deemed necessary.
4. Fit the new frangible burst disc sandwiched between the two gaskets and very carefully tighten down the butterfly nuts until the glass seal is firm and a light contact seal has been made on both sides of the disc.
5. Run the foam proportioning system with the cover fully removed and if desired collect samples of the finished foam for analysis only after the system has settled into equilibrium. Visually check for any leaks at the inlet and outlet gaskets.
6. After running the foam, continue to flush the unit with fresh water to remove all residues. If possible dry down the unit internally.
7. Re-inspect the frangible burst disc and if damaged in any way replace as per 3 & 4 above.
8. Refit the inspection cover and associated gaskets (replace if deemed necessary) and lightly tighten down to ensure the cover is sealed all the way around.



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