

## ***SPRAYTECS Series UP High Velocity Directional Spray Nozzles, Open, Non-Automatic. Suitable for Water Spray fixed systems.***

### **Technical Data**

#### ***General Description***

The SPRAYTECS Series UP are high velocity, open (non-automatic) directional spray nozzles incorporating individual swirlers to obtain directional water spray.

They are expressly designed for use in water spray fixed systems for fire protection applications, and are suitable when a high velocity water application is required, such in case of protection of flammable liquids.

These Series UP spray nozzles can be equipped (as option) with an Inlet Strainer and/or (as option) a Dust Cap against dust and insect infestation as better explained in the section: Design Criteria.

SPRAYTECS Series UP are available in brass or stainless steel, and have a spray pattern related with different characteristics and dimensions of the orifice. When water reaches the nozzle, flows through and over the internal swirl. This causes the swirling of water, starting with an initial rotational movement. The design of the internal swirl assures better directionality and relative high velocity to the drops that come out the nozzle orifice. The result is a solid conical spray pattern of water drops, discharged in the design defined area.

The spray nozzles expressly designed for High Velocity

performances are used in water spray fixed systems for the protection of hazards as flammable liquids and gas storage tanks, diesel engines and diesel storage tanks, lube oil systems, oil fire boilers, circuit breakers, conveyor systems, chemical process equipments, oil filled transformers and similar hazards.

These SPRAYTECS UP Series spray nozzles are able to quickly extinguishing the oil fires by emulsification, smothering, cooling.

The high velocity spray nozzles in fixed water spray systems have good cooling effects on surfaces, so the possibility of reignition after a fire extinguishing action is minimized.

Effects of concentration of chemicals, ambient temperature, and gas/chemical velocity should be considered about the corrosive nature to which spray nozzles may be exposed. We recommend that the end user could be advised about compatibility between corrosive environments and materials of construction of the spray nozzles.

#### **IMPORTANT**

Always read and refer to Technical sections: Design Criteria, Installation and Maintenance (here in this document in next pages) before handling and installation of these water spray, sprinkler systems and components. The products described herein must be installed

and maintained in compliance with all recommendations of this document. Improper handling, installation or maintenance can create damages to the sprinkler/water spray system and fail to operate in a fire situation or cause to operate prematurely with dangerous effects.



*The sprinkler/water spray owner is the sole responsible about fire protection system and devices in good operating conditions. The installing contractor or sprinkler/spray nozzle manufacturer should be contacted about any information need.*

## Technical Data

### Approvals

Series UP are tested under European Standards EN 12259-1

### Maximum Working Pressure

350 psi (24,2 bar)

### Water Distribution

Optimal flow pressure is between 30 to 90 psi (2,1 to 6,2 bar). Refer to the figures below in this document.

### Discharge Coefficient K-Factor

Please refer to the figure on the left in this page.

### Physical Characteristics (Brass)

Body: Brass  
Swirl: Brass

### Physical Characteristics (SS 316L)

Body: Stainless Steel AISI 316L  
Swirl: Stainless Steel AISI 316L

### Dimensions

Please refer to the figure on the left in this page.

### Thread Connection

½" NPT Male or ½" BSPT Male

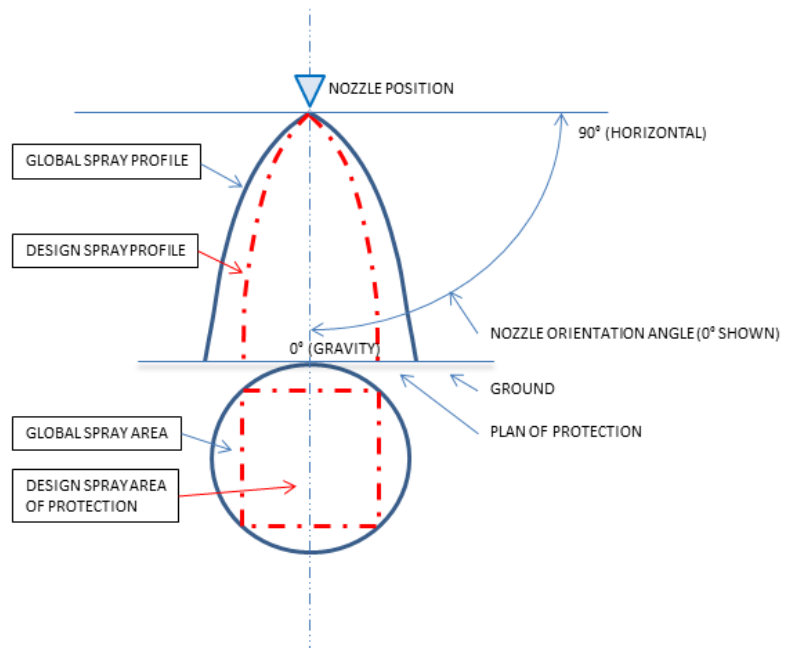
Code & Material	K-Factor		Nominal Dimensions in Inches & (mm)	
	NFPA (GPM/ vpsi)	ISO/SI (LPM/ vbar)	A	WS
<b>UP12T240MT1 Brass</b>	1,6	23	1,5" (38 mm)	0,87" (22 mm)
<b>UP12T240MB5 Stainless Steel AISI 316L</b>	1,6	23	1,5" (38 mm)	0,87" (22 mm)

**Fig. 1 : Water Spray Nozzle UP Series Codes, Dimensions, Wrench sizes and K-factor**

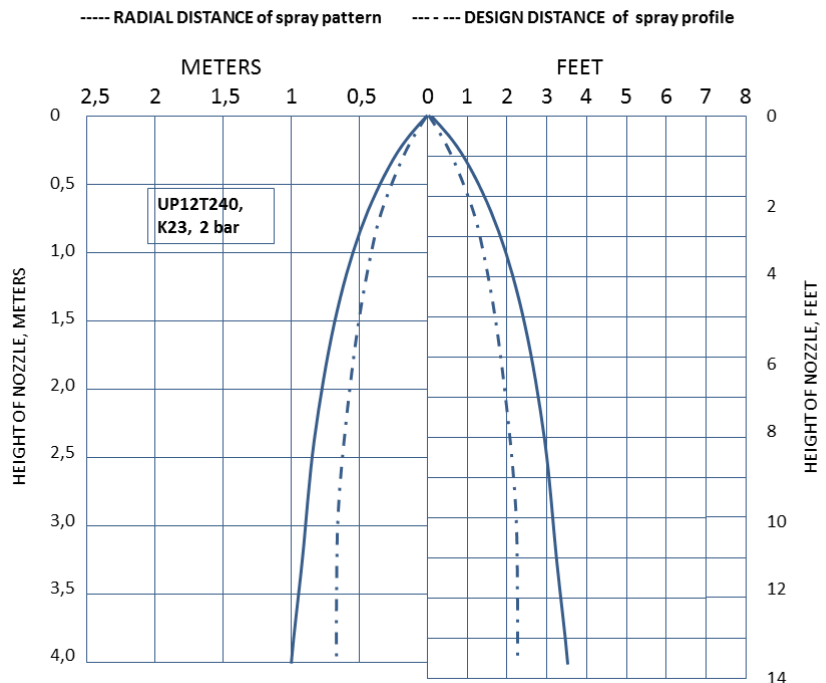


**Notes (Water Distribution Design):**

1. The shapes of the Global Spray Area and Design Spray Area of Protection, Global and Design Spray Profile remain essentially the same over the showed maximum heights of nozzle positioning.
2. Design Data here indicated are related only to the indicated pressures. In case of different pressures applied, please ever consult Spraytecs Technologies Ltd. We will happy to support and confirm the project basic data with your Fire Fighting System Engineers. Every nozzle on the market can have a different distribution depending from the applied pressure. Ever contact the manufacturer is a best practice.
3. Design data applies to a maximum wind of 24 km/h (15 MPH).



**Fig. 2a : Water Distribution Design Data and Design Criteria**



**Fig. 2b : Water Distribution Design Data of UP nozzle K23 at 2 bar**

## Design Criteria

### Nozzle Positioning

The nominal global (overall) spray area patterns, the maximum heights of positioning from the protected surface (axial distances), the spacing are showed in Fig. 2a, Fig. 2b, Fig. 2c. The minimal residual pressure of 2 bar (29 psi) can be applied in most applications.

Anyway we recommend to use a minimum residual pressure of 3,5 bar (51 psi) in all applications requiring higher velocity water discharge, as those specifying rapid extinguishment of oil fires by emulsification effect.

To obtain the total impingement on all surfaces we recommend to consider in your system design the showed dimensions (in fig. 2a, fig. 2b, fig. 2c) of Design Distance Profile and Design Spray Area of Protection for the axial distances/heights of nozzle positioning. The squared Design Spray Area of Protection inside the circular Global Spray Area is defined in Fig. 2a.

The maximum recommended heights of nozzle are established on maintaining the specified spray patterns under a maximum wind speed of 25 km/h (15 MPH).

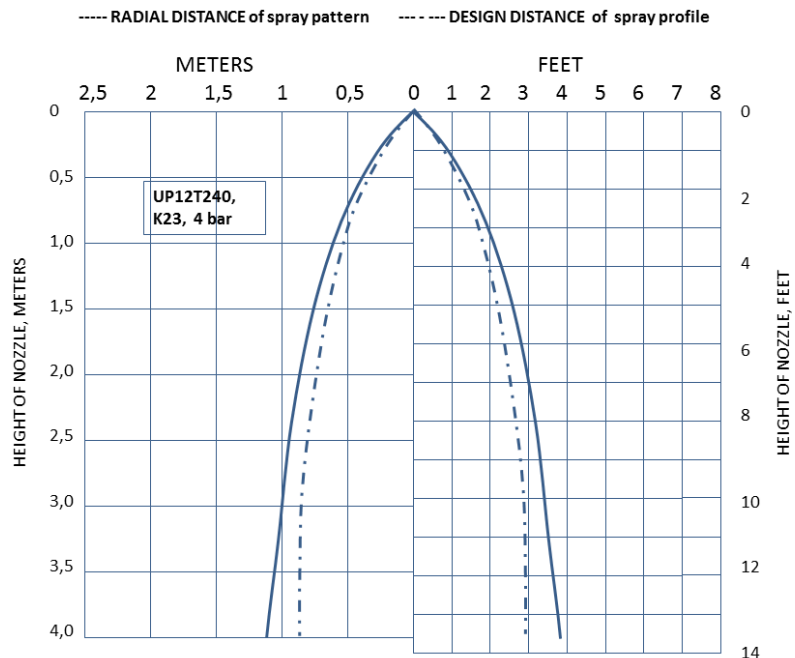
### Main Pipeline Strainers

Main pipeline strainers are required for systems utilizing Spraytecs UP Nozzles, because their internal waterways are less than 9.5 mm (3/8 inch).

### Dust Caps.

The optional Dust Caps are suitable for indoor and outdoor use over a temperature range of -50C to 68C (-58F to 154F).

To assure the release of the Dust Cap, a minimum flowing pressure of 1.0 bar (15 psi) is required.



**Fig. 2c : Water Distribution Design Data of UP nozzle K23 at 4 bar**

## Installation

Spraytecs Series UP Nozzles must be installed as specified in this section.

### General Instructions

A leak tight in a 1/2" inch BSPT or NPT male nozzle joint should be obtained by applying a minimum to maximum torque of 10 to 19 Nm (7.3 to 14 ft-lbs). Higher levels of torque may damage the nozzle inlet and cause malfunctioning of the nozzle.

Phase A). With pipe thread sealant applied to the pipe threads, hand tighten the nozzle into the nozzle fitting.

Phase B). Using a fixed wrench of appropriate size, tighten the nozzle in the nozzle fitting. The wrench must be of the size specified as in Fig. 1.

## Care and Maintenance

Spraytecs Series UP Nozzles must be maintained in accordance with the below specifications.

Before to start maintenance works and therefore closing a fire protection system main control valve on the fire protection system that it controls, obtain permission from the proper authorities to shut down the fire protection system and notify all personnel who may be affected by this operation.

Sprinklers/Nozzles which are found damaged, leaking or with sign of corrosion must be replaced. Moreover they must never be coated, painted, plated or anyway altered after leaving the factory.

Sprinklers/Nozzles that have been exposed to corrosive effect of

combustion, but have not operated, should be substituted.

Sprinklers/Nozzles that seems modified or not in perfect conditions must be replaced.

During maintenance operation is mandatory to avoid any damage to the sprinklers/nozzles, as water dropping, wrench twist/slippage, striking, or similar situations, because in such cases must be replaced.

Water spray fixed systems for fire protection needs of a regularly performed planned service of maintenance by trained operators. The service operations must inspect nozzles for proper spray performance during the water flow trip tests of the system.

Moreover it is recommended that nozzles must be checked about broken, damages or signs of impaired protection, and this operation should be planned weekly or more frequently. Ever the local availability of sprinklers/nozzles of the same type should be assured, in the way to permit that the fire protection system will work as intended in the unfortunate case of fire.

The owner of the fire protection system and of the fire protection devices, is responsible for the inspection, testing and maintenance in total compliance with this document, as well as with the applicable standards of the applicable Fire European Standards (EN 12259-1), the National Fire Protection Association (NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or Spraytechs Technologies Ltd regarding any questions.

Water spray fixed systems are mandatory as subjects to be inspected, to be tested and to be maintained by a qualified Inspection Service in accordance with the local requirements and/or national codes.

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