

**BLAZE**

Medium Velocity Water Spray Nozzle

Model : BT 5860-BR / BT 5860-SS / BT 5860-AB

Description:

The BT 5860 Medium Velocity Water Spray Nozzle is a non-clogging, open-type directional spray nozzle designed to discharge a uniform cone of medium velocity water droplets. It is intended for use in fixed water spray systems for a wide range of fire protection applications, including:

- Cooling of storage tanks and process vessels
- Exposure protection of structures and equipment
- Controlled burning
- Dilution and dispersion of flammable vapours
- Extinguishment of Class A fires

The general arrangement of the Medium Velocity Water Spray Nozzle is shown in Fig. 1. The nozzle comprises a body, splitter pin and deflector, and is supplied with ½ in. (DN15) male threaded connections to BSPT (M) or NPT (M) standards.

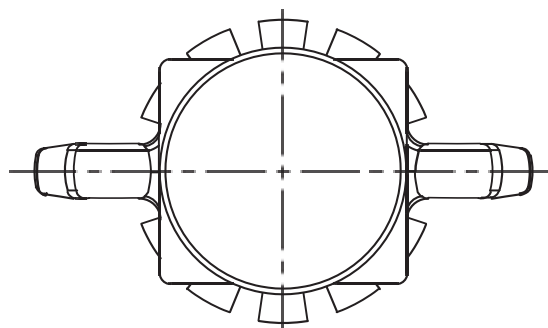
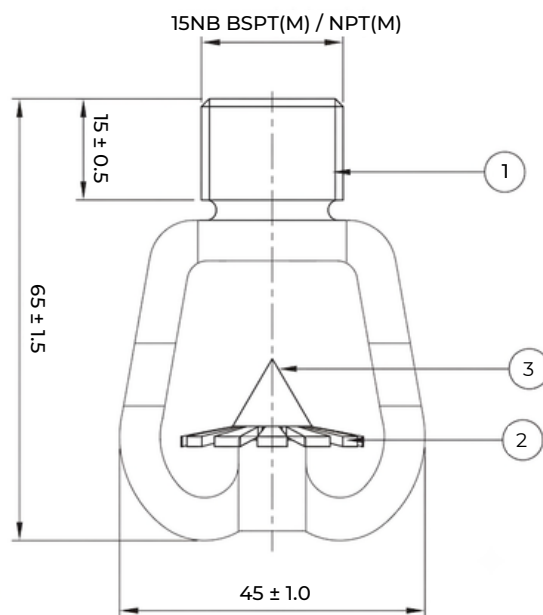
The Flow vs Pressure performance graph is shown in Fig. 2. Spray patterns for 90°, 120° and 140° spray angle nozzles are illustrated in Fig. 3, Fig. 4 and Fig. 5, respectively.

Specifications :

Model	BT 5860-BR - Brass BT 5860-SS - Stainless Steel BT 5860-AB - Aluminium Bronze	
Maximum Working Pressure	1.4 Bar - 3.5 Bar	
End Connection	½" BSPT(M) (½" NPT(M) optional)	
Approvals	UL Listed	
Spray Angles	90°, 120°, 140°	
Weight	0.095 Kg (Approx.)	
Finish	Brass- Natural Finish / Chrome Plated Nickel / Electroless Nickel Plated / Epoxy Powder Coated.	
	Stainless Steel - Natural Finish	
	Aluminium Bronze - Natural Finish	
K Factor	METRIC	US
	K-18	1.26
	K-22	1.54
	K-30	2.10
	K-35	2.45
	K-41	2.87
	K-51	3.57
	K-64	4.48
	K-79	5.53
	K-91	6.37
	K-102	7.14

Material Specifications :

No.	Description	Material		
		BT 5860-BR	BT 5860-SS	BT 5860-AB
1	Body	Brass, IS:291 Gr.-1	ASTM A351 Gr.CF8M(SS:316)	Aluminium Bronze IS:305-AB1
2	Deflector	Brass, IS:2768	ASTM A240 S32205/S32750	PH.BRONZE TO IS:7814
3	Pin	Brass, IS:291 Gr.-1	ASTM A479 S31803/S32750	PH.BRONZE IS:7811

**Fig. 1****BLAZETECH SYSTEMS LTD.** contact@blaze-tech.co.uk

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Operation :

The Water Spray System may be operated manually or automatically. When the fire water supply is activated, the Medium Velocity Water Spray Nozzles discharge water as solid, uniform cones of medium velocity droplets at predetermined spray angles and directions, providing effective fire control, cooling and exposure protection. The spray patterns for 90°, 120° and 140° nozzles are illustrated in Fig. 3, Fig. 4 and Fig. 5, respectively.

Specification :

The BT 5860 Medium Velocity Water Spray Nozzle is manufactured from Brass, Stainless Steel 316, or Nickel Aluminium Bronze (NAB) to provide excellent corrosion resistance and long service life. Brass nozzles are available in either a natural or chrome-plated finish. The nozzles are supplied with 15 NB (½ in.) male threaded connections to NPT (M) or BSPT (M) standards, as required.

K-Factor :

The K-Factor is the discharge coefficient used to determine the flow characteristics of the nozzle and is based on an operating pressure range of 1.4 to 3.5 bar. In addition to the standard K-Factors, intermediate K-Factors can be supplied with individual test results; however, these are not UL Approved.

The UL Listed Blazetech MVWSN is available with the following K-Factors to suit various system design requirements:

K-18, K-22, K-30, K-35, K-41, K-43, K-51, K-64, K-79, K-91 and K-102.

Spray Angle :

The spray angle is determined from the actual spray pattern and coverage achieved within the operating pressure range of 1.4 to 3.5 bar. The BT 5860 Medium Velocity Water Spray Nozzle is available with spray angles of 90°, 120° and 140°, all covered under the applicable UL approval.

For optimum performance, the recommended nozzle operating pressure is between 1.4 and 3.5 bar. At pressures above 3.5 bar, the spray pattern tends to contract inwards, reducing the effective spray coverage.

Nozzle Selection :

The selection of the K-Factor and spray angle for the BT 5860 Medium Velocity Water Spray Nozzle should be based on the applicable design standards, such as NFPA, FOC, TAC, OISD, or the requirements of the Authority Having Jurisdiction (AHJ).

The principal factors influencing nozzle selection are:

- Required water application density
- Available pressure at the nozzle
- Required spray coverage

Determining the K-Factor

The required K-Factor can be calculated when the required flow rate and operating pressure at the nozzle are known, using the following equation:

$$Q = K \times \sqrt{P}$$

or

$$K = Q / \sqrt{P}$$

Where:

- Q = Required nozzle flow rate (L/min)
- P = Nozzle operating pressure (bar)
- K = Nozzle discharge coefficient (K-Factor)

Example :

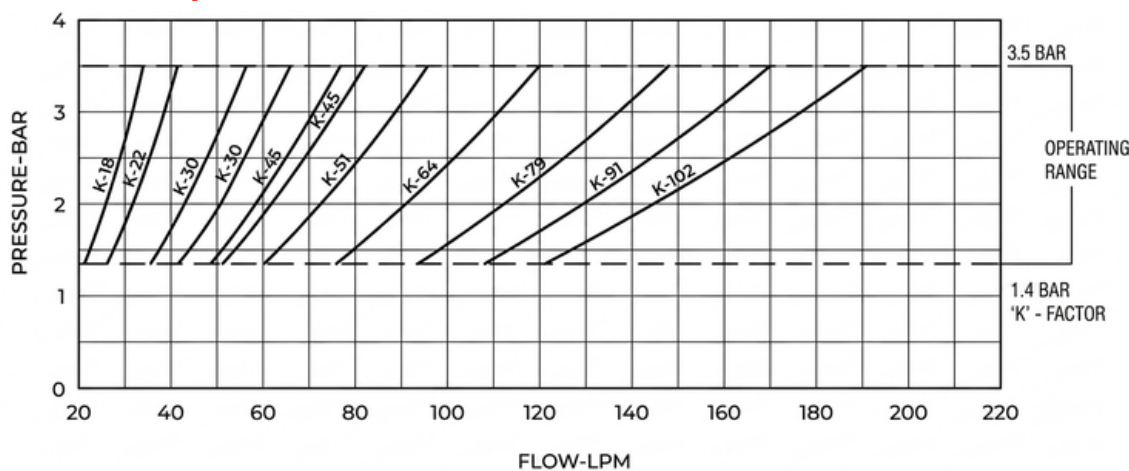
- Required flow (Q) = 45 L/min
- Nozzle pressure (P) = 1.4 bar

$$K = 45 / \sqrt{1.4} = 38.03$$

In this case, the appropriate selection would be a K-41 nozzle.

Note: If the calculated K-Factor falls between two standard values, always select the next higher standard K-Factor available from Blazetech to ensure the required flow is achieved.

Flow V/S Pressure Graph :

**Fig. 2****BLAZETECH SYSTEMS LTD.**

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Medium Velocity Water Spray Nozzle

Model : BT 5860-BR / BT 5860-SS / BT 5860-AB

Spray Angle 90° :

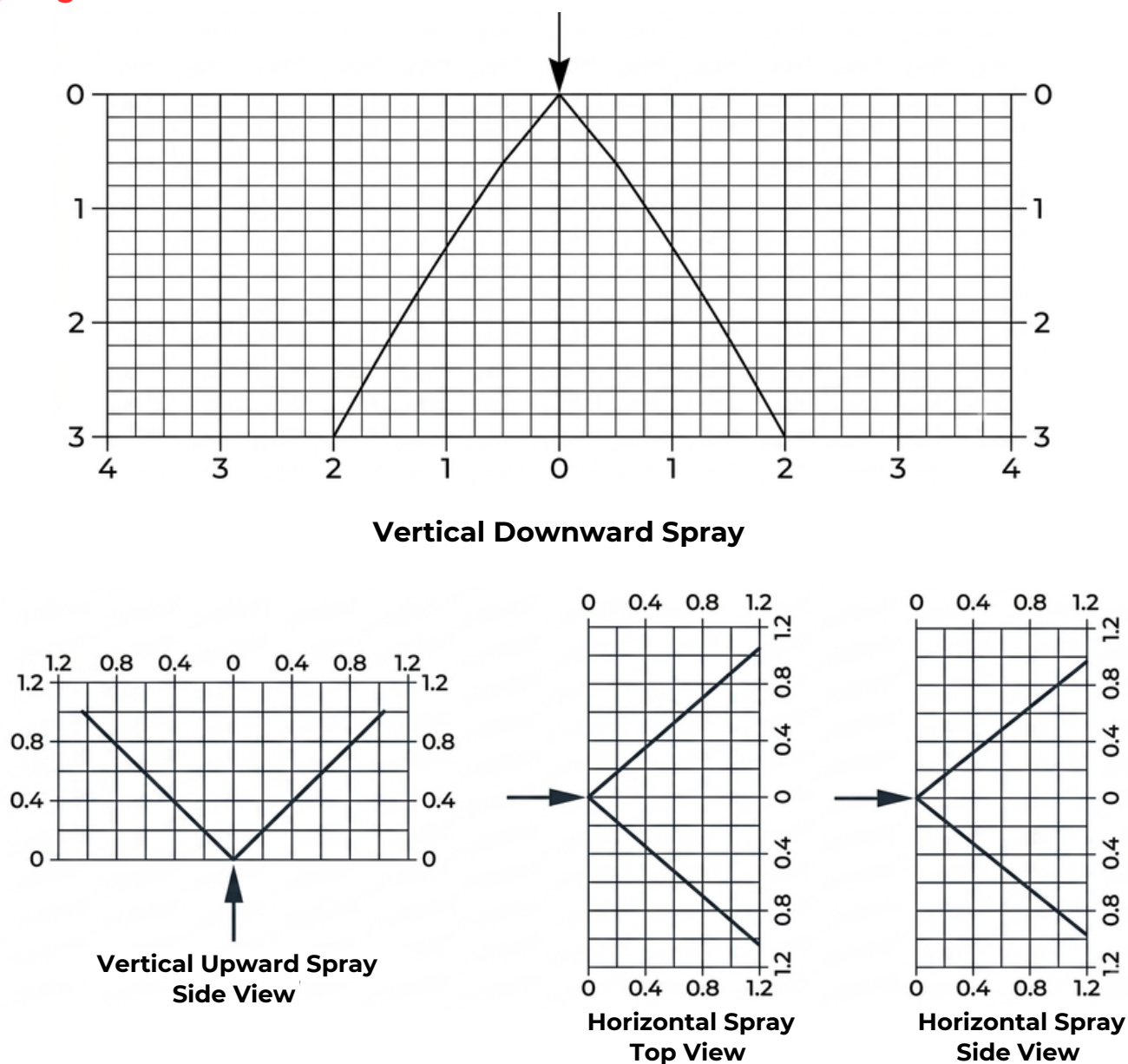


Fig. 3

- NOTE:**
1. ALL DIMENSIONS ARE IN METERS.
 2. THE SPRAY PATTERN GIVEN IN GRAPH IS FOR SPRAY ANGLE OF 90 DEG, AT NOZZLE INLET PRESSURE OF 1.4 TO 3.5 BAR.
 3. TEST SPRAY PATTERN OBTAINED IS IN STILL AIR CONDITION.

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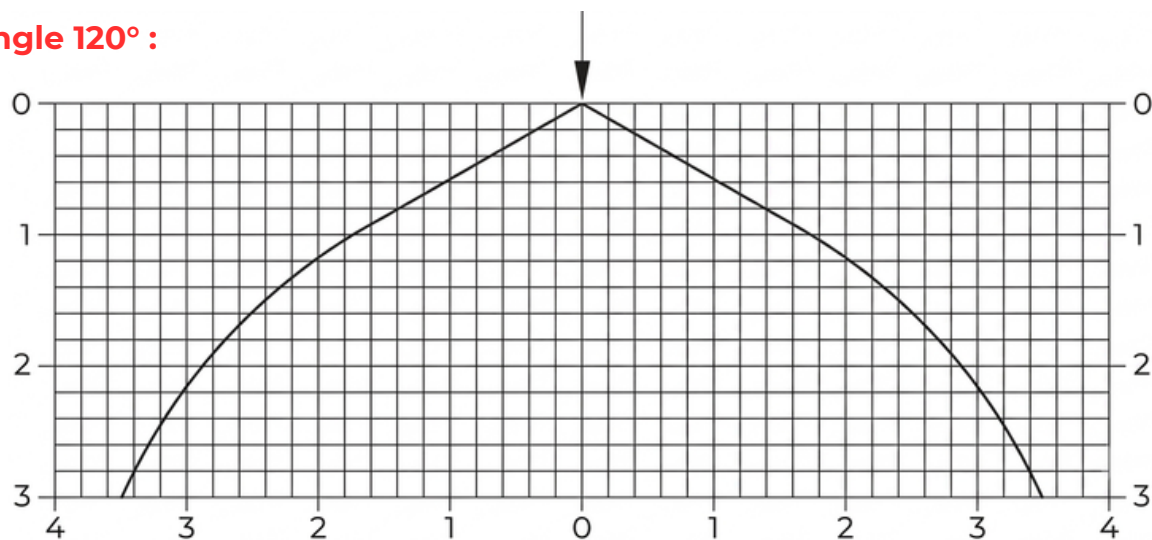
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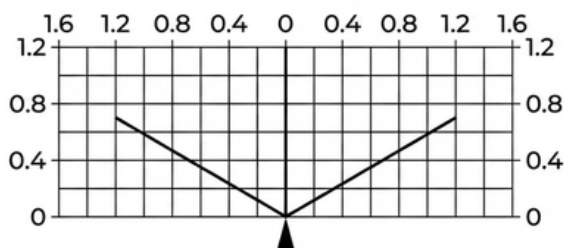
Medium Velocity Water Spray Nozzle

Model : BT 5860-BR / BT 5860-SS / BT 5860-AB

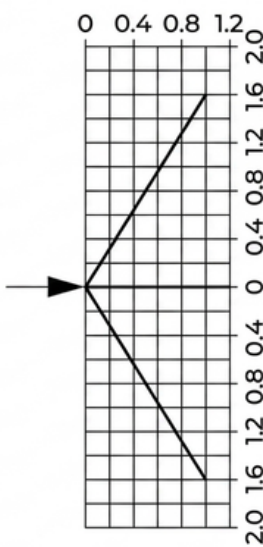
Spray Angle 120° :



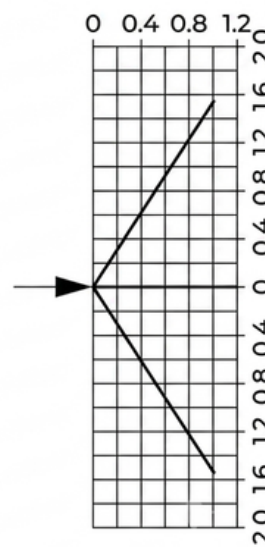
Vertical Downward Spray



Vertical Upward Spray
Side View



Horizontal Spray
Top View



Horizontal Spray
Side View

Fig. 4

NOTE:

1. ALL DIMENSIONS ARE IN METERS.
2. THE SPRAY PATTERN GIVEN IN GRAPH IS FOR SPRAY ANGLE OF 120 DEG, AT NOZZLE INLET PRESSURE OF 1.4 TO 3.5 BAR.
3. TEST SPRAY PATTERN OBTAINED IS IN STILL AIR CONDITION.

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Spray Angle 140° :

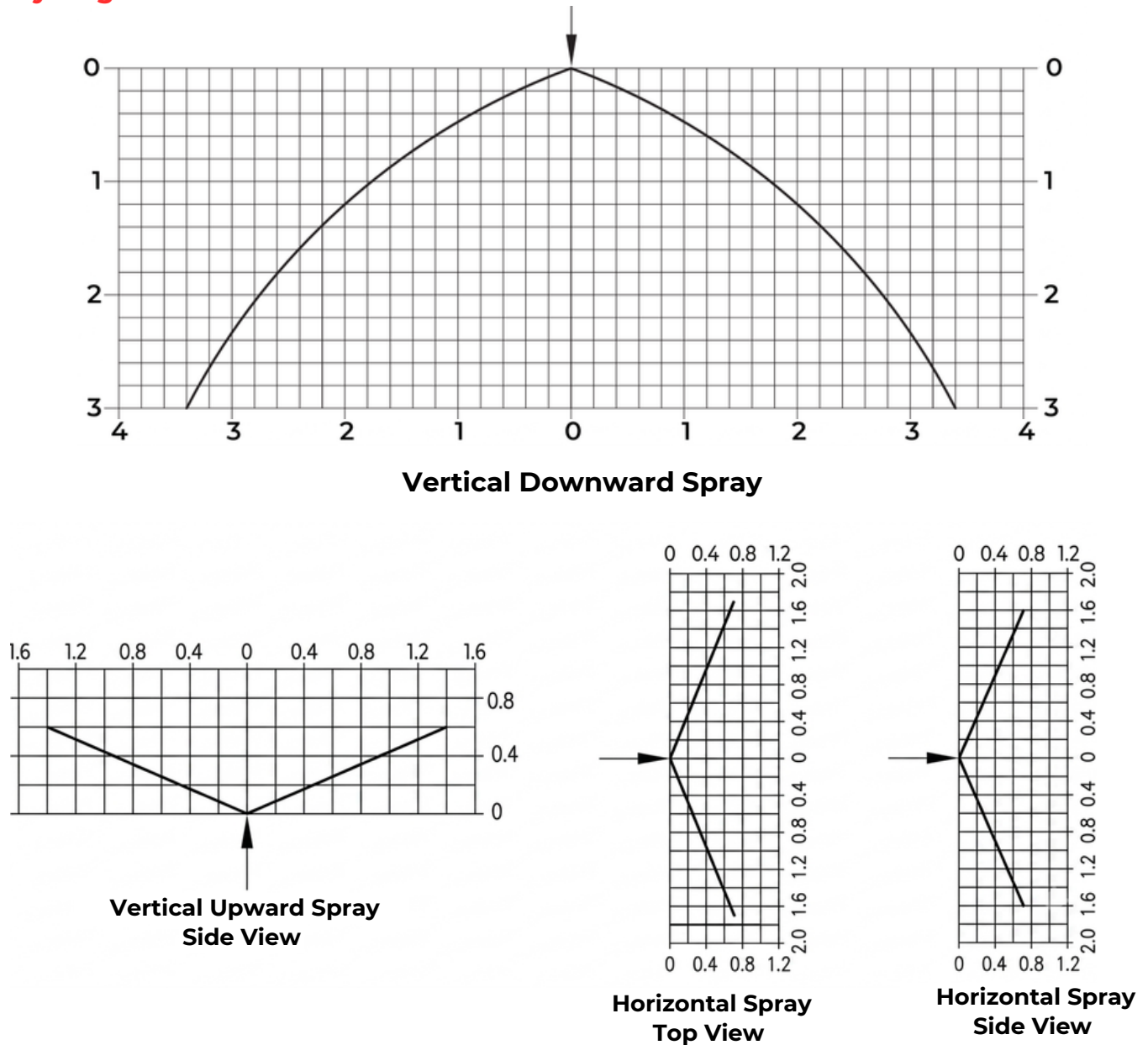


Fig. 5

NOTE:

1. ALL DIMENSIONS ARE IN METERS.
2. THE SPRAY PATTERN GIVEN IN GRAPH IS FOR SPRAY ANGLE OF 140 DEG, AT NOZZLE INLET PRESSURE OF 1.4 TO 3.5 BAR.
3. TEST SPRAY PATTERN OBTAINED IS IN STILL AIR CONDITION.

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