UL logo gelecek

FM APPROVED

WATER SPRAY NOZZLE

- Medium Velocity Spray Nozzle
- Reverse Action Spray Nozzle
- High Velocity Spray Nozzle
- Tank Cooling Nozzle
- Window / Curtain Nozzle

Önsöz

3A Köpüklü Yangın Korunum Sistemleri San. ve Tic. Ltd. Şti. *2024 yılında kuruldu. Kuruluş amacımız yangın sektöründe özellikle endüstriyel tesislerin korunması konusunda çalışmaktır.*

Temel amacımız, endüstriyel yangın tehlikelerine doğru ve akılcı çözümler üretmektir. Endüstriyel yangın tehlikelerine uygun çözümler üretirken, ulusal ve uluslararası kuralları uygulayarak bu kuralların gerektirdiği kalitede ve onaylara sahip ürünleri kullanarak çözüm üretmektir.

Temel hedefimiz sorun değil çözüm üretmektir. Bu yönü ile 3A Yangın, yetişmiş kadrosu, yurt dışı çözüm ortakları ve özel çözüm yöntemleri ile sektördeki yerini almıştır. Deneyimli kadrosu ile kendi içinde iş bölümü yapmış olup, malzeme satışı, sistem dizaynı ve projelendirme, taahhüt, teknik servis hizmetlerini farklı departmanları ile vermektedir.

3A Köpüklü Yangın Korunum Sistemleri San. ve Tic. Ltd. Şti. *Müşteri memnuniyetini, sürekli gelişmeyi, kaliteyi, ekip çalışmasını, sosyal sorumluluğu, profesyonel yönetim anlayışını, teknolojik gelişmelere uygunluğu ve paylaşımı esas alan bir anlayışla sektöründe lider bir kuruluş olmayı kendine "Vizyon" edinmiştir.*

Ayrıca belirlemiş olduğumuz bu vizyon çerçevesinde müşterilerimize, çalışanlarımıza, ülkemize kaynak ve değer yaratan örnek bir kuruluş olmayı kendimize "Misyon" edindik.

WATER SPRAY NOZZLE

TECHNICAL DATA	
MODEL	MV-A & MV-AS Brass Material MV-B & MV-BS Stainless Steel Material MV-E Aluminium Bronze Material
TYPE	MV-A, MV-B & MV-E are without strainer MV-AS & MV-BS are with strainer
MAXIMUM WORKING PRESSURE	12 Bar (175 PSI)
END CONNECTION	½" BSPT (½" NPT OPTIONAL)
MATERIAL	Refer Table-I
INCLUDED WATER SPRAY ANGLE FOR EACH K-FACTOR	160°, 140°, 120°, 110°, 100°, 90°, 80° & 65°
K FACTOR	MV-A/MV-B & MV-E Metric (US) K-18 (1.26) K-22 (1.54) K-26 (1.8) 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) MV-AS/MV-BS Metric (US) K-18 (1.26) K-22 (1.54) K-26 (1.8) K-30 (2.10) K-35 (2.45) K-41 (2.87)
FINISH	MV-A & MV-AS Natural Brass finish, Nickel-Chrome plated, Electroless Nickel plated, Epoxy powder coated. MV-B, MV-BS & MV-E Natural finish
APPROVALS	UL Listed, FM Approved & LRS-Lloyd's Register Approved Blow-off Plug- FM Approved For Approval data refer Table-II
ORDERING INFORMATION	Specify K-Factor, spray angle, finish, model and end connection

DESCRIPTION

The HD® Medium Velocity Water Spray Nozzles are open type (non-automatic) nozzles, designed for directional spray application in fixed fire protection system.

Medium velocity water spray nozzle has an external deflector, which discharges water in a directional cone shaped pattern of small droplet size. The water is uniformly distributed over the surface to be protected.

MV Nozzles are effectively designed to apply water to exposed vertical, horizontal, curved and irregular shaped surfaces to allow cooling to prevent excessive absorption of heat from external fire and avoid structural damage or spread of fire. In some application nozzles may be installed to control or extinguish the fire depending on water design density as per applicable codes. The nozzle is used in deluge water spray system for special hazard fire protection application.

As the design and intent of specific water spray system may vary considerably, MV nozzle is made available in several combinations of orifice sizes (K-factors) and spray angles.

The minimum desirable pressure to achieve a reasonable spray pattern is 1.4 Kg./Sq.cm. The water distribution pattern as shown in the graph in following pages is at an average pressure of 2.0 Kg/Sq.cm. The change in pressure between 1.4 to 3.5 Kg./sq.cm. does not affect considerable change in spray angle.

The spray pattern shown is with indoor application. System designer must consider wind velocity while designing the system for outdoor application. Field obstruction if any affecting the spray pattern of the nozzle must also be considered. The nozzle may be oriented to any position as deemed necessary to cover the hazard.

The Blow-off plugs can be used to prevent the depositing of foreign materials in the water way of the nozzles, which could interfere with discharge of the spray nozzle. Blow-off plugs are optional and are FM Approved. Blow-off Plugs have identification mark with respect to K factor. For example, Blow off plug for nozzle having K-factor 22 will have identification mark of 22. Minimum operatiiong pressure for nozzle having Blow-off plug is 1.4 Kg./Sq.cm (20 PSI).

The main pipeline strainer as per NFPA-15 is required for system utilizing nozzle orifice diameter less than 9.5mm (3/8 inch), i.e.MV Nozzle having K-factor 41 and less, and also for the system water likely to contain obstructive materials.

INSTALLATION & MAINTENANCE

The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment shall be made in original packing only.

Nozzle which is visibly damaged should not be installed. Use Teflon tape or soft thread sealant on male thread of the nozzle.

The nozzles must be hand tightened into the fitting. After hand tightening use Nozzle Wrench-NW-M for wrench tightening in to nozzle fittings. Excessive tightening torque may result into serious damage to nozzle arms and the deflector, which may affect spray pattern of the nozzle and its performance.

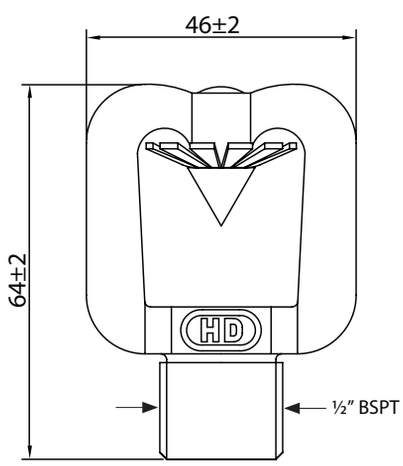
It is recommended that water spray system be inspected regularly by authorised technical personnel.

The nozzle must be checked for atmospheric effects, external and internal obstruction, blockage if any. The system must be operated with optimum water flow at least twice in a year or as per the provisions of NFPA or local authority having jurisdiction.

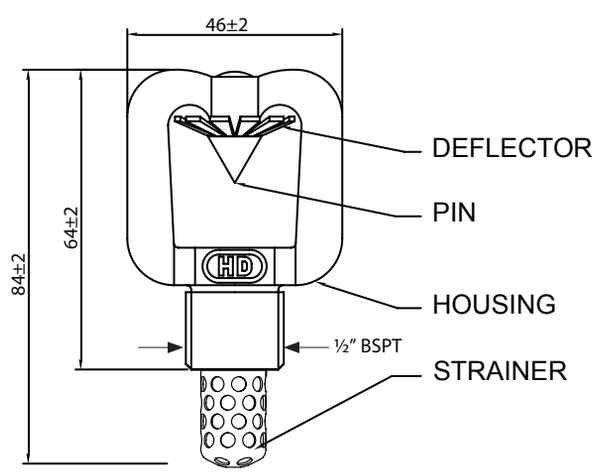
It is recommended to design water spray system as per guidelines of NFPA15 and/or AHJ.

The owner is solely responsible for maintaining the water spray system and the components there in so that it performs properly when required.

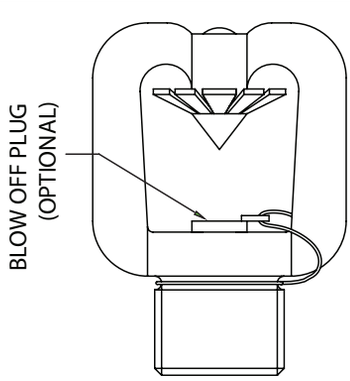
MODEL MV-A, MV-B & MV-E



MODEL MV-AS, & MV-BS



Nozzles with Blow-off Plug



FM APPROVED

TABLE - I : MATERIAL OF CONSTRUCTION

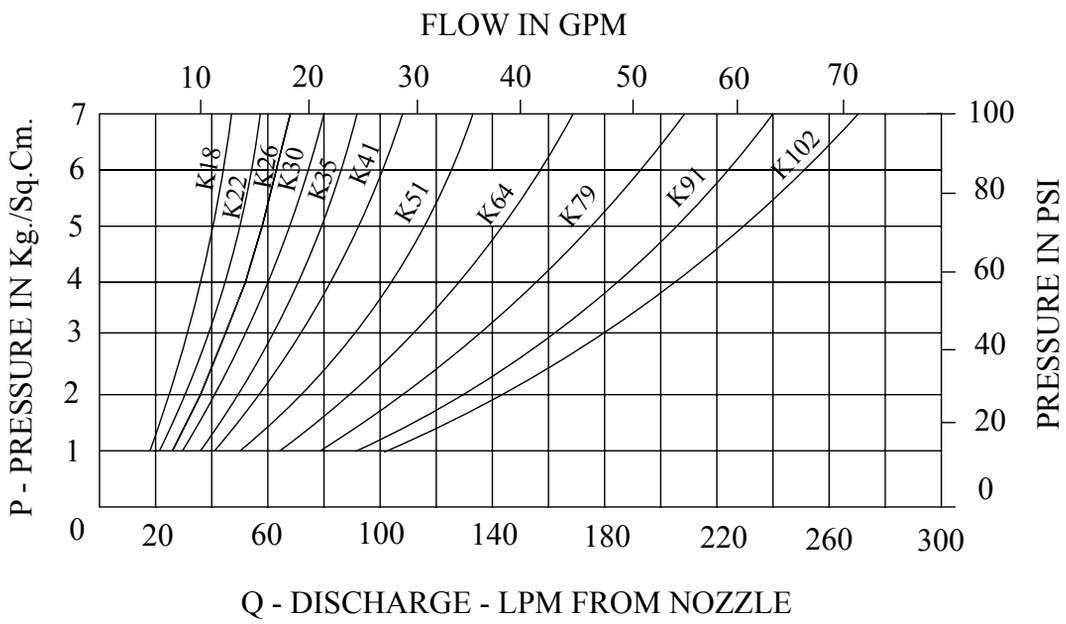
COMPONENT	MODEL MV-A & MV-AS	MODEL MV-B & MV-BS		MODEL MV-E
		STANDARD	OPTIONAL	
HOUSING	BRASS, IS:291 GR.-1 (EQUIVALENT TO ASTM B21)	ASTM A351-CF8M (STAINLESS STEEL 316)	ASTM A351 CF3M (STAINLESS STEEL 316L)	ALUMINIUM BRONZE IS:305-AB1 (EQUIVALENT TO ASTM B148)
PIN	BRASS IS:291. GR. -1 (EQUIVALENT TO ASTM B21)	ASTM-A479 GR 31803	ASTM A479 TYP. 316L	PH.BRONZE IS:7811 (EQUIVALENT TO ASTM B139)
DEFLECTOR	BRASS IS:2768 (EQUIVALENT TO ASTM B36)	ASTM A240 GR 2205	ASTM A240 TYP. 316L	PH.BRONZE IS:7814-GR-II (EQUIVALENT TO ASTM B103)
STRAINER	COPPER (FOR MV-AS)	STAINLESS STEEL 316 (FOR MV-BS)	STAINLESS STEEL 316L	-
BLOW-OFF CAP	ELASTOMER	ELASTOMER	ELASTOMER	ELASTOMER

Note: Equivalent specification is indicative only.

TABLE - II : APPROVAL DATA

K-FACTOR	SPRAY ANGLE	MODEL & APPROVALS														
		MV-A BRASS, WITHOUT STRAINER			MV-AS BRASS, WITH STRAINER			MV-B STAINLESS STEEL WITHOUT STRAINER			MV-BS STAINLESS STEEL WITH STRAINER			MV-E ALUMINIUM BRONZE		
		UL	FM	LRS	UL	FM	LRS	UL	FM	LRS	UL	FM	LRS	UL	FM	LRS
K- 18, 22, 30, 35, 41	65°, 80°, 90°, 100°, 110°, 120°, 140°	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
K- 18, 22, 30, 35, 41	160°	√	--	--	√	--	--	√	--	--	√	--	--	√	--	--
K- 26	65°, 80°, 90°, 100°, 110°, 120°, 140°, 160°	√	--	--	√	--	--	√	--	--	√	--	--	√	--	--
K- 51, 64, 79, 91, 102	65°, 80°, 90°, 100°, 110°, 120°, 140°	√	√	√	--	--	--	√	√	√	--	--	--	√	√	√

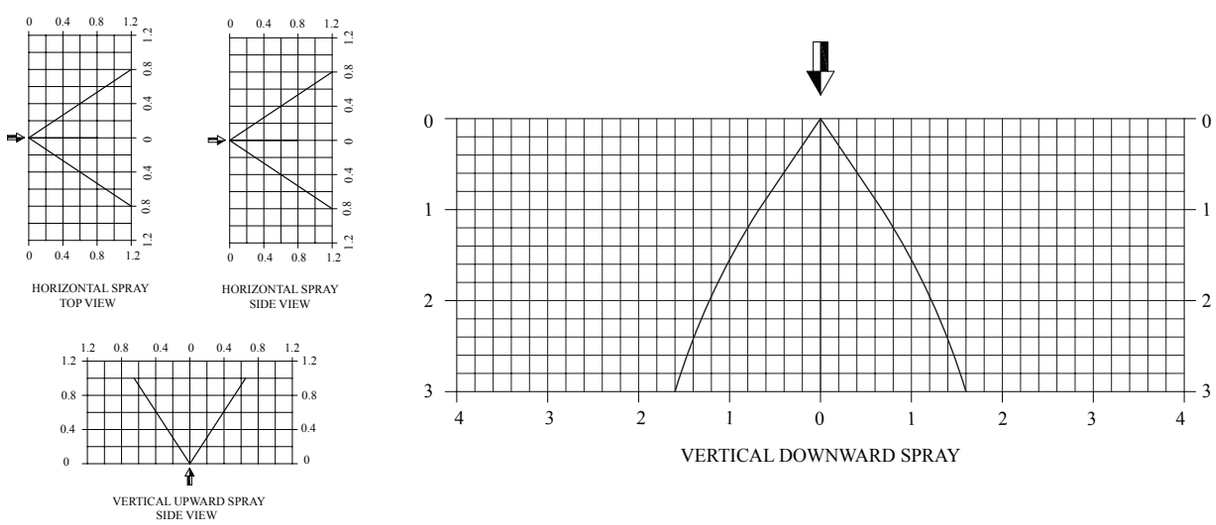
DISCHARGE CHARACTERISTICS



Q =K √ P where P is supply pressure in Kg/sq.cm., K= nozzle constant (K-factor) in metric
US K factor = Metric K factor MK ÷ 14.2745

SPRAY PATTERN

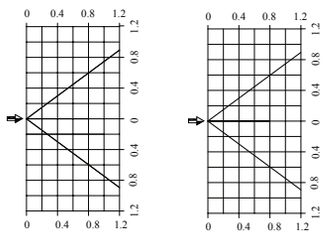
SPRAY ANGLE 65°

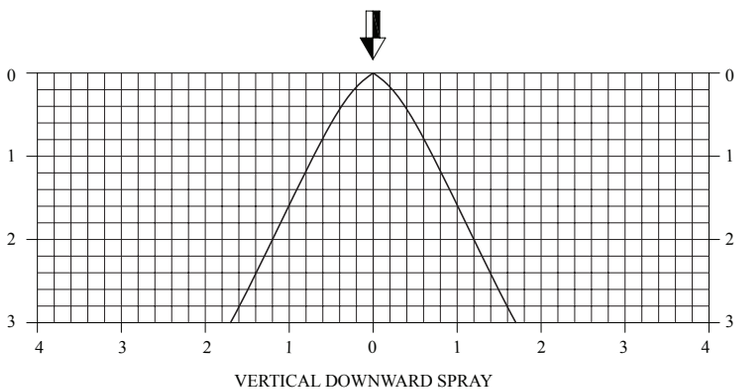


ALL DIMENSIONS ARE IN METERS

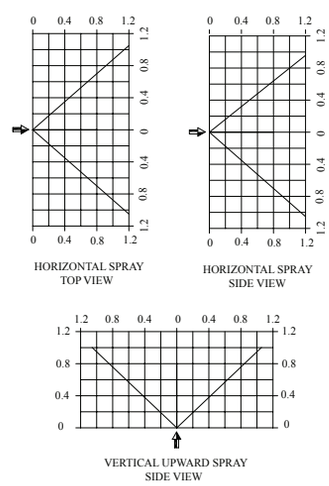
SPRAY PATTERN

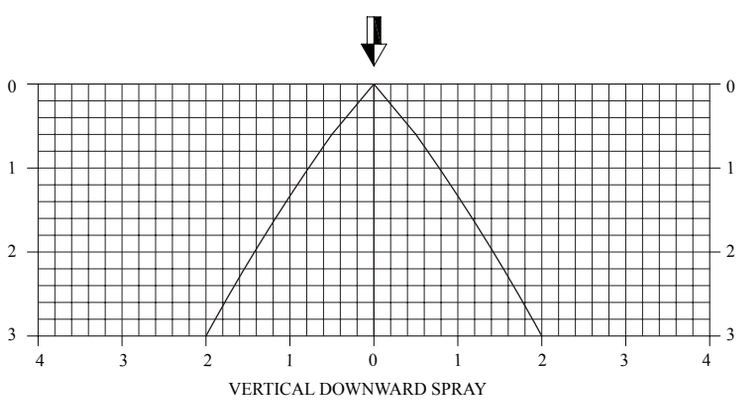
SPRAY ANGLE 80°



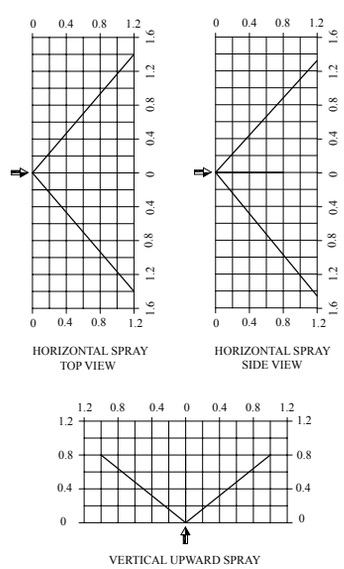


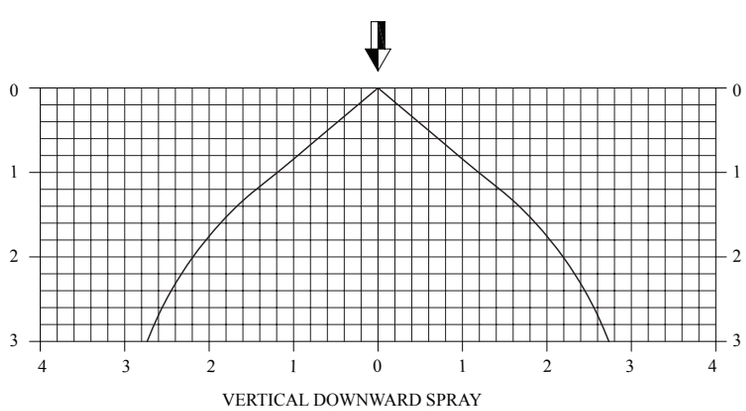
SPRAY ANGLE 90°





SPRAY ANGLE 100°

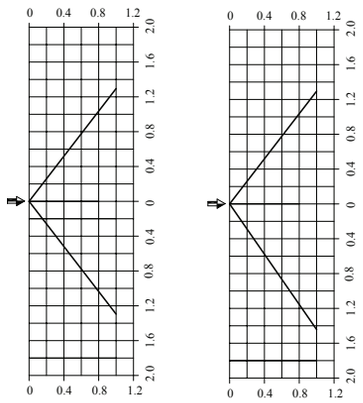


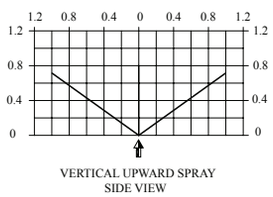


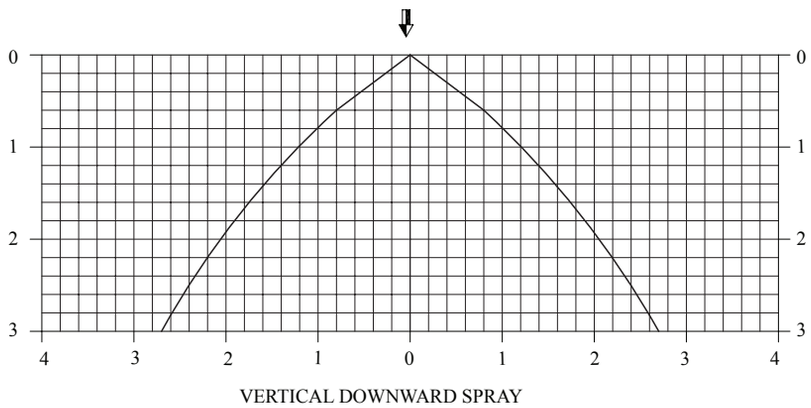
ALL DIMENSIONS ARE IN METERS

SPRAY PATTERN

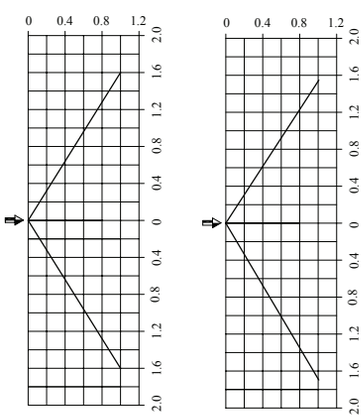
SPRAY ANGLE 110°

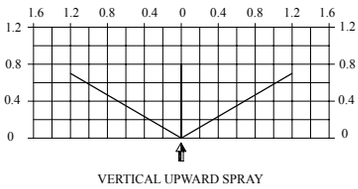


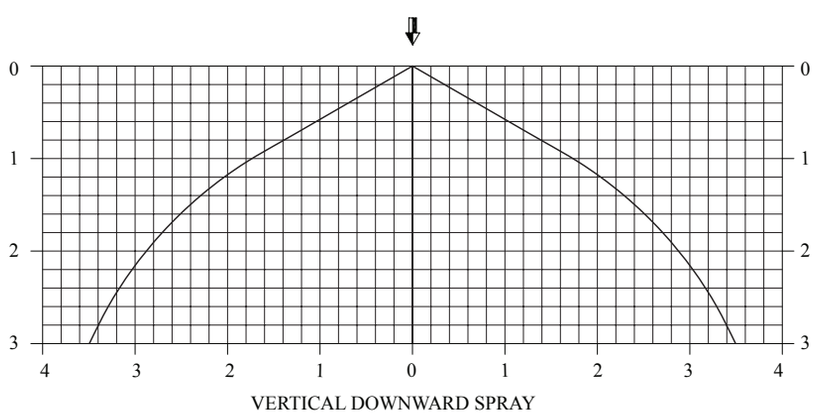




SPRAY ANGLE 120°



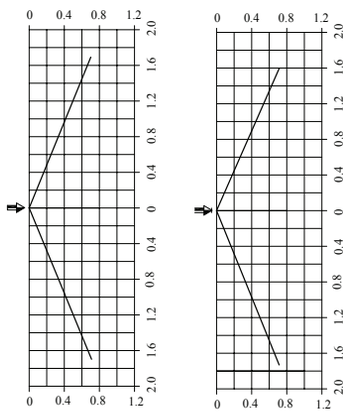


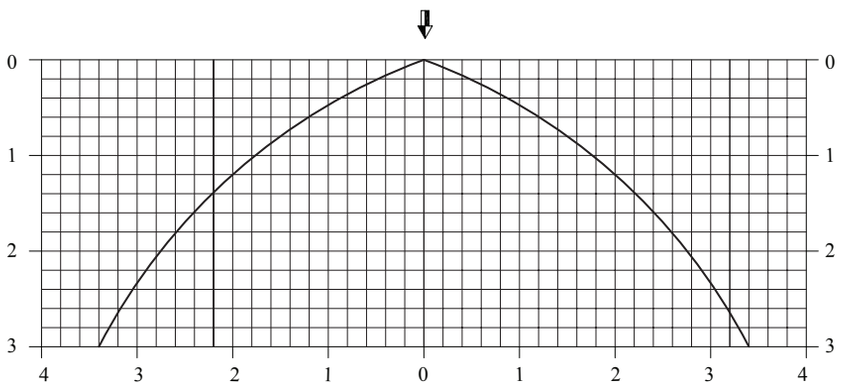


ALL DIMENSIONS ARE IN METERS

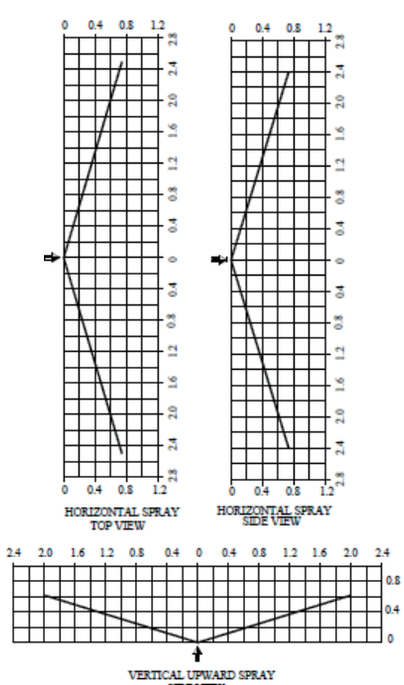
SPRAY PATTERN

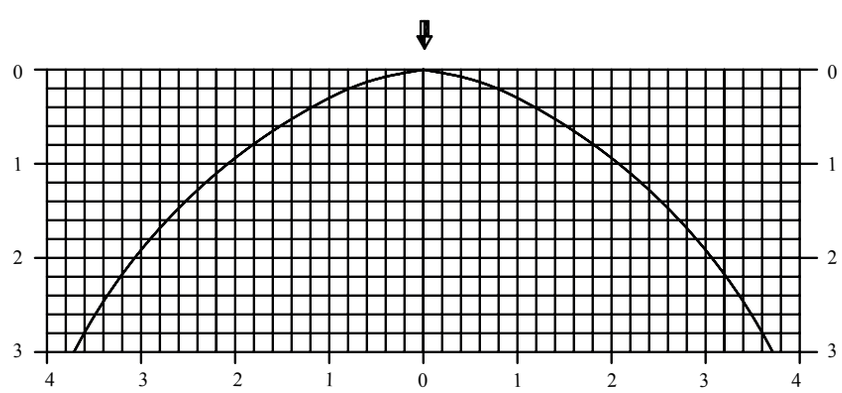
SPRAY ANGLE 140°





SPRAY ANGLE 160°



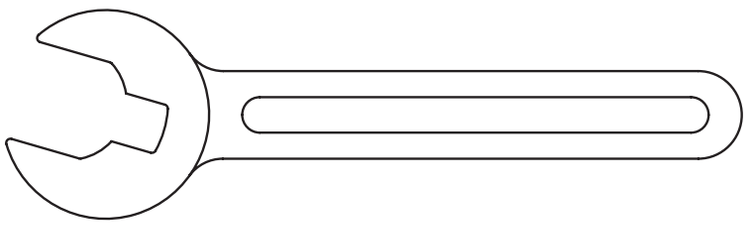


ALL DIMENSIONS ARE IN METERS

Note :

1) The design spray patterns given in graphs are included spray angle of 65 Deg. to 160 Deg. at nozzle inlet pressure of 1.4 to 4.1 Bar. When the nozzle pressure above 4.1 Bar is applied, the coverage area will decrease because the spray pattern tends to draw inward at higher pressure. Consult HD Technical Services for pressure upto 12.1 Bar.
2) The spray data are obtained from the test in still air.

MV NOZZLE WRENCH MODEL NW-M



LIMITED WARRANTY

3A KÖPÜKLÜ YANGIN KORUNUM SİSTEMLERİ SAN. VE TİC. LTD. ŞTİ. hereby referred to as 3A YANGIN warrants to the original purchaser of the fire protection products manufactured by 3A YANGIN and to any other person to whom such equipment is transferred, that such products will be free from defect in material and workmanship under normal use and care, for two (2) years from the date of shipment by 3A YANGIN. Products or Components supplied or used by 3A YANGIN, but manufactured by others, are warranted only to the extent of the manufacturer's warranty. No warranty is given for product or components which have been subject to misuse, improper installation, corrosion, unauthorized repair, alteration or un-maintained. 3A YANGIN shall not be responsible for system design errors or improper installation or inaccurate or incomplete information supplied by buyer or buyer's representatives. 3A YANGIN will repair or replace defective material free of charge, which is returned to our factory, transportation charge prepaid, provided after our inspection the material is found to have been defective at the time of initial shipment from our works. 3A YANGIN shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product including damages for injury to person, damages to property and penalties resulting from any products and components manufactured by 3A YANGIN. 3A YANGIN shall not be liable for any damages or labour charges or expense in making repair or adjustment to the product. 3A YANGIN shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data & services. In no event shall's product liability exceed an amount equal to the sale price. The foregoing warranty is exclusive and in lieu of all other warranties and representation whether expressed, implied, oral or written, including but not limited to, any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

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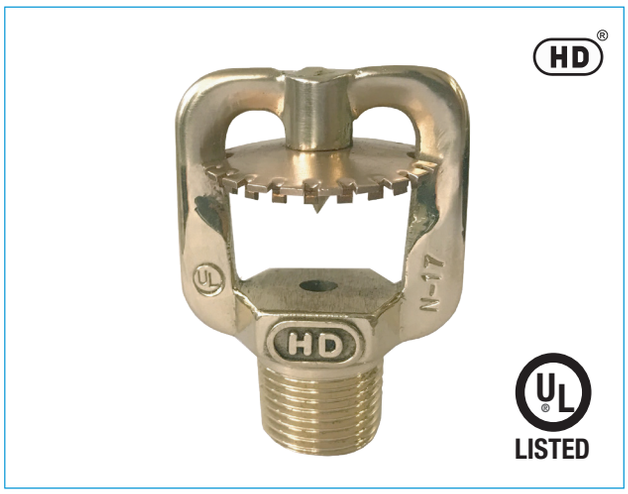
Product development is a continuous programme of 3A KÖPÜKLÜ YANGIN KORUNUM SİSTEMLERİ SAN. VE TİC. LTD. ŞTİ. and hence the right to modify any specification without prior notice is reserved with the company.

WATER SPRAY NOZZLE

TECHNICAL DATA		
MODEL	MV CB - Brass MV CBS - Brass With Copper Strainer MV C - Stainless Steel MV CS - Stainless Steel With Strainer MV CE - Aluminium Bronze	
MAXIMUM WORKING PRESSURE	12.3 KG/CM^2 (175 PSI)	
END CONNECTION	½" BSPT (½" NPT OPTIONAL)	
MATERIAL	Refer Table-I	
INCLUDED WATER SPRAY ANGLE FOR EACH K-FACTOR	140°, 120°	
K-FACTOR	MV-CB/MV-C MV-CE K30 (2.10) K51 (3.57) K64 (4.48) K79 (5.53) K102 (7.14)	MV-CBS MV-CS K18 (1.26) K22 (1.54)
WEIGHT (Approx)	0.130 Kg	
FINISH	MV-CB/ MV-CBS: Natural Brass finish, Chrome plated brass, Electroless Nickel plated, Epoxy coated MV-C/ MV-CS/ MV-CE: Natural finish	
APPROVALS	UL LISTED	
ORDERING INFORMATION	Specify Model, K-Factor, spray angle, finish and end connection	



DESCRIPTION

HD® Reverse Action Medium Velocity Water Spray Nozzles are open type (non-automatic) nozzles, designed for directional spray application in fixed fire protection system.

Reverse Action MV nozzle has external deflector and discharges water in opposite direction of flow. Water is uniformly distributed over the surface to be protected.

The Nozzles are effectively designed to apply water to exposed vertical, horizontal, curved and irregular shaped surfaces to allow cooling to prevent excessive absorption of heat from an external fire and provide structural damage or spread of fire. In some application, nozzles may be applied to control or extinguish the fire depending on water design density as per applicable codes.

The nozzle is used in deluge water spray system for special hazard fire protection application.

As the design and intent of specific water spray system may vary considerably, the nozzle is made available in several combinations of orifice sizes and spray angles.

The minimum desirable pressure to achieve a reasonable spray pattern is 1.4 Kg./Sq.cm. The water distribution pattern as shown in the graph in following pages is at an average pressure of 2.0 Kg/Sq.cm. The change in pressure between 1.4 to 3.5 Kg./sq.cm. does not affect considerable change in spray angle. The spray pattern shown is considering still air condition. System designer must consider wind velocity while designing the system for outdoor application. Field obstruction if any affecting the spray pattern of the nozzle must also be considered. The nozzle may be oriented to any position as deemed necessary to cover the hazard.

The Blow-off plugs can be used to prevent depositing of foreign materials in the water way of the nozzle, which could interfere with the discharge of the spray nozzle. Blow-off plugs are optional and are not UL listed.

As per NFPA-15 main pipeline strainer is required for system utilizing nozzle office diameter less than 9.5mm (3/8 inch), i.e HD Nozzle having K-factor 30 and less, and also for the system water which is likely to contain obstructive materials.

INSTALLATION & MAINTENANCE

The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only.

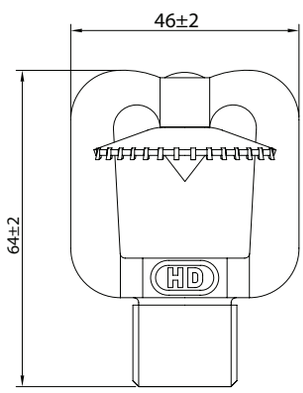
Nozzle which is visibly damaged should not be installed.

Use Teflon tape or soft thread sealant on male thread of the nozzle. The nozzles must be hand tightened into the fitting. Excessive tightening torque may result into serious damage to nozzle arms and the deflector, which may affect spray pattern of the nozzle and its performance.

It is recommended that water spray system be inspected regularly by authorised technical personnel. The nozzle must be checked for atmospheric effects, external and internal obstruction & blockage if any. The system must be operated with optimum water flow at least twice in a year or as per the provisions of NFPA /TAC or local authority having jurisdiction.

The owner is solely responsible for maintaining the water spray system and the components there in, so that it performs properly when required.

MODEL MV-CB, MV-C, MV-CE



MODEL MV-CBS, MV-CS

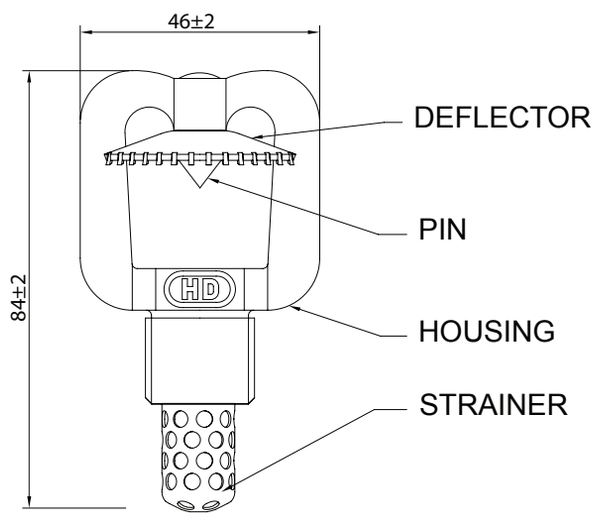
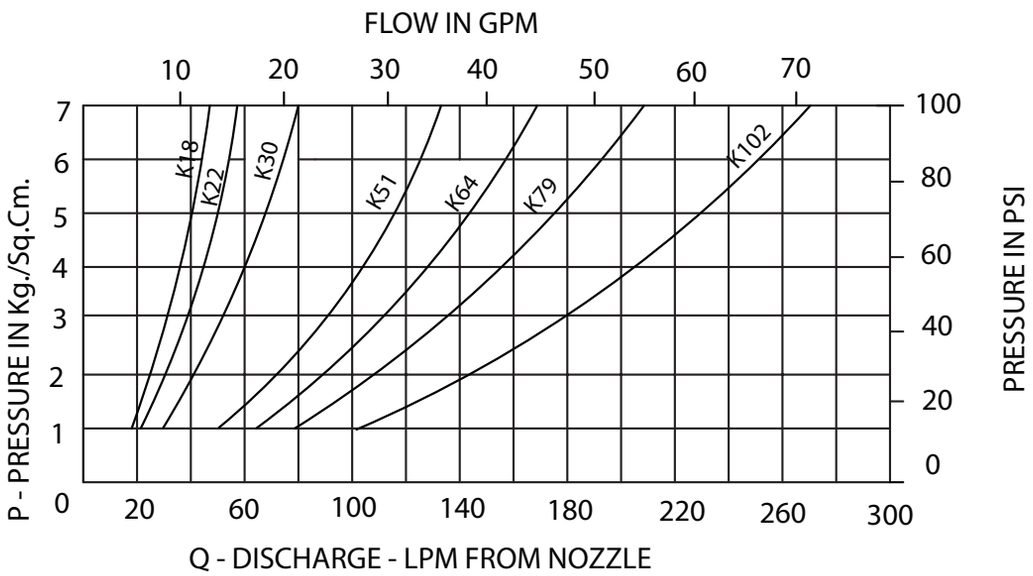


TABLE - I : MATERIAL OF CONSTRUCTION

COMPONENT	MODEL MV-CB, MV-CBS	MODEL MV-C, MV-CS	MODEL MV-CE
HOUSING	BRASS IS:291, GR.-I (EQUIVALENT TO ASTM B21)	ASTM A 351, CF8M	ALUMINIUM BRONZE IS:305-AB1 (EQUIVALENT TO ASTM A148)
PIN	BRASS IS:291, GR.-I (EQUIVALENT TO ASTM B21)	ASTM A 479 GR 31803	PH. BRONZE IS:7811 (EQUIVALENT TO ASTM B148/ BS2874-PB102)
DEFLECTOR	BRASS IS:2768 (EQUIVALENT TO ASTM B36)	ASTM A 240 GR 2205	PH. BRONZE IS:7814 GR-II (EQUIVALENT TO ASTM B148/ BS2870-PB102)
STRAINER	COPPER (FOR MV-CBS)	STAINLESS STEEL 316 (FOR MV-CS)	---
BLOW-OFF CAP	ELASTOMER	ELASTOMER	ELASTOMER

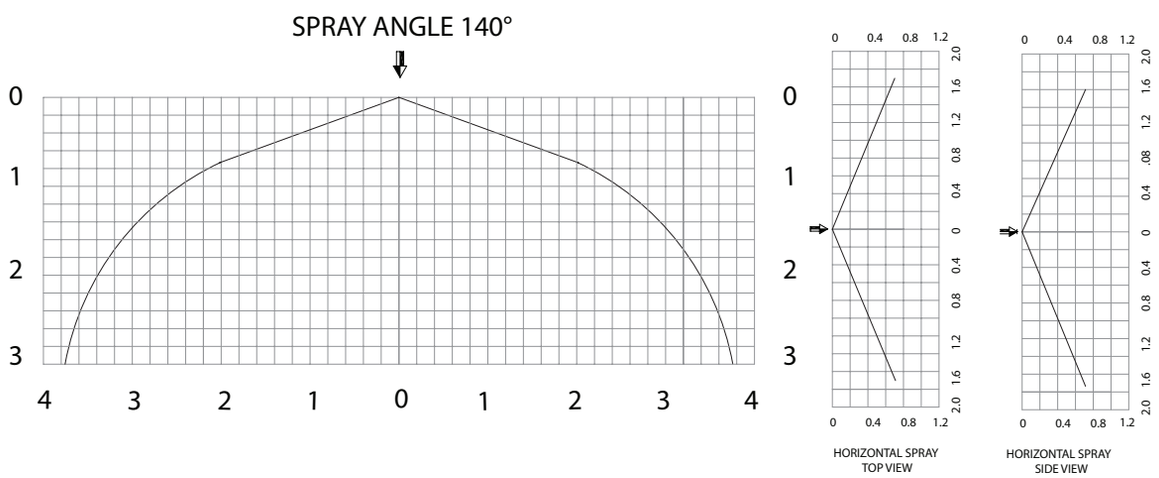
DISCHARGE CHARACTERISTICS



Q = K √P where P is supply pressure in Kg./Sq.cm., K=Nozzle constant (K-factor) in metric

US K factor = Metric K factor ÷ 14.2745

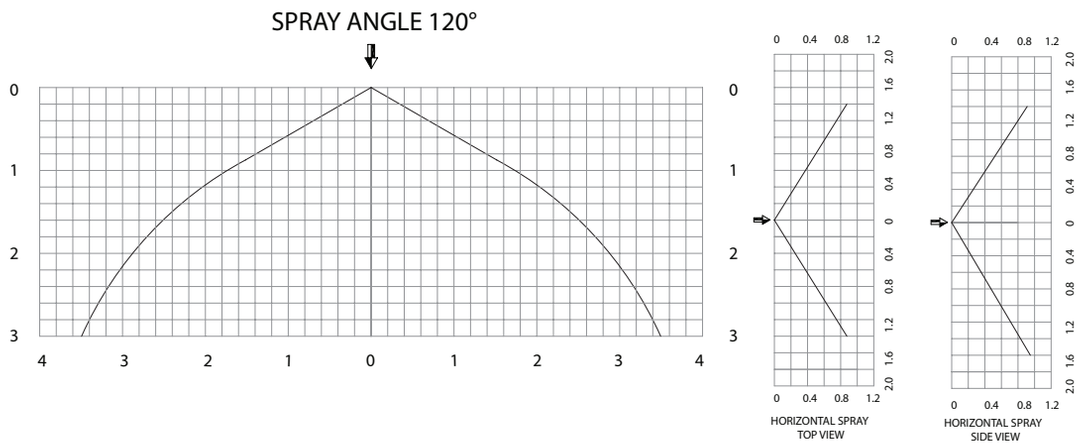
SPRAY PATTERN



VERTICAL DOWNWARD SPRAY

ALL DIMENSIONS ARE IN METERS

SPRAY PATTERN



VERTICAL DOWNWARD SPRAY

ALL DIMENSIONS ARE IN METERS

Note :

1) The design spray pattern given in graph are included spray angle of 120 Deg. and 140 Deg. at nozzle inlet pressure of 1.4 to 4.1 Bar. When the nozzle pressure above 4.1 Bar is applied, the coverage area will decrease because, the spray pattern tends to draw inward at higher pressure. Consult HD Technical Services for higher pressure upto 12.1 Bar (175 PSI).

2) The spray data are obtained from the test in still air.

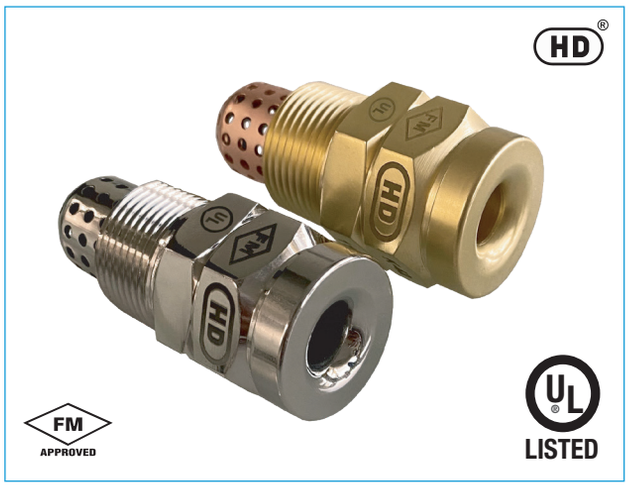
MODELS HV-AS & HV-BS

TECHNICAL DATA	
MODEL	HV-AS & HV-BS
MAXIMUM WORKING PRESSURE	12.3 Bar (175 PSI)
END CONNECTION	¾" BSPT (¾" NPT OPTIONAL)
MATERIAL	HV-AS - Housing & Scroll Brass IS : 291 (Equivalent to ASTM-B21) Strainer - Copper HV-BS - Stainless Steel CF8M (SS316)
INCLUDED WATER SPRAY ANGLE AND K-FACTOR	SPRAY ANGLE — K-FACTOR METRIC (US) 75° - 22 (1.54) 80° - 18 (1.26) 90° - 32 (2.24) 100° - 26 (1.82) 115° - 42 (2.94) 120° - 23 (1.61)
WEIGHT (Approx)	0.200 Kg
FINISH	Natural Finish Nickel Chrome Plated (optional for HV-AS)
APPROVALS	UL Listed & FM Approved
ORDERING INFORMATION	Specify Model, K-Factor, Spray angle and Finish

DESCRIPTION

High Velocity Water Spray Nozzles are internal swirl plate type open nozzles designed for use in fixed water spray or deluge system for the fire protection application.

These nozzles produce solid uniform and dense core of high velocity water spray for effective fire control. Nozzles are normally used to cool the surface as well as for extinguishment. High Velocity Water Spray Nozzles are typically used for Deluge protection of special hazards such as oil filled transformers, switch-gear, chemical process equipments, conveyor system and flammable liquid storage areas. The minimum desirable pressure to achieve a reasonable spray pattern is 3.5 Kg./sq.cm. (50 psi). The water distribution pattern is as shown in the graph in following pages giving maximum effective axial distance from the nozzle. The spray pattern shown is considering indoor areas. The system designer must consider wind velocity while designing the system for outdoor application. Field obstruction if any, affecting the spray pattern of the nozzle must be considered. The nozzle may be oriented in any position as deemed necessary to cover the hazard.



3.5 bar to 7 bar pressure at Nozzle is recommended for effective application requiring high velocity water delivery for rapid extinguishment of all fires by emulsification.

The Nozzles are having inbuilt Strainer, but still main pipeline strainer is required in the system.

The Blow-off cap can be used to prevent the depositing of foreign material in the water way of the nozzle. Use of Blow-off cap is optional and not UL Listed/FM Approved.

MAINTENANCE

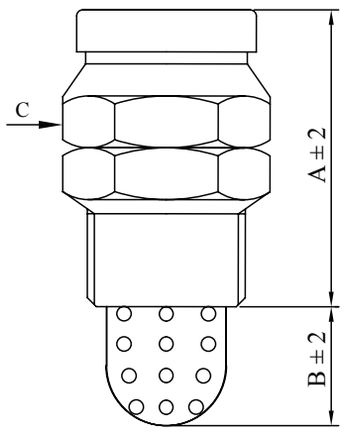
The spray nozzle must be handled with due care. For best results , the storage as well as any further shipment be made in original packing only.

Nozzle which is visibly damaged should not be installed. Use Teflon tape or soft thread sealant on the male thread of the nozzle.

It is recommended that the water spray system be inspected by an authorised technical personnel. The nozzle must be checked for corrosion, external and internal obstruction, blockage if any. The nozzle should be cleaned or replaced if required. The system must be operated with optimum water flow at least three times in a year or as per the provision of NFPA or local authority having jurisdiction.

The owner is solely responsible for maintaining the water spray system and components therein, so that it performs properly when required.

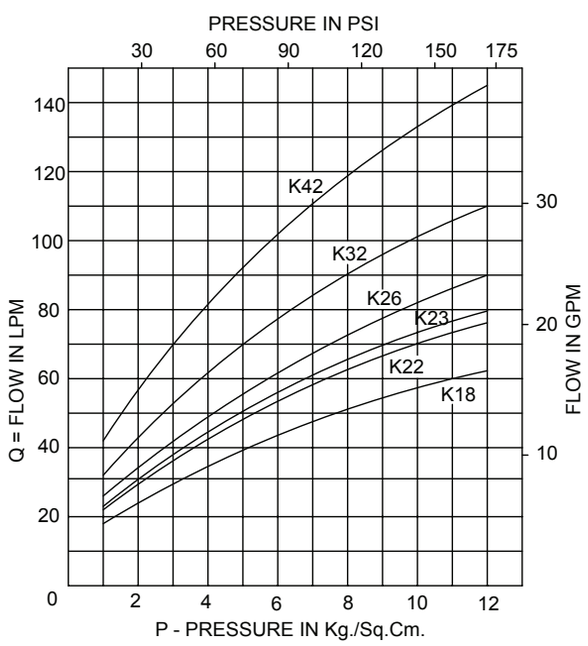
HV-AS



DIMENSION In millimeters (Approximate)

NOZZLE FACTOR & SPRAY ANGLE	A	B	C A/ F
K 22 X 75°	49	20	30
K 18 X 80°	44	20	30
K 32 X 90°	49	20	30
K 26 X 100°	55	20	30
K 23 X 120°	49	20	30
K 42 X 115°	49	20	30

DISCHARGE CHARACTERISTICS



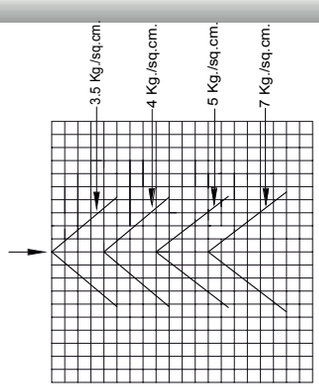
Q =K √ P where P is supply pressure in Kg/sq.cm., K= nozzle constant (K-factor) in metric.

US K factor = Metric K factor ÷ 14.2745

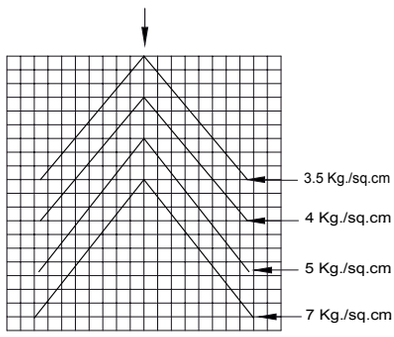
K-Factor Tolerance = 2.8 K (Metric)

FM APPROVED | c UL

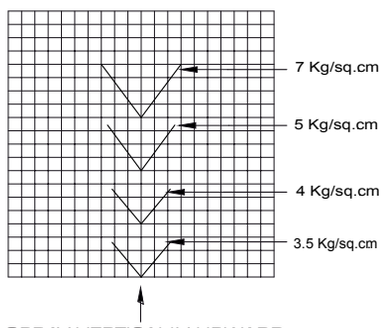
SPRAY PATTERN K-18 x 80°



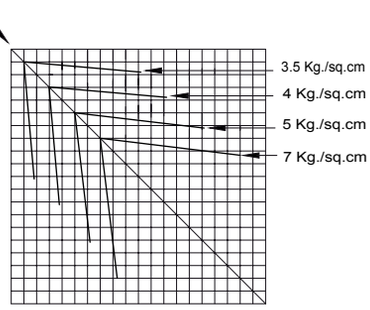
SPRAY HORIZONTAL



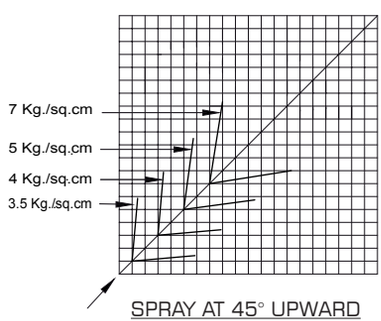
SPRAY VERTICALLY DOWNWARD



SPRAY VERTICALLY UPWARD

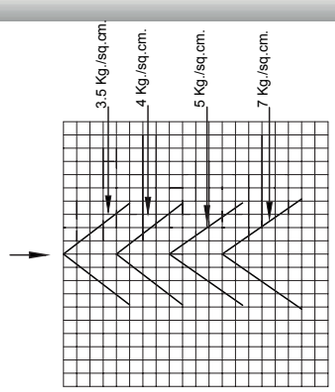


SPRAY AT 45° DOWNWARD

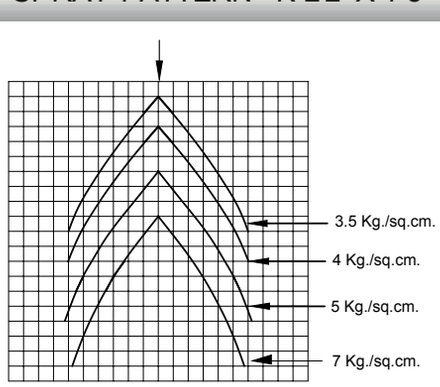


SPRAY AT 45° UPWARD

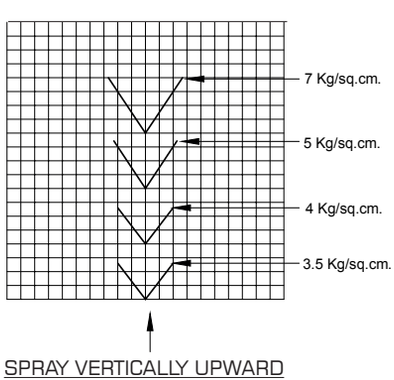
SPRAY PATTERN K-22 X 75°



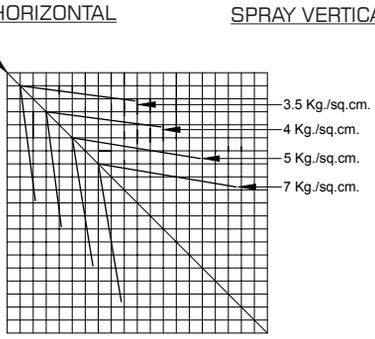
SPRAY HORIZONTAL



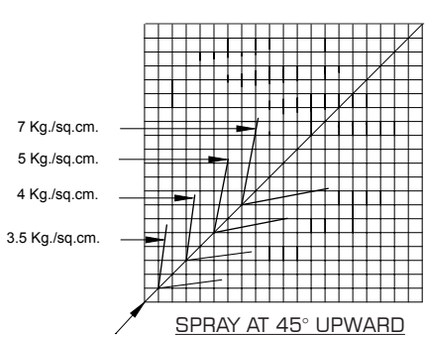
SPRAY VERTICALLY DOWNWARD



SPRAY VERTICALLY UPWARD



SPRAY AT 45° DOWNWARD

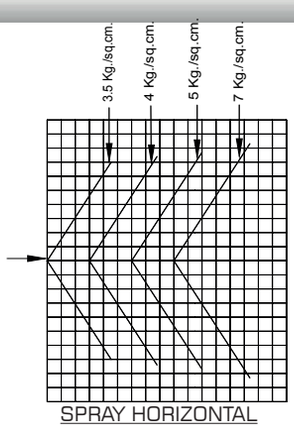


SPRAY AT 45° UPWARD

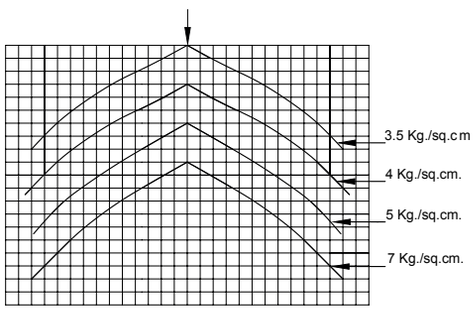
Note :

- One square is 200 X 200 mm.
- The graph is plotted at 3.5 to 7 Bar pressure. The increased pressure excess of 7 Bar will result in decrease in coverage, since the spray pattern tends to draw inward pattern at higher pressure. For higher pressure, consult HD FIRE Marketing.

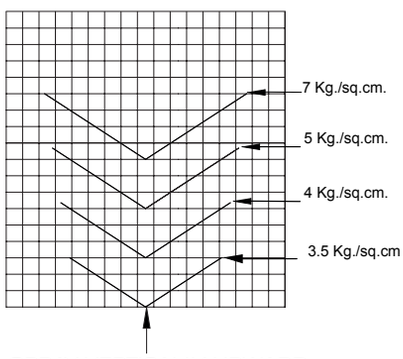
SPRAY PATTERN K-23 X 120°



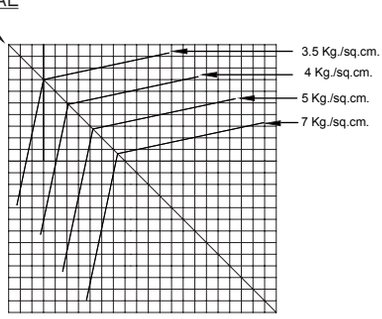
SPRAY HORIZONTAL



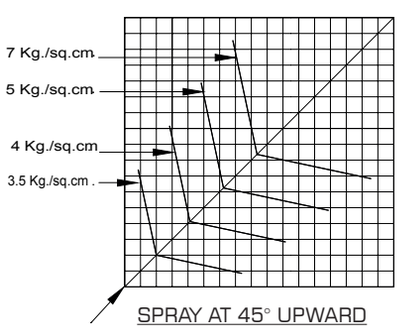
SPRAY VERTICALLY DOWNWARD



SPRAY VERTICALLY UPWARD

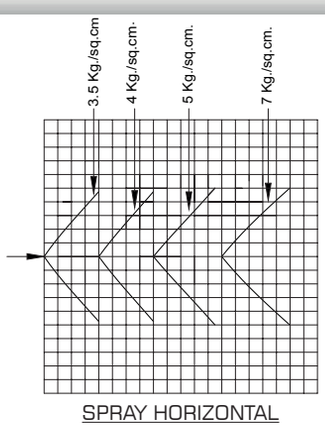


SPRAY AT 45° DOWNWARD

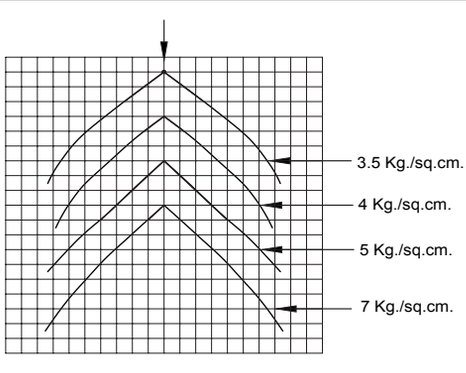


SPRAY AT 45° UPWARD

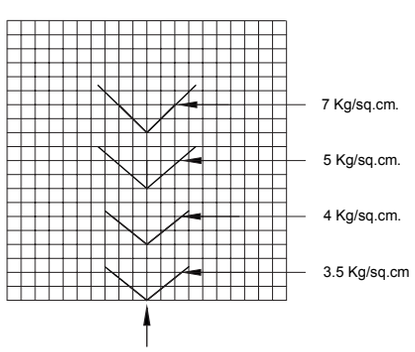
SPRAY PATTERN K-26 X 100°



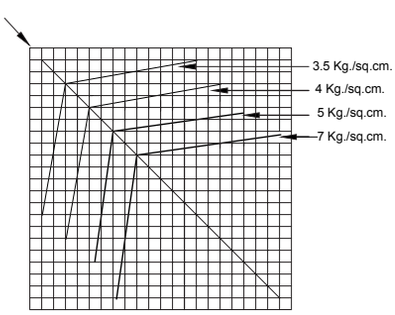
SPRAY HORIZONTAL



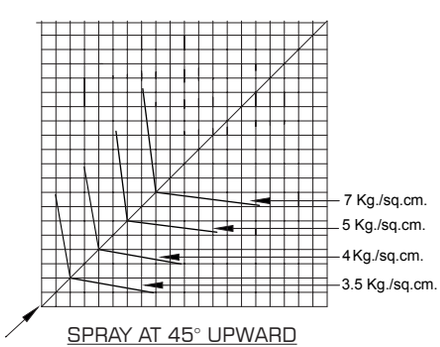
SPRAY VERTICALLY DOWNWARD



SPRAY VERTICALLY UPWARD



SPRAY AT 45° DOWNWARD

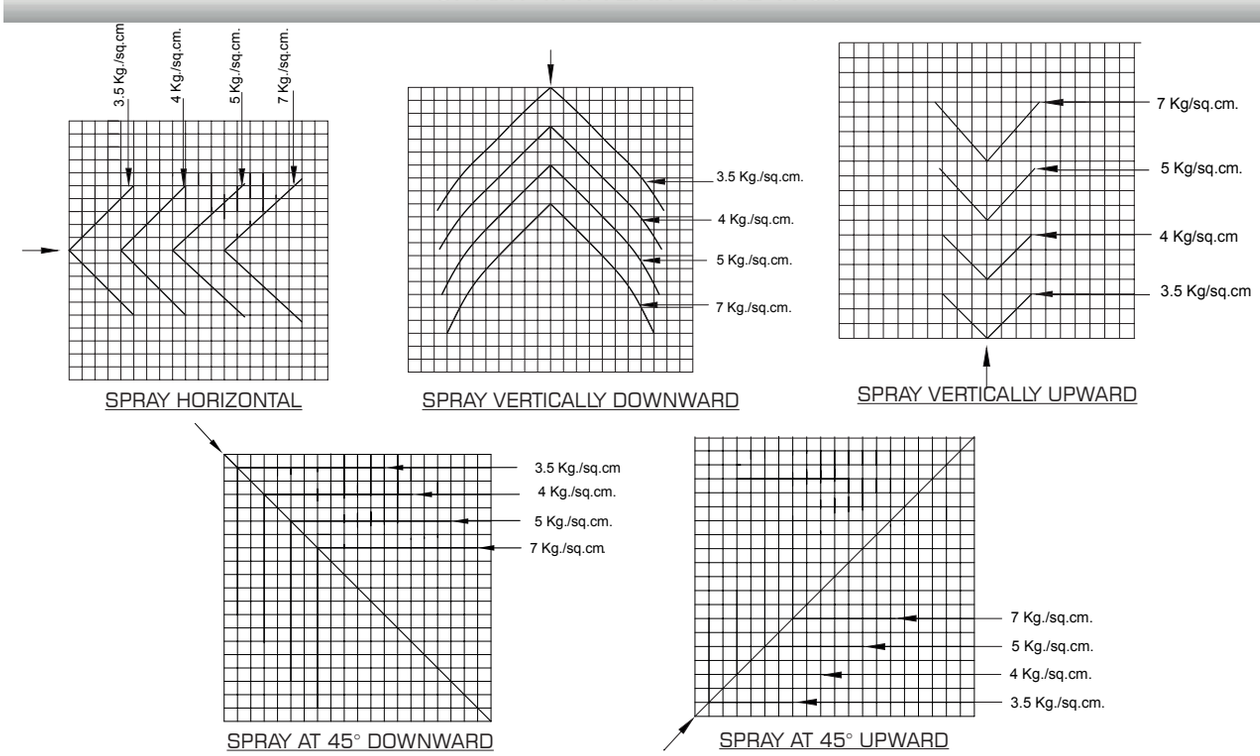


SPRAY AT 45° UPWARD

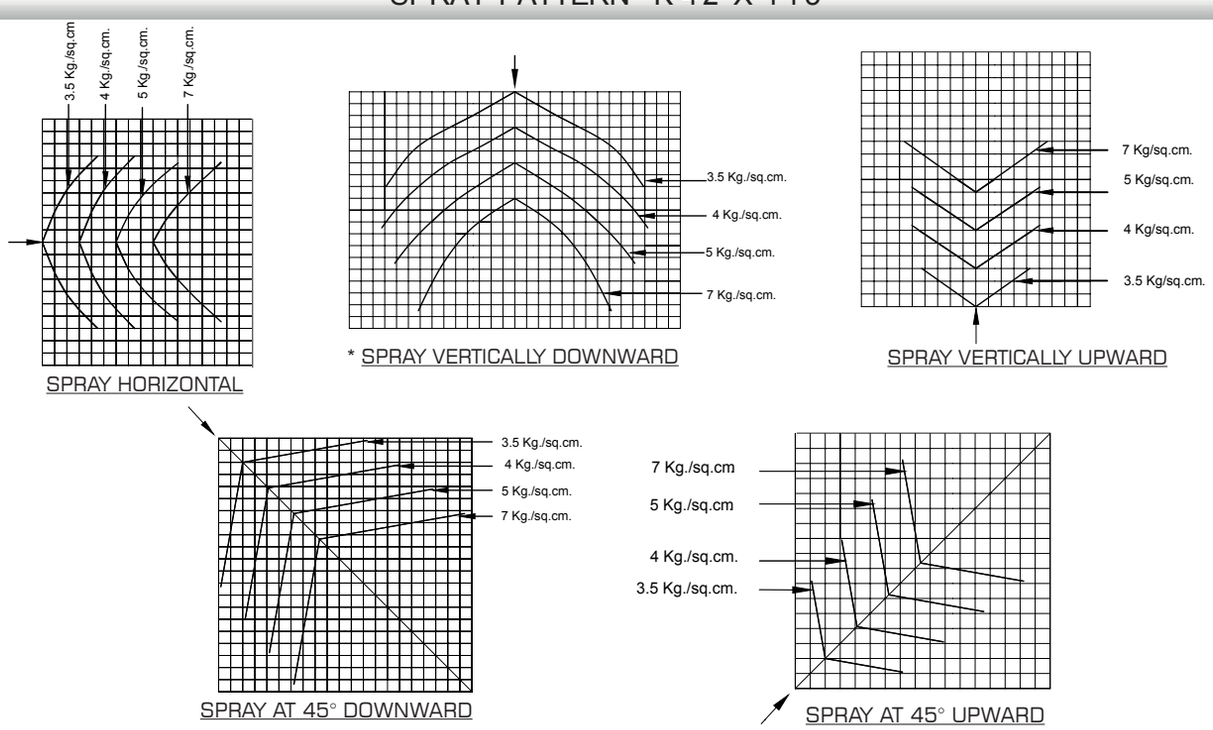
Note :

- One square is 200 X 200 mm.
- The graph is plotted at 3.5 to 7 Bar pressure. The increased pressure excess of 7 Bar will result in decrease in coverage, since the spray pattern tends to draw inward pattern at higher pressure. For higher pressure, consult HD FIRE Marketing.

SPRAY PATTERN K-32 X 90°



SPRAY PATTERN K-42 X 115°



Note :

- One square is 200 X 200 mm.
- The graph is plotted at 3.5 to 7 Bar pressure. The increased pressure excess of 7 Bar will result in decrease in coverage, since the spray pattern tends to draw inward pattern at higher pressure. For higher pressure, consult HD FIRE Marketing.
- * For Nozzle inlet pressure of 7 Bar, consider spray angle as 106°.

HIGH VELOCITY WATER SPRAY NOZZLE

(HV-H & HV-HB)

TECHNICAL DATA	
MODEL	HV-HB Brass HV-H Stainless steel
MAXIMUM WORKING PRESSURE	12 Bar (175 PSI)
END CONNECTION	1" BSPT (1" NPT OPTIONAL)
MATERIAL Model HB Model H	Housing & Scroll - Brass IS : 291 (equivalent to ASTM-B21) Strainer - Copper - SS 316 (CF8M) Stainless Steel Housing Strainer - Stainless steel
INCLUDED WATER SPRAY ANGLE AND K-FACTOR	SPRAY ANGLE — K-FACTOR METRIC (US) 100° - K 48 100° - K 58 75° - K 61 90° - K 78
WEIGHT (Approx)	HV-HB Brass 0.25 Kg HV-H SS 0.22 Kg
FINISH	HV-HB Brass Finish Nickel Chrome Plated (optional) HV-H Natural
APPROVALS	UL Listed
ORDERING INFORMATION	Specify Model, K-Factor, Spray angle, Finish and end connection.

DESCRIPTION

High Velocity Water Spray Nozzles are internal swirl plate type open nozzles designed for use in fixed water spray or deluge system for the fire protection application.

These nozzles produce solid uniform and dense core of high velocity water spray to effect fire control. Nozzles are normally used to cool the surface as well as for extinguishment. Nozzles are typically used for Deluge protection of special hazards such as oil filled transformers, switch-gear, chemical process equipments, conveyor system, diesel engines, flammable liquid storage areas and similar hazards. The minimum desirable pressure to achieve a reasonable spray pattern is 2.1 Kg./sq.cm. (30 psi). The water distribution pattern is as shown in the graph in following pages giving maximum effective axial distance from the nozzle. The spray pattern shown is with indoor application. The system designer must consider wind velocity while designing the system for outdoor application. The spray pattern is drawn considering maximum of 20 Km/hr. Field obstruction if any affecting the spray pattern of the nozzle must be considered. The nozzle may be oriented in any position as deemed necessary to cover the hazard.

2.1 bar to 7 bar pressure at Nozzle is recommended for effective application requiring High Velocity Water delivery for rapid extinguishment of all fires by emulsification.

The Nozzles are having inbuilt Strainer, but still main pipeline strainer is required in the system.

The Blow-off cap can be used to prevent the depositing of foreign material in the water way of the nozzle. Use of Blow-off cap is optional and not UL listed.

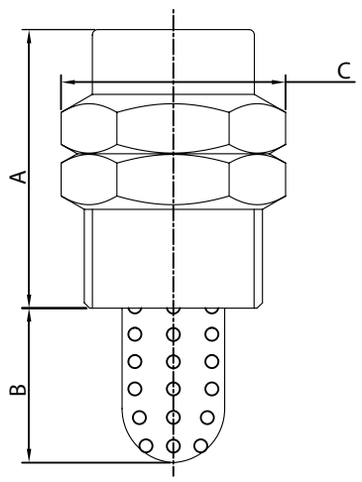
MAINTENANCE

The spray nozzle must be handled with due care. For best results , the storage as well as any further shipment be made in original packing only.

Nozzle which is visibly damaged should not be installed. Use Teflon tape or soft thread sealant on the male thread of the nozzle.

It is recommended that the water spray system be inspected by an authorised technical personnel. The nozzle must be checked for corrosion, external and internal obstruction, blockage if any. The nozzle should be cleaned or replaced if required. The system must be operated with optimum water flow at least three times in a year or as per the provision of NFPA/TAC or local authority having jurisdiction.

The owner is solely responsible for maintaining the water spray system and components therein, so that it performs properly when required.



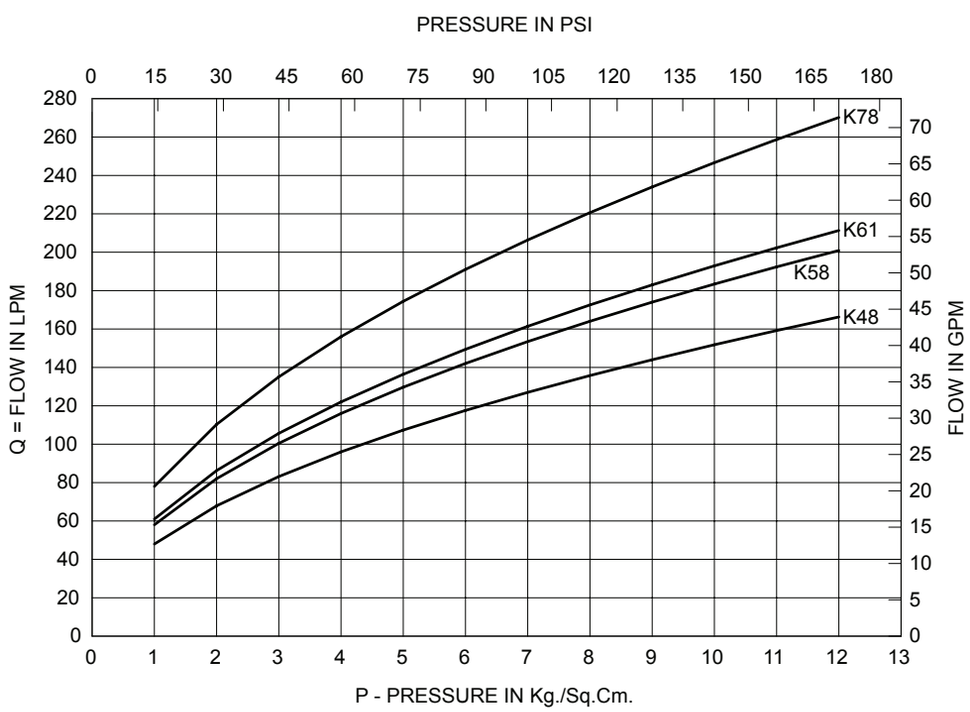
MATERIAL		
PART	HV-HB	HV-H
Body	Brass*	ASTM A351 CF8M
Swirl Plate	Brass*	SS 316
Strainer	Copper	SS 316

* Brass IS291 equivalent to B21

DIMENSION In millimeters (Approximate)

NOZZLE FACTOR & SPRAY ANGLE	A	B	C A/ F
K 48 X 100 °	52	29	36
K 58 X 100 °	52	29	36
K 61 X 75 °	52	29	36
K 78 X 90 °	52	29	36

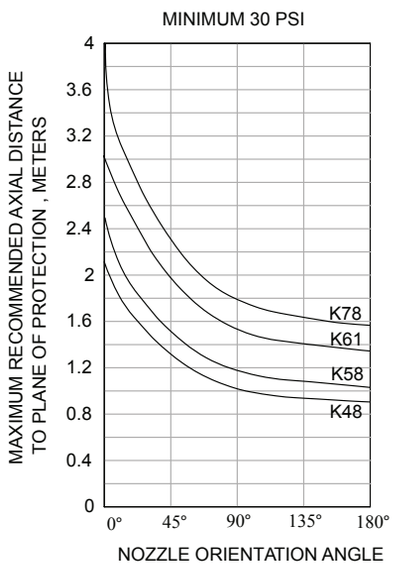
DISCHARGE CHARACTERISTICS

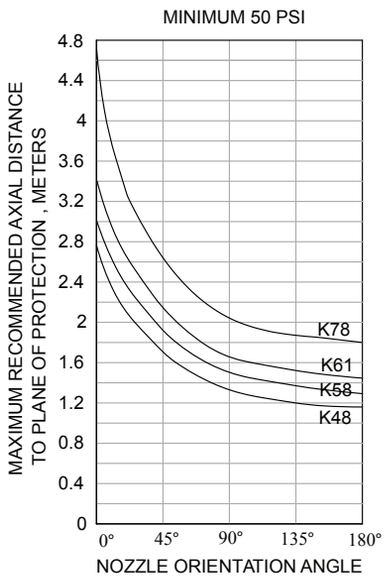


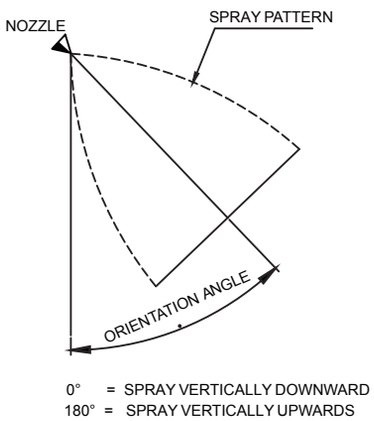
Q = K √ P where P is supply pressure in Kg/sq.cm., K = nozzle constant (K-factor) in metric
US K factor = Metric K factor ÷ 14.2745

FM APPROVED | c UL

MAXIMUM RECOMMENDED AXIAL DISTANCE VS NOZZLE ORIENTATION

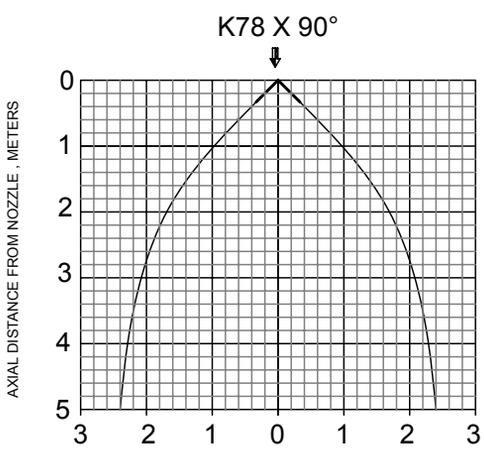


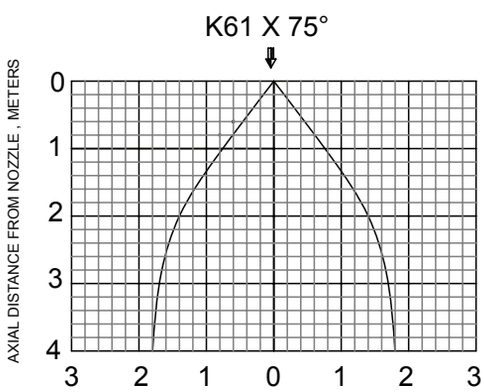


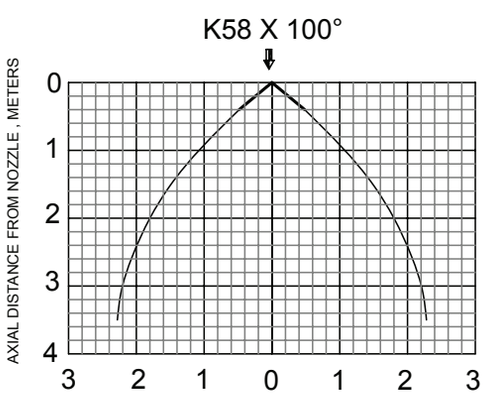


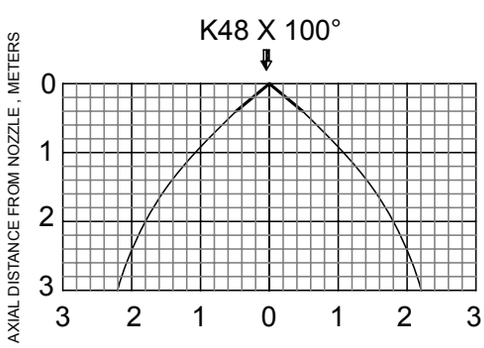
0° = SPRAY VERTICALLY DOWNWARD
180° = SPRAY VERTICALLY UPWARDS

SPRAY PATTERN









Note: The graph is plotted at 2.1 to 7 Bar pressure. The increased pressure excess of 7 Bar will result in decrease in coverage, since the spray pattern tends to draw inward pattern at higher pressure. For higher pressure, consult HD FIRE Marketing.

FM APPROVED | c UL

TS & TSS

TECHNICAL DATA	
MODEL	TS in Brass Construction TSS in Stainless Steel Construction
MAXIMUM WORKING PRESSURE	12 Bar (175 PSI)
END CONNECTION	½" BSPT (NPT optional)
K-FACTOR	K20, K30, K37, K42, K58, K79
FINISH	Natural (For model TS optional Ni-Cr plated) (For model TSS optional Electroless Ni plated)
WEIGHT (Approx.)	0.180 Kg
APPROVAL	UL Listed
ORDERING INFORMATION	Specify: a) Model b) K factor c) Finish

It is recommended that water spray system be inspected regularly by authorised technical personnel. The nozzle must be checked for atmospheric effects, external and internal obstruction, blockage if any. The nozzle should be cleaned or replaced if required. The system must be operated with optimum water flow atleast twice in a year or as per the provisions of NFPA or local authority having jurisdication.

The owner is solely responsible for maintaining the water spray system and the components therein so that it performs properly when required.

DESCRIPTION

The Tank Cooling Nozzle distributes water in a flat curtain.

Tank Cooling Nozzle is typically mounted in upright position at a distance from the exterior wall of the tank for cooling of the tank. In case of fire in the vicinity of the tank it prevents the tank from absorbing the heat radiation.

Tank Cooling Nozzles are available in Brass and Stainless Steel construction with different k-factors.

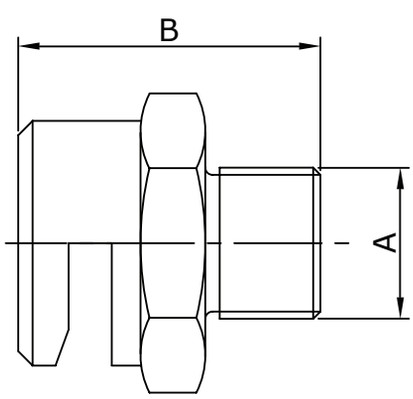
The main pipeline strainers as per NFPA -15 are required for system utilizing nozzles with orfice diameter less than 9.5 mm (3/8 inch).

MAINTENANCE

The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only.

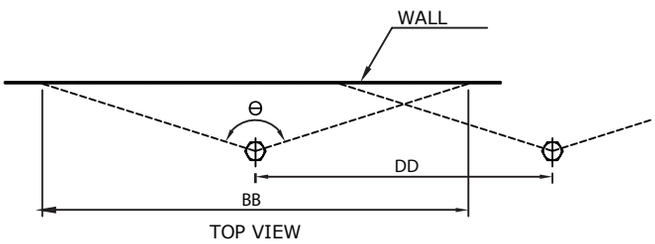
Nozzle which is visibly damaged should not be installed.

Use Teflon tape or soft thread sealant on male thread of the nozzle. Excessive tightening torque may result into serious damage to nozzle arms and deflector, which may affect the spray pattern of the nozzle and it's performance.

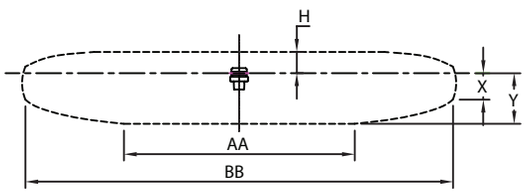


MODEL	A	B In MM
TS & TSS	1/2" BSPT	44

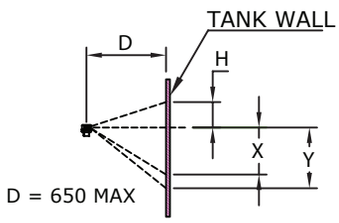
SPRAY PATTERN



TOP VIEW



FRONT VIEW



SIDE VIEW

K FACTOR	DIMENSIONS (IN MM)						ANGLE (IN DEGREE)
	AA	BB	H	X	Y	DD	
K20	4.3 X D	7.3 X D	0.25 X D	0.3 X D	0.7 X D	5.0 X D	150
K30	4.5 X D	7.6 X D	0.25 X D	0.3 X D	0.7 X D	5.0 X D	150
K37	4.5 X D	7.6 X D	0.25 X D	0.4 X D	0.85 X D	5.0 X D	150
K42	4.65 X D	9.1 X D	0.25 X D	0.4 X D	0.85 X D	6.0 X D	155
K58	5.15 X D	9.4 X D	0.35 X D	0.4 X D	0.85 X D	6.0 X D	155
K79	5.55 X D	11.3 X D	0.35 X D	0.4 X D	0.85 X D	6.0 X D	160

Note:

Spray Pattern profiles are given in the graph for discharge pressure from 1.4 to 4.1 Bar. When discharge pressure above this is applied, then the coverage area will decrease because spray pattern tends to draw inward at higher pressure. For pressure above 4.1 Bar, consult HD FIRE Technical Service. Design data obtained from tests in still air.

CN & CNS

TECHNICAL DATA	
MODEL	CN in Brass IS319/ASTM B16 CNS in Stainless Steel construction
MAXIMUM WORKING PRESSURE	12.3 Bar (175 PSI)
END CONNECTION	½" BSPT (NPT OPTIONAL)
K- FACTOR	K20, K23, K32, K42, K58, K79
FINISH	CN - Natural Brass finish, Nickel Chrome plated CNS- Natural finish
WEIGHT (Approx.)	0.180 Kg
APPROVAL	UL Listed
ORDERING INFORMATION	Specify: a) Model b) K factor c) Finish

DESCRIPTION

Window Curtain Nozzles are non-automatic, open, "outside" sprinklers intended for protection of windows, walls and roofs against exposure fires.

The directional discharge produces a flat fan shaped spray pattern. Used to produce a water curtain, they are installed on manual or automatic deluge systems.

Window Curtain Nozzles are available in Stainless Steel construction with different flow rate.

INSTALLATION

The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only.

Nozzle which is visibly damaged should not be installed.

Use Teflon tape or soft thread sealant on male thread of the nozzle. The nozzles must be tightened into the fitting.

Excessive tightening torque may result into serious damage to nozzle arms and the deflector which may affect spray pattern of the nozzle and it's performance.

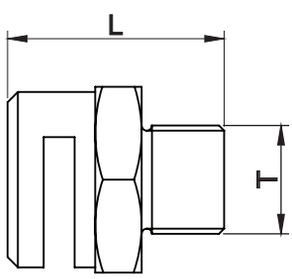
Spray nozzles are to be installed in accordance with the latest published standards of NFPA or similar organizations and also with the provisional governmental code, ordinance and standards whenever applicable.

The use of these nozzles may be limited due to occupancy and hazard, refer to Authority having jurisdiction prior to installation.

INSPECTIONS, TESTS & MAINTENANCE

It is recommended that window spray system be inspected regularly by authorised technical personnel. The nozzle must be checked for atmospheric effects, external and internal obstruction, blockage if any. The nozzles should be cleaned or replaced if required. The system must be operated with optimum water flow at least twice in a year or as per the provisions of NFPA or local authority having jurisdication.

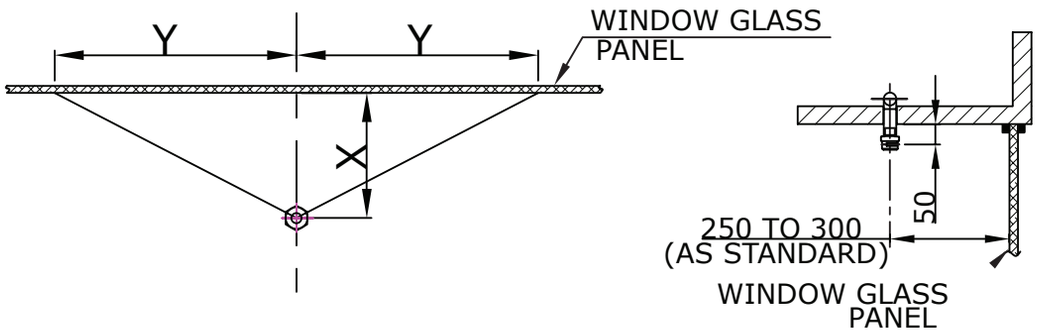
The owner is solely responsible for maintaining the water spray system and the components therein so that it performs properly when required.



MODEL	T	L In MM
CN	1/2" BSPT	44
CNS	1/2" BSPT	44

DIMENSION in millimeter (Approximate)

WINDOW CURTAIN NOZZLE SPRAY CHARACTERISTICS



TOP VIEW

SIDE VIEW

K20						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	1050	1350	2400	3300	3900	3900
15	1800	2100	2700	4050	4050	3900
25	3000	3000	2850	4200	4350	3900
30	3000	3000	3000	4200	4350	4050
50	3000	3150	3300	4500	4500	4050
57	3000	3450	3300	4500	4500	4050

K23						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	1050	1350	2400	3300	3900	3900
15	1800	2100	2700	4050	4050	3900
25	3000	3000	2850	4200	4350	3900
30	3000	3000	3000	4200	4350	4050
50	3000	3150	3300	4500	4500	4050
57	3000	3450	3300	4500	4500	4050

K32						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	1200	1800	2550	3750	3600	3600
15	2100	2400	3000	4200	4200	3600
25	3150	2700	3300	4500	4350	3750
30	3300	2850	3600	4650	4500	3750
50	3300	3300	3900	4800	4500	4050
57	3300	3300	3900	4800	4650	4050

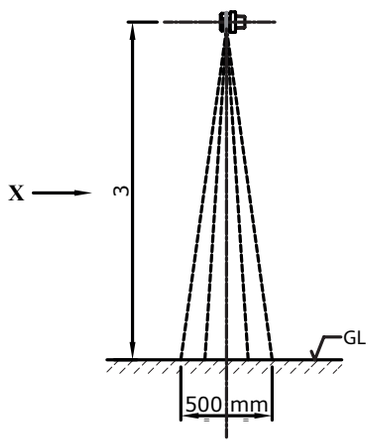
K42						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	1650	2250	2550	2775	3750	2550
15	2400	2850	2850	3075	3900	4350
25	3600	3300	3300	3150	4350	4500
30	3600	3900	4200	3300	4350	4500
50	3750	4200	4650	3450	4500	4650
57	3900	4200	4800	3750	4500	4650

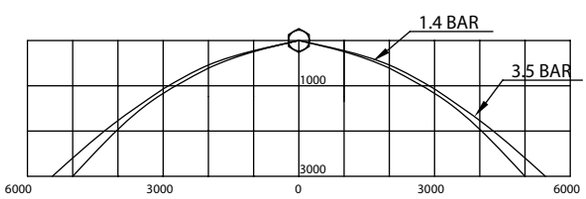
K58						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	2100	2250	3150	3450	4050	2700
15	2550	3000	3900	4500	4800	4350
25	3900	4200	4200	4800	5100	4500
30	3900	4650	4500	4800	5100	4650
50	4200	4650	4800	4950	5400	4650
57	4200	4650	4800	5175	5400	4800

K79						
X →	250	300	600	900	1200	1500
Pressure (PSI)	↓ Y					
7	2550	2550	3450	3600	3450	2850
15	3600	3900	4350	4350	4800	4200
25	3900	4050	4350	4950	4950	4500
30	4200	4500	4650	5250	5250	4500
50	4200	4800	4800	5400	5400	4650
57	4200	4800	4800	5400	5400	4800

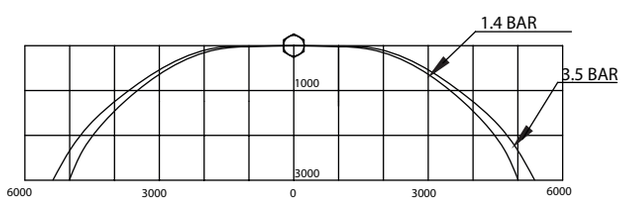
All Dimensions in MM

SPRAY PATTERN - VERTICAL DOWNWARDS
NOZZLE INSTALLATION - HORIZONTAL (SIDEWALL)

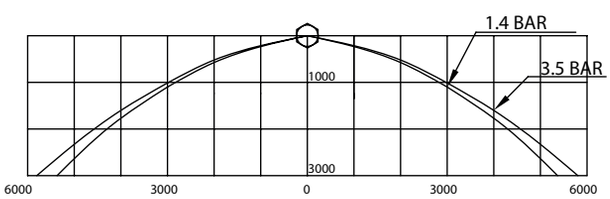




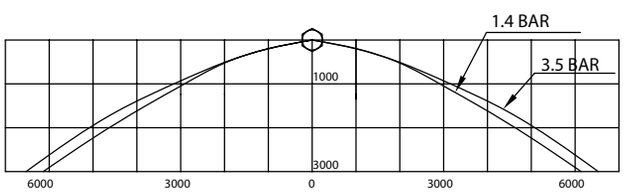
K20



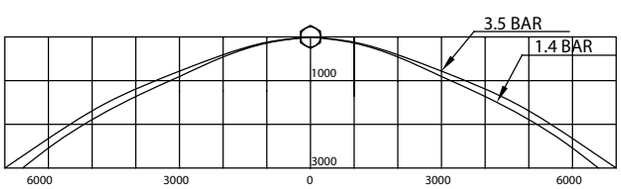
K23



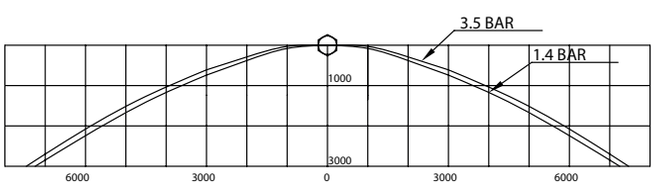
K30



K42



K58



K79

VIEW - ' X '

SCALE: EACH SQUARE IS 1000 X 1000 MM

Note:

Spray Pattern profiles are given in the graph for discharge pressure from 1.4 to 4.1 Bar. When discharge pressure above this is applied, then the coverage area will decrease because spray pattern tends to draw inward at higher pressure. For pressure above 4.1 Bar, consult HD FIRE Technical Service. Design data obtained from tests in still air.

LIMITED WARRANTY

3A KÖPÜKLÜ YANGIN KORUNUM SİSTEMLERİ SAN. VE TİC. LTD. ŞTİ. hereby referred to as 3A YANGIN warrants to the original purchaser of the fire protection products manufactured by 3A YANGIN and to any other person to whom such equipment is transferred, that such products will be free from defect in material and workmanship under normal use and care, for two (2) years from the date of shipment by 3A YANGIN. Products or Components supplied or used by 3A YANGIN, but manufactured by others, are warranted only to the extent of the manufacturer's warranty. No warranty is given for product or components which have been subject to misuse, improper installation, corrosion, unauthorized repair, alteration or un-maintained. 3A YANGIN shall not be responsible for system design errors or improper installation or inaccurate or incomplete information supplied by buyer or buyer's representatives. 3A YANGIN will repair or replace defective material free of charge, which is returned to our factory, transportation charge prepaid, provided after our inspection the material is found to have been defective at the time of initial shipment from our works. 3A YANGIN shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product including damages for injury to person, damages to property and penalties resulting from any products and components manufactured by 3A YANGIN. 3A YANGIN shall not be liable for any damages or labour charges or expense in making repair or adjustment to the product. 3A YANGIN shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data & services. In no event shall's product liability exceed an amount equal to the sale price. The foregoing warranty is exclusive and in lieu of all other warranties and representation whether expressed, implied, oral or written, including but not limited to, any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

NOTICE :

The equipment presented in this bulletin is to be installed in accordance with the latest publication standards of NFPA or other similar organisations and also with the provision of government codes or ordinances wherever applicable.

The information provided by us is to the best of our knowledge and belief, and consist of general guidelines only. Site handling and installation control is not in our scope. Hence we give no guarantee for result and take no liability for damages, loss or penalties whatsoever, resulting from our suggestion, information, recommendation or damages due to our product.

Product development is a continuous programme of 3A KÖPÜKLÜ YANGIN KORUNUM SİSTEMLERİ SAN. VE TİC. LTD. ŞTİ. and hence the right to modify any specification without prior notice is reserved with the company.

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