

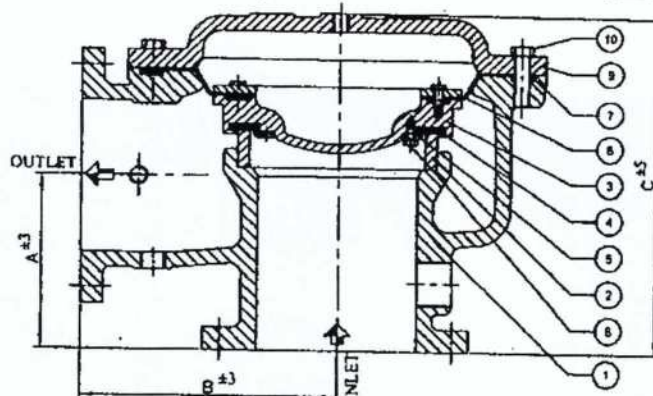
Title	Data Sheet for Deluge Valves
Project	Fire Detection & Protection System for 2 x 750 MW Pragati III, CCP

1.0	Manufacturer	:	H.D. Fire (As per approved Vendor List)		
2.0	Model	:	'A' Hydraulically Operated)		
3.0	Type of actuation	:	By fusing of Q.B. Detector/by Electrical Signal		
4.0	Sizes	:	80NB, 100NB & 150NB		
5.0	Quantity	:	As per approved Drawing		
6.0	End Connection	:	Flanged End (Flat Face) Dimensions & Drilling to ANSI B16.1, 125#		
7.0	Recommended Flow rates against various sizes of Deluge Valves	:	SIZE	Wt. w/o trim	Flow Rate in
			80NB	52Kg.	1150 LPM
			100NB	76Kg.	5000 LPM
			150NB	136Kg.	13500 LPM
8.0	Material of Construction	:			
8.1	Body (Housing)	:	Cast Iron to IS:210.Gr. FG 260		
8.2	Seat	:	Bronze IS-318, LTB-II		
8.3	Clapper	:	Bronze IS-318, LTB-II		
8.4	Seat Rubber	:	Neoprene		
8.5	Rubber Clamp	:	Bronze IS-318, LTB-II		
8.6	Bolts (Internal)	:	Stainless Steel - 304		
8.7	Diaphragm	:	Neoprene		
8.8	Clamp Ring	:	Bronze IS-318, LTB-II		
8.9	Cover	:	Cast Iron IS-210, Gr. FG-260		
8.10	Bolt (External)	:	Steel 1363		
9.0	Whether capable of resetting manually?	:	Yes		
10.0	Rated Working Pressure	:	12Kg./cm ²		
11.0	Hydro Test Pressure	:	25Kg/cm ² {for 5 minutes} for body		
12.0	Seat Test Pressure	:	18 Kg./cm ²		
13.0	Acceptability of TAC	:	Yes, and UL listed		
14.0	Painting	:	Three Coats of Chlorinated Rubber Paint over a coat of suitable primer		
15.0	Inspection & Testing	:	As per approved QAP		
16.0	Catalogue	:	Attached		
17.0	Accessories	:	All accessories as shown in the Model A will be provided.		

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VALVE SIZE	A	B	C
200 NB	230	330	455
150 NB	200	300	382
100 NB	165	240	304
80 NB	135	210	272
50 NB	135	210	272

EQUIPMENT PARTICULARS

NAME OF THE EQUIPMENT
MODEL
MOUNTING
SIZE

: DELUGE VALVE
: A
: 90° PATTERN INLET TO OUTLET, VERTICAL MOUNTING.
: 200NB, 150NB, 100NB, 80NB, 50NB.

DESIGN PARTICULARS

INLET & OUTLET FLANGE
MAX. WORKING PRESSURE
HYDROTEST PRESSURE
SEAT TEST PRESSURE
FRICTION LOSS (EQUIVALENT LENGTH OF PIPE)

: ANSI B16.1, CLASS 125.
: 12.3 KG/SQ.CM.
: 25 KG/SQ.CM. (FOR 5 MINUTES)
: 18 KG/SQ.CM.
: 200NB - 26.0 MTRS.
: 150NB - 19.0 MTRS.
: 100NB - 11.0 MTRS.
: 80NB - 5.5 MTRS.
: 50NB - 1.8 MTRS.

TRIM TYPE

: ATTACHED SCHEMATIC DRG.

MATERIAL OF CONSTRUCTION

- 1) HOUSING
- 2) SEAT
- 3) CLAPPER
- 4) SEAT RUBBER
- 5) RUBBER CLAMP
- 6) BOLT (INTERNAL)
- 7) DIAPHRAGM
- 8) CLAMP RING
- 9) COVER
- 10) BOLT (EXTERNAL)

: CAST IRON TO IS:210 GR FG 260
: BRONZE TO IS:318 LTB-II
: BRONZE TO IS:318 LTB-II
: NEOPRENE
: BRONZE TO IS:318 LTB-II
: SS 304
: NEOPRENE
: BRONZE TO IS:318 LTB-II
: CAST IRON TO IS:210 GR FG 260
: STEEL 1363

PAINTING

PRIMER
FINISH



Three Coats of Chlorinated Rubber Paint over a Coat of Switabla
~~PRIMER - TWO COATS~~
~~FINISH - TWO COATS~~

MARKING ON EQUIPMENT

: MFG. TRADE NAME.
: YEAR OF MFG.
: SERIAL NO.
: SIZE & MODEL.
: 'UL' LISTED MARK.
: AS PER QAP



TEST & INSPECTION:

TITLE- GA DRG. & DATA SHEET FOR DELUGE VALVE, MODEL-A



HD FIRE PROTECT PVT. LTD.

DATA SHEET NO.

DV-115001-DS

REV.

0

Title	Data Sheet for Q.B. Detectors
Project	Fire Detection & Protection System for 2x750 MW Pragati III, CCP

1.0	Make	H.D.Fire
2.0	Type	Pendent Fusible Bulb Type
3.0	Model	HD 10L
4.0	Material of Construction	
a	Body	Bronze
b	Bulb	Quartzoid Bulb
5.0	Temperature at which bulb shatters	79 Deg. C
6.0	Color of liquid	Yellow
7.0	End connections	1/2 " APT
8.0	Quantity	As per approved drawing
9.0	Approval	UL Listed
10.0	Finish	Nickel Chrome Plated
11.0	Hydrostatic Test Pressure	25Kg/cm2 for a period of 5 min.
11.1	Working Pressure	3.5 Kg/CM2 (g) Minimum
12.0	Temperature at the location of detector (Max.)	45 Deg. C.
13.0	Marking of Equipment	Manufacturer Name
		Operating Temperature
		Model
		UL listed mark
14.0	Inspection & Testing	As per agreed QAP
15.0	Catalogue enclosed	YES

Client	BHEL Doc. No.:	Rev.	Date of Submission	Sheet No.
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HD SPRINKLERS



Technical Data

Style	Pendent, Upright, Recessed Pendent, Concealed Sprinkler
Temp Response	Standard Response with 5mm glass bulb, Quick Response with 3mm glass bulb
Coverage	Standard Coverage
Nominal Orifice Size	1/2" (12.7 mm)
K-Factor	5.6 US (80 metric)
Nominal Thread Size	1/2" NPT or BSPT
Max Working Pressure	175 PSI (12 Bar)
Factory Hydrostatic Test Pressure	500 PSI (35 Bar)
Min Operating Pressure	7 PSI (0.5 Bar)
Temp. Rating	57°C (135° F), 68°C (155° F), 79°C (175° F), 93°C (200° F), 141°C (286° F)
For Concealed Cover	57°C (135° F), 68°C (155° F)
Approvals	UL Listed
Finish	Brass, Chrome Plated, White Painted
Ordering Information	Style, Temp. Rating, Thread size, Finish, Cover specification (concealed)



Product Description

Pendent, Recessed & Upright Sprinklers

HD Pendent, Recessed and Upright sprinklers are designed for use in light and ordinary hazards. The temperature rating is standard response (5 mm. glass bulb) and quick response (3mm glass bulb). The sprinklers come with compact design, glass bulb type, available in several different finishes and temperature ratings. The pendent sprinklers must be installed in pendent position, and upright sprinklers are to be installed in the upright position. The recessed sprinkler enclosure must be pushed over the mounting plate only after final paint has been applied to the ceiling. Do not attempt to make-up for insufficient adjustment in the Escutcheon plate by over tightening the sprinkler. The recessed pendent sprinklers are intended for use in area with finished ceiling. It uses two piece Recessed Escutcheon which provides 1/2" (12.7 mm) of recessed adjustment from flushed pendent sprinkler.

Pendent Concealed Sprinklers

HD Pendent Concealed Sprinklers are thermo-sensitive glass bulb sprinklers having decorative flat cover plate designed to conceal the sprinkler for smooth ceiling. The cover plates are available in several decorative finishes to match architectural requirements. The unique design allows installation and testing of the sprinkler prior to installation of the cover plate with cup. Sprinkler housing is threaded to fix cover plate with cup assembly to provide 12.7mm (1/2") vertical adjustment.

The cover plate and cup design allows installation of the sprinkler and pressure testing of the fire fighting system prior to installation of a suspended ceiling or final painting of the ceiling. The sprinkler cover assembly can be removed and reinstalled for removal of ceiling panels for access to building service equipments. HD Pendent Concealed Sprinklers are Standard Response (5mm glass bulb) or Quick response (3mm glass bulb) with standard coverage

Sprinkler Operation

The Sprinkler operating device is state of the art heat responsive frangible glass bulb supplied by a world leader in this innovative technology. The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached the bulb shatters and water flows through the sprinkler and strikes the deflector, forming a uniform water spray pattern to control or extinguish the fire.

Material Specification

Deflector	ASTM C22000 B36
Bulb	Glass with Glycerine solution
Bulb Nominal Diameter	Std. Response 5.0 mm Quick Response 3.0 mm
Load Screw	ASTM C36000 B16
Cap	Copper
Seal	Belleville Washer coated on both sides with Teflon Tape
Frame	ASTM C37700B124

Care and Handling

The sprinkler must be handled with due care they must be stored in cool place for best results. The storage as well as any onward shipment is made in original packing only. Sprinklers must be visually inspected carefully before installation. Sprinklers visibly damaged, dropped or exposed to temperature in excess of the maximum ambient temperature permitted should never be installed. Never install any glass bulb sprinkler if the bulb is cracked or if there is a loss of liquid from the Bulb. Sprinklers must be installed after the piping is in place to prevent mechanical damage.

Use Teflon tape or soft thread sealant on male thread of the sprinkler for leak tight sprinkler joint. Use proper wrench. Use appropriate torque. Excessive tightening torque may distort the sprinkler inlet and cause leakage. Sprinklers must never be painted, plated or coated after they leave factory.

The HD sprinkler described herein must be installed and maintained in accordance with the latest edition of HD technical data, the latest standards of the National Fire Protection Association (NFPA) and Factory Mutual (FM) or to the standard of any other authorities having jurisdiction. The owner is solely responsible for maintaining their fire protection system and devices in proper operating condition.

Inspection Testing and Maintenance

Refer to NFPA 25 for inspection testing and maintenance requirement or to the authority having jurisdiction. For detail of warranty refer HD's current price list, conditions of sale or contact HD directly.

Sprinkler Ratings

SPRINKLER TEMP. CLASSIFICATION	NORMAL SPRINKLER TEMP. RATING	NFPA MAX. CEILING TEMP. ALLOWED	GLASS BULB COLOUR
Ordinary	57°C (135°F)	38°C (100°F)	Orange
Ordinary	68°C (155°F)	38°C (100°F)	Red
Intermediate	79°C (175°F)	65°C (150°F)	Yellow
Intermediate	93°C (200°F)	65°C (150°F)	Green
High	141°C (286°F)	107°C (225°F)	Blue

Sprinkler Ratings for Concealed Sprinkler

NORMAL SPRINKLER TEMP. RATING	NFPA MAX. CEILING TEMP. ALLOWED	COVER TEMP. RATING
57°C (135°F) & 68°C (155°F)	38°C (100°F)	57°C (135°F)
79°C (175°F) & 93°C (200°F)	65°C (150°F)	68°C (155°F)

LIMITED WARRANTY

HD FIRE PROTECT PVT. LTD. hereby referred to as HD FIRE warrants to the original purchaser of the fire protection products manufactured by HD FIRE 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 HD FIRE. Products or Components supplied or used by HD FIRE, but manufactured by others, are warranted only for 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 modification. HD FIRE shall not be responsible for system design or for improper installation or inaccurate or incomplete information supplied by owner or buyer's representatives.

HD FIRE 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. HD FIRE 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 HD FIRE. HD FIRE shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data & services. In no event shall HD FIRE'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 of 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 are to the best of our knowledge and belief, and are general guidelines only. Site handling and installation control is beyond our reach. 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 HD FIRE PROTECT PVT. LTD. and hence the right to modify any specification without prior notice is reserved with the company.



**HD FIRE PROTECT
PVT. LTD.**

C 3/6 THE NANDANVAN IND. ESTATE, LBS MARG, (HANE 400 604, INDIA)
PHONE : (91) 22 2582 6950, 2582 6793
FAX : (91) 22 2501 2524, 6786 9049
EMAIL : info@hdfire.com
WEBSITE : www.hdfire.com

**VNIV.EX15208**
Sprinklers, Automatic and Open

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Sprinklers, Automatic and Open

See General Information for Sprinklers, Automatic and Open

HD FIRE PROTECT PVT LTD
OPP ACC RESEARCH CENTRE
NANDANVAN IND ESTATE, C-3/6
L B S MARG
THANE, MH 400604 INDIA

EX15208

Sprinkler Identification Number (SIN) HD 201, 202, 101, 102, 204, 104, HD211, HD212 glass bulb type sprinklers

UPRIGHT AND PENDENT STANDARD SPRAY SPRINKLERS**NOMINAL 5.6 K-FACTOR**

SIN	Response Type	Type	System Working Pressure, psig	Temp Rating, °F
HD201	QR	Pendent	175	155
HD202	QR	Upright	175	155
HD101	SR	Pendent	175	135, 155, 175, 200
HD102	SR	Upright	175	135, 155, 175, 200

NOMINAL 1.4 TO 4.2 K-FACTOR

SIN	Response Type	Type	System Working Pressure, psig	Temp Rating, °F
HD211	QR	Pendent	175	155, 200
HD212	QR	Upright	175	155, 200

FLUSH, RECESSED AND CONCEALED SPRINKLERS

SIN	Response Type	Type	Nom K-Factor	Temp Rating, °F	
				Cover	Sprinkler
HD204	QR	Conc. Pendent	5.6	135	155
HD201	QR	Rec. Pendent	5.6	—	155
HD104	SR	Conc. Pendent	5.6	135	135, 155
HD104	SR	Conc. Pendent	5.6	155	175, 200
HD101	SR	Rec. Pendent	5.6	—	135, 155, 175, 200

STANDARD SIDEWALL SPRAY SPRINKLERS

SIN	Response Type	Type	Nom k-Factor	System Working pressure, psig	Temp Rating, °F
HD103	SR	HSW	5.6	175	155
HD203	QR	HSW	5.6	175	155

Last Updated on 2010-03-17

Questions?

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COMPLIANCE REPORT	
Main Contractor :	M/s BHARAT HEAVY ELECTRICALS LIMITED
Client :	Pragati Power Corporation Ltd.
Consultant :	NTPC
Project :	Fire Protection System for 2 x 750 MW Pragati III.
Reference:	Data sheet-High & Medium Velocity Spray Nozzles (Drg No.PE-V0-314-552-A064)

SL NO	NTPC COMMENTS	REPLY
1	Plesae check & correct K factors for MVW	K51 & K64
2	Plesae check & correct K factors for HVW	K26 & K18
3	Flow	
3.1	Flow(For MVW)	Flow For K -51-60.344 LPM Flow For K -64-75.72 LPM
3.2	Flow(For HVW)	Flow For K -26 -48.64 LPM Flow For K -18 -33.67 LPM

Title	Data Sheet for High & Medium Velocity Spray Nozzle
Project	Fire Detection & Protection System for 2 x 750 MW Pragati III,CCP

	MEDIUM VELOCITY NOZZLES	
1.0	Manufacturer	: H.D. Fire Protect Pvt. Ltd.
2.0	Model	: MV - A
3.1	Flow(For K-51)	: 60.344 LPM
3.2	Flow(For K-64)	: 75.72 LPM
4.0	K Factors	: K-51 & K-64
5.0	Design Particulars	
5.1	End Connection	: ½" BSPT (M)
5.2	Effective Working Pressure	: 1.4(Min.) to 7 Kg/Sq. cm(Max) 20 PSI to 100 PSI
5.3	Maximum Working Pressure	: 12.3 kg/cm2 (175 PSI)
5.4	Deflector type	: External Deflector
6.0	Material of Construction	
6.1	Housing	: Forged Naval Brass to IS:291-1
6.2	Deflector Pin	: Naval Brass to IS:291-1
6.3	Deflector	: Brass to IS:2768
7.0	Quantity	: AS per approved drg.
8.0	Painting	: Nickel Chrome Plated
9.0	Listing / Approvals	: UL-Listed
10.0	Inspection & Testing	: As per agreed QAP
11.0	Drawingg & Catalogue	: Enclosed
	High Velocity Spray Nozzles	
1.0	Manufacturer	: H.D. Fire Protect Pvt. Ltd.
2.0	Model	: HV - A
3.1	Flow(For K-26)	: 48.64 LPM
3.2	Flow(For K-18)	: 33.67 LPM
3.3	K Factors	: K 26 & K18
4.0	Design Particulars	
4.1	End Connection	: ¾" BSPT (M) {3/4" NPT Optional}
4.2	Effective Working Pressure	: 3.5 to 10.5 kg/sq. cm (50 to 150 PSI)
4.3	Maximum Working Pressure	: 12.3 kg/cm2 (175 PSI)
4.4	Deflector type	: External Deflector
5.0	Material of Construction	
5.1	Housing & Scroll	: Naval Brass to IS:291-1
6.0	Quantity	: AS per approved drg.
7.0	Painting	: Brass Finish Nickel Chrome Plated
8.0	Listing / Approvals	: UL-Listed
9.0	Inspection & Testing	: As per agreed QAP
10.0	Drawing & Catalogue	: Enclosed

Client	BHEL Doc. No.:	Rev.	Date of Submission	Sheet No.
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HIGH VELOCITY WATER SPRAY NOZZLE

HD
HD FIRE PROTECT
PVT. LTD.

TECHNICAL DATA :

MODEL	HV-A Without strainer ✓ HV-AS with strainer	
MAXIMUM WORKING PRESSURE	12.3 Kg./Sq.Cm. (175 PSI)	
EFFECTIVE WORKING PRESSURE	3.5 TO 10.5 Kg./Sq.Cm. (50 to 150 PSI)	
END CONNECTION	¾" BSPT (¾" NPT OPTIONAL)	
MATERIAL	Housing & Scroll - Brass IS : 291 (EQUIVALENT TO ASTM-B21)	
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) ✓
WEIGHT	Approx. 0.200 Kgs.	
FINISH	Brass Finish Nickel Chrome Plated (optional)	
APPROVALS	UL Listed	
ORDERING INFORMATION	Specify Model, K-Factor, Spray angle and Finish.	

APPLICATION

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 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 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. 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.

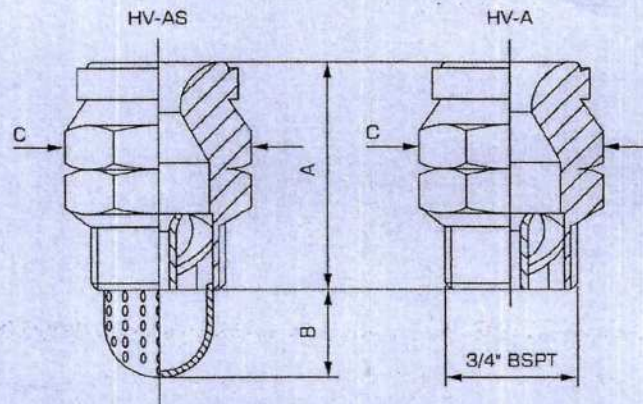
MAINTENANCE

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 cleared 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.

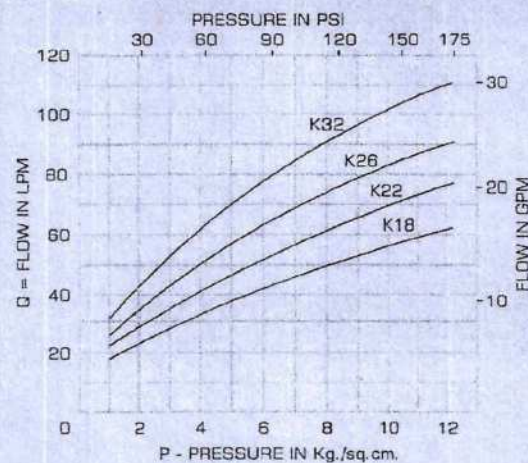
The owner is solely responsible for maintaining the water spray system and components therein, so that it performs properly when required.



DIMENSION In millimetres (Approximate)

NOZZLE FACTOR & SPRAY ANGLE	A	B	C (A/F)
K 22 x 75°	49	21	30
K 18 x 80°	44	21	30
K 32 x 90°	49	21	30
K 26 x 100°	55	21	30

DISCHARGE CHARACTERISTICS



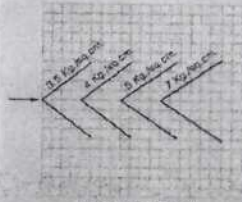
$Q = K\sqrt{P}$ where P is supply pressure in Kg./sq.cm.,
 K -is nozzle constant in Metric
 US K Factor = Metric K Factor $\div$ 14.2745

SPRAY PATTREN

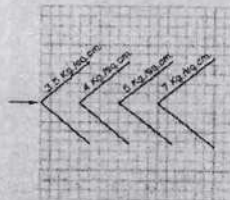
K22 X 75°

K18 X 80°

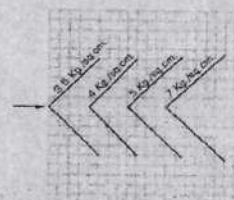
K32 X 90°



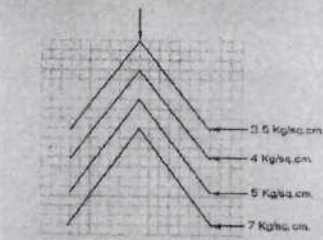
SPRAY HORIZONTAL



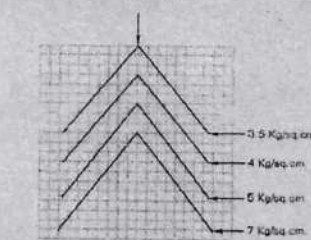
SPRAY HORIZONTAL



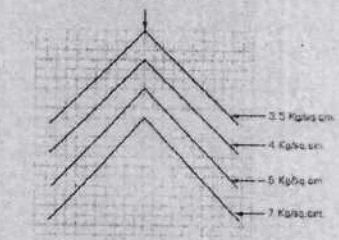
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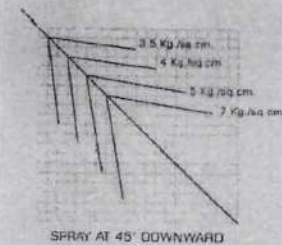
SPRAY VERTICALLY DOWNWARD



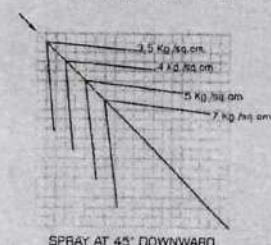
SPRAY VERTICALLY DOWNWARD



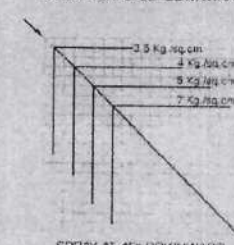
SPRAY VERTICALLY DOWNWARD



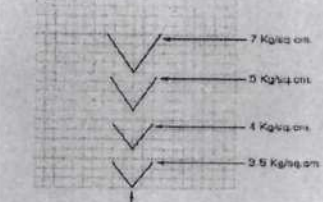
SPRAY AT 45° DOWNWARD



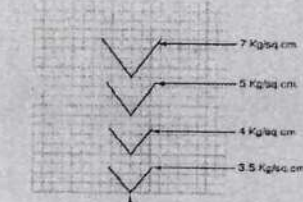
SPRAY AT 45° DOWNWARD



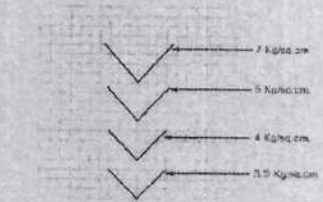
SPRAY AT 45° DOWNWARD



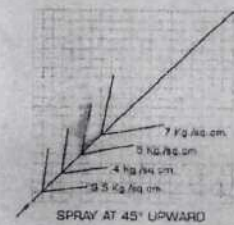
SPRAY VERTICALLY UPWARD



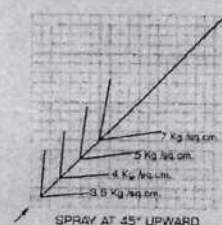
SPRAY VERTICALLY UPWARD



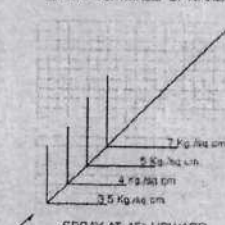
SPRAY VERTICALLY UPWARD



SPRAY AT 45° UPWARD



SPRAY AT 45° UPWARD



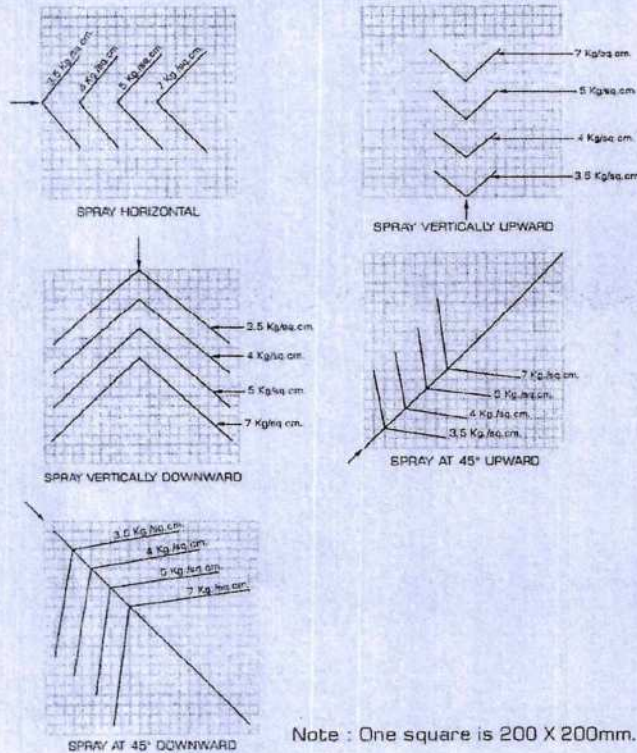
SPRAY AT 45° UPWARD

Note : One square is 200 X 200mm.

APRIL, 2005

HD109

K26 X 100°



Note : One square is 200 X 200mm.

LIMITED WARRANTY

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HD's obligation under this warranty is limited to replace or repair the products or its parts, which are shown to HD's examination to be in a defective condition attributable to HD. No warranty is given for products or components which have been subject, to misuse, improper installation, corrosion, wear and tear, improper storage, modification or repaired. If the defect attributable to HD cannot be rectified by repair or replacement, then HD may elect to refund the purchase price of the equipment in complete discharge of its obligation under this Limited Warranty.

IN NO EVENT SHALL HD FIRE PROTECT PVT. LTD. BE LIABLE IN CONTRACT, STRICT LIABILITY OR ANY OTHER LEGAL THEORY, FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES FOR INJURY TO PERSON OR DEATH OR DAMAGE TO PROPERTY AND OR PENALTIES RESULTING FROM ANY PRODUCTS OR COMPONENT MANUFACTURED OR ASSEMBLED BY HD. THIS IS LIMITED WARRANTY ONLY. HD DISCLAIMS WITH RESPECT TO THE PRODUCTS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THERE IS NO WARRANTY OF ANY NATURE MADE BY HD BEYOND AS STATED ABOVE.

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 are to the best of our knowledge and belief, and are general guidelines only. Site handling and installation control is beyond our reach. 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 HD FIRE PROTECT PVT. LTD. and hence the right to modify any specification without prior notice is reserved with the company.



HD FIRE PROTECT PVT. LTD.

C-3/6, THE NANDANVAN IND. ESTATE, L.B.S. MARG, THANE 400 604, INDIA.

• PHONES : +(91) 22 2583 5434 • 2582 6958 • 2582 6793

• FAX : +(91) 22 2581 2524 • 5596 9049

• EMAIL : info@hdfire.com • WEBSITE : www.hdfire.com

MEDIUM VELOCITY WATER SPRAY NOZZLE



HD FIRE PROTECT
PVT. LTD.

TECHNICAL DATA :

MODEL	A & B	
MAXIMUM WORKING PRESSURE	12.3 Kg./Sq.Cm. (175 psi)	
MINIMUM EFFECTIVE WORKING PRESSURE	7 Kg./Sq.Cm. (100 psi) maximum	
	1.4 Kg./Sq.Cm. (20 psi) minimum	
END CONNECTION	1/2" BSPT (1/2" NPT OPTIONAL)	
MATERIAL	Model A - Brass	
	Model B - Stainless Steel	
INCLUDED WATER SPRAY ANGLE FOR EACH K-FACTOR	140°, 120°, 110°, 100°, 90°, 80° & 65°	
ORIFICE SIZE AND K-FACTOR	(MM) (INCH)	METRIC (US)
	6.0(0.236)	- K22(1.54)
	7.0(0.275)	- K30(2.10)
	7.5(0.295)	- K35(2.45)
	8.0(0.314)	- K41(2.87)
	9.0(0.354)	- K51(3.57) ✓
	10.0(0.393)	- K64(4.48) ✓
	11.0(0.433)	- K79(5.53)
	12.0(0.472)	- K91(6.37)
	12.5(0.492)	- K102(7.14)
WEIGHT	0.115 Kg. (approximately)	
FINISH	Brass or Nickel Chrome plated for Model A	
	Natural finish for Model B	
APPROVALS	UL Listed for Model A	
ORDERING INFORMATION	Specify K-Factor, spray angle and finish.	

APPLICATION

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.

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, a MV nozzle is made available in several combination 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 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.

MAINTENANCE

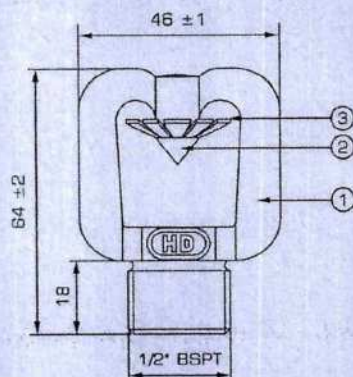
The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only.

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. HD make wrench must be used to tighten the nozzle unit 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 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 twice in a year or as per the provisions of NFPA/TAC or local authority having jurisdiction.

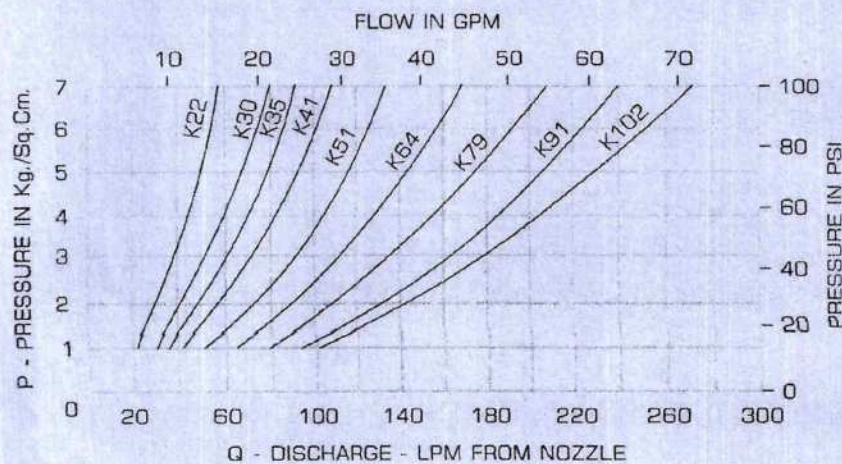
The owner is solely responsible for maintaining the water spray system and the components therein so that it performs properly when required.



PART LIST

COMPONENT	MODEL-A	MODEL-B
HOUSING	FORGED BRASS IS:291, GR.-I (EQUIVALENT TO ASTM B21)	SS 316
DEFLECTOR PIN	BRASS IS:291, GR.-I (EQUIVALENT TO ASTM B21)	SS 316
DEFLECTOR	BRASS IS:2768 (EQUIVALENT TO ASTM B36)	SS 316

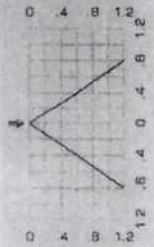
DISCHARGE CHARACTERISTICS



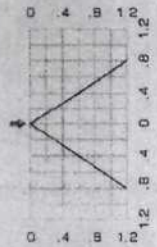
$Q = K\sqrt{P}$, where P is supply pressure in Kg./sq. cm., K-is nozzle constant in Metric
US K Factor = Metric K Factor + 14.2745

SPRAY PATTERN

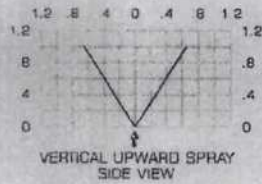
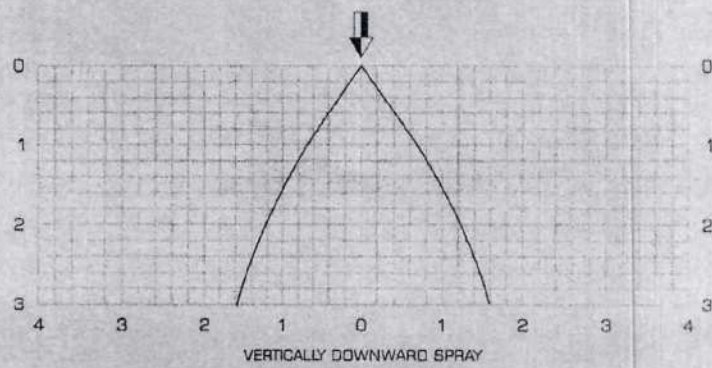
HORIZONTAL SPRAY
TOP VIEW



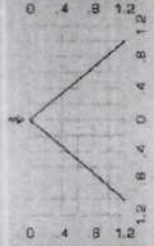
HORIZONTAL SPRAY
SIDE VIEW



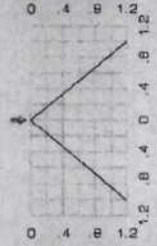
SPRAY ANGLE 65°



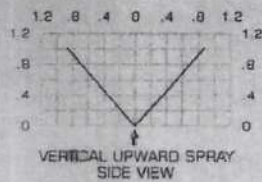
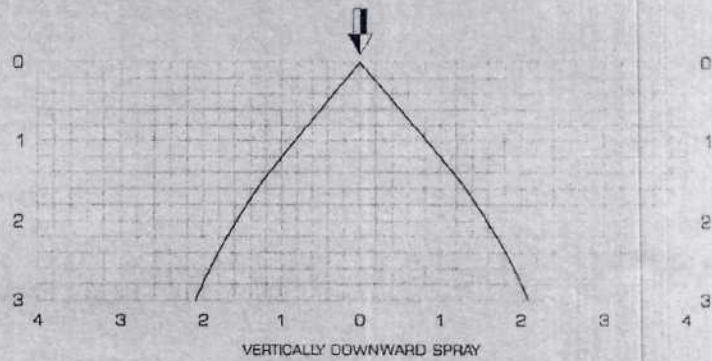
HORIZONTAL SPRAY
TOP VIEW



HORIZONTAL SPRAY
SIDE VIEW

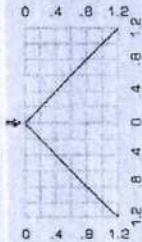


SPRAY ANGLE 80°

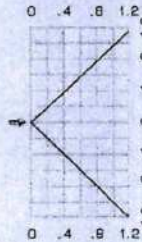


ALL DIMENSIONS ARE IN METERS

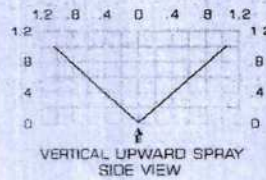
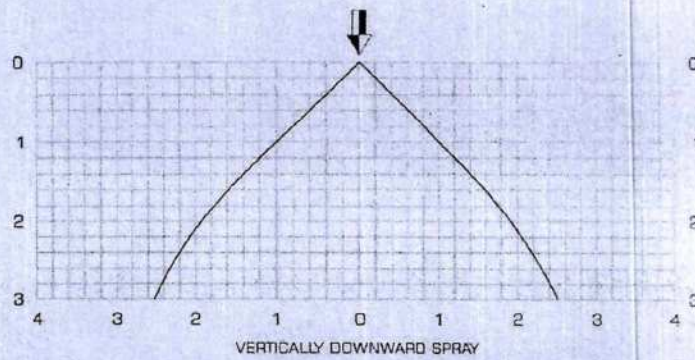
HORIZONTAL SPRAY
TOP VIEW



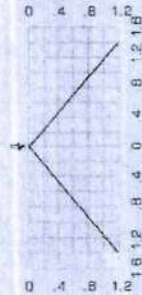
HORIZONTAL SPRAY
SIDE VIEW



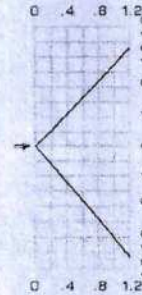
SPRAY ANGLE 90°



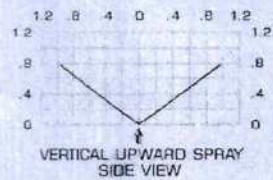
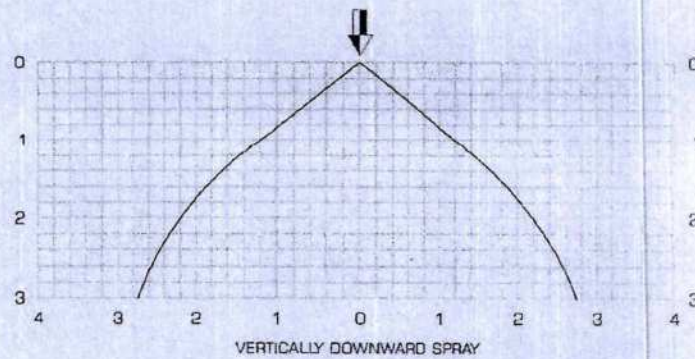
HORIZONTAL SPRAY
TOP VIEW



HORIZONTAL SPRAY
SIDE VIEW

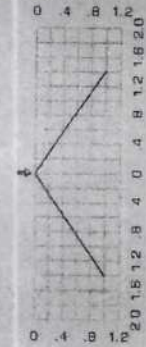


SPRAY ANGLE 100°

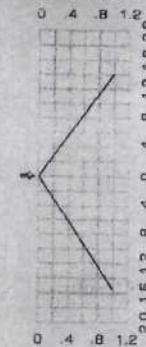


ALL DIMENSIONS ARE IN METERS

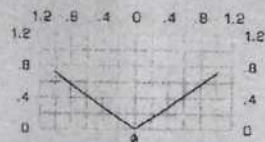
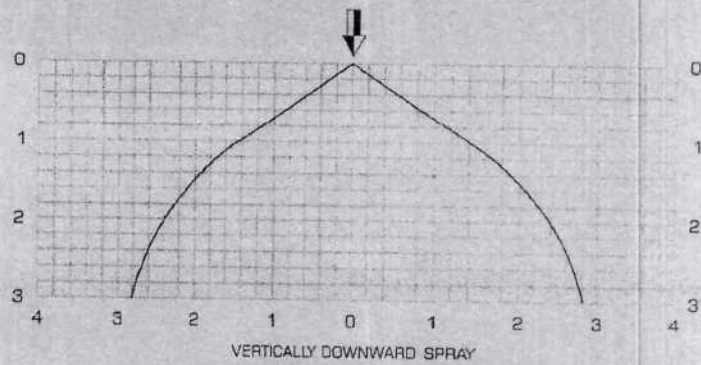
HORIZONTAL SPRAY
TOP VIEW



HORIZONTAL SPRAY
SIDE VIEW

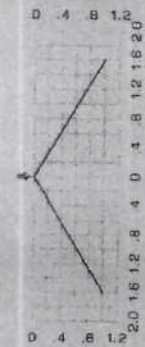


SPRAY ANGLE 110°

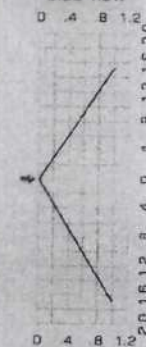


VERTICAL UPWARD SPRAY
SIDE VIEW

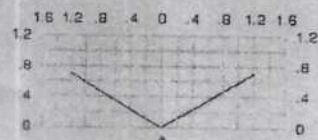
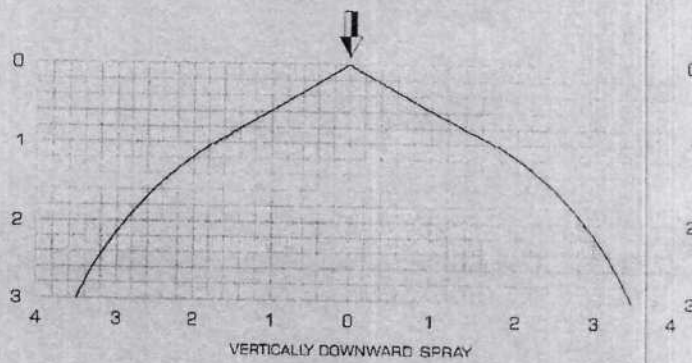
HORIZONTAL SPRAY
TOP VIEW



HORIZONTAL SPRAY
SIDE VIEW



SPRAY ANGLE 120°



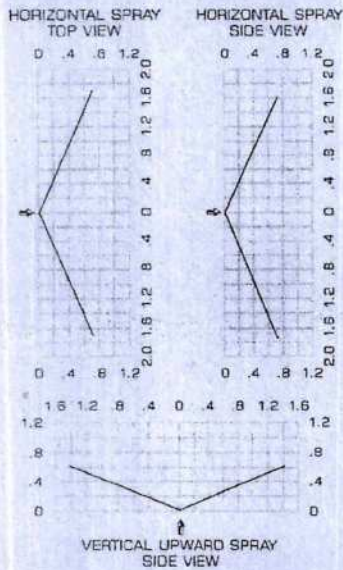
VERTICAL UPWARD SPRAY
SIDE VIEW

ALL DIMENSIONS ARE IN METERS

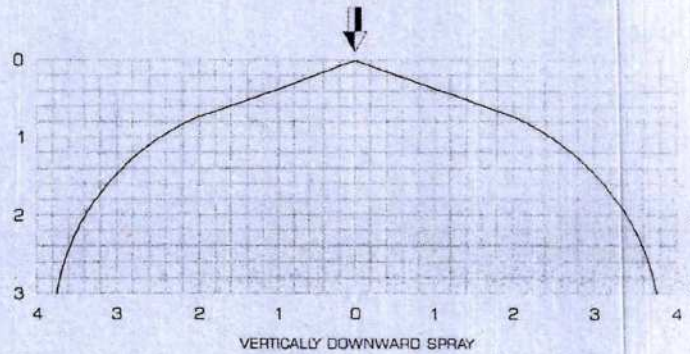
APRIL, 2005

HD FIRE PROTECT

HD108



SPRAY ANGLE 140°



ALL DIMENSIONS ARE IN METERS

LIMITED WARRANTY

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• PHONES : +(91) 22 2583 5434 • 2582 8958 • 2582 6793

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• EMAIL : info@hdfire.com • WEBSITE : www.hdfire.com

MANUFACTURERS NAME & ADDRESS				MANUFACTURING QUALITY PLAN				Project : 2 x 750 MW, Pragati III, Combined Cycle Project Package : Fire Protection System Po No:PSNR/SCP/BOP-BAWANA/1888,1889 & 1890 Dt:01.07.05 Customer : Pragati Power Corporation Ltd.,			
HD FIRE PROTECT PVT. LTD., BLDG NO. 1, GALA NO. 3A, ARIHANT COMPOUND, PURNE VILLAGE, NEAR KOPAR BUS STOP, BHIWANDI, DIST. THANE-421302				ITEM : QB Detector				QP No. : 9472-001-QVE-Q-423-01 REV:01 DATE : 21/09/2010 PAGE : 2 of 2			
SR. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS	
1	2	3	4	5	6	7	8	9	M C N	10	
Final Assembly & Testing											
a		Material of Detector Bulb	Minor	Review	100%	Approved Drawing / Data Sheet	Approved Drawing / Data Sheet	Manufacturing Compliance Certificate	P V V		
b		Dimensions	Minor	Measurement & Gauge Check	10% at Random	As per approved Drg.	As per approved Drg.	Inspection Report	P V V		
c		Hydro Test *	Major	Hydro Testing	10% at Random	25 Kg./Sq. Cm. for 5 minutes	No Leakage	Inspection Report	P W W		
d		Verification of Mark & Model approval by UL/FM	Major	Visual	10% at Random	As per approved Drg.	As per approved Drg.	Inspection Report	P W W		
NOTE:1 ALL MATERIALS SHALL BE AS PER APPROVED DRAWING /DATASHEET. IN CASE OF ANY AMBIGUITY IN QAP, MATERIALS AS PER DRAWING/DATA SHEET SHALL BE FINAL.											
				LEGEND : RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN Q.A. DOCUMENTATION ** M: MANUFACTURER/SUB SUPPLIER C: MAIN SUPPLIER, P-PERFORM, W-WITNESS and V- WITNESS and V: VERIFICATION AS APPROPRIATE, "CHP" SHALL INDICATED IN COLUMN "N" AS "W".				DOC. NO.:			APPROVED BY
								FOR NTPC USE			
Manufacturer Sub Supplier				SIGNATURE							

ITEM : (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : HVW/MVW SPRAY NOZZLE (FOR FIRE FIGHTING)		STANDARD QUALITY PLAN				QP NO.: 0000-999-QOM-S -019 REV. NO: 01 DATE : 26/07/06 PAGE 1 OF 1 VALID UPTO : 25/07/2009		REVIEWED BY: U. SUDEEP O.P. NIKMAN S. SIMLA		APPROVED BY: ANIL GUPTA	
CONFORMING TO CODE:		Quantum of check		Type of check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks
		M	C/N					M	C	N	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
1.0 Raw Material											
1.1	Body, Scroll, Deflector, Deflector Pin	Chemical & Physical	Major	Chemical & Physical	1/ Batch	Appd. Data Sheet/ Mfg. Std.	Appd. Data Sheet/ Mfg. Std.	Lab TC	✓	P	V
2.0 Inprocess Inspection											
	Machining & Assembly	Dimension & Fitment	Minor	Measurement, Visual	100%	Mfg. Drg	Mfg. Drg			P	
3.0 Final Inspection											
3.1	Assembled Spray Nozzle	Finish & Dimension	Major	Visual, Measurement	100%	10%	Appd. Data sheet / Mfg. Std.	IR	✓	P	W
3.2		K' Factor & Angle	Major	Flow Test	Random 5% per type	5 Nos per Lot	Appd. Data sheet / Mfg. Std.	IR	✓	P	W
3.3		Spray Pattern	Major	Spray Angle	Random 5% per type	5 Nos per Lot	Appd. Data sheet / Mfg. Std.	IR	✓	P	W

Note: Raw Material shall be as per approved drawings/data sheets.

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
 ** M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION.
 AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W".

FORMAT NO.: QS-01-QAI-P-10/F3-R1

ENGG. DIV./QA&I