

TTTD-106-1 Rev No. 5	Form No.		PROJECT ENGINEERING & SYSTEM DIVISION BHEL, HYDERABAD –32.		PY51390					
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company. TECHNICAL SPECIFICATION FOR SPRAY NOZZLE										
					Revisions :		Prepared by:	Checked by:	Approved By:	Date
							-SD-	-SD-	-SD-	
					00		Sumant	Amit/PCS	MNSR	26.07.18



PROJECT ENGINEERING & SYSTEM DIVISION

BHEL, HYDERABAD –32.

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1. SCOPE/INTENT:

- 1.1. This specification covers the technical requirements of constructional features, accessories, inspection, tests, test certificates, documentation, preservation, packing and forwarding of Spray Nozzle.
- 1.2. Scope of supply shall include design, manufacture, inspection, shop testing, shop painting, packing and delivery.
- 1.3. The supplier shall strictly comply with this standard in all respects. No deviation shall be allowed. However, bidder can raise technical queries on the specification during pre-bid stage and clarifications may be sought from BHEL before the bid submission.

APPLICATION:

These items suitable for fire protection systems (Water based protection system).

2. VARIANT TABLE:

Var. No.	Description	Material Code
01	SS HVWS Nozzle	PY9751390010
02	SS MVWS Nozzle	PY9751390028

Note: Bidder to quote as per Material Code as mentioned in the Enquiry

3. TECHNICAL REQUIREMENTS:

Sl. No.	Requirements	Compliance
3.1	Body	SS 316
3.2	Approval	UL listed
3.3	Discharge angle *	60° to 150° The mentioned discharge angle is only indicative. The discharge angles of nozzles, used in our design practice, are 75°, 80°, 90°, 100°, 110°, 115°, 120° and 140°. Bidder's product range should be able to cover the functional requirement of discharge angles mentioned above.
3.4	K Factor *	Range: 18 to 102 in metric unit The mentioned range is only indicative in metric unit. Bidder may choose K factors equivalent units also. K factor (in metric) of nozzles, used in our design practice are 18, 22, 23, 26, 30, 32, 35, 41, 42, 51,

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.	<table border="1"> <tr> <td></td> <td></td> <td> 64, 79, 91 and 102. Bidder's product range should be able to cover the functional requirement of K factor as mentioned above. </td> </tr> <tr> <td>3.5</td> <td>Finish</td> <td>Chrome plated</td> </tr> <tr> <td>3.6</td> <td>For HVWS Nozzle</td> <td></td> </tr> <tr> <td>3.6.1</td> <td>Size</td> <td>3/4" NPT (M)</td> </tr> <tr> <td>3.6.2</td> <td>Effective Working Pressure</td> <td>3.5 kg/cm²(g) to 5 kg/cm²(g)</td> </tr> <tr> <td>3.6.3</td> <td>Maximum rated pressure</td> <td>12.5 kg/cm²(g)</td> </tr> <tr> <td>3.6.4</td> <td>Strainer</td> <td>SS 316</td> </tr> <tr> <td>3.6.5</td> <td>Scroll</td> <td>SS 316</td> </tr> <tr> <td>3.6.6</td> <td>Deflector Pin</td> <td>Not applicable</td> </tr> <tr> <td>3.6.7</td> <td>Deflector</td> <td>Not applicable</td> </tr> <tr> <td>3.7</td> <td>For MVWS Nozzle</td> <td></td> </tr> <tr> <td>3.7.1</td> <td>Size</td> <td>1/2" NPT (M)</td> </tr> <tr> <td>3.7.2</td> <td>Effective Working Pressure</td> <td>1.4 kg/cm²(g) to 3.5 kg/cm²(g)</td> </tr> <tr> <td>3.7.3</td> <td>Maximum rated pressure</td> <td>12.5 kg/cm²(g)</td> </tr> <tr> <td>3.7.4</td> <td>Strainer</td> <td>Not applicable</td> </tr> <tr> <td>3.7.5</td> <td>Scroll</td> <td>Not applicable</td> </tr> <tr> <td>3.7.6</td> <td>Deflector Pin</td> <td>SS</td> </tr> <tr> <td>3.7.7</td> <td>Deflector</td> <td>SS</td> </tr> <tr> <td>3.8</td> <td>Marking on Equipment</td> <td>Mfg. Trade Name, Year & Batch No, K Factor & Spray Angle, Model, 'UL' Listed mark</td> </tr> </table> * Nozzle angle and K Factor shall be confirmed after post order. 4. PAINTING Finish shall be Chrome plated / natural finish. 5. INSPECTION AND TESTING As per BHEL QAP (Refer attached Annexure) 6. DOCUMENTATION: 6.1. Along with the offer: Signed and stamped copy of this specification as token of acceptance of the specification for execution in the event of Order. As well as catalogue, valid UL listed certificate shall						64, 79, 91 and 102. Bidder's product range should be able to cover the functional requirement of K factor as mentioned above.	3.5	Finish	Chrome plated	3.6	For HVWS Nozzle		3.6.1	Size	3/4" NPT (M)	3.6.2	Effective Working Pressure	3.5 kg/cm ² (g) to 5 kg/cm ² (g)	3.6.3	Maximum rated pressure	12.5 kg/cm ² (g)	3.6.4	Strainer	SS 316	3.6.5	Scroll	SS 316	3.6.6	Deflector Pin	Not applicable	3.6.7	Deflector	Not applicable	3.7	For MVWS Nozzle		3.7.1	Size	1/2" NPT (M)	3.7.2	Effective Working Pressure	1.4 kg/cm ² (g) to 3.5 kg/cm ² (g)	3.7.3	Maximum rated pressure	12.5 kg/cm ² (g)	3.7.4	Strainer	Not applicable	3.7.5	Scroll	Not applicable	3.7.6	Deflector Pin	SS	3.7.7	Deflector	SS	3.8	Marking on Equipment	Mfg. Trade Name, Year & Batch No, K Factor & Spray Angle, Model, 'UL' Listed mark
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.	be submitted along with the offer for at least for the specified K factor and discharge angle as listed in Annexure-1 to this specification. In case the UL certificate is not available, bidder may offer equivalent product with its certification, which will be subjected to purchaser decision for acceptance or rejection. 6.2. After PO Placement: Two copies each of the following documents shall be submitted for approval. • G.A. Drawings with weights and dimensions • Technical Data sheets, Catalogue • Material specification details • Tests to be conducted • O&M manuals • Storage/Preservation instructions for at least three years. Final documentation consisting of above documents shall be submitted in requisite sets (to be decided post order) of hard and soft copies. Schedule for document submissions: <table border="1"> <thead> <tr> <th>S.no</th> <th>Description</th> <th>Schedule</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Submission of GA drawing & Technical Datasheet by vendor</td> <td>7 days from the date of P.O.</td> </tr> <tr> <td>2</td> <td>Approval GA drawing & Technical Datasheet by BHEL</td> <td>14 days from receipt of the document*</td> </tr> </tbody> </table> * The GA drawing & Technical Datasheet submitted by vendor shall be strictly in compliance to all applicable standards and specification. 7. PRESERVATION, PACKING & MARKING OR PACKING CASE: 7.1. A suitable temporary rust preventive with minimum life of two years shall be applied inside the item/equipment body in order to prevent corrosion. 7.2. All the item / equipment shall be packed suitably in closed wooden cases in order to avoid damage during transit and storage at BHEL. Suitable supports shall be provided inside the cases in order to avoid internal movement. In case of exported consignments, the packing shall be seaworthy (Refer enclosed Annexure for Export Packing guidelines, AA 0490009, Rev-01). Each item / equipment after end protection should be wrapped in polythene sheet before packing in the cases.			S.no	Description	Schedule	1	Submission of GA drawing & Technical Datasheet by vendor	7 days from the date of P.O.	2	Approval GA drawing & Technical Datasheet by BHEL	14 days from receipt of the document*
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.	Each packing case must contain two copies of the shipping list giving details of all the contents of the case. 7.3. The following marking shall be done on each packing case minimum on two sides and at the top. (a) Complete address of the consignee and destination as per BHEL Purchase Order. (b) BHEL Purchase order Number (c) BHEL item Material Code (d) Number of pieces in each packing case (e) Net Weight (f) Gross Weight (g) Packing case number and total number of packing (h) Arrow indicating top of the packing case.			
	Ref. Doc.			

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	Rev. No.	Date	Revision Details	Revised By	Checked By	Approved By
	00	26.07.2018	First Issue	-SD-	-SD-	-SD-
	01	21.01.2020	Details of K factor of nozzles are added	Anupam / Sumant	Amit / Kamaluddin	P. C. S
	Ref. Doc.					