

TD-106-1 Rev No. 5 Form No.	 HYDERABAD	PRODUCT STANDARD PUMPS HYDERABAD		FP60291																																																															
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<u>ADDL QUALITY REQUIREMENTS - MHI DESIGN BFPs &, BPs</u> 1.0 SCOPE: This standard specifies additional quality requirements apart from the Plant Purchasing specifications HY19593-R03 and HY19569-R03. These additional quality requirements are as per purchase specifications of the Collaborator M/s.MHI, Japan. 2.0 CASTINGS COVERED UNDER THIS STANDARD: <table border="1"> <thead> <tr> <th>PUMP TYPE</th> <th>CASTING</th> <th>MATL CODE</th> <th>DRG.NO.-VAR NO</th> <th>JIS / MHI SPECN</th> </tr> </thead> <tbody> <tr> <td rowspan="2">MDG455</td> <td>Inner casing U&L (RPCL)</td> <td>FP9219306093</td> <td>21804214960-00</td> <td rowspan="2">SCS6</td> </tr> <tr> <td>Inner casing U&L (Gadarwara)</td> <td>FP9219306140</td> <td>21804215005-00</td> </tr> <tr> <td>MDG405</td> <td>Inner casing U&L</td> <td>FP9219306034</td> <td>21804214959-00</td> <td>SCS6</td> </tr> <tr> <td>MDG366</td> <td>Inner casing U&L</td> <td>FP9219321017</td> <td>21804215002-00</td> <td>SCS6</td> </tr> <tr> <td>MDG346</td> <td>Inner casing U&L</td> <td>FP9219306107</td> <td>21804214970-00</td> <td>SCS6</td> </tr> <tr> <td rowspan="4">MLC450</td> <td>Casing-TD</td> <td>FP9219306115</td> <td>01891124504-00</td> <td rowspan="4">SCS6</td> </tr> <tr> <td>Casing cover-TD</td> <td>FP9219306506</td> <td>01891124507-00</td> </tr> <tr> <td>Casing-MD</td> <td>FP9219306131</td> <td>01891124505-00</td> </tr> <tr> <td>Casing cover-MD</td> <td>FP9219306530</td> <td>01891124524-00</td> </tr> <tr> <td rowspan="4">MLC400</td> <td>Casing-TD</td> <td>FP9219306026</td> <td>01891124488-00</td> <td rowspan="4">SCS6</td> </tr> <tr> <td>Casing cover-TD</td> <td>FP9219307006</td> <td>01891124491-00</td> </tr> <tr> <td>Casing-MD</td> <td>FP9219306123</td> <td>01891124489-00</td> </tr> <tr> <td>Casing cover-MD</td> <td>FP9219306514</td> <td>01891124514-00</td> </tr> <tr> <td rowspan="2">144RND</td> <td>1st stage casing</td> <td>FP9216906073</td> <td>01812824576-00</td> <td rowspan="2">SCPH2</td> </tr> <tr> <td>Stage bowl & Discharge bowl</td> <td>FP9216907177</td> <td>01812924569-00</td> </tr> </tbody> </table>		PUMP TYPE	CASTING	MATL CODE	DRG.NO.-VAR NO	JIS / MHI SPECN	MDG455	Inner casing U&L (RPCL)	FP9219306093	21804214960-00	SCS6	Inner casing U&L (Gadarwara)	FP9219306140	21804215005-00	MDG405	Inner casing U&L	FP9219306034	21804214959-00	SCS6	MDG366	Inner casing U&L	FP9219321017	21804215002-00	SCS6	MDG346	Inner casing U&L	FP9219306107	21804214970-00	SCS6	MLC450	Casing-TD	FP9219306115	01891124504-00	SCS6	Casing cover-TD	FP9219306506	01891124507-00	Casing-MD	FP9219306131	01891124505-00	Casing cover-MD	FP9219306530	01891124524-00	MLC400	Casing-TD	FP9219306026	01891124488-00	SCS6	Casing cover-TD	FP9219307006	01891124491-00	Casing-MD	FP9219306123	01891124489-00	Casing cover-MD	FP9219306514	01891124514-00	144RND	1 st stage casing	FP9216906073	01812824576-00	SCPH2	Stage bowl & Discharge bowl	FP9216907177	01812924569-00		
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Ref. Doc	Revisions :		Prepared :	Approved :	Date :																																																														
	Refer to record of revisions :		M.S.RAM	K.H.R.K	22.04.16																																																														



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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.		3.0 ADDL.REQUIREMENTS FOR CASTINGS WITH JIS SPECN <u>SCS6</u>: 3.1 HEAT TREATMENT: Against Clause 6.0 of Specification HY19593-R03, Castings shall be heat treated as mentioned below. Quenching : 950 deg.C MINIMUM + Air cooling Tempering : 570 - 620 deg.C + Air cooling or slow cooling 3.2 MECHANICAL PROPERTIES: Over and above specification requirement of Clause 10.0 of HY19593-R03, castings shall confirm to the following tensile test requirement. Tensile test for reduction of area > 35% 4.0 ADDL.REQUIREMENTS FOR CASTINGS WITH JIS SPECN <u>SCPH2</u>: 4.1 MECHANICAL PROPERTIES: Over and above specification requirement of Clause 11.0 of HY19569-R05, castings shall confirm to the following tensile test requirement. Yield strength > 245 N/sq.mm Tensile strength > 480 N/sq.mm Reduction of area > 35% 6.0 LIQUID PENETRANT TEST FOR ALL CASTINGS: Penetrant Test shall be conducted as per BHEL standard AA0850131. Acceptance standards: Both the following acceptance standards shall be met. 6.1 As per MHI standard GPC-0280-R05: No crack indications Size of indication shall be under 2 mm. Linear indication is the length not less than three the width. Maximum 2 pieces of linear indications on the unit area (in a rectangle of 2500 sq.mm, maximum length of a side of the rectangle shall be 150mm)	Ref. Doc	6.2 As per AA0850132 : 3 no. of 3 mm dia circular indications per unit rectangular area of 100 sq.cm. The maximum length of side of rectangle shall be 25cm.



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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.		7.0 DIMENSIONAL CHECK FOR CASTINGS: All the castings shall be dimensionally checked as per the following applicable Formats, in addition to the regular dimensional check as per casting drawing. 7.1 FOR INNER CASINGS OF BFPs: Applicable Format Nos.: 8.4, 9.5 & Wall thickness doc no.66M-2544-R0 (separate attachment, file name : FP60291-Formats-BFP.pdf) 7.2 FOR CASING & CASING COVERS OF BOOSTER PUMPS: Applicable Format Nos.: 8.2, 9.2 & 9.5 (separate attachment, file name : FP60291-Formats-BP.pdf) 7.3 FOR 1ST STAGE CASING, STAGE&DISCHARGE BOWLS OF CEP: Applicable Format Nos.: 8.3, 8.6 & 9.4 (separate attachment, file name : FP60291-Formats-CEP.pdf)		
Ref. Doc				



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		Rev. No.	Date	Revision Details	Revised By	Approved By
		Ref. Doc.				