

**TECHNICAL SPECIFICATION FOR "PIPING SYSTEM & TROLLEY FOR UPGRADATION OF HOT WATER FLUSHING UNIT" SPECIFICATION NO. EMT-6823**

SL NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIREMENT	OFFERED	DEVIATION
1.0	<b>PURPOSE :</b>			
	The piping system shall be used for the circulation of hot water at 80±10°C and 2 kg/cm <sup>2</sup> in the stator winding bars of THDF type Turbo generators. The trolley shall be used for moving the hot water flushing unit in and out of the stator winding enclosure as and when required.	Vendor to note.		
2.0	<b>SCOPE :</b>			
	The scope of supply includes design, manufacturing and supply of the piping system and trolley for the up gradation of the hot water flushing unit at BHEL works, Haridwar. <b>NOTE:</b> - Vendor may visit BHEL Haridwar works to refer the scheme before submitting the offer.	Vendor to confirm.		
3.0	<b>JOB DESCRIPTION :</b>			
3.1	After inserting the stator winding bars into stator slots, the curing of the winding and overhang portion of the stator winding is done for settling the bars into slots and curing of the putty filled in overhang portion. This curing is done by circulating the hot water at 80±10°C and 2 kg/cm <sup>2</sup> .	Vendor to note.		
3.2	Hot Water Flushing Unit (BHELs Scope) is kept inside the stator winding enclosure where the winding is done. The trolley will be used to move the hot water flushing unit in and out of the stator winding enclosure.	Vendor to note.		
4.0	<b>TECHNICAL REQUIREMENT</b>			
4.1	<b>Bend Pipe as per sketch EMT-1909/01, Qty – 1 No.</b>	Vendor to confirm.		
4.1.1	Stainless Steel Pipe with material Grade SS304.			
4.1.2	Stainless Steel Pipe NB 90, Outer Diameter 101.6 mm, Wall Thickness 3.2 mm.			
4.1.3	Stainless Steel pipe with flanges at both ends.			
4.1.4	Bending radius of Pipe R100.			
4.1.5	The perpendicularity shall be maintained between flange and pipe as per sketch on both ends.			
4.1.6	Details of fixed flanges as per sketch.			
4.2	<b>Bend Pipe as per sketch EMT-1909/02, Qty – 1 No.</b>	Vendor to confirm.		
4.2.1	Stainless Steel Pipe with material Grade SS304.			
4.2.2	Stainless Steel Pipe NB 90, Outer Diameter			

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4.5	Pipe with two valves as per sketch EMT-1909/06, Qty – 1 No.	Vendor to confirm.		
4.5.1	Stainless Steel Pipe with material Grade SS304.			
4.5.2	Stainless Steel Pipe NB 90, Outer Diameter 101.6 mm, Wall Thickness 3.2 mm.			
4.5.3	Stainless Steel pipe with fixed flanges at both ends.			
4.5.4	The perpendicularity shall be maintained between flange and pipe as per sketch on both ends.			
4.5.5	Details of fixed flanges as per sketch.			
4.5.6	Reputed make valve NB 100 and NB 50 are to be supplied.	Vendor shall furnish the make in the offer.		
4.6	Bend Pipe as per sketch EMT-1909/07, Qty – 1 No.	Vendor to confirm.		
4.6.1	Stainless Steel Pipe with material Grade SS304.			
4.6.2	Stainless Steel Pipe NB 90, Outer Diameter 101.6 mm, Wall Thickness 3.2 mm.			
4.6.3	Stainless Steel pipe with fixed flanges at both ends.			
4.6.4	Bending radius of Pipe R100.			
4.6.5	The perpendicularity shall be maintained between pipe and flanges as per sketch.			
4.6.6	Details of fixed flanges as per sketch.			
4.7	<b>PNEUMATIC TESTING :</b>	Vendor to confirm.		
4.7.1	Connect item no. 3, 7, 5, 2 & 6 as per sketch EMT-1909 and perform pneumatic test at 10 bar for 30 minutes.			
4.7.2	Connect pipe no. 1 & 3 as per sketch EMT-1909 and perform pneumatic test at 10 bar for 30 minutes.			
4.7.3	All arrangement required for performing the tests at sl. No. 4.7.1 & 4.7.2 shall be arranged vendor.			
4.8	<b>PARAMETER OF MANUAL TROLLEY :</b>	Vendor to confirm.		
4.8.1	Length of the trolley 3000 mm.			
4.8.2	Width of the trolley 2500 mm.			
4.8.3	Height of the trolley top from ground level shall not exceed 550 mm.			
4.8.4	Weight carrying capacity 4 Ton.			
4.8.5	Centre to centre distance between the existing rails is 1460 mm.			
4.8.6	Width of the each rail is 60 mm.			
4.8.7	Trolley shall run smoothly on the existing rails at BHEL works, Haridwar. <i>Suitable locking system shall be provided</i> <b>NOTE:</b> - Vendor may visit BHEL Haridwar works to refer the same before submitting the offer.			
4.8.8	Suitable no. forged alloy wheels shall be provided. Details of wheel like diameter, size,	Vendor shall furnish the details in the offer.		

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	collar etc to be furnished along with the offer.			
4.8.9	Hooks for maneuvering shall be provided.			
4.8.10	Material of Trolley – SS 304.			
<b>5.0</b>	<b>GENERAL ARRANGEMENT DRAWING TROLLEY</b>			
5.1	General arrangement drawing of Manual Trolley indicating all the details such as overall size, position of wheels ribs various items used etc. are to be furnished with the offer.	Vendor to confirm.		
5.2	General Arrangement Drawing with details as mentioned in Sl. No. 4.8 & 5.1, is to be submitted for BHEL approval within one month after placement of Purchase Order	Vendor to confirm.		
<b>6.0</b>	<b>PRE-DISPATCH INSPECTION :</b>			
6.1	Pre-acceptance of the piping system and manual trolley for the up gradation of the hot water flushing unit will be done by BHEL engineer at vendor's works before dispatch. The vendor must give minimum 15 days notice for pre-inspection.	Vendor to confirm.		
6.2	Tests as per Sl. No. 4.7 shall be performed in the presence of the BHELs representative.	Vendor to confirm.		
<b>7.0</b>	<b>GUARANTEE/ WARANTEE</b>			
7.1	Guarantee for piping system and trolley for up gradation of the hot water flushing unit shall be 18 months from the date of dispatch or 12 months from the date of final acceptance at BHEL works, Haridwar, whichever is earlier.	Vendor to confirm.		
7.2	Any spares required during guarantee period shall have to be arranged by the vendor free of cost (up to BHEL Haridwar stores) and duty levied has to be borne by the vendor.	Vendor to confirm.		
<b>8.0</b>	<b>GENERAL :</b>			
8.1	Manual Trolley shall be painted to grey RAL 7038 or mutually agreed.	Vendor to confirm.		
8.2	Piping system and trolley for the up gradation of the hot water flushing unit shall be suitably packed to prevent damage during transit and storage.	Vendor to confirm.		

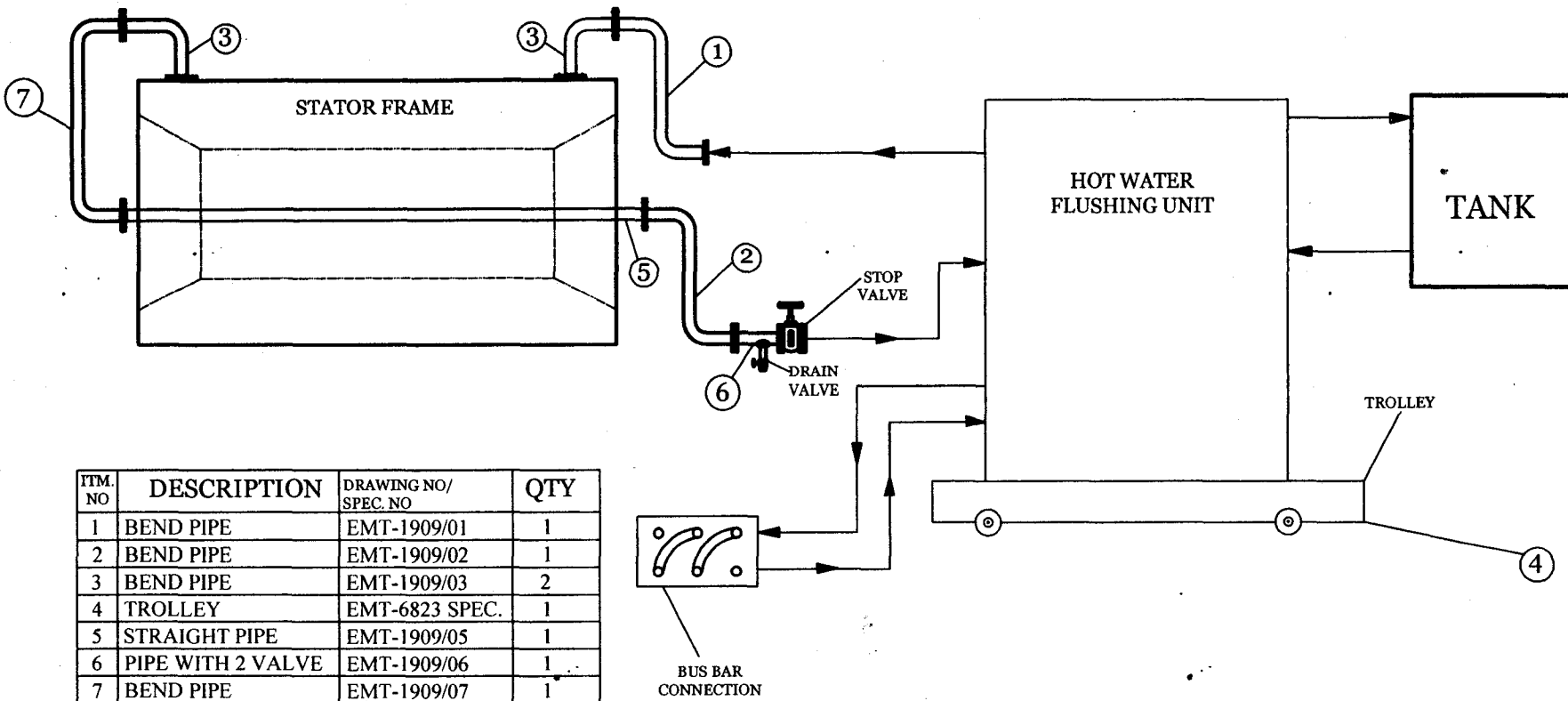
*Mohina Tandon*  
 11/2/14  
 (Mohina Tandon)  
 Engineer (EMT)

*Amit Kumar*  
 03/02/14  
 (Amit Kumar)  
 Manager (LSTG, Block-I)

*R.K. Verma*  
 (R. K. Verma)  
 Sr. Manager, WEX-I

6061-LWT  
DRAWING No.

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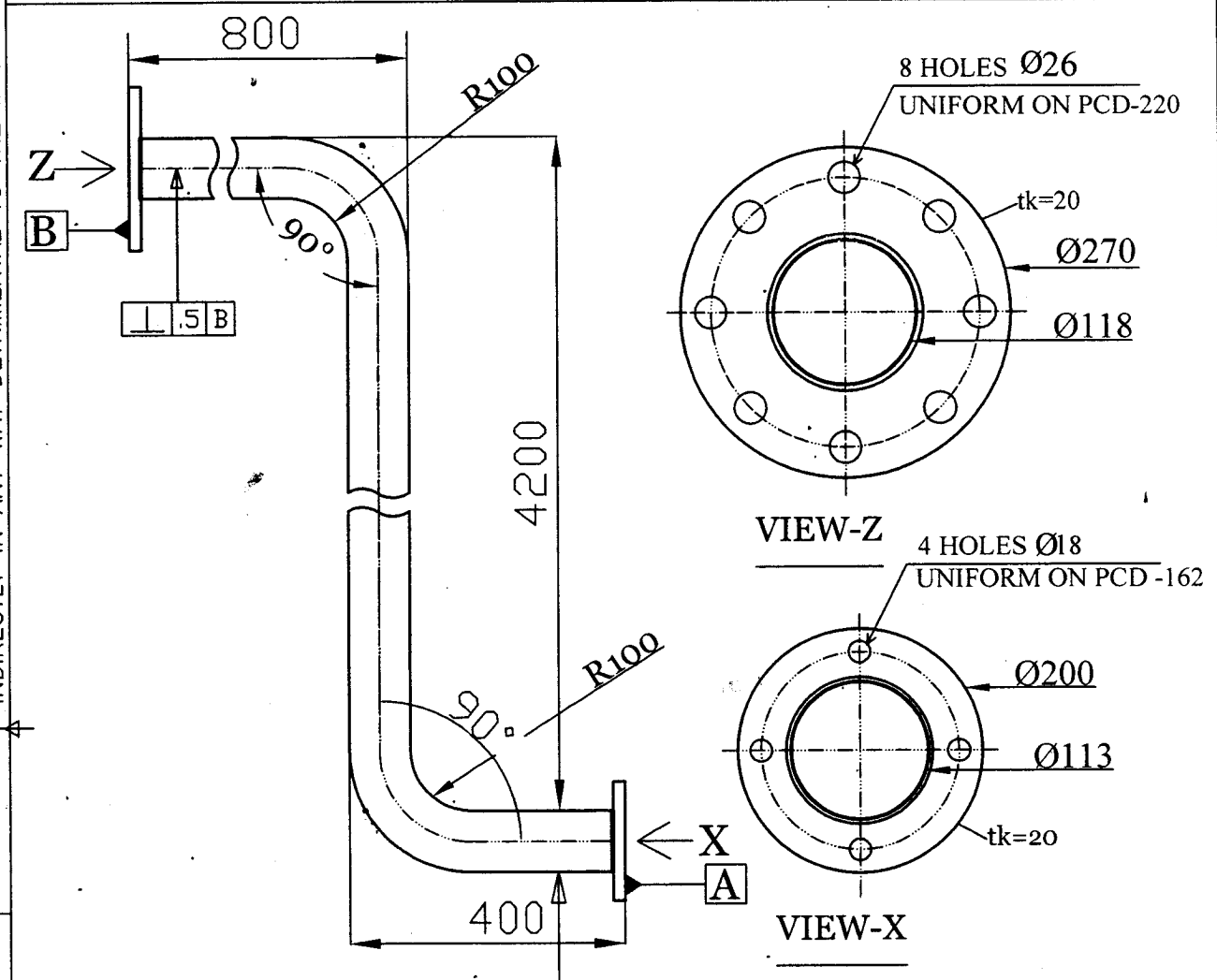
ITM. NO	DESCRIPTION	DRAWING NO/ SPEC. NO	QTY
1	BEND PIPE	EMT-1909/01	1
2	BEND PIPE	EMT-1909/02	1
3	BEND PIPE	EMT-1909/03	2
4	TROLLEY	EMT-6823 SPEC.	1
5	STRAIGHT PIPE	EMT-1909/05	1
6	PIPE WITH 2 VALVE	EMT-1909/06	1
7	BEND PIPE	EMT-1909/07	1

INVENTORY No. SIGN. & DATE REF. DRG. No.

REV	DATE	ALTERED	REV	DATE	ALTERED
		CHECKED			CHECKED

BHARAT HEAVY ELECTRICALS LTD. HARDWAR	NAME	SIGN.	DATE	No. OF VAR.
	DRN	TARUN TOMAR	<i>Tarun Tomar</i>	30.1.14
	CHD	MOHINA TANDON	<i>Mohina Tandon</i>	20.1.14
	APD	N S RANA	<i>N S Rana</i>	30.1.14
DEPT.	SCALE	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM No. OF No. ITEMS
CODE			DRAWING No.	REV
TITLE PIPING SYSTEM & TROLLEY FOR HOT WATER FLUSHING UNIT			EMT-1909	
			SHEET No. 01   No. OF SHEETS 01	

REV	DATE	ALTERED	REV	DATE	ALTERED	GMSNo./GR.SP.No.		STATUS OF DRG.	
		CHECKED			CHECKED	AGREED DEPT.	NAME	SIGN.	DATE
GRADE OF UNTOL. DIM.M/CG- $\phi$ /M/F/-AA0230208						WELDING A/B/C/D AA0621104		GASCUTTING-'T3'AA0621101	



Notes:-

- 1) Pipe NB=90, OD=101.6, TK=3.2mm
- 2) Weld seams should be minimum 5mm.
- 3) The material used in pipe and flange should be stainless steel (SS-304).
- 4) All dimensions are in mm.

REF.DRG.No. SIGN & DATE INVENTORY No

	BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN	DATE	No. OF VAR	
	HARDWAR		DRN	TARUN TOMAR	30.1.14		
			CHD	MOHINA TANDON	30.1.14		
		APD	N S RANA	30.1.14			
DEPT		SCALE	WEIGHT(kg)	REF. TO ASSY. DRG.		ITEM No.	No. OF ITEM
CODE				DRAWING No.		REV	
TITLE BEND PIPE FOR HOT WATER FLUSHING UNIT				EMT-1909/01			
				SHEET No. 01	No. OF SHEETS 01		

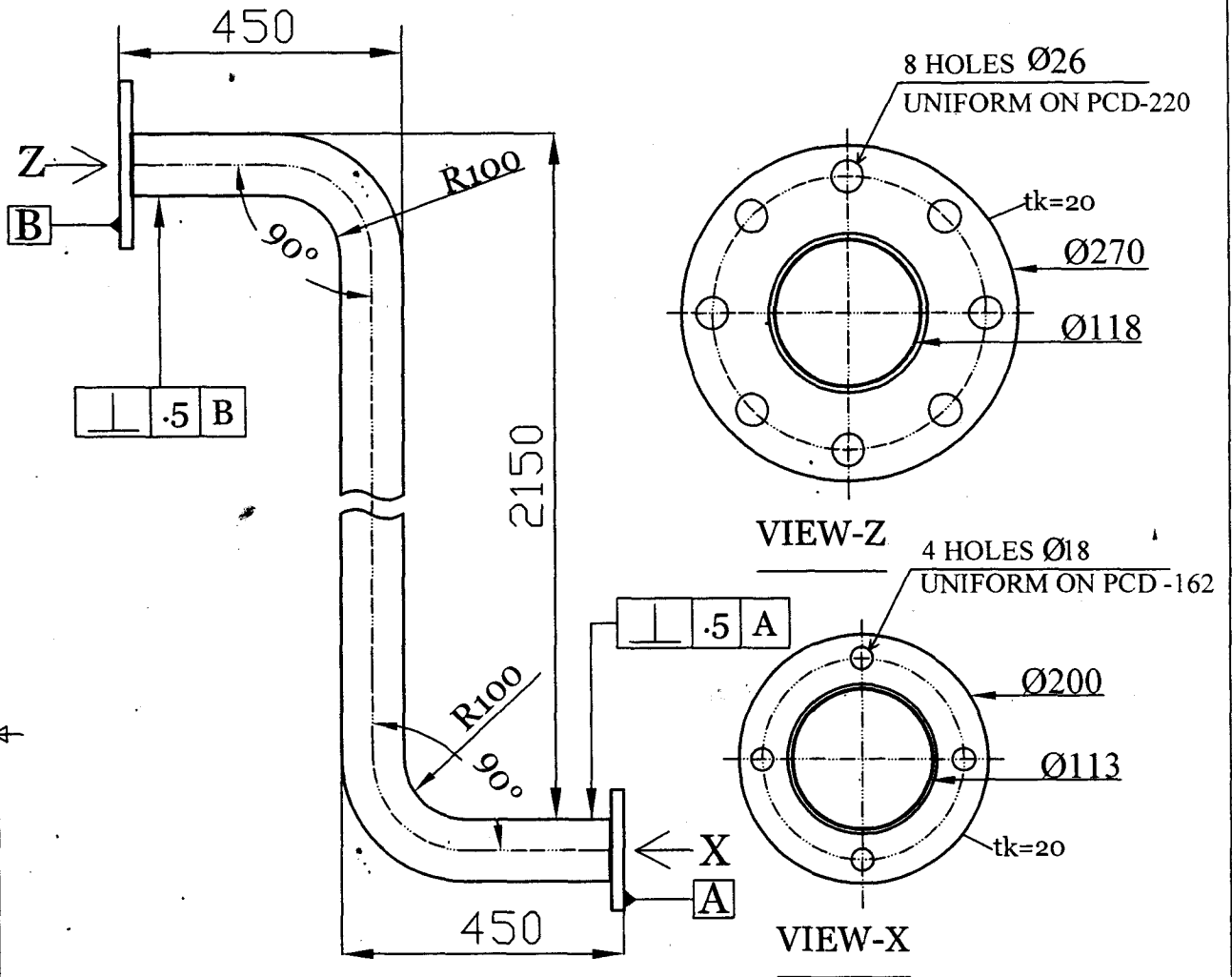
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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG39(B)

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REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	GMSNo./GR.SP.No.		STATUS OF DRG.	
						AGREED DEPT.	NAME	SIGN.	DATE
GRADE OF UNTOL. DIM.M/CG- $\ell$ /M/F/-AA0230208				WELDING A/B/C/D AA0621104		GASCUTTING-T3'AA0621101			



**Notes:-**

- 1) Pipe NB=90, OD=101.6, TK=3.2mm
- 2) Weld seams should be minimum 5mm.
- 3) The material used in pipe and flange should be stainless steel (SS-304).
- 4) All dimensions are in mm.

REF.DRG.No.

SIGN & DATE

INVENTORY No



**BHARAT HEAVY ELECTRICALS LTD.  
HARDWAR**

	NAME	SIGN	DATE	No.
DRN	TARUN TOMAR	<i>Tarun Tomar</i>	30.1.14	OF
CHD	MOHINA TANDON	<i>Mohina Tandon</i>	30.1.14	VAR
APD	N S RANA	<i>N S Rana</i>		

DEPT		SCALE	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM No.	No. OF ITEM
CODE						
TITLE <b>BEND PIPE FOR HOT WATER FLUSHING UNIT</b>				DRAWING No. <b>EMT-1909/02</b>		REV
				SHEET No. 01	No. OF SHEETS 01	

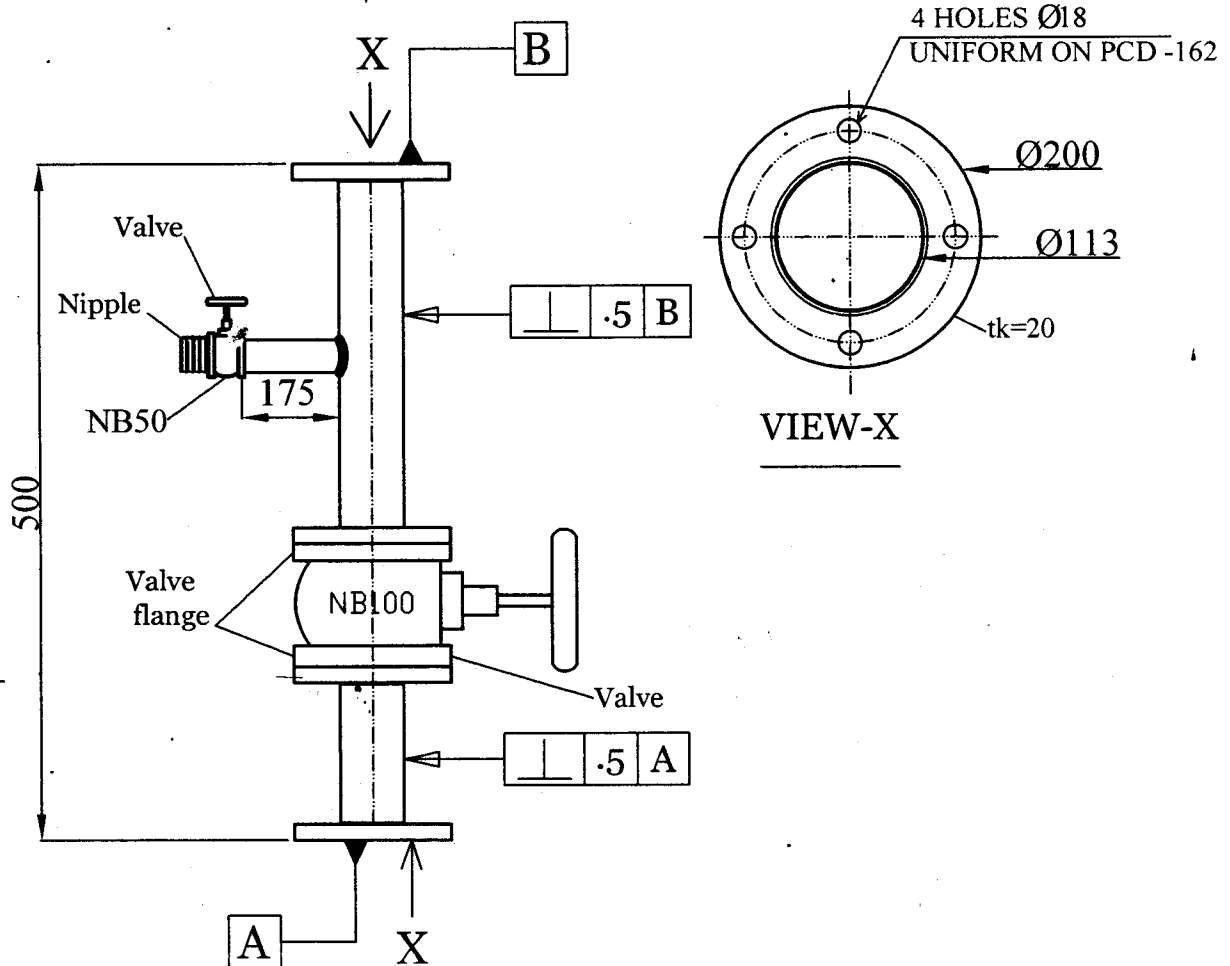
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG39(B)

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REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	GMSNo./GR.SP.No.			STATUS OF DRG.
						AGREED DEPT.	NAME	SIGN.	DATE

GRADE OF UNTOL. DIM.M/CG-~~L~~/M/F/-AA0230208 WELDING A/B/C/D AA0621104 GASCUTTING-'T3'AA0621101



**Notes:-**

- 1) Pipe NB=90, OD=101.6, TK=3.2mm
- 2) Flange size should match with valve flange.
- 3) Weld seams should be minimum 5mm.
- 4) The material used in pipe and flange should be stainless steel (SS-304).
- 5) All dimensions are in mm.

REF.DRG.No.	SIGN & DATE		BHARAT HEAVY ELECTRICALS LTD. HARDWAR		NAME	SIGN	DATE	No.				
					DRN	TARUN TOMAR	<i>Tarun</i>	30.1.14	OF			
INVENTORY No	DEPT		SCALE	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM No.	No. OF ITEM	REV				
					CHD				MOHINA TANDON	<i>Mohina</i>	30.1.14	VAR
					APD				N S RANA	<i>N S Rana</i>	30.1.14	
TITLE BEND PIPE FOR HOT WATER FLUSHING UNIT					DRAWING No. EMT-1909/06							
					SHEET No. 01	No. OF SHEETS 01						



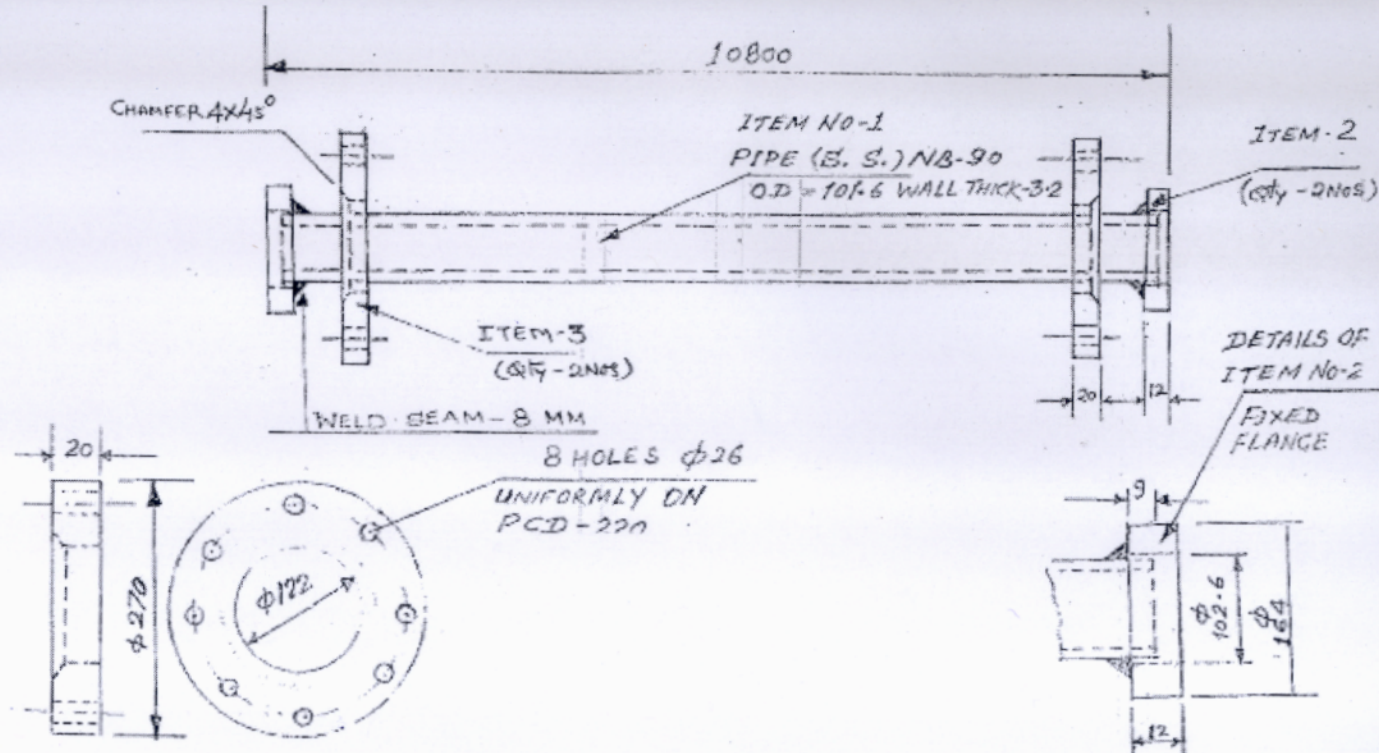




EMT-1909/05  
DRAWING No.

ALL DIMENSIONS ARE IN MM.

ANNEXURE - II (PAGE-1)



DETAILS OF ITEM-3  
FLOATING FLANGE

STAINLESS STEEL PIPE (ITEM-1)  
WITH FLOATING FLANGE

GMS No./GR.SP.No.		STATUS OF DRG		TYPE OF PRODUCT		COMP. DRG. No.		M/C TOOL TRANS No.		REF. DRG. No.							
AGREED	DEPT	NAME	SIGN.	DATE		DESIGN ORDER No.		M/C MODEL No.									
GRADE OF UNTOL. DIM.:-				BHARAT HEAVY ELECTRICALS LTD. HARDWAR				NAME		SIGN.		DATE		No. OF VAR.			
M/CG-6/M/1 A0230208								DRN		FARUN TOMAR							
WELDING-A/B/C/D A0621104								CHD		MORINDA TANDON							
GAS CUTTING-'T3' A0621101				APD		N S RANA											
REV	DATE	ALTERED	CHECKED	REV	DATE	ALTERED	CHECKED	DEPT.	SCALE	WEIGHT(Kg)	REF.TO ASSY. DRG.	ITEM No. OF No	REV				
TITLE STRAIGHT PIPE FOR HOT WATER HEATING INSTALLATION								DRAWING No. EMT-1909/05				REV					
								SHEET No. 01 / No. OF SHEETS 01									

SIZE A 3

22