

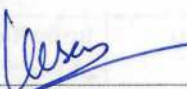
	<b>Bharat Heavy Electricals Ltd</b> <b>Boiler Auxiliaries Plant</b> Ranipet-632 406	<b>FLUE GAS DESULPHURISATION DEPT.</b> <b>TECHNICAL SPECIFICATION</b>
<b>TECHNICAL SPECIFICATION: FWQS:024</b>	<b>REV NO:00</b>	

00	25/06/2021	FRESH RELEASE			
			ANUPAM KUSHWAHA	SHANMUGA SUDARAM S	V.KESAVAN
REV	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED

Sl.no	Item	RUBBER EXPANSION JOINTS/BELLOWS FOR PIPELINE	Vendor Acceptance/ Comments
1	Scope of supply	1) Design, manufacture, testing and supply of Rubber Expansion Joints for pipeline in the duty condition as specified in technical datasheet.  2) Vendor to provide both side swiveling metal flanges along with fastener (galvanized). Counter/Companion flange shall be in the BHEL scope.  3) Vendor to provide galvanised control rods (tie rod), bolts, nuts and washers.  Note: Control Plates (shall be welded type with flanges)	
2	Eligibility criteria	1) Vendor should be a manufacturer of Rubber Expansion Joints.  2) List of customers to whom Rubber Expansion Joints of similar size supplied, unpriced PO Copy to be furnished along with offer.  3) Previous inspection/ test report to be furnished for the similar sizes along with offer.	
3	Sizes	350NB,300NB,200NB,150 NB,125 NB & 100 NB	
4	Application-Fluid	Gypsum Slurry : 350NB,300NB & 200NB Air/Water : 150NB,125NB & 100NB	
5	Type	<b>Filled Single Arch Type for:</b> 350NB, 300NB & 200NB sizes <b>Open Single Arch Type for :</b> 150NB,125 NB & 100NB sizes	
6	Flange	All holes and dimensions shall be as per ANSI B16.5 Class 150	
7	Connection Type	Minimum One side flange will be loose/slip-on swivelling type.  <b>Note:</b> Flanges will be in single piece of both ends. Split type of flange is not acceptable.	
8	Galvanizing	Flange, Control Plates, Control Rods, Nuts & Washers all shall be galvanized-40μ thick.	

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9	Sample requirement	During enquiry stage, one number of typical sample of rubber expansion joint to be sent to BHEL for review.  <b>Note:</b> Vendors who have earlier sent their REJ sample vide the tender enquiry no. 3800029E dtd. 25/04/2020 need not to send again. Other new vendors must send their typical sample of REJ to BHEL.	
10	Inspection at vendor works	1) Inspection by BHEL or its authorized agency.  2) Material Test Certificates shall be submitted during inspection.	
11	Document	1) The Vendor shall furnish point wise reply and submit seal & signed copy of this technical specification. 2) The Vendor shall submit the dimensional drawings / catalogues indicating M.O.C and weight along with the offer for information. 3) Vendor to provided Quality plan with the offer.	
12	Packing	1) Rubber Expansion Joints of each size/ Type/ rating/ Standard/ Material should be suitably packed separately. Each package shall marked with same details so that the Expansion Joints shall be Identified easily. 2) The part items of the equipment should be identified by the tag numbers and should be packed as to minimize the possibility of damage during storage or transit. The equipment shall be protected for a storage of 12 months at site, if any extra precaution is to be taken by the Purchaser for storage beyond 12 months the same shall be explicitly indicated in the operation and maintenance manuals.	
13	Outside the box	PO number, vendor name, item size, material code, model number, quantity inside the box, gross weight and net weight to be mentioned.	
14	Drawing	Typical drawing (Illustrative purpose only) of REJ is attached for reference.	

**TECHNICAL DATASHEET FOR RUBBER EXPANSION JOINTS:**

Data Sheet for Rubber Expansion Joints for (Flue Gas Desulphurization)FGD Projects							
S. No.	1	2	3	4	5	6	7
Location	RC Spray Header	RC Spray Header	JAS Input	JAS Input / Mist Eliminator Washing Pipe Inlet	Mist Eliminator Washing Pipe Inlet	Mist Eliminator Washing Pipe Inlet	Vendor to Confirm
Flow media	Gypsum Slurry	Gypsum Slurry	Gypsum Slurry	Air/ Water	Water	Water	
Purpose	Anti-Vibration/ Displacement	Anti-Vibration/ Displacement	Anti-Vibration/ Displacement	Anti-Vibration/ Displacement	Anti-Vibration/ Displacement	Anti-Vibration/ Displacement	
Pipe Size	NB 350	NB 300	NB 200	NB 150	NB125	NB 100	
Arch type	Filled	Filled	Filled	Open	Open	Open	
Face-To-Face Length (including rubber lining)	200 mm	150 mm	150 mm	150 mm	150 mm	150 mm	
Service conditions	Operating Temp. (Deg.C)	70	70	100	100	70	70
	Design Temp. (Deg.C)	80	80	110	110	80	80
	Working pressure (g) kg/cm <sup>2</sup>	4	4	4	8	8	8
	Hydro Test Pressure kg/cm <sup>2</sup> (g)	6	6	6	12	12	12
	Installation Position	Horizontal / Vertical/ Inclined	Horizontal/ Vertical/ Inclined	Horizontal/ Vertical/ Inclined	Horizontal/ Vertical/ Inclined	Horizontal/ Vertical/ Inclined	
Shore Hardness		65±5 shore A	65±5 shore A	65±5 shore A	65±5 shore A	65±5 shore A	
Axial Movement (mm)	Compression	30	30	30	19	19	19
	Extension	17	17	17	11	11	11
Lateral Movement (mm)		19	19	16	16	16	16
Flange Details	O.D. (mm)	534	483	343	279	254	229
	PCD (mm)	476.2	431.8	298.5	241.3	215.9	190.5
	Hole Dia. (mm)	28.4	25.4	22.2	22.2	22.2	19.1
	No. Of Hole (nos.)	12	12	8	8	8	8
	Thickness (mm)as per ANSI B16.5	35	32	28	25	24	24
Tie Rod Length (mm)		380±5	300±5	300±5	300±5	300±5	300±5
Tie Rod dia. (Ø)mm		Ø24	Ø24	Ø16	Ø16	Ø16	Ø16

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**Material of Construction:**

Fixed Flange	IS 2062+ Chloroprene Rubber	
Loose Flange	IS 2062+ Chloroprene Rubber	
Rubber Outer Cover	EPDM	
Reinforcing Fabric	Chemical fibre	
Reinforcing Cord	Chemical fibre	
Rubber Inner Tube	Chloroprene Rubber	
Control Ring/Plate (Control plates will be welded on the flanges. Bolted type is not acceptable)	IS 2062 Gr. A	
Tie Rod/control bolt	IS:1367 CL 6.8 With 40 $\mu$ Galvanised	
Nut, Lock nut & Washer	IS:1367 CL 6.0 With 40 $\mu$ Galvanised	

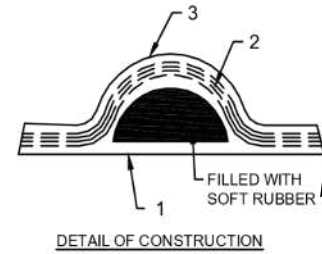
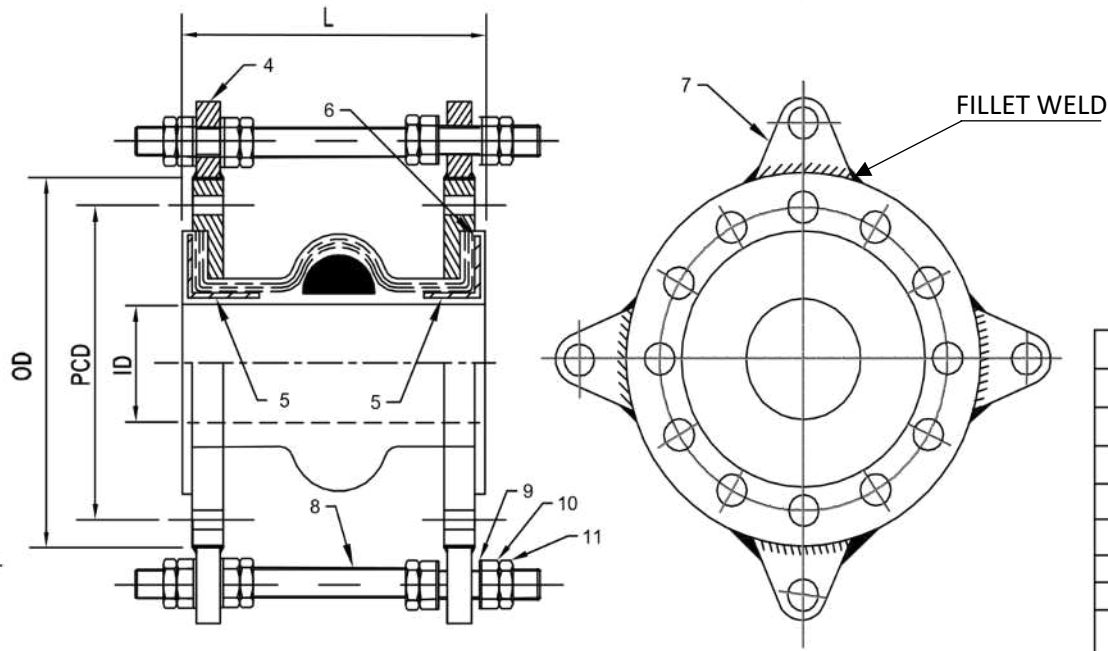
**Remarks:** One Set of Rubber Expansion joint/bellow consists of following items explained in below table-

Items	350 NB/300 NB	200NB/150NB/125NB/100NB	Vendor Acceptance /Comments
Bellow	1 no.	1 no.	
Flange(1 fixed +1 slip on)	2 nos.	2 nos.	
Control plates	8 nos.	4 nos.	
Tie rod/Control bolts	4 nos.	2 nos.	
Nut	16 nos.	8 nos.	
Lock Nut	16 nos.	8 nos.	
Washer	16 nos.	8 nos.	

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REV NO:00

SPECIFICATION NO: FWQS:024





Note:

1. Not applicable to sizes 150NB, 125NB, &100NB.
2. Applicable to only sizes 350NB,300NB&200NB

11	NUT	A307 B+GAL 50μ	4x4	4x2
10	LOCK NUT	A307 B+GAL 50μ	4x4	4x2
9	WASHER	A307 B+GAL 50μ	4X4	4X2
8	CONTROL BOLT	A307 B+GAL 50μ	4	2
7	CONTROL PLATE	ASTM A36	4X2	2X2
6	LOOSE FLANGE	ASTM A36	1	1
5	NIPPLE	ASTM A36	2	2
4	FLANGE	ASTM A36+CR	1	1
3	RUBBER OUTER COVER	EPDM		
2	REINFORCING FABRIC	CHEMICAL FIBER		
1	RUBBER INNER TUBE	CHLOROPRENE RUBBER		
PART NO.	NAME OF PART	MATERIAL	QNTY IN NOS. (FOR 300NB & ABOVE)	QNTY IN NOS. (FOR BELOW 300NB)
BILL OF MATERIALS				

TYPICAL DRAWING OF RUBBER EXPANSION JOINT WITH BOM

	BHARAT HEAVY ELECTRICALS LIMITED, UNIT: BOILER AUXILIARIES PLANT, RANIPET-632 406.		DEPT CODE	NAME	SIGN	DATE
			DRN	ARUN KUMAR		10.11.19
			CHD	ASHISH KUSH.		10.11.19
			APPD	V.KESAVAN		10.11.19
TITLE: GA DRAWING OF RUBBER EXPANSION JOINT						
DRG .NO:					SCALE : NTS	REV NO
						00

Size A4

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