



PRODUCT STANDARD
BUSDUCT ENGINEERING DIVISION

Annexure
Ref: BDE/MB/
20-21/001

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MANUFACTURING SPECIFICATION & TESTING REQUIREMENTS OF METALLIC BELLOWS

USE OF PRODUCT:

PRODUCT IS TO BE USED FOR ELECTRICAL CONTINUITY OF BUSDUCT ENCLOSURE (HAVING RATED CONTINUOUS CURRENT OF BUSBAR) WITHOUT OVER-HEATING.

PART A:

MANUFACTURING PARAMETERS OF METALLIC BELLOW:

- (i) BELLOW SHALL BE MANUFACTURED AS PER APPROVED DRAWING 31391300021 REV.02 (SHEET 02 OF 02) BY DIE PRESSING METHOD SO AS TO MAINTAIN FLEXIBILITY IN BELLOW. IN CASE ANY ALTERNATIVE METHOD OF MANUFACTURING IS SUGGESTED, THIS SHOULD BE ACCOMPANIED WITH SUITABLE NOTE SUGGESTING HOW IT IS BETTER & SUITED TO OUR PURPOSE.
- (ii) IT SHOULD CONSIST OF STRIPS PRESSED TOGETHER. THICKNESS OF STRIPS TO BE USED TO BE 0.65mm.
- (iii) NO CIRCUMFERENTIAL BUTT WELDING IS ALLOWED (EXCEPT FOR BOTH EXTREME ENDS) FOR MAKING THE BELLOW.
- (iv) LONGITUDINAL WELDING BETWEEN CURVES OF STRIPS IS ALLOWED. HOWEVER, WELDING IN EACH STRIP SHALL BE STAGGERED. (IT WILL NOT MATCH WITH LOCATION OF WELDING WITH OTHER STRIPS). THIS MAINTAINS LOCATION OF WELD JOINT IN EACH CIRCULAR STRIP SHALL BE AT DIFFERENT LOCATION.
- (v) PROPER FINISHING OF LONGITUDINAL WELDING OF STRIP TO BE ENSURED.
- (vi) STAGE INSPECTION SHALL BE DONE BEFORE PRESSING OF STRIPS.

DIMENSIONAL TOLERANCE

- (i) AS PER IS2102(PART 1), CLASS V (VERY COARSE).

PACKING REQUIREMENT:

- (i) EACH UNIT SHALL BE PACKED AS PER ATTACHED **PACKING LIST/INSTRUCTIONS REF: RU/PACKING/20200331 DT.26.10.2020** IN TOATALY COVERD WOODEN BOXES. PROPER CUSHIONING PROVISION TO AVOID DAMAGE DUE TO JERKS DURING TRANPORATION & HANDLING SHALL BE PROVIDED AS DONE FOR FRAGILE ITEMS.

REV.	00	PRINTS TO:-	APPROVED -		
ALTD.			A. NARAYAN		
APPD.			PREPARED	ISSUED	DATE
DATE.			SKANDSHIV BHARDWAJ	25/10/20	26.10.2020

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PART B:

TESTING REQUIREMENT

- I. DIMENSION
- II. VISUAL INSPECTION.
- III. IN PROCESS CHECKS: PHYSICAL VERIFICATION OF WELDING JOINTS OF LONGITUDINAL WELDING OF ALL STRIPS.
- IV. FINISH OF BUTT WELDING JOINTS ALL STRIPS.
- V. MEASUREMENT OF COMPRESSION & RECOVERY (+/-5mm)
- VI. MILLI VOLT DROP TEST.
- VII. 10% RADIOGRAPHY TEST (RT) TEST ON BUTT WELDED JOINTS
- VIII. VENDOR TO SUBMIT ITS OWN QAP ALONG WITH OFFER
- IX. QAP TO BE STRICTLY FOLLOWED FOR INSPECTION ESP. SECTIONS SL NOS. 1.1 & 3.4.

DOCUMENTS TO BE SUBMITTED AT THE TIME OF OFFER:

QAP

DOCUMENTS TO BE SUBMITTED ALONGWITH SUPPLY:

1. RAW MATERIAL TEST CERTIFICATES
2. GUARANTEE CERTIFICATE
3. INSPECTION REPORT
4. RADIOGRAPHY TEST REPORT
5. MILLI VOLT DROP TEST REPORT

IN CASE OF ANY CONTRADICTION, INFORMATION GIVEN IN THE DRAWING 31391300021 REV.02 SHALL PREVAIL.

REV.	00	PRINTS TO:-		APPROVED -		
ALTD.				A. NARAYAN		
APPD.				PREPARED	ISSUED	DATE
DATE.				SKANDSHIV BHARDWAJ	26.10.2020	26.10.2020

PACKING LIST/INSTRUCTIONS

Ref:RU/Packing/20200331 Dated 26.10.2020

Each Metallic Bellow along with accessories shall be securely and properly packed separately in a clearly labeled **WOODEN BOX** for shipment, storage and stocking safely as per details given below:

SI NO.	ITEM	QTY	UNIT
1	METALLIC BELLOW	01	NO.
2	BONDING STRIP	04	NOS.
3	PACKING STRIPS	04	NOS.
4	LEVELLING TEMPORARY PIECES	AS REQD	NOS.

- Supplier shall be liable for adequacy of packing to ensure safe delivery of items at destination without any damage. Suitable measures like cushioning, use of iron cleats in wooden box, silica gel bags, etc. as required shall be provided.
- Packing slip kept in polyethylene bag shall be placed in box at suitable location. In addition, one more packing slip covered in transparent polyethylene bag and slip holder shall be affixed at front/rear case and should be clearly visible and intelligible.
- In addition, marking plate as per following template shall be affixed at front/rear of box.

		BHEL – <unit> - <location> - <pin>	
CONSIGNEE			
MATERIAL			
CUSTOMER REF.		MO. NO.	
DESPATCH ADVICE NOTE NO		CASE NO	
DIMENSIONS(MM) L x B x H		NET WT -KGS	GROSS WT -KGS
SPECIAL INSTRUCTIONS		HANDLE WITH CARE - KEEP DRY DO NOT DROP - DO NOT TILT	

23/10/20
28/10/20 20