

BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
PHONE NO: 0091 1334 285120

Sub: Procurement of ACC STEAM DUCT
Projects: Patratu-2

A. SCOPE OF ENQUIRY:

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam turbines, turbo generators and so on.

Bids are invited from Indian indigenous suppliers for following items through GeM Portal <https://gem.gov.in>

Scope of Work: - **PRE-FAB. M/C & FAB. ONLY** as per Drawing/Standard & QP requirements.

SLNO	MATERIAL CODE	DESCRIPTION	TOTAL QTY	UNIT	DELIVERY IN DAYS
1	0170997001701	ACC STEAM DUCT	1	NO.	90

(Total qty in numbers= 1 nos. of 0170997001701 & Fab. Weight= 96686 kg. /pc)

TOTAL LOAD = 96686 KG. (TOLERANCE IN TOTAL LOAD MAY BE (+/-) 25%)

B. Buyers Specific Additional Terms & Conditions in addition to GTC:

Sl. No.	Terms	Description	Bidder's Confirmation
1.	Confirmation to compliance of General terms and conditions on GeM	In addition to the terms & conditions mentioned in below table, latest General terms and conditions on GeM or subsequent rules/policies issued by GeM shall be applicable against this enquiry. Kindly confirm same is acceptable to you.	
2.	Documents Checklist:	Kindly confirm that the following documents have been submitted along with your offer: 1. Requisite EMD 2. Pre-Qualification Requirements 3. Quality Requirements & Plan 4. Drawings & CBOM 5. make in india (Self-certification) 6. Integrity pact 7. Vendor credentials in NTPC formats (SUB-VENDOR QUESTIONNAIRE & MAIN CONTRACTOR attached) 8. Any other document as specified in "Buyers Specific Additional Terms & Conditions in addition to GTC"	

3.	Pre-Qualification Requirements	The Pre-Qualification Requirements are attached. All the bidders should ensure submission of duly-filled and signed with complete details and documents as called for in these requirements.	
4.	Special Instruction of Technical requirement	1. Items to be supplied directly to Patratu Site. DELIVERY TERM: F.O.R. PATRATU SITE Patratu site address: GENERAL MANAGER (PROJECTS) , PATRATU STPP (3X800 MW), PATRATU VIDYUT UTPADAN NIGAM LIMITED, PO – PTPS, DIST – RAMGARH, JHARKHAND – 829119. Please confirm.	
		4.All ACC STEAM DUCT are required as per NIT document and specification only. Please confirm.	
5.	Prices	Prices shall remain firm and fixed during entire tender process and execution of the contract. Kindly confirm that Quoted prices on GEM against the GEM bid for each schedule is F.O.R. Patratu site on firm basis & inclusive of all cost components (Packing & Forwarding, Freight, GST, Insurance etc.). Also inform the percentage of GST considered by you in your FOR prices.	
6.	MDCC clause	Material shall be dispatched only after issue of material dispatch clearance certificate (MDCC) by BHEL. All test certificates, applicable TPIA verified documents, Quality Plan and relevant documents are to be sent to BHEL before dispatch of material for issue of MDCC, which will be issued after review of test certificates, applicable TPIA verified documents, Quality Plan and all relevant documents. MDCC will be issued within 07 days of receipt of these documents once found complete in all respects. In case of any delay on account of BHEL in issuing MDCC, delivery shall be extended by no. of days in excess of 7 days taken by BHEL in issuing MDCC and delays shall be dealt on merit basis. This period of 7 days is included in the delivery period. Material is to dispatched within 07 days of receipt of MDCC from BHEL without waiting for PO amendment.	
7.	Quality Requirements	Quality Requirements are attached with this tender document. All the bidders should ensure submission of duly filled and signed the attached QP with complete details and documents as called for in these requirements.	

8.	Delivery Period	Bidders are requested to quote their best possible delivery period in terms of days from date of PO.									
9.	Penalty / LD Clause :	LD/Penalty for delayed supplies shall be as per latest General terms and conditions on GeM.									
		The date of LR (Lorry receipt) would be treated as the date of delivery for penalty purposes.									
10.	Payment Terms	100% payment will be made after receipt and acceptance of material at site and after issue of consignee receipt-cum acceptance certificate (CRAC) as per the below details:									
		<table><tr><th>Type of Bidder</th><th>Payment Terms (Number of Days)</th></tr><tr><td>Micro & Small Enterprises (MSEs)</td><td>45 days</td></tr><tr><td>Medium Enterprises</td><td>60 days</td></tr><tr><td>Non MSME</td><td>90 days</td></tr></table>		Type of Bidder	Payment Terms (Number of Days)	Micro & Small Enterprises (MSEs)	45 days	Medium Enterprises	60 days	Non MSME	90 days
		Type of Bidder		Payment Terms (Number of Days)							
		Micro & Small Enterprises (MSEs)		45 days							
		Medium Enterprises		60 days							
Non MSME	90 days										
		Subject to submission of 8 sets of non-discrepant documents along with original MDCC & LR as per terms & conditions of GEM contract.									
11.	Quantity Variation	BHEL reserves the right to cancel tender or reject any or all the quotations without assigning any reasons thereof. BHEL also reserves the right to Increase or decrease the tendered quantities. Vendors should be prepared to accept order for reduced Quantity without any extra charges. Vendor should also be prepared for giving discount in case of Increase in Quantity. Vendor has to take dispatch clearance from BHEL before starting supplies of item. In case ordered quantity is reduced, then payment shall be made accordingly, as per decreased quantity. Kindly confirm.									
12.	Bid to RA	Opening of Price bid & RA shall be conducted for only those bidders who qualifies PQR, Quality requirements and whose techno-commercial bid is acceptable to BHEL & customer PVUNL.RA will be conducted as per GeM rules & guidelines.									
13.	Risk Purchase	In case of abnormal delays (beyond the maximum late delivery period as per LD clause) in supplies / defective supplies or non-fulfilment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere / alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL									

		extant rules. This will be without prejudice to any other right of BHEL under the contract or under General Law. Kindly confirm.	
14.	Action against Bidders / vendor / supplier / contractor in case of default	In order to protect the commercial interests of BHEL, BHEL shall take action against supplies / contractors by way of suspension of business dealings, who either fail to perform or are in default without any reasonable cause, cause loss of business/ money/ reputation, indulge in malpractices, cheating, bribery, fraud or any other misconduct or formation of cartels so as to influence the bidding process or influence the price etc. Suspension of Business Dealings could be in the form of “Hold” or “Banning” a supplier/ contractor or a bidder and shall be as per “Guidelines for Suspension of Business Dealings with Suppliers/ Contractors” available at BHEL’s website https://www.bhel.com/guidelines/suspensionbusiness-dealings-supplierscontractors	
15.	Conflict of Interest	A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if: a) they have controlling partner (s) in common; or b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or c) they have the same legal representative/agent for purposes of this bid; or d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from. One bidding manufacturer in more than one bid; or f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a	

		particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following: 1. The principal manufacturer directly or through one Indian agent on his behalf; and 2. Indian/foreign agent on behalf of only one principal, or g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid, or h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "	
16.	EMD Applicability	EMD will be applicable as per GEM bid, however EMD is waived in following cases- a. Central/ State – PSUs b. *MSE suppliers are exempted for submission of EMD (Valid Documentary proof against MSE must be submitted along with offer to avail the benefits). c. BHEL-HEEP registered vendors (if applicable) are exempted from submission of EMD. d. Other exemptions on EMD will be as per GeM Terms and conditions. *Benefits of MSE (such as EMD Waiver, Tender fee exemption, Price preference, Payment preference etc.) will be given only to those MSE Vendors who are manufacturers of offered items against the NIT. No MSE benefits shall be provided to Agents / Stockiest / Dealers / Traders etc. for the items offered but not manufactured by themselves.	
17.	In course of evaluation, if more than one bidder happens to occupy L-1 status	In course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discount from respective L-1 bidders. In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of respective L-1 bidders or their representatives."	

18.	GUARANTEE CERTIFICATE: -	The vendor shall warrant that the supplied fabricated assemblies comply fully with the drawings and other technical conditions. If the fabrications/items are found defective owing to faulty workmanship/incomplete work within a period of eighteen (18) months from Supply completion date. Supply completion date shall be reckoned from the actual date of last supply made by the vendor (date of LR) for the quantities awarded (in terms of number(s)). During guarantee period, the vendor shall make good of items/replace the same free of cost. Alternatively, the rework/replacement charges may be recovered.	
19.	RECTIFICATION: -	Any defect (noticed at SITE) arising out of the fabrication/machining done by the Sub-Contractor, will have to be rectified or items replaced by the sub-contractor within 10 days of intimation of same at their own cost. Otherwise BHEL will be free to take necessary action as deemed fit and consequence/cost of the same will be to subcontractors' account.	

SPECIAL REMARKS FOR BIDDERS:

Following documents are an integral part of this tender enquiry and endorsed copies of these documents (duly signed and stamped on each page, as a token of acceptance) are to be uploaded along with offer on e-procurement portal.

1. Please submit signed & Stamped copy (each page) of duly filled of confirmation column of "Buyers Specific Terms & Conditions" and supporting documents where required.
2. Please submit signed & stamped copy (each page) of PQR documents with proper filled information and related supporting documents as mentioned in PQR.
3. Vendor scope includes complete manufacturing of item as per drawing including all NDT requirements, painting & preservation as per drg.
4. Vendor scope also includes any mock up of assemblies required in drg
5. Transportation of items as per shipping list/packing list provided by BHEL to Patratu site is also in the scope of vendor.
6. MDCC is required before dispatch of items & MDCC is required for all items.
7. Patratu site address is:
General Manager (projects), 3x800 mw Patratu stpp
Patratu vidyut utpadan nigam limited
po-ptps, Dist-Ramgarh, jharkhand-829119.
8. Tolerance in total load may be (+/-) 25%
9. Guarantee period will be 18 months from the date of last supply by the vendor.
10. Vendors to confirm, endorse and return back MQP no- PAT/ACC/DUCT U-2 rev00 (attached).
11. Inspection by NTPC / PVUNL and BHEL / BHEL nominated inspection agency as per finally NTPC / PVUNL approved QP.
12. Offers that are found suitable techno-commercially & approved by customer PVUNL will be considered for further process.
13. Notes available in drawing to be fulfilled by the vendor for manufacturing.
14. All items to be manufactured with party material only. No further subcontracting is permissible, without prior approval.
15. Supplier must furnish material test certificates for all the items.
16. Guarantee Certificate will be required.
17. Aesthetic appearance shall also be ensured and inspected before delivery to SITE.
18. Cleaning of parts, removal of mill scale from components prior to assembly will be in scope of vendor.
19. CHP Clearance may be obtained from NTPC/LLOYD/RITES/NPC at party's end.
20. Final Assembly shall undergo cleaning to ensure that all parts are free from dents, mills, spatters.
21. Customer's seal (if Any on supplied Material) to be transferred.
22. Copies of the relevant certificates to be supplied to the receiving shop.
23. All special tests viz., UT, RT, HYDRAULIC & KEROSENE etc. are to be performed as per drg. requirements.
24. Rest all terms and conditions shall be as per general terms and conditions of **GeM**.

Raw material

Raw material shall be procured from following PVUNL enlisted main steel producers only:

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SAIL, JSW Steel Limited, Jindal Steel & Power, Tata Steel Ltd (for reinforcement steel / TMT bars), RINL (for long products/ rolled sections and Reinforcement steel / TMT bars), Essar Steel India Ltd (for flat products/ Steel plates), Electrosteel Steel Ltd (for Reinforcement steel / TMT bars) and Monnet Ispat and Energy Ltd (for long products/ rolled sections and Reinforcement steel / TMT bars).

In addition to above, the approved sources of plates are:

“SAIL, JSW Steel Limited, Jindal Steel & Power, Tata Steel Ltd, RINL, Essar Steel India Ltd), and Monnet Ispat and Energy Ltd”

PQR

Item : ACC Duct Elbow TEE dia.8000, ACC Steam duct, Acc Steam duct Riser, D Liasioning 8000mm-2800mm, Y piece, Blank Plate for ground duct (Partatu: drg: 01709970009-01, 01709970017-01, 01709970022-00, 01709970023-00, 01709970025-00, 11709970121-00, 11709970172-00)

PRE-QUALIFICATION REQUIREMENT

01.00	TECHNICAL REQUIREMENT	Required	Vendor's Offer
01.01	Experience: Vendors should have experience of fabricating (cutting/bending/assembly/welding/pre-fabrication machining) and supplying of atleast 1 no. ACC Duct Elbow TEE dia.8000, ACC Steam duct, Acc Steam duct Riser, D Liasioning 8000mm-2800mm, Y piece, Blank Plate for ground duct or equivalent components in last 7 years from the date of enquiry as per following details: i) Dimensions of job: Diameter=4000 mm and Length= 3000 mm and above. (ii) Weight: 4 Tons and above	Vendor to Comply & submit suitable evidence including technical specifications, drawings etc.	
01.02	Facility: i) Lifting facility and capacity at vendor works should EOT crane 10 Tons and above. ii) Vendor must have levelled bed plate having size : Length/height= 4000mm, Dia./Breadth=8600mm and above to fabricate the job ((Either machined bed plate or bed plate constructed by steel plates is allowed but concrete floor not allowed). iii) Vendor must have rolling/bending facility to bend/roll cylinder of thickness 20mm or above with width 2500mm or above. (iv) Vendor must have suitable WPS/PQR and qualified welders for welding approved by third party and submit documentary evidence with offer. (v) Vendor must have cutting facility to cut plate of thickness 50mm and above.	Vendor to Comply & submit suitable evidence including technical specifications, technical brochure, photographs etc. of the facilities.	
01.03	Vendor to furnish certificate or documentary evidence against clause 01.01 from the customer / company or end user duly confirming that fabricated ACC Duct Elbow TEE dia.8000, ACC Steam duct, Acc Steam duct Riser, D Liasioning 8000mm-2800mm, Y piece, Blank Plate for ground duct or equivalent job was supplied and used for Hydro Pump or turbine/power plant/capital goods/infrastructure application OR Vendor to submit documentary evidence as per clause 1.04.	Vendor to Comply & submit suitable documents	
01.04	Vendor to furnish name of customer/company with complete contact details and month /year of previous supply along with copy of PO, type of manufacturing facility used for fabrication (assembly/welding/pre-fabrication machining), supply documents, Payment details(invoice copy) and inspection documents of supplied ACC Duct Elbow TEE dia.8000, ACC Steam duct, Acc Steam duct Riser, D Liasioning 8000mm-2800mm, Y piece, Blank Plate for ground duct or equivalent.	Vendor to Comply & submit suitable documents	
01.05	All PQR documents are to be stamped and signed in original by Vendor. In case documents and official stamp is in language other than English, documents and details of official stamp are to be translated in English and duly certified by Government agency/approved agency of Government/Embassy.	Vendor to Comply & submit suitable documents	
01.06	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, their offers shall be rejected.	Vendor to agree	

NOTE: PQR is not restrictive

20/06/2023
[Ravi Deshmukh
Manager (WT)]

20/06/2023
[Ravi Deshmukh
Manager (WT)]

20/06/2023
(As Am) AG-47

complete name and address of manufacturing works of vendor

PROJECT: PATRATU 3 X 800MW													
PACKAGE: EPC(TG/ACC)													
CONTRACT No: 9585-001													
CONTRACTOR : BHEL HARIDWAR													
MANUFACTURING QUALITY PLAN													
ITEM: FABRICATION OF DUCTS AND MANIFOLDS													
Q.P. No: PAT/ACC/DUCT U-2													
Page No. 1of1													
REV 00,													
SUB SYSTEM :- AS PER PO													
S. No.	COMPONENTS/OPERATION	CHARACTERISTICS/CHEK	CLASS	TYPE / METHOD OF CHEK	QUANTUM OF CHEK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY	REMARKS	
					M	C/N			9	D*			M
1	2	3	4	5	6	7	8	9	D*	10	11		
A	RAW MATERIAL	Dimension	Major	Meas.	100%								
		Chemical Composition	Major	Lab. Test	1/Heat		Approved Drg./Tech. Spec.						
		Mechanical Properties	Major	Lab. Test	1/Heat								
		Internal Flaw	Major	UT Report	100%		ASTM A578 Level B-S2						
		(UT on Plate > 40mm Thk)											
B	INSPECTION - IN PROCESS											Co-related Milli TC to be submitted for review. Refer note 1 and 2.	
B.1	Marking, Cutting and Preparation	Completeness	Major	Visual & Measurement	100%								
		Dimension	Major	Measurement	Random								
		Rolling Process	Major	Visual & Dimensional	100%		Apporoved Drg. / Tech. Spec.						
		Edge Preparation	Major	Visual	100%								
B.2	Rolling & Fit-up	Fit-up	Major	Visual	100%								
		Dimensions	Major	Meas.	100%								
		WPS, PQR, WPQ	Major	Review	100%		ASME Sec. IX						
		Size	Major	Meas.	100%		Approved Drg. / Tech. Spec.						
B.3	Welding	Weld Defects											
		i) Butt Weld	Major	RT/UT	10%		ASME Sec VIII Div. 1 Appendix 12						
			Major	DPT	100%		ASME Sec VIII Div. 1 Appendix 8						
		ii) Fillet Weld	Major	DPT	10%		ASME Sec VIII Div. 1 Appendix 8						
C	FINAL INSPECTION	iii) Heat Treatment	If Applicable	HEAT Treatment chart	100%		ASME Sec VIII Div. 1 Appendix 8						
		Completeness	Major	Visual	100%		Approved Drg. / Tech. Spec.						
		Dimensions	Major	Meas.	Randomly from offered lot		Approved Drg. / Tech. Spec.						
		Match Marking	Major	Visual	100%		Approved Drg. / Tech. Spec.						
D	TRIAL ASSEMBLY FOR LARGE SIZE DUCTS REDUCER, Y-PIECE, BRANCH, TRANSITION DUCTS	Identification	Major	Visual			Approved Drg. / Tech. Spec.						
		Orientation	Major										
		Dimensions	Major										
		Match Marking	Major	Visual & Measurement	100%		Approved Drg. / Tech. Spec.						
E	SUEFACE PREP. & PAINTING	Visual & Measurement	Major	Random	100%		Approved Drg./ Tech. Spec.						
F	PACKING AND TRANSPORTATION	Visual & Measurement	Major	Random	100%		Approved Drg./ Tech. Spec.						
MFD. SUB SUPPLIER	MAIN SUPPLIER	LEGEND:- *RECORDS, IDENTIFICATION WITH "TICK"(V) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. **M:- MANUFACTURER/SUB-SUPPLIER, C:- MAIN SUPPLIER, N:- NTPC, P: PERFORM, W:- WITNESS AND V:- VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"						DOC. NO. :					
SIGNATURE		SIGNATURE		FOR NTPC USE		REVIEWED BY		APPROVED BY		APPROVAL SEAL			

Note-1 : Rolled sections shall be of grade designation E250 Quality A/BR semi killed / killed conforming to IS 2062. All steel plated shall be of grade designation E250, Quality BR (fully killed), conforming to IS 2062 and shall be tested for impact test value at room temperature. Plates beyond 12mm thickness and upto 40mm thickness shall be normalized rolled.

Plates beyond 40mm thickness shall be vacuum degassed furnace normalized and shall also be 100% ultrasonically tested as per ASTM-A578 level B-S2. (FOR MILD STEEL)

Note-2:- Rolled sections shall be of grade designation E350 or higher Quality BO (Fully Killed) conforming to IS 2062. Plates beyond 12mm thickness and upto 40mm thickness shall be normalized rolled.

Plates beyond 40mm thickness shall be vacuum degassed furnace normalized and shall also be ultrasonically tested as per ASTM-578 level B-S2. (FOR MEDIUM AND HIGH TENSILE STEEL)

Note-3:- Proper lockingof circular duct parts shall beensuredin such a way that site weld edgesand circularduct curvature is intact during transportation and handling at **site**

Note-4:- All material of construction shall be as per NTPC/PVUN approved drawing/ data sheet.

Self-certification

As per Government Public procurement order no. P-45021/2/2017-BE-II dt.15.06.2017 & P-45021/2/2017-PP(BE-II) dated 28.05.2018,29.5.2019 & 04.6.2020, it is hereby certifying that we

.....

(supplier name) are(Class-I/Class-II) local supplier and will meet the requirement of minimum local content of (50%/20%) as defined in public procurement order dated 04.6.2020 for material against Enquiry no.

.....

Details of location at which local value addition will be made is as follows: -

.....

.....

We also understand, false declarations will be in breach of the code of integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the general financial rules along with such other actions as may be permissible under law.

Seal & Signature of Supplier

	CORPORATE QUALITY ASSURANCE			
	MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT			

Ref No:				Date:			
i.	Main Contractor						
ii.	Project						
iii.	Package Name				Package No		
iv.	Proposed Item/Scope of Sub-contracting						
v.	Item covered under	Schedule-1			As per contract clause No-		
		Schedule-2					
vi.	If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled						
vii.	Name and Address of the proposed Sub-vendor's works						
viii.	PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network						
ix.	Item Description (Type/Size/Rating/Scope of Sub-Contracting)	Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)	Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)		Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time		
x.	Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)						
	Project/Package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply	
We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting.							
Name:				Desig:			
				Sign:			
				Date:			

Company's Seal/Stamp:-

Format No. : QS-01-QAI-P-04/F1-R3

1/1

Engg. div./QA&I

	CORPORATE QUALITY ASSURANCE SUB-VENDOR QUESTIONNAIRE		

i.	Item/Scope of Sub-contracting			
ii.	Address of the registered office	Details of Contact Person (Name, Designation, Mobile, Email)		
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured	Details of Contact Person: (Name, Designation, Mobile, Email)		
iv.	Annual Production Capacity for proposed item/scope of sub-contracting			
v.	Annual production for last 3 years for proposed item/scope of sub-contracting			
vi.	Details of proposed works			
1.	Year of establishment of present works			
2.	Year of commencement of manufacturing at above works			
3.	Details of change in Works address in past (if any)			
4.	Total Area			
	Covered Area			
5.	Factory Registration Certificate	Details attached at Annexure – F2.1		
6.	Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)	Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design Details attached at Annexure – F2.2 (if applicable)		
7.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)	Details attached at Annexure – F2.3		
8.	After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)	Applicable / Not applicable Details attached at Annexure – F2.4		
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any	Details attached at Annexure – F2.5		
10.	Sources of Raw Material/Major Bought Out Item	Details attached at Annexure – F2.6		

	CORPORATE QUALITY ASSURANCE SUB-VENDOR QUESTIONNAIRE					

11.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing			Details attached at Annexure – F2.7		
12.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)			Details attached at Annexure – F2.8		
13.	Testing facilities (List of testing equipment)			Details attached at Annexure – F2.9		
14.	If manufacturing process involves fabrication then-			Applicable / Not applicable		
	List of qualified Welders			Details attached at Annexure – F2.10		
	List of qualified NDT personnel with area of specialization			(if applicable)		
15.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses			Applicable / Not applicable Details attached at Annexure. –F2.11 (if applicable)		
16.	Supply reference list including recent supplies			Details attached at Annexure – F2.12 (as per format given below)		
	Project/ package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply
17.	Product satisfactory performance feedback letter/certificates/End User Feedback			Attached at annexure - F2.13		
18.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) Note:- Reports need not to be submitted			Applicable / Not applicable Details attached at Annexure – F2.14 (if applicable)		
19.	Statutory / mandatory certification for the proposed product			Applicable / Not applicable Details attached at Annexure – F2.15 (if applicable)		
20.	Copy of ISO 9001 certificate (if available)			Attached at Annexure – F2.16		
21.	Product technical catalogues for proposed item (if available)			Details attached at Annexure – F2.17		
Name:		Desig:		Sign:		Date:

Company's Seal/Stamp:-



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01

Revno: 1

Rev Date: 11.07.2023

Description: ACC STEAM DUCT

Total weight: 96686.0

RECORD OF CHANGES

Drawing No	Var	Revno	Rev Date	Description
01709970017	01	1	11.07.2023	Item no 22 added.

CBOM - 01709970017 01

	ENGG		WTX	
	Initial	Date	Initial	Date
Worked By	hxeas	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape		Remarks			
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
0	01709970017 01			96686.0						
1(1)	ACC STEAM DUCT			Y						
MF CD	GROUND DUCT		Y	96686.0	SITE					
1	21709970113 00			5075.0						
1(1)	GROUND DUCT-1			Y						
MF CD			N	5066.3	0306-0314-000D					
1-1	21709970117 00	AA1011819104	AA10119	505.1	9174.0X501.0	1	1	530.85	0.0	530.85
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
1-2	21709970116 00	AA1011819104	AA10119	926.84	9183.0X1065.0	1	1	1129.58	0.0	1129.58
1(1)	REDUCER PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
1-3	21709970117 01	AA1011819104	AA10119	1219.7	9060.0X1225.0	1	1	1281.88	0.0	1281.88
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
1-4	21709970117 02	AA1011819104	AA10119	846.3	9060.0X850.0	1	1	889.5	0.0	889.5
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
1-5	21709970118 00	AA1011819155	AA10119	500.8	1240.0X4630.0	1	1	1184.12	0.0	1184.12
1(1)	STIFFENER PLATE			Y	PL 25			Made in 2 segment		
MF DR					0072-0301-0306-0317-0306					KG
1-6	21709970118 01	AA1011819155	AA10119	574.02	1325.0X4575.0	1	1	1250.26	0.0	1250.26
1(1)	STIFFENER PLATE			Y	PL 25			Made in 2 segment		
MF DR					0072-0301-0306					KG
1-7	21709970118 02	AA1011819155	AA10119	494.8	1235.0X4575.0	1	1	1165.34	0.0	1165.34
1(1)	STIFFENER PLATE			Y	PL 25			Made in 2 segment		
MF DR					0072-0301-0306-0317					KG
1-8		AA1010209175	AA10109	1.25	100.0	1	2	1.3	0.0	2.6
2(2)	NOZZLE			Y	RND 45					
MF DR	ST-C20-HR-RND				0072-0315-0317-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01

Revno: 1

Rev Date: 11.07.2023

Description: ACC STEAM DUCT

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
1-9	41622270039 00	AA1010209191	AA10109	0.7	75.0	1	2	1.93	0.0	3.86
2(2)	SOCKET 1" PIPE			Y	RND 56			RND DIA 56,L=75		
MF DR	SOCKET 1" PIPE				0072-0315-0317-0390					KG
1-10		HW1041055684	AA10455	58.06	3612.0	1	1	3.612	0.0	3.612
1(1)	PIPES L= 3612			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
1-11		HW1041055684	AA10455	56.3	3500.0	1	1	3.5	0.0	3.5
1(1)	PIPES L= 3500			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
1-12		HW1041055684	AA10455	12.05	750.0	1	2	0.75	0.0	1.5
2(2)	PIPE L=750			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
1-13		HW1041055684	AA10455	11.2	694.0	1	2	0.694	0.0	1.388
2(2)	PIPES L= 694			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
2	21709970114 00			5075.0						
1(1)	GROUND DUCT-2			Y						
MF CD			N	5066.3	0306-0314-000D					
2-1	21709970117 00	AA1011819104	AA10119	505.1	9174.0X501.0	1	1	530.85	0.0	530.85
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
2-2	21709970116 00	AA1011819104	AA10119	926.84	9183.0X1065.0	1	1	1129.58	0.0	1129.58
1(1)	REDUCER PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
2-3	21709970117 01	AA1011819104	AA10119	1219.7	9060.0X1225.0	1	1	1281.88	0.0	1281.88
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG
2-4	21709970117 02	AA1011819104	AA10119	846.3	9060.0X850.0	1	1	889.5	0.0	889.5
1(1)	SHELL PLATE			Y	PL 14			May be made in 2 parts		
MF DR					0072-0301-0306-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape		Remarks			
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
2-5	21709970118 00	AA1011819155	AA10119	500.8	1240.0X4630.0	1	1	1184.12	0.0	1184.12
1(1)	STIFFENER PLATE			Y	PL 25		Made in 2 segment			
MF DR					0072-0301-0306-0317-0306					KG
2-6	21709970118 01	AA1011819155	AA10119	574.02	1325.0X4575.0	1	1	1250.26	0.0	1250.26
1(1)	STIFFENER PLATE			Y	PL 25		Made in 2 segment			
MF DR					0072-0301-0306					KG
2-7	21709970118 02	AA1011819155	AA10119	494.8	1235.0X4575.0	1	1	1165.34	0.0	1165.34
1(1)	STIFFENER PLATE			Y	PL 25		Made in 2 segment			
MF DR					0072-0301-0306-0317					KG
2-8		AA1010209175	AA10109	1.25	100.0	1	2	1.3	0.0	2.6
2(2)	NOZZLE			Y	RND 45					
MF DR	ST-C20-HR-RND				0072-0315-0317-0306					KG
2-9	41622270039 00	AA1010209191	AA10109	0.7	75.0	1	2	1.93	0.0	3.86
2(2)	SOCKET 1" PIPE			Y	RND 56		RND DIA 56,L=75			
MF DR	SOCKET 1" PIPE				0072-0315-0317-0390					KG
2-10		HW1041055684	AA10455	58.06	3612.0	1	1	3.612	0.0	3.612
1(1)	PIPES L= 3612			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
2-11		HW1041055684	AA10455	56.26	3500.0	1	1	3.5	0.0	3.5
1(1)	PIPES L= 3500			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
2-12		HW1041055684	AA10455	12.05	750.0	1	2	0.75	0.0	1.5
2(2)	PIPES L= 750			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
2-13		HW1041055684	AA10455	11.2	694.0	1	2	0.694	0.0	1.388
2(2)	PIPES L= 694			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
3	21709970115 00			4029.2						
1(1)	GROUND DUCT-3			Y						
MF CD		N		4020.4	0306-0314-000D					

ENGG

WTX

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Type Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
3-1	21709970120 00	AA1011819104	AA10119	388.5	7069.0X501.0	1	1	409.0	0.0	409.0
1(1)	SHELL PLATE			Y	PL 14					
MF DR					0072-0301-0306					KG
3-2	21709970119 00	AA1011819104	AA10119	713.0	7066.0X1008.0	1	1	822.65	0.0	822.65
1(1)	REDUCER PLATE			Y	PL 14					
MF DR					0072-0301-0306					KG
3-3	21709970120 01	AA1011819104	AA10119	938.2	6982.0X1225.0	1	1	987.87	0.0	987.87
1(1)	SHELL PLATE			Y	PL 14					
MF DR					0072-0301-0306					KG
3-4	21709970120 02	AA1011819104	AA10119	651.0	6982.0X850.0	1	1	685.5	0.0	685.5
1(1)	SHELL PLATE			Y	PL 14					
MF DR					0072-0301-0306					KG
3-5	21709970121 00	AA1011819155	AA10119	385.3	970.0X3645.0	1	1	729.23	0.0	729.23
1(1)	STIFFENER PLATE			Y	PL 25					
MF DR					0072-0301-0306					KG
3-6	21709970121 01	AA1011819155	AA10119	441.6	1050.0X3605.0	1	1	780.7	0.0	780.7
1(1)	STIFFENER PLATE			Y	PL 25			Made in 2 segment		
MF DR					0072-0301-0306					KG
3-7	21709970121 02	AA1011819155	AA10119	380.0	965.0X3605.0	1	1	717.5	0.0	717.5
1(1)	STIFFENER PLATE			Y	PL 25			Made in 2 segment		
MF DR					0072-0301-0306					KG
3-8		AA1011819074	AA10119	5.9	380.0X380.0	1	1	11.9	0.0	11.9
1(1)	PAD OD380 X ID 220			Y	PL 10			OD 380/ID 220		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
3-9		AA1011819074	AA10119	5.8	245.0X575.0	1	1	11.6	0.0	11.6
1(1)	REDUCTION DIA 220 X DIA114			Y	PL 10			Made in 2 half		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
3-10		HW1041055684	AA10455	48.22	3000.0	1	1	3.0	0.0	3.0
1(1)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
3-11		HW1041055684	AA10455	46.02	2863.0	1	1	2.863	0.0	2.863
1(1)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
3-12		HW1041055684	AA10455	8.76	545.0	1	1	0.545	0.0	0.545
1(1)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
3-13		HW1041055684	AA10455	7.96	495.0	1	1	0.495	0.0	0.495
1(1)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
4	11709970107 00			2640.0						
1(1)	GROUND DUCT - 4			Y						
MF CD			N	2654.0	0306-0314-000D					
4-1		AA1011819104	AA10119	2095.0	2280.0X8362.0	1	1	2202.0	0.0	2202.0
1(1)	PLATE		2280X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0301-0306					KG
4-2		HW1041055684	AA10455	109.5	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
4-3		HW1041055684	AA10455	30.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
4-4		AA1011819155	AA10119	6.0	186.0X250.0	1	2	9.6	0.0	19.2
2(2)	LIFTING LUG PLATE			Y	PL 25					
MF DR	ST-FE410 WB-PLATE				0072-0301-0317-0306					KG
4-5		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA100MM	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
4-6		AA1011819104	AA10119	4.8	125.0X350.0	1	2	5.05	0.0	10.1
2(2)	PAD PLATE		125X350	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG

ENGG

WTX

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01

Revno: 1

Rev Date: 11.07.2023

Description: ACC STEAM DUCT

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
4-7		HW1011819953	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
4-8		HW1011819953	AA10119	122.1	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
4-9		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.8	0.0	72.8
1(1)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
4-10		AA1011819139	AA10119	14.12	185.0X735.0	1	2	22.4	0.0	44.8
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
5	11709970109 00			2640.0						
1(1)	GRAOUND DUCT-5			Y						
MF CD			N	2654.0	0306-0314-000D					
5-1		AA1011819104	AA10119	2095.0	2280.0X8362.0	1	1	2202.0	0.0	2202.0
1(1)	PLATE		2280X8362	Y	PL 14			May be made in 2 part.		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
5-2		HW1041055684	AA10455	109.5	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
5-3		HW1041055684	AA10455	30.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
5-4		AA1011819155	AA10119	6.0	186.0X250.0	1	2	9.6	0.0	19.2
2(2)	LIFFTING LUG PLATE			Y	PL 25					
MF DR	ST-FE410 WB-PLATE				0072-0301-0317-0306					KG
5-5		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE			Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Type Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
5-6		AA1011819104	AA10119	4.8	125.0X350.0	1	2	5.05	0.0	10.1
2(2)	PAD PLATE		125X350	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
5-7		HW1011819953	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
5-8		HW1011819953	AA10119	122.1	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
5-9		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.77	0.0	72.77
1(1)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
5-10		AA1011819139	AA10119	14.1	185.0X735.0	1	2	22.44	0.0	44.88
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
6	11709970110 00			2863.0						
1(1)	GROUND DUCT-6			Y						
MF CD			N	2882.0	0306-0314-000D					
6-1		AA1011819104	AA10119	2095.0	2280.0X8362.0	1	1	2202.0	0.0	2202.0
1(1)	PLATE		2280X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0301-0306					KG
6-2		HW1041055684	AA10455	109.5	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT		114.3	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
6-3		HW1041055684	AA10455	30.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT		114.3	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
6-4		AA1011819155	AA10119	6.0	186.0X250.0	1	2	9.6	0.0	19.2
2(2)	LIFFTING LUG PLATE			Y	PL 25					
MF DR	ST-FE410 WB-PLATE				0072-0301-0317-0306					KG

ENGG

WTX

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
6-5		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA100	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0315-0317-0306					KG
6-6		AA1011819104	AA10119	4.8	125.0X350.0	1	2	5.05	0.0	10.1
2(2)	PAD PLATE		125X350	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
6-7		HW1011819953	AA10119	13.0	256.0X522.0	1	2	33.0	0.0	66.0
2(2)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
6-8		HW1011819953	AA10119	122.1	700.0X946.0	1	2	163.9	0.0	327.8
2(2)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
6-9		AA1011819104	AA10119	69.2	450.0X1400.0	1	2	72.77	0.0	145.54
2(2)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
6-10		AA1011819139	AA10119	14.1	185.0X735.0	1	4	22.44	0.0	89.76
4(4)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
7	11709970111 00			4924.0						
1(1)	GROUND DUCT-7			Y						
MF CD		N		5033.0	0306-0301-0306-0314-000D					
7-1		AA1011819104	AA10119	1826.0	2100.0X8362.0	1	1	2028.2	0.0	2028.2
1(1)	PLATE		2100X8362	Y	PL 14			May be made in 2 parts		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
7-2		AA1011819104	AA10119	1183.0	1400.0X8362.0	1	1	1352.14	0.0	1352.14
1(1)	PLATE		1400X8362	Y	PL 14			May be made in 2 parts.		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
7-3		AA1011819074	AA10119	23.8	962.0X962.0	1	4	76.35	0.0	305.4
4(4)	FLANGE		OD962XID734	Y	PL 10			Dia 962/734		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
7-4		AA1011819074	AA10119	133.5	840.0X2362.0	1	4	163.69	0.0	654.76
4(4)	PIPE PLATE			Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
7-5		AA1011819104	AA10119	59.5	1152.0X1152.0	1	4	153.3	0.0	613.2
4(4)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
7-6		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
7-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
7-8		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA100	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
7-9		HW1011819953	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
7-10		HW1011819953	AA10119	122.0	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
7-11		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.8	0.0	72.8
1(1)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
7-12		AA1011819139	AA10119	14.1	185.0X735.0	1	2	22.44	0.0	44.88
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
7-13		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT		DIA114.3X6811	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR

ENGG**WTX**

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
7-14		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT		DIA114.3X1858	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
8	11709970112 00			4795.0						
1(1)	GROUND DUCT-8			Y						
MF CD			N	4860.0	0306-0301-0306-0314-000D					
8-1		AA1011819104	AA10119	1781.0	2000.0X8362.0	1	1	1931.62	0.0	1931.62
1(1)	PLATE		2000X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
8-2		AA1011819104	AA10119	1377.0	1500.0X8362.0	1	1	1448.72	0.0	1448.72
1(1)	PLATE		1500X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
8-3	21709970122 00			294.3						
1(1)	MAN HOLE ASSEMBLY			Y						
MF CD			N		0306-0314-000D					
8-3-1	31709970016 00	AA1011819074	AA10119	138.5	1310.0X1885.0	1	1	203.72	0.0	203.72
1(1)	PIPE			Y	PL 10					
MF DR					0072-0301-0306					KG
8-3-3	41601570007 00	AA1011819198	AA10119	40.9	765.0X765.0	1	1	59.5	0.0	59.5
1(1)	Plate Flange			Y	PL 40			OD/ID=765/600		
MF DR					0072-0301-0317-0306					KG
8-3-4	41601570008 00	AA1011819171	AA10119	108.0	765.0X765.0	1	1	154.5	0.0	154.5
1(1)	BLANK FLANGE			Y	PL 32					
MF DR					0072-0301-0317-0306					KG
8-3-5	41604570004 00	AA1010209086	AA10109	0.44	325.0	1	1	0.513	0.0	0.513
1(1)	HANDLE			Y	RND 16			RND DIA 16,L=325		
MF DR					0072-0315-0306					KG
8-3-6		AA7121130076	AA7121130	0.029	0.0	0	0	0.0	0.0	2.0
2(2)	SCRU HEX SET F.D.P A-14H			Y						
SI DR	M10X45				0075-0306					NO

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Type Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
8-3-7		AA7161005078	AA7161005	0.017	0.0	0	0	0.0	0.0	1.0
1(1)	WASHER PNCHD A-ST			Y						
SI DR	22				0075-0306					NO
8-3-8	41601570001 00	AA1011819139	AA10119	0.38	53.0X110.0	1	2	1.3	0.0	2.6
2(2)	LUG			Y	PL 20					
MF DR					0072-0301-0317-0306					KG
8-3-9	41601570002 00	AA1011819139	AA10119	0.38	53.0X110.0	1	2	1.3	0.0	2.6
2(2)	LUG			Y	PL 20					
MF DR					0072-0301-0317-0306					KG
8-3-10		AA1010209108	AA10109	0.75	310.0	1	1	0.8	0.0	0.8
1(1)	ROUND BAR DIA 20,L=310			Y	RND 20					
RM DR	ST-C20-HR-RND				0072-0315-0306					KG
8-3-11		HW5981797061	0503.206	0.7	670.0X670.0	1	1	2.7	0.0	2.7
1(1)	NEOPREN GASKET DIA 670/612,S=4			Y	4					
RM DR	RUBBER-HEAT-REST-TYP B SHEET				0072-0306					KG
8-3-12		AA7111124146	AA7111124	0.049	0.0	0	0	0.0	0.0	20.0
20(20)	BOLT HEX A-8.8			Y						
SI DR	M24X110				0075-0306					NO
8-3-13		AA7151112025	AA7151112	0.11	0.0	0	0	0.0	0.0	20.0
20(20)	NUT HEX. B-6			Y						
SI DR	M24				0075-0306					NO
8-4		AA1011819104	AA10119	51.0	1251.0X910.0	1	1	131.5	0.0	131.5
1(1)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
8-5		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
8-6		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
8-7		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA100	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
8-8		HW1011819953	AA10119	13.0	256.0X522.0	1	2	33.0	0.0	66.0
2(2)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
8-9		HW1011819953	AA10119	122.0	700.0X946.0	1	2	163.9	0.0	327.8
2(2)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
8-10		AA1011819104	AA10119	69.2	450.0X1400.0	1	2	72.77	0.0	145.54
2(2)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
8-11		AA1011819139	AA10119	14.1	185.0X735.0	1	4	22.44	0.0	89.76
4(4)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
8-14		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
8-15		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
9	11709970113 00			4265.0						
1(1)	GROUND DUCT-9			Y						
MF CD			N	4315.0	0306-0301-0306-0314-000D					
9-1		AA1011819104	AA10119	2280.0	2480.0X8362.0	1	1	2395.2	0.0	2395.2
1(1)	PLATE		2480X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
9-2		AA1011819104	AA10119	937.0	1020.0X8362.0	1	1	985.13	0.0	985.13
1(1)	PLATE		1020X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
9-3		HW1011819953	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
9-4		HW1011819953	AA10119	122.0	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
9-5		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.77	0.0	72.77
1(1)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
9-6		AA1011819139	AA10119	14.1	185.0X735.0	1	2	22.44	0.0	44.88
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
9-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
9-8		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
9-9		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
9-10		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
9-11		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
10	11709970114 00			4353.0						
1(1)	GROUND DUCT-10			Y						
MF CD			N	4453.0	0306-0301-0306-0314-000D					

ENGG

WTX

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
10-1		AA1011819104	AA10119	1826.0	2100.0X8362.0	1	1	2028.2	0.0	2028.2
1(1)	PLATE		2100X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
10-2		AA1011819104	AA10119	1091.0	1300.0X8362.0	1	1	1255.55	0.0	1255.55
1(1)	PLATE		1300X8362	Y	PL 14			May be made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
10-3		AA1011819074	AA10119	23.8	962.0X962.0	1	4	76.35	0.0	305.4
4(4)	FLANGE			Y	PL 10			Dia 962/742		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
10-4		AA1011819074	AA10119	133.5	840.0X2362.0	1	4	163.69	0.0	654.76
4(4)	PIPE PLATE		L=2362	Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
10-5		AA1011819104	AA10119	59.5	1152.0X1152.0	1	4	153.3	0.0	613.2
4(4)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
10-6		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
10-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
10-8		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
10-9		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
10-10		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01

Revno: 1

Rev Date: 11.07.2023

Description: ACC STEAM DUCT

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape		Remarks			
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
11	11709970115 00			3786.0						
2(2)	GROUND DUCT- 11			Y						
MF CD			N	3816.0	0306-0301-0306-0314-000D					
11-1		AA1011819104	AA10119	2280.0	2480.0X8362.0	1	2	2395.2	0.0	4790.4
1(2)	PLATE		2480X8362	Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
11-2		AA1011819104	AA10119	937.0	1020.0X8362.0	1	2	985.13	0.0	1970.26
1(2)	PLATE		1020X8362	Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
11-3		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
1(2)	SUPPORT RING			Y	PL 14		Made in 2 segment			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
11-4		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
1(2)	SUPPORT RING			Y	PL 14		Made in 2 segment			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
11-5		AA1011819104	AA10119	0.7	100.0X100.0	1	8	1.16	0.0	9.28
4(8)	PLATE		DIA 100	Y	PL 14		Dia 100/50			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
11-6		HW1041055684	AA10455	30.0	6811.0	1	4	6.811	0.0	27.244
2(4)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
11-7		HW1041055684	AA10455	6.0	1858.0	1	4	1.858	0.0	7.432
2(4)	TECH SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
12	11709970116 00			4924.2						
1(1)	GROUND DUCT- 12			Y						
MF CD			N	5032.0	0306-0301-0306-0314-000D					
12-1		AA1011819104	AA10119	1826.0	2100.0X8362.0	1	1	2028.2	0.0	2028.2
1(1)	PLATE		2100X8362	Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape		Remarks			
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
12-2		AA1011819104	AA10119	1183.0	1400.0X8362.0	1	1	1352.14	0.0	1352.14
1(1)	PLATE		1400X8362	Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
12-3		AA1011819074	AA10119	23.8	962.0X962.0	1	4	76.35	0.0	305.4
4(4)	FLANGE			Y	PL 10		Dia 962/742			
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
12-4		AA1011819074	AA10119	133.5	840.0X2360.0	0	0	163.69	0.0	654.76
4(4)	PIPE PLATE			Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
12-5		AA1011819104	AA10119	59.5	1152.0X1152.0	1	4	153.3	0.0	613.2
4(4)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
12-6		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
12-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14		Made in 2 segment			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
12-8		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100	Y	PL 14		Dia 100/50			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
12-9		HW1011819953	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
12-10		HW1011819953	AA10119	122.0	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
12-11		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.77	0.0	72.77
1(1)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
12-12		AA1011819139	AA10119	14.1	185.0X735.0	1	2	22.44	0.0	44.88
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
12-13		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
12-14		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
13	11709970117 00			4497.0						
1(1)	GROUND DUCT- 13			Y						
MF CD			N	4548.0	0306-0301-0306-0314-000D					
13-1		AA1011819104	AA10119	2280.0	2480.0X8362.0	1	1	2395.2	0.0	2395.2
1(1)	PLATE		2480X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
13-2		AA1011819104	AA10119	937.0	1020.0X8362.0	1	1	985.13	0.0	985.13
1(1)	PLATE		1020X8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
13-3		HW1011819953	AA10119	13.0	256.0X522.0	1	2	33.0	0.0	66.0
2(2)	LIFITING LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
13-4		HW1011819953	AA10119	122.0	700.0X946.0	1	2	163.9	0.0	327.8
2(2)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
13-5		AA1011819104	AA10119	69.2	450.0X1400.0	1	2	72.77	0.0	145.54
2(2)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
13-6		AA1011819139	AA10119	14.1	185.0X735.0	1	4	22.44	0.0	89.76
4(4)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape		Remarks			
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
13-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14		Made in 2 segment			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
13-8		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
13-9		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100	Y	PL 14		Dia 100/50			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
13-10		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
13-11		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
14	11709970118 00			4265.0						
1(1)	GROUND DUCT- 14			Y						
MF CD		N		4314.0	0306-0301-0306-0314-000D					
14-1		AA1011819104	AA10119	2280.0	2480.0X8362.0	1	1	2395.2	0.0	2395.2
1(1)	PLATE			Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
14-2		AA1011819104	AA10119	1020.0	1020.0X8362.0	1	1	985.13	0.0	985.13
1(1)	PLATE			Y	PL 14		May be made in 2 part			
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
14-3		AA1011819074	AA10119	13.0	256.0X522.0	1	1	33.0	0.0	33.0
1(1)	LUG PLATE			Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
14-4		HW1011819953	AA10119	122.0	700.0X946.0	1	1	163.9	0.0	163.9
1(1)	LUG PLATE			Y	PL 30					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG

ENGG

WTX

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
14-5		AA1011819104	AA10119	69.2	450.0X1400.0	1	1	72.77	0.0	72.77
1(1)	PAD PLATE		450X1400	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
14-6		AA1011819139	AA10119	14.1	185.0X735.0	1	2	22.44	0.0	44.88
2(2)	RIB PLATE			Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
14-7		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
14-8		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
2(2)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
14-9		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100/50	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
14-10		HW1041055684	AA10455	30.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
14-11		HW1041055684	AA10455	6.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
15	11709970119 00			3106.0						
1(1)	GROUND DUCT- 15			Y						
MF CD		N		3150.0	0306-0301-0306-0314-000D					
15-1		AA1011819104	AA10119	1982.0	2270.0X8362.0	1	1	2192.4	0.0	2192.4
1(1)	PLATE		2270x8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0301-0306					KG
15-2		AA1011819074	AA10119	23.8	962.0X962.0	1	3	76.35	0.0	229.05
3(3)	FLANGE PLATE			Y	PL 10			Dia 962/742		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
15-3		AA1011819074	AA10119	110.0	592.0X2362.0	1	1	115.4	0.0	115.4
1(1)	PIPE PLATE			Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
15-4		AA1011819104	AA10119	59.0	1125.0X1125.0	1	1	146.2	0.0	146.2
1(1)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
15-5		AA1011819104	AA10119	247.0	1120.0X4140.0	1	1	535.55	0.0	535.55
1(1)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
15-6		AA1011819104	AA10119	0.7	100.0X100.0	1	4	1.16	0.0	4.64
4(4)	PLATE		DIA 100/50	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
15-7		HW1041055684	AA10455	30.0	1858.0	1	2	1.858	0.0	3.716
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
15-8		HW1041055684	AA10455	6.0	6811.0	1	2	6.811	0.0	13.622
2(2)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
15-9		AA1011819074	AA10119	217.0	1401.0X2362.0	1	2	273.0	0.0	546.0
2(2)	PIPE PLATE			Y	PL 10					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
15-10		AA1011819104	AA10119	64.0	1259.0X1259.0	1	2	183.0	0.0	366.0
2(2)	PAD PLATE			Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
16	11709970120 00			2408.0						
2(2)	GROUND DUCT- 16			Y						
MF CD			N	2420.0	0306-0301-0306-0314-000D					
16-1		AA1011819104	AA10119	2086.0	2270.0X8362.0	1	2	2192.4	0.0	4384.8
1(2)	PLATE		2270x8362	Y	PL 14			May be made in 2 part		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
16-2		AA1011819104	AA10119	247.0	1120.0X4140.0	1	2	535.55	0.0	1071.1
1(2)	SUPPORT RING			Y	PL 14			Made in 2 segment		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306-0317-0306					KG
16-3		AA1011819104	AA10119	0.7	100.0X100.0	1	8	1.16	0.0	9.28
4(8)	PLATE		DIA 100/50	Y	PL 14			Dia 100/50		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0317-0306					KG
16-4		HW1041055684	AA10455	30.0	6811.0	1	4	6.811	0.0	27.244
2(4)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
16-5		HW1041055684	AA10455	6.0	1858.0	1	4	1.858	0.0	7.432
2(4)	TECH. SUPPORT			Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
18		HW1047955210	AA10455	2623.0	27775.0	1	4	27.775	0.0	111.1
4(4)	TIE ROD (PIPE)			Y	355.6X11.13			May be cut 4 & 5 part		
MF CD	ST-B-HFS-PIPE				0072-0315-0306-0314-000D					MR
19	21709970111 00			2826.5						
1(1)	SADDLE - S1 FOR G.DUCT			Y						
MF CD			N	2857.0	0306-0314-000D					
19-1		AA1011819104	AA10119	657.0	950.0X6293.0	1	1	690.5	0.0	690.5
1(1)	WRAPPER PLATE		950X6293	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
19-2		AA1011819139	AA10119	801.5	4220.0X4297.0	1	1	2992.0	0.0	2992.0
1(1)	WEB PLATE			Y	PL 20			May be made in 2 part		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
19-3		AA1011819139	AA10119	398.0	900.0X4224.0	1	1	627.3	0.0	627.3
1(1)	RIB PLATE		900/300X4224	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
19-4		AA1011819139	AA10119	126.0	435.0X1843.0	1	2	132.3	0.0	264.6
2(2)	RIB PLATE		435X1843	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG

ENGG**WTX**

Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01
Description: ACC STEAM DUCT

Revno: 1

Rev Date: 11.07.2023

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
19-5		AA1011819139	AA10119	189.0	435.0X2762.0	1	2	198.24	0.0	396.48
2(2)	RIB PLATE		435X2762	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
19-6		HW1011819945	AA10119	340.0	900.0X800.0	1	1	356.4	0.0	356.4
1(1)	BASE PLATE		800X900	Y	PL 60					
MF DR	ST-FE410 WB-PLATE				0072-0301-0317-0306					KG
20	21709970111 01			2826.0						
1(1)	SADDLE - S1 FOR G.DUCT			Y						
MF CD		N		2857.0	0306-0314-000D					
20-1		AA1011819104	AA10119	657.0	950.0X6293.0	1	1	690.5	0.0	690.5
1(1)	WRAPPER PLATE		950X6293	Y	PL 14					
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
20-2		AA1011819139	AA10119	801.5	4220.0X4297.0	1	1	2992.0	0.0	2992.0
1(1)	WEB PLATE			Y	PL 20			May be made in 2 part		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
20-3		AA1011819139	AA10119	398.0	900.0X4224.0	1	1	627.3	0.0	627.3
1(1)	RIB PLATE		900/300X4224	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
20-4		AA1011819139	AA10119	126.0	435.0X1843.0	1	2	132.3	0.0	264.6
2(2)	RIB PLATE		435X1843	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
20-5		AA1011819139	AA10119	189.0	435.0X2762.0	1	2	198.24	0.0	396.48
2(2)	RIB PLATE		435X2762	Y	PL 20					
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
20-6		HW1011819945	AA10119	340.0	800.0X900.0	1	1	356.4	0.0	356.4
1(1)	BASE PLATE		800X900	Y	PL 60					
MF DR	ST-FE410 WB-PLATE				0072-0301-0317-0306					KG
21	31709970012 00			623.0						
2(2)	SADDLE S1 TOP RING FOR G.DUCT			Y						
MF CD		N		633.0	0306-0314-000D					

ENGG

WTX

	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



COMBINED BILL OF MATERIAL

Printed On:13.07.2023

Printed By:

CBOM No: 01709970017 CBOM Var: 01

Revno: 1

Rev Date: 11.07.2023

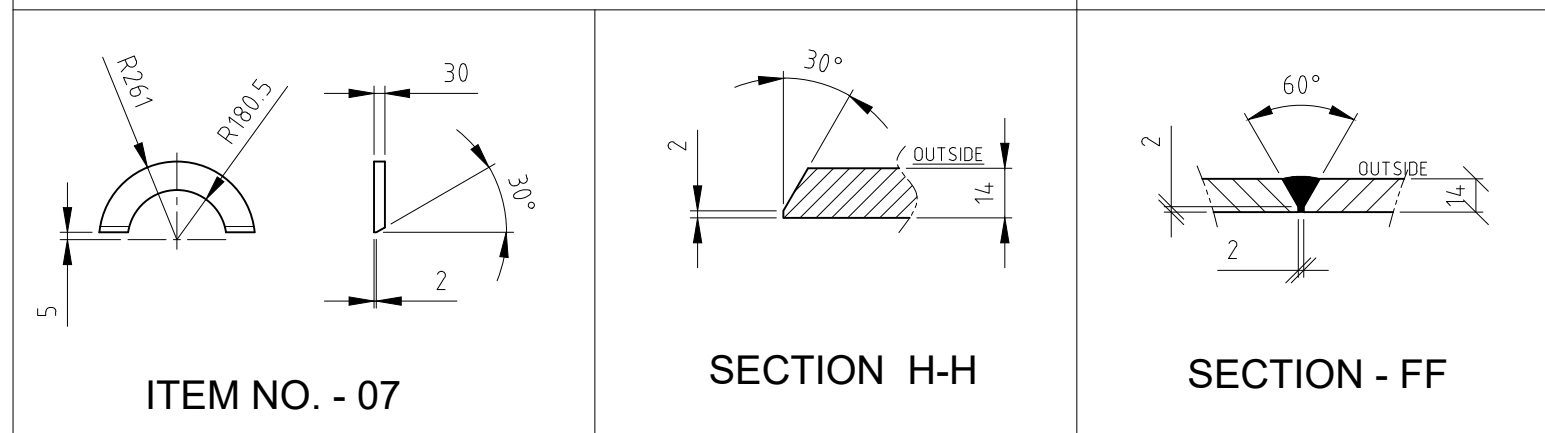
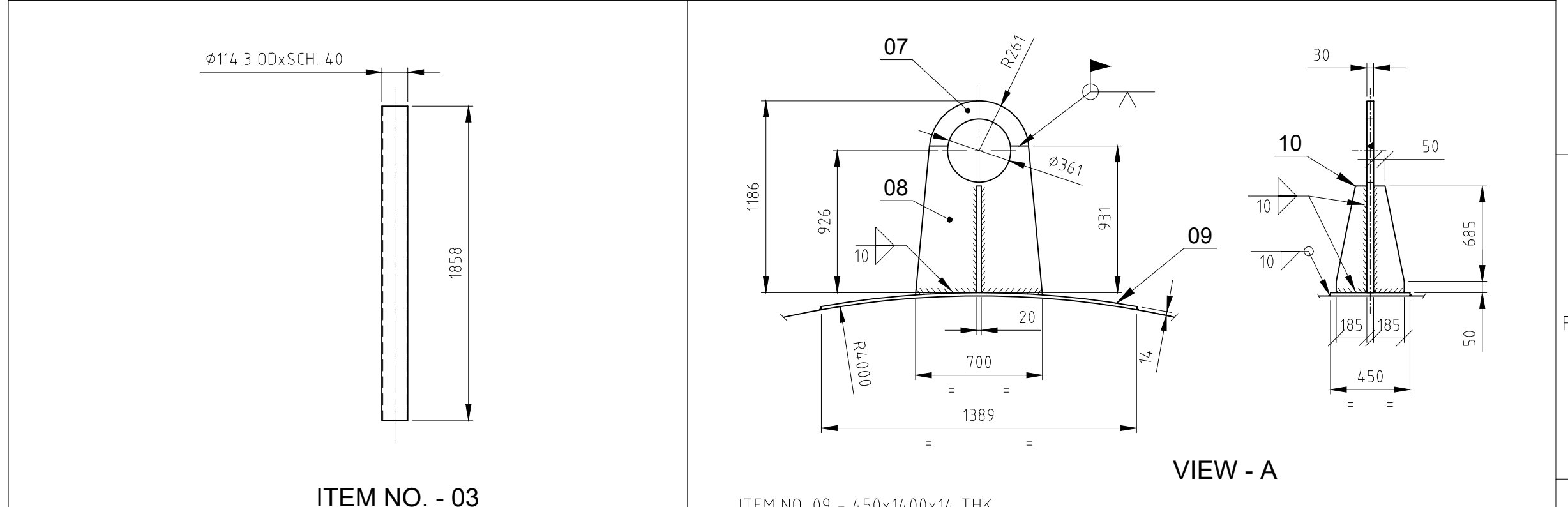
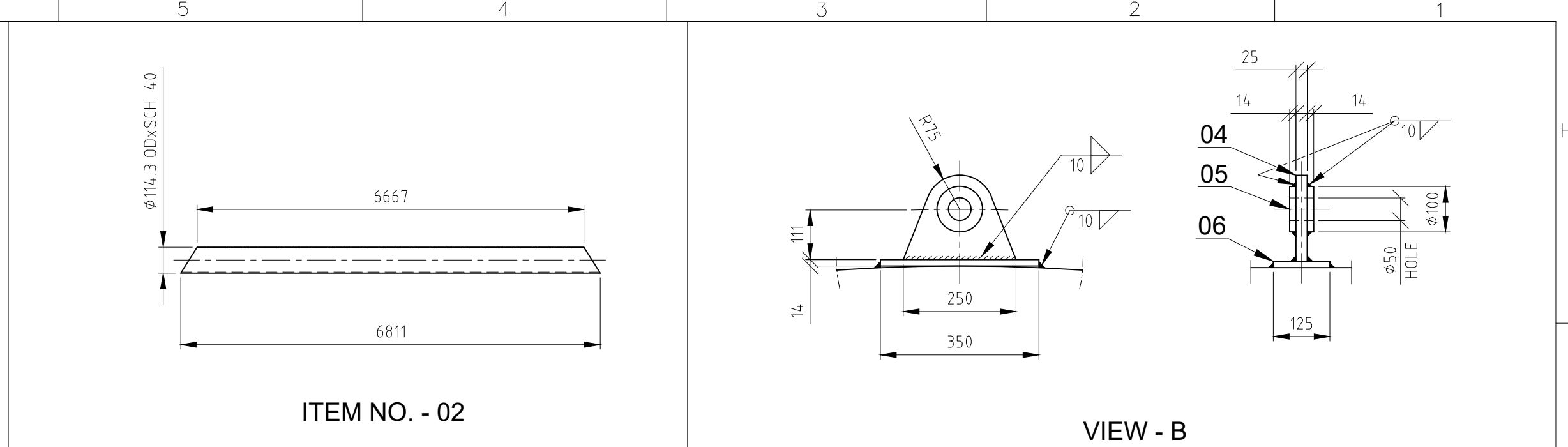
Description: ACC STEAM DUCT

Total weight: 96686.0

Item No	Drawingno Var Mvar	Mat Code	Mat Spec	Weight	Blank Sizes	Nos	Qty	Norm/pc	Extra Norm	Total Norm
Qty(Total)	Description		Assy. Remarks	Inclusion?	Mat Shape			Remarks		
Typ Cat Zone	Var/Matl. Description		ENGG SIZE/GRP	Fab Wt	Route				Spare Code	Unit
21-1		AA1011819139	AA10119	319.0	300.0X7065.0	1	2	349.72	0.0	699.44
1(2)	PLATE		300X6765	Y	PL 20			300mm. bending allowance incl.		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
21-2		AA1011819139	AA10119	304.0	950.0X3300.0	1	2	517.3	0.0	1034.6
1(2)	RING PLATE			Y	PL 20			Made in 2 segment		
MF DR	ST-FE410 WB-PLATE				0072-0301-0306					KG
22	21709970230 00			3149.0						
3(3)	GROUND DUCT BELLOW PIECE			Y						
MF CD			N		0306-0314-000D					
22-1		AA1011819104	AA10119	2389.6	8363.0X2600.0	1	3	2511.4	0.0	7534.2
1(3)	DUCT PLATE		8363X2600	Y	PL 14			May be made in 2 parts		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
22-2		AA1011819104	AA10119	238.0	1130.0X4360.0	1	6	569.0	0.0	3414.0
2(6)	STIFFENER PLATE		4000X4250	Y	PL 14			Made in 2 parts		
MF DR	STRUCTURAL STEEL WELDABLE				0072-0301-0306					KG
22-3		HW1041055684	AA10455	108.9	6774.0	1	6	6.774	0.0	40.644
2(6)	TECH.SUPPORT		L=6774	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR
22-4		HW1041055684	AA10455	29.3	1820.0	1	6	1.82	0.0	10.92
2(6)	TECH.SUPPORT		L=1820	Y	PI 114.3X6.02					
MF DR	ST-B-HFS-PIPES				0072-0315-0306					MR

CB

	ENGG		WTX	
	Initial	Date	Initial	Date
Worked By	hxesan	15.11.2022	bk2gau	27.12.2022
Checked By	hxeaxk	27.12.2022	wtxskg	27.12.2022
Approved By	hxenp	30.12.2022	wtxskg	27.12.2022



1. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
2. PAINTING ON OUTSIDE SURFACES:
 - (i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – 1 COAT – DFT 50 MICRON.
 - (ii) INTERMEDIATE PAINT: EPOXY TIQ PIGMENTED POLYAMIDE CURED PAINT – 1 COAT – 50 MICRON.
3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
5. UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
6. (a) DIAMETER TOLERANCES

(b) ADMISSIBLE QUALITY

At ends: Da 2800 mm – 4900 mm $x = 14$ mm
Da 4900 mm – 6300 mm $x = 16$ mm
Da 6300 mm – 8100 mm $x = 20$ mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

$$D_a \leq 9220 \text{ mm} \quad q = 6 \text{ mm}$$

7. TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)

8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.

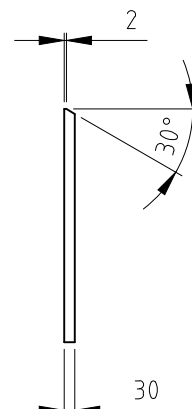
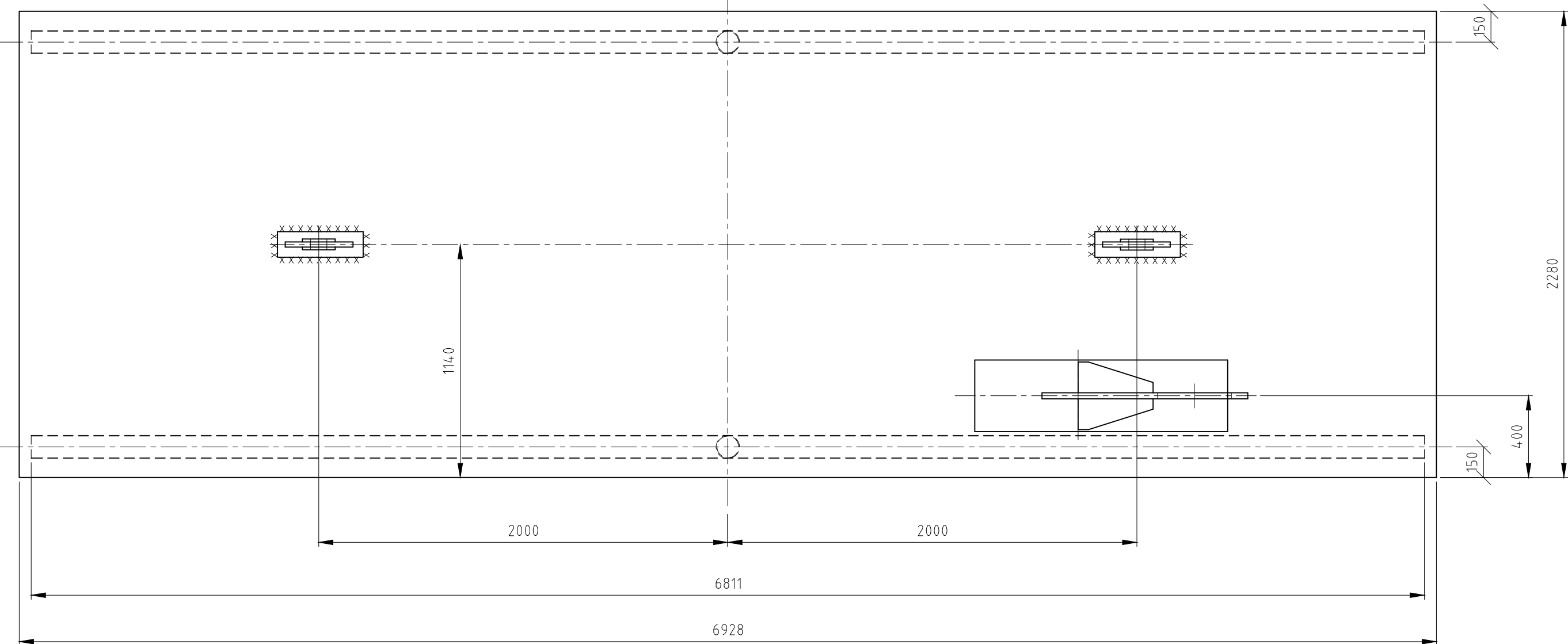
9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.

10. ► REPRESENTS SITE WELDING.

11. IF REQUIRED, PLATES (IT.1) MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL F-F. SO THAT JOINT DOES NOT FOLD WITH AND IS AT LEAST 100 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDING CLASSIFICATION GROUPS & TEST SCOPE AS PER T.R.1.

A1 साइज़/A1 SIZE

संगी मची मंथ्या / INVENTORY NO.	हस्ताक्षर और दिनांक / SIGN & DATE	संगीत अभिकल्प संख्या / REFERENCE DRG.NO.
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ITEM NO. - 08

30Δ	10Δ	10▽	6▽	SIZE & SYMBOL OF SEAM
0.2	—	22.7	1.2	WELD LENGTH (M)
0.8	—	12.3	0.25	WT. OF WELD METAL
E-7018				TYPE OF ELECTRODE



ITEM NO. 09 - 450x1400x14 THK



ITEM NO. - 07

2. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.

2. PAINTING ON OUTSIDE SURFACES:

(i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – 1 COAT – DFT 50 MICRON.

(ii) INTERMEDIATE PAINT: EPOXY TIQ PIGMENTED POLYAMIDE CURED PAINT – 1 COAT – 50 MICRON.

3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.

4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.

5. UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.

6. (a) DIAMETER TOLERANCES

At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} = \pm 7 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} = \pm 8 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} = \pm 10 \text{ mm}$

(b) ADMISSIBLE OVALITY

At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} \quad x = 14 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} \quad x = 16 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} \quad x = 20 \text{ mm}$

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE ORLATENESS

$D_a \leq 9220 \text{ mm} \quad q = 6 \text{ mm}$

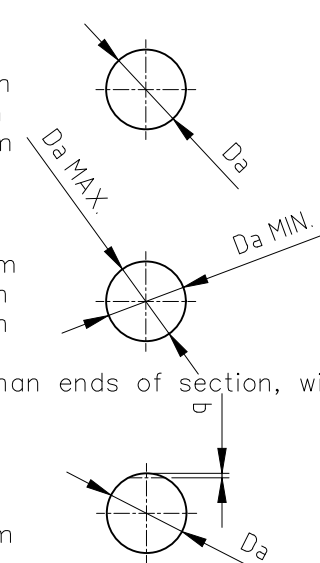
7. TRAIL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)

8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.

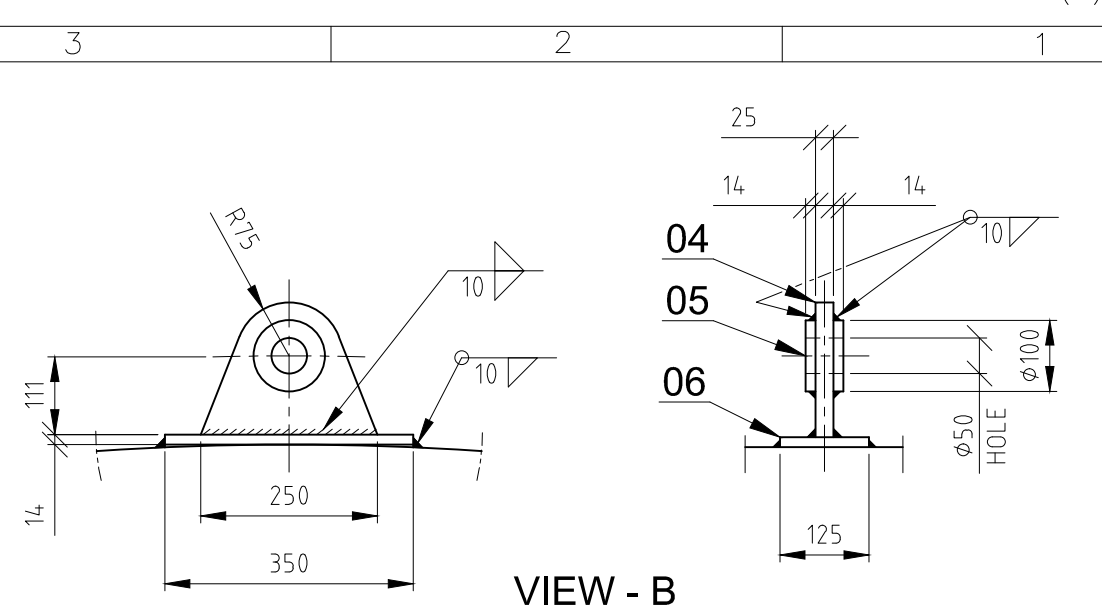
9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.

10. ► REPRESENTS SITE WELDING.

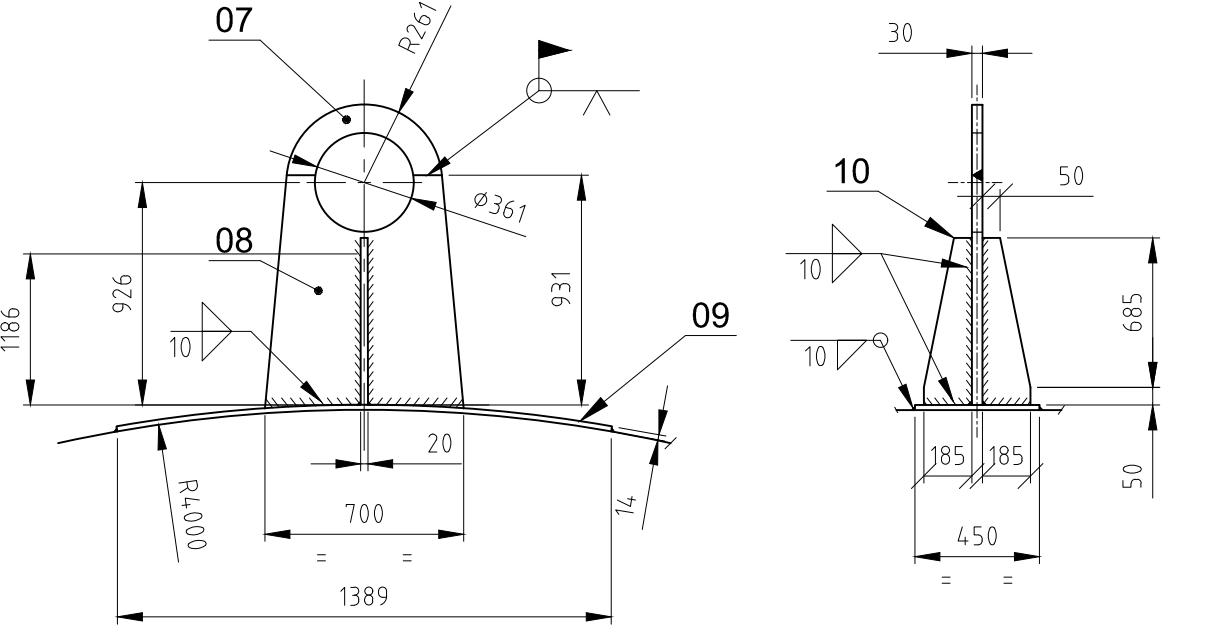
11. IF REQUIRED, PLATES (IT.1) MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL F-F, SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 100 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDING CLASSIFICATION GROUPS & TEST SCOPE AS PER T.R. 1.



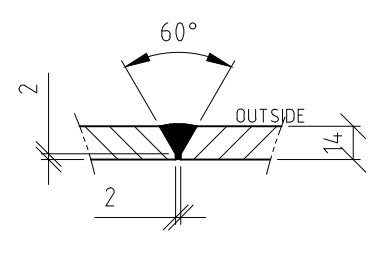
A1 साइज/A1 SIZE



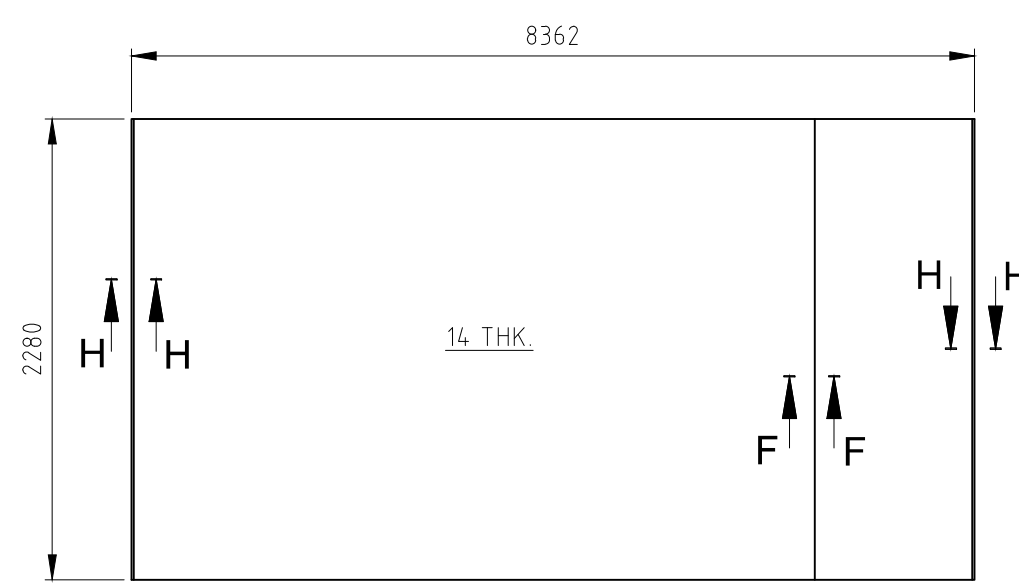
VIEW - B



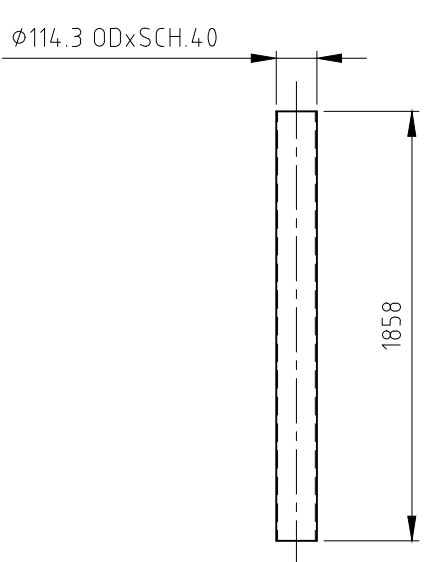
VIEW - A



SECTION - FF



ITEM NO. - 01

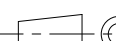


ITEM NO. - 03

30Δ	10Δ	10▽	6▽	SIZE & SYMBOL OF SEAM
0.35	—	31.6	1.2	WELD LENGTH (M)
1.4	—	17.1	0.25	WT. OF WELD METAL
E-7018				TYPE OF ELECTRODE

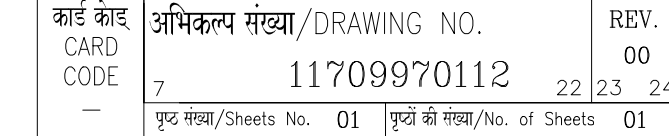
संशोधन REV.	दिनांक DATE	परिवर्तक ALTERED BY
		जयकांत CHD

अन्त्य दिनांक का माप GRADE OF UNTOLERANCED DIMENSION मशीनिंग - ए00230208 एम MACHINING - AA0230208 m वेल्डिंग - ए00621104 को थ्रेडों पे WELDING-CLASS 'B' OF AA0621104 गैस कटिंग - ए00621101 को मारपी 3 GAS CUTTING-TABLE 3 OF AA0621101		मी.वी.ओ.एफ./C.B.O.M. 01709970017.VAR.01 मारपी दिनांक AGED DEPT. नाम/NAME WTX MANISH प्रमाण/ SIGN Sd/-
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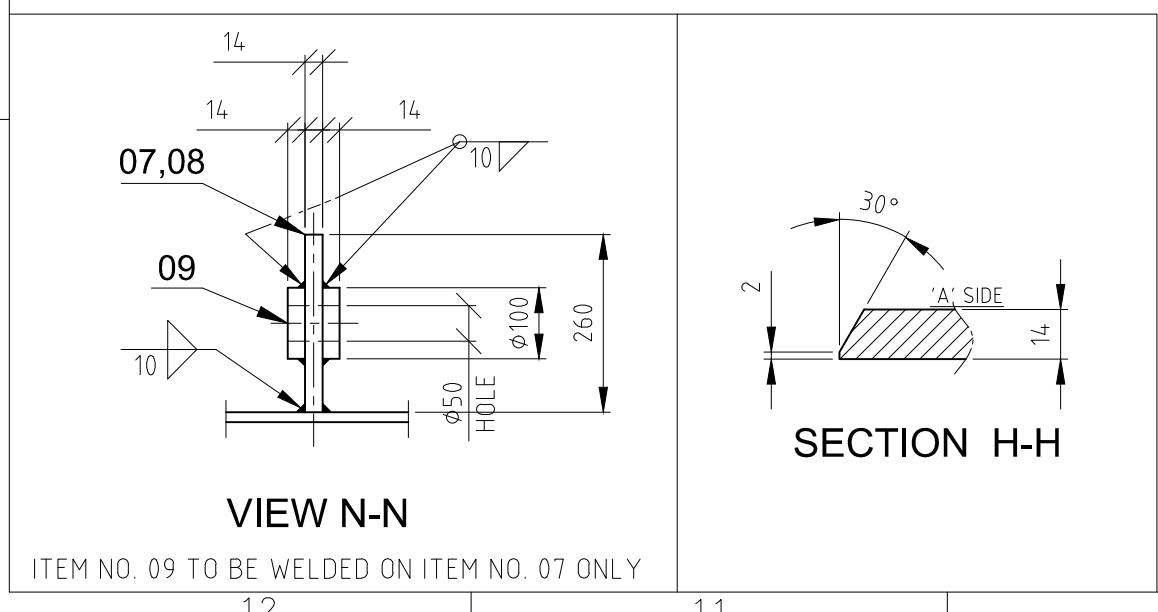
जिम्मा का नं. STATUS OF Dwg. U	उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		ACC. PATRATU			
दिनांक/DATE 27.12.22	 भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानीपुर, हरिद्वार BHARAT HEAVY ELECTRICALS LIMITED RANIPUR, HARDWAR		नाम/NAME S.JOSHI डिजाइन AXAY चेक N.Prakash अनुमोदित 27.12.22	हस्ताक्षर/SIGN 28.12.22	दिनांक/DATE 06.10.2022 06.10.2022 06.10.2022	प्रिंट्स की संख्या No. of Var. - - 06
विभाग कोड/HXE कोड/06.04.222		अनुपात/SCALE -	भार का ग.ग. WEIGHT (KG) 2882.0	असेम्बली अधिकृत का दर्जन REFER TO ASSLY. DRG. 01709970017.VAR.01	नग्न द्वाक NO. OF ITEMS 06	प्रिंट्स की संख्या NO. OF SHEETS 01
शीट का शीर्षक/TITLE GROUND DUCT-6			कट्टे का कोड CARD CODE -	अधिकृत संख्या/DRAWING NO. 11709970110	रिव. 00	प्रिंट्स की संख्या/No. of Sheets 01

A1 साइज/A1 SIZE

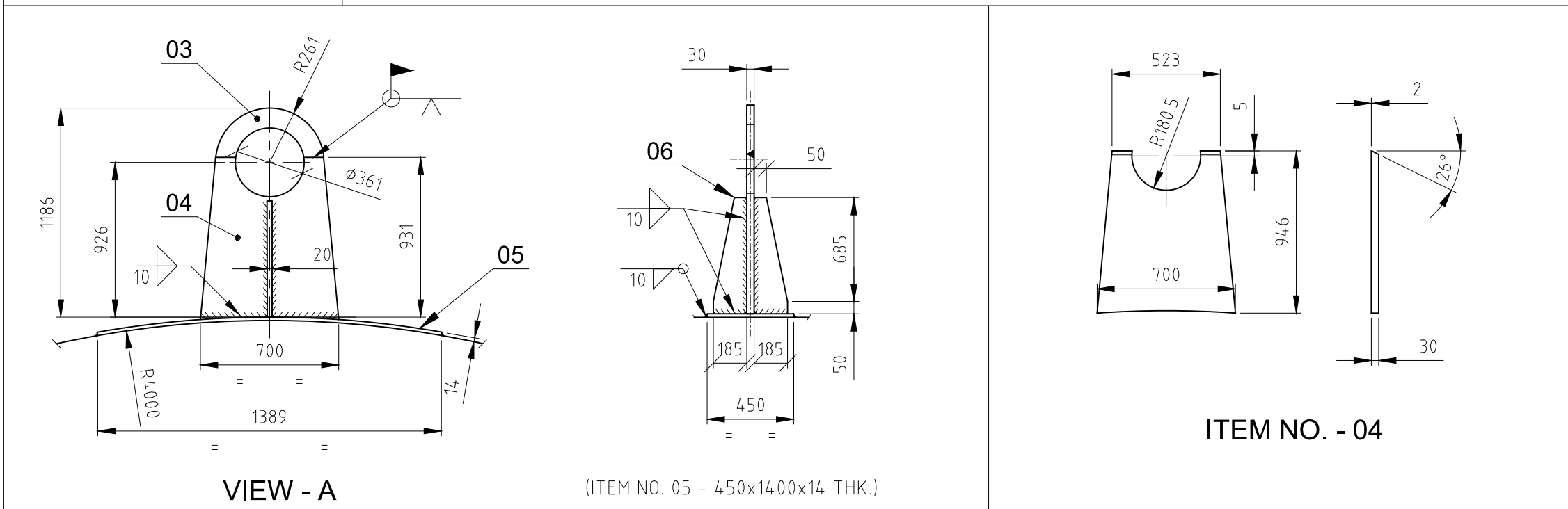
संगी मूची संख्या / INVENTORY NO.	हस्ताक्षर औ शिब/ SIGN & DATE	मंडीमें अभिकल्प संख्या / REFERENCE DRG.NO.
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गामर्ग नं० गंध्या / INVENTORY NO.	कलकत्ता औषध विभाग / S/N & DATE	संशोधित अभिकल्प संख्या / REFERENCE DRUG NO.
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14Δ	28Δ	10Δ	10▽	6▽	SIZE & SYMBOL OF SEAM
8.4	—	—	72.0	1.2	WELD LENGTH (M)
9.4	—	—	39.1	0.25	WT. OF WELD METAL
E-7018					TYPE OF ELECTRODE



2. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.

2. PAINTING ON OUTSIDE SURFACES:

(i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – 1 COAT – DFT 50 MICRON.

(ii) INTERMEDIATE PAINT: EPOXY TIQ PIGMENTED POLYAMIDE CURED PAINT – 1 COAT – 50 MICRON.

3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.

4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.

5. UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.

6. (a) DIAMETER TOLERANCES

At ends: Da 2800 mm – 4900 mm = ± 7 mm
Da 4900 mm – 6300 mm = ± 8 mm
Da 6300 mm – 8100 mm = ± 10 mm

(b) ADMISSIBLE OVALITY

At ends: Da 2800 mm – 4900 mm $\times = 14$ mm
Da 4900 mm – 6300 mm $\times = 16$ mm
Da 6300 mm – 8100 mm $\times = 20$ mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da ≤ 9220 mm $q = 6$ mm

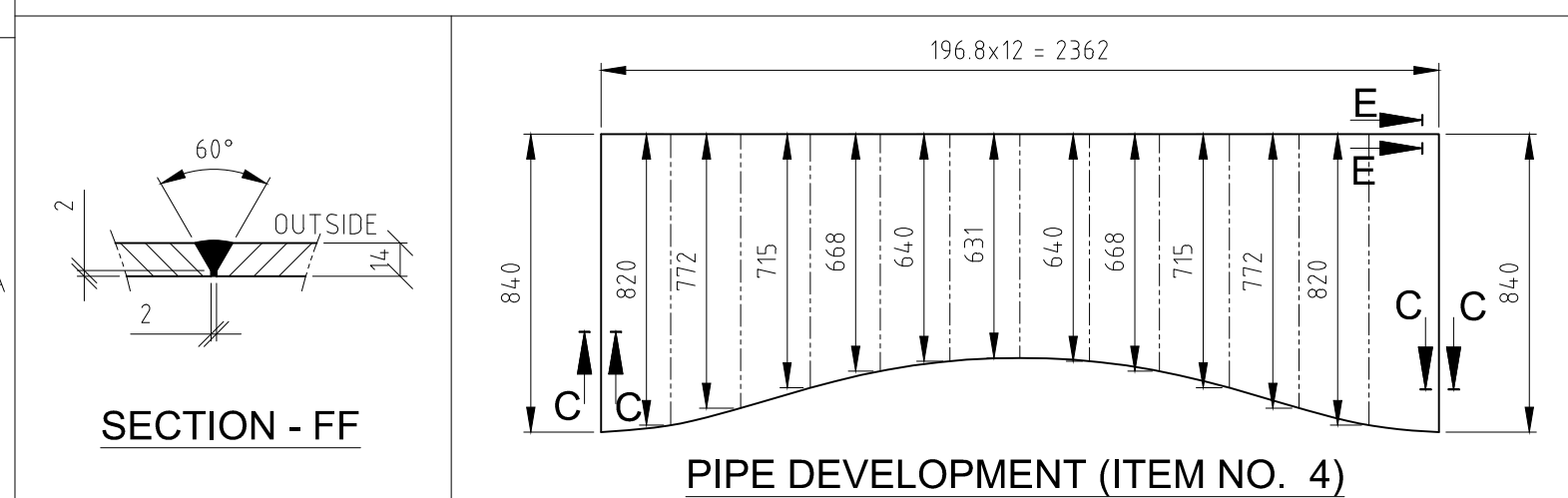
7. TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)

8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.

9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.

10. ► REPRESENTS SITE WELDING.

[illegible]



14Δ	28Δ	10Δ	10▽	8▽	6▽	SIZE & SYMBOL OF SEAM
8.4	10.0	10.0	60.6	10.0	1.2	WELD LENGTH (M)
9.4	42.3	7.2	32.8	3.4	0.25	WT. OF WELD METAL
F-7018						TYPE OF ELECTRODE

ITEM NO. 5 (R.F. PAD)

ITEM NO. 3 & 4

ITEM NO. 08 TO BE WELDED ON ITEM NO. 07 ONLY.

1. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
2. PAINTING ON OUTSIDE SURFACES:
 - (i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER - 1 COAT - DFT 50 MICRON.
 - (ii) INTERMEDIATE PAINT: EPOXY TiO₂ PIGMENTED POLYAMIDE CURED PAINT - 1 COAT - 50 MICRON.
3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
5. UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
6. (a) DIAMETER TOLERANCES

(b) ADMISSIBLE OVALITY

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

$$D_a \leq 9220 \text{ mm}$$
 $q = 6 \text{ mm}$

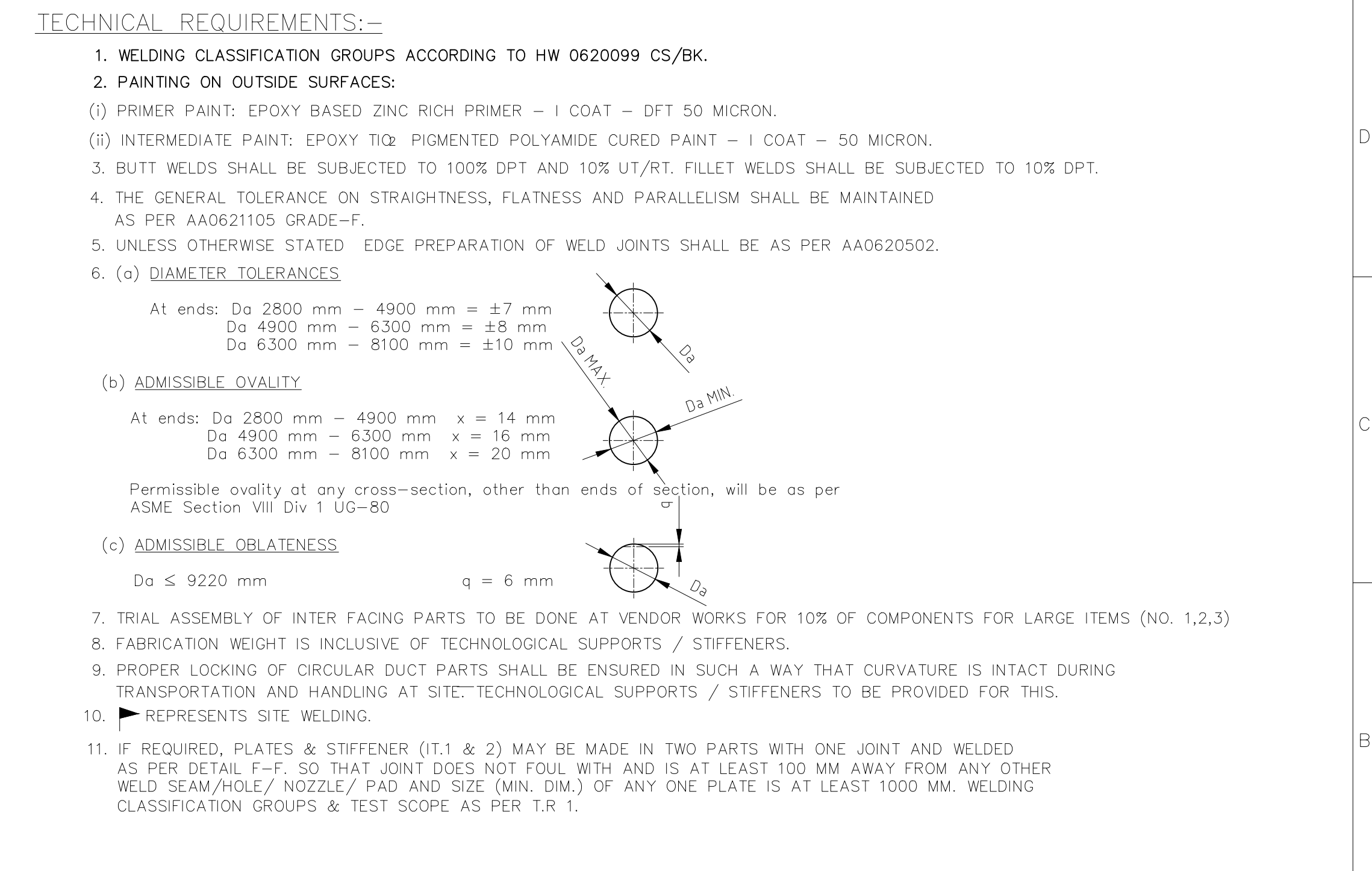
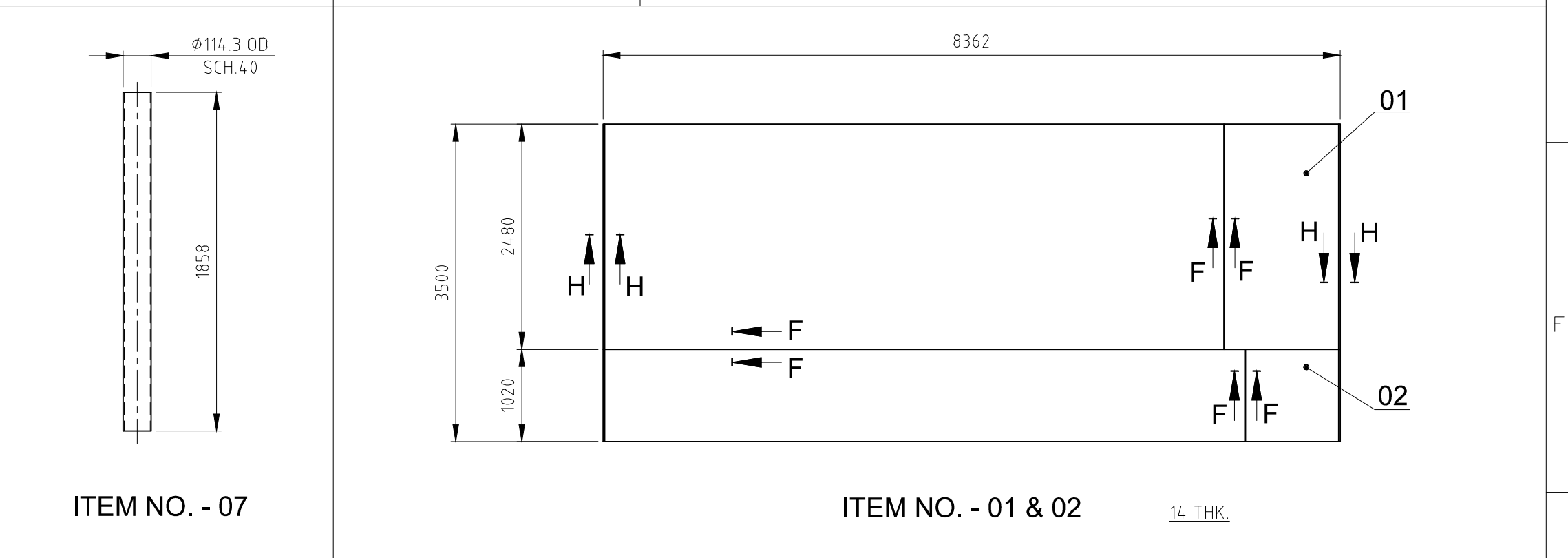
7. TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)

8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.

9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.

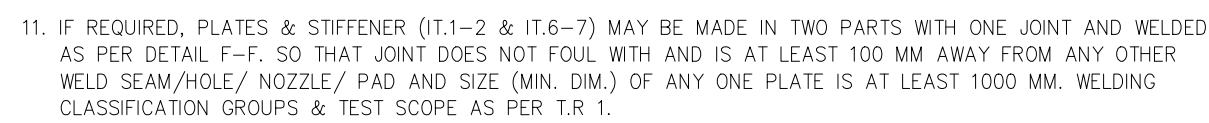
10.  REPRESENTS SITE WELDING.

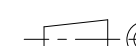
[illegible]

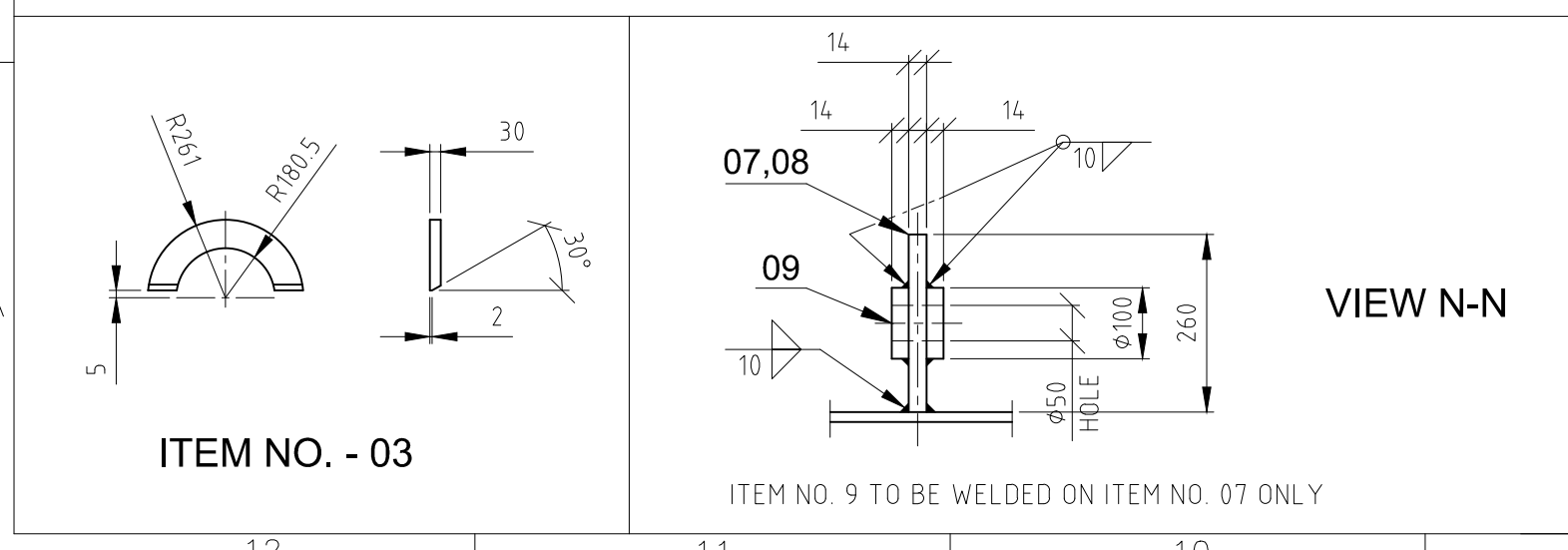


उत्पाद का प्रकार या ग्राहक/प्रियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					ACC, PATRATU									
बेपत्ता इलेक्ट्रिकल्स  भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानीपुर, हरियाणा BHARAT HEAVY ELECTRICALS LIMITED RANIPUR, HARDWAR					नाम/NAME S.JOSHI अवधि/DURATION XRAY प्रकार/TYPE N.P.Rakash		हस्ताक्षर/SIGN SD\ SD\ SD\		दिनांक/DATE 06.10.2022 06.10.2022 06.10.2022		पंजीकृत नाम/No. of Ver. - - -			
विषय/TOPIC HXE		अनुपात/SCALE 3816		भार का भार/WEIGHT (KG) 3816		असेम्बली ऑपरेशन का नमूना REFER TO ASSLY. DRG. 017099970017.VAR.01				नग क्रमांक/NO. OF ITEMS 11		कुल संख्या/NO. OF SHEETS 00		
कोड/CODE 4222							ऑफिस ड्राइंग/DRAWING NO. 117099700115				REV. 00		पृष्ठ संख्या/Sheets No. 23	
शीर्षक/TITLE GROUND CUT - 11					काई कार्ड CODE -		पृष्ठ संख्या/No. of Sheets 01				पृष्ठ संख्या/No. of Sheets 23		पृष्ठ संख्या/No. of Sheets 24	

प्राप्ति मूची मंथ्या /INVENTORY NO.	मरणांतर और रिकॉर्ड/SGN & DATE	संशोधित अभिलेख मंथ्या /REFERENCE DRG.NO.
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उत्पाद का प्रकार या ग्राहक /पयिोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				ACC, PATRATU							
भारत हेवी इलेक्ट्रिकल्स लिमिटेड, गुनीपुर, हरिद्वार BHARAT HEAVY ELECTRICALS LIMITED RANIPUR, HARDWAR				नाम/NAME S.JOSHI AXAY N.Prakash		हस्ताक्षर/SIGN SD_____ SD_____ SD_____		तिथिंक/DATE 06.10.2022 06.10.2022 06.10.2022		सील नम्बर No. of Seal - - -	
विषय DEPT.		HXE		अनुपात /SCALE		भार कि.ग्रा. WEIGHT (KG)		अभ्यन्तेरी अधिकृत का दर्भ REFER TO ASSLY. DRG.			
कोड /CODE4222				-		5032		01709970017_VAR.01			
शीर्षक/TITLE						काई कार्ड CARD CODE		अधिकृत यंत्र्या/DRAWING NO.			
GROUND DUCT- 12						7		11709970116			
						टुचें का संख्या/Sheets No.		01		टुचें का संख्या/No. of Sheets	
						23				23	
										24	



14Δ	28Δ	10Δ	10▽	6▽	SIZE & SYMBOL OF SEAM
8.4	—	—	77.2	1.2	WELD LENGTH (M)
9.4	—	—	41.8	0.25	WT. OF WELD METAL
E-7018					TYPE OF ELECTRODE

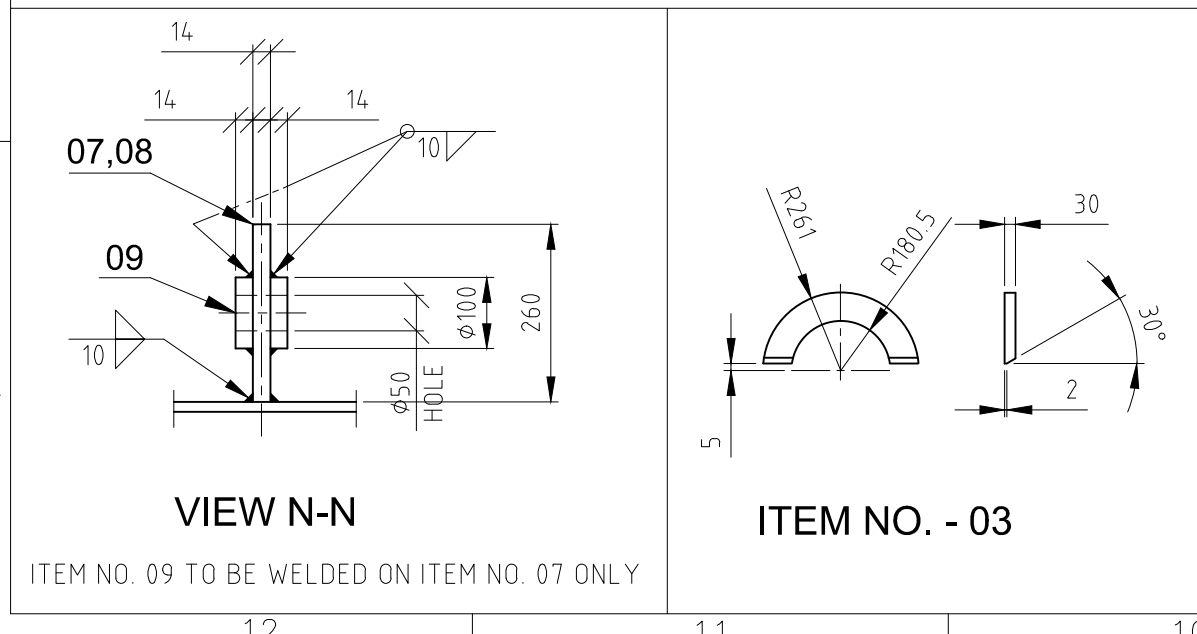
89

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	 भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानिपुर BHARAT HEAVY ELECTRICALS RANIPUR, HARDWARE
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नाम/NAME	हस्ताक्षर/SIGN	दिनांक/DATE	संलग्न संख्या No. of Vcr.
सहायक DRM, जयशंकर GHF	S.JOSHI	Sd\	06.10.2022
अधीक्षक	AXAY	Sd\	06.10.2022
सहायक	N.Prakash	Sd\	06.10.2022

दिवाण DEPTT.	HXE		अनुपात/SCALE	याग कि.ग. WEIGHT (KG)	अंमकनी अडकलस का मरंम REFER TO ASSLY.	का ड्रमंग DRAWING	की संख. No. OF ITEMS
कोड/CODE	4222		-	4548	01709970017.VAR.01	13	-
शीर्षक/TITLE			खाई कार्ड CARD CODE	अंककलस मय्या/DRAWING No.			REV.
GROUND DUCT- 13			-	7	11709970117	23	00
				पृथ का संख./No. of Sheets	23	24	01

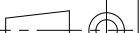
सामग्री मची संख्या / INVENTORY NO.	इकठ्ठा आणि दिनांक / DATE	लुप्तमिती अभिकल्प संख्या / REFERENCE DRG.NO.
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14Δ	28▷	10▷	10▽	6▽	SIZE & SYMBOL OF SEAM
8.4	—	—	72.0	1.2	WELD LENGTH (M)
9.4	—	—	39.1	0.25	WT. OF WELD METAL
E-7018					TYPE OF ELECTRODE



1. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
2. PAINTING ON OUTSIDE SURFACES:
- (i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – 1 COAT – DFT 50 MICRON.
- (ii) INTERMEDIATE PAINT: EPOXY TIQ₂ PIGMENTED POLYAMIDE CURED PAINT – 1 COAT – 50 MICRON.
3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
5. UNLESS OTHERWISE STATED, EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
6. (a) DIAMETER TOLERANCES
- At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} = \pm 7 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} = \pm 8 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} = \pm 10 \text{ mm}$
- (b) ADMISSIBLE OVALITY
- At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} \quad x = 14 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} \quad x = 16 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} \quad x = 20 \text{ mm}$
- Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80
- (c) ADMISSIBLE OBLATENESS
- $D_a \leq 9220 \text{ mm} \quad q = 6 \text{ mm}$
7. TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.
9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
10. ► REPRESENTS SITE WELDING.

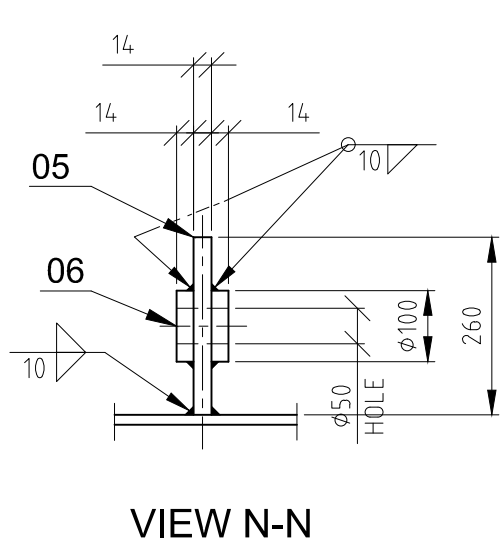
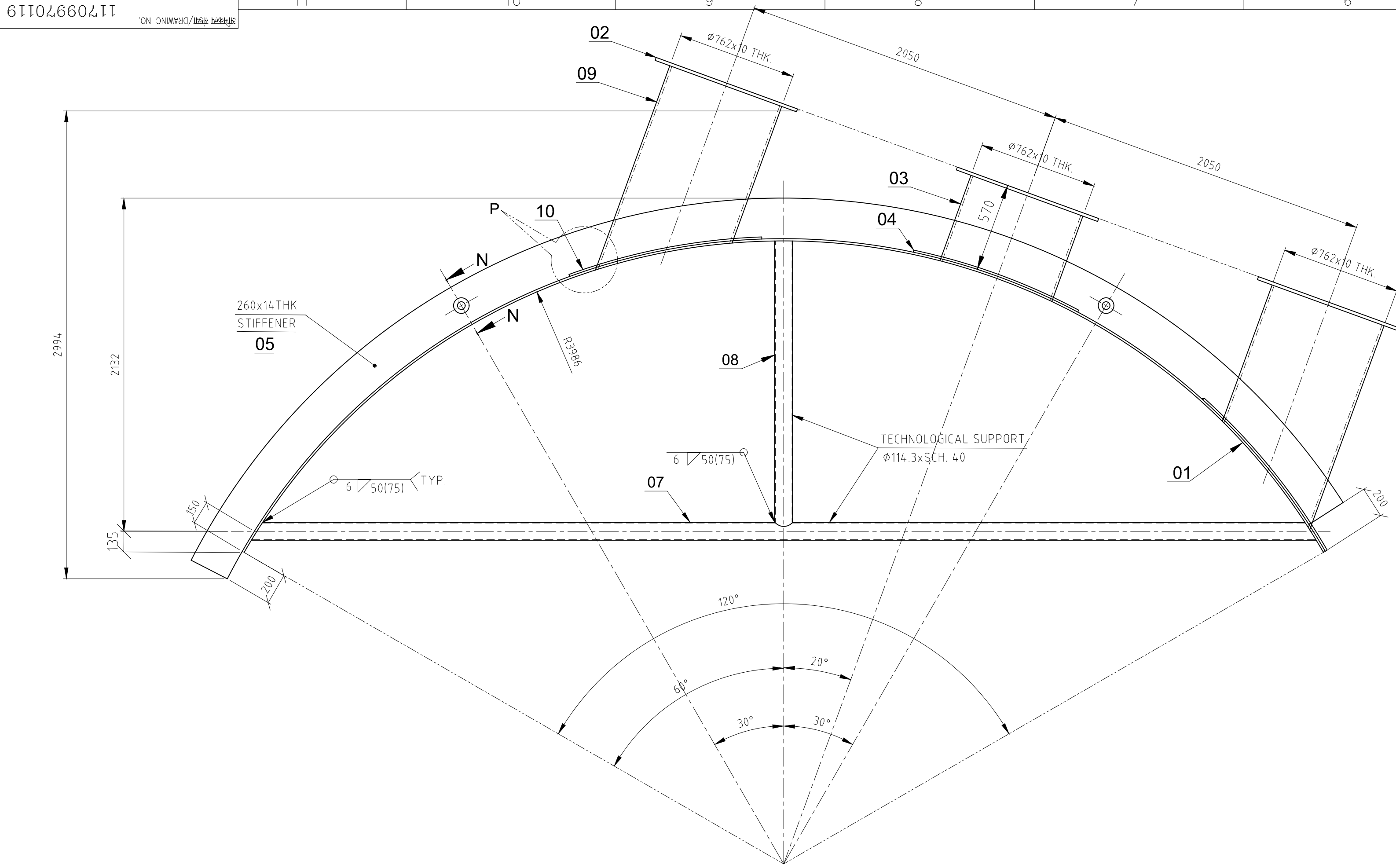
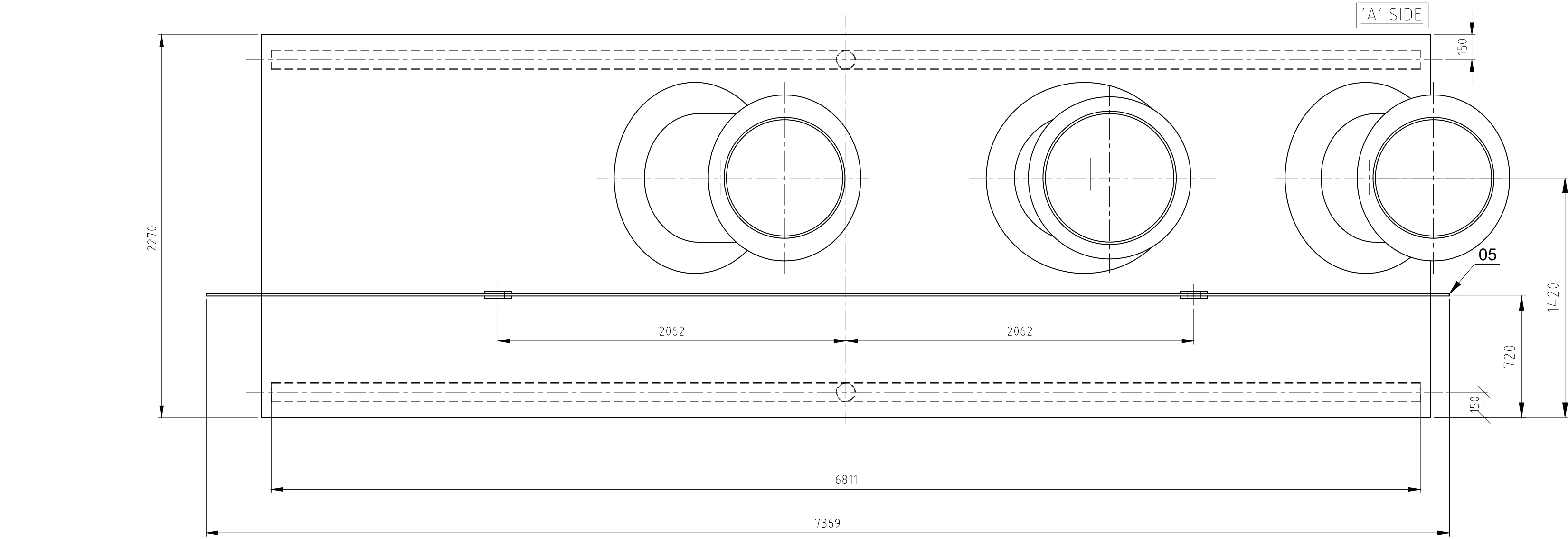
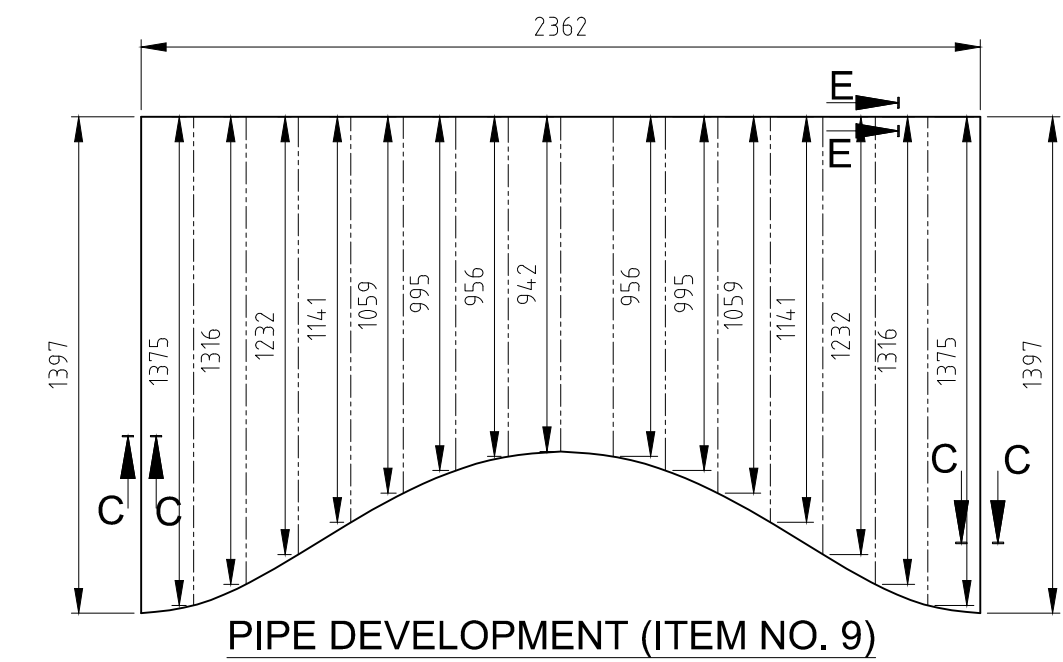
अन्य विमाओं का माप GRADE OF INTOLERANCE DIMENSION मशीनिंग - ए00230208 एम MACHINING - AA02.30208 m वेल्टिंग - ए00621104 को गार्पनी 3 WELDING-CLASS 'B' OF AA0621104 गैस कटिंग - ए00621101 को गार्पनी 3 GAS CUTTING-TABLE 3 OF AA0621101			मौ.वी.ओ.एम्./C.B.O.M. 01709970017.VAR.01 आवक विमाओं का माप नाम/NAME मशीनिंग/SEEN दिनांक/DATE 27.12.22			उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानीपुर, हस्तिद्वार BHARAT HEAVY ELECTRICALS LIMITED RANIPUR, HARDWAR			ACC, PATRATU			
मशीनिंग REV.	दिनांक DATE	वैकल्पिक आवक विमाओं का माप OPTIONAL आवक विमाओं का माप OPTIONAL	मशीनिंग REV.	दिनांक DATE	वैकल्पिक आवक विमाओं का माप OPTIONAL आवक विमाओं का माप OPTIONAL	विमा DEPT.	HXE	अनुपात/SCALE	भार कि.ग्रा. WEIGHT (KG)	अभिधानी अभियन्ता का संदर्भ REFER TO ASSLY. DRG.	नग क्रमांक NO. OF ITEMS	नग की संख्या NO. OF ITEMS
						कोड/ CODE4222		-	4314	01709970017.VAR.01	14	
शीर्षक/TITLE									कार्ड कोड CARD CODE	अधिकृत संख्या/DRAWING NO.	REV.	
GROUND DUCT- 14									7	11709970118	22	23
									फुट मात्रा/Sheets No.	01	पृष्ठों की संख्या/No. of Sheets	01

संपत्ति सूची संख्या/INVENTORY NO. सामग्री की मात्रा/QUANTITY & UNIT निर्दिष्ट आंकड़ों के संदर्भ में/REFERENCE DRG. NO.

इस दस्तावेज़ में दी गई सभी जानकारी का प्रयोग केवल निर्माण के लिए है। इसका उपयोग या अन्यत्र प्रयोग करने से पहले इसे लिखित रूप से अनुमति प्राप्त होना आवश्यक है।

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.

संपत्ति सूची संख्या/INVENTORY NO.



SECTION CC	SECTION EE	SECTION - DD	SECTION - FF	SECTION H-H
28	8	10	8	6
5.0	5	32.2	5	1.2
21.1	2.5	17.5	1.7	0.25
E-7018				
SIZE & SYMBOL OF SEAM				
WELD LENGTH (M)				
WT. OF WELD METAL				
TYPE OF ELECTRODE				

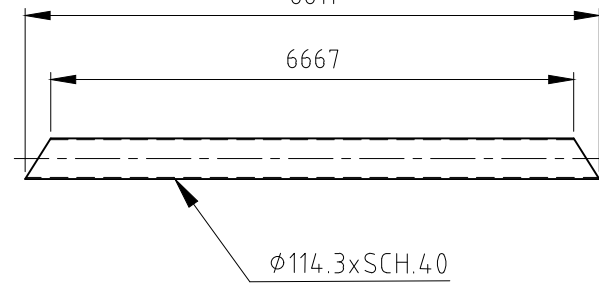
11. IF REQUIRED, PLATES & STIFFENER (IT.1 & IT.5) MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL F-F, SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 100 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDING CLASSIFICATION GROUPS & TEST SCOPE AS PER T.R. 1.

प्रथम कोण प्रक्षेपण/FIRST ANGLE PROJECTION

सभी विमाएं मिलीमीटर में हैं/ALL DIMENSIONS ARE IN mm.

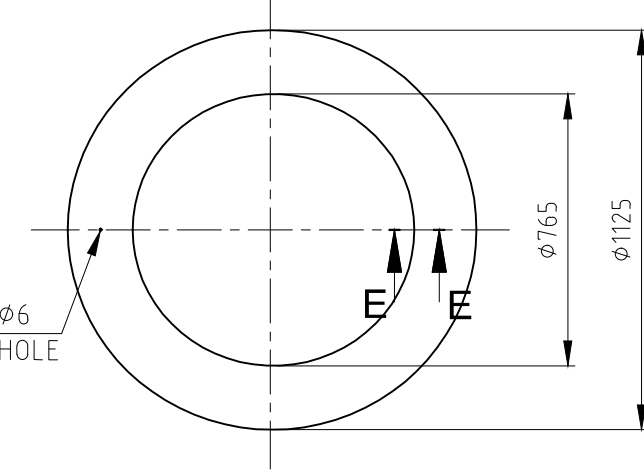
फ़ॉर्म 45 (बी)/FORM 45 (B)

ITEM NO. - 07



VIEW P (TYP.)

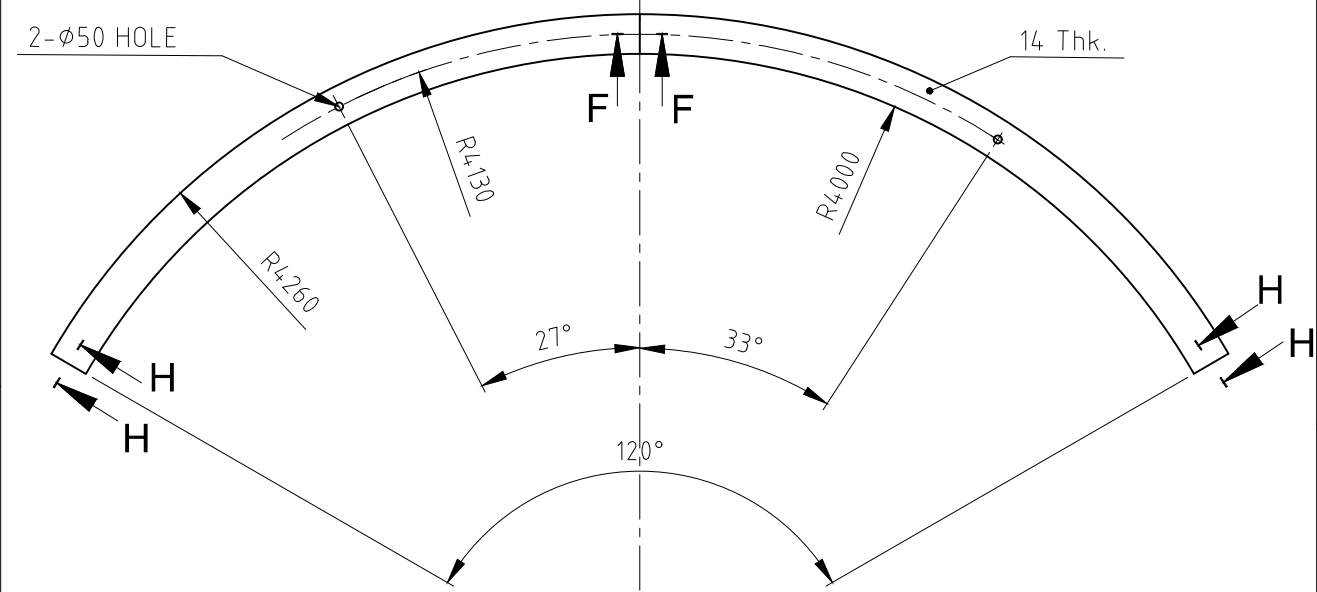
ITEM NO. - 08



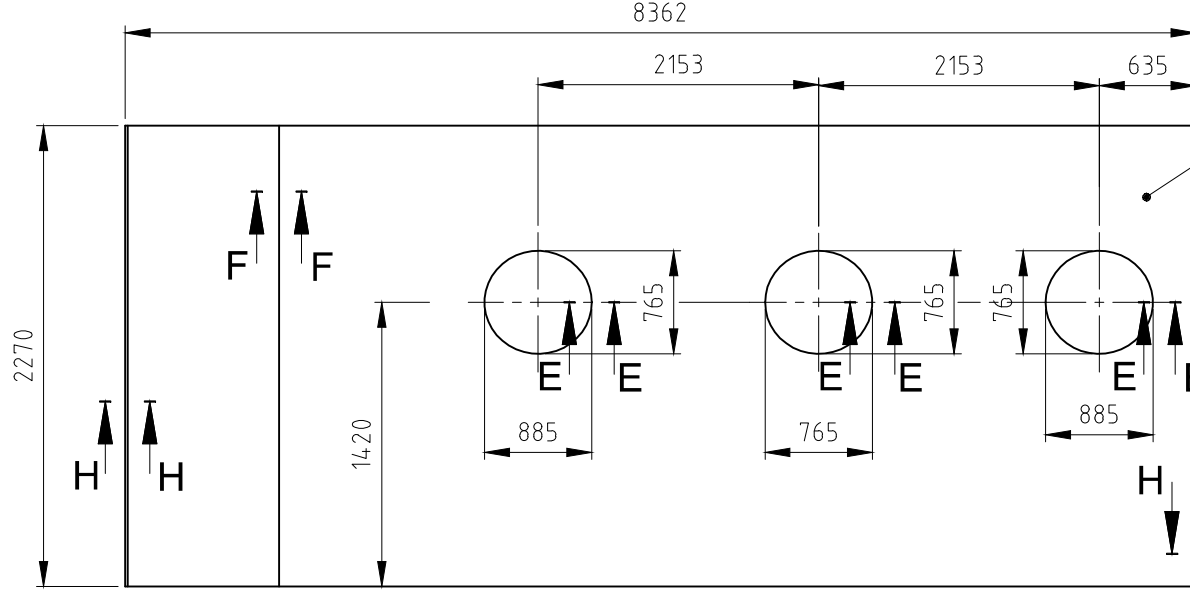
DEVELOPMENT OF ITEM- 4

ITEM NO. 4 (R.F PAD)

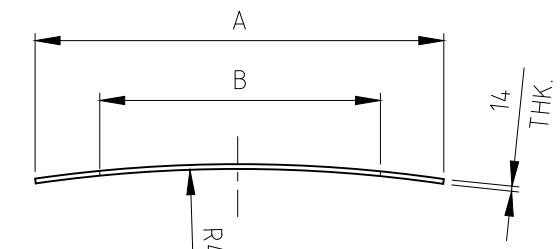
ITEM NO.	A	B
4	1122	765
10	1256	882



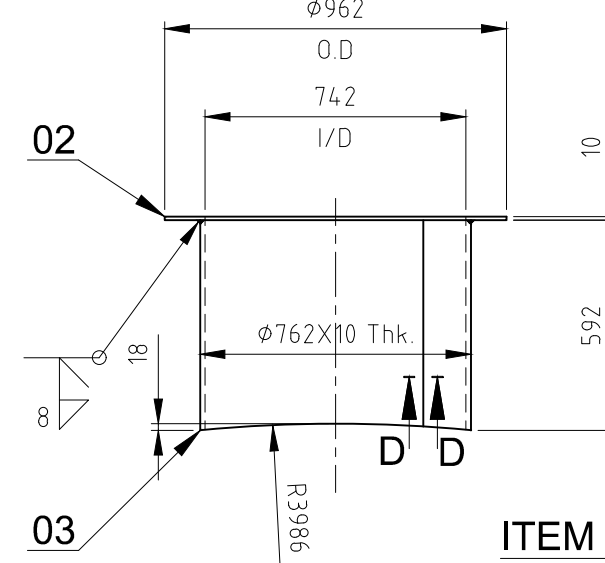
ITEM NO. - 05



ITEM NO. - 01

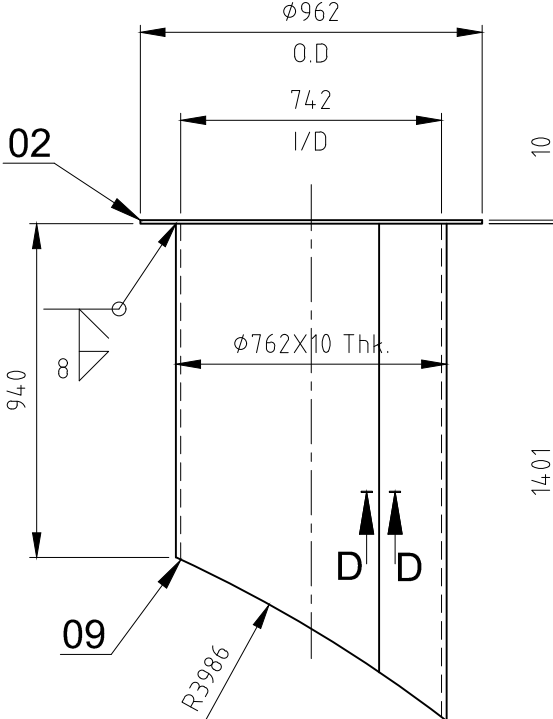


ITEM NO. 4 (R.F PAD)

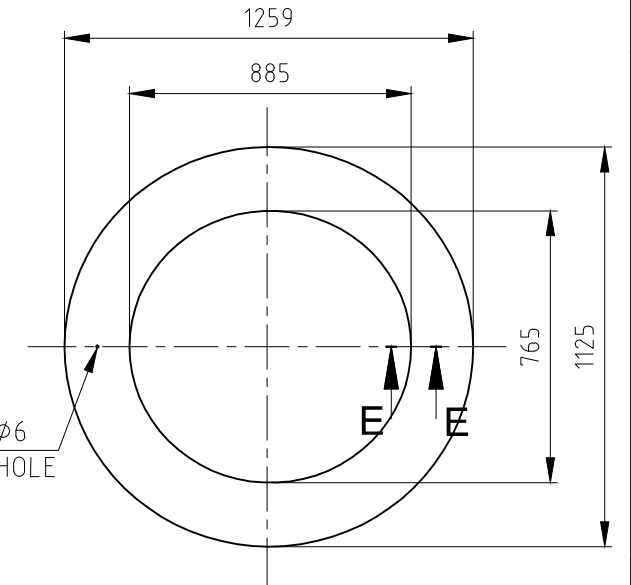


ITEM NO. 2 & 3

DEVELOPMENT LENGTH = 592x2362x10 THK.



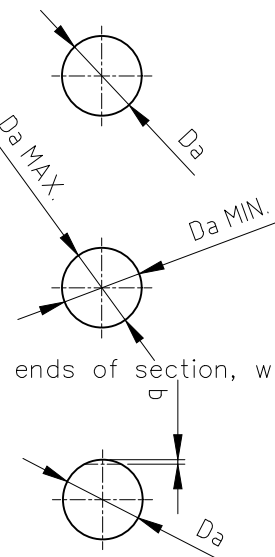
ITEM NO. 2 & 9



DEVELOPMENT OF ITEM- 10

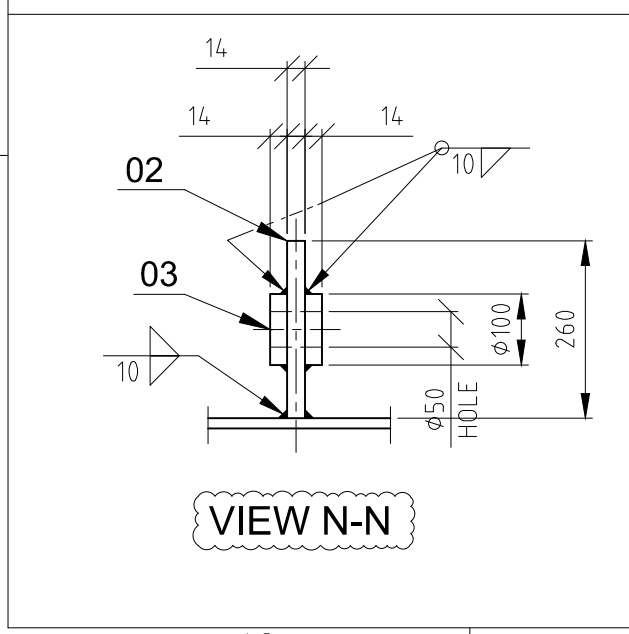
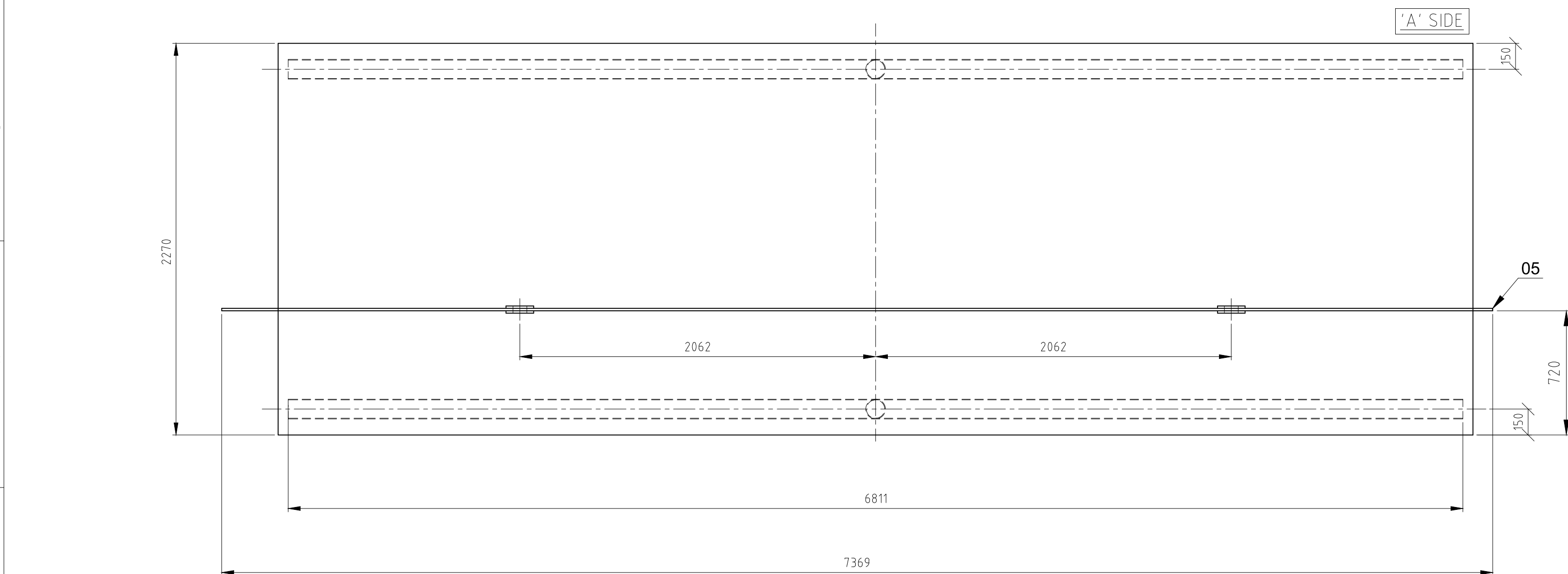
TECHNICAL REQUIREMENTS:-

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- PAINTING ON OUTSIDE SURFACES:
 - PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER - I COAT - DFT 50 MICRON.
 - INTERMEDIATE PAINT: EPOXY TiO₂ PIGMENTED POLYAMIDE CURED PAINT - I COAT - 50 MICRON.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES
At ends: Da 2800 mm - 4900 mm = ±7 mm
Da 4900 mm - 6300 mm = ±8 mm
Da 6300 mm - 8100 mm = ±10 mm
(b) ADMISSIBLE OVALITY
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm
Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80
(c) ADMISSIBLE OBLATENESS
Da ≤ 9220 mm
q = 6 mm
7. TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.
9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
10. REPRESENTS SITE WELDING.

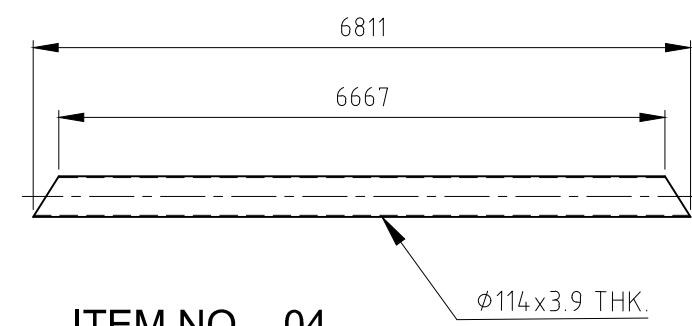


आमंत्रित विमाओं का वर्ग				मौजूदा विमाओं का वर्ग			
GRADE OF UNTOLERANCED DIMENSION				STATUS OF DRG.			
MACHINING - AA0230208 m				01709970017.VAR.01			
WELDING - CLASS 'B' OF AA0621104				WELDING - CLASS 'B' OF AA0621104			
GAS CUTTING - TABLE 3 OF AA0621101				GAS CUTTING - TABLE 3 OF AA0621101			
मौजूदा REV.	दिनांक DATE	परिवर्तित/ALTERED BY	उत्तर/ANSWER	मौजूदा REV.	दिनांक DATE	परिवर्तित/ALTERED BY	उत्तर/ANSWER

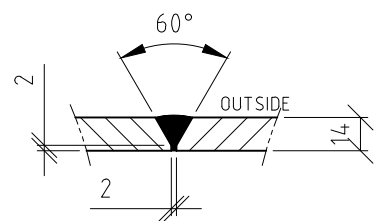
उत्पाद का प्रकार या ग्राहक/परियोजना का नाम				TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
ACC, PATRATU				ACC, PATRATU			
भारत हेवी इलेक्ट्रिकल्स लिमिटेड, राणीपुर, हरिद्वार				BHARAT HEAVY ELECTRICALS LIMITED, RANIPUR, HARDWAR			
विकास/DEVELOP.	मौजूदा/EXIST.	मौजूदा/EXIST.	मौजूदा/EXIST.	विकास/DEVELOP.	मौजूदा/EXIST.	मौजूदा/EXIST.	मौजूदा/EXIST.
S.JOSHI	Sd/-	26.10.2022	26.10.2022	S.JOSHI	Sd/-	26.10.2022	26.10.2022
AXAY	Sd/-	26.10.2022	26.10.2022	AXAY	Sd/-	26.10.2022	26.10.2022
N.Prakash	Sd/-	26.10.2022	26.10.2022	N.Prakash	Sd/-	26.10.2022	26.10.2022
भारत हेवी इलेक्ट्रिकल्स लिमिटेड, राणीपुर, हरिद्वार				BHARAT HEAVY ELECTRICALS LIMITED, RANIPUR, HARDWAR			
विकास/DEVELOP.	मौजूदा/EXIST.	मौजूदा/EXIST.	मौजूदा/EXIST.	विकास/DEVELOP.	मौजूदा/EXIST.	मौजूदा/EXIST.	मौजूदा/EXIST.
HXE	Sd/-	31.50	31.50	HXE	Sd/-	31.50	31.50
कोड/Code4222	कोड/Code4222	कोड/Code4222	कोड/Code4222	कोड/Code4222	कोड/Code4222	कोड/Code4222	कोड/Code4222
शीट/Sheet				शीट/Sheet			
अनुपात/SCALE				अनुपात/SCALE			
भार कि.ग्रा. WEIGHT (KG)				भार कि.ग्रा. WEIGHT (KG)			
01709970017.VAR.01				01709970017.VAR.01			
अधिकार/Authority				अधिकार/Authority			
11709970119				11709970119			
7				7			
22				22			
23				23			
24				24			



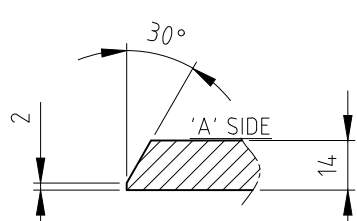
14△	28△	8 ▽	10▽	6▽	SIZE & SYMBOL OF SEAM
—	—	—	21.0	1.2	WELD LENGTH (M)
—	—	—	11.4	0.25	WT. OF WELD METAL
E-7018					TYPE OF ELECTRODE
8					7



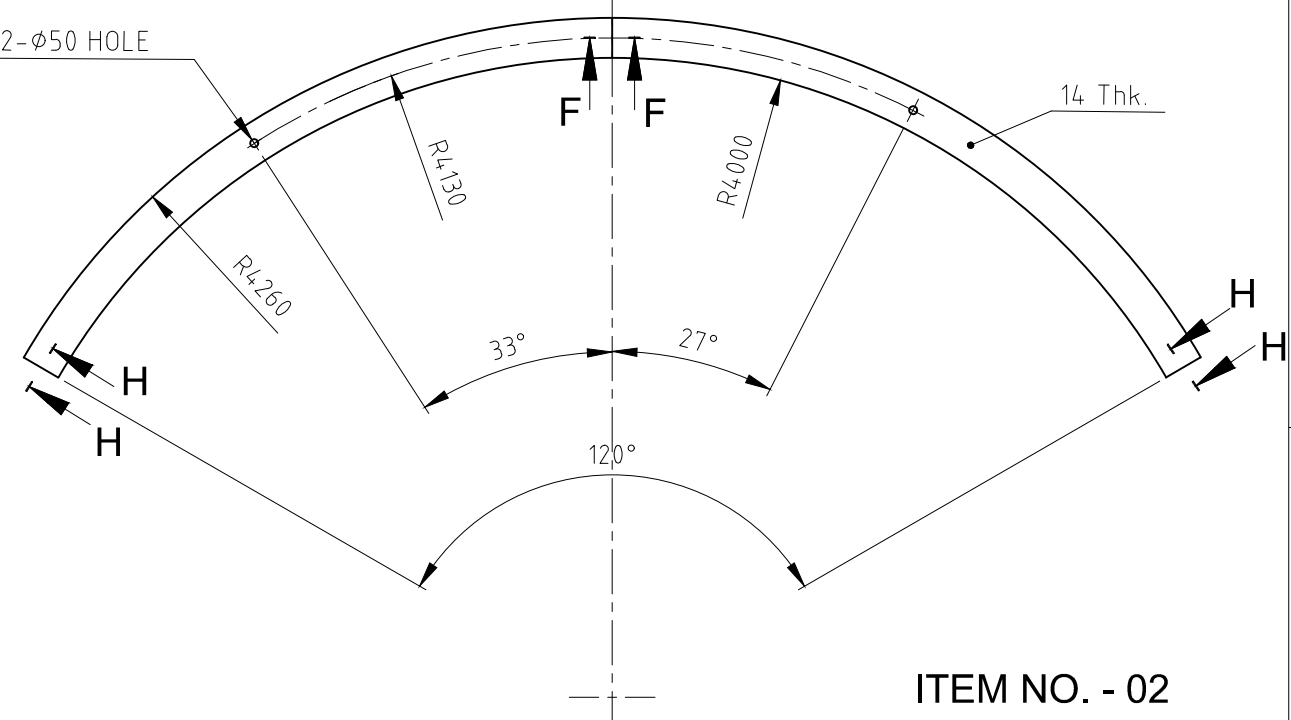
ITEM NO. - 04



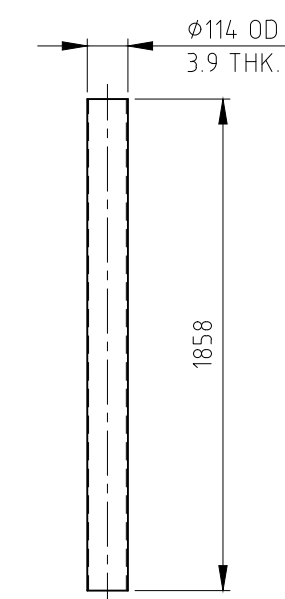
SECTION - FF



SECTION H-H



ITEM NO. - 02



ITEM NO. - 05



ITEM NO. - 01

2. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.

2. PAINTING ON OUTSIDE SURFACES:

(i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – 1 COAT – DFT 50 MICRON.

(ii) INTERMEDIATE PAINT: EPOXY TiO₂ PIGMENTED POLYAMIDE CURED PAINT – 1 COAT – 50 MICRON.

3. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.

4. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.

5. UNLESS OTHERWISE STATED, EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.

6. (a) DIAMETER TOLERANCES

At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} = \pm 7 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} = \pm 8 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} = \pm 10 \text{ mm}$

(b) ADMISSIBLE OVALITY

At ends: $D_a 2800 \text{ mm} - 4900 \text{ mm} \quad x = 14 \text{ mm}$
 $D_a 4900 \text{ mm} - 6300 \text{ mm} \quad x = 16 \text{ mm}$
 $D_a 6300 \text{ mm} - 8100 \text{ mm} \quad x = 20 \text{ mm}$

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

$D_a \leq 9220 \text{ mm} \quad q = 6 \text{ mm}$

7. TRAIL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3).

8. FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.

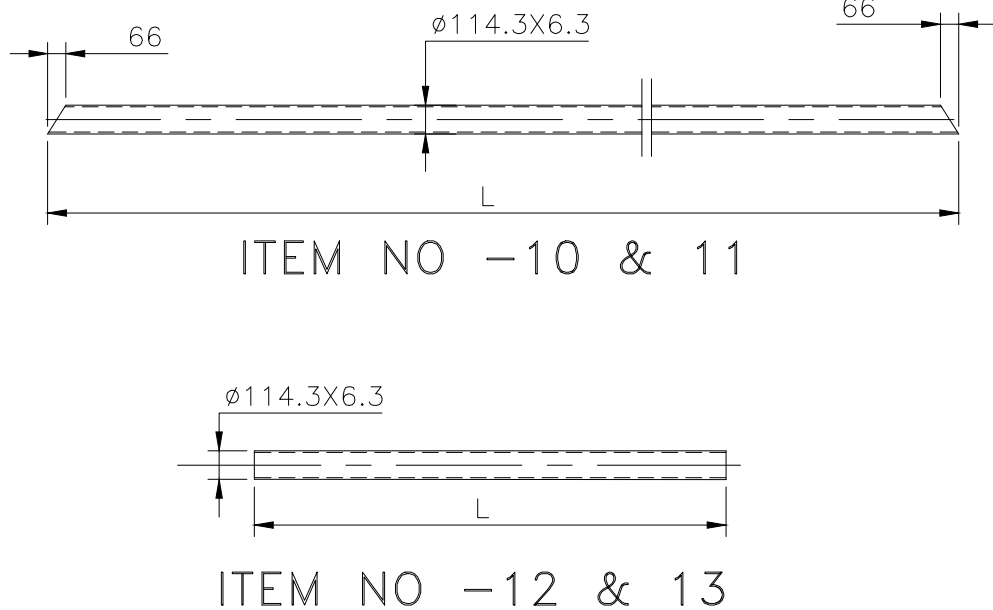
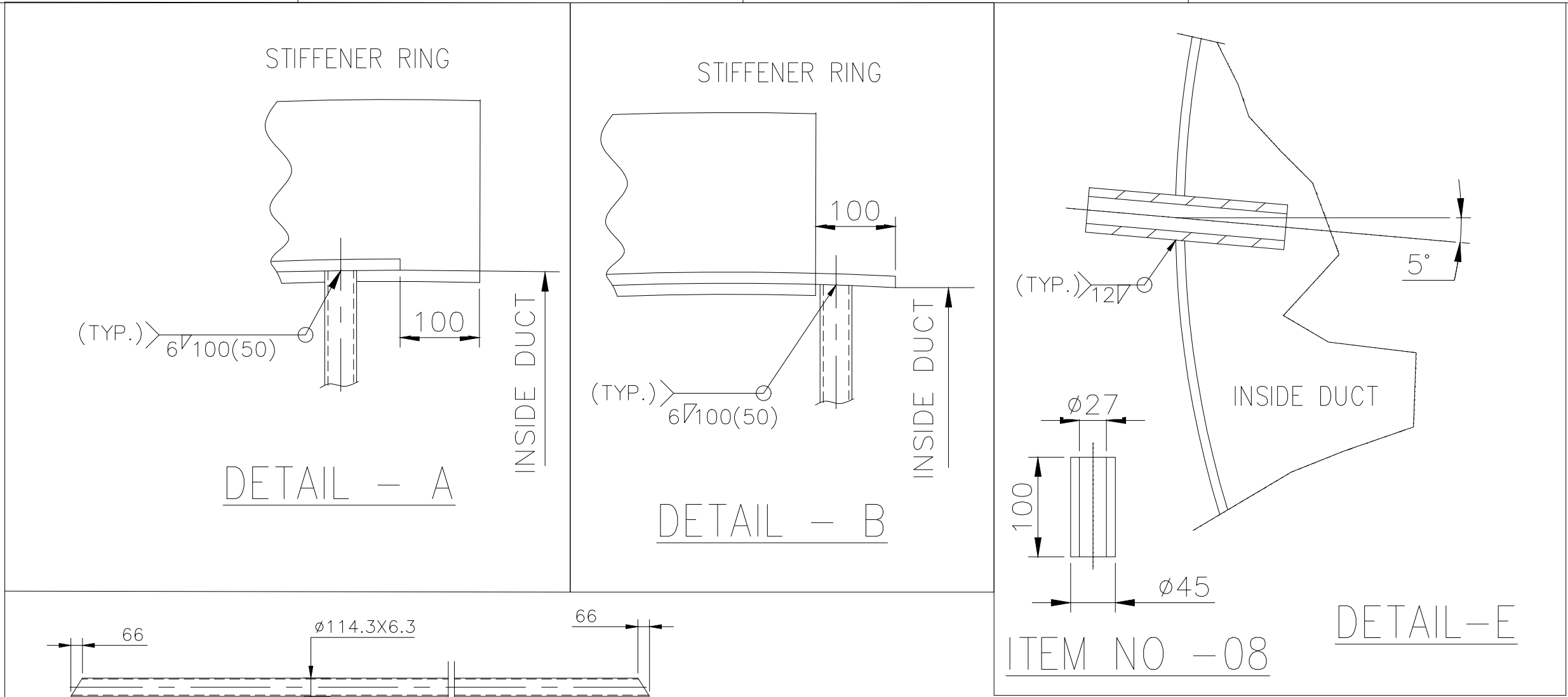
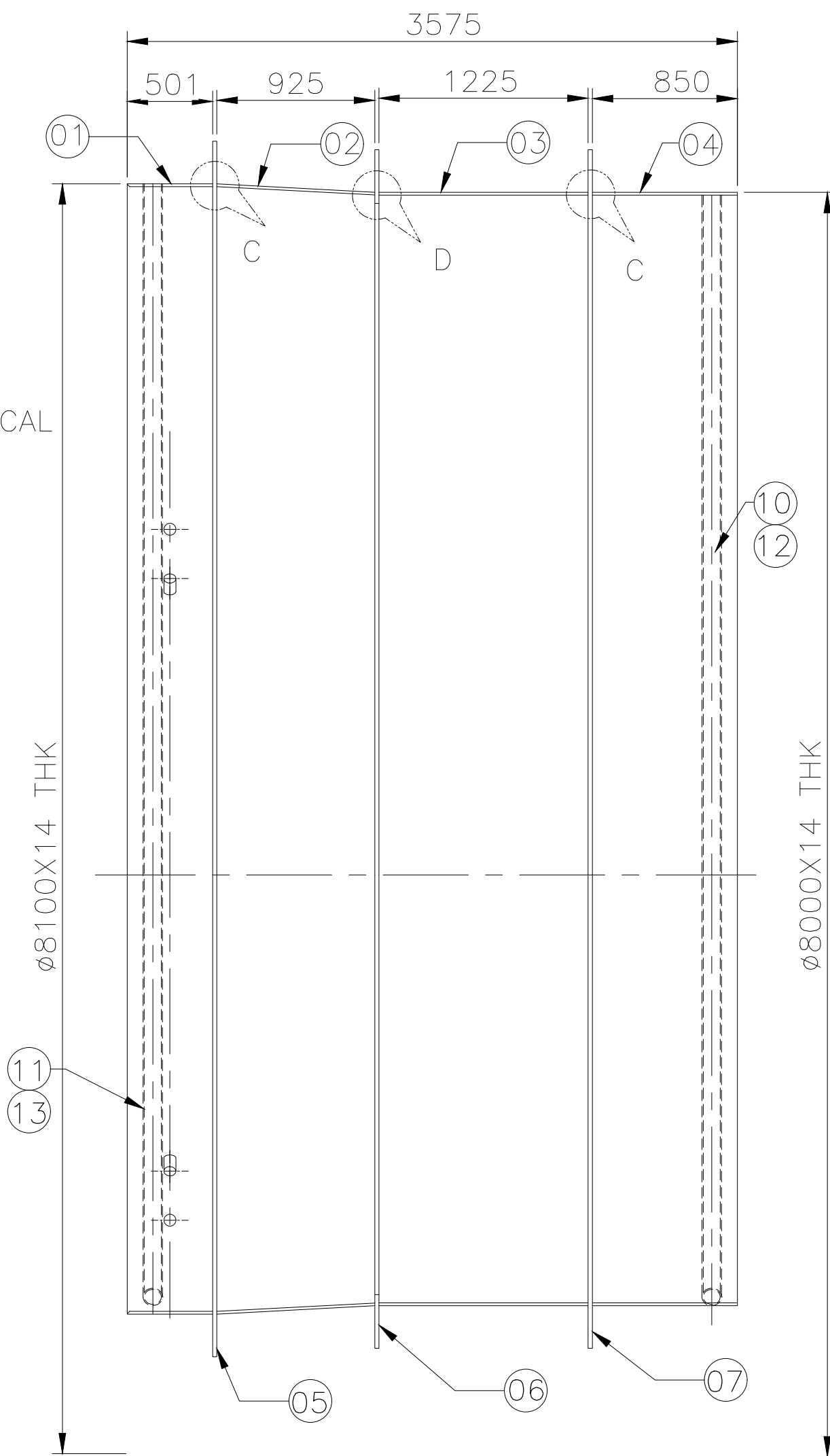
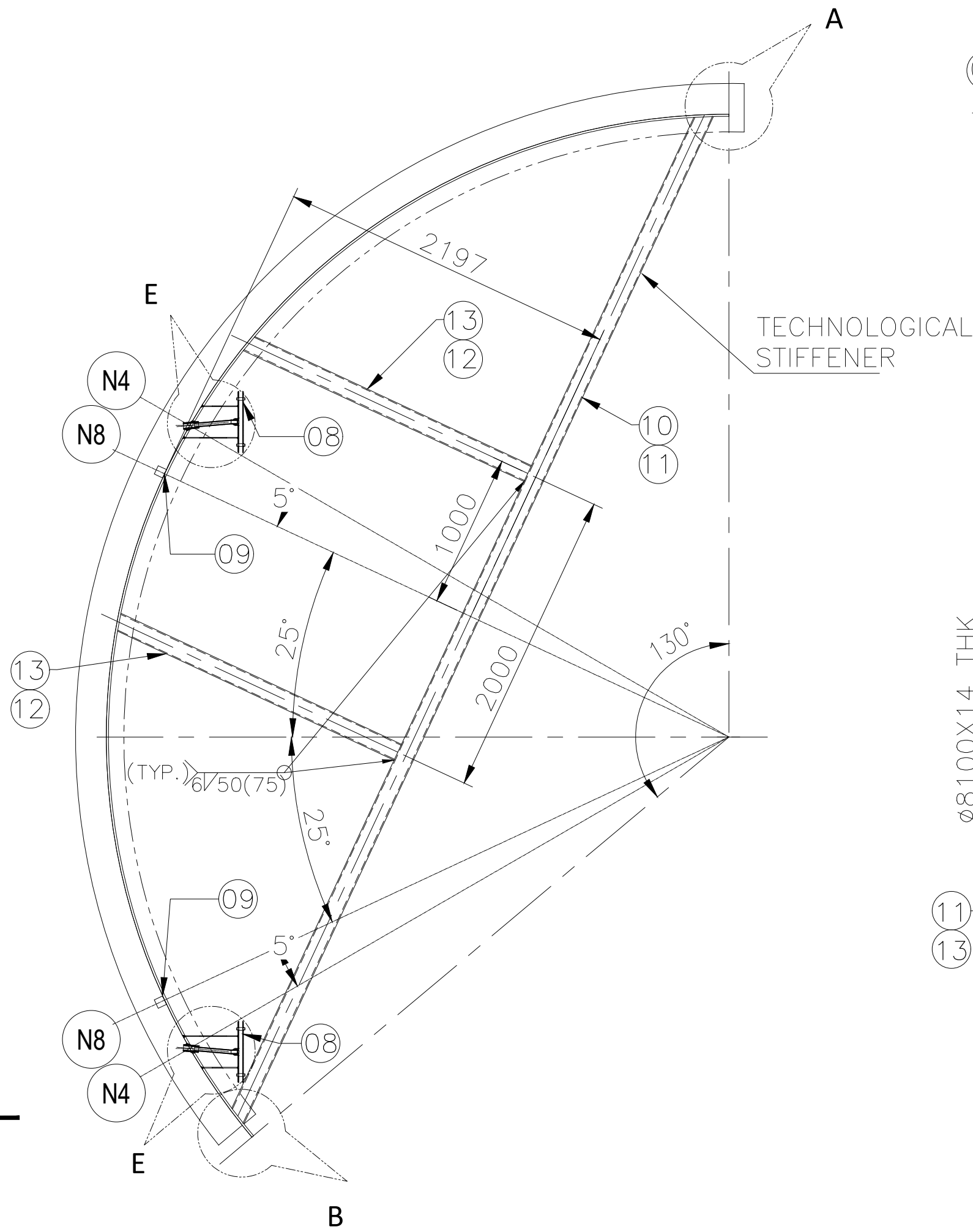
9. PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.

10. ► REPRESENTS SITE WELDING.

11. IF REQUIRED, PLATES & STIFFENER (IT.1 & 2) MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL F-F. SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 100 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDING CLASSIFICATION GROUPS & TEST SCOPE AS PER T.R. 1.

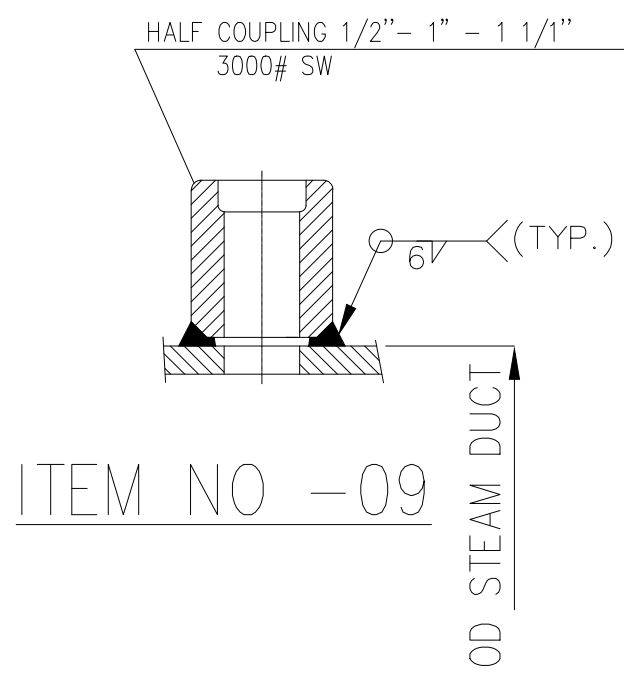
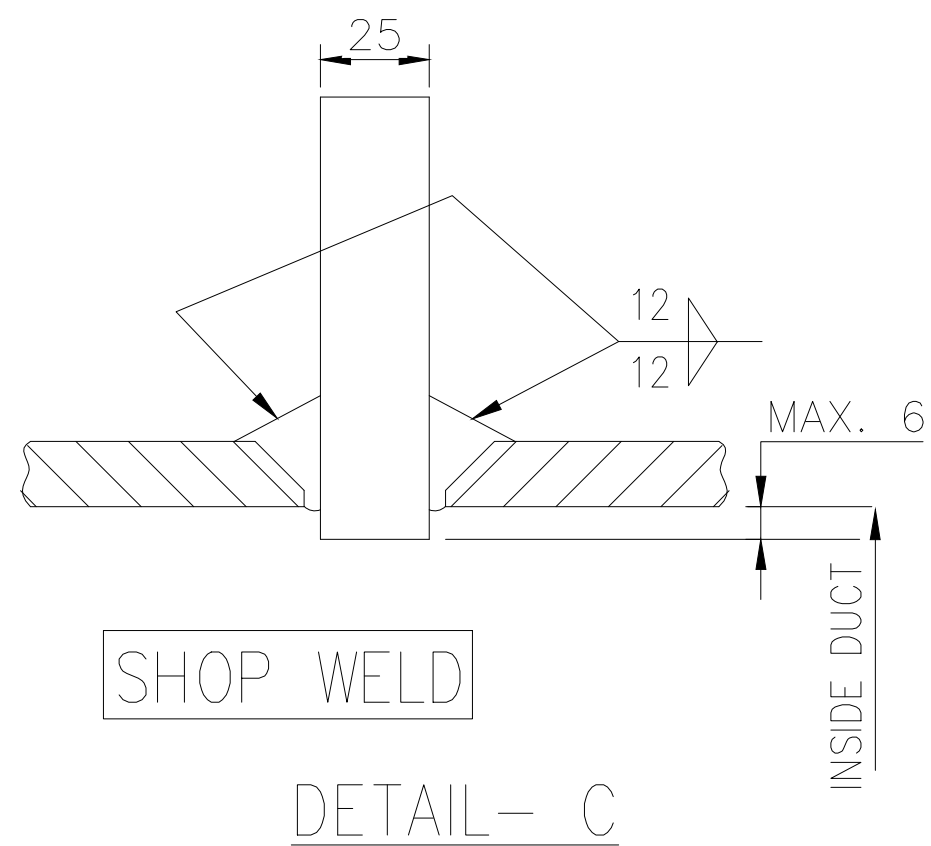
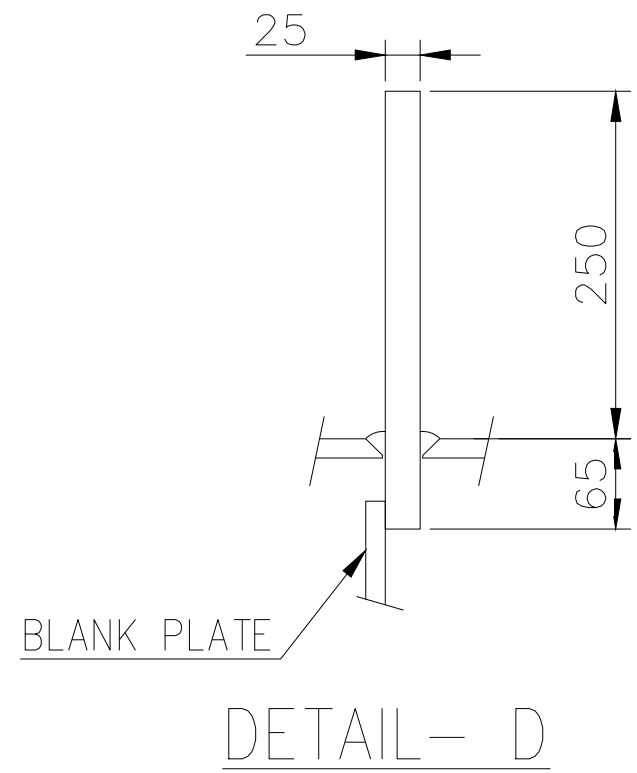
[illegible]

DRAWING NO. 21709970113



ITEM NO	L	WEIGHT (Kg.)	QTY.	REMARK
10	3612	165.7	01	
11	3500	160.6	01	
12	750	34.4	02	
13	694	31.8	02	

- TECHNICAL REQUIREMENTS:-
- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
 - PAINTING ON OUTSIDE SURFACES:
 - (i) PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER - I COAT - DFT 50 MICRON.
 - (ii) INTERMEDIATE PAINT: EPOXY TIO PIGMENTED POLYAMIDE CURED PAINT - I COAT - 50 MICRON.
 - BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
 - THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
 - UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
 - (a) DIAMETER TOLERANCES
At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm
 - (b) ADMISSIBLE OVALITY
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm
Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80
 - (c) ADMISSIBLE OBLATENESS
Da ≤ 9220 mm q = 6 mm
 - TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
 - PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
 - A SEMI CIRCULAR GROOVE OF RADIUS 25mm MAY BE PROVIDED IN THE STIFFENER AT THE LOCATION WHERE STIFFENER CROSSES A WELD SEAM TO MAINTAIN CONTACT BETWEEN PLATE (IT. 1, 2, 3 & 4) AND STIFFENER.

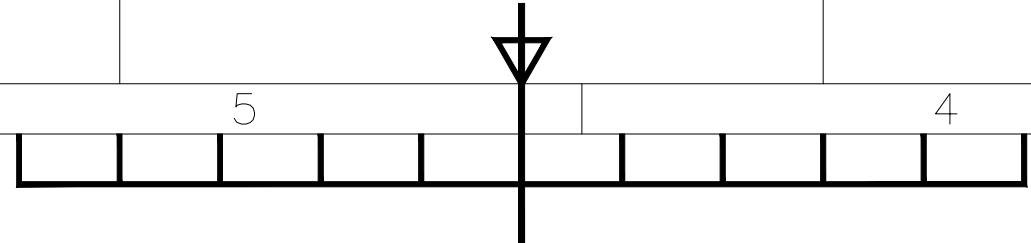


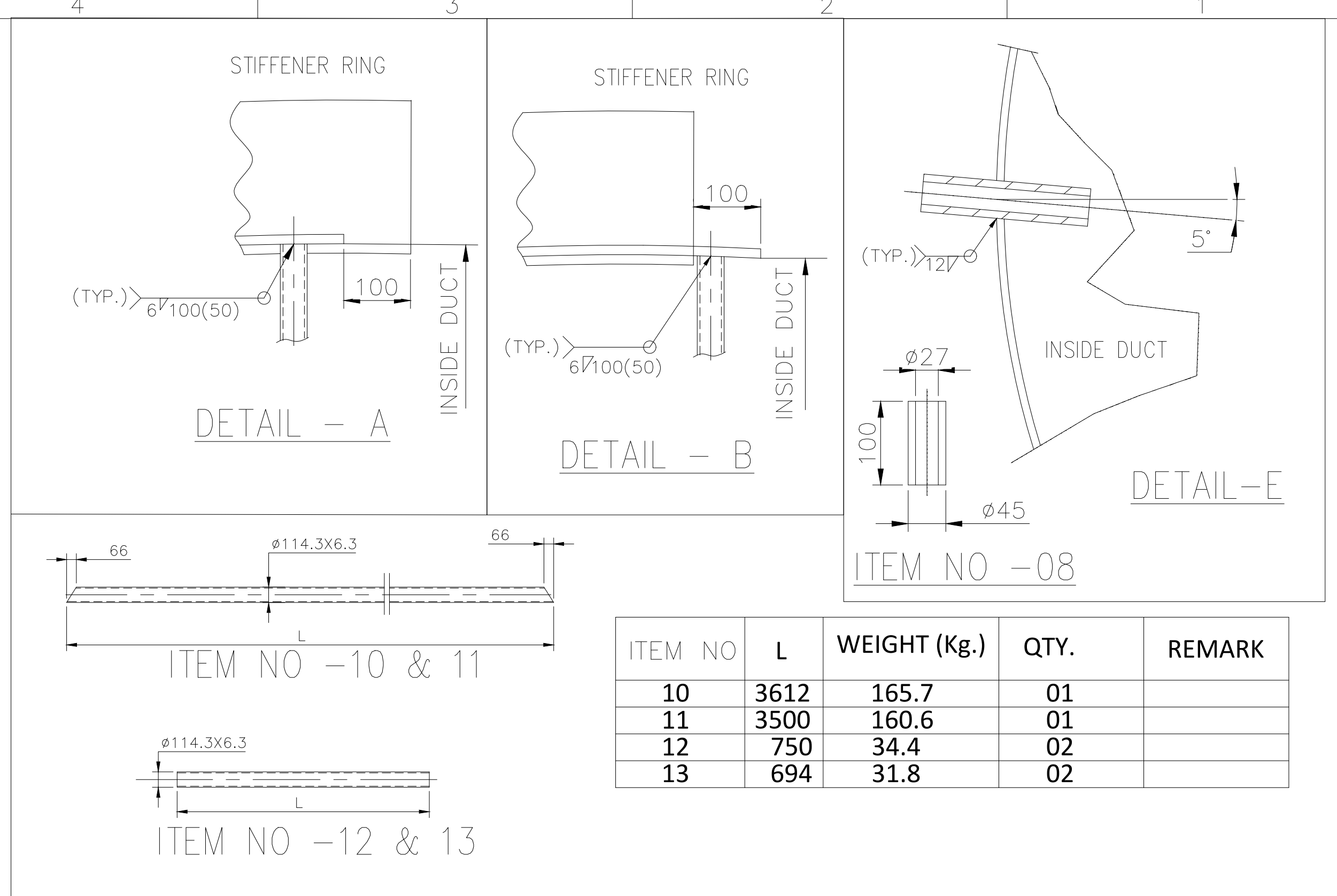
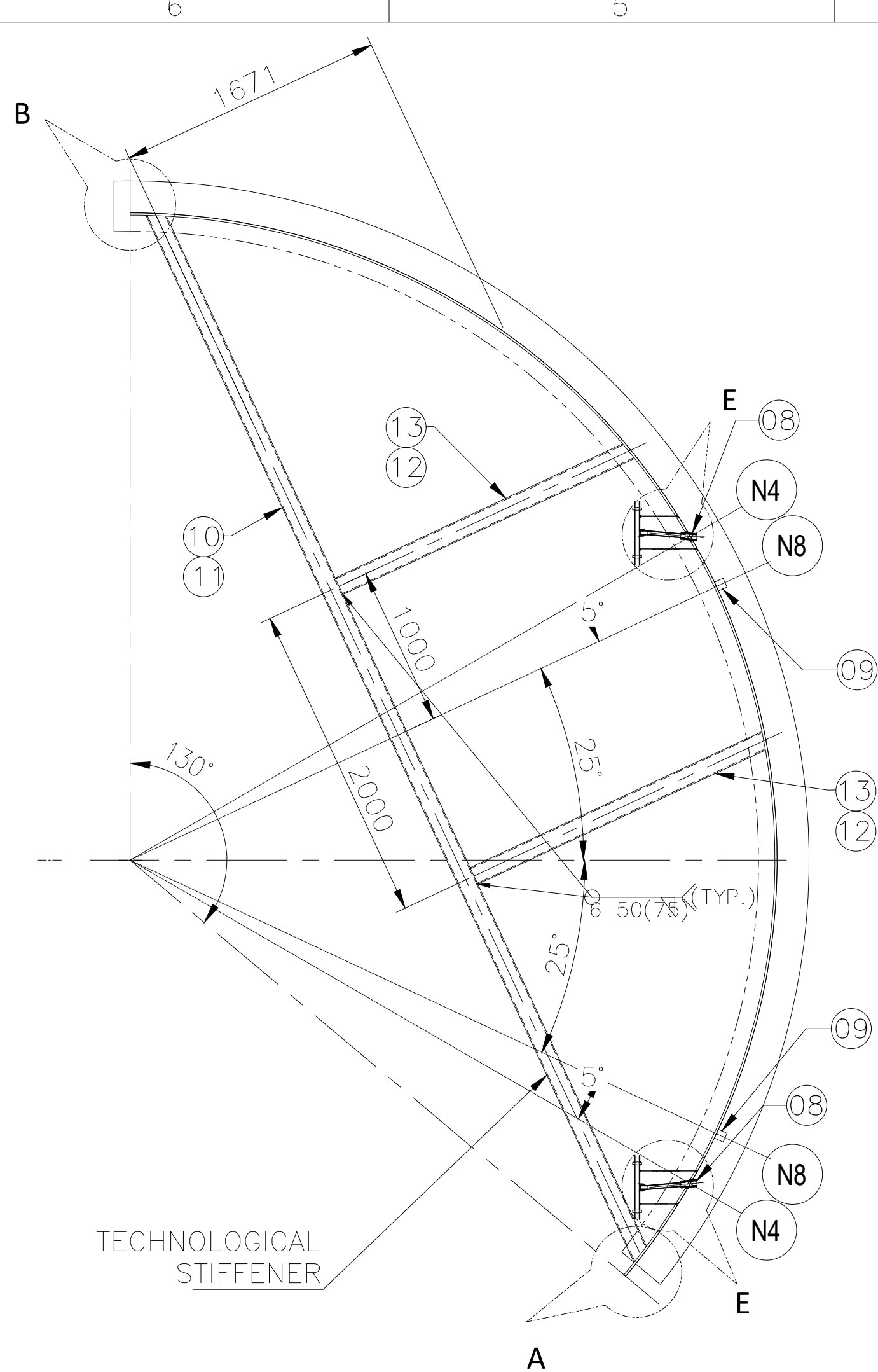
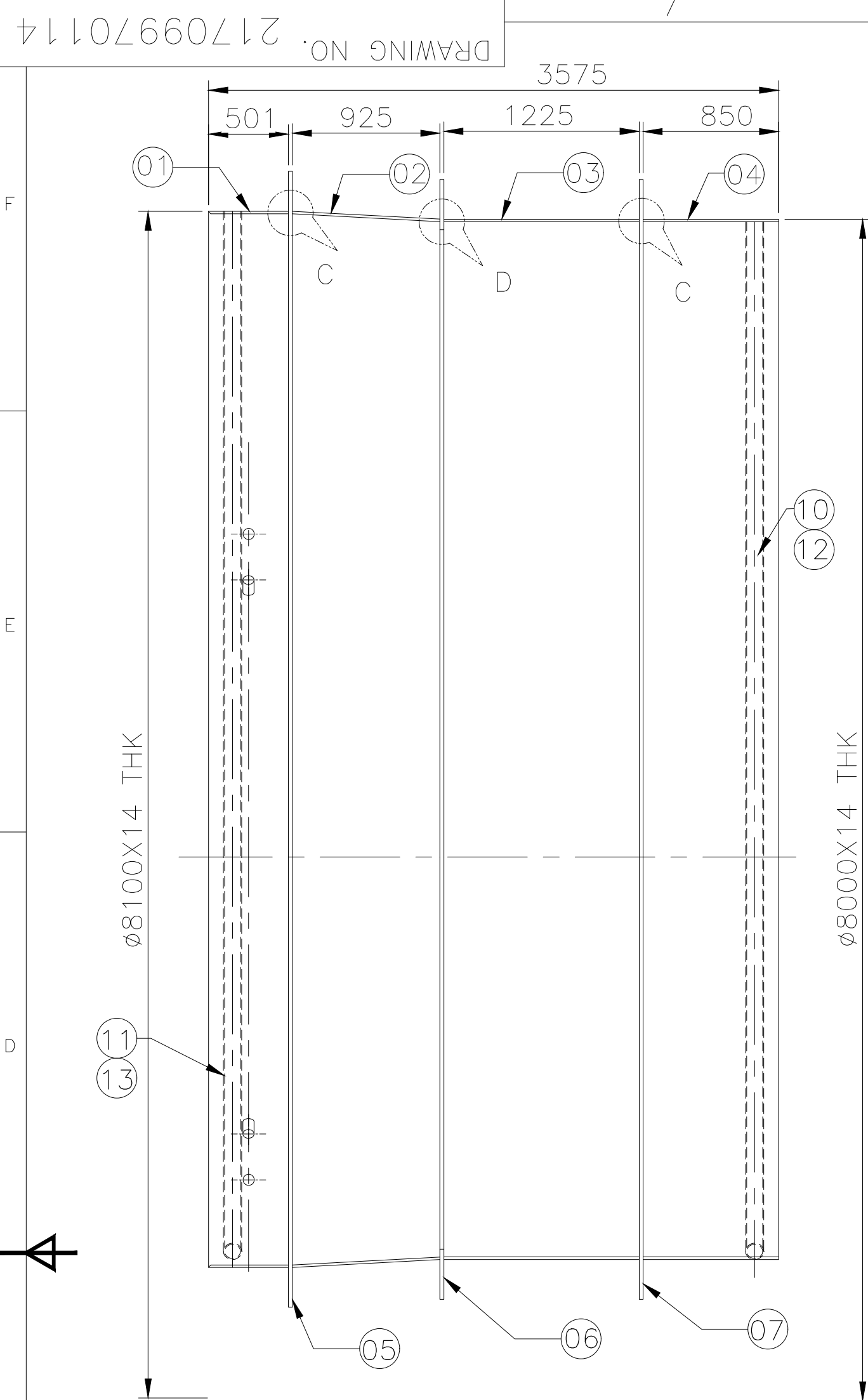
(12) ∇	(6) ∇	SIZE & SYMBOL OF SEAM
12.5	0.72	WELD LENGTH (M).
8.5	0.1	WT. OF WELD METAL (Kg).
E-7018		TYPE OF ELECTRODE

GRADE OF UNTOL. DIM:-		REV.		DATE	
M/CG- V/C/M/F AA 0230208		ALTERED		CHECKED	
WELDING-A/B/C/D-AA621104					
GAS CUTTING-'T3'AA0621101					

CBOM NO. 01709970017-01		STATUS OF DRG. U	
AGREED DEPT.	NAME	SIGN	DATE
WT	MANISH	-SD-	27.12.22

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT		3X800 MW ACC (PATRATU)	
DEPT. HXE		SCALE 1:40	WEIGHT(Kg.) 5473
CODE 2444		REF. TO ASSY. DRG. 01709970017	
TITLE GROUND DUCT -1		DRAWING NO. 21709970113	
SHEET NO.		NO.OF SHEETS	



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ITEM NO	L	WEIGHT (Kg.)	QTY.	REMARK
10	3612	165.7	01	
11	3500	160.6	01	
12	750	34.4	02	
13	694	31.8	02	

TECHNICAL REQUIREMENTS:-

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- PAINTING ON OUTSIDE SURFACES:
 - PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER - I COAT - DFT 50 MICRON.
 - INTERMEDIATE PAINT: EPOXY TIO PIGMENTED POLYAMIDE CURED PAINT - I COAT - 50 MICRON.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm

(b) ADMISSIBLE OVALITY

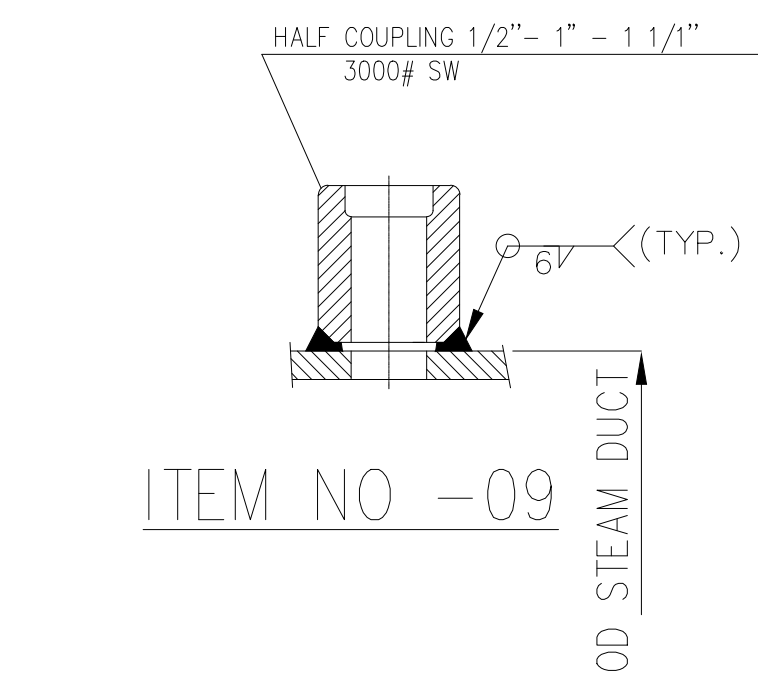
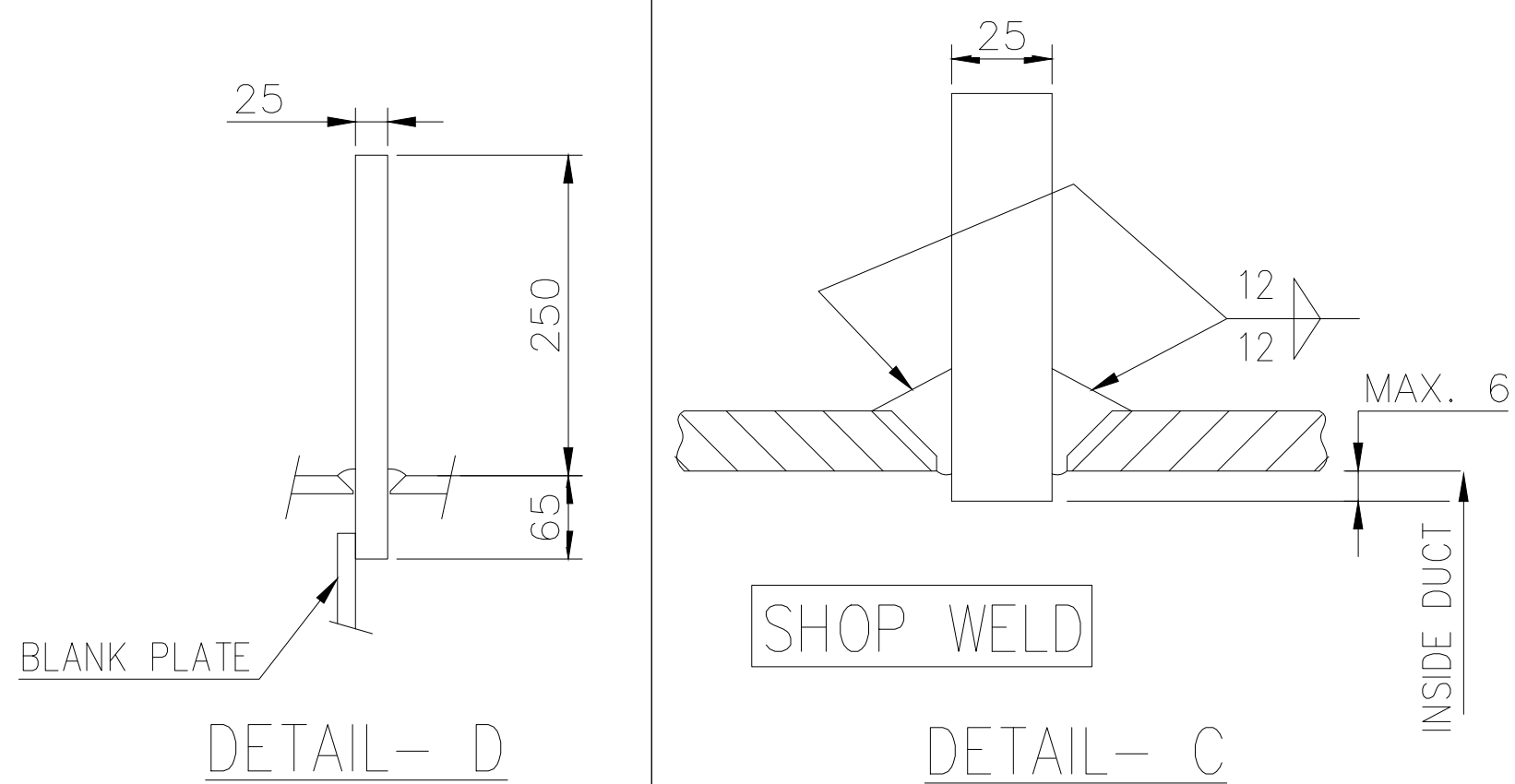
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da ≤ 9220 mm q = 6 mm

- TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
- PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
- A SEMI CIRCULAR GROOVE OF RADIUS 25mm MAY BE PROVIDED IN THE STIFFENER AT THE LOCATION WHERE STIFFENER CROSSES A WELD SEAM TO MAINTAIN CONTACT BETWEEN PLATE (IT. 1, 2, 3 & 4) AND STIFFENER.



(12) ▽	(6) ▽	SIZE & SYMBOL OF SEAM
12.5	0.72	WELD LENGTH (M).
8.5	0.1	WT. OF WELD METAL (Kg).
E-7018		TYPE OF ELECTRODE

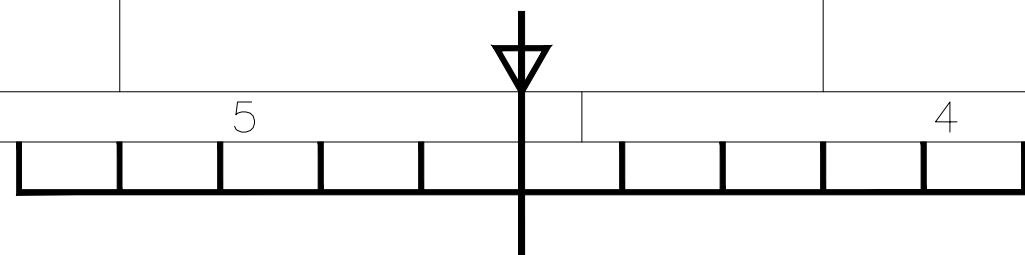
GRADE OF UNTOL. DIM:-
M/CG- V/C/M/F AA 0230208
WELDING-A/B/C/D-AA621104
GAS CUTTING-'T3'AA0621101

REV. DATE ALTERED
CHECKED

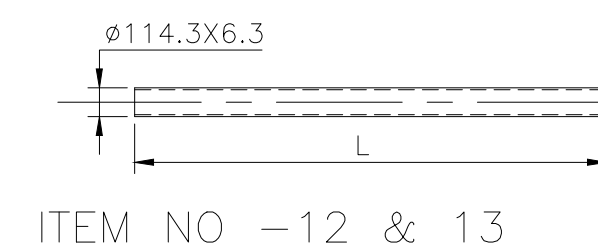
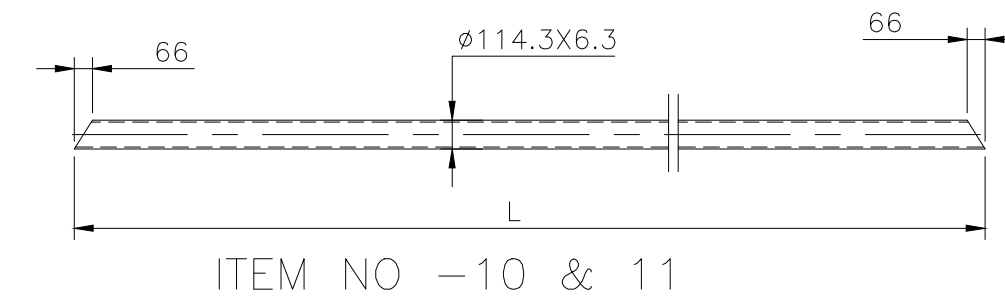
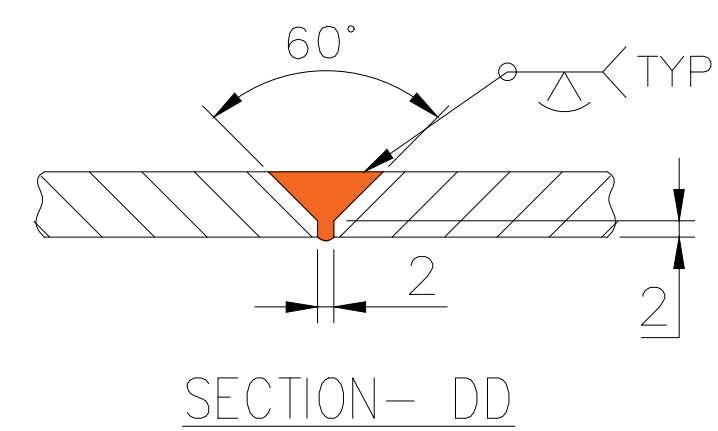
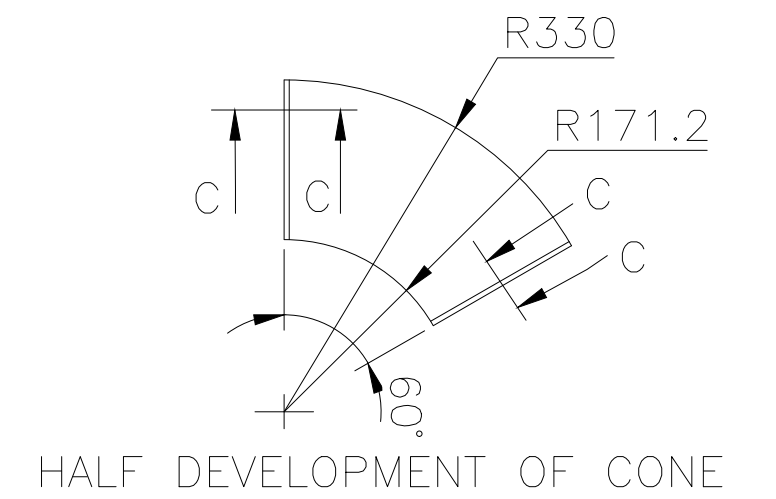
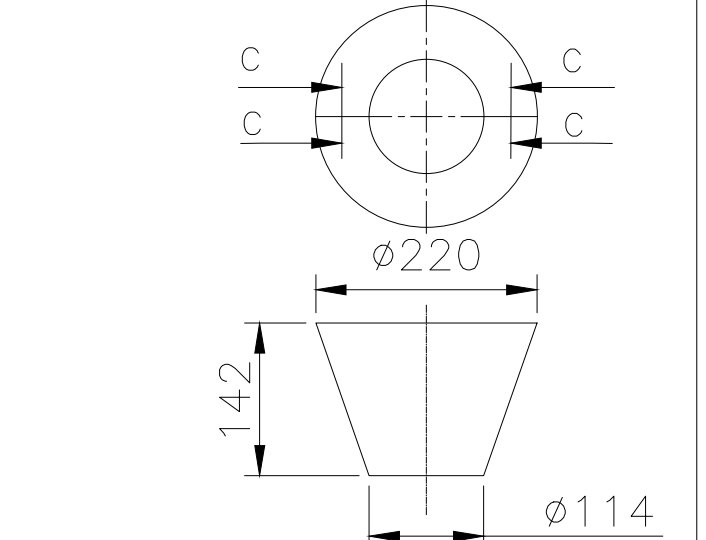
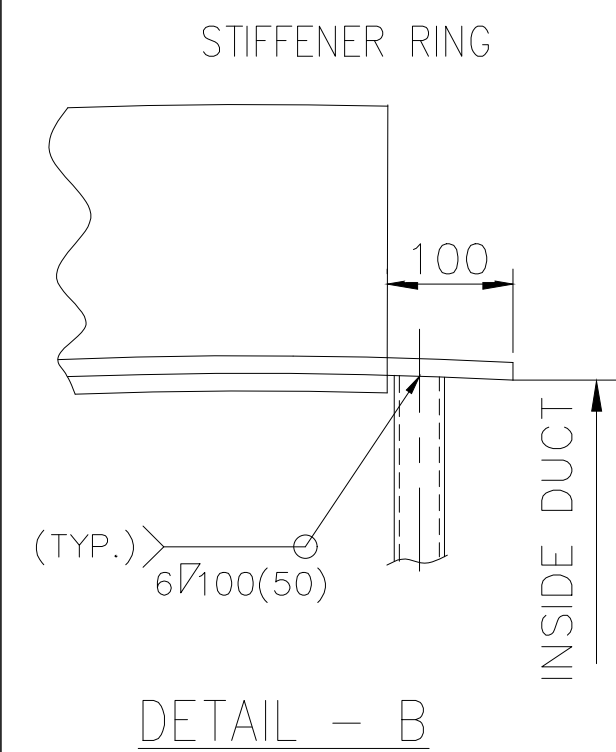
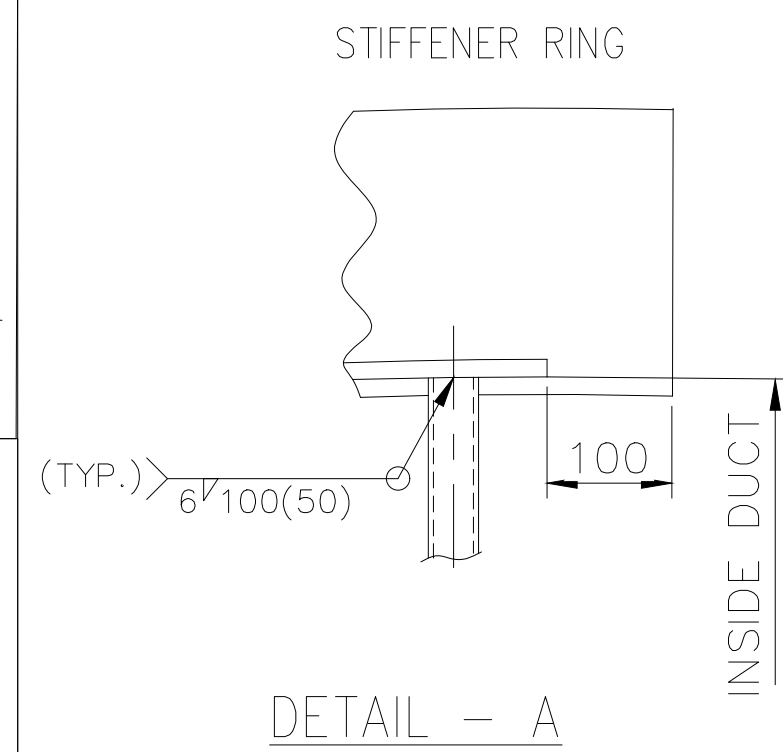
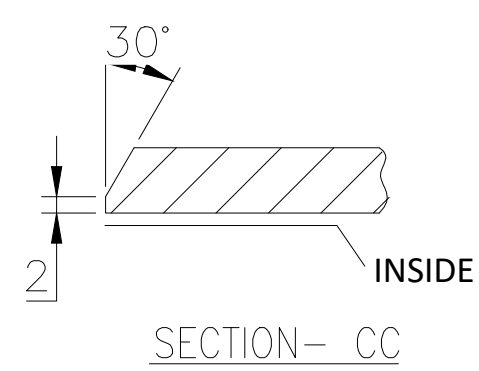
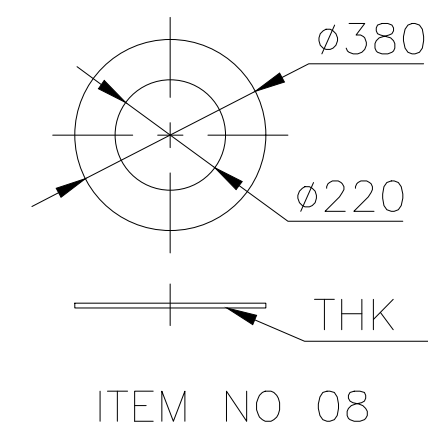
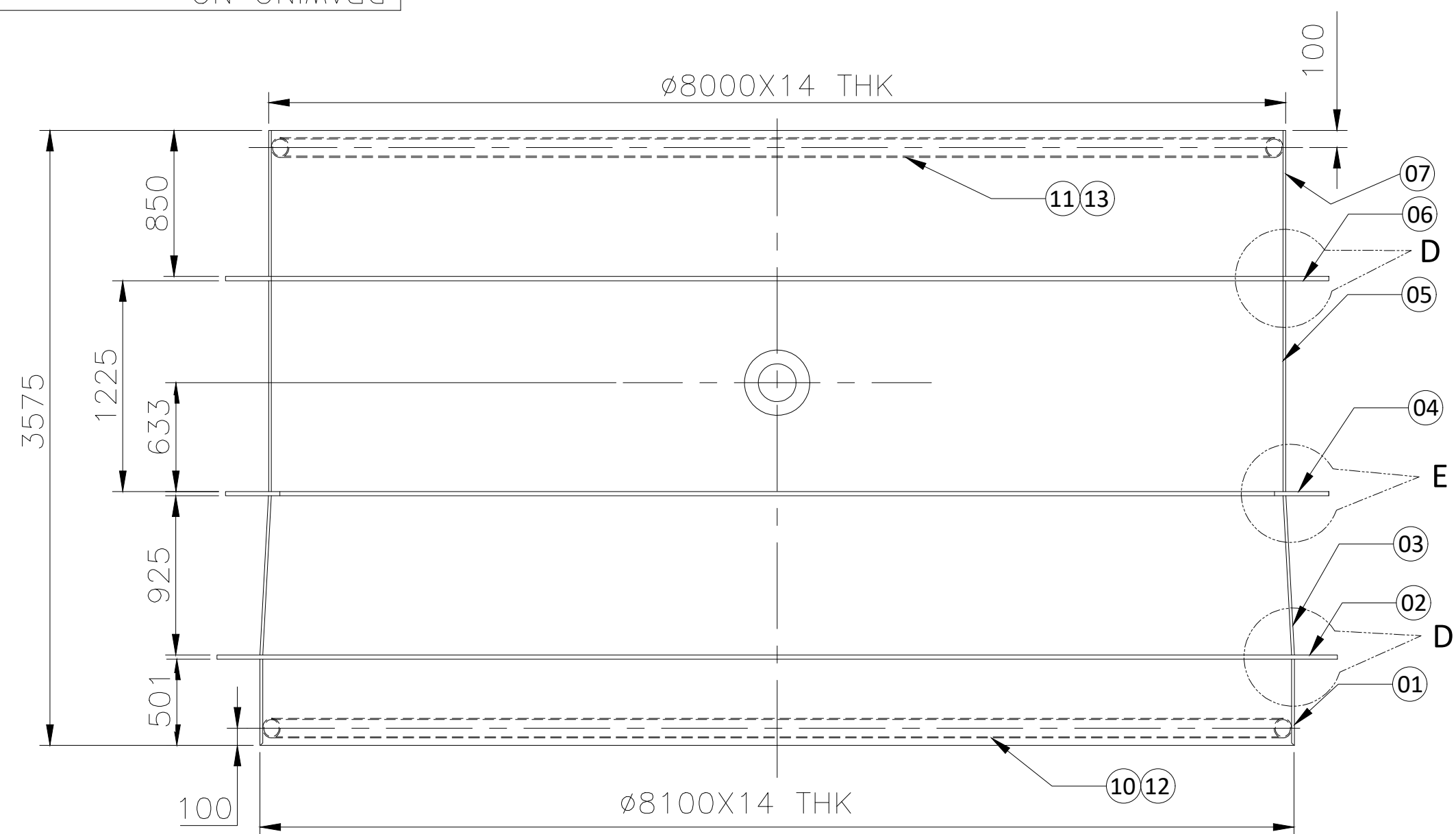
CBOM NO. 01709970017-01			STATUS OF DRG. U
AGREED DEPT.	NAME	SIGN	DATE
WT	MANISH	-SD-	27.12.22

REV. DATE ALTERED
CHECKED

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT				3X800 MW ACC (PATRATU)				
सी एच ई एल  BHARAT HEAVY ELECTRICALS LTD. HARDWAR					NAME	SIGN	DATE	NO.OF. VAR.
				DRN	NK JANGRA	-Sd-	13.09.22	--
				CHD	AXAY KUMAR	-Sd-	13.09.22	
				APD	N PRAKASH	-Sd-	13.09.22	
				73, 74				
DEPT.	HXE		SCALE	WEIGHT(Kg.)	REF. TO ASSY. DRG.		ITEM NO.	NO.OF ITEMS
CODE	2444		1:40	5473	01709970017		02	--
						75, 77		
TITLE				1 CARD CODE X	DRAWING NO.		REV.	
GROUND DUCT -2					21709970114		00	
					21709970114		23, 24	
				SHEET NO.		NO.OF SHEETS		



DRAWING NO. 21709970115



ITEM NO	L	WEIGHT (Kg.)	QTY.	REMARK
10	3000	137.7	01	
11	2863	131.4	01	
12	545	25.0	01	
13	495	22.7	01	

TECHNICAL REQUIREMENTS:-

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- PAINTING ON OUTSIDE SURFACES:
 - PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER - I COAT - DFT 50 MICRON.
 - INTERMEDIATE PAINT: EPOXY TIO PIGMENTED POLYAMIDE CURED PAINT - I COAT - 50 MICRON.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm

(b) ADMISSIBLE OVALITY

At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm

- TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
- PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
- A SEMI CIRCULAR GROOVE OF RADIUS 25mm MAY BE PROVIDED IN THE STIFFENER AT THE LOCATION WHERE STIFFENER CROSSES A WELD SEAM TO MAINTAIN CONTACT BETWEEN PLATE (IT. 1, 3, 5 & 7) AND STIFFENER.

(12) ∇	(6) ∇	SIZE & SYMBOL OF SEAM
12.5	1.5	WELD LENGTH (M).
8.5	0.3	WT. OF WELD METAL (Kg).
E-7018		TYPE OF ELECTRODE

GRADE OF UNTOL. DIM.:--
M/CG- V/C/M/F AA 0230208
WELDING-A/B/C/D-AA621104
GAS CUTTING-'T3'AA0621101

REV. DATE ALTERED
CHECKED

CBOM NO.		STATUS OF DRG.	
01709970017-VAR.01		U	
AGREED DEPT.	NAME	SIGN	DATE
WT	MANISH	-SD-	27.12.22

REV. DATE ALTERED
CHECKED

TYPE OF PRODUCT OR
NAME OF CUSTOMER/ PROJECT

3X800 MW ACC
(PATRATU)

DRN	NAME	SIGN	DATE	NO.OF VAR.
CHD	NK JANGRA	-Sd-	13.09.22	--
APD	AXAY KUMAR	-Sd-	13.09.22	--
APD	N. PRAKASH	-Sd-	13.09.22	73, 74

DEPT.	HXE	SCALE	WEIGHT(Kg.)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
CODE	2444	1:40	4235	01709970017	03	75, 77

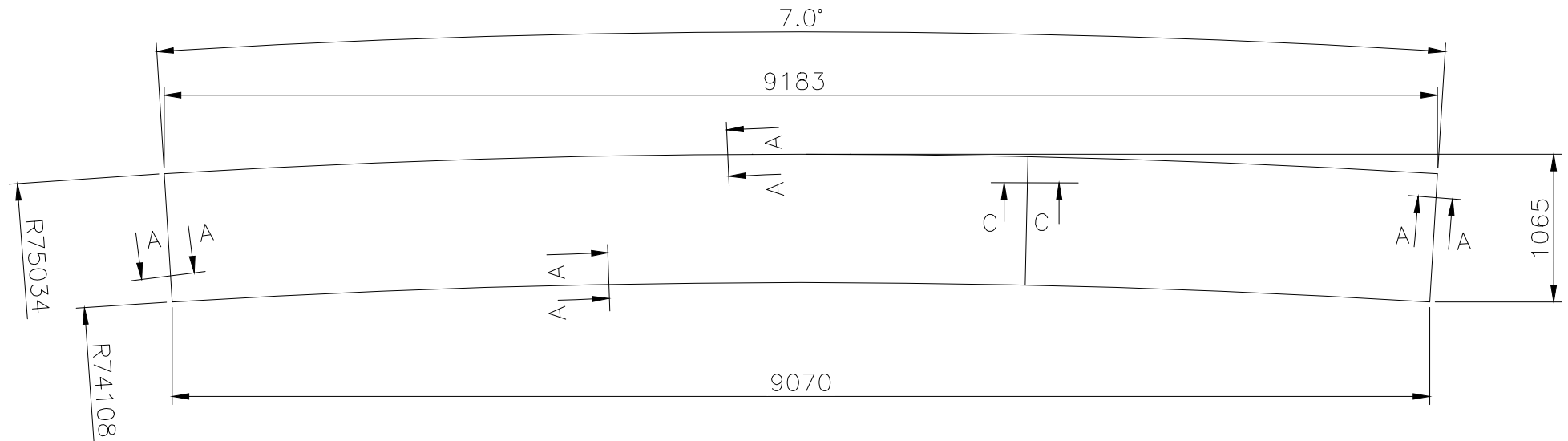
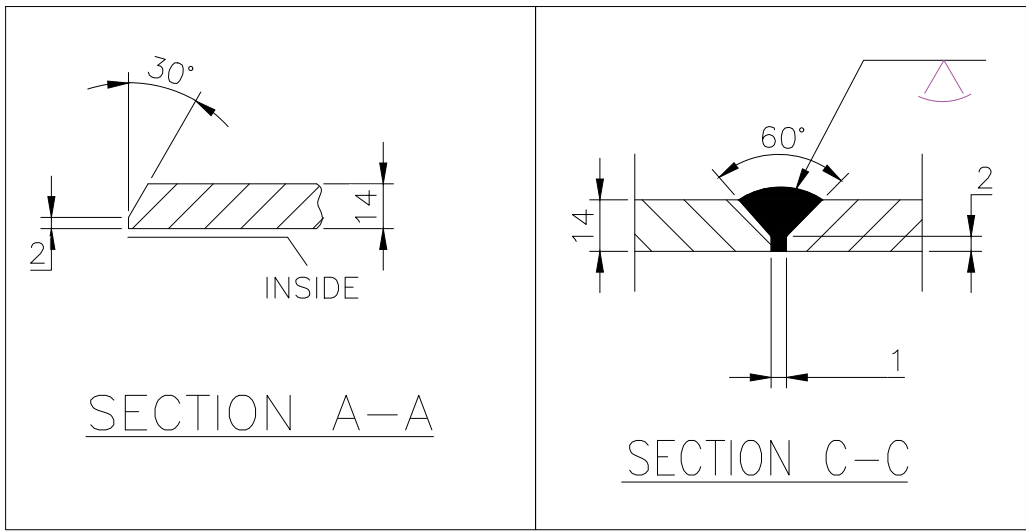
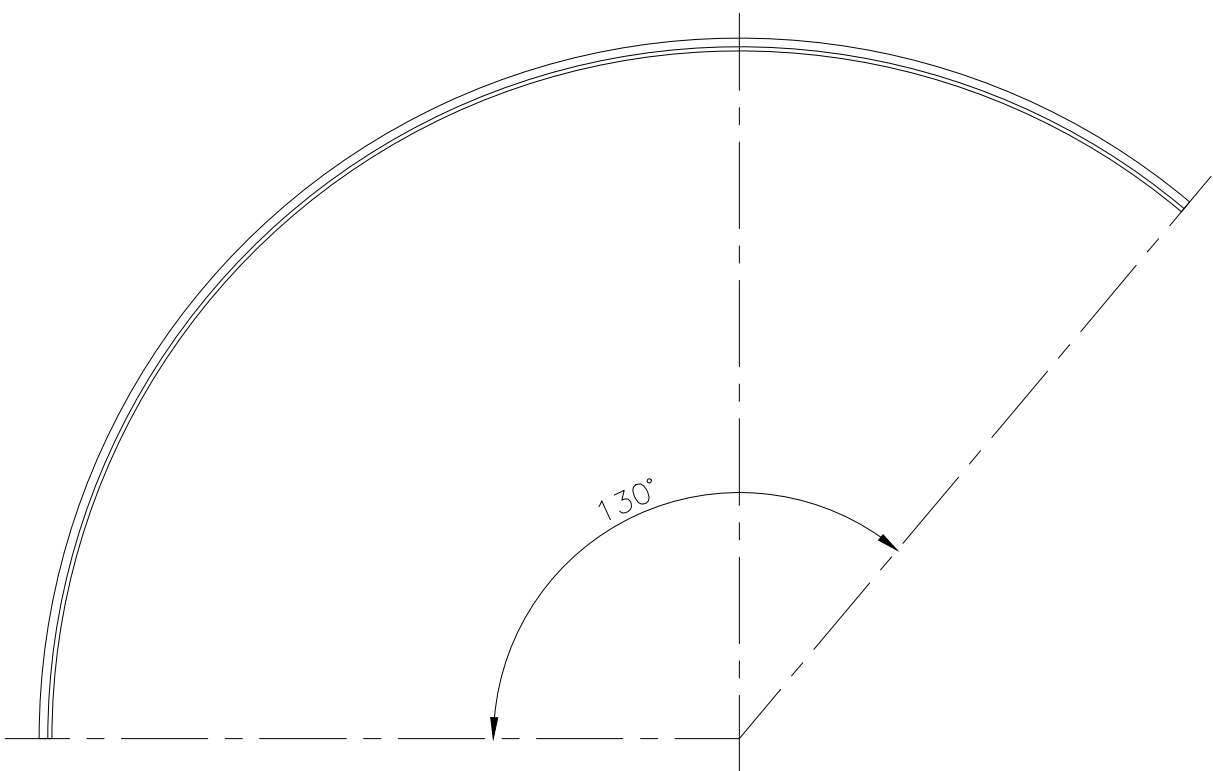
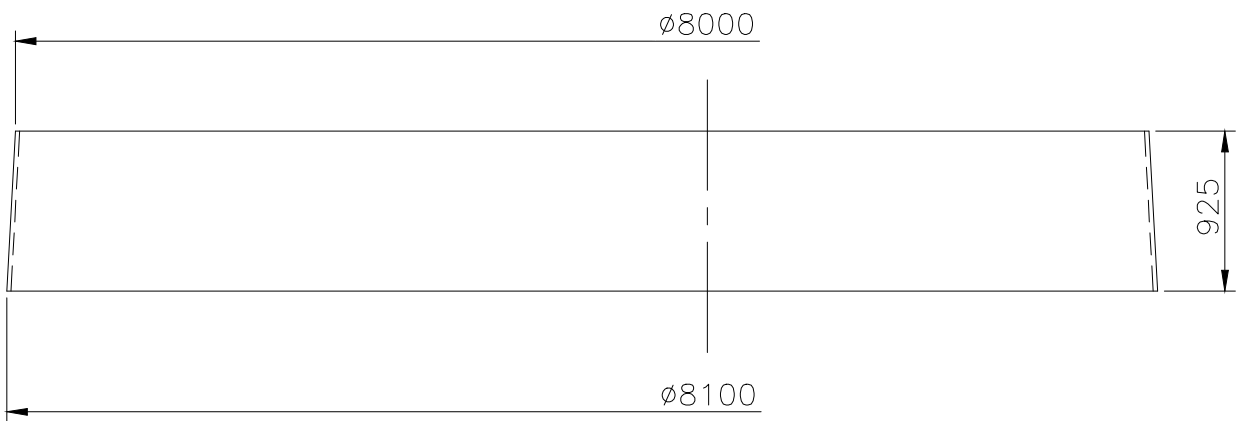
TITLE	CARD CODE	DRAWING NO.	REV.
GROUND DUCT -3	X	21709970115	00
SHEET NO.		NO.OF SHEETS	

SIZE A2

420x594 mm

21709970116

DRAWING NO.

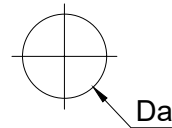


DEVELOPMENT FOR PART OF REDUCER

TECHNICAL REQUIREMENTS:-

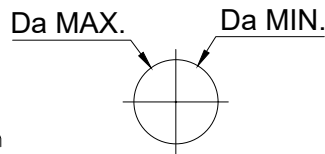
- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm



(b) ADMISSIBLE OVALITY

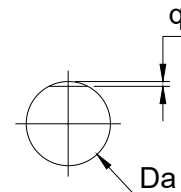
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm



Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm



- IF REQUIRED, PLATE & STIFFENER MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL C-C SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1

CBOM NO. 01709970017 - 01			STATUS OF DRG. U	
AGREED DEPT.	NAME	SIGN	DATE	
WT	MANISH	-SD-	27.12.22	
GRADE OF UNTOL. DIM.:— M/CG— V/C/M/F AA 0230208 WELDING—A/B/C/D—AA621104 GAS CUTTING—’T3’AA0621101				
REV.	DATE	ALTERED	REV.	DATE
		CHECKED		CHECKED
↓				

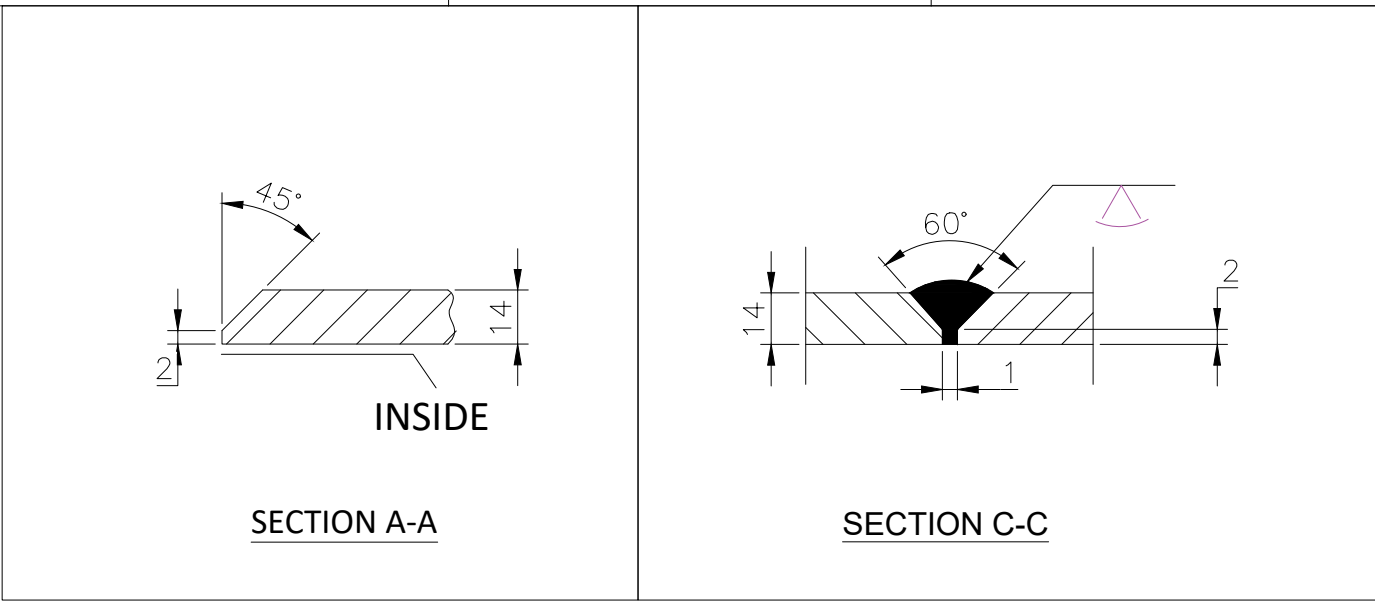
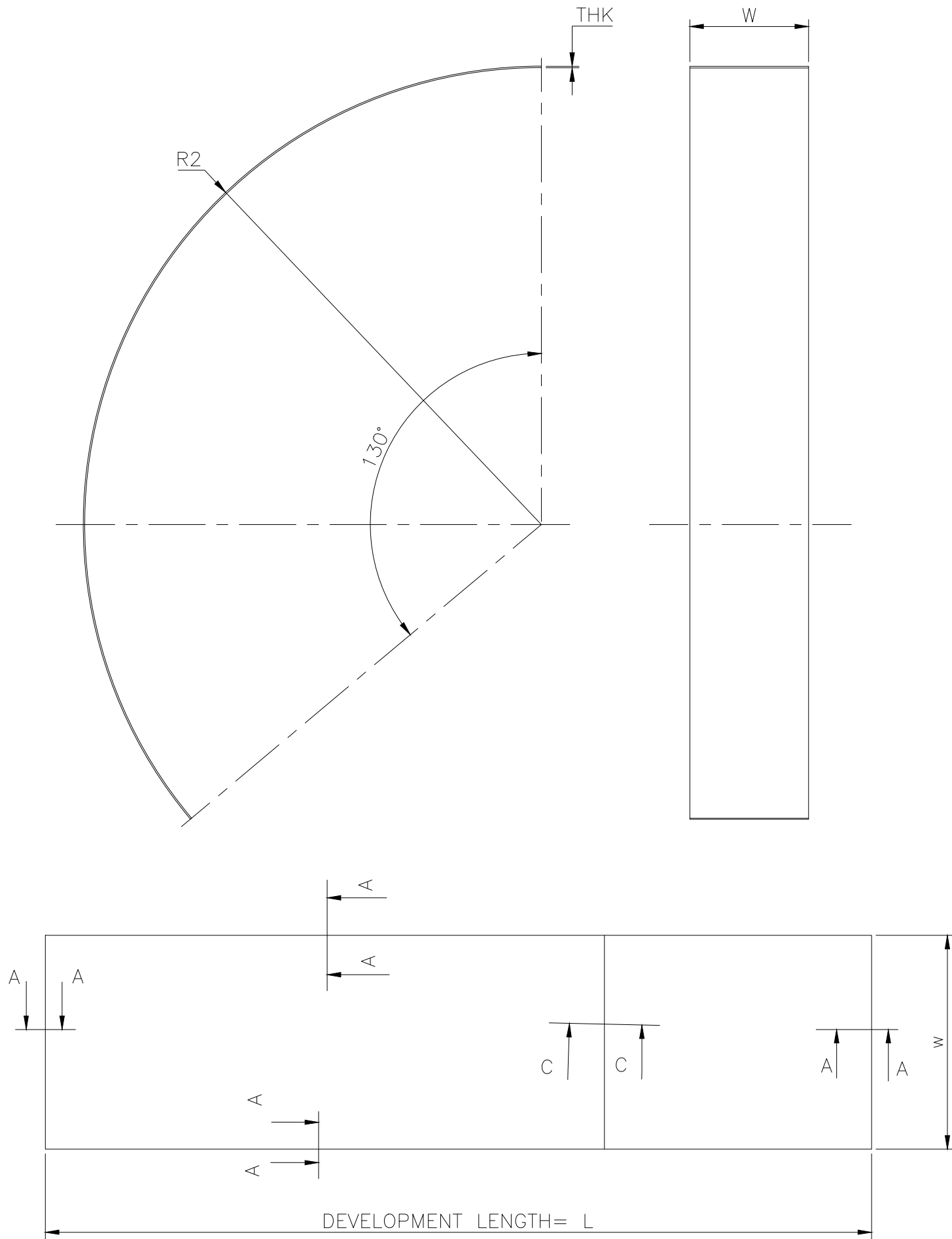
TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT		3X800 MW ACC (PATRATU)			
	NAME		SIGN	DATE	NO.OF VAR.
	NK JANGRA		-Sd-	13.09.2022	--
	AXAY KUMAR		-Sd-	13.09.2022	--
BHARAT HEAVY ELECTRICALS LTD. HARDWAR		N PRAKASH		-Sd-	13.09.2022
DEPT. HXE	SCALE 1:40	WEIGHT(Kg.) 927.0	REF. TO ASSY. DRG. 21709970113 21709970114		ITEM NO. 02
CODE 2444	TITLE REDUCER PLATE		DRAWING NO. 21709970116		REV. 00
SHEET NO.		NO.OF SHEETS		NO.OF ITEMS 73, 74	

SIZE A2

420x594 mm

21709970117

DRAWING NO.



- TECHNICAL REQUIREMENTS:-
- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
 - BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
 - THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
 - UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
 - (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm

- (b) ADMISSIBLE OVALITY

At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

- (c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm

6. IF REQUIRED, PLATE & STIFFENER (ITEM -01 ,03 04) MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL C-C SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1

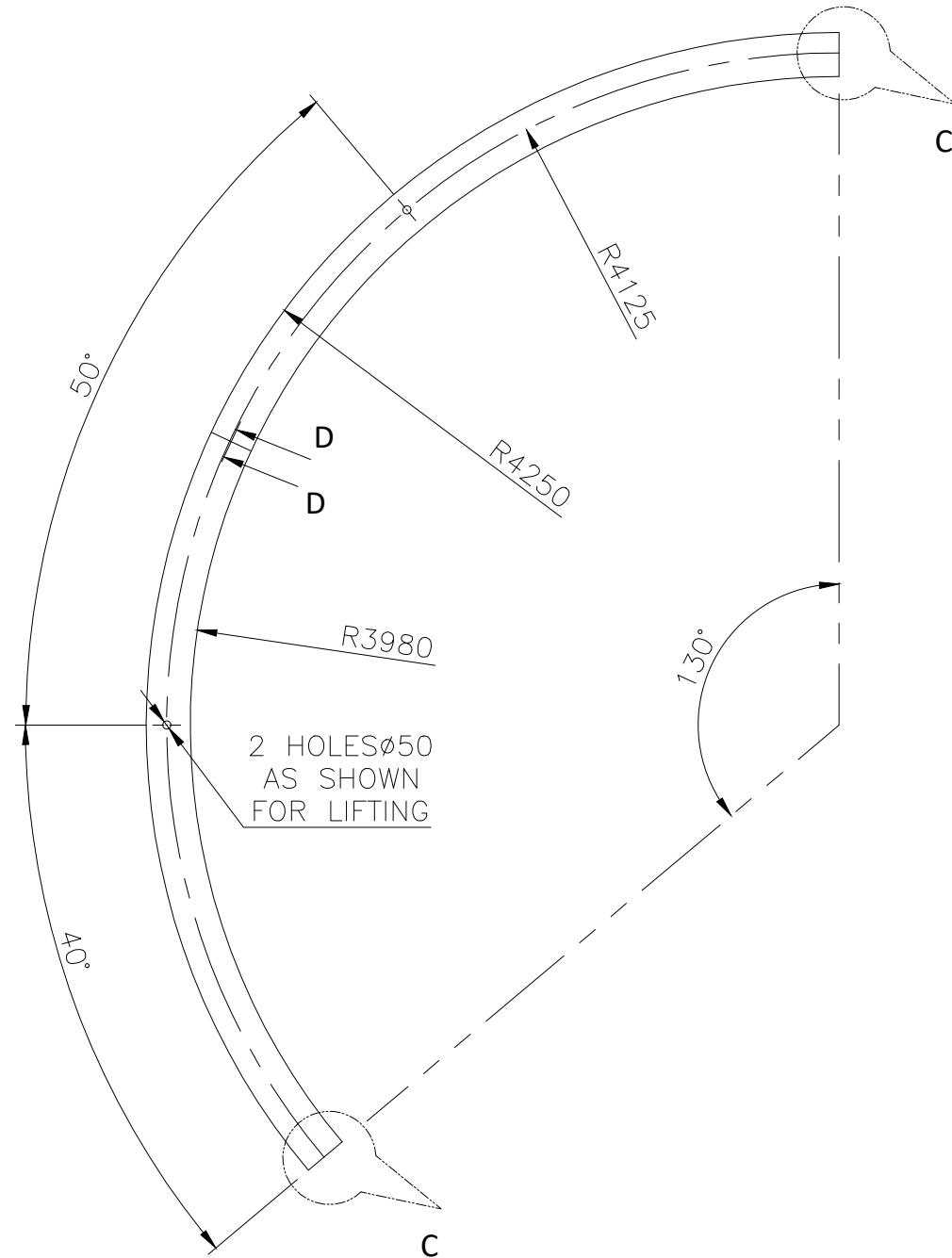
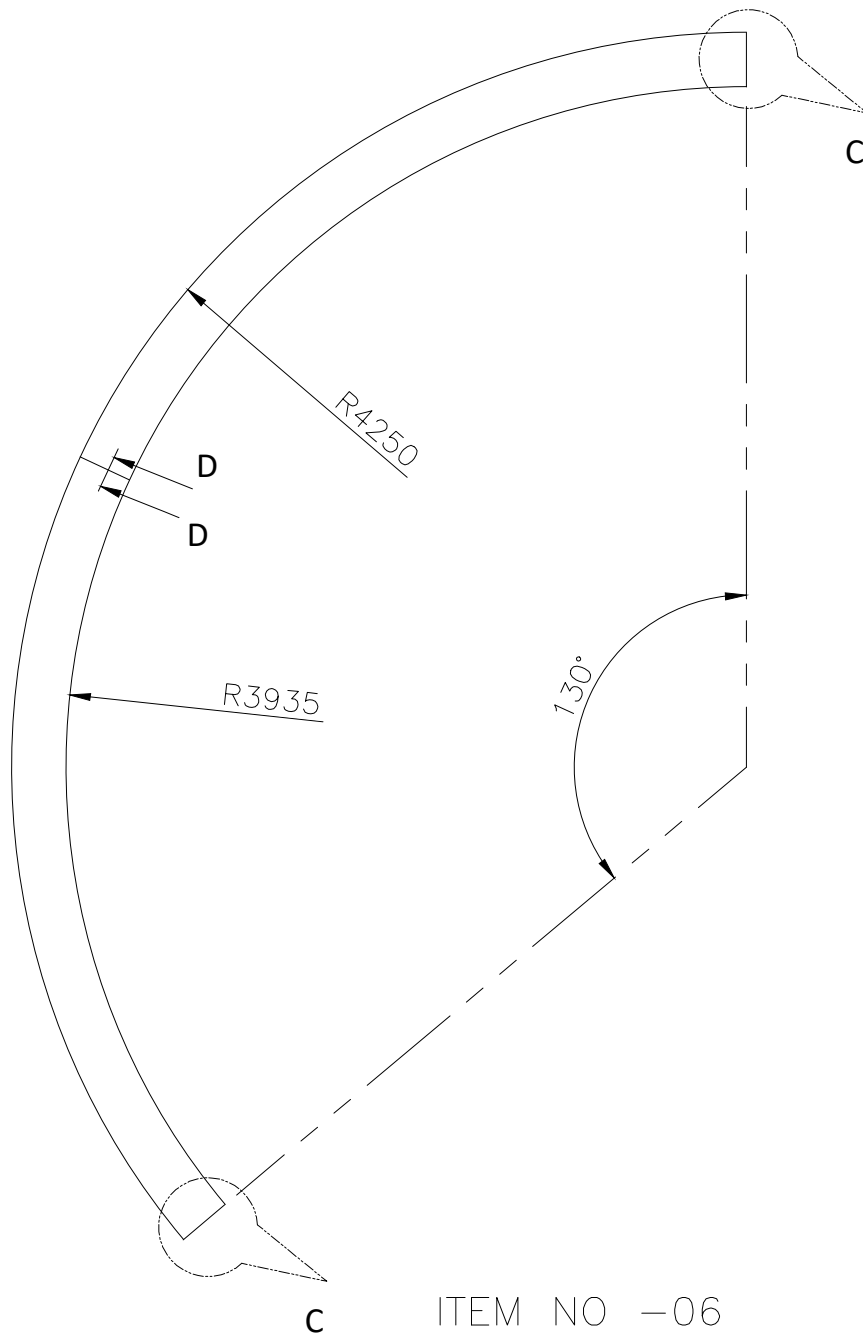
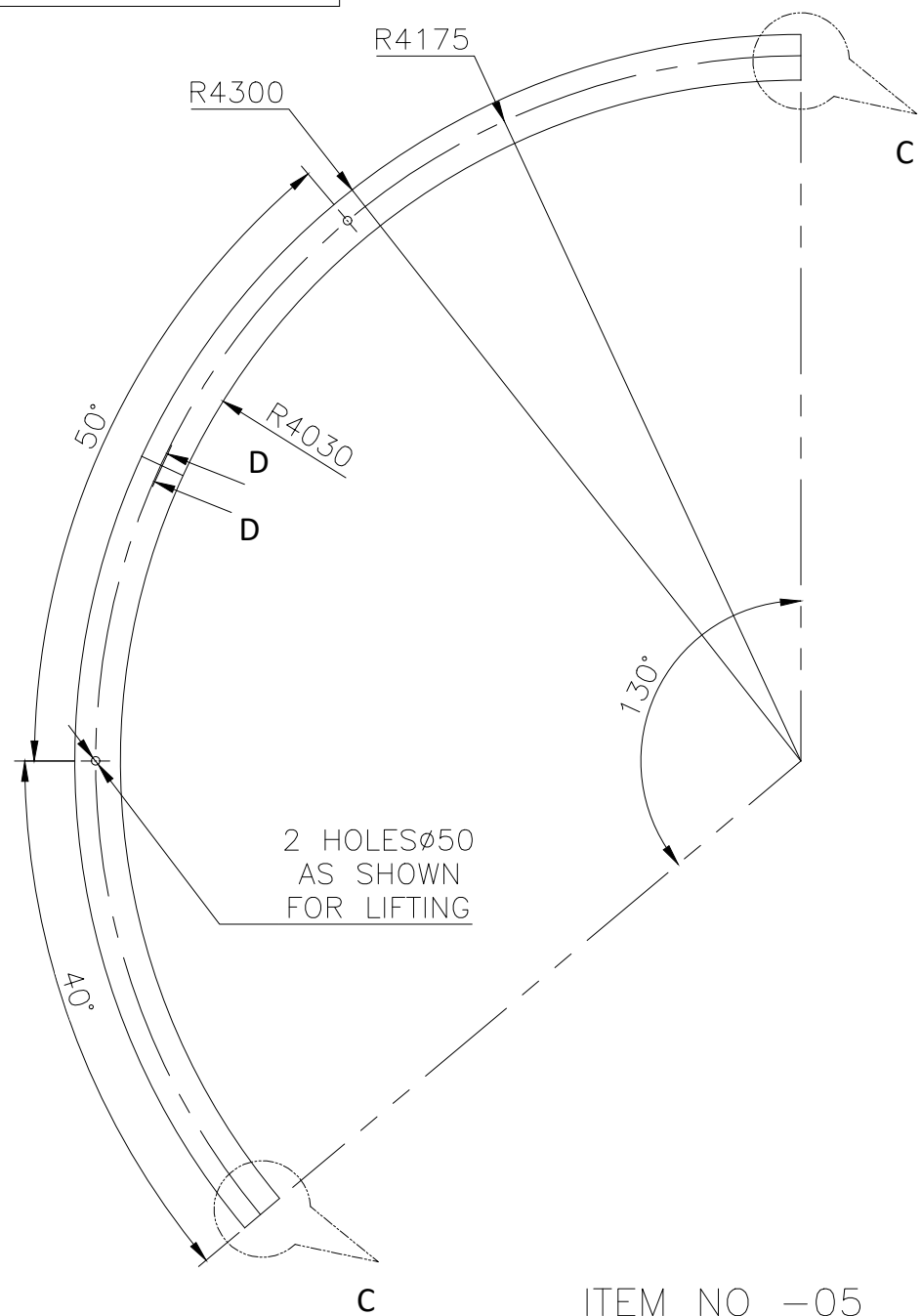
VAR.	ITEM NO	R2	THICKNESS	DEVELOPMENT LENGTH =L	WIDTH= W	WEIGHT
00	01	4050	14	9173.3	501	505.10
01	03	4000	14	9059.82	1225	1219.7
02	04	4000	14	9059.82	850	846.3

CBOM NO. 01709970017 - 02			STATUS OF DRG. U	
AGREED DEPT.	NAME	SIGN	DATE	
WT	MANISH	-SD-	27.12.22	
GRADE OF UNTOL. DIM.:-				
M/CG- V/C/M/F AA 0230208				
WELDING-A/B/C/D-AA621104				
GAS CUTTING-'T3'AA0621101				
REV.	DATE	ALTERED	REV.	DATE
		CHECKED		CHECKED

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT		3X800 MW ACC (PATRATU)			
	DRN	NAME	SIGN	DATE	NO.OF VAR.
	CHD	NK JANGRA	-Sd-	13.09.2022	--
	APD	AXAY KUMAR	-Sd-	13.09.2022	--
DEPT.	HXE	SCALE	WEIGHT(Kg.)	REF. TO ASSY. DRG.	ITEM NO.
CODE	2444	1:40	SEE TABLE	21709970113	--
TITLE		DRAWING NO.		REV.	
SHELL PLATE		21709970117		00	
SHEET NO.		NO.OF SHEETS		SIZE A2	

81102660212

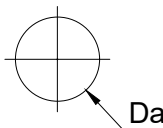
DRAWING NO.



TECHNICAL REQUIREMENTS:-

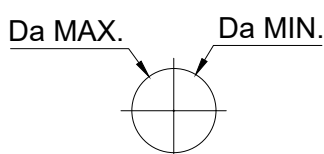
1. WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
2. BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
3. THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
4. UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
5. (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm



(b) ADMISSIBLE OVALITY

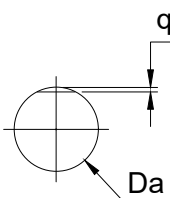
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm



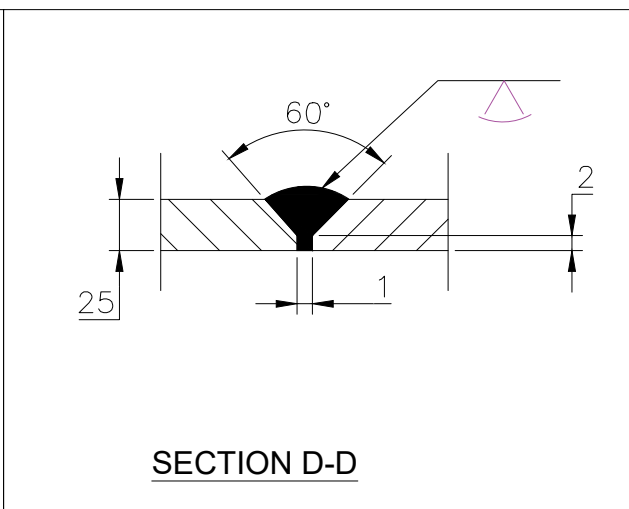
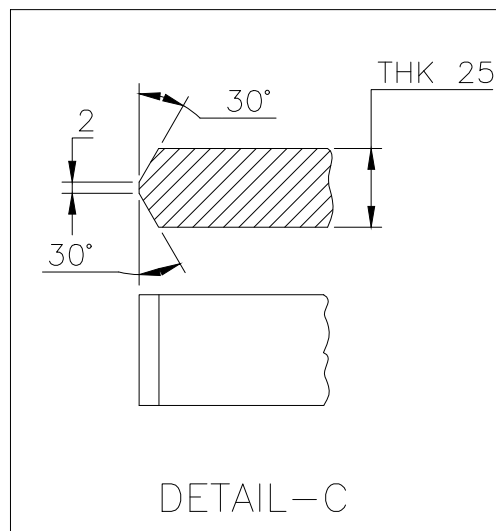
Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm

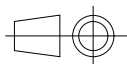


6. IF REQUIRED, PLATE & STIFFENER (ITEM 05,06 & 07)MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL D-D SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1



VAR.	ITEM	WEIGHT (Kg.)	REMARK
00	05	500.8	
01	06	574.02	
02	07	494.8	

CBOM NO. 01709970017,var.01			STATUS OF DRG. U				
AGREED DEPT.	NAME	SIGN	DATE				
WT	MANISH	-SD-	27.12.22				
GRADE OF UNTOL. DIM.:—							
M/CG— V/C/M/F AA 0230208							
WELDING—A/B/C/D—AA621104							
GAS CUTTING—'T3'AA0621101							
REV.	DATE	ALTERED					
		CHECKED					
↓				REV.	DATE	ALTERED	
						CHECKED	

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT				3X800 MW ACC (PATRATU)					
BHARAT HEAVY ELECTRICALS LTD. HARDWAR					NAME	SIGN	DATE	NO.OF VAR.	
				DRN	NK JANGRA	-Sd-	13.09.2022		
				CHD	AXAY KUMAR	-Sd-	13.09.2022	-	
				APD	N PRAKASH	-Sd-	13.09.2022	73, 74	
DEPT.	HXE		SCALE	WEIGHT (Kg.)	REF. TO ASSY. DRG. 21709970113 21709970114			ITEM NO.	NO.OF ITEMS
CODE	2444		1:40	—				-	75, 77
TITLE				1 CARD CODE X	DRAWING NO. 21709970118			REV. 00	
STIFFENER PLATE					7			23	
					SHEET NO.			NO.OF SHEETS	

21709970119

DRAWING NO.

7

6

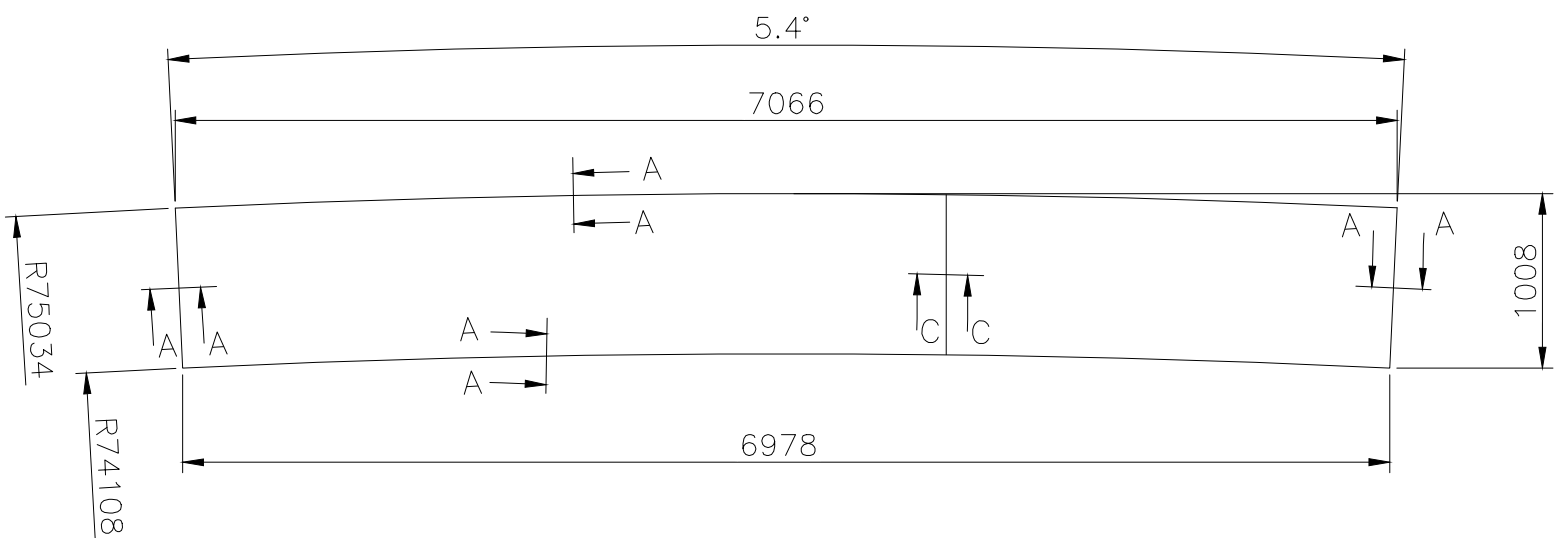
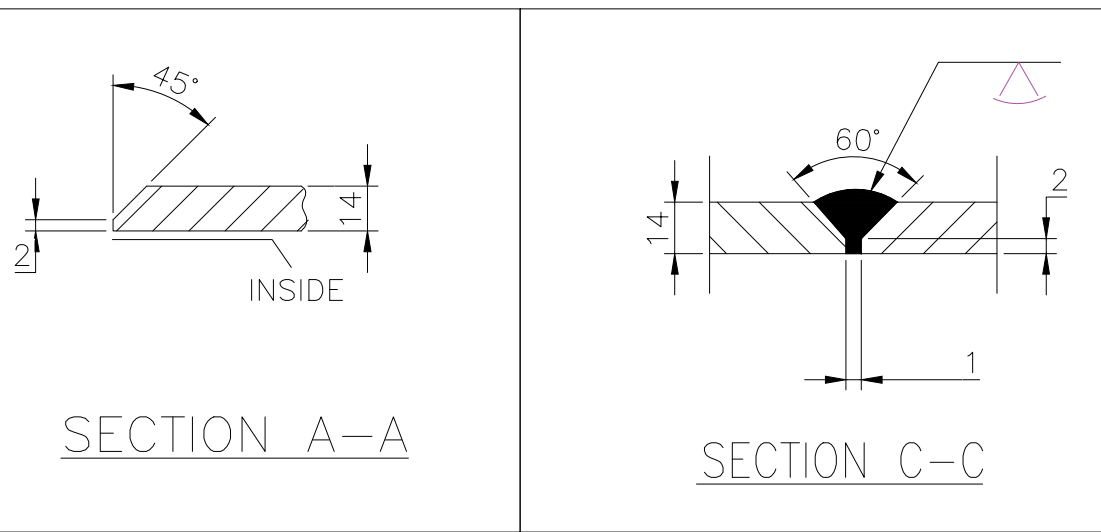
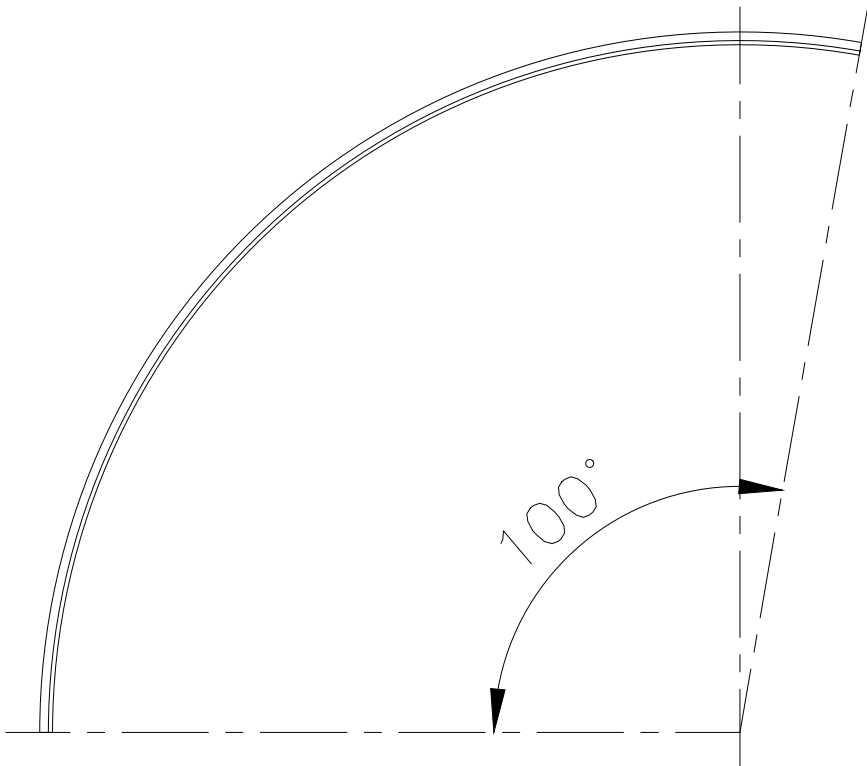
5

4

3

2

1



DEVELOPMENT FOR PART OF REDUCER

TECHNICAL REQUIREMENTS:-

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm

(b) ADMISSIBLE OVALITY

At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm

- IF REQUIRED, PLATE & STIFFENER MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL C-C SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1

CBOM NO. 01709970017,var.01			STATUS OF DRG. U
AGREED DEPT.	NAME	SIGN	DATE
WT	MANISH	-SD-	27.12.22

GRADE OF UNTOL. DIM.:--			
M/CG- V/C/M/F AA 0230208			
WELDING-A/B/C/D-AA621104			
GAS CUTTING-'T3'AA0621101			

REV.	DATE	ALTERED
		CHECKED

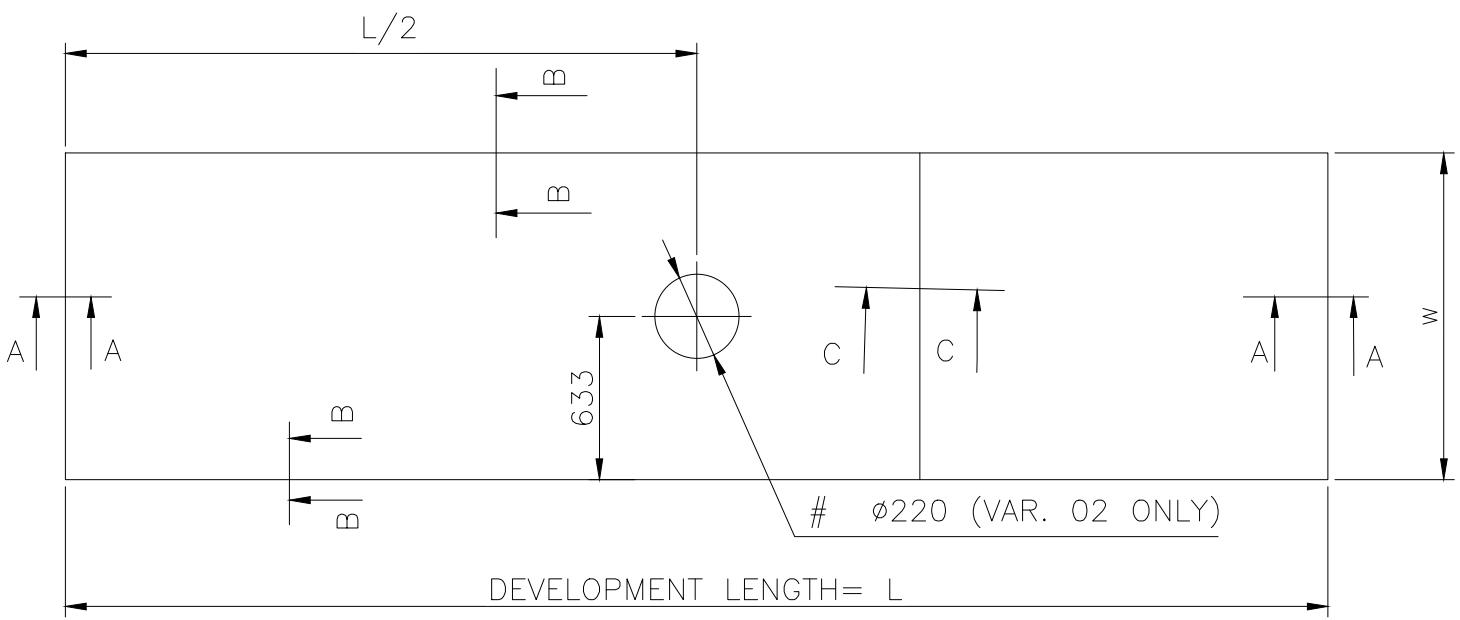
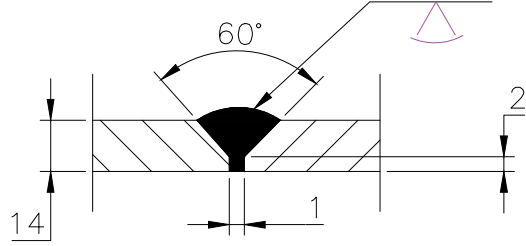
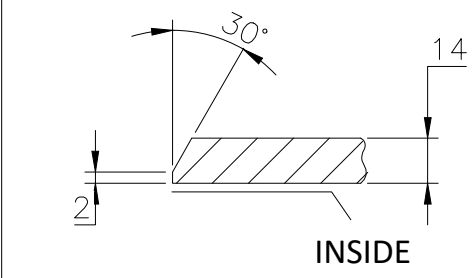
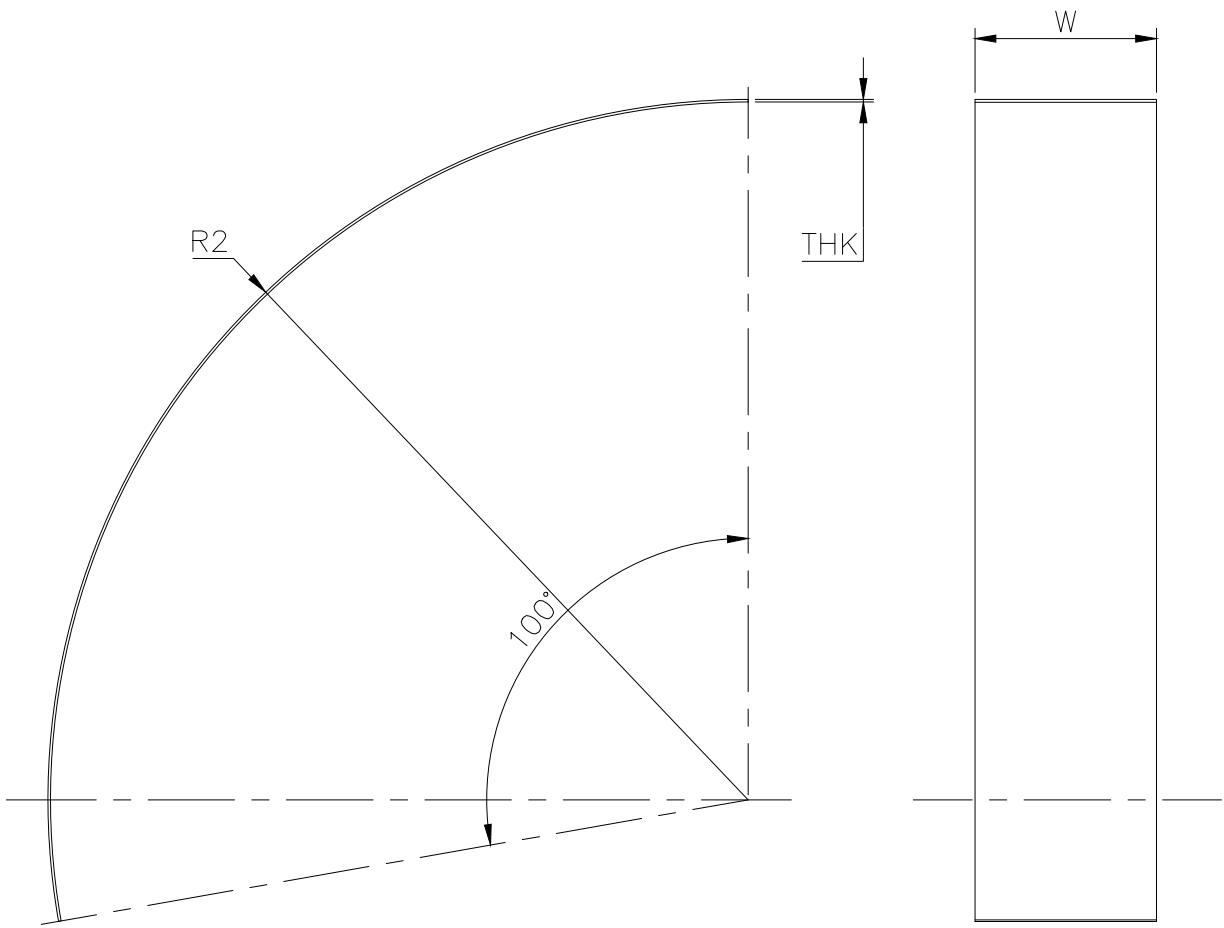
REV.	DATE	ALTERED
		CHECKED

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT		3X800 MW ACC (PATRATU)					
	BHARAT HEAVY ELECTRICALS LTD. HARDWAR		DRN	NK JANGRA	-Sd-	13.09.2022	NO.OF VAR.
			CHD	AXAY KUMAR	-Sd-	13.09.2022	--
			APD	N PRAKASH	-Sd-	13.09.2022	73, 74
DEPT.	HXE	SCALE	--	WEIGHT(Kg.)	713.0	REF. TO ASSY. DRG.	ITEM NO.
CODE	2444					21709970115	02
TITLE			DRAWING NO.		REV.		
REDUCER PLATE			21709970119		00		
			SHEET NO.		NO.OF SHEETS		

SIZE A2

420x594 mm

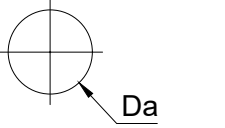
DRAWING NO. 21709970120



VAR.	ITEM NO	R2	THICKNESS	DEVELOPMENT LENGTH=L	WIDTH= W	WEIGHT Kg
00	01	4050	14	7068.6	501	388.5
01	03	4000	14	6981.3	1225	938.2
02	05	4000	14	6981.3	850	651.0
	-	-	-			

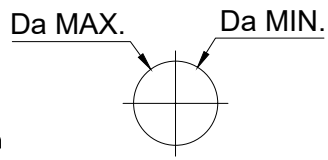
- TECHNICAL REQUIREMENTS:-
- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
 - BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
 - THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
 - UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
 - (a) DIAMETER TOLERANCES

At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm



(b) ADMISSIBLE OVALITY

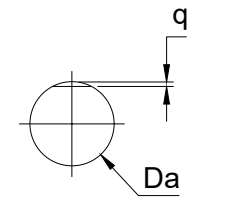
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm



Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm



- IF REQUIRED, PLATE & STIFFENER MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL C-C SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1

GRADE OF UNTOL. DIM.:—
M/CG— V/C/M/F AA 0230208
WELDING—A/B/C/D—AA621104
GAS CUTTING—T3'AA0621101

REV.	DATE	ALTERED
		CHECKED

CBOM NO.		STATUS OF DRG.	
01709970017		U	
AGREED DEPT.	NAME	SIGN	DATE
WT	MANISH	-SD-	27.12.22

REV.	DATE	ALTERED
		CHECKED

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT 3X800 MW ACC (PATRATU)

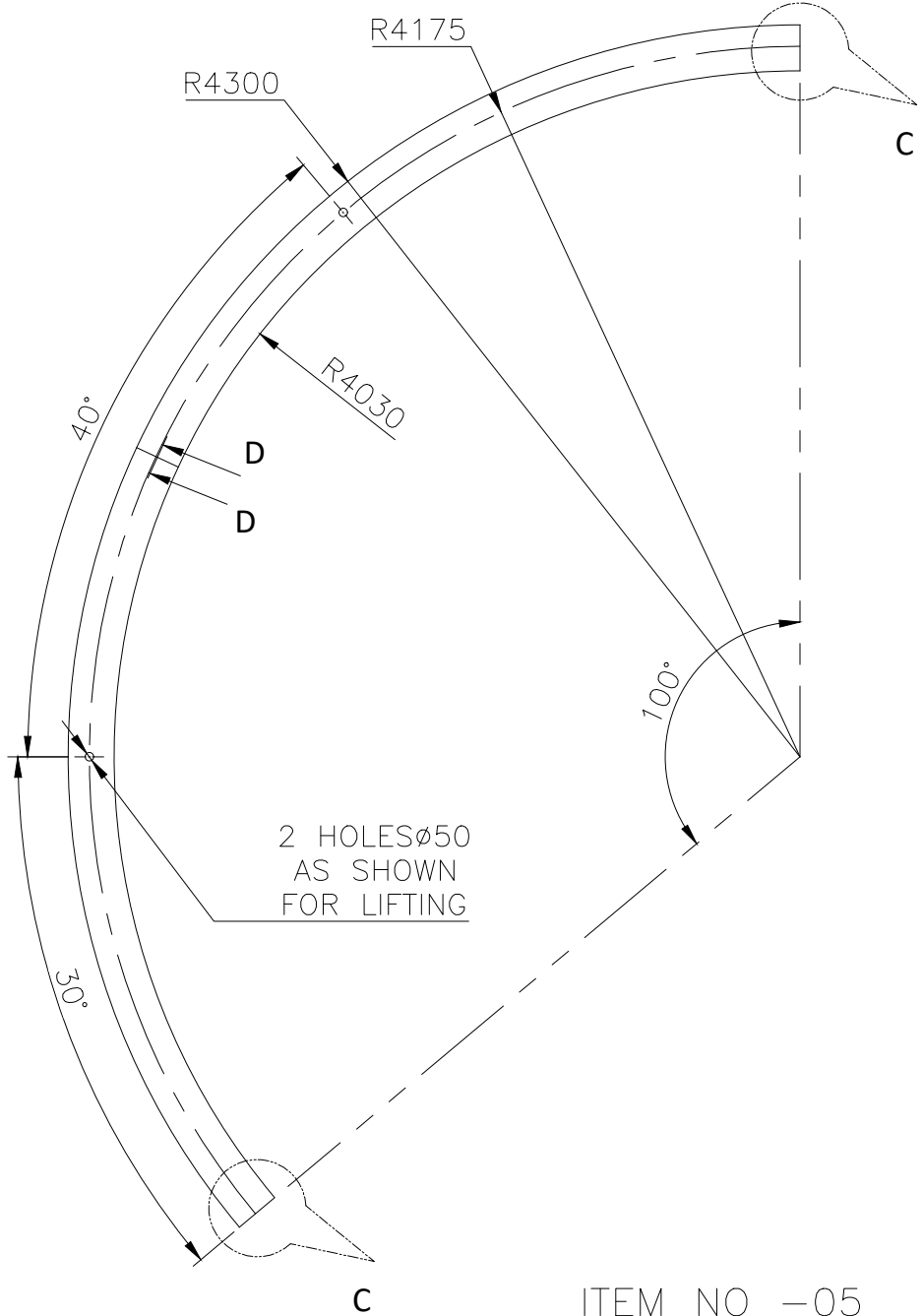
DRN	NAME	SIGN	DATE	NO.OF VAR.
CHD	NK JANGRA	-Sd-	13.09.2022	--
APD	AXAY KUMAR	-Sd-	13.09.2022	--
	N PRAKASH	-Sd-	13.09.2022	73, 74

DEPT.	HXE	SCALE	WEIGHT(Kg.)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
CODE	2444	1:40	SEE TABLE	21709970115	-	--

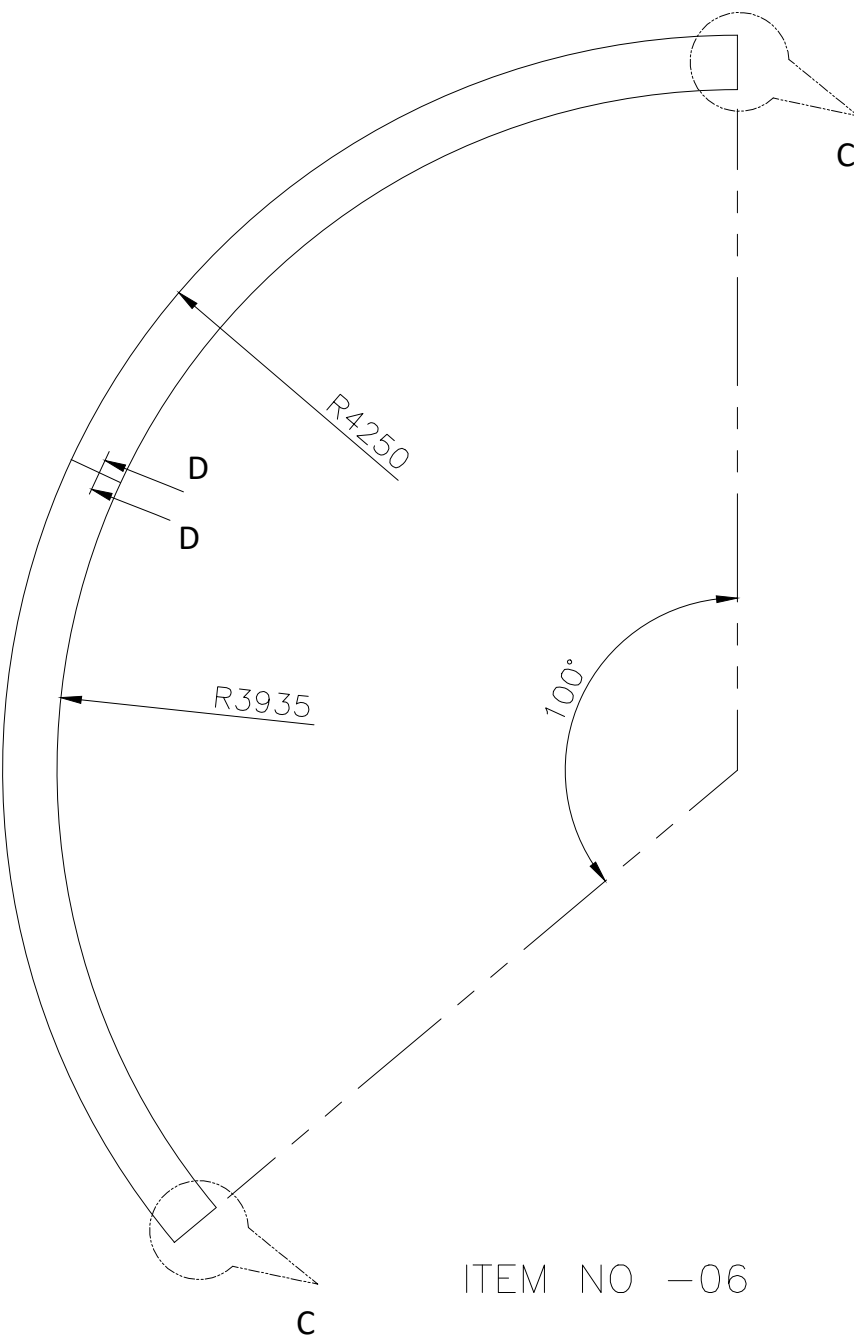
TITLE	CARD CODE	DRAWING NO.	REV.
SHELL PLATE	X	21709970120	00
SHEET NO.		NO.OF SHEETS	

12102660212

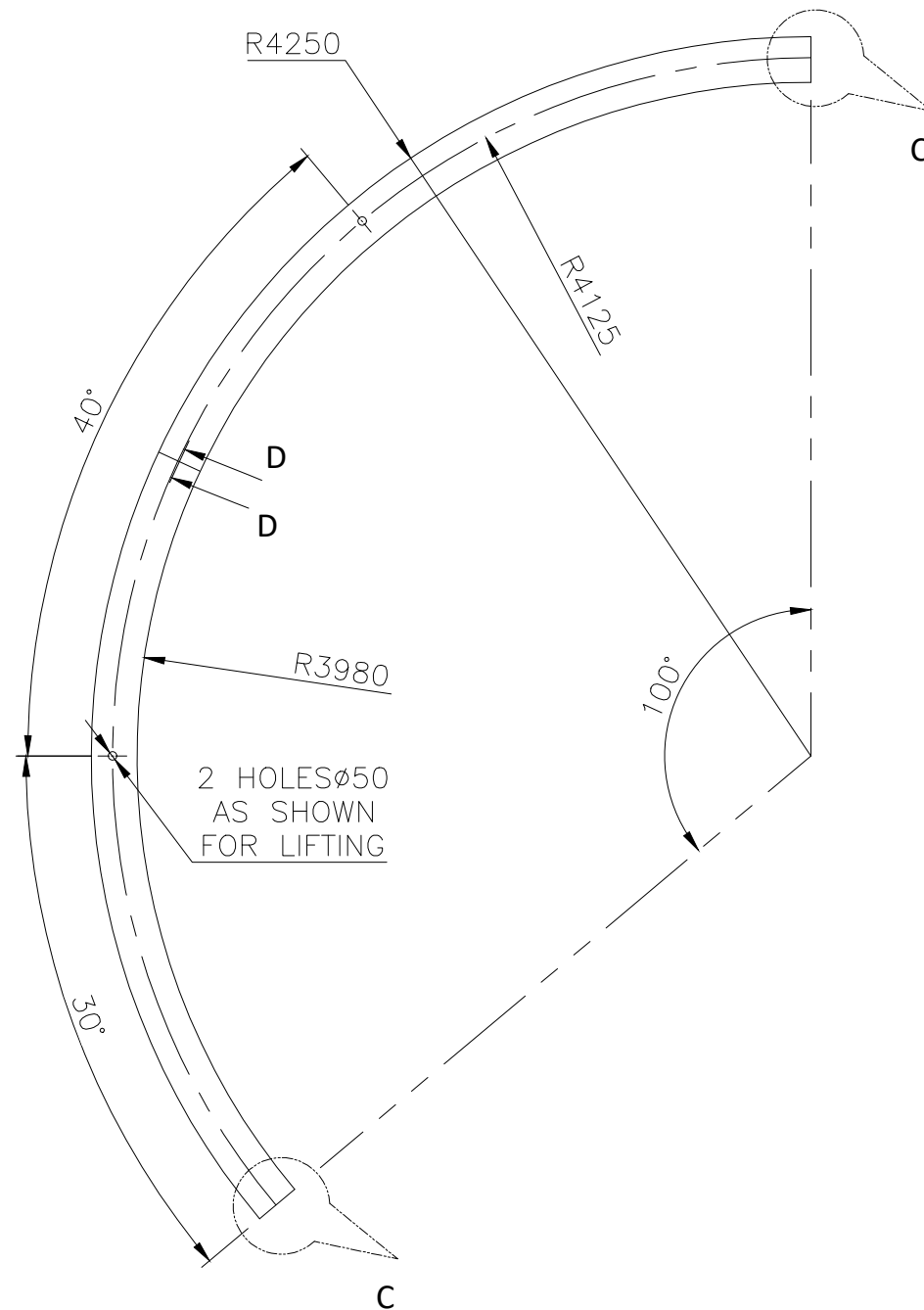
DRAWING NO.



ITEM NO -05



ITEM NO -06

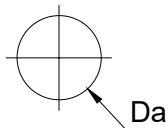


ITEM NO -07

TECHNICAL REQUIREMENTS:-

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE-F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

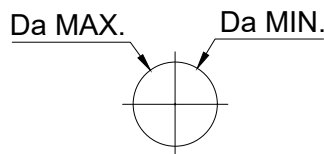
At ends: Da 2800 mm - 4900 mm = ± 7 mm
Da 4900 mm - 6300 mm = ± 8 mm
Da 6300 mm - 8100 mm = ± 10 mm



Da

(b) ADMISSIBLE OVALITY

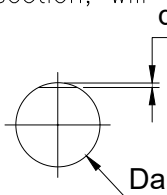
At ends: Da 2800 mm - 4900 mm x = 14 mm
Da 4900 mm - 6300 mm x = 16 mm
Da 6300 mm - 8100 mm x = 20 mm



Da MAX.

Da MIN.

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG-80

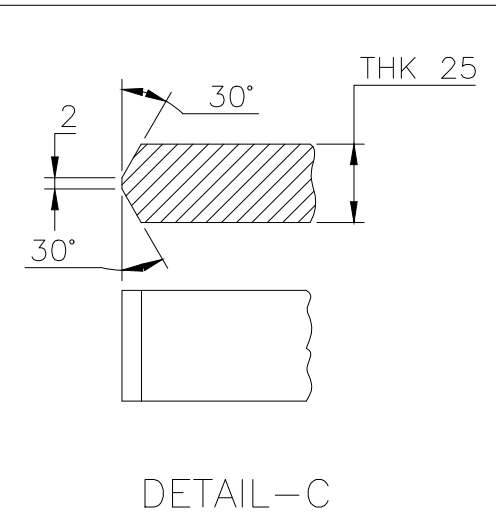


q

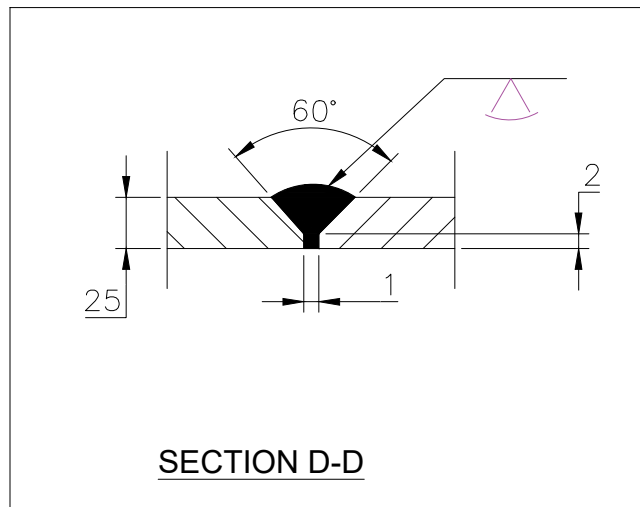
(c) ADMISSIBLE OBLATENESS

Da $\leq$ 9220 mm q = 6 mm

- IF REQUIRED, PLATE & STIFFENER (ITEM 05,06 & 07)MAY BE MADE IN TWO PARTS WITH ONE JOINT AND WELDED AS PER DETAIL D-D SO THAT JOINT DOES NOT FOUL WITH AND IS AT LEAST 300 MM AWAY FROM ANY OTHER WELD SEAM/HOLE/ NOZZLE/ PAD AND SIZE (MIN. DIM.) OF ANY ONE PLATE IS AT LEAST 1000 MM. WELDED CLASSIFICATION GROUPS AND TEST SCOPE AS PER T.R.1



DETAIL-C



SECTION D-D

VAR.	ITEM	WEIGHT (Kg.)	REMARK
00	05	385.3	
01	06	441.6	
02	07	380.6	

CBOM NO. 01709970017			STATUS OF DRG. U	
AGREED DEPT.	NAME	SIGN	DATE	
WT	MANISH	-SD-	27.12.22	
GRADE OF UNTOL. DIM.:-				
M/CG- V/C/M/F AA 0230208				
WELDING-A/B/C/D-AA621104				
GAS CUTTING-'T3'AA0621101				
REV.	DATE	ALTERED		
		CHECKED		

TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT		3X800 MW ACC (PATRATU)			
	NAME		SIGN	DATE	NO.OF VAR.
	NK JANGRA		-Sd-	13.09.2022	--
	AXAY KUMAR		-Sd-	13.09.2022	
DEPT. HXE		SCALE 1:40		WEIGHT(Kg.)	NO.OF ITEMS
CODE 2444				--	--
TITLE		DRAWING NO.		REV.	
STIFFENER PLATE		21709970115		00	
		SHEET NO.		NO.OF SHEETS	

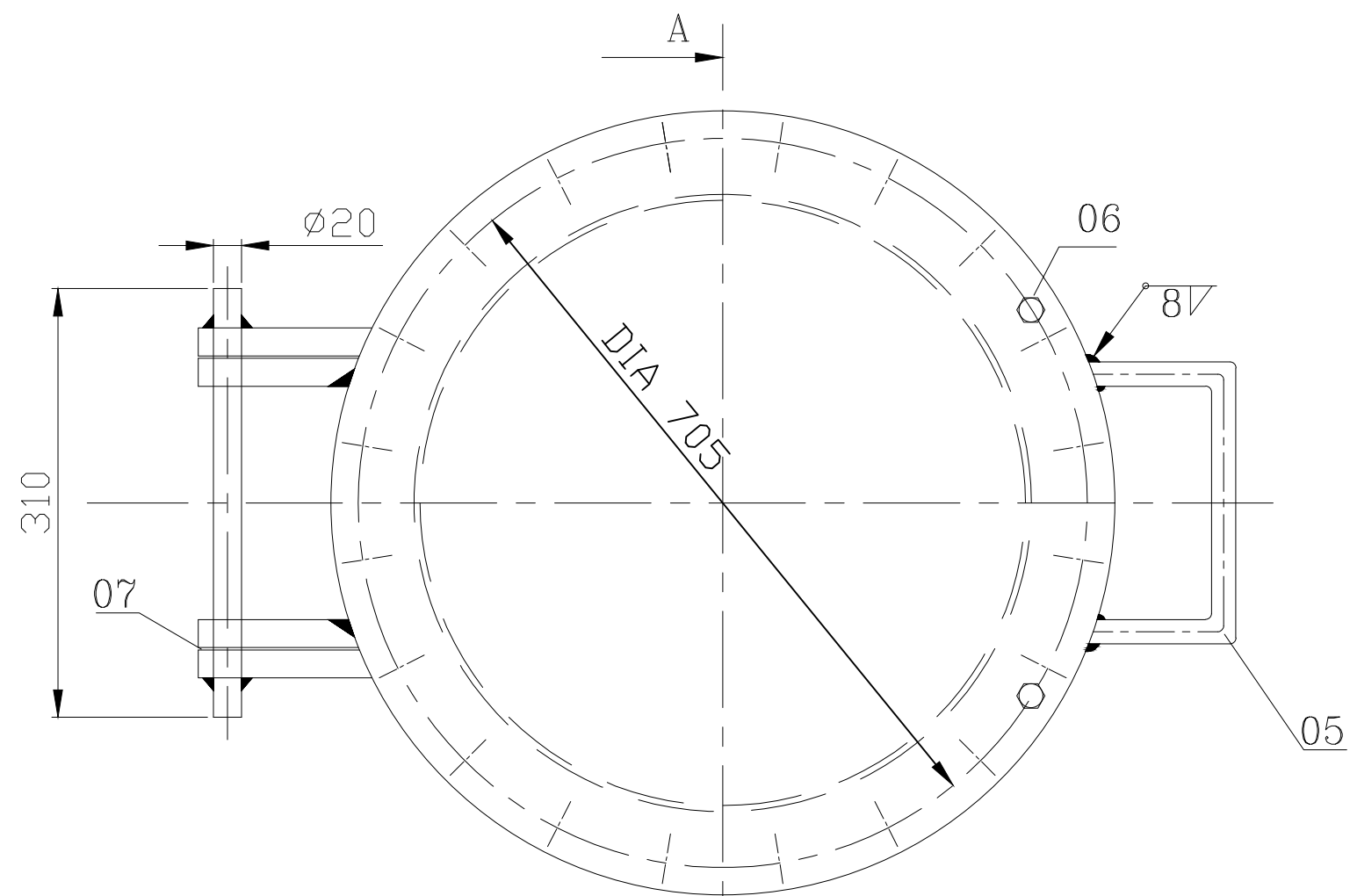
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Inventory No
Sign & Date
Ref.Drawing No>

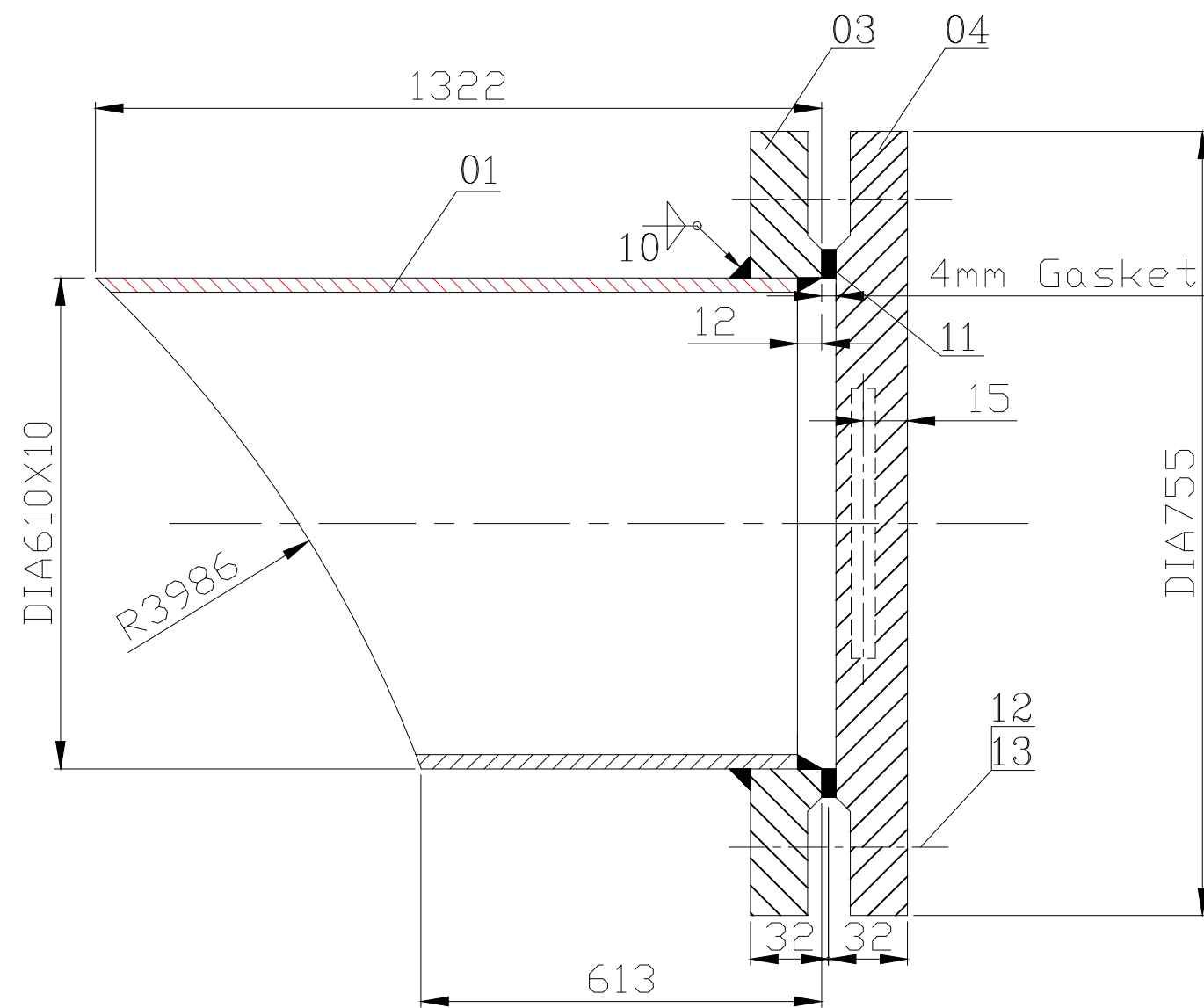
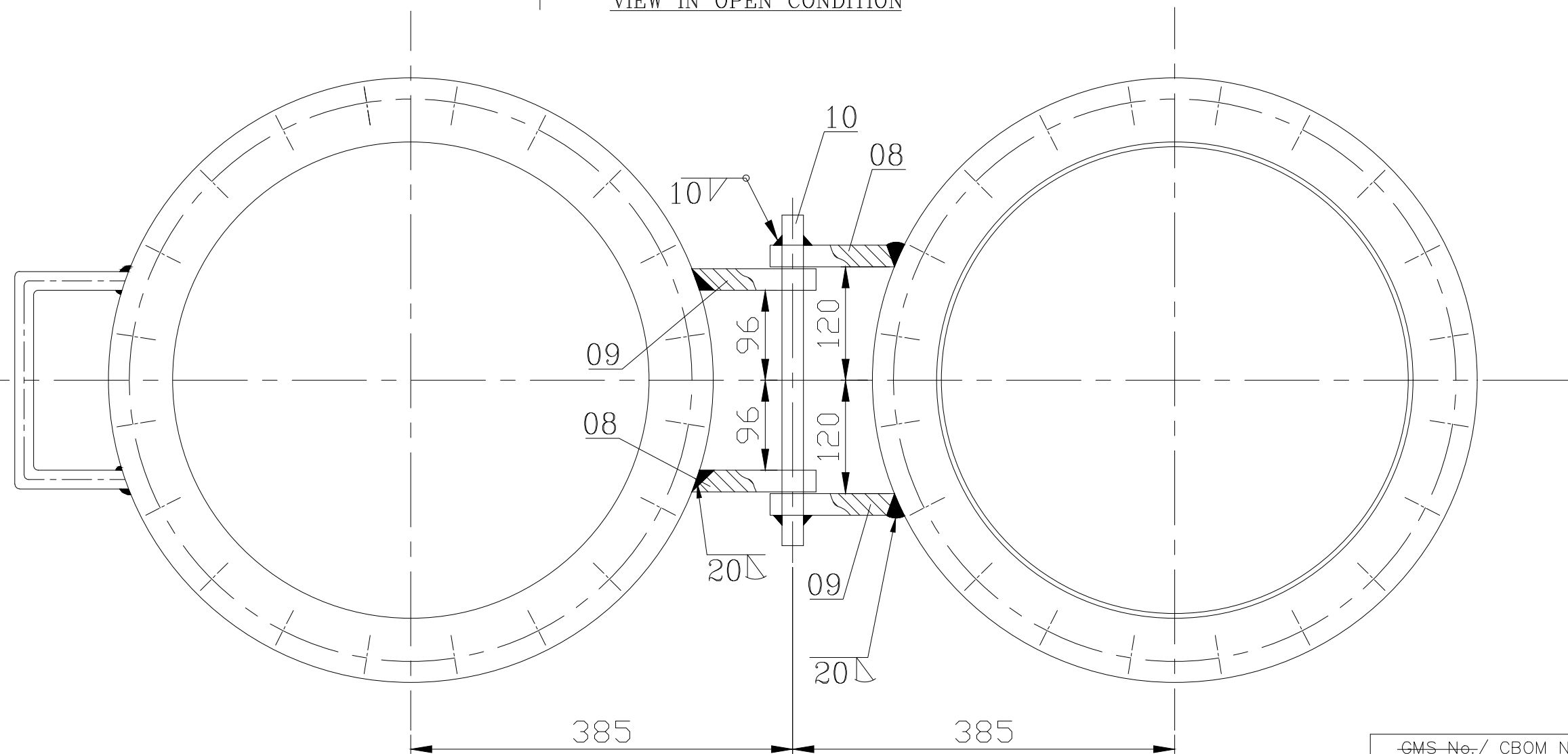
21709970122
DRAWING No.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm)

FORM DG 44(B)



VIEW IN OPEN CONDITION



SECTION A-A

T.R. -

WELDING QUALITY NOTE:-

WELDING CLASSIFICATION GROUP ACCORDING TO HW0620099 CS/BK, TEST SCOPE ACCORDING TO HW0850199 CATEGORY OF SERVICE REQUIREMENTS-3.

GRADE OF UNTOL.DIM

M/CG.-C/M/F AA0230208

WELDING-A/B/C/D AA0621104

GAS CUTTING-'T3'AA0621101

REV	DATE	ALTERED
		CHECKED

AGREED	NAME	SIGN	DATE
DEPT	WT	MANISH	sd/-

REV	DATE	ALTERED
		CHECKED

TYPE OF PRODUCT
OR
NAME OF CUSTOMER/PROJECT

ACC PATRATU

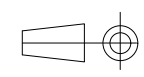


BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

DRN	NAME	SIGN	DATE	NO. OF
S.JOSHI	Sd/-	20/10/22	VAR	
CHD	AXAY	Sd/-	20/10/22	-
APPD	N.PRAKASH	Sd/-	20/10/22	73 74

DEPT HXE

CODE 4222



SCALE

N.T.S.

WEIGHT (KG)

294.30

REF. TO ASSY. DRG.

11709970112

DRAWING NO.

21709970122

SHEET No. 01 No. OF SHEETS 01

SIZE A2

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INTEREST OF THE COMPANY.

सहायिका एव गोपनीय
इस प्रोद्य में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स लिमिटेड की
संपत्ति है। इसका प्रत्यक्ष या अप्रत्यक्ष रूप में किसी भी तरह
प्रयोग नहीं किया जाए जो कंपनी के हित में हानिकार हो।

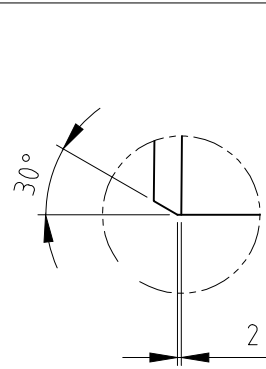
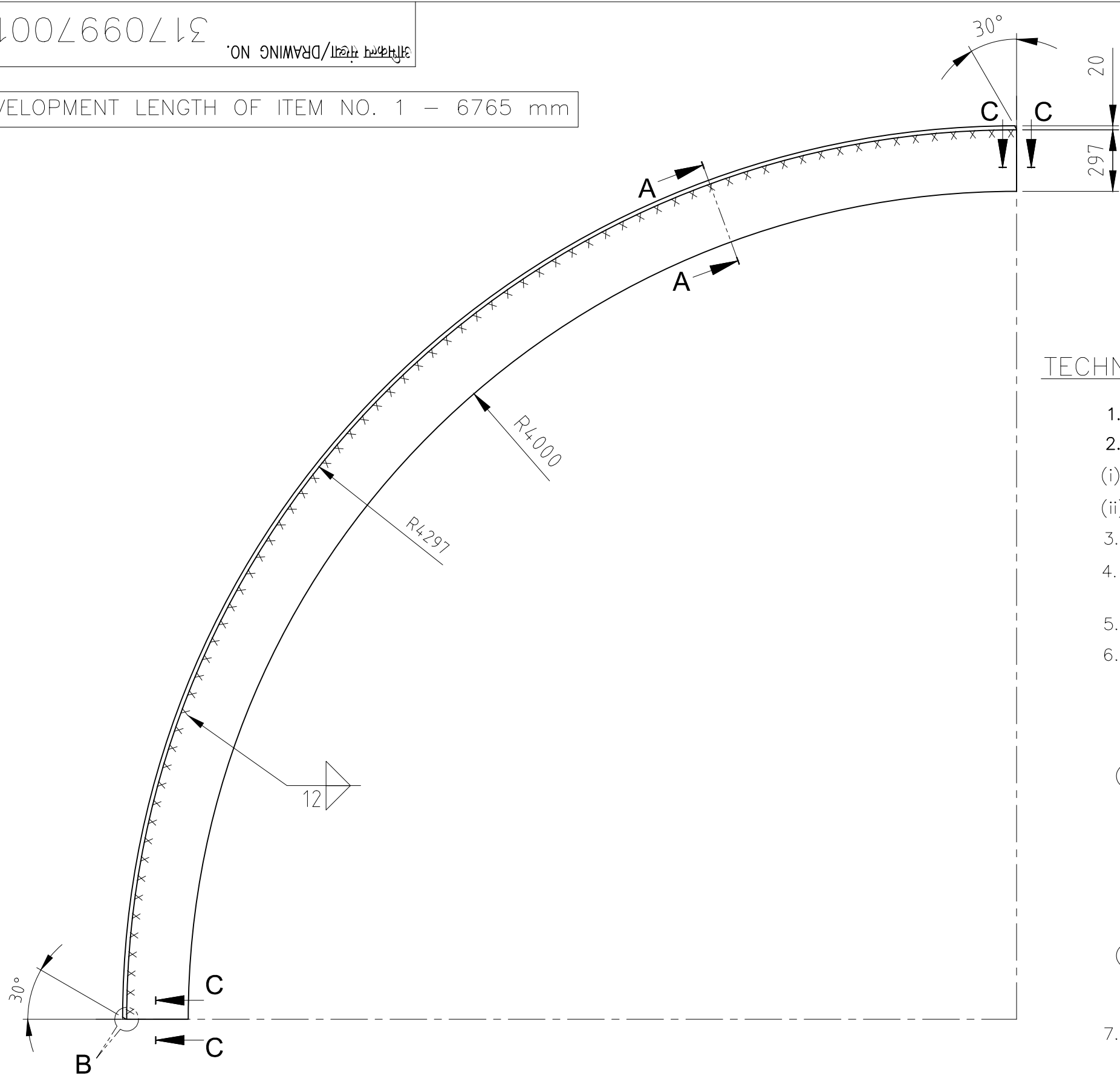
संशोधन अभिकल्प संख्या
REFERENCE DRG. NO.

हस्ताक्षर और दिनांक/SIGN & DATE

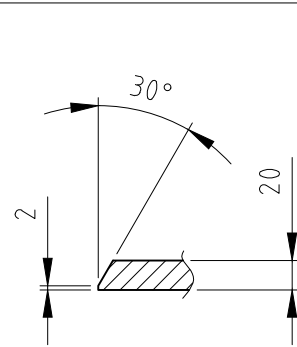
सामग्री सूची संख्या
INVENTORY NO.

अभिकल्प संख्या/DRAWING NO.
31709970012

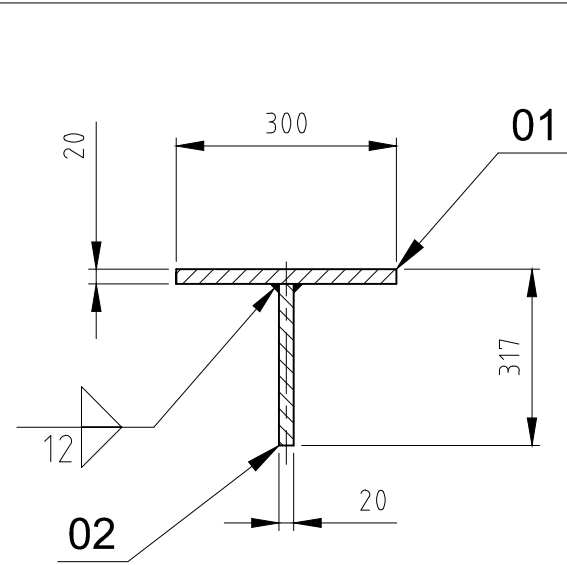
DEVELOPMENT LENGTH OF ITEM NO. 1 – 6765 mm



VIEW - B



SECTION C-C



SECTION - AA

TECHNICAL REQUIREMENTS:—

- WELDING CLASSIFICATION GROUPS ACCORDING TO HW 0620099 CS/BK.
- PAINTING ON OUTSIDE SURFACES:
 - PRIMER PAINT: EPOXY BASED ZINC RICH PRIMER – I COAT – DFT 50 MICRON.
 - INTERMEDIATE PAINT: EPOXY TIQ PIGMENTED POLYAMIDE CURED PAINT – I COAT – 50 MICRON.
- BUTT WELDS SHALL BE SUBJECTED TO 100% DPT AND 10% UT/RT. FILLET WELDS SHALL BE SUBJECTED TO 10% DPT.
- THE GENERAL TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM SHALL BE MAINTAINED AS PER AA0621105 GRADE–F.
- UNLESS OTHERWISE STATED EDGE PREPARATION OF WELD JOINTS SHALL BE AS PER AA0620502.
- (a) DIAMETER TOLERANCES

At ends: Da 2800 mm – 4900 mm = ± 7 mm
Da 4900 mm – 6300 mm = ± 8 mm
Da 6300 mm – 8100 mm = ± 10 mm
- (b) ADMISSIBLE OVALITY

At ends: Da 2800 mm – 4900 mm x = 14 mm
Da 4900 mm – 6300 mm x = 16 mm
Da 6300 mm – 8100 mm x = 20 mm

Permissible ovality at any cross-section, other than ends of section, will be as per ASME Section VIII Div 1 UG–80
- (c) ADMISSIBLE OBLATENESS

Da ≤ 9220 mm q = 6 mm
- TRIAL ASSEMBLY OF INTER FACING PARTS TO BE DONE AT VENDOR WORKS FOR 10% OF COMPONENTS FOR LARGE ITEMS (NO. 1,2,3)
- FABRICATION WEIGHT IS INCLUSIVE OF TECHNOLOGICAL SUPPORTS / STIFFENERS.
- PROPER LOCKING OF CIRCULAR DUCT PARTS SHALL BE ENSURED IN SUCH A WAY THAT CURVATURE IS INTACT DURING TRANSPORTATION AND HANDLING AT SITE. TECHNOLOGICAL SUPPORTS / STIFFENERS TO BE PROVIDED FOR THIS.
- REPRESENTS SITE WELDING.

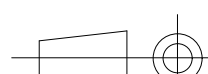
12	8	SIZE & SYMBOL OF SEAM
13.5	—	WELD LENGTH (M)
10.1	—	WT. OF WELD METAL
E–7018		TYPE OF ELECTRODE

असह्य विमाओं का वर्ग GRADE OF UNTOLERANCED DIMENSION			सी.बी.ओ.एम./C.B.O.M. 01709970017,VAR.01			अभिकल्प का मर STATUS OF DRG.
मशीनिंग - एए0230208 एम MACHINING – AA0230208 m			सहमत विभाग AGREED DEPTT.	नाम/NAME	हस्ताक्षर/ SIGN.	दिनांक/DATE
वेल्डिंग - एए0621104 की श्रेणी बी WELDING–CLASS ‘B’ OF AA0621104			WT.	MANISH	Sd.	27.12.22
गैस कटिंग - एए0621101 की सारणी 3 GAS CUTTING–TABLE 3 OF AA0621101						
संशोधन REV.	दिनांक DATE	संशोधनकर्ता ALTERED BY जांचकर्ता CHD	संशोधन REV.	दिनांक DATE	संशोधनकर्ता ALTERED BY जांचकर्ता CHD	—
			—	—		—

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						ACC, PATRATU					
भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानीपुर, हरिद्वार BHARAT HEAVY ELECTRICALS LIMITED RANIPUR, HARDWAR						निर्माणकर्ता DRN.	नाम/NAME	हस्ताक्षर/SIGN	दिनांक/DATE	वैरिएट संख्या No. of Var.	
						जांचकर्ता CHD	S.JOSHI	Sd.	06/10/2022	—	
						स्वीकृतकर्ता APPD	AXAY	Sd.	06/10/2022	—	
							N.PRAKASH	Sd.	06/10/2022	—	
विभाग DEPTT.	HXE	अनुपात/SCALE	भार कि.ग्रा. WEIGHT (KG)	असह्यली अभिकल्प का संदर्भ REFER TO ASSLY. DRG.	नग क्रमांक	नगों की संख्या NO. OF ITEMS					
कोड /CODE	4222	N.T.S	623	01709970017,VAR.01	21	—					
शीर्षक/TITLE							अभिकल्प संख्या/DRAWING NO.				
SADDLE–S1 TOP RING FOR G.DUCT							31709970012				
							7 22 23 24				
							पृष्ठ संख्या/Sheets No. 01 पृष्ठों की संख्या/No. of Sheets 01				

सामग्री सूची संख्या
INVENTORY NO.

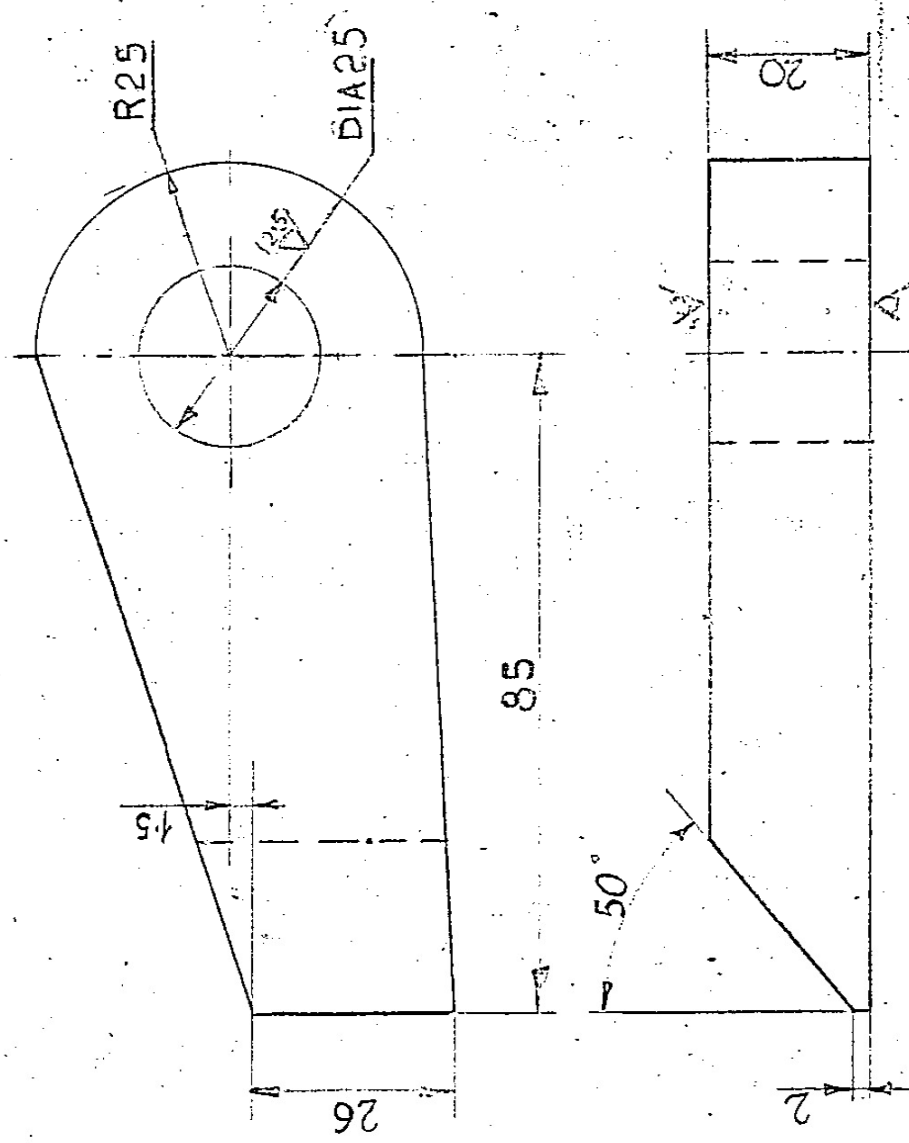
WELDING CLASSIFICATION GROUP ACCORDING TO
HW0620099 CS.
TEST SCOPE ACCORDING TO HW0850199.
CATEGORY OF SERVICE REQUIREMENT-3

असह्य विमाओं का वर्ग GRADE OF UNTOLERANCED DIMENSION			सी.बी.ओ./C.B.O.M. 01709970017,var.01		अधिकृत्य का सर STATUS OF DRG.	उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				ACC PATRATU									
मशीनिंग - एए0230208 एम MACHINING – AA0230208 m			सहमत विभाग AGREED DEPTT.	नाम/NAME	हस्ताक्षर/ SIGN.	दिनांक/DATE		भारत हेवी इलेक्ट्रिकल्स लिमिटेड, रानीपुर, हरिद्वार BHARAT HEAVY ELECTRICALS LIMITED, RANIPUR HARDWAR	निर्माणकर्ता/DRN.	नाम/NAME	हस्ताक्षर/SIGN	दिनांक/DATE	वैरिएंट संख्या No. of Var.						
वेल्डिंग - एए0621104 की श्रेणी बी WELDING–CLASS ‘B’ OF AA0621104			WT	MANISH	sd/–	27.12.22				S.JOSHI	Sd/–	20/10/22							
गैस कटिंग - एए0621101 की सारणी 3 GAS CUTTING–TABLE 3 OF AA0621101										AXAY	Sd/–	20/10/22							
									स्वीकृत/दस्ता APPD	N.PRAKASH	Sd/–	20/10/22							
संशोधन REV.	दिनांक DATE	संशोधनकर्ता ALTERED BY जर्चकर्ता CHD	संशोधन REV.	दिनांक DATE	संशोधनकर्ता ALTERED BY जर्चकर्ता CHD	विभाग DEPTT.	HXE		अनुपात/SCALE	भार कि.ग्रा. WEIGHT (KG)	असेम्बली अधिकृत्य का संदर्भ REFER TO ASSLY. DRG. 21709970122	नग क्रमांक ITEM NO.	नों की संख्या NO. OF ITEMS						
							कोड/ CODE 4222		N.T.S	138.3									
						शीर्षक/TITLE				कार्ड कोड CARD CODE	अधिकृत्य संख्या/DRAWING NO.								
						PIPE					7	31709970016	22	23	24				
											पृष्ठ संख्या/Sheets No.	पृष्ठों की संख्या/No. of Sheets							

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CHECKED		CHECKED		AGREE'D DEPT.	NAME	SGN	DATE
				NAT.	GARG	SGN	19.08.80

50/ALLOVER



QTY	NO OF	UNIT OF	LUG	ITEM NO	DRAWING NO.	ITEM NO	MATERIAL CODE	MATERIAL SPEC.	UNIT WT (KG)	QTY	
TAKEN	AF	RM. UNIT									
ANT	NIT	QTY	CARD TYPE 2								
CARD TYPE 1											

DEPT		CODE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.
HXE		4222	1:1		2-160-15-70001	003

SIGN & DATE		NAME		SIGN.	DATE
		ANAND			
		CHECKED		SANKARAN	
		APPROVED		A. SINGH	

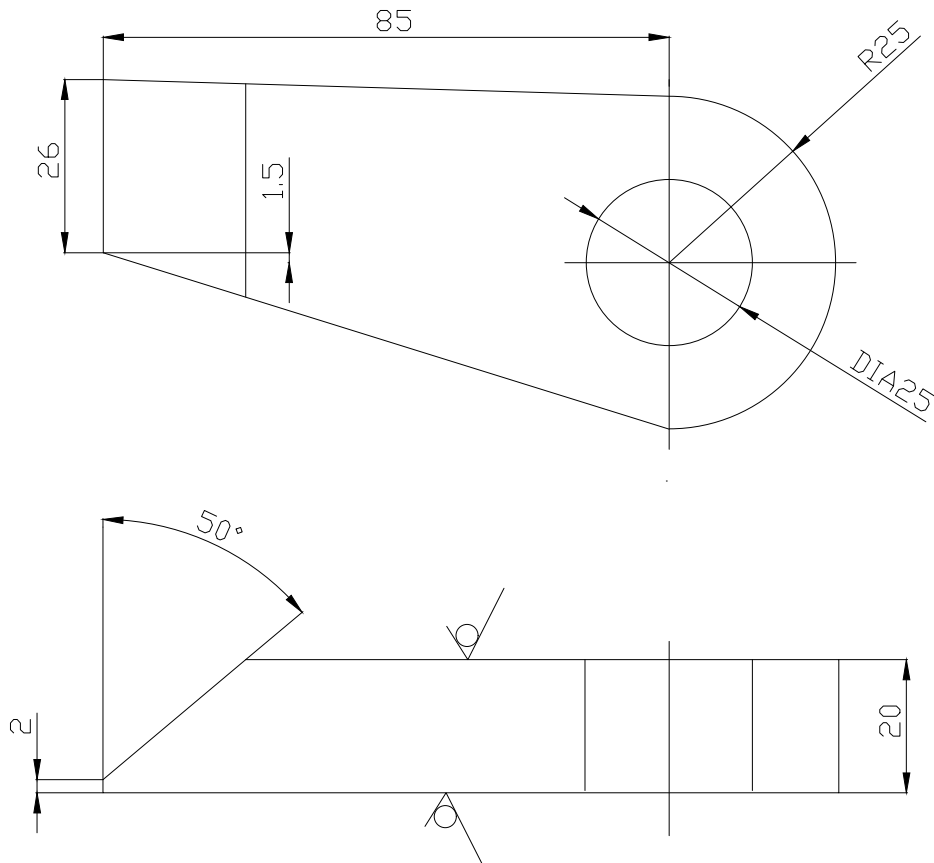
Dimensions to be Controlled Within Limits as Shown		CARD CODE	DRAWING NO.
Machining Tolerance $\pm$ 0.25 mm Unless Otherwise			
			4-160-15-70001

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

REV	DATE	ALTERED	REV	DATE	ALTERED	RK GARG	CBOM No.			STATUS OF DRG
		CHECKED			CHECKED		MK LAHOTI	GMS 91601570001		
			HXE-03-F-1063				AGREED DEPT.	NAME	SIGN	DATE
			HARD COPY TO BE REPLACED BY SOFT COPY.				W.T.	GARG	sd.	7.3.80

GRADE OF UNTOL.DIM.M/CGC/M/F.AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

50°
THE REST.

REF.DRG.No.

SIGN & DATE

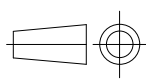
INVENTORY No.

BHARAT HEAVY ELECTRICALS LTD
HARDWAR

	NAME	SIGN	DATE	NO. OF VAR
DRN	AHMAD	sd		
CHD	L.K.S.	sd	21.2.80	
APD	A.SINGH	sd	22.2.80	

DEPT. HXE

CODE 4222



SCALE

—

WEIGHT(Kg)

0.38

REF.TO ASSY.DRG.

21601570001

ITEM No.

04

No OF ITEMS

TITLE

LUG

DRAWING No.

41601570002

SHEET No. 01

No.OF SHEETS 01

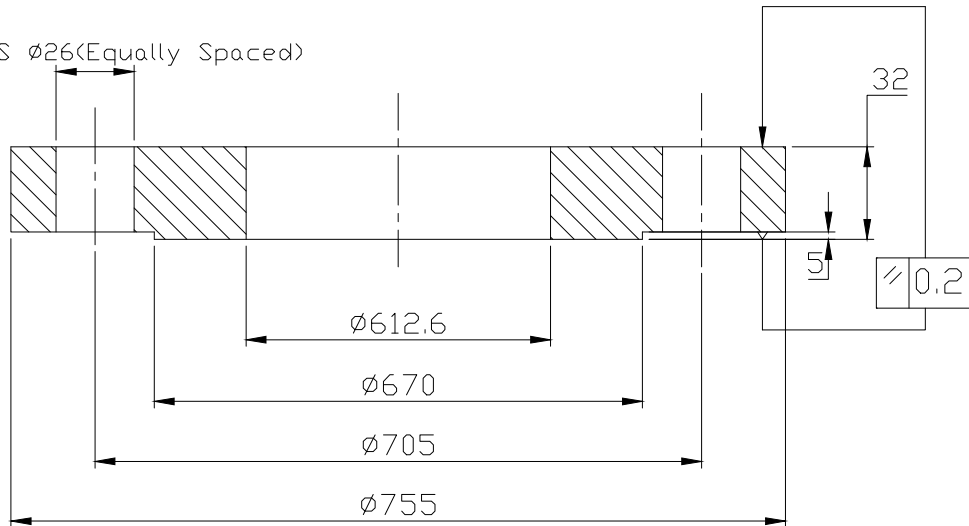
SIZE A4

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

REV	DATE	ALTERED	REV	DATE	ALTERED	CBOM No.		STATUS	
		CHECKED			CHECKED	21603470040		OF DRG	
						AGREED	NAME	SIGN	DATE
						DEPT.	I RAM	sd/-	23.09.06
						WT.			

GRADE OF UNTOL.DIM.M/CGC/M/F.AA0230208 | WELDING A/B/C/D AA0621104 | GAS CUTTING-T3 AA0621101

12.5/
THE REST.20 HOLES $\phi 26$ (Equally Spaced)

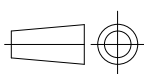
REF.DRG.No.

SIGN & DATE

BHARAT HEAVY ELECTRICALS LTD
HARDWAR

	NAME	SIGN	DATE	NO. OF VAR
DRN	RK	Sd.	16.9.06	
CHD	NP	Sd.	16.9.06	
APD	NPM	Sd.	25.9.06	

DEPT. HXE



SCALE

WEIGHT(Kg)

93

REF.TO ASSY.DRG.

ITEM

No OF

CODE 4222

No.

ITEMS

TITLE

PLATE FLANGE

DRAWING No.

41601570007

SHEET No. 01

No.OF SHEETS 01

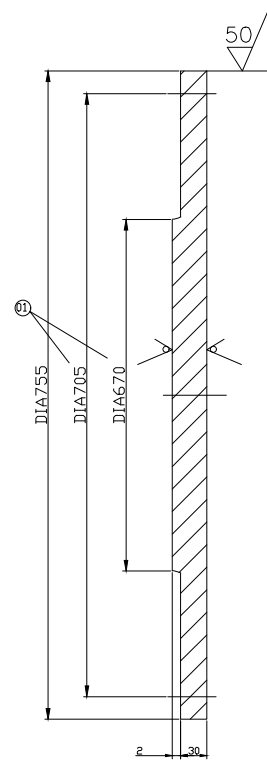
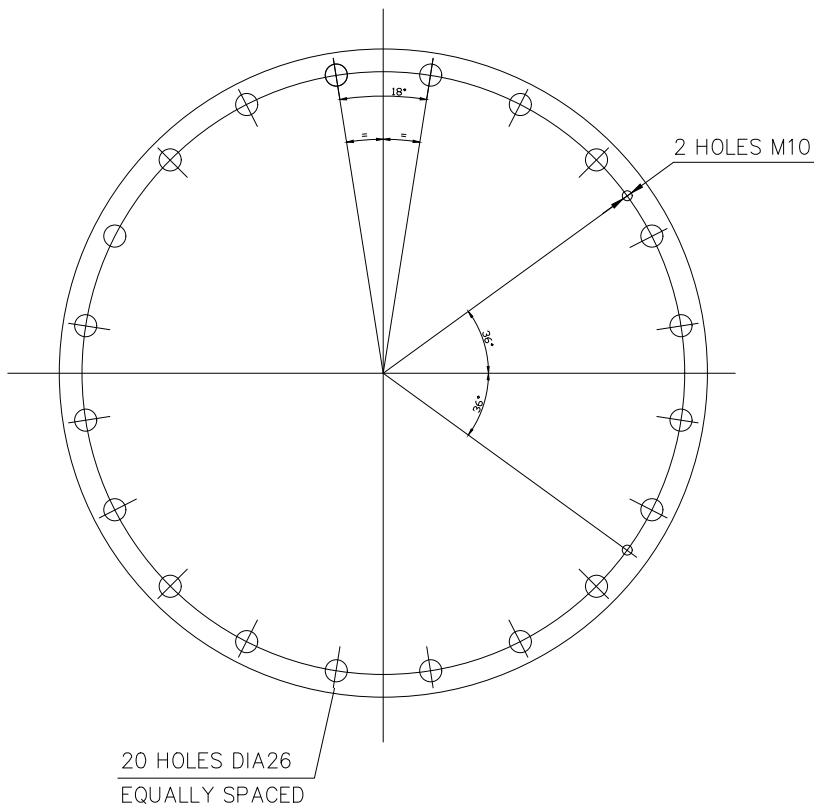
SIZE A4

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

REV	DATE	ALTERED	REV 01	DATE 27.6.13	ALTERED	VIMAL	CBOM No. 21603470040			STATUS OF DRG
		CHECKED			CHECKED					
			HXE-13-F0135			AGREED DEPT.		NAME	SIGN	DATE
			DIM. 4670 6750 CORRECTED AS 670 & 750.			WT.		I RAM	sd/-	23.09.06

GRADE OF UNTOL.DIM.M/CGC/M/F.AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

12.5/
THE REST.

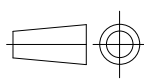
REF.DRG.No.

SIGN & DATE

INVENTORY No.

BHARAT HEAVY ELECTRICALS LTD
HARDWARDRN
CHD
APD

NAME	SIGN	DATE	NO. OF VAR
RK	Sd.	16.9.06	
NP	Sd.	16.9.06	
NPM	Sd.	25.9.06	

DEPT. HXE
CODE 4222SCALE
—WEIGHT(Kg)
93REF.TO ASSY.DRG.
—ITEM No.
—

No OF ITEMS

TITLE
BLANK FLANGEDRAWING No.
41601570008

SHEET No. 01 No.OF SHEETS 01

SIZE A4

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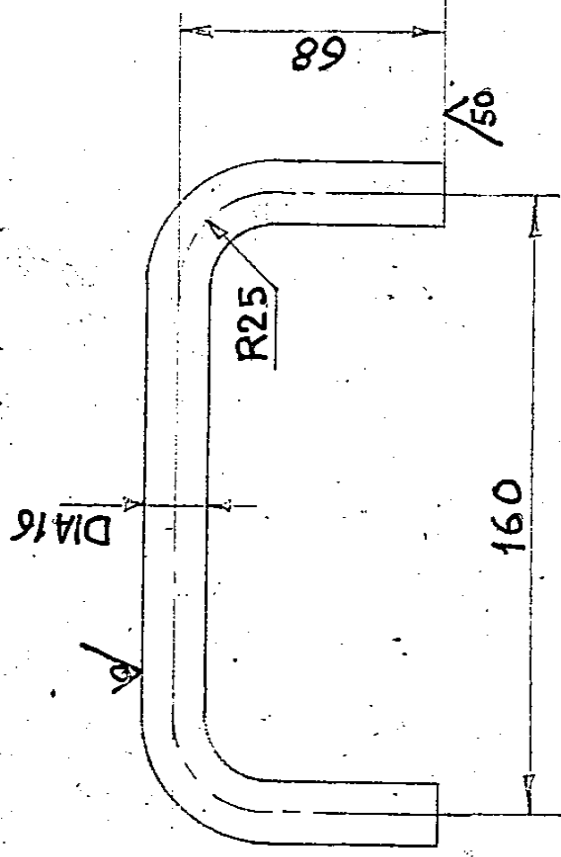
Ref Drg. No.

Sign & Date

Inventory No.

Dimensions to be Controlled Within Limits as Shown
Machining Tolerance + .25 mm Unless Otherwise

DRAWING NO.
4-160-45-70004



DEVELOPED LENGTH = 275

[illegible]

BHARAT HEAVY ELECTRICALS LTD.

RANIPUR - HARDWAR.

DEPT HXE	CODE 043		SCALE 1:2	WEIGHT (KG) 0.44	REF. TO ASSY. DRG. 3-160-45-70006	ITEM NO. 002
HANDLE					NAME KHATRI	DATE
					SIGN.	
					DRAWN	
					CHECKED M.L.L.	6.3.79
					APPROVED A-SINGH.	10/4/79

HANDLE

