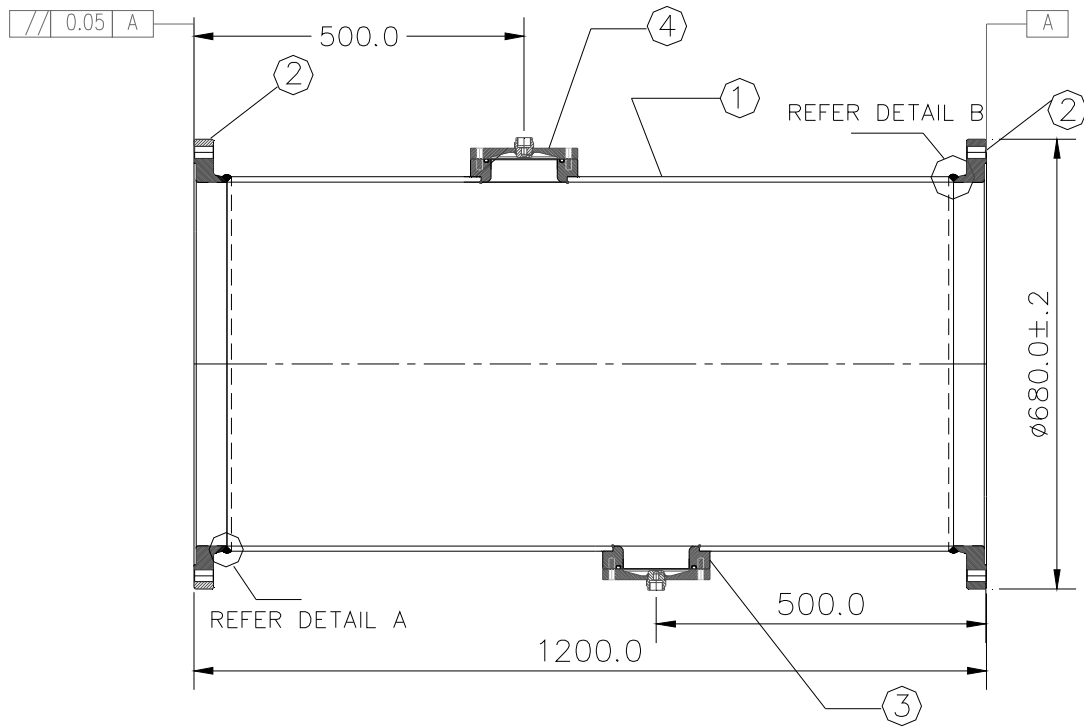


PSGSG108	Process Specifications for Straight Enclosure	Drg.No.	RD DG 4350617500
		Date	16.06.08
		Product	GSM-400
1.0	APPLICATION: Straight Enclosure (Drg. No. RD DG 4 35 0617 0500) is a coupling element for a pressurized, gas insulated power equipment. The gas pressure in this metal enclosure is maintained around 0.75 MPa. This leak tight assembly shall meet following specification.		
2.0	SPECIFICATIONS:		
2.1	SHAPES: Refer drawings i) Assembly : RD DG 4 35 0617 0500 ii) Straight pipe : RD DG 4 35 0617 0502 iii) End Flange : RD DG 4 35 0617 0501 iv) Side Port : RD DG 4 35 0617 0503 (v) Cover : RD DG 4 35 0617 0504		
2.2	Material : Low Carbon austenitic stainless steel confirming to AISI-304/316 .		
2.3	Fabrication PROCESS: Standard seamless or ERW (straight / spiral) tubular sections shall be used for construction. Fabricated / drawn sections can be used for other areas not confirming to standard pipe schedules. The flange sections shall be manufactured and welded to tubes/shells, maintaining parallelism of faces and perpendicularity as prescribed. The tube and flange assembly shall then be machined for details and drawing dimensions in minimum settings (preferably one). The flange sealing surfaces shall be polished to RA 0.8 or better and the bolting holes shall be machined fine. Angular tolerances, wherever not mentioned in the drawing, shall be within 0.1°. All sharp corners shall be removed (default chamfer of 0.5x45° shall be used for unspecified chamfers).		
Page 1/3	PSGSG-108.doc		Signature

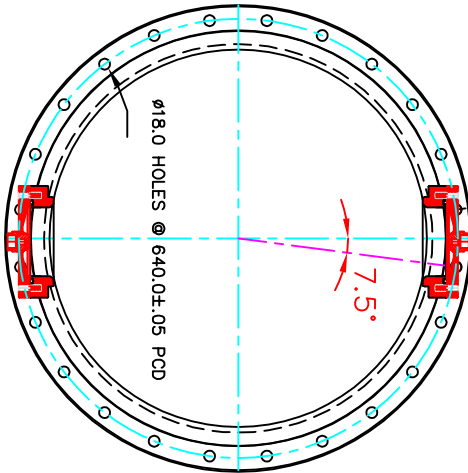
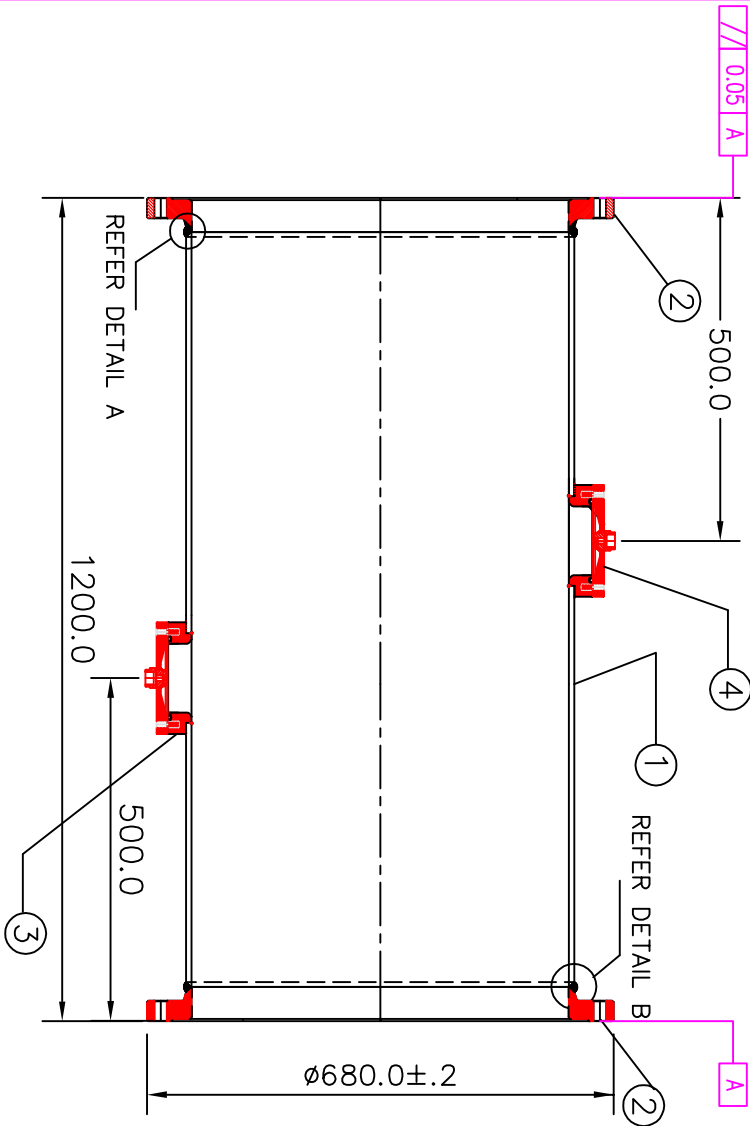
PSGSG108	Process Specifications for Straight Enclosure	Drg.No.	RD DG 435 0617500
		Date	16.06.08
		Product	GSM-400
	<p>All welded joints shall be TIG / MIG welded with suitable SS electrode. The welded sections shall be sized as per drawing and verified / tested using Dye Penetration (DP) technique at all stages of welding. Inside edges/weld shall be fused to obtain near smooth weld surface. Weld splatter shall be removed and weld surfaces polished using suitable emery.</p> <p>In case of drawn profiles, the profile shall be drawn and size verified by internal quality. No smithy shall be permitted for adjusting mismatch in size of profiles in view of defect/crack inception.</p> <p>2.4 Pressure test: The DP tested assembly should be cleaned, degreased and prepared for pressure test. The assembly shall be pressurized at 0.75 MPa and lowered in a water tank for verification of air leakage. In situation of no visual indication the pressure shall be maintained for 4 hours and pressure drop during this period shall be recorded. In case of pressure drop a course leak check shall be performed using suitable tracer gas to locate the leak source. The leak shall be rectified and the test repeated to satisfaction. Components indicating drop in pressure during this test will not be accepted.</p> <p>In case of order quantity exceeding 10 numbers, one sample assembly shall be proof pressurized to 14 bar (hydraulic) for 15 minutes prior to this test to verify pressure withstanding capabilities of seams and section used.</p> <p>2.5 Stress Relieving: The supplier shall stress relieve tested component to ensure zero post manufacturing deformation.</p> <p>2.6 Surface Treatment: Stress relieved component shall be electro-polished on the inside surface using moderate current densities.</p>		
Page 2 / 3	PSGSG-108.doc	Signature	

PSGSG108	Process Specifications for Straight Enclosure	Drg.No.	RD DG 435 0617500
		Date	16.06.08
		Product	GSM-400
2.7	The assemblies further shall be sandblasted on the outer surface and powder coated (> 50 Micron) to shade as specified on drawing. During this operation all flanges and sealing surfaces shall be masked at the sealing surfaces and at the rim.		
3.0	INSPECTION: The final dimensional checks and the leak test shall be carried out in presence of BHEL inspector.		
4.0	PACKING: The accepted component shall be packed in wooden boxes with suitable PVC covers (dummies, thickness 8-10mm) on the flanges to prevent ingress of foreign material in transit. The component shall be then covered with a thick polyethylene cover providing addition protection to external surface of the component. For transit time higher than 2-weeks, adequate quantity of moisture absorbent shall also be placed with the component.		
5.0	DOCUMENTS: A certified copy of following documents shall be sent along with the delivery note. 2.9.1 Material source certificate, 2.9.2 Material test certificate , 2.9.3 Stage wise DP tests, 2.9.4 Pressure drop test and pressure withstand test report, 2.9.5 Electro-polishing schedule, 2.9.6 Guaranteed against all manufacturing defects.		
6.0	GENERAL: In case of doubts in specifications, please contact Dr. M. MOHANA RAO, MANAGER, BHEL R&D for clarifications. E-mail ID of Dr. Rao is mmrao@bhelrnd.co.in .		
Page 3 / 3	PSGSG-108.doc		Signature

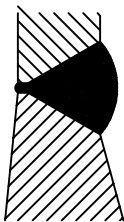
REPRESENTATIVE DRAWINGS



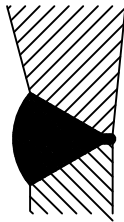
(a). Straight Enclosure



DETAIL A



DETAIL B



1. PIPE AND FLANGE TO BE TIG/MIG WELDING WITH SS ELECTRODE
2. THE ROOT SHOULD BE HOMOGENEOUS AND LEAK FREE.
3. THE ASSY. TO BE PRESSURE TESTED AS PER SPECIFICATION.
4. TESTED ASSEMBLIES TO BE DECREASED AND POWDER COATED ON OUTSIDE.
5. ELECTRO POLISH INSIDE SURFACE.

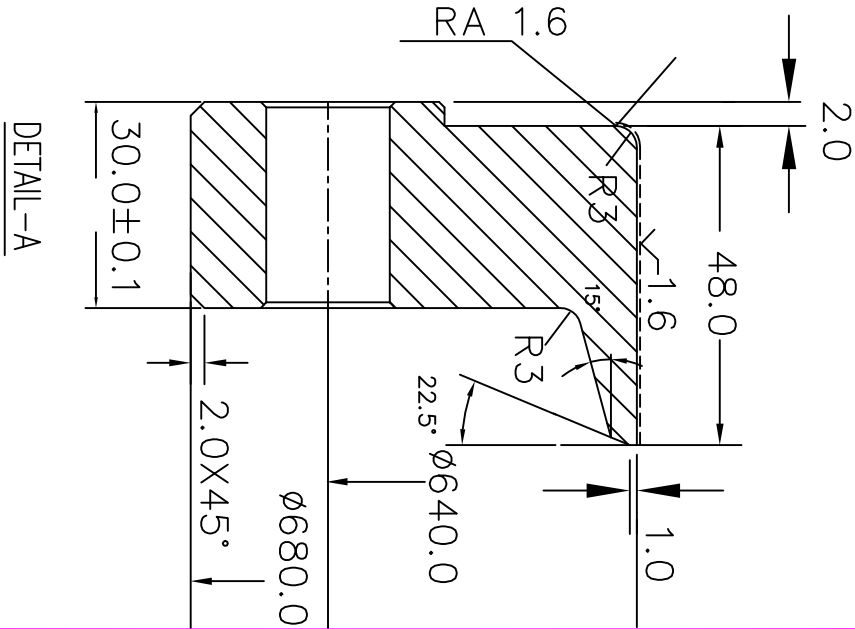
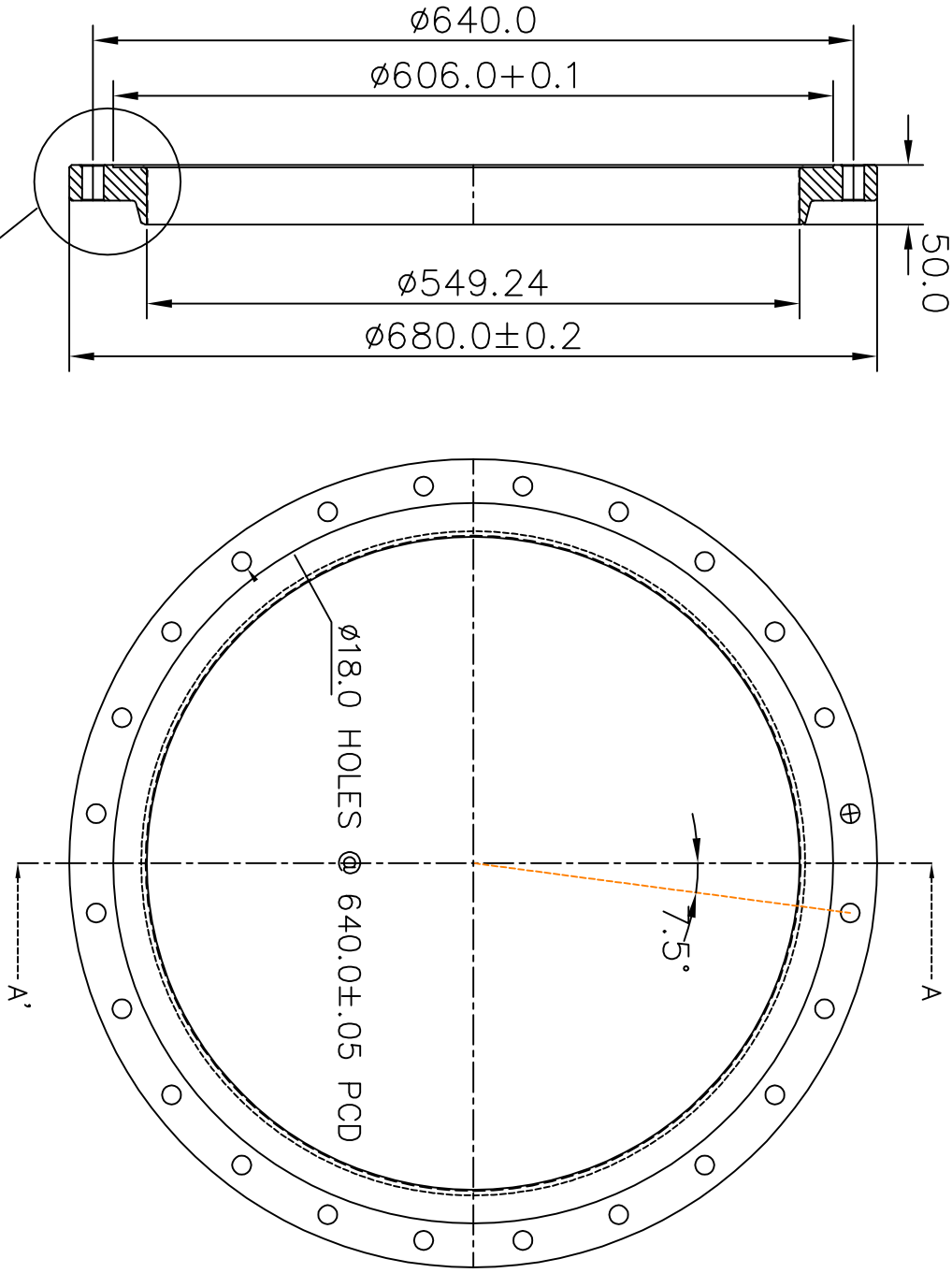
FINAL ON 14/12/09

VAR. NO.	ITEM NO.	DESCRIPTION	DRAWING NO.	IT. NO.	MATL. CODE	UNIT WGT.	QTY.
04	COVER	RD DG 4 35 0617 0504	SS-304			2	
03	SIDE PORT	RD DG 4 35 0617 0503	SS-304			2	
02	PIPE	RD DG 4 35 0617 0502	SS-304			1	
01	END FLANGE	RD DG 4 35 0617 0501	SS-304			2	

GSM 400

TYPE OF PRODUCT		NAME OF CUSTOMER	
Bharat Heavy Electricals Ltd.		HYDERABAD	
DRN	KSS RAO	NAME	SIGN.
CRD	MM RAO	DATE	NO. OF
APPD	HS JAIN	DATE	NO. OF
101		101	

REV.	DATE	ALTERED	REV.	DATE	ALTERED
ZONE		CHECKED	ZONE		CHECKED
TITLE					
STRAIGHT ENCLOSURE ASSEMBLY					
SHEET NO. NO. OF SHEETS					



REFER DETAIL-A


VAR. NO.	ITEM NO.	DESCRIPTION	SS-304	UNIT WGT.	QTY.
01	SS PLATE	$\phi 680.0 - \phi 520 \times 55.0$			

TYPE OF PRODUCT
NAME OF CUSTOMER
GSM 400



BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

DRN KSS RAO
CND MM RAO
APPD HS JAIN

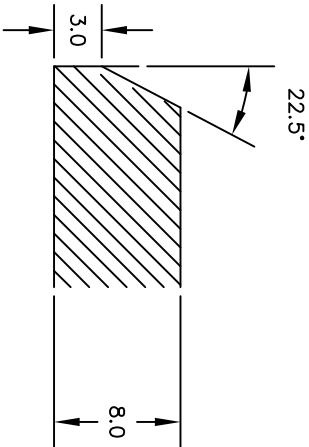
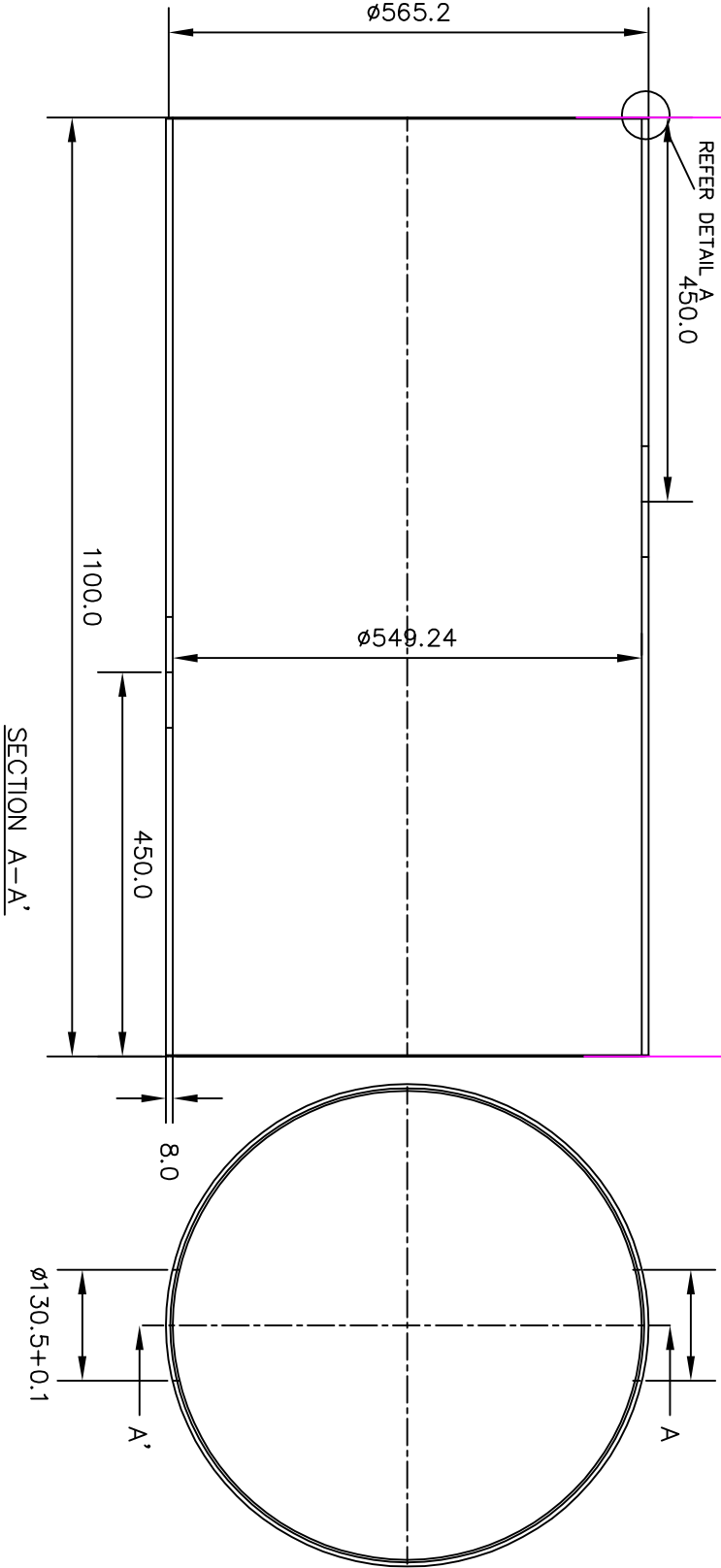
REV. DATE	ALTERED	REV. DATE	ALTERED	DEPT.	GRADE OF	SCALE	WEIGHT(KG)	REF. TO	ITEM NO.	NO. OF ITEMS
	CHECKED		CHECKED		TOL. DIM.					
ZONE		ZONE		CODE		NTS	36.0	DRAWING NO.	RD DG 4 35 0617 0501	REV.
				TITLE	END FLANGE			CARD CODE	SHEET NO.	NO. OF SHEETS

1. REMOVE ALL SHARP CORNERS 0.8 x 45°

0.05 A

A

(~3.2)



VAR. NO.	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	QTY.	DRAWING NO.	IT. NO.	MATL. CODE	MATL. SPECN.	UNIT WGT.	QTY.	ZONE
		01		Secdn/ spiral welded pipe	1	1100.0 long 8.0mm thk		SS-304				

TYPE OF PRODUCT
NAME OF CUSTOMER
GSM-400

DEPT. CIB
GRADE OF
CODE 435
TOL. DM.
C/M/F

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

DRN. NAME. SIGN. DATE. NO. OF
CXD MM RAO
APPD HS JAIN
REF. TO RD DG 4 35 0617 0500
ITEM NO. 1

01

REV.	DATE	ALTERED	REV.	DATE	ALTERED
ZONE		CHECKED	ZONE		CHECKED

TITLE

STRAIGHT PIPE

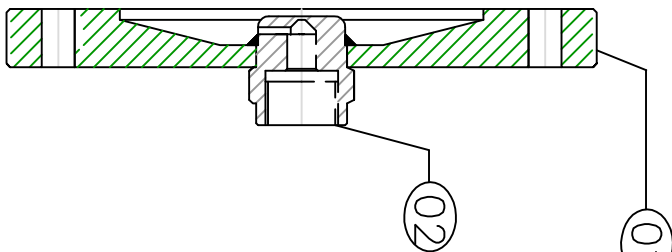
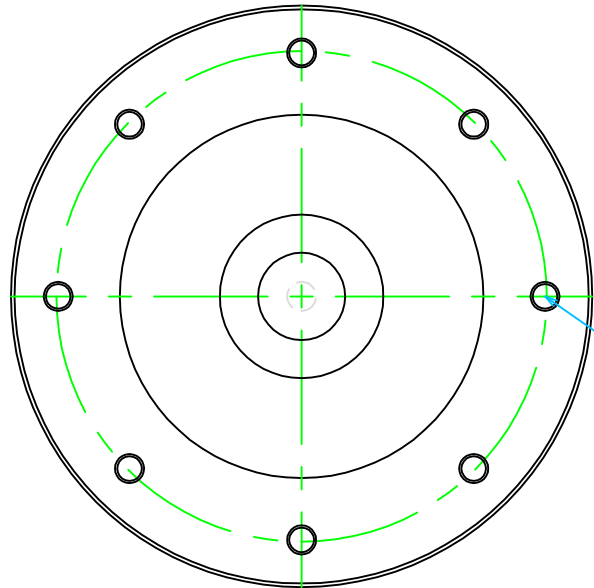
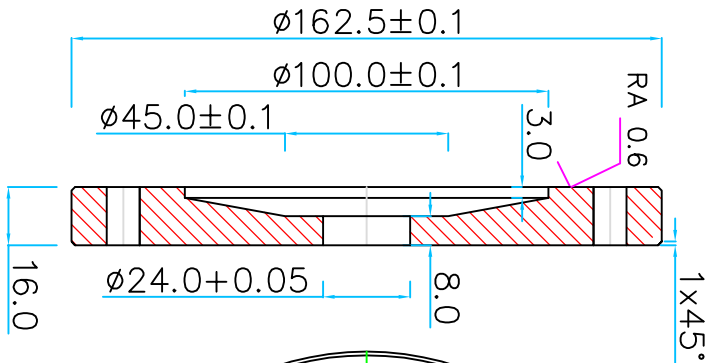
CARD CODE

RD DG 4 35 0617 0502
SHEET NO.

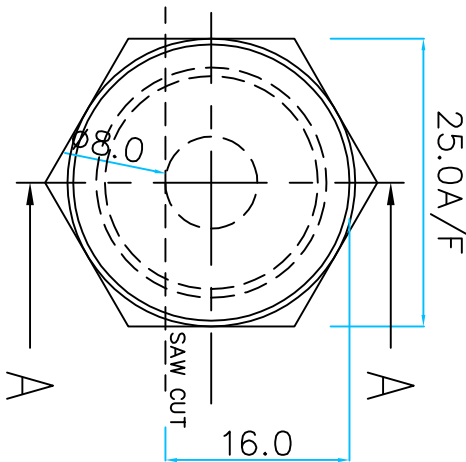
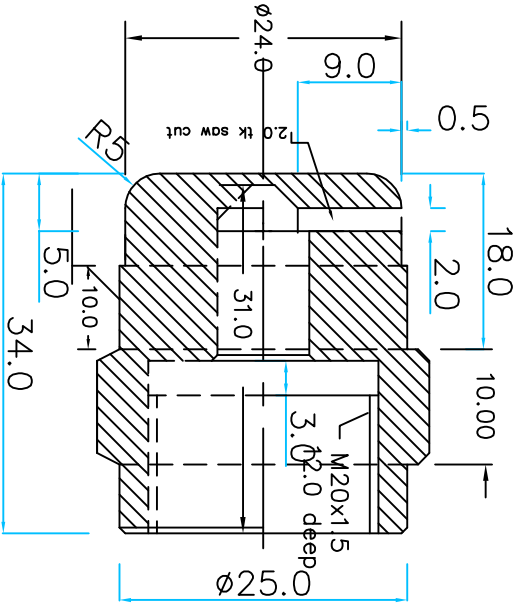
NO. OF SHEETS

1. PIPE TO BE POLISHED AFTER SIZING AND MILLING

8 NO., 9.2 CLEAR HOLES
@135±0.07 PCD WITH 0.4X45° C/F



ASSEMBLY



All sharp edges shall be machined to 0.5x45°
Buffing shall be done.

VAR. NO.	ITEM NO.	DESCRIPTION	DRAWING NO.	VAR.	IT. NO.	MATL. CODE	MATL. SPECN.	UNIT WT.	QTY.	ZONE
02	01	COVER	SS-304	SS-304	02					

GSM-400



BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

NAME	SIGN.	DATE	NO. OF
DRN	KSRAD	26.12.05	VAR.
APPD	HSJAIN	09.01.06	01

REV.	DATE	ALTERED	CHECKED	ZONE

DEPT.	GRADE OF	SCALE	WEIGHT(KG)	CAD CODE	DRAWING NO.	REV.
COVER	NTS	3.0			RD DG 4 35 0617 0500 1	