




PSGSG/ 2015- 16/001	Product Specifications for Surge Arrester Housing	Drg. No.	RD DG 4 35 0520 6600
		Date	20.03.2015
		Product	GSM245
1.0	Application: The stainless steel Surge arrester housing to Drawing. No. RD DG 4 35 0520 6600 is used for gas filled applications. The gas pressure in this metal enclosure is maintained at 0.5-0.7 MPa. The surge arrester housing shall meet following Specifications.		
2.0	Drawings : Main Assembly Drawing Surge arrester housing: RD DG 4 35 0520 6600 Pipe assembly: RD DG 4 35 0520 6610 Dish assembly: RD DG 4 35 0520 6620		
3.0	SPECIFICATIONS:		
3.1	Material: Low Carbon Austenitic stainless steel confirming to AISI-304L.		
3.2	Standard seamless or ERW (straight/ spiral) tubular sections shall be used for construction, where ever applicable in design. Fabricated (allowing rolled and seam welded) / drawn sections can be used for other areas not conforming to standard pipe schedules.		
3.3	Drawn profiles, to size, only shall be used for direct welding with the flanges (To be machined to the drawing only after welding). No smithy is allowed for formation/ matching of profiles in view of defect inception. Pipe and flanges shall be MIG/TIG welded with suitable SS electrode.		
3.4	The welded sections shall be sized as per drawing and verified /tested using Dye Penetration (D.P.) technique at all stages of welding. Inside edges/weld shall be fused to obtain near smooth weld surface.		
1/3	PSGSG/2015-16/001.doc		 Signature MANNE BHOOPATHI SR. ENGINEER (GSG/35) BHEL R&D, HYD-93.

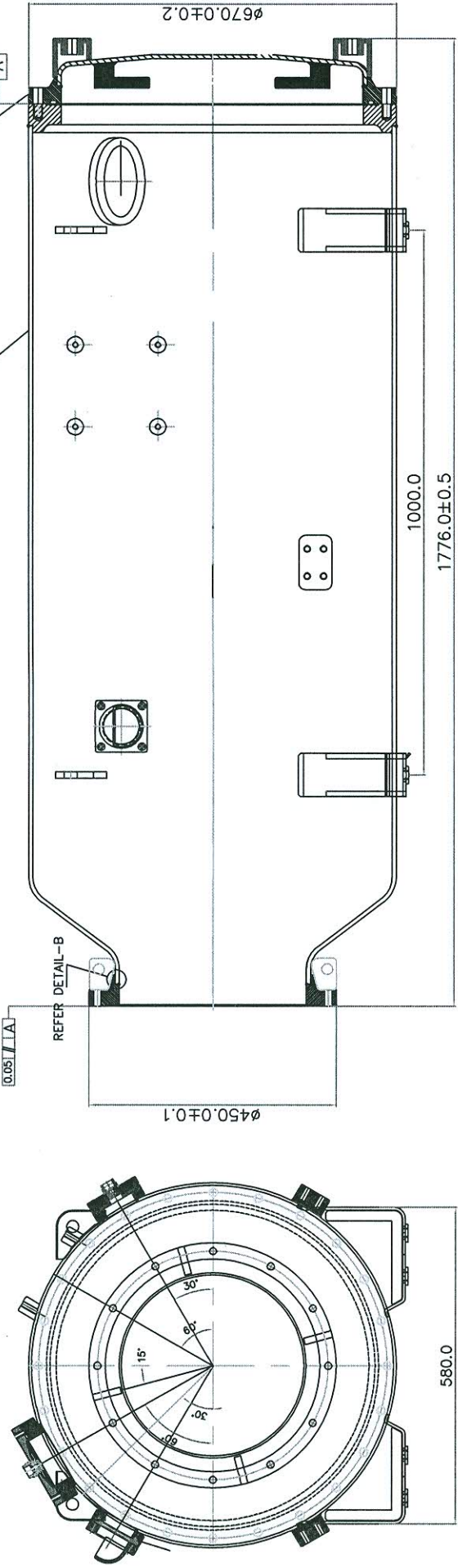
PSGSG/ 2015- 16/001	Product Specifications for Surge Arrester Housing	Drg. No.	RD DG 4 35 0520 6600
		Date	20.03.2015
		Product	GSM245
3.5	The flanges shall be manufactured to drawings after welding only. The flanges shall be machined as per instructions and maintaining parallelism of faces and Perpendicularity as prescribed. To ensure parallality, it is must to machine the components after welding all the sections as prescribed. The flange sealing surfaces shall be polished to RA 0.6 or better and the bolting holes shall be machined fine, using CNC milling, and shall have uniform chamfer. The tolerances, wherever not mentioned in the drawing, shall be within 0.10. Any sharp corners shall be removed as per the drawing. Wherever not specified in the drawing, a chamfer of 0.5x45° shall be provided at the sharp corners and edges.		
3.6	All flanges of different dimensions shall be welded by maintaining parallallity as per limits of manufacturing drawing.		
3.7	Weld splatter, if any, shall be removed by chipping or grinding on completion of the weld. Particular care should be taken to avoid any splatter on the inside of the chamber, at the joint or other locations.		
3.8	Dye penetration report shall be generated and submitted to BHEL.		
3.9	The tested assembly should be cleaned, degreased and prepared for pressure test. The assembly shall be tested at 8.5 bar pressure for 4 hours and pressure drop shall be recorded and communicated to BHEL. The leak shall be rectified and the test repeated to satisfaction. Components indicating drop in pressure during this test will not be accepted. The arrangement shall be kept at 15 bar for 15 minutes prior to this test to verify pressure withstanding capabilities specified in drawing.		
3.10	The supplier shall stress relieve tested component to ensure zero post supply deformation.		
2/3	PSGSG/2015-16/001.doc		 Signature MANNE BHOOPATHI SR. ENGINEER (GSG/35) BHEL R&D, HYD-93.

PSGSG/ 2015- 16/001	Product Specifications for Surge Arrester Housing		Drg. No.	RD DG 4 35 0520 6600
			Date	20.03.2015
			Product	GSM245
3.11	The supplier shall stress relieve tested component to ensure zero post supply deformation.			
3.12	Stress relieved component shall be electro-polished on the inside surface using moderate current densities.			
3.13	The assemblies further shall be sandblasted on the outer surface and powder coated (> 50 Micron) as specified in drawing. During this operation all flanges shall be masked at the sealing surfaces and at the rim.			
3.13	The dimensional checks and the leak test shall be carried out in presence of BHEL inspector.			
3.14	The accepted component shall be packed in wooden boxes with suitable PVC covers on the flanges to prevent transit damages. A thick polyethylene cover shall be used to seal to component from ingress of moisture and water. For transit time higher than 2-weeks, adequate quantity of moisture absorbent shall also be placed with the component.			
3.15	<p>Following certificates shall be furnished for acceptance of the component:</p> <p>3.15.1 Material source certificate,</p> <p>3.15.2 Material test certificate ,</p> <p>3.15.3 Stage wise DP tests,</p> <p>3.15.4 Pressure drop test and pressure withstand test report,</p> <p>3.15.5 Electro-polishing schedule.</p> <p>A certified copy of above documents shall be sent along with the delivery not.</p>			
4.0	The components shall be guaranteed against all manufacturing defects.			
5.0	Qualification requirements: The supplier shall be of national repute with proven record and should have supplied similar enclosures. Supplies reference list shall be provided along with the offer.			
3/3	PSGSG/2015-16/001.doc		 Signature MANNE BHOOPATHI SR. ENGINEER (GSG/35) BHEL R&D, HYD-93.	

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

RD DG 4 35 0520 6600



ITEM NO.	DESCRIPTION	DRAWING NO.	IT. NO. VAR	MATL. CODE	MATL. SPECN.	UNIT WT.	QTY.	ZONE
02	DISH ASSY	RD DG 4 35 0520 6620		SS-304L			01	
01	SA ENCLOSURE	RD DG 4 35 0520 6610		SS-304L			01	NFS

TYPE OF PRODUCT	GSM-245
NAME OF CUSTOMER	BHARAT HEAVY ELECTRICALS LTD. HYDERABAD
DRN	AL
CHKD	AL
APPRD	MMRAO
DATE	07.02.15
NO. OF VAR.	01
NO. OF ITEMS	01
REF. TO	RD DG 4 35 0520 6000
DRAWING NO.	RD DG 4 35 0520 6600
CARD CODE	RD DG 4 35 0520 6600
TITLE	SA HOUSING

REV.	DATE	ALTERED	CHECKED
ZONE			

REV.	DATE	ALTERED	CHECKED
ZONE			

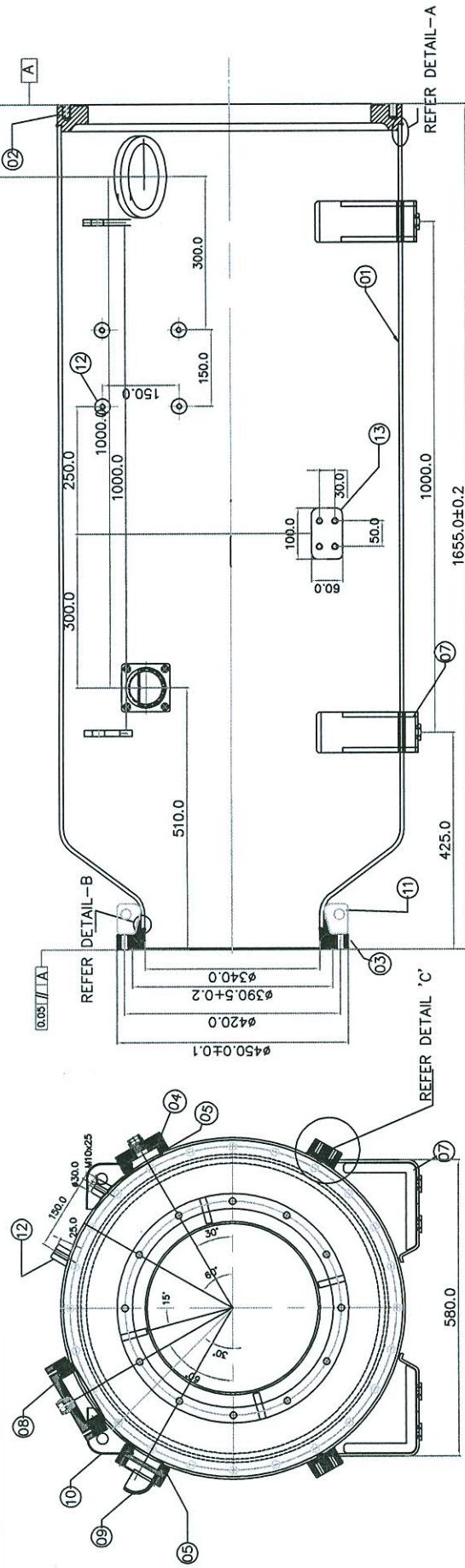
INVENTORY NO.	
SIGN. AND DATE	
REF. DRG. NO.	

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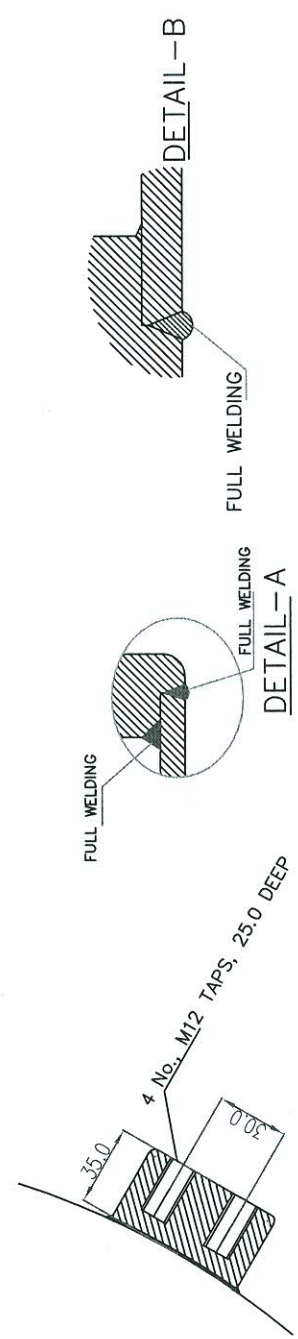
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

RD DG 4 35 0520 6610



ITEM NO.	DESCRIPTION	DRAWING NO.	IT. NO. VAR.	MATL. CODE	MATL. SPECN.	UNIT	QTY.
13	EARTHING PLATE	100X60X35		SS-304L		A	02
12	GUIDE RODS	25X430.0		SS-304L		C	01
11	LIFTING LUG I	RD DG 4 35 0520 6614		SS-304L		C	04
10	LIFTING BRACKET	RD DG 4 35 1133 4140		SS-304L		C	04
09	RUPTURE DISK COVER	RD 99 320 630		SS-304L		C	01
08	FLANGE V	RD DG 4 35 0617 983		SS-304L		C	01
07	SUPPORT BRACKET ASSY.	RD DG 4 35 1133 4130		SS-304L		C	04
06	FLANGE III	RD DG 4 35 1133 4160		SS-304L		C	01
05	FLANGE IV	RD 99 320 610		SS-304L		C	02
04	DUMMY FLANGE	RD 99 320 640		SS-304L		C	01
03	FLANGE-II	RD DG 4 35 0520 6613		SS-304L		C	01
02	FLANGE-I	RD DG 4 35 0520 6612		SS-304L		C	01
01	PIPE	RD DG 4 35 0520 6611		SS-304L		C	01



DETAIL-C

Note:

1. FLANGE TO BE TIG / MIG WELDING WITH SUITABLE SS ELECTRODE
2. THE ROOT SHOULD BE HOMOGENEOUS AND CONTINUOUS.
3. PRESSURE TEST AS PER ENCLOSED SPECIFICATION.
4. TESTED ASSEMBLIES TO BE DEGREASED, SAND BLASTED AND POWDER COATED ON OUTSIDE.
5. ELECTRO POLISH INSIDE SURFACE.
6. LIFTING LUGS AND SUPPORT BRACKETS SHALL BE FULLY WELDED TO PIPE AND FLANGE.
7. ALL WELDINGS SHALL BE GROUNDED TO DIMENSIONS.
8. FLANGES SHALL BE MACHINED TO DRAWING AFTER WELDING TO PIPE.

GSM-245

TYPE OF PRODUCT
NAME OF CUSTOMER

DRN	CHK	APPD	REF. TO	NAME	SIGN.	DATE	NO. OF VAR.
				BHARAT HEAVY ELECTRICALS LTD.		15.02.15	
DEPT.	GRADE OF	SCALE	WEIGHT(KG)	HYDERABAD			
RD DG 4 35 0520 6610	C/M/F						
TITLE	SA ENCLOSURE						
CARD CODE	RD DG 4 35 0520 6610						
REV.	RD DG 4 35 0520 6610						
SHEET NO.	NO. OF SHEETS						

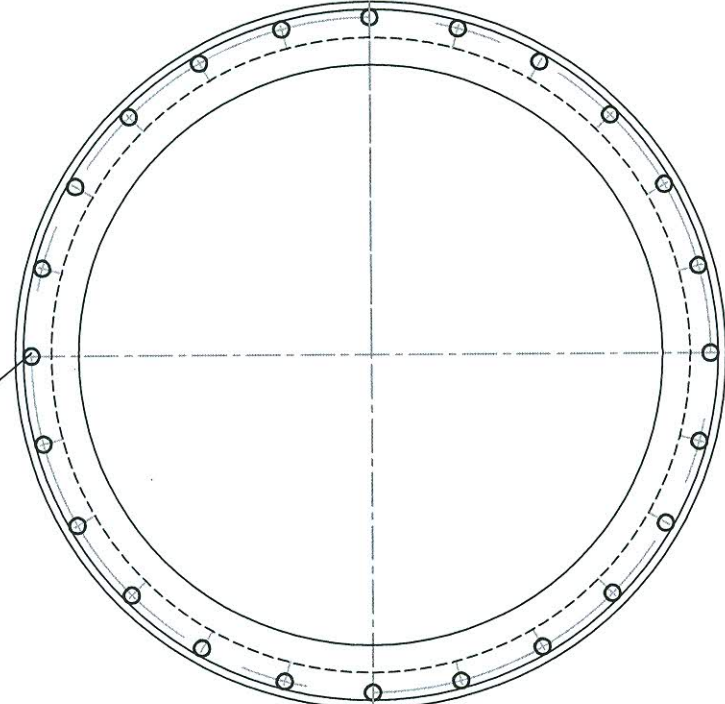
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REF. DRG. NO. INVENTORY NO. SIGN. AND DATE

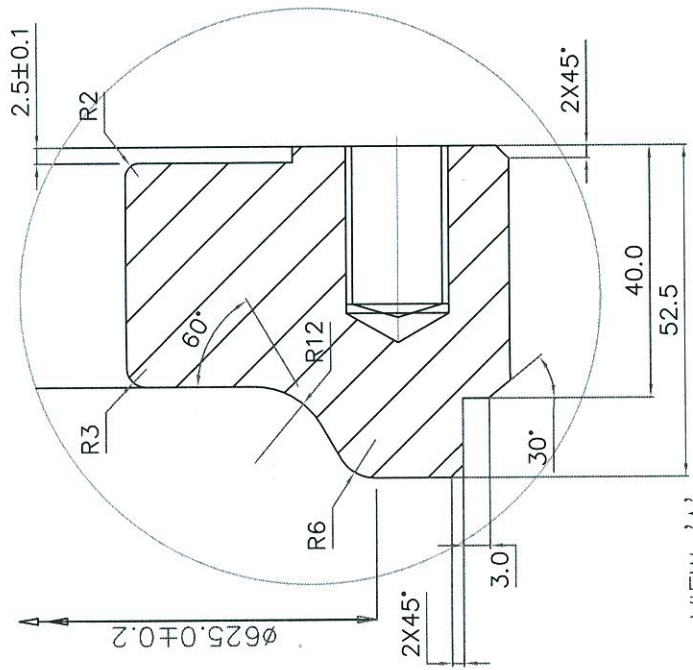
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FIRST ANGLE PROJECTION

24 No., M16 TAPS @ 635.0 PCD, 25.0 DEEP



(ALL DIMENSIONS ARE IN mm)

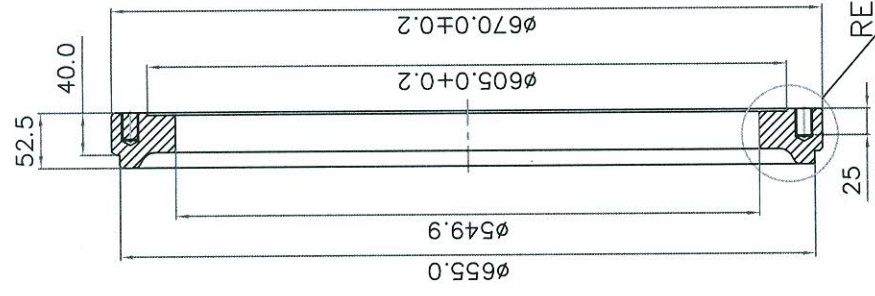


VIEW 'A'

ENLARGED VIEW 'A'

DETAIL 'A'

REFER DETAIL 'A'



Note:

1. Sealing area shall be polished to RA 0.8 or better.
2. M 16.0 Taps shall be chamfered uniformly (0.8x45°).
3. PCD and flange centre shall be concentric within ±0.05
4. Finished flange shall be degreased and packed in 125 micron poly bag and sealed.
5. Component shall be Machined to dimensions after welding to pipe

VAR.00	REMARKS	01	BLOCK	SS-304L	01
		VAR NO.	DESCRIPTION	MATL. CODE	UNIT WT.
		NO.	DRAWING NO.	MATL. SPECN.	QTY.

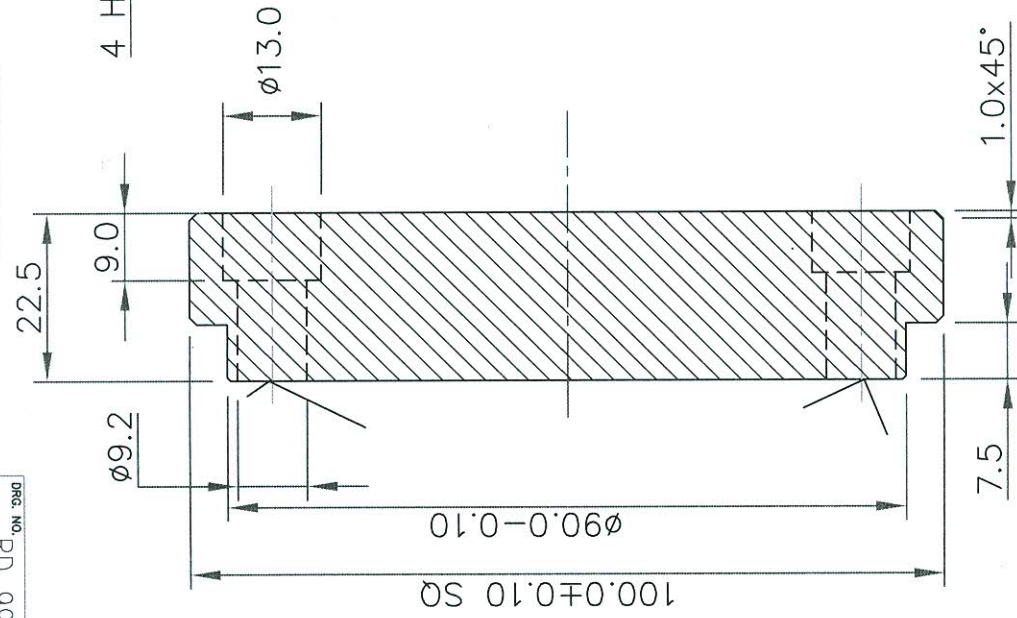
GSM-245

TYPE OF PRODUCT		NAME OF CUSTOMER		DATE		NO. OF VAR.	
BHARAT HEAVY ELECTRICALS LTD.		BHARAT HEAVY ELECTRICALS LTD.		15.02.15		15.02.15	
HYDERABAD		HYDERABAD		15.02.15		15.02.15	
DEPT. CODE		SCALE		APPRO. MMRAD		ITEM NO.	
C/M/F		C/M/F		REF. TO		NO. OF ITEMS	
REV. DATE		REV. DATE		RD DG 4 35 0520 6610		REV. NO.	
ALTERED CHECKED		ALTERED CHECKED		DRAWING NO.		REV.	
ZONE		ZONE		RD DG 4 35 0520 6612		REV.	
				CARD CODE		REV.	
				RD DG 4 35 0520 6612		REV.	
				SHEET NO.		NO. OF SHEETS	
				FLANGE I			

RD 99 320 640

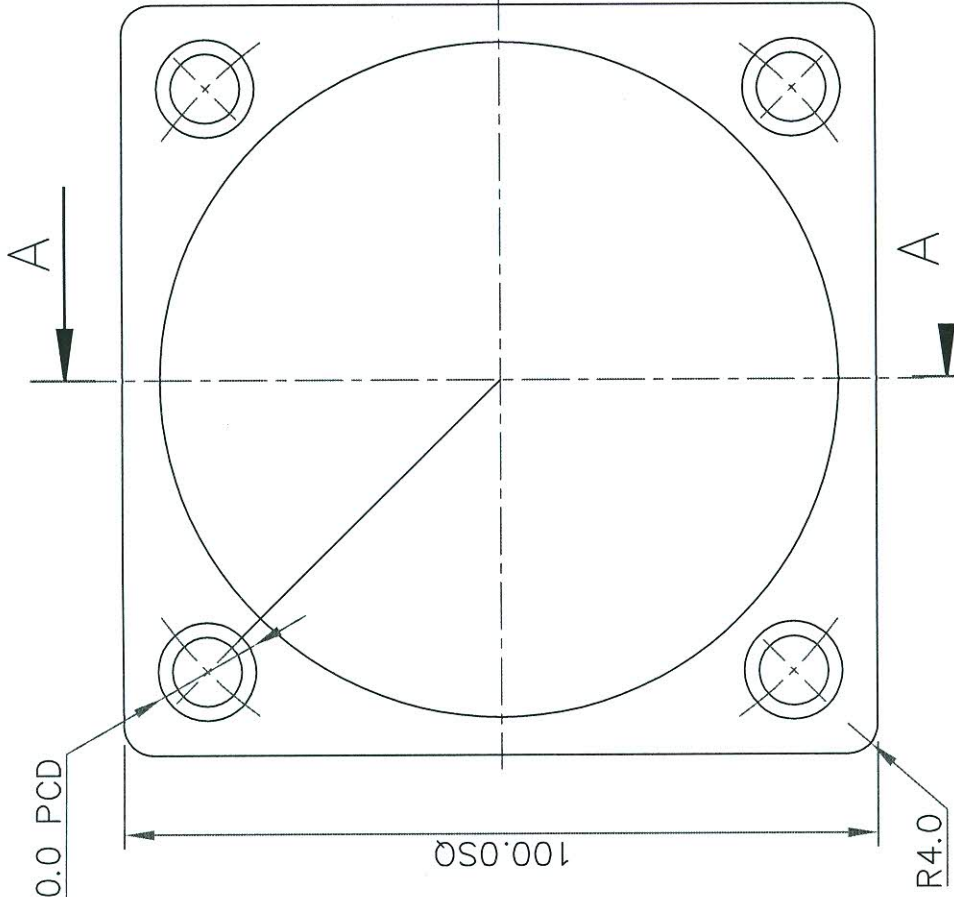
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



SECTION AA

4 Holes as shown 110.0 PCD



VAR. NO.	REMARKS	ITEM NO.	DESCRIPTION	DRWG. NO.	IT. NO.	MATL. CODE	SS. 304	UNIT WT.	ZONE
		01	SS PLATE	105.0 SQ x 25.0					

TYPE OF PRODUCT		NAME OF CUSTOMER		SIGN.		DATE		NO. OF	
GSM 145		BHARAT HEAVY ELECTRICALS LTD.		KS RAO		01.02.03		VAR.	
HYDERABAD		HYDERABAD		MW RAO		01.02.03		NO.	
DEPT. CODE		SCALE		APPD.		HS JAIN		NO.	
35		NTS		RD 99 320 600 2		01.02.03		REV.	
TITLE		WEIGHT(KG)		DRAWING NO.		RD 99 320 640 0		NO. OF SHEETS	
DUMMY FLANGE		35		RD 99 320 640 0		6		6	

MARKED SURFACE SHALL BE FINISHED TO RA 1.6

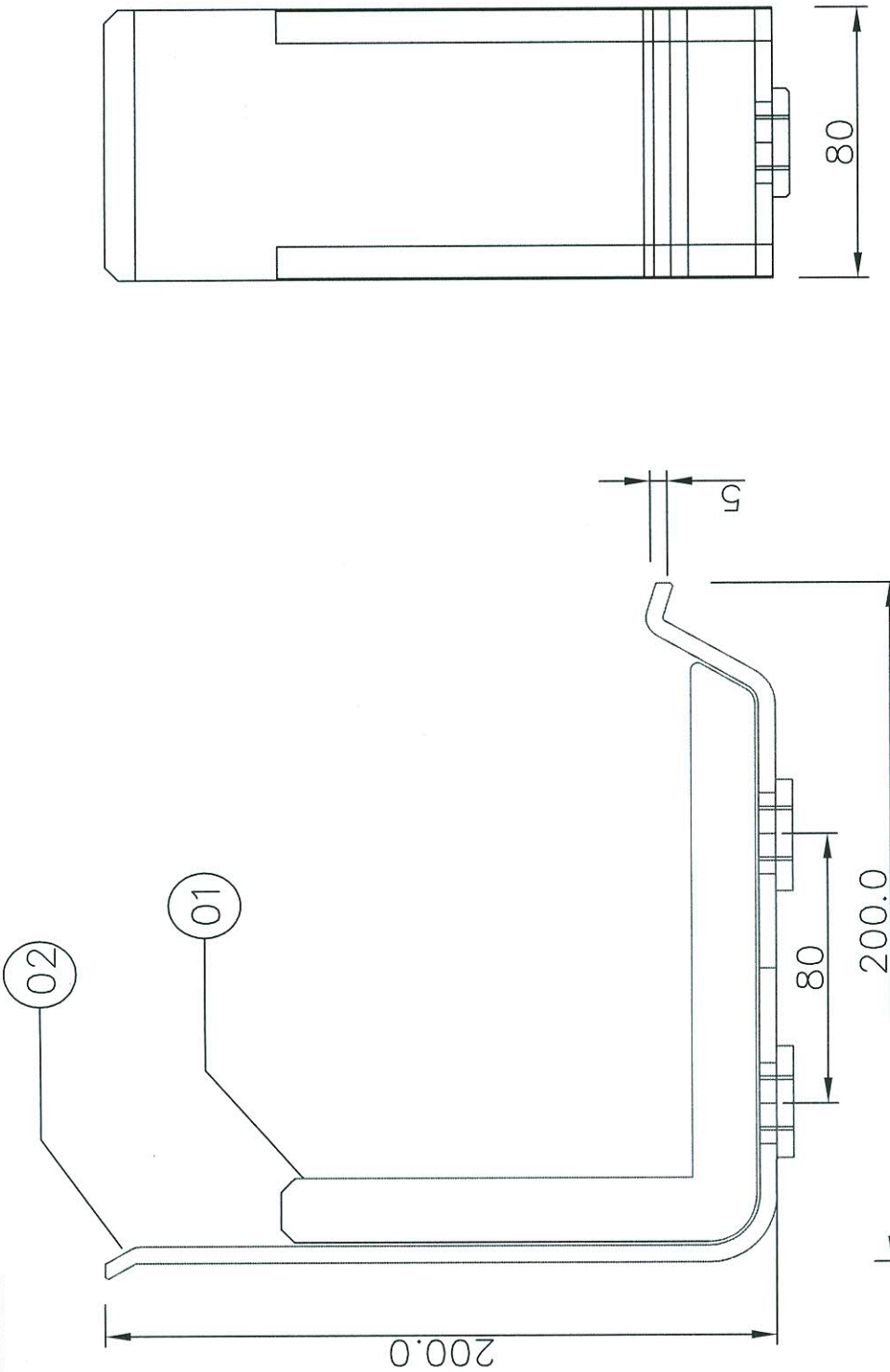
FINAL ON 15/11/08

(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION

DRG RD DG 4 35 1133 4130

(~3.2)



1. ALL SHARP EDGES SHALL BE MACHINED TO 0.4x45°
2. PIPE AND FLANGE TO BE TIG / MIG WELDING WITH SUITABLE SS ELECTRODE
3. THE ROOT SHOULD BE HOMOGENEOUS AND CONTINUOUS.

REV.	DATE	ALTERED	DATE	ALTERED	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	DRAWING NO.	IT. NO.	MATL. CODE	UNIT	NO. OF ITEMS	ZONE
02								SUPPORT BRACKET	RD DG 4 35 1133 4130B		SS-304L	A	01	
01								SUPPORT PLATE	RD DG 4 35 1133 4130A		SS-304L	C	02	

TYPE OF PRODUCT: CGSM-145

NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DEPT. CODE: NTS

SCALE: NTS

WEIGHT(KG):

GRADE OF TOOL DIM. C/M/F:

REV. DATE ALTERED DATE ALTERED

ZONE ZONE

INVENTORY NO.:

SIGN. AND DATE:

REF. DRG. NO.:

DATE NO. OF VAR. 04.01.12 01

NAME KSRAO AL

SIGN.:

APPD. MMRAO

REF. TO: RD DG 4 35 1133 4100

DRAWING NO.:

CARD CODE: RD DG 4 35 1133 4130

TITLE: SUPPORT BRACKET ASSY.

SHEET NO.:

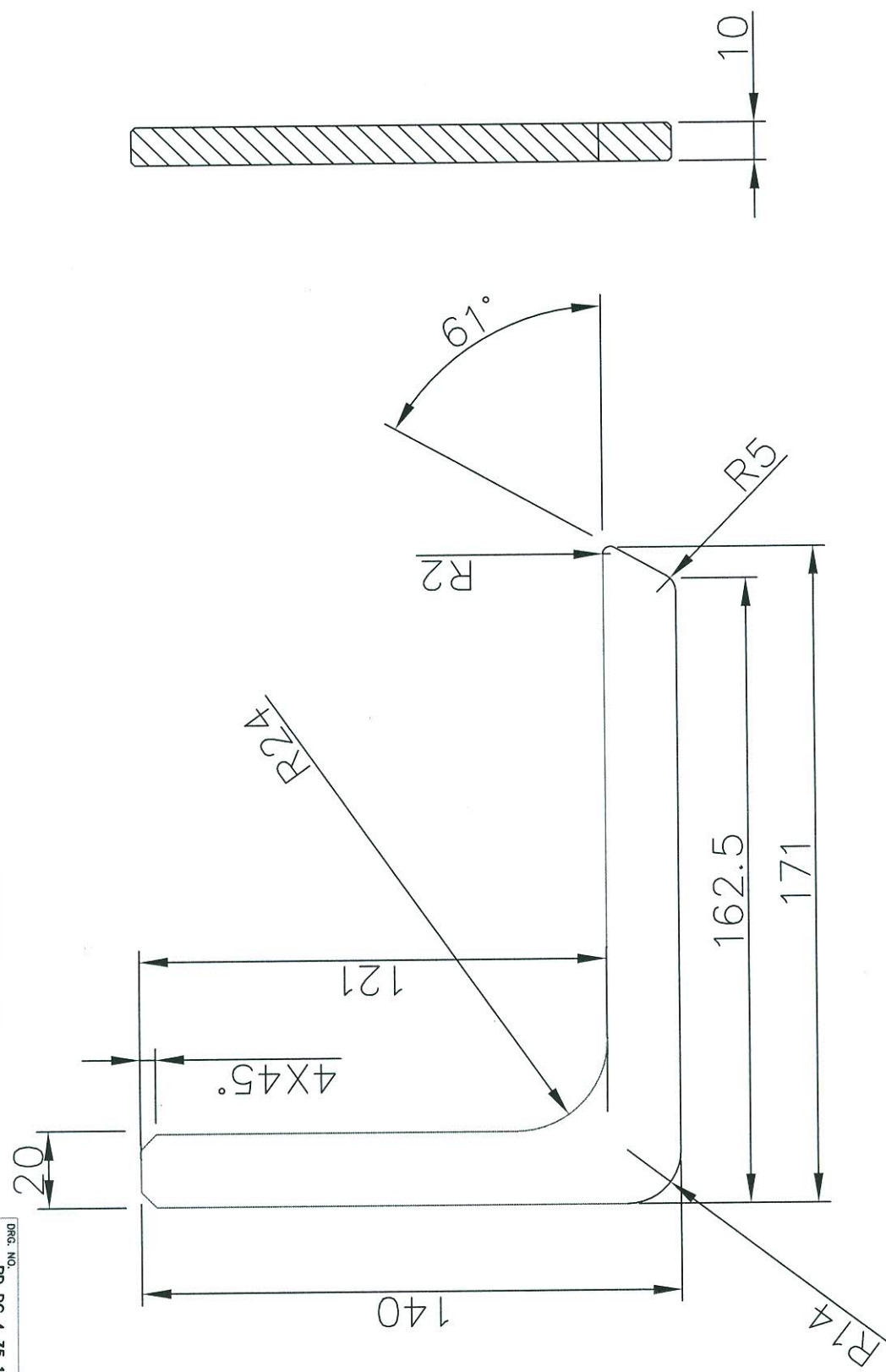
NO. OF SHEETS:

(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION

DRG. NO.
RD DG 4 35 1133 4130A

(~3.2)



SS PLATE	01	SS-304L	08
DESCRIPTION	ITEM NO.	MATL. CODE	UNIT WT.
DRAWING NO.	NO.	MATL. SPECN.	QTY.
VAR.00	REMARKS	IT. NO.	LINE
		VAR.	A C

TYPE OF PRODUCT: CGIS-145

NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DATE: 04-01-12

DRN: KSRao

APPD: MIRAo

REF. TO: RD DG 4 35 1133 4130

ITEM NO. OF ITEMS: 1

NO. OF SHEETS: 1

TITLE: SUPPORT PLATE

CARD CODE: RD DG 4 35 1133 4130A

ALL SHARP EDGES SHALL BE MACHINED TO 0.4x45°

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

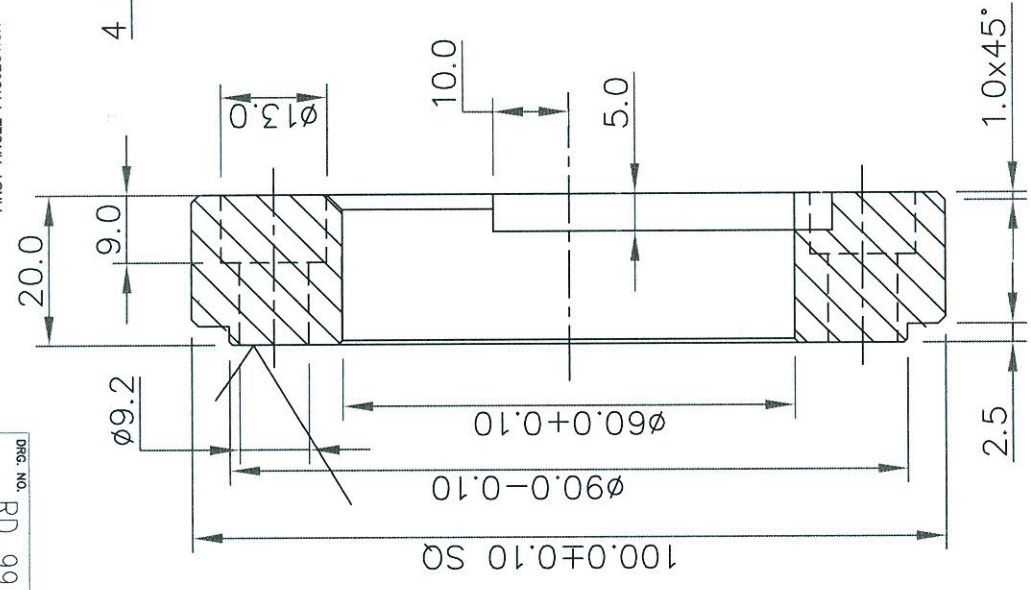
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REF. DRG. NO. INVENTORY NO. SIGL. AND DATE

RD 99 320 631

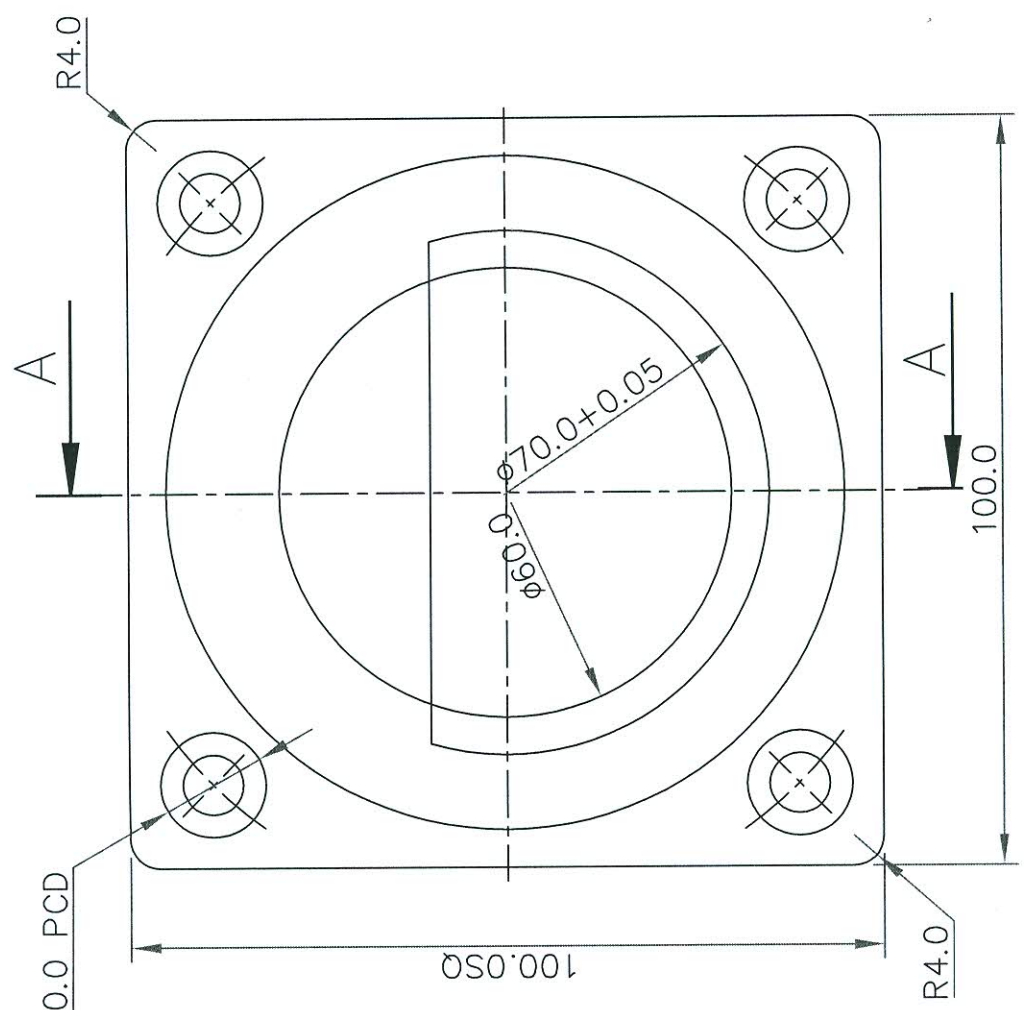
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



SECTION AA

4 Holes as shown 110.0 PCD



VAR. NO.	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	DR. NO.	IT. NO.	MATL. CODE	SS. 304	UNIT WT.	QTY.	NOZ
01				SS PLATE	105.0 SQ x 25.0						

MARKED SURFACE SHALL BE FINISHED TO RA 1.6
 ALL SHARP EDGES SHALL BE MACHINED TO 0.4x45°

TYPE OF PRODUCT: GSM 145
 NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

REV.	DATE	ALTERED CHECKED	ZONE	SCALE	WEIGHT (G)	REF. TO	DRAWING NO.	NO. OF SHEETS
				NTS		RD 99 320 630 2	RD 99 320 631	6

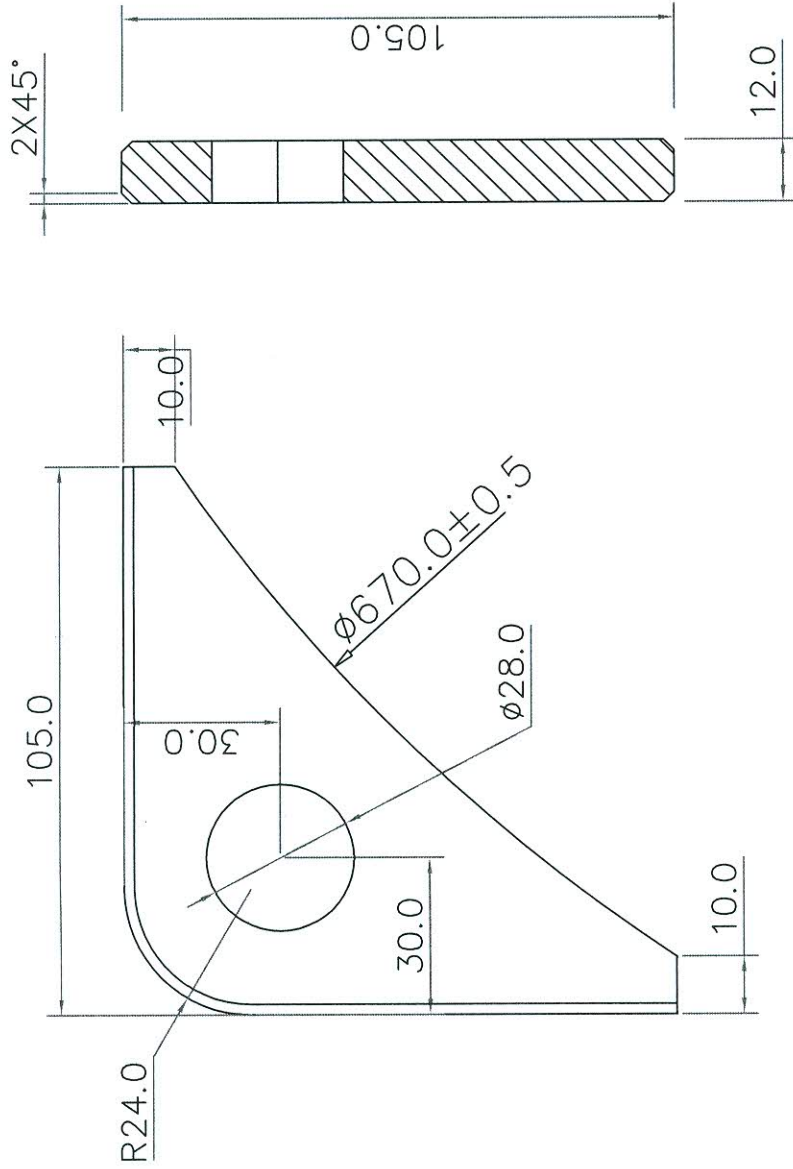
REV.	DATE	NO. OF VAR.	SIGN.	NAME	DRN	CHKD	APPD	REF. TO	DRAWING NO.	NO. OF SHEETS
	01.02.03	01		KS RAO				RD 99 320 630 2	RD 99 320 631	10

RD DD 4 50
ON 3RD

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

(~3.2)



ALL SHARP EDGES SHALL BE MACHINED TO 0.4x45°

VAR.00	REMARKS	VAR	ITEM NO.	NO.	01	SS PLATE	SS-304L	04
						DESCRIPTION	MATL. SPECN.	UNIT WT.
						DRAWING NO.	MATL. CODE	QTY.

TYPE OF PRODUCT: SS PLATE

NAME OF CUSTOMER: CGIS-145

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DEPT. CODE: NTS

SCALE: 1:1

WEIGHT(KGS): 4100

REF. TO: RD DG 4 35 1133 4100

DRAWING NO.: RD DG 4 35 1133 4140

TITLE: LIFTING BRACKET

REV.	DATE	ALTERED	CHECKED	ZONE

INVENTORY NO.	SGN. AND DATE	REF. DRG. NO.

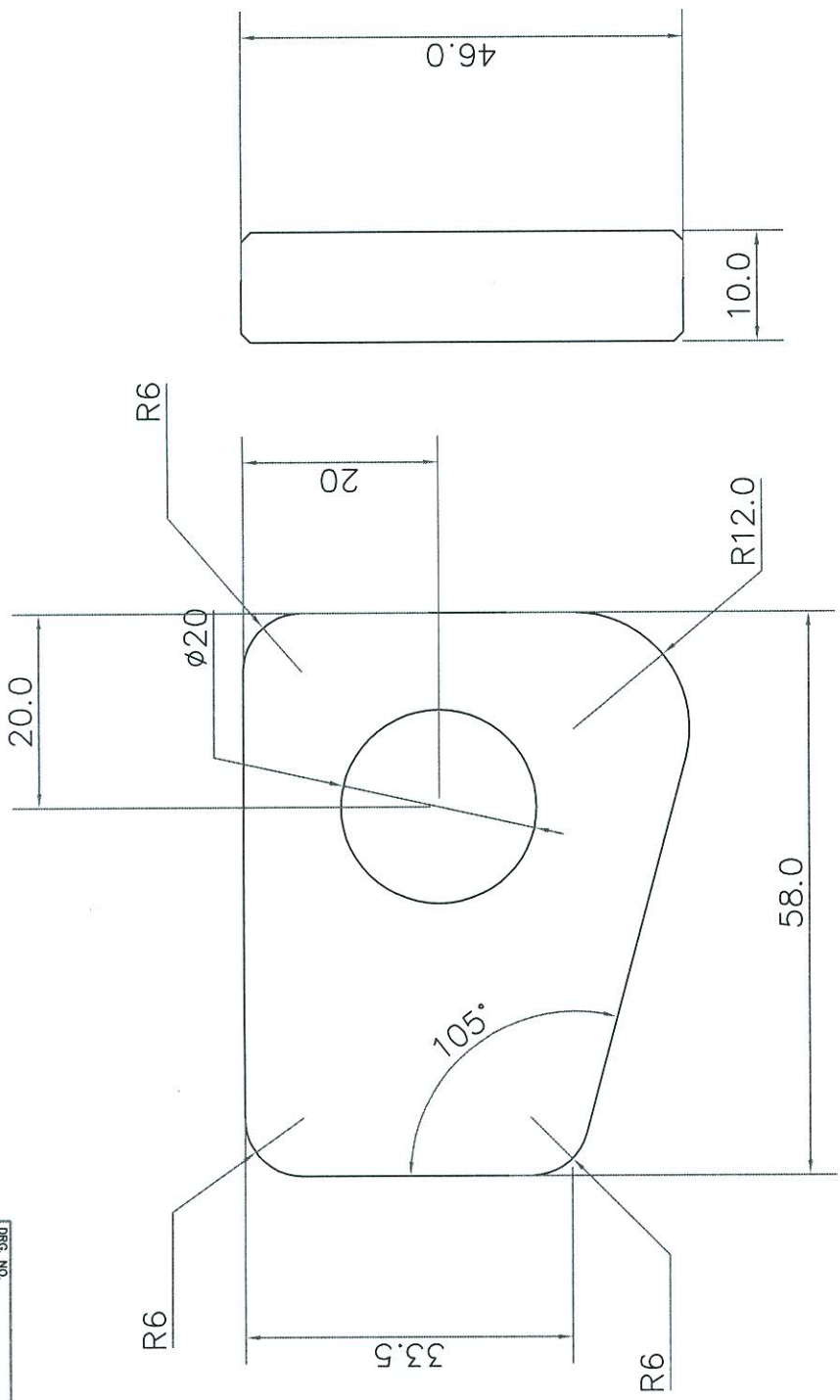
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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG NO. RD DG 4 35 0520 6614

(~3.2)



VAR. NO.	REMARKS	ITEM NO.	DESCRIPTION	DRAWING NO.	SS-304L	UNIT WT.	QTY.	NO. OF ITEMS
01			SS BLANK					04

TYPE OF PRODUCT: GSM 245
 NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DRN AL	CHK AL	APPRO	REF. TO	DATE	NO. OF VAR.
		MMRAO	RD DG 4 35 0520 6610	15.02.15	

DEPT. CODE: / GRADE OF TOOL DIM. C/M/F: / SCALE: / WEIGHT(KG): / DRAWING NO. RD DG 4 35 0520 6614

TITLE: LIFTING LUG I

REV.	DATE	ALTERED	CHECKED	ZONE

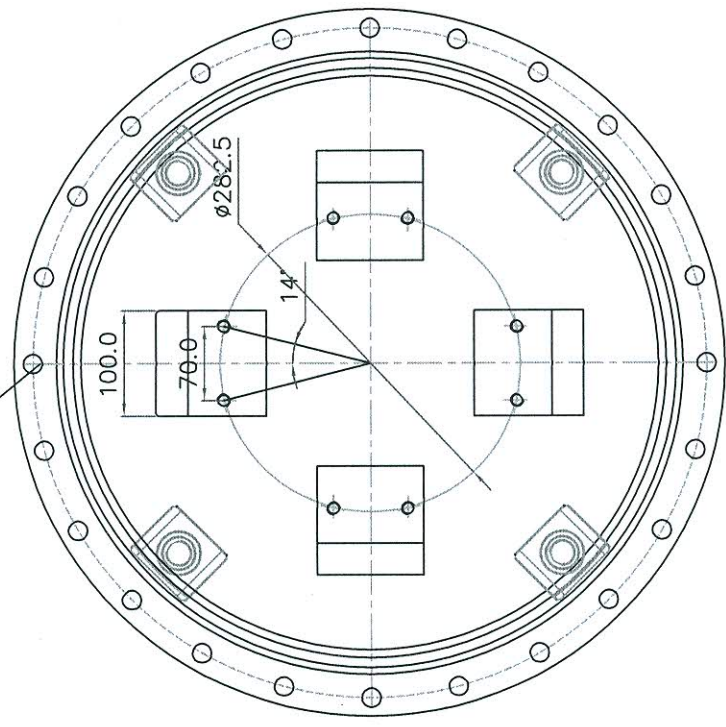
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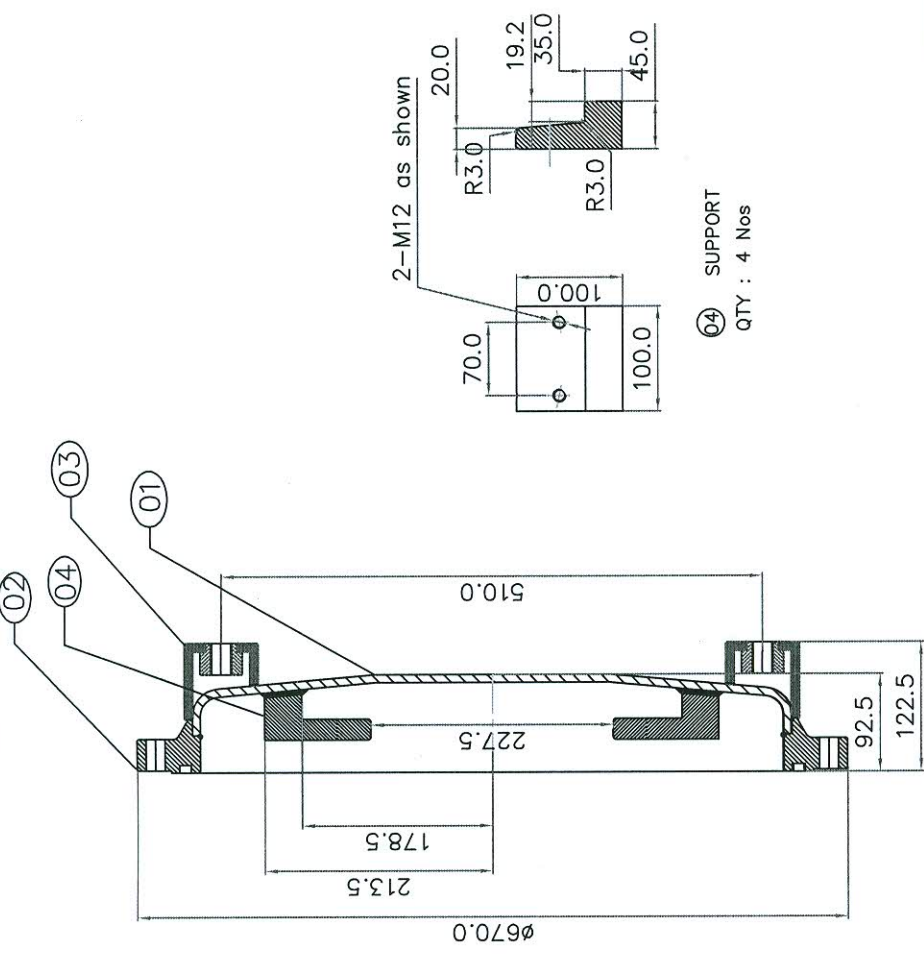
RD DG 4 35 0520 6620

FIRST ANGLE PROJECTION

24 No. $\phi 18$ DIA CLEAR HOLES @ 635.0 PCD



(ALL DIMENSIONS ARE IN mm)



04 SUPPORT
QTY : 4 Nos

Note:

1. FLANGE TO BE TIG / MIG WELDING WITH SUITABLE SS ELECTRODE
2. THE ROOT SHOULD BE HOMOGENEOUS AND CONTINUOUS.
3. TESTED ASSEMBLIES TO BE DEGREASED, SAND BLASTED AND POWDER COATED ON OUTSIDE.
4. ELECTRO POLISH INSIDE SURFACE.
5. ALL WELDINGS SHALL BE GROUNDED TO DIMENSIONS.
6. FLANGES SHALL BE MACHINED TO DRAWING AFTER WELDING TO DISH.

VAR.00	REMARKS	VAR	ITEM NO.	NO.	DESCRIPTION	DRWG NO.	IT. NO.	MATL. CODE	MATL. SPECN.	UNIT WT.	QTY.	NO. OF
			04		SUPPORT			SS-304L			04	NOZ
			03		BRACKET	RD 99 320 700		SS-304L			04	VAR.
			02		FLANGE	RD DG 4 35 0520 6622		SS-304L			01	ITEM
			01		DISH	RD DG 4 35 0520 6621		SS-304L			01	NO. OF

GSM-245

TYPE OF PRODUCT: DISH ASSY
 NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD
 DRN AL: []
 CKD AL: []
 APPD: MMRAO
 REF. TO: RD DG 4 35 0520 6600
 DATE: 07.02.15
 SIGN: []
 NAME: []
 WEIGHT(KG): []
 SCALE: []
 TITLE: DISH ASSY
 DRAWING NO.: RD DG 4 35 0520 6620
 SHEET NO.: []
 NO. OF SHEETS: []

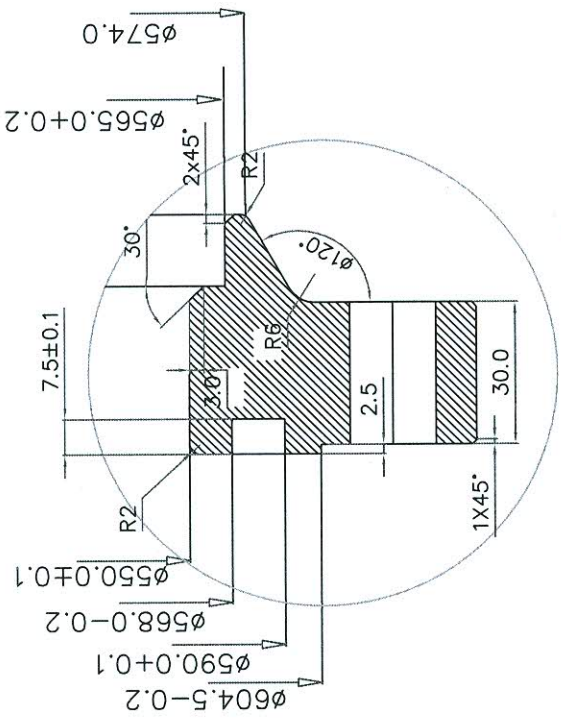
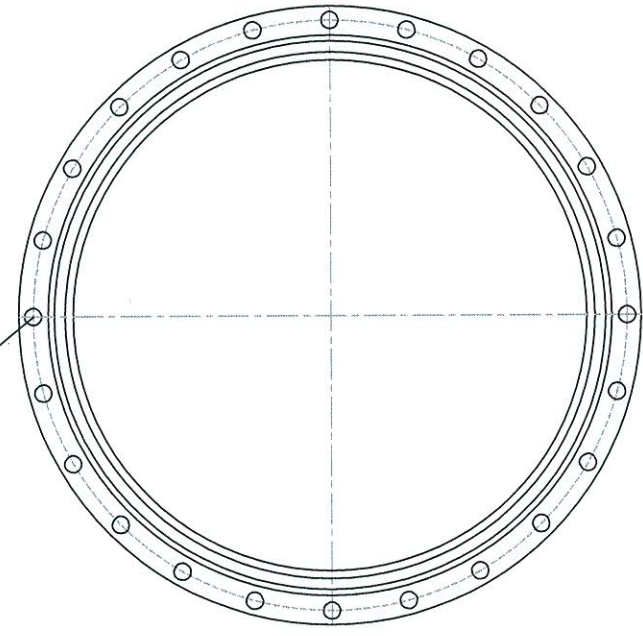
REV.	DATE	ALTERED	CHECKED	ZONE

799 0750 53 + 90 RD
ON-282

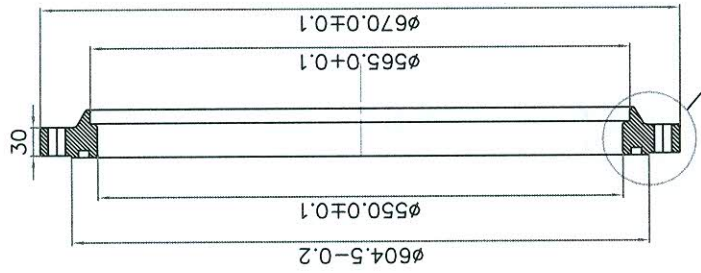
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

24 No. $\phi 18$ DIA CLEAR HOLES @ 635.0 PCD



DETAIL 'A'



REFER DETAIL 'A'

Note:

1. Sealing area shall be polished to RA 0.8 or better.
2. M 16.0 Taps shall be chamfered uniformly (0.8x45°).
3. PCD and flange centre shall be concentric within ± 0.05
4. Finished flange shall be degreased and packed in 125 micron poly bag and sealed.
5. Component shall be Machined to dimensions after welding to dish

REV.	DATE	ALTERED	CHECKED	ZONE	VAR. NO.	REMARKS	ITEM NO.	NO.	DESCRIPTION	DRAWING NO.	IT. NO.	MATL. CODE	SS-304L	UNIT WT.	QTY.	NO. OF SHEETS
									FLANGE					01		
<p>TYPE OF PRODUCT: GSM-245</p> <p>NAME OF CUSTOMER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD</p> <p>DEPT. CODE: RD DG 4 35 0520 6600</p> <p>GRADE OF TOL. DIM. C/M/F: RD DG 4 35 0520 6600</p> <p>WEIGHT(KG):</p> <p>SCALE:</p> <p>TITLE: FLANGE</p> <p>DATE: 07.02.15</p> <p>SIGN. AND DATE: MMR AO</p> <p>INVENTORY NO.:</p> <p>DRAWING NO.:</p> <p>CARD CODE: RD DG 4 35 0520 6622</p> <p>REV.:</p> <p>SHEET NO.:</p>																

