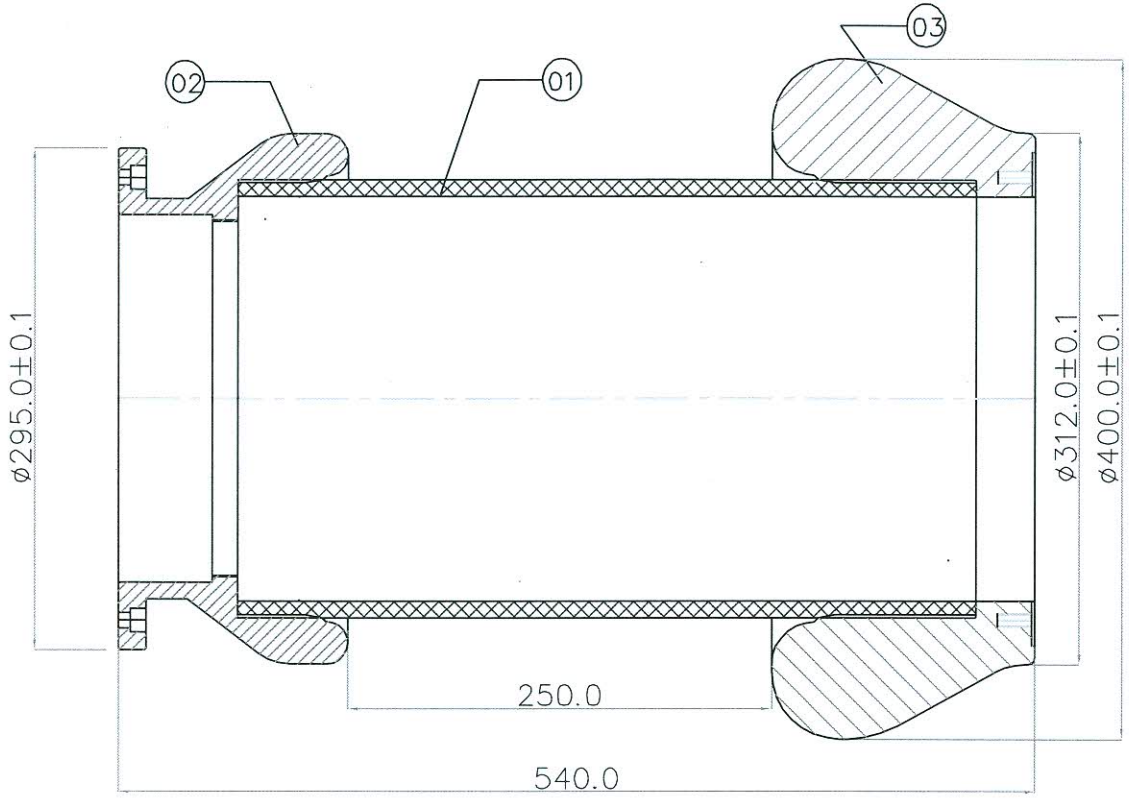
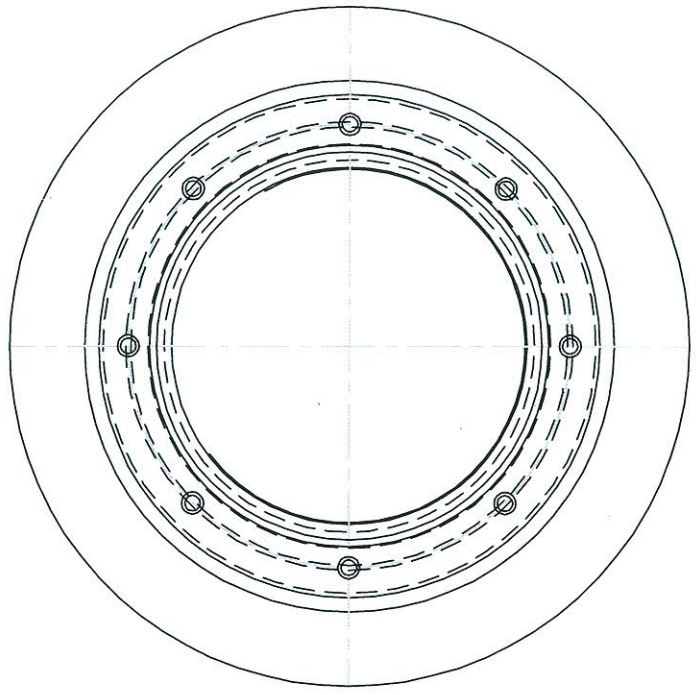
DRG. NO. RD DG 4 35 0617 0240

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)





VAR.OO	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO. / VAR	MATL. CODE / MATL. SPECN.	A C	UNIT	UNIT WT. / QTY.	GS	ZONE
			03	FLANGE–II		RD DG 4 35 0617 0243					20.0 kg / 01		
			02	FLANGE–I		RD DG 4 35 0617 0242					7.0 kg / 01		
			01	INSULATOR		RD DG 4 35 0617 0241					5.0 kg / 01		

Note:

1. The support insulator shall be hydraulically pressure tested at 12 bar for one minute.
2. support insulator assembly shall be compatible to SF6 gas.

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

TYPE OF PRODUCT: GSM–400

NAME OF CUSTOMER

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN	KSRAO		26.12.05	
CKD	MMRAO		02.01.06	
APPD	HSJAIN		02.01.06	

DEPT. CODE	GRADE OF TOL DIM. C/M/F	SCALE	WEIGHT(KG)	REF. TO	ITEM NO.	NO.OF ITEMS
		NTS		RD DG 4 35 0617 0200	1	

TITLE: SUPPORT INSULATOR ASSY.

CARD CODE

DRAWING NO. RD DG 4 35 0617 0240 REV.

SHEET NO. NO. OF SHEETS

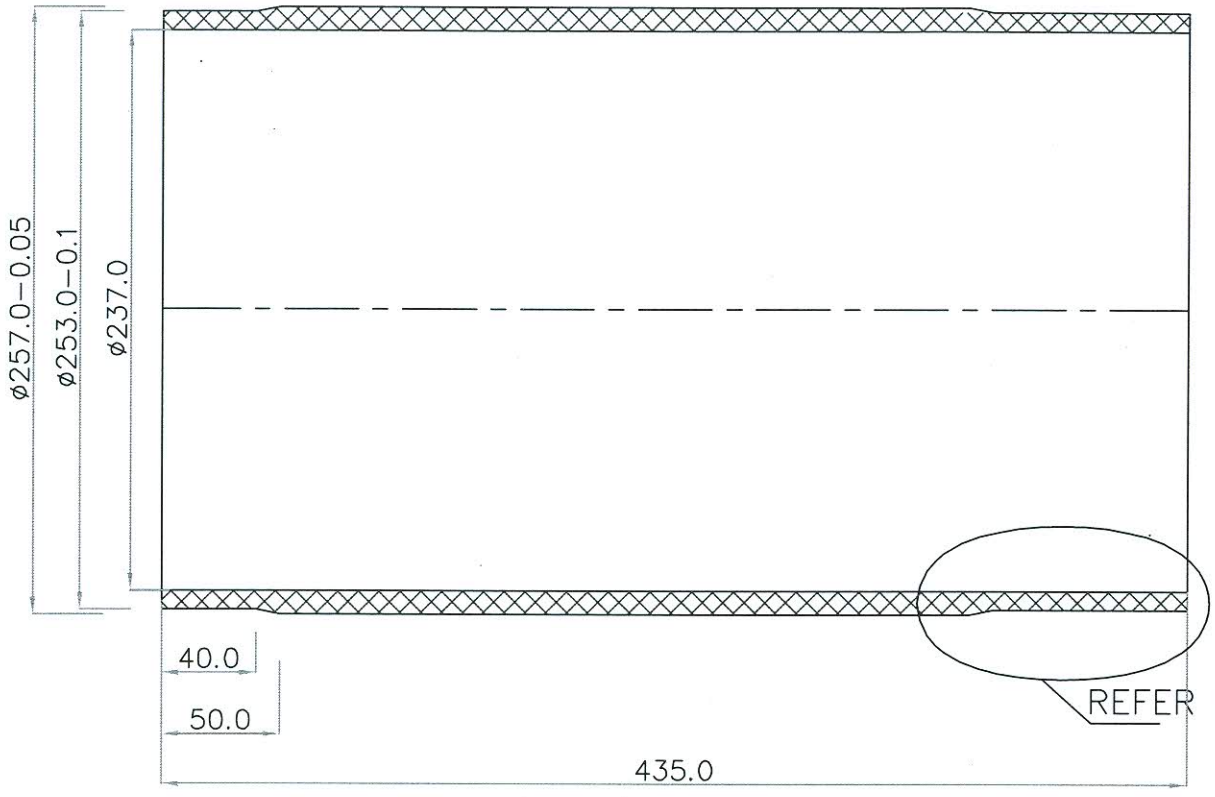
REF. DRG. NO. | SIGN. AND DATE | INVENTORY NO.

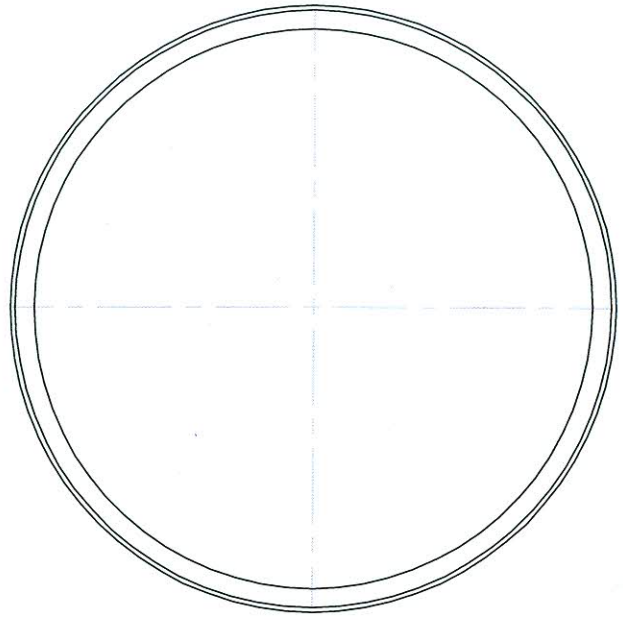
DRG. NO. RD DG 4 35 0617 0241

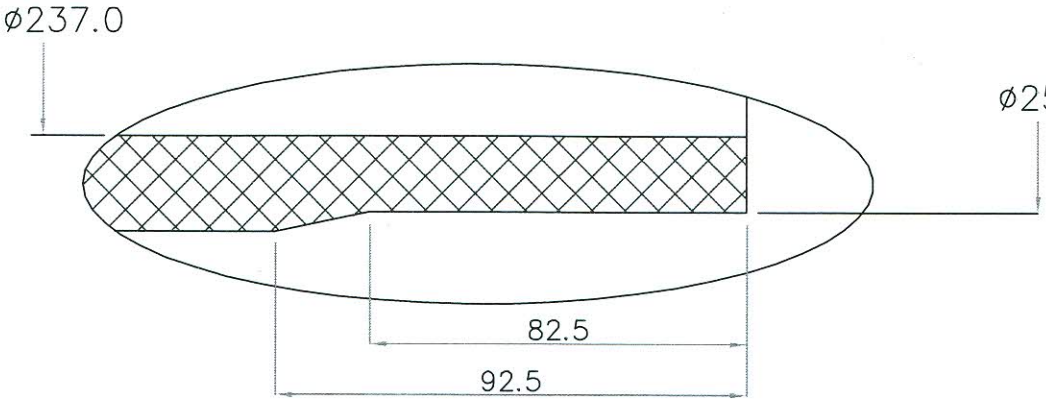
FIRST ANGLE PROJECTION

(ALL DI[illegible]IONS ARE IN mm)

(~1.6)







DETAIL 'A'

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

VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO. / VAR	MATL. CODE / MATL. SPECN.	A C	UNIT	UNIT WT. / QTY.	GS	ZONE
	01	INSULATOR		RD DG 4 35 0617 0241		ARAMID/POLYESTER/ KEVLAR FIBER			5.0 kg / 01		
VAR.00	REMARKS										

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

TYPE OF PRODUCT
NAME OF CUSTOMER GSM−400

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN				
CKD	MMRAO		02.01.06	
APPD	HSJAIN		02.01.06	

DEPT. / CODE	GRADE OF TOL. DIM. C/M/F	SCALE	WEIGHT(KG)	REF. TO	ITEM NO.	NO.OF ITEMS
		NTS	5.0 kg	RD DG 4 35 0617 0240	1	

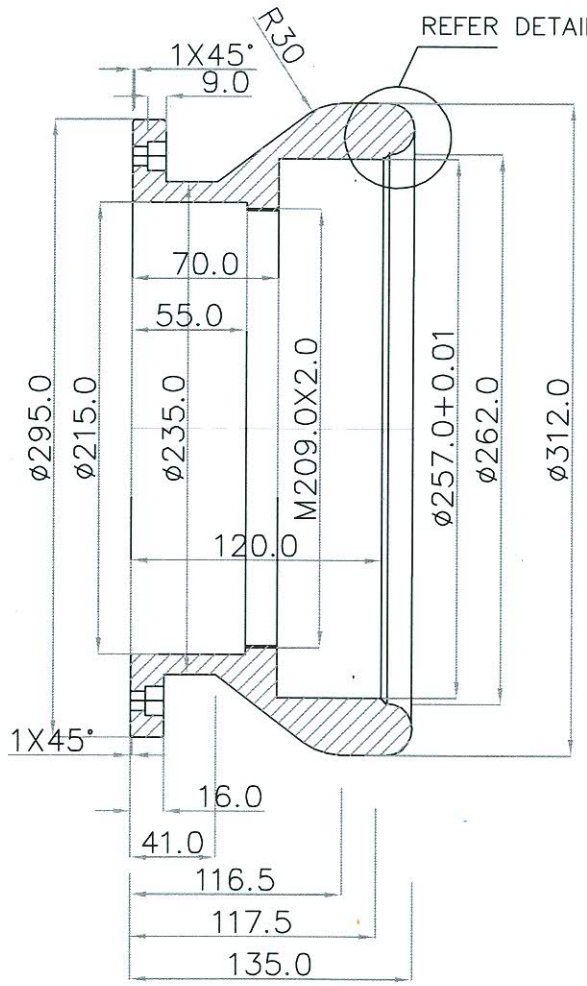
TITLE: INSULATOR
CARD CODE
DRAWING NO. RD DG 4 35 0617 0241 REV.
SHEET NO. NO. OF SHEETS

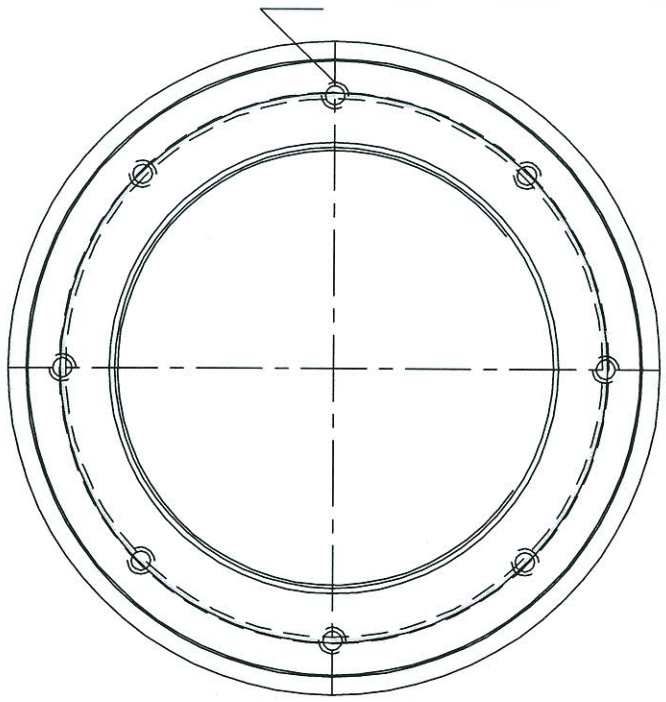
DRG. NO. RD DG 4 35 0617 0242

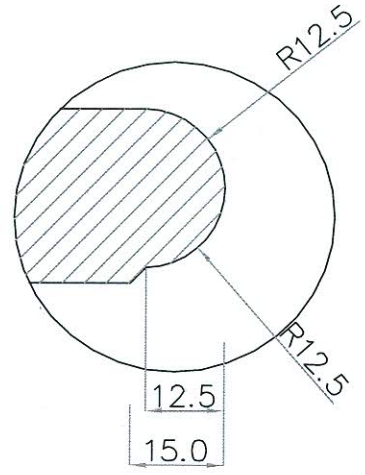
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

(~1.6)







DETAIL 'A'

ALL SHARP EDGES SHALL BE MACHINED TO 0.5X45°

VAR.OO	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO. / VAR	MATL. CODE / MATL. SPECN.	A C	UNIT	UNIT WT. / QTY.	GS	ZONE
			01	BLOCK		ø315.0Xø200.0X140.0		Al.ALloy			17.0 kg / 01		

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

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

TYPE OF PRODUCT
NAME OF CUSTOMER GSM-400

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN	KSRAO		26.12.05	
CKD	MMRAO	MMRao	02.01.06	
APPD	HSJAIN		02.01.06	

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

DEPT. / CODE	GRADE OF TOL. DIM. C/M/F	SCALE	WEIGHT(KG)	REF. TO	ITEM NO.	NO.OF ITEMS
		NTS	7.0	RD DG 4 35 0617 0240	1	

TITLE: FLANGE-I

CARD CODE

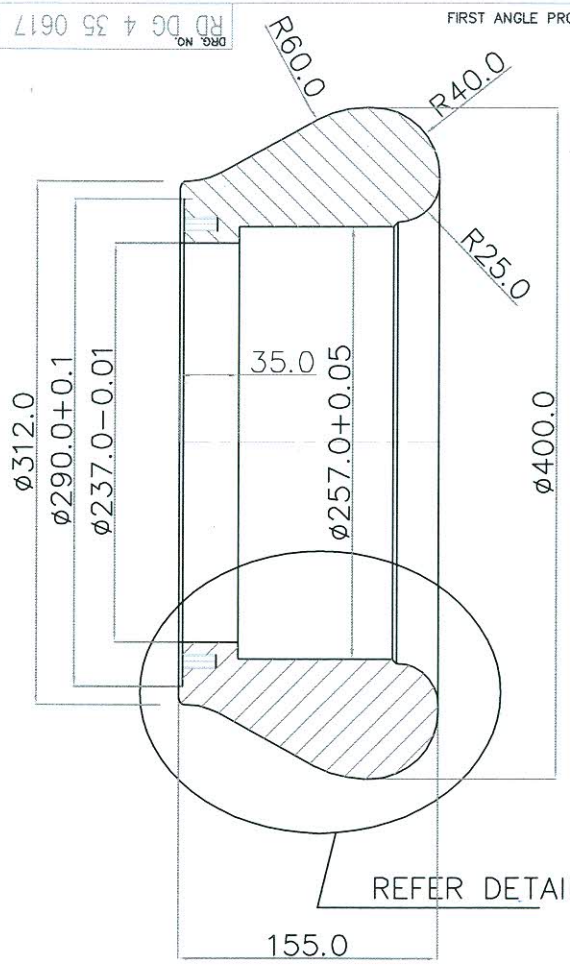
DRAWING NO. RD DG 4 35 0617 0242 REV.

SHEET NO. NO. OF SHEETS

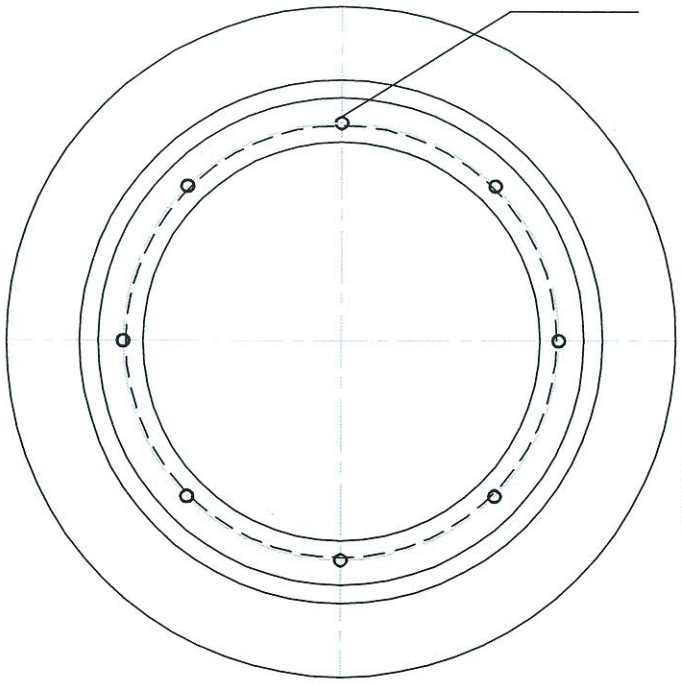
DRG. NO. RD DG 4 35 0617 0243

FIRST ANGLE PROJECTION

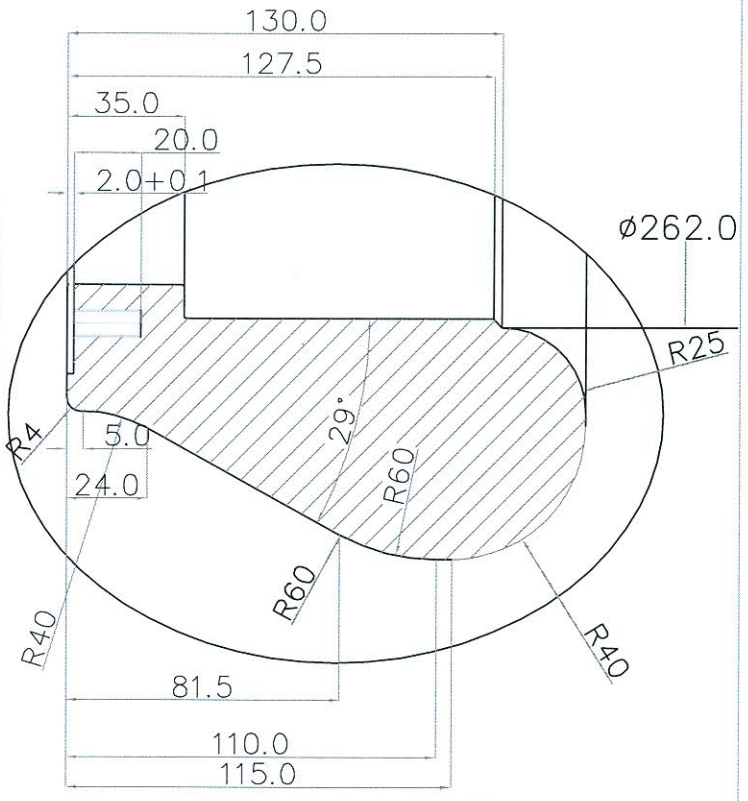
(ALL DI IONS ARE IN mm)



8 No., M8 TAPS @ 260.0 PCD, 20.0 DEEP



(~1.6)



DETAIL–'A'

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

VAR.00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO. / VAR	MATL. CODE / MATL. SPECN.	A C	UNIT	UNIT WT. / QTY.	QS	ZONE
			01	BLOCK		ø400.0Xø200.0x160.0		Al. Alloy			43.0 kg / 01		

ALL SHARP EDGES SHALL BE MACHINED TO 0.5X45°

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

TYPE OF PRODUCT
NAME OF CUSTOMER GSM-400

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN	KSRAO		26.12.05	
CKD	MMRAO	MMRAO	02.01.06	
APPD	HSJAIN		02.01.06	

DEPT. CODE	GRADE OF TOL. DIM. C/M/F	SCALE	WEIGHT(KG)	REF. TO	ITEM NO.	NO.OF ITEMS
		NTS	20.0	RD DG 4 35 0617 0240	1	

TITLE: FLANGE-II

CARD CODE

DRAWING NO. RD DG 4 35 0617 0243 REV.

SHEET NO. NO. OF SHEETS

PSGSG106 _SI	SPECIFICATIONS FOR Support Insulators	Drg.No.	RD DG 4 35 0617 0240
		Date	29.12.14
		Product	GSM-400

1.0 APPLICATION:

Tubular insulator with metal flanges is a part of a high voltage, heavy duty switchgear. The component is intended for a 420 kV AC, 50 Hz System.

2.0 SPECIFICATION:

2.1 TUBE MATERIAL

2.1.1 The POLYESTER lining used for tube shall have following properties:

#	Property	Unit	Value
1	Density	g/ccm	~1.3
2	Tensile Strength	N/cm	~1000
3	Impulse dielectric Strength	kV/mm	≥ 16
4	Relative permittivity	-	~3.4
5	Dielectric loss factor	%	~0.4
6	SHRINKAGE15 HR160 °C	%	≤ 2
7	SHRINKAGE	%	< 0.5
8	Water Absorption	%	< 0.5
9	Water Absorption @ 100^{0}C	%	< 0.5

2.1.2 **Type of Fiber:** Aramid / Kevlar or a combination of these fibers. The material shall be resistant against arced SF6.

Contd..

	2.1.3	**Manufacturing process:** The fibers shall be wound and impregnated with hot curing epoxy resin in vacuum/ pressure. The casting shall be void free and shall achieve required electrical and mechanical properties. The epoxy used shall be compatible to arced SF6 gas.
	2.1.4	The inside diameter of the tube shall be lined with (0.4-0.6mm) arc resistance material (compatible to arced SF6) to minimize the filament erosion by arced SF6.
	2.1.5	The processed material shall have good Chemical resistance against organic and inorganic acids.
	2.1.6	The shape of the tube shall be in accordance to the approved drawing.
2.2		**METAL INSERTS**
	2.2.1	Profiled metal inserts as per approved drawing shall be machined using NC machining from mechanical grade aluminum alloy as per (DIN/BIS/IS standards).
	2.2.2	The aluminum flanges shall be glued to the epoxy tube using a hot curing adhesive (compatible to arced SF6 gas) and joined as per the practices of the supplier.
	2.2.3	The bonding between insulator and metal flanges shall be done without roll pins /threaded bolts/ cross bolts. The bonding shall not only withstand specified mechanical forces but also offer leak tightness for use in differential pressure application.
3.0		**FACTORY TEST**
	3.1	Dimensional report
	3.2	Mechanical load bearing capability (Tensile, 100 kN+ 10%). Necessary test shall be conducted. Breaking load shall be minimum of 200kN.

4.0 **QUALIFYING REQUIREMENTS:**

The supplier shall be of national / International repute with proven record and should have supplied similar material for gas insulated circuit breaker applications. These insulators shall be used for GIS application and for these applications performance reference shall be submitted.

5.0 **GENERAL**

5.1 Metal Flanges shall be free from sharp corners. Wherever not specified in the drawing, a radius of R 0.5mm shall be provided at unspecified corner/Edge.

5.2 The components shall be packed individually in appropriate packing so as to prevent transit damages.

5.3 The components shall be guaranteed against all manufacturing defects.

5.4 In case of doubts in specifications, the supplier shall contact BHEL for clarifications.