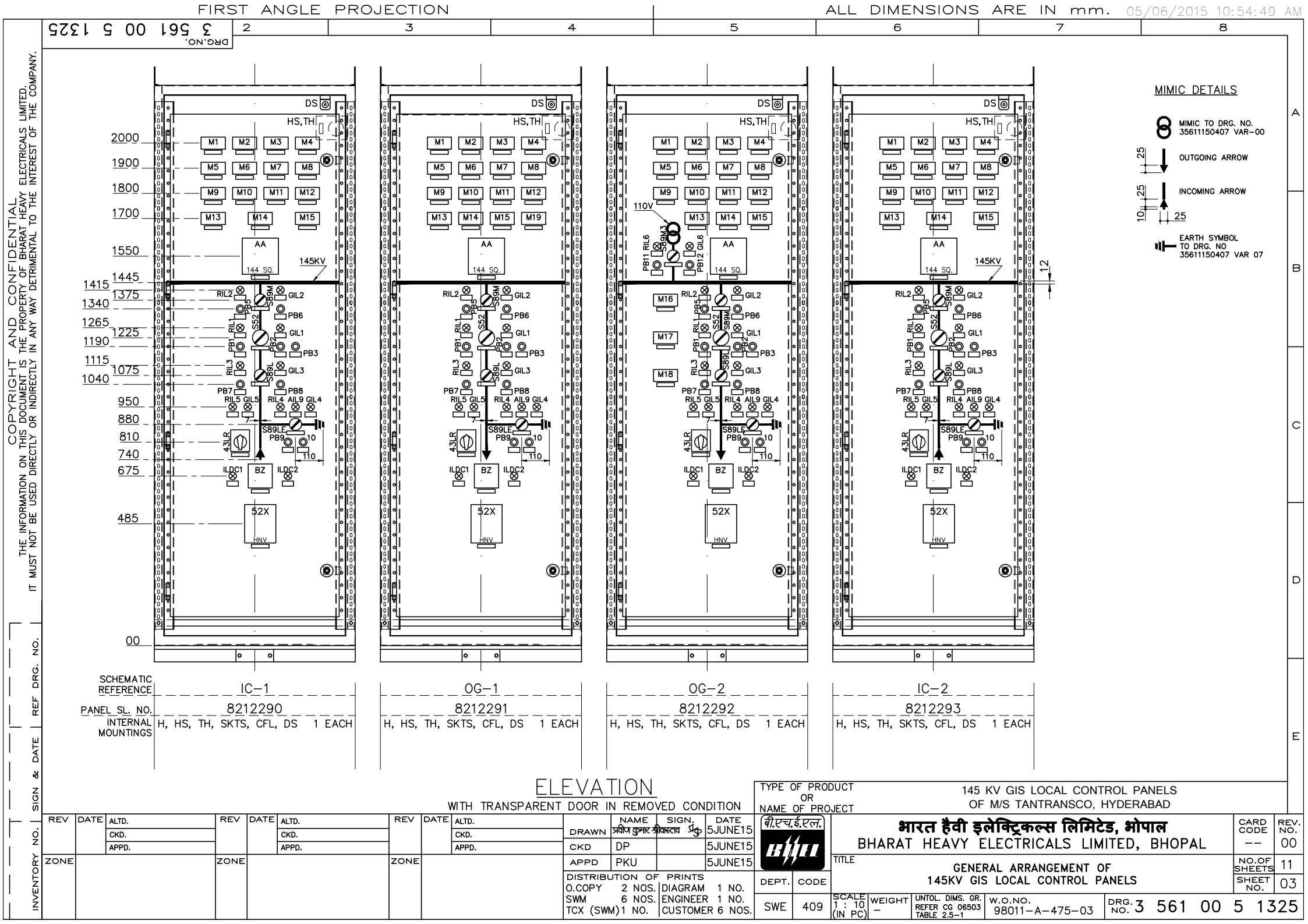


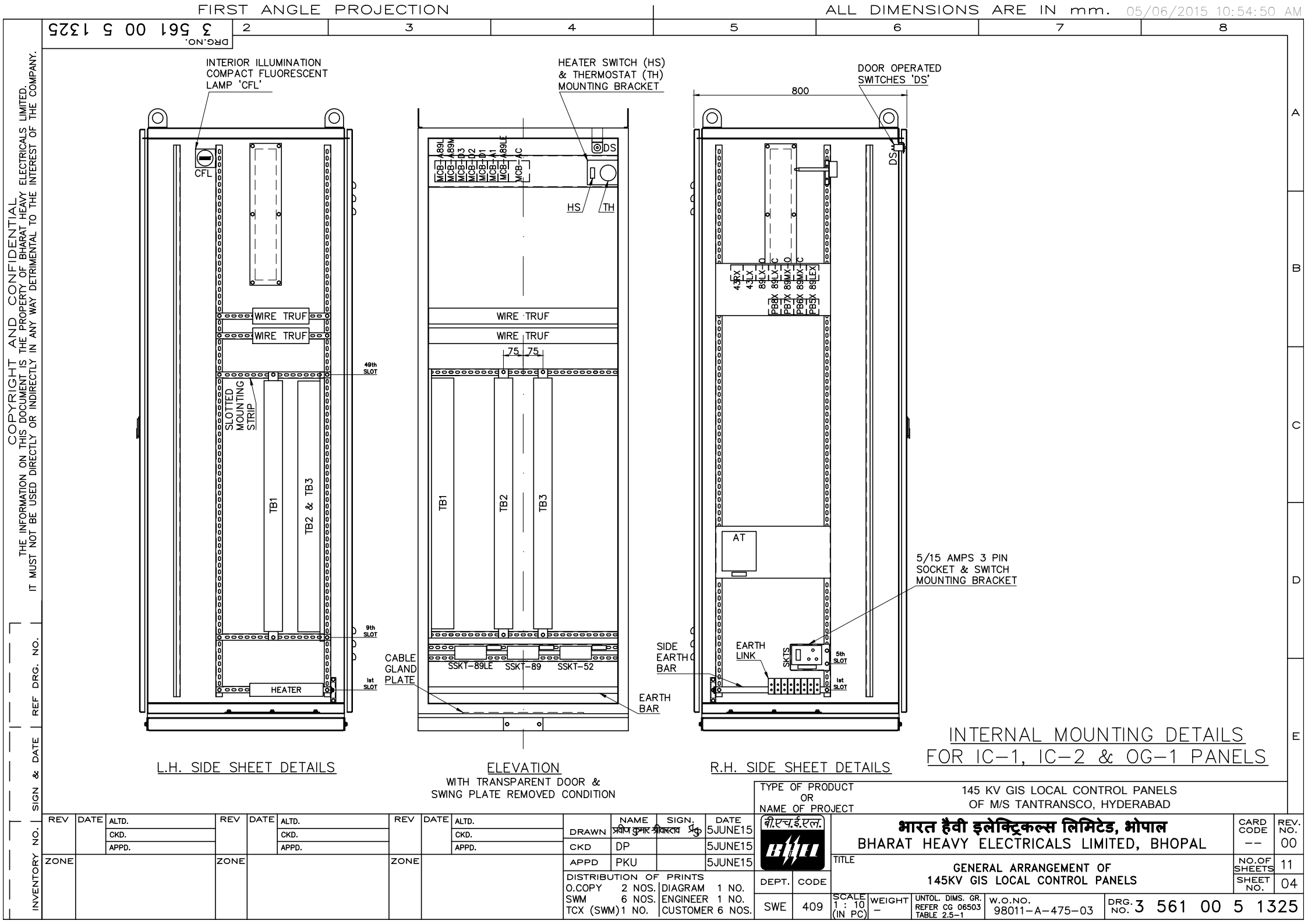
DOOR HANDLE
(LOCKABLE)

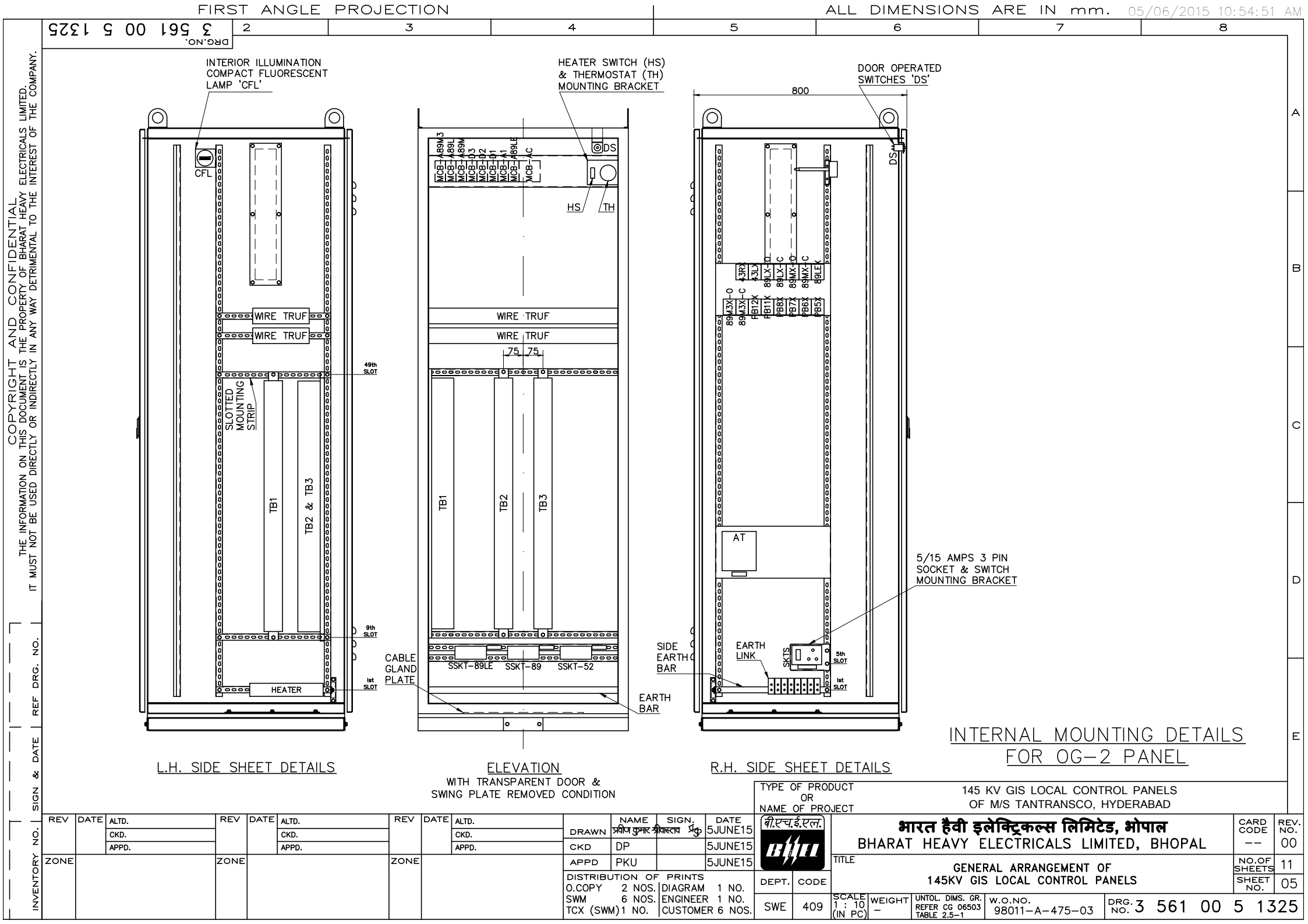
8212293

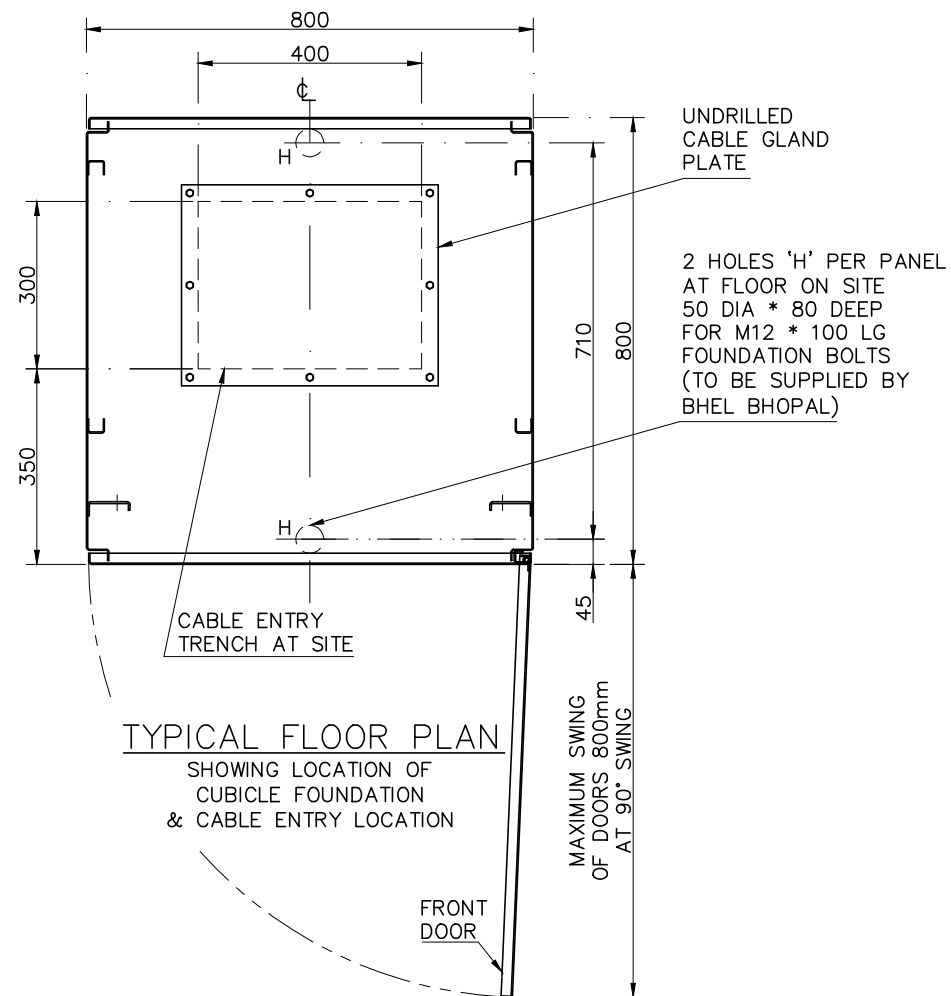
PANELS				SHEET NO.		02	
DRG. NO.		3 561 00 5 1325					

INVENTORY NO.	SIGN & DATE	REF	DRG. NO.
---------------	-------------	-----	----------









TYPICAL FLOOR PLAN
SHOWING LOCATION OF
CUBICLE FOUNDATION
& CABLE ENTRY LOCATION

INVENTORY NO.	SIGN & DATE	REF DRG. NO.															
			TYPE OF PRODUCT OR NAME OF PROJECT 145 KV GIS LOCAL CONTROL PANELS OF M/S TANTRANSCO, HYDERABAD														
REV	DATE	ALTD.	REV	DATE	ALTD.	REV	DATE	ALTD.	DRAWN	NAME	SIGN.	DATE	वी.एच.ई.एल. 		CARD CODE	REV. NO.	
		CKD.			CKD.			CKD.	प्रवीण कुमार श्रीधर राव	प्रवीण कुमार श्रीधर राव		5JUNE15	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल		--	00	
		APPD.			APPD.			APPD.	CKD	DP		5JUNE15	BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL				
ZONE			ZONE			ZONE			APPD	PKU		5JUNE15	TITLE GENERAL ARRANGEMENT OF 145KV GIS LOCAL CONTROL PANELS		NO. OF SHEETS	11	
									DISTRIBUTION OF PRINTS		DEPT.		CODE				
									O.COPY 2 NOS.		ENGINEER 1 NO.						
									SWM 6 NOS.		CUSTOMER 6 NOS.						
									TCX (SWM) 1 NO.								
									SCALE	WEIGHT	UNTOL. DIMS. GR.	REFER	W.O. NO.	DRG. NO.			
									1 : 10 (IN PC)	-	CG 06503	CG 06503	98011-A-475-03	3 561 00 5 1325			
											TABLF 2.5-1						

- 1) FINISH :- (POWDER COATED, PLAIN FINISH, APPROXIMATE THICKNESS OF PAINT COATING SHALL BE 50 MICRONS AVERAGE)
- I. EXTERIOR & INTERIOR COLOUR OF CUBICLE :- GREY TO SHADE RAL-9002.
- II. EXTERIOR COLOUR OF LEFT HAND SIDE SHEET AND RIGHT HAND SIDE SHEET OF ALL THE PANEL :- BLUE TO SHADE RAL-5012.
- III. PLINTH :- BLACK
2. COLOUR OF MIMIC PAINTED ON SWING PLATE (AS PER IS:11954-1987)
- III. 145KV - LEMON TO SHADE NO. 355 OF IS:5-1978
- II. 110V & EARTH - BLACK
3. ALL INSTRUMENTS & RELAYS ETC. MOUNTED ON SWING TYPE INTERNAL MOUNTING PLATES ARE FLUSH MOUNTING TYPE.
4. FUSES, LINKS, E'LINKS, NO. OF T.Bs. WIRING ETC. AS PER WIRING TABLE.
5. CUBICLES ARE SUITABLE FOR IP:31 DEGREE OF PROTECTION TO IEC:60529.
6. EARTH BAR - 3 THK. * 25W TIN PLATED COPPER IS PROVIDED AT THE BOTTOM OF THE PANEL ACROSS THE WIDTH & ONE DEPTH OF THE CUBICLE.
7. THE CUBICLE IS FABRICATED FROM 2 THK COLD ROLLED CARBON STEEL SHEET, ANNEALED-DRAWING TYPE.
8. EXPOSED TERMINALS OF ALL FUSES, LINKS, TERMINAL BLOCKS ARE SHROUDED.
9. REAR DOORS ARE CONNECTED TO EARTHBAR WITH GREEN PVC FLEXIBLE WIRE.
10. MAIN CIRCUIT LABEL & DEVICE LABELS ARE BLACK ANODISED ALUMINIUM WITH NATURAL WHITE ENGRAVING, PROVIDED ON FRONT & REAR OF THE DEVICE, LABELS FIXED TO THE PANEL WITH SCREWS AND NUTS, ENGRAVINGS AS PER THIS DRAWING.
11. TERMINAL BLOCKS ARE CLIP-ON TO CHANNEL, SCREW DRIVER OPERATED STUD TYPE, DISCONNECTING TYPE FOR CT & PT CIRCUITS, DISCONNECTING TERMINAL BLOCKS SUITABLE FOR TAKING TWO LUGGED WIRES WITH CONDUCTOR CROSS SECTION OF UP TO 6 SQUARE MM SIZE. FOR REST OF THE CIRCUITS NON-DISCONNECTING TERMINAL BLOCKS CLIP-ON TO CHANNEL, SCREW DRIVER OPERATED STUD TYPE / SPRING LOADED FEED THROUGH TYPE SUITABLE FOR TAKING TWO LUGGED WIRES WITH CONDUCTOR CROSS SECTION OF UP TO 2.5 SQUARE MM SIZE.
12. PANEL WIRING :- PVC INSULATED, 1100V GRADE STRANDED COPPER CONDUCTOR WIRE WITH CONDUCTOR CROSS SECTION AS UNDER :
2.5 SQUARE MM FOR CT, PT & EARTH CIRCUITS
0.5 SQUARE MM FOR ALARM CIRCUITS
1.5 SQUARE MM FOR REST OF THE CIRCUITS
WIRE TERMINATIONS :- USING SOLDERLESS CRIMPING LUGS.
13. COLOUR OF WIRES :-

1 PHASE AC CIRCUIT (PHASE & NEUTRAL)	: BLACK
DC CIRCUITS (POSITIVE & NEGATIVE)	: GREY
EARTH	: GREEN
3 PHASE CT & PT CIRCUITS :	
A PHASE :	RED
B PHASE :	YELLOW
C PHASE :	BLUE
NEUTRAL :	BLACK
14. FOR IDENTIFICATION OF WIRES NUMBERED PVC FERRULES / TUBULAR FERRULES WITH BLACK LETTER/DIGIT OVER WHITE SURFACE AT BOTH ENDS OF WIRE ARE PROVIDED
15. EACH PANEL IS A SEPARATE SHIPPING UNIT AND TO BE PLACED SIDE BY SIDE TO FORM A BOARD IF REQUIRED.

SIZE OF LABEL 50 x 380	DRG. NO. 35611150417	IT. NO. 001	MAT. CODE BP9009447222	LETTER HEIGHT OF ENGRAVED LABEL= 15mm	QTY. OF LABEL PER CUBICLE=001	TOTAL QTY. OF LABELS
MCL REF.	PANEL SL. NO.	L A B E L I N S C R I P T I O N				SCHEME NO.
		I LINE		II LINE		
MCL1	8212290	145KV INCOMER-1		LOCAL CONTROL PANEL		35620061470
MCL2	8212291	145KV OUTGOING-1		LOCAL CONTROL PANEL		35620061470
MCL3	8212292	145KV OUTGOING-2		LOCAL CONTROL PANEL		35620061470
MCL4	8212293	145KV INCOMER-2		LOCAL CONTROL PANEL		35620061470

43LR	CONTROL SELECTION		REMOTE	LOCAL	—	—
DEV. REF.	MAIN LABEL INSCRIPTION	POSITION REFERENCE	1	2	3	4

CONTROL & SELECTOR SWITCH DIAL PLATE DETAILS

TYPE OF PRODUCT OR NAME OF PROJECT		145 KV GIS LOCAL CONTROL PANELS OF M/S TANTRANSKO, HYDERABAD					CARD CODE	REV. NO.	
बी.एच.ई.एल. 		भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL						--	00
TITLE		GENERAL ARRANGEMENT OF 145KV GIS LOCAL CONTROL PANELS					NO.OF SHEETS	11	
DEPT.	CODE						SHEET NO.	07	
SWE	409	SCALE 1 : 10 (IN PC)	WEIGHT —	UNTO. DIMS. GR. REFER CG 06503 TABLE 2.5-1.	W.O.NO. 98011-A-475-03	DRG. NO.	3 561 00 5 1325		

INSCRIPTION ON LABELS AT THE REAR OF DEVICE	TOTAL QTY. OF LABELS		BLANK LABEL REF.	LOCATION OF DEVICE IN PANEL NO.
	FRONT	REAR		

E

REV	DATE	ALTD.	REV	DATE	ALTD.	REV	DATE	ALTD.	DRAWN	NAME	SIGN.	DATE	BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL										CARD CODE	REV. NO.		
		CKD.			CKD.			CKD.	CKD	DP		5JUNE15	 भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL										--	00		
		APPD.			APPD.			APPD.	APPD	PKU		5JUNE15														
ZONE			ZONE			ZONE			DISTRIBUTION OF PRINTS O.COPY 2 NOS. DIAGRAM 1 NO. SWM 6 NOS. ENGINEER 1 NO. TCX (SWM)1 NO. CUSTOMER 6 NOS.				DEPT.	CODE	GENERAL ARRANGEMENT OF 145KV GIS LOCAL CONTROL PANELS										NO.OF SHEETS	11
													SWE	409	SCALE 1 : 10 (IN PC)	WEIGHT -	UNTOL. DIMS. GR. REFER CG 06503 TABLE 2.5-1	W.O.NO. 98011-A-475-03	DRG. NO.	3 561 00 5 1325					SHEET NO.	08

INSCRIPTION ON LABELS AT THE REAR OF DEVICE	TOTAL QTY. OF LABELS		BLANK LABEL REF.	LOCATION OF DEVICE IN PANEL NO.
	FRONT	REAR		

E

REV	DATE	ALTD.	REV	DATE	ALTD.	REV	DATE	ALTD.	DRAWN	NAME	SIGN.	DATE		भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL					CARD CODE	REV. NO.
		CKD.			CKD.			CKD.	CKD	DP		5JUNE15		TITLE GENERAL ARRANGEMENT OF 145KV GIS LOCAL CONTROL PANELS					NO.OF SHEETS	11
		APPD.			APPD.			APPD.	APPD	PKU		5JUNE15		DEPT.	CODE	SCALE	WEIGHT	UNTOL. DIMS. GR. REFER CG 06503	W.O.NO.	DRG. NO.
ZONE			ZONE			ZONE			DISTRIBUTION OF PRINTS 0.COPY 2 NOS. DIAGRAM 1 NO. SWM 6 NOS. ENGINEER 1 NO. TCX (SWM) 1 NO. CUSTOMER 6 NOS.				SWE	409	1 : 10 (IN PC)	-	2.5-1	98011-A-475-03	3	561 00 5 1325

INSCRIPTION ON LABELS AT THE REAR OF DEVICE	TOTAL QTY. OF LABELS		BLANK LABEL REF.	LOCATION OF DEVICE IN PANEL NO.
	FRONT	REAR		

E

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
---------------	-------------	--------------

REV	DATE	ALTD.	REV	DATE	ALTD.	REV	DATE	ALTD.	NAME	SIGN.	DATE	NAME OF PROJECT	CARD CODE	REV. NO.
		CKD.			CKD.			CKD.	DRAWN	प्रवीण कुमार श्रीवास्तव	5JUNE15	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल	--	00
		APPD.			APPD.			APPD.	CKD	DP	5JUNE15	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल		
ZONE			ZONE			ZONE			APPD	PKU	5JUNE15	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल		
									DISTRIBUTION OF PRINTS			GENERAL ARRANGEMENT OF		
									0.COPY 2 NOS. DIAGRAM 1 NO.			145KV GIS LOCAL CONTROL PANELS		
									SWM 6 NOS. ENGINEER 1 NO.			SCALE 1 : 10		
									TCX (SWM) 1 NO. CUSTOMER 6 NOS.			WEIGHT -		
												UNTOL. DIMS. GR. REFER CG 06503		
												TARLF 2.5-1		
												W.O.NO. 98011-A-475-03		
												DRG. NO. 3 561 00 5 1325		
									SWE	409				

INSCRIPTION ON LABELS AT THE REAR OF DEVICE	TOTAL QTY. OF LABELS		BLANK LABEL REF.	LOCATION OF DEVICE IN PANEL NO.
	FRONT	REAR		

E

TOTAL QTY. OF LABEL PER PANEL	BLANK LABEL REF.	DRAWING REFERENCE	ITEM NO.	SIZE OF LABEL (HxW)	MATERIAL CODE	LETTER HEIGHT OF ENGRAVED LABEL IN MM
	L4	3 561 11 5 0417	013	20*45	--	3
	L5	3 561 11 5 0417	004	15*55	BP 9029447257	3
	L7	3 561 11 5 0417	005	15*70	BP 9029447265	3
001	LP	4 561 11 5 3021	001	25*25	BP 9029094672	3

TYPE OF PRODUCT OR NAME OF PROJECT	145 KV GIS LOCAL CONTROL PANELS OF M/S TANTRANSCO, HYDERABAD
--	---

REV	DATE	ALTD.	REV	DATE	ALTD.	REV	DATE	ALTD.	DRAWN	NAME	SIGN.	DATE	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL	CARD CODE	REV. NO.		
		CKD.			CKD.												
		APPD.			APPD.												
ZONE			ZONE			ZONE			APPD	PKU		5JUNE15	TITLE			NO.OF SHEETS	11
DISTRIBUTION OF PRINTS									DEPT.	CODE	GENERAL ARRANGEMENT OF 145KV GIS LOCAL CONTROL PANELS			SHEET NO.	11		
O.COPY 2 NOS. DIAGRAM 1 NO.											SCALE 1 : 10 (IN PC)			WEIGHT			
SWM 6 NOS. ENGINEER 1 NO.											UNTOL. DIMS. GR. REFER CG 06503						
TCX (SWM) 1 NO. CUSTOMER 6 NOS.									SWE	409	W.O.NO. 98011-A-475-03			DRG. NO. 3 561 00 5 1325			

FIRST ANGLE PROJECTION

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

ALL DIMENSIONS ARE IN mm.

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OUTLINE AND GENERAL ARRANGEMENT DRAWING
OF
SCADA INTERFACE PANEL OF 132KV SWITCHYARD
FOR
132/33 KV GAS INSULATED SWITCHGEAR PACKAGE
AT
VITTALWADI (NARAYANAGUDA)
APTRANSCO

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
REV	DATE	ALT.
ZONE	DATE	ALT.
REV	DATE	ALT.
ZONE	DATE	ALT.
REV	DATE	ALT.
ZONE	DATE	ALT.
DRAWN	NAME	SIGN
CHKD	J.R.	09DEC08
APPD	A.K.M.	09DEC08
DISTRIBUTION OF PRINTS	1 NO. ENGINEER	1 NO. CUSTOMER
0 COPY	3 NOS.	6 NOS.
SWM	DEPT. CODE	409
SWE	SCALE	1:10
(IN FC)	WEIGHT	UNROL. DIMS. 66
TABLE 23-1	REFER CG 06503	W.O. NO. 98508-A-555-01
DRG. NO. 3	561	00 5 0934

CUSTOMER L.R. NO. CE/C/400KV/SE (P&MM) DE-1/A2/GIS/BHEL
OM 0298/2008-1 DATED 24 MARCH 2008

CUSTOMER /PROJECT 132/33 KV GAS INSULATED SWITCHGEAR PACKAGE
AT VITTALWADI (NARAYANAGUDA)
APTRANSCO

BHARAT HEAVY ELECTRICALS LIMITED
BHOPAL

GENERAL ARRANGEMENT OF
SCADA INTERFACE PANEL OF 132KV SWITCHYARD

CARD CODE REV
NO. OF SHEETS
NO. 04
SHEET 01

ALL DIMENSIONS ARE IN mm.

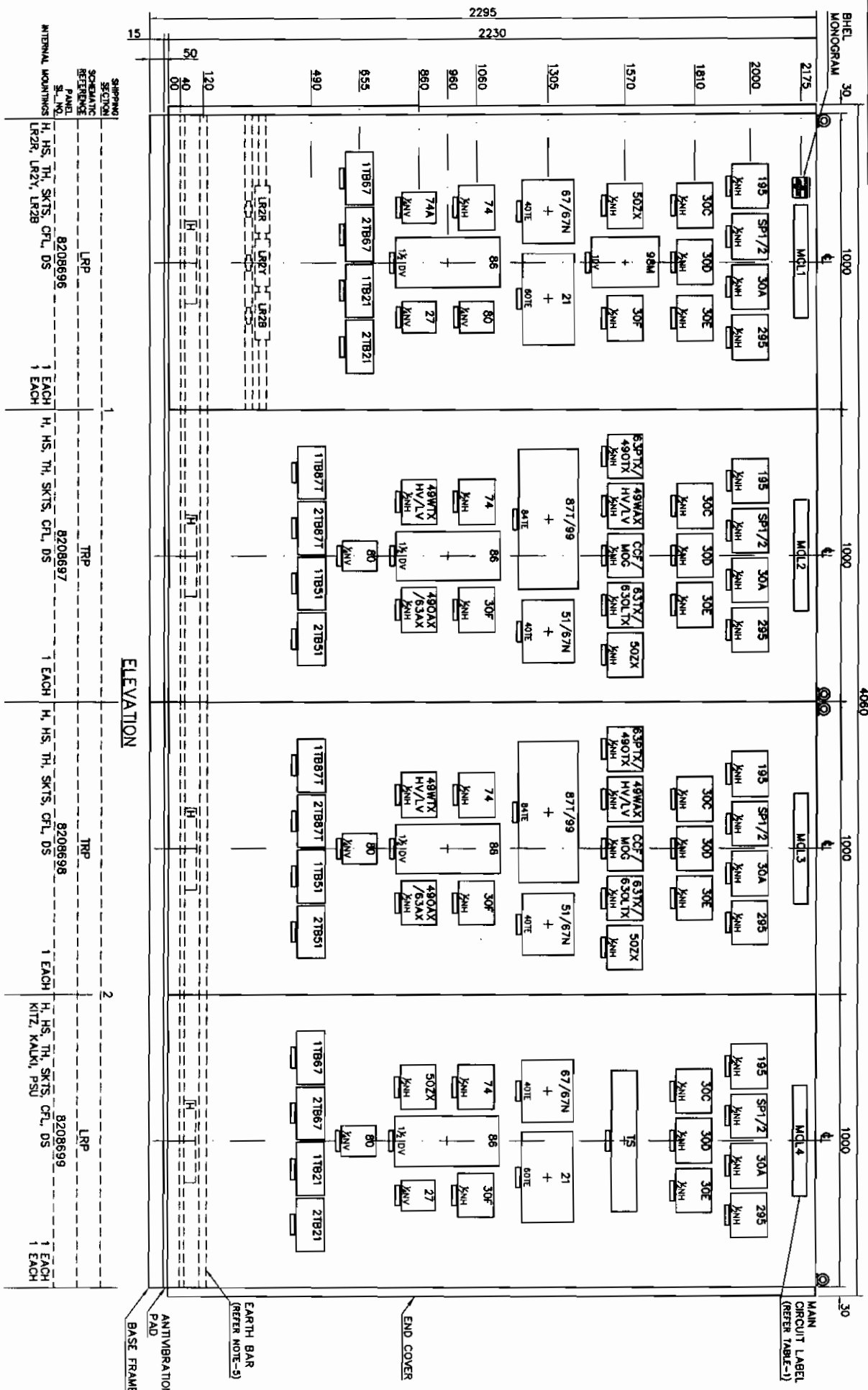
TOTAL QTY. OF LABEL PER PANEL	BLANK QTY. OF LABEL REF.	DRAWING REFERENCE	ITEM NO.	SIZE OF LABEL (HxW)	MATERIAL CODE	LETTER HEIGHT FROM BOTTOM IN MM.
	L5	3 561 11 5 0417	004	15x55	BP 9029447257	3
	L7	3 561 11 5 0417	005	15x70	BP 9029447265	3
001	LP	4 561 11 5 3021	001	25x25	BP 90293994672	3

001	LP	4 561 11 5 3021	001	25x25	BP 9029094672	3
-----	----	-----------------	-----	-------	---------------	---

FIRST ANGLE PROJECTION				DIMENSIONS ARE IN mm.			
5260 5 00 195 3	2	3	4	5	6	7	8

OUTLINE AND GENERAL ARRANGEMENT DRAWING
OF
132 KV SWITCHYARD RELAY PANELS
FOR
132/33 KV GAS INSULATED SWITCHGEAR PACKAGE
AT
VITTALWADI (NARAYANAGUDA)
APTRANSCO

[illegible]

[illegible]**BHARAT HEAVY ELECTRICALS LIMITED**

GENERAL ARRANGEMENT OF KV SWITCHYARD RELAY PANELS

BHARAT HEAVY ELECTRICALS LIMITED						CAGE NO.	REV.	DWG. NO.
BHOPAL						--	01	02
TITLE								
GENERAL ARRANGEMENT OF								
132 KV SWITCHYARD RELAY PANELS								
SCALE	WEIGHT	UNIT	DIMS. OR IN PT.	W.C.N.O. 98508-A-555-01	ORIG. NO.	3	561	00
1 : 10	---	---	---	REF. NO. 06603	NO.	5	09255	

NOTES :-

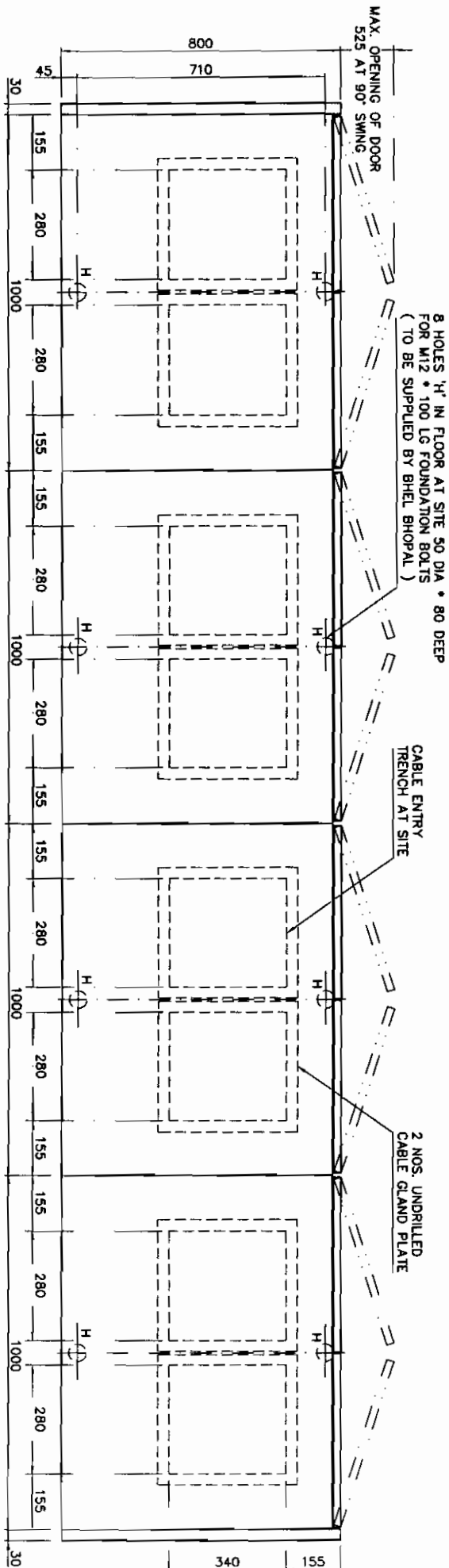
1. FINISH :- (POWDER COATED, PLAIN FINISH)
 - I. EXTERIOR :- RAL 7032.
 - II. INTERIOR :- RAL 7032.
 - III. PLINTH :- BLACK, SEMI-MATT
2. ALL INSTRUMENTS, METERS & RELAYS ETC. MOUNTED ON FRONT PANEL ARE FLUSH MOUNTING TYPE .
3. FUSES, LINKS, ELINKS, NO. OF T.Bs, WIRING ETC. AS PER WIRING TABLE.
4. CUBICLES ARE SUITABLE FOR IP:54 DEGREE OF PROTECTION TO IS:13947.
5. EARTH BAR - 3 THK. x 25W TIN PLATED COPPER IS PROVIDED AT THE BOTTOM OF THE PANEL ACROSS THE WIDTH & ONE DEPTH OF THE CUBICLE.
6. THE CUBICLE'S FRONT PANEL IS MANUFACTURED FROM 3 THK C. R. S. SHEET

- ON OF WIRES NUMBERED FERRULES WITH BLACK
ER WHITE SURFACE AT BOTH ENDS OF WIRE ARE PROVIDED.

SCREWS AND NUTS, ENGRAVINGS AS PER THIS DRAWING.
CLIP-ON TO CHANNEL, SCREW DRIVER OPERATED STUD TYPE,

- | | |
|--------------------------------------|---------|
| 1 PHASE AC CIRCUIT (PHASE & NEUTRAL) | : BLACK |
| DC CIRCUITS (POSITIVE & NEGATIVE) | : GREY |

TITLE		GENERAL ARRANGEMENT OF 132 KV SWITCHYARD RELAY PANELS		CADD REV. NO. CODE		01 --	
BHARAT HEAVY ELECTRICALS LIMITED BHOPAL							
SCALE		UNITS. DIMS. FOR WEIGHT		WO. NO.		DRG. NO.	
1:10		REFER TO 00003		98508-A-555-01		3 561 00	
IN PC		TABLE 2.5-1				5 0925	
						SHEET NO. OF SHEETS	
						03	



FLOOR PLAN

[illegible]



(FOR ALL PANELS)

(FOR PANEL SL. NO. 8208696)

FOR PANEL SL. NO. 8208697 & 8208698)

(FOR PANEL SL. NO. 8208699)

- OF THE CUBICLES TO DRG. NO. 35611150274 ITEM - 001

BHARAT HEAVY ELECTRICALS LIMITED

CARD	REV
------	-----

BIRLAKA HEAVY ELECTRICALS LIMITED
BHOPAL

CODE	NO.
1	01

TITLE
GENERAL ABANDONMENT OF

NO. OF	
--------	--

GENERAL ARRANGEMENT OF

SHEETS	03
SHEET	

132 KV SWILCHARD RELAY PANELS

3	NO.	05
---	-----	----

SCALE	W.O.NO.	DRG. 7
1 : 10	REFER CG 06503	561
WEIGHT		
UNTOL DIMS. GR.		

5 0975

(IN PC)	--	TABLE 2.5-1	98508-A-333-01	NO. 0	201
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00007000

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SCHEDULE OF APPARATUS & LABEL DETAILS FOR PANEL SL. NO. 8208696

DEVICE REFERENCE	DESCRIPTION	TYPE / MAKE	INSCRIPTION ON LABEL IN FRONT OF DEVICE			INSCRIPTION ON LABELS AT THE REAR OF DEVICE	TOTAL QTY. OF LABELS		REV.
			I LINE	II LINE	III LINE		FRONT	REAR	
21	DISTANCE PROTECTION RELAY WITH BUILT-IN LBB PROTECTION.	P442/AREVA	DISTANCE	PROTECTION	21	21	001	001	L7
67/67N	DIRECTIONAL O/C & E/F RELAY	P141/AREVA	O/C & E/F	PROTECTION	67/67N	67/67N	001	001	L7
86	HIGH SPEED TRIP RELAY, H/R CONTACT	VAAHMS3/AREVA	TRIP RELAY	86	-	86	001	001	L7
74	86 TRIP COIL SUPERVISION RELAY	VAX21/AREVA	TRIP RELAY 86	COIL SUPERVISION	74	74	001	001	L7
195	CB COIL SUPERVISION RELAY	VAX31/AREVA	TRIP COIL -1	SUPERVISION	195	195	001	001	L7
295	CB COIL SUPERVISION RELAY	VAX31/AREVA	TRIP COIL -2	SUPERVISION	295	295	001	001	L7
30A	2 ELEMENT AUX RELAY	VAA21/AREVA	LOSS OF N2/	LOSS OF SF6	30A	30A	001	001	L7
30C	2 ELEMENT AUX RELAY	VAA21/AREVA	O/L TRIP/	GEN L/O	30C	30C	001	001	L7
30D	2 ELEMENT AUX RELAY	VAA21/AREVA	N2 L/O	AUTO TRIP	30D	30D	001	001	L7
30E	2 ELEMENT AUX RELAY	VAA21/AREVA	DC-2 MCB FAIL/	OIL PRESSURE TROUBLE	30E	30E	001	001	L7
30F	2 ELEMENT AUX RELAY	VAA21/AREVA	DC-1 MCB FAIL/	MCB TRIP	30F	30F	001	001	L7
98M	FUSE FAIL RELAY	VAPM31/AREVA	BUS PT SEC-3	FUSE FAIL	98M	98M	001	001	L7
74A	ALARM CANCELLATION RELAY	VAA11/AREVA	ALARM	CANCELLATION	74A	74A	001	001	L7
80	DC SUPPLY SUPERVISION RELAY	VAA11/AREVA	PANEL DC	SUPERVISION	80	80	001	001	L7
50ZX	2 ELEMENT AUX RELAY	VAA21/AREVA	LBB	50ZX	-	50ZX	001	001	L7
27	UNDER VOLTAGE RELAY	VAG11/AREVA	U/V FOR ES	INTERLOCK	27	27	001	001	L7
SP1/2	2 ELEMENT AUX RELAY	VAA21/AREVA	SPARE	-	-	SP1/2	001	001	L7
11B67	TEST TERMINAL BLOCK	MPG/AREVA	TEST BLOCK	FOR 67/67N	11B67	11B67	001	001	L7
21B67	TEST TERMINAL BLOCK	MPG/AREVA	TEST BLOCK	FOR 67/67N	21B67	21B67	001	001	L7
11B21	TEST TERMINAL BLOCK	MPG/AREVA	TEST BLOCK	FOR 21	11B21	11B21	001	001	L7
21B21	TEST TERMINAL BLOCK	MPG/AREVA	TEST BLOCK	FOR 21	21B21	21B21	001	001	L7
LR2R	LOADING RESISTOR	-/AREVA	LOADING RESISTOR	FOR 98M R-PH	LR2R	-	001	-	L5
LR2Y	LOADING RESISTOR	-/AREVA	LOADING RESISTOR	FOR 98M Y-PH	LR2Y	-	001	-	L5
LR2B	LOADING RESISTOR	-/AREVA	LOADING RESISTOR	FOR 98M B-PH	LR2B	-	001	-	L5

INTERNAL MOUNTINGS

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
REV	DATE	REV
DATE	DATE	DATE
CD.	CD.	CD.
APPD.	APPD.	APPD.
ZONE	ZONE	ZONE
01	27 APR 2009	27 APR 2009
CUSTOMER'S COMMENTS		
INCORPORATED.		
DISTRIBUTION OF PRINTS		
1 NO. ENGINEER 1 NO. 3 NOS. CUSTOMER 6 NOS.		
SHEET NO.		
409		
BHARAT HEAVY ELECTRICALS LIMITED		
Bhopal		
GENERAL ARRANGEMENT OF		
132 KV SWITCHYARD RELAY PANELS		
DRG. NO. 3 561 00 5 0925		

8

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INVENTORY NO.	SIGN & DATE	REF DRG. NO.
---------------	-------------	--------------

DEVICE REFERENCE	D E S C R I P T I O N	TYPE / MAKE	INSCRIPTION ON LABEL IN FRONT OF DEVICE			ON LABELS AT THE REAR OF DEVICE			
			I LINE	II LINE	III LINE	FRONT	REAR		
			DISTANCE	O/C & E/F	PROTECTION	21	67/67N		
21	DISTANCE PROTECTION RELAY	P442/AREVA				21	001	001	L7
67/67N	DIRECTIONAL O/C & E/F RELAY	P141/AREVA							
	HIGH SPEED TRIP RELAY, H/R CONTACT	VAPM53/AREVA	TRIP RELAY	86	-	86	001	001	L7
74	TRIP COIL SUPERVISION RELAY	VAX21/AREVA	TRIP RELAY 86	COIL SUPERVISION	74	74	001	001	L7
195	CB COIL SUPERVISION RELAY	VAX31/AREVA	TRIP COIL -1	SUPERVISION	195	195	001	001	L7
295	CB COIL SUPERVISION RELAY	VAX31/AREVA	TRIP COIL -2	SUPERVISION	295	295	001	001	L7
30A	2 ELEMENT AUX RELAY	VAA21/AREVA	LOSS OF NZ/	LOSS OF SF6	30A	30A	001	001	L7
30C	2 ELEMENT AUX RELAY	VAA21/AREVA	O/L TRIP/	GEN L/O	30C	30C	001	001	L7
30D	2 ELEMENT AUX RELAY	VAA21/AREVA	N2 L/O	AUTO TRIP	30D	30D	001	001	L7
30E	2 ELEMENT AUX RELAY	VAA21/AREVA	DC-2 MCB FAIL/	OIL PRESSURE TROUBLE	30E	30E	001	001	L7
30F	2 ELEMENT AUX RELAY	VAA21/AREVA	DC-1 MCB FAIL/	MCB TRIP	30F	30F	001	001	L7
80	DC SUPPLY SUPERVISION RELAY	VAA11/AREVA	PANEL DC	SUPERVISION	80	80	001	001	L7
27	UNDER VOLTAGE RELAY	VAG11/AREVA	U/V FOR ES	INTERLOCK	27	27	001	001	L7
50ZX	2 ELEMENT AUX RELAY	VAA21/AREVA	LB8	50ZX	-	50ZX	001	001	L7
SP1/2	2 ELEMENT AUX RELAY	VAA21/AREVA	SPARE	SP1/2	-	SP1/2	001	001	L7
TS	TIME SYNCHRONISER	T-GPS-300 / SERTEL	TIME SYNCHRONISER	TS	-	TS	001	001	L7
1TB67	TEST TERMINAL BLOCK	MPC/AREVA	TEST BLOCK	FOR 67/67N	1TB67	1TB67	001	001	L7
2TB67	TEST TERMINAL BLOCK	MPC/AREVA	TEST BLOCK	FOR 67/67N	2TB67	2TB67	001	001	L7
1TB21	TEST TERMINAL BLOCK	MPC/AREVA	TEST BLOCK	FOR 21	1TB21	1TB21	001	001	L7
2TB21	TEST TERMINAL BLOCK	MPC/AREVA	TEST BLOCK	FOR 21	2TB21	2TB21	001	001	L7
KITZ	CONVERTER	-/AREVA	PORT CONVERTER	KITZ	-	-	001	-	L5
KALKI	CONVERTER	-/AREVA	PROTOCOL	CONVERTER	KALKI	-	001	-	L5
PSU	POWER SUPPLY	-/AREVA	POWER SUPPLY	FOR KALKI	PSU	-	001	-	L5
</									

INTERNAL MOUNTINGS

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BHARAT HEAVY ELECTRICALS LIMITED

BHO PAL

GENERAL ARRANGEMENT OF

132 KV SWITCHYARD RELAY PANELS

1: 16	REFER CG 06503	98508-A-555-01
(IN PC)	TABLE 2.5-1	

Doc. No. 3 561 00 5 0925

5 0925

ORG.NO. 3 561 00 5 0925

ORG. NO. 3 E

TOTAL QTY. OF LABEL REMOVED PANEL	BLANK KIDNEY MED.	DRAINING REFERENCE	ITEM NO.	SIZE OF CABLE (INCH)	MATERIAL CODE	LETTER REPORT PANEL NUMBER
L5	3 561 11 5 0417	004	15+55	BP	9029447257	3
L7	3 561 11 5 0417	005	15+70	BP	9029447265	3
LP	4 561 11 5 3021	001	25+25	BP	9029094672	3

001	LP	4 561 11 5 3021	001	25x25	BP 9029094672	3
-----	----	-----------------	-----	-------	---------------	---

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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm.

4/27/2009 11:00:17 AM

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OUTLINE AND GENERAL ARRANGEMENT DRAWING
OF
132 KV SWITCHYARD CONTROL PANELS
FOR
132/33 KV GAS INSULATED SWITCHGEAR PACKAGE
AT
VITTALWADI (NARAYANAGUDA)
APTRANSCO

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
REV	DATE	ALT.
ZONE	ZONE	ZONE
REV	DATE	ALT.
ZONE	ZONE	ZONE
DATE	ALT.	REV
27 APR 2009	CHKD. J.R.	01
CUSTOMER'S COMMENTS INCORPORATED.		
DRAWN	NAME	SIGN
CHKD.	J.R.	sd/-
APPRO.	A.K.M.	sd/-
DISTRIBUTION OF PRINTS	DATE	DATE
1 NO. ENGINEER	03DEC08	03DEC08
3 NOS. CUSTOMER		
SWE	409	
SCALE	WEIGHT	UNITOL. DIMS. OR
1:1	---	W.O.NO.
1:1	---	98508-A-555-01
DRG. NO.	3 561 00 5 0924	

CUSTOMER L.R. NO. CE/C/400KV/SE (P&M) DE-1/A2/GIS/BHEL
OM 0298/2008-1 DATED 24 MARCH 2008

CUSTOMER /PROJECT 132/33 KV GAS INSULATED SWITCHGEAR PACKAGE
AT VITTALWADI (NARAYANAGUDA)
APTRANSCO

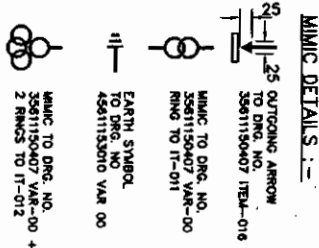
BHARAT HEAVY ELECTRICALS LIMITED
BHOPAL

TITLE GENERAL ARRANGEMENT OF
132 KV SWITCHYARD CONTROL PANELS

CARD CODE REV
NO. OF SHEETS 07
SHEET NO. 01

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REV		DATE	ATD.	REV	DATE	ATD.	REV	DATE	ATD.	INVENTORY NO.
CHG.			OKD.			OKD.			OKD.	
APPD.			APPD.			APPD.			APPD.	
01		27	2009	CUSTOMER'S COMMENTS INCORPORATED.						
DRAWN		NAME	SIGN.	DATE	ATD.	REV	DATE	ATD.	REV	DATE
CHKD.		J.R.	sd/-	03DEC08	03DEC08	01	27	2009	2009	2009
APPD.		J.R.	sd/-	03DEC08	03DEC08	01	27	2009	2009	2009
DISTRIBUTION OF PRINTS		DEPT.		CODE		SHEETS		NO. OF SHEETS		NO. OF SHEETS
O.COPY 1 NO. ENGINEER 1 NO. SWM 3 NOS. CUSTOMER 6 NOS.		SWE 409				132 KV SWITCHYARD CONTROL PANELS		5 092		5 092
SCALE 1:10		W.O. NO. 98508-A-555-01		DRG. NO. 3		561 00		5 092		5 092
WEIGHT		UNITS. DMS. GR.		W.O. NO.		DRG. NO.		561 00		5 092
---		---		98508-A-555-01		3		561 00		5 092

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
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LOOSE SUPPLY ITEMS WITH ENERGY METER

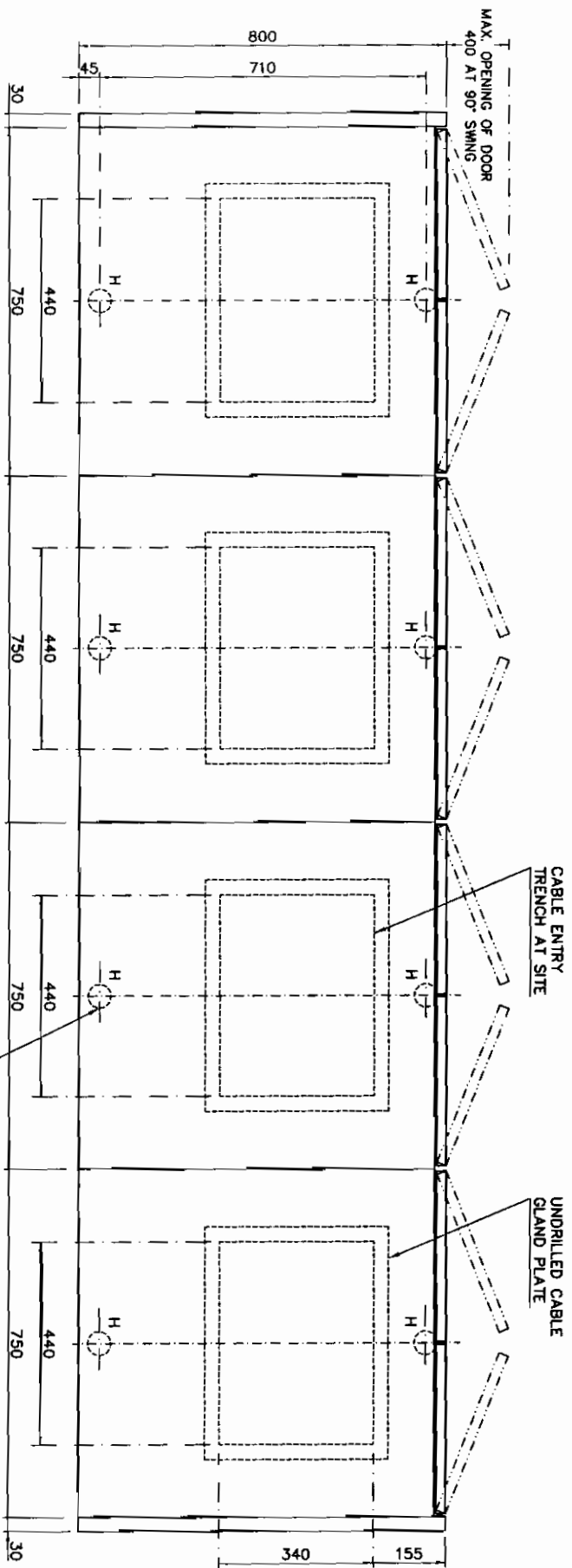
1) MRI	- 1NO.
2) DESKTOP PC WITH S/W	- 1NO.

CONTROL & SELECTOR SWITCH DIAL PLATE DETAILS

		DEPT. CODE		SWE	
TITLE		132 KV SWITCHYARD CONTROL PANELS			
GENERAL ARRANGEMENT OF		132 KV SWITCHYARD CONTROL PANELS			
BHOPAL		BHOPAL			
CARD CODE		---			
NO. OF SHEETS		5			
SHEET NO.		09			
SCALE		1:10			
WEIGHT		---			
UNCL. Dwg. 58		98508-A-555-01			
REFER TO 06403		TABLE 25-1			
NO. OF SHEETS		5			
SHEET NO.		09			

1. FINISH :- (POWDER COATED, PLAIN FINISH)
 - I. EXTERIOR :- RAL 7032.
 - II. INTERIOR :- RAL 7032.
 - III. PLINTH :- BLACK, SEMI-MATT
2. COLOUR OF PAINTED STEEL STRIP MIMIC (AS PER IS:11954-1987)
 - I. 132KV - SIGNAL RED TO SHADE NO. 537 OF IS:5
 - II. 33KV - OLIVE GREEN TO SHADE NO. 220 OF IS:5
 - III. 110V - DARK VIOLET
 - IV. EARTH - BLACK
3. ALL INSTRUMENTS, METERS & RELAYS ETC. MOUNTED ON FRONT PANEL ARE FLUSH MOUNTING TYPE.
4. FUSES, LINKS, E/LINKS, NO. OF T.Bs. WIRING ETC. AS PER WIRING TABLE.
5. CUBICLES ARE SUITABLE FOR IP:54 DEGREE OF PROTECTION TO IS:13947.
6. EARTH BAR - 3 THK. x 25W TIN PLATED COPPER IS PROVIDED AT THE BOTTOM OF THE PANEL ACROSS THE WIDTH & ONE DEPTH OF THE CUBICLE.
7. THE CUBICLE'S FRONT PANEL IS MANUFACTURED FROM 3 THK C. R. S. SHEET & REST OF THE CUBICLE IS FABRICATED FROM 2 THK C. R. S. SHEET.
8. EXPOSED TERMINALS OF ALL FUSES, LINKS, TERMINAL BLOCKS ARE SHROUDED.
9. REAR DOORS ARE CONNECTED TO EARTHBAR WITH GREEN PVC FLEXIBLE WIRE.
10. MAIN CIRCUIT LABEL & DEVICE LABELS ARE BLACK ANODISED ALUMINIUM WITH NATURAL WHITE ENGRAVING, PROVIDED ON FRONT & REAR OF THE DEVICE. LABELS FIXED TO THE PANEL WITH SCREWS AND NUTS, ENGRAVINGS AS PER THIS DRAWING.
11. TERMINAL BLOCKS ARE CLIP-ON TO CHANNEL, SCREW DRIVER OPERATED STUD TYPE, DISCONNECTING TYPE CATDM4 OF ELMEX MAKE OR EQUIVALENT FOR CT & PT CIRCUITS, NON-DISCONNECTING TYPE CATM3 OF ELMEX MAKE OR EQUIVALENT FOR REST OF THE CIRCUITS. DISCONNECTING TERMINAL BLOCKS SUITABLE FOR TAKING TWO LUGGED WIRES WITH CONDUCTOR CROSS SECTION OF UP TO 6 SQUARE MM SIZE. NON-DISCONNECTING TERMINAL BLOCKS SUITABLE FOR TAKING TWO LUGGED WIRES WITH CONDUCTOR CROSS SECTION OF UP TO 4 SQUARE MM SIZE.
12. PANEL WIRING :- PVC INSULATED, 650V GRADE STRANDED COPPER CONDUCTOR WIRE WITH CONDUCTOR CROSS SECTION AS UNDER :
 - 2.5 SQUARE MM FOR CT, PT & EARTH CIRCUITS
 - 1.5 SQUARE MM FOR REST OF THE CIRCUITS
 - 0.5 SQUARE MM FOR ALARM CIRCUITS.
13. WIRE TERMINATIONS :- USING SOLDERLESS CRIMPING LUGS.
 - COLOUR OF WIRES :-
 - 1 PHASE AC CIRCUIT (PHASE & NEUTRAL) : BLACK
 - DC CIRCUITS (POSITIVE & NEGATIVE) : GREY
 - EARTH : GREEN
 - 3 PHASE CT & PT CIRCUITS :
 - A PHASE : RED
 - B PHASE : YELLOW
 - C PHASE : BLUE
 - NEUTRAL : BLACK
14. FOR IDENTIFICATION OF WIRES NUMBERED FERRULES WITH BLACK LETTER/DIGIT OVER WHITE SURFACE AT BOTH ENDS OF WIRE ARE PROVIDED.

- 8 HOLES 'H' IN FLOOR AT SITE 50 DIA * 80 DEEP FOR M12 * 100 LG FOUNDATION BOLTS (TO BE SUPPLIED BY BHEL BHOPAL)



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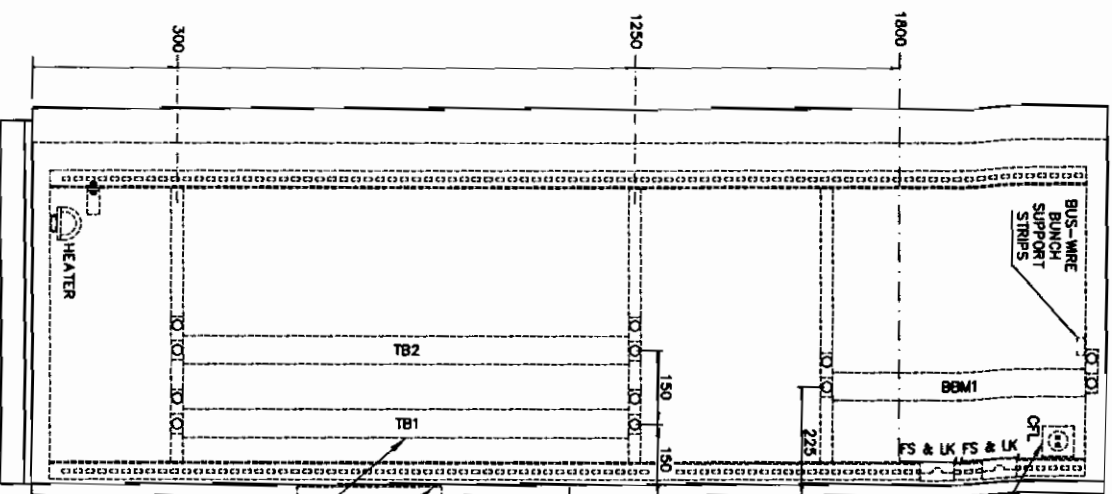
NOTES:—

1. FOR MOUNTING OF DEVICES, MOUNTING PLATES ARE DRILL TO SUIT IN ASSEMBLY.
2. FITMENT'S DIMENSION SHOWN IN SIDE VIEW ARE NOT VERY CRITICAL AND CAN BE CHANGED TO SUIT AS PER ASSEMBLY'S REQUIREMENT.
3. SLOTTED MOUNTING STRIPS FOR MOUNTING IN THE WIDTH OF THE CUBICLES TO DRG. NO. 35611150274 ITEM - 001 TO 004

SLOTTED MOUNTING STRIPS FOR MOUNTING IN THE DEPTH OF THE CUBICLES TO DRG. NO. 35611150274 ITEM - 001

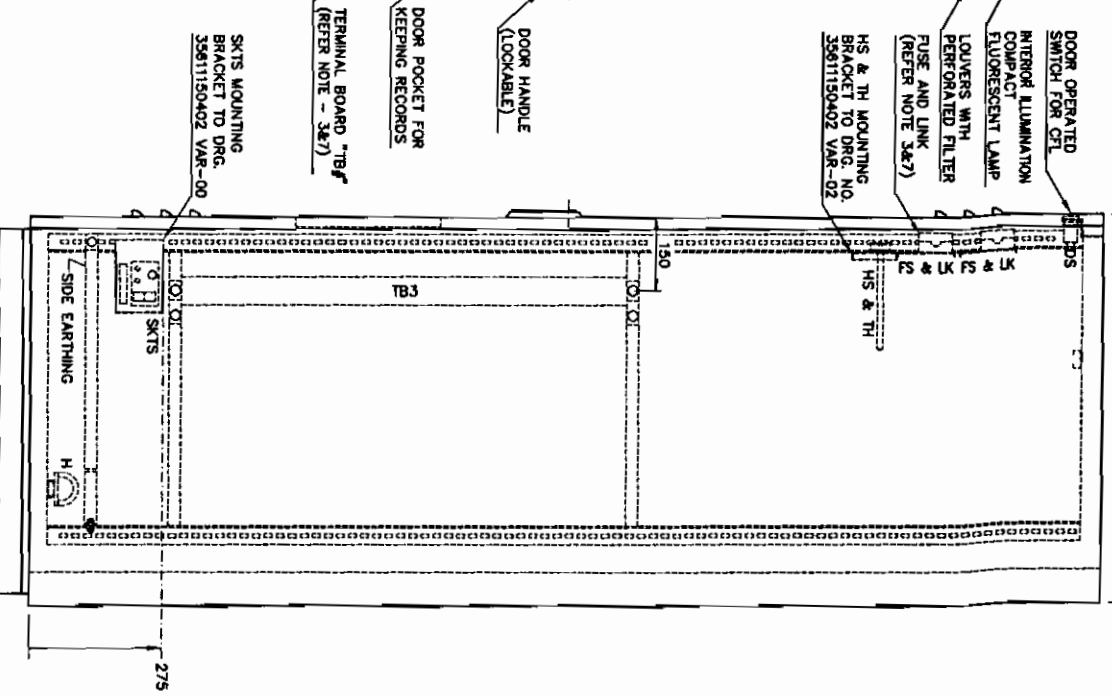
RIGHT HAND SIDE SHEET DETAILS

(FOR ALL PANELS)



LEFT HAND SIDE SHEET DETAILS

(FOR ALL PANELS)



BHARAT HEAVY ELECTRICALS LIMITED BHOPAL		CARD CODE
GENERAL ARRANGEMENT OF 132 KV SWITCHYARD CONTROL PANELS		--
TITLE	NO OF SHEET	
SCALE	SHEET NO.	
WEIGHT		
DRAWN		
CHKD.		
DATE		
BY		
FOR		
BY		
FOR		

FIRST ANGLE PROJECTION

L DIMENSIONS ARE IN mm.

4/27/2009 11:09:23 AM

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ON DRG

SCHEDULE OF APPARATUS & LABEL DETAILS

DEVICE REFERENCE	DESCRIPTION	TYPE / MAKE	INSCRIPTION ON LABEL IN FRONT OF DEVICE			INSCRIPTION ON LABELS AT THE REAR OF DEVICE		TOTAL QTY. OF LABELS
			I LINE	II LINE	III LINE	FRONT	REAR	
AA1	8 WAY ALARM ANNUNCIATOR	- / VESTAL	ALARM ANNUNCIATOR	AA1	-	AA1	004	004 L7
AA2	8 WAY ALARM ANNUNCIATOR	- / VESTAL	ALARM ANNUNCIATOR	AA2	-	AA2	004	004 L7
AA3	8 WAY ALARM ANNUNCIATOR	- / VESTAL	ALARM ANNUNCIATOR	AA3	-	AA3	002	002 L7
AR	DC MILLI AMETER, 4-20mA	- / IMP	R-PHASE	CURRENT	AR	AR	004	004 L7
AY	DC MILLI AMETER, 4-20mA	- / IMP	Y-PHASE	CURRENT	AY	AY	004	004 L7
AB	DC MILLI AMETER, 4-20mA	- / IMP	B-PHASE	CURRENT	AB	AB	004	004 L7
V	DC MILLI AMETER, 4-20mA	- / IMP	VOLTAGE	V	-	V	004	004 L7
F	FREQUENCY METER	- / IMP	FREQUENCY	F	-	F	001	001 L7
MW	DC MILLI AMETER, 4-20mA	- / IMP	ACTIVE POWER	MW	-	MW	004	004 L7
MVAR	DC MILLI AMETER, 4-20mA	- / IMP	REACTIVE POWER	MVAR	-	MVAR	004	004 L7
PBS	PUSH BUTTON SWITCH WITH BLACK ACTUATOR	- / STD. STOCKED	SILENCE	PBS	-	PBS	004	004 L5
PBA	PUSH BUTTON SWITCH WITH BLACK ACTUATOR	- / STD. STOCKED	ACCEPT	PBA	-	PBA	004	004 L5
PBR	PUSH BUTTON SWITCH WITH BLACK ACTUATOR	- / STD. STOCKED	RESET	PBR	-	PBR	004	004 L5
PBT	PUSH BUTTON SWITCH WITH BLACK ACTUATOR	- / STD. STOCKED	LAMP TEST	PBT	-	PBT	004	004 L5
PBI	PUSH BUTTON SWITCH WITH BLACK ACTUATOR	- / STD. STOCKED	DC FAIL	ACCEPT	PBI	PBI	001	001 L5
SLA	LED TYPE INDICATING LAMP WITH AMBER LENS	- / STD. STOCKED	PANEL	DC FAIL	SLA	SLA	004	004 L5
SLA1	LED TYPE INDICATING LAMP WITH AMBER LENS	- / STD. STOCKED	COMMON	DC FAIL	SLA1	SLA1	001	001 L5
SLA2	LED TYPE INDICATING LAMP WITH AMBER LENS	- / STD. STOCKED	PANEL DC	HEALTHY	SLA2	SLA2	004	004 L5
SL52G	LED TYPE INDICATING LAMP WITH GREEN LENS	- / STD. STOCKED	OPEN	SL52G	-	SL52G	004	004 L5
SL52R	LED TYPE INDICATING LAMP WITH RED LENS	- / STD. STOCKED	CLOSE	SL52R	-	SL52R	004	004 L5
SL89LG	LED TYPE INDICATING LAMP WITH GREEN LENS	- / STD. STOCKED	OPEN	SL89LG	-	SL89LG	002	002 L5
SL89LR	LED TYPE INDICATING LAMP WITH RED LENS	- / STD. STOCKED	CLOSE	SL89LR	-	SL89LR	002	002 L5
SL89MG	LED TYPE INDICATING LAMP WITH GREEN LENS	- / STD. STOCKED	OPEN	SL89MG	-	SL89MG	004	004 L5
SL89MR	LED TYPE INDICATING LAMP WITH RED LENS	- / STD. STOCKED	CLOSE	SL89MR	-	SL89MR	004	004 L5
SL89M3G	LED TYPE INDICATING LAMP WITH GREEN LENS	- / STD. STOCKED	OPEN	SL89M3G	-	SL89M3G	001	001 L5
SL89M3R	LED TYPE INDICATING LAMP WITH RED LENS	- / STD. STOCKED	CLOSE	SL89M3R	-	SL89M3R	001	001 L5
SL89TG	LED TYPE INDICATING LAMP WITH GREEN LENS	- / STD. STOCKED	OPEN	SL89TG	-	SL89TG	002	002 L5
SL89TR	LED TYPE INDICATING LAMP WITH RED LENS	- / STD. STOCKED	CLOSE	SL89TR	-	SL89TR	002	002 L5

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ENTRY NO. SIGN & DATE REF DRG. NO.

REV	DATE	ALD.	REV	DATE	ALD.
01	27 APR 2009	APR. P.K.U.	01	27 APR 2009	APR. P.K.U.
CUSTOMER'S COMMENTS INCORPORATED.					

DRAWN	NAME	SIGN.	DATE
APR	P.K.U.	sd/-	27 APR 2009
CHECKED	NAME	SIGN.	DATE
APR	P.K.U.	sd/-	27 APR 2009
DISTRIBUTION OF PRINTS O COPY 1 NO. ENGINEER 1 NO. SWM 3 NOS. CUSTOMER 6 NOS.			

BHARAT HEAVY ELECTRICALS LIMITED BHOPAL	
GENERAL ARRANGEMENT OF 132 KV SWITCHYARD CONTROL PANELS	
SCALE	1:10
WEIGHT	UNITS: GMS. OR W/O.N.O.
REFER	CG 0803 08508 A 555-01
DRG.	3 561 00 5 0924
NO. OF SHEETS	07
SHEET NO.	06

DIMENSIONS ARE IN MM.

LABEL SPECIFICATION :-

REV	DATE	ALT.
		OKD.
		APPD.
ZONE		

REV		ZONE		INTERNAL MOUNTINGS	

INVENTORY NO.

SIGN & DATE

REF DRG. NO.

35200001021

DRG.NO.

REV

DATE

ALTERED

CKD.

APPD.

REV

DATE

ALTERED

CKD.

APPD.

REV

DATE

ALTERED

CKD.

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ZONE

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DRAWN

NAME

SIGN.

DATE

CKD

RRR

Sd/-

25. 04. 11

APPD

HRP

Sd/-

25. 04. 11

DISTRIBUTION OF PRINTS

CUSTOMER

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DC

- 1

ENGR.

-1

SWGR. SHOPS-2

SWGR. TEST-1

SWGR. TCX

-1

35200001021

DRG.NO.

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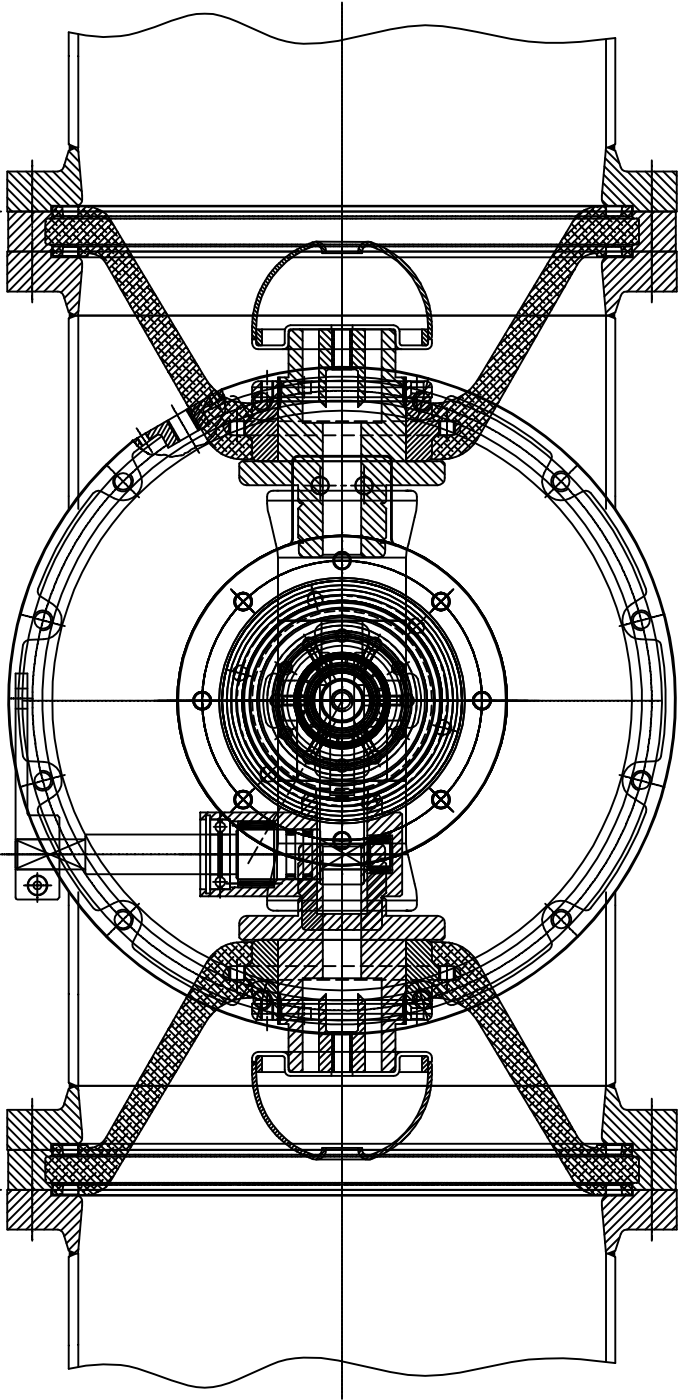
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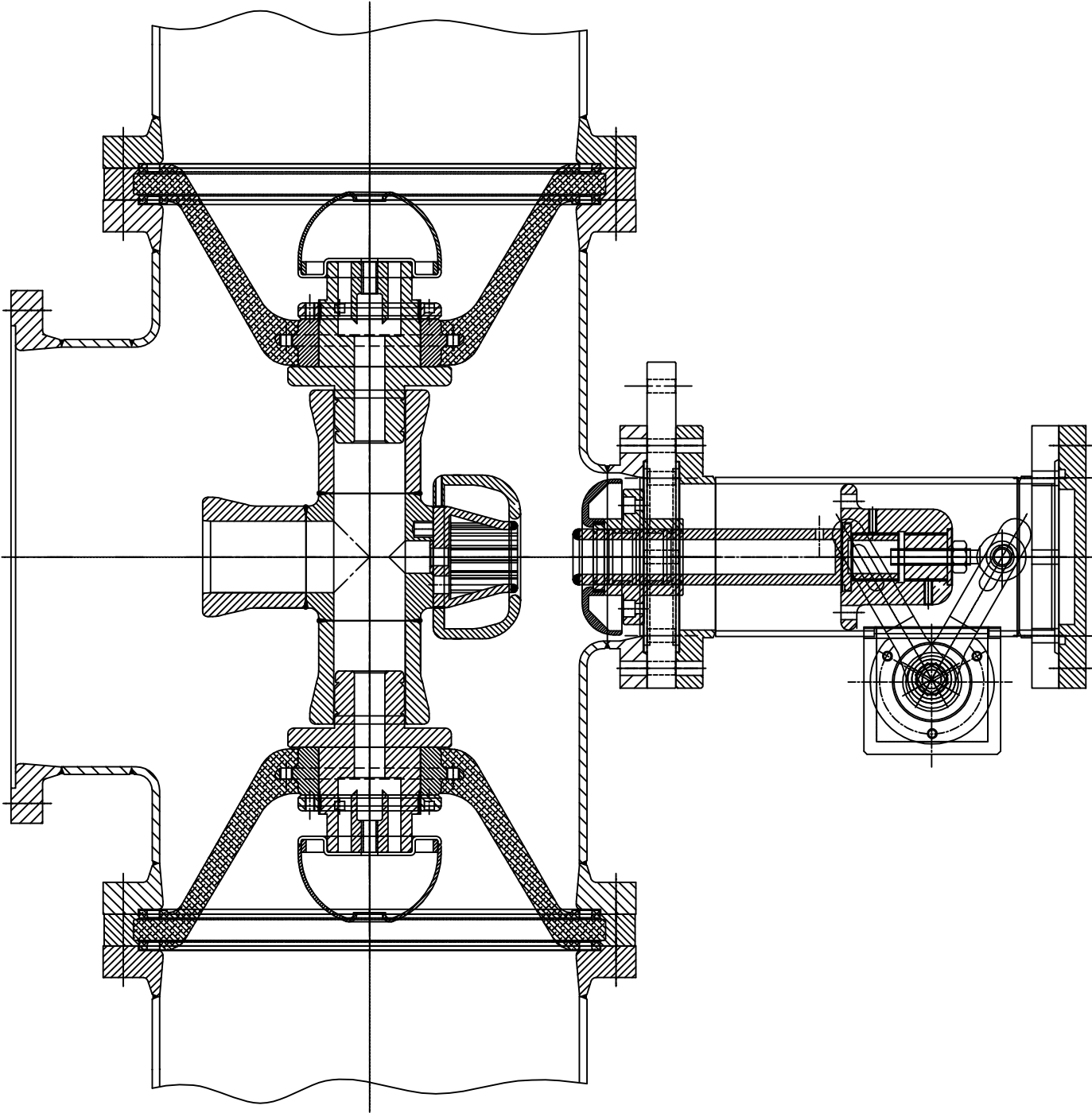
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CUSTOMER P.O. NO. -LR NO. CE/C/400 KV/SE (P&MM) DE-1/A2/GIS/BHEL
DM 0298/2008-1 AT 24-03-2008

TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO

भारत भारती

BHEL

DEPT.

CODE

BHARAT HEAVY ELECTRICALS LIMITED

BHOPAL

TITLE

OGA OF EARTH SWITCH MODULE

SCALE

1:1

W.O.NO.

98011-A-475-03
98012-A-475-03

DRG. NO.

35200001021

CARD CODE

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REV. NO.

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NO.OF SHEETS

01

SHEET NO.

01

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SIGN & DATE

INVENTORY NO.

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

DRG.NO.

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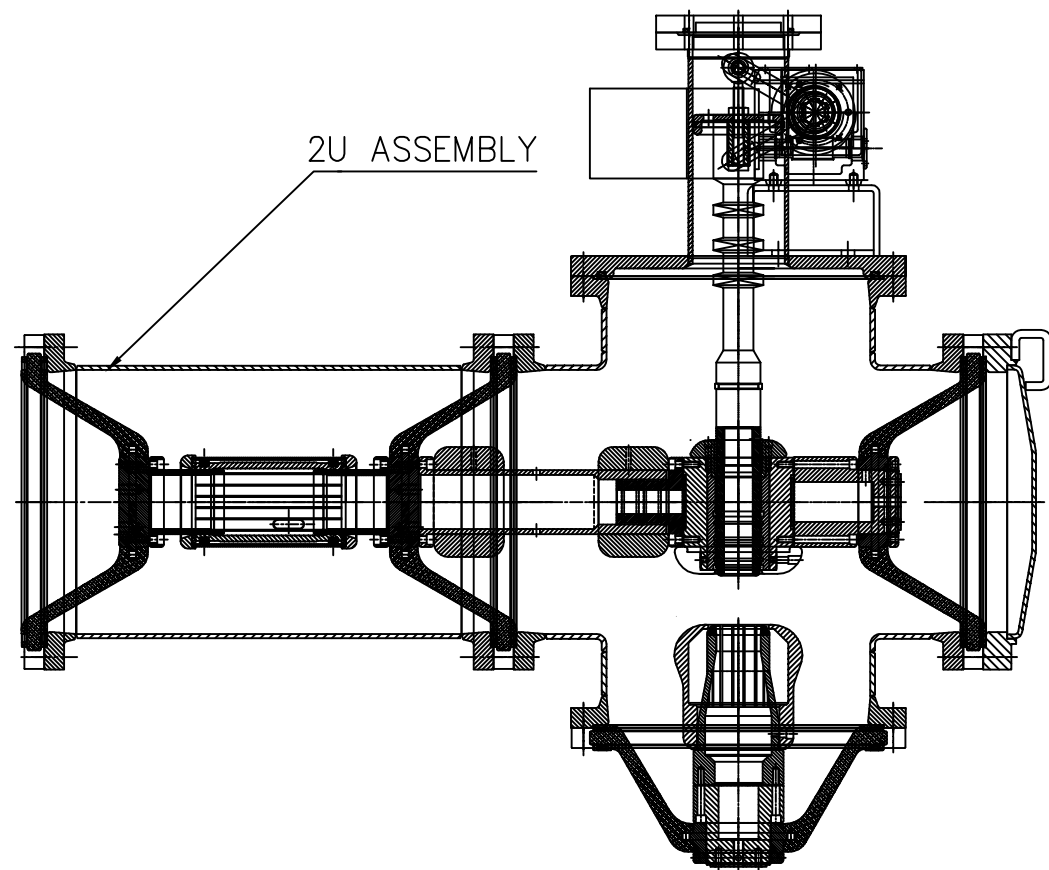
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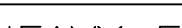
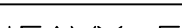
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2U ASSEMBLY

 550 ± 10

TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO

REV	DATE	ALTERED	REV	DATE	ALTERED	REV	DATE	ALTERED	DRAWN	NAME AKN	SIGN. Sd/-	DATE 25. 04. 11		BHARAT HEAVY ELECTRICALS LIMITED BHOPAL				CARD CODE --	REV. NO. 00
		CKD.			CKD.			CKD.											
		APPD.			APPD.			APPD.											
ZONE			ZONE			ZONE		APPD	HRP	Sd/-	25. 04. 11		DEPT. CODE		TITLE <u>OGA OF T-ISOLATOR MODULE</u>		NO.OF SHEETS	01	
								DISTRIBUTION OF PRINTS											
								CUSTOMER -4		QC - 1									
								ENGR. -1		SWGR. SHOPS-2									
								SWGR. TEST-1		SWGR. TCX -1									
				SWE	409	SCALE 1:1	W.O.NO. 98011-A-475-03 98012-A-475-03	DRG. NO. 35200001020											

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REF DRG. NO.

SIGN & DATE

INVENTORY NO.

DRG.NO.

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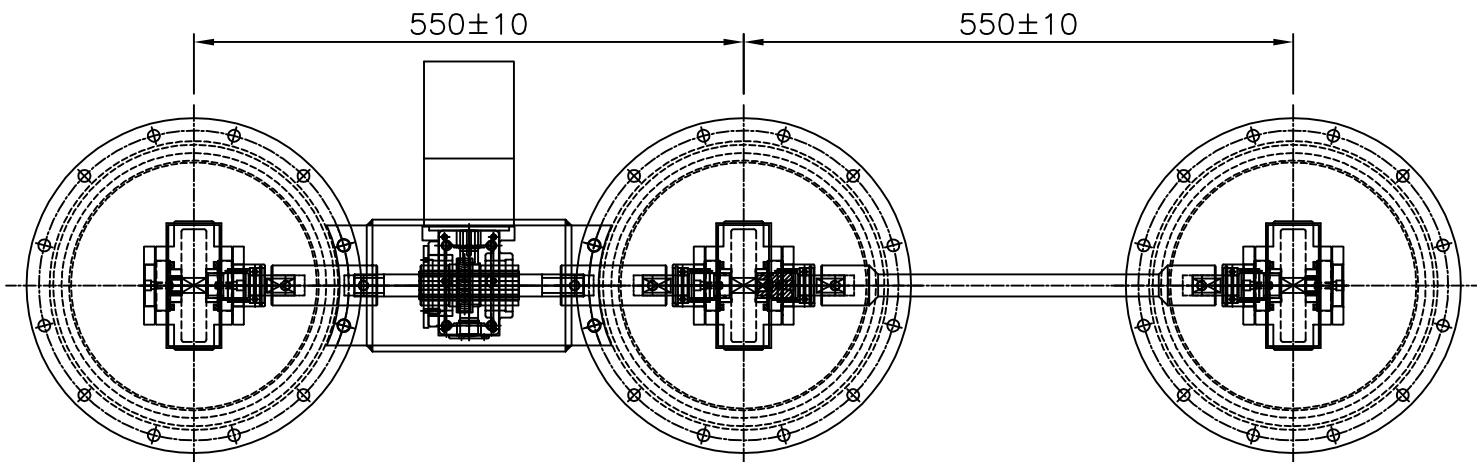
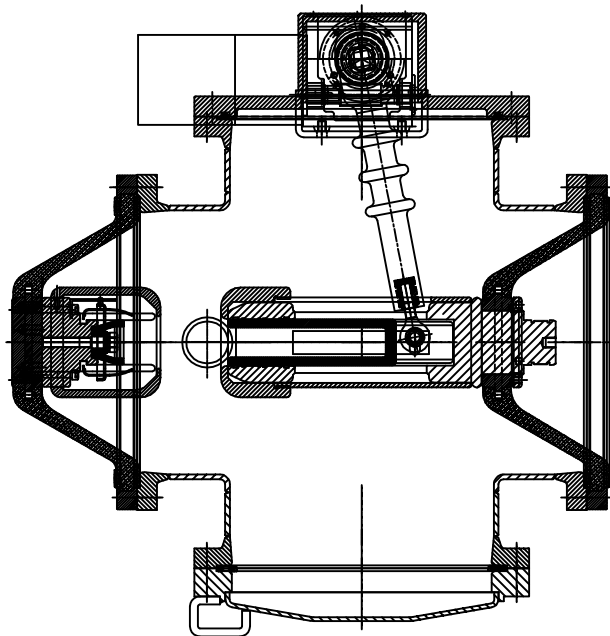
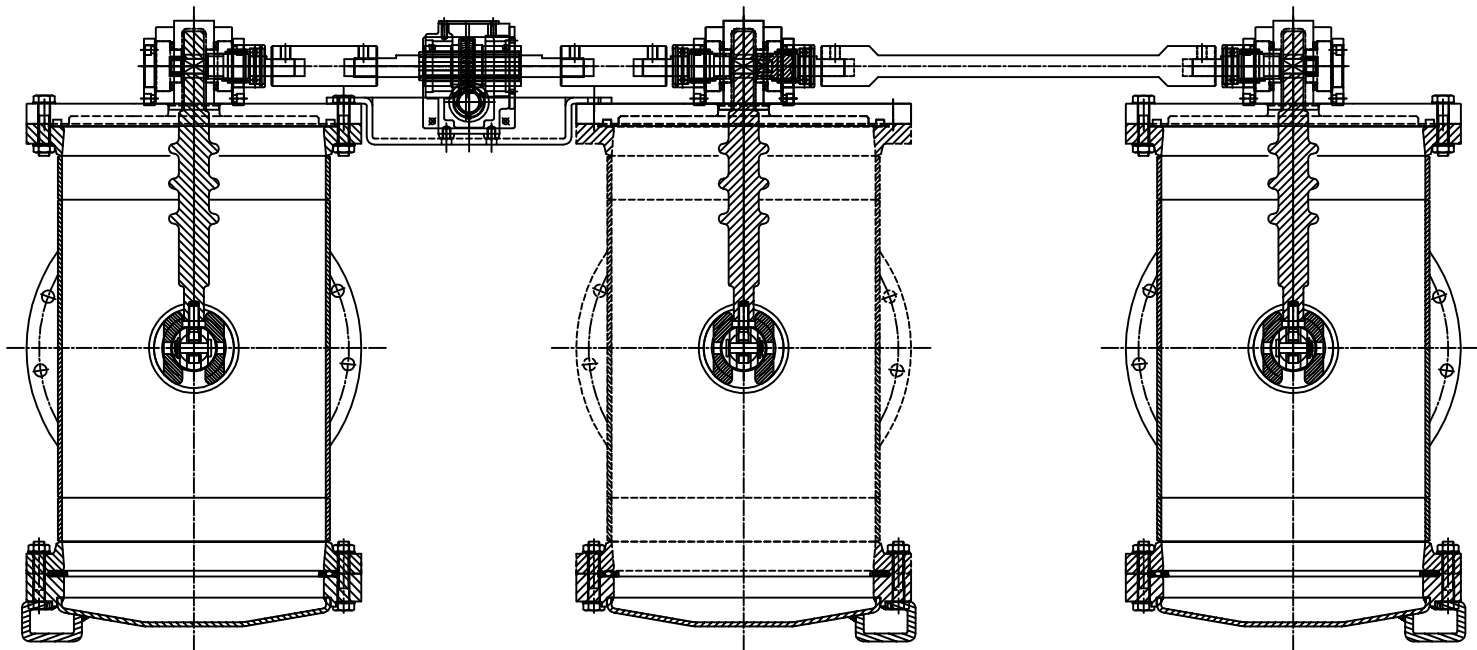
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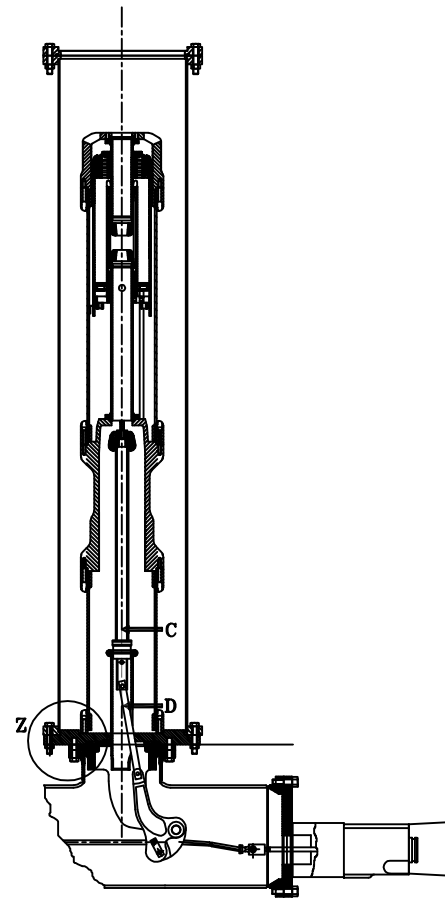
CUSTOMER P.O. NO. -LR NO. CE/C/400 KV/SE (P&MM) DE-1/A2/GIS/BHEL
OM 0298/2008-1 AT 24-03-2008

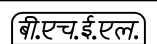
TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO

REV	DATE	ALTERED	REV	DATE	ALTERED	REV	DATE	ALTERED	DRAWN	NAME AKN	SIGN. Sd/-	DATE 25. 04. 11		BHARAT HEAVY ELECTRICALS LIMITED BHOPAL					CARD CODE --	REV. NO. 00		
		CKD.			CKD.			CKD.														
		APPD.			APPD.			APPD.														
ZONE			ZONE			ZONE		APPD	HRP	Sd/-	25. 04. 11	DEPT. CODE		TITLE OGA OF AXIAL ISOLATOR MODULE					NO.OF SHEETS	01		
																					DISTRIBUTION OF PRINTS	
																					CUSTOMER -4	QC - 1
												ENGR. -1	SWGR. SHOPS-2	SWE	409	SCALE 1:1	W.O.NO. 98011-A-475-03 98012-A-475-03	DRG. NO. 35200001019				
												SWGR. TEST-1	SWGR. TCX -1									

INVENTORY NO.	SIGN & DATE	REF DRG. NO.
---------------	-------------	--------------

DRG.NO.



		BHARAT HEAVY ELECTRICALS LIMITED		CARD CODE	REV. NO.
		BHOPAL		--	00
DEPT. CODE		TITLE <u>OGA OF CIRCUIT BREAKER MODULE</u>		NO.OF SHEETS	01
				SHEET NO.	01
SWE	409	SCALE 1:1	W.O.NO. 98011-A-475-03 98012-A-475-03	DRG. NO.	35200001018

INVENTORY NO.

SIGN & DATE

614051100
REF DRG. NO.

35200001003
DRG. NO.

2345678

REV

DATE

ALTERED

CKD.

APPD.

REV

DATE

ALTERED

CKD.

APPD.

REV

DATE

ALTERED

CKD.

APPD.

ZONE

ZONE

ZONE

DRAWN

NAME

SIGN.

DATE

CKD

RRR

Sd/-

27. 05. 08

APPD

HRP

Sd/-

27. 05. 08

DISTRIBUTION OF PRINTS

CUSTOMER

-4

QC

- 1

ENGR.

-1

SWGR.

SHOPS-2

SWGR.

TEST-1

SWGR.

TCX

-1

बी.एच.ई.एल.

BHEL

DEPT.

CODE

SWE

409

CUSTOMER P.O. NO. -LR NO. CE/C/400 KV/SE (P&MM) DE-1/A2/GIS/BHEL
DM 0298/2008-1 AT 24-03-2008

TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO

BHARAT HEAVY ELECTRICALS LIMITED
BHOPAL

TITLE

INCOMER BAY

SCALE

NTS

W.O.NO.

98011-A-475-03
98012-A-475-03

DRG. NO.

35200001003

CARD CODE

REV. NO.

NO.OF SHEETS

SHEET NO.

--

00

01

01

01

CABLE TERMINATION

02

EARTH SWITCH

03

AXIAL ISOLATOR

04

CURRENT TRANSFORMER

05

2U BUS

06

CIRCUIT BREAKER

07

2U BUS

08

T-ISOLATOR

09

3-PHASE BUS

10

POTENTION TRANSFORMER

11

LIGHTING ARRESTER

12

LC PANEL

LOCAL CONTROL CONSOLE

3000±50

3493±10

INCOMER

NOTE:-
THE DIM. SHOWN ARE INDICATIVE AND MAY VARY.

COPYRIGHT AND CONFIDENTIAL

614051200

SIGN & DATE

INVENTORY NO.

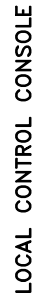
DRG.NO.

3

(5)

7

8



SL.NO.	DESCRIPTION
01	CABLE TERMINATION
02	EARTH SWITCH
03	AXIAL ISOLATOR
04	CURRENT TRANSFORMER
05	2U BUS
06	CIRCUIT BREAKER
07	2U BUS
08	T-ISOLATOR
09	3-PHASE BUS
10	LC PANEL

NOTE:-

THE DIM. SHOWN ARE INDICATIVE AND MAY VARY.

CUSTOMER P.O. NO. -LR NO. CE/C/400 KV/SE (P&MM) DE-1/A2/GIS/BHEL
OM 0298/2008-1 AT 24-03-2008

TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO

REV	DATE	ALTERED	REV	DATE	ALTERED	REV	DATE	ALTERED	DRAWN	NAME BRM	SIGN. Sd/-	DATE 27. 05. 08		BHARAT HEAVY ELECTRICALS LIMITED BHOPAL				CARD CODE --	REV. NO. 00
		CKD.			CKD.			CKD.											
		APPD.			APPD.			APPD.											
ZONE		ZONE		ZONE		APPD	HRP	Sd/-	27. 05. 08		DEPT.	CODE	TITLE TRANSFORMER BAY				NO.OF SHEETS	01	
						DISTRIBUTION OF PRINTS													
						CUSTOMER -4		QC - 1											
						ENGR. -1		SWGR. SHOPS-2											
						SWGR. TEST-1		SWGR. TCX -1											
						SWE	409	SCALE NTS	W.O.NO. 98011-A-475-03 98012-A-475-03	DRG. NO. 35200001002									

COPYRIGHT AND CONFIDENTIAL

REF DRG. NO.

SIGN & DATE

INVENTORY NO.

DRG.NO.

3

4

5

6

7

8



132 / 33 kV
TRANSFORMER

A

B

C

D

□

TYPE OF PRODUCT : 36/145 KV GAS INSULATED SWITCHGEAR
NAME OF PROJECT : M/S APTRANSCO



BHARAT HEAVY ELECTRICALS LIMITED
BHOPAL

TITLE	<u>SLD for 132 / 33 kV GIS S/S</u>
-------	------------------------------------

CARD CODE	REV NO.
--	01

SHEETS	01
SHEET NO.	01

SCALE NTS	W.O.NO. 98011-A-475-03 98012-A-475-03	DRG. NO. 35200001001
--------------	--	-------------------------

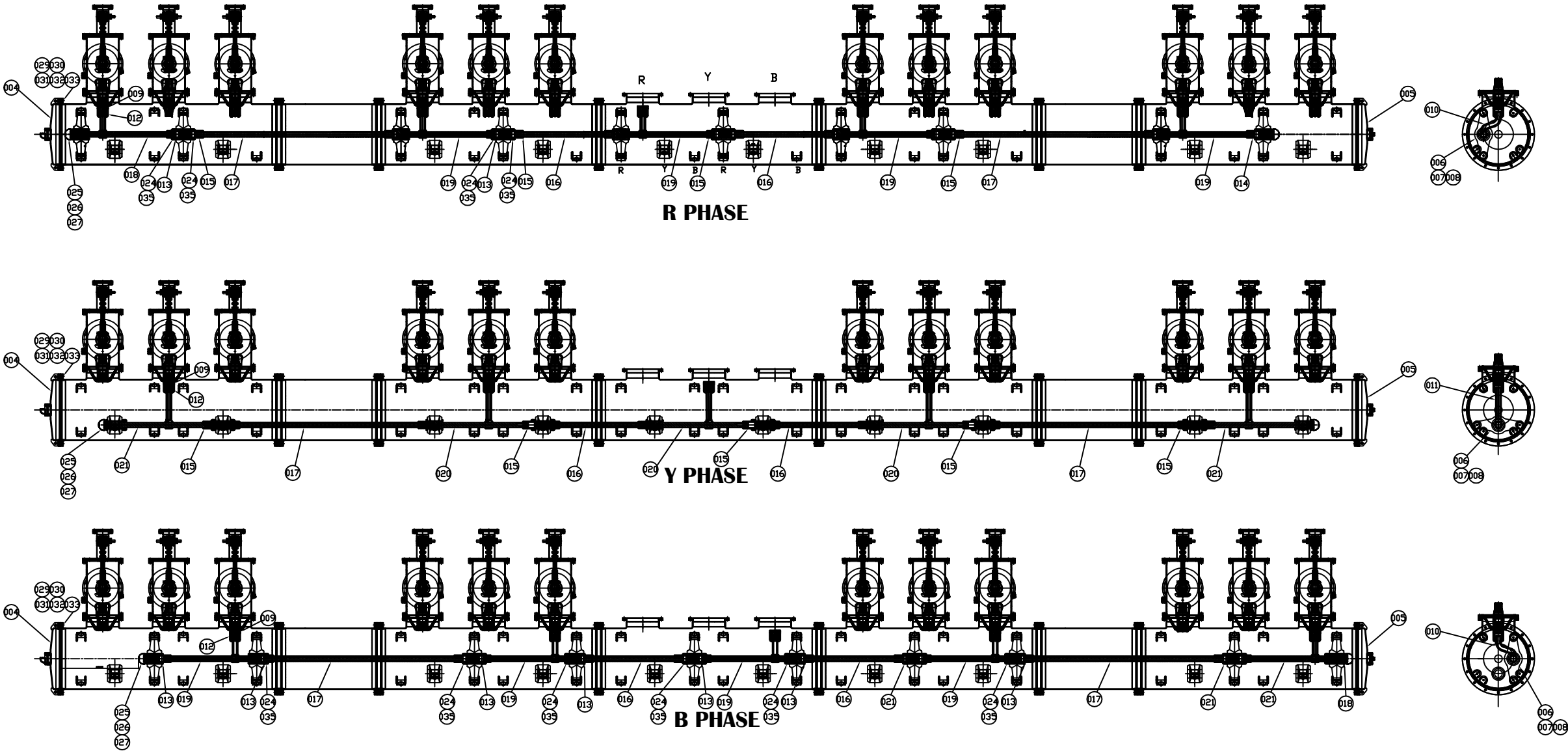
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED.
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

REF.DRG.NO.

SIGN.& DATE

INVENTORY NO.

15200501038 DRG NO



VAR 00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	UNIT	DRAWING NO.	IT.NO. VAR	MATERIAL CODE	A	UNIT	UNIT WT.
								MATL. SPCN.	C		QTY
ADDITIONAL INFORMATION				TYPE OF PRODUCT OR NAME OF CUST./PROJ							
STATUS OF DRAWING				GSM-145							
DISTRIBUTION OF PRINTS				M/S A.P. TRANSCO							
SWE	SWM	TCX		BHARAT HEAVY ELECTRICALS LIMITED							
1	3	1		BHDPAL							
REV	DATE	ALTD	CKD	DEPT	SWE	UN. TOL.DIMENR.	SCALE	WEIGHT	REF TO ASSY	ITEM	NO. OF
		APPD		CODE	409	AA 0230208	1:1	KG	-	NO.	ITEMS
TITLE				BUSBAR & DROPPER ARRNGT. OF							
				COMMON BUSBAR CHAMBER (5-BAY)							
				DRG NO							
				15200501038							
				SHT.NO. 02							
				NO. OF SHT. 02							

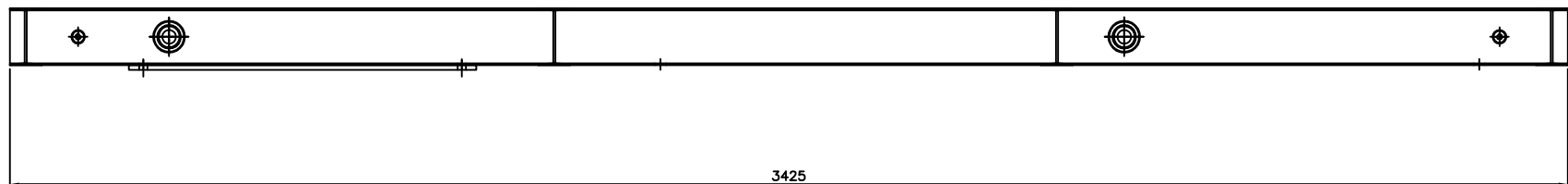
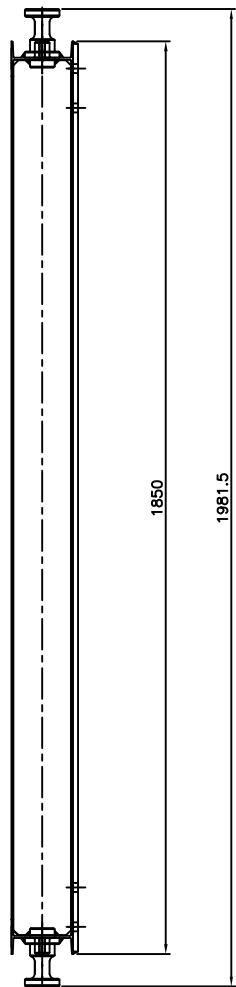
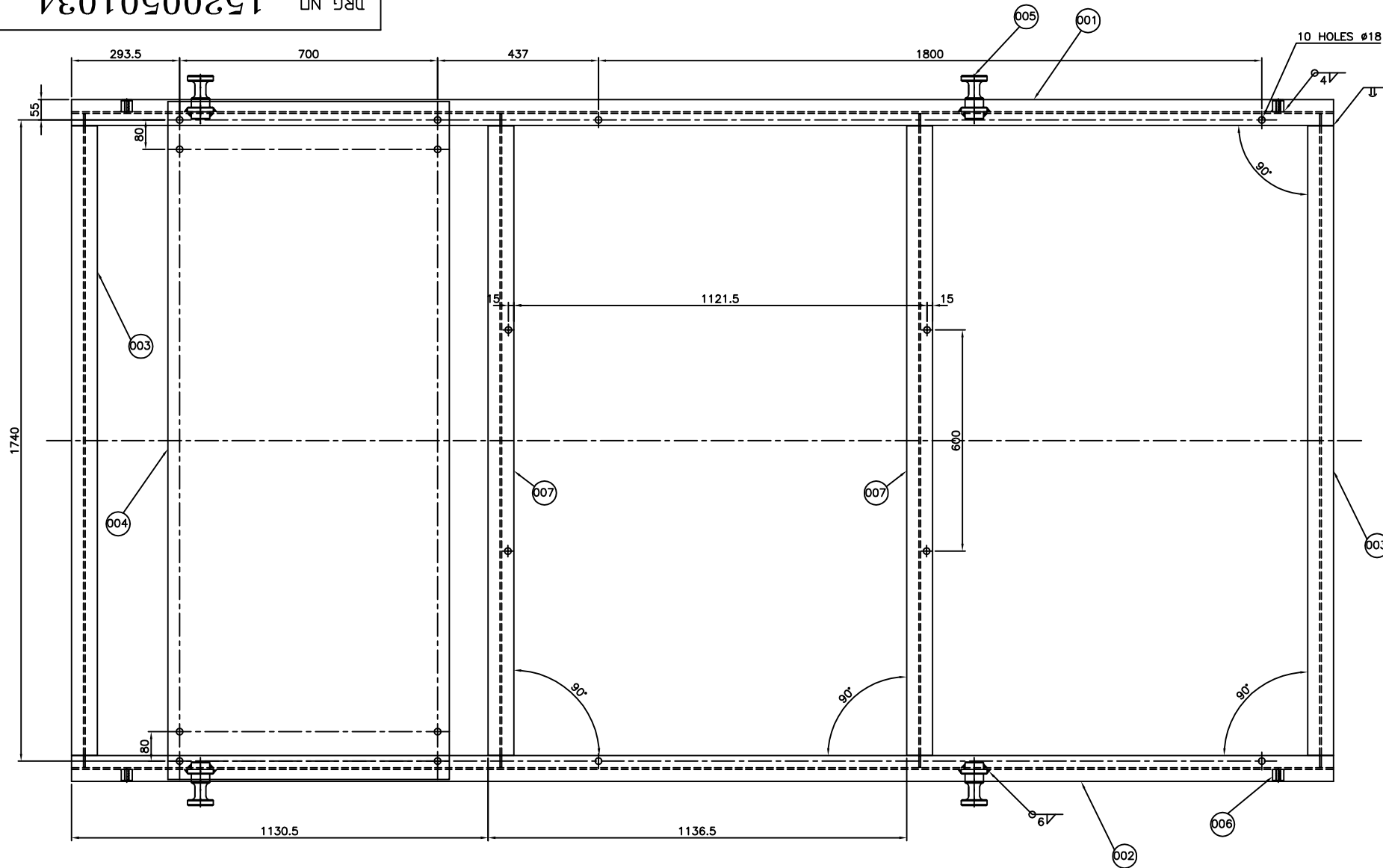
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REF.DRG.NO.

SIGN. & DATE

INVENTORY NO.

DRG NO 15200501034



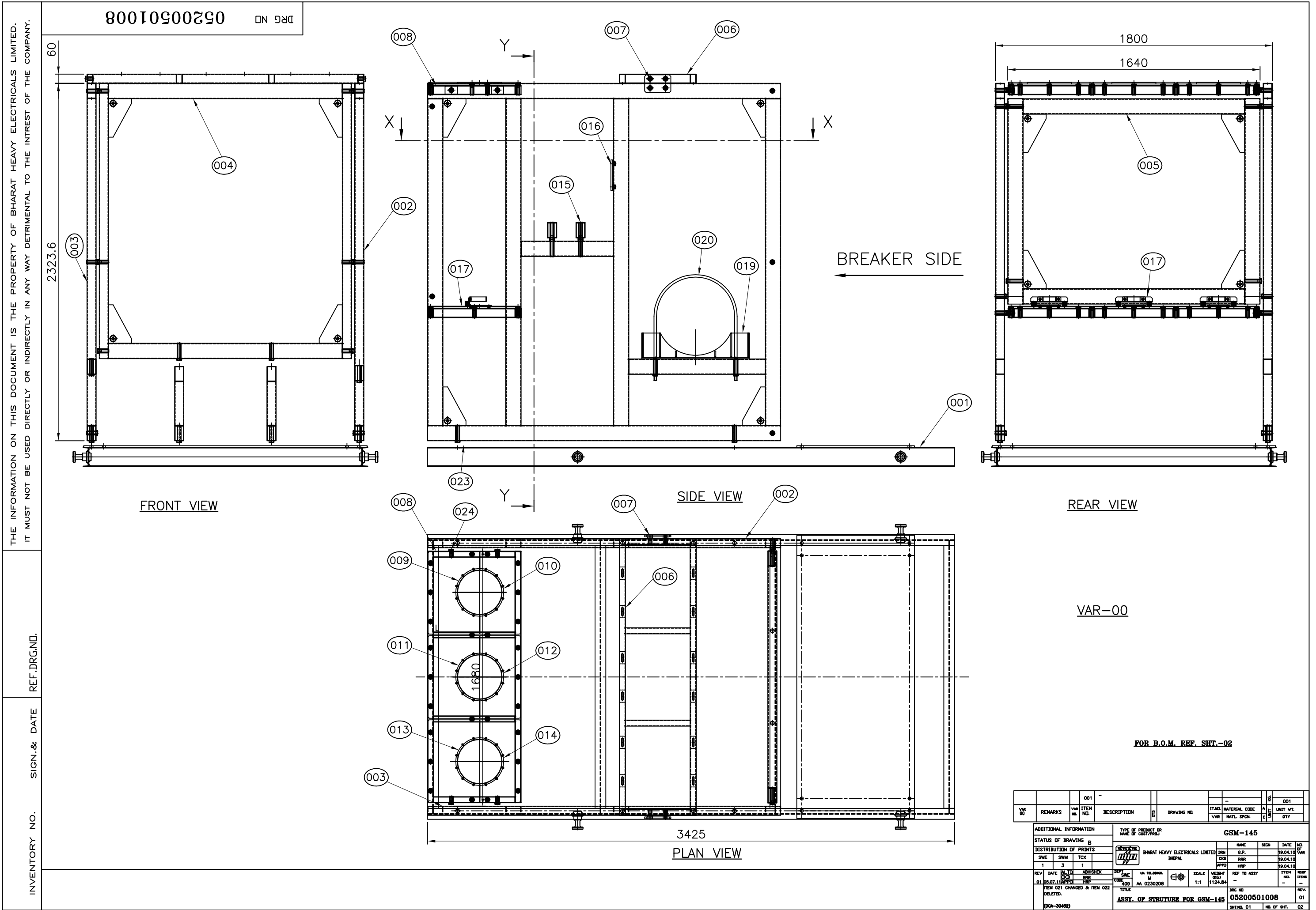
VAR-00

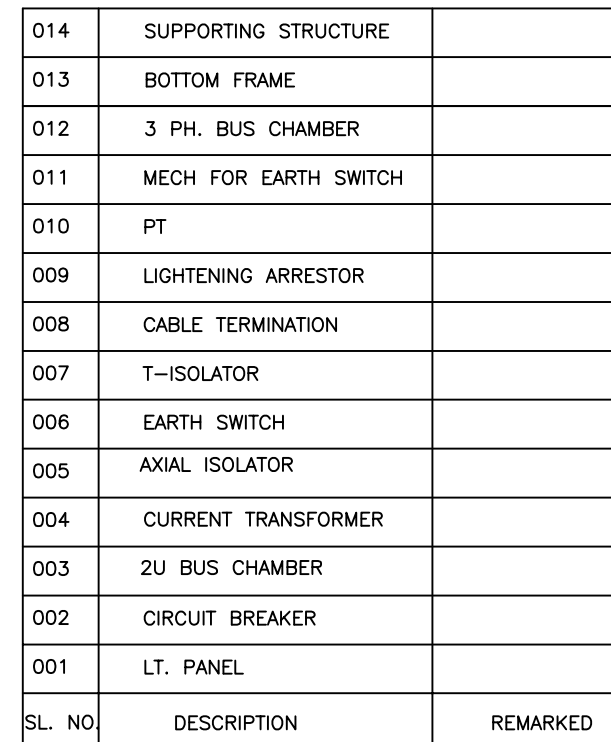
1. EXCEPT ITEM 004, ITEM 001 TO 007 ARE TO BE WELDED.
2. WELDED FRAME IS FREE FROM WAVINESS.
3. TOP SURFACES ARE TO BE GROUND FLUSH.

EPOXY POLYESTER POWDER COATING TO AA 0674124
FOR SHADE REFER ENGG. SPEC/MID.

002			007	'I' BEAM CROSS		35200501228	002		KG	23.76	
004			006	EARTHING BOSS		45200501038	001		KG	0.23	
004			005	HOOK		35200501256	001		KG	7.61	
001			004	BASE PLATE		25200501057	001		KG	111.05	
002			003	'I' BEAM CROSS		35200501228	001		KG	23.76	
001			002	'I' BEAM LHS		35200501226	001		KG	45.89	
001			001	'I' BEAM RHS		35200501227	001		KG	45.89	
VAR 00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.ND.	MATERIAL CODE	A	UNIT	UNIT W.T.
							VAR	MATL. SPCN.	C		QTY

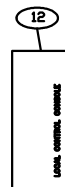
ADDITIONAL INFORMATION				TYPE OF PRODUCT OR NAME OF CUST/PROJ		GSM-145						
STATUS OF DRAWING B												
DISTRIBUTION OF PRINTS				 BHARAT HEAVY ELECTRICALS LIMITED BHOPAL			NAME	SIGN	DATE	NO. OF VAR		
SWE	SWM	TCX				DRN	SSA	Sd/-	08.03.10	00		
1	3	1				CKD	SDM	Sd/-	18.05.10			
						APPD	HRP	Sd/-	18.05.10			
REV	DATE	ALTD	ABHISHEK	DEPT	SWE	UN. TOL.DIMGR.		SCALE	WEIGHT (IN KGS.)	REF TO ASSY	ITEM NO.	MOD IF
01	06.07.11	APPD	HRP	CUDE	409	AA 0230208		1:1	258.19	05200501008	001	007
ITEM 007 & DIMENSION ADDED.				TITLE					DRG NO	REV.		
(DCA-30453)				BASE FRAME ASSY.					15200501034			01
									SHT.NO. 01		NO. OF SHT. 01	

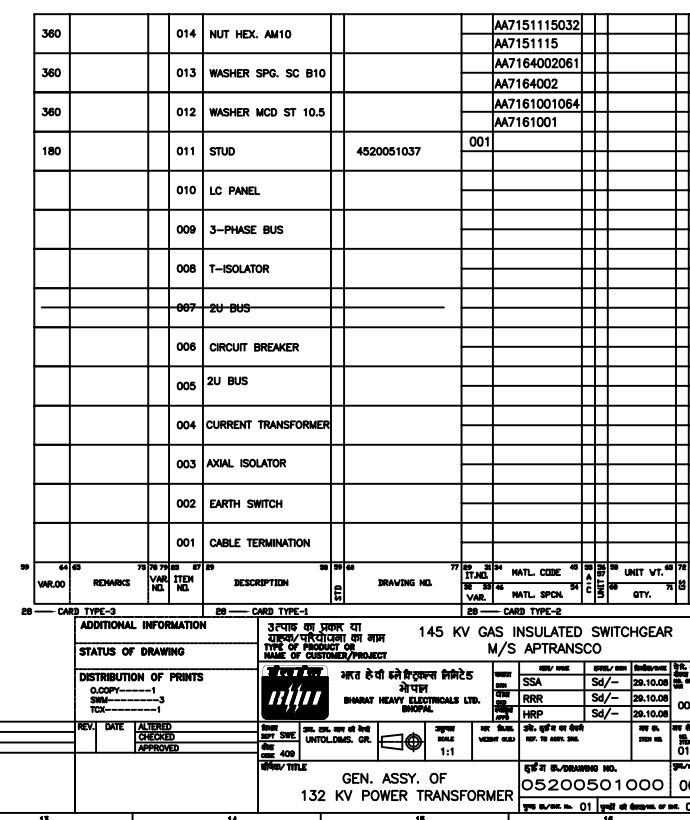
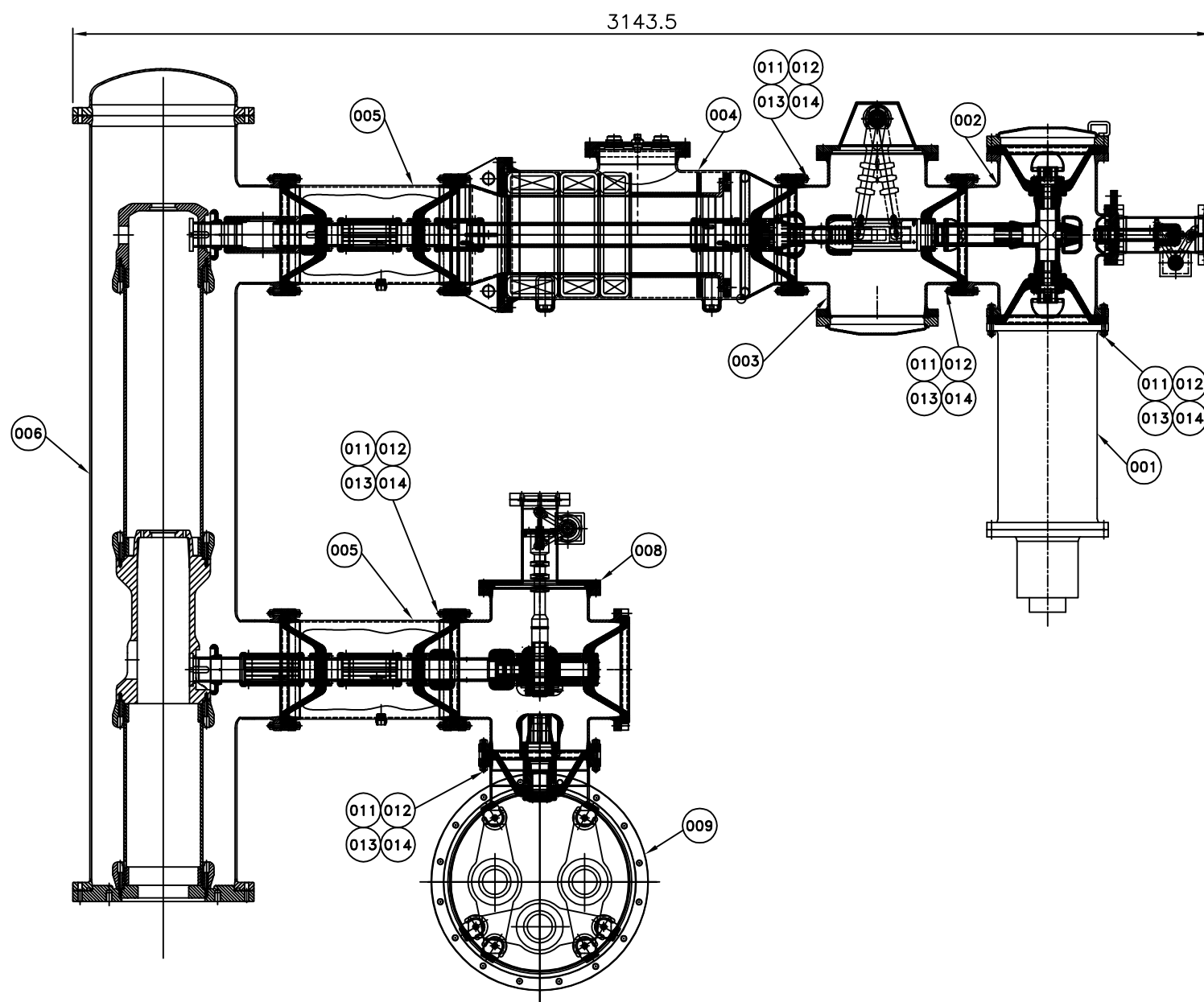




0.00	REMARKS	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																						
		VAR. NO.	ITEM NO.	DESCRIPTION	UNIT	QTY.	TRK1	TRK2	TRK3	TRK4	TRK5	TRK6	TRK7	TRK8	TRK9	TRK10	TRK11	TRK12	TRK13	TRK14	TRK15	TRK16	TRK17	TRK18	TRK19	TRK20	TRK21	TRK22																					
CARD TYPE-3		CARD TYPE-1										CARD TYPE-2																																					
ADDITIONAL INFORMATION				375KVA 11KV TRANSFORMER TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										CSM 145																																			
STATUS OF DRAWING				0.00P-----1 0.00M-----3 0.00C-----1										भारत हेवी इलेक्ट्रिकल लिमिटेड भारती BHARAT HEAVY ELECTRICALS LTD. BHOPAL																																			
DISTRIBUTION OF PRINTS														<table><tr><th>क्रमांक</th><th>विवरण</th><th>प्रमाण</th><th>दिनांक</th><th>प्रमाण</th></tr><tr><td>SSA</td><td>Sd/-</td><td>15.01.00</td><td></td><td></td></tr><tr><td>RRR</td><td>Sd/-</td><td>15.01.00</td><td></td><td></td></tr><tr><td>RRP</td><td>Sd/-</td><td>15.01.00</td><td></td><td></td></tr></table>																क्रमांक	विवरण	प्रमाण	दिनांक	प्रमाण	SSA	Sd/-	15.01.00			RRR	Sd/-	15.01.00			RRP	Sd/-	15.01.00		
क्रमांक	विवरण	प्रमाण	दिनांक	प्रमाण																																													
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RRR	Sd/-	15.01.00																																															
RRP	Sd/-	15.01.00																																															
REV. DATE				0.00P-----1 0.00M-----3 0.00C-----1										0.00P-----1 0.00M-----3 0.00C-----1																																			
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0.00P-----1 0.00M-----3 0.00C-----1				0.00P-----1 0.00M-----3 0.00C-----1										0.00P-----1 0.00M-----3 0.00C-----1																																			
0.00P-----1 0.00M-----3 0.00C-----1				0.00P-----1 0.00M-----3 0.00C-----1										0.00P-----1 0.00M-----3 0.00C-----1																																			
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0.00P-----1 0.00M-----3 0.00C-----1				0.00P-----1 0.00M-----3 0.00C-----1										0.00P-----1 0.00M-----3 0.00C-----1																																			
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INVENTORY NO.	SIGN. & DATE	05200501001-00 -01
		REF. DES. NO.

[illegible]



Incomer(1bay)

	Dimension(Widthx Depth x Height)	2650mm X3700mm x4200mm	
Sl No.	Module	Weight.(kg)	Remarks
1	Breaker	1500	
2	2U	153	51kg/2U
3	CT	750	250kg/CT assy.
4	Axial isolator	306	102kg/axial assy.
5	T isolator	315	105kg/T isolator assy.
6	Earth switch assembly with Mechanism	300	80 kg/earth swi+60kg for mechanism
7	Bus bar Assembly	500	500kg/
8	LA	600	200
9	PT	260	260kg/ PT
10	Cable termination	300	100kg/cable termination assy.
11	LCP	200	200kg/LCP
12	Structure Assembly	1300	1300/Assembly
	Total	6484	

Outgoing(I bay)

	Dimension(Widthx Depth x Height)	2650mm x 3700mm x3200mm	
Sl No.	Module	Weight.(kg)	Remarks
1	Breaker	1500	
2	2U	153	51 kg/2U
3	CT	750	250kg/CT assy.
4	Axial isolator	306	102kg/axial assy.
5	T isolator	315	105kg/T isolator assy.
6	Earth switch assembly with Mechanism	300	80 kg/earth swi+60kg for mechanism
7	Bus bar Assembly	500	500kg/
8	Cable termination	300	100kg/cable termination assy.
9	LCP	200	200kg/LA
10	Structure Assembly	1300	1300/Assembly
	Total	5624	

Bus PT(1bay)

	Dimension(Widthx Depth x Height)	2200mm x 2000mm x2000mm	
Sl No.	Module	Weight.(kg)	Remarks
1	Axial isolator With reducer	420	140kg/axial assy. With reducer
2	Bus bar Assembly	500	500kg/
3	PT	780	260kg/ PT
4	LCP	200	200
5	Structure Assembly	500	500
	Total	2400	