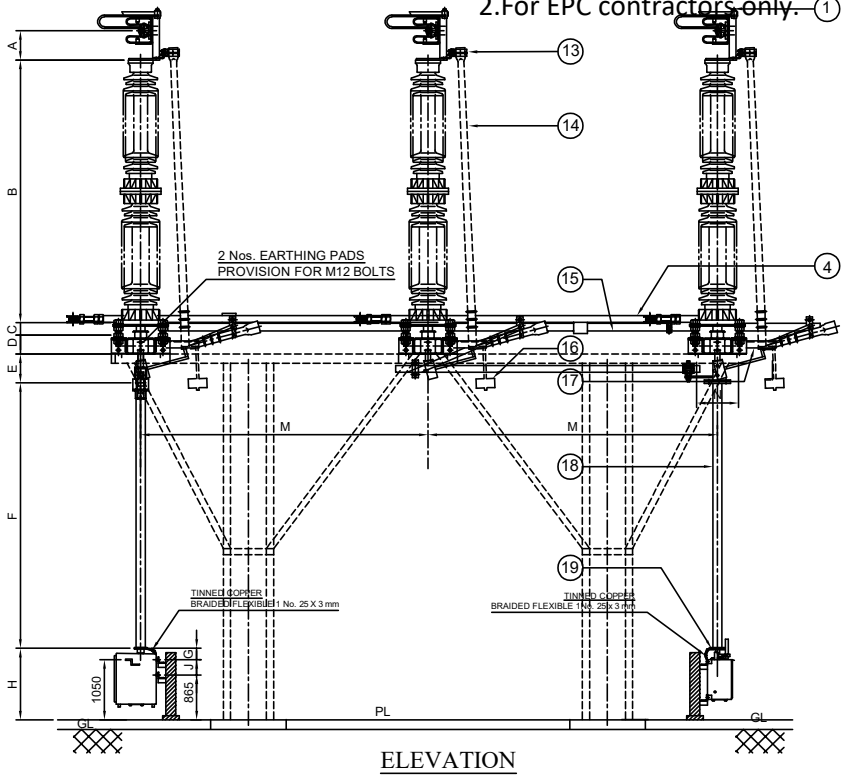


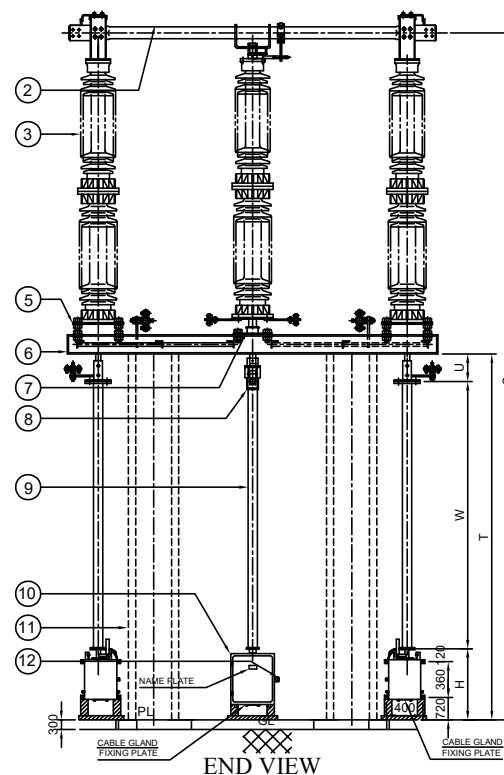


NOTE:-1. Drawings approval subject to valid type test reports,  
to be checked during acceptance tests.

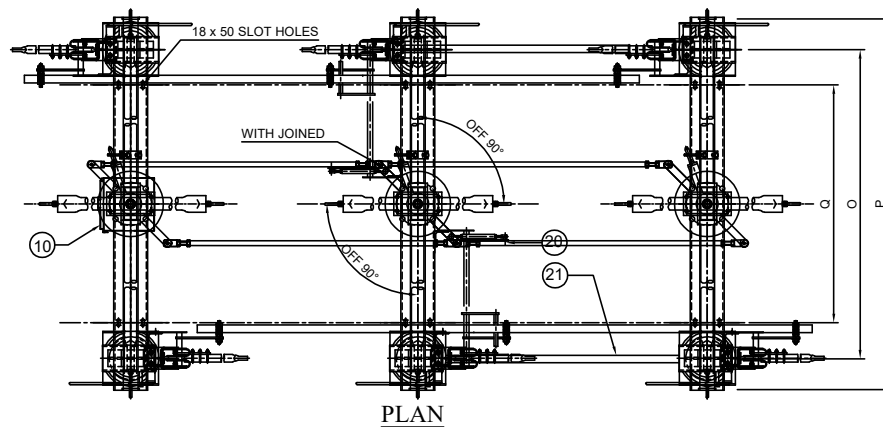
2. For EPC contractors only. ①



ELEVATION



END VIEW



PLAN

INSULATOR DETAILS  
4 Nos. M16 x 22 DEEP ON 127 P.C.D. TYPICAL

TOP FLANGE DETAILS  
4 Nos. Ø18 HOLES ON 225 P.C.D TYPICAL

BOTTOM FLANGE DETAILS

OPERATING MECHANISM  
FIXING DETAILS

PART LIST:

1. FIXED CONTACT ASSEMBLY
2. MOVING CONTACT ASSEMBLY
3. INSULATOR STACK (NOT IN OUR SCOPE OF SUPPLY)
4. TANDEM PIPE (32 NB, G.I. PIPE)
5. ELEVATOR PLATE (12 mm THICK)
6. BASE CHANNEL (150 x 75 x 5 mm THICK MS CHANNEL)
7. ROTATING SHAFT WITH LEVER ARM & CLAMP  
(M.S. HOT DIP GALVANIZED)
8. UNIVERSAL JOINT ARRANGEMENT
9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
10. OPERATING MECHANISM FOR M.S. (MOTOR)
11. SUPPORTING STRUCTURE (NOT IN OUR SCOPE OF SUPPLY)
12. PROVISION FOR PADLOCK
13. E.S. FIXED CONTACT ASSEMBLY
14. E.S. MOVING CONTACT ASSEMBLY
15. E.S. TANDEM PIPE (32 NB, G.I. PIPE)
16. COUNTER WEIGHT
17. TOP OPERATING MECHANISM FOR E.S.
18. E.S. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
19. OPERATING MECHANISM FOR E.S. (MANUAL)
20. MECHANICAL INTERLOCK BETWEEN M.S. & E.S.
21. AUX. TANDEM PIPE (32 NB G.I. PIPE)

REFERENCE DRAWINGS:

- |  |       |               |
|--|-------|---------------|
| FOR ISOLATOR CONTACT DETAILS (1600A)   | ----- | 4. GRM APT 02 |
| FOR EARTH SWITCH CONTACT DETAILS       | ----- | 4. GRE APT 03 |
| FOR OPERATING MECHANISM DETAILS (M.S.) | ----- | 4. GM APT 04  |
| FOR SCHEMATIC DIAGRAM DETAILS (M.S.)   | ----- | 4. GM APT 05  |
| FOR OPERATING MECHANISM DETAILS (E.S.) | ----- | 4. GN APT 06  |
| FOR NAME PLATED DETAILS                | ----- | 4. GZ APT 07  |
| FOR MECHANICAL INTERLOCK DETAILS       | ----- | 4. GZ APT 08  |

Thickness of Silver plating : 15 Microns Minimum

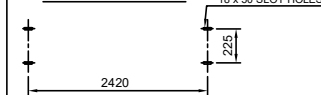
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED AS PER (87 MICRONS)
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (87 MICRONS)
4. THE INDICATED DIMENSIONS ARE SUBJECT TO THE MANUFACTURING TOLERANCE:  
UP TO 50 mm ---±3%; 51 TO 100 mm ---±2%;  
101 TO 300 mm ---±1%; ABOVE 300 mm ---±0.5%;
5. SHORT TIME CURRENT RATING 40 KA rms. FOR 3 Sec.
6. APPLICABLE STANDARD : IS/IEC 62271 - 102
7. ROTATING STOOL BASE HAVING 2 Nos. SEALED BALL BEARINGS OF ADEQUATE SIZE
8. INSULATOR BOTTOM 225 P.C.D. AND TOP 127 P.C.D.
09. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE NOT IN OUR SCOPE OF SUPPLY

ELECTRICAL PARAMETERS

- |                              |                |
|------------------------------|----------------|
| 1. NOMINAL SYSTEM VOLTAGE    | : 220 kV       |
| 2. HIGHEST SYSTEM VOLTAGE    | : 245 kV       |
| 3. P.F. WITHSTAND VOLTAGE    | : 460 kV rms   |
| 4. IMPULSE WITHSTAND VOLTAGE | : 1050 kV PEAK |

BASE FIXING DETAILS



WEIGHT:

NET WEIGHT OF THE ISOLATOR MATERIALS  
EXCLUDING INSULATOR : 1100 Kg. (Approx.)

Drawing approval subject to valid vendor registration

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

DIMENSIOSNS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
175	2300	75	150	205	1395	140	1200	NA	195	220	NA	4500	225	3200	3600	2420	NA	5500	2800	175	NA	1425	NA

REVISIONS			
D	C	B	A

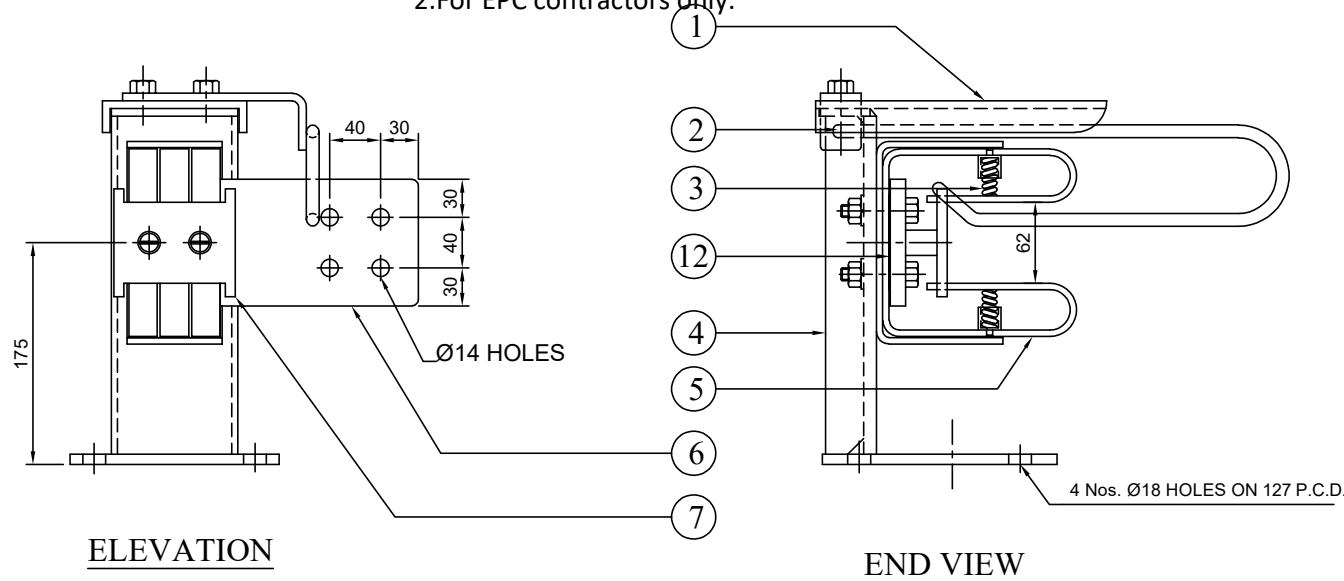
TITLE:  
**G.A. OF 220 kV, 1600 A,  
TP, HDB, RT, ISOLATOR WITH TWO E.S.**

SCALE:N.T.S	DATE	DRAWN	CHECKED	APPROVED	DRG.NO:	REV
	21-03-2023				3. GR APT 01	

**GR POWER SWITCHGEAR LTD.,  
JEEDIMETLA HYDERABAD-500 055 INDIA**

**FIXED CONTACT ASSEMBLY:**

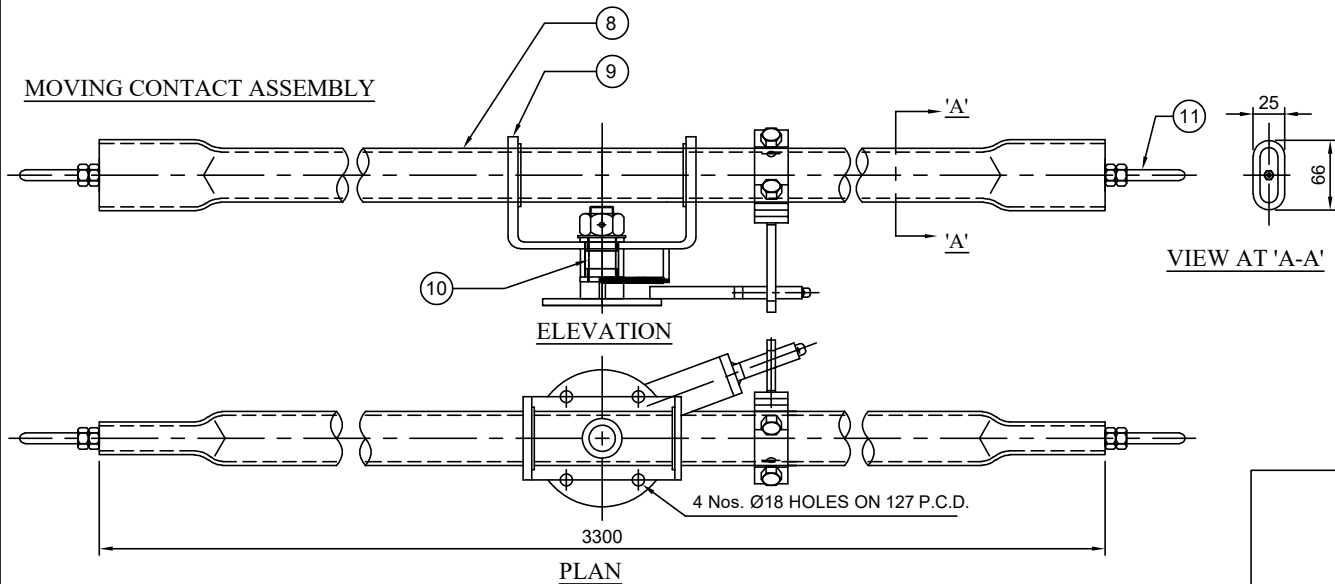
**NOTE:-**1. Drawings approval subject to valid type test reports, to be checked during acceptance tests.  
2. For EPC contractors only.



**ELEVATION**

**END VIEW**

**MOVING CONTACT ASSEMBLY**



**ELEVATION**

**PLAN**

**PART LIST:**

- |   |        |
|---|--------|
| 1. HOOD (18 SWG M.S. HDG)                               | 06 Nos |
| 2. ARCING HORNS (Ø10 ROD M.S. HDG)                      | 06 Nos |
| 3. SPRINGS (Ø2 mm STAINLESS STEEL.)                     | 36 Nos |
| 4. SUPPORTING CHANNEL (115 x 40 mm M.S. HDG)            | 06 Nos |
| 5. JAWS (32 x 5.3 HDEC STRIP 3 Nos. SILVER PLATED)      | 18 Nos |
| 6. JUMPER PLATE (100 x 16 ALU. FLAT)                    | 06 Nos |
| 7. SPACER (ALUMINUM)                                    | 06 Nos |
| 8. MOVING CONTACT ARM (50 OD x 38 ID CU. TUBE )         | 03 Nos |
| 9. MC SUPPORT WITH NYLON BUSH                           | 06 Nos |
| 10. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM) | 03 Nos |
| 11. ARCING HORN FOR MOVING CONTACT (Ø10 ROD M.S. HDG)   | 06 Nos |
| 12. BI-METALLIC SHEET (2 mm THICK Alu. + Cu.)           | 06 Nos |

**NOTE:**

- ALL DIMENSIONS ARE IN MILLIMETER
- ALL FERROUS PARTS ARE HOT DIP GALVANIZED
- ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED  
MICRONS REMAINING CONTACT AREA TIN PLATED.
- THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY  
Thickness of Silver plating : 15 Microns Minimum

**CHIEF ENGINEER/PROJECTS**  
**APTRANSCO/VS/Vijayawada**

Drawing approval subject to valid vendor registration

- Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
- Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capability.

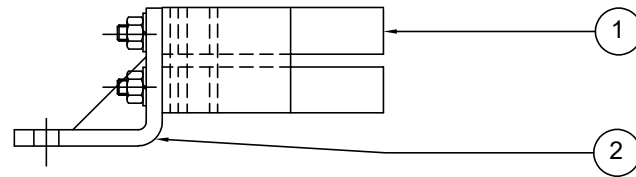
REVISIONS			
D	C	B	A

**TITLE:**  
**MAIN SWITCH CONTACT ASSEMBLY**  
(FOR 220 kV 1600 Amps)

**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

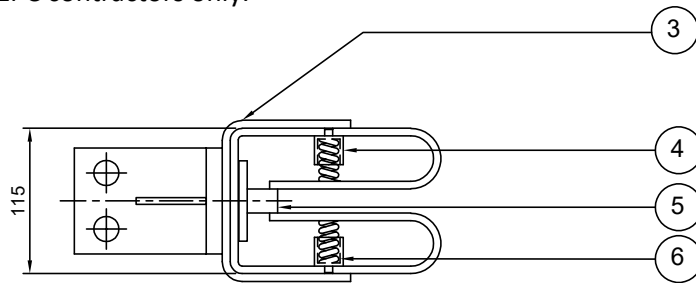
SCALE:N.T.S		
DATE		21/03 - 2023
DRAWN		<i>[Signature]</i>
CHECKED		<i>[Signature]</i>
APPROVED		
DRG.NO:	REV	
4. GRM APT 02		

**FIXED CONTACT ASSEMBLY:**



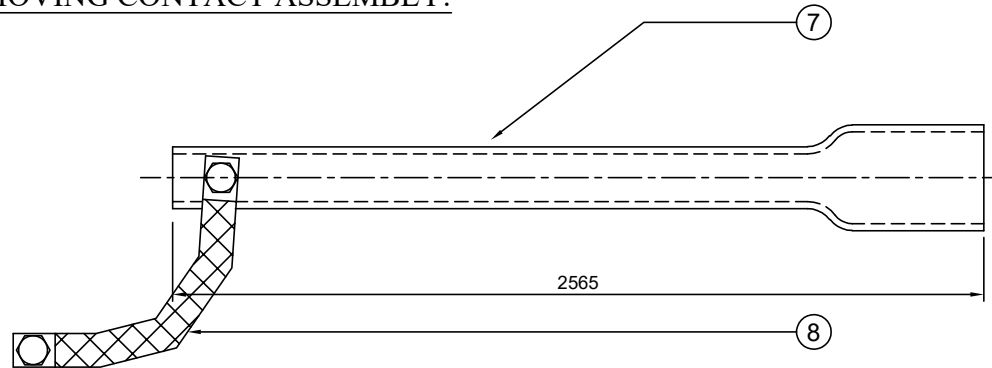
**ELEVATION**

NOTE:-1. Drawings approval subject to valid type test reports, to be checked during acceptance tests.  
2. For EPC contractors only.



**PLAN**

**MOVING CONTACT ASSEMBLY:**



- Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
- Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capatibility.

**PART LIST:**

- JAWS (2 Nos. 32 x 4 mm, Cu. FLAT SILVER PLATED)
- F.C. SUPPORT PLATE (M.S. HDG)
- JAW BRACKET (M.S. HDG)
- SPRING HOLDER BUSH (NYLON)
- SPACER (AL)
- SPRINGS (14 SWG S.S. WIRE)
- MOVING CONTACT ARM (38 OD x 30 ID CU. PIPE)
- COPPER FLEXIBLE (25 x 4 mm, 4 Nos)

**NOTE:**

- ALL DIMENSIONS ARE IN MILLIMETER
- ALL FERROUS PARTS ARE HOT DIP GALVANIZED
- ALL NON FERROUS CONTACT POINTS ARE SILVER PLATED
- 5 MICRONS REMAINING CONTACT AREA TIN PLATED

Thickness of Silver plating : 15 Microns Minimum

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

Drawing approval subject to valid vendor registration

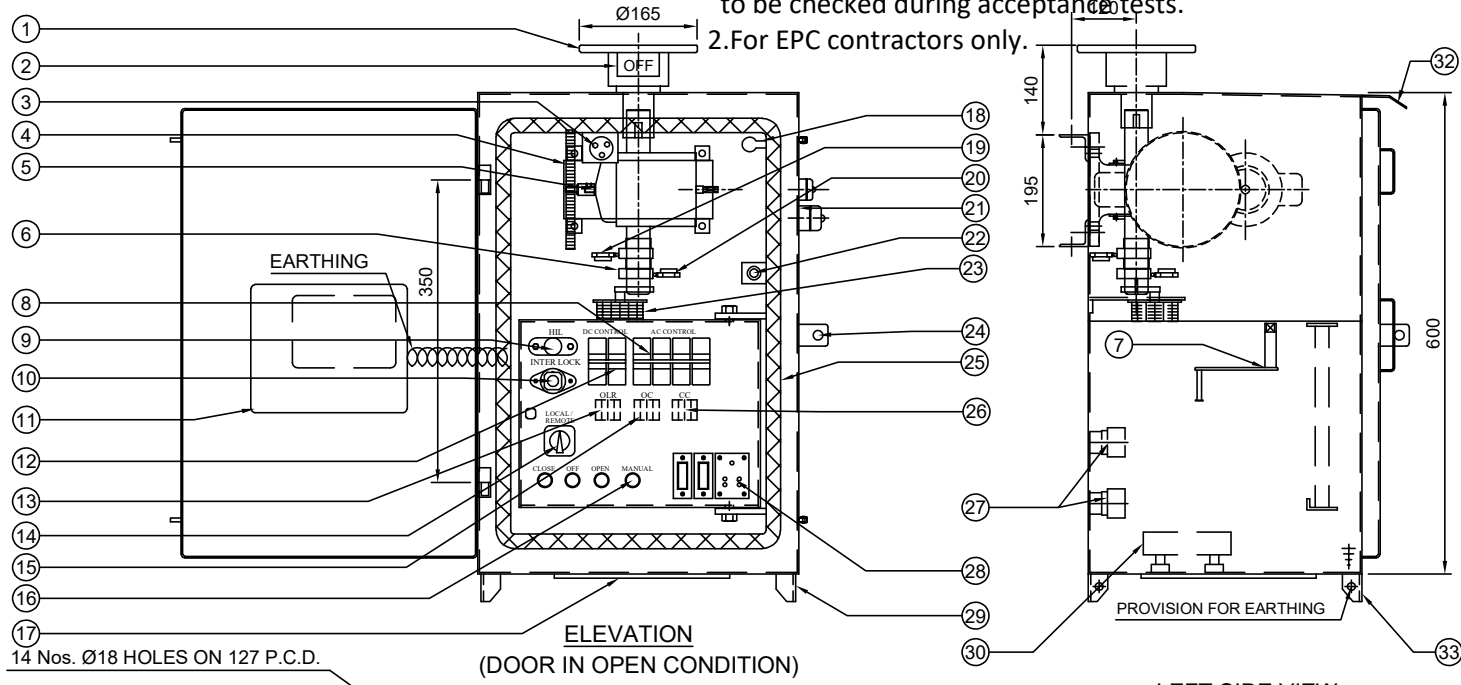
REVISIONS			
D	C	B	A

TITLE:  
**EARTH SWITCH CONTACT ASSEMBLY**  
(FOR 220 kV EARTH SWITCH)

**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

SCALE:N.T.S	
DATE	21-03-2023
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	REV
4. GRE APT 03	

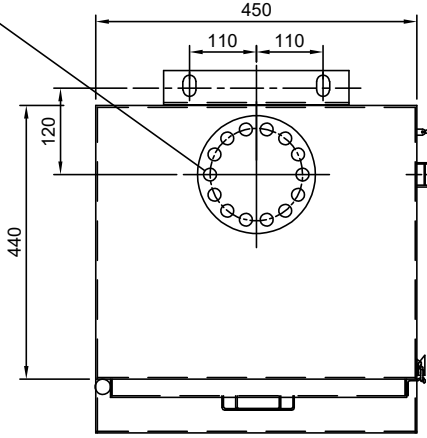
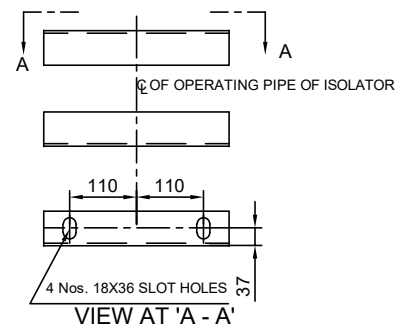
to be checked during acceptance tests.  
2. For EPC contractors only.



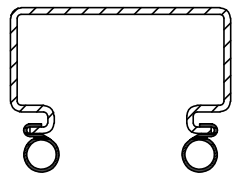
- PART LIST:**
- OUTPUT FLANGE (8 mm THICK, 14 HOLES)
  - ON/OFF INDICATOR
  - THERMOSTAT (30 TO 85°C RECOMMENDED SETTING 40°)
  - GEAR BOX (SPUR / WORM & WORM SHAFT, RATIO 1 : 630)  
(MATERIAL : EN8 / FORGED STEEL)
  - MOTOR (Ø3, 415 Volts, 0.5 HP MOTOR)
  - LIMIT SWITCH OPERATING CAM
  - OPERATING HANDLE FIXED TO DOOR
  - AC CONTROL SWITCH (4 POLE MCB) S1
  - PUSH CAP (FOR HIL)
  - HANDLE INTERLOCK (HIL)
  - SCHEMATIC DIAGRAM PLATE
  - DC CONTROL SWITCH (2 POLE MCB) S2
  - OVER LOAD RELAY CUM SINGLE PHASE PREVENTOR (OLR)
  - LOCAL/REMOTE SWITCH (S3)
  - OPENING CONTACTOR (OC)
  - OPEN / CLOSE / MANUAL / OFF PUSH BUTTON (PBO / PBC / PBH / EPB)
  - DETACHABLE CABLE GLANDS FIXING PLATE (WITH OUT GLANDS)
  - CUBICLE LAMP HOLDER
  - LIMIT SWITCH (LSO)
  - LIMIT SWITCH (LSC)
  - CUBICLE WITH DOOR (3 mm THICK ALU SHEET)
  - DOOR OPERATED LIGHT SWITCH (LS)
  - AUX. SWITCH (12 NO + 12 NC)
  - PROVISION FOR PAD LOCK
  - RUBBER GASKET (EPDM)
  - CLOSING CONTACTOR (CC)
  - TERMINAL BLOCK (UBT - 4 TYPE OF ELMEX OR ITS EQUIVALENT)
  - HEATER / POWER SOCKET SWITCHES (HS,PSS)
  - BOX SUPPORT
  - HEATER, 80 WATTS, 240 V
  - MANUAL OPERATING CAP / COVER
  - RAIN SHADE
  - PROVISION FOR EARTHING TERMINALS

14 Nos. Ø18 HOLES ON 127 P.C.D.

**FIXING DETAILS FOR SUPPORTING STRUCTURE**



**GASKET DETAILS**

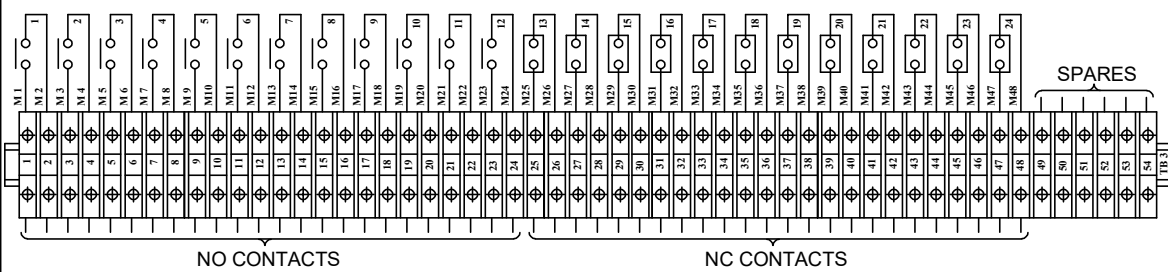


**NOTE :**

- ALL DIMENSIONS ARE IN MILLIMETERS
- CUBICLE WILL BE NATURAL ALUMINIUM FINISH FOR INSIDE AND OUTSIDE.
- DEGREE OF PROTECTION IP:55 AS PER IS/IEC 60529
- 20% SPARE TERMINALS WILL BE PROVIDED
- WIRING WILL BE DONE WITH 1100 V. GRADE
  - FOR POWER CIRCUIT (AC SUPPLY) : 2.5 Sq.MM Cu. STRANDED
  - FOR AUXILIARY CIRCUIT (DC SUPPLY) : 2.5 Sq.MM Cu. STRANDED P.V.C. INSULATED CONDUCTOR
- WEIGHT OF THE BOX : 80 Kg (Approx.)
- LUBRICATION OF GEARS : NON HARDENED GREASE FILLED GEAR BOX

Drawing approval subject to valid vendor registration

**AUX. SWITCH CONTACT DETAILS FOR ISOLATOR**  
(12 NO / 12 NC)



CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

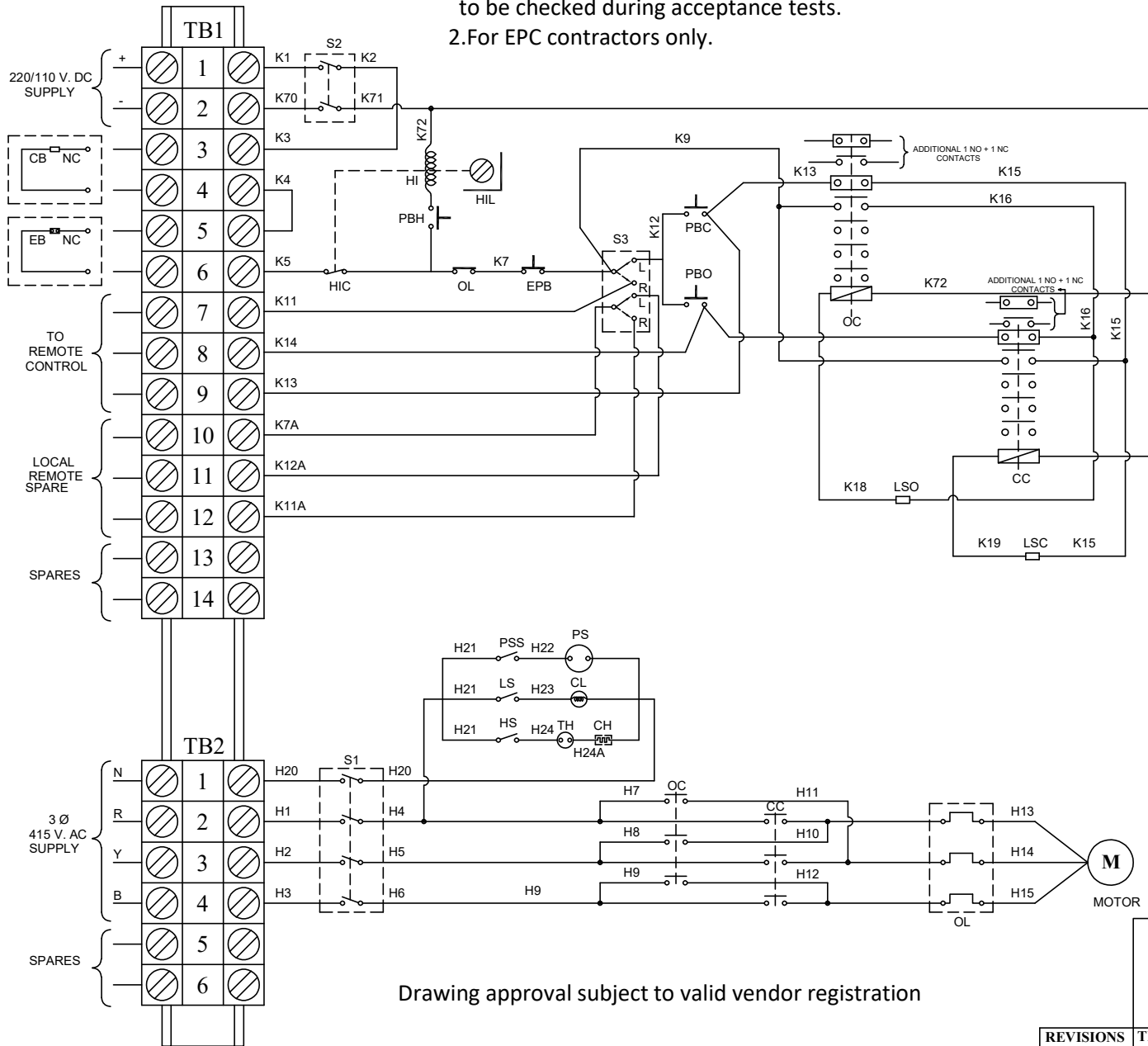
REVISIONS			
D	C	B	A

TITLE:	<b>GENERAL ARRANGEMENT OF MOTOR OPERATING MECHANISM FOR 220 KV M/S.</b>
SCALE:N.T.S	
DATE	21-03-2023
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	4. GM APT 04
REV	



**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

NOTE:-1. Drawings approval subject to valid type test reports, to be checked during acceptance tests.  
2. For EPC contractors only.



Drawing approval subject to valid vendor registration

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capability.

LEGEND	DESCRIPTION	MAKE	271
HIC	HANDLE INTERLOCK CONTACT	SWITRON/RECOM	721
M	MOTOR 3Ø 415 V. 0.5 HP	REMI/ELECEN/HEMAL/HINDUSTAN	
CH	CUBICLE HEATER 80 WATTS	KONTAKT/RAMANA ELECT.	
S1	A.C. SUPPLY CONTROL SWITCH, 16 A MCB	SCHNEIDER/C&S/SIEMENS/CHINT	
S2	D.C. SUPPLY CONTROL SWITCH, 10 A MCB	SCHNEIDER/C&S/SIEMENS/CHINT	
S3	LOCAL/REMOTE SELECTOR SWITCH 16 A	SWITRON/RECOM	
OC,CC	OPEN/CLOSE CONTACTORS, 9 A	SCHNEIDER/C&S/SIEMENS/CHINT	
OL	OVER LOAD RELAY WITH SPP 1.0 TO 1.6 A	SCHNEIDER/C&S/SIEMENS/CHINT	
PBO,PBC	OPEN/CLOSE PUSH BUTTONS, 4 A	C&S/JAIBALAJI/VAISHNO/SIEMENS/TECHNIC	
LSO,LSC	OPEN/CLOSE LIMIT SWITCHES, 10 A	JAI BALAJI/MANI	
PBH	MANUAL HANDLE PUSH BUTTONS, 4 A	C&S/JAIBALAJI/VAISHNO/SIEMENS/TECHNIC	
EPB	EMERGENCY PUSH BUTTON, 4 A	C&S/JAIBALAJI/VAISHNO/SIEMENS/TECHNIC	
HI	HANDLE INTERLOCK COIL, 20 WATTS	SELMECH/GRPS	
HIL	MANUAL HANDLE KEY INTERLOCK	PSI/EE	
LS,PSS,HS	LIGHT, SOCKET, HEATER SWITCHES, 5A	MARU OR ITS EQUIVALENT	
CL	CUBICLE LAMP HOLDER	MARU OR ITS EQUIVALENT	
PS	POWER SOCKET, 5A	MARU OR ITS EQUIVALENT	
TB	TERMINAL BLOCKS (UBT-4)	ELMEX / CONNECTWELL / VIN MECH	
TH	THERMOSTAT	BEPL	

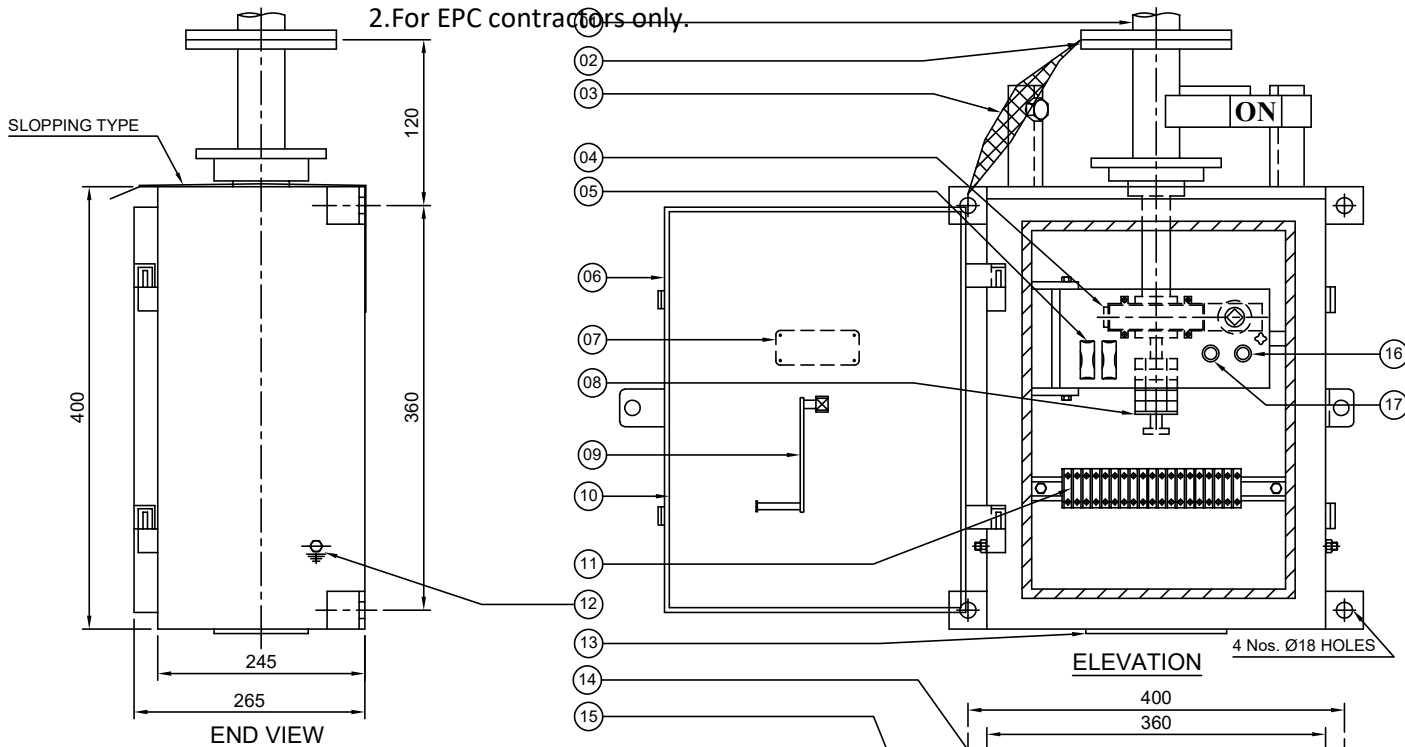
**OPERATING INSTRUCTIONS:**

1. DON'T OPERATE THE ISOLATOR WHEN THE 'CIRCUIT BREAKER' IS IN 'ON'
2. ISOLATOR OPERATION IS POSSIBLE ONLY WHEN THE INTERLOCK CONDITIONS ARE SATISFIED.
3. FOR MANUAL OPERATION FOLLOW THE FOLLOWING INSTRUCTIONS:-
  - a) BY PRESSING THE PUSH BUTTON (PBH) REMOVE THE CASTLE KEY AND KEEP THE KEY IN HANDLE LOCK AND ROTATE FOR GETTING WAY TO INSERT THE OPERATING HANDLE.
  - b) INSERT THE OPERATING HANDLE AND ROTATE IN CLOCK / ANTI CLOCK WISE DIRECTIONS FOR TO OPEN / CLOSE THE ISOLATOR.
  - c) IF MANUAL OPERATION IS NOT NEEDED RESTORE THE CASTLE KEY IN THE HANDLE INTERLOCK AND ROTATE.

CHIEF ENGINEER/PROJECTS  
APTRANSCO/Vs/Vijayawada

<table border="1"> <thead> <tr> <th>REVISIONS</th> </tr> <tr> <th>D C B A</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> <tr> <td> </td> </tr> </tbody> </table>	REVISIONS	D C B A			TITLE: <b>SCHEMATIC DIAGRAM FOR MOTOR CONTROL PANEL FOR 220 KV</b>	SCALE:N.T.S	
	REVISIONS						
	D C B A						
DATE	21-03-2023						
DRAWN							
CHECKED							
APPROVED		DRG.NO:	4. GM APT 05				
<b>GR POWER SWITCHGEAR LTD., JEEDIMETLA HYDERABAD-500 055 INDIA</b>		REV					

to be checked during acceptance tests.  
2. For EPC contractors only.



**PART LIST**

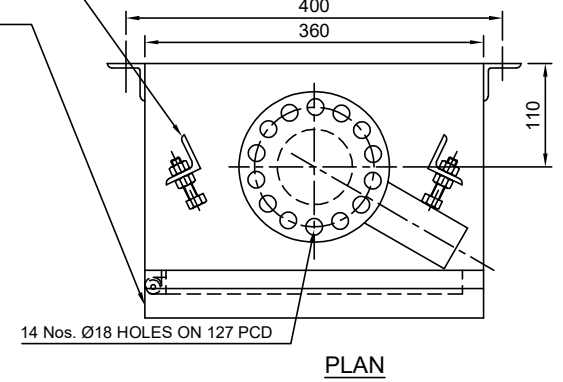
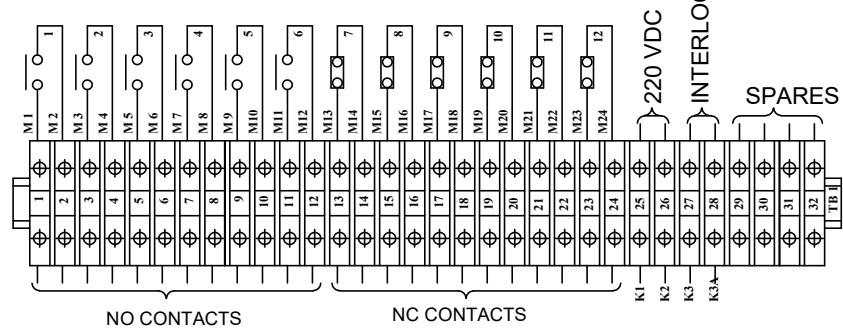
- 01. DOWN OPERATING PIPE
- 02. OUTPUT FLANGE (8 MM THICK M.S. PLATE)
- 03. COPPER FLEXIBLE (25 x 3 mm TINNED Cu. FLEXIBLE)
- 04. REDUCTION GEAR BOX (MATERIAL : EN8 / FORGED STEEL)
- 05. FUSES (2 A)
- 06. CUBICLE WITH DOOR (3 mm THICK, ALU. SHEET)
- 07. NAME PLATE
- 08. AUXILIARY SWITCH (6 NO + 6 NC)
- 09. OPERATING HANDLE
- 10. GASKET (EPDM)
- 11. TERMINAL BLOCKS (UBT-4 OF ELMEX / VIN MECH OR ITS EQUIVALENT)
- 12. PROVISION FOR EARTHING TERMINALS
- 13. DETACHABLE CABLE GLAND FIXING PLATE (WITHOUT GLANDS)
- 14. ON - OFF STOPPERS (M.S. ANGLE, HDG)
- 15. RAIN SHADE
- 16. INDICATION LAMP
- 17. PUSH BUTTON (4 A)

**NOTES:**

- 1. ALL DIMENSIONS ARE IN MILLIMETER
- 2. CUBICLE WILL BE NATURAL ALUMINIUM FINISH FOR INSIDE AND OUTSIDE.
- 3. DEGREE OF PROTECTION IP:55 AS PER IS/IEC 60529
- 4. WEIGHT OF THE BOX :28 Kg (Approx.)
- 5. WIRING WILL BE DONE WITH 1100 V GRADE 2.5 Sq. mm Cu. STANDED P.V.C. INSULATED CONDUCTOR
- 6. 20% SPARE TERMINALS PROVIDED
- 7. REDUCTION GEAR RATIO 20 : 1 MAKE GRPS MATERIAL OF GEAR EN8 / STEEL
- 8. LUBRICATION OF GEARS : NON HARDENED GREASE FILLED GEAR BOX

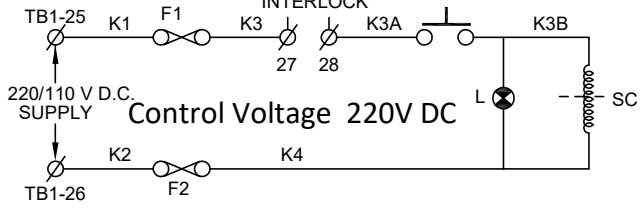
**AUX. SWITCH CONTACT DETAILS FOR ISOLATOR**

(6 NO / 6 NC)



Drawing approval subject to valid vendor registration

**SCHEMATIC DIAGRAM:**



**LEGEND:**

- F1, F2 ----- FUSES (2 Amp Rating)
- PB ----- PUSH BUTTON
- L ----- INDICATION LAMP
- SC ----- SOLENOID COIL

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

REVISIONS			
D	C	B	A

TITLE:

**OPERATING MECHANISM  
FOR EARTH SWITCH  
(FOR 220 KV)**



**GR POWER SWITCHGEAR LTD.,  
JEEDIMETLA HYDERABAD-500 055 INDIA**


SCALE: N.T.S	
DATE	21-03-2023
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	4. GN APT 06
REV	


NOTE:-1. Drawings approval subject to valid type test reports,  
to be checked during acceptance tests.

NAME PLATE DETAILS FOR ISOLATOR

2. For EPC contractors only.

NAME PLATE DETAILS FOR EARTH SWITCH

 MANUFACTURED & SUPPLIED BY <b>GR POWER SWITCHGEAR LTD.,</b> JEEDIMETLA, HYDERABAD - 500 055	
CUSTOMER :	M/s. TRANSMISSION CORPORATION OF AP LIMITED
PROJECT :	-----
CONTRACTOR :	-----
P.O. NO :	----- Dt. : -----
TYPE :	HDB SL. NO : AS APPLICABLE YEAR OF Mfg. : 2023
RATING :	Un 220 KV ; In : 1600 A ; WEIGHT IN KG : -----
IMPLUSE(UI) :	1050 KV Peak; SWITCHING(Us): ----- KV Peak;
P.F. :	460 KV rms; STC(lth): 40 KA rms; DURATION: 3 Sec;
OPERATING MECHANISM :	MOTOR, 3 Ph., 415 V, 0.5 HP
CONTROL VOLTAGE :	220/110 V DC CREEPAGE: -----
Control Voltage 220V DC	

 MANUFACTURED & SUPPLIED BY <b>GR POWER SWITCHGEAR LTD.,</b> JEEDIMETLA, HYDERABAD - 500 055	
CUSTOMER :	M/s. TRANSMISSION CORPORATION OF AP LIMITED
PROJECT :	-----
CONTRACTOR :	-----
L.O.A./ P.O. NO :	----- Dt. : -----
TYPE :	VB SL. NO : AS APPLICABLE YEAR OF Mfg. : 2023
RATING :	Un 220 KV ; In : ----- A ; WEIGHT IN KG : -----
IMPLUSE(UI) :	1050 KV Peak; SWITCHING(Us): ----- KV Peak;
P.F. :	460 KV rms; STC(lth): 40 KA rms; DURATION: 3 Sec;
OPERATING MECHANISM :	MANUAL(RG)
CONTROL VOLTAGE :	220/110 V DC CREEPAGE: -----


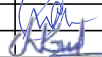
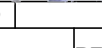
Project, Contractor , PO, date , year of MFG shall be stamped during inspection

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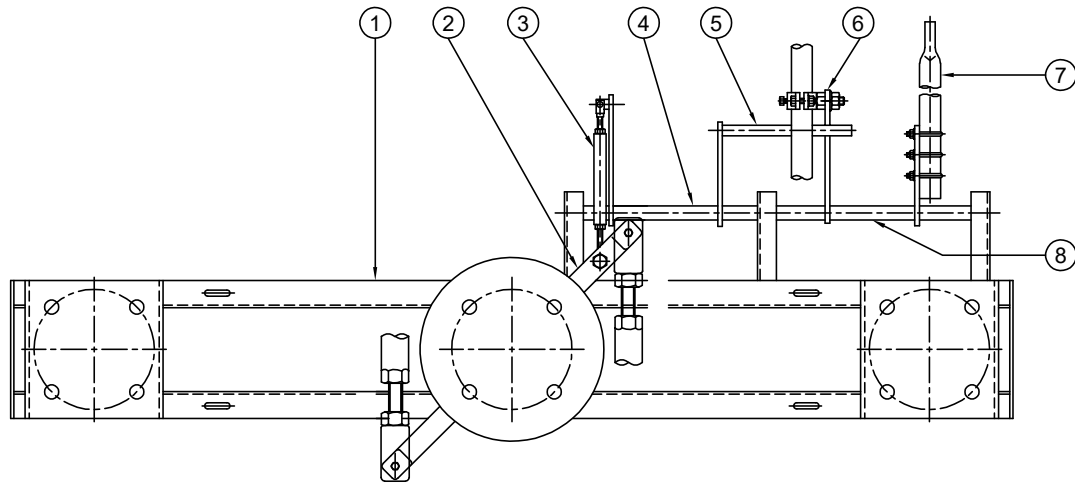
1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capatibility.

- NOTES :**
1. ENGRAVED LETTER SIZE : 3 mm
  2. LETTER ETCHED WHITE ON BLACK BACKGROUND
  3. MATERIAL : ALUMINUM
  4. THICKNESS : 1 mm

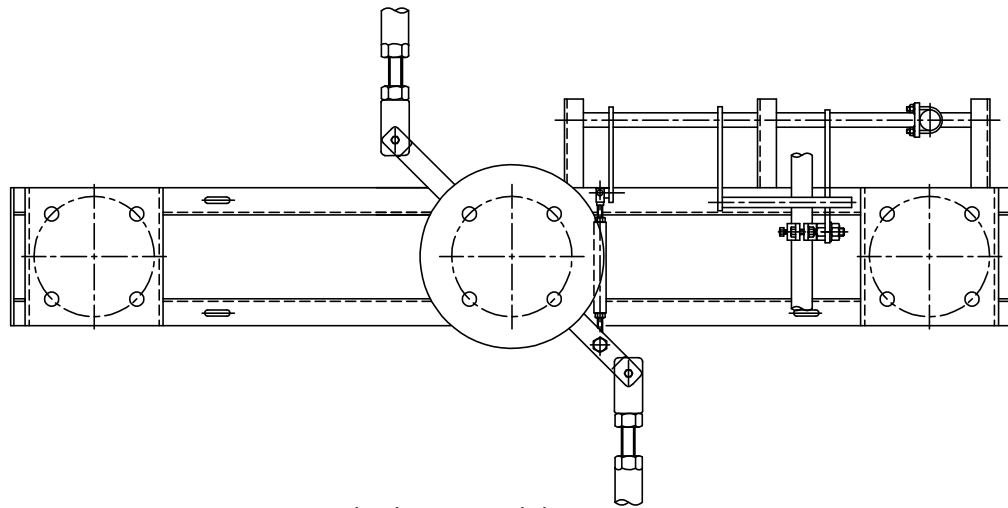
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<table border="1"> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>D</th> <th>C</th> <th>B</th> <th>A</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS				D	C	B	A									TITLE:  <b>NAME PLATE DETAILS</b> (FOR 220 kV ISOLATOR)	SCALE: N.T.S	
	REVISIONS																		
	D	C	B	A															
DATE	21-03-2023																		
DRAWN																			
CHECKED																			
APPROVED		DRG.NO:	4. GZ APT 07																
		REV																	

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JEEDIMETLA HYDERABAD-500 055 INDIA



**FIG - 1 : ISOLATOR IN "CLOSE" POSITION  
EARTH SWITCH IN "OPEN" POSITION**



**FIG - 2 : ISOLATOR IN "OPEN" POSITION  
EARTH SWITCH IN "CLOSE" POSITION**

NOTE:-1. Drawings approval subject to valid type test reports, to be checked during acceptance tests.  
2. For EPC contractors only.

**CONSTRUCTION :**

ISOLATOR OPERATING LEVER (2) IS CONNECTED TO THE ROTATION PIPE - 1 (4) THROUGH THE LINK ROD (3). THE STOPPER ROD (5) ALSO MOVES ALONG WITH THE ROTATING PIPE (4) EARTH SWITCH OPERATING LEVER (6) MOVES THE ROTATING PIPE - 2 (8) WITH EARTH SWITCH MOVING CONTACT (7) INDIVIDUALLY

**FUNCTION :**

IN FIG - 1 : IN THIS CONDITION THE ISOLATOR OPERATING LEVER (2) IS CONNECTED TO THE ROTATING PIPE - 1 (4) SUCH THAT THE STOPPER ROD (5) IS ABOVE THE EARTH SWITCH OPERATING LEVER (6) AS A RESULT THE STOPPER (5) WILL NOT PERMIT EARTH SWITCH OPERATING LEVER (6) TO MOVE AND THE E.S. MOVING CONTACT WILL REMAIN IN OPEN POSITION.

IN FIG - 2 : IN THIS CONDITION THE ISOLATOR OPERATING LEVER IS CONNECTED TO THE ROTATING PIPE - 1 (4) SUCH THAT THE STOPPER ROD (5) WILL BE BELOW THE EARTH SWITCH OPERATING LEVER (6) AS A RESULT THE EARTH SWITCH OPERATING LEVER (6) WILL NOT PERMIT THE STOPPER ROD TO MOVE (5) AND ISOLATOR OPERATING LEVER (2) WILL REMAIN IN OPEN POSITION.

**NOTES :**

1. BASE CHANNEL 150 x 75 x 5 THK CHANNEL (HOT DIP GALVANIZED)
2. ISOLATOR OPERATING LEVER (40 x 10 mm THIK MS FLATTE)
3. LINK ROD ( 25 NB MS PIPE HDG)
4. ROTATING PIPE - 1 ( 25 NB MS PIPE HDG)
5. STOPPER ROD (20 Ø MS ROD HDG)
6. E.S. OPERATING LEVER (50 x 8 MS FLAT HDG)
7. E.S. MOVING CONTACT (38 OD x 30 ID CU. PIPE)
8. ROTATING PIPE - 2 ( 25 NB MS PIPE HDG)

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REVISIONS			
D	C	B	A

TITLE: **MECHANICAL INTERLOCK BETWEEN MAIN SWITCH AND EARTH SWITCH (FOR 220 kV ISOLATOR)**

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JEEDIMETLA HYDERABAD-500 055 INDIA


SCALE: N.T.S	
DATE: 21-03-2023	
DRAWN	
CHECKED	
APPROVED	
DRG.NO: 4. GZ APT 08	REV

**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR 220KV, 1600A WITH TWO EARTH SWITCH**

S.No	DESCRIPTION		220 KV
1	Type/Installation	:	"DB" Double Break - OUTDOOR
2	Manufacturer's Name and country of manufacture	:	GR POWER SWITCHGEAR LTD., HYDERABAD
3	Standards according to which the isolators are manufactured.	:	IS 9921Part I to V.& IEC 62271-102
4	Maximum design voltage at which the isolator can operate (kV).	:	245 KV
5	Frequency (Hz)	:	50 Hz
6	Rated voltage (kV)	:	220KV
7	Maximum current that can be safely interrupted by the Isolator inductive (A & % PF) Capacitive (A & % PF)	:	0.7 Amps at 0.15 p.f.
8	Continuous current rating normal (Amps) under site conditions (Amps).	:	1600 Amps
9	Rated short time current		<u>MAIN SWITCH/ EARTH SWITCH</u>
	i) For 3 Seconds (kA rms)	:	40 KA rms
	ii) For 1 Second (kA rms)	:	Not Applicable
	iii) Rated peak short time current (KV P)	:	100 KA rms
10	Current density at the minimum cross section of		
	a) Moving blade (Amps/Sq.mm)	:	2.0 Amps/Sq.mm for HDE Cu. Tube
	b) Terminal pad	:	1.0 Amp/Sq.mm for EC grade Alu. Flat.
	c) Contacts	:	1.6 Amps/Sq.mm for HDE Cu. Flat.
11	Maximum temperature rise of current carrying parts when carrying rated current continuously (Deg.C).	:	Within the specified limits of IS/IEC 62271-102.
12	Insulation levels		
	i) Impulse withstand voltage (kV Peak) Phase to Earth Isolating Distance.	:	1050 KV Peak
	ii) Switching surge withstand voltage (kV Peak) Phase to Earth isolating distance.	:	Not applicable

S.No	DESCRIPTION		220 KV
	iii) Power Frequency withstand voltage (kV rms) Phase to Earth isolating distance.	:	460 KV rms
13	Minimum clearance in air		
	i) Between poles (mm)	:	4000 mm for a phase spacing of 4500 mm
	ii) Between live parts and earth (mm)	:	2100 mm
	iii) Between live parts when switch is open.		
	a) On the same pole (mm)	:	2800 mm
	b) Between adjacent poles (mm)	:	3000 mm
14	Rated mechanical terminal load		
	i) Load along the terminal connector side (Kg).	:	102 Kgs
	ii) Load across the terminal connector side (Kg).	:	33.7 Kgs
15	Torque required to operate the switch in Kg.m.	:	40 Kg m
16	Contact Zone		
	i) Horizontal deflection (mm)		} Not applicable
	ii) Vertical deflection (mm)	:	
	iii) Total amplitude of longitudinal movement w.r.t conductor supporting fixed contact		
17	Design and construction		
	i) No. of insulators per pole	:	Three
	ii) No. of breaks per pole	:	Two
	iii) Type of closing / opening mechanism (Horizontal / vertical break straight etc.).	:	Horizontal break for Isolator
	iv. Contacts		Thickness of Silver plating : 15 Microns Minimum Hard Drawn Electrolytic Copper flat, silver plated micron thickness.
	a) Material and grade	:	
	b) Cross-sectional area (Sq.mm)	:	1017 Sq.mm for 1600A

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S.No	DESCRIPTION	220 KV	
v	Moving blades	Thickness of Silver plating : 15 Microns Minimum Hard Drawn Electrolytic Copper tube, silver plated  micron thickness.  829 Sq.mm for 1600A  8 mm Thick MS HDG  MS HDG  40 x 10 MS HDG Flat  14 swg SS wire  Not encased  Drawing approval subject to valid vendor registration  Less than M8 are of stainless steel  M8 and above are of MS HDG.  12 mm thick M.S. Hot dip galvanised plate  MS HDG suitable for 50 ID Ball Bearing  2 Nos. below centre rotating post insulator  As per GA drawings  Suitable for 40 NB  6 Nos. bush bearings, brass, 16 mm ID Size.  ( i ) Mechanical interlock between Isolator and Earth Switch.  ( ii ) Electrical interlock between Isolator and circuit breaker.  50 mm NB Class B GI Pipe.	
	a) Material and grade		
	b) Cross-sectional area (Sq.mm)		
vi)	Contact support		
	a) Material and size of channel / block.		
vii)	Rain hood-material grade and size		
viii)	Turn and twist mechanism		
	a) Material and size of clamps		
	b) Material size of springs		
	c) Whether springs are encased		
ix)	Nuts and bolts		
	a) Size, material and grade in live parts.		
	b) Size, material and grade in other parts.		
x)	Insulator base plate material and size of plate below insulators.		
xi)	Bearings		
	a) Material and size of housing		
	b) No. of bearings, location & size		
xii)	Tandem pipe		
	a) Size, length class and No. of pipes		
	b) Size of shackle screw		
	c) No. of bearings / bush and its material and size.		
xiii)	Type of interlock		
xiv)	Down pipe size, length and class		

S.No	DESCRIPTION	220 KV
	xv) Type of universal/swivel joint a) Between bearing & down pipe b) Between down pipe and operating mechanism. xvi) Operating mechanism a) Control cabinet Material and thickness Degree of protection Type size and no. of cable glands. Whether removable gland plate provided. b) Make type, rating and Qty. of Motors Auxiliary blocks Terminal blocks Insulated Wires HRC Fuse Space Heater Interlocks xvii) Base a) Size of steel sections used b) Overall size c) Total weight	: Universal joint : Vernier Flange Motor operated mechanism for M.S. & Manual operated mechanism for E.S. : 3 mm Thick ALU Sheet : IP : 55 as per IS 2147 : Compression type, 2 Nos. 19 mm. (Contractor scope of supply) : Yes, removable gland plate provided. : Ø3, 415v, 0.5 HP Motor : 12 NO / 12 NC contacts for Main Switch 6 NO / 6 NC contacts for Earth Switch Mani 10 A, 2 A DC breaking with 2A - 1 No. : UBT-4 : 1100 V grades, 2.5 Sq.mm PVC For Auxiliary Circuit and 2.5 Sq.mm for Power circuit : Not Applicable, MCB's : 1 No. 230V AC. 80 Watts / Ramana Electrical : 1 Set PSI / 20 Watts magnetic - 1 No. : 150 X 75 mm : 3600 x 150 x 75 mm x 5 mm : 52 Kgs approx

for GR POWER SWITCHGEAR LTD.,

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AUTHORIZED SIGNATORY

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