

SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR 145 KV

S.No	DESCRIPTION		145 KV
1	Type/Installation	:	"DB" Double Break - OUTDOOR
2	Manufacturer's Name and country of manufacture	:	GR POWER SWITCHGEAR LTD.,
3	Standards according to which the isolators are manufactured.	:	IS : 9921 Part I to V.
4	Maximum design voltage at which the isolator can operate (kV).	:	145 KV
5	Frequency (Hz)	:	50 Hz
6	Rated voltage (kV)	:	145KV
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).	:	800/1250/1600/2000/2500 Amps
9	Rated short time current		<u>MAIN SWITCH/ EARTH SWITCH</u>
	i) For 3 Seconds (kA rms)	:	31.5 KA rms
	ii) For 1 Second (kA rms)	:	Not Applicable
	iii) Rated peak short time current (KV P)	:	78.75 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.
	d) Terminal connector	:	1.0 Amps/Sq.mm for Alu. Alloy.
11	Maximum temperature rise of current carrying parts when carrying rated current continuously (Deg.C).	:	Within the specified limits of IS - 9921 Part II.
12	Derating factor for specified site conditions	:	Unity
13	Insulation levels		
	i) Impulse withstand voltage (kV Peak) Phase to Earth Isolating Distance.	:	650/750 KV Peak
	ii) Switching surge withstand voltage (kV Peak) Phase to Earth isolating distance.	:	Not applicable

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	iii) Power Frequency withstand voltage (kV rms) Phase to Earth isolating distance.	275/315 KV rms
14	Minimum clearance in air	
	i) Between poles (mm)	2700 mm for a phase spacing of 3000 mm
	ii) Between live parts and earth (mm)	1300 mm
	iii) Between live parts when switch is open.	
	a) On the same pole (mm)	1735 mm
	b) Between adjacent poles (mm)	2090 mm
15	Rated mechanical terminal load	
	i) Load along the terminal connector side (Kg).	51 Kgs
	ii) Load across the terminal connector side (Kg).	17.3 Kgs
16	Torque required to operate the switch in Kg.m.	40 Kg m
17	Contact Zone	
	i) Horizontal deflection (mm)	
	ii) Vertical deflection (mm)	
	iii) Total amplitude of longitudinal movement w.r.t conductor supporting fixed contact	Not applicable
18	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	
	a) Material and grade	Hard Drawn Electrolytic Copper flat, silver plated of 10 to 15 micron thickness.
	b) Cross-sectional area (Sq.mm)	520 Sq.mm for 800A 780 Sq.mm for 1250A 1000 Sq.mm for 1600A 1300 Sq.mm for 2000A 1560 Sq.mm for 2500A
	v Moving blades	
	a) Material and grade	Hard Drawn Electrolytic Copper tube, silver plated of 10 to 15 micron thickness.

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	b) Cross-sectional area (Sq.mm)	: 427 Sq.mm for 800A 650 Sq.mm for 1250A 855 Sq.mm for 1600A 1028 Sq.mm for 2000A 1275 Sq.mm for 2500A
vi)	Contact support	
	a) Material and size of channel / block.	: 6 mm Thick MS HDG
	b) Material and size of plate	: 8 mm thick MS HDG Plate
vii)	Rain hood-material grade and size	: N.A
viii)	Turn and twist mechanism	
	a) Material and size of clamps	: 40 x 10 MS HDG Flat
	b) Material size of springs	: 10 swg SS wire
	c) Whether springs are encased	: Not encased
ix)	Nuts and bolts	
	a) Size, material and grade in live parts.	: Lessthan M8 are of stainless steel
	b) Size, material and grade in other parts.	: M8 and above are of MS HDG.
x)	Insulator base plate material and size of plate below insulators.	: 8 mm thick M.S. Hot dip galvanised plate
xi)	Bearings	
	a) Material and size of housing	: MS HDG / LM-6 Alu. Alloy suitable for 40 ID Ball Bearing
	b) No. of bearings, location & size	: 2 Nos. below centre rotating post insulator
xii)	Tandem pipe	
	a) Size, length class and No. of pipes	: 32NB GI pipe for Main Switch/ Earth Swithch.
	b) Size of shackle screw	: Suitable for 32 NB
	c) No. of bearings / bush and its material and size.	: 6 Nos. bush bearings, brass, 16 mm ID Size.
xiii)	Type of interlock	: ( i ) Mechanical interlock between Isolator and Earth Switch.  ( ii ) Electrical interlock between Isolator and circuit breaker.

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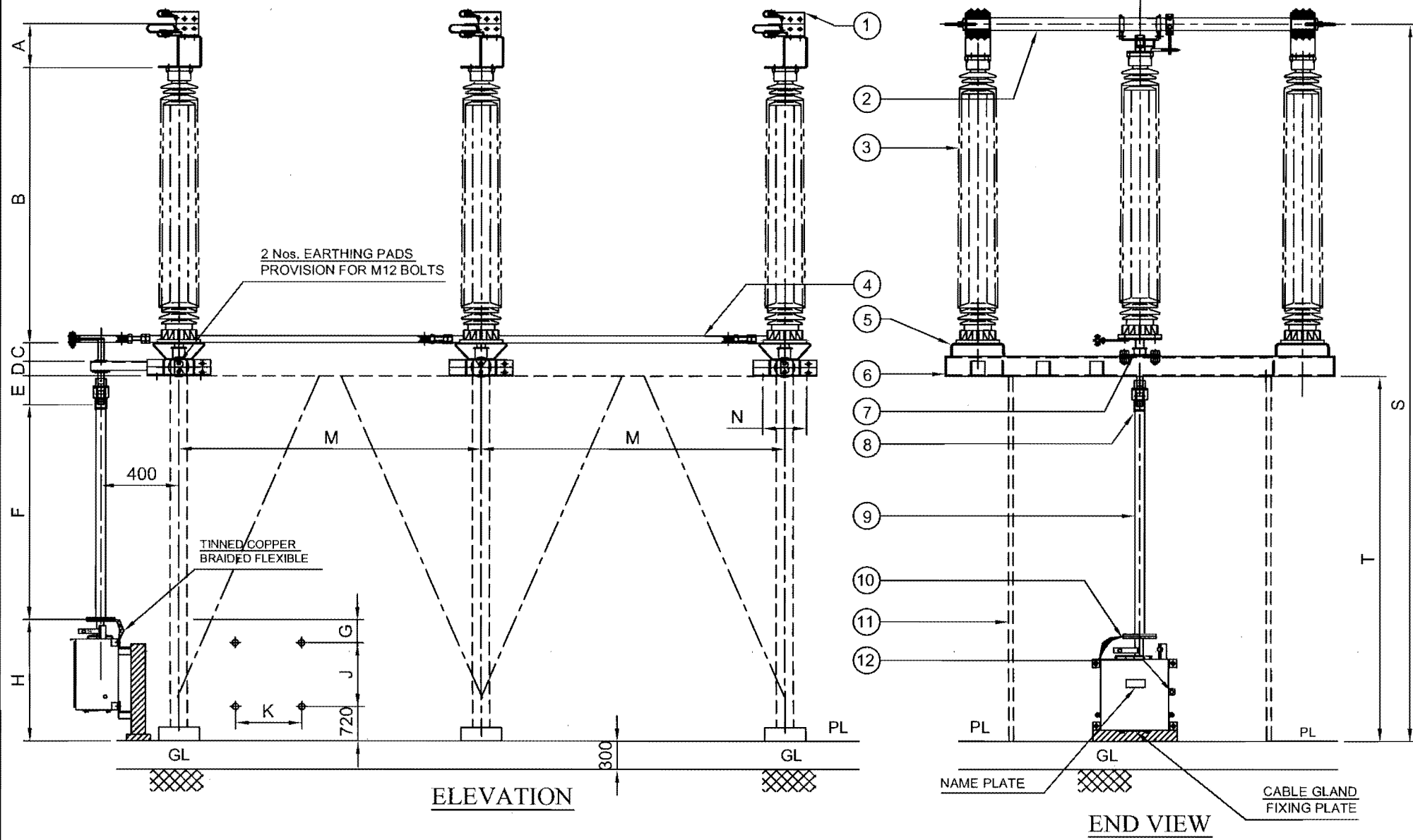
S.No	DESCRIPTION	145 KV
xiv)	Down pipe size, length and class	50 mm NB GI Pipe.
xv)	Type of universal/swivel joint	
	a) Between bearing & down pipe	Universal joint
	b) Between down pipe and operating mechanism.	Vernier Flange
xvi)	Operating mechanism	Motor operated mechanism for M.S. & Manual operated mechanism for E.S.
	a) Control cabinet	
	Material and thickness	2.64 Thick MS Sheet
	Degree of protection	IP : 55 as per IS 2147
	Type size and no. of cable glands.	Compression type, 2 Nos. 19 mm. (Contractor scope of supply)
	Whether removable gland plate provided.	Yes, removable gland plate provided.
	b) Make type, rating and Qty. of Motors	Ø3, 415v, 0.5 HP Motor
	Auxiliary blocks	8 NO / 8 NC contacts for Motor operated Main Switch 6 NO / 6 NC contacts for Manual operated Main Switch 6 NO / 6 NC contacts for Earth Switch Mini 10 A, 2 A DC breaking with 2A - 1 No.
	Terminal blocks	UBT-4
	Insulated Wires	660/1100 V grades, 2.5 Sq.mm PVC For Auxiliary Circuit and 2.5 Sq.mm for Power circuit
	HRC Fuse	Not Applicable, MCB's
	Space Heater	1 No. 230V AC. 80 Watts Kontakt / Ramana Electrical
	Interlocks	1 Set PSI / 20 Watts magnetic - 1 No.
xvii)	Base	
	a) Size of steel sections used	145 X 80 mm
	b) Overall size	2500 x 190 x 80 mm
	c) Total weight	28 Kgs approx

for GR POWER SWITCHGEAR LTD.,

AUTHORIZED SIGNATORY

APPROVED

S. S. Ravishankar  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082



- 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 CHANNEL (250 x 75 mm FORMED CHANNEL)
  6. BASE CHANNEL (145 x 80 x 4 mm THICK FORMED CHANNEL)
  7. ROTATING SHAFT WITH LEVER ARM & CLAMP (M.S. HDG)
  8. UNIVERSAL JOINT ARRANGEMENT
  9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
  10. OPERATING MECHANISM FOR MAIN SWITCH (MANUAL)
  11. SUPPORTING STRUCTURE (NOT IN OUR SCOPE OF SUPPLY)
  12. PROVISION FOR PADLOCK

**REFERENCE DRAWINGS:**

FOR ISOLATOR CONTACT DETAILS (800A)	4. RM TS 06
FOR ISOLATOR CONTACT DETAILS (1250A)	4. RM TS 07
FOR ISOLATOR CONTACT DETAILS (1600A)	4. RM TS 08
FOR ISOLATOR CONTACT DETAILS (2000A)	4. RM TS 09
FOR ISOLATOR CONTACT DETAILS (2500A)	4. RM TS 10
FOR OPERATING MECHANISM DETAILS (M.S.)	4. N TS 14
FOR NAME PLATED DETAILS	4. Z TS 16

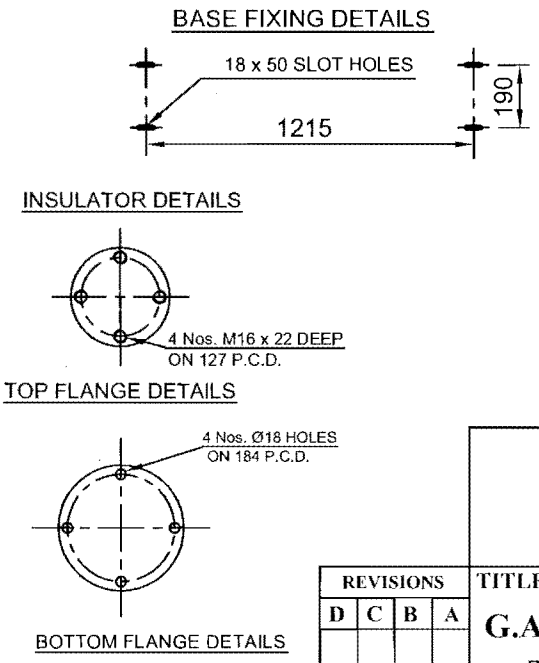
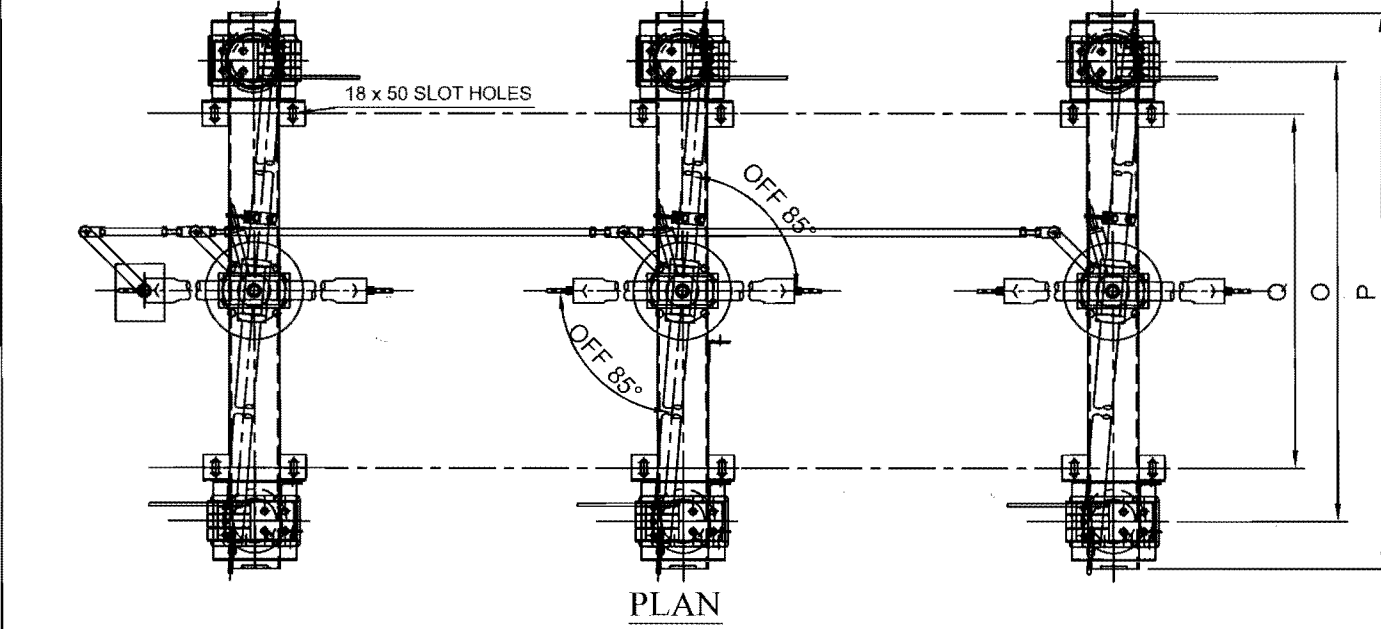
- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS
  2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
  3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (10 TO 15 MICRONS)
  4. THE INDICATED DIMENSIONS ARE SUBJECTED TO THE MANUFACTURING TOLERANCE:  
UP TO 50 mm  $\pm 3\%$ ; 51 TO 100 mm  $\pm 2\%$ ;  
101 TO 300 mm  $\pm 1\%$ ; ABOVE 300 mm  $\pm 0.5\%$ ;
  5. SHORT TIME CURRENT RATING 31.5 KA rms. FOR 3 Sec.
  6. MIN. CREEPAGE DISTANCE : 3625 mm
  7. APPLICABLE STANDARD : IS:9921 PART I TO V
  8. MAIN ROTATING POST HAVING 2 Nos. BALL BEARINGS OF ADEQUATE SIZE
  9. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE NOT IN OUR SCOPE OF SUPPLY

**WEIGHT:**

NET WEIGHT OF THE ISOLATOR  
EXCLUDING INSULATOR : 550 Kg (Approx.)

**APPROVED**

*S. S. Ravi*  
Chief Engineer, Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

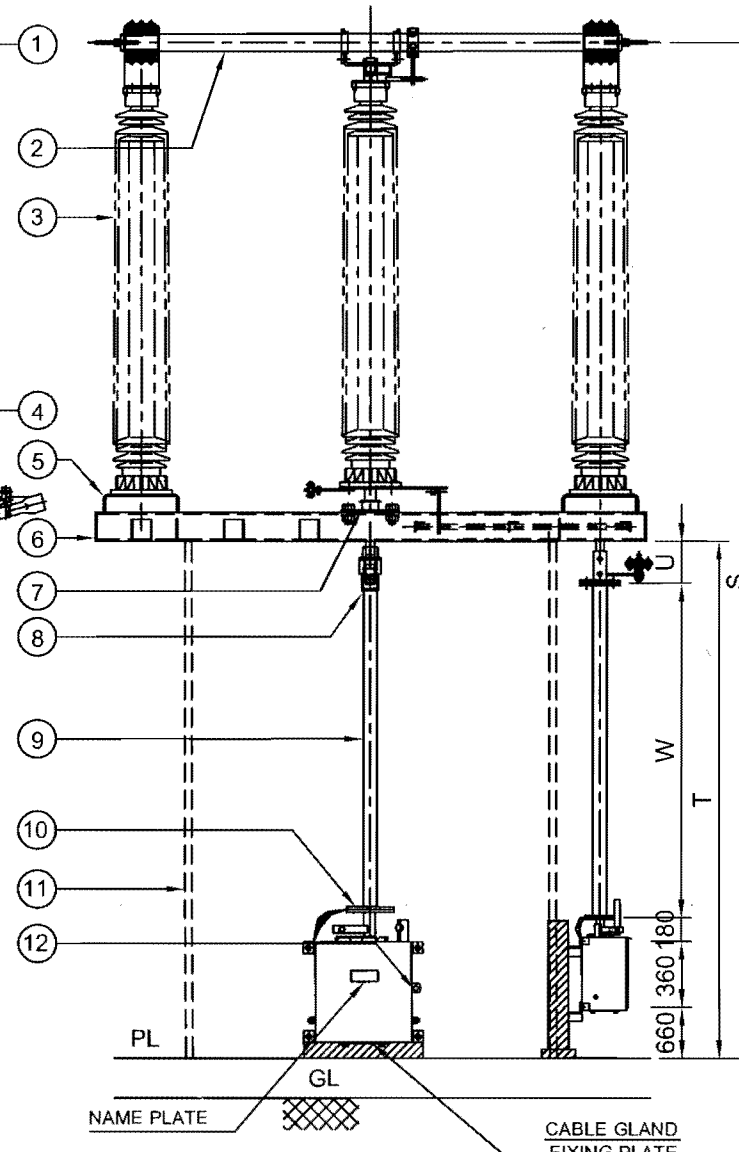


**DIMENSIONS**

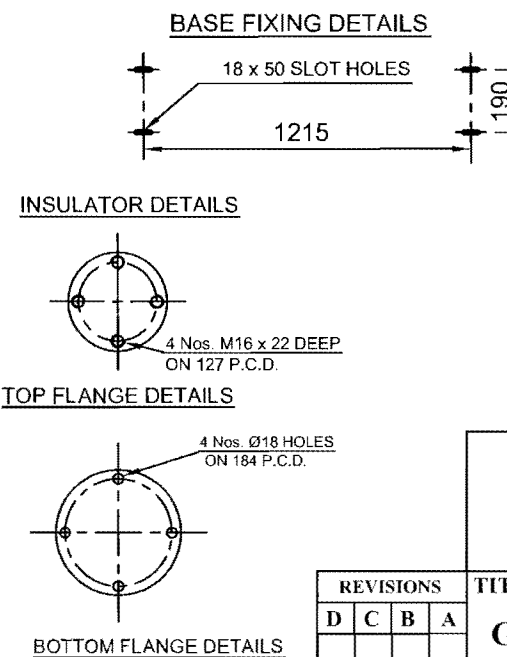
A	B	C	D	E	F	G	H	J	K	M	N	O	P	Q	S	T
175	1500	75	80	180	1420	120	1200	360	400	3000	190	2135	2500	1215	4630	2800

REVISIONS				TITLE:		SCALE: N.T.S.	
D	C	B	A	G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS, TP, HDB, RT, ISOLATOR WITH OUT E.S. (MANUAL OPERATING MECHANISM)		DATE	26-05-2016
						DRAWN	
						CHECKED	
						APPROVED	
						DRG.NO:	REV
						3. FR TS 01	A

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



END VIEW



### BOTTOM FLANGE DETAILS

REVISIONS			
D	C	B	A

A	TITLE:	SCALE:N.T.S	
	G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS, TP, HDB, RT, ISOLATOR WITH ONE E.S. (MANUAL OPERATING MECHANISM)	DATE	26 - 05 - 2016
		DRAWN	
		CHECKED	
		APPROVED	
	GR POWER SWITCHGEAR LTD., JEEDIMETLA HYDERABAD-500 055 INDIA	DRG.NO: 3. FR TS 02	REV A

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 CHANNEL (250 x 75 mm FORMED CHANNEL)
6. BASE CHANNEL (145 x 80 x 4 mm THICK FORMED CHANNEL)
7. ROTATING SHAFT WITH LEVER ARM & CLAMP (M.S. HDG)
8. UNIVERSAL JOINT ARRANGEMENT
9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
10. OPERATING MECHANISM FOR MAIN SWITCH (MANUAL)
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. TOP OPERATING MECHANISM FOR E.S.
17. E.S. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
18. OPERATING MECHANISM FOR E.S. (MANUAL)
19. MECHANICAL INTERLOCK BETWEEN M.S. & E.S.
20. AUX. TANDEM PIPE (32 NB, G.I. PIPE)
21. COUNTER WEIGHT

FOR ISOLATOR CONTACT DETAILS (800A)	-----	4. RM TS 06
FOR ISOLATOR CONTACT DETAILS (1250A)	-----	4. RM TS 07
FOR ISOLATOR CONTACT DETAILS (1600A)	-----	4. RM TS 08
FOR ISOLATOR CONTACT DETAILS (2000A)	-----	4. RM TS 09
FOR ISOLATOR CONTACT DETAILS (2500A)	-----	4. RM TS 10
FOR EARTH SWITCH CONTACT DETAILS	-----	4. RE TS 11
FOR OPERATING MECHANISM DETAILS (M.S.)	-----	4. N TS 14
FOR OPERATING MECHANISM DETAILS (E.S.)	-----	4. N TS 15
FOR NAME PLATED DETAILS	-----	4. Z TS 16
FOR MECHANICAL INTERLOCK DETAILS	-----	4. Z TS 17

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (10 TO 15 MICRONS)
4. THE INDICATED DIMENSIONS ARE SUBJECTED TO THE MANUFACTURING TOLERANCE:  
UP TO 50 mm --- $\pm 3\%$ ; 51 TO 100 mm --- $\pm 2\%$ ;  
101 TO 300 mm --- $\pm 1\%$ ; ABOVE 300 mm --- $\pm 0.5\%$ ;
5. SHORT TIME CURRENT RATING 31.5 KA ms. FOR 3 Sec.
6. MIN. CREEPAGE DISTANCE : 3625 mm
7. APPLICABLE STANDARD : IS:9921 PART I TO V
8. MAIN ROTATING POST HAVING 2 Nos. BALL BEARINGS OF ADEQUATE SIZE
9. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE NOT IN OUR SCOPE OF SUPPLY

NET WEIGHT OF THE ISOLATOR  
EXCLUDING INSULATOR : 650 Kg (Approx.)

APPROVED


*S. S. Rao*  
Chief Engineer, Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

TITLE:
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**G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS,  
TP, HDB, RT, ISOLATOR WITH ONE E.S.  
(MANUAL OPERATING MECHANISM)**



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

SCALE:N.T.S 

DATE	26 - 05 - 2016
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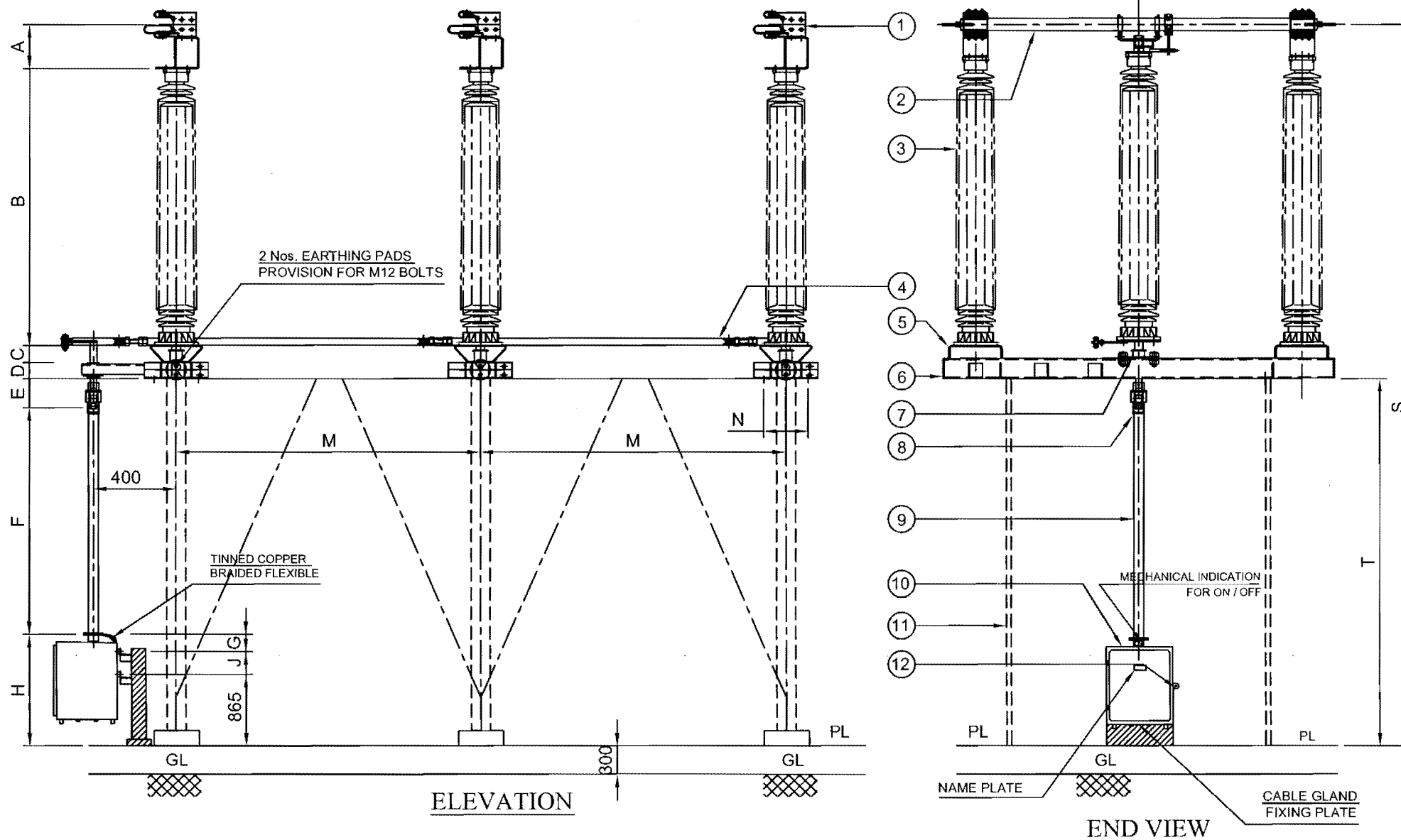
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REV

3. FR TS 02 

A
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#### PART LIST:

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2. MOVING CONTACT ASSEMBLY
3. INSULATOR STACK (NOT IN OUR SCOPE OF SUPPLY)
4. TANDEM PIPE (32 NB, G.I. PIPE)
5. ELEVATOR CHANNEL (250 x 75 mm FORMED CHANNEL)
6. BASE CHANNEL (145 x 80 x 4 mm THICK FORMED CHANNEL)
7. ROTATING SHAFT WITH LEVER ARM & CLAMP (M.S. HDG)
8. UNIVERSAL JOINT ARRANGEMENT
9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
10. OPERATING MECHANISM FOR MAIN SWITCH (MOTOR)
11. SUPPORTING STRUCTURE (NOT IN OUR SCOPE OF SUPPLY)
12. PROVISION FOR PADLOCK

#### REFERENCE DRAWINGS:

FOR ISOLATOR CONTACT DETAILS (800A)	-----	4. RM TS 06
FOR ISOLATOR CONTACT DETAILS (1250A)	-----	4. RM TS 07
FOR ISOLATOR CONTACT DETAILS (1600A)	-----	4. RM TS 08
FOR ISOLATOR CONTACT DETAILS (2000A)	-----	4. RM TS 09
FOR ISOLATOR CONTACT DETAILS (2500A)	-----	4. RM TS 10
FOR OPERATING MECHANISM DETAILS (M.S.)	-----	4. M TS 12
FOR SCHEMATIC DIAGRAM DETAILS (M.S.)	-----	4. M TS 13
FOR NAME PLATED DETAILS	-----	4. Z TS 16

#### NOTES:

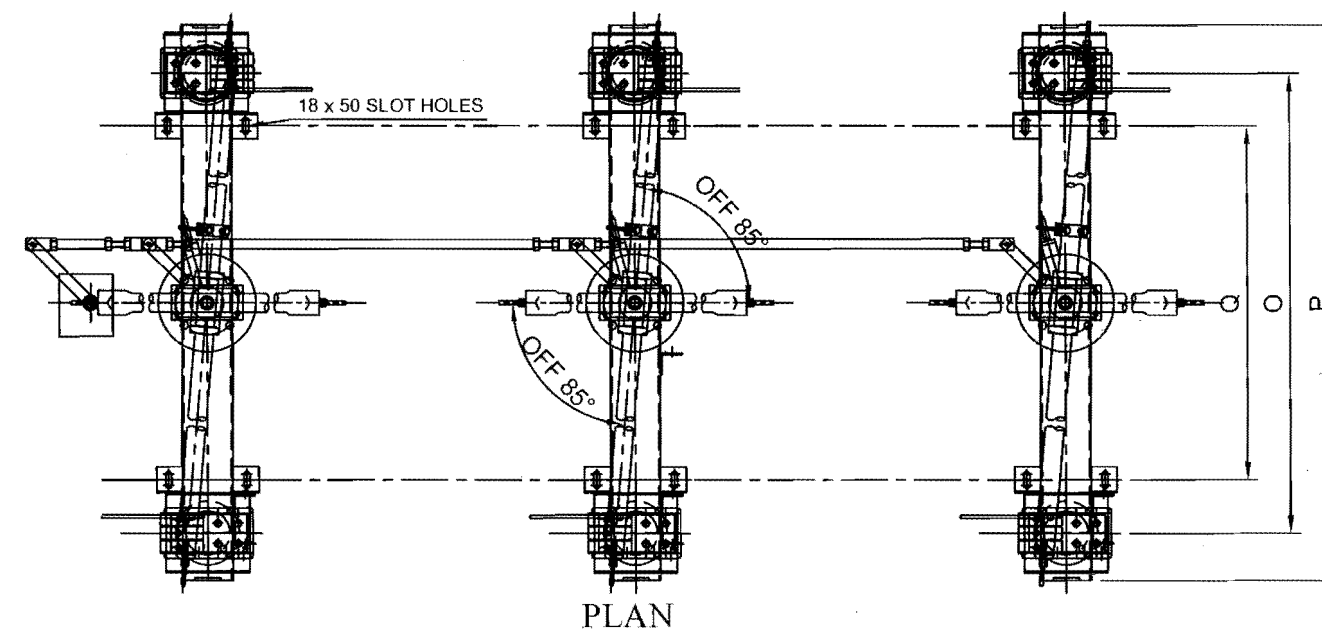
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (10 TO 15 MICRONS)
4. THE INDICATED DIMENSIONS ARE SUBJECT TO THE  
MANUFACTURING TOLERANCE:  
UP TO 50 mm ---±3%; 51 TO 100 mm ---±2%;  
101 TO 300 mm ---±1%; ABOVE 300 mm ---±0.5%;
5. SHORT TIME CURRENT RATING 31.5 KA ms. FOR 3 Sec.
6. MIN. CREEPAGE DISTANCE : 3625 mm
7. APPLICABLE STANDARD : IS:9921 PART I TO V
8. MAIN ROTATING POST HAVING 2 Nos. BALL BEARINGS OF ADEQUATE SIZE
10. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE  
NOT IN OUR SCOPE OF SUPPLY

#### WEIGHT:

NET WEIGHT OF THE ISOLATOR  
EXCLUDING INSULATOR : 580 Kg (Approx.)

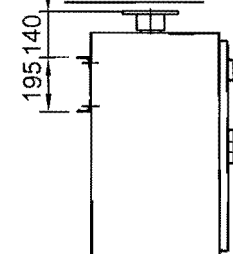
**APPROVED**

*S. B. Reddy*  
Chief Engineer, Transmission  
TSTRANSCO, Vidyut Soudha  
HYDERABAD - 500 082



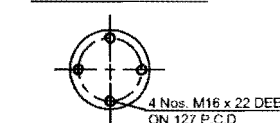
PLAN

#### OPERATING MECHANISM FIXING DETAILS



DETAILS AT "X"

#### INSULATOR DETAILS

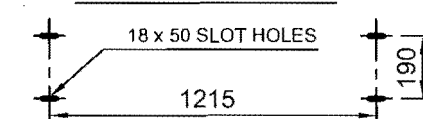


#### TOP FLANGE DETAILS



#### BOTTOM FLANGE DETAILS

#### BASE FIXING DETAILS



#### DIMENSIONS

A	B	C	D	E	F	G	H	J	K		M	N	O	P	Q		S	T		
175	1500	75	80	180	1420	140	1200	195	220		3000	190	2135	2500	1215		4630	2800		

#### REVISIONS

D	C	B	A

#### TITLE:

**G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS,  
TP, HDB, RT, ISOLATOR WITH OUT E.S.  
(MOTOR OPERATING MECHANISM)**



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

#### SCALE:N.T.S

DATE 26-05-2016

DRAWN

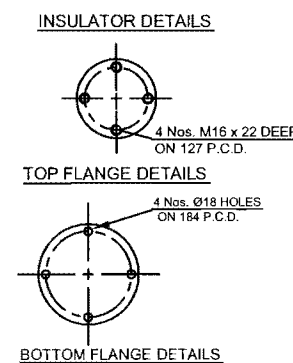
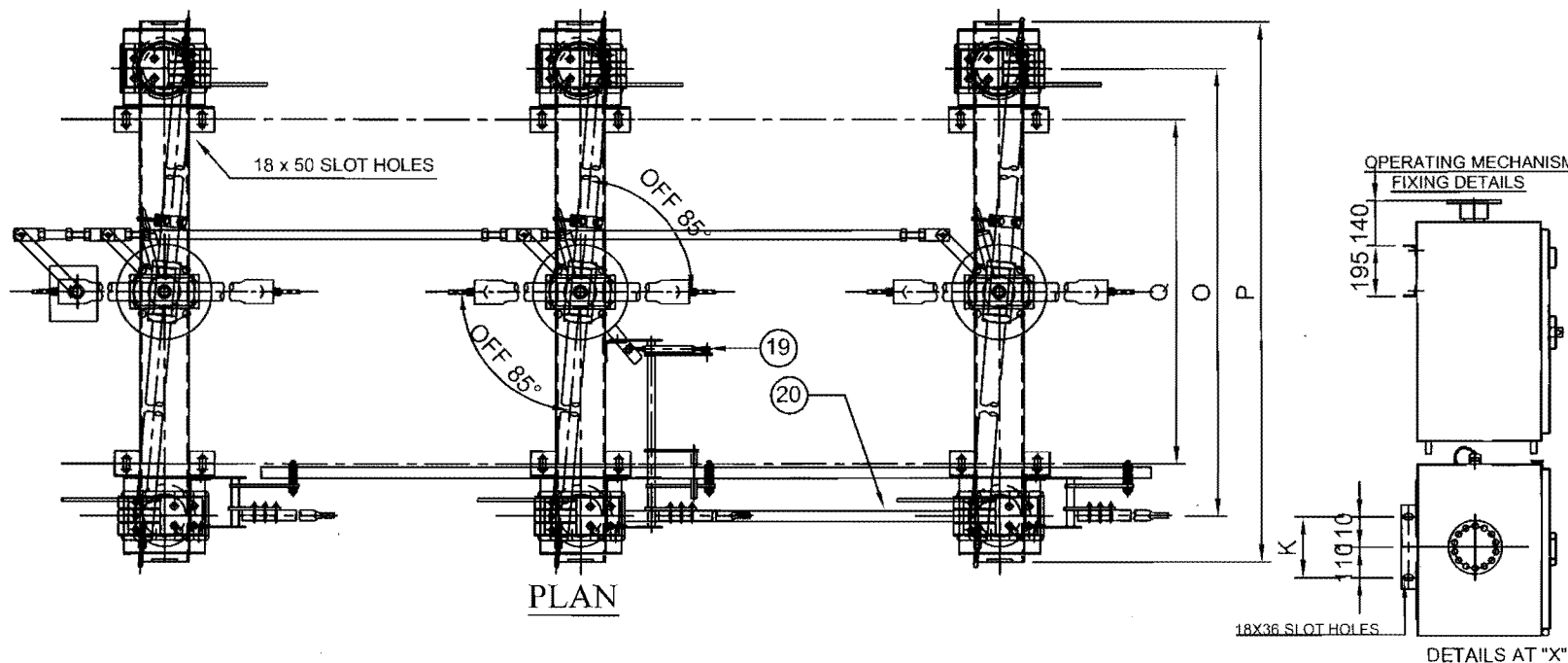
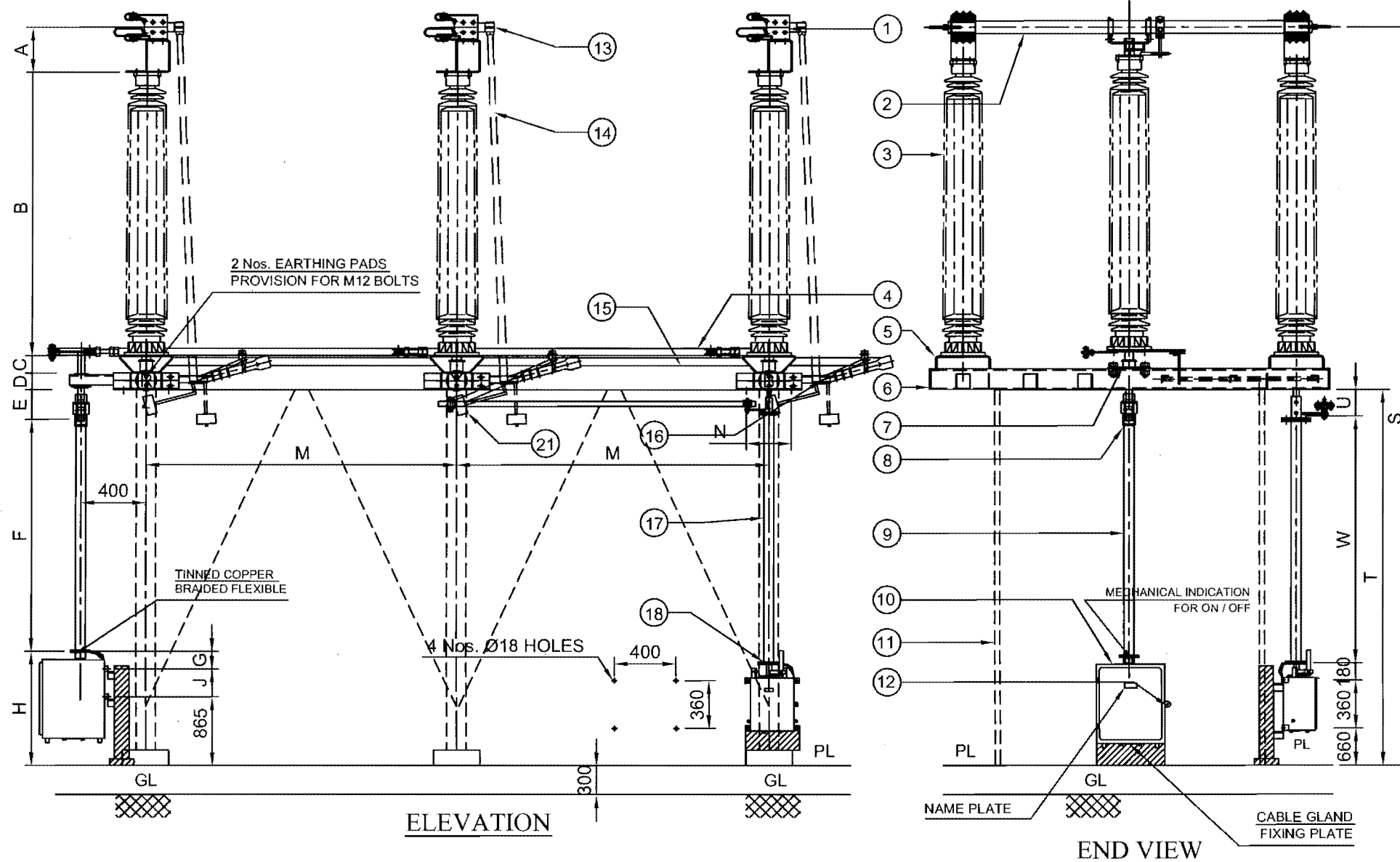
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APPROVED

DRG.NO: 3. FR TS 03

REV A





# 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 CHANNEL (250 x 75 mm FORMED CHANNEL)
6. BASE CHANNEL (145 x 80 x 4 mm THICK FORMED CHANNEL)
7. ROTATING SHAFT WITH LEVER ARM & CLAMP (M.S. HDG)
8. UNIVERSAL JOINT ARRANGEMENT
9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
10. OPERATING MECHANISM FOR MAIN SWITCH (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. TOP OPERATING MECHANISM FOR E.S.
17. E.S. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
18. OPERATING MECHANISM FOR E.S. (MANUAL)
19. MECHANICAL INTERLOCK BETWEEN M.S. & E.S.
20. AUX. TANDEM PIPE (32 NB, G.I. PIPE)
21. COUNTER WEIGHT

## REFERENCE DRAWINGS:

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FOR ISOLATOR CONTACT DETAILS (1600A)	4. RM TS 08
FOR ISOLATOR CONTACT DETAILS (2000A)	4. RM TS 09
FOR ISOLATOR CONTACT DETAILS (2500A)	4. RM TS 10
FOR EARTH SWITCH CONTACT DETAILS	4. RE TS 11
FOR OPERATING MECHANISM DETAILS (M.S.)	4. M TS 12
FOR SCHEMATIC DIAGRAM DETAILS (M.S.)	4. M TS 13
FOR OPERATING MECHANISM DETAILS (E.S.)	4. N TS 15
FOR NAME PLATED DETAILS	4. Z TS 16
FOR MECHANICAL INTERLOCK DETAILS	4. Z TS 17

## NOTES:

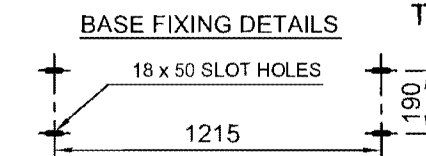
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (10 TO 15 MICRONS)
4. THE INDICATED DIMENSIONS ARE SUBJECT TO THE MANUFACTURING TOLERANCE:  
UP TO 50 mm  $\pm 3\%$ ; 51 TO 100 mm  $\pm 2\%$ ;  
101 TO 300 mm  $\pm 1\%$ ; ABOVE 300 mm  $\pm 0.5\%$ ;
5. SHORT TIME CURRENT RATING 31.5 KA ms. FOR 3 Sec.
6. MIN. CREEPAGE DISTANCE : 3625 mm
7. APPLICABLE STANDARD : IS:9921 PART I TO V
8. MAIN ROTATING POST HAVING 2 Nos. BALL BEARINGS OF ADEQUATE SIZE
9. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE NOT IN OUR SCOPE OF SUPPLY

## WEIGHT:

NET WEIGHT OF THE ISOLATOR  
EXCLUDING INSULATOR : 680 Kg (Approx.)

**APPROVED**

Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082



REVISIONS
D C B A

TITLE:

G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS,  
TP, HDB, RT, ISOLATOR WITH ONE E.S.  
(MOTOR OPERATING MECHANISM)



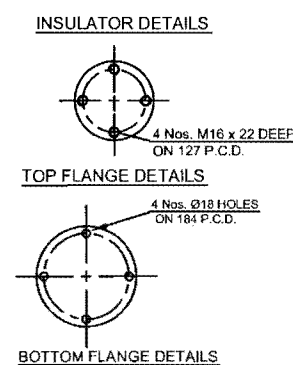
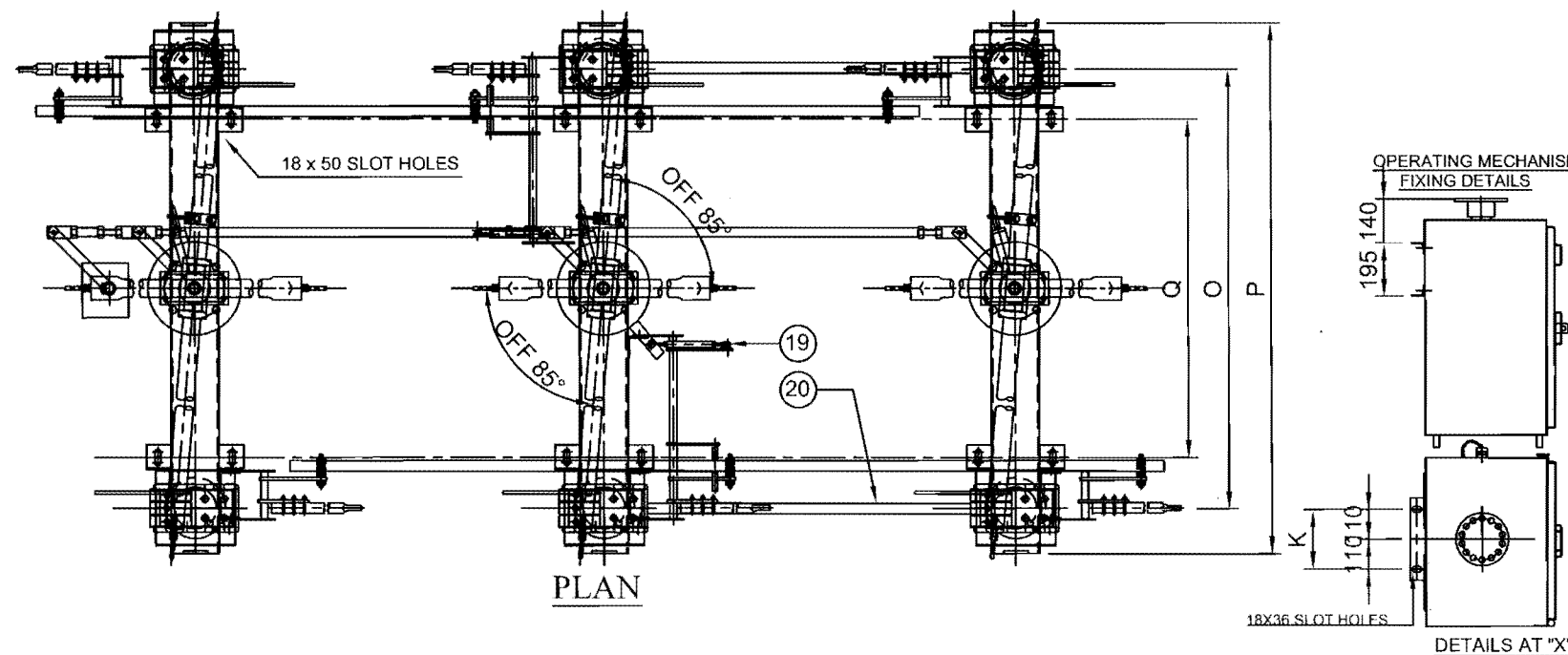
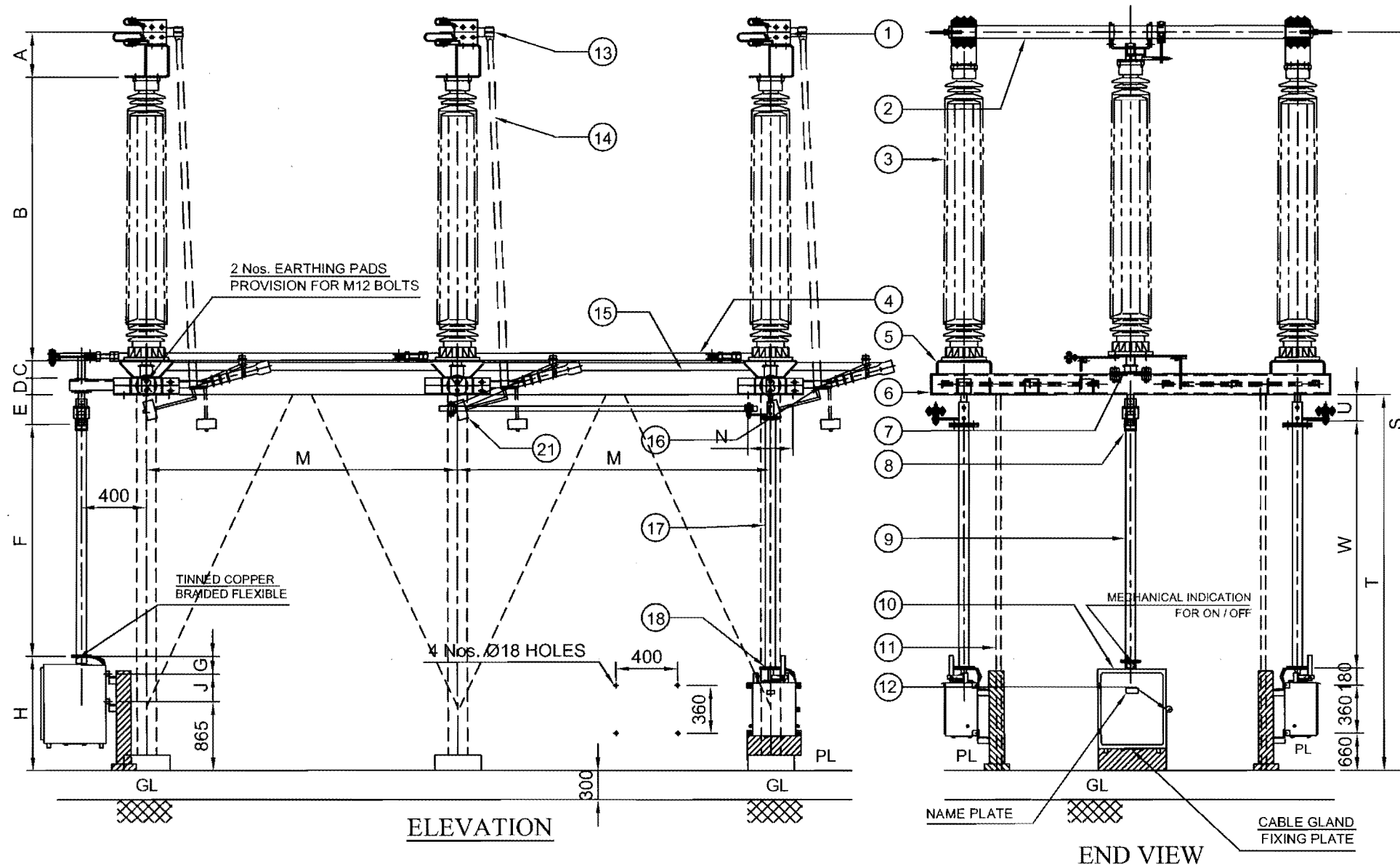
**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

SCALE:N.T.S.	26-05-2016
DATE	
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	3. FR TS 04
REV	A

## DIMENSIONS

A	B	C	D	E	F	G	H	J	K	M	N	O	P	Q	S	T	U	W
175	1500	75	80	180	1420	140	1200	195	220	3000	190	2135	2500	1215	4630	2800	175	1425





# 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 CHANNEL (250 x 75 mm FORMED CHANNEL)
6. BASE CHANNEL (145 x 80 x 4 mm THICK FORMED CHANNEL)
7. ROTATING SHAFT WITH LEVER ARM & CLAMP (M.S. HDG)
8. UNIVERSAL JOINT ARRANGEMENT
9. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
10. OPERATING MECHANISM FOR MAIN SWITCH (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. TOP OPERATING MECHANISM FOR E.S.
17. E.S. DOWN OPERATING PIPE (50 NB, G.I. PIPE)
18. OPERATING MECHANISM FOR E.S. (MANUAL)
19. MECHANICAL INTERLOCK BETWEEN M.S. & E.S.
20. AUX. TANDEM PIPE (32 NB, G.I. PIPE)
21. COUNTER WEIGHT

## REFERENCE DRAWINGS:

- FOR ISOLATOR CONTACT DETAILS (800A) ----- 4. RM TS 06  
 FOR ISOLATOR CONTACT DETAILS (1250A) ----- 4. RM TS 07  
 FOR ISOLATOR CONTACT DETAILS (1600A) ----- 4. RM TS 08  
 FOR ISOLATOR CONTACT DETAILS (2000A) ----- 4. RM TS 09  
 FOR ISOLATOR CONTACT DETAILS (2500A) ----- 4. RM TS 10  
 FOR EARTH SWITCH CONTACT DETAILS ----- 4. RE TS 11  
 FOR OPERATING MECHANISM DETAILS (M.S.) ----- 4. M TS 12  
 FOR SCHEMATIC DIAGRAM DETAILS (M.S.) ----- 4. M TS 13  
 FOR OPERATING MECHANISM DETAILS (E.S.) ----- 4. N TS 15  
 FOR NAME PLATED DETAILS ----- 4. Z TS 16  
 FOR MECHANICAL INTERLOCK DETAILS ----- 4. Z TS 17

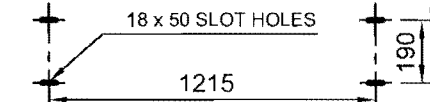
## NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED (10 TO 15 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 31.5 KA rms. FOR 3 Sec.
6. MIN. CREEPAGE DISTANCE : 3625 mm
7. APPLICABLE STANDARD : IS:9921 PART I TO V
8. MAIN ROTATING POST HAVING 2 Nos. BALL BEARINGS OF ADEQUATE SIZE
9. SUPPORT STRUCTURE & INSULATORS INCLUDING FIXING HARDWARE NOT IN OUR SCOPE OF SUPPLY

## WEIGHT:

NET WEIGHT OF THE ISOLATOR  
 EXCLUDING INSULATOR : 780 Kg (Approx.)

## BASE FIXING DETAILS



**APPROVED**

Chief Engineer / Transmission  
 TSTRANSCO, Vidyut Soudra,  
 HYDERABAD - 500 080

DIMENSIONS																		
A	B	C	D	E	F	G	H	J	K	M	N	O	P	Q	S	T	U	W
175	1500	75	80	180	1420	140	1200	195	220	3000	190	2135	2500	1215	4630	2800	175	1425

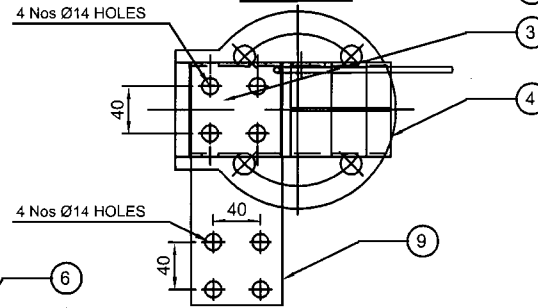
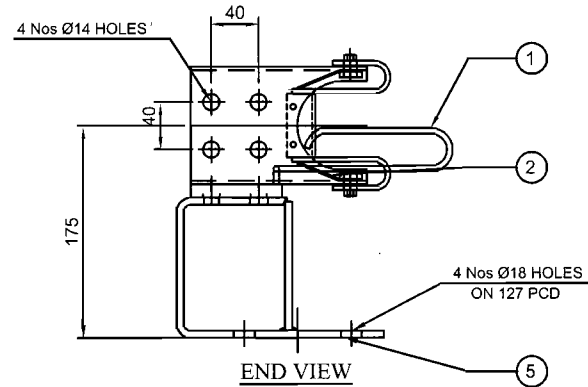
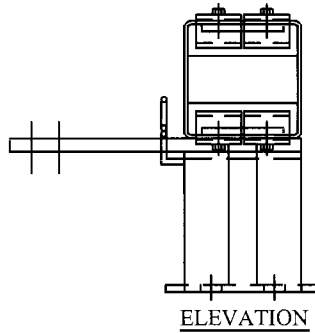
REVISIONS			
D	C	B	A

TITLE:  
**G.A. OF 145 kV, 2500/2000/1600/1250/800 AMPS,  
 TP, HDB, RT, ISOLATOR WITH TWO E.S.  
 (MOTOR OPERATING MECHANISM)**

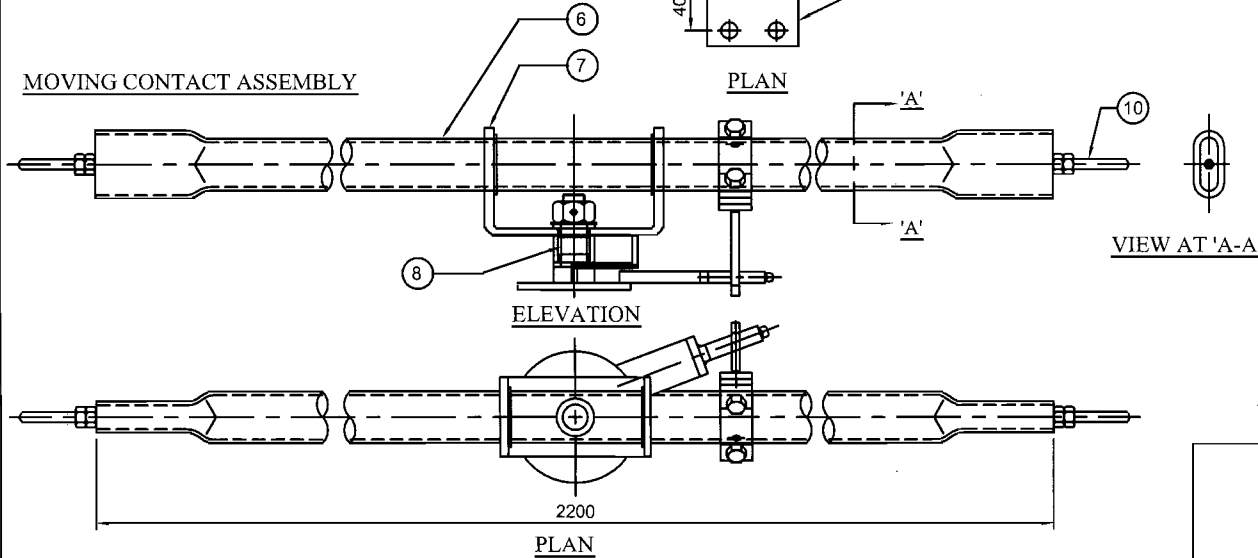
**GR POWER SWITCHGEAR LTD.,  
 JEEDIMETLA HYDERABAD-500 055 INDIA**

SCALE:N.T.S	DATE	DRAWN	CHECKED	APPROVED	DRG.NO:	REV
26-05-2016					3. FR TS 05	A

# FIXED CONTACT ASSEMBLY:



# MOVING CONTACT ASSEMBLY



## PART LIST

1. ARCING HORN FOR FIXED CONTACT (Ø10 ROD M.S. HDG)	06 Nos
2. SPRINGS (STAINLESS STEEL)	12 Nos
3. CONTACT SUPPORT (Alu.)	06 Nos
4. CONTACT FINGER (65 x 4 HDECu. FLAT 2 Nos. SILVER PLATED)	12 Nos
5. SUPPORTING PLATE (6 mm THICK, M.S. HDG)	06 Nos
6. MOVING CONTACT ARM (38 OD x 30 ID CU. TUBE )	03 Nos
7. BEARING BLOCK	06 Nos
8. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM)	03 Nos
9. TERMINAL PAD (75 x 12 AL FLAT)	06 Nos
10. ARCING HORN FOR MOVING CONTACT (Ø10 ROD M.S. HDG)	06 Nos

## NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED  
10 TO 15 MICRONS REMAINING CONTACT AREA TIN PLATED
4. THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY

**APPROVED**

Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS			
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TITLE:

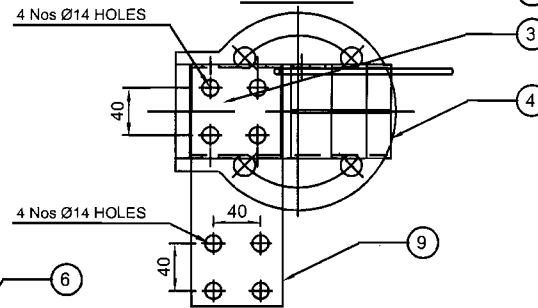
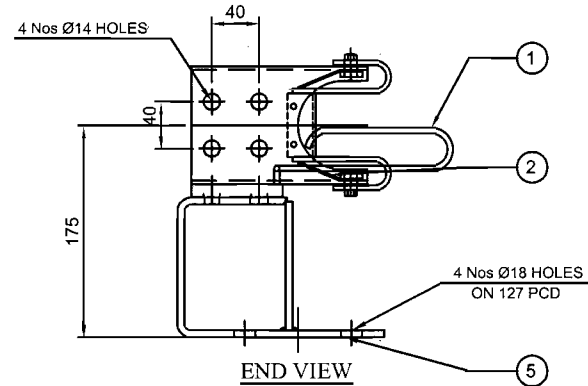
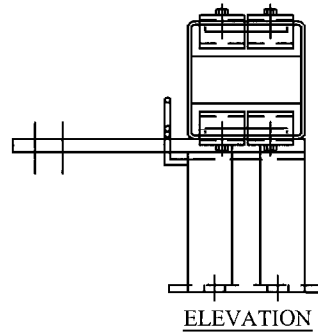
**MAIN CONTACT ASSEMBLY**  
(FOR 145 kV 800 Amps)



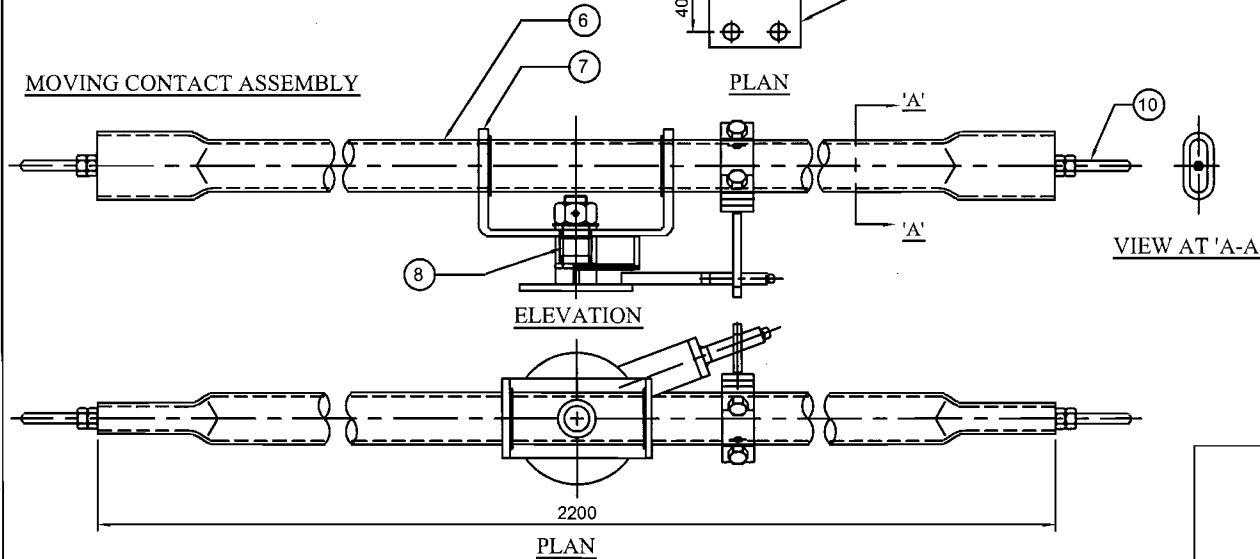
**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

SCALE:N.T.S	
DATE	26-05-2016
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	4. FRM TS 06
REV	A

# FIXED CONTACT ASSEMBLY:



# MOVING CONTACT ASSEMBLY



## PART LIST

1. ARCING HORN FOR FIXED CONTACT(Ø10 ROD M.S. HDG)	06 Nos
2. SPRINGS (STAINLESS STEEL)	12 Nos
3. CONTACT SUPPORT ( Alu.)	06 Nos
4. CONTACT FINGER (65 x 6 HDECu. FLAT 2 Nos. SILVER PLATED)	12 Nos
5. SUPPORTING PLATE (6 mm THICK, M.S. HDG)	06 Nos
6. MOVING CONTACT ARM (50 OD x 41 ID CU. TUBE )	03 Nos
7. BEARING BLOCK	06 Nos
8. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM)	03 Nos
9. TERMINAL PAD (100 x 12.5 AL FLAT)	06 Nos
10. ARCING HORN FOR MOVING CONTACT (Ø10 ROD M.S. HDG)	06 Nos

## NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED  
10 TO 15 MICRONS REMAINING CONTACT AREA TIN PLATED.
4. THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY

**APPROVED**

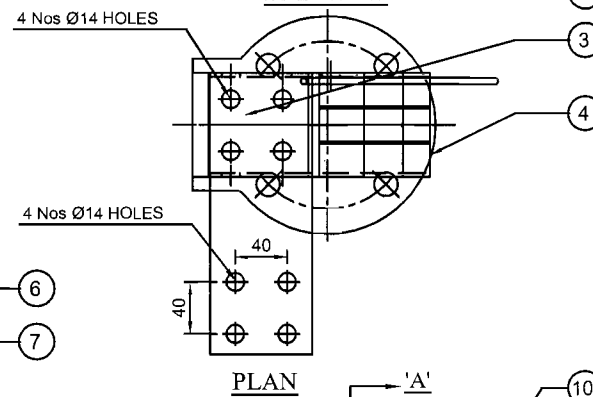
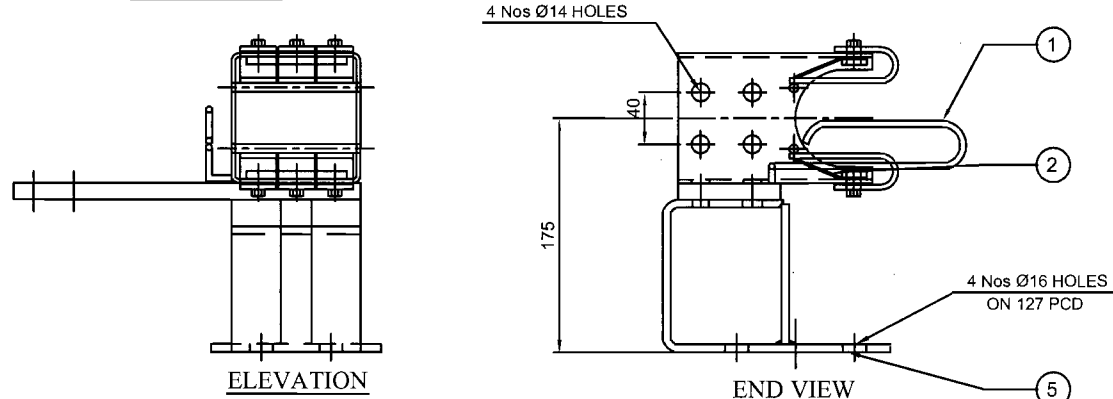
*S. S. Rao*  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 032

REVISIONS				
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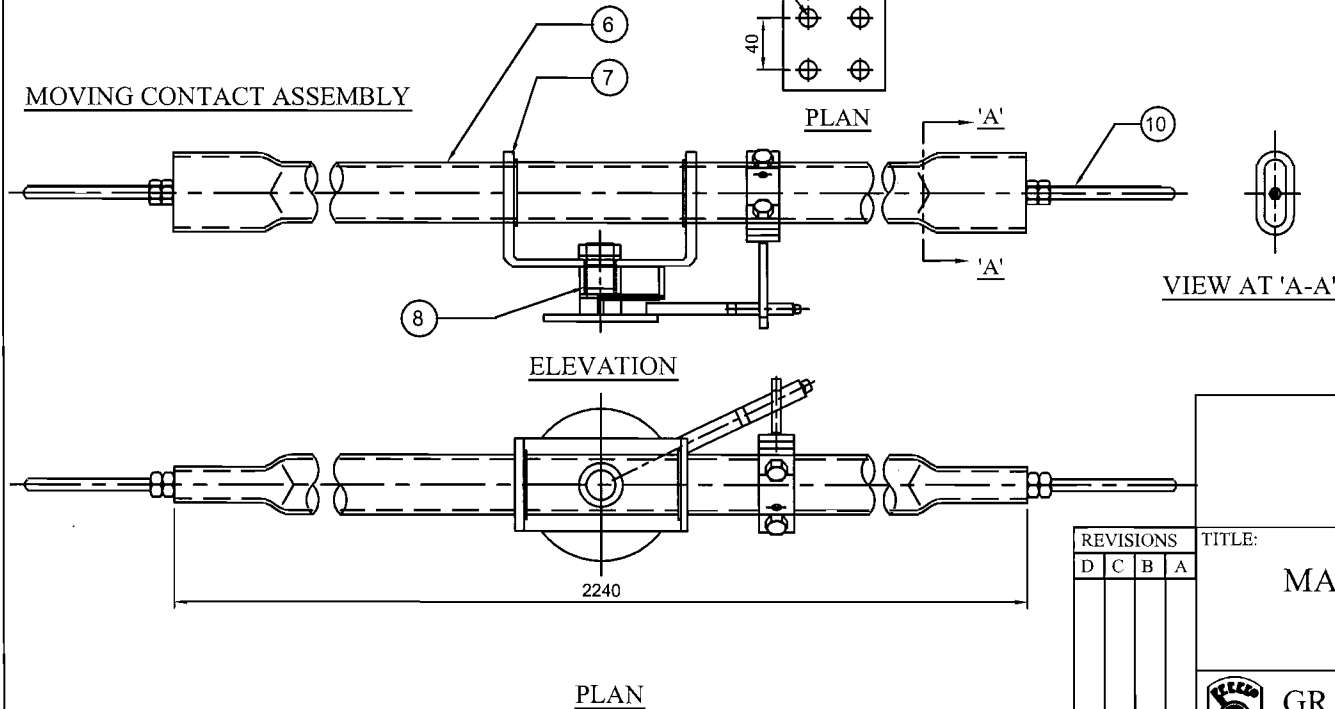
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MAIN CONTACT ASSEMBLY		DATE: 26-05-2016
(FOR 145 kV 1250 Amps)		DRAWN: <i>[Signature]</i>
		CHECKED: <i>[Signature]</i>
		APPROVED: <i>[Signature]</i>
GR POWER SWITCHGEAR LTD.,		DRG.NO:
JEEDIMETLA HYDERABAD-500 055 INDIA		4. FRM TS 07

REV
A

# FIXED CONTACT ASSEMBLY:



## MOVING CONTACT ASSEMBLY



## PART LIST

	BOQ
1. ARCING HORN FOR FIXED CONTACT(Ø10 ROD M.S. HDG)	06 Nos
2. SPRINGS (STAINLESS STEEL)	12 Nos
3. CONTACT SUPPORT (Alu.)	06 Nos
4. CONTACT FINGER (100 x 5 HDECu. FLAT 2 Nos. SILVER PLATED)	12 Nos
5. SUPPORTING PLATE (6 mm THICK, M.S. HDG)	06 Nos
6. MOVING CONTACT ARM (65 OD x 56 ID CU. TUBE )	03 Nos
7. BEARING BLOCK	06 Nos
8. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM)	03 Nos
9. TERMINAL PAD ( 100 x 16 AL FLAT)	06 Nos
10. ARCING HORN FOR MOVING CONTACT(Ø10 ROD M.S. HDG)	06 Nos

## NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED  
10 TO 15 MICRONS REMAINING CONTACT AREA TIN PLATED.
4. THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY

**APPROVED**

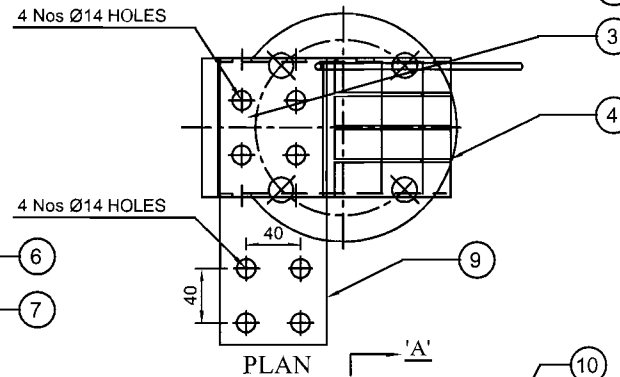
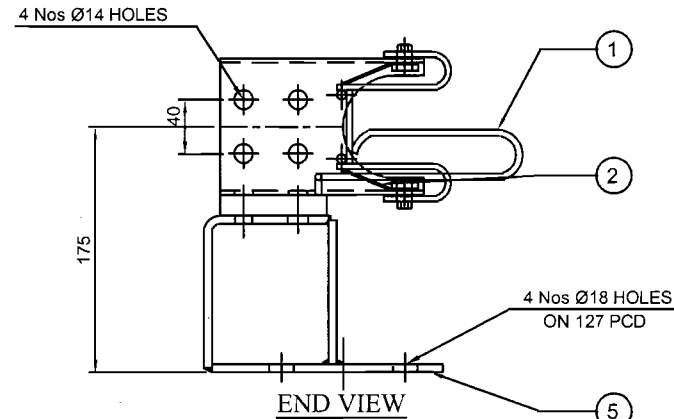
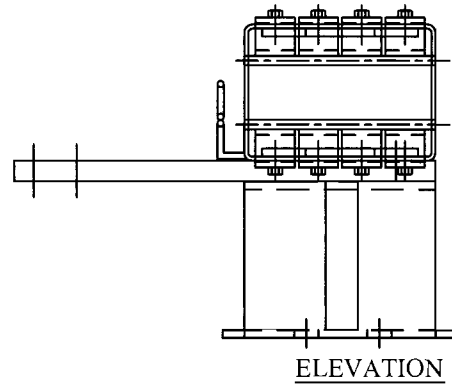
*S. S. Ravi*  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS			
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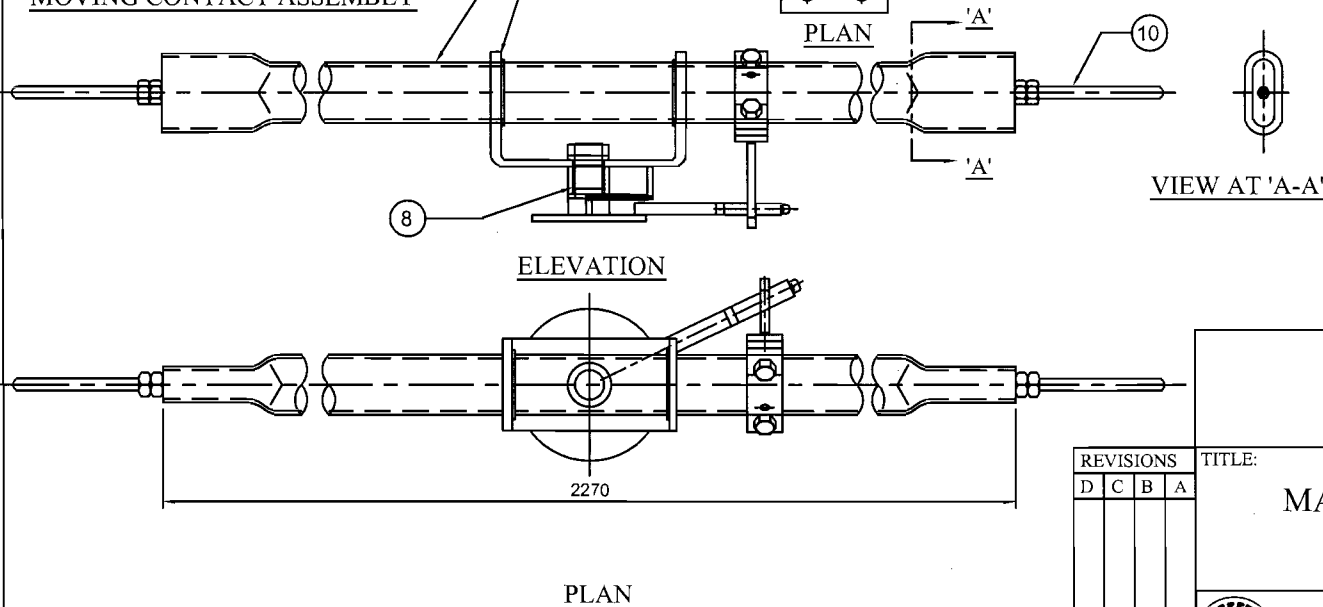
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MAIN CONTACT ASSEMBLY		DATE	
(FOR 145 kV 1600 Amps)		DRAWN	
		CHECKED	
		APPROVED	
GR POWER SWITCHGEAR LTD.,		DRG.NO:	
JEEDIMETLA HYDERABAD-500 055 INDIA		4. FRM TS 08	

DATE		REV	
26 - 05 - 2016		A	

# **FIXED CONTACT ASSEMBLY:**



## **MOVING CONTACT ASSEMBLY**



## **PART LIST**

1. ARCING HORN FOR FIXED CONTACT(Ø10 ROD M.S. HDG)	06 Nos
2. SPRINGS (STAINLESS STEEL)	24 Nos
3. CONTACT SUPPORT (Alu. EXTRUCTION)	06 Nos
4. CONTACT FINGER (65 x 5 HDECu. FLAT 4 Nos. SILVER PLATED)	24 Nos
5. SUPPORTING PLATE (6 mm THICK, M.S. HDG)	06 Nos
6. MOVING CONTACT ARM (65 OD x 54 ID CU. TUBE )	03 Nos
7. BEARING BLOCK	06 Nos
8. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM)	03 Nos
9. TERMINAL PAD (100 x 20 AL FLAT)	06 Nos
10. ARCING HORN FOR MOVING CONTACT(Ø10 ROD M.S. HDG)	06 Nos

## **NOTE:**

- ALL DIMENSIONS ARE IN MILLIMETER
- ALL FERROUS PARTS ARE HOT DIP GALVANIZED
- ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED  
10 TO 15 MICRONS REMAINING CONTACT AREA TIN PLATED
- THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY

**APPROVED**

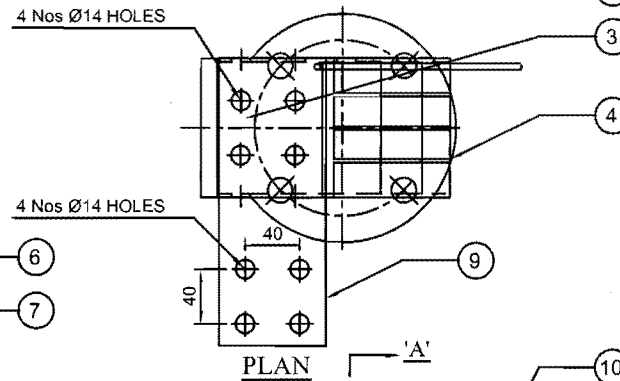
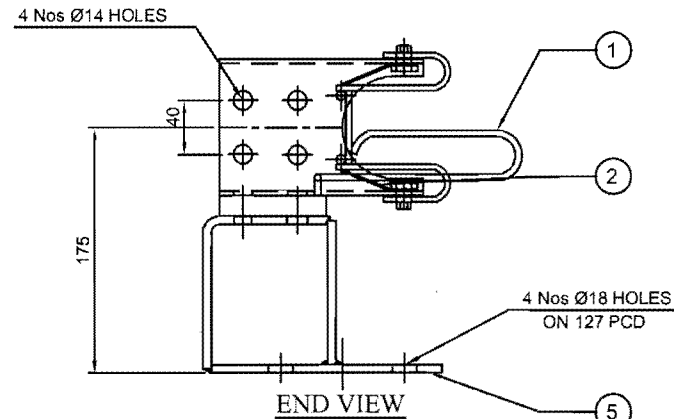
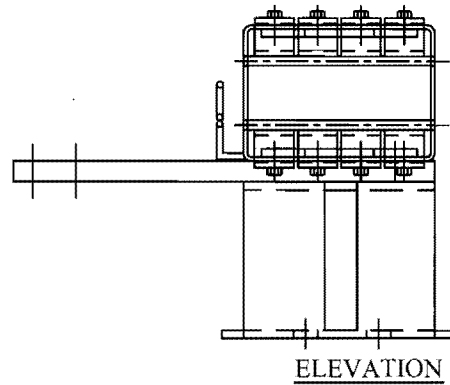
*S. S. Ranga*  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS			
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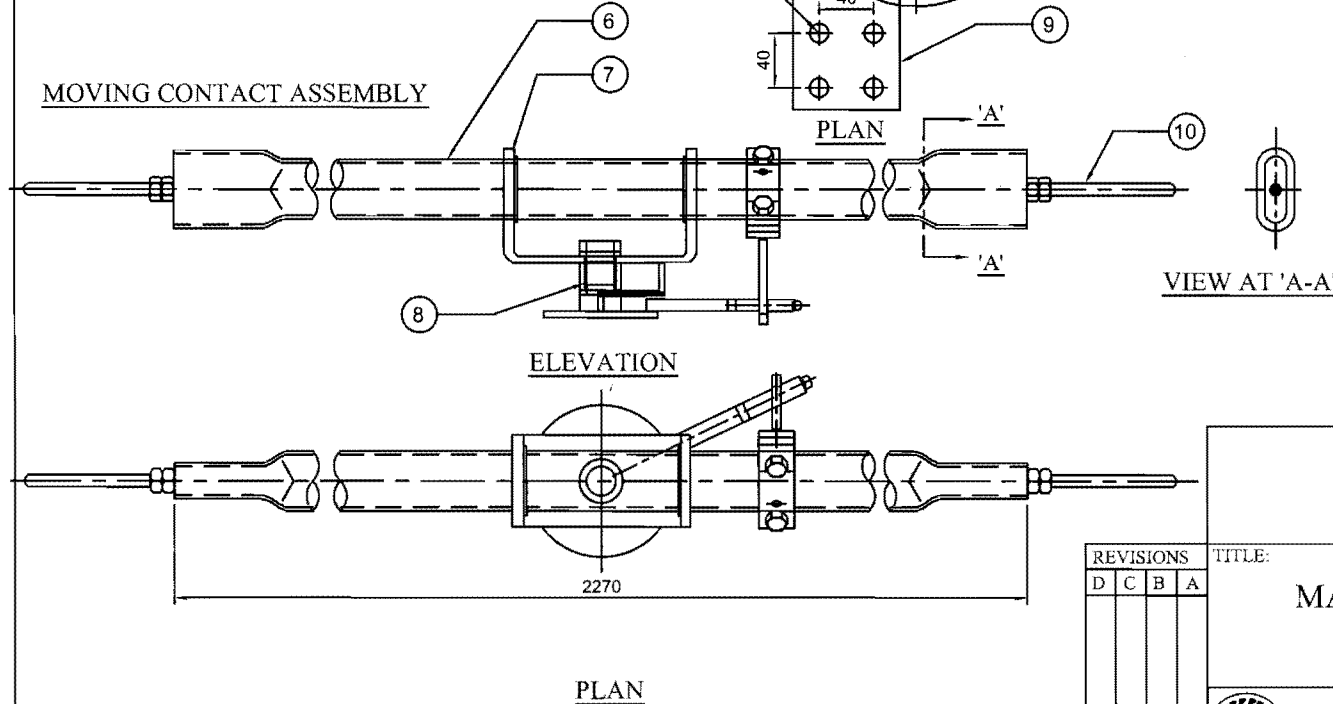
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SCALE:N.T.S	26 - 05 - 2016
DATE	DRAWN
CHECKED	APPROVED
DRG.NO:	4. FRM TS 09
GR POWER SWITCHGEAR LTD., JEEDIMETLA HYDERABAD-500 055 INDIA	REV A

SCALE:N.T.S	26 - 05 - 2016
DATE	DRAWN
CHECKED	APPROVED
DRG.NO:	4. FRM TS 09
GR POWER SWITCHGEAR LTD., JEEDIMETLA HYDERABAD-500 055 INDIA	REV A

# FIXED CONTACT ASSEMBLY:



## MOVING CONTACT ASSEMBLY



## PART LIST

1. ARCING HORN FOR FIXED CONTACT(Ø10 ROD M.S. HDG)	06 Nos
2. SPRINGS (STAINLESS STEEL)	24 Nos
3. CONTACT SUPPORT (Alu. EXTRUCTION)	06 Nos
4. CONTACT FINGER (65 x 6 HDECu. FLAT 4 Nos. SILVER PLATED)	24 Nos
5. SUPPORTING PLATE (6 mm THICK, M.S. HDG)	06 Nos
6. MOVING CONTACT ARM (65 OD x 51 ID CU. TUBE )	03 Nos
7. BEARING BLOCK	06 Nos
8. CENTER MECHANISM (M.S. HDG, TURN & TWIST MECHANISM)	03 Nos
9. TERMINAL PAD (100 x 25 AL FLAT)	06 Nos
10. ARCING HORN FOR MOVING CONTACT(Ø10 ROD M.S. HDG)	06 Nos

## BOQ

06 Nos
24 Nos
06 Nos
24 Nos
06 Nos
03 Nos
06 Nos
03 Nos
06 Nos
06 Nos

## NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON-FERROUS CONTACT POINTS ARE SILVER PLATED 10 TO 15 MICRONS REMAINING CONTACT AREA TIN PLATED.
4. THE MOVING CONTACT ASSEMBLY SHOWN FOR TURN & TWIST ASSEMBLY

**APPROVED**

*S. R. Rao*  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS			
D	C	B	A

TITLE:

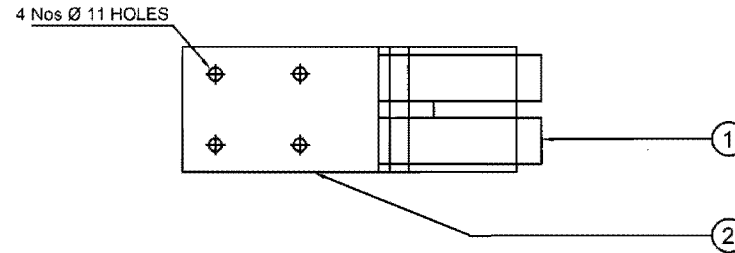
**MAIN CONTACT ASSEMBLY**  
(FOR 145 kV 2500 Amps)



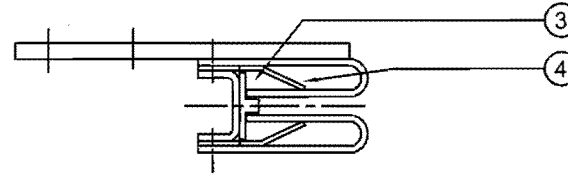
**GR POWER SWITCHGEAR LTD.,**  
JEEDIMETLA HYDERABAD-500 055 INDIA

SCALE:N.T.S	
DATE	26 - 05 - 2016
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CHECKED	
APPROVED	
DRG.NO:	4. FRM TS 10
REV	A

# FIXED CONTACT ASSEMBLY :

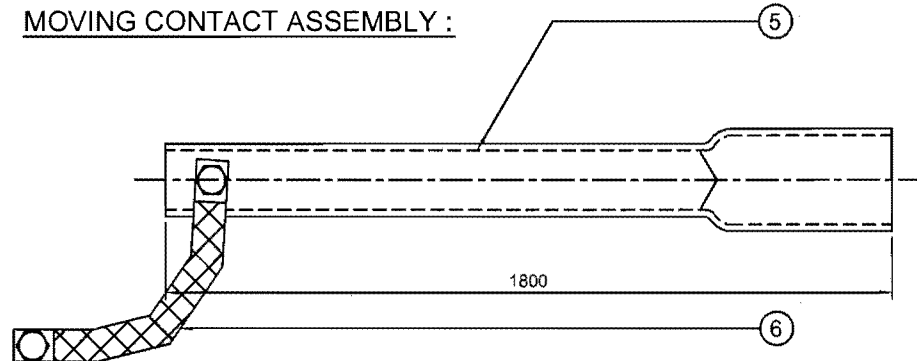


ELEVATION



PLAN

# MOVING CONTACT ASSEMBLY :



## PART LIST

1. JAWS (25 x 4 mm Cu. FLAT 2 PAIRS, SILVER PLATED)
2. F.C. SUPPORT PLATE (50 x 10 mm THK. Alu. FLAT)
3. SPACER (NYLON)
4. SPRING (STAINLESS STEEL)
5. MOVING CONTACT ARM (38 OD x 3.15 THK. CU. PIPE)
6. COPPER FLEXIBLE (25 x 3 mm, 350 mm LONG) 2 Nos.

## NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED
3. ALL NON FERROUS CONTACT POINTS ARE SILVER PLATED  
10 TO15 MICRONS REMAINING CONTACT AREA TIN PLATED

**APPROVED**

*P. S. Ramesh*  
Chief Engineer / Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS				
D	C	B	A	

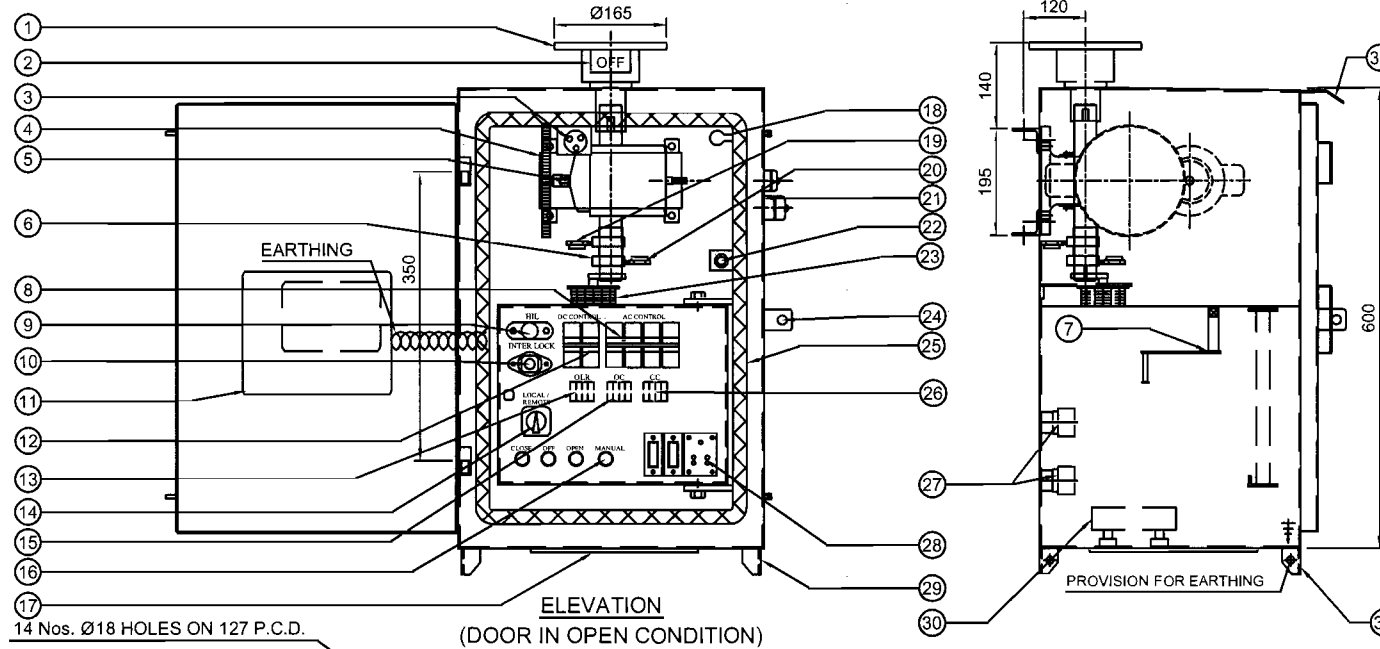
TITLE:  
**EARTH SWITCH CONTACT ASSEMBLY  
FOR 132 KV**



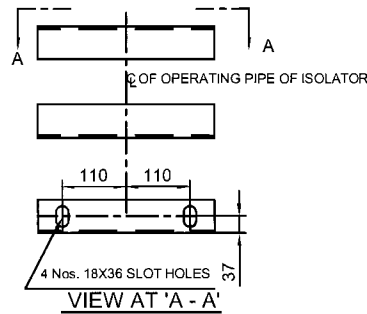
**GR POWER SWITCHGEAR LTD.,  
JEEDIMETLA HYDERABAD-500 055 INDIA**

SCALE:N.T.S	
DATE	01 - 08 - 2014
DRAWN	<i>ASB</i>
CHECKED	<i>ASB</i>
APPROVED	<i>ASB</i>
DRG.NO:	4. RE TS 11
REV	

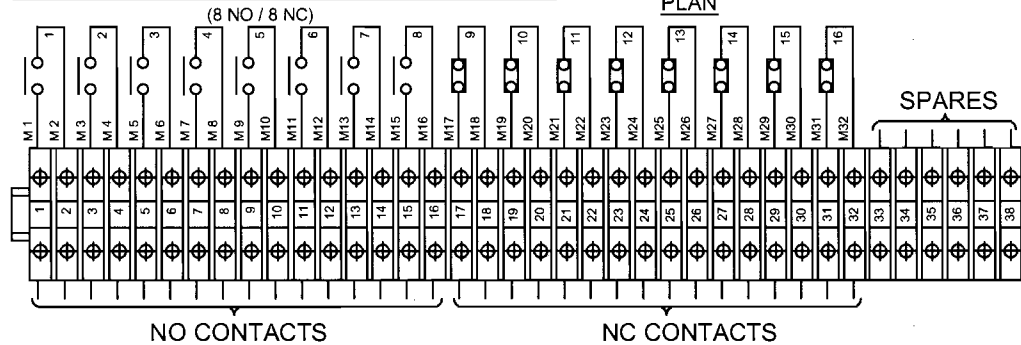




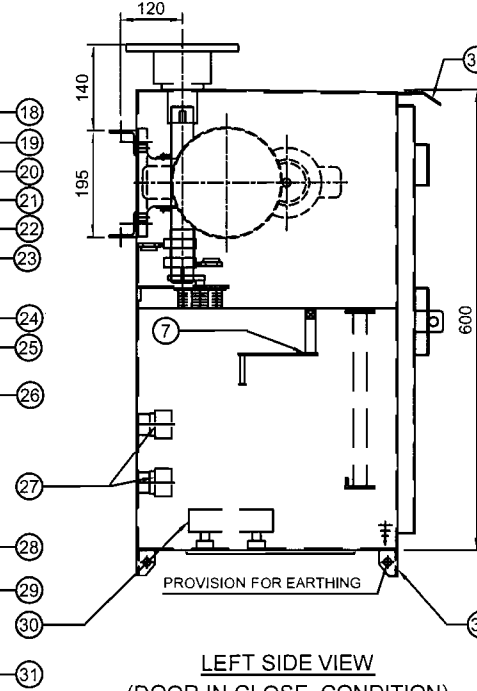
#### FIXING DETAILS FOR SUPPORTING STRUCTURE



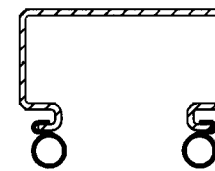
#### AUX. SWITCH CONTACT DETAILS FOR ISOLATOR



#### LEFT SIDE VIEW (DOOR IN CLOSE CONDITION)



#### GASKET DETAILS



#### 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 (2.64 mm THICK M.S SHEET)
- DOOR OPERATED LIGHT SWITCH (LS)
- AUX. SWITCH (8 NO + 8 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

#### NOTE :

- ALL DIMENSIONS ARE IN MILLIMETERS
- CUBICLE WILL BE POWDER COATED WITH LIGHT GRAY SHADE NO : 631 OF IS : 5 FOR INSIDE AND OUTSIDE.
- DEGREE OF PROTECTION IP : 55 AS PER IS : 13947
- 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

**APPROVED**

*S. S. Ramesh*  
Chief Engineer / Transmission

TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS			
D	C	B	A

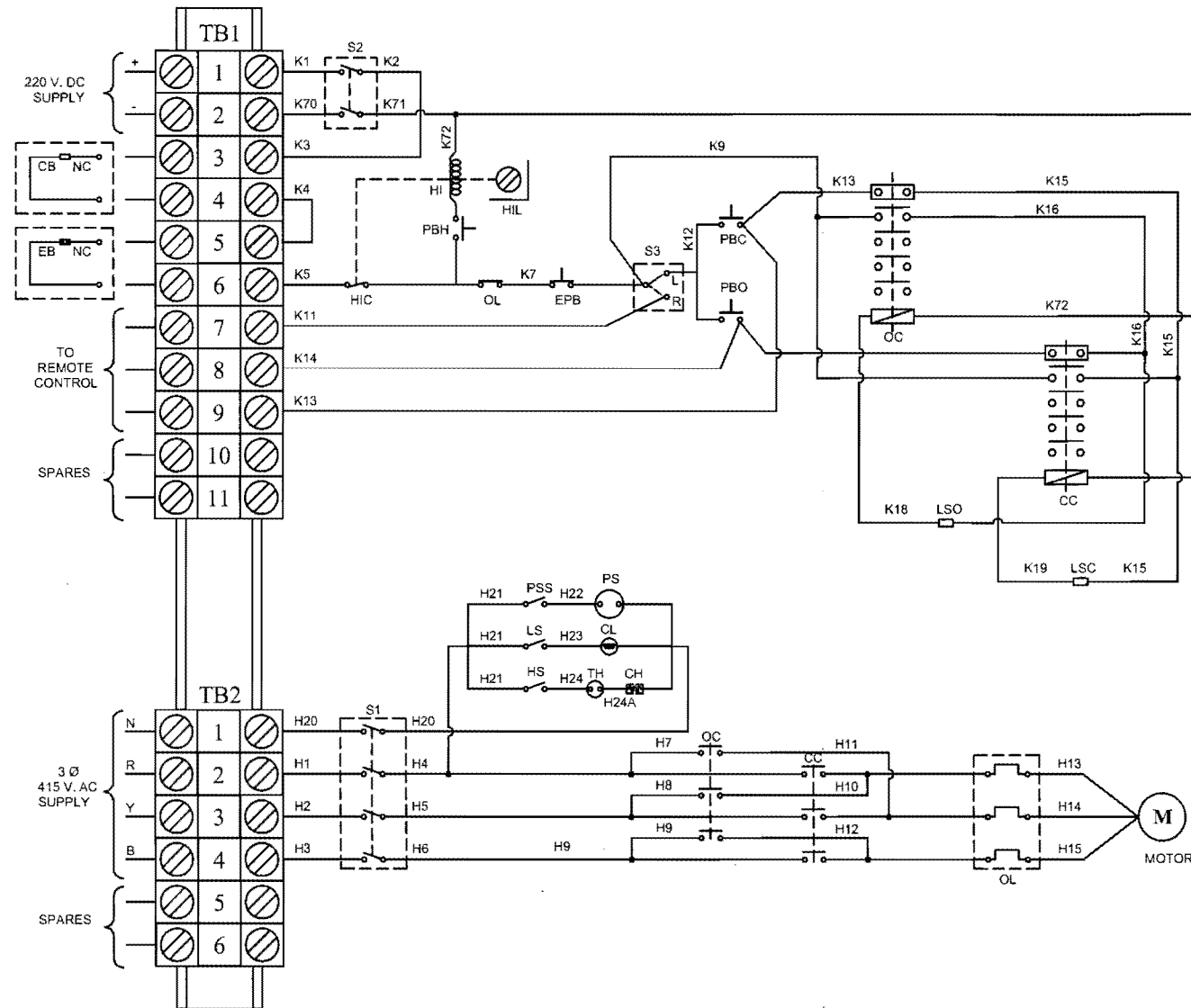
TITLE:

**GENERAL ARRANGEMENT OF MOTOR  
OPERATING MECHANISM FOR 132 KV M/S.**



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

SCALE:N.T.S.	01 - 08 - 2014
DATE	
DRAWN	
CHECKED	
APPROVED	
DRG.NO:	REV
4. M TS 12	



LEGEND	DESCRIPTION	MAKE
HIC	HANDLE INTERLOCK CONTACT	SWITRON/RECOM
M	MOTOR 3Ø 415 V, 0.5 HP	REMI/ELECON/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, 7 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/TECHN/C
LSO,LSC	OPEN/CLOSE LIMIT SWITCHES, 10 A	JAI BALAJI/MANI
PBH	MANUAL HANDLE PUSH BUTTONS, 4 A	C&S/JAIBALAJI/VAISHNO/SIEMENS/TECHN/C
EPB	EMERGENCY PUSH BUTTON, 4 A	C&S/JAIBALAJI/VAISHNO/SIEMENS/TECHN/C
HI	HANDLE INTERLOCK COIL, 20 WATTS	SELMECH/GRPS
HIL	MANUAL HANDLE KEY INTERLOCK	PS/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:

- DON'T OPERATE THE ISOLATOR WHEN THE 'CIRCUIT BREAKER' IS IN 'ON'
- ISOLATOR OPERATION IS POSSIBLE ONLY WHEN THE INTER LOCK CONDITIONS ARE SATISFIED.
- FOR MANUAL OPERATION FOLLOW THE FOLLOWING INSTRUCTIONS:-
  - 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.
  - INSERT THE OPERATING HANDLE AND ROTATE IN CLOCK / ANTI CLOCK WISE DIRECTIONS FOR TO OPEN / CLOSE THE ISOLATOR.
  - IF MANUAL OPERATION IS NOT NEEDED RESTORE THE CASTLE KEY IN THE HANDLE INTER LOCK AND ROTATE.

**APPROVED**

*S. S. Ramana*  
 Chief Engineer / Transmission  
 TSTRANSCO, Vidyut Soudha,  
 HYDERABAD - 500 082

REVISIONS			
D	C	B	A

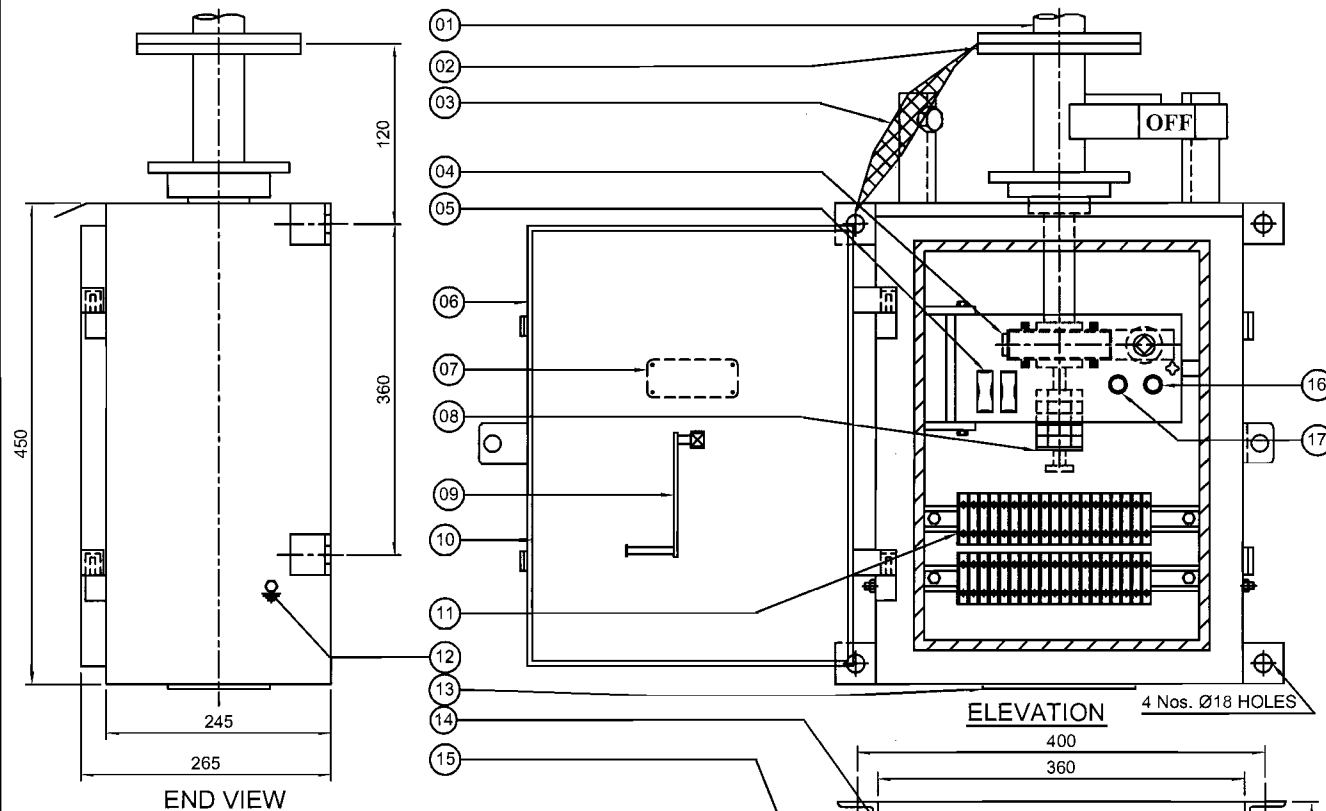
TITLE:

**SCHEMATIC DIAGRAM FOR  
 MOTOR CONTROL PANEL  
 FOR 132 KV ISOLATOR**

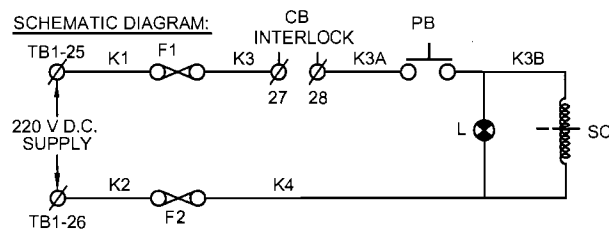


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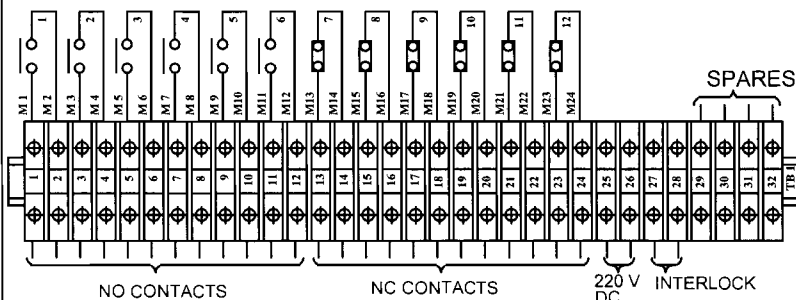
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APPROVED	
DRG.NO:	REV
4. M TS 13	



END VIEW



AUX. SWITCH CONTACT DETAILS FOR ISOLATOR (6 NO + 6 NC)



14 Nos. Ø18 HOLES ON 127 PCD

ELEVATION

4 Nos. Ø18 HOLES

PLAN

## PART LIST

01. DOWN OPERATING PIPE
02. OUTPUT FLANGE (08 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 (2.64 mm THICK, M.S. SHEET)
07. NAME PLATE
08. AUXILIARY SWITCH (6 NO + 6 NC)
09. OPERATING HANDLE
10. GASKET (EPDM)
11. TERMINAL BLOCKS (UBT - 4 OF ELEMx / VIN MECH OR ITS EQVT.)
12. PROVISION FOR EARTHING TERMINALS
13. DETACHABLE CABLE GLAND FIXING PLATE (WITHOUT GLANDS)
14. ON - OFF STOPPERS (M.S. ANGLE PAINTED)
15. RAIN SHADE
16. INDICATION LAMP
17. PUSH BUTTON (4 A)

## NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. CUBICLE WILL BE POWDER COATED WITH LIGHT GRAY SHADE NO:631 OF IS:5
3. DEGREE OF PROTECTION IP:55 AS PER IS:2147
4. WEIGHT OF THE BOX :28 Kg (Approx.)
5. WIRING WILL BE DONE WITH 660/1100 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 GARES : NON HARDENED GEARS FILLED GEAR BOX

## LEGEND:

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

**APPROVED**

*S. D. R.*  
 Chief Engineer / Transmission  
 TSTRANSCO, Vidyut Soudha,  
 HYDERABAD - 500 082

REVISIONS			
D	C	B	A

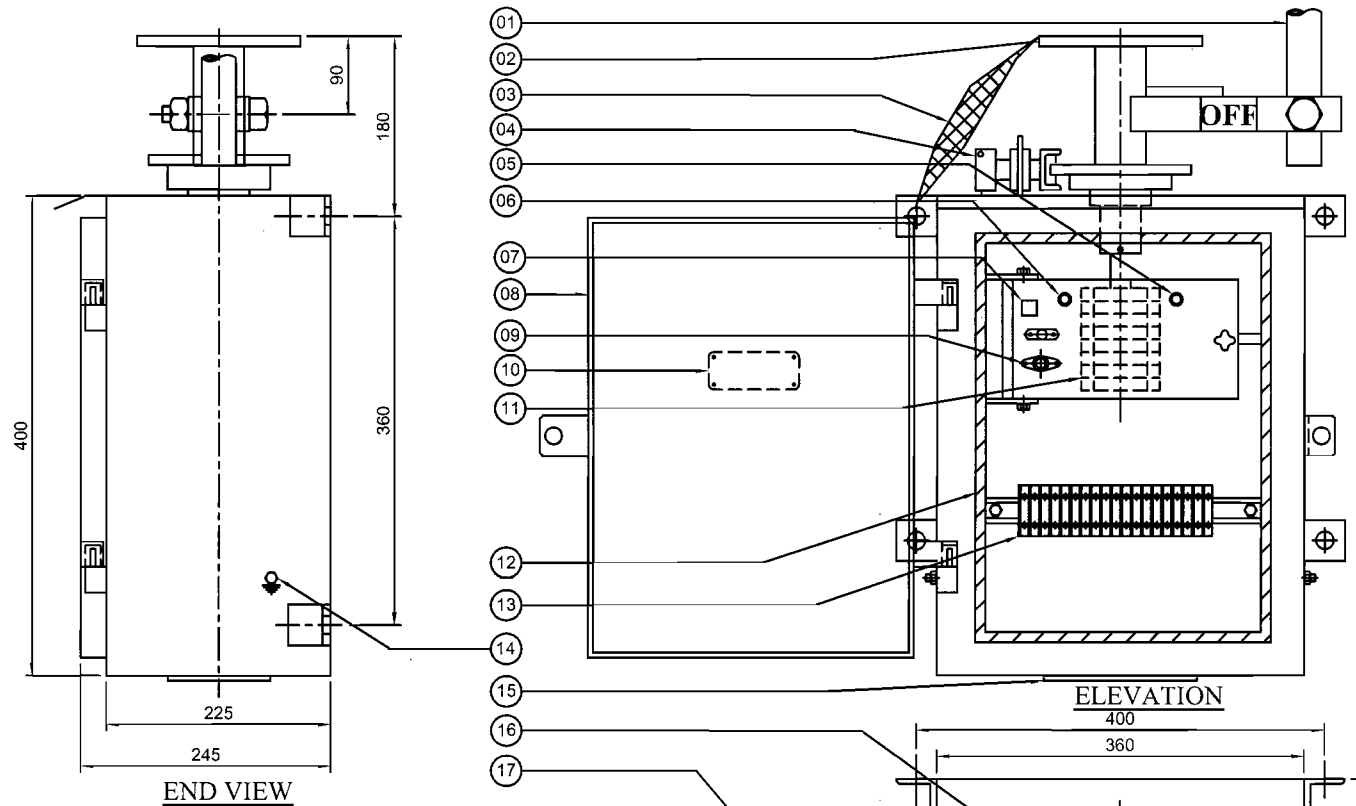
TITLE:

**OPERATING MECHANISM FOR  
 MAIN SWITCH  
 (FOR 132 KV)**



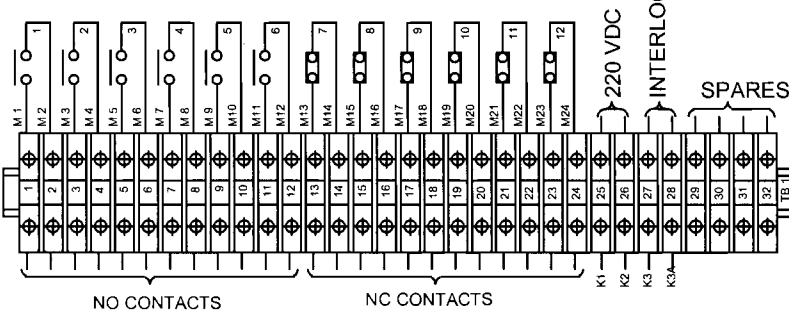
**GR POWER SWITCHGEAR LTD.,  
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DATE	01-08-2014
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APPROVED	<i>[Signature]</i>
DRG.NO:	4. N TS 14
REV	



END VIEW

### AUXILIARY SWITCH DETAILS (6 NO / 6 NC)



14 Nos. 18Ø HOLES ON 127 PCD.

ELEVATION

PLAN

### PART LIST

01. OPERATING HANDLE (Ø32 G.I. PIPE)
02. OUTPUT FLANGE (8 mm THICK M.S. PLATE)
03. COPPER FLEXIBLE (25 x 3 mm TINNED Cu. FLEXIBLE)
04. LOCKING ARRANGEMENT (WITHOUT PADLOCK & KEY)
05. INDICATION LAMP
06. PUSH BUTTON
07. ELECTRICAL INTERLOCK (220 V D.C. 20 WATT GRPS MAKE)
08. CUBICLE WITH DOOR (2.64 mm THICK M.S. SHEET)
09. INTERLOCK WITH KEY
10. NAME PLATE
11. AUXILIARY SWITCH (6 NO / 6 NC, 10 A, CONTACTS SILVER PLATED)
12. GASKET (EPDM)
13. TERMINAL BLOCKS (UBT - 4 OF ELEM X / VIN MECH OR ITS EQVT.)
14. PROVISION FOR EARTHING TERMINALS
15. DETACHABLE CABLE GLAND FIXING PLATE (WITHOUT GLANDS)
16. ON - OFF STOPPERS (M.S. ANGLE)
17. RAIN SHADE

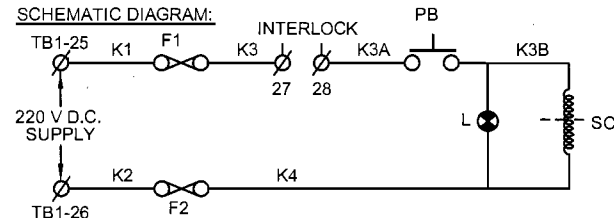
### NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER
2. CUBICLE WILL BE POWDER COATED WITH LIGHT GRAY SHADE NO:631 OF IS:5 FOR INSIDE AND OUT SIDE
3. DEGREE OF PROTECTION IP:55 AS PER IS:2147
4. WEIGHT OF THE BOX :28 Kg (Approx.)
5. 20 % SPARE TERMINALS PROVIDED.
6. WIRING WILL BE DONE WITH 1100 VOLTS GRADE, 2.5 Sq.mm. COPPER STANDED PVC INSULATED LABLE

**APPROVED**

*P. S. Kumar*  
Chief Engineer, Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

### SCHEMATIC DIAGRAM:



### LEGEND:

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

REVISIONS			
D	C	B	A

TITLE:


**MANUAL OPERATING MECHANISM  
FOR 132 KV EARTH SWITCH**



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

SCALE: N.T.S.	DATE: 01-08-2014
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APPROVED: <i>[Signature]</i>	DRG.NO: 4. N TS 15
REV:	


## NAME PLATE DETAILS FOR ISOLATOR

		MANUFACTURED & SUPPLIED BY	
<b>GR POWER SWITCHGEAR LTD.,</b>			
JEEDIMETLA, HYDERABAD - 500 055			
CUSTOMER :	M/s. TRANSMISSION CORPORATION OF TS LIMITED		
PROJECT :			
CONTRACTOR :			
P.O. NO :		Dt. :	
TYPE :	HDB	SL. NO :	AS APPLICABLE
		YEAR OF Mfg. :	
RATING : Un	145	KV ; In :	2500/2000 A ;
WEIGHT IN KG :			
IMPLUSE(UI) :	650	KV Peak ; SWITCHING(Us) :	NA KV Peak ;
P.F. :	275	KV rms ; STC(lth) :	31.5 KA rms ;
DURATION :	3	Sec ;	
OPERATING MECHANISM :	MANUAL (RG) / MOTOR, 3 Ph., 415 V, 0.5 HP		
CONTROL VOLTAGE :	220 V DC		

150

100


## 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 TS LIMITED		
PROJECT :			
CONTRACTOR :			
L.O.A./ P.O. NO :		Dt. :	
TYPE :	VB	SL. NO :	AS APPLICABLE
		YEAR OF Mfg. :	
RATING : Un	145	KV ; In :	A ;
WEIGHT IN KG :			
IMPLUSE(UI) :	650	KV Peak ; SWITCHING(Us) :	NA KV Peak ;
P.F. :	275	KV rms ; STC(lth) :	31.5 KA rms ;
DURATION :	3	Sec ;	
OPERATING MECHANISM :	MANUAL		
CONTROL VOLTAGE :	220 V DC		

150

100

## NAME PLATE DETAILS FOR ISOLATOR

		MANUFACTURED & SUPPLIED BY	
<b>GR POWER SWITCHGEAR LTD.,</b>			
JEEDIMETLA, HYDERABAD - 500 055			
CUSTOMER :	M/s. TRANSMISSION CORPORATION OF TS LIMITED		
PROJECT :			
CONTRACTOR :			
P.O. NO :		Dt. :	
TYPE :	HDB	SL. NO :	AS APPLICABLE
		YEAR OF Mfg. :	2013
RATING : Un	145	KV ; In :	1600/1250/800 A ;
WEIGHT IN KG :			
IMPLUSE(UI) :	650	KV Peak ; SWITCHING(Us) :	NA KV Peak ;
P.F. :	275	KV rms ; STC(lth) :	31.5 KA rms ;
DURATION :	3	Sec ;	
OPERATING MECHANISM :	MANUAL (RG) / MOTOR, 3 Ph., 415 V, 0.5 HP		
CONTROL VOLTAGE :	220 V DC		

150



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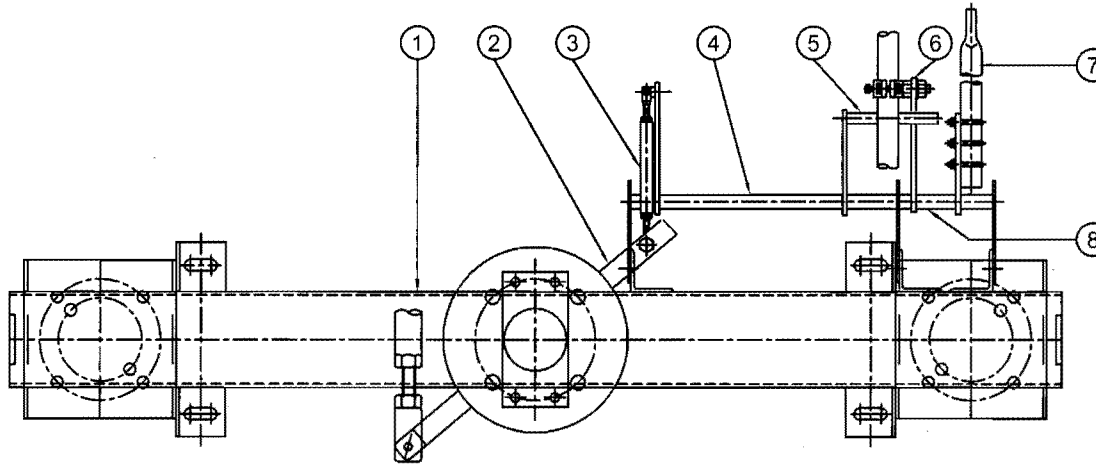
APPROVED

## NOTES :

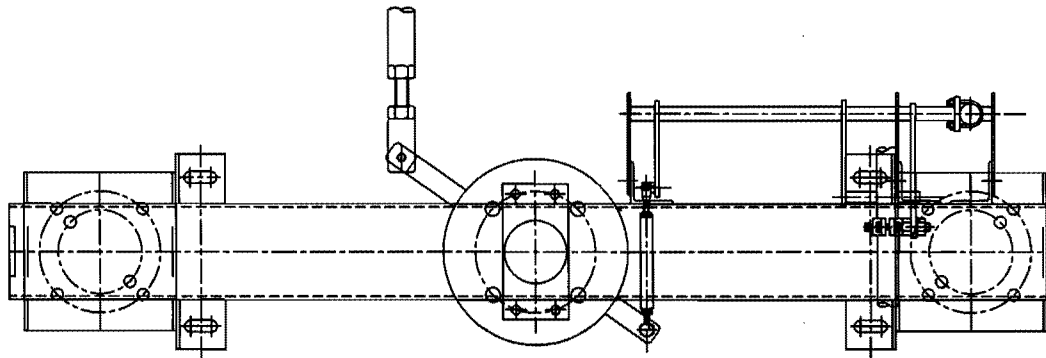
1. ENGRAVED LETTER SIZE : 3 mm
2. LETTER ETCHED WHITE ON BLACK BACKGROUND
3. MATERIAL : ALUMINIUM
4. THICKNESS : 1 mm

*[Signature]*  
Chief Engineer/ Transmission  
TSTRANSCO/ Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS				TITLE:		SCALE: N.T.S	
D	C	B	A	NAME PLATE DETAILS FOR 132 KV ISOLATOR & E.S			
						DATE 01 - 08 - 2014	
						DRAWN	
						CHECKED	
						APPROVED	
						DRG.NO:	
						REV	
						GR POWER SWITCHGEAR LTD., JEEDIMETLA HYDERABAD-500 055 INDIA	
						4. Z TS 16	



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



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

#### 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 145 x 80 x 4 BOX CHANNEL (HOT DIP GALVANIZED)
2. ISOLATOR OPERATING LEVER
3. LINK ROD
4. ROTATING PIPE - 1
5. STOPPER ROD
6. E.S. OPERATING LEVER
7. E.S. MOVING CONTACT
8. ROTATING PIPE - 2

**APPROVED**

*S. S. Ramesh*  
Chief Engineer, Transmission  
TSTRANSCO, Vidyut Soudha,  
HYDERABAD - 500 082

REVISIONS				
D	C	B	A	

TITLE:

**MECHANICAL INTERLOCK BETWEEN  
MAIN SWITCH AND EARTH SWITCH**



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

SCALE: N.T.S.	
DATE	01 - 08 - 2014
DRAWN	<i>[Signature]</i>
CHECKED	<i>[Signature]</i>
APPROVED	<i>[Signature]</i>
DRG.NO:	4. Z TS 17
REV	