

GUARANTEED TECHNICAL PARTICULARS FOR 245KV DBR ISOLATOR

1.	Type/Installation	Center Post Rotating Double Break- "DBR"
2.	Manufacturer's name and Country of manufacture	M/S. Siemens Limited Hyderabad, India
3.	Standards according to which the isolators are manufactured.	IS : 9921 (Part I to V) of 1985 IEC:62271-102
4.	Maximum design voltage at which the isolator can operate	245 kV
5.	Frequency(HZ)	50 Hz
6.	Rated voltage(kV)	220 kV
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 (assigned)
8.	Continuous current rating	
	a) Under normal conditions	800 Amps
	b) Under site conditions	800 Amps
9	Rated short time current	
	i.) For 3 seconds (kA rms.)	Not applicable
	ii.) For 1 second (kA rms.)	40 kA (rms.)
	iii.) Rated peak short time current(kAp)	100 kA (peak)
10	Current density at the minimum cross-section of	
	a) Moving blade	1.4 A/Sq.mm
	b) Terminal pad	0.4 A/Sq.mm
	c) Contacts	1.34 A/Sq.mm
	d) terminal connector	1.0 A/Sq.mm
11	Maximum Temp. rise of current carrying parts when carrying rated current continuously	Within limits as per IEC:62271-102 De-rated to 50 deg.C & Table -3 of IEC:60694
12	Derating factor for specified site conditions	Unity
13	Insulation levels	
	i.) Impulse with stand voltage (kV peak)	
	Phase to earth	1050 kV (peak)
	Isolating distance	1200 kV (peak)
	ii.) Switching surge withstand voltage(kV peak)	
	Phase to earth	Not applicable
	Isolating distance	Not applicable
	iii.) Power frequency with stand voltage (kV rms.)	
	Phase to earth	460 kV (rms)
	Isolating distance	530 kV (rms)
14.	Minimum clearance in air	
	i.) Between poles (mm)	4500 mm
	ii.) Between live parts and earth	Equal to dry arcing distance of insulator selected
	iii.) Between live parts when the switch is open	
	a) On the same pole	3200 mm
	b) Between adjacent poles	3000 mm (Approx.)
15.	Rated mechanical terminal loads	
	i.) Load along the terminal connector side(Kg)	800 N as per Table 3 of IEC:62271-102
	ii.) Load across the terminal connector side(Kg)	270 N as per Table 3 of IEC:62271-102

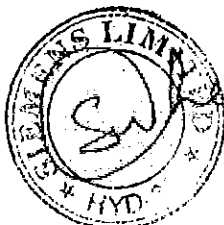


A. PROVED FOR TURNKEY PROJECTS

31/10/13
CHIEF ENGINEER / CONSTRUCTION
A. TRANSCO/VIDYUTH S330111170.

GUARANTEED TECHNICAL PARTICULARS FOR 245KV DBR ISOLATOR

16.	Torque required to operate switch in Kg-m	36 Kg-m
17	Contact zone	
	i.) Horizontal deflection(mm)	Not applicable
	ii.) Vertical deflection (mm)	Not applicable
	iii.) Total amplitude of longitudinal movement w.r.t. conductor supporting fixed contact (mm)	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
	iv.) Contacts	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	400 sq.mm
	v) Moving blade	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	725 sq.mm
	vi.) Contact support	
	a) Material and size of channel/ block	250x150 CRFS channel
	b) Material and size of plate	6,mm MS plate
	vii.) Rain hood-Material Grade and size	18G AL.sheet
	viii.) Turn and twist mechanism	
	a) Material and size of clamps	10 MS flat
	b) Material and size of springs	10 Gauge SS Spring
	c) Whether springs are encased	Yes
	ix.) Nuts and Bolts	
	a) Size, material and grade in live parts	Stainless steel
	b) Size, material and grade in other parts	Galvanized
	x.) Insulator base plate material and size of plate below insulators	10 mm MS plate
	ix.) Bearings	50 ID
	a) Material and size of housing	Aluminium casting
	b) No. of bearings , location and size	Two, Below rotating stool base
	xii.) Tandem pipe	32 NB
	a) Size class and no. of pipes	32NB & 1No- CLASS-B
	b) Size of shackle , screw	Screw rod M24X125Lg
	c) No. of bearings / bush its material and size	Brass bush & Ø25/ Ø22x10L
	xiii.) Type of interlock	Mechanical/ Electrical
	xiv.) Down pipe size and class	50NB & CLASS-B
	xv.) Type of universal/swivel joint	
	a) Between bearing and down pipe	Universal joint
	b) Between down pipe and operating mechanism	Flange welding
	xvi.) Operating mechanism	
	a) Control cabinet	
	Material and thickness	MS 12 SWG
	Degree of protection	IP-55



GUARANTEED TECHNICAL PARTICULARS FOR 245KV DBR ISOLATOR

	Type size and no. of cable glands Whether removable gland plate provided	In scope of Contractor Yes
	xvii.) Base	
	a) Size of steel sections used	
	b) Overall size	125x65 MS channel
	c) Total weight	95 Kg(approx.)
	xviii.) Terminal connectors	In scope of Contractor
	a) Clamp body:	
	Alloy composition	Aluminium alloy, LM-6
	Plating if any	----
	Area at air cross-section	-----
	b) Bolts and nuts size	M12
	Alloy composition	M.S Hot dip galvanized
	Tensile strength	Within the limits of values as specified in IS:5561
	c) Type of washers used	Spring
	d) Material of braids	Copper
	e) Temperature rise when carrying rated current at 50 Degree centigrade ambient	Within the limits of values as specified in IS:5561
	f) Weight of each type of clamp	1 to 2 kgs (Approx.)
19.	List of bought out items	Refer GA drawings
20	Has Bidder included information sought in clause No.5.27.1	NA
21	List of test certificates furnished	Refer type test report list
22	List of drawings furnished	Refer DRG. No. 3 G71 BSC APTCL R001

	Standardised Drawing for 220 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 254-1 03 sheets Revision No. 0
	Prepared & Approved during October – 2013
	Customer ref : APTRANSCO
	Title: GTPs for 245kV Isolators

For Siemens Limited



APPROVED FOR TURNKEY PROJECTS

 CHIEF ENGINEER / CONSTRUCTION
 APTRANSCO/VIDYUTH SODHA/HYD.

Index	Amendment/Revision	Date	Name
A	Revised as per customer comments dt.26.7.12	28.7.12	s.m.singh
B	Revised as per customer comments dt.26.7.12	4.3.13	s.m.singh
C			
D			

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DRAWING No.		BRIEF DETAILS OF DRAWINGS										No. of	Amendment to RECORD OF DRAWINGS										Qty. of
Sl. No.												Sh	0	A	B	C	D	E	F	G	H	I	Prints
1	(3)G711BSC-A	PITCL	R01011	B								1											
2	(3)G711BSC-A	PITCL	Z0102	A								2											
3	(3)G711BSC-A	PITCL	Z0103	A								2											
4	(3)G711BSC-A	PITCL	C0104	A								1											
5	(3)G711BSC-A	PITCL	C0105	A								1											
6	(3)G711BSC-A	PITCL	C0106	B								1 OF 3											
7	(3)G711BSC-A	PITCL	Z0106	B								2 OF 3											
8	(3)G711BSC-A	PITCL	Z0106	B								3 OF 3											
9	(3)G711BSC-A	PITCL	W0107	B								1 OF 4											
10	(3)G711BSC-A	PITCL	W0107	B								2 OF 4											
11	(3)G711BSC-A	PITCL	W0107	B								3 OF 4											
12	(3)G711BSC-A	PITCL	W0107	B								4 OF 4											
13	(3)G711BSC-A	PITCL	Z0108	A								2											
14	(3)G711BSC-A	PITCL	C0109	B								1											
15	(3)G711BSC-A	PITCL	N0110	B								1											



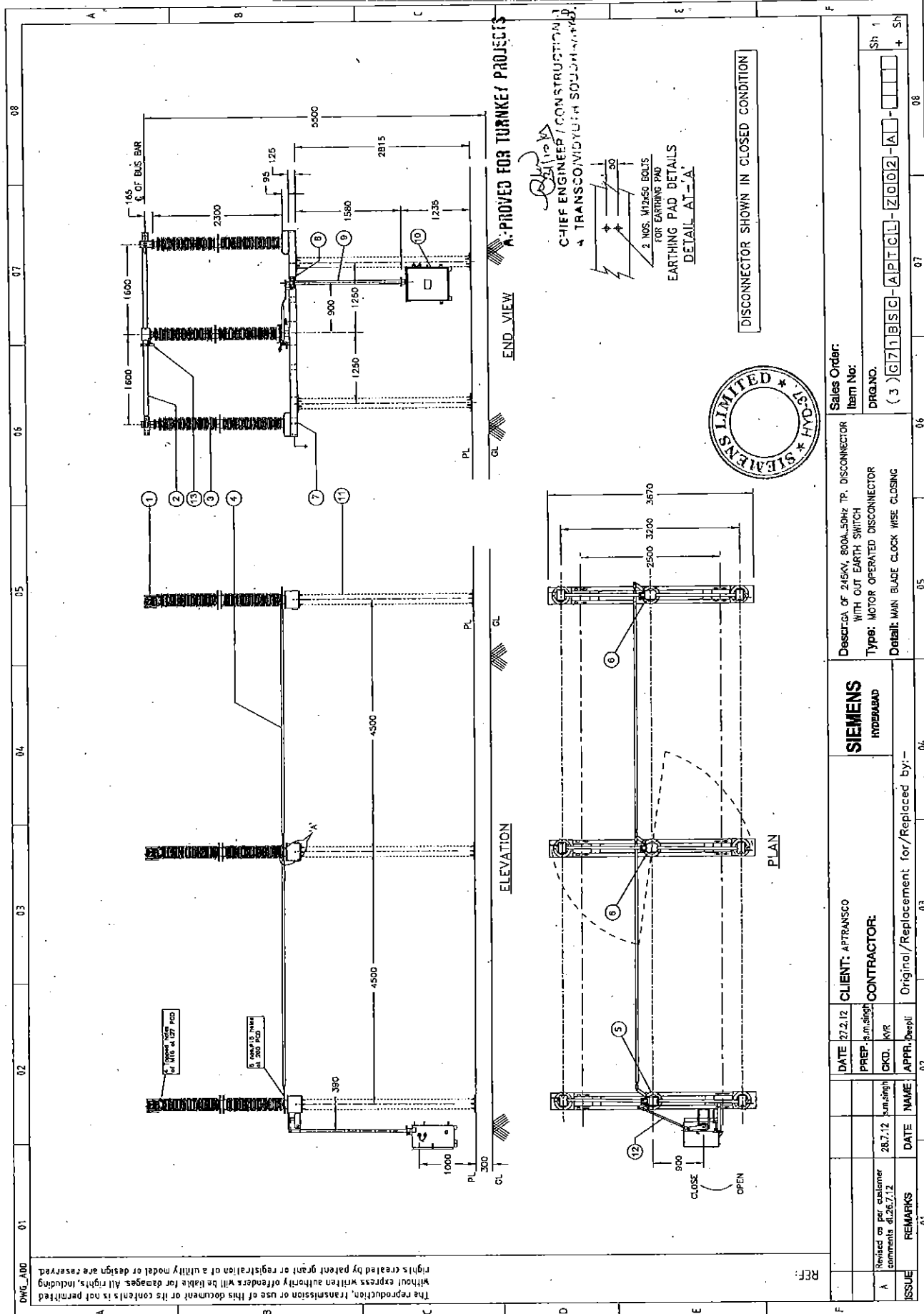
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CHIEF ENGINEER / CONSTRUCTION-1
4. TRANSCO/IDYUTH SOUSHA/AYJ

Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-2 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: 245kV, 800A Disconnecter copper design

Dr. Codes	C = Construction Details; D = Design Instruction / Tech Details; E = Equipment List; L = Equipment Layout (Front, Rear); N = Name Plate / Rating Plate; R = Record of Drawings; S = Single Line Diagram; W = Wiring Drawing / Power & Control Circuit; Z = Any Drawing not covered by other code.
DATE 27.2.12	CLIENT: APTRANSCO
PREP. s.m.singh	CONTRACTOR: SIEMENS HYDERABAD
CHKD. KVR	
APPR. Deepthi	
	Original/Replacement for/Replaced by:-
	Descr: 245KV, 800A DISCONNECTOR
	Type: DBR (Copper Design)
	Details: Record of Drawings
	Sales Order:
	Item No:
	DRG.NO.
	(3)G711BSC-A-PITCL-R001-B
	Sh 1

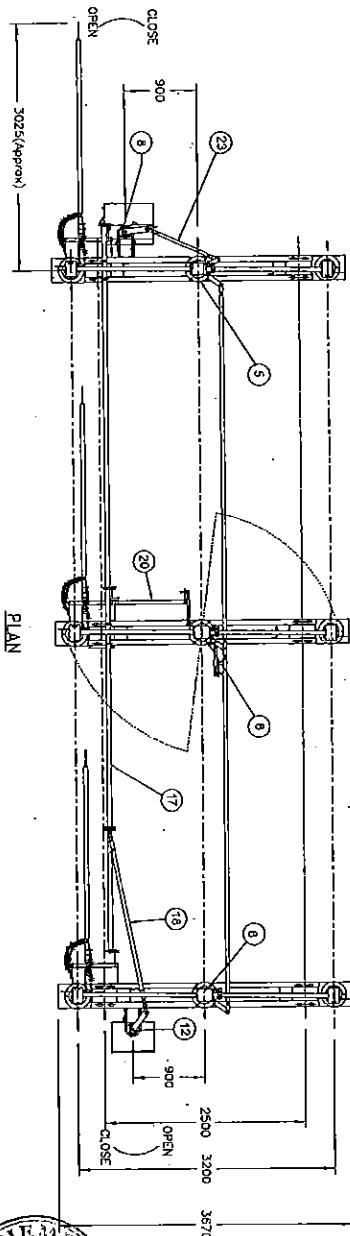
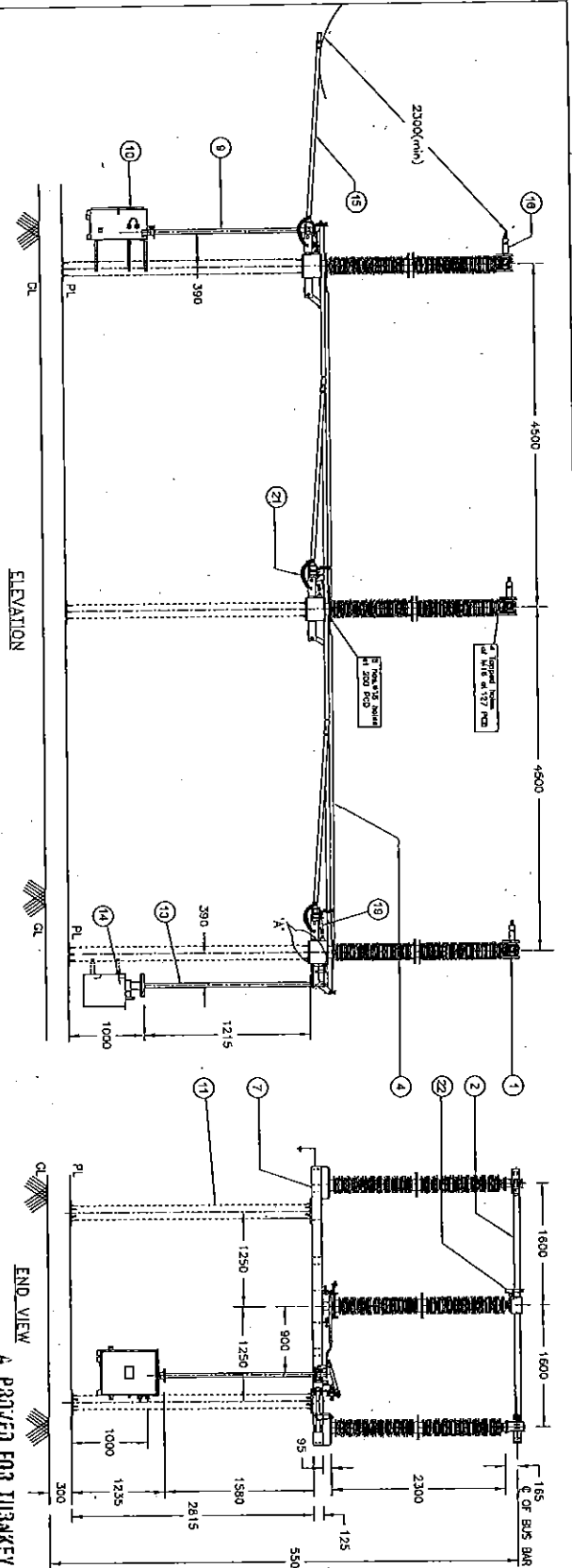
	Standardised Drawing for 220 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 254-3 01 sheet Revision No. 0
	Prepared & Approved during October - 2013
Customer ref : APTRANSCO	
Title: GA of 245kV, 800A/1250A, 50Hz., TP, Disconnecter without earth switch, (Motor operated Disconnecter) Main blade clock wise closing	



01		02		03		04		05		06		07		08	
PWT JOB															
A		B													
SL.No.		PART LIST										Qty/SPole			
01		Fixed contact assembly										06			
02		Moving contact assembly										03			
03		Insulator stack (in scope of Contractor)										09			
04		Phase coupling pipe(32NB, G.I.pipe)										01			
05		Rotating stool base with lever (for drive pole)										01			
06		Rotating stool base with lever (for normal poles)										02			
07		Base Channel 125x65 Composite formed channel (MS)										03 set			
08		Disconnector Top operating mechanism assembly										01			
09		Disconnector Operating pipe(50NB, G.I.pipe)										01			
10		Disconnector Operating mechanism box-(Motor)										01			
11		Support Structure (in scope of Contractor)										-			
12		Main switch push pipe										01			
13		Moving contact clamp assy (10mm Thick M.S.Flats)										03set			
REFERENCE DRAWINGS For contact details 800A (CW)----- 3 G71BSC APTCL C004 For operating mechanism details----- 3 G71BMC APTCL Z006															
QUANTITY : WEIGHTS (For reference only) Net weight of the Disconnector, } 850 Kgs(approx.) without insulators Net weight of the Insulator, } Kgs(approx.)															
NOTES 01 All dimensions are in 'mm' 02 All Ferrous parts are hot-dip galvanised as per IS:4759 03 All non-ferrous contact points are silver plated 15 microns (min) 04 Main rotating post having (75mm ID) 2 nos. ball bearings (make: SKF, HMT, TATA) 05 The indicated dimensions are subject to the manufacturing tolerance: i) Upto 50mm-----±3%; ii) 51 to 100mm-----±2%; iii) 101 to 300mm-----±1%; iv) Above 300mm-----±0.5%. 06 All G.I. pipes are 'Class B' type 07 The Below mentioned hardware is not in scope of SIEMENS(Disconnector manufacturer) manufactory 1) Base channel to structure fixing hardware 2) Drive box to structure fixing hardware 3) Insulator bottom fixing hardware															
INSULATOR FIXING DETAILS															
BASE CHANNEL FIXING HOLES DETAILS															
APPROVED FOR ISSUANCE CHIEF ENGINEER/CONSTRUCTION & TRANSMISSION SOUTH INDIA SIEMENS LIMITED															

STP/GTP-DWG/Approval No. 254-4-01 sheet Revision No. 0		Prepared & Approved during October - 2013		Customer ref : APTRANSCO		Title: GA of 245KV, 800A/1250A, 50Hz, TP, Disconnector without earthing switch, (DBR Motor operated Disconnector) Main blade clock wise closing	
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CHIEF ENGINEER / CONSTRUCTION
A TRANSCO/WDVTH SOUJHA-1
DISCONNECTOR SHOWN IN CLOSED CONDITION
EARTH SWITCH SHOWN IN OPEN CONDITION



2 NOS. M12x50 BOLTS
FOR EARTHING PAD
EARTHING PAD DETAILS
DETAIL AT 'A'

REF:

DATE: 27/2/12	CLIENT: APTRANSCO	DATE: 27/2/12	CONTRACTOR: SIEMENS
PREP: S. Singh	APPR: K.R.	Original/Replacement for/Replaced by:-	INTERBAND
REMARKS: Revised as per customer comments dtd 26/7/12	DATE: 26/7/12	NAME: S. Singh	DATE: 26/7/12
ISSUE: 01	02	03	04
Description of 245KV, 800A, 50Hz TP, DISCONNECTOR WITH ONE EARTH SWITCH Type: MOTOR OPERATED DISCONNECTOR & E/S Detail: (E/S ON RIGHT HAND SIDE). MAIN BLADE CLOCK WISE CLOSING			
Sales Order: 612-11			
DRG. NO. (3) C71BSC-A1PTCL-20013-A			
Sh 1			

Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-5-01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: CA of 245KV, 800A, 50Hz, TP Disconnectors with one earth switch
(Earth switch on right hand side) (Main blade clock wise closing)

STP/GTP-DWG/Approval No. 254-6-01 sheet Revision No. 0

Prepared & Approved during October - 2013

Customer ref : APTRANSCO

Title: GA of 245KV, 800A, 50Hz, TP Disconnector with one earth switch (Motor operated disconnector & earth switch manual operated) (Main blade clock wise closing)

SL No.	PART LIST	QTY/SPQ
01	Fixed contact assembly	06
02	Moving contact assembly	03
03	Insulator stack (in scope of Contractor)	09
04	Phase coupling pipe (32NB, G.I. pipe)	01
05	Rotating stool base with lever (for drive pole)	01
06	Rotating stool base (for normal poles)	02
07	Base Channel (125x65 Composite formed channel (MS))	03set
08	Disconnector Top operating mechanism assembly	01
09	Disconnector Operating pipe (50NB, G.I. pipe)	01
10	Disconnector Operating mechanism box- (Motor)	01
11	Support Structure (in scope of Contractor)	-
12	E.S. TOM Assembly	01
13	E.S. Operating pipe (50NB, G.I. pipe)	01
14	E.S. Operating mechanism box (MANUAL) - RG.BOM	01
15	E.S. Moving contact assembly	03
16	E.S. Fixed contact assembly	03
17	E.S. Phase coupling pipe (32NB, G.I. pipe)	01
18	E.S. push pipe (32NB, G.I. pipe)	01
19	Counter balance spring	03
20	Mechanical interlocking Assy.	01
21	Copper flexible (90sq mm) - 3 Nos/Earth switch	09
22	Moving contact assy (10mm thick M.S. plate)	03set
23	Push pipe for Disconnector	01

REFERENCE DRAWINGS

For contact details 800A(CW)-----3 G71BSC APTCL C004

For E.S. contact details-----3 G71BSC APTCL C005

For operating mechanism details for Isolator-----3 G71BMC APTCL Z006

For operating mechanism details for E/S-----3 G71BNC APTCL Z008

NOTES

01 All dimensions are in 'mm'

02 All Ferrous parts are hot-dip galvanised as per IS:4759

03 All non-ferrous contact points are silver plated 15 microns (min)

04 Main rotating post having (75mm ID) 2 nos. ball bearings (make: SKF, HMT, TATA)

05 The indicated dimensions are subject to the manufacturing tolerance:

i) Up to 50mm-----±3%; ii) 51 to 100mm-----±2%;

iii) 101 to 300mm-----±1%; iv) Above 300mm-----±0.5%.

06 All G.I. pipes are 'Class B' type

07 The Below mentioned hardware is not in scope of SIEMENS (Disconnector manufacturer)

1) Base channel to structure fixing hardware

2) Drive box to structure fixing hardware

3) Insulator bottom fixing hardware

DATE: 27.12 PREP: [Signature] CHK: RRR

DATE: 28.7.12 APPR: [Signature]

DATE: 02

ISSUE

REMARKS

01

Original/Replacement for/Replaced by:-

02

03

04

DATE: 27.12 CLIENT: APTRANSCO

PREP: [Signature] CONTRACTOR:

SIEMENS HYDERABAD

Descr: GA of 245KV, 800A, 50Hz, TP DISCONNECTOR WITH ONE EARTH SWITCH

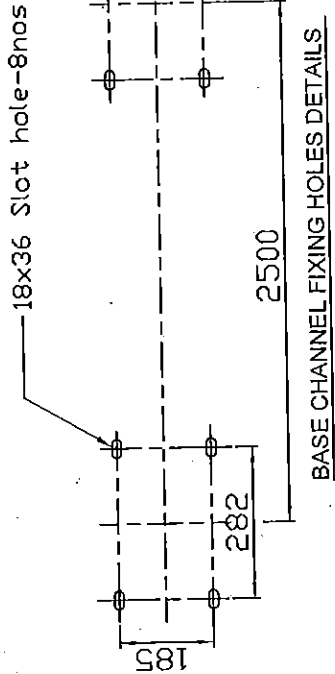
Type: MOTOR OPERATED DISCONNECTOR & EARTH SWITCH MANUAL OPERATED

Detail: MAIN BLADE CLOCK WISE CLOSING

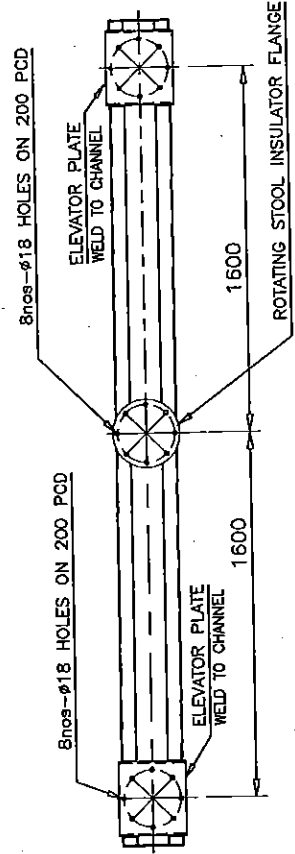
Sales Order: Item No: DRG. NO. (3) G71BSC APTCL-Z003-A-1

Sh 2

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BASE CHANNEL FIXING HOLES DETAILS



INSULATOR FIXING DETAILS



QUANTITY :

WEIGHTS (For reference only)

Net weight of the Disconnector, } 1050 Kgs(approx.)

without insulators

Net weight of the Insulator, } 1440 Kgs(approx.)

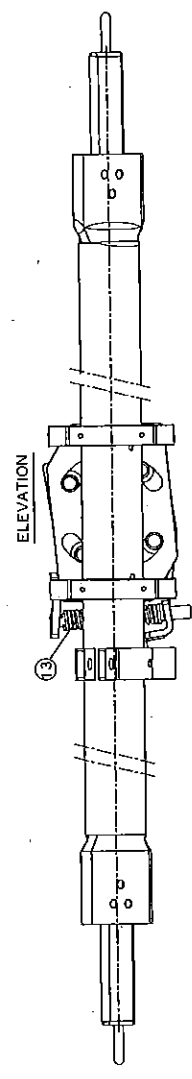
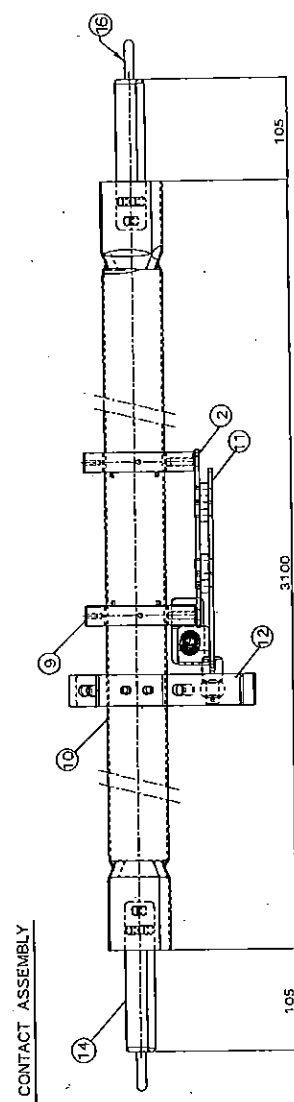
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CHIEF ENGINEER, CONSTRUCTION

TRANSSCO, HYD.

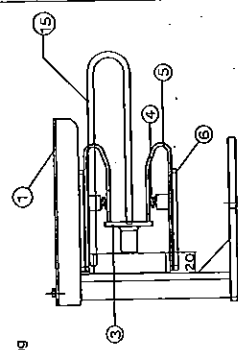
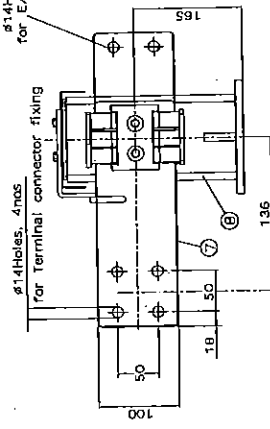
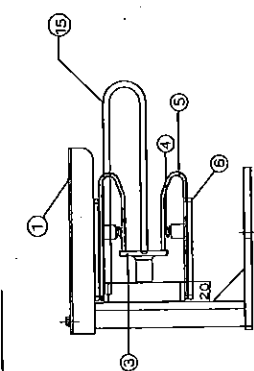
PART LIST	
1	HOOD
2	ROTATING BLADE MECHANISM TOP PLATE
3	SPACER (ALUMINIUM CASTING)
4	SPRING (S.S WIRE)
5	FIXED CONTACT JAW (6 NOS 20X5mm CU STRIPS)
6	SUPPORT PLATE
7	JUMPER PAD (100X20mm AL-FLAT)
8	SUPPORTING CHANNEL
9	MOVING CONTACT FIXING BLOCK
10	MOVING CONTACT ARM (75 OD.70 ID CU. TUBE)
11	ROTATING BLADE MECHANISM BOTTOM PLATE
12	MOVING CONTACT CLAMP
13	ROTATING BLADE MECHANISM SPRING
14	MOVING CONTACT TIP(50X10 CU.PLAT)
15	Fixed contact arcing horn(Ø10mm G.I.rod)
16	Moving contact arcing horn(Ø12mmG.I.rod)

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[Signature]
CHIEF ENGINEER/CONSTRUCTION-I
A. TRANS CO/MDY/14 SOGAH NAYO.



PLAN

FIXED CONTACT ASSEMBLY(FOR WITH OUT E/S SIDE)



ELEVATION

END VIEW

ELEVATION

END VIEW

DESCRIPTION	SIZE	QTY	AREA OF CROSS SECTION	DENSITY
F.C JAW	20X5 CU.FLAT	6	600	1.33
TERMINAL PAD	100X20 AL.FLAT	1	2000	0.4
MOVING CONTACT	75 ODx70 ID CU.TUBE	1	589.41	1.40



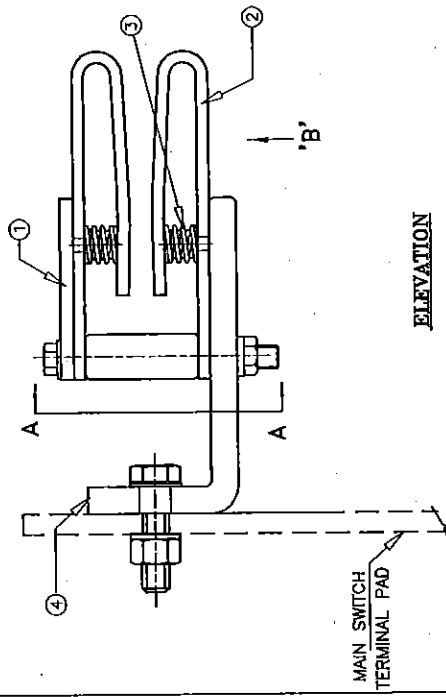
CU. DESIGN

NOTES
 01 All dimensions are in 'mm'
 02 All ferrous parts are hot-dip galvanised as per IS: 4759
 03 All non-ferrous contact points are silver plated to 15 microns(min.)
 04 At all Al. & Cu. contact part, Cu. contact surface is tin plated

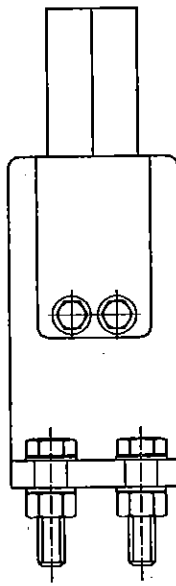
Descript: MAIN CONTACT ASSEMBLY Type: MAIN BLADE CLOCK WISE CLOSING Detail:		Sales Order: Item No:	
		DRG.NO. (3) G711BSC APTCL C004	
SIEMENS HYDERABAD		DATE: 27.2.12 PREP: a.m.alingh CKD: K.R. APPR: Deepthi	
CONTRACTOR:		Original/Replacement for/Replaced by:-	
REMARKS:		DATE: 28.2.12 APPR: a.m.alingh	
ISSUE:		DATE: 28.2.12 APPR: a.m.alingh	

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FIXED CONTACT DETAILS



ELEVATION



VIEW 'B'

PART LIST

- 01 Spacer plate 50X6mm Al. flat
- 02 Female contact jaw (2 pairs 20X5 mm Cu.flat-Silver plated)
- 03 Spring (stainless steel)
- 04 Earth switch Fixed Holder (Al.)
- 05 Male contact (50X10 Cu.flat)
- 06 Moving contact arm (50 00, 100 ID CU. tube)
- 07 Copper flexible (90 Sq.mm - 3Nos.)
- 08 Hood (Al. sheet)

Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)

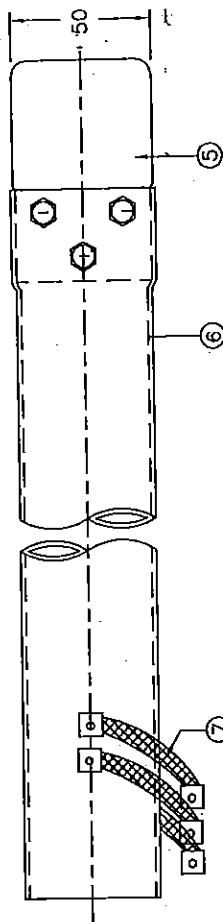
STD/GTP-DWG/Approval No. 254-8 01 sheet Revision No. 0

Prepared & Approved during October - 2013

Customer ref : APTRANSCO

Title: Earth switch contact Assembly

MOVING CONTACT DETAILS



NOTES

- 01 All dimensions are in mm
- 02 All non-ferrous contact points are silver plated to 15 microns (MIN.)
- 03 All ferrous parts are hot-dip galvanised as per IS: 4759

REF:

DATE	27/2/12	CLIENT	APTRANSCO	Desor:	SIEMENS	Earth CONTACT ASSEMBLY	Sales Order:
PREP	am-shah	CONTRACTOR:		Type:	HYDERABAD	(FOR 'DBR' DISCONNECTOR)	Item No:
CHECKED	4.3.13	DATE	02	Detail:			DRG.NO.
ISSUE	REMARKS	NAME	02	Original/Replacement for/Replaced by:-			(3) G71BSC-APTCIL-C005-A-5
							Sh 1
							- Sh



Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-9 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: GA of motor control panel (motor mechanism for disconnector)



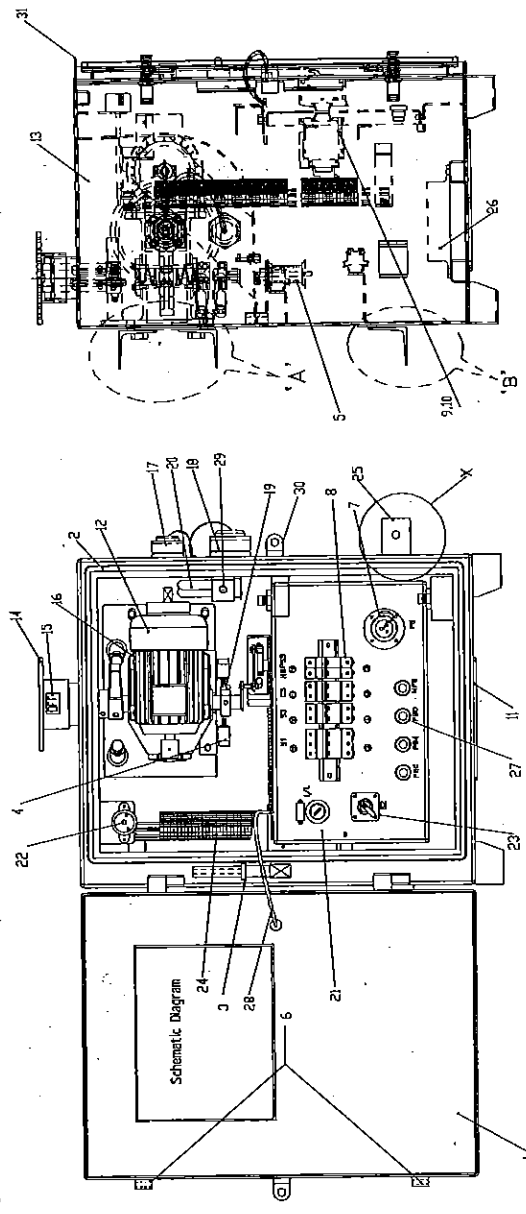
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APTRANSCO/WDYUTH SODDHA/MSJ

GENERAL NOTES:

- FOR DETAILS 'A'/'B'/'X' REFER DRG. No. 3 G71BMC APTCL 2006 SHEET NO. 2 OF 3
- FOR DIMENSIONS & TB ARRANGEMENT DETAILS REFER DRG. No. 3 G71BMC APTCL 2006 SHEET NO. 3 OF 3

GENERAL ARRANGEMENT:

M/S DRIVE FOR DISCONNECTOR (MECH-GANG)



ELEVATION

END VIEW

NOTES:

- All dimensions are in 'mm'
- For manual operation follow the instructions as given in schematic diagram drawing (Dr.No:3 G71BMC APTCL 2007)
- Degree of protection for cabinet IP:55 as per IS:13947
- Cubicle shall be made of MS Minimum thickness of 12SWG sheet Finish: Powder Coating shall be done to the colour Shade no.-631 OF IS:5 (60 Microns)
- Internal wiring:
2.5 sqmm CU stranded conductor for Motor and heater dkt
2.5 sqmm CU stranded conductor for Control Supply and Aux switch.
Insulating Sleeves shall be provided at all the wire terminations.
20% spare terminals will be provided
- Net weight of box - 100 kgs(approx).
- Roof of the box shall be made slant to drain the rain water
- The Gear shall be made out of Aluminum bronze or any other better material lubricated for life with graphite or better quality non drawing and non-hardening type grease.

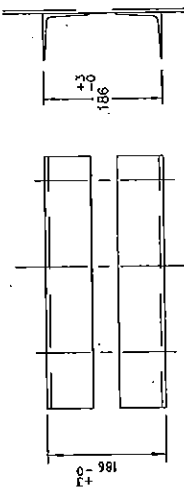
PART LIST	
1	DOOR (25WG MS SHEET)
2	RUBBER GASKET (EPDM)
3	HANDLE FOR MANUAL OPERATION
4	LIMIT SWITCHES (LS1, LS2)
5	AUX. SWITCH
6	DOOR LATCHES
7	POWER SOCKET
8	MS-IP-MCB FOR 34 AC SUPPLY
9	MS-IP-MCB FOR 14 AC SUPPLY
10	MS-IP-MCB FOR DC SUPPLY
11	MS-IP-MCB FOR HEATER
12	PSS-IP-MCB FOR POWER SOCKET
13	OPEN CONTACTOR (OC) CLOSE CONTACTOR (CC)
14	OLR-OVER LOAD RELAY
15	DETACHABLE CABLE GLAND FIXING PLATE
16	IN-MOTOR (ISHP) 34.415V AC 50Hz
17	OUTER SHELL (25WG MS SHEET)
18	FLANGE
19	ON & OFF INDICATOR
20	REDUCTION GEAR BOX (GEAR-END STEEL)
21	MANUAL OPERATION APERTURE
22	INTER LOCK-A/A
23	LIMIT SWITCH ACTUATORS
24	CONTACT FUSEBENT LAMP/ISH
25	1/2-HANDLE INTERLOCK WITH SWITCH AND LOCK
26	TH-THERMOSTAT 80°C TO 85°C
27	S2-LOCAL/REMOTE SELECTOR SWITCH
28	TERMINAL BLOCK (STD TYPE)
29	(EUMEX/ CONNECT-WELL MARK)
30	EARTHING TERMINAL-2 Nos.
31	CH-HEATER
32	PUSH BUTTONS (PBC: P80, P84 & P86)
33	DOOR EARTHING
34	LS-DOOR SWITCH FOR ILLUMINATION LAMP
35	PAD LOCK FACILITY
36	CANOPY FOR RAIN WATER

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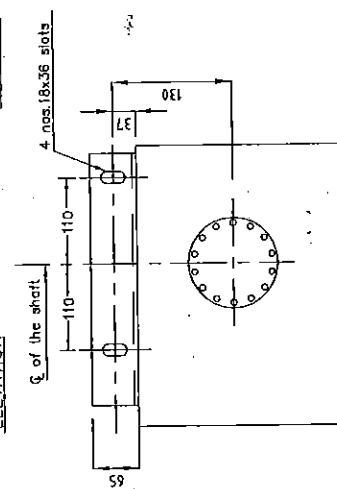
ISSUE	REMARKS	DATE	NAME	APPR.	Desig.	Original/Replacement for/Replaced by:-	DATE	NAME	APPR.	Desig.
01		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
02		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
03		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
04		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
05		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
06		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
07		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
08		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
09		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			
10		27.2.12				Original/Replacement for/Replaced by:-	27.2.12			

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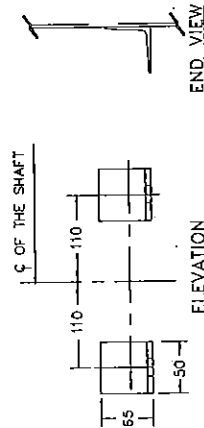
STRUCTURE MOUNTING DIMENSIONS: DISCONNECTOR & E/S DRIVE (MECH-GANG)



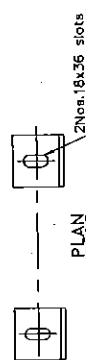
ELEVATION



DETAIL AT 'A'
PLAN

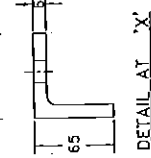
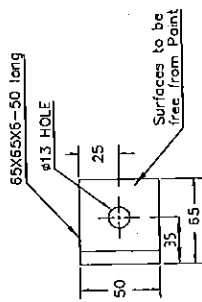


ELEVATION



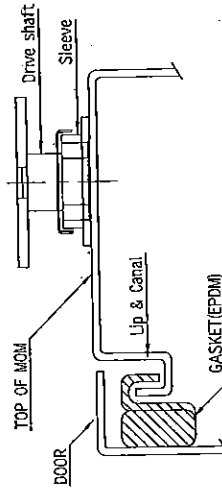
DETAIL AT 'B'
PLAN

EARTHING TERMINAL:



DETAIL AT 'X'

SECTIONAL DETAIL OF DOOR GASKET



PROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION

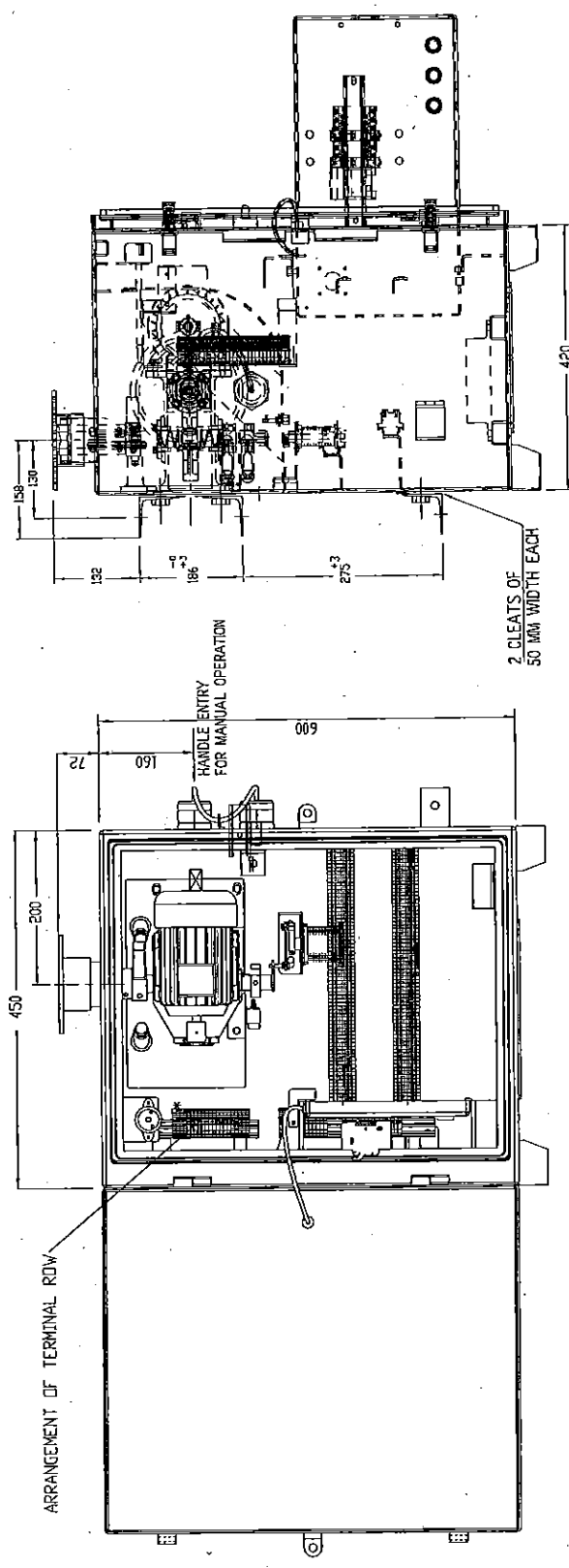
TRANSSCO/WIDYUTH SOUDHAPUR

Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-10 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: Mounting Arrangement details motor mechanism

DATE	27.12.12	CLIENT	APTRANSCO	DATE	01
PREP	amr	CONTRACTOR		DATE	02
CHECK	MSR	Original/Replacement for/Replaced by:-		DATE	03
APPR	Dept			DATE	04
NAME				DATE	05
REMARKS				DATE	06
ISSUE				DATE	07
				DATE	08
				DATE	09
				DATE	10
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				DATE	100

DWG. A00
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GENERAL ARRANGEMENT WITH DIMENSIONS



ELEVATION

END VIEW

- NOTE:**
1. TB ARRANGEMENT IS ONLY FOR REF. IF REQUIRED THE ARRANGEMENT WILL BE MODIFIED WITH OUT EFFECTING THE CLEARANCES.
 2. (*) THIS ADDITIONAL TERMINAL ROW WILL BE PROVIDED ONLY WHEN THE NO. OF TERMINALS ARE MORE.



Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-11 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: Mounting Arrangement and dimensional details

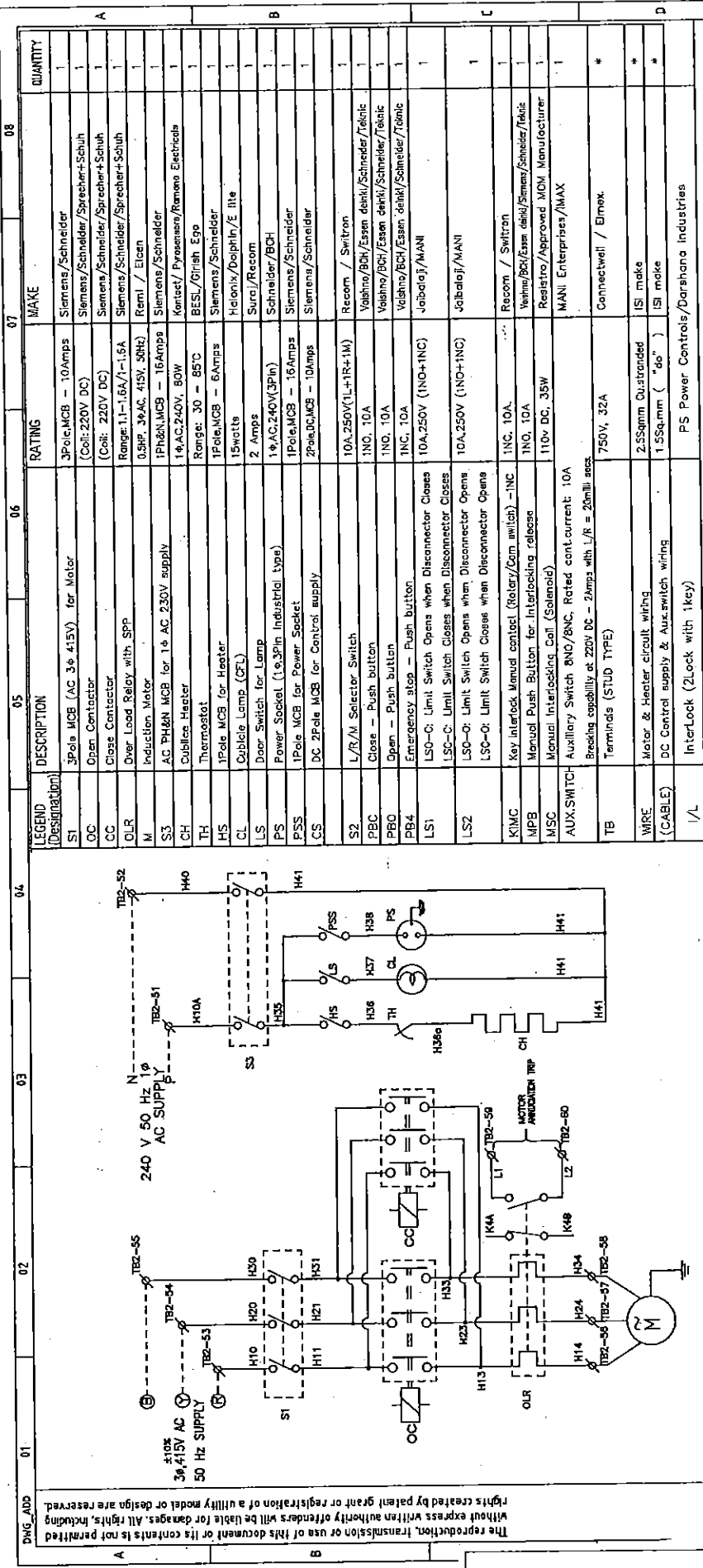


APPROVED FOR TURNKEY PROJECT
ENGINEER IN CHARGE
TRANSMISSION & POWER

DATE	27.2.12	CLIENT	APTRANSCO
PREP	S.M. Singh	CONTRACTOR	
CHKD	MSR		
APPR	Deepti		
NAME			
DATE			
REMARKS			
ISSUE			

Descr:	MOUNTING ARRANGEMENT AND DIMENSIONAL DETAILS
Type:	MOTOR CONTROL PANEL
Detail:	

Sales Order:	
Item No:	
DRAWING:	(3) 6711BMC-A1E11C1-20106-01-1111
Sh	3
Sh	08



OPERATING INSTRUCTIONS :-

- 1 Operation is possible only when the breaker is 'OPEN' ensure this condition is satisfied.
- 2 For manual operation of Isolator follow the following steps:
 - i) Keep selector switch (S2) in manual position
 - ii) Rotate the key of castel type interlock provided on panel board by pressing the manual (MPB) push button for its release.
 - iii) Insert Interlock key of castel type lock provided on right side of the cubicle & operate the handle insertion blocking flap to gain access for manual operation.
 - iv) Rotate the handle clockwise/anti-clockwise to open/close the Isolator respectively.
 - v) When the manual operation is not needed restore the position of key to proper position in side the cubicle



A-PROVED FOR TURKEY PROJECTS

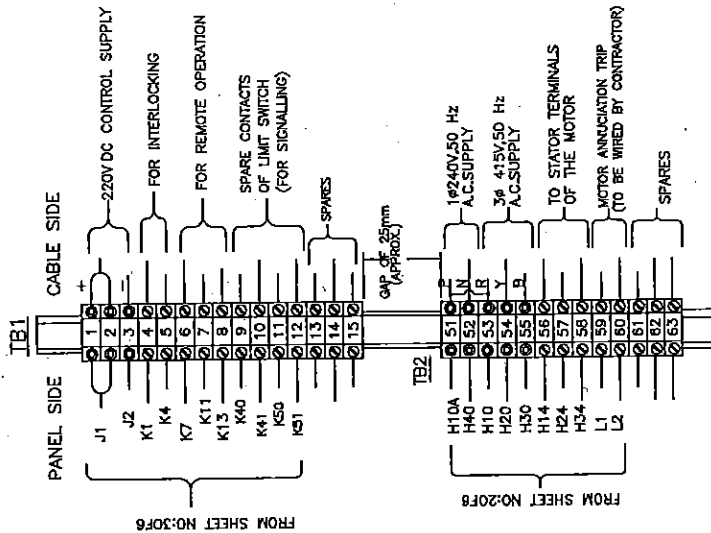
311014
CHIEF ENGINEER / CONSTRUCTION - I
TRANSCONTINENTAL SOUTH AFRICA

ISSUE	REMARKS	DATE	NAME	APPRO	Dept	02	03	04	05	06	07	08
Original/Replacement for/Replaced by:--												
CONTRACTOR:				SIEMENS								
DATE 27.2.12				CLIENT: APTRANSCO								
PREP sm:sn:gh				HYDERABAD								
CHK. KR				Type: PART LIST AND THE TECHNICAL DATA								
				Detail: (FOR DISCONNECTORS-MECHANICALLY MATED)								
				Descr: SCHEMATIC DIAGRAM FOR DISCONNECTOR CONTROL PANEL-AC								
				Sales Order: Item No: DRG.NO.								
				(3) G711BMC-APTICL-W0107-01-SH 1								
				+ SH								

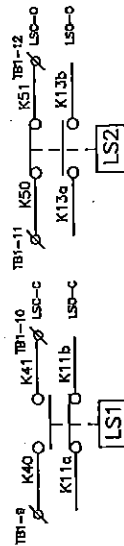
	(M/s Siemens Limited) Standardised Drawing for 220 KV Isolator STD/GTP-DWG/Approval No. 254-12 01 sheet Revision No. 0	Prepared & Approved during October - 2013	Customer ref : APTRANSCO	Title: Schematic Diagram for Disconnecter control panel - AC and part list and the technical data
	Title: Schematic Diagram for Disconnecter control panel - AC and part list and the technical data			

DWG_ADD

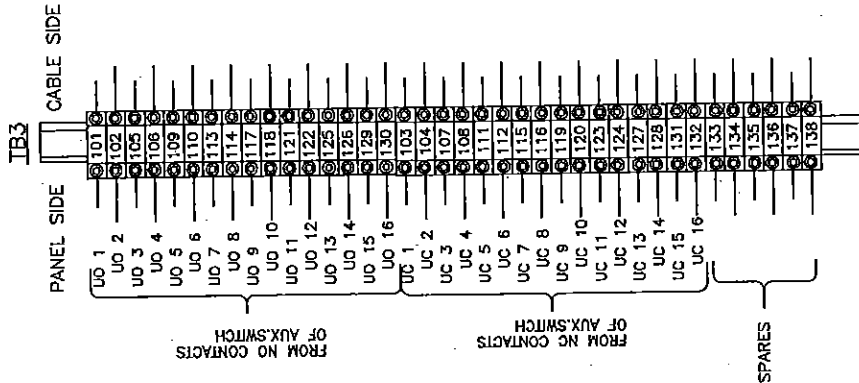
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TERMINAL BLOCK FOR DC & AC



LIMIT SWITCH CONTACT CONFIGURATION



AUX. SWITCH 8NO/8NC CONTACTS

Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 254-14 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO
Title: Terminal Block details for AC & DC (For Disconnectors - Mechanically Ganged)



APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION

APTRANSCO HYDERABAD

DATE	27/2/12	CLIENT	APTRANSCO	DATE	01
PREP	simam	CONTRACTOR		DATE	02
CHK	KR			NAME	
APPR	Deepthi	Original/Replacement for/Replaced by:-		REMARKS	
ISSUE					

Descr: TERMINAL BLOCK DETAILS
FOR AC & DC
Type: (FOR DISCONNECTORS-MECHANICALLY GANGED)
Detail:

Sales Order:
Item No:

DRG.NO
(3) G711B/MC-AP/CL-W0107-01-SH 3

DWG. NO. 01 02 03 04 05 06 07 08

AUX. SWITCH 8NO/8NC CONTACTS

8 NO CONTACTS: 101, 105, 109, 113, 117, 121, 125, 129, 102, 106, 110, 114, 118, 122, 126, 130

8 NC CONTACTS: 103, 107, 111, 115, 119, 123, 127, 131, 104, 108, 112, 116, 120, 124, 128, 132

DISCONNECTOR AUX. SWITCH CONTACT TRAVEL DIAGRAM

0° 10° 20° 30° 40° 50° 60° 70° 80° 90°

DISCONNECTORS OPEN

DISCONNECTORS CLOSE

DISCONNECTOR POSITION

CONTACT	DISCONNECTOR POSITION
LS1	INTER
LS2	INTER

0° 90°

DISCONNECTOR OPEN

DISCONNECTOR CLOSE

LIMIT SWITCH CONTACT DEVELOPMENT DIAGRAM

01 02 03 04 05 06 07 08

NOTES

- ALL CIRCUITS SHOWN IN DEENERGISED CONDITION
- DISCONNECTOR AUX. SWITCH NO/NC CONTACTS SHOWN CORRESPOND TO DISCONNECTORS OPEN CONDITION
- CONTACT OF 'KIMC' SHOWN IN 'KEY TRAPPED' (IN PANEL) POSITION

SIEMENS HYDERABAD

DATE: 27/2/12 CLIENT: APTRANSCO

PREP: [Signature] CONTRACTOR: [Signature]

CHECKED: MSR

APPROVED: [Signature]

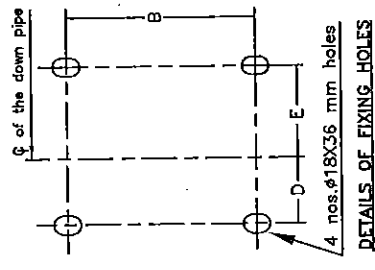
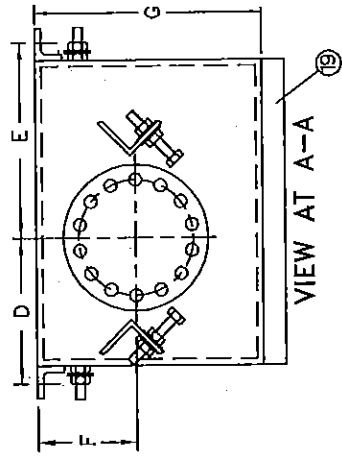
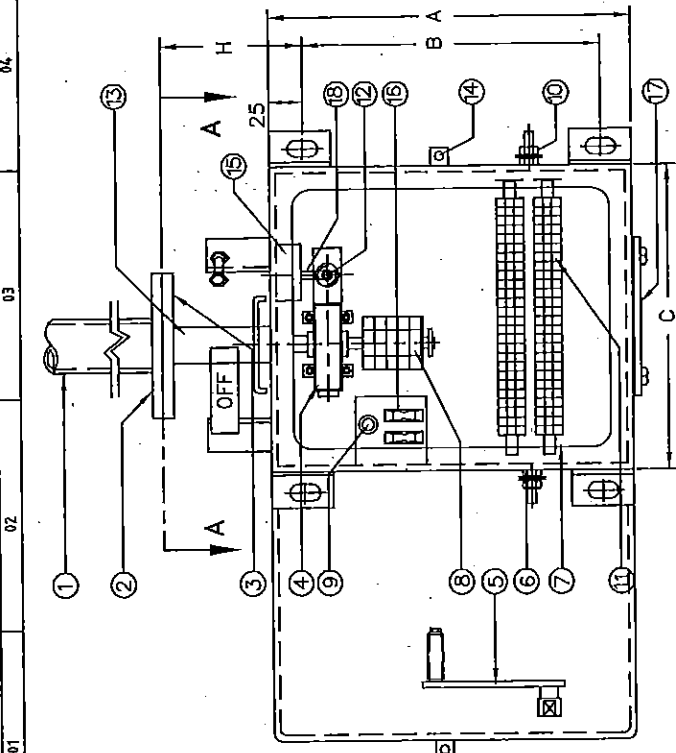
Original/Replacement for/Replaced by: [Signature]

DISCONNECTORS - Mechanically Ganged

Sh 4

(3) 071MSR-APTCL-W007-01-01

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A PROVED FOR TURNKEY PROJECTS
DEF ENGINEER / CONSTRUCTION - I
NANSON/VIDYUTHI SOUTHERN



PART LIST

- 01 Down pipe
- 02 12-Holes flange
- 03 14-Holes flange
- 04 Reduction gear box, Gear ratio 1:20
- 05 GEAR-EN8 STEEL
- 06 Operating handle
- 07 Cubicle (12 SWG M.S Sheet)
- 08 Rubber gasket for dust & weather proof
- 09 Aux. switch (3NO/3NC)
- 10 Push button
- 11 Earthing terminal
- 12 Terminal block-STUD Type
- 13 Operating handle insertion rod
- 14 ON & OFF stopper
- 15 Provision for padlock (without lock)
- 16 Solenoid 220V AC-10A-15%
- 17 Fuses, 6A (HRC type)
- 18 Detachable type cable glands fixing plate
- 19 2.5mm thk. plate (with out glands)
- 20 Plunger
- 21 Rain hood

DIMENSIONS

A	B	C	D	E	F	G	H
450	400	325	168	207	100	250	174

NOTES

- 01 All dimensions are in 'mm'
- 02 Internal wiring will be done with 1100V grade 2.5 sq.mm Cu-stranded conductor and 20% spare terminals will be provided
- 03 Degree of protection IP:55
- 04 Net weight of the box-35 Kgs (approx)
- 05 Cubicle is painted both sides with colour shade no.631 of IS:5

INSTRUCTIONS:

- 1 Donot operate the Earth Switch when Isolator is in 'ON' position
- 2 To energise solenoid press push button
- 3 Donot padlock Earth switch if interlocking plunger does not fall into the slot provided
- 4 The Gear shall be made out of Aluminium bronze or any other better material lubricated for life with graphite or better quality non drawing and non-hardening type greases.

DATE: 07.2.12		CLIENT: APTRANSCO	
PREP: 01.02.12	CHECK: 01.02.12	CONTRACTOR:	
DATE: 4.3.13	APPR: 01.02.12	Original/Replacement for/Replaced by:-	
ISSUE	REMARKS		
SIEMENS HYDERABAD Descr: MANUAL OPERATING MECHANISM BOX FOR EARTH SWITCH Type: Reduction gear operating mechanism Detail: Sales Order: Item No: DRG.NO. (5) G71BNC-APTCL-Z00B-A			

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FIG-1: EARTH SWITCH 'ON' POSITION WHILE MAIN SWITCH OFF

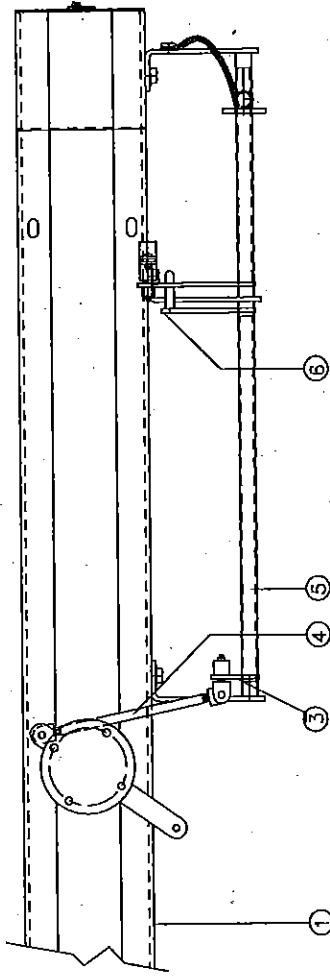
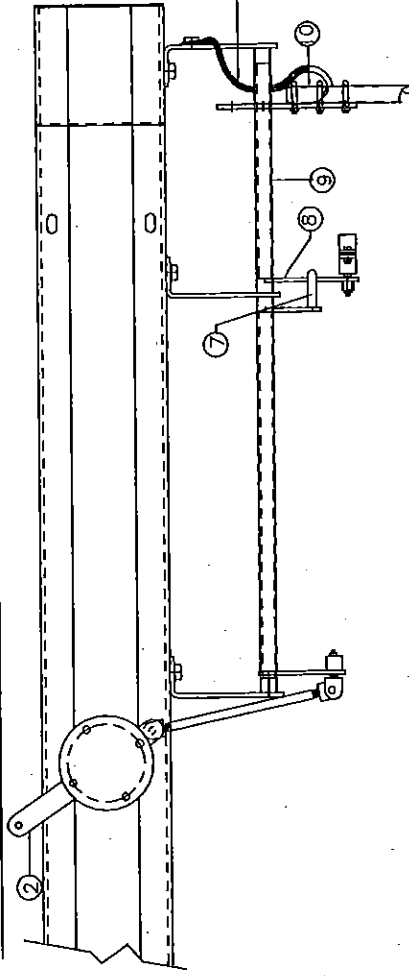


FIG-2: EARTH SWITCH OFF POSITION WHILE MAIN SWITCH ON



FUNCTION OF LINK MECHANISM

FIG-1 Shows the earth switch (10) in closed position if the main switch is to be closed, the main switch lever arm (2) has to move in a clockwise direction. As the link mechanism rotating pipe (5) is connected with the main switch lever (7) through a link pipe (4), the interlocking stud (7) will also move, but as the lever arm of earth switch phase coupling pipe (8) is in the link stud, it cannot be moved. This does not allow the main switch lever arm to rotate, so it is not possible to close the main switch when the earth switch is in closed position. When the earth switch is opened, the lever arm (8) moves away, allowing the interlocking stud to facilitate the rotation of the main switch lever, resulting in the closure of main switch.

FIG-2 Similar to operate the earth switch with respect to the main switch, all the levers move vice versa allowing the operation of earth switch only when the main switch is in open position.



Standardised Drawing for 220 kV Isolator
(M/s Siemens Limited)

STD/GTP-DWG/Approval No. 254-18 01 sheet Revision No. 0
Prepared & Approved during October - 2013
Customer ref : APTRANSCO

Title: Mechanical interlock between main switch & Earth switch (for clock wise closing)



A. APPROVED FOR ISSUANCE: P. K. S. S.

21/11/2013

C. OFF ENGINEER / CONSTRUCTION
A. TRANSCO/INDIAN SOUTHERN RAILWAYS

PART LIST

- 01 Base channel
- 02 Main switch lever arm
- 03 Link mechanism lever arm
- 04 Link mechanism rotating pipe
- 05 Link mechanism rotating pipe
- 06 Interlocking stud lever arm
- 07 Interlocking stud
- 08 Earth switch phase coupling pipe
- 09 Moving contact rotating pipe
- 10 Earth switch moving contact
- 11 Copper flexible

SIEMENS
HYDERABAD

Descr: MECHANICAL INTERLOCK BETWEEN MAIN SWITCH & EARTH SWITCH
Type: 24SKY.DBR (FOR CLOCK WISE CLOSING)
Detail:

Sales Order:
Item No:
DRG. NO.

(3) G711B1Z1C-APTICIL-0009-01-01 Sh 1

ISSUE REMARKS DATE NAME APPR. DESIG Original/Replacement for/Replaced by:-

DATE 27.2.12 PREP. S. K. S. S. CHKD. KVR

01 02 03 04 05 06 07 08

NAME PLATE DETAILS FOR EARTH SWITCH

01 Engraved letter size — 2 mm
02 Letter etched white on black background
03 Material Anodised S.S — Thickness 24G/0.56 mm
* Weight/drive shall be depend on type of isolator
and indicated in the respective name plates

4. PROVED FOR JURY BY 2301

CHIEF ENGINEER / CONTRACTOR
HANOI-VIETNAM 1947-1953

[illegible]

MOOSE ACSR
(31.77%)

100

Issue			
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			DATE	17.2.12	CLIENT: APTRANSCO
			PREP.	A. Smith	CONTRACTOR:
			CKD.	NFR	
					Original/Replacement
REMARKS	DATE	NAME	APPR.	HSR	

SIEMENS
HYDERABAD

DESCR: TERMINAL CONNECTOR ON PAD (ISO. AL.)
TO SUIT MOOSE ACSR COND. (31.776).
Type: MOOSE ACSR COND. (31.776).
Detail: FOR 24SKV 800A DER

Sales Order:	Item No:	DRG.NO.
---------------------	-----------------	----------------

ORG.NO. (3) G71BZC-APTCL-Z011-0- - Sh 1 - Sh



Standardised Drawing for 245 kV Isolator (M/s Siemens Limited)

STD/GTP-DWG/Approval No. 254-20 01 sheet Revision No. 0
Prepared & Approved during October - 2013

Customer ref : APTRANSCO
Title: Terminal Connectors on pad to suit moose ACSR Conductor

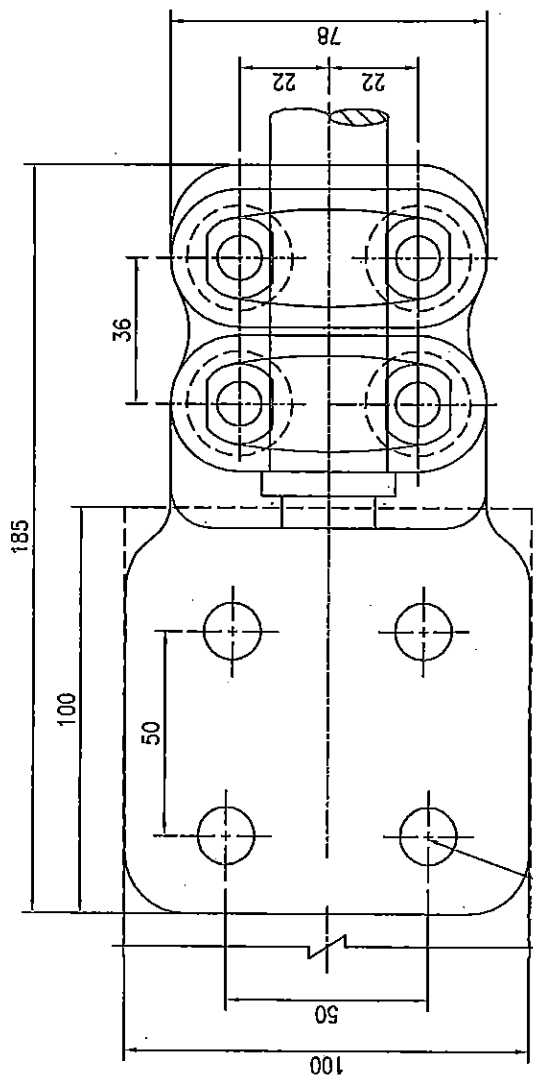
STARTED JEREMY PAGE'S

C. IFF ENGINEER / CONSTRUCTION

4 TRANSFORMATIONS 15

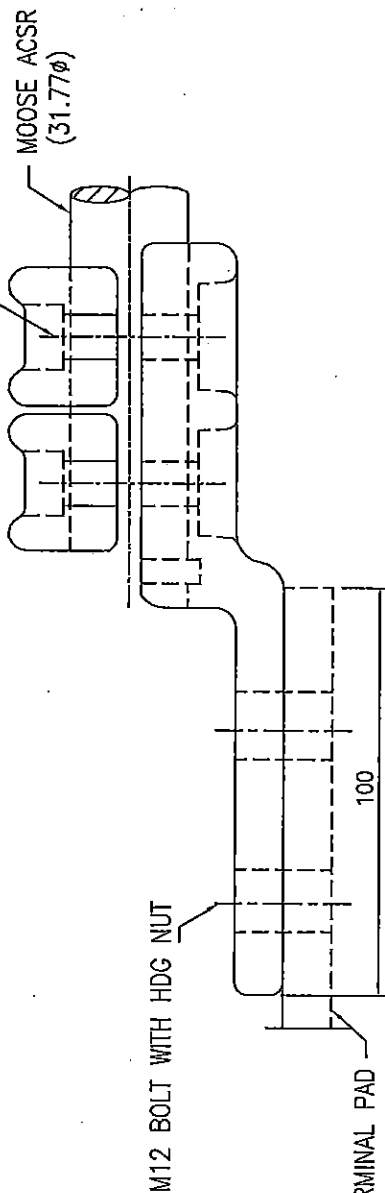
NOTES

1. All The Dimensions are in MM
2. All Sharp Corners are to be Rounded off
3. The indicated dimensions are subject to the manufacturing tolerances:
 - i) Up to 50mm --- $\pm 3\%$
 - ii) 51 to 100mm --- $\pm 2\%$
 - iii) 101 to 300mm --- $\pm 1\%$
 - iv) Above 300mm --- $\pm 0.5\%$
4. Short Time Current Rating : 40kA/1sec
5. Material of Connector-Aluminium Alloy
6. Applicable Standards: IS 5561
7. Rating : 800 Amps
8. Weight : 1Kgs (Approx)



PLAN

4Nos.-Ø14 HOLES-



ELEVATION

REF:

ISSUE	REMARKS	DATE	NAME	APPR.	CRD.	PREP.	DATE	CLIENT: AFRANISCO	CONTRACTOR:	SIEMENS HYDERABAD	DESOFF: TERMINAL CONNECTOR ON FAD (ISO. AL.) TO SUIT MOOSE ACSR COND. (31.775'). Types: MOOSE ACSR COND. (31.775'). Detail: FOR 245KV 800A DER	Sales Order: Item No: DRG.NO. (3) G71 BZC-APTCL-2011-0 - Sh 1 - Sh
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CHIEF ENGINEER / CONSTRUCTION
A TRANSCO/MIDYOUTH SOCIETY

NOTES

1. All The Dimensions are in MM
2. All Sharp Corners are to be Rounded off
3. The indicated dimensions are subject to the manufacturing tolerance:
i) Up to 50mm --- $\pm 3\%$ ii) 51 to 100mm --- $\pm 2\%$
iii) 101 to 300mm --- $\pm 1\%$ iv) Above 300mm --- $\pm 0.5\%$
4. Short Time Current Rating : 40kA/1sec
5. Material of Connector-Aluminium Alloy
6. Applicable Standards: IS 5561
7. Rating : 800 Amps
8. Weight : 1Kgs (Approx)

GUARANTEED TECHNICAL PARTICULARS FOR 145KV DBR ISOLATOR

1.	Type/Installation	Center Post Rotating Double Break- "DBR"
2.	Manufacturer's name and Country of manufacture	Siemens Limited Hyderabad, India
3.	Standards according to which the isolators are manufactured.	IS : 9921 (Part I to V) of 1985 IEC:62271-102
4.	Maximum design voltage at which the isolator can operate	145 kV
5.	Frequency(HZ)	50 Hz
6.	Rated voltage(kV)	132 kV
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 (assigned)
8.	Continuous current rating	
	a) Under normal conditions	800 Amps
	b) Under site conditions	800 Amps
9.	Rated short time current	
	i.) For 3 seconds (kA rms.)	31.5 kA (rms.)
	ii.) For 1 second (kA rms.)	Not applicable
	iii.) Rated peak short time current(kAp)	78.75 kA (peak)
10.	Current density at the minimum cross-section of	
	a) Moving blade	1.40 A/Sq.mm
	b) Terminal pad	0.4 A/Sq.mm
	c) Contacts	1.34 A/Sq.mm
	d) terminal connector	1.0 A/sq.mm
11.	Maximum Temp. rise of current carrying parts when carrying rated current continuously	Within limits as per IEC:62271-102 De-rated to 50 deg.C & Table -3 of IEC:60694
12.	Derating factor for specified site conditions	Unity
13.	Insulation levels	
	i.) Impulse with stand voltage (kV peak)	
	Phase to earth	650 kV (peak)
	Isolating distance	750 kV (peak)
	ii.) Switching surge withstand voltage(kV peak)	
	Phase to earth	Not applicable
	Isolating distance	Not applicable
	iii.) Power frequency with stand voltage (kV rms.)	
	Phase to earth	275 kV (rms)
	Isolating distance	315 kV (rms)
14.	Minimum clearance in air	
	i.) Between poles (mm)	3000 mm
	ii.) Between live parts and earth	Equal to dry arcing distance of insulator selected
	iii.) Between live parts when the switch is open	
	a) On the same pole	2135 mm
	b) Between adjacent poles	2700 mm (Approx.)



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GUARANTEED TECHNICAL PARTICULARS FOR 145KV DBR ISOLATOR

15.	Rated mechanical terminal loads	
	i.) Load along the terminal connector side(Kg)	500 N as per Table 3 of IEC:62271-102
	ii.) Load across the terminal connector side(Kg)	170 N as per Table 3 of IEC:62271-102
16.	Torque required to operate switch in Kg-m	25 Kg-m
17	Contact zone	
	i.) Horizontal deflection(mm)	Not applicable
	ii.) Vertical deflection (mm)	Not applicable
	iii.) Total amplitude of longitudinal movement w.r.t. conductor supporting fixed contact (mm)	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
	iv.) Contacts	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	400 sq.mm
	v) Moving blade	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	725 sq.mm
	vi.) Contact support	
	a) Material and size of channel/ block	220x160 CRFS channel
	b) Material and size of plate	6 mm MS plate
	vii.) Rain hood-Material, Grade and size	18G G.I. sheet
	viii.) Turn and twist mechanism	
	a) Material and size of clamps	50x10 MS flat
	b) Material and size of springs	10 Gauge SS Spring
	c) Whether springs are encased	Yes
	ix.) Nuts and Bolts	
	a) Size, material and grade in live parts	Stainless steel
	b) Size, material and grade in other parts	Galvanized
	x.) Insulator base plate material and size of plate below insulators	10 mm MS plate
	ix.) Bearings	50 ID
	a) Material and size of housing	Aluminium casting
	b) No. of bearings , location and size	Two, Below rotating stool base
	xii.) Tandem pipe	
	a) Size class and no. of pipes	32NB & 1 no. CLASS-B
	b) Size of shackle , screw	Screw rod M24X125Lg
	c) No. of bearings / bush its material and size	Brass bush & Ø25/ Ø22x10L
	xiii.) Type of interlock	Mechanical/ Electrical
	xiv.) Down pipe size and class	50NB & CLASS-B
	xv.) Type of universal/swivel joint	
	a) Between bearing and down pipe	Universal joint
	b) Between down pipe and operating mechanism	Flange welding



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IEE ENGINEER / CONSTRUCTION
TRANS CO/VIDYUTH SODHA/HYD.

GUARANTEED TECHNICAL PARTICULARS FOR 145KV DBR ISOLATOR

	xvi.) Operating mechanism	
	a) Control cabinet	
	Material and thickness	MS 12 SWG
	Degree of protection	IP-55
	Type size and no. of cable glands	In scope of Contractor
	Whether removable gland plate provided	Yes
	xvii.) Base	
	a) Size of steel sections used	
	b) Overall size	125x65 ISMC channel
	c) Total weight	30 Kg(approx.)
	xviii.) Terminal connectors	In scope of Contractor
	a) Clamp body:	
	Alloy composition	Aluminium alloy, LM-6
	Plating if any	----
	Area at air cross-section	-----
	b) Bolts and nuts size	M12
	Alloy composition	M.S Hot dip galvanized
	Tensile strength	Within the limits of values as specified in IS:5561
	c) Type of washers used	Spring
	d) Material of braids	Copper
	e) Temperature rise when carrying rated current at 50 Degree centigrade ambient	Within the limits of values as specified in IS:5561
	f) Weight of each type of clamp	1 to 2 kgs (Approx.)
19.	List of bought out items	Refer GA drawings
20	Has Bidder included information sought in clause No.5.27.1	NA
21	List of test certificates furnished	Refer type test report list
22	List of drawings furnished	Refer DRG. No. 3 G71 CSC APTCL R001

	Standardised Drawing for 132 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 253-1 03 sheets Revision No. 0
	Prepared & Approved during October – 2013
	Customer ref : APTRANSCO Title: GTPs for 145kV Isolators

For Siemens Limited

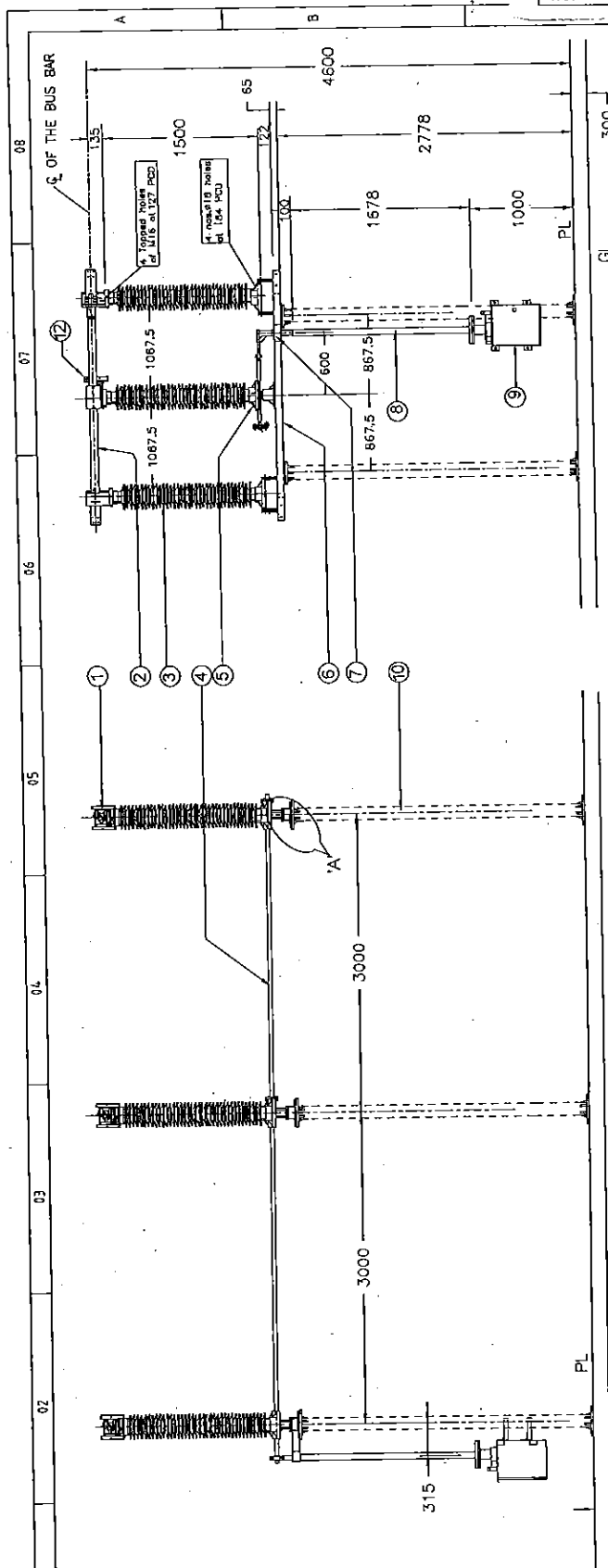


A PROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION - I
APTRANSCO/MIDYOUTH SOUTH AFRICA

Customer ref : APTRANSCO

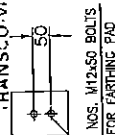
Title: GA of 145kV, 800A/1250A, 50Hz., TP, 'DBR' Disconnecter without earth switch (Manual operated disconnector) (Main switch blade anti clock wise closing)



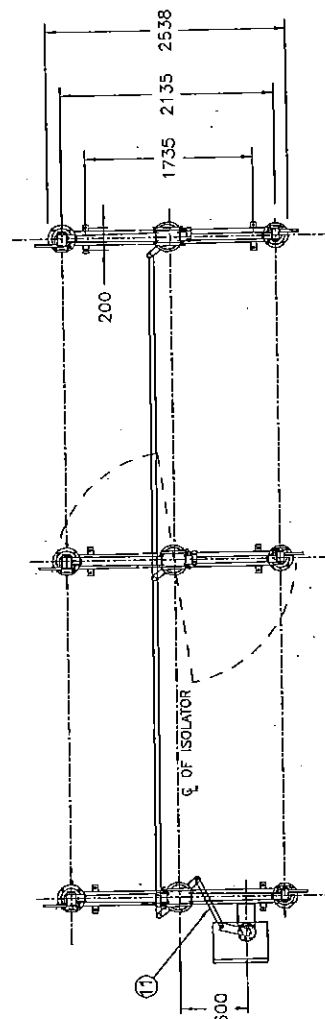
END VIEW

PROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION



EARTHING PAD DETAILS
DETAIL AT-'A'



PLAN

[illegible]



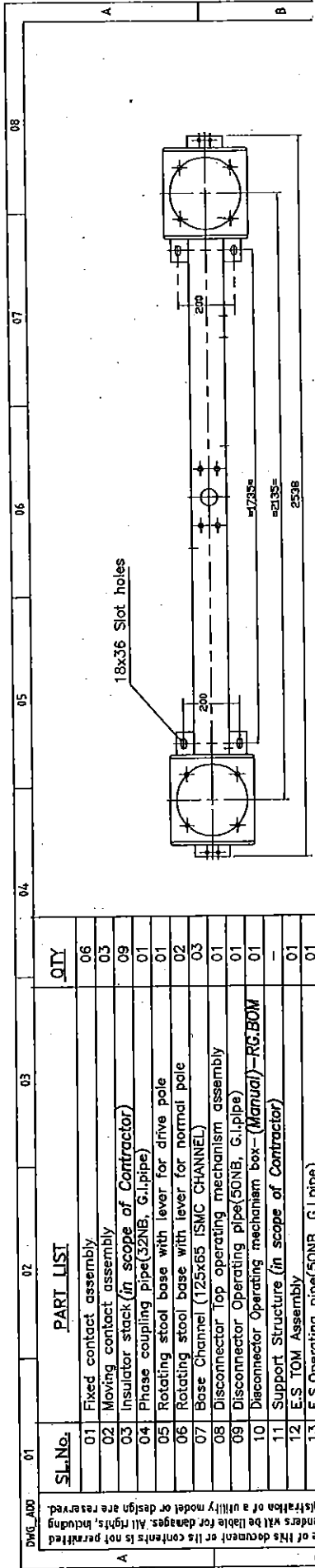
Standardised Drawing for 132 kV Isolator
(M/s Siemens Limited)

STD/GTP-DWG/Approval No. 253-6 01 sheet Revision No. 0

Prepared & Approved during October - 2013

Customer ref : APTRANSCO

Title: GA of 145kV,800A/1250A, 50Hz., TP, Disconnector with one earth switch (Manual operated disconnector & earthswitch)



BASE CHANNEL FIXING HOLES DETAILS

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[Signature]

CHIEF ENGINEER / CONSTRUCTION

M. TRANSCO/PROJECTS/SOUTH

QUANTITY:

WEIGHTS (For reference only)

Net weight of the Disconnector, } 575 Kgs(approx.)

without insulators



SL.No.	PART LIST	QTY
01	Fixed contact assembly	06
02	Moving contact assembly	03
03	Insulator stack (in scope of Contractor)	09
04	Phase coupling pipe(32NB, G.I.pipe)	01
05	Rotating stool base with lever for drive pole	01
06	Rotating stool base with lever for normal pole	02
07	Base Channel (125x65 ISMC CHANNEL)	03
08	Disconnector Top operating mechanism assembly	01
09	Disconnector Operating pipe(50NB, G.I.pipe)	01
10	Disconnector Operating mechanism box - (Manual) -RG.BOM	01
11	Support Structure (in scope of Contractor)	-
12	E.S. TOM Assembly	01
13	E.S.Operating pipe(50NB, G.I.pipe)	01
14	E.S.Operating mechanism box (Manual) -RG.BOM	01
15	E.S.Moving contact assembly	03
16	E.S.Fixed contact assembly	03
17	E.S.Phase coupling pipe (32NB, G.I.pipe)	02
18	E.S. Push pipe (32NB, G.I.pipe)	01
19	Copper flexible(90sq mm)-3 Nos/pole	09
20	Main switch push pipe	01
21	Mechanical Interlocking between M/S & E.S	01
22	Moving contact clamp assy.(10mm thk M.S Flat)	03
23	E.S. Toggle assembly	03

REFERENCE DRAWINGS

For contact details (800A)----- 3 671CSC APTCL C004

For E.S.contact details----- 3 671CSC APTCL C005

For operating mechanism details- 3 671CNC APTCL Z006

For E/S operating mechanism details- 3 671CNC APTCL Z007

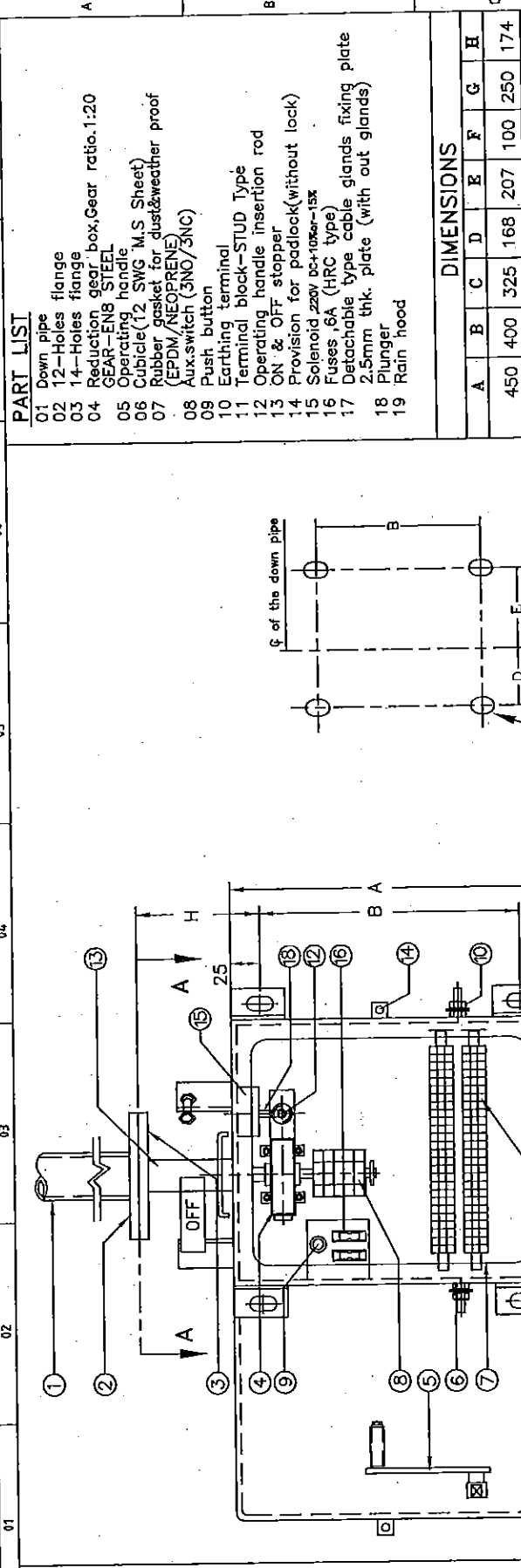
- NOTES
- 01 All dimensions are in 'mm'
 - 02 All M.S parts are hot-dip galvanised (as per IS: 4759)
 - 03 All non-ferrous contact points are silver plated 15 microns
 - 04 Main rotating post having (50mm ID) 2 nos. ball bearings (make: SKF,HMT,TATA)
 - 05 The indicated dimensions are subject to the manufacturing tolerance:
 - i) Upto 50mm-----±3%; ii) 51 to 100mm-----±2%;
 - iii) 101 to 300mm-----±1%; iv) Above 300mm-----±0.5%.
 - 06 All G.I. pipes are 'Class B' type
 - 07 Rated terminal Load shall be as per IEC:62271-102
 - 08 The Below mentioned hardware is not in scope of SIEMENS(Disconnector manufacturer)
 - 1) Base channel to structure fixing Hardware
 - 2) Insulator bottom fixing hardware
 - 3) Drive box to structure fixing hardware

SIEMENS HYDERABAD		Descri: GA of 145KV,800A/1250A,50Hz TP. DISCONNECTOR WITH ONE EARTH SWITCH Type: Detail: MANUAL OPERATED DISCONNECTOR & E/S		Sales Order: Item No.: DRG.NO.	
		(3) 671CSC APTCL Z003-A		Sh 2 - Sh	
DATE 13.05.10 PREP. S.M.Singh CHKD. K.V.R. APPR. [Signature] DATE 28.7.12	CLIENT: APTRANSCO CONTRACTOR:	Original/Replacement for/Replaced by:-	01 02 03 04 05 06 07 08	CAD FILE: 3 671CSC APTCL Z003-20F2	

DATE		01		02		03		04		05		06		07		08	
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FIXED CONTACT DETAILS ELEVATION PLAN																	
MOVING CONTACT DETAILS ELEVATION																	
PART LIST 01 Spacer plate 50X6mm Al. flat 02 Female contact jaw (2 pairs 20X5 mm Cu.flat-Silver plated) 03 Spring (stainless steel) 04 Fixed contact jumper pad (Al.) 05 Male contact (50X10 Cu.flat) 06 Moving contact arm 07 Copper flexible (90 Sq.mm - 3Nos.) NOTES 01 All dimensions are in mm 02 All non-ferrous contact points are silver plated to 15 microns (MIN.) 03 All ferrous parts are hot-dip galvanised (as per IS:4759)																	
A. PROVED FOR TURKEY PROJECTS CHIEF ENGINEER / CONSTRUCTION A. TRANSCO/VIDYUTH SODAL SIEMENS LIMITED HYD-132																	
SIEMENS HYDERABAD Descr: EARTH SWITCH CONTACT ASSEMBLY Type: (FOR 145 KV DBR DISCONNECTOR) Detail:																	
Sales Order: Item No: DRG NO. (3) G71CISIC-APTCL-0005-01 - Sh 1																	
DATE 22.2.12 PREP. S. M. Singh CKD. KVR APPR. Deepthi																	
Original/Replacement for/Replaced by:-																	
ISSUE REMARKS DATE NAME																	

01	02	03	04	05	06	07	08																
PART LIST 01 Down pipe 02 12-Holes flange 03 14-Holes flange 04 Reduction gear box, Gear ratio: 1:20 05 GEAR-EN8 STEEL 06 Operating handle 07 Cubicle (12 SWG M.S Sheet) 08 Rubber gasket for dust & weather proof (EPDM/NEOPRENE) 09 Aux. switch (6NO/6NC) 10 Push button 11 Earthing terminal 12 Terminal block-STUD Type 13 Operating handle insertion rod 14 ON & OFF stopper 15 Provision for padlock (without lock) 16 Solenoid, 110V AC-10A-13% 17 Fuses, 6A (HRC type) 18 Detachable type cable glands fixing plate 19 Plunger 20 Rain hood																							
NOTES 01 All dimensions are in 'mm' 02 Internal wiring will be done with 1100V grade and 2.5 sq. mm Cu-insulated conductor and 20% spare terminals will be provided 03 Degree of protection IP-55 04 Net weight of the box-35 Kgs (approx) 05 Cubicle is painted both sides with colour shade no. 531 of IS-5 06 The Gear shall be made out of Aluminium bronze or any other better material lubricated for life with graphite or better quality non drawing and non-hardening type grease.																							
INSTRUCTIONS: 1 Donot operate the Disconnector when Breaker is in 'ON' position 2 To energise solenoid press push button 3 Donot padlock Disconnector if interlocking plunger does not fall into the slot provided																							
DIMENSIONS <table border="1"> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> </tr> <tr> <td>450</td> <td>400</td> <td>325</td> <td>168</td> <td>207</td> <td>100</td> <td>250</td> <td>174</td> </tr> </table>								A	B	C	D	E	F	G	H	450	400	325	168	207	100	250	174
A	B	C	D	E	F	G	H																
450	400	325	168	207	100	250	174																
DETAILS OF FIXING HOLES 4 nos. $\phi 18 \times 36$ mm holes																							
ELEVATION																							
VIEW AT A-A																							
APPROVED FOR TURNKEY PROJECTS CHIEF ENGINEER / CONSTRUCTION TRANSCON DIVISION SOUTH ASIA																							

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PART LIST

- 01 Down pipe
- 02 12-Holes flange
- 03 14-Holes flange
- 04 Reduction gear box, Gear ratio: 1:20
- 05 GEAR-ENB STEEL
- 06 Operating handle
- 07 Cubicle (12 SWG 'M.S. Sheet)
- 08 Rubber gasket for dust & weather proof (EPDM/NEOPRENE)
- 09 Aux. switch (3NO/3NC)
- 10 Push button
- 11 Earthing terminal
- 12 Terminal block-STUD Type
- 13 Operating handle insertion rod
- 14 ON & OFF stopper
- 15 Provision for padlock (without lock)
- 16 Solenoid 220V DC-100W-15%
- 17 Fuses, 6A (HRC type)
- 18 Detachable type cable glands fixing plate 2.5mm thk. plate (with out glands)
- 19 Plunger
- 20 Rain hood

NOTES

- 01 All dimensions are in mm.
- 02 Internal wiring will be done with 1100V grade 2.5 sq. mm Cu-stranded conductor and 20% spare terminals will be provided
- 03 Degree of protection IP-55
- 04 Net weight of the box-35 Kgs (approx)
- 05 Cubicle is painted both sides with colour shade no: 631 of ISI-5
- 06 The Gear shall be made out of Aluminium bronze or any other better material lubricated for life with graphite or better quality non drawing and non-hardening type grease.

INSTRUCTIONS:

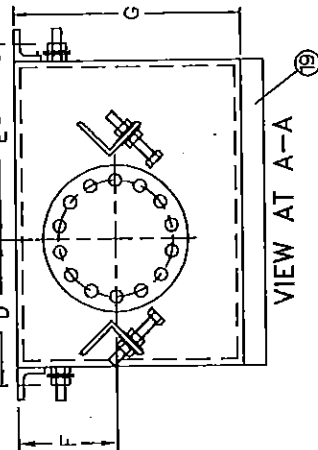
- 1 Donot operate the Earth Switch when Isolator is in 'ON' position
- 2 To energise solenoid press push button
- 3 Donot padlock Earth switch if interlocking plunger does not fall into the slot provided

DIMENSIONS

A	B	C	D	E	F	G	H
450	400	325	168	207	100	250	174

A: PROVED FOR TURKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION
TRANSNESCO / CONSTRUCTION



DATE: 27.2.12		CLIENT: APTRANSCO		CONTRACTOR:	
PREP: sub. 2012	CKD: mr	DATE: 4.3.13	NAME: amir	APPR: 02	01
REMARKS: A: Revised as per customer comments 27.2.13		ISSUE			
Title: Manual operating mechanism box for Earth switch (Reduction gear)					
Customer ref: APTRANSCO					
Prepared & Approved during October-2013					
STD/GTP-DWG/Approval No. 253-11 01 sheet Revision No. 0					
(M/s Siemens Limited)					
STANDARDISED DRAWING FOR I22 KVA ISOLATOR					
Sales Order:		Item No:		DRG. NO.	
(3) G71CNC		APTRC		2007-A-1111	
Sh 1		+ Sh		08	

01	02	03	04	05	06	07	08																		
SCHEMATIC DIAGRAM																									
AUX. SWITCH 3NO/3NC CONTACTS																									
LEGEND <table border="1"> <thead> <tr> <th>LEGEND</th> <th>DESCRIPTION</th> <th>MAKE</th> </tr> </thead> <tbody> <tr> <td>F1, F2</td> <td>Fuses for control supply</td> <td>BS/Cooper Business/Vieltrino</td> </tr> <tr> <td>H.P.B</td> <td>Push Button for interlock release</td> <td>Schneider/Vieltrino/Escondido</td> </tr> <tr> <td>EMI</td> <td>Solenoid coil (220V DC) (Electro mechanical interlock)</td> <td>Siemens/EMD Resistro</td> </tr> <tr> <td>⊙</td> <td>Terminal block</td> <td>Elmex/connectwell</td> </tr> <tr> <td>TB1</td> <td>STUD Type</td> <td></td> </tr> </tbody> </table>								LEGEND	DESCRIPTION	MAKE	F1, F2	Fuses for control supply	BS/Cooper Business/Vieltrino	H.P.B	Push Button for interlock release	Schneider/Vieltrino/Escondido	EMI	Solenoid coil (220V DC) (Electro mechanical interlock)	Siemens/EMD Resistro	⊙	Terminal block	Elmex/connectwell	TB1	STUD Type	
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TB1	STUD Type																								
Standardised Drawing for 132 kV Isolator (M/s Siemens Limited) STD/GTP-DWG/Approval No. 253-12 01 sheet Revision No. 0 Prepared & Approved during October - 2013 Customer ref : APTRANSCO Title: Terminal Block details for Earth switch (Reduction gear)																									
SIEMENS HYDERABAD DATE: 27.2.12 PREP: SUSHANT CKD: MSR APPR: [Signature] CLIENT: APTRANSCO CONTRACTOR: [Signature] Original/Replacement for/Replaced by:-																									
REVISIONS <table border="1"> <thead> <tr> <th>ISSUE</th> <th>REMARKS</th> <th>DATE</th> <th>NAME</th> <th>DATE</th> <th>NAME</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Revised as per customer comments of 28.2.13</td> <td>4.3.13</td> <td>amresh</td> <td></td> <td></td> </tr> </tbody> </table>								ISSUE	REMARKS	DATE	NAME	DATE	NAME	A	Revised as per customer comments of 28.2.13	4.3.13	amresh								
ISSUE	REMARKS	DATE	NAME	DATE	NAME																				
A	Revised as per customer comments of 28.2.13	4.3.13	amresh																						
SALES ORDER Item No: [Blank] DRG. NO. (3) 0711CNC-APTCL-Z007-A- [Blank] Sh 2 - Sh [Blank]																									

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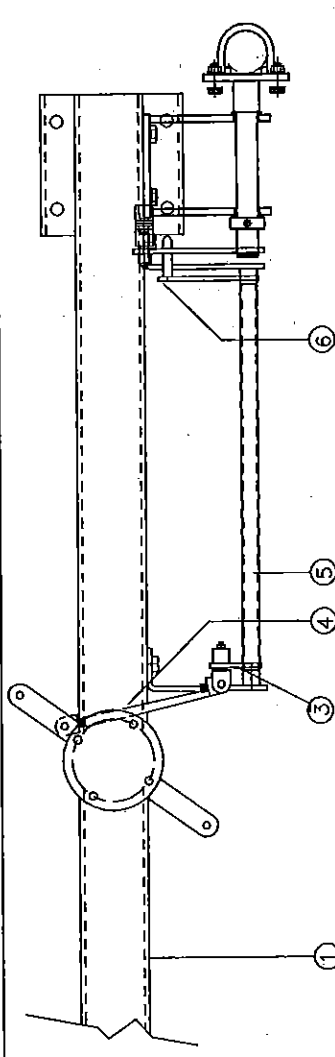
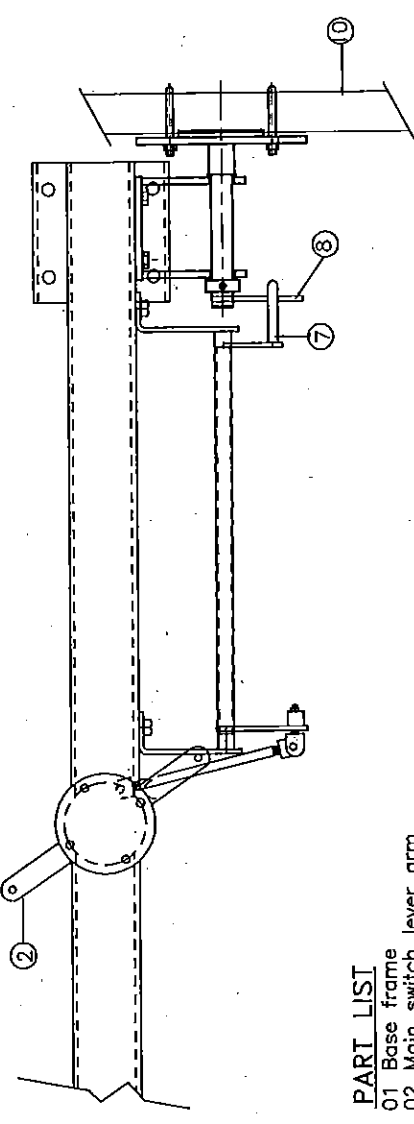
[Signature]

CHIEF ENGINEER / CONSTRUCTION

APTRANSCO/VIDYUTH SQUAD/H/M/O.



		Standardised Drawing for 132 kV Isolator (M/s Siemens Limited) STD/GTP-DWG/Approval No. 253-13 01 sheet Revision No. 0	
Customer ref : APTRANSCO Prepared & Approved during October - 2013		Title: Mechanism interlock between main switch earth switch	

DWG. NO. 01		02		03		04		05		06		07		08	
FIG-1: EARTH SWITCH 'ON' POSITION WHILE MAIN SWITCH OFF  FIG-2: EARTH SWITCH OFF POSITION WHILE MAIN SWITCH ON 															
FUNCTION OF LINK MECHANISM FIG-1 Shows the earth switch (10) in closed position if the main switch is to be closed, the main switch lever arm (2) has to move in a anti clockwise direction, as the link mechanism rotating pipe (5) is connected with the main switch lever through a link pipe (4), the interlocking stud (7) will also move, but as the lever arm of earth switch phase coupling pipe (8) is in the link stud, it cannot be moved, this does not allow the main switch lever arm to rotate, so it is not possible to close the main switch, when the earth switch is in closed position, when earth switch is opened, the lever arm (8) moves away allowing the interlocking stud to facilitate the rotation of the main switch lever, resulting in the closure of main switch. FIG-2, Similar to operate the earth switch with respect to the main switch, all the levers move vice versa allowing the operation of earth switch only when the main switch is in open position.															
PART LIST 01 Base frame 02 Main switch lever arm 03 Link mechanism lever arm 04 Link mechanism pipe 05 Link mechanism rotating pipe 06 Interlocking stud lever arm 07 Interlocking stud 08 Earth switch phase coupling pipe lever arm 09 Moving contact rotating pipe 10 Earth switch moving contact A*PROVED FOR TURNKEY PROJECTS <i>[Signature]</i> CHIEF ENGINEER / CONSTRUCTION & TRANSCO MIDYOUTH SOUTH INDIA.															
SIEMENS LIMITED HYDERABAD MECHANICAL INTERLOCK BETWEEN MAIN SWITCH & EARTH SWITCH Type: (FOR 145kV 'DBR' DISCONNECTOR) Detail:															
SALES ORDER Item No : (3) 6716ZC-APTCL-008-00-00 Sh 1 DATE 27.2.12 CLIENT APTRANSCO PREP. S.M. Singh CONTRACTOR CHKD. K.V.R. DATE NAME APPR. DEPT. Original/Replacement for/Replaced by:-															
ISSUE REMARKS REF:															

Standardised Drawing for 132 kV Isolator (M/s Siemens Limited) STD/GTP-DWG/Approval No. 253-14 01 sheet Revision No. 0 Prepared & Approved during October - 2013 Customer ref : APTRANSCO Title: Name plate details of main switch & Earth switch		DATE 13.05.10 PREP: S.M. Singh CHECK: K.V. APPR: Deepthi DATE 02		CLIENT: APTRANSCO CONTRACTOR:		SIEMENS HYDERABAD		Descr: NAME PLATE DETAILS MAIN SWITCH & EARTH SWITCH Type: (FOR 145KV 'DBR') Detail:		Sales Order: Item No: DRG NO. (3) G711CZIC-APTCL-NO009-01-01 Sh 1 - Sh	
01 02 03 04 05 06 07 08		01 02 03 04 05 06 07 08		01 02 03 04 05 06 07 08		01 02 03 04 05 06 07 08		01 02 03 04 05 06 07 08		01 02 03 04 05 06 07 08	

±0.5

±0.5

SIEMENS LIMITED
PTD, Division, Hyderabad Works
P.O. Balanagar, Hyderabad-57, INDIA

SIEMENS LIMITED
PTD, Division, Hyderabad Works
P.O. Balanagar, Hyderabad-57, INDIA

CUSTOMER		APTRANSCO	
LOA No.			
YEAR OF MFG	2012	SUBSTATION	
TYPE	DBR	SL.NO.	
VOLTAGE (KV) Ur	132	FREQUENCY (Hz) fr	50
BIL (KV) Up	850	CURRENT(A) Ir	800
SWITCHING IMP(KV)Us	NA	TYPE OF DRIVE	MANUAL(RG BOM)
P (KV) Ud	275	MOTOR VOLTAGE(AC)	
STC KA/SEC Ik/Itk	31.5KA/3Sec.	CONTROL VOLTAGE(DC)	220
WT.OF ISO(KG)	425	WT.OF DRIVE(KG)	40
UNIT NO.		SALES ORDER NO.	

CUSTOMER		APTRANSCO	
LOA No.			
YEAR OF MFG	2012	SUBSTATION	
TYPE		SL.NO.	
VOLTAGE (KV) Ur	132	FREQUENCY (Hz) fr	50
BIL (KV) Up	850	CURRENT(A) Ir	NA
SWITCHING IMP(KV)Us	NA	TYPE OF DRIVE	MANUAL(RG BOM)
P (KV) Ud	275	MOTOR VOLTAGE(AC)	
STC KA/SEC Ik/Itk	31.5KA/3Sec.	CONTROL VOLTAGE(DC)	220
WT.OF E/S(KG)	150	WT.OF DRIVE(KG)	40
UNIT NO.		SALES ORDER NO.	

NAME PLATE DETAILS FOR MAIN SWITCH

NAME PLATE DETAILS FOR EARTH SWITCH

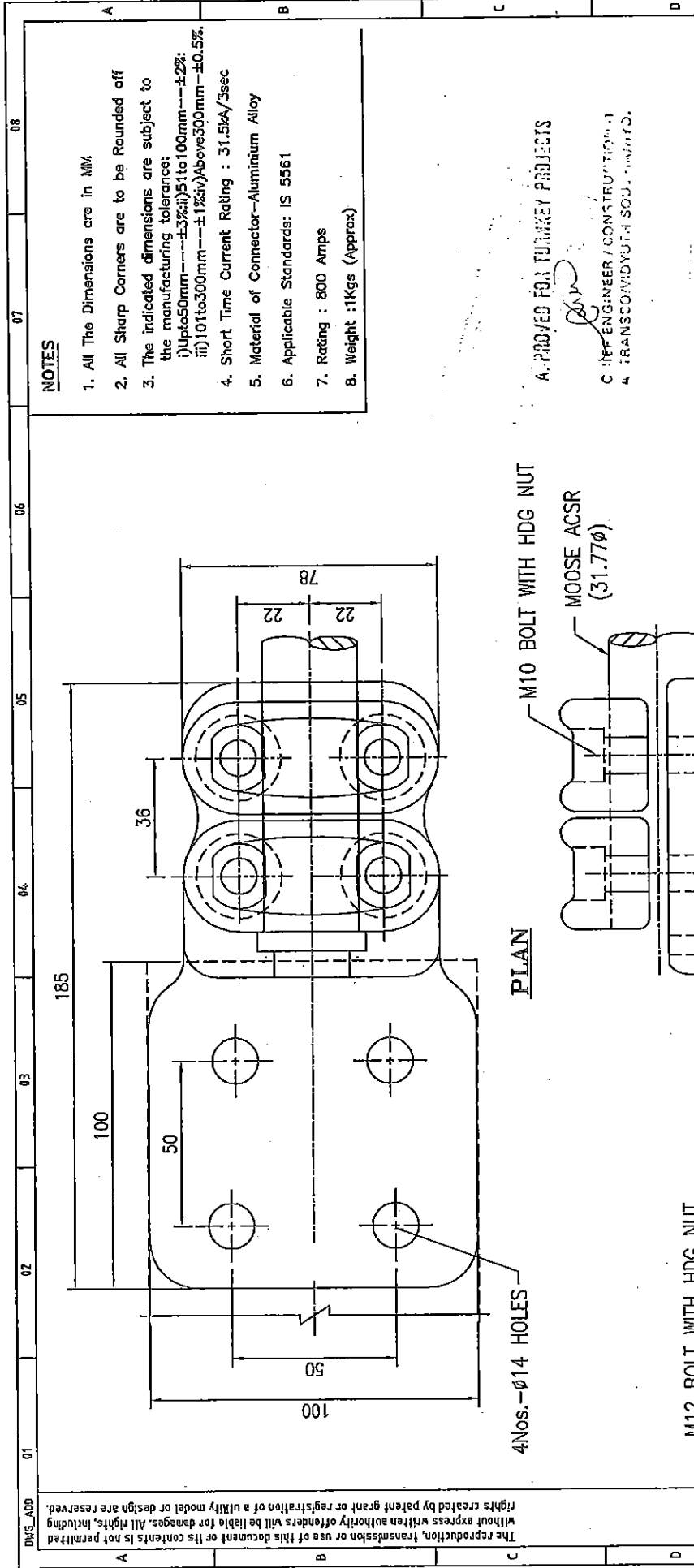
NOTES

- 01 Engraved letter size - 2 mm
- 02 Letter etched white on black background
- 03 Material Alu.-Thickness 24G/0.56mm



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A. TRANSCO/VIDYUTH SUDHAN



NOTES

1. All The Dimensions are in MM
2. All Sharp Corners are to be Rounded off
3. The indicated dimensions are subject to the manufacturing tolerance:
i) Up to 50mm --- ±3% ii) 51 to 100mm --- ±2%
iii) 101 to 300mm --- ±1% iv) Above 300mm --- ±0.5%
4. Short Time Current Rating : 31.5kA/3sec
5. Material of Connector- Aluminium Alloy
6. Applicable Standards: IS 5561
7. Rating : 800 Amps
8. Weight : 1Kgs (Approx)

PLAN

ELEVATION

M10 BOLT WITH HDG NUT

MOOSE ACSR
(31.77φ)

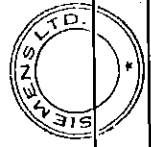
M12 BOLT WITH HDG NUT

TERMINAL PAD
ISO. AL.

A. APPROVED FOR TURNKEY PROJECTS

C. HEAD ENGINEER / CONSTRUCTION
4. TRANSCOMED SOUTH SOUTHERN LTD.

	Standardised Drawing for 145 kV Isolator (M/s Siemens Limited)
STD/GTP-DWG/Approval No. 253-15 01 sheet Revision No. 0	
Prepared & Approved during October - 2013	
Customer ref : APTRANSCO	
Title: Terminal Connectors to suit moose ACSR Conductor	



Sales Order:

Item No:

DRGNO.

(3) 671E2IC-APTCCL-2011-01-01

DESCR: TERMINAL CONNECTOR ON PAD (ISO. AL.)
TO SUIT MOOSE ACSR CONDR. (31.77φ).

Type: MOOSE ACSR CONDR. (31.77φ).

Detail: FOR 145KV 800A DBR

SIEMENS

HYDERABAD

CLIENT: APTRANSCO

CONTRACTOR:

DATE: 22/12

PREP: am/gh

CHKD: NSR

APPR: NSR

NAME

DATE

REMARKS

DATE

ISSUE

REMARKS

DATE

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REMARKS

Dwg. Add		01	02	03	04	05	06	07	08
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4Nos. - $\phi 14$ HOLES 100 50 185 36 22 78 PLAN M10 BOLT WITH HDG NUT MOOSE ACSR (31.77ϕ) ELEVATION 100 50 TERMINAL PAD ISO. AL. M12 BOLT WITH HDG NUT									
NOTES 1. All The Dimensions are in MM 2. All Sharp Corners are to be Rounded off 3. The indicated dimensions are subject to the manufacturing tolerance: i) Up to 50mm - ± 0.5 ii) 51 to 100mm - ± 0.75 iii) 101 to 300mm - ± 1.0 iv) Above 300mm - $\pm 0.5\%$ 4. Short Time Current Rating : 31.5kA/3sec 5. Material of Connector - Aluminium Alloy 6. Applicable Standards: IS 5561 7. Rating : 800 Amps 8. Weight : 1Kgs (Approx)									
A PROVED FOR TURNKEY PROJECTS CHIEF ENGINEER / CONSTRUCTION TRANSCO/INDIA SOUTH DIVISION									
SIEMENS HYDERABAD CLIENT: APTRANSCO CONTRACTOR: Original/Replacement for/Replaced by:- DATE 22.12 PREP. [Signature] CHKD. [Signature] APPR. [Signature] ISSUE REMARKS DATE NAME									
Descr: TERMINAL CONNECTOR ON PAD (ISO. AL.) TO SUIT MOOSE ACSR CONDR. (31.77ϕ). Type: MOOSE ACSR CONDR. (31.77ϕ). Detail: FOR 145KV 800A DBR Sales Order: Item No: DRG. NO. (3) G71E2C-APTCL-Z011-Q-Q-SH 1									

GUARANTEED TECHNICAL PARTICULARS FOR 36KV DBR ISOLATOR

1.	Type/Installation	Center Post Rotating Double Break- "DBR"
2.	Manufacturer's name and Country of manufacture	Siemens Limited Hyderabad, India
3.	Standards according to which the isolators are manufactured.	IS : 9921 (Part I to V) of 1985 IEC:62271-102
4.	Maximum design voltage at which the isolator can operate	36 kV
5.	Frequency(HZ)	50 Hz
6.	Rated voltage(kV)	33 kV
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 (assigned)
8.	Continuous current rating	
	a) Under normal conditions	800 Amps/1250 Amps
	b) Under site conditions	800 Amps/1250 Amps
9.	Rated short time current	
	i.) For 3 seconds (kA rms.)	25 kA (rms.)
	ii.) For 1 second (kA rms.)	Not applicable
	iii.) Rated peak short time current(kAp)	62.5 kA (peak)
10.	Current density at the minimum cross-section of	
	a) Moving blade	1.38A/Sq.mm(800A) 1.32A/sq.mm(1250A)
	b) Terminal pad	0.88A/Sq.mm(800A) 1.04A/sq.mm(1250A)
	c) Contacts	1.56A/Sq.mm(800A) 1.56A/sq.mm(1250A)
	d) terminal connector	1.0A/Sq.mm
11.	Maximum Temp. rise of current carrying parts when carrying rated current continuously	Within limits as per IEC:62271-102 De-rated to 50 deg.C & Table -3 of IEC:60694
12.	Derating factor for specified site conditions	Unity
13.	Insulation levels	
	i.) Impulse with stand voltage (kV peak)	
	Phase to earth	170 kV (peak)
	Isolating distance	195 kV (peak)
	ii.) Switching surge withstand voltage(kV peak)	
	Phase to earth	Not applicable
	Isolating distance	Not applicable
	iii.) Power frequency with stand voltage (kV rms.)	
	Phase to earth	70 kV (rms)
	Isolating distance	80 kV (rms)
14.	Minimum clearance in air	
	i.) Between poles (mm)	1300 mm
	ii.) Between live parts and earth	Equal to dry arcing distance of insulator
	iii.) Between live parts when the switch is open	
	a) On the same pole	914 mm
	b) Between adjacent poles	1000 mm (Approx.)

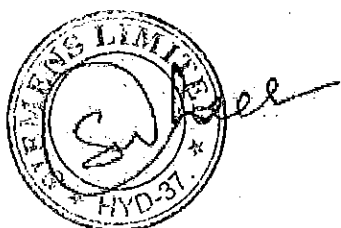


APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
RANCO, VIDYUTHA SODHA, HYD

GUARANTEED TECHNICAL PARTICULARS FOR 36KV DBR ISOLATOR

15.	Rated mechanical terminal loads	
	i.) Load along the terminal connector side(Kg)	Not applicable
	ii.) Load across the terminal connector side(Kg)	Not applicable
16.	Torque required to operate switch in Kg-m	25 Kg-m
17	Contact zone	
	i.) Horizontal deflection(mm)	Not applicable
	ii.) Vertical deflection (mm)	Not applicable
	iii.) Total amplitude of longitudinal movement w.r.t. conductor supporting fixed contact (mm)	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
	iv.) Contacts	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	800A-512Sq.mm & 1250A-768Sq.mm
	v) Moving blade	
	a) Material and grade	Hard drawn electrolytic copper & electrolytic
	b) Cross-sectional area(mm)	800A-578Sq.mm & 1250A-945Sq.mm
	vi.) Contact support	
	a) Material and size of channel/ block	220x150x4 CRFS channel
	b) Material and size of plate	6 mm MS plate
	vii.) Rain hood-Material Grade and size	18SWG MS sheet
	viii.) Turn and twist mechanism	
	a) Material and size of clamps	40x10 MS flat
	b) Material and size of springs	15 Gauge SS Spring
	c) Whether springs are encased	Yes
	ix.) Nuts and Bolts	
	a) Size, material and grade in live parts	Stainless steel
	b) Size, material and grade in other parts	Galvanized
	x.) Insulator base plate material and size of plate below insulators	6 mm MS plate
	ix.) Bearings	O-8 Thrust Ball Bearings
	a) Material and size of housing	Aluminium casting
	b) No. of bearings , location and size	Two & Below rotating stool base
	xii.) Tandem pipe	
	a) Size class and no. of pipes	25NB & 1 NO CLASS-B
	b) Size of shackle , screw	Not required
	c) No. of bearings / bush its material and size	Brass bush
	xiii.) Type of interlock	Mechanical/ Electrical
	xiv.) Down pipe size and class	50NB & Class-B
	xv.) Type of universal/swivel joint	
	a) Between bearing and down pipe	Universal joint
	b) Between down pipe and operating mechanism	Flange welding



APPROVED FOR TURNKEY PROJECTS

Handwritten signature

CHIEF ENGINEER / CONSTRUCTION
A TRANSCO/VIDYUTH SOUTHERN

GUARANTEED TECHNICAL PARTICULARS FOR 36KV DBR ISOLATOR

xvi.) Operating mechanism	
a) Control cabinet	
Material and thickness	MS 12 SWG.
Degree of protection	IP-55
Type size and no. of cable glands	In scope of Contractor
Whether removable gland plate provided	Yes
xvii.) Base	
a) Size of steel sections used	
b) Overall size	100x50 ISMC channel
c) Total weight	10 Kg(approx.)
xviii.) Terminal connectors	
a) Clamp body:	
Alloy composition	Aluminium alloy, LM-6
Plating if any	----
Area at air cross-section	-----
b) Bolts and nuts size	M12
Alloy composition	M.S Hot dip galvanized
Tensile strength	Within the limits of values as specified in IS:5561
c) Type of washers used	Spring
d) Material of braids	Copper
e) Temperature rise when carrying rated current at 50 Degree centigrade ambient	Within the limits of values as specified in IS:5561
f) Weight of each type of clamp	1 to 2 kgs (Approx.)
19. List of bought out items	Refer GA drawings
20. Has Bidder included information sought in clause No.5.27.1	NA
21. List of test certificates furnished	Refer type test report list
22. List of drawings furnished	Refer Drg.No.3 G71 FSC APTCL R001

	Standardised Drawing for 33 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 252-1 03 sheets Revision No. 0
	Prepared & Approved during October – 2013
	Customer ref : APTRANSCO
Title: GTP for 36 kV DBR Isolators	

For Siemens Limited

APPROVED FOR TURNKEY PROJECTS

[Signature]
2/10/13
CHIEF ENGINEER / CONSTRUCTION
APTRANSCO VIDYUTHI SOUTHERN



Index	Amendment/Revision	Date	Name
A	Revised as per customer comments dt.26.7.12	26.7.12	s.m.singh
B	Revised as per customer comments dt.26.2.13	4.3.13	s.m.singh
C			
D			

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Index	Amendment/Revision	Date	Name
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A. PROVED FOR JUNKY PRODUCTS

CHIEF ENGINEER / CONSTRUCTION
HANSCHWYDIA SOUTHERN



Standardised Drawing for 33 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 252-2 01 sheets Revision No. 0
Prepared & Approved during October - 2013

Customer ref : APTRANSCO

Title: 33kV 800A/1250 Disconnector copper design

Standardised Drawing for 33 kV Isolator
(M/s Siemens Limited)
STD/GTP-DWG/Approval No. 252-2 01 sheets Revision No. 0
Prepared & Approved during October - 2013

Customer ref : APTRANSCO

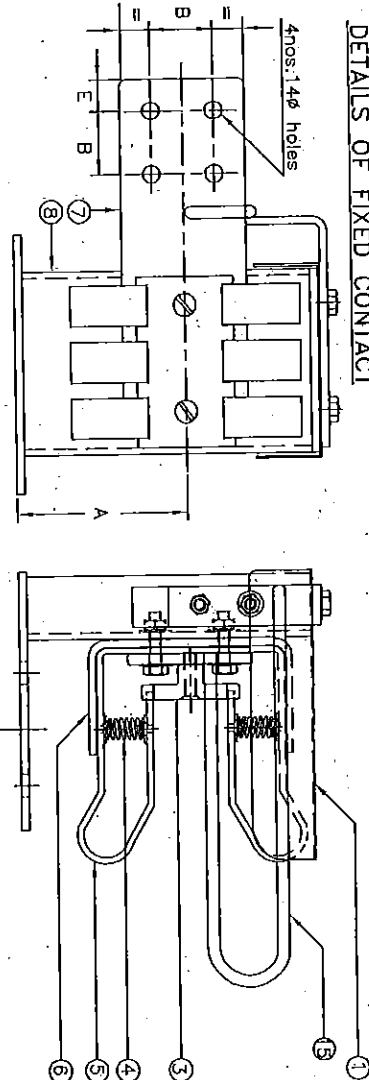
Title: 33kV 800A/1250 Disconnector copper design

Dwg.	C = Construction Details; D= Design Instruction / Tech Details; E= Equipment List; L=Equipment Layout (Front, Rear); N= Name Plate / Rating Plate; R = Record of Drawings;
S	= Single Line Diagram; W = Wiring Drawing / Power & Control Circuit; Z = Any Drawing not covered by other code.
Codes	
DATE	Z7.2.12
PREP.	S.M.Singh
CKD.	K.V.R
APPR.	Deepthi
Original/Replacement for/Replaced by:-	

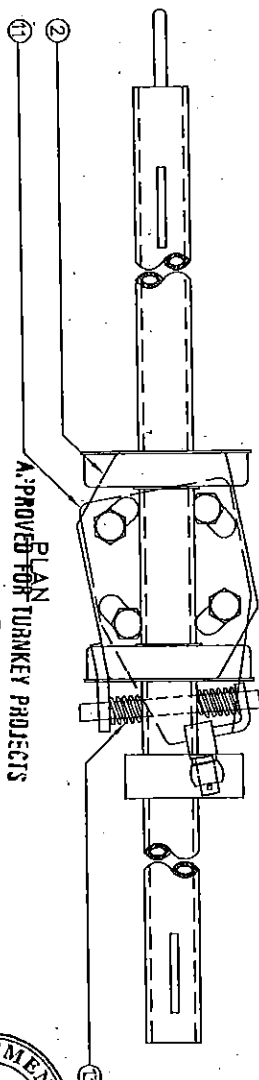
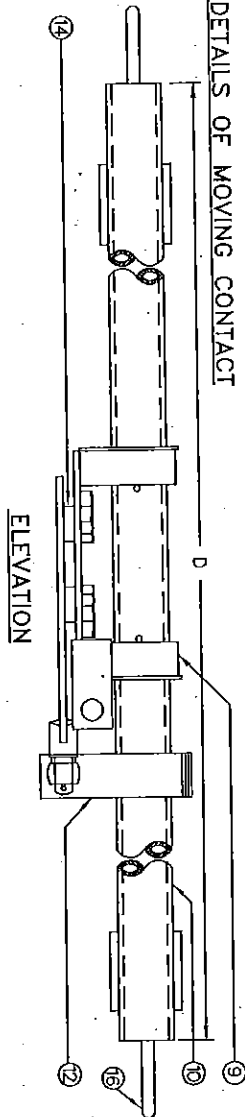
	Standardised Drawing for 33 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 252-5 01 sheet Revision No. 0
	Prepared & Approved during October - 2013
	Customer ref : APTRANSCO
Title: Main Contact assembly for 33kV, 1250A disconnectors	

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DETAILS OF FIXED CONTACT



DETAILS OF MOVING CONTACT



PLAN FOR TURNKEY PROJECTS

COPPER DESIGN

CHIEF ENGINEER / CONSTRUCTION

SIEMENS

TYPE: (FOR 33KV, 1250Amp DISCONNECTORS)

DETAILS:

ITEM NO: (3) 0711FSC-ARTICLE-00004-A-1-1

Sh 1

PART LIST

- 01 Shroud on fixed contact (G.I. sheet)
- 02 Rotating blade mechanism top plate
- 03 Spacer (Aluminum) Casting
- 04 Spring (15G S.S. wire)
- 05 Fixed contact jaw (3 Nos 32x4mm Cu strips)
- 06 Jaw back strip (M.S. strips)
- 07 Lumper pad (100x12mm Al. flat)
- 08 Supporting channel (M.S. channel)
- 09 Moving contact bearing block
- 10 Moving contact arm (50 mm dia ID tube)
- 11 Rotating blade mechanism bottom plate
- 12 Moving contact clamp
- 13 Rotating blade mechanism spring
- 14 Brass bush
- 15 Fixed contact arcing horn (100mm G.I. rod)
- 16 Moving contact arcing horn (12mm G.I. rod)

NOTES

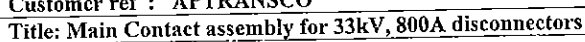
- 01 All dimensions are in 'mm'
- 02 All ferrous parts are hot-dip galvanised as per IS:4759
- 03 All non-ferrous contact points are silver plated to 15 microns
- 04 The indicated dimensions are subject to the manufacturing tolerance
 1) Up to 50mm --- ±0.3mm
 2) 51 to 100mm --- ±0.5mm
 3) 101 to 300mm --- ±1.0mm
 4) Above 300mm --- ±1.5mm

DIMENSIONS

A	B	C	D	E	F
135	40	-	1025	18	-

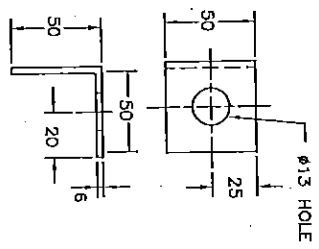
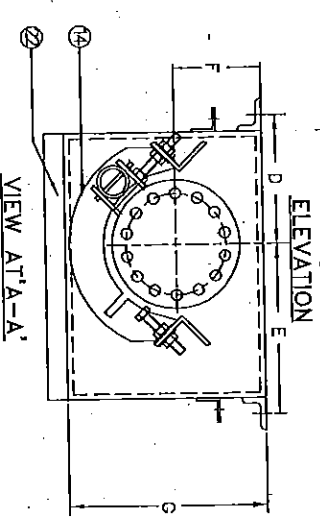
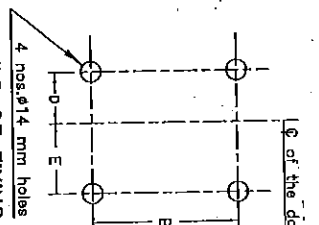
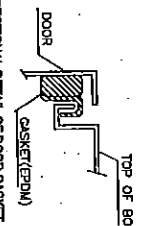
DESCRIPTION	SIZE	QTY	AREA OF CROSS SECTION	DENSITY
FIXED JAW	32x4 Cu. Flat	6	768	1.95
MOVING JAW	100x12 Al. Flat	1	1200	0.4
MOVING CONTACT BLADE	50 mm dia ID	1	245.61	1.32





	Standardised Drawing for 33 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 252-7 01 sheet Revision No. 0
	Prepared & Approved during October - 2013
	Customer ref : APTRANSCO
Title: Manual operating mechanism box for main switch	

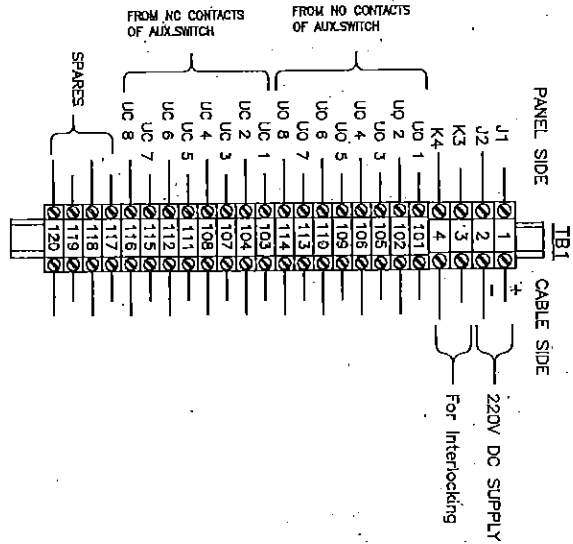
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NOTES 1 All dimensions are in 'mm' 2 Internal wiring will be done with 2.5 sq. mm Cu standard conductor & 20% spare terminals will be provided 3 Cubicle shall be made of MS Sheet Finish: Powder Coating shall be done to the colour shade No. 651 of IS:5 4 Net weight of the box - 32 Kgs (approx) 5 Degree of protection : IP55		DETAIL AT 'A' 																			
VIEW AT 'A-A' 		DETAILS OF FIXING HOLES 																			
SECTIONAL DETAIL OF DOOR GASKET 		PART LIST 01 Down pipe 02 12-Holes flange 03 14-Holes flange 04 ON & OFF stopper 05 Water proof cover 06 Locking block 07 Cubicle (12 SWG M.S Sheet) 08 Rubber gasket for dust/weather proof (EPDM rubber) 09 Aux switch (4NO/4NC) 10 Detachable type cable glands fixing plate (without glands) 11 Push button 12 Earthing terminal (M12 size) 13 Terminal block (STUD type) 14 Elmer/Connectwell mole 15 Operating handle, locking plate 16 Operating handle (32mm G.I pipe) 17 Provision for padlock (without lock) 18 Plunger 19 Plunger guide block 20 Solenoid Coil (E.M.I) 21 Fuses, 6A (HRC Type) 22 Rain hood 23 Provision for padlock (without lock)																			
INSTRUCTIONS: 1 Donot operate the Disconnector when Breaker is in 'ON' position 2 To energise solenoid press push button 3 Donot padlock Disconnector if interlocking plunger does not fall into the slot provided 4 The Gear shall be made out of Aluminium bronze or any other better material lubricated for life with graphite or better quality non drying and non-hardening type grease.		DIMENSIONS <table border="1"> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> </tr> <tr> <td></td> <td>450</td> <td>350</td> <td>325</td> <td>140</td> <td>235</td> <td>105</td> <td>250</td> <td>175</td> </tr> </table>			A	B	C	D	E	F	G	H		450	350	325	140	235	105	250	175
	A	B	C	D	E	F	G	H													
	450	350	325	140	235	105	250	175													
APPROVED FOR TURNKEY PROJECTS  CHIEF ENGINEER / CONSTRUCTION-1 TRANSCO/DV/DV/11300/11/17/21		Sales Order: Item No : DRG. NO : (3) G71FHG-APTCIL-2007-11-17/21																			
REMARKS 01 02 03 04 05 06 07 08		DATE 01 02 03 04 05 06 07 08																			

	Standardised Drawing for 33 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 252-8 01 sheet Revision No. 0
	Prepared & Approved during October - 2013
Customer ref : APTRANSCO	
Title: Terminal Block details for main switch	

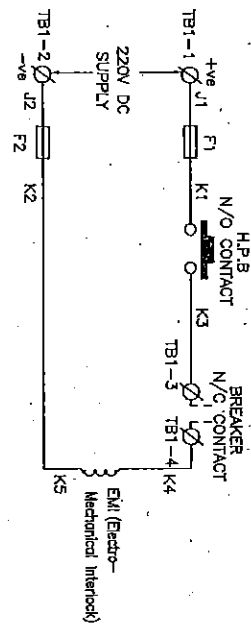
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REF:		DRG. A00	
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NAME		84	
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NAME		86	
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NAME		88	
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NAME		96	
DATE		97	
NAME		98	
DATE		99	
NAME		100	



AUX-SWITCH AND/ANC
CONTACTS

SCHEMATIC DIAGRAM(D.C)



LEGEND	DESCRIPTION	MAKE
F1, F2	Fuses for control supply	VAISHNO/COOPER BUSSMAN/GE
H.P.B	Push Button for interlock release	Valhio/Siemens/Schneider/Essen Delid Tarko
EMI	Solenoid coil (220V DC) (Electro mechanical interlock)	Siemens/EMD/Resisto
TB1	Terminal block STUD TYPE	Elmex/ connectwell



APPROVED FOR TENDER PURPOSES

2013

Sales Order: TRANSOVIDU 4 SOU 11

DRG. NO. (3) 671FHC-APTRC-2007-2072

Sh 2

CAD FILE: 3 671FHC APTRC 2007-2072



Standardised Drawing for 33 kV Isolator
(M/s Siemens Limited)

STD/GTP-DWG/Approval No. 252-9 01 sheet Revision No. 0

Prepared & Approved during October - 2013

Customer ref : APTRANSCO

Title: Name plate details

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REF:

- NOTES**
- 01 Engraved letter size - 2 mm
 - 02 Letter etched white on black background
 - 03 Material : Aluminium - Thickness 24 G/.56 mm

(*) 800A/1250A AS APPLICABLE

NAME PLATE DETAILS FOR MAIN SWITCH

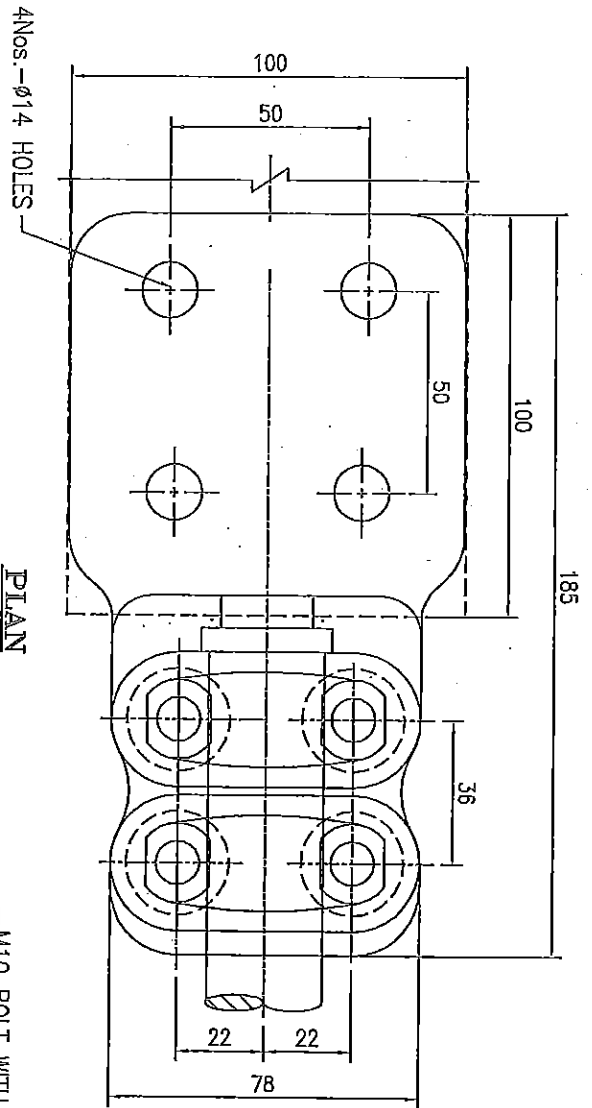
SIEMENS LIMITED PTD Division, Hyderabad Works P.O. Balanagar/Hyderabad - 57, INDIA	
CUSTOMER	APTRANSCO
P.O. No.	
YEAR OF MFG	2012
TYPE	DBR
VOLTAGE (kV) U _r	36
BIL (kV) U _p	170
SWITCHING IMP(kV) U _s	70
I _p (kA) U _s	25KA/3SEC
STD KA/SEC I _k /I _k	250
WT.OF ISOL(kg)	40
UNIT NO.	
SALES ORDER No.	
SUBSTATION	
S.L. NO.	
FREQUENCY (Hz) f _r	50Hz
CURRENT(A) I _r	(*)
TYPE OF DRIVE	MANUAL
MOTOR VOLTAGE(V)	
CONTROL VOLTAGE(V)	220V
WT.OF DRIVE(kg)	



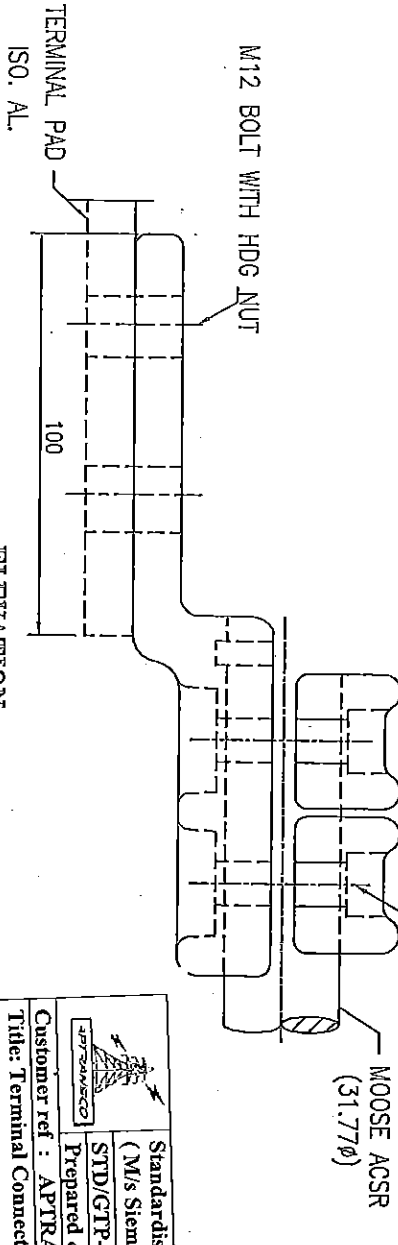
APPROVED FOR TURNKEY PROJECTS
CHIEF ENGINEER / CONSTRUCTION
SIEMENS LIMITED

DATE	22.12	CLIENT	APTRANSCO	SIEMENS	HYDERABAD
PREP	S.A. Singh	CONTRACTOR			
CHK	KVS				
DATE		NAME			
APPR		band			
Original/Replacement for/Replaced by:-					
Descr	NAME PLATE DETAILS				
Type					
Detail					
Sales Order	Item No :				
DRAWN	(3) G71 FZC - APT CL - N1010 - A -				
Sh	1				
Sh					

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PLAN



ELEVATION

- NOTES**
1. All The Dimensions are in MM
 2. All Sharp Corners are to be Rounded off
 3. The indicated dimensions are subject to the manufacturing tolerance:
i) Up to 50mm --- $\pm 0.3\%$ ii) 51 to 100mm --- $\pm 0.2\%$
iii) 101 to 300mm --- $\pm 0.15\%$ iv) Above 300mm --- $\pm 0.5\%$
 4. Short Time Current Rating : 25kA/3sec
 5. Material of Connector - Aluminium Alloy
 6. Applicable Standards: IS 5561
 7. Rating : 1250 Amps
 8. Weight : 1Kgs (Approx)

MOOSE ACSR
(31.77Ø)

CHIEF ENGINEER / CONSTRUCTOR
A. TRANSCO/WIDYUTIR SOUTHERN

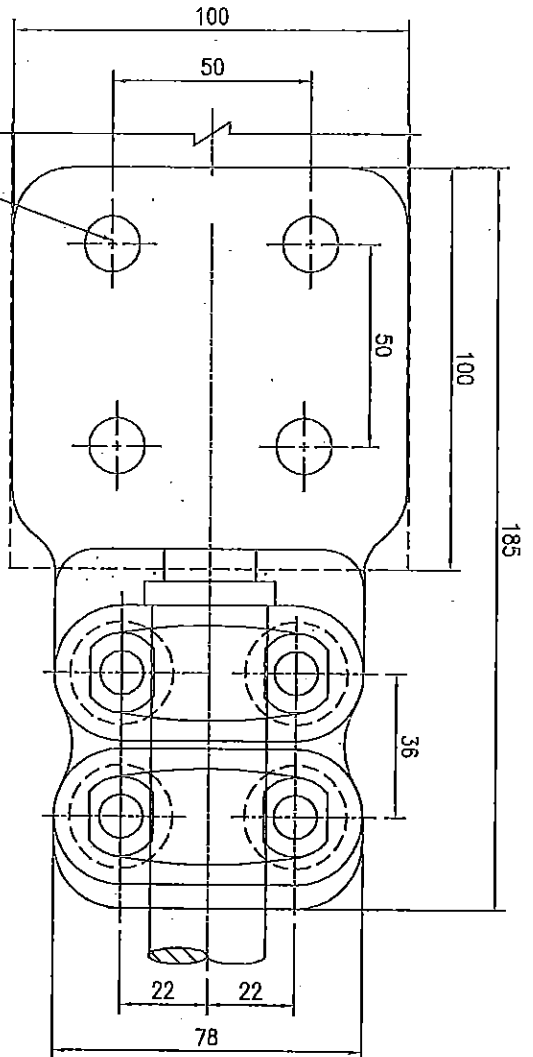
Standardised Drawing for 33 kV Isolator
(M/s Siemens Limited)

STD/GTP-DWG/Approval No. 252-10 01 sheet Revision No. 0
Prepared & Approved during October - 2013

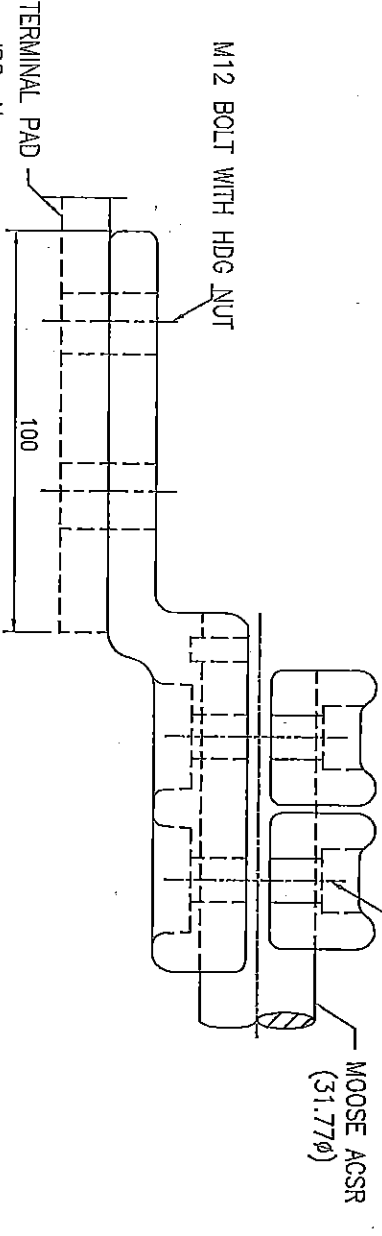
Customer ref : APTTRANSO
Title: Terminal Connectors to suit moose ACSR Conductor for 33kV 1250A DBR

DATE: 22.12.12	CLIENT: APTTRANSO	SIEMENS HYDERABAD	Design: TERMINAL CONNECTOR ON PAD (ISO. AL.)	Serial Order:
PREP. (Drawing)	CONTRACTOR:		Type: MOOSE ACSR COND. (31.77Ø).	Item No:
CHKD. (R)			Detail: FOR 33KV 1250A DBR	DRG. NO. (3)G71FZC-APTCL-Z0111-01
ISSUE	REMARKS	DATE	NAME	APPR. (R)
01				
02				
03				
04				
05				
06				
07				
08				

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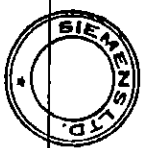
PLAN



ELEVATION

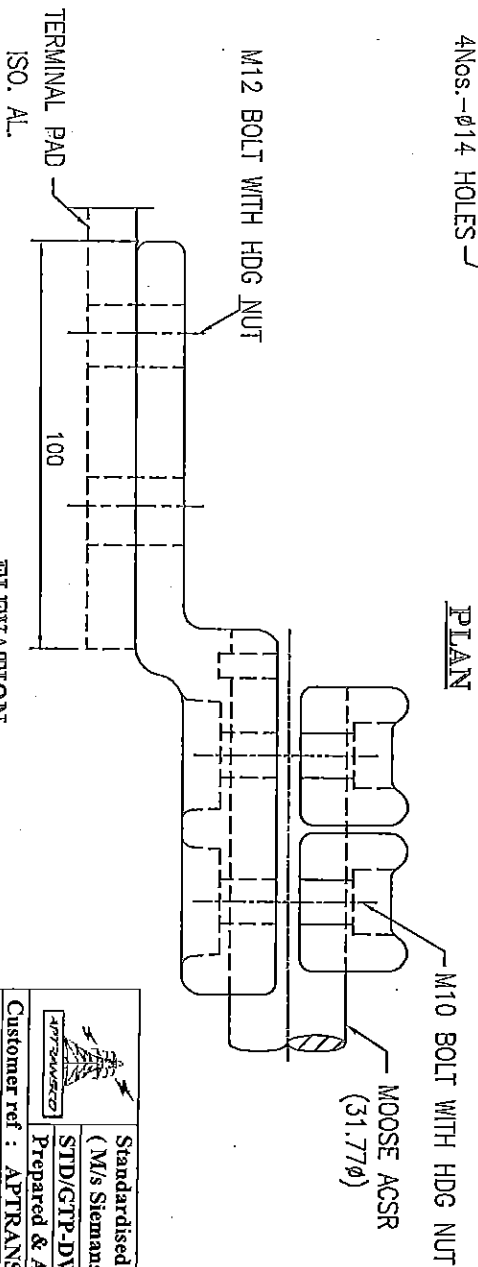
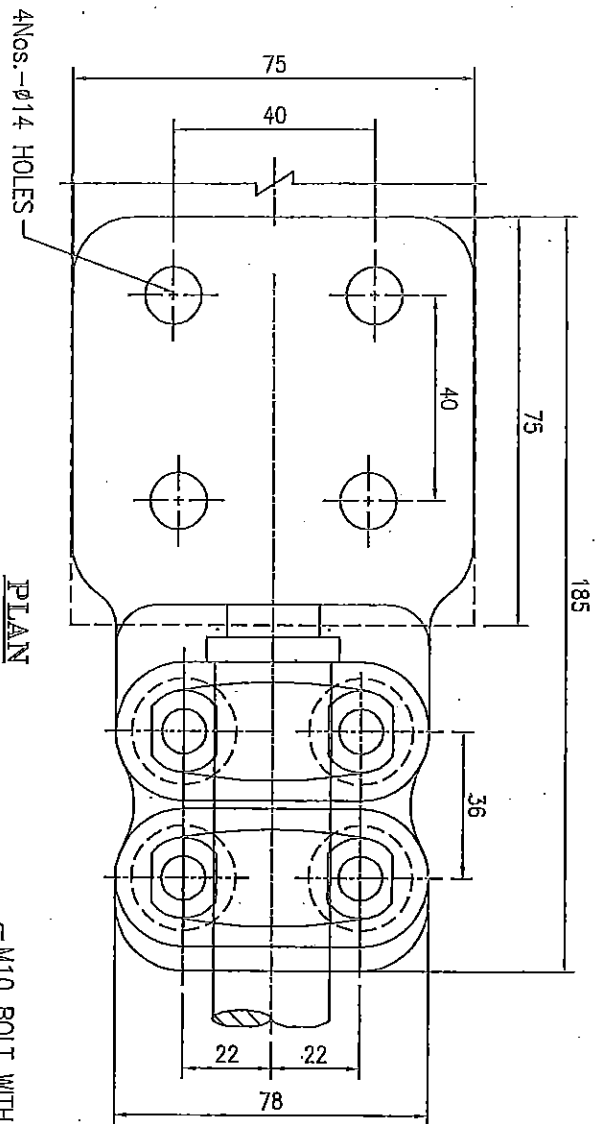
- NOTES**
1. All The Dimensions are in MM
 2. All Sharp Corners are to be Rounded off
 3. The indicated dimensions are subject to the manufacturing tolerances:
i) Up to 50mm --- ±3% ii) 51 to 100mm --- ±2%
iii) 101 to 300mm --- ±1% iv) Above 300mm --- ±0.5%
 4. Short Time Current Rating : 25kA/3sec
 5. Material of Connector- Aluminium Alloy
 6. Applicable Standards: IS 5561
 7. Rating : 1250 Amps
 8. Weight : 1Kgs (Approx)

APPROVED FOR TURNKEY PROJECTS
CHIEF ENGINEER / CONSTRUCTION
TRANSCORPORATION SOUTHERN CO



DATE: 22.12.12	CLIENT: AFRANSCO	SIEMENS HYDERABAD	Describe: TERMINAL CONNECTOR ON PAD (ISO. AL.)	Serial Order: Item No:
PREP. by: [Signature]	CONTRACTOR:		Type: MOOSE ACSR CONDR. (31.77Ø).	
CHECKED: [Signature]			Type: MOOSE ACSR CONDR. (31.77Ø).	
ISSUE: 01	DATE: [Blank]	MADE: [Blank]	Detail: FOR 33KV 1250A DER	
REMARKS:	Original/Replacement for/Replaced by:-			

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- ## NOTES
1. All The Dimensions are in MM
 2. All Sharp Corners are to be Rounded off
 3. The indicated dimensions are subject to the manufacturing tolerance:
i) $4\pm 0.50\text{mm}$ --- $\pm 3\%$
ii) $10\pm 0.50\text{mm}$ --- $\pm 1\%$
iii) Above 300mm --- $\pm 0.5\%$
 4. Short Time Current Rating : $25\text{A}/\frac{1}{2}\text{sec}$
 5. Material of Connector—Aluminium Alloy
 6. Applicable Standards: IS 5561
 7. Rating : 800 Amps
 8. Weight : 1Kgs (Approx)

EXPERIENCED FOR TURNKEY PROJECTS

K. RANSOVIDYU, 11 SOU

NO. 100-100000

	Standardised Drawing for 33 kV Isolator (M/s Siemens Limited)
	STD/GTP-DWG/Approval No. 252-11 01 sheet Revision No. 0 Prepared & Approved during October – 2013
Customer ref : APTRANSCO	
Title: Terminal Connectors to suit moose ACSR Conductor for 33kV 800A DBR	

Standardised Drawing (M/s Siemens Limited)

STD/GTP-DWG/Approval No. 252-11 01 sheet Revision No. 0
Prepared & Approved during October - 2012

6 October - 2013

Title: Terminal Connectors to suit moose ACSR Conductor for 33kV 800A DBR

DBR A FREE, A CATALOG CONNECTIONS TO SELL HOUSE ACSR Conductor for 33KV 800A

DBR

REF:

TERMINAL PA
ISO. AL.

ISO. AL.

ELEVATION

CLIENT: APTRANSO

CONTRACTOR:

CONTRACTOR:

SIEMENS
HYPERBAG

HYDREBAND
COLLIMIN

DESCRIPT: TERMINAL CONNECTOR ON PAD (ISO. AL.)
TO SUIT MOOSE ACSR COND. (31.77 ϕ).
TYPE: MOOSE ACSR COND. (31.77 ϕ).

Type: MOOSE ACSR COND. (31.77p).

Type: TO SUIT MOOSE ACSR.
MOOSE ACSR COND.R.

Sales Order:
Item No:
DEB NO

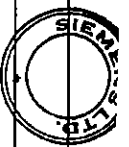
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1988

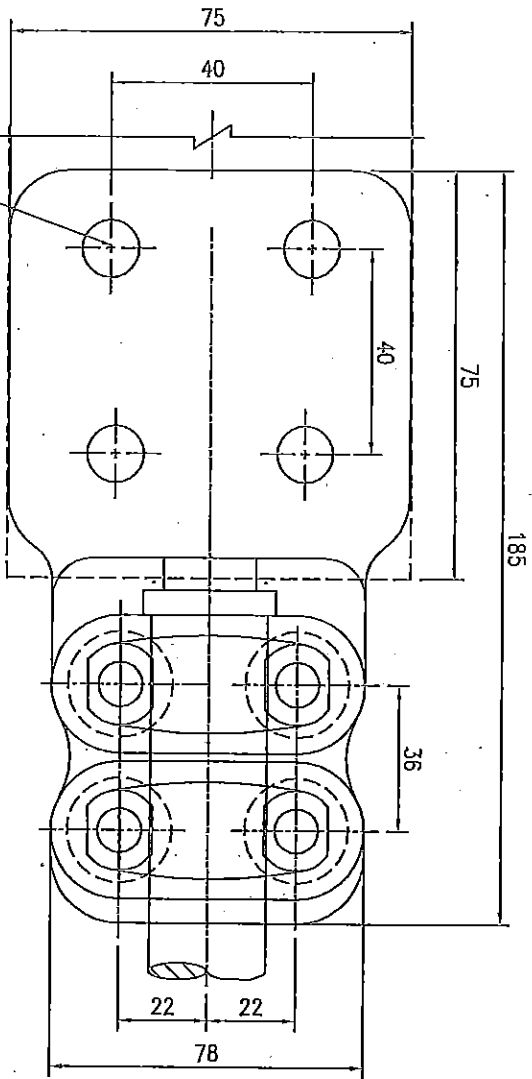
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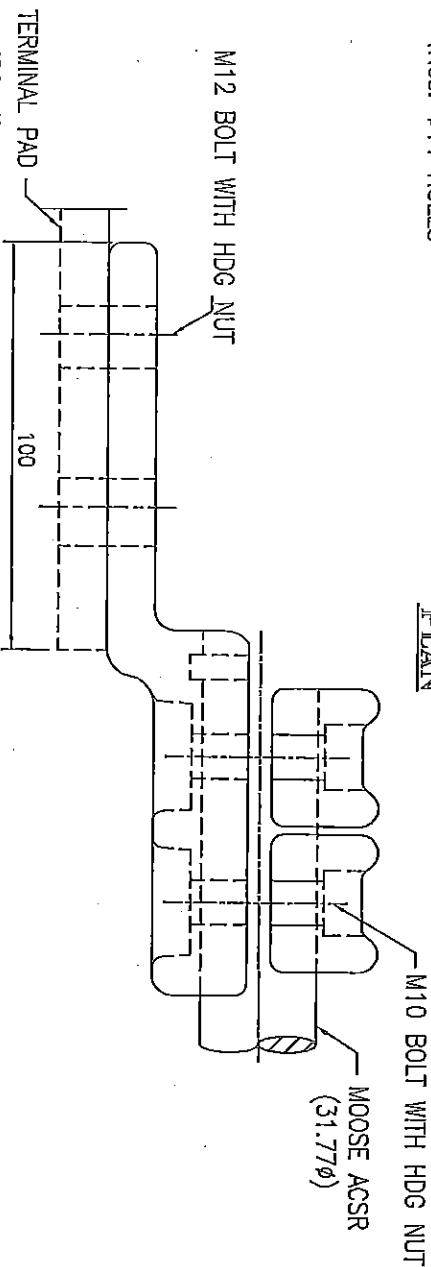
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PLAN



ELEVATION

- NOTES**
1. All The Dimensions are in MM
 2. All Sharp Corners are to be Rounded off
 3. The indicated dimensions are subject to the manufacturing tolerances:
 $0 \text{ to } 50 \text{ mm} \text{ --- } \pm 0.25 \text{ mm}$
 $51 \text{ to } 100 \text{ mm} \text{ --- } \pm 0.25 \text{ mm}$
 $101 \text{ to } 300 \text{ mm} \text{ --- } \pm 0.5 \text{ mm}$
 $\text{Above } 300 \text{ mm} \text{ --- } \pm 0.5 \text{ mm}$
 4. Short Time Current Rating : 25kA/3sec
 5. Material of Connector - Aluminium Alloy
 6. Applicable Standards: IS 5561
 7. Rating : 800 Amps
 8. Weight : 1Kgs (Approx)

A PROVED FOR TURNKEY PROJECTS
 CHIEF ENGINEER / CONSULTANT
 TRANSCO VIDYUTAN SANGHAN

REF:

DATE: 22.12.12	CLIENT: APPRANSCO	DESIGN: TERMINAL CONNECTOR ON PAD (ISO. AL.)	Sales Order No:
PREP. (and) PLOT:	CONTRACTOR:	TYPE: TO SLIT MOOSE ACSR CONDR. (31.77Ø).	Item No:
C.D. NO:		DETAIL: FOR 33KV 330A DER	DRG. NO.
APPR. BY:	Original/Replacement for/Replaced by:-		(3) 0711FZG-ARTICLE-20112-01-01
REMARKS:			Sh 1
01			SN
02			
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