GUARANTEED TECHNICAL PARTICULARS FOR 33 KV DISCONNECTORS (ISOLATORS)

S.NO.	TECHNICAL PARTICULARS	33 KV ISOLATORS
01.	Type/Installation	Double Break outdoor, Banging Horizontal upright .
02.	Manufacturer's Name and Country of Manufacture	M/s. Switches & Switchgears Hyderabad, India.
03.	Standards according to which the isolator are manufactured.	IS 9921 & IEC-129
04.	Maximum design voltage at which the Isolator can operate(KV)	36 KV
05.	Frequency (Hz)	50 Hz
06.	Rated voltage(KV)	33 KV
07.	Maximum current that can be safely interrupted by the Isolator Inductive (A & %PF) Capacitive (A & %PF)	 0.7 Amps at 0.15 PF 0.7 Amps at 0.15 PF
08.	Continuous current rating Nominal (Amps) Under site conditions (Amps)	 800 Amps/1200 Amps 800 Amps/1200 Amps
09.	Rated short time current i. For 3 Seconds (KA Rms.) ii. For 1 Second (KA Rms.) iii. Rated peak short time current (KAP)	 ----- 25 KA (RMS) 62.5 KA (Peak)
10.	Current density at the minimum cross – section of a) Moving blade (Amps/Sq. mm) b) Terminal pad c) Contacts d) Terminal Connector	MAIN Cu. pipe 2.5 Amps/ Sq.mm Al. flat 1.0 Amp / Sq. mm Cu. flat 1.6 Amps/ Sq. mm Al. 1.0 Amp/ Sq. mm
11.	Maximum Temp. rise of current carrying parts when carrying rated current continuously (Deg.C)	With in the specified limits of IS
12.	Derating factor for specified site conditions	Unity
13.	Insulation Levels i. Impulse withstand voltage (KV peak) a. Phase to Earth b. Across Isolating distance ii. Switching surge withstand voltage (KVP) a. Phase to Earth b. Across Isolating Distance iii. Power Frequency withstand voltage (KV rms.) a. Phase to Earth b. Across Isolating distance	 170 KV Peak 195 KV Peak Not Applicable. 75 KV (Rms.) 85 KV (Rms.)

Contd.. 2..

For M/s. Switches & Switchgear's

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14.	Minimum clearance in air : i. Between poles (mm) ii. Between live parts & earth (mm) iii. Between live parts when switch is open : a. On the same pole (mm) b. Between adjacent poles (mm)	 1050 mm (Phase to Phase Center of 1300 mm) 508 mm. (Equivalent to Insulator height) 840 (Center to Center of outer stacks – 915 mm.) 1050 mm.
15.	Rated mechanical terminal load i. Load long the terminal connector side (Kg.) ii. Load across the terminal connector side (Kg.)	 Not to be assigned for 33KV Isolator Not to be assigned for 33KV Isolator
16.	Torque required to operate the switch in Kg.M.	25 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 (mm.)	 Not to be assigned for Double Break Isolators & applicable in case of pentograph Isolators only.
18.	Design and Construction i. No. of Insulators per pole ii. No. of breaks per pole iii. Type of closing/ opening Mechanism (Horizontal/vertical break straight etc.)	MAIN 3 Stacks/per Phase Two Horizontal Banging type
	iv. Contacts a. Material & Grade b. Cross – Sectional area (mm).	800A: HDE Copper flat; 512 Sq.mm. 1200A: HDE Copper flat; 768 Sq.mm.
	v. Moving blades a. Material & Grade b. Cross – sectional area (mm).	800A: HDE Copper Tube; 329 Sq.mm. 1200A: HDE Copper Tube; 511 Sq.mm.

Contd..3..

For M/s. Switches & Switchgear's

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	vi. Contact Support : a. Material & size of channel / block b. Material & size of plate. (Bottom)	 MS HDG. 6mm. MS HDG
	vii. Rain hood – Material grade & size	GI sheet
	viii. Turn & twist mechanism a. Material & size Of clamps b. Material size of springs c. Whether springs are encased	Not Applicable being banging type ---- DO--- ---- DO---
	ix. Nuts & Bolts a. Size, material & grade in live parts b. Size, material & grade in other parts	 5/8'' and above all hot dip galvanized. and less than 3/8 '' are stain less steel. 3/8'' and higher hot dip galvanized.
	x. Insulator base plate material & size of plate below Insulators	100 x 50 mm MS Channel HDG & 6 mm. MS plate HDG for centre Insulator
	xi. Bearings a. Material & size of housing b. No. of bearings, location & size	 MSHDG 2 Nos. (1 No. Thrust bearing + 1 No. Bush bearing) under rotating stack Insulator shaft of 25mm Dia.
	xii. Tandem Pipe a. Size class & No. of pipes b. Size of shackle, screw c. No. of Bearings/Bush & its material and size	 25mm I.D. Class B -1 No. 3.5 Mts. long each. (with intermediate joint)
	xiii. Type of interlock	Not Applicable.
	xiv. Down pipe size, class & length	38 mm N.B. GI CLASS – B 5575mm long for 800A 2855mm long for 1200A
	xv. Type of universal/ swivel joint a). Between bearing & down pipe. b). Between down pipe operating mechanism.	 -------- Vernier type flanges.
	xvi. Operating mechanism a). Control cabinet material and Thickness Degree of protection Type size and No. of cable glands Whether removal gland plate provided.	 Manual operated banging type (handle and lever)
	xvii. Base : a. Size of steel sections used b. Overall size c. Total weight	 100 x 50 MS Channel 1030 x 100 x 50 mm 8.4 Kgs. (Approx)

Standardised Drawing for 33 kV Isolator (M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 245-01 03 sheet Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: GTP for 33 kV Isolator.

For M/s. Switches & Switchgear's

Authorised Signatory

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

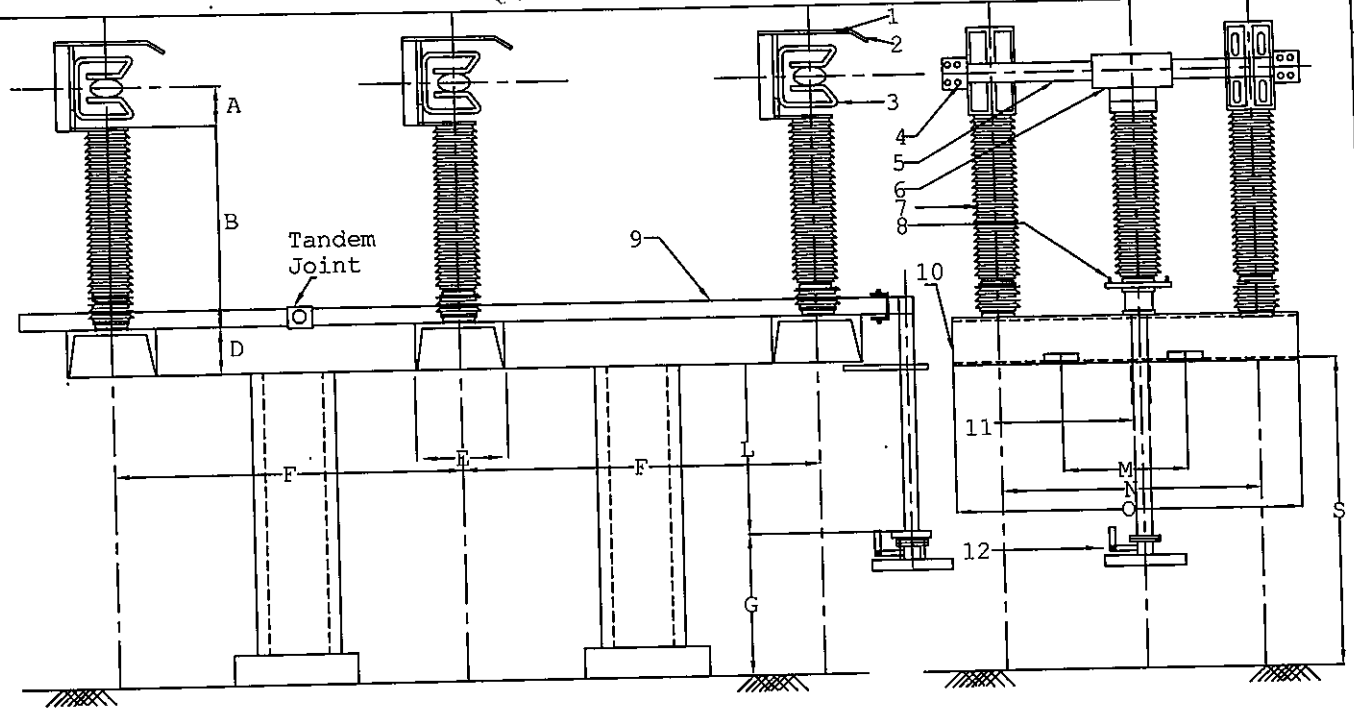
Standardised Drawing for 33 kV Isolator
(M/s Switches& Switchgear's)

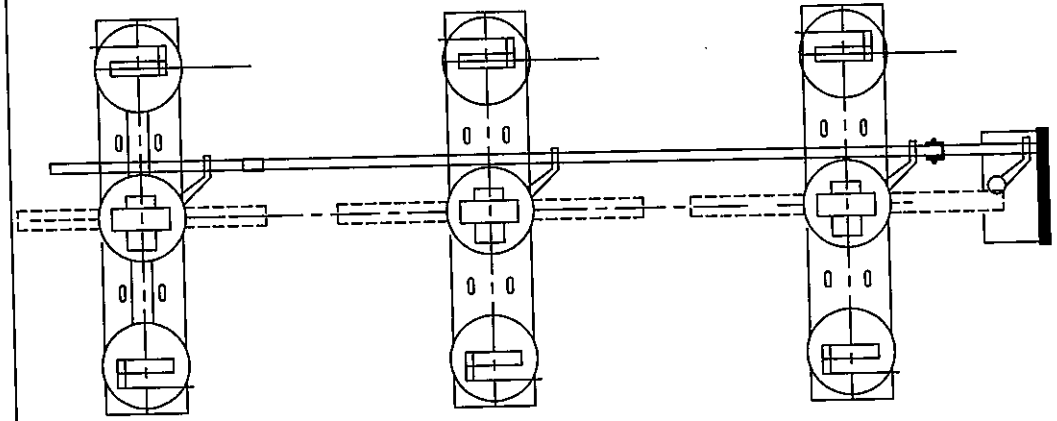
STD/GTP-DWG/Approval No. 245-02 01 sheet Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: GA of 33KV 800A DB Isolator-Handle and Lever Operated.





REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat 32x4mm 2Nos.
4. Jumper pad 75x12mm Al.Flat with BI-metallic strip
5. Moving contact HDEC pipe 38mm O.D.x32mm I.D.
6. M.C. Support plate
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Main switch tandum pipe 25 dia class B, 3.5 mts long with tandum joint.
10. Switch base channel 100 x 50 mm MSHDG
11. Main switch down pipe 38 Dia classB
12. Handle and lever mechanism

NOTES

1. All dimensions are in mm.
2. All ferrous parts hot dip galvanised.
3. All contacts ends silver plated.
4. Base Channel shall be provided with 76 mm P.C.D. holes to accomodate solid core insulators.

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APTRANSCO/VIDYUTH SOUDHA/HYD

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
80	508		50	100	1300	1000					5575	400	915	1030				6575

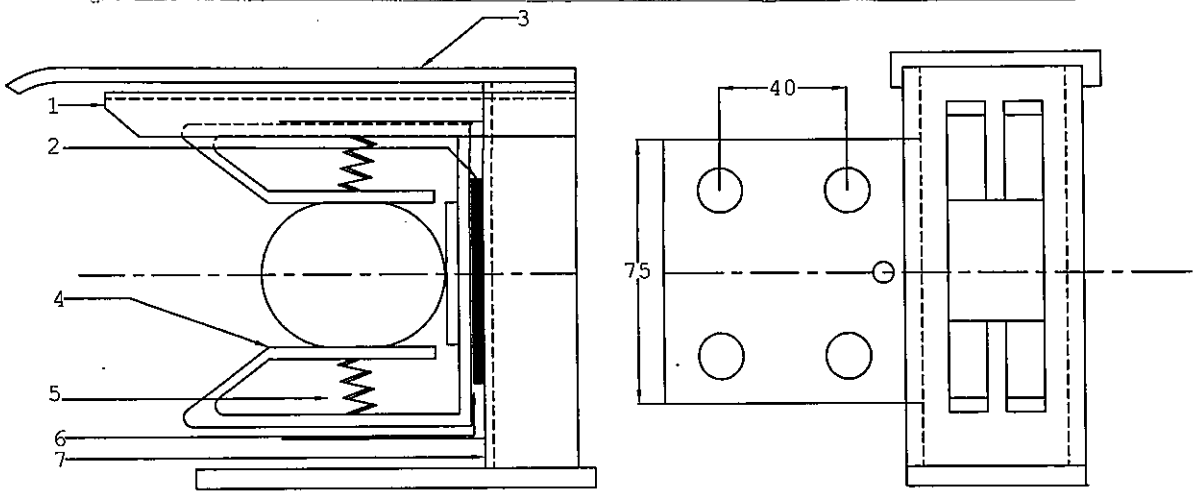
Switches & Switchgears
4/A, B.K.GUDA, S.R.NAGAR
HYDERABAD

General Arrangement of 33 KV 800 Amps DB Isolator - Handle and Lever Operated

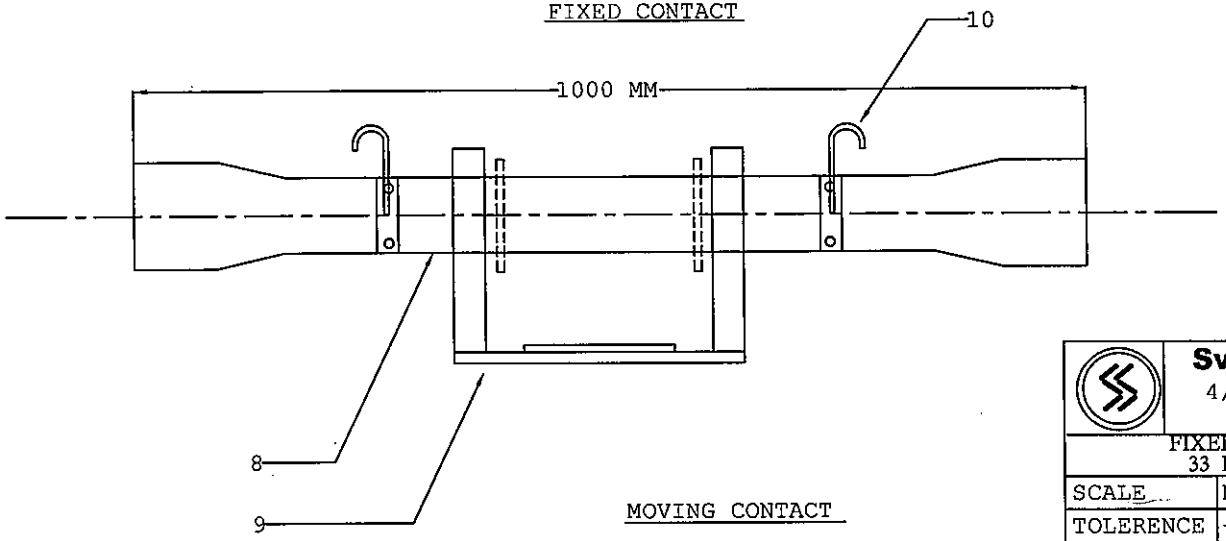
SCALE	N.T.S.	DRAWN BY	S.N.MUR
TOLERENCE	+/- 5 MM.	CHECKED BY	K.V.K.S.
DATE	26-4-10	APPROVED BY	
DRG.NO.	SS-33-GA-169 (UPRIGHT)-Rev-2		

SWITCHES & SWITCHGEARS HYD-38.

APTRANSCO	**Standardised Drawing for 33 kV Isolator (M/s Switches& Switchgear's)**
	STD/GTP-DWG/Approval No. 245-03 01 sheet Revision No. 0
	Prepared & Approved during November – 2011
Customer ref : APTRANSCO	
Title: Fixed and Moving Contact For 33 KV 800A DB Isolator.	



FIXED CONTACT



MOVING CONTACT

R E F E R E N C E

1. G.I.RAIN HOOD
2. JUMPER PAD 75X12 mm AL.FLAT
3. F.C.Arcing horn G I Rod
4. JAWS-32X4mm HDEC FLAT 2 NOS.
5. SPRING-STAINLESS STEEL
6. BI METALIC STRIP CU+AL
7. F.C. CUP SUPPORT MSHDG
8. MOVING CONTACT - 38mmO.D X 32 mm I.D HDEC PIPE
9. M C Support plate
10. M.C.ARCING HORN G.I. ROD

NOTES

1. ALL DIMENSIONS ARE IN MM
2. ALL FERROUS PARTS ARE HOT DIP GALVANISED
3. ALL CONTACTS ENDS SILVER PLATED.
4. MALE CONTACT BOTH ENDS DULY PRESSED

APPROVED FOR TUTICORIN PROJECTS
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUT SOUDHA/HYD.

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

FIXED AND MOVING CONTACT FOR 33 KV 800 AMPS D.B. ISOLATOR

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.K
DATE		APPROVED BY	
DRG.NO.	SS - 33 - 81 / R1		

SWITCHGEARS HYD-38.

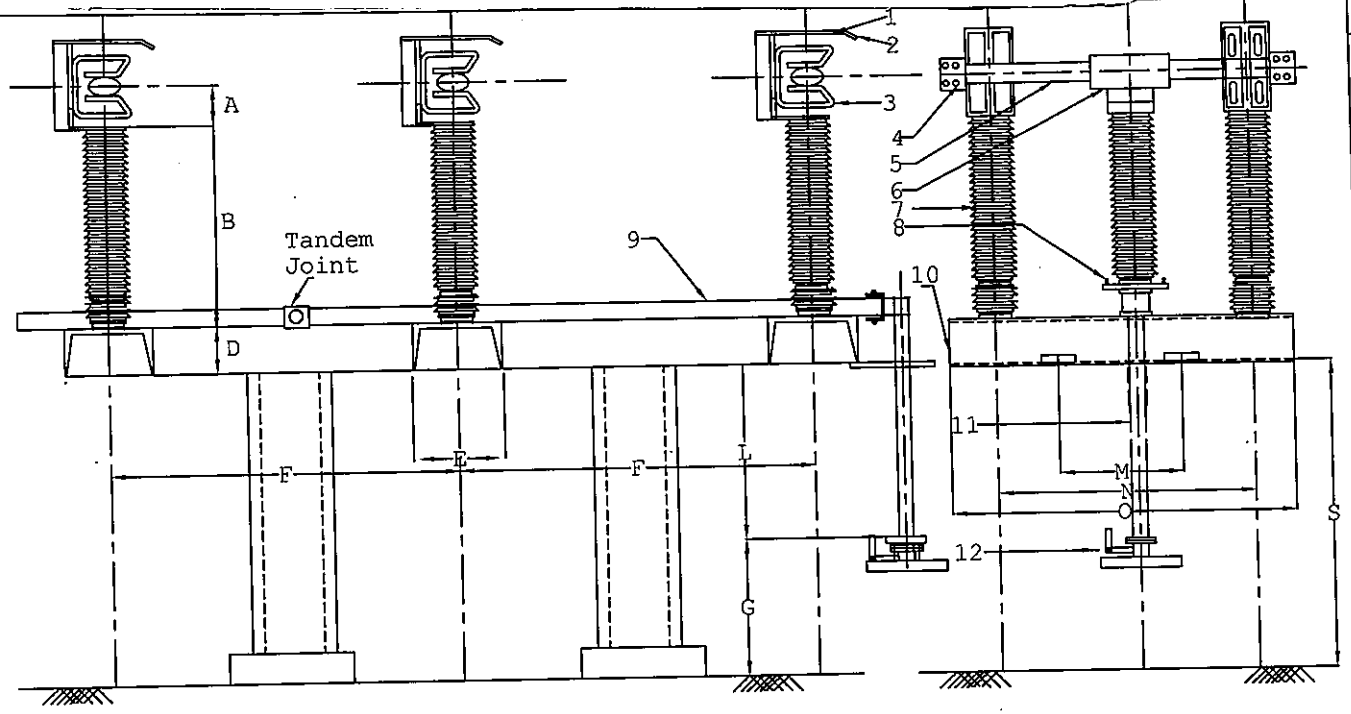
Standardised Drawing for 33 kV Isolator
(M/s Switches& Switchgear's)

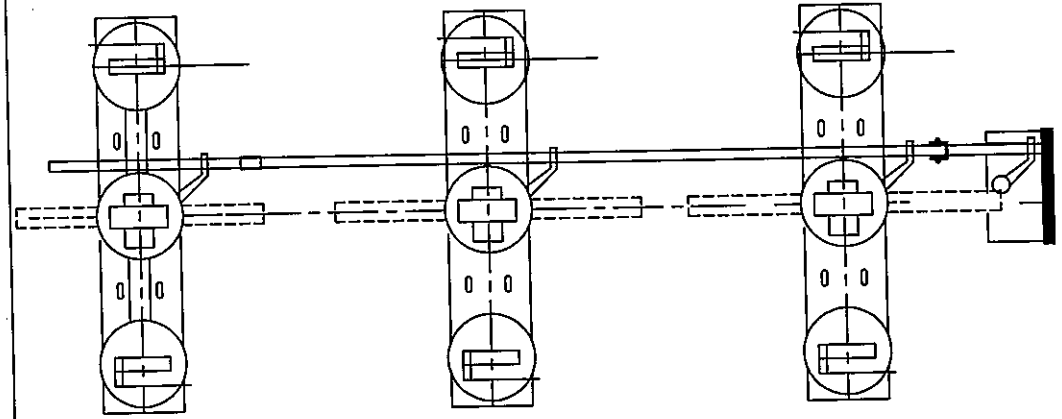
STD/GTP-DWG/Approval No. 245-04 01 sheet Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: GA of 33KV 1200ADB Isolator –Handle and Lever Operated..





A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
80	508		50	100	1300	1000					2855	400	915	1030				3855

REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat 32x4mm 3 Nos.
4. Jumper pad 100 x 12mm Al.Flat with BI-metallic strip
5. Moving contact HDEC pipe 50 mm O.D.x 43 mm I.D.
6. M.C. Support plate
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Main switch tandum pipe 25 dia class B, 3.5 mts long with tandum joint.
10. Switch base channel 100 x 50 mm MSHDG
11. Main switch down pipe 38 Dia classB
12. Handle and lever mechanism

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-I
APTRANSCO/VIDYUTH SOUDHA/HYD.

NOTES

1. All dimensions are in mm.
2. All ferrous parts hot dip galvanised.
3. All contacts ends silver plated.
4. Base Channel shall be provided with 76 mm P.C.D. holes to accomodate solid core insulators.

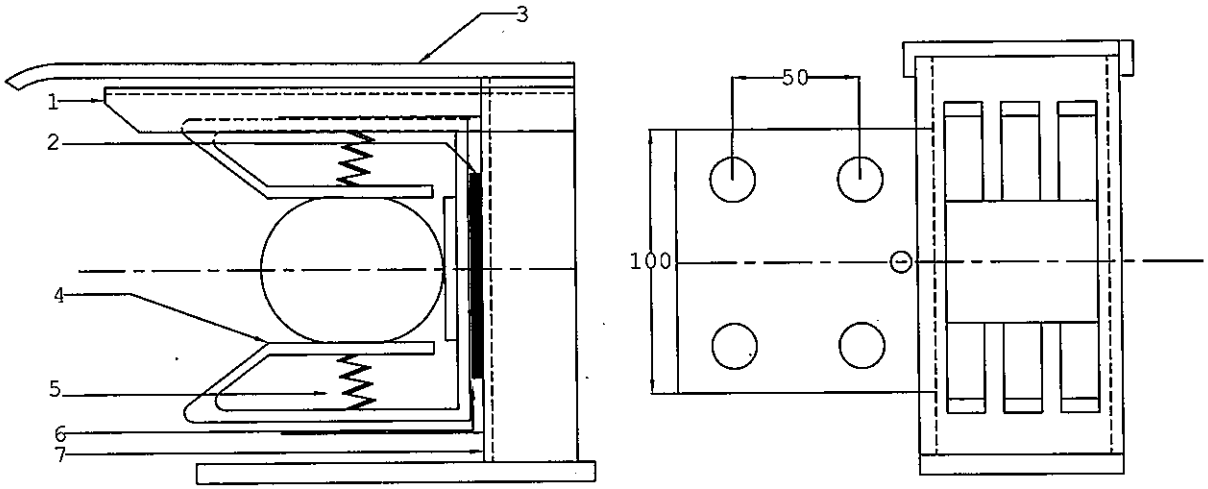
Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

General Arrangement of 33 KV 1200 Amps DB Isolator - Handle and Lever Operated

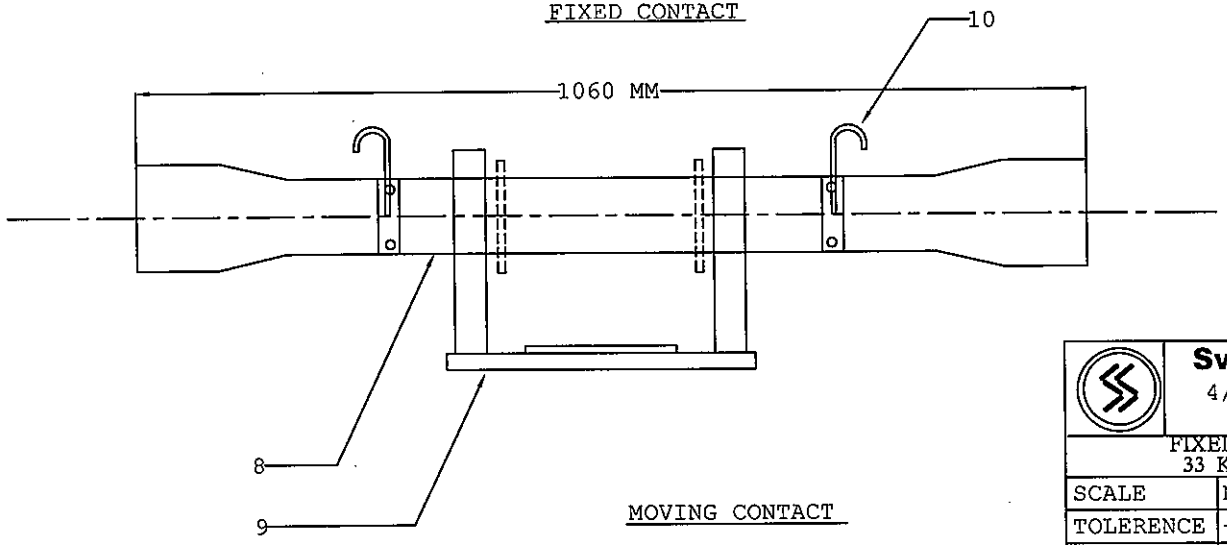
SCALE	N.T.S.	DRAWN BY	S.N.MURTY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.K
DATE	26-4-10	APPROVED BY	
DRG.NO.	SS-33-GA-170 (UPRIGHT)-Rev-2		

SWITCHES & SWITCHGEARS HYD-38.

APTRANSCO	**Standardised Drawing for 33 kV Isolator (M/s Switches& Switchgear's)**
	STD/GTP-DWG/Approval No. 245-05 01 sheet Revision No. 0
	Prepared & Approved during November – 2011
Customer ref : APTRANSCO	
Title: Fixed and Moving Contact For 33KV 1200ADB Isolator.	



FIXED CONTACT



MOVING CONTACT

R E F E R E N C E

1. G.I.RAIN HOOD
2. JUMPER PAD 100X12 mm AL.FLAT
3. F.C.Arcing horn G I Rod
4. JAWS-32X4mm HDEC FLAT 3 NOS.
5. SPRING-STAINLESS STEEL
6. BI METALIC STRIP CU+AL
7. F.C. CUP SUPPORT MSHDG
8. MOVING CONTACT - 50mmO.D X 43mm I.D HDEC PIPE
9. M C Support plat
10. M.C.ARCING HORN G.I. ROD

NOTES

1. ALL DIMENSIONS ARE IN MM
2. ALL FERROUS PARTS ARE HOT DIP GALVANI-SED
3. ALL CONTACTS ENDS SILVER PLATED.
4. MALE CONTACT BOTH ENDS DULY PRESSED

APPROVED FOR TURNKEY PROJECTS
9/11/2011
CHIEF ENGINEER / CONSTRUCTION
APTRANSCO/VIDYUTH SOUDHA/HYD

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

FIXED AND MOVING CONTACT FOR 33 KV 1200 AMPS D.B. ISOLATOR **HYD-38.**

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.K
DATE		APPROVED BY	
DRG.NO.	SS - 33 - 82 / R1		

GUARANTEED TECHNICAL PARTICULARS FOR 132 KV DISCONNECTORS WITH AND WITHOUT EARTH SWITCH (ISOLATORS)

S.NO.	TECHNICAL PARTICULARS	132 KV ISOLATORS
01.	Type/Installation	Double Break Turn & Twist, outdoor, Horizontal upright.
02.	Manufacture's Name and Country of Manufacture	M/s.Switches & Switchgears, Hyderabad, India.
03.	Standards according to which the isolator are manufactured.	IS 9921 & IEC-129
04.	Maximum design voltage at which the Isolator can operate(KV)	145 KV
05.	Frequency (Hz)	50 Hz
06.	Rated voltage(kV)	132 KV
07.	Maximum current that can be safely interrupted by the Isolator Inductive (A & %PF) Capacitive (A & %PF)	 0.7 Amps at 0.15 PF 0.7 Amps at 0.15 PF
08.	Continuous current rating Nominal (Amps) Under site conditions (Amps)	MAIN EARTH 800Amps. ---- 800 Amps. ----
09.	Rated short time current i. For 3 Seconds (kA rms.) ii. For 1 Second (kA rms.) iii. Rated peak short time current	---- -- 31.5 KA (RMS) -- -- 80 KA (Peak) --
10.	Current density at the minimum cross – section of a. Moving blade (Amps/Sqmm) b. Terminal pad c. Contacts d. Terminal Connector	MAIN EARTH CU.2.5 AMP/SQ.MM Cu. Pipes AL.1.0 AMP/SQ.MM Al. Flat CU.1.6 AMP/SQ.MM Cu. Flat AL.1.0 AMP/SQ.MM Aluminium
11.	Maximum Temp. rise of current carrying parts when carrying rated current continuously (deg.c)	With in the specified limits of IS
12.	Derating factor for specified site conditions	Unity
13.	Insulation Levels i. Impulse withstand voltage (kV peak) a. Phase to Earth b. Isolating distance ii. Switching surge withstand voltage(kVp) a. Phase to Earth b. Isolating Distance iii. Power Frequency withstand voltage (kV Rms.) a. Phase to Earth b. Isolating distance	 650 KV 750 KV Not Applicable 275 KV (Rms.) 315 KV (Rms.)

Contd.. 2..

For M/s. Switches & Switchgear's

Authorised Signatory

14.	Minimum clearance in air : i. Between poles (mm) ii. Between live parts & earth (mm) iii. Between live parts when switch is open : a. On the same pole (mm) b. Between adjacent poles (mm)	 2500 mm (Phase to Phase Centre 3000mm.) 1500 mm. (Equal to Insulator Height) 1930 mm (Center to Center of outer stacks – 2100 mm) 2500 mm	
15.	Rated mechanical terminal load i. Load long the terminal connector side (Kg.) ii. Load across the terminal connector side (Kg.)	 500 (N) 170 (N)	
16.	Torque required to operate the switch in Kg-m.	Main 35 Kg/m	Earth 40 Kg/m
17.	Contract Zone i. Horizontal deflection (mm) ii. Vertical deflection (mm) iii. Total amplitude of longitudinal movement w.r.t conductor Supporting fixed contact (mm).	Not to be assigned for Double Break Isolators & applicable for pentograph Isolators only.	
18.	Design and Construction i. No. of Insulators per pole ii. No. of breaks per pole iii. Type of closing/ opening mechanism (horizontal/vertical break straight etc.)	MAIN 3 Stacks/per Phase Two Horizontal Turn & Twist	EARTH ----- Single Vertical Banging
	iv. Contacts a. Material & Grade b. Cross – Sectional area (mm).	 HDE Copper Flat 512 Sq.mm.	 HDE Copper Flat 512 Sq.mm
	v. Moving blades a. Material & Grade b. Cross – sectional area (mm.)	HDE Copper Tube 329 Sq.mm	HDE Copper Tube 329 Sq.mm.
	vi. Contact Support : a. Material & size of channel / block b. Material & size of plate.	 MS HDG 6mm. MS.HDG Plate	 MS HDG

Contd..3..

For M/s. Switches & Switchgear's

Authorised Signatory

	vii. Rain hood – Material grade & size	GI sheet
	viii. Turn & twist mechanism a. Material & size Of clamps b. Material size of springs c. Whether springs are encased	 MS HDG SS GRADE 16 SWG YES, encased with grease.
	ix. Nuts & Bolts a. Size, material & grade in live parts b. Size, material & grade in other parts	 5/8" and above all hot dip galvanized & less than 3/8" are stainless steel 3/8"and above all hot dip galvanized
	x. Insulator base plate material & size of plate below Insulators (Elavator Plate)	10mm thick MS HDG
	xi. Bearings a. Material & size of housing b. No. of bearings, location & size	 MSHDG 2 Nos. Bearings under rotating Insulators stack shaft of 40 mm. dia.
	xii. Tandem Pipe a. Size class & No. of pipes b. Size of shackle, screw c. No. of Bearings/Bush & its material and size	 32mm I.D Class B 7 Mts, Long 2 Nos. (with inter mediate joint) for main switch and 1 No 7 Mts long (with inter mediate joint) for Earth switch 5/8" DIA 5/8" DIA
	xiii. Type of interlock	Electromagnet type interlock between Isolators & breaker. Electrical & Builtin constructional type mechanical Interlock between Isolator & earth switch.
	xiv. Down pipe size & class	---- 50mm I.D. CLASS B ----
	xv. Type of universal swivel joint a. Between bearing & down pipe. b. Between down pipe operating mechanism.	 ---- Swivel type Fork joint ---- ---- Vernier type flange type ----
	xvi. Operating mechanism a. Control cabinet material and Thickness Degree of protection Type size and No.of cable glands Whether removal gland plate provided.	Manually operated through Worm and Reduction gear M.S. Sheet 12 SWG. Enamel Painted IP 55 Provision for Double compression type brass nickel coated 20mm dia cable glands – 2Nos. YES
	xvii. Base : a. Size of steel sections used b. Overall size c. Total weight	 Composite frame fabricated out of 2 Nos. of 125 x 65 x 4.0 mm thick M.S. formed Channel 2320 x 255 x 125 55 Kg (Approx)

For M/s. Switches & Switchgear's

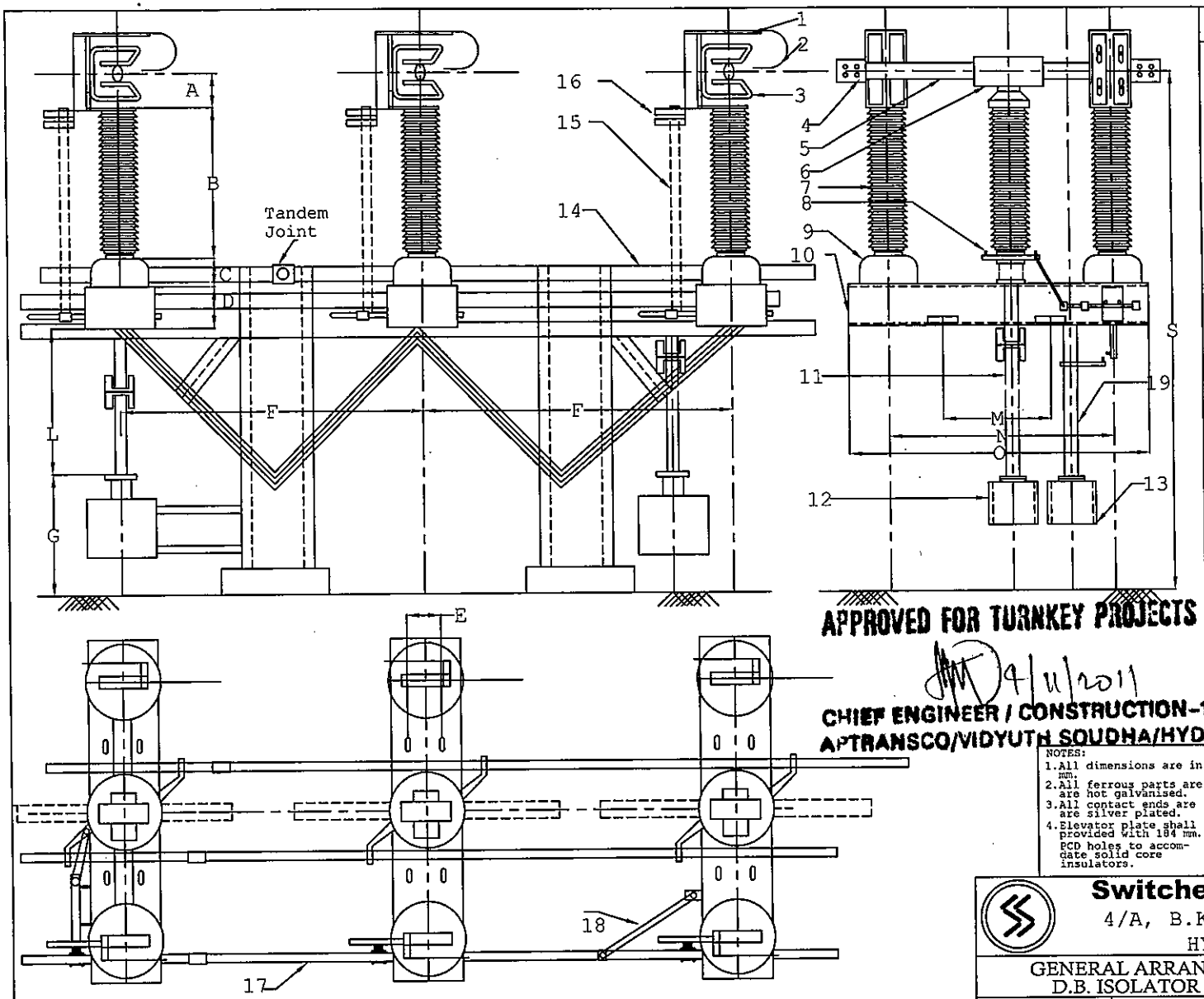
Authorised Signatory

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUT SOUDHA, HYD

APTRANSCO	Standardised Drawing for 132 kV Isolator (M/s Switches& Switchgear's)
	STD/GTP-DWG/Approval No. 246-01 03 sheets Revision No. 0
	Prepared & Approved during November – 2011
	Customer ref : APTRANSCO
	Title: GTP for 132KV Isolator.



REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat 32x4mm 2Nos.
4. Jumper pad 75x12mm Al.Flat with BI-metallic strip
5. Moving contact HDEC pipe 38mm O.D.x32mm I.D.
6. Rotating Blade Mechanism.
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Elevator plate 10mm Thick MSHDG
10. Switch base formed channel 125x65x4.0 mm MSHDG
11. Main switch down pipe 50Dia classB
12. Main switch BOM box
13. Earth switch BOM box
14. Main switch tandem pipe 32Dia.classB 7M long(in 2lenghts)
15. Earth switch moving contact 38 mm O.D. X 32mm I.D.
16. Earth switch fixed contacts HDEC flat 32x4 2Nos.
17. E/S tandem pipe 32mm dia class B 7 mts long(in 2 lengths)
18. Auxillary tandem pipe
19. Earth Switch Down pipe 50mm dia.

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

NOTES:
1. All dimensions are in mm.
2. All ferrous parts are are hot galvanised.
3. All contact ends are are silver plated.
4. Elevator plate shall provided with 184 mm. PCD holes to accomdate solid core insulators.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
120	1500	60	125	190	3000	1240					1605	1220	2100	2320				4650

Switches & Switchgears
4/A, B.K.GUDA, S.R.NAGAR
HYDERABAD

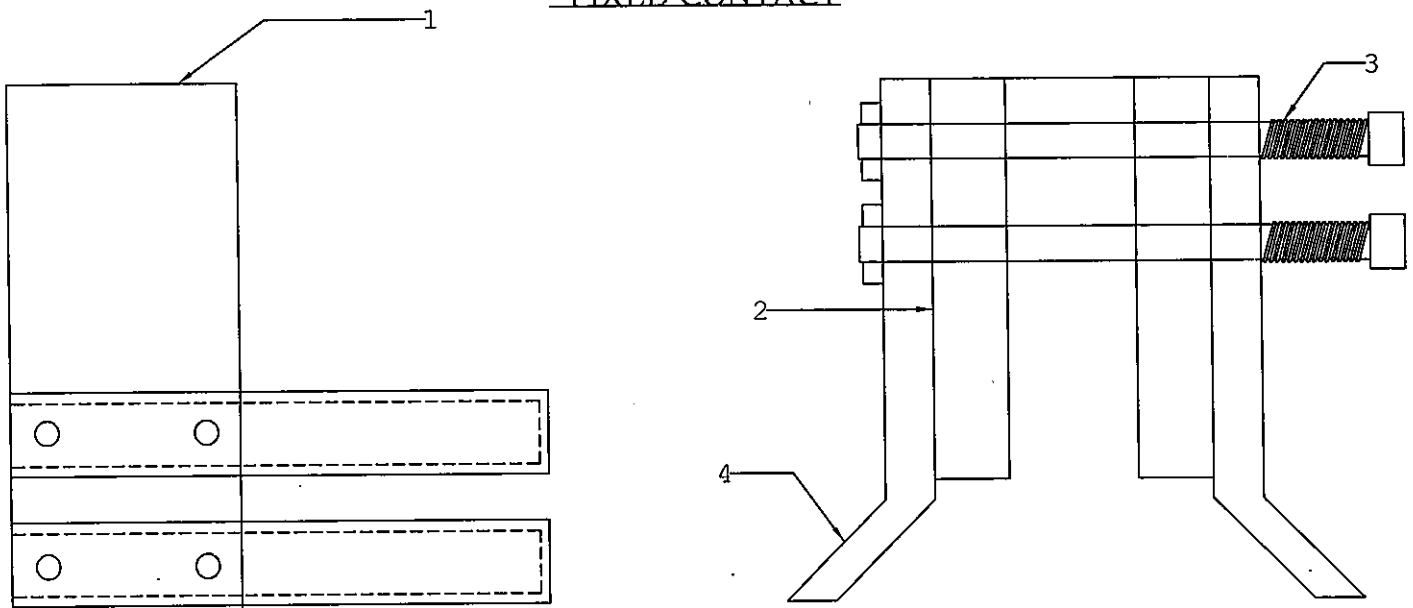
GENERAL ARRANGEMENT OF 132KV, 800A D.B. ISOLATOR WITH EARTH SWITCH

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.S.K
DATE		APPROVED BY	
DRG.NO.	SS - 132 - GA - 159/ R 1		

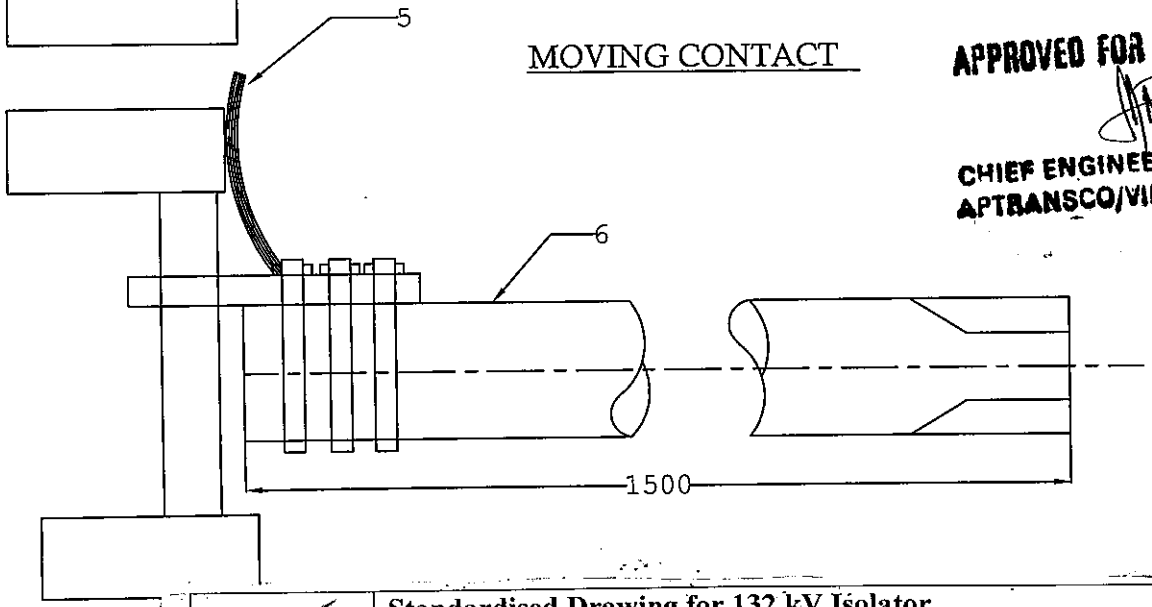
SWITCHGEARS HYD-38.

Standardised Drawing for 132 kV Isolator
(M/s Switches& Switchgear's)
STD/GTP-DWG/Approval No. 246-02 01 sheet Revision No. 0
Prepared & Approved during November – 2011
Customer ref : APTRANSCO
Title: GA of 132KV 800A DB Isolator With Earth Switch.

FIXED CONTACT



MOVING CONTACT



APPROVED FOR TURNKEY PROJECTS
9/11/2011
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

REFERENCE

1. JUMPER PAD 75x12mm AL.FLAT WITH BI METALIC STRIP(CU+AL)
2. JAWS 32x4 2NOS.HDEC FLAT
3. SPRINGS STAINLESS STEEL
4. JAWS SUPPORTING CLAMP
5. FLEXIBLE 25x3 COPPER
6. MOVING CONTACT 38MM O.D.x 32MM I.D. HDEC PIPE.

NOTES

1. ALL DIMENSIONS ARE IN MM ONLY
2. ALL CONTACT ENDS ARE SILVER PLATED.
3. ALL FERROUS PARTS HOT DIP GALVANIZED.

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

- 132 KV 800 AMPS EARTH SWITCH FIXED AND MOVING CONTACTS

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.M.R
DATE		APPROVED BY	
DRG.NO.	SS - 132-82 /R1		

SWITCHGEARS (I) LTD. HYD-38

APTRANSCO

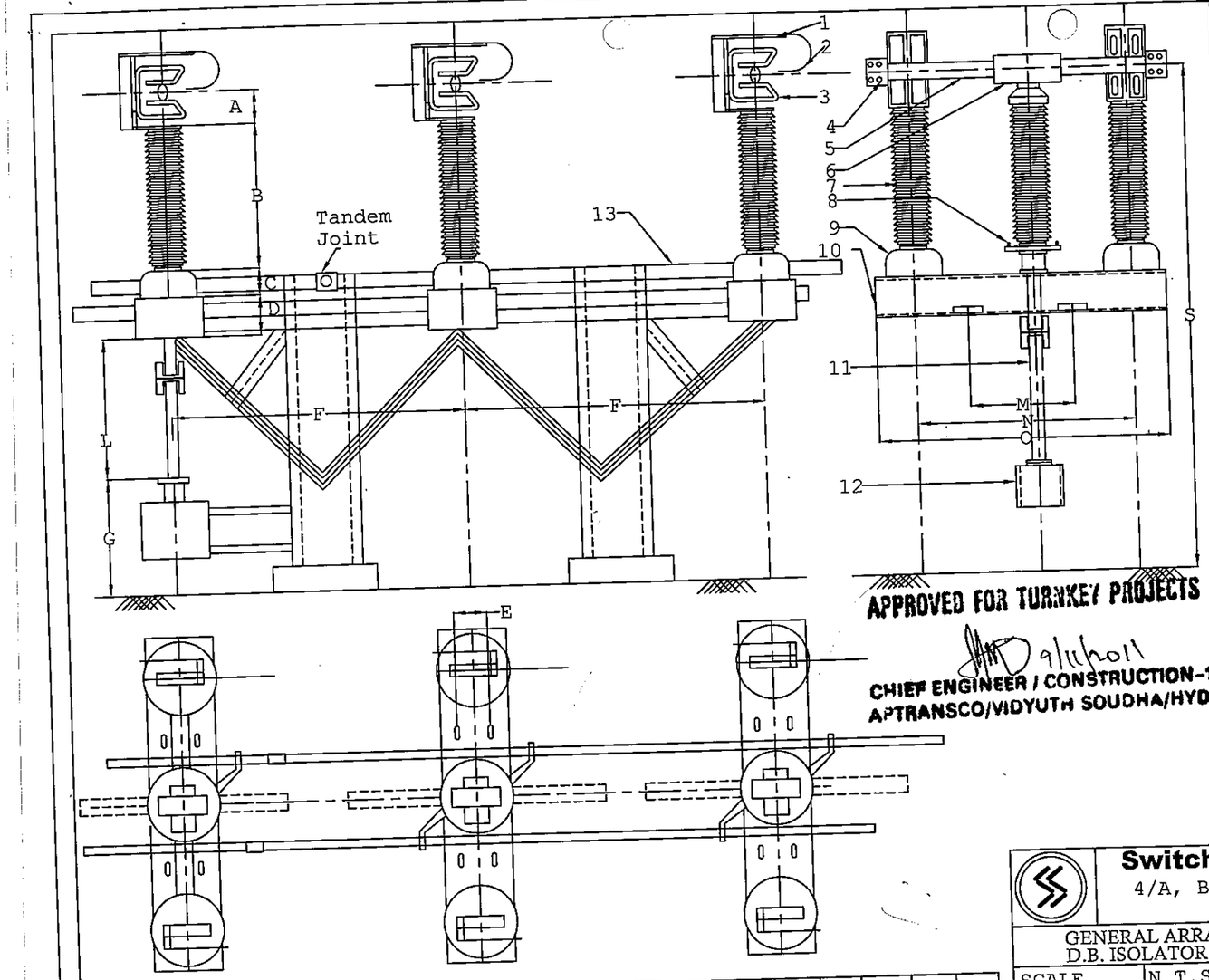
Standardised Drawing for 132 kV Isolator (M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 246-03 01 sheet Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: 132KV 800A Earth Switch Fixed and Moving Contact



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
120	1500	60	125	190	3000	1240					1605	1220	2100	2320				4650

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat 32x4mm 2Nos.
4. Jumper pad 75x12mm Al.Flat with BI-metallic strip
5. Moving contact HDEC pipe 38mm O.D.x32mm I.D.
6. Rotating Blade Mechanism.
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Elevator plate 10mm Thick MSHDG
10. Switch base formed channel 125x65x4.0 mm MSHDG
11. Main switch down pipe 50Dia classB
12. Main switch BOM box
13. Main switch tandem pipe 32Dia.classB 7M long(in 2lenghts)

NOTES

1. All dimensions are in mm.
2. All ferrous parts hot dip galvanised.
3. All contacts ends silver plated.
4. Elevator plate shall be provided with 184mm P.C.D. holes to accomodate solid core insulators.

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

GENERAL ARRANGEMENT OF 132 KV 800A D.B. ISOLATOR WITHOUT EARTHSWITCH

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.K.
DATE		APPROVED BY	
DRG.NO.	SS - 132 - GA - WOES-169/ R1		

APTRANSCO

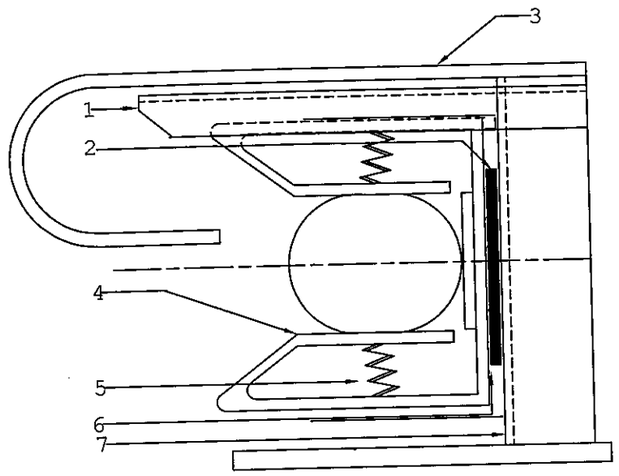
Standardised Drawing for 132 kV Isolator (M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 246-04 01 sheet Revision No. 0

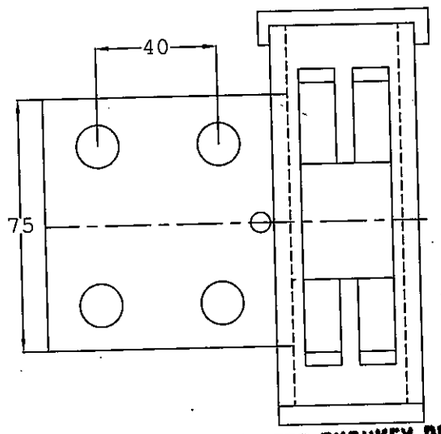
Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: GA of 132KV 800A DB Isolator Without Earth Switch..



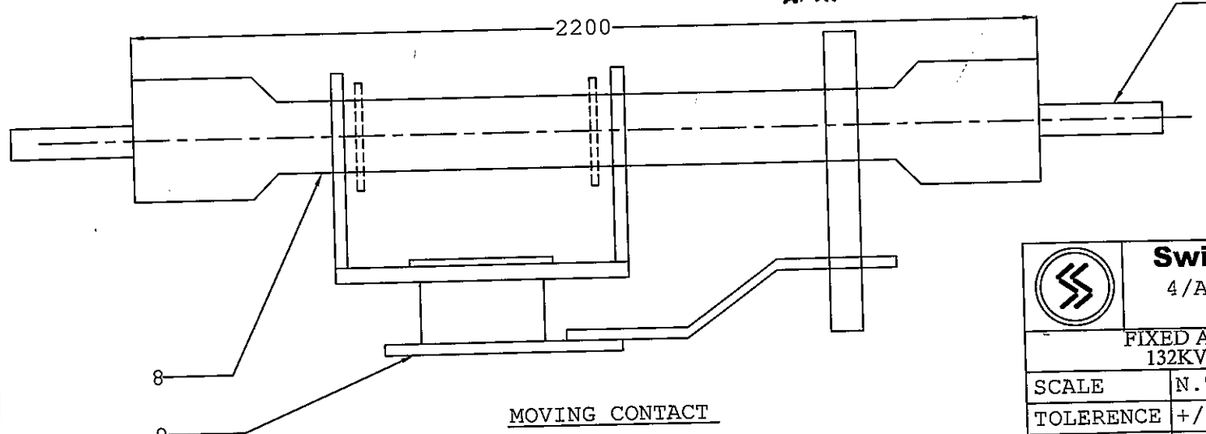
FIXED CONTACT



APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.



MOVING CONTACT

REFERENCE

1. G.I.RAIN HOOD
2. JUMPER PAD 75X12 mm AL.FLAT
3. FC ARCING HORN GI ROD
4. JAWS-32X4mm HDEC FLAT 2 NOS.
5. SPRING-STAINLESS STEEL
6. BI METALIC STRIP CU+AL
7. F.C. CUP SUPPORT MSHDG
8. MOVING CONTACT - 38mmO.D X 32mm I.D HDEC PIPE
9. TURN & TWIST MECHA-NISM
10. M.C.ARCING HORN G.I. ROD

NOTES

1. ALL DIMENSIONS ARE IN MM
2. ALL FERROUS PARTS ARE HOT DIP GALVANI-SED
3. ALL CONTACTS ENDS SILVER PLATED.
4. MOVING CONTACT BOTH ENDS SLIGHTLY PRESSED

Switches & Switchgear
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

FIXED AND MOVING CONTACT FOR 132KV 800 AMPS D.B. ISOLATOR

SCALE	N.T.S.	DRAWN BY	N.MURTY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.
DATE		APPROVED BY	
DRG.NO.	SS - 132 - 81		

HYD-38.

Standardised Drawing for 132 kV Isolator (M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 246-05 01 sheet Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: Fixed and Moving Contact For 132 KV 800A DB Isolator.

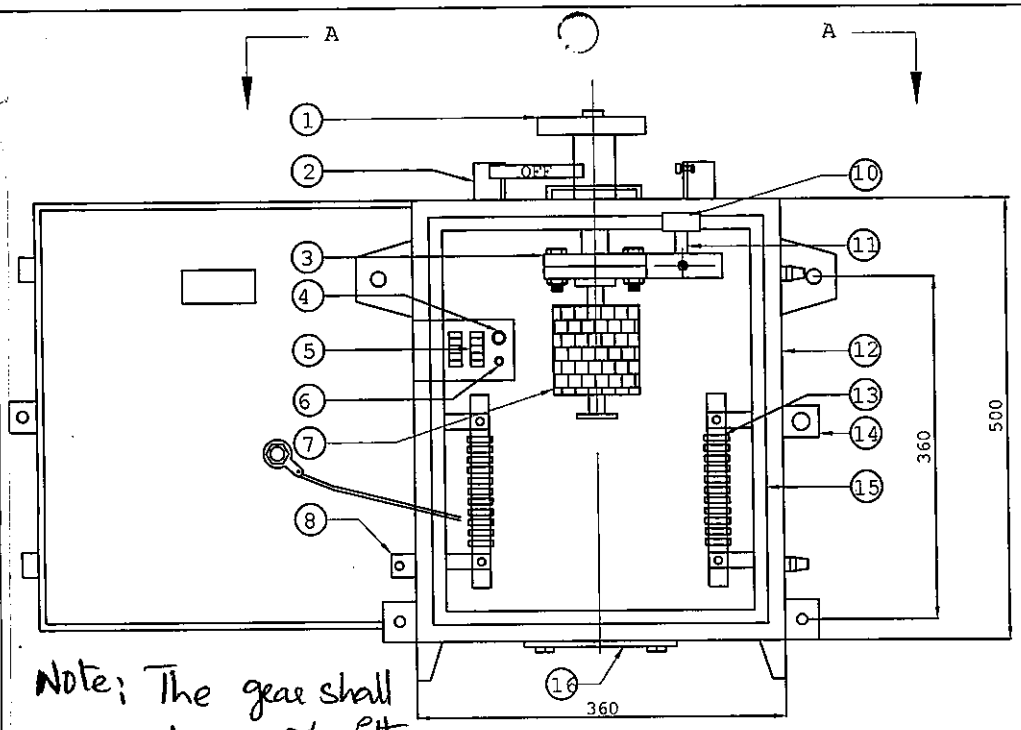
Standardised Drawing for 132 kV Isolator
(M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 246-06 01 sheet Revision No. 0

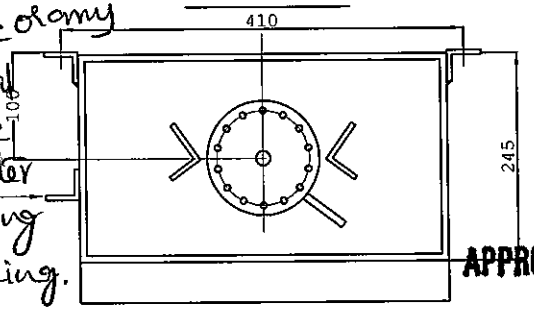
Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: Bottom Operating Mechanism Box(Reduction Gear).



ELEVATION



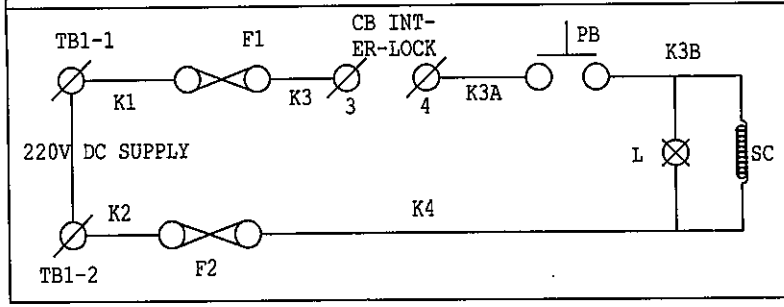
VIEW AT A-A

Note; The gear shall be made up of with aluminium bronze or any other better material lubricated for life with graphite of better quality non drawing and non hardening. type grease

S.NO	DESCRIPTION
1.	FLANGE
2.	ON\OFF STOPPER
3.	REDUCTION GEAR BOX
4.	PUSH BUTTON
5.	FUSES 5A
6.	INDICATION LAMP
7(a)	AUXILLARY SWITCH 8NO+8NC FOR MAIN SWITCH
7(b)	AUXILLARY SWITCH 3NO+3NC FOR EARTH SWITCH
8.	EARTH TERMINAL
9.	OPERATING HANDLE
10	SOLONOID 220 VOLTS D.C.
11.	PLUNGER
12.	CUBICAL (12G M.S.SHEET)
13.	CAT M3 TERMINALS (STUD)
14.	PROVISION FOR PAD LOCK (WITH OUT LOCK)
15.	RUBBER GASKET FOR DUST\WEATHER PROOF
16.	DETACHABLE CABLE GLAND FIXING PLATE WITH OUT GANDS

NOTES:
1. ALL DIMENSIONS ARE IN MM
2. INTERNAL WIRING WILL BE DONE WITH 2.5 SQ.mm Cu. STRANDS CONDUCTOR AND 20% SPARE WILL BE PROVIDED
3. DEGREE OF PROJECTION IP-55
4. CUBICAL IS PAINTED BOTH SIDES WITH SHADE NO.631
5. WEATHER DUST & VERMIN PROOF.

APPROVED FOR TURNKEY PROJECTS
9/11/04
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD



LEGEND
F1, F2 - FUSES
PB-PUSH BUTTON
L-INDICATOR LAMP
SC-SOLENOID COIL

Switches & Switchgears
4/A, B.K.GUDA, S.R.
HYDERABAD

Bottom Operating Mechanism Box (Reduction Gear)

SCALE	N.T.S.	DRAWN BY	S.N.MURTY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K
DATE	19-11-2010	APPROVED BY	
DRG.NO.	SS - BOM - RG - 10		

HYD-38.

GUARANTEED TECHNICAL PARTICULARS FOR 220 KV WITH EARTH SWITCH DISCONNECTORS (ISOLATORS)

S.No.	CHRACTERISTICS	220 KV DISCONNECTORS
01.	Type/Installation	Double Break Turn & Twist, outdoor, Horizontal upright.
02.	Manufacturer's Name and Country of Manufacture	M/s. Switches & Switchgears Hyderabad.
03.	Standards according to which the isolator are manufactured.	IS 9921 & IEC-129
04.	Maximum design voltage at which the Isolator can operate(KV)	245 KV
05.	Frequency (Hz)	50 Hz
06.	Rated voltage (kV)	220 KV
07.	Maximum current that can be safely interrupted by the Isolator Inductive (A & %PF) Capacitive (A & %PF)	 0.7 Amps at 0.15 PF 0.7 Amps at 0.15 PF
08.	Continuous current rating Nominal (Amps) Under site conditions (Amps)	MAIN EARTH 800 Amps. ---- 800 Amps. - ---
09.	Rated short time current i. For 3 Seconds (KA rms.) ii. For 1 Second (KA rms.) iii. Rated peak short time current (KVP)	 ---- -- 40 KA (RMS) -- -- 100 KA (Peak) --
10.	Current density at the minimum cross section of a. Moving blade (Amps/Sq.mm) b. Terminal pad c. Contacts d. Terminal Connector	MAIN EARTH 2.5 Amp/ Sq.mm Cu. pipe 1.0 Amp/ Sq.mm Al. flat 1.6 Amp/ Sq.mm Cu. flat 1.0 Amp/ Sq.mm Aluminium.
11.	Maximum Temp. rise of current carrying parts when carrying rated current continuously (Deg.C)	With in the limits specified in IS
12.	Derating factor for specified site conditions	Unity
13.	Insulation Levels i. Impulse withstand voltage (KV peak) a. Phase to Earth b. Isolating distance ii. Switching surge withstand voltage(KV Peak) a. Phase to Earth b. Isolating Distance iii. Power Frequency withstand voltage (KV rms.) a. Phase to Earth b. Isolating distance	 1050 KV P 1200 KV P Not Applicable. 460 KV (RMS.) 530 KV (RMS.)

Contd.. 2..

For M/s. Switches & Switchgear's

Authorised Signatory

4.	Minimum clearance in air : i. Between poles (mm) ii. Between live parts & earth (mm) iii. Between live parts when switch is open a. On the same pole (mm) b. Between adjacent poles (mm)	 4000 mm(Phase to phase center of 4500 mm) 2300 mm.(equal to Insulators Height) 3000 mm (Center to Center of outer stacks – 3200) 4000 mm
15.	Rated mechanical terminal load i.Load long the terminal connector side (Kg.) ii.Load across the terminal connector side (Kg.)	 800 (N) 270 (N)
16.	Torque required to operate the switch in Kg.M.	MAIN: 35 Kg/m EARTH: 40 Kg/m
17.	Contract Zone i. Horizontal deflection (mm) ii. Vertical deflection (mm) iii.Total amplitude of longitudinal movement w.r.t conductor supporting fixed contact (mm)	Not to be assigned for Double Break Isolator & applicable in case of pentograph Isolators only.
18.	Design and Construction i. No. of Insulators per pole ii. No. of breaks per pole iii. Type of closing/ opening Mechanism (Horizontal/vertical Break straight etc.)	MAIN / EARTH 3 Stacks/per Phase / ---- Two / Single Horizontal / Vertical Turn & Twist / Banging
	iv. Contacts a. Material & Grade b. Cross – Sectional area (mm).	HDE Copper Flat / HDE Copper Flat 512 Sq. mm / 512 Sq. mm
	v. Moving blades a. Material & Grade b. Cross – sectional area (mm.)	HDE Copper Tube / HDE Copper Tube 329 Sq.mm / 329 Sq.mm.
	vi. Contact Support : a. Material & size of channel / block b. Material & size of plate. (Bottom)	MS HDG / MS HDG MS HDG / MS HDG
	vii. Rain hood – Material grade & size	GI sheet

Contd..3..

For M/s. Switches & Switchgear's

Authorised Signatory

	viii. Turn & twist mechanism a. Material & size of clamps b. Material size of springs c. Whether springs are encased	 MS HDG SS GRADE 16 SWG YES, encased with grease.
	ix. Nuts & Bolts a. Size, material & grade in live parts b. Size, material & grade in other parts	 5/8" and above all hot dip galvanized & less than 3/8" are stainless steel. 3/8"and above all hot dip galvanized
	x. Insulator base plate material & size of plate below Insulators (Elevator Plates)	MS HDG 10 MM
	xi. Bearings a. Material & size of housing b. No. of bearings, location & size	 MSHDG 2 Nos. Bearings under rotating Insulator stack shaft of 50mm. Dia.
	xii. Tandem Pipe a) Size length class & No. of pipes b) Size of shackle, screw. c) No. of Bearings/Bush & its material and size	 32mm I.D Class "B" 10 Mts. Long 2 Nos. (with Intermediate Joint) for MS and 1 Nos. (with Intermediate Joint) for Earth Switch ------ 5/8" DIA ----- ------ 5/8" DIA -----
	xiii. Type of interlock	Electromagnet type interlock between Isolators & breaker. mechanical Interlock between Main and earth switch .
	xiv. Down pipe size length & class	---- 50mm I.D. CLASS B ----
	xv. Type of universal/ swivel joint. a) Between bearing & down pipe. b) Between down pipe and operating mechanism.	 ---- Swivel type Fork joint ---- ---- Vernier type flange type ----
	xvi. Operating mechanism a. Control cabinet material and Thickness Degree of protection Type size and No.of cable glands Whether removal gland plate provided.	MAIN / EARTH Motor Operated / Manually operated through Worm and Reduction gear M.S. Sheet 12 SWG. / M.S. Sheet 12 SWG. Enamel Painted / Enamel Painted IP 55 / IP 55 Provision for Double compression type brass nickel coated 20mm dia cable glands – 2Nos. YES

Contd .. 4..

For M/s. Switches & Switchgear's

Authorised Signatory

	xvii. Base : a) Size of steel sections used	Composite frame fabricated with 2 Nos. of 150 x 75 x 5 mm thick M.S. formed Channel
	b) Overall size	3500 x 300 x 150
	c) Total weight	104 Kg. (Approx)

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

M/S. Switches & Switchgears

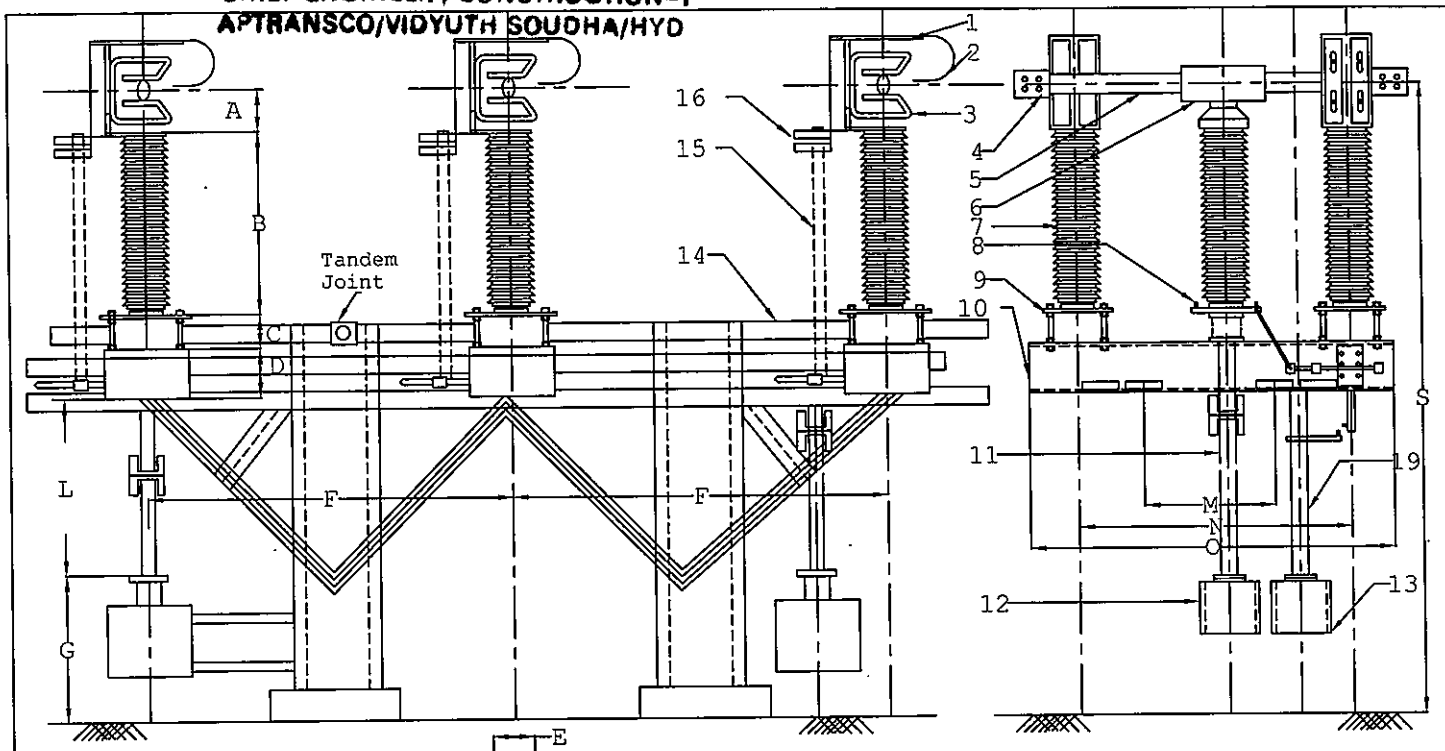
Authorised signatory

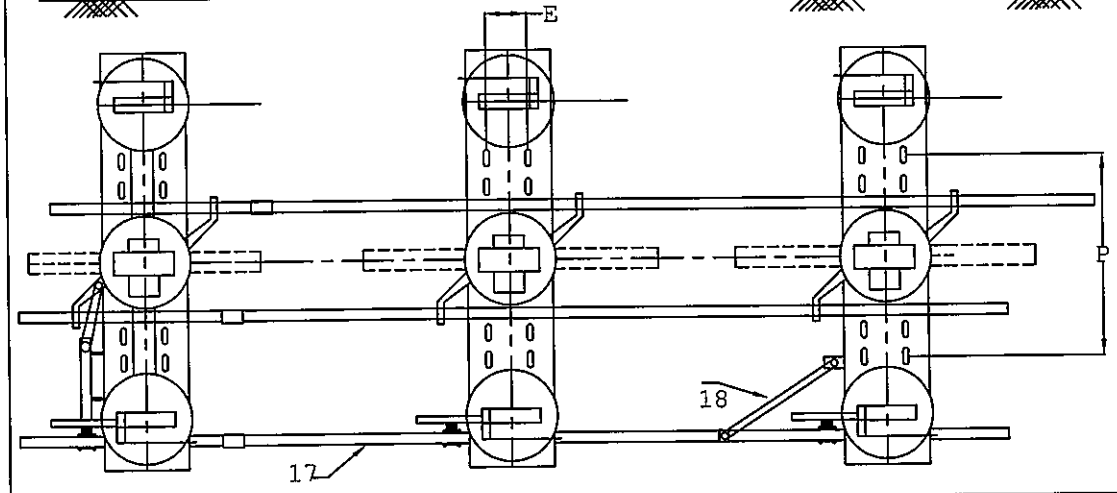
APTRANSCO	**Standardised Drawing for 220 kV Isolator (M/s Switches& Switchgear's)**
	STD/GTP-DWG/Approval No. 247-01 04 sheets Revision No. 0
	Prepared & Approved during November – 2011
Customer ref : APTRANSCO	
Title: GTP For 220 KV Isolator.	

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD





A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
120	2300	70	150	225	4500	1240					1620	1220	3200	3500	2440			5500

REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat (Refer Part Drawing)
4. Jumper pad (Refer Part Drawing)
5. Moving contact HDEC pipe (Refer Part Drawing)
6. Rotating Blade Mechanism.
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Elevator plate 10mm Thick MSHDG
10. Switch base formed channel 150x75mmx5mm MSHDG
11. Main switch down pipe 50Dia classB
12. Main switch MOM box
13. Earth switch BOM box
14. Main switch tandem pipe 32Dia.classB 10M long(in 2 lenghts)
15. Earth switch moving contact H.D.E.C Pipe (Refer Part Drawing)
16. Earth switch fixed contacts HDEC flat (Refer Part Drawing)
17. E/S tandem pipe 32mm dia class B 10 mts long(in 2 lengths)
18. Auxillary tandem pipe
19. Earth Switch Down pipe 50mm dia.

NOTES
1. All dimensions are in mm.
2. All ferrous parts hot dip galvanised.
3. All contacts ends silver plated.
4. Elevator plate shall be provided with 200mm P.C.D. holes to accomodate solid core insulators.

Switches & Switchgear
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

SWITCHES & SWITCHGEARS HYD-38.

GENERAL ARRANGEMENT OF 220 KV
D.B. ISOLATOR WITH EARTH SWITCH

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.S.K
DATE		APPROVED BY	
DRG.NO.	SS - 220 - GA - 159		

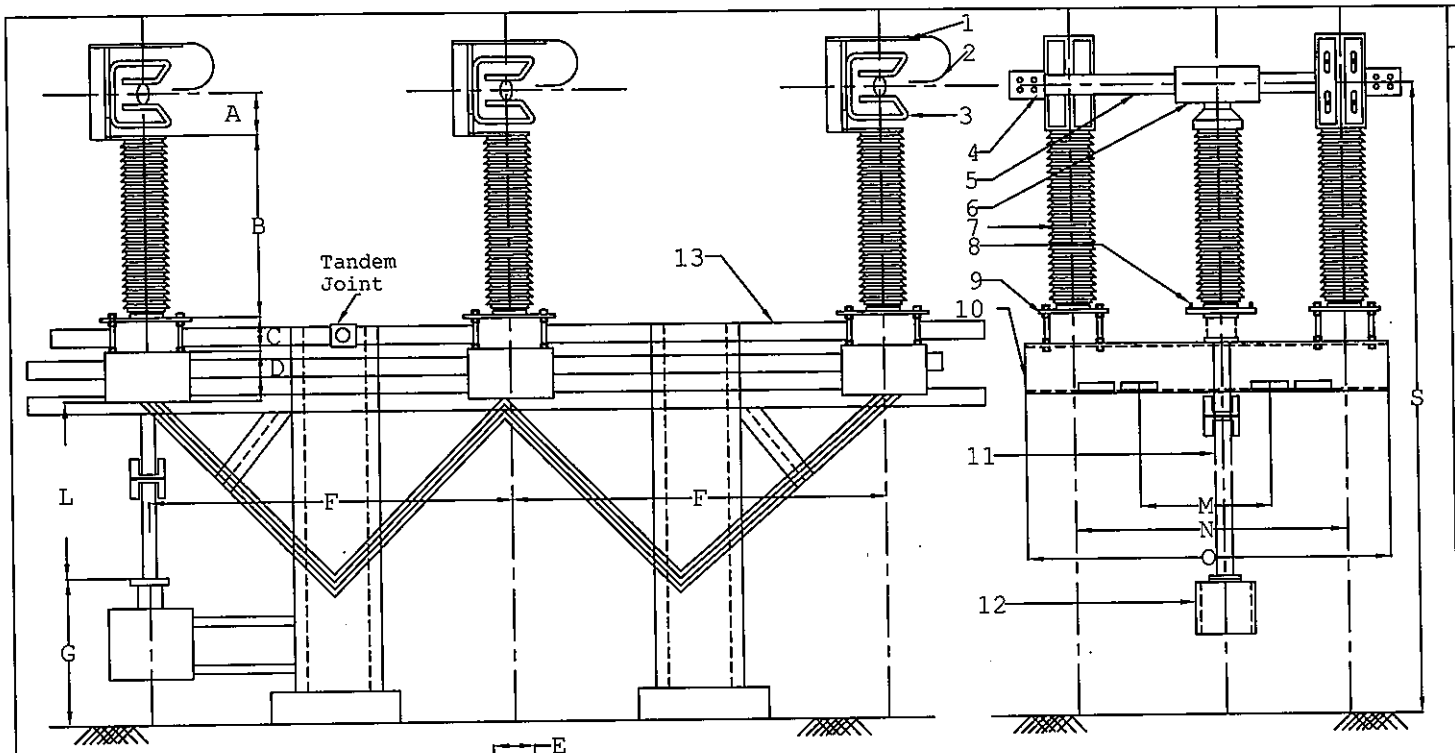
Standardised Drawing for 220 kV Isolator
(M/s Switches& Switchgear's)

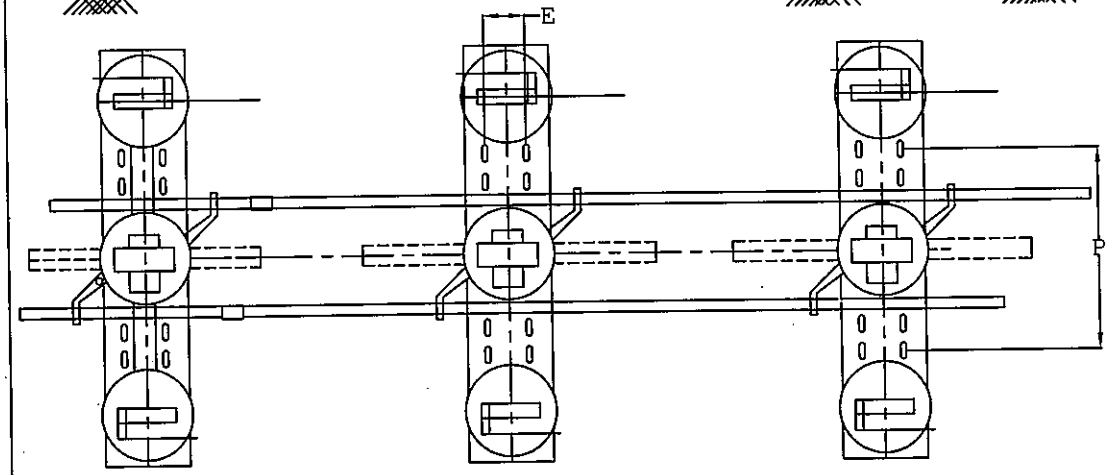
STD/GTP-DWG/Approval No. 247-02 01 sheets Revision No. 0

Prepared & Approved during November – 2011

Customer ref : APTRANSCO

Title: GA of 220 KV DB Isolator With Earth Switch.





REFERENCE

1. Rain Hood G.I.
2. Arcing Horn 10 mm DIA G.I. rod
3. Main Switch Fixed Contact HDEC Flat (Refer Part Drawing)
4. Jumper pad (Refer Part Drawing)
5. Moving contact HDEC pipe (Refer Part Drawing)
6. Rotating Blade Mechanism.
7. Insulator (not in scope of supply)
8. Main switch lever arm with clamp.
9. Elevator plate 10 mm Thick MSHDG
10. Switch base formed channel 150x75mmx5mm Thick MSHDG
11. Main switch down pipe 50Dia classB
12. Main switch MOM box
13. Main switch tandem pipe 32Dia.classB 10M long(in 2 lenghts)

NOTES
1. All dimensions are in mm.
2. All ferrous parts hot dip galvanised.
3. All contacts ends silver plated.
4. Elevator plate shall be provided with 200mm P.C.D. holes to accomodate solid core insulators.

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-I
APTRANSCO/VIDYUTH SOUDHA/HYD

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
120	2300	70	150	225	4500	1240					1620	1220	3200	3500	2440			5500

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

GENERAL ARRANGEMENT OF 220 KV D.B. ISOLATOR WITHOUT EARTH SWITCH

KYD-28.

SCALE	N.T.S.	DRAWN BY	D.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.K
DATE	23-5-09	APPROVED BY	
DRG.NO.	SS - 220 - GA - WOES -169		

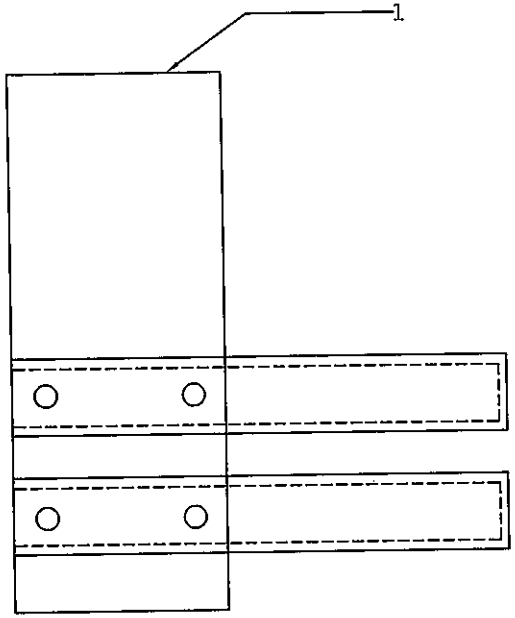
Standardised Drawing for 220 kV Isolator
(M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 247-03 01 sheets Revision No. 0

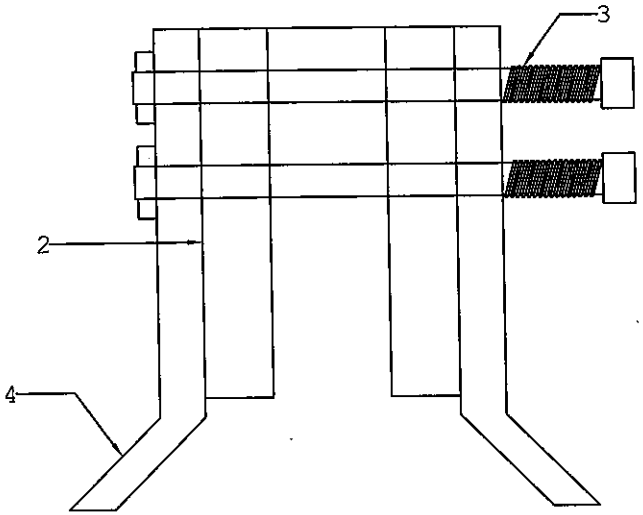
Prepared & Approved during November – 2011

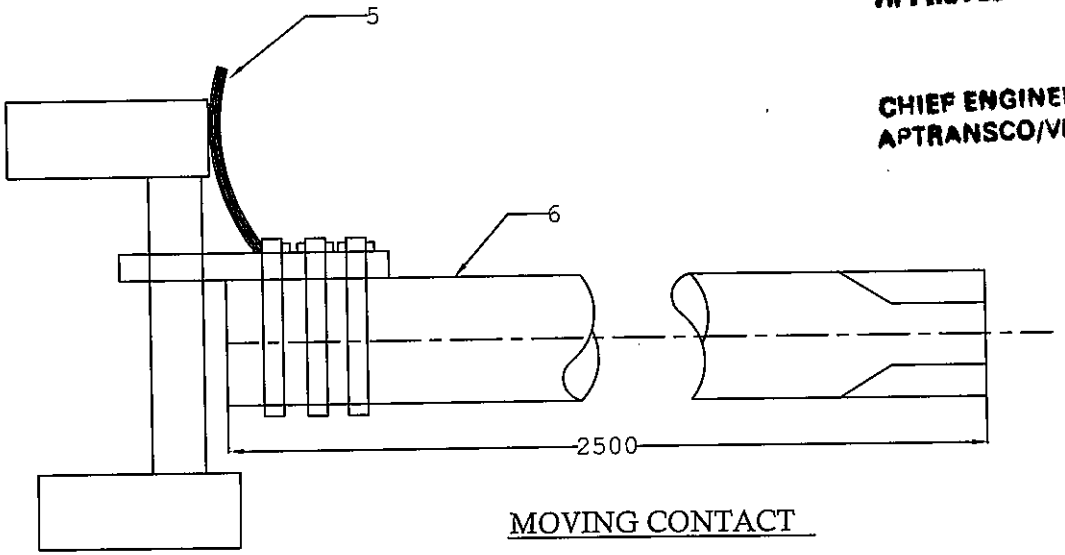
Customer ref : APTRANSCO

Title: GA of 220 KV DB Isolator Without Earth Switch.



FIXED CONTACT





MOVING CONTACT

APPROVED FOR TURNKEY PROJECTS

9/11/2011

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD

REFERENCE
1.JUMPER PAD 75x12mm AL.FLAT WITH BI METALIC STRIP(CU+AL)
2.JAWS 25 x4 2NOS.HDEC FLAT.
3.SPRINGS STAINLESS STEEL
4.JAWS SUPPORTING CLAMP
5.FLEXIBLE 25x3 COPPER - 2 Nos.
6.MOVING CONTACT 38MM O.D.x 32MM I.D. HDEC PIPE.

NOTES
1. ALL DIMENSIONS ARE IN MM ONLY
2. ALL CONTACT ENDS ARE SILVER PLATED.
3. ALL FERROUS PARTS HOT DIP GALVANIZED.

Switches & Switchgears
4/A, B.K.GUDA, S.R. NAGAR
HYDERABAD

220 KV 800 AMPS EARTH SWITCH BLADE AND MOVING CONTACTS

SCALE	N.T.S.	DRAWN BY	S.N.MURTHY
TOLERENCE	+/- 5 MM.	CHECKED BY	K.K.R
DATE		APPROVED BY	
DRG.NO.	SSI - 220-82		

SWITCHES & SWITCHGEARS HYD-38.

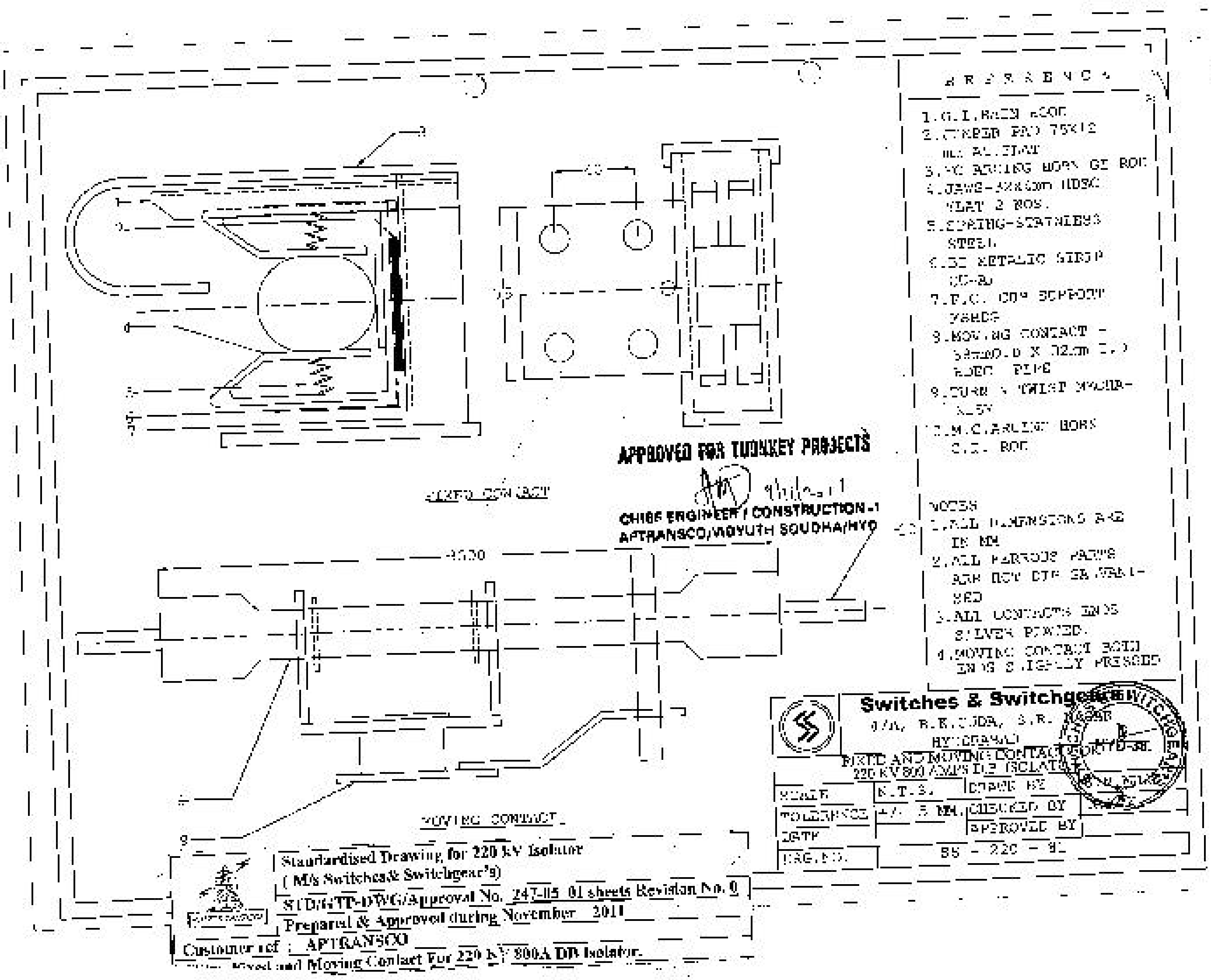
Standardised Drawing for 220 kV Isolator
(M/s Switches& Switchgear's)

STD/GTP-DWG/Approval No. 247-04 01 sheets Revision No. 0

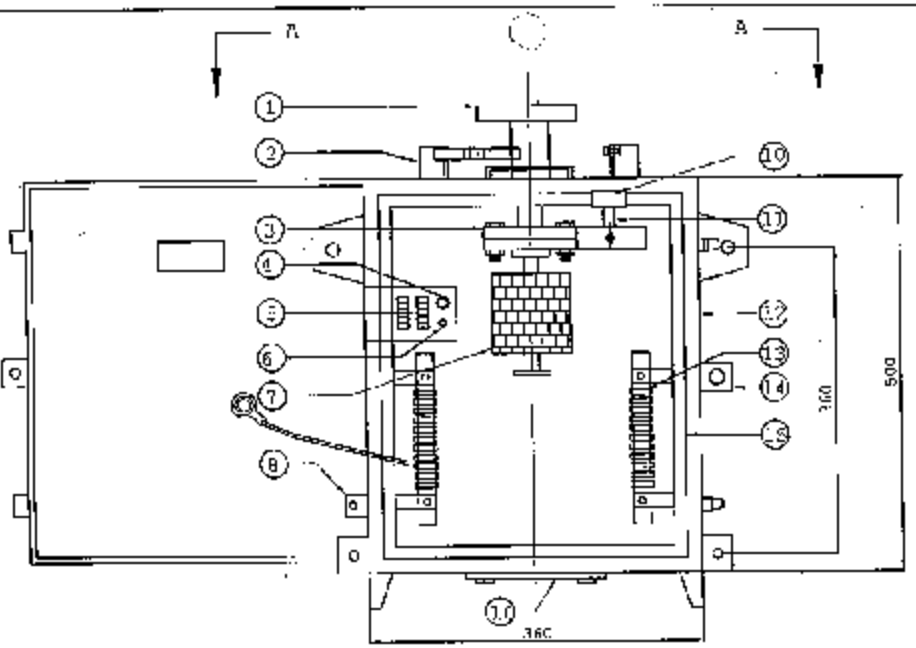
Prepared & Approved during November – 2011

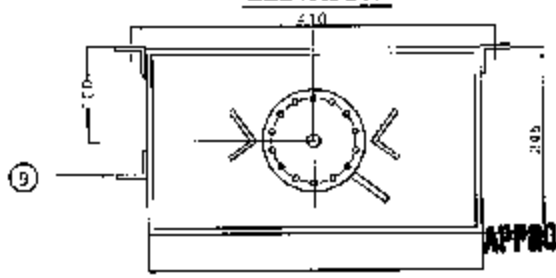
Customer ref : APTRANSCO

Title: 220 KV 800A Earth Switch Fixed and Moving Contacts.


REFERENCES
1. G.I. RAIN ROOF
2. COPPER PAD 75X12
3. SS ARCING HORN GI ROD
4. JAWS - 2 NOS.
5. SPRING - STAINLESS STEEL
6. SS METALIC STRIP
7. F.C. CUP SUPPORT
8. MOVING CONTACT - PIPE
9. TURN & TWIST MECHA-
10. M.C. ARCING HORN G.I. ROD
NOTES
1. ALL DIMENSIONS ARE IN MM
2. ALL FERROUS PARTS ARE HOT DIP GALVANI-SED
3. ALL CONTACTS ENDS SILVER PLATED.
4. MOVING CONTACT BOTH ENDS SLIGHTLY PRESSED
FIXED CONTACT
MOVING CONTACT
APPROVED FOR TURNKEY PROJECTS
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD
Switches & Switchgears
HYDERABAD
FIXED AND MOVING CONTACT FOR 220 KV 800 AMPS DB ISOLATOR
SCALE
N.T.S.
DRAWN BY
TOLERANCE
+/- 3 MM.
CHECKED BY
DATE
APPROVED BY
DRG.NO.
SS - 220 - 91
Standardised Drawing for 220 kV Isolator
(M/s Switches& Switchgear's)
STD/GTP-DWG/Approval No. 247-05 01 sheets Revision No. 0
Prepared & Approved during November 2011
Customer ref : APTRANSCO
Fixed and Moving Contact For 220 KV 800A DB Isolator.

Standardised Drawing for 220 kV Isolator
(M/s Switches& Switchgear's)
STD/GTP-DWG/Approval No. 247-06 01 sheets Revision No. 0
Prepared & Approved during November – 2011
Customer ref : APTRANSCO
Title: Bottom Operating Mechanism Box(Reduction Gear).

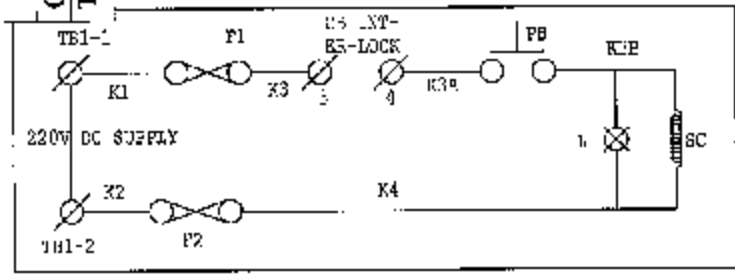




S.NO	DESCRIPTION
1.	FLANGE
2.	ON\OFF STOPPER
3.	REDUCTION GEAR BOX
4.	PUSH BUTTON
5.	FUSES 5A
6.	INDICATION LAMP
7(a)	AUXILLARY SWITCH 8NO+8NC FOR MAIN SWITCH
7(b)	AUXILLARY SWITCH 8NO+8NC FOR EARTH SWITCH
8.	EARTH TERMINAL
9.	OPERATING HANDLE
10	SOLONOID 220 VOLTS D.C.
11.	PLUNGER
12.	CUBICAL (12G M.S.SHEET)
13.	CAT M3 TERMINALS (STUD)
14.	PROVISION FOR PAD LOCK (WITH CUT LOCK)
15.	RUBBER GASKET FOR DUST\WEATHER PROOF
16.	DETACHABLE CABLE GLAND FIXING PLATE WITH OUT GLANDS

NOTES:
1.ALL DIMENSIONS ARE IN MM
2. INTERNAL WIRING WILL BE DONE WITH 2.5 SQ.mm Cu. STRANDS CONDUCTOR AND 20% SPARE WILL BE PROVIDED
3.DEGREE OF PROTECTION IP-55
4. CUBICAL IS PAINTED WITH SIDES WITH SHADE NO.631
5.WEATHER DUST & VERMIN PROOF.

APPROVED FOR TURNKEY PROJECTS
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/NIOYUTH SOUDHA/HYD



LEGEND
F1,F2 - FUSES
PB-PUSH BUTTON
L-INDICATOR LAMP
SC-SOLENOID COIL

Switches & Switchgears
4/A, J.K.GUDA, S. NAGAR, HYDERABAD

HYD-38.

Bottom Operating Mechanism Box (Reduction Gear)

SCALE	N.T.S.	DRAWN BY	[illegible]
TOLERENCE	+/- 5 MM.	CHECKED BY	[illegible]
DATE	19-11-2010	APPROVED BY	
DRG.NO.	SS - BOM - RG - 10		