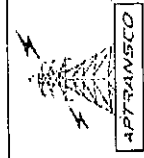


XRC:11203A

9

TYPE OF EQUIPMENT	OUTDOOR VCB TYPE PCOB-36
EQUIPMENT CONFORMS TO SPECIFICATION	IS : 13118/IEC : 62271-100
RATED VOLTAGE	36kV
RATED FREQUENCY	50Hz
RATED CONTINUOUS CURRENT	1600A
RATED SHORT TIME CURRENT & IT'S DURATION	25kA FOR 3-SECONDS
RATED SHORT CIRCUIT MAKING CURRENT	62.5kA
RATED OPERATING SEQUENCE	0-0.3 SEC.-CO-3MIN-CO
RATED INSULATION LEVEL	36kV/70kV/170kVp
DEGREE OF PROTECTION	IP-55
SCHEMATIC DIAGRAM	XWC:5103A
WIRING DIAGRAM	XWC:5104A
CUTOUT DRG No. (FOR INTERNAL USE ONLY)	XRD:9391
TYPE OF OPERATING MECHANISM	SPMX - 500 FORM AM
AUXILIARY SWITCHES	12-N/O + 12-N/C
SPRING CHARGING MOTOR SUPPLY	230V AC, 85 TO 110%
TRIPPING SUPPLY & ITS OPERATING RANGE	220V DC, 70 TO 110%
CLOSING SUPPLY & ITS OPERATING RANGE	220V DC, 85 TO 110%
HEATER SUPPLY	230V AC
ILLUMINATING SUPPLY	230V AC
PAINT SHADE	LIGHT GREY SHADE No. 631 OF IS:5
SPECIAL REQUIREMENTS :-	
LOCAL/REMOTE SELECTOR SWITCH	16A, 250V AC/DC
T/N/C BREAKER CONTROL SWITCH	16A, 250V AC/DC
HEATER WITH SWITCH	80 WATT, 230V AC
THERMOSTAT SWITCH FOR HEATER	15A, 30°-110°C, 230V AC
LAMP TYPE CFL WITH DOOR SWITCH	18W, 230V AC
SOCKET WITH SWITCH	3-PIN, 5/15A, 250V AC/DC
PLUG IN TYPE RELAY FOR ANTI-PUMPING	220V DC
AUX. CONTACTOR FOR CONTACT MULTIPLICATION	220V DC
MOTOR STARTER	0.6A - 1.0A
OPERATION COUNTER	MECHANICAL
FOUNDATION BOLTS FOR VCB FIXING	M16x500mm. LONG
DOUBLE POLE MINIATURE CIRCUIT BREAKER FOR DC CKT.	6A, 220V DC
DOUBLE POLE MINIATURE CIRCUIT BREAKER FOR AC CKT.	6A, 230V AC
TERMINAL CONNECTOR SUITABLE FOR ACSR "MOOSE" CONDUCTOR	AS PER CATALOG NO. EACF-13B-H2-C3-W1-#1

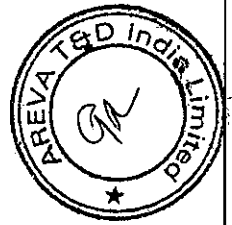
Standardised Drawing for 36 kV Vacuum Circuit Breaker
 (M/s Areva T&D India Ltd.,)
 STD/GTP-DWG/Approval No. 249-2-1 sheet Revision No. 0
 Prepared & Approved during November - 2011
 Customer ref : APTRANSCO
 Title: Technical Specification for 36 kV Outdoor VCB



APPROVED FOR TURNKEY PROJECTS

[Signature]

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




DATE :	
BY.:	
APP. :	

	AREVA T&D INDIA LIMITED KOTAMBI WORKS, VADODARA-391510		
	SCALE: NTS DATE: 04/11/11 DRAWN: Dipti		
CHECKED: RKS APPROVED:		S.O. No. STANDARD	DRAWING NO. XRC:11203A Sheet 2 OF 2
		REV.	0

XRD:11204A

BILL OF MATL. FOR AREVA MAKE 36kV, 1600A, 25kA OUTDOOR VACUUM CIRCUIT BRK. TYPE PCOB-36 (AS PER DRG. NO. XRC:11203A) EACH SET COMPRISING OF THE FOLLOWING.

SL.No.	DESCRIPTION	QTY/ BRK.	MAKE
1	VACUUM INTERRUPTER IN PORCELAIN BUSHING TYPE VG4-A	3	AREVA
2	MOTOR OPERATED SPRING CHARGED MECHANISM OF 230V AC/DC WITH COMPLETE FITTED FOLLOWING ACCESSORIES. a). MECHANICAL SPRING CHARGING INDICATOR b). MECHANICAL ON/OFF INDICATOR c). PUSH BUTTON/LEVER FOR MANUAL EMERGENCY TRIP d). PUSH BUTTON/LEVER FOR MANUAL CLOSE e). OPERATION COUNTER (MECH.) f). MANUAL SPRING CHARGING HANDLE	1	AREVA
3	CLOSING COIL SUITABLE FOR 220V DC, 225WATT ±10%	1	AREVA
4	SHUNT TRIP COIL SUITABLE FOR 220V DC, 75WATT ±10%	2	AREVA
5	TRIP/NEUTRAL/CLOSE SPRING BACK TO NEUTRAL BREAKER CONTROL SWITCH WITH PISTOL GRIP HANDLE Rating : 16A, 250V AC/DC	1	KAYCEE/SWITRON/RECOM/AREVA APPROVED
6	LOCAL/REMOTE SELECTOR SWITCH, Rating : 16A, 250V AC/DC	1	KAYCEE/SWITRON/RECOM/AREVA APPROVED
7	SPACE HEATER Rating : 80WATT, 230V AC	1	IAC/VILECO/GIRISH/SAIEGO/APT/AREVA APPROVED
8	TOGGLE SWITCH Rating: 2A, 250V AC	1	KAYCEE/SWITRON/RECOM/AREVA APPROVED
9	PUSH TO OFF DOOR SWITCH	1	ESSEN/SURAJ/VAISHNO/AREVA APPROVED
10	ILLUMINATING LAMP TYPE CFL Rating : 18WATT, 230V	1	PHILIPS/HPL/AREVA APPROVED
11	THERMOSTAT SWITCH Rating : 15A, 230V AC, MAXM. RANGE : 30°C-110°C	1	SAIEGO/VILECO/GIRISH/APT/AREVA APPROVED
12	12-N/O + 12-N/C AUXILIARY SWITCH	1	SHIRKE/SHUBHADA/I-MAX/AREVA APPROVED
13	3-PIN SOCKET WITH SWITCH Rating : 5/15A, 250V AC/DC	1	ANCHOR/AREVA APPROVED
14	SET OF STUD TYPE TERMINALS CATM4	1	ELMEX/CONNECTWELL/AREVA APPROVED
15	MOTOR STARTER Rating : 0.6A TO 1.0A	1	NORTH WEST/AREVA APPROVED
16	MOTOR FOR MECHANISM, Rating : 230V AC/DC	1	AGNI/AREVA APPROVED
17	TOP INSULATOR	3	ABI/CJI/RCPL/JG&P/BEI/AREVA APPROVED
18	BOTTOM INSULATOR	3	ABI/CJI/RCPL/JG&P/BEI/AREVA APPROVED
19	PLUG IN TYPE RELAY FOR ANTI-PUMPING Rating : 220V DC WITH 2-C/O CONTACTS	1	PLA/OEN/AREVA APPROVED
20	AUX. CONTACTOR FOR CONTACT MULTIPLICATION 220V DC WITH 4-N/O + 4-N/C CONTACTS	1	SCHNEIDER/C&S/L&T/SIEMENS/AREVA APPROVED
21	DOUBLE POLE MINIATURE CIRCUIT BREAKER 6A, 220V DC	1	SCHNEIDER/LEGRAND/INDO-ASIAN/HAVELL'S/SIEMENS/L&T/AREVA APPROVED
22	DOUBLE POLE MINIATURE CIRCUIT BREAKER 6A, 230V AC	1	SCHNEIDER/LEGRAND/INDO-ASIAN/HAVELL'S/SIEMENS/L&T/AREVA APPROVED
23	CONTROL CABLE GLAND SIBG1619 WITH RUBBER RING 1615	6	GLANDMECH/COMET/STS/AREVA APPROVED
24	CONTROL CABLE GLAND SIBG2925 WITH RUBBER RING 2921	1	GLANDMECH/COMET/STS/AREVA APPROVED
25	TERMINAL CONNECTOR SUITABLE FOR ACSR 70/5E CONDUCTOR AS PER CATALOG NO. EACF-13B-H2-C3-W1-01	6	EXALT/RAMLEX/NOOTAN/AREVA APPROVED
26	SUPPORTING STRUCTURE ASSY. WITH REQD. BOLTS, NUT & WASHER	1-set	AREVA
27	FOUNDATION BOLT M16 X 500MM LONG	4	AREVA



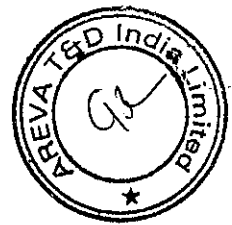
**Standardised Drawing for 36 kV Vacuum Circuit Breaker
(M/s Areva T&D India Ltd.,)**

STD/GTP-DWG/Approval No. 249-3- 1 sheet Revision No. 0

Prepared & Approved during November - 2011

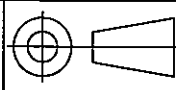
Customer ref : APTRANSCO

Title: Bill of Material for 36 kV Outdoor VCB

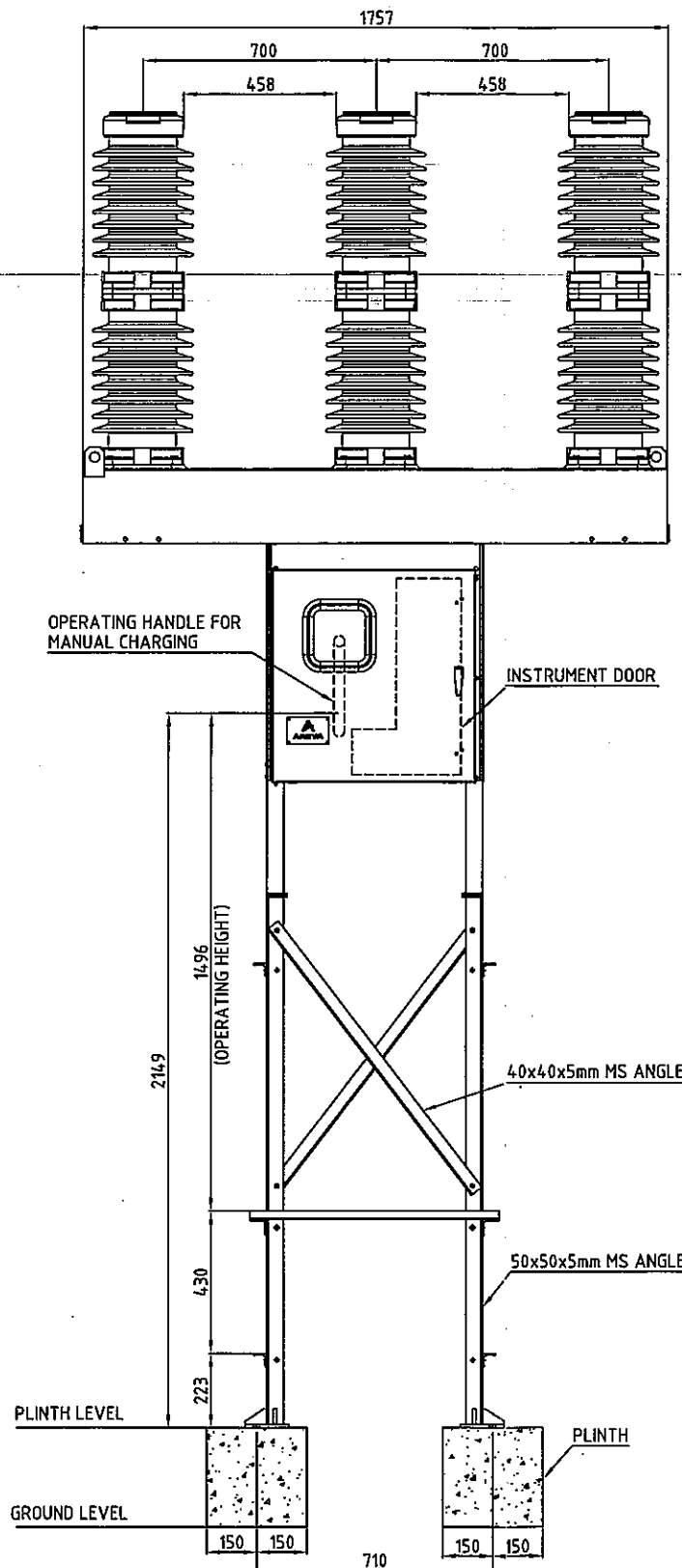
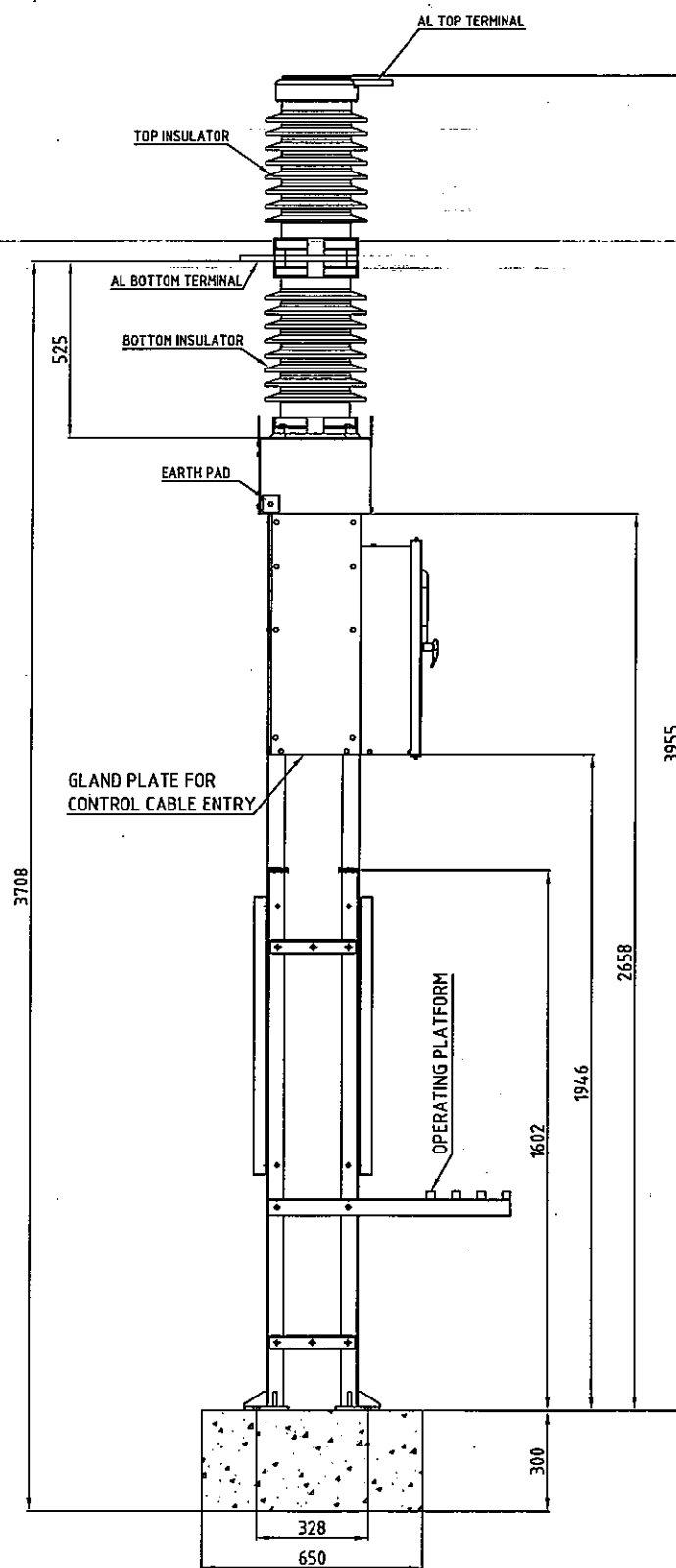


APPROVED FOR TURNKEY PROJECTS

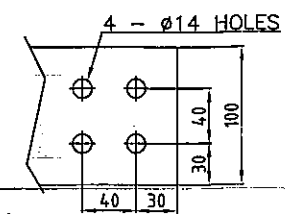
DATE :		BY :	
		AP :	<p style="text-align: center;">CHIEF ENGINEER / CONSTRUCTION -1 APTRANSCO/VIDYUTH SOUDHA/HYD.</p>

AREVA	AREVA T&D INDIA LIMITED KOTAMBI WORKS, VADODARA-391510	
SCALE: NTS	Bill Of Materials Of 36kV, 1600A, 25kA	
DATE: 04/011/11	Outdoor VCB Type PCOB-36 for M/s. APTRANSCO	
DRAWN: Dipti	S.O. No.	DRAWING NO.
CHECKED: RKS	STANDARD	XRD:11204A
APPROVED:		REV. 0

XRC:11203A



ALL DIMENSION ARE IN mm.



DETAILS OF TERMINAL PAD

TOTAL CREEPAGE DISTANCE : 900mm MINIMUM
 VACUUM INTERRUPTER VG4-A MAKE: AREVA
 RATED VOLTAGE AND RATED FREQUENCY: 33kV, 50Hz.
 MAXIMUM CONTINUOUS VOLTAGE: 36kV
 RATED CONTINUOUS CURRENT: 1600AMP.
 RATED S.T.C. : 25KA FOR 3 SECONDS
 APPROX. WEIGHT OF VCB 400kg.
 APPROX. WEIGHT OF BRK. STRUCTURE 55kg.
 APPROX. IMPACT (DYNAMIC) LOAD OF BREAKER: 900kg
 DEGREE OF PROTECTION OF ENCLOSURE: IP-55
 FOR TECHNICAL SPECIFICATION, REFER DRAWING NO XRC:11203A Sheet 2 OF 2
 FOR BILL OF MATERIALS, REFER DRAWING NO XRD:11204A
 FOR RATING PLATE DETAILS, REFER DRAWING NO XRD:11205A
 FOR SCHEMATIC DIAGRAM, REFER DRAWING NO XWC:5103A
 FOR WIRING DIAGRAM, REFER DRAWING NO XWC:5104A

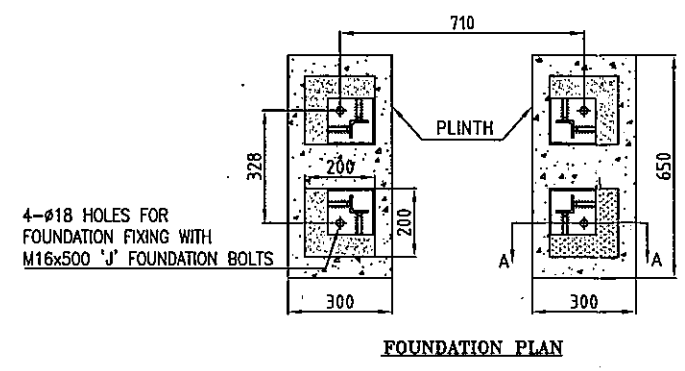
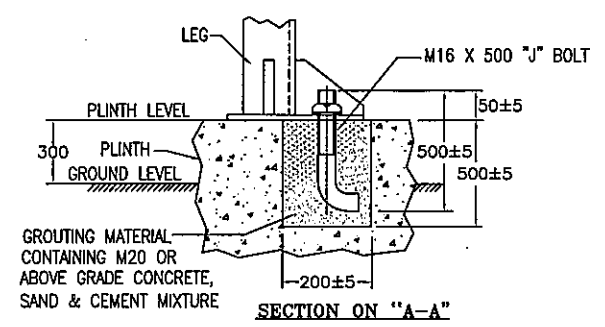
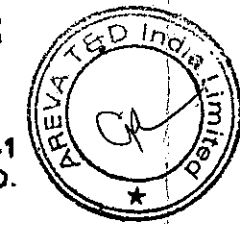
	Standardised Drawing for 36 kV Vacuum Circuit Breaker (M/s Areva T&D India Ltd.,)
	STD/GTP-DWG/Approval No. 249-1- 1 sheet Revision No. 0
	Prepared & Approved during November - 2011
Customer ref : APTRANSCO	
Title: GA for 36 kV Outdoor VCB	

TOLERANCES FOR UNTOLERANCED DIMENSION

BASIC SIZE	TOLERANCES
0-100 mm (upto & including)	±2 mm
101 - 600 mm	±5 mm
601 - 1200 mm	±10 mm
1201 - 2000 mm	±15 mm
2001 - 3000 mm	±20 mm
3001 and Above	±25 mm

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



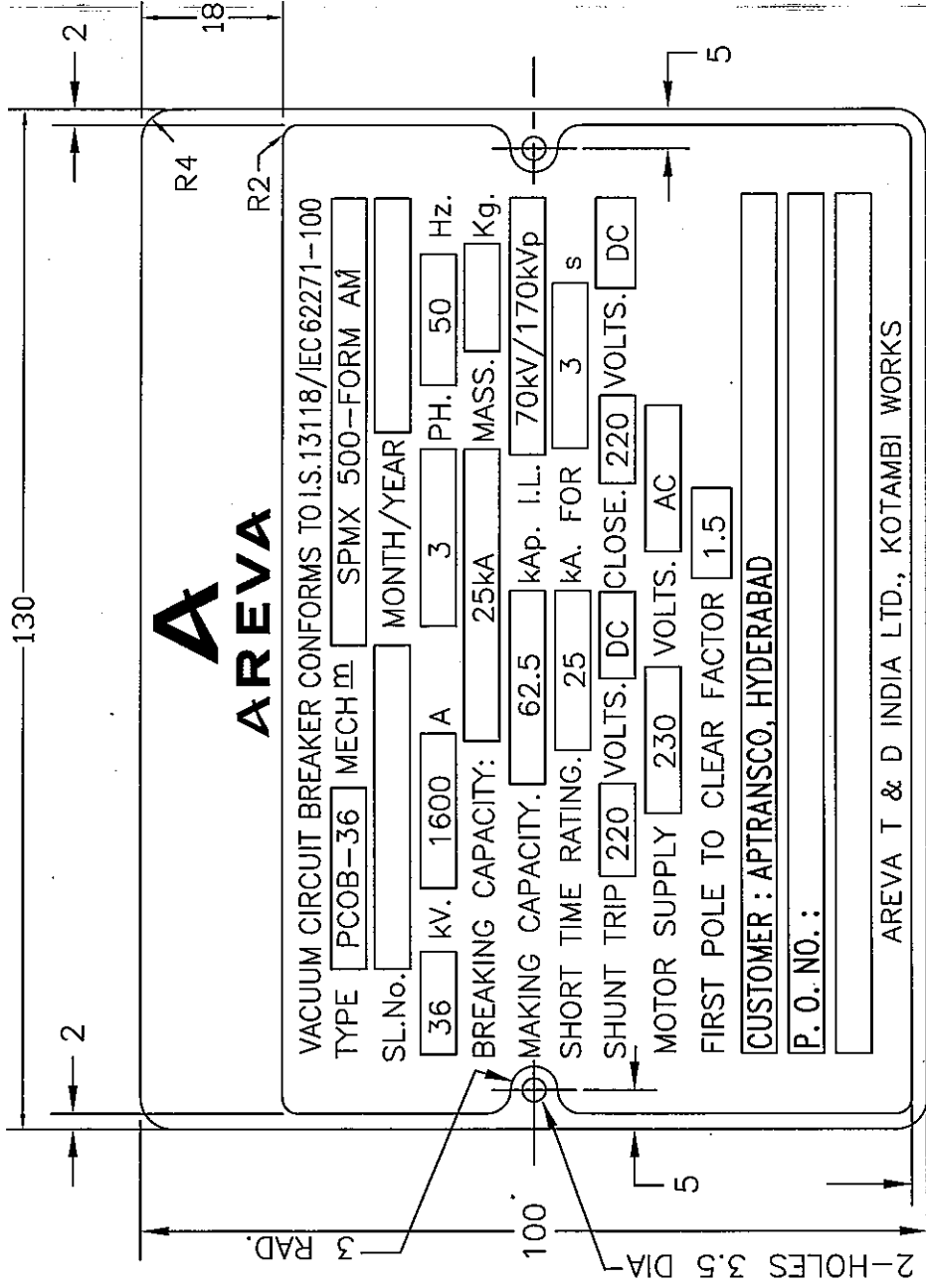
DATE :	APP. :
BY.:	

	AREVA T&D INDIA LIMITED		
	KOTAMBI WORKS, VADODARA-391510		
SCALE: NTS	General Arrangement Drawing Of 36kV, 1600A, 25kA		
DATE: 04/11/11	Outdoor VCB Type PCOB-36 for M/s. APTRANSCO		
DRAWN: Dipti			
CHECKED: RKS	S.O. No.	DRAWING NO.	REV.
APPROVED:	STANDARD	XRC:11203A	0
		Sheet 1 OF 2	

XRD:11205A

TOLERANCES : UNTOLERANCED DIMENSIONS ± .5
 UNTOLERANCED HOLE CENTERS ± .15

ALL DIMENSIONS ARE IN mm.



1-No./SET CODE No.

MATL:- AL ALLOY SHT. AS PER DESIGNATION 19800
 (22SWG, 0.7THK) CONDITION "O" TO IS 737

NOTES:-

- LETTERS "A.R.E.V.A" & SYMBOL "A" SHOULD BE IN POST OFFICE RED SHADE 538 OF IS:5 LOGOTYPE TO BE ON NATURAL BACKGROUND USE ONLY
 SOLID COLOURS SUITABLE FOR OUTDOOR APPLICATION.
- LETTERS & PANELS WHITE AND RAISED FROM BACKGROUND.
 BLANK PANELS FOR PUNCHING AND ENGRAVING TO BE SURFACE HARDENED.
- ANODISED FLAT.
- BLACK ANODISED.

APPROVED FOR TURKEY PROJECTS



W Dey/ukh017
 CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUTH SOUDHA/HYD.

AREVA	AREVA T&D INDIA LIMITED KOTAMBI WORKS, VADODARA-391510	
SCALE: NTS	Rating Plate Details Of 36kV, 1600A, 25kA	
DATE: 04/11/11	Outdoor VCB Type PCOB-36 For	
DRAWN: Dipti	M/S. APTRANSCO	
CHECKED: KS	S.O. No.	DRAWING NO.
APPROVED:	STANDARD	REV. XRD:11205A 0

DATE :	BY :
	App :

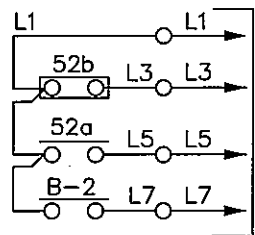
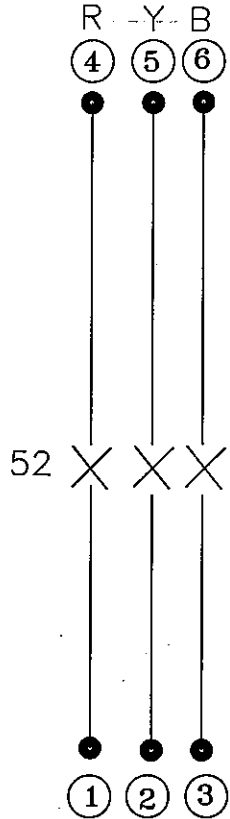
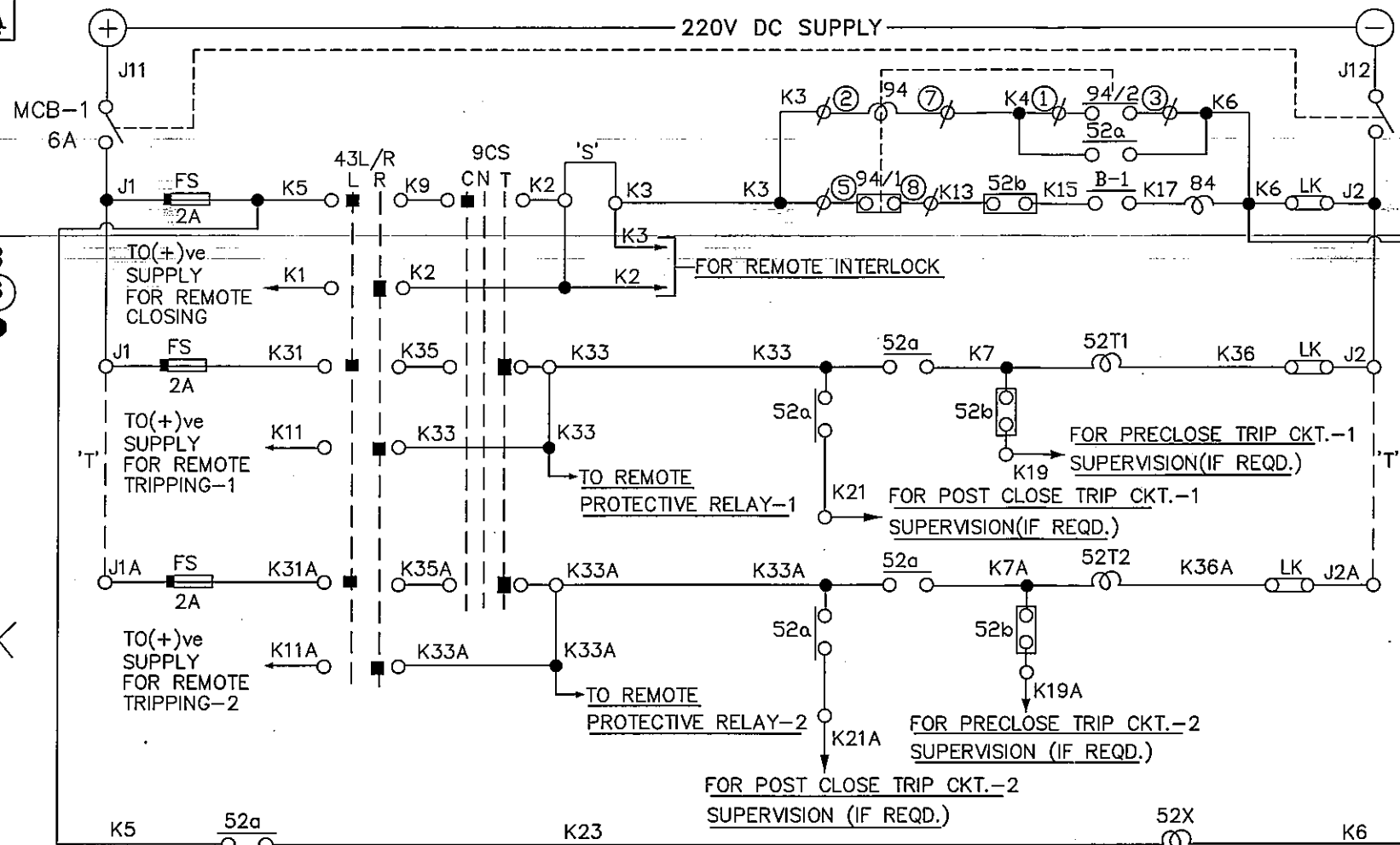
APTRANSCO

Standardised Drawing for 36 kV Vacuum Circuit Breaker
 (M/s Areva T&D India Ltd.,)

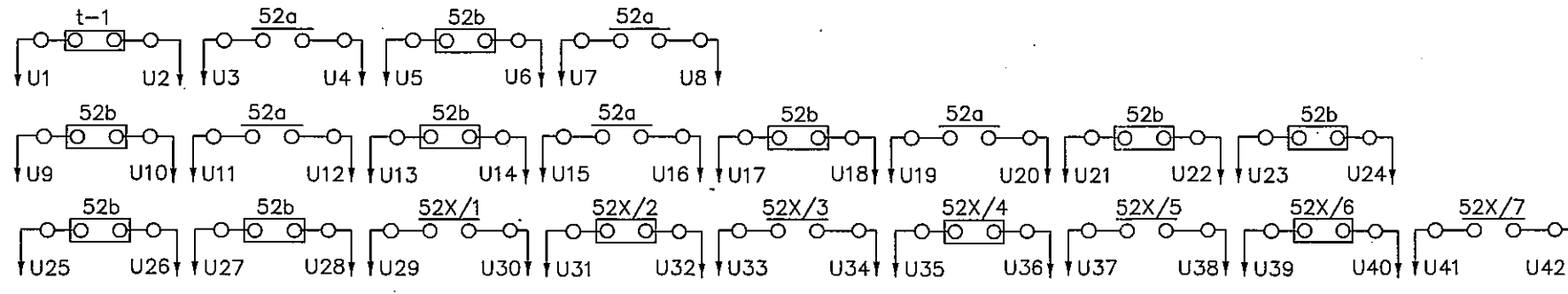
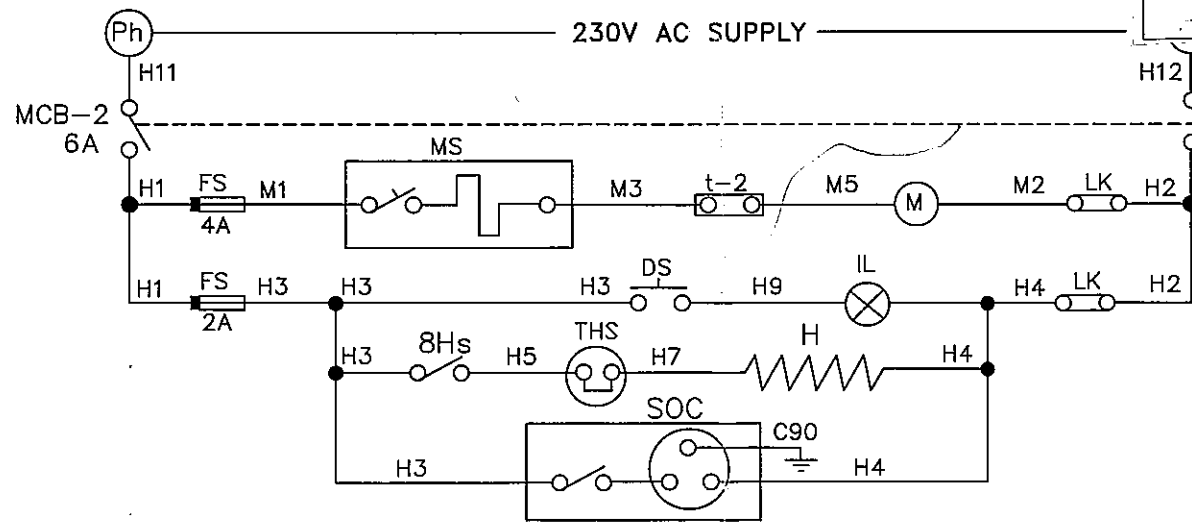
STD/GTP-DWG/Approval No. 249-4-1 sheet Revision No. 0
 Prepared & Approved during November - 2011

Customer ref : APTRANSCO
 Title: Rating Plate details of 36 kV Outdoor VCB

XWC:5103A



TO REMOTE FOR ON/OFF & SPRG. CHARGE INDICATION



SPARE CONTACTS OF AUX. SWITCH/LIMIT SWITCH

Standardised Drawing for 36 kV Vacuum Circuit Breaker
(M/s Areva T&D India Ltd.)
STD/GTP-DWG/Approval No. 249-5-1 sheet Revision No. 0
Prepared & Approved during November - 2011
Customer ref : APTRANSCO
Title: Schematic Diagram of 36 kV Outdoor VCB

LEGEND	DESCRIPTION
52	VACUUM CIRCUIT BREAKER
52a	AUXILIARY SWITCH(CLOSED,BKR.CLOSED)
52b	AUXILIARY SWITCH(CLOSED,BKR.OPEN)
B-1	SPRING MECHm.AUX.SWITCH(CLOSED SPG.CHARGED)
B-2	SPG.MECHm.AUX.SWITCH(CLOSED SPG.CHARGED)
t-1	SPG.MECHm.AUX.SWITCH(CLOSED SPG.DISCHARGED)
t-2	SPG. MECHm.AUX.SWITCH(CLOSED SPG.DISCHARGED)
M	MOTOR
MS	MOTOR STARTER
84	CLOSING COIL
52T1&52T2	SHUNT TRIP COILS
43L/R	LOCAL/REMOTE SELECTOR SWITCH
9CS	BREAKER CONTROL SWITCH (T-TRIP, N-NEUTRAL, C-CLOSE)
H & 8HS	HEATER & HEATER SWITCH
THS	THERMOSTAT FOR HEATER
DS	DOOR SWITCH (SHOWN IN DOOR CLOSED CONDITION)
IL	ILLUMINATING LAMP
SOC	3-PIN SOCKET WITH SWITCH
FS & LK	FUSES AND LINKS
94,94/1, 94/2	COIL & CONTACT OF PLUG IN RELAY
MCB-1	DP MINIATURE CKT. BREAKER FOR DC CKT.
MCB-2	DP MINIATURE CKT. BREAKER FOR AC CKT.
52X & 52X/1 TO 52X/7	COIL & CONTACT OF AUX. CONTACTOR

NOTE:-

- 1) REMOVE SHORT LINK "S" BETWEEN K2 & K3 FOR INTERLOCK CIRCUIT, IF REQD.
- 2) REMOVE SHORT LINK "T" BETWEEN J1 & J1A AND J2 & J2A FOR TWO SEPERATED/INDEPENDENT TRIP CIRCUIT, IF REQD.

FOR DETAIL WIRING DIAGRAM REFER DRAWING XWC:5104A

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUTH DIVISION

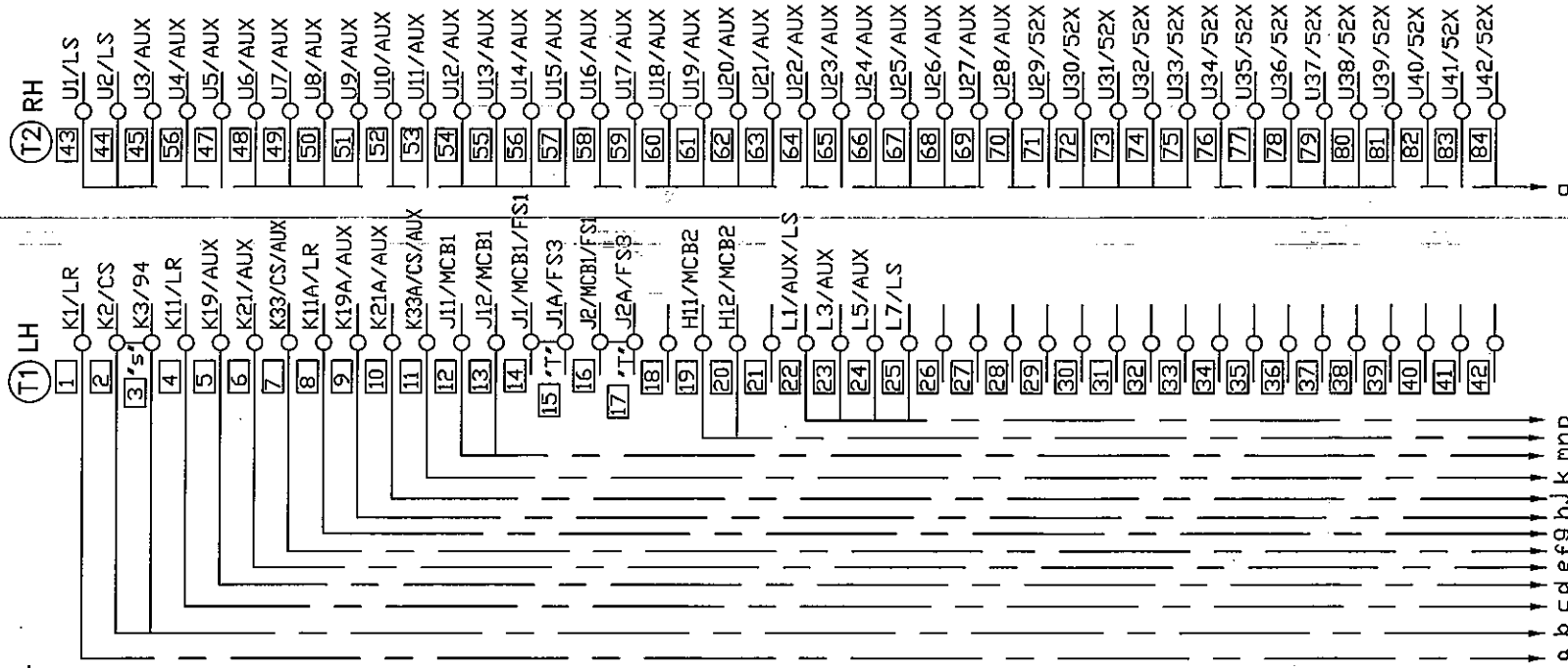


	AREVA T&D INDIA LIMITED		
	KOTAMBI WORKS, VADODARA-391510		
SCALE: NTS	Schematic Diagram Of 36kV Outdoor		
DATE: 04/11/11	VCB Type PCOB-36 for M/s. APTRANSCO		
DRAWN: Dipti			
CHECKED: RKS	S.O. No.	DRAWING NO.	REV.
APPROVED:	STANDARD	XWC:5103A	0

DATE :
BY :
APP. :

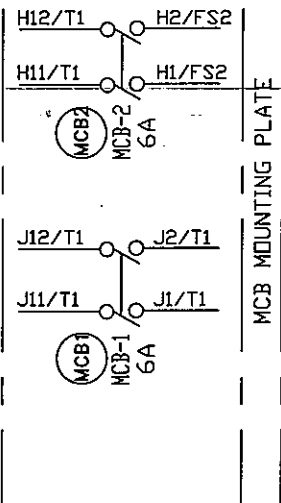
XWC:5104A

TOTAL NO. OF WIRES : 120



FRONT VIEW OF INTERIOR OF INSTRUMENT CHAMBER

FRONT-VIEW OF MECH.



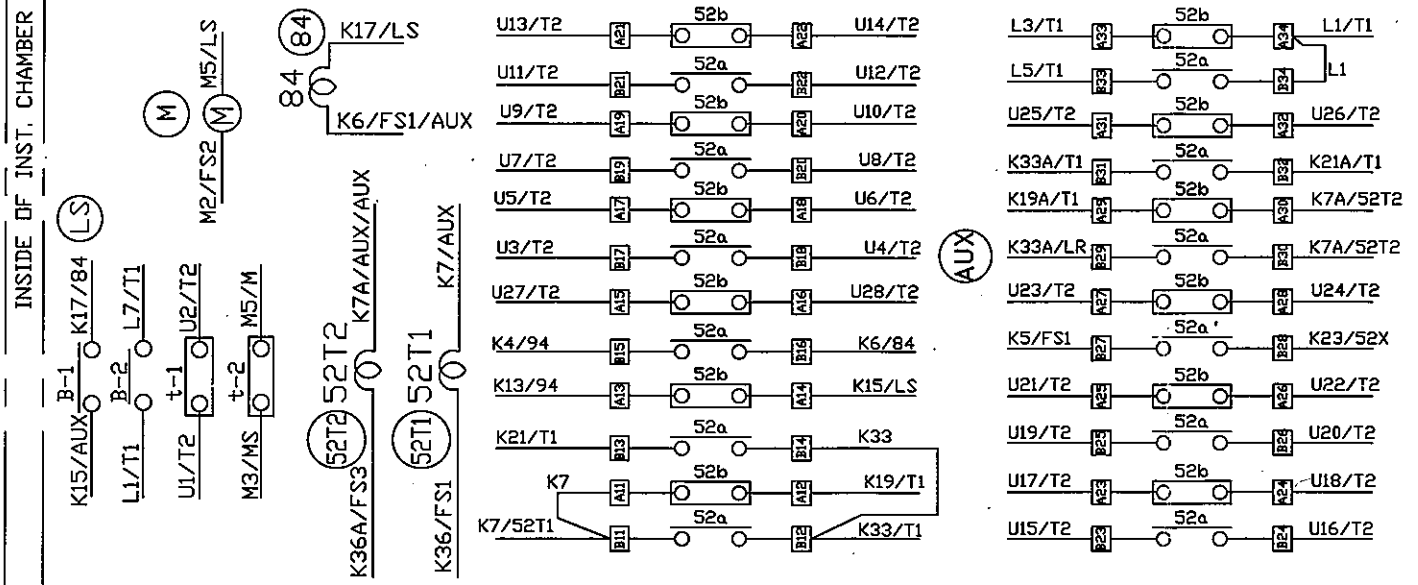
MCB MOUNTING PLATE

LEGEND	DESCRIPTION
52a	AUXILIARY SWITCH (CLOSES WHEN BKEAKER CLOSED)
52b	AUXILIARY SWITCH (CLOSES WHEN BKEAKER OPEN)
B-1 & B-2	SPRING MECHm. LIMIT SWITCH (CLOSES WHEN SPRING CHARGED)
t-1 & t-2	SPRING MECHm. LIMIT SWITCH (CLOSES WHEN SPRING DISCHARGED)
M	SINGLE PHASE MOTOR
MS	MOTOR STARTER
84	CLOSING COIL
52T1 & 52T2	SHUNT TRIP COILS
43L/R	LOCAL/REMOTE SELECTOR SWITCH
9CS	BREAKER CONTROL SWITCH (T-TRIP, N-NEUTRAL, C-CLOSE)
SOC	3-PIN SOCKET WITH SWITCH
IL	ILLUMINATING LAMP
DS	DOOR SWITCH (SHOWN IN DOOR CLOSED POSITION)
H	HEATER
8Hs	HEATER SWITCH
THS	THERMOSTAT
94	PLUG IN ANTI-PUMPING RELAY WITH 2-C/O CONTACTS
FS & LK	FUSES AND LINKS
MCB-1	DOUBLE POLE MINATURE CIRCUIT BREAKER FOR DC CIRCUIT
MCB-2	DOUBLE POLE MINATURE CIRCUIT BREAKER FOR AC CIRCUIT
52X	AUX. CONTACTOR FOR CONTACT MULTIPLICATION

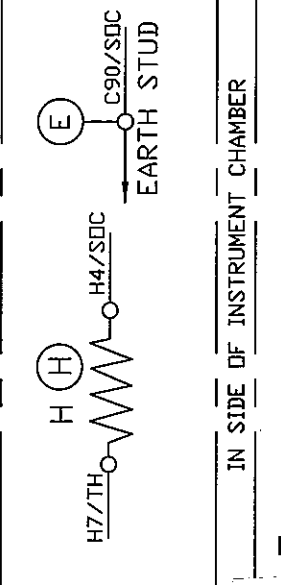
NOTE:-

- REMOVE SHORT LINK 'S' BETWEEN K2 & K3 FOR INTERLOCK CIRCUIT,IF REQD.
- REMOVE SHORT LINK 'T' BETWEEN J1 & J1A AND J2 & J2A FOR TWO SEPERATED/INDEPENDENT TRIP CIRCUIT,IF REQD.
- WIRING-
 - GENERAL: 2.5 SQ. MM. PVC INSULATED OR EQUIVALENT COPPER WIRE
 - COLOURING- BLACK FOR AC CKT. & SPARE
 - GRAY FOR DC CKT.
 - GREEN FOR EARTH
- a) FOR REMOTE CLOSING
- b) FOR REMOTE INTERLOCK
- c) FOR REMOTE TRIPPING TRIP CKT.-1
- d) FOR REMOTE PRECLOSE TRIP CKT.-1 SUPERVISION
- e) FOR REMOTE POSTCLOSE TRIP CKT.-1 SUPERVISION
- f) TO REMOTE PROTECTION TRIP-1
- g) FOR REMOTE TRIPPING TRIP CKT.-2
- h) FOR REMOTE PRECLOSE TRIP CKT.-2 SUPERVISION
- i) FOR REMOTE POSTCLOSE TRIP CKT.-2 SUPERVISION
- k) TO REMOTE PROTECTION TRIP-2
- n) 220V DC CONTROL SUPPLY
- n) 230V AC SUPPLY
- p) TO REMOTE FOR ON, OFF & SPG. CHARGED INDICATION
- q) SPARE CONTACT OF LIMIT SWITCH/BREAKER AUX. SWITCH

FOR DETAIL SCHEMATIC DIAGRAM REFER DRAWING XWC:5103A



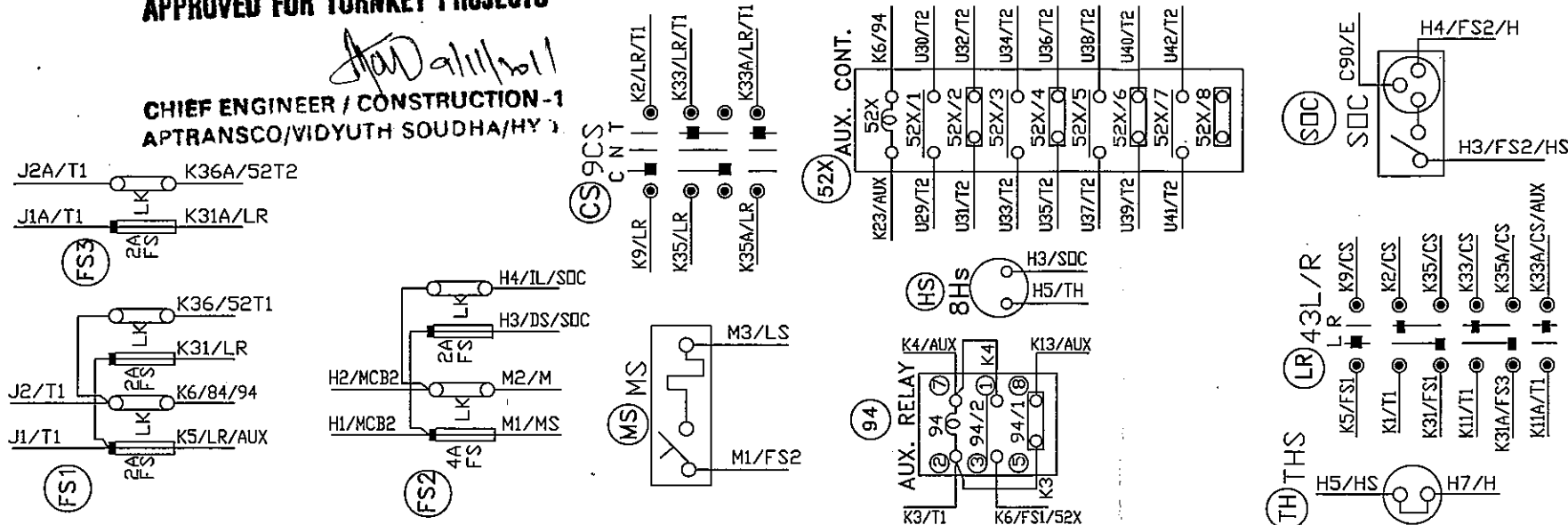
FRONT-VIEW OF MECH.



IN SIDE OF INSTRUMENT CHAMBER

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION -1
APTRANSKO/VIDYUTH SOUDHA/HY



REAR VIEW OF INST.

Standardised Drawing for 36 kV Vacuum Circuit Breaker
(M/s Areva T&D India Ltd.,)
STD/GTP-DWG/Approval No. 249-6- 1 sheet Revision No. ()
Prepared & Approved during November - 2011

Customer ref : APTRANSKO
Title: Wiring Diagram of 36 kV Outdoor VCB

		AREVA T&D INDIA LIMITED KOTAMBI WORKS, VADODARA-391510	
SCALE: NTS	Wiring Diagram Of 36kV Outdoor VCB Type PCOB-36 for M/s. APTRANSKO		
DATE: 04/11/11			
DRAWN: Dipti			
CHECKED: RKS	S.O. No.	DRAWING NO.	REV.
APPROVED:	STANDARD	XWC:5104A	0