

4601561/2021/EEMRT-ENE51

1). Minimum 300 mm Plinth shall be maintained for Current transformers in the substation during foundation works to ensure safe live to ground clearances as per IE rules.

2). Since the supply of terminal connectors is not in the scope of CT Manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with the CT requirement and compatibility.

**LIST OF STANDARD DRAWINGS**

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

145 KV INDUCTIVE VOLTAGE TRANSFORMER			IVT RATIO - $\frac{132kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}} - 110 - \frac{110V}{\sqrt{3}}$				
SR.NO.	TITLE	DRAWING NO.	REV.	RECORD			
				APPLICATION		RETURN	
				KIND	DATE	DATE	CC
01	GENERAL ARRANGEMENT DRAWING	145IVT II WDG GA	R0	AA	06.05.2021		
02	SECTIONAL VIEW	145IVT II WDG SV	R0	AA	06.05.2021		
03	RATING & SCHEMATIC DIAGRAM	145IVT II WDG RS	R0	AA	06.05.2021		
04	SECONDARY BOX ASSEMBLY	145IVT II WDG SB	R0	AA	06.05.2021		

IF IN DOUBT ASK

- AA : Application for Approval
- RA : Reapplication for Approval
- FD : Final Drawing
- RD : Reference Drawing
- AP : Approved
- AC : Approved with Corrections
- RC : Return for Corrections
- CC : Customer Comments


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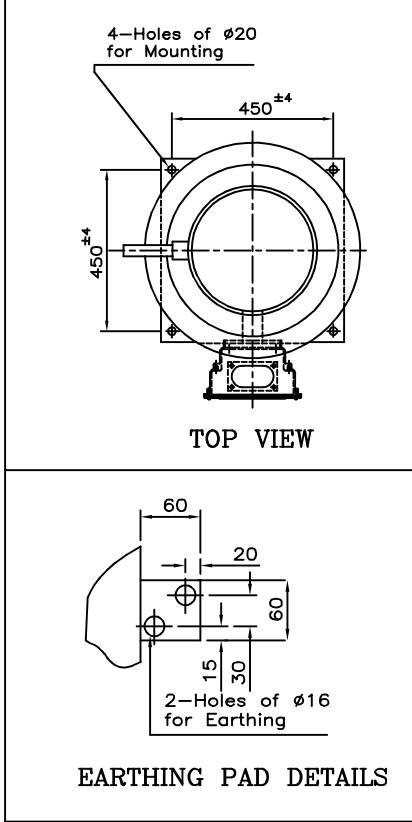
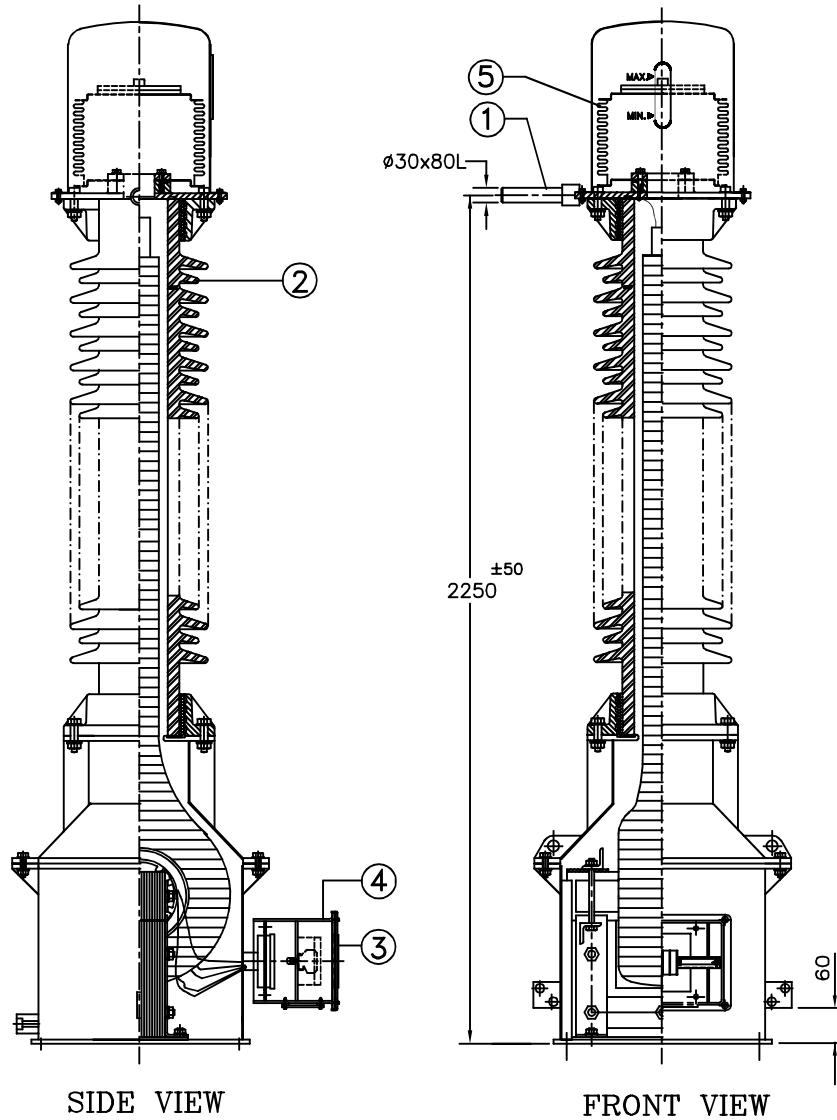
SURFACE FINISH.....  
FINISH : MS COMPONENT- HOT DIP GALVANISED.

PACKING DIMENSIONS : L-920 x W-680 x H-2725 mm.  
NET WEIGHT : 400 Kg. (Approx.)  
GROSS WEIGHT : 600 Kg. (Approx.)

Customer : APTRANSCO  
Customer Order Ref. :  
QUANTITY :

R6			R4			R2				SIGN	NAME	<b>LIST OF DRAWINGS</b> 145 KV INDUCTIVE VOLTAGE TRANSFORMER TYPE-VBOT:145/850/50				
R5			R3		R1				DRN	STJ						
									CHD	SSM						
										APPD	SDS					
NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	SCALE	N.T.S.	DATE: 06.05.2021	ALL DIMENSIONS ARE IN mm	DRG.NO:-145IVT II WDG LD/R0


IF IN DOUBT ASK



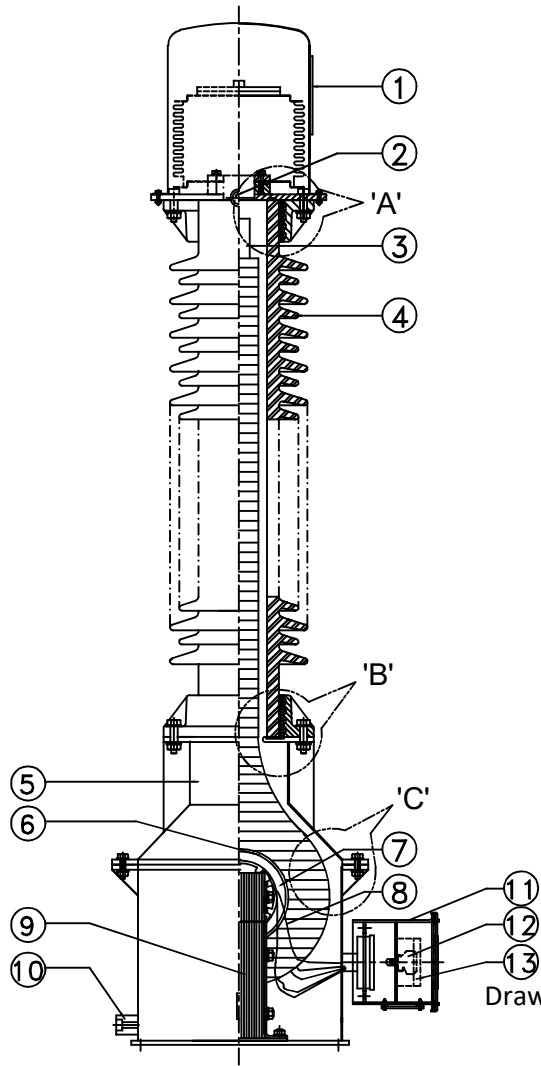
NO.	QTY.	DESCRIPTION	MATERIAL
1	1	PRIMARY TERMINAL( $\phi 30 \times 80L$ ) Min.	COPPER
2	1	PORCELAIN INSULATOR (BROWN COLOUR)	PORCELAIN
3	1	RATING & SCHEMATIC DIAGRAM	145MT II WDG RS
4	1	SECONDARY TERMINAL BOX	145MT II WDG SB
5	1	BELLOWS	STAINLESS STEEL

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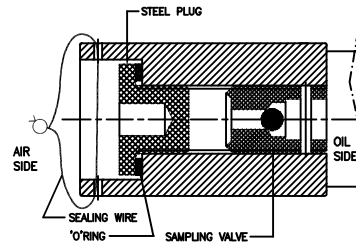
NOTE : PLEASE REFER INSTRUCTION MANUAL FOR HANDLING & TRANSPORTATION OF IVT.

R6		R4		R2		SIGN	NAME	GENERAL ARRANGEMENT DRAWING	 CG Power and Industrial Solutions Limited, Aurangabad			
R5		R3		R1		DRN	STJ	FOR 145 KV INDUCTIVE VOLTAGE TRANSFORMER				
						CHD	SSM	TYPE-VEOT:145/650/50				
						APPD	SDS					
NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	SCALE	N.T.S.	DATE: 06.05.2021	ALL DIMENSIONS ARE IN mm	DRG.NO:-145MT II WDG GA/RO

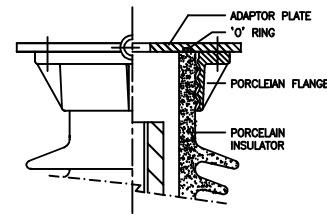
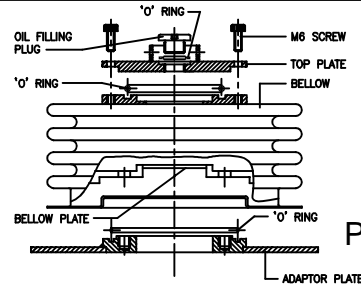
IF IN DOUBT ASK



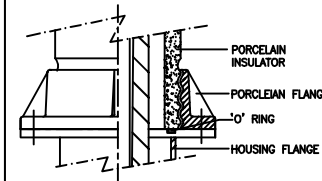
ITEM NO. 9  
ASSEMBLY OF OIL SAMPLING VALVE



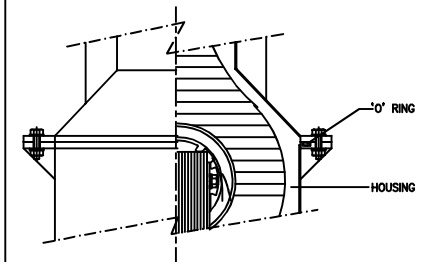
ASSEMBLY OF BELLOWS



DETAILS OF 'A'



DETAILS OF 'B'



DETAILS OF 'C'

ITEM	QTY.	DESCRIPTION
1	1	OIL LEVEL INDICATOR
2	1	PRIMARY TERMINAL(ø30x80mm.Long.Min)
3	1	COND. BUSHING
4	1	PORCELAIN INSULATOR
5	1	HOUSING
6	1	SHIELD
7	1	PRIMARY WINDING
8	1	SECONDARY WINDING
9	1	CRGO-CORE
10	1	OIL SAMPLING VALVE
11	1	SECONDARY TERMINAL BOX
12	7	SECONDARY TERMINALS
13	3	HRC FUSES

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R6			R4			R2			SIGN	NAME	<b>SECTIONAL VIEW DRAWING</b> FOR 145 KV INDUCTIVE VOLTAGE TRANSFORMER TYPE-VEOT:145/650/50					
R5			R3		R1			DRN	STJ							
								CHD	SSM							
								APPD	SDS							
NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	SCALE	N.T.S.	DATE: 06.05.2021	ALL DIMENSIONS ARE IN mm	DRG.NO:-145VT II WDG SV/RO

1). Minimum 300 mm Plinth shall be maintained for Current transformers in the substation during construction work to ensure sufficient clearance to ground clearances as per IE rules.

2). Since the supply of terminal connectors is not in the scope of CT Manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with the CT requirement and compatibility.

**NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.**

**145 KV INDUCTIVE VOLTAGE TRANSFORMER**

RATING & SCHEMATIC DIAGRAM

MFG. BY :- CG Power and Industrial Solutions Limited, D2 MIDC Waluj, Aurangabad  
MADE IN INDIA



Customer : APTRANSCO

Customer Order Ref. :

TYPE	VEOT:145/650/50	S.O.NO.		YEAR	
SPEC.	IS : 16227 -1&3 / IEC:61869-1&3	RATED FREQ.	50 Hz	IVT SR.NO	

	WINDING-I		WINDING-II	
	1a - 1n	2a1 - 2n	2a2 - 2n	
VOLTS	110/√3	110	110/√3	
BURDEN (VA)	150	50	50	
ACCURACY CLASS	0.2	3P	3P	

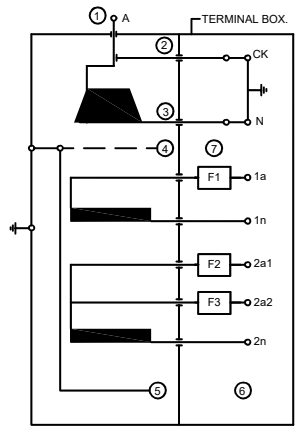
HIGHEST SYSTEM VOLTAGE	145 KV	INSULATION LEVEL	275 kV/ 650 kVp
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VOLTAGE FACTOR	1.2 CONT./1.5-30SEC.	CREEPAGE DISTANCE	3625 mm
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TOTAL WEIGHT	400 ±10% Kg	OIL VOLUME	90 ±10% Litre
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1. PRIMARY TERMINAL (H.V.)
2. CAPACITANCE TAN DELTA LEADOUT FROM BUSHING ACTIVE PART.
3. NEUTRAL END OF HV WINDING.
4. EARTH SHIELD BETWEEN HV & LV. (CONNECTED TO EARTH INSIDE HOUSING.)
5. CORE EARTHING LEAD (CONNECTED TO EARTH INSIDE HOUSING)
6. SECONDARY LEADOUT.
7. HRC FUSE = 6AMP.

**CAUTION:**  
-ENSURE LV TERMINALS ARE NOT SHORTED IN OPERATION.  
-ENSURE Ck and N ARE CONNECTED TO EARTH BEFORE CHARGING IVT.



4 HOLES OF Ø4.5 mm  
Material—Aluminium Anodised.

IVT SR.NOs. :

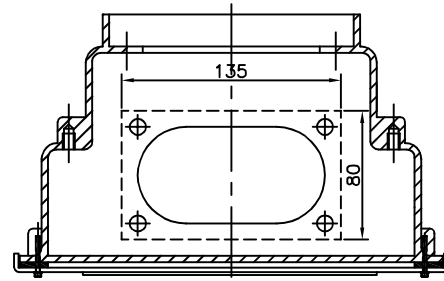
IF IN DOUBT ASK

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APTRANSCO

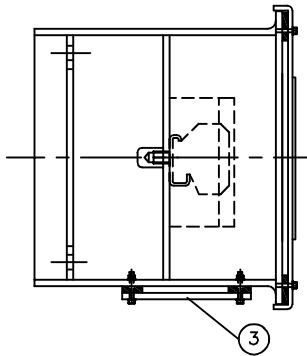
R6			R4			R2					SIGN	NAME	<b>RATING &amp; SCHEMATIC DIAGRAM</b> <b>145 KV INDUCTIVE VOLTAGE TRANSFORMER</b> <b>TYPE-VEOT:145/650/50</b>			
R5			R3			R1				DRN	STJ					
										CHD	SDS					
										APPD	SDS					
NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	SCALE	1:1	DATE : 06.05.2021	ALL DIMENSIONS ARE IN mm	DRG.NO:-145IVT II WDG RS/RO

SL.NO.	QTY	ITEM	MATERIAL	RM SIZE/SPECIFICATION
1	1	SECONDARY BOX ASSEMBLY	ALUMINIUM	DRG.NO.-480684
2	7	SEC.TERMINAL BLOCK WITH MARKER	MELAMINE	MAKE: ELMEX KBT M5-15
3	1	GLAND PLATE	ALUMINIUM	135x80 mm.
4	1	RATING & SCHEMATIC DIAGRAM	ALUMINIUM ANOD.	--
5	3	HRC FUSE	STD.MAKE	RATING - 6 AMP.

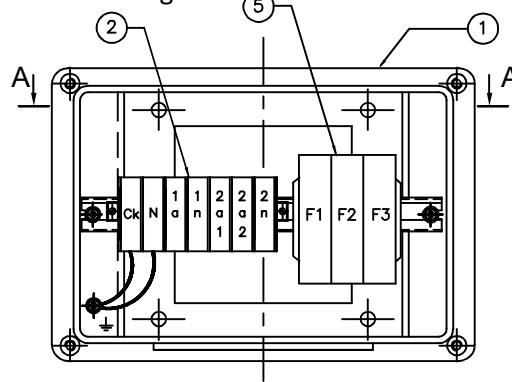


TOP VIEW (SECTION A-A)

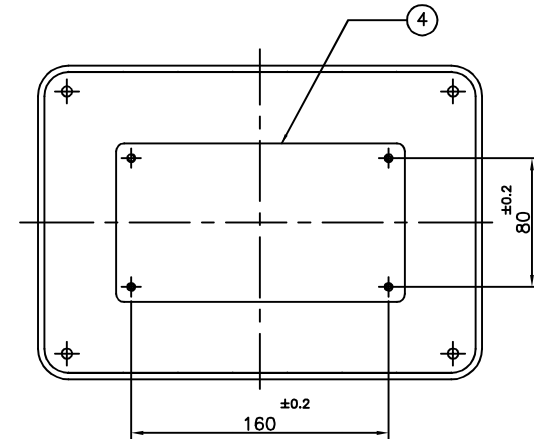
Drawing approval subject to valid vendor registration



SIDE VIEW



ELEVATION



COVER

IF IN DOUBT ASK

NOTES :

- 1) SECONDARY BOX ASSEMBLY TO CONFIRM IP55 AS PER IS:13947
- 2) Ck:TERMINAL FOR CAPACITANCE & TAN DELTA MESUREMENT ONLY. SHOULD BE KEPT EARTHED WHEN NOT IN USE.

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NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	SCALE	N.T.S.	DATE: 06.05.2021	ALL DIMENSIONS ARE IN MM	DRG.NO: 145IVT II WDG SB/RO
R6				R4				R2								
R5				R3				R1								

SIGN	NAME
DRN	STJ
CHD	SSM
APPD	SDS

**SECONDARY BOX ASSEMBLY**  
FOR 145 kV INDUCTIVE VOLTAGE TRANSFORMER  
TYPE-VEOT:145/650/50



CG Power and Industrial Solutions Limited, Aurangabad

**CG Power and Industrial Solutions Limited**  
**Vacuum Interrupters and Instrument Transformers Division: Power Systems**  
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T: +91 240 255 8000 F: +91 240 255 4697



**GUARANTEED TECHNICAL PARTICULARS FOR  
ELECTROMAGNETIC (INDUCTIVE) VOLTAGE TRANSFORMERS**

REF.	145 KV IVT	132000/√3 /110/√3 + 110-110/√3 V, Normal Creepage.	Revision No.	R0
Sr#	Particulars	Unit	Values	
1	Type/ Installation			
2	Manufacturer's Name and Country of Manufacture		CG Power and Industrial Solutions Limited Aurangabad, India	
3	Manufacturers Type designation		VEOT:145/650/50	
4	Highest System Voltage (Ph. to ph.)	kV	<b>145</b>	
5	Type of insulation used		Class A (Oil Impregnated Paper)	
6	Rated Frequency	Hz	50	
7	Suitable for Altitude (Max)	Meters	1000	
8	Conforming to Standard		IS: 16227-1&3 / IEC: 61869-1&3	
9	Rated System Voltage	kV	132/√3	
10	No. of Secondary Windings		Two	
11	Secondary Winding Details		I	II
12	Rated Primary voltage	Volts	132000/√3	132000/√3
13	Rated Secondary Voltage	Volts	110/√3	110 - 110/√3
14	Rated Secondary Burden	VA	150	50
15	Accuracy Class		0.2	3P
16	Rated Voltage Factor		1.2 Continuous, 1.5 for 30 secs.	
17	Simultaneous Burden		NA	
18	One minute Power Frequency (Wet & Dry) withstand Voltage on Primary Winding	kV rms	275	
19	1.2/50 micro sec. Lightning Impulse withstand Voltage	kV peak	650	
20	One minute Power Frequency withstand Voltage on Secondary Winding	kV rms	3	
21	Total Creepage distance	mm (mm/kV)	3625 (25 mm/kV)	
22	Primary Terminal material & details		Copper, φ30 x 80 mm long	
23	Surface Finish of MS components exposed to atmosphere		Hot Dip Galvanized	
24	Secondary Terminal Box arrangement		Single Door Box.	
25	Volume of Oil	Litres	90 +/-10%	
26	Total weight of equipment	kg	400 +/-10%	
27	Mounting details	mm	4 holes of φ20 at 450 x 450 mm	
28	Dielectric Dissipation Factor ( Tan-Delta )		< 0.005	
29	Measurement of Partial Discharge @ 1.2 UM/ √3	pC	< 5	
30	Measurement of Partial Discharge @ UM	pC	< 10	

145 KV STD I

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Registered Office:  
CG House, 6th Floor, Dr Annie Besant Road, Worli, Mumbai 400 030, India  
T: +91 22 2423 7777 F: +91 22 2423 7733 W: www.cgglobal.com  
Corporate Identity Number: L99999MH1937PLC002641

**NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.**

- 1). Minimum 300 mm Plinth shall be maintained for Current transformers in the substation during foundation works to ensure safe live to ground clearances as per IE rules.
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**FOR EPC CONTRACTS ONLY**

Chief Engineer  
Power Systems, Planning & Design  
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