

Drawing approval subject to valid vendor registration

**Item: 145kV IVT**

**Ratio: 3-W**

**Creepage: 25mm/kV**

**Customer: APTransco, Andhra Pradesh**

**List of Standard Drawings/Documents:**

Sl. No.	Description	Drawing/ Doc No.
1	General Arrangement	APTR-08.25.145E1_REV No.02
2	Rating Plate	APTR-08.25.145E2_REV No.02
3	Terminal Box GA	APTR-08.25.145E3_REV No.02
4	Sectional View	APTR-08.25.145E4_REV No.01
5	GTP	--

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capability.

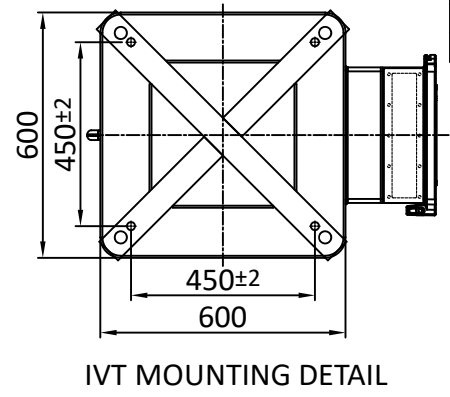
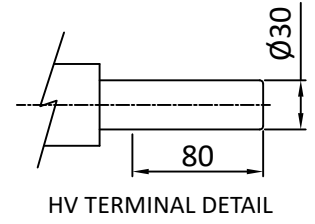
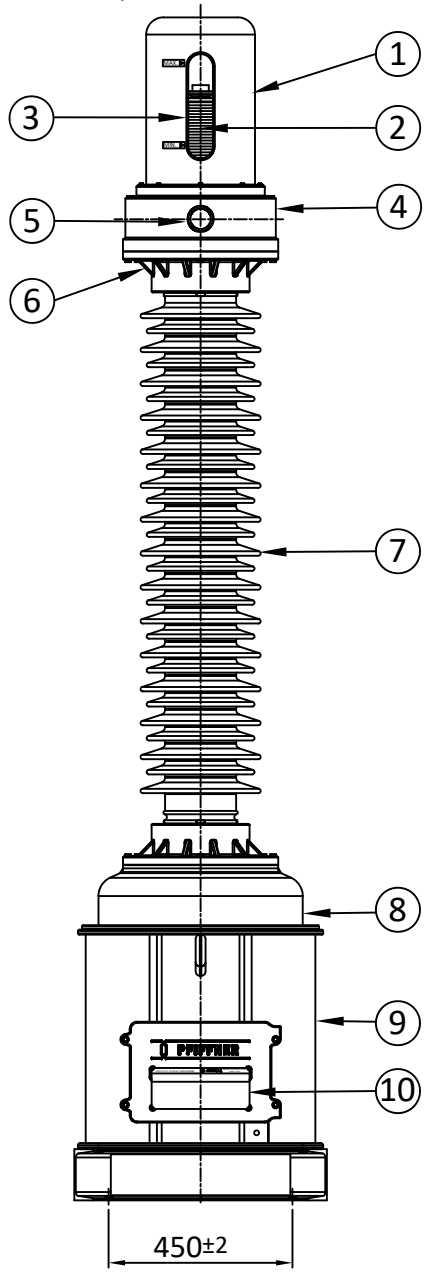
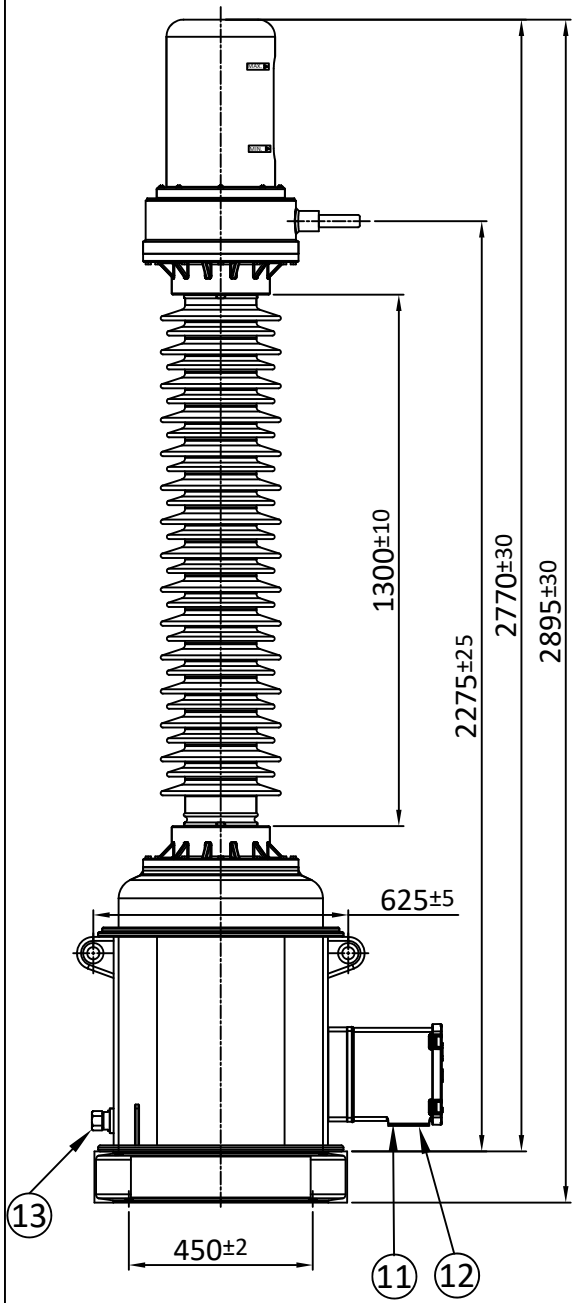
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NOTE:-1. Drawings approval subject to valid type test reports,

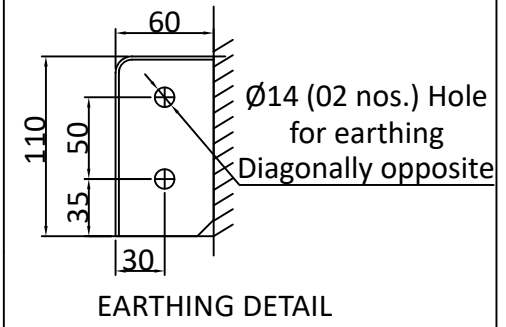
to be checked during acceptance tests.

2. For EPC contractors only.

IF IN DOUBT ASK



NO.	QTY.	DESCRIPTION	MATERIAL
01	01	BELLOWS COVER	ALUMINIUM
02	01	BELLOWS	STAINLESS STEEL
03	01	BELLOW LEVEL INDICATOR	POLYCARBONATE
04	01	CHAMBER	ALUMINIUM
05	01	HV TERMINAL	COPPER
06	02	INSULATOR FLANGE	ALUMINIUM
07	01	INSULATOR	PORCELAIN
08	01	TOP TANK	ALUMINIUM
09	01	BOTTOM TANK	ALUMINIUM
10	01	RATING & SCHEMATIC PLATE	ALUMINIUM
11	01	TERMINAL BOX	ALUMINIUM
12	01	GLAND PLATE	ALUMINIUM
13	01	OIL SAMPLING VALVE	STEEL GALVANISED



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TOTAL WEIGHT : 500 kg ±10%  
 TOTAL OIL WEIGHT : 110 kg ±10%  
 CREEPAGE DISTANCE : ≥3625 mm

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

02	AS PER CUSTOMER COMMENTS.	CHM	25.04.2023
01	AS PER CUSTOMER COMMENTS.	CHM	20.04.2023
REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL : NA		MATERIAL : NA	
WEIGHT : NA			
NAME	SIGN		
DRAWN	M.D.	09.03.2023	FINISH : NA
CHK'D	M.C.	09.03.2023	SCALE : N.T.S.
APPV'D	R.P.	09.03.2023	SHEET SIZE : A3

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**PIFFNER**  
 Instrument Transformers Pvt.Ltd.  
 NASHIK, INDIA

TITLE :  
 GENERAL ARRANGEMENT  
 145KV IVT  
 DWG NO. : APTR-08.25.145E1  
 SHEET 1 OF 1 | REV. NO. : 02

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<b>PIFFNER</b> Instrument Transformers Pvt.Ltd. NASHIK, INDIA		<b>INDUCTIVE VOLTAGE TRANSFORMER</b> MADE IN INDIA	
CUSTOMER : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.		PO No. : -----	
YEAR : ----	TYPE : EOF 145 W	SPECIFICATION : IS 16227, IEC 61869	SERIAL NO. : -----
A - N 132000/√3 V	1a - 1n	110/√3 V	2a - 2n
	VA	50	VA
	CLASS	3P	CLASS
	SIMULTANEOUS BURDEN / ACCURACY CLASS		TOTAL THERMAL LIMITING OUTPUT
H.S.V. : 145 kV	FREQUENCY : 50 Hz	150 VA / 0.2	300 VA
INSULATION LEVEL : 275 kV / 650 kVp			
VOLTAGE FACTOR : 1.2 CONT. / 1.5-30 sec.			
CREEPAGE DISTANCE : ≥3625 mm			
TOTAL WEIGHT : 500 ±10% kg	OIL WEIGHT : 110 ±10% kg		
A - PRIMARY TERMINAL (H.V.) B <sub>5</sub> - CAPACITANCE TAN DELTA LEADOUT N - NEUTRAL END OF PRIMARY WINDING. F1-F3 - FUSE (16 A)		CAUTION : - ENSURE SECONDARY TERMINALS ARE NOT SHORTED IN OPERATION. - ENSURE B <sub>5</sub> AND N ARE CONNECTED TO EARTH BEFORE CHARGING IVT. - CHECK BELLOWS POSITION.	
234±0.5		Ø1.7 (04 Nos.)	
240			

- Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
- Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capatibility.

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

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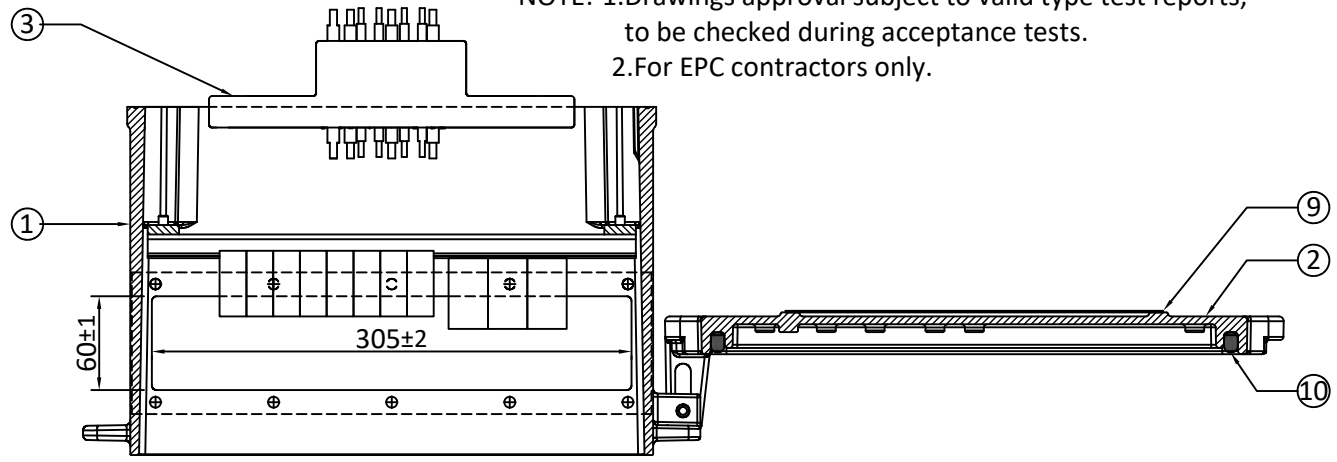
02	AS PER CUSTOMER COMMENTS.	CHM	26.04.2023
01	AS PER CUSTOMER COMMENTS.	CHM	20.04.2023
REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL : NA		MATERIAL : 1mm thick Aluminium metal photo	
WEIGHT : NA			
	NAME	SIGN	DATE
DRAWN	M.D.		09.03.2023
CHK'D	M.C.		09.03.2023
APPV'D	R.P.		09.03.2023
SPEC : NA		ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.	
FINISH : NA		SCALE : N.T.S.	
TITLE : RATING PLATE 145 kV IVT		SHEET SIZE : A3	
Instrument Transformers Pvt.Ltd. NASHIK, INDIA		DWG NO. APTR-08.25.145E2	
		SHEET 1 OF 1	
		REV. NO. : 02	

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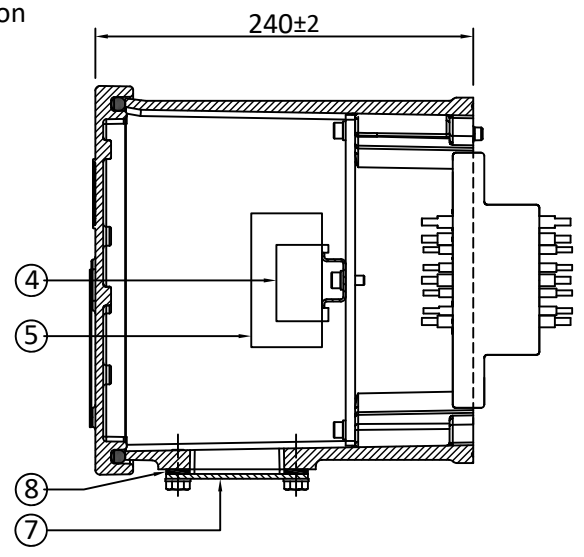
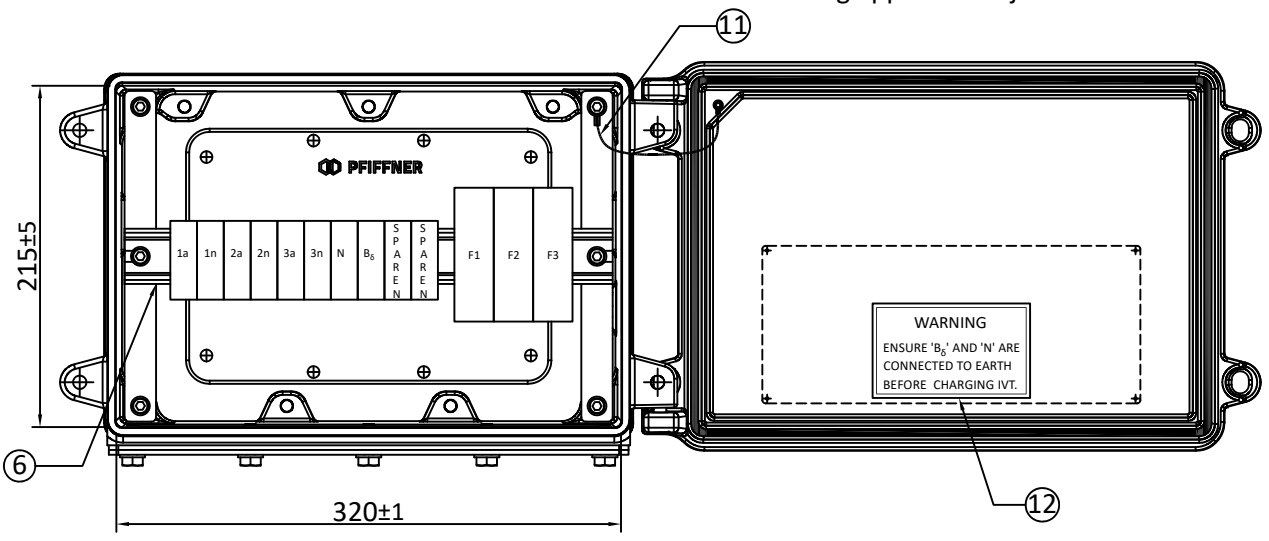
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SR.NO.	DESCRIPTION	QTY.	MATERIAL
1	TERMINAL BOX	1	ALUMINIUM
2	TERMINAL BOX COVER	1	ALUMINIUM
3	EPOXY MONOBLOCK	1	EPOXY
4	STUD TYPE TERMINAL BLOCK	8+2 SPARE	ELMEX OR EQUI.
5	FUSE - HRC (16 A)	3	GE / C&S
6	TERMINAL CARRIER RAIL	1	STEEL
7	GLAND PLATE ( 330x90x4 mm thk. )	1	ALUMINIUM
8	GLAND PLATE GASKET	1	RUBBER
9	RATING & SCHEMATIC PLATE	1	ALUMINIUM
10	DOOR GASKET	1	RUBBER
11	DOOR EARTHING CABLE	1	COPPER
12	WARNING STICKER	1	ALUMINIUM



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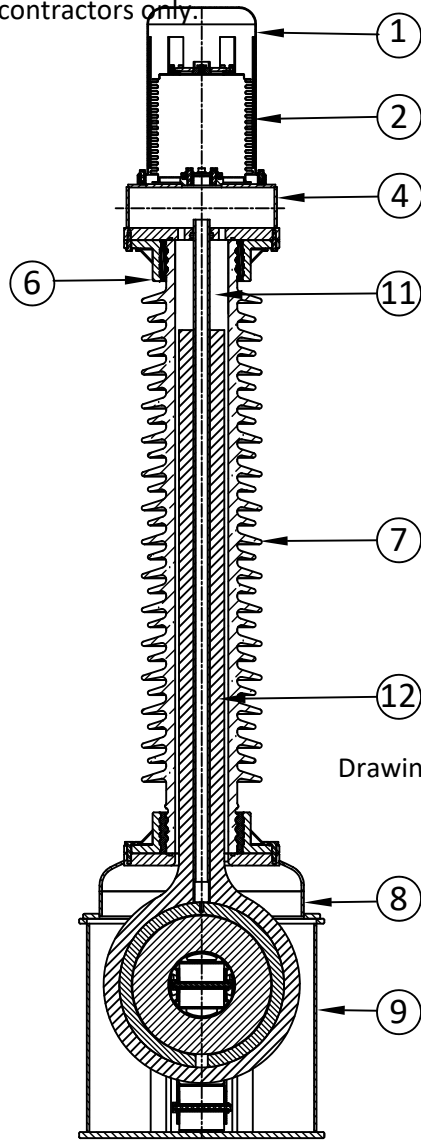
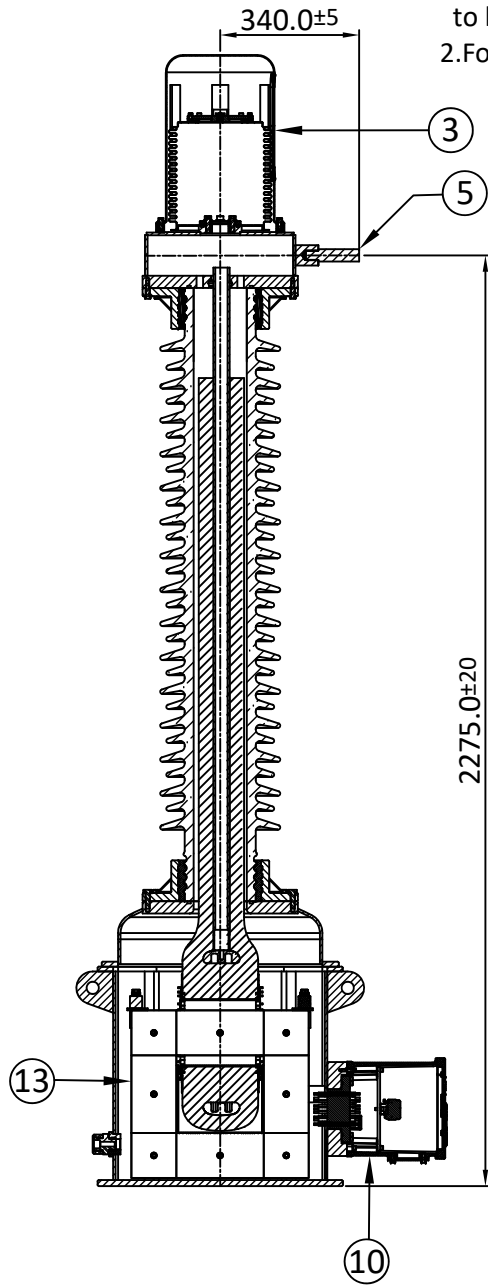
02	AS PER CUSTOMER COMMENTS.	CHM	26.04.2023
01	AS PER CUSTOMER COMMENTS.	CHM	20.04.2023
REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL : NA		MATERIAL : NA	
WEIGHT : NA			
NAME	SIGN		
DRAWN	M.D.	09.03.2023	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
CHK'D	M.C.	09.03.2023	SCALE : N.T.S.
APPV'D	R.P.	09.03.2023	SHEET SIZE : A3
		TITLE : TERMINAL BOX GA	
Instrument Transformers Pvt.Ltd.		145kv IVT	
NASHIK, INDIA		APTR-08.25.145E3	
		SHEET 1 OF 1	REV. NO. : 02

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NO.	QTY.	DESCRIPTION	MATERIAL
01	01	BELLOWS COVER	ALUMINIUM
02	01	BELLOWS	STAINLESS STEEL
03	01	BELLOWS LEVEL INDICATOR	POLYCARBONATE
04	01	CHAMBER	ALUMINIUM
05	01	HV TERMINAL	COPPER
06	02	INSULATOR FLANGE	ALUMINIUM
07	01	INSULATOR	PORCELAIN
08	01	TOP TANK	ALUMINIUM
09	01	BOTTOM TANK	ALUMINIUM
10	01	TERMINAL BOX	ALUMINIUM
11	-	INSULATING OIL	EHV Grade - MINERAL OIL
12	01	ACTIVE PART	OIL IMPREGNATED PAPER
13	01	CRGO CORE ASSEMBLY	CRGO (M4)

Notes:

HV Winding is SWG36 (Ø0.193mm) copper conductor of cross sectional area 0.0293 sq.mm.

LV Winding :  
LV Winding 1,2 and 3 is SWG14 (Ø2.032mm) four copper conductor in parallel of total cross sectional area 12.98 sq.mm.

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01	AS PER CUSTOMER COMMENTS.			CHM	25.04.2023
REV.NO.	DESCRIPTION			APPV'D	REV. DATE
GEN. TOL. : NA		MATERIAL : NA			
WEIGHT : NA		SPEC : NA			
DRAWN	M.D.	09.03.2023	FINISH : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.	
CHK'D	M.C.	09.03.2023	SCALE : N.T.S.	SHEET SIZE : A3	
APPV'D	R.P.	09.03.2023	TITLE :	DRG NO.	
<b>PFIFFNER</b> Instrument Transformers Pvt.Ltd. NASHIK, INDIA			SECTIONAL VIEW 145KV IVT	APTR-08.25.145E4	
				SHEET 1 OF 1	REV. NO. : 01

**Annexure**

**GUARANTEED TECHNICAL PARTICULARS FOR PTs**

**EOF 145 W OUTDOOR INDUCTIVE VOLTAGE TRANSFORMERS  
(145kV, 3 Windings 25mm Creepage)**

Sl.No	Particulars	Description		
1	Type	Dead Tank, Single Phase, Oil Filled, Outdoor type		
2	Manufacturer's type /Designation	EOF 145 W, / Pedestal Mounting		
3	Manufacturer's Name and address and Country of Manufacture	PFIFFNER Instrument Transformers Pvt Limited, Gat No. 176, 178/2, Sarul, Nashik 422010, Maharashtra, INDIA		
4	Mounting of tank (Bottom)	Bottom		
5	Conforming to Standard	Yes, IEC 61869-1&3		
6	Rated primary voltage (kV rms)	132 kV		
7	Rated highest voltage (kV rms)	145 kV		
8	Rated frequency (Hz)	50 Hz		
9	Secondary winding details			
	a) No. of secondary windings	Winding – I	Winding – II	Winding – III
	b) Rated secondary voltage(v)	110/v3	110/v3	110/v3
	c) Rated burden (VA)	50	50	50
	d) Class of accuracy	3P	3P	0.2
10	Temperature rise at 1.2 times rated voltage with rated burden (deg.C)	As per IEC61869		
11	Rated voltage factor and time	1.2 Continuous and 1.5 for 30seconds		
12	Impulse withstand test voltage (KV) peak.	650		
13	One minute power frequency withstand test voltage on primary (KV rms)	275		
14	One minute power frequency withstand test voltage on secondary (KV rms)	3		
15	Porcelain Bushing (make)	IEC / Modern / Ravikiran		
16	Total creepage distance of the bushing (mm)	≥ 3625 mm		
17	Protected creepage distance of the bushing (mm)	Not Applicable		
18	Quantity of insulating oil (Litres)	120 ± 10% (approx.)		
19	Weight of oil (Kg.)	110 ± 10% (approx.)		
20	Total Weight (Kg.)	500 ± 10% (approx.)		
21	Mounting details	450 x 450 (please refer GA drawing)		
22	Live parts to ground clearance			
23	Whether V.T. is sealed construction with nitrogen at top	YES, IVT is hermetically sealed with SS bellows.		
24	Overall dimensions	Please Refer Attached GA Drawing		
25	Grade of oil	IS 335		
26	Voltage Transformers shall carry 25% above the rated burden continuously without injury in respect of voltage Transformers	YES		
27	RIV at 1.1 x Um/Root3m(Micro Volts)	<1000 uV		
28	Partial Discharge	<10 pC @ Um <5 pC@1.2 @ Um/v3		
29	Tan Delta	< 0.5%		
30	Total thermal limiting output (VA)	300		
31	Simultaneous burden and accuracy class	150VA / 0.2		

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