Vijai Electricals Ltd., Transformer Testing Laboratory

ULR No. : TC776424000000154F

DOC No.	:	VELTTL/2024/154	Vijai Electricals Ltd., Plot no. 1A, Sector 12, IIE, SIDCUL, Haridwar, Haridwar, Uttarakhand, India - 249403
Telephone	:	+91 9258332206	
FAX	:	-	
E-Mail	:	surendra.sharma@vijai.co.in	
BO Code	:	None	

Test REPORT AS PER : IS 1180 : Part 1 (2014)

QR Code/Barcode : 100000223260

REPORT NO : 10146853/2024/SS/3_1 DATE : 18 Apr, 2024

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address	:	M/S. SOUMYA VIDYUT INDUSTRIES PLOT NO -2 , SHREE KRISHNA VIHAR,, VILLAGE - AKERA DOONGAR , VKI AREA , JAIPUR, JAIPUR, JAIPUR, RAJASTHAN, INDIA - 302013
b) Nature of sample	:	SS
c) Grade/Variety/Type/Class Size etc	:	05 kVA ,NOMINAL SYSTEM VOLTAGE , IN kV:11/ SQUARE ROOT 3 (1.732)/0.240kV, SINGLE PHASE TYPE , SEALED TYPE , ALUMINIUM WOUNDED , AMOURPHOUS CORE , ENERGY EFFICIENCY LEVEL -1
d) Declare values, if any	:	25000
e) Batch No. & Date of Manufacture	:	SR NO. 05 /
f) Quantity	:	01
g) Date of Receipt	:	28 Mar, 2024
h) BIS Seal	:	Verified by Sample Cell
i) IO's Signature	:	Verified by Sample Cell
j) Any other Information / Expiry Date, If any	:	-/NA
k) Date of Commencement of Testing	:	28 Mar, 2024
l) Date of Completion of Testing	:	16 Apr, 2024
m) Section Code	:	24EFFB2
n) Section Report No.	:	24EFFB2_1
o) Report Type	:	New
p) Reference Report No.	:	
q) Remarks	:	TEST REPORT SUBMITTED.

Vineesh Kumar
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 18 Apr, 2024 10:23 AM

1.

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PART B. SUPPLEMENTARY INFORMATION

1.	Reference to sampling procedure, wherever applicable.	Yes
2.	Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any.	Yes
3.	Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any.	No
3.	NABL Report required ?	Yes

Surendra Kumar Sharma
OIC Electrical
(Authorized Signatory)
Authorized on: 16 Apr, 2024 17:28 PM

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PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	8.8 (100%)	Total losses at 100 % load (Watts)	for 1-ph	-	95.0	Watt	86.96 (Before SC Test: 85.38W; After SC Test: 86.96W)
2	8.8 (50%)	Total losses at 50 % load (Watts)	for 1-ph	-	35.0	Watt	26.51 (Before SC Test: 26.10W; After SC Test: 26.51W)
3	21.4 c	No load current at 112.5 percent voltage.	281.3V & 3.6845 A	-	1.25	Ampere	0.35 (Before SC Test: 0.34A; After SC Test: 0.35A)
4	21.5.3.3	Oil leakage test (routine test)	The assembled transformer for non-sealed and sealed type with all fittings including bushings in position, shall be tested at a pressure equivalent to twice the normal head measured at the base of the tank for 6 h. There should be no leakage at any point. Tank with corrugations shall be tested for oil leakage test at a pressure of 15 kPa measured at the top of the tank for 6 h. There should be no leakage at any point.	-	-	-	No leakage observed at any point.
5	21.5.3.2	For Single Phase Distribution Transformers Up to Including 25 kVA : pressure test (routine test)	The transformer tank shall be tested at a pressure of 35 kPa above atmosphere pressure maintained inside the tank for 10 min. There should be no leakage at any point.	-	-	-	No leakage observed at any point.
6	21.5.3.1	For Single Phase Distribution Transformers Up to Including 25 kVA : pressure test (type test)	The tank shall be subjected to air pressure of 100 kPa above atmospheric pressure for 30 min. There should be no leakage at any point and there is no deformation of tank.	-	-	-	No deformation of tank is observed; No leakage is observed at any point.
7	21.3(c)	Short-circuit withstand test	In accordance with Cl. No 4 of IS:2026 Part 5	-	-	-	Short Circuit Withstand Test with Thermal Withstand Capability was performed and results found in order with the requirement of standard.
8	21.3(b)	Temperature-rise test	In accordance with Cl. No 5 of IS:2026 Part 2	-	40.0	˚C	20.33 (Oil Temperature Rise: 12.00˚C; Winding Temperature Rise: HV - 20.33˚C, LV - 19.86˚C)

9	21.3(a)	Lightning impulse test	In accordance with Cl. No 13.2, 13.3, 13.4 in IS:2026 Part 3	-	-	-	Lightning Impulse Test With Chopped on tail was performed and results found in order with the requirement of standard.
10	21.2 g)	Separate-source voltage withstand test	as per [IS 2026 (Part 3) Unit : KV	-	-	-	WITHSTOOD.
11	21.2 f)	Induced over-voltage withstand test	t/f shall withstand with over voltage as per [IS 2026 (Part 3)unit : KV	-	-	-	WITHSTOOD.
12	21.2 e)	Measurement of insulation resistance	as per [IS 2026 (Part 1)]. Unit : ohm-cm	-	-	-	Before & After SC Test: All IR Values are found ˃2000MΩ
13	21.2 d)	Measurement of no-load loss and current	as per [IS 2026 (Part 1)]. Unit : Amp	-	0.625	Ampere	0.082 (Before SC Test: No load current - 0.080A, No load Loss - 6.34W; After SC Test: No Load Current - 0.082A, No Load Loss - 6.36W)
14	21.2 c)	Measurement of short-circuit impedance (principal tapping, when applicable) and load loss at 50 percent and 100 percent load	as per [IS 2026 (Part 1)]. Unit : Ohm	2.25	2.75	%	2.49 (Calculated at 75˚C: Before SC Test: %Z - 2.49, Load Loss (50% load) - 19.76W, Load Loss (100% load) - 79.04W; After SC Test: %Z - 2.50, Load Loss (50% load) - 20.15W, Load Loss (100% load) - 80.60W)
15	21.2 b)	Measurement of voltage ratio and check of phase displacemen	as per [IS 2026 (Part 1)]. Unit : Volt	26.33	26.59	-	26.44 (Before and After SC Test: UV/un - 26.44; Polarity - Subtractive)
16	21.2 a)	Measurement of winding resistance	as per [IS 2026 (Part 1)]. Unit : Ohm	-	-	-	Average Winding Resistance at 75˚C: Before SC test: HV - 77.93Ω, LV - 68.29mΩ; After SC test: HV - 79.02Ω, LV - 69.06mΩ

Surendra Kumar Sharma
OIC Electrical
(Authorized Signatory)
Authorized on: 16 Apr, 2024 17:28 PM

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PART D. REMARKS

The sample "CONFORMS" the requirement of standard IS 1180 Part 1: 2014 with all amendments.

Surendra Kumar Sharma
OIC Electrical
(Authorized Signatory)
Authorized on: 16 Apr, 2024 17:28 PM

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TEST REPORT

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**
Name & Address of Customer	:	SOUMYA VIDYUT INDUSTRIES Plot No – 02, Shree Krishna Vihar , Village – Akera Doongar, VKI Area, Jaipur, Rajasthan, India - 302013
Customer Reference No. & Date	:	BIS Test Request
Date of Receipt of sample	:	28.03.2024
Date of Testing of Sample	:	28.03.2024 to 16.04.2024
Sample Description	:	5kVA, 11000/√3 / 240Volt, Single Phase Distribution Transformer
Manufacturer Serial No.	:	05
Make	:	SOUMYA VIDYUT INDUSTRIES
QR Code	:	100000223260
BIS Sample Code	:	10146853/2024/SS/3
Vijai Sample Code	:	VT0324005
Technical Specification of Sample	:	As assigned by customer
KVA Rating: 5KVA HV Rated Voltage: 11000/√3 Volt LV Rated Voltage: 240Volt HV Rated Current: 0.79 Ampere LV Rated Current: 20.83 Ampere Type: Outdoor, Sealed, Amorphous core Winding Material: Aluminium Type of Winding: Non - Circular Concentric No. of Phase: 1 Tapping's: NA Year of Manufacture:2024 Frequency: 50Hz Type of Cooling: ONAN Temperature Rise of Oil/Winding: 35/40°C		% Impedance: 2.5% Polarity: Subtractive Insulation Level HV: $3kV_{rms}/75kV_{peak}$ Insulation Level LV: $3kV_{rms}$ Total Losses at 75°C (Watt): 35Max (at 50% load) Total Losses at 75°C (Watt): 95Max (at 100% load) Energy Efficiency Level: 1 HV Winding Conductor: PE Aluminium wire, Bare dia : 0.96mm LV Winding Conductor: DPC Aluminium Strip, Bare size: 10.0mm x 2.5mm x 1No. Volume of Oil in litres: 18.0 Weight of Oil in kg: 15.0 Total Weight of Transformer in kg: 89.0 Tank Internal Dimensions (DxH): 300mmx550mm
Test Conducted	:	As per Sheet 2 of 20
Test Specification	:	IS 1180 Part 1:2014 (Amendment-1,2,3 & 4)
Test Witnessed By	:	-
No. of Pages of Test Report	:	20(Twenty) + Drawings - 3pages
Remarks	:	The sample Conforms the requirement of standard.

TESTED/PREPARED BY
RAPPRAVSEH SINGH
TEST ENGINEER

REVIEWED & AUTHORIZED BY
SURENDRA KUMAR SHARMA
QUALITY MANAGER

Note:
1. *This report relates only to the particular sample received for testing in good condition at VEL.*
2. *Laboratory is responsible only for observed results. Rest data has come from customer.*
3. *This report cannot be reproduced in part or full under any circumstances.*
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Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

Details of Test Conducted

Sl. No.	Name of Test		Test Specification
1	Measurement of Winding Resistance	:	As per clause 21.2a of IS 1180 Part-1: 2014
2	Measurement of Voltage Ratio and Check of Phase Displacement	:	As per clause 21.2b of IS 1180 Part-1: 2014
3	Measurement of Short Circuit Impedance and Load Loss at 50% and 100% Load	:	As per clause 21.2c of IS 1180 Part-1: 2014
4	Measurement of No Load Loss and Current	:	As per clause 21.2d of IS 1180 Part-1: 2014
5	Total Losses at 50% Load	:	As per clause 8.8 of IS 1180 Part-1: 2014
6	Total Losses at 100% Load	:	As per clause 8.8 of IS 1180 Part-1: 2014
7	Measurement of Insulation Resistance	:	As per clause 21.2e of IS 1180 Part-1: 2014
8	Induced overvoltage Withstand test	:	As per clause 21.2f of IS 1180 Part-1: 2014
9	Separate source Voltage withstand test	:	As per clause 21.2g of IS 1180 Part-1: 2014
10	Measurement of No Load Current at 112.5% Voltage	:	As per clause 21.4c of IS 1180 Part-1: 2014
11	Lightning Impulse Test (Chopped on Tail)	:	As per clause 21.3a of IS 1180 Part-1: 2014
12	Temperature Rise test	:	As per clause 21.3b of IS 1180 Part-1: 2014
13	Short –Circuit Withstand Test (Dynamic & Thermal)	:	As per clause 21.3c & 17 of IS 1180 Part-1: 2014
14	Pressure Test (Routine)	:	As per clause 21.2h & 21.5.3.2 of IS 1180 Part-1: 2014
15	Oil Leakage Test	:	As per clause 21.2j & 21.5.3.3 of IS 1180 Part-1: 2014
16	Pressure Test (Type)	:	As per clause 21.3d & 21.5.3.1 of IS 1180 Part-1: 2014

TESTED/PREPARED BY
RAPPRAVSEH SINGH
TEST ENGINEER

REVIEWED & AUTHORIZED BY
SURENDRA KUMAR SHARMA
QUALITY MANAGER

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**
Discipline - Electrical		**Group - Inductors & Transformers**

Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
1.	**Measurement of Winding Resistance** (As per clause 21.2a of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Oil Temperature measured: 24°C			CONFORMS
	HV Winding	-	64.68Ω	
	Calculated Average HV Resistance/Phase at 75 °C	-	77.93Ω	
	LV Winding	-	56.68mΩ	
	Calculated Average LV Resistance/Phase at 75 °C	-	68.29mΩ	
2.	**Measurement of Voltage Ratio and Check of Phase Displacement (Polarity)** (As per clause21.2b of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)*			CONFORMS
	Measurement of Voltage Ratio	26.46 ± 0.5%	26.44	
	Check of Phase Displacement (Polarity)	Additive/Subtractive	Subtractive	
3.	**Measurement of Short Circuit Impedance and Load Loss at 50% and 100 % Load** (As per clause 21.2c of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Oil Temperature measured: 24°C At 50% Load: Test Current (Amp): 0.394 Ampere			CONFORMS
	Impedance Voltage (Volt)		74.26	
	Measured Loss(Watt)		16.51	
	Calculated Loss at 75°C (Watt)		19.76	
	At 100% Load: Test Current (Amp): 0.787Ampere			
	Impedance Voltage (Volt)		148.51	
	Measured Loss (Watt)		66.02	
	Measured Impedance Voltage (%)		2.34	
	Calculated Impedance Voltage (%) at 75°C	2.5% (±10%)	2.49	
	Calculated Load Loss at 75°C (Watt)	-	79.04	

TESTED/PREPARED BY

Vijai Electricals Ltd. Transformer Testing Laboratory, Haridwar-249403

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
4.	**Measurement of No Load Loss and Current** (As per clause 21.2d of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Oil Temperature measured: 24°C Frequency: 50.0Hz Applied Voltage on LV Side (Volt): 240Volt No Load Current (Ampere) No Load Loss (Watt)	 0.625 (Max) -	 0.080 6.34	CONFORMS
5.	**Total Loss at 50% Load** (As per clause 6.8 of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Total Loss Calculated at 75°C (Watt)	 35.0(Max)	 26.10	CONFORMS
6.	**Total Loss at 100% Load** (As per clause 6.8 of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Total Loss Calculated at 75°C (Watt)	 95.0(Max)	 85.38	CONFORMS
7.	**Measurement of Insulation Resistance** (As per clause 21.2e of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* Oil Temperature measured: 24°C I.R. Value measured between HV Winding – LV Winding at 2500Volt DC (MΩ) HV Winding – Earth at 2500Volt DC (MΩ) LV Winding – Earth at 500Volt DC (MΩ)	 - - -	 >2000 >2000 >2000	CONFORMS
8..	**Induced overvoltage Withstand test** (As per clause 21.2f of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* The test voltage of 756Volt – 1Phase was applied on LV winding terminals of transformer. The supply frequency maintained at 200Hz. Duration of test was 30Sec.	 The transformer shall withstand 756Volt at 200Hz frequency for 30sec.	 Withstood	CONFORMS

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Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
9.	Separate source Voltage withstand test (As per clause 21.2g of IS 1180 Part-1: 2014) *(Routine Test Before Short Circuit Withstand Test)* On HV Side: The test voltage of 3kVrms (AC) was applied between HV Windings (all two HV terminals shorted) and Earth. The Tank and LV windings were shorted together and earthed. Duration of test was 60 seconds. On LV Side: The test voltage of 3kVrms (AC) was applied between LV Windings (all two LV terminals shorted) and Earth. The Tank and HV windings were shorted together and earthed. Duration of test was 60 seconds.	 The transformer shall withstand 3kVrms power frequency voltage for 60seconds. The transformer shall withstand 3kVrms power frequency voltage for 60seconds.	 Withstood Withstood	CONFORMS
10.	**Measurement of No Load Current at 112.5% Voltage** (As per clause 21.4c of IS 1180 Part-1: 2014) *(Special Test Before Short Circuit Withstand Test)* Oil Temperature measured: 24°C Frequency: 50.0Hz Applied Voltage on LV Side (Volt): 270Volt (P-N) Measured No Load Current (Ampere)	 1.25(Max)	 0.34	CONFORMS

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Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

11. **Lightning Impulse Test**
(As per Cl. No. 21.3a of IS 1180(part 1): 2014 Amendment No. 1,2,3,4 test procedure was followed as per IS: 2026-(Part-III), 2018 cl. No. 13.3

TEST PARAMETERS:
RATED VOLTAGE: 11/√3 kV
TEST VOLTAGE: 75 kVp ±3% For Full wave
82.5kVp ±3% For Chopped wave

WAVE SHAPE: T1= 1.20µs (±30% Tol.) &T2=50µs (±20%Tole.)For Full wave
T1= 1.20 µs (±30% Tol.) & T2=3µs to 6µs For Chopped wave

NOS. OF PHASE TESTED: 01

Sl. No.	Test Application Detail	Peak Magnitude (kVp)
1	Reduced Full Impulse Wave	41.74
2	100% Full Impulse Wave	73.54
3	100% Chopped Impulse Wave	81.73
4	100% Chopped Impulse Wave	82.18
5	100% Full Impulse Wave	73.34
6	100% Full Impulse Wave	74.49

Remarks: From the observation of enclosed oscillographic records, it is concluded that the transformer conforms to the requirements of the above mentioned standard with respect to the test carried out.

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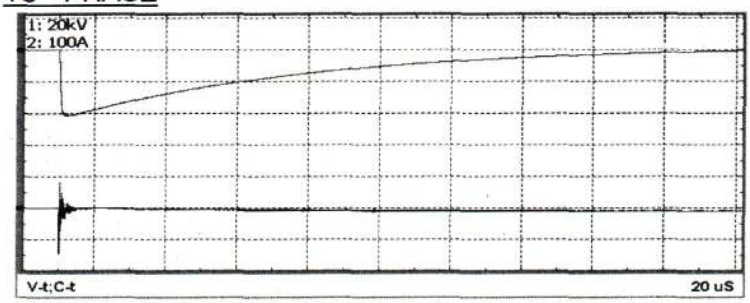
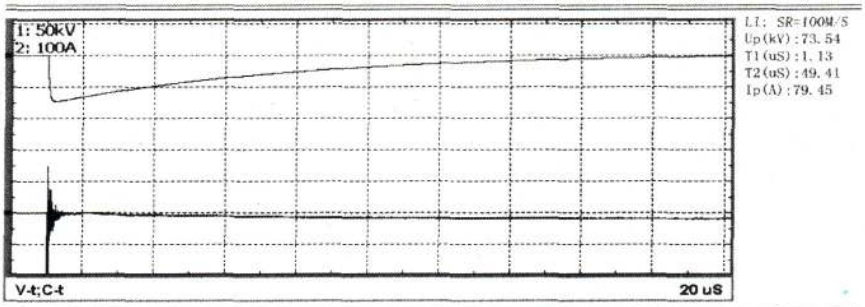
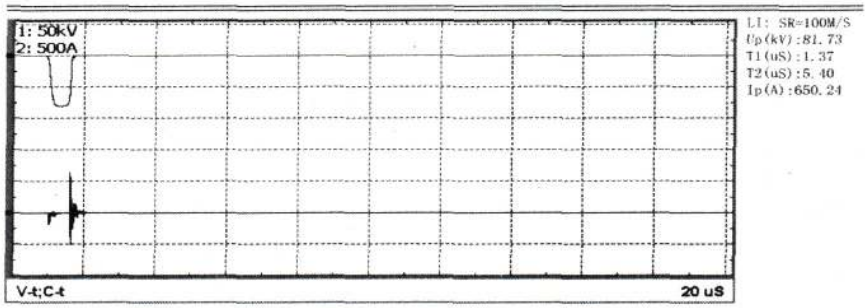
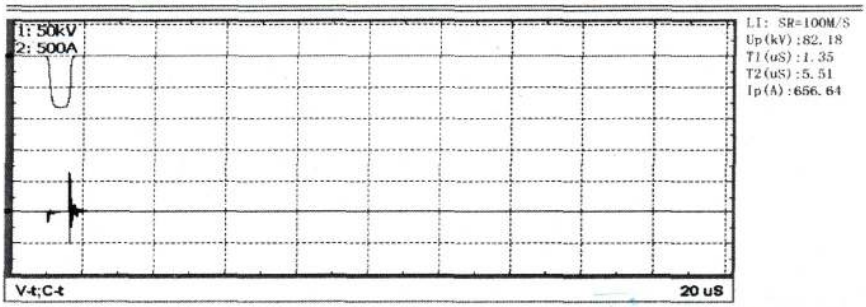
ULR No.	:	**TC776424000000154F**

1U - PHASE









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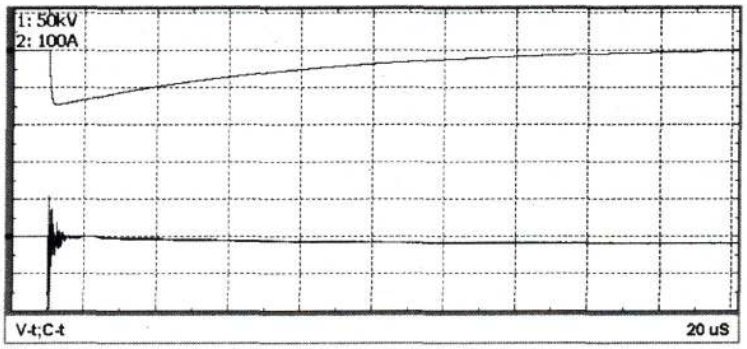

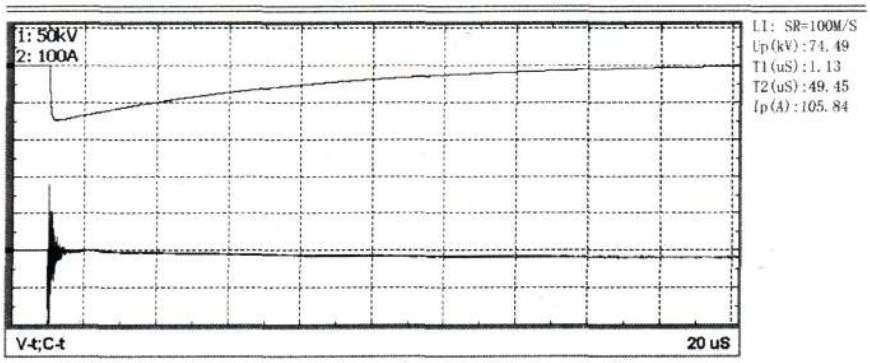

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Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
12.	**Temperature Rise Test** (As per clause 21.3b of IS 1180 Part-1 2014) Dimensions of Tank Measured: 300mm (Dia.) x 550mm(Height) Total Losses fed for Temperature Rise Test: 85.38Watt (Load loss: 79.04W; No Load Loss: 6.34Watt) Total measured losses were fed to transformer by connected the supply to HV windings and LV winding kept short-circuited to achieve the steady state temperature rise of top oil of transformer. The top oil and with ambient temperature were recorded hourly. After achieving the steady state of top oil temperature rise of transformer, the fed current is reduced to rated current and kept continue at rated current for 1hour. After one hour, shut down was performed and hot resistances were measured and calculated the temperature rise of windings.			CONFORMS
	a) Top Oil Temperature Rise:	Max. 35 °C	12.00 °C	
	b) HV Winding Temperature Rise:	Max. 40 °C	20.33 °C	
	c) LV winding Temperature Rise:	Max. 40 °C	19.86 °C	
	d: Ambient temperature at shutdown:	-	29.00 °C	
	d) Time of Shutdown (Hrs.):	-	05:05 Hrs.	

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13. **Short –Circuit Withstand Test (Dynamic & Thermal)**

(As per Clause No. 17 & 21.3 c of IS 1180 (Part 1): 2014)

The verification of the short-circuit withstand test was performed on the high voltage winding connected to three phase- balanced source and low voltage winding short circuited through current measuring instruments.
Test Conducted with pre-set short circuit as per attached circuit diagram.
Condition of the equipment under test: As after routine tests
Supply frequency: 50

Test No.	Oscillogram No.	Tap Changer Position	Applied Voltage (kV)	Short circuit current Measured on LV Side		Duration (msec.)	Remarks
				PEAK (A)	RMS (A)		
1	VT0324005 ET 1	NA	6.351	1313	811	494.69	No Abnormality
2	VT0324005 ET 2	NA	6.351	1311	820	503.43	No Abnormality
3	VT0324005 ET 3	NA	6.351	1313	812	501.29	No Abnormality
4	VT0324005 ET 4	NA	6.351	1143	796	2016.00	No Abnormality (Thermal Shot)

Measurement of the % reactance during the short circuit test:

LV Winding was short circuited. Three phase AC supply was connected to HV winding to pass test current. Before the short circuit test and after each shot, the percentage reactance was measured.

Sl. No.	Tap Changer Position	Measurement performed		Measured value of % reactance at 50 Hz	% Change in % Reactance
1	NA	Before Test		1.927	------
2	NA	After the Test no.	1	1.958	1.60
3	NA	After the Test no.	2	1.965	1.97
4	NA	After the Test no.	3	1.964	1.91
5	NA	After the Test no.	4	1.965	1.93

TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
13.1	**Measurement of Winding Resistance** (As per clause 21.2a of IS 1180 Part-1: 2014) *(Routine Test After Short Circuit Withstand Test)* Oil Temperature measured: 28°C			CONFORMS
	HV Winding	-	66.64Ω	
	Calculated Average HV Resistance/Phase at 75 °C	-	79.02Ω	
	LV Winding	-	58.24mΩ	
	Calculated Average LV Resistance/Phase at 75 °C	-	69.06mΩ	
13.2	**Measurement of Voltage Ratio and Check of Phase Displacement (Polarity)** (As per clause21.2b of IS 1180 Part-1: 2014) *(Routine Test After Short Circuit Withstand Test)*			CONFORMS
	Measurement of Voltage Ratio	26.46 ± 0.5%	26.44	
	Check of Phase Displacement (Polarity)	Additive/Subtractive	Subtractive	
13.3	**Measurement of Short Circuit Impedance and Load Loss at 50% and 100 % Load** (As per clause 21.2c of IS 1180 Part-1: 2014) *(Routine Test After Short Circuit Withstand Test)* Oil Temperature measured: 28°C			CONFORMS
	At 50% Load: Test Current (Amp): 0.394Ampere			
	Impedance Voltage (Volt)		74.60	
	Measured Loss(Watt)		17.14	
	Calculated Loss at 75°C (Watt)		20.15	
	At 100% Load: Test Current (Amp): 0.787Ampere			
	Impedance Voltage (Volt)		149.20	
	Measured Loss (Watt)		68.54	
	Measured Impedance Voltage (%)		2.35	
	Calculated Impedance Voltage (%) at 75°C	2.5% (±10%)	2.50	
	Calculated Load Loss at 75°C (Watt)	-	80.60	

TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
13.4	**Measurement of No Load Loss and Current** (As per clause 21.2d of IS 1180 Part-1 2014) *(Routine Test After Short Circuit Withstand Test)* Oil Temperature measured: 28°C Frequency: 50.0Hz Applied Voltage on LV Side (Volt): 240Volt (P-N) No Load Current (Ampere) No Load Loss (Watt)	 0.625 (Max) -	 0.082 6.36	CONFORMS
13.5	**Total Loss at 50% Load** (As per clause 6.8 of IS 1180 Part-1 2014) *(Routine Test After Short Circuit Withstand Test)* Total Loss Calculated at 75°C (Watt)	 35.0(Max)	 26.51	CONFORMS
13.6	**Total Loss at 100% Load** (As per clause 6.8 of IS 1180 Part-1 2014) *(Routine Test After Short Circuit Withstand Test)* Total Loss Calculated at 75°C (Watt)	 95.0(Max)	 86.96	CONFORMS
13.7	**Measurement of Insulation Resistance** (As per clause 21.2e of IS 1180 Part-1 2014) *(Routine Test After Short Circuit Withstand Test)* Oil Temperature measured: 28°C I.R. Value measured between HV Winding – LV Winding at 2500Volt DC (MΩ) HV Winding – Earth at 2500Volt DC (MΩ) LV Winding – Earth at 500Volt DC (MΩ)	 - - -	 >2000 >2000 >2000	CONFORMS
13.8	**Induced overvoltage Withstand test** (As per clause 21.2f of IS 1180 Part-1 2014) *(Routine Test after Short Circuit Withstand Test)* The test voltage of 756Volt – 1Phase was applied on LV winding terminals of transformer. The supply frequency maintained at 200Hz. Duration of test was 30Sec.	 The transformer shall withstand 756Volt at 200Hz frequency for 30sec.	 Withstood	CONFORMS

TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

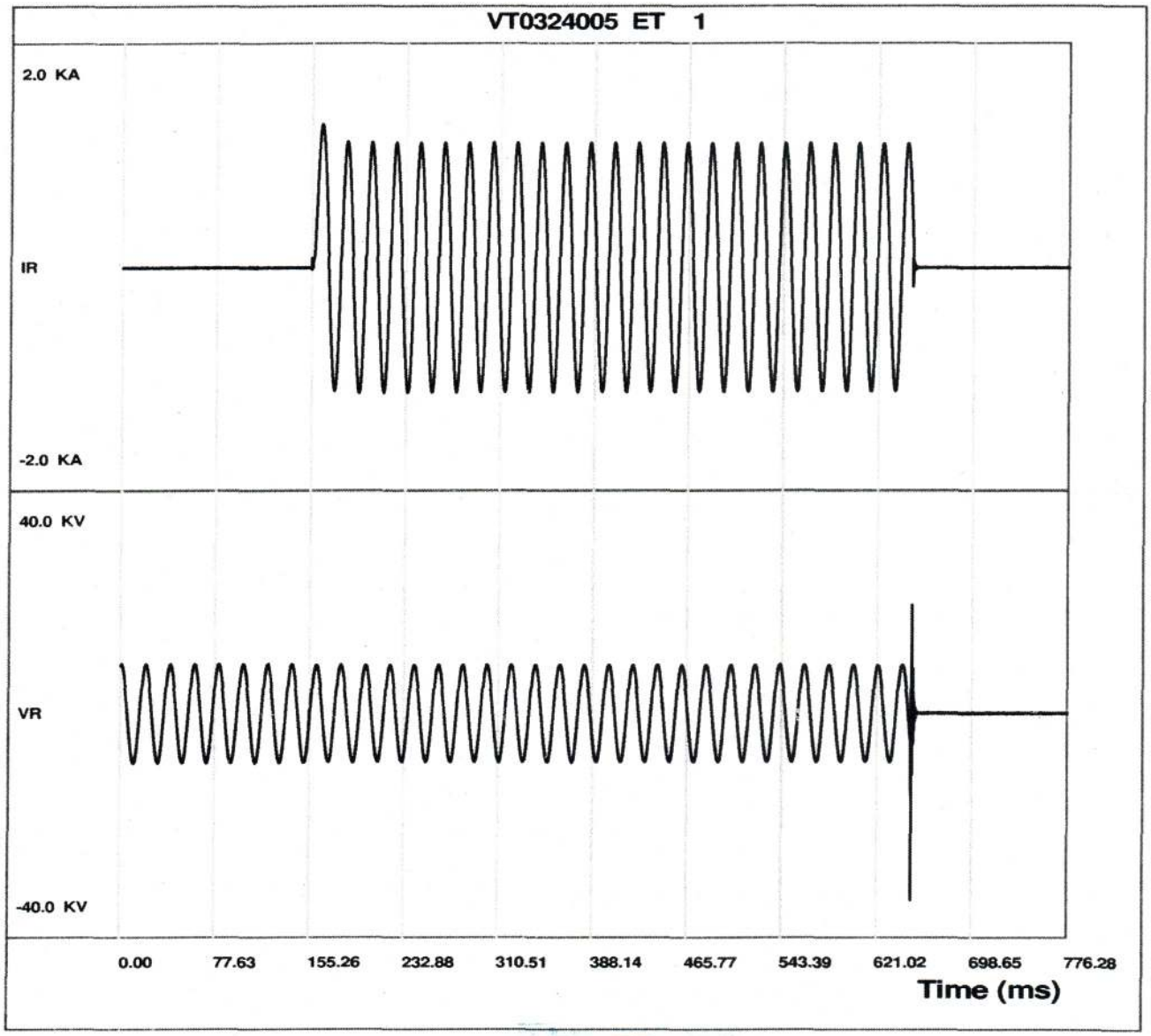
Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
13.9	Separate source Voltage withstand test (As per clause 21.2g of IS 1180 Part-1 2014) *(Routine Test after Short Circuit Withstand Test)* On HV Side: The test voltage of 3kVrms (AC) was applied between HV Windings (all two HV terminals shorted) and Earth. The Tank and LV windings were shorted together and earthed. Duration of test was 60 seconds. On LV Side: The test voltage of 3kVrms (AC) was applied between LV Windings (all two LV terminals shorted) and Earth. The Tank and HV windings were shorted together and earthed. Duration of test was 60 seconds.	The transformer shall withstand 3kVrms power frequency voltage for 60seconds. The transformer shall withstand 3kVrms power frequency voltage for 60seconds.	Withstood Withstood	CONFORMS
13.10	**Measurement of No Load Current at 112.5% Voltage** (As per clause 21.4c of IS 1180 Part-1 2014) *(Special Test After Short Circuit Withstand Test)* Oil Temperature measured: 28°C Frequency: 50.0Hz Applied Voltage on LV Side (Volt): 270Volt (P-N) Measured No Load Current (Ampere)	1.25 (Max)	0.35	CONFORMS

OBSERCVATIONS:	1. Physical Inspection of transformer was carried out after SC Withstand test. 2. Top cover of transformer was open and CCA of transformer was taken out from tank. 3. Core Coil Assembly was inspected and no physical damage or deformation observed.
Result:	1. % change in % reactance is found within limits as per standard. 2. Routine tests were carried before and after the Short Circuit Withstand Test and found within limits as specified by the standard.

TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

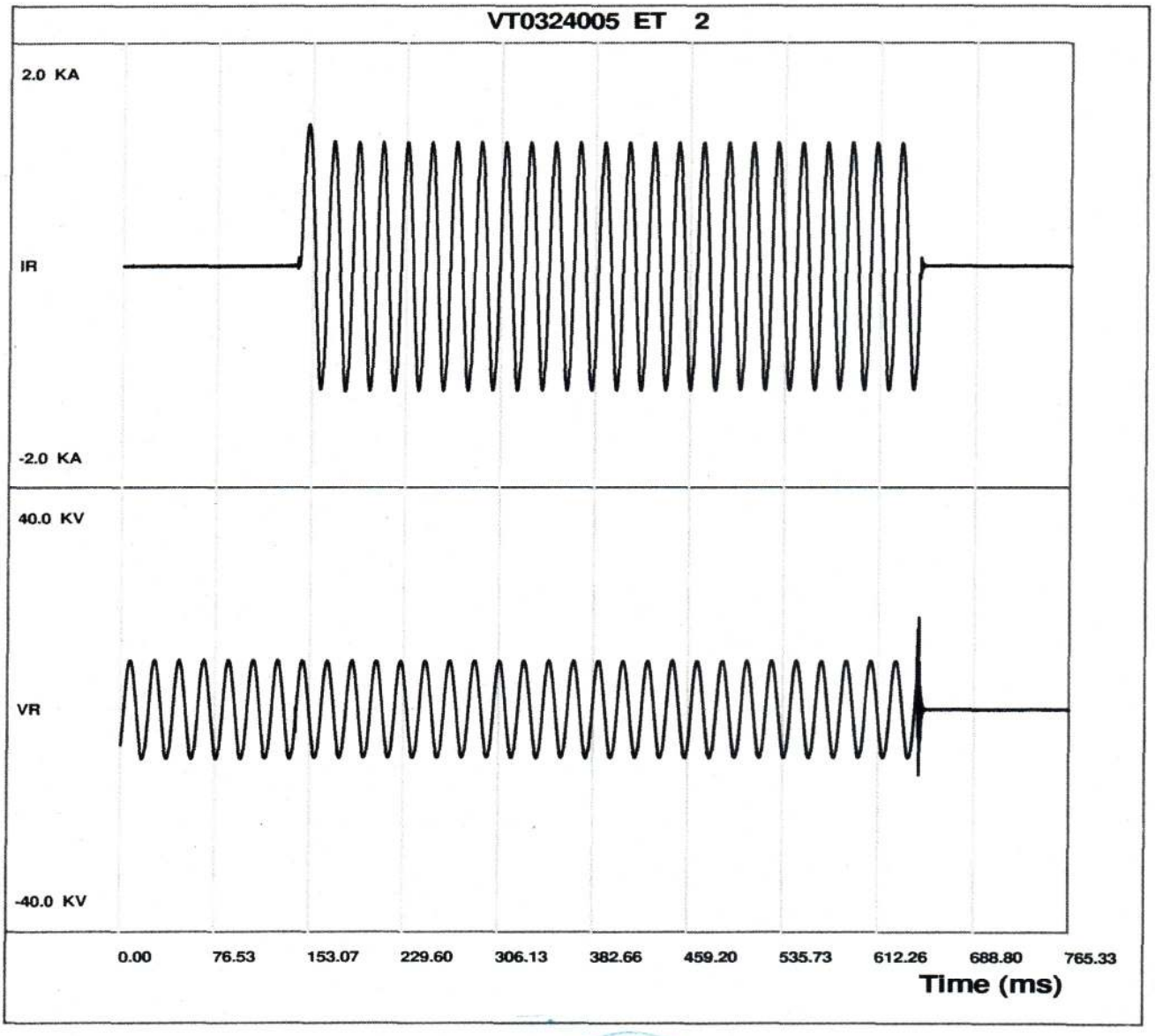
Test Report No.	:	VELTTL/2024/154
Test Report Date	:	16.04.2024
ULR No.	:	TC776424000000154F



TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

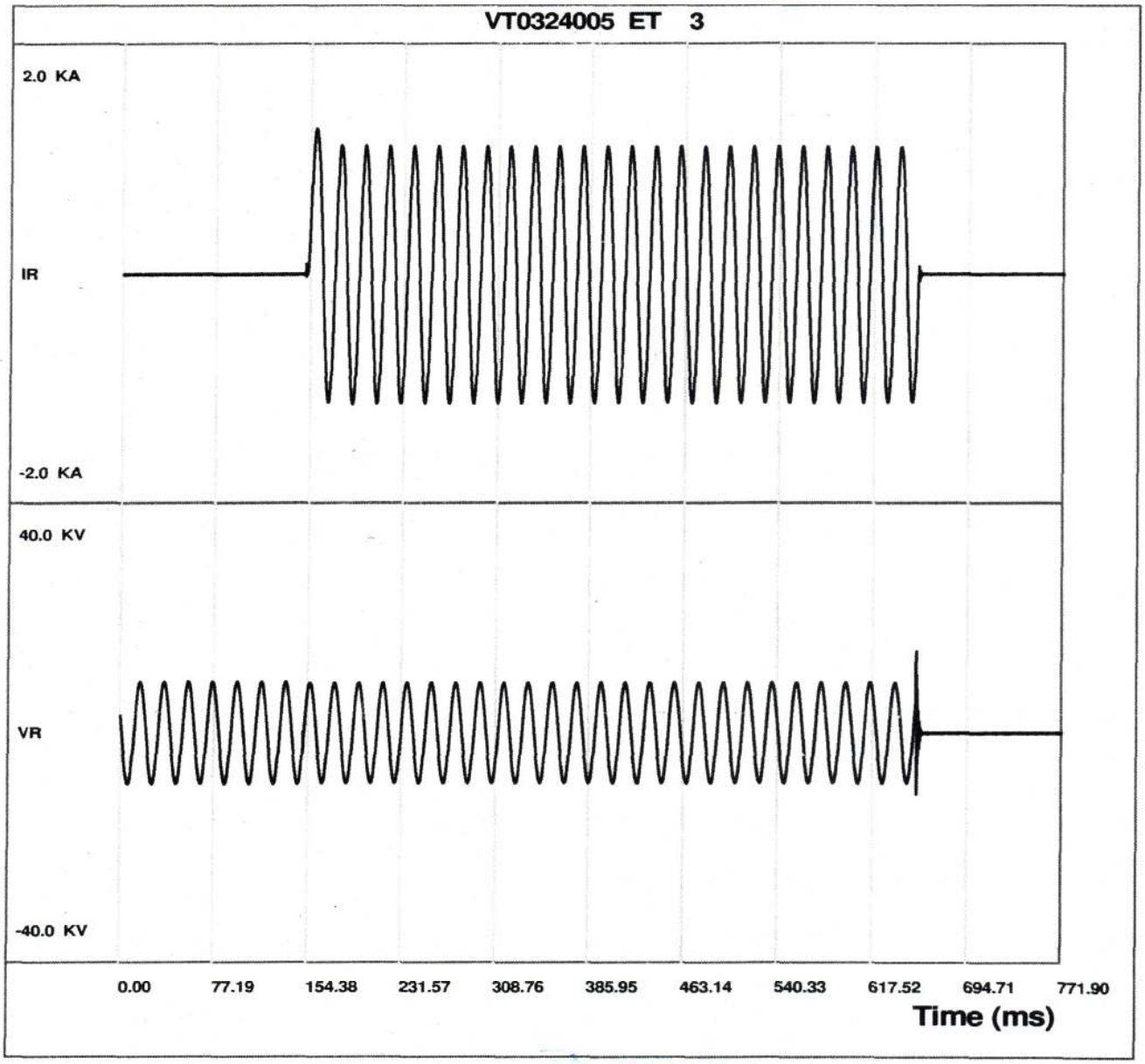
Test Report No.	:	VELTTL/2024/154
Test Report Date	:	16.04.2024
ULR No.	:	TC776424000000154F



TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

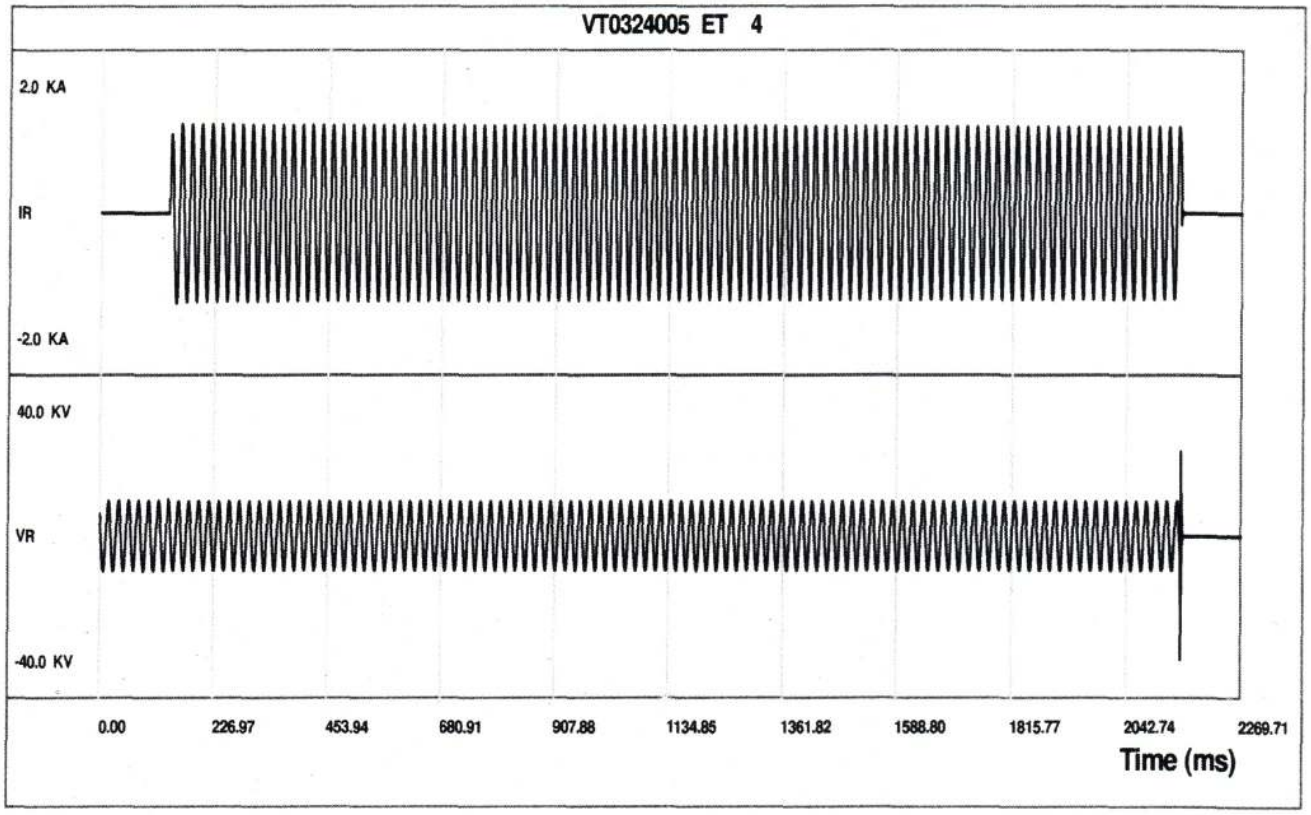
Test Report No.	:	VELTTL/2024/154
Test Report Date	:	16.04.2024
ULR No.	:	TC776424000000154F



TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

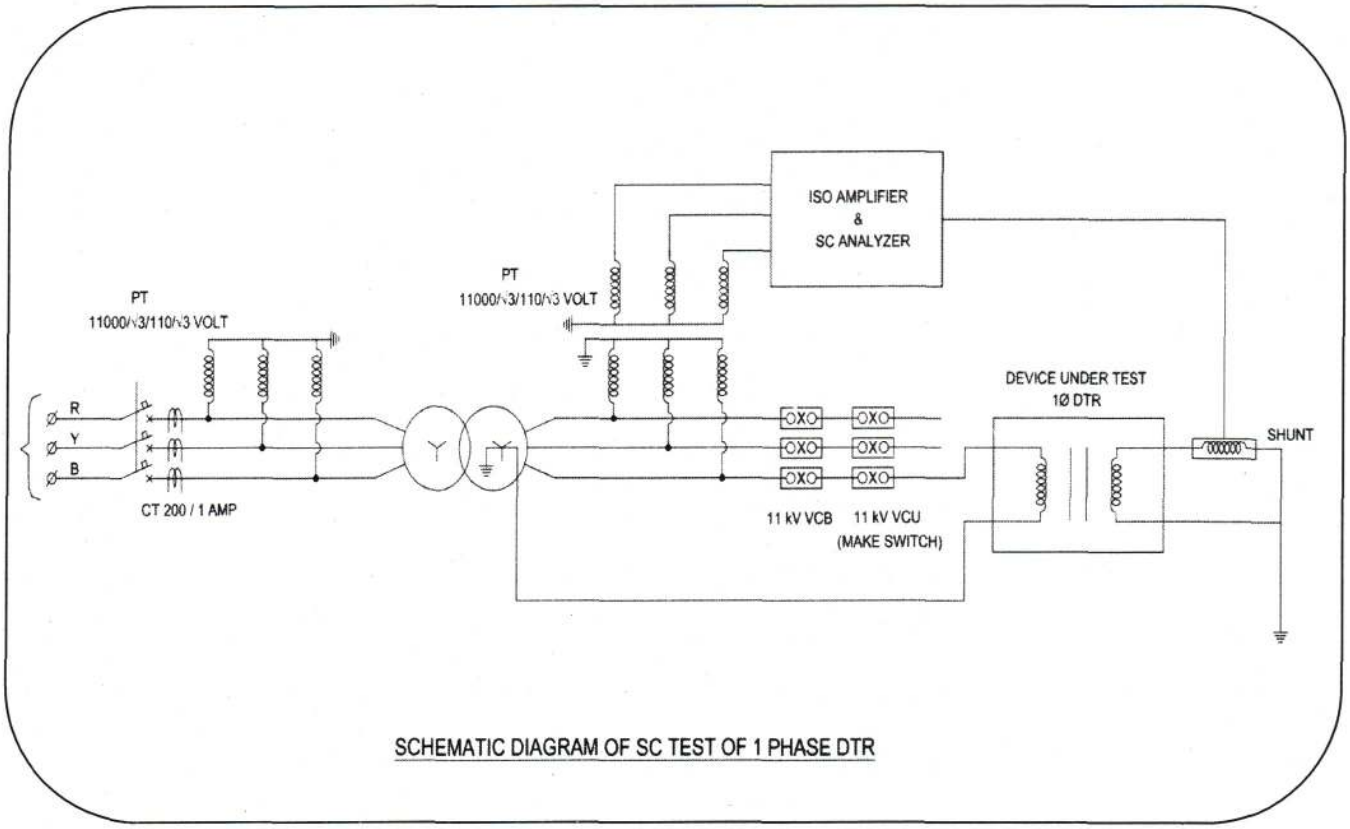


TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

SCHEMATIC CIRCUIT DIAGRAM OF SHORT CIRCUIT TEST



SCHEMATIC DIAGRAM OF SC TEST OF 1 PHASE DTR

TESTED/PREPARED BY

REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

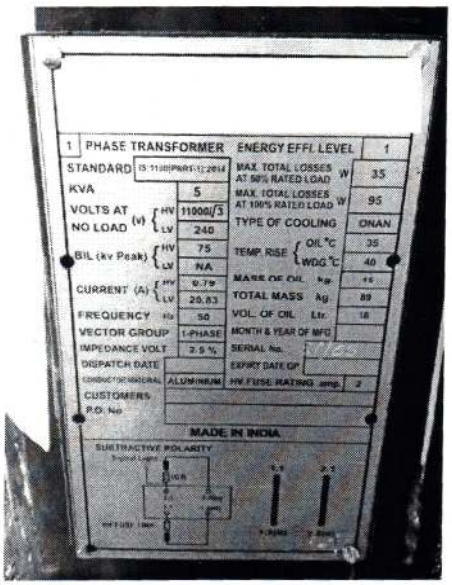
Sl. No.	Particular of Test	Requirement as per Specification	Obtained Value	Remarks
14	**Pressure Test (Routine)** (As per clause 21.2h & 21.5.3.2 of IS 1180 Part-1 2014) The transformer with bolted cover was tested at an air pressure of 35kPa above atmosphere pressure maintained inside the tank for 10minutes.	There should be no leakage at any point.	No Leakage observed	CONFORMS
15	**Oil Leakage Test** (As per clause 21.2j & 21.5.3.3 of IS 1180 Part-1 2014) The Assembled transformer with all fitting including bushings in position was tested at a pressure at the top equivalent to the normal head that was available at the base of the tank for 6Hrs.	There should be no leakage at any point.	No Leakage observed	CONFORMS
16	**Pressure Test (Type)** As per clause 21.3d & 21.5.3.1 of IS 1180 Part-1 2014 i) **Air Pressure:** The transformer tank (Round) was subjected to air pressure of 100kPa for 30minutes. ii) **Vacuum:** The transformer tank was subjected to vacuum of 760mm of mercury for 30minutes. iii) **Air Leakage Observation**	There should be No Deformation of Tank There should be No Deformation of Tank There should be no leakage at any point	No Deformation of Tank observed No Deformation of Tank observed No Leakage Observed	CONFORMS

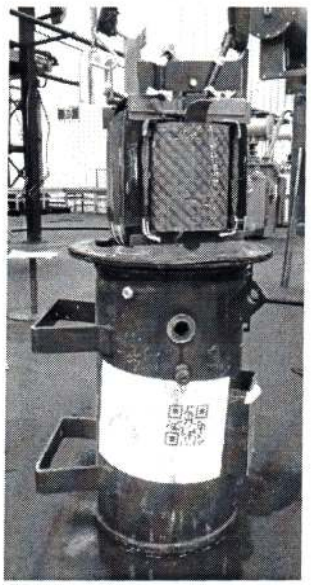
TESTED/PREPARED BY

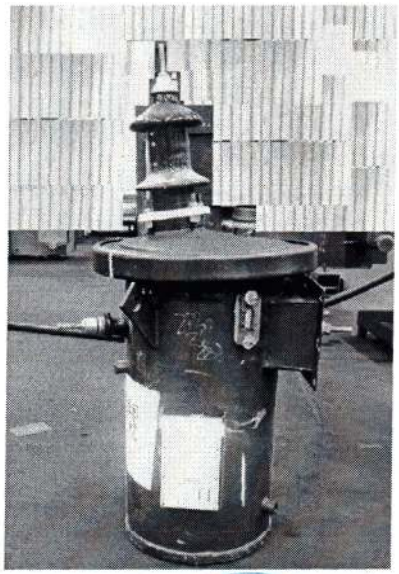
REVIEWED & AUTHORIZED BY

Test Report No.	:	**VELTTL/2024/154**
Test Report Date	:	**16.04.2024**
ULR No.	:	**TC776424000000154F**

PHOTOGRAPHS







TESTED/PREPARED BY
RAPPRAVSEH SINGH
TEST ENGINEER

REVIEWED & AUTHORIZED BY
SURENDRA KUMAR SHARMA
QUALITY MANAGER

---------- End of Report ----------

DISTRIBUTION TRANSFORMER

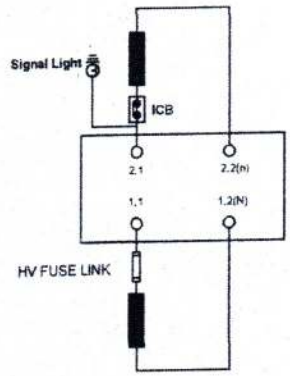
SOUMYA VIDYUT INDUSTRIES

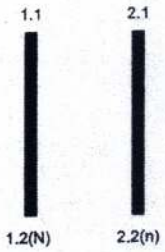
PLOT NO. 2, SHREE KRISHNA VIHAR, AAKERA, VKI AREA, JAIPUR

1 PHASE TRANSFORMER			
STANDARD	IS : 1180 (Part-1)/2014	ENERGY EFFICIENCY LEVEL	1
KVA	5	MAX. TOTAL LOSS AT 50% RATED LOAD W	35
VOLTS AT NO LOAD (V) HV	11000 /√3	MAX. TOTAL LOSS AT 100% RATED LOAD W	95
VOLTS AT NO LOAD (V) LV	240	TYPE OF COOLING	ONAN
BIL (kV Peak) HV	75	TEMP. RISE OIL °C	35
BIL (kV Peak) LV	NA	TEMP. RISE WDG °C	40
CURRENT (A) HV	0.79	MASS OF OIL kg	15
CURRENT (A) LV	20.83	TOTAL MASS kg	89
FREQUENCY Hz	50	VOLUME OF OIL Ltr	18
VECTOR GROUP	1-PHASE	MONTH & YEAR OF MFG.	2024
IMPEDANCE VOLT %	2.5	SERIAL NO.	05 *
DISPATCH DATE	-	EXPIRY DATE G.P.	-
CONDUCTOR MATERIAL	ALUMINIUM	HV FUSE RATING amp	2
CUSTOMER	-		
P.O. No.	-		

MADE IN INDIA

SUBTRACTIVE POLARITY





105

175

105

70

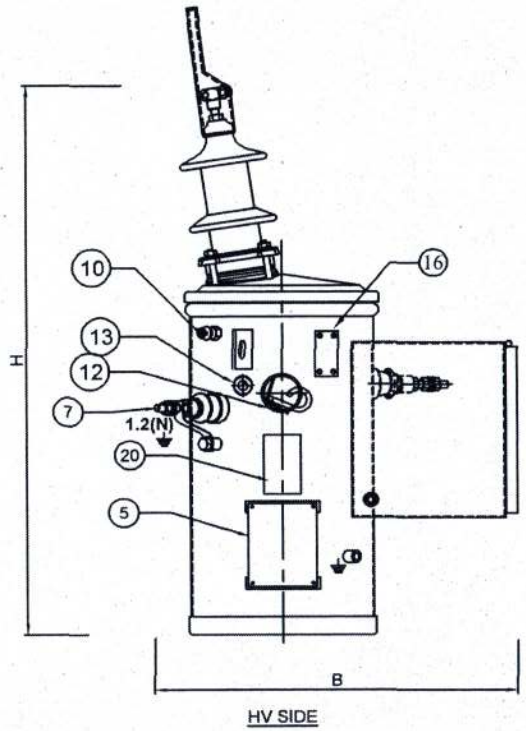
Verification of this drawing by VELTTL is limited to relevant dimensional checks only.
Verified dimensions are marked with '*'.
Note: The manufacturer has guaranteed that the equipment submitted fot tests has been manufactured in accordance with the drawings submitted.
Test Report No. VELTTL/2024/154
Date 16/04/2024
Verified by

Vijai Electricals Ltd. Transformer Testing Laboratory, Haridwar-249403

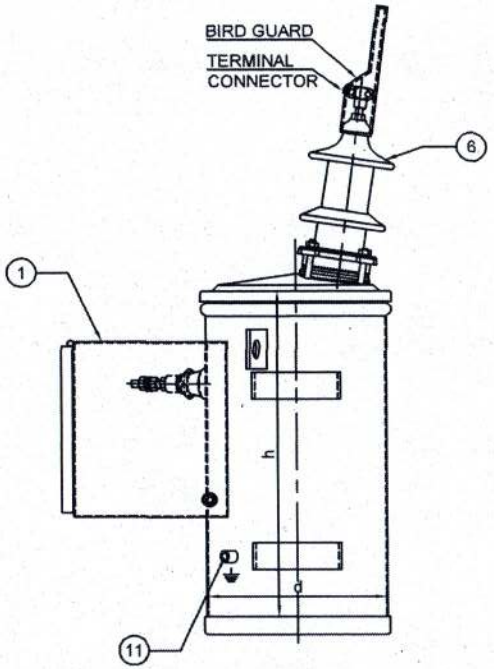
NOTES :-

1- '*' MARKED ITEMS SHOULD BE PUNCHED AT THE TIME OF DISPATCH.
2- MINIMUM 8 RIVETS FOR FIXING.
3- MATERIAL - STAINLESS STEEL 0.9 WITH TOLERANCE ± 0.1 MM. THICK.
4- ALL DIMENSIONS ARE IN MM.

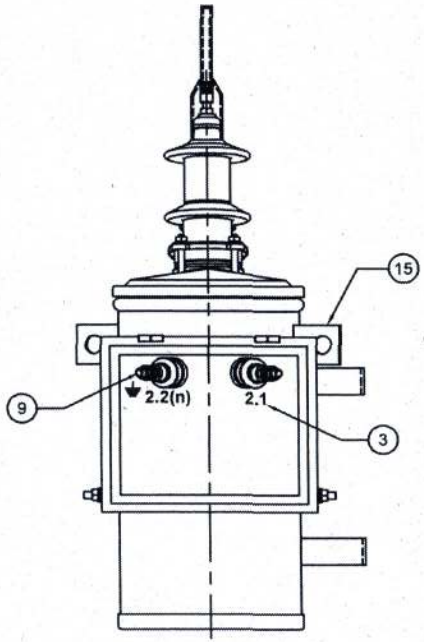
SOUMYA VIDYUT INDUSTRIES, JAIPUR			
Title: RATING AND DIAGRAM PLATE			
Rating : 5 KVA, 11/√3/0.240 KV, 1Ø, 50 Hz, ONAN, DISTRIBUTION TRANSFORMER			
Buyer's Reference: JVVNL	ALUMINIUM WOUND AMORPHOUS CORE ENERGY EFFICIENCY LEVEL 1		Scale N.T.S.
		DATE : 29.01.24	REV.No.
DRN BY SKY/TRAFO		DRAWING No. SVI/RP/04	00



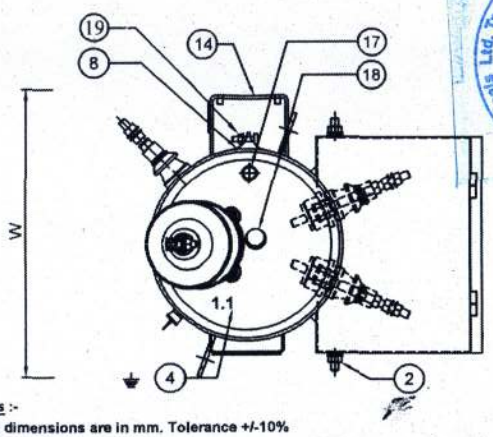
HV SIDE



SIDE VIEW
(MOUNTING)



LV SIDE



Notes :-
1- All dimensions are in mm. Tolerance +/-10%
2- This drawing shows only general disposition of fittings.
3- Tank side plate - 2.0 mm. Thk.M.S.
Top & bottom - 2.5 mm. Thk.M.S.
4- Paint Shade : Olive Green Color conforming to No. 220 of IS : 5 / 1961

Vijai Electricals Ltd. Transformer Testing Laboratory, Haridwar-249403

TANK INSIDE DIAMETER (d)	mm	300 *
TANK INSIDE HEIGHT (h)	mm	550 *
OVERALL HEIGHT (H)	mm	910 *
OVERALL BREADTH (B)	mm	450 *
OVERALL WIDTH (W)	mm	480 *

WEIGHTS / QTY.		
TRANSFORMER OIL	Ltrs.	18
TOTAL TRANSFORMER	Kg.	89
TRANSFORMER OIL	Kg.	15
TANK & FITTINGS	Kg.	30
INTERNAL ASSEMBLY	Kg.	44

Min. AIR CLEARANCES IN mm.		
VOLTAGE	H.V.	L.V.
PHASE TO PHASE	NA	NA
PHASE TO EARTH	140 *	20(box inside) *

Verification of this drawing by VELTTL is limited to relevant dimensional checks only.
Verified dimensions are marked with '*'.
Note: The manufacturer has guaranteed that the equipment submitted fot tests has been manufactured in accordance with the drawings submitted.
Test Report No. VELTTL/2024/1154
Date 16/04/2024
Verified by

"*" marked items not provided at time of type testin

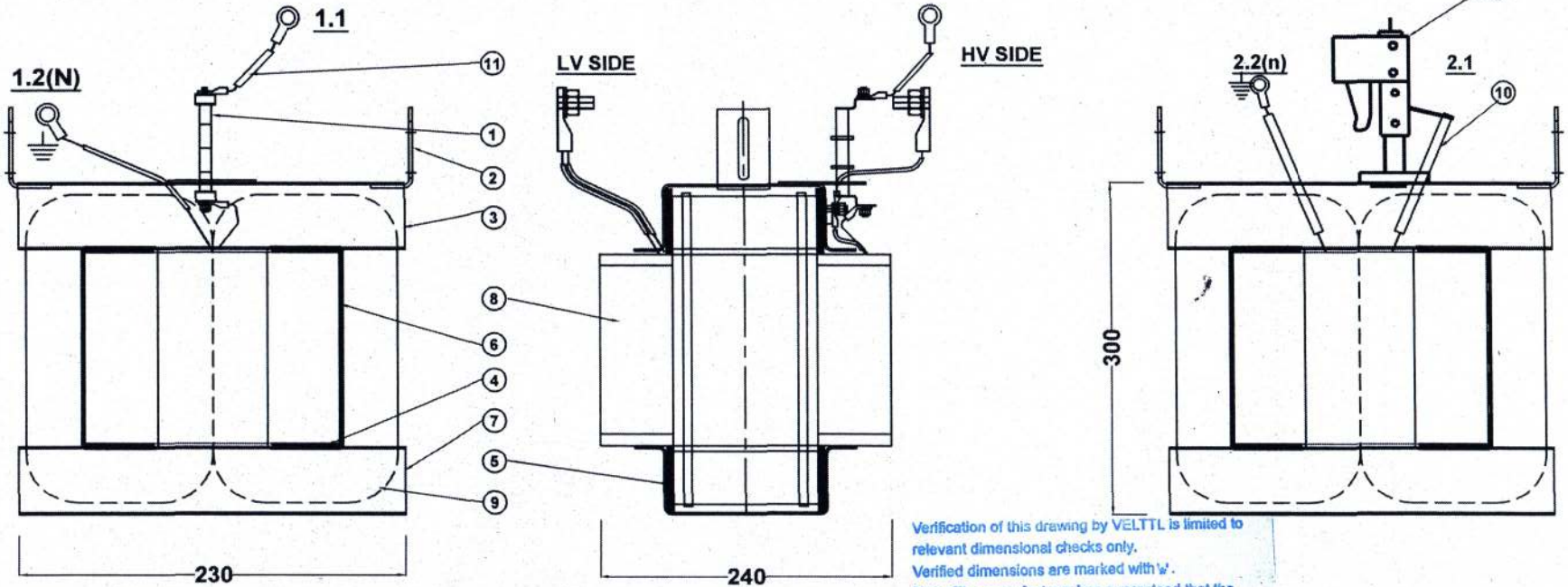
S. No.	Description	Qty
20	Technical plate*	1
19	Anti-theft SS bolt*	1
18	Oil filling hole with cover (1/1/4")	1
17	Thermometer pocket	1
16	Oil level guage	1
15	Lifting lugs	2
14	Pole mounting bracket	2
13	Signal light*	1
12	Internal Circuit Breaker handle*	1
11	Tank Earthing terminal	2
10	Pressure relief device*	1
9	L.V. Bushing	2
8	Top cover clamp	1
7	H.V. Neutral bushing	1
6	H.V. Bushing	1
5	Rating & terminal marking plate	1
4	H.V. Terminal marking	1 se
3	L.V. Terminal marking	1 se
2	Earthing terminal (LV box)*	2
1	LV cable box*	1

SOUMYA VIDYUT INDUSTRIES, JAIPUR

Title: OUTLINE GENERAL ARRANGEMENT DRAWING

Rating : 5 KVA, 11/√3/0.240 KV, 1Ø, 50 Hz, ONAN, DISTRIBUTION TRANSFORMER

Buyer's Reference:		Scale
-	ALUMINIUM WOUND AMORPHOUS CORE ENERGY EFFICIENCY LEVEL 1	N.T.S
	DATE : 29.01.24	REV.No
DRN BY: SKY/TRAFO	DRAWING No. SVI/GA/04	00



H.V. SIDE VIEW

SIDE VIEW

L.V. SIDE VIEW

Verification of this drawing by VELTTL is limited to relevant dimensional checks only.
Verified dimensions are marked with '*'.
Note: The manufacturer has guaranteed that the equipment submitted fot tests has been manufactured in accordance with the drawings submitted.
Test Report No. VELTTL/20241154
Date 16/04/2024
Verified by

" * " marked items not provided at time of type testing.

CONDUCTOR SIZE		
	LV	HV
Bare	10 x 2.5 *	0.96 Dia *
Covered	10.3 x 2.8 *	1.01 Dia *
Aluminium	DPC *	Polyesterimide enamel (Class H) *
Conductor Configuration	1W x 1D *	-

CORE SIZE	
Core Window Height	200 mm *
Core build up	2 x 33 mm
Core Sheet width	142 mm

COIL DIMENSIONS		
	LV	HV
ID	72 x 149	118 x 192
OD	112 x 186	162 x 236
AXIAL HT.	188 (INCLUDING END PACKING)	

SL.No.	LIST OF FITTINGS	Qty.
12	INTERNAL CIRCUIT BREAKER*	1
11	HV LEAD	-
10	LV LEAD	-
9	CORE (AMORPHOUS CORE)	2 nos
8	LV & HV COIL (ALUMINIUM)	1 set
7	BOTTOM CORE CLAMP	1
6	COIL SEPARATOR	1 set
5	CHANNEL SEPARATOR	1 set
4	END INSULATION	1 set
3	TOP CORE CLAMP	1
2	LOCKING CUM LIFTING LUG	2
1	HV FUSE LINK*	1

Vijai Electricals Ltd. Transformer Testing Laboratory, Haridwar-249403

Notes :-

1- All dimensions are in mm. Tolerance +/-5%

2- This drawing shows only general disposition of fittings.

SOUMYA VIDYUT INDUSTRIES, JAIPUR

Title: INTERNAL CONSTRUCTIONAL DETAIL DRAWING

Rating : 5 KVA, 11/√3/0.240 KV, 1Ø, 50 Hz, ONAN, DISTRIBUTION TRANSFORMER

Buyer's Reference: -

ALUMINIUM WOUND
AMORPHOUS CORE
ENERGY EFFICIENCY LEVEL 1

Scale N.T.S

DATE : 29.01.24

REV.No

DRN BY SKY/TRAFO

DRAWING No. SVI/IC/04

00