



Certificate No. : TC-5389

## ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

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### TEST REPORT

ULR-TC538920000026197F

SHEET : 1 OF 6

<b>NAME AND ADDRESS OF CUSTOMER</b>  LAXMI ELECTRONICS 1383, DATNAGAR, BAMANOLI, MIDC, KUPWAD, SANGLI - 416436.	<b>REPORT NO.:</b> RP-2021-021943 <b>DATE OF ISSUE :</b> 08.12.2020	
	<b>CUSTOMER REF. NO.</b> Letter	<b>DATED</b> 30.11.2020
	<b>DATE OF SAMPLE RECEIPT</b> 30.11.2020	<b>DATE OF TESTING</b> 03.12.2020 & 04.12.2020
	<b>SAMPLE DESCRIPTION</b> AIR CORE DRY TYPE SERIES REACTOR Manufactured by : LAXMI ELECTRONICS Rating : 2.42 kVAR System voltage : 11000 Volts Rated current : 165.75 Amps Number of Phases : 1 Further details as per sheet no. 2.	
<b>SAMPLE IDENTIFICATION</b> ERDA sample code number : ERDA-00391692 Manufacturer serial number : 3107 Year of manufacture : 2020 Enclosed drawing number : 1) LE-NP-04-11-20 REVISION 00 2) LE-GA-03-11-20 REVISION 00		
<b>TEST DETAILS</b> As per sheet 3 of 6.	<b>TEST SPECIFICATION</b> As per sheet 3 of 6.	
<b>TEST RESULTS :</b> As per sheets 4 of 6 & 5 of 6.		
<b>ENCLOSURE :</b> Photographs of test sample - As per sheet 6 of 6.		
<b>TESTS WITNESSED BY :</b> Mr. Vaibhav Jamdar [Director, Laxmi Electronics]		
<b>REMARK :</b> Reactor <b>conforms</b> to the guaranteed requirement as per above mentioned test specification for above mentioned test nos. 1 to 3.		
 <b>PREPARED BY</b>	 <b>CHECKED BY</b>	 <b>APPROVED BY</b> <b>(Kapil J. Sharma)</b>
<b>Note :</b> 1. This report relates only to the particular sample received for testing in good condition at E.R.D.A. 2. This report cannot be reproduced in part under any circumstances. 3. Publication of this report requires prior permission in writing from Director , E.R.D.A. 4. Only the tests asked for by the customer have been carried out. 5. In case of any dispute, Vadodara will be the exclusive jurisdiction & shall be construed as where the cause has arised.		
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**REPORT NO.:** RP-2021-021943

**SHEET : 2 OF 6**

**DATE OF ISSUE :** 08.12.2020

**TECHNICAL SPECIFICATIONS OF TEST OBJECT ASSIGNED BY CUSTOMER**

1.	Name of Manufacturer	LAXMI ELECTRONICS
2.	Manufacturer serial number	3107
3.	kVAR rating	2.42
4.	System Voltage (Volts)	11000
5.	Rated Current (Amp.)	165.75
6.	Number of phases	1
7.	Winding Material	Aluminium
8.	Type of Cooling	AN
9.	Frequency (Hz)	50
10.	Class of insulation	F
11.	Guaranteed Reactance/Phase ( $\Omega$ )	0.088 (+20% Tol.) (As specified by customer)
12.	Guaranteed Inductance/Phase (mH)	0.280 (+20% Tol.) (As specified by customer)
13.	Guaranteed load loss at 75°C (Watts)	350 (+10% Tol.)
14.	Guaranteed maximum temperature rise of winding ( $^{\circ}$ C)	90 (As specified by customer)
15.	Year of Manufacture	2020
16.	Standard no.	IS 2026 (Part 6) : 2017 & customer's requirement.

**PREPARED BY**

**CHECKED BY**



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**REPORT NO.:** RP-2021-021943

**SHEET :** 3 OF 6

**DATE OF ISSUE :** 08.12.2020

Sr. No.	TEST DETAILS	TEST SPECIFICATION
1.	Measurement of loss	As per customer's requirement, testing procedure followed as per cl.no.8.9.7 of IS 2026 (Part 6) : 2017
2.	Measurement of Inductance	As per customer's requirement
3.	Temperature-rise test at rated continuous current	As per customer's requirement, testing procedure followed as per cl.no.8.9.11 of IS 2026 (Part 6) : 2017
<b>PREPARED BY</b> <i>MBY</i>		<b>CHECKED BY</b> <i>gop</i>



ELECTRONIC

TC 3053876



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**ULR-TC53892000026197F**

Discipline : Electrical

Group : Inductors and Transformers

REPORT NO.: RP-2021-021943

SHEET : 4 OF 6

DATE OF ISSUE : 08.12.2020

Sr. No.	Particulars of test and Cl. no.	Requirement as per specification	Obtained value	Remarks
1.	<p><b>Measurement of loss :</b> (As per customer's requirement, testing procedure followed as per cl.no.8.9.7 of IS 2026 (Part 6) : 2017)</p> <p>Tested with 162.43 Amps. Frequency : 49.970 Hz Average winding temperature : 28.0°C</p> <p>Test current (Amps) Measured Voltage (Volts) Measured loss (Watts) Corrected loss (Watts) At 28.0°C At 75°C</p>	350 (+10% Tol.)	162.43 15.689 258.80 269.49 312.37	Conforms
2.	<p><b>Measurement of Inductance :</b> (As per customer's requirement)</p> <p>Test current (Amps) Measured Voltage (Volts) Frequency (Hz) Inductive reactance (X<sub>L</sub>) at 28.0 (Ω) Inductive reactance (X<sub>L</sub>) at 75°C at 50 Hz (Ω)</p> <p>Inductance, L = Inductive reactance (X<sub>L</sub>) at 50 Hz (mH) ----- 2 π f</p>	0.088 (+20% Tol.)  0.280 (+20% Tol.)	162.43 15.689 49.970 0.0962 0.0963  0.307	Conforms

PREPARED BY

CHECKED BY



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**ULR-TC538920000026197F**

**REPORT NO.:** RP-2021-021943

**SHEET :** 5 OF 6

**DATE OF ISSUE :** 08.12.2020

Sr. No.	Particulars of tests and Cl.No.	Requirement as per specification	Obtained Value	Remarks
3.	<p><b>Temperature-rise test at rated continuous current :</b> (As per customer's requirement, testing procedure followed as per cl.no.8.9.11 of IS 2026 (Part 6) : 2017)</p> <p>The test was carried out at rated value of current and continued until the temperature rise increment of any part of the reactor is less than 1°C in 1 hour and has remained there at least for three hours. At the shutdown, hot winding resistance was measured and temperature rise calculated.</p> <p>For the purpose of determining the steady state condition of temperature rise, RTDs were mounted on the following parts of reactor :</p> <ol style="list-style-type: none"> <li>1. Outside of winding</li> <li>2. Inside of winding</li> </ol> <p><u>Temperature rise by using RTD</u>            Outside of winding (°C) : 16.5            Inside of winding (°C) : 20.1            Ambient temperature at shut down (°C) : 28.8</p> <p><u>Temperature rise by resistance method</u>            Winding (°C) : 25.6</p>	Max. 90 (As specified by customer)		Conforms

PREPARED BY *NBJ*

CHECKED BY *Am*



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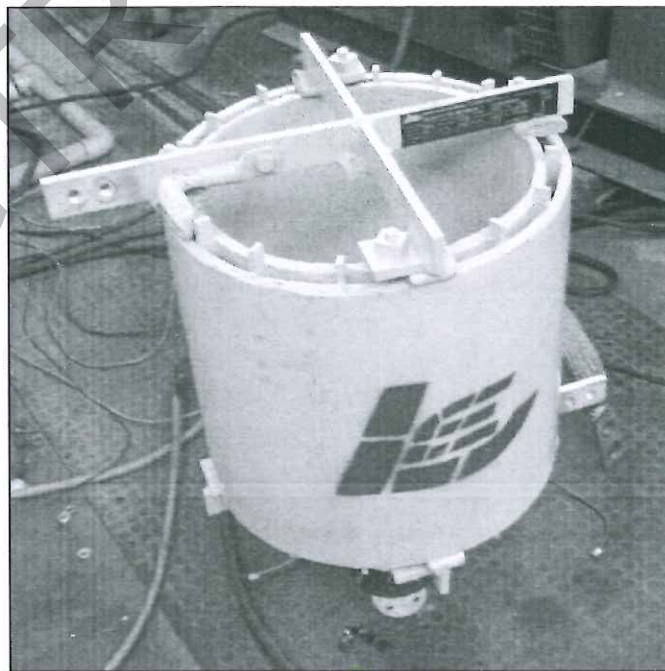
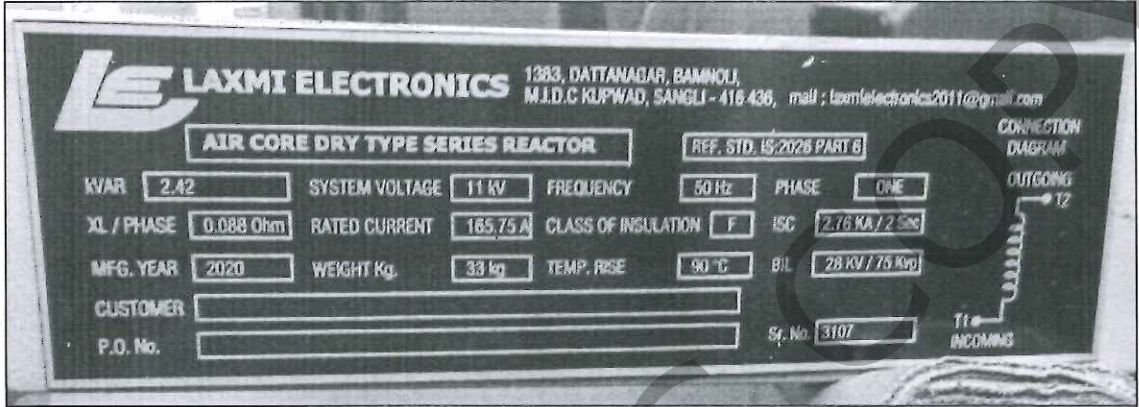
ULR-TC53892000026197F

REPORT NO.: RP-2021-021943

SHEET : 6 OF 6

DATE OF ISSUE : 08.12.2020

## PHOTOGRAPHS OF TEST SAMPLE



TC 3053866

PREPARED BY *MB*

CHECKED BY *BB*



\*\*\*\* End of Test Report \*\*\*\*



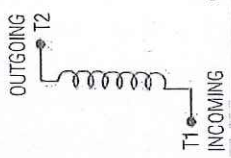
**LAXMI ELECTRONICS**  
1383, DATTANAGAR, BAMBOLI,  
M.I.D.C KUPWAD, SANGLI - 416 436, mail : laxmielectronics2011@gmail.com

**AIR CORE DRY TYPE SERIES REACTOR**

REF. STD. IS: 2026 PART 6

KVAR	2.42	SYSTEM VOLTAGE	11 KV	FREQUENCY	50 Hz	PHASE	ONE
XL / PHASE	0.088 Ohm	RATED CURRENT	165.75 A	CLASS OF INSULATION	F	ISC	2.76 KA / 2 Sec
MFG. YEAR	2020	WEIGHT Kg.	33 kg	TEMP. RISE	90 °C	BIL	28 KV / 75 Kvp
CUSTOMER							
P.O. No.							
	Sr. No. 3107 *						

**CONNECTION DIAGRAM**



Verification of this drawing by ERDA is limited to relevant dimensional checks only. Verified dimensions are marked with '\*'.  
Note : The manufacturer has guaranteed that the equipment submitted for tests has been manufactured in accordance with the drawings submitted.

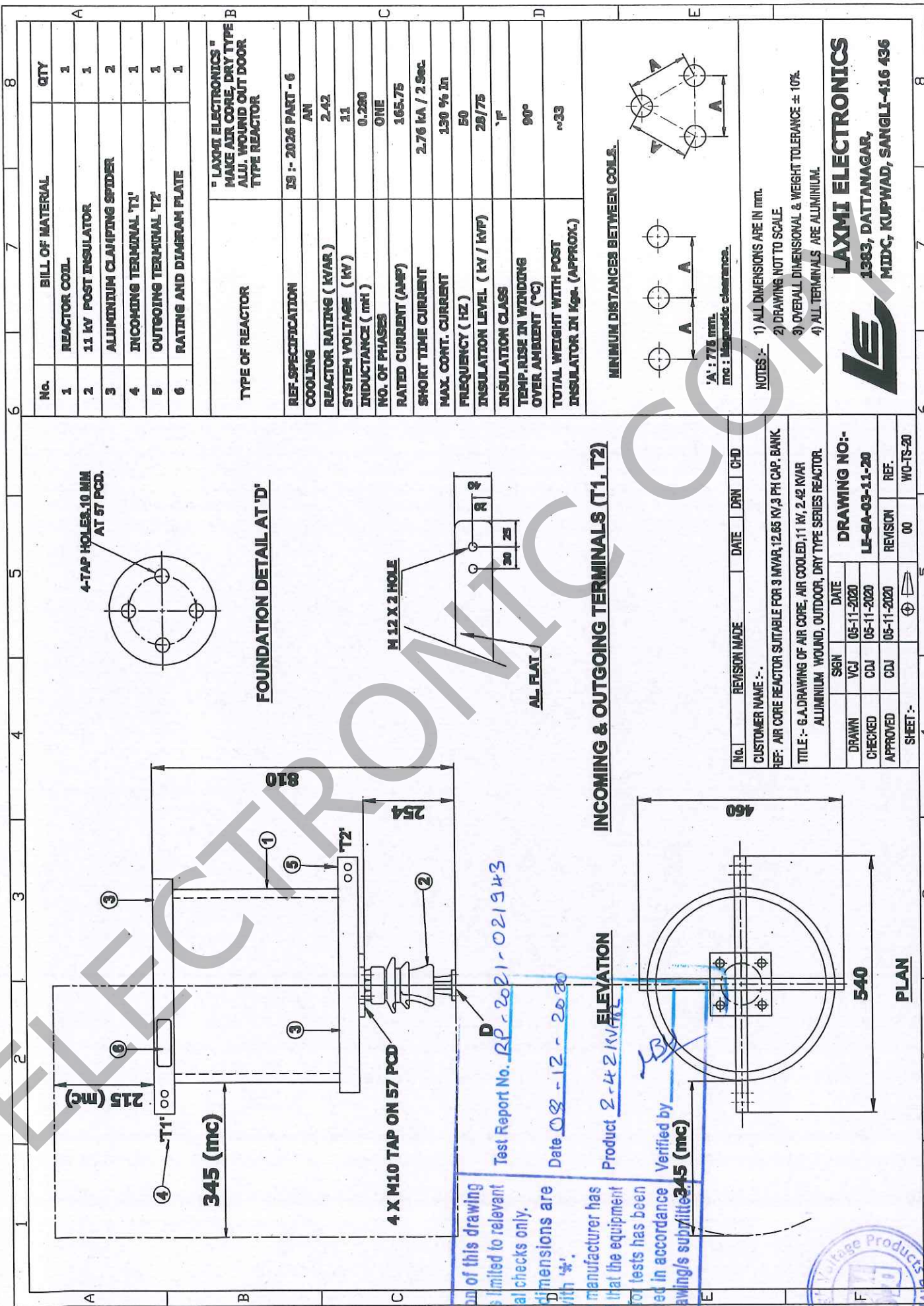
Test Report No. RP-2021-021943  
Date 08-12-2020  
Product 2.42 KVAR  
Verified by [Signature]

No.	REVISION MADE	DATE	DRN	CHD
CUSTOMER NAME :- POWER PROJECTS A/C-MSEDCL				
END USER :- MSEDCL				
REF. :- AIR CORE REACTOR SUITABLE FOR Capacitor Bank.				
TITLE :- NAME PLATE DRAWING OF AIR CORE AIR COOLED: 11 KV, 2.42 KVAR ALUMINIUM WOUND, OUTDOOR, DRY TYPE SERIES REACTOR.				
DRAWN	YCU	05-11-2020	DRAWING NO.:-	
CHECKED	CDJ	05-11-2020	LE-NP-04-11-20	
APPROVED	CDJ	05-11-2020	REVISION	REF.
SHEET:-	00	WD-1950		

- NOTES :-
- 1) ALL DIMENSIONS ARE IN mm.
  - 2) DRAWING NOT TO SCALE.
  - 3) OVERALL DIMENSIONAL & WEIGHT TOLERANCE = 10%.
  - 4) ALL TERMINALS ARE ALUMINIUM.

**LAXMI ELECTRONICS**  
1383, DATTANAGAR, BAMBOLI,  
M.I.D.C KUPWAD, SANGLI-416 436





Verification of this drawing by ERDA is limited to relevant dimensional checks only. Verified dimensions are marked with '\*'.  
 Note: The manufacturer has guaranteed that the equipment submitted for tests has been manufactured in accordance with the drawing/s submitted.

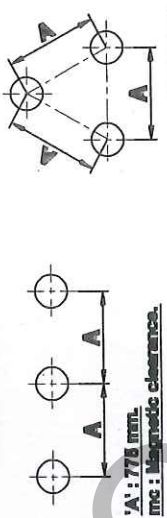
Test Report No. RP-2021-021943  
 Date 08-12-2020  
 Product 2-42 KV/72  
 Verified by LD



No.	BILL OF MATERIAL	QTY
1	REACTOR COIL	1
2	11 KV POST INSULATOR	1
3	ALUMINIUM CLAMPING SPIDER	2
4	INCOMING TERMINAL 'T1'	1
5	OUTGOING TERMINAL 'T2'	1
6	RATING AND DIAMETER PLATE	1

TYPE OF REACTOR	REF. SPECIFICATION
" LAXMI ELECTRONICS " MAKE AIR CORE, DRY TYPE ALU. WOUND CUT DOOR TYPE REACTOR	IS :- 2026 PART - 6
REACTOR RATING ( KVAR )	AN
SYSTEM VOLTAGE ( KV )	2.42
INDUCTANCE ( mH )	11
NO. OF PHASES	0.280
RATED CURRENT ( AMP )	ONE
SHORT TIME CURRENT	165.75
MAX. CONT. CURRENT	2.76 kA / 2 Sec.
FREQUENCY ( HZ )	130 % In
INSULATION LEVEL ( KV / KVP )	50
INSULATION CLASS	25/75
TEMP. RISE IN WINDING OVER AMBIENT ( °C )	'F'
TOTAL WEIGHT WITH POST INSULATOR IN Kgs. ( APPROX. )	90°
	~33

MINIMUM DISTANCES BETWEEN COILS.



- NOTES :-
- 1) ALL DIMENSIONS ARE IN mm.
  - 2) DRAWING NOT TO SCALE.
  - 3) OVERALL DIMENSIONAL & WEIGHT TOLERANCE ± 10%.
  - 4) ALL TERMINALS ARE ALUMINIUM.

No.	REVISION MADE	DATE	DRN	CFD
CUSTOMER NAME :-				
REF: AIR CORE REACTOR SUITABLE FOR 3 MVAR, 12.65 KV/3 PH CAP. BANK				
TITLE :- G.A. DRAWING OF AIR CORE, AIR COOLED, 11 KV, 2.42 KVAR ALUMINIUM WOUND, OUTDOOR, DRY TYPE SERIES REACTOR				
DRN	VCJ	05-11-2020	DRAWING NO:-	
CHECKED	CDJ	05-11-2020	LE-CA-03-11-20	
APPROVED	CDJ	05-11-2020	REVISION	REF.
SHEET:-			00	WO-TS-20

**LAXMI ELECTRONICS**  
 1363, DATTANAGAR,  
 MIDC, KUPWAD, SANGLI-416 436

PLAN

ELEVATION

FOUNDATION DETAIL AT 'D'

INCOMING & OUTGOING TERMINALS (T1, T2)

4-TAP HOLES, 10 MM AT 57 PCD.

M 12 X 2 HOLE

AL-FLAT

4 X M10 TAP ON 57 PCD

345 (mc)

215 (mc)

810

150

540

T1

T2

1

2

3

4

5

6

7

8

A

B

C

D

E

F