

# Test Report

M/S. ROVE ELECTRIC PVT LTD,

REPORT NUMBER: 4787519965-OTHERS-S1

PROJECT NUMBER: 4787519965



Location (a)

UL India Lab,

UL India Pvt Limited,

Laboratory building,

Kalyani Platina

Campus, Sy.no.129/4,

EPIP Zone, Phase II,

Whitefield,

Bangalore - 560 066

P:91-80-41384400

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Location (b)

UL India Pvt Limited,

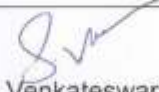
413 Sector-8, IMT

Manesar, Gurgaon.P:

91-124-22990246

**TEST DISCIPLINE: ELECTRICAL****General details**

<b>Customer / Applicant</b>	Rove Electric Pvt Ltd, SF NO: 193/1B, Vellakinar Village, Coimbatore - 641 029		
<b>Manufacturer</b>	Same as above		
<b>Program</b>	Others		
<b>Test Lab Location</b>	(a) UL Bangalore	<b>Refer to Cover page for the UL address</b>	
<b>Item Under Test</b>	Capacitor Duty Contactor (12.5, 25 & 75 KVAR)		
<b>Model</b>	Refer to page		
<b>Number of Samples</b>	3		
<b>UL Sample Identification</b>	432546-2, 432547-2 & 432548-1	<b>Refer Summary of Test results for multiple samples</b>	
<b>Manufacturer Serial Number (if any)</b>	Not Applicable		
<b>Condition of IUT on receipt</b>	Good		
<b>Date of Receipt</b>	29 August 2016		
<b>Applicable Standard</b>	IEC 60947-4-1; Edition 3.1 2012-07; Clause 9.3.3.6 Low-voltage switchgear and control gear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters		
<b>Date of Testing (Start date)</b>	30 August 2016	<b>End Date</b>	14 October 2016
<b>UL general^ ambient condition</b>	<b>Temperature in °C</b>	25 +3/-5°C	
	<b>Relative humidity in %</b>	45-70 %	
<b>Date of Reporting</b>	7 December 2016		
<b>Test In-charge</b>	Mohan A.C		

 Venkateswaran. S Senior test engineer	 B.K. Madhusudhan Project Engineer
<b>Reviewed by</b>	<b>Authorized signatory</b>

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## Contents

1. Models.....	4
2. Description of Item under Test (IUT).....	4
3. Test results.....	5
4. Connection Drawings.....	8
5. Products photos.....	9
6. Oscillograms.....	10
7. Test set up Photos.....	13
8. After Test photos.....	16



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**1. Models:**

Model/ Type reference 1	ABNCC1212
Model/ Type reference 2	ABNCC2512
Model/ Type reference 3	ABNCC7523

**2. Description of Item under Test (IUT):**

Test item particulars	Capacitor Duty Contactor
Method of operation	Electromagnetic
Number of poles	3P
Kind of current	AC
Rated frequency	50-60 Hz
Rated operational voltage Ue(V)	400
Rated insulation voltage Ui(V)	690
Rated impulse with stand voltage Uimp	8 KV
Conventional free air thermal current (A)	25, 50 & 135A
Rated KVAR	12.5, 25 & 75
Utilization category.. capacitive loads AC-6b	AC-6b
Trade Mark	<b>A=N.</b>

Contactor consists of two Auxiliary NO/NC, One Add on block, Per Phase two resistor wires & One Surge suppressor connected across coil. The test performed only on main three poles of contactor with Add on block and the contactor operated by 240V ac coil with surge suppressor.



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**3. Test results:**

Sample No: 432546-2		Required	Actual
CLAUSE	REQUIREMENT TEST		
	TEST SEQUENCE II		
<b>9.3.3.6</b>	<b>OPERATIONAL PERFORMANCE CAPABILITY</b>		
	UTILIZATION CATEGORY	AC-6b	
	Rated operational voltage	400V , 50 Hz	400V , 50 Hz
	Rated operational capacitive load(kVar)	12.5	13.7
	Test voltage		
	L1	400	416
	L2	400	412
	L3	400	415
	Test current		
	L1	18	19.1
	L2	18	18.9
	L3	18	19.1
	Cable size in Sq. mm	4	4
	Cable length in M.	1	1
	Torque in N-M	2.6	2.6
	On time	1 sec	1 sec
	Off time	9 sec	9 sec
	Number of operating cycle	1,00,000	1,00,000
<b>9.3.3.6.6</b>	<b>Behavior and condition during and after test</b>		
	Permanent arcing	-	No
	Flash over between poles	-	No
	Blowing of the fusible element in the earth circuit	-	No
	Welding of contacts	-	No
	The contacts shall operate when the contactor or starter is switched by the applicable method of control	-	Yes
	Dielectric verification		
	Test voltage( 2 Ue/ min 1000V) for 1 min( V)	1000	Withstood

Note: Sample complies with the above requirement.



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**Test results (Cont.....):**

IEC 60947-4-1		432547-2	
CLAUSE	Sample No.	Required	Actual
	REQUIREMENT TEST		
	TEST SEQUENCE II		
9.3.3.6	OPERATIONAL PERFORMANCE CAPABILITY		
	UTILIZATION CATEGORY	AC-6b	AC-6b
	Rated operational voltage	400V , 50 Hz	400V , 50 Hz
	Rated operational capacitive load(kVar)	25	26.42
	Test voltage		
	L1	400	418
	L2	400	412
	L3	400	409
	Test current		
	L1	36	37.4
	L2	36	36.9
	L3	36	36.6
	Cable size in Sq. mm	10	10
	Cable length in M.	1	1
	Torque in N-M	3.5	3.5
	On time	1 sec	1 sec
	Off time	9 sec	9 sec
	Number of operating cycle	1,00,000	1,00,000
9.3.3.6.6	Behavior and condition during and after test		
	Permanent arcing		No
	Flash over between poles		No
	Blowing of the fusible element in the earth circuit		No
	Welding of contacts		No
	The contacts shall operate when the contactor or starter is switched by the applicable method of control		Yes
	Dielectric verification		
	Test voltage( 2 Ue/ min 1000V) for 1 min( V)	1000	Withstood

Note: Sample complies with the above requirement.



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**Test results (Cont.....):**

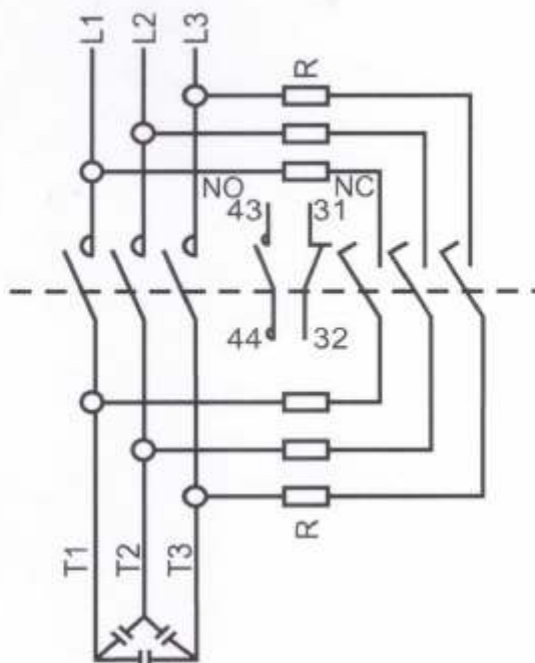
IEC 60947-4-1			
Sample No.		432548-1	
CLAUSE	REQUIREMENT TEST	Required	Actual
	TEST SEQUENCE II		
<b>9.3.3.6</b>	<b>OPERATIONAL PERFORMANCE CAPABILITY</b>		
	UTILIZATION CATEGORY	AC-6b	AC-6b
	Rated operational voltage	400V , 50 Hz	400V , 50 Hz
	Rated operational capacitive load(kVar)	75	79.21
	Test voltage		
	L1	400	412
	L2	400	416
	L3	400	408
	Test current		
	L1	108	111.1
	L2	108	112.3
	L3	108	110.6
	Cable size in Sq. mm	35	35
	Cable length in M.	2	2
	Torque in N-M	5	5
	On time	1 sec	1 sec
	Off time	9 sec	9 sec
	Number of operating cycle	1,00,000	1,00,000
<b>9.3.3.6.6</b>	<b>Behavior and condition during and after test</b>		
	Permanent arcing		No
	Flash over between poles		No
	Blowing of the fusible element in the earth circuit		No
	Welding of contacts		No
	The contacts shall operate when the contactor or starter is switched by the applicable method of control		Yes
	Dielectric verification		
	Test voltage( 2 Ue/ min 1000V) for 1 min( V)	1000	Withstood

Note: Sample complies with the above requirement.



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4. Connection Drawing:



Kvar	R in ohms per phase
12.5	2 X 1.2
25	2 X 1.2
75	2 X 1.1



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5. Products photos:

Photo of Sample No 432546-2



Photo of Sample No 432547-2

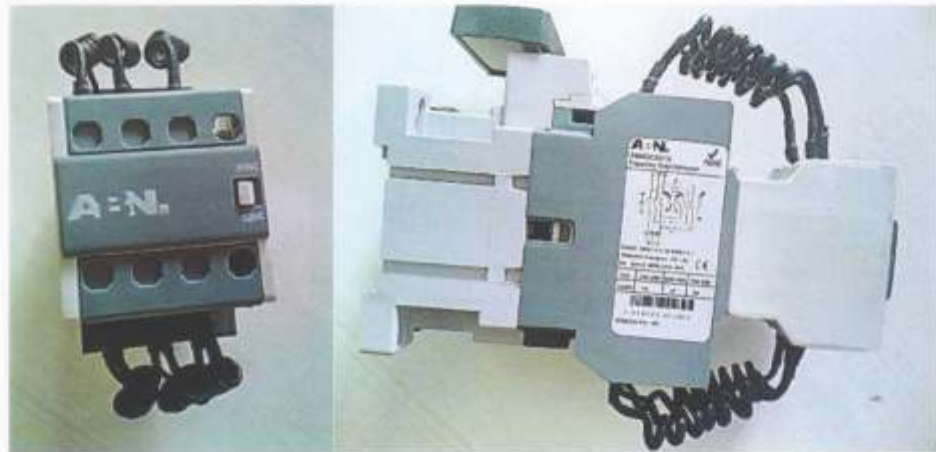
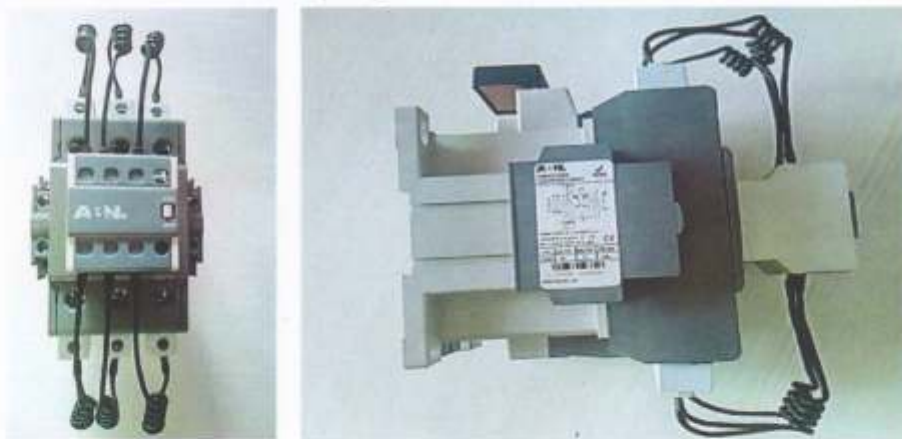
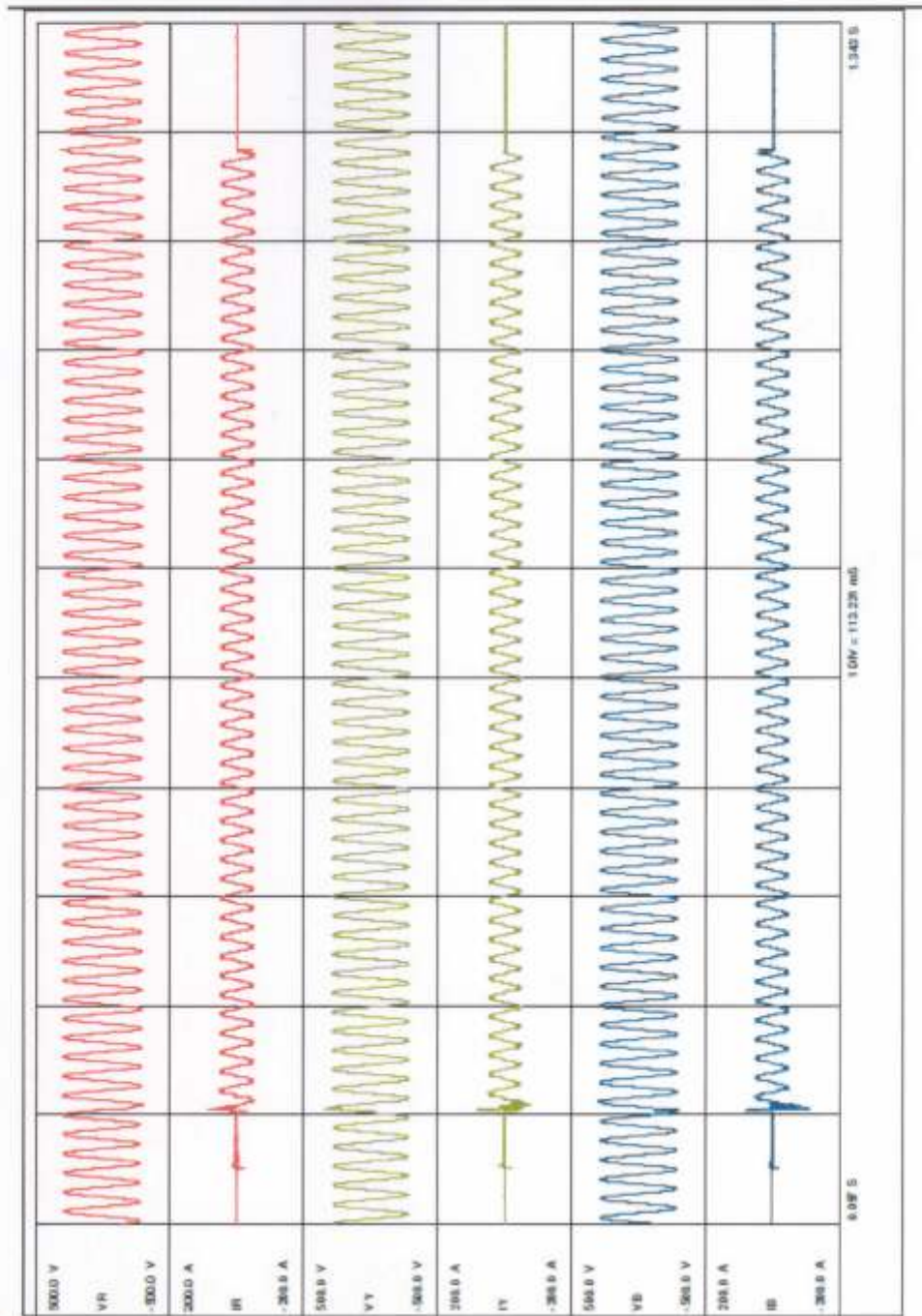


Photo of Sample No 432548-1



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6. Oscillograms:

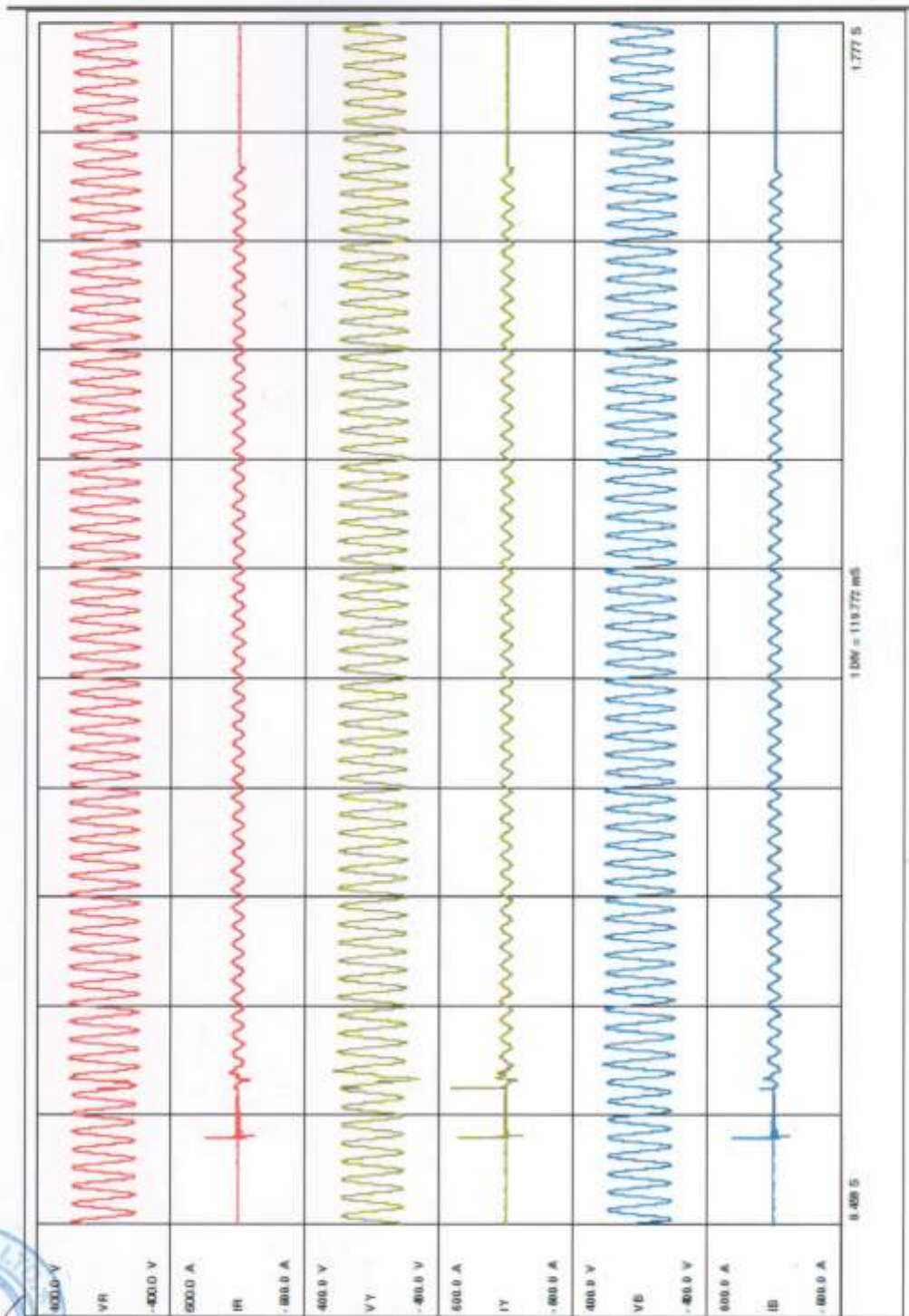


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Oscillogram for 12.5 KVAR Capacitor Duty Contactor



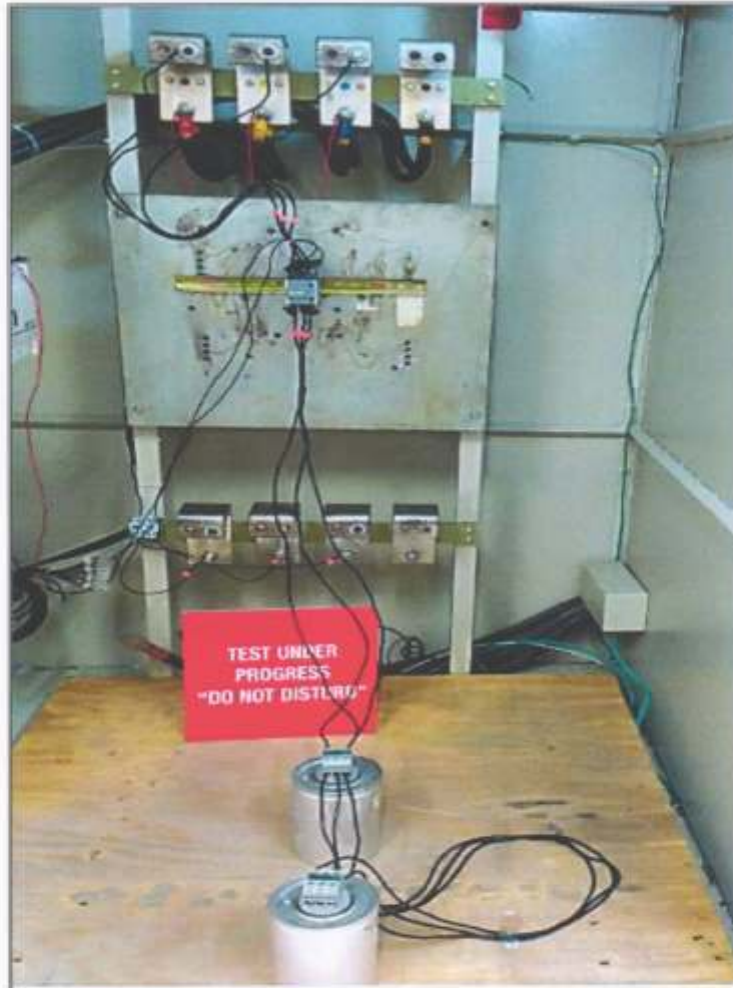
Oscillograms (Cont.....)



Oscillogram for 70 KVAR Capacitor Duty Contactor

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## 7. Test set up Photos



Test set up Photos for 12.5KVAR Capacitor Duty Contactor



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Test set up Photos (Cont.....)



Test set up Photo for 12.5KVAR Capacitor Duty Contactor



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Test set up Photos (Cont.....)



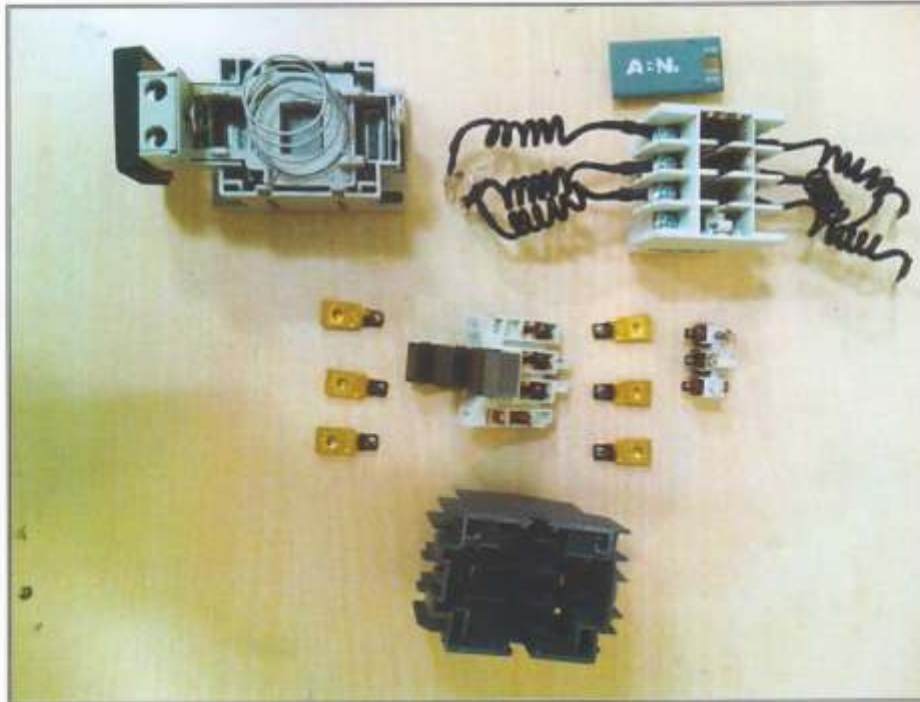
Test set up Photo for 25 KVAR Capacitor Duty Contactor



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**8. After Test photos:**

12.5 KVAR Capacitor Duty Contactor conditions after 1, 00,000 operations

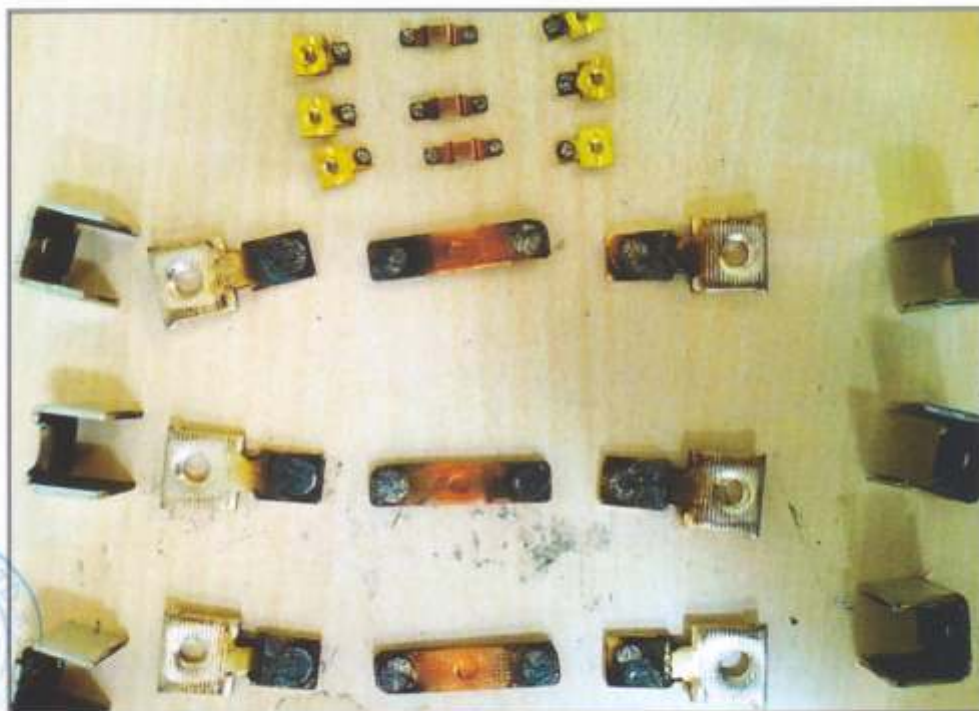
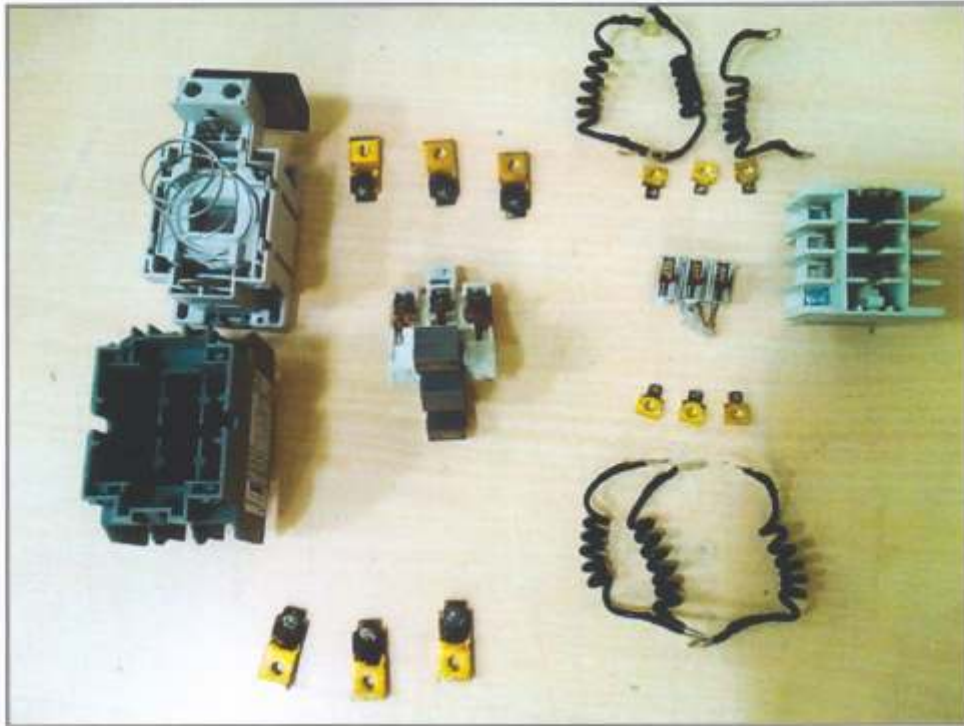


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**After Test photos (Cont.....)**

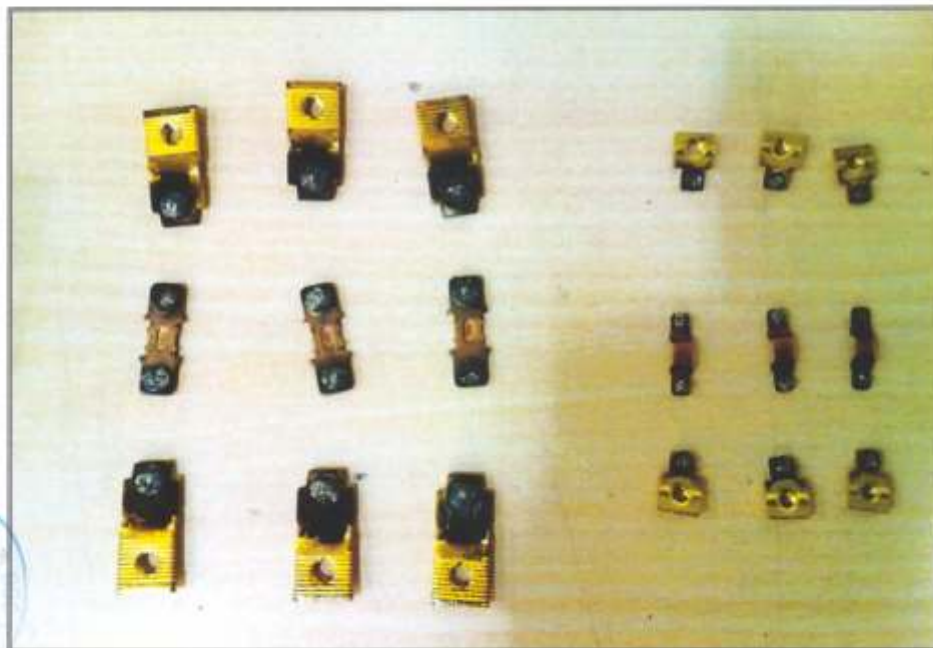
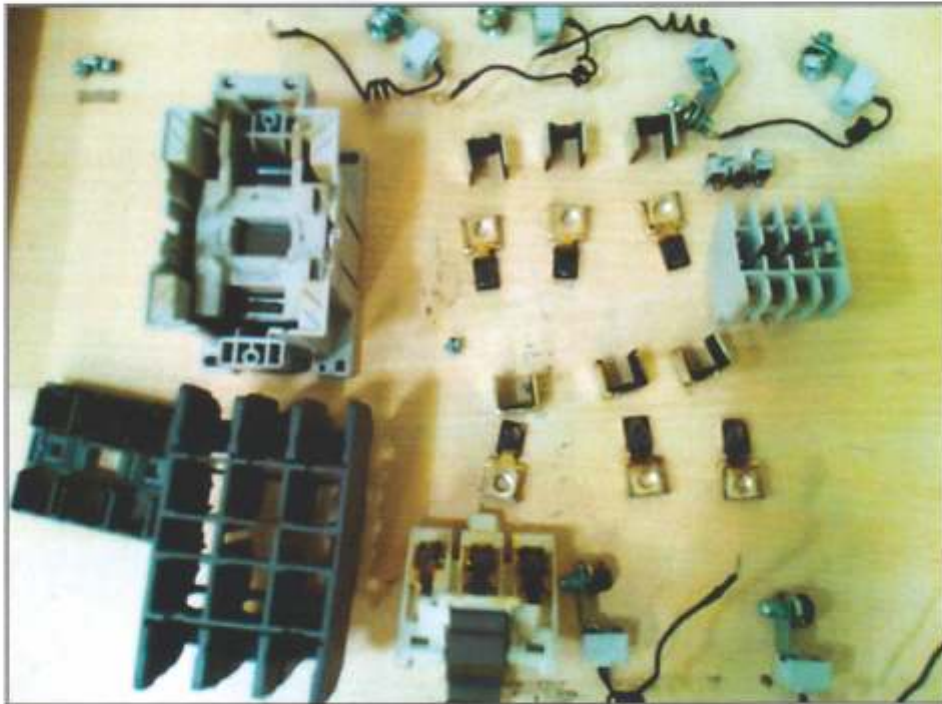
25 KVAR Capacitor Duty Contactor conditions after 1, 00,000 operations



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**After Test photos (Cont.....)**

70 KVAR Capacitor Duty Contactor conditions after 1, 00,000 operations



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\*\*\*End of the report\*\*\*



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