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AB-0386-T

1903.27.04/00

22.08.2019

TEST REPORT

Client Name/Address	VTEK ELEKTRİK İTH. İHR. SAN. VE TİC. LTD. ŞTİ. Merkez Mah. Aldemir Çk. Sk. No: 6/3 Gaziosmanpaşa / İSTANBUL		
Name and Identity of Test Item	TK60 1200/5 A Current Transformer		
Order No.	1903.27	Sample Acceptance Date	22.07.2019
Num. Of Pages of The Report	10 + 16 pages of annexes 26 pages in total	Test Date(s)	23.07.2019-21.08.2019
Test Standard(s)	IEC 61869-1: 09.10.2013 Instrument Transformers- Part 1: General Requirements IEC 61869-2: 12.06.2013 Instrument Transformers- Part 2: Additional Requirements for Current Transformers		
Test Result(s)	POSITIVE / Details are given on the following pages which are part of this report.		
Remarks			
<p><i>The test results relate only to the items tested.</i></p> <p><i>Tests marked (#) in this test report are not included in the TÜRKAK accreditation schedule for this laboratory.</i></p> <p><i>TESTLA Elektrik Laboratuvarları accredited by TÜRKAK under registration number AB-0386-T for IEC ISO/IEC 17025:2012 as test laboratory.</i></p> <p><i>Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.</i></p> <p><i>The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.</i></p>			
Seal	Report Date	Person in Charge of Test	Laboratory Manager
	22.08.2019	 Mehmet KALYONCU	 Caner EREN

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1. Participants of Tests

Sequence No.	Name, Last Name	Position	Company
1.	Caner Eren	Head of Laboratory	TESTLA
2.	Mehmet Şumnu	Laboratory Chief / Test Personnel	
3.	Mehmet Kalyoncu	Test Personnel	
4.	Selçuk Aygün	Prepared By	

2. Performed Test

Sequence No.	Test name	IEC 61869-2 Clause	Result
1.	Temperature-rise test	7.2.2	P
2.	Tests for accuracy	7.2.6	P
3.	Short-time current tests	7.2.201	P
4.	Power-frequency voltage withstand tests on primary terminals	7.3.1	P
5.	Power-frequency voltage withstand tests on secondary terminals	7.3.4	P

The test details are given in the following pages (Chapter 5).

3. General Ambient Conditions

Ambient temperature (°C)	Ambient Humidity (RH%)	Atmospheric pressure (mbar)
24,1-28,7	47-63	1005-1009

Laboratory Indoor ambient conditions are climatically controlled and registered. Special ambient conditions are specified separately in relevant test.

4. Rated Values of Test Item

Manufacturer	VTEK ELEKTRİK
Model/Type	TK60
Declared Primary Current / Declared Secondary Current	1200/5A Icth= 1 In
Rated Frequency	50/60 Hz
CI / VA	CI:05 FS5 15VA
Rated Short-Time Thermal Current (Ith) and Duration (sec)	60 kA / 1 sec.
Serial Number	07203230

Photograph of the test sample



5. Test Results

Explanations on the presentation and reporting of results.

This report applies only to samples for which tests have been carried out.

Tests marked in this test report (#) are not within the scope of accreditation obtained from TÜRKAK.

Since the test sample was provided by the customer, the contribution resulting from sampling was not included in the measurement uncertainty. The test sample was tested as received.

In line with customer requests,

Tests according to IEC 61869-1 and IEC 61869-2 standards were shown as follows in the table in the column of the test standard, as "(IEC 61869-1) IEC 61869-2"

(IEC 61869-1) IEC 61869-2			
Clause	Required-Requirement	Measured-Observed	Result

In this table,

1. Column: **Clause**

The clause number of the standard specified in the top line. (The clauses of the test standard cited to the other standards are specified under the Requirement-Necessity section-column)

2. Column: **Required -Requirement**

Structural requirements-conditions-guidelines for the described tests to determine the suitability of the sample described in the relevant standard clause and the property defined in the relevant standard clause of this sample.

3. Column: **Measured-Observed**

The results of measurements and observations (if any, are made in the NOTES section of this section and / or in the last-bottom section of the relevant test page, if the customer requests, technical or other reasons are omitted)

4. Column: **Result**

Display of decisions in Possible Tests Results:

— Non-applicable for the sample	:	NA	(Not Apply)
— Sample meets the requirements	:	P	(Pass) (if any) *
— Sample does not meet the requirements	:	F	(Fail) (if any) *
— Given information and topics	:	--	Out of Assessment

It is signed as above.

(*) Situations in which the "passed" / "failed" evaluation can not be made with regard to the tests made:

- Deviations, additions and removals from standards (to affect to the results positively) related with customer request or other situations.
- The possibility that the numerical results obtained from the sample in the tests are positive / negative when the measurement uncertainties of the relevant test-device participate in the calculation (In such cases the measurement uncertainty values of the relevant tests are specified in the report)
- Absence of declaration values (necessary for evaluation of the suitability of the results) of the samples in relation to the experiments performed.
- By the nature of the Test being undertaken there is no limit or criterion for assessing compliance (the relevant test-product standard or the customer's pre-determined) of the results obtained to be positive or negative.



(IEC 61869-1) IEC 61869-2

Clause	Required-Requirement	Measured-Observed	Result																																																				
7.2.2	Temperature-rise test																																																						
	IEC 61869-1, 7.2.2 is apply.		--																																																				
(7.2.2)	Temperature-rise test																																																						
	For this test, the transformer shall be mounted in a manner representative of the mounting in service.	Suitable mounted	--																																																				
	The temperature rise of windings shall, when practicable, be measured by the increase in resistance method, but for windings of very low resistance, thermocouples may be employed.	Measured by the increase in resistance method. See 7.3.201.	--																																																				
	Instrument transformers shall be considered to have attained a steady-state temperature when the rate of temperature rise does not exceed 1 K/h.	--	--																																																				
	Class of insulation	A	--																																																				
	Test current	1200 A	--																																																				
	Limit values according to insulation class of solid or gas insulated transformers; • Class Y 45 K • Class A 60 K • Class E 75 K • Class B 85 K • Class F 110 K • Class H 135 K	The measurement results are given in the table below.	--																																																				
	<table border="1"> <thead> <tr> <th colspan="6">Temperature-rise table</th> </tr> <tr> <th rowspan="2">Measuring Points</th> <th>Data-1 (°C)</th> <th rowspan="2">Difference (K)</th> <th rowspan="2">Limit (K)</th> <th rowspan="2">Result</th> <th rowspan="2"></th> </tr> </thead> <tbody> <tr> <td>Average Outdoor Temperature</td> <td>25,95</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Outdoor (Oil) Temperature -1</td> <td>25,72</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Outdoor (Oil) Temperature -2</td> <td>26,18</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="4">TK60 1200/5 A</td> <td>Secondary 1</td> <td>49,85</td> <td>23,89</td> <td>75,00</td> <td>POSITIVE</td> </tr> <tr> <td>Secondary 2</td> <td>52,28</td> <td>26,32</td> <td>75,00</td> <td>POSITIVE</td> </tr> <tr> <td>Plastic Body Side</td> <td>64,32</td> <td>38,37</td> <td>75,00</td> <td>POSITIVE</td> </tr> <tr> <td>Plastic Cover Upper</td> <td>38,39</td> <td>12,44</td> <td>75,00</td> <td>POSITIVE</td> </tr> </tbody> </table>			Temperature-rise table						Measuring Points	Data-1 (°C)	Difference (K)	Limit (K)	Result		Average Outdoor Temperature	25,95					Outdoor (Oil) Temperature -1	25,72					Outdoor (Oil) Temperature -2	26,18					TK60 1200/5 A	Secondary 1	49,85	23,89	75,00	POSITIVE	Secondary 2	52,28	26,32	75,00	POSITIVE	Plastic Body Side	64,32	38,37	75,00	POSITIVE	Plastic Cover Upper	38,39	12,44	75,00	POSITIVE	--
Temperature-rise table																																																							
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	Plastic Body Side	64,32	38,37	75,00	POSITIVE																																																		
	Plastic Cover Upper	38,39	12,44	75,00	POSITIVE																																																		
7.3.201	Determination of the secondary winding resistance																																																						
	<table border="1"> <thead> <tr> <th colspan="3">Resistance measurement table</th> </tr> <tr> <th>Before Temperature-rise test (mΩ)</th> <th>After Temperature-rise test (mΩ)</th> <th>K</th> </tr> </thead> <tbody> <tr> <td>279,88</td> <td>341,9</td> <td>58</td> </tr> </tbody> </table> <p>The temperature rises of the windings measured by the resistance increase method are within the limits.</p>			Resistance measurement table			Before Temperature-rise test (mΩ)	After Temperature-rise test (mΩ)	K	279,88	341,9	58	P																																										
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(IEC 61869-1) IEC 61869-2

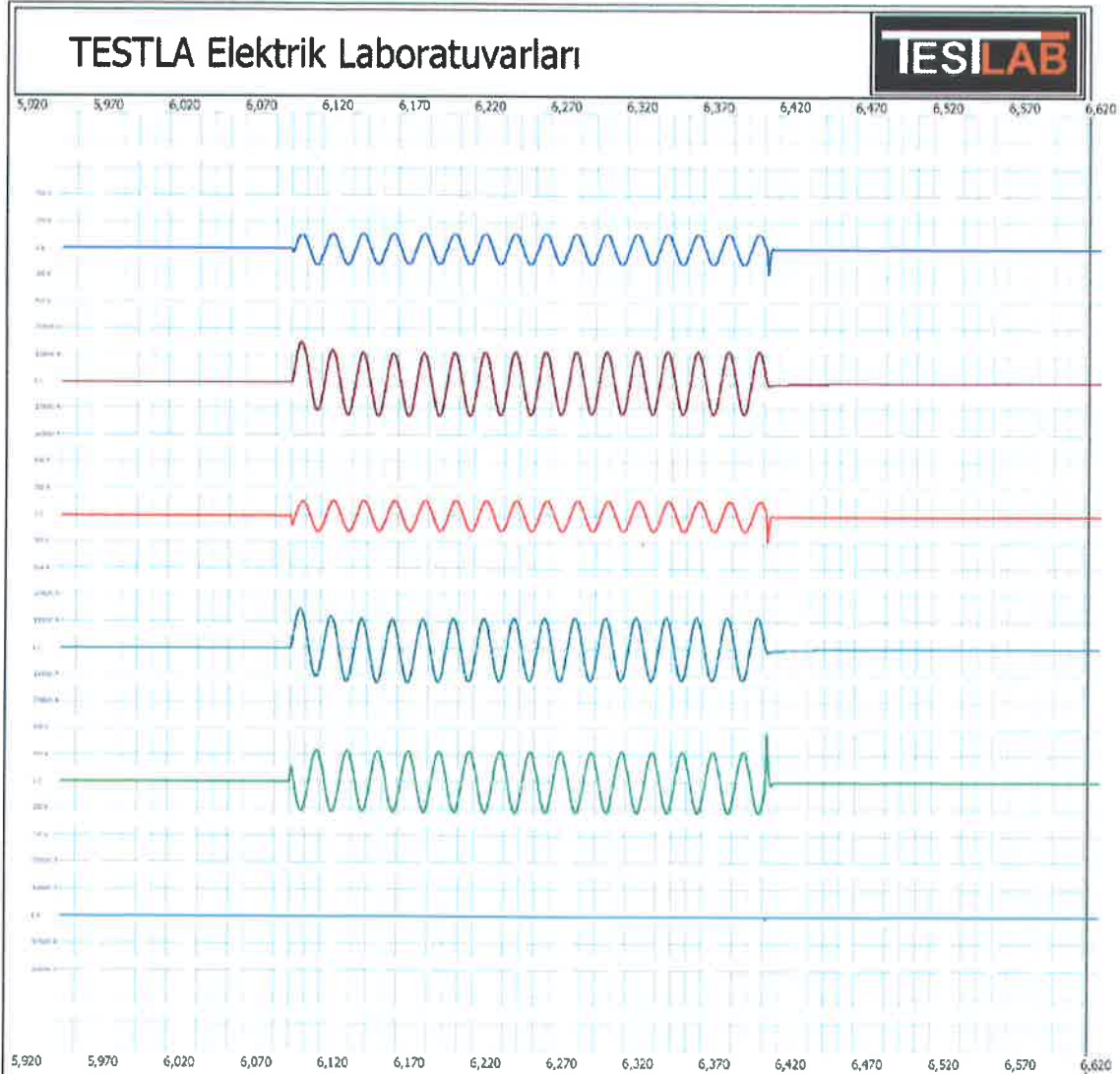
Clause	Required-Requirement	Measured-Observed	Result
7.2.6	Tests for accuracy		
	The measurement results are given in the annex.	See list of annexes.	P
7.2.201	Short-Time Current Tests		
	For the short time (I _{th}) current tests, CT should be in a temperature between 10 and 40 °C before test	Temperature= 24,9 °C Humidity= 60 RH%	--
	This test should be performed by according to; (I ² t) will not be less then (I ² th), predicted t duration will be in between 0,5 second and 5 second and during the t duration seconder units will be short circuit at the I Current	t= 1000 ms	--
	Dynamic test should be performed with primer current which should be more than (I _{dyn}) and seconder unit should be short circuit.	60 kA RMS 1000 ms 150 kA Peak	--
	Dynamic test may be combined to thermal test with the condition that first I Peak should be more than (I _{dyn})	Applied separately.	--
	The transformer shall be deemed to have passed these tests if, after cooling to ambient temperature (between 10 °C and 40 °C), it satisfies the following requirements:		
	a) There should be no visible damage,	Yes	P
	b) Limits of error after the current is cut off and magnetized; should not differ from the values recorded before the experiment by more than half of the error limits corresponding to their own accuracy class,	Yes The measurement results are given in the list of annexes.	P
	c) It should be withstand to dielectric test according to clause 7.3.1, 7.3.3 and 7.3.4, but test current and voltage should be decreased %90 of the values	Primary= 2,7 kV Secondary= 2,7 kV Between sections= NA There was no disruptive discharge.	P
	d) In the examination, there shouldn't be a deformation on the cover of conductive	There is no deformation.	P
Notes:			



(IEC 61869-1) IEC 61869-2

Clause	Required-Requirement	Measured-Observed	Result
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Oscillogram of Short-Time Current Test



V 1	V 2	V 3	I 1	I 2	I 3
124,752 V	122,703 V	242,673 V	86.135,461 A	85.379,016 A	0,000 A
Cos Phi 1	Cos Phi 2	Cos Phi 3	I1 time	I2 time	I3 time
0,295	0,293	0,000	310 msec	310 msec	0 msec
I1 Peak	I2 Peak	I3 Peak	I1 Joul	I2 Joul	I3 Joul
151.987,297 A	150.876,188 A	0,000 A	2.301,843 kA²sn	2.261,591 kA²sn	0,001 kA²sn

Osc. No : 1903.27-42691 Test Date : 20.08.2019

Company : VTEK Elektrik

Test Current : 60 kA

Test Maneuvers : 150 kA Peak

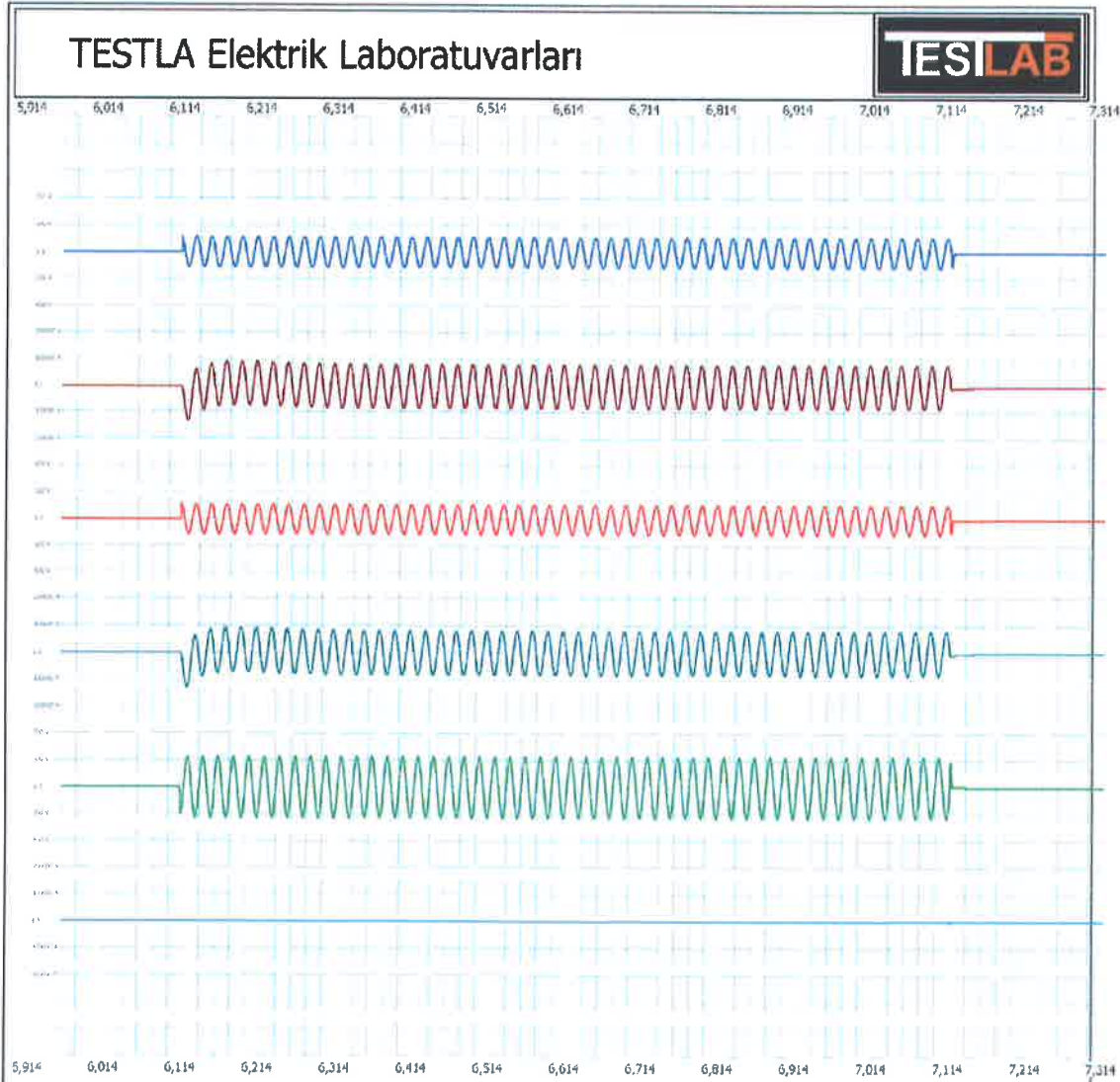
Tip/Model : TK60 1200/5A Current Transformer

Sample No : 1903.27.04



(IEC 61869-1) IEC 61869-2

Clause	Required-Requirement	Measured-Observed	Result
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V 1	V 2	V 3	I 1	I 2	I 3
123,564 V	121,983 V	241,311 V	60.491,188 A	60.508,611 A	0,000 A
Cos Phi 1	Cos Phi 2	Cos Phi 3	I1 time	I2 time	I3 time
0,298	0,292	0,000	1.002 msec	1.002 msec	0 msec
I1 Peak	I2 Peak	I3 Peak	I1 Joul	I2 Joul	I3 Joul
-129.622,436 A	-129.822,852 A	0,000 A	3.666,502 kA²sn	3.668,615 kA²sn	0,001 kA²sn

Osc. No : 1903.27-42692 Test Date : 20.08.2019

Company : VTEK Elektrik

Test Current : 60 kA

Test Maneuvers : 60 kA Rms

Tip/Model : TK60 1200/5A Current Transformer

Sample No : 1903.27.04



(IEC 61869-1) IEC 61869-2

Clause	Required-Requirement	Measured-Observed	Result																																
7.3.1	Power-frequency voltage withstand tests on primary terminals																																		
	This clause of IEC 61869-1 is applicable with the addition of the following	--	--																																
	The test voltage shall be applied between the short-circuited primary winding and earth.	--	--																																
	The short-circuited secondary winding(s), the frame, case (if any) and core (if there is a special earth terminal) shall be connected to earth.	--	--																																
(7.3.1)	Power-frequency voltage withstand tests on primary terminals																																		
	The power-frequency withstand test shall be performed in accordance with IEC 60060-1.	--	--																																
	The test voltage shall have the appropriate value given in Table 2, depending on the highest voltage for equipment.	Test voltage= 3 kV	--																																
	Table 2 – Rated primary terminal insulation levels for instrument transformers																																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Highest voltage for equipment U_m (r.m.s.)</th> <th style="text-align: center;">Rated power-frequency withstand voltage (r.m.s.)</th> <th style="text-align: center;">Rated lightning impulse withstand voltage (peak)</th> <th style="text-align: center;">Rated switching withstand voltage (peak)</th> </tr> <tr> <th style="text-align: center;">kV</th> <th style="text-align: center;">kV</th> <th style="text-align: center;">kV</th> <th style="text-align: center;">kV</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0,72</td> <td style="text-align: center;">3</td> <td style="text-align: center;">---</td> <td></td> </tr> <tr> <td style="text-align: center;">1,2</td> <td style="text-align: center;">6</td> <td style="text-align: center;">---</td> <td></td> </tr> <tr> <td style="text-align: center;">3,6</td> <td style="text-align: center;">10</td> <td style="text-align: center;">20</td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">40</td> <td></td> </tr> <tr> <td style="text-align: center;">7,2</td> <td style="text-align: center;">20</td> <td style="text-align: center;">40</td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">60</td> <td></td> </tr> </tbody> </table>	Highest voltage for equipment U_m (r.m.s.)	Rated power-frequency withstand voltage (r.m.s.)	Rated lightning impulse withstand voltage (peak)	Rated switching withstand voltage (peak)	kV	kV	kV	kV	0,72	3	---		1,2	6	---		3,6	10	20				40		7,2	20	40				60			
Highest voltage for equipment U_m (r.m.s.)	Rated power-frequency withstand voltage (r.m.s.)	Rated lightning impulse withstand voltage (peak)	Rated switching withstand voltage (peak)																																
kV	kV	kV	kV																																
0,72	3	---																																	
1,2	6	---																																	
3,6	10	20																																	
		40																																	
7,2	20	40																																	
		60																																	
	The duration shall be 60 s, unless otherwise specified.	Test duration= 60 s	--																																
	The secondary terminals, the frame, case (if any) and core (if there is a special earth terminal) shall be connected to earth.	--	--																																
	The test voltage shall be applied: - between the primary terminals and earth, - between primary terminals, where applicable.	Test voltage= 3 kV	P																																
	Repeated power-frequency tests on primary terminals should be performed at 80 % of the specified test voltage.	--	NA																																
(7.3.4)	Power-frequency voltage withstand tests on secondary terminals																																		
	The frame, case (if any), core (if there is a special earth terminal), and all the other terminals shall be connected to earth.	--	--																																
	The test voltage according to 5.3.5 shall be applied for 60 s in turn between the short circuited terminals of each winding and earth.	Test voltage= 3 kV Test duration= 60 sec.	P																																
Notes:																																			



6. Test Assembly and Test Item Photographs



7. List of Annexes

- 8 pages Measurement of fault limits for short-time current test in clause 7.2.201 and measurement of tests for accuracy in clause 7.2.6.
- 8 pages technical document.

END OF REPORT



Company Name:
Company Address:
Order Number:



General test information:

Date/Time: 2019-08-20, 09:35:49

Test device:	CT-Analyzer	Device Serial No.:	LF491J
File name:	C:\Users\SicakLT\Documents\OMICRON\CTAnalyzer\RemoteEFL\TEMP\XMLData(1).xml		
Assessments:	OK		

Used test settings:

I-pn:	1200,0 A	Location:		Object:	
I-sn:	5,0 A	Company:		Manufacturer:	VTEKE
Rated burden:	15,0 VA / 0,8	Country:		Type:	TK60
Operating burden:	15,0 VA / 0,8	Station:	Testla	Serial number:	07203230
Applied standard:	IEC 61869-2	Feeder/Bay:		Core number:	S1-S2
Core type (P/M):	M	Phase:		Tap:	SC BEFORE
Class:	0,5	IEC-ID:	61869-2	Optional:	1903.27.04
FS:	5,0	ext (lcth):	120 %		
f:	50,0 Hz	max. Rct:	0,354 Ω		

Resistance test:

Rmeas (25°C):	0,297 Ω
Rref (75°C):	0,35423 Ω

Burden test:

Burden:	cos φ:	Z:
Vmeas:	Imeas:	

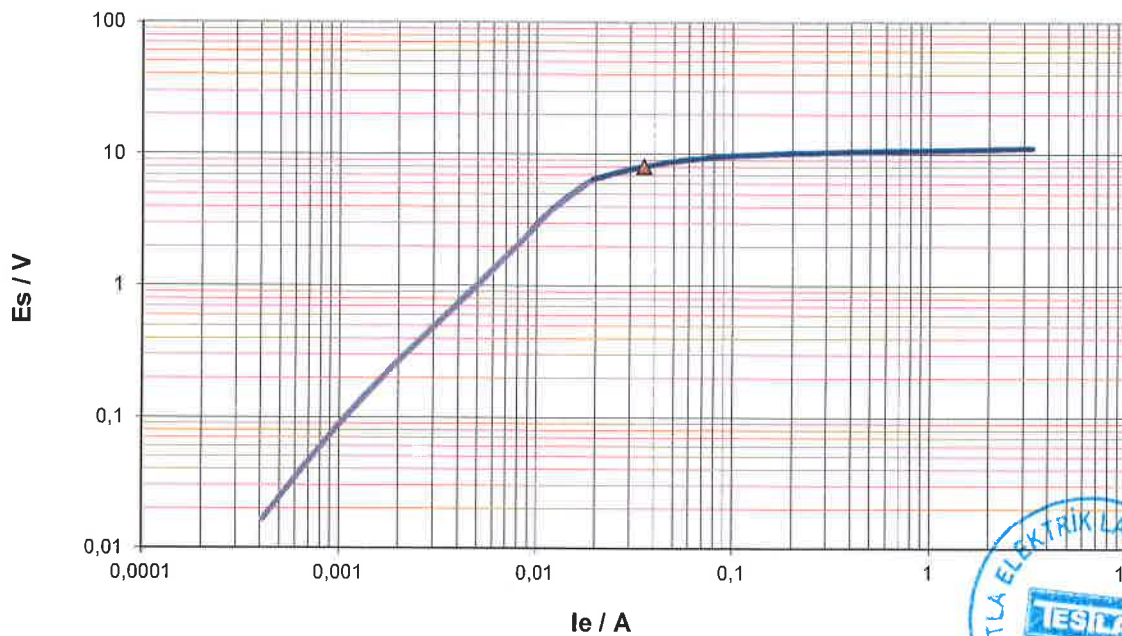
Excitation test:

V-kn:	8,079 V	I-kn:	0,035152 A	Result with rated burden:	Result with operating burden:						
V-kn 2:	#YOK	I-kn 2:	#YOK	FS:	2,52	FSi:	2,37	FS:	2,52	FSi:	2,37
Ls:	0,0000956H	Lm:	1,0429H	Ts:	1,25s			Ts:	1,25s		
Kr:	70,46 %										

Ratio test:

Ratio:	1200,0	:	4,98745	ε:	-0,251 %	Δφ:	2,1 min	Polarity:	OK	N:	239,97
				εc:	0,2734 %						

Excitation curve data

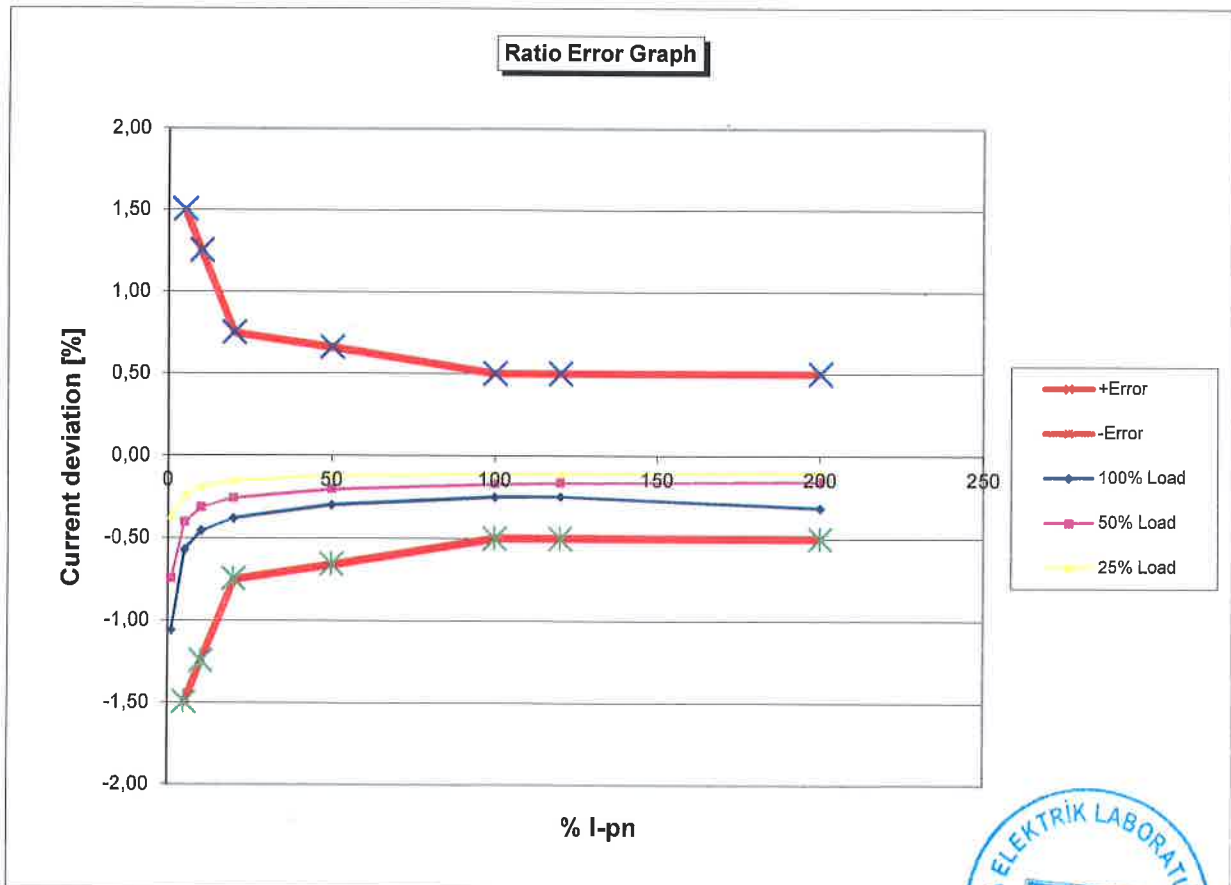


— Seri1	— (I-kn, V-kn)	— (I-kn2, V-kn2)	— Series2
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Current ratio error in % at % of rated current								
VA/cosPhi	1	5	10	20	50	100	120	200
15 VA/ 0,8	-1,064	-0,572	-0,458	-0,381	-0,300	-0,251	-0,247	-0,315
7,5 VA/ 0,8	-0,743	-0,405	-0,316	-0,258	-0,204	-0,171	-0,162	-0,153
3,75 VA/ 1	-0,367	-0,240	-0,187	-0,151	-0,123	-0,111	-0,107	-0,099
1,88 VA/ 1	-0,309	-0,212	-0,164	-0,130	-0,104	-0,093	-0,090	-0,082
VA/								

Phase displacement in [min] at % rated current								
VA/cosPhi	1	5	10	20	50	100	120	200
15 VA/ 0,8	27,147	11,916	9,314	7,037	3,849	2,099	2,096	7,723
7,5 VA/ 0,8	26,412	10,898	8,420	6,624	4,353	2,642	2,200	2,022
3,75 VA/ 1	30,155	13,071	9,905	7,861	5,665	4,074	3,667	2,969
1,88 VA/ 1	27,796	11,797	8,832	6,947	5,079	3,738	3,393	2,501
VA/								



Company Name:
Company Address:
Order Number:



General test information: Date/Time: 2019-08-20, 09:39:27

Test device:	CT-Analyzer	Device Serial No.:	LF491J
File name:	C:\Users\SicakLT\Documents\OMICRON\CTAnalyzer\RemoteEFL\TEMP\XMLData(1).xml		
Assessments:	OK		

Used test settings:

I-pn:	1200,0 A	Location:	Object:
I-sn:	5,0 A	Company:	Manufacturer: VTEKE
Rated burden:	15,0 VA / 0,8	Country:	Type: TK60
Operating burden:	15,0 VA / 0,8	Station:	Serial number: 07203230
Applied standard:	IEC 61869-2	Feeder/Bay:	Core number: S1-S2
Core type (P/M):	M	Phase:	Tap: SC BEFORE
Class:	0,5	IEC-ID:	Optional: 1903.27.04
FS:	5,0	ext (lcth):	120 %
f:	60,0 Hz	max. Rct:	0,354 Ω

Resistance test:

Rmeas (25°C):	0,29691 Ω
Rref (75°C):	0,35412 Ω

Burden test:

Burden:	cos φ:	Z:
Vmeas:	Imeas:	

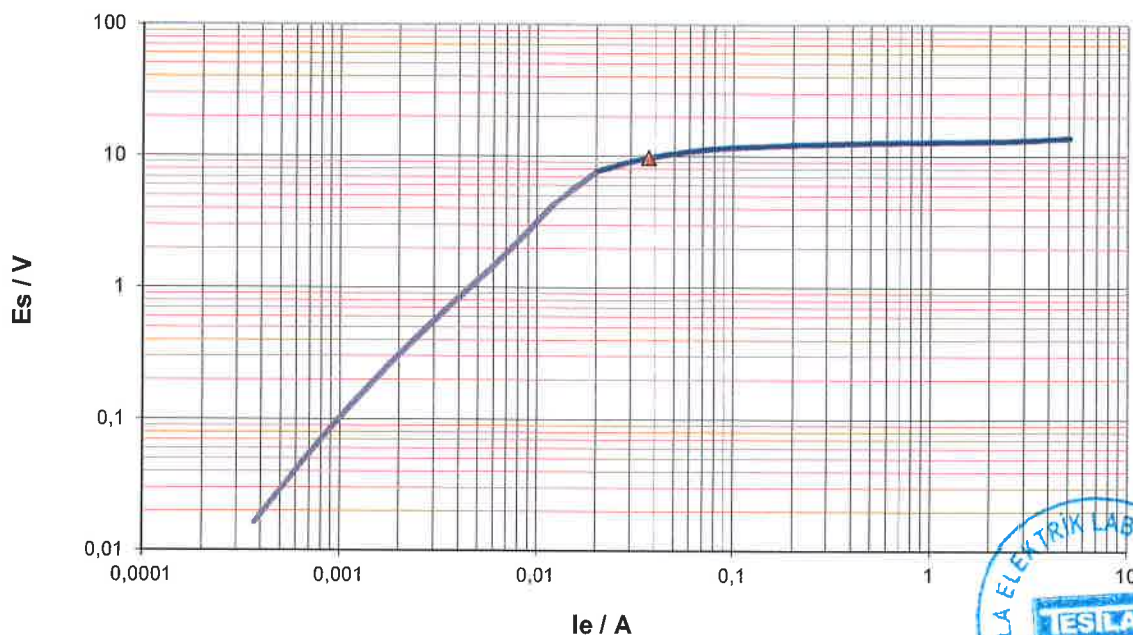
Excitation test:

V-kn:	9,75 V	I-kn:	0,037002 A	Result with rated burden:	Result with operating burden:
V-kn 2:	#YOK	I-kn 2:	#YOK	FS: 3,03	FSi: 2,85
Ls:	0,0000854H	Lm:	0,9758H	Ts: 1,17s	Ts: 1,17s
Kr:	71,03 %				

Ratio test:

Ratio:	1200,0	:	4,9886	ε:	-0,2281 %	Δφ:	1,71 min	Polarity:	OK	N:	239,97
				εc:	0,2469 %						

Excitation curve data

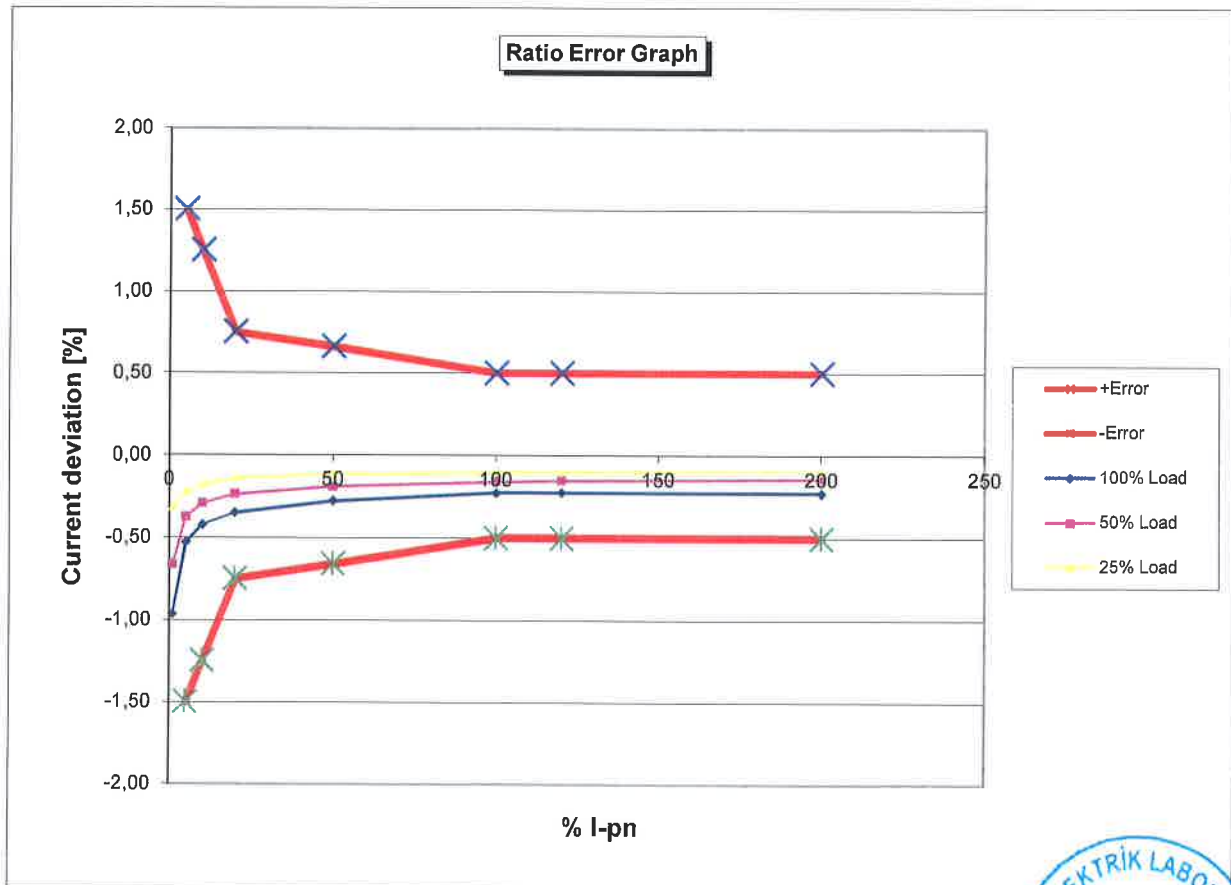


— Series1 — (I-kn,V-kn) — (I-kn2,V-kn2) — Series2



	Current ratio error in % at % of rated current							
VA/cosPhi	1	5	10	20	50	100	120	200
15 VA/ 0,8	-0,964	-0,530	-0,422	-0,350	-0,279	-0,228	-0,224	-0,228
7,5 VA/ 0,8	-0,664	-0,374	-0,292	-0,237	-0,191	-0,160	-0,152	-0,139
3,75 VA/ 1	-0,315	-0,222	-0,175	-0,140	-0,114	-0,102	-0,099	-0,091
1,88 VA/ 1	-0,262	-0,195	-0,154	-0,122	-0,096	-0,086	-0,083	-0,076
VA/								

	Phase displacement in [min] at % rated current							
VA/cosPhi	1	5	10	20	50	100	120	200
15 VA/ 0,8	25,311	10,557	8,224	6,295	3,702	1,708	1,663	3,186
7,5 VA/ 0,8	24,639	9,886	7,440	5,899	4,078	2,565	2,192	1,661
3,75 VA/ 1	27,753	11,948	8,944	7,075	5,211	3,856	3,496	2,604
1,88 VA/ 1	25,518	10,794	7,993	6,248	4,618	3,521	3,211	2,391
VA/								



Company Name:
Company Address:
Order Number:



General test information: Date/Time: 2019-08-20, 13:35:40

Test device:	CT-Analyzer	Device Serial No.:	LF491J
File name:	C:\Users\SicakLT\Documents\OMICRON\CTAnalyzer\RemoteEFL\TEMP\XMLData(1).xml		
Assessments:	OK		

Used test settings:

I-pn:	1200,0 A	Location:	Object:
I-sn:	5,0 A	Company:	Manufacturer: VTEKE
Rated burden:	15,0 VA / 0,8	Country:	Type: TK60
Operating burden:	15,0 VA / 0,8	Station: Testla	Serial number: 07203230
Applied standard:	IEC 61869-2	Feeder/Bay:	Core number: S1-S2
Core type (P/M):	M	Phase:	Tap: SC AFTER
Class:	0,5	IEC-ID: 61869-2	Optional: 1903.27.04
FS:	5,0	ext (lcth):	120 %
f:	50,0 Hz	max. Rct:	0,365 Ω

Resistance test:

Rmeas (25°C):	0,30574 Ω
Rref (75°C):	0,36465 Ω

Burden test:

Burden:	cos φ:	Z:
Vmeas:	Imeas:	

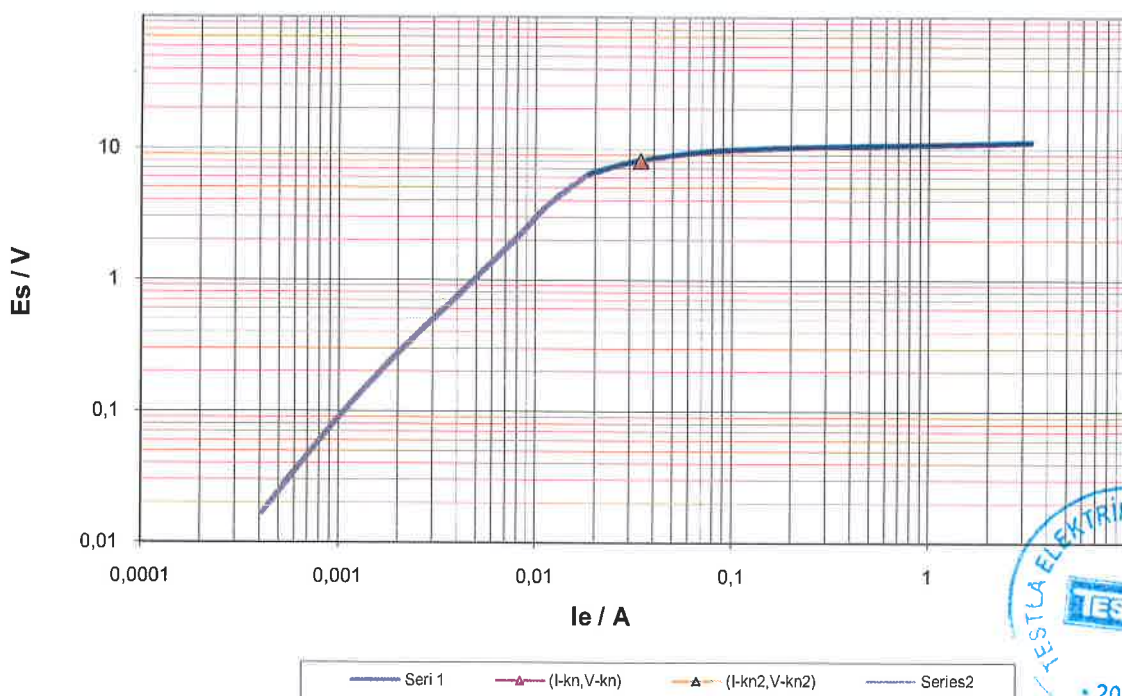
Excitation test:

V-kn:	8,1 V	I-kn:	0,034435 A	Result with rated burden:	Result with operating burden:						
V-kn 2:	#YOK	I-kn 2:	#YOK	FS:	2,49	FSi:	2,34	FS:	2,49	FSi:	2,34
Ls:	0,0000946H	Lm:	1,0569H	Ts:	1,251s	Ts:	1,251s				
Kr:	70,86 %										

Ratio test:

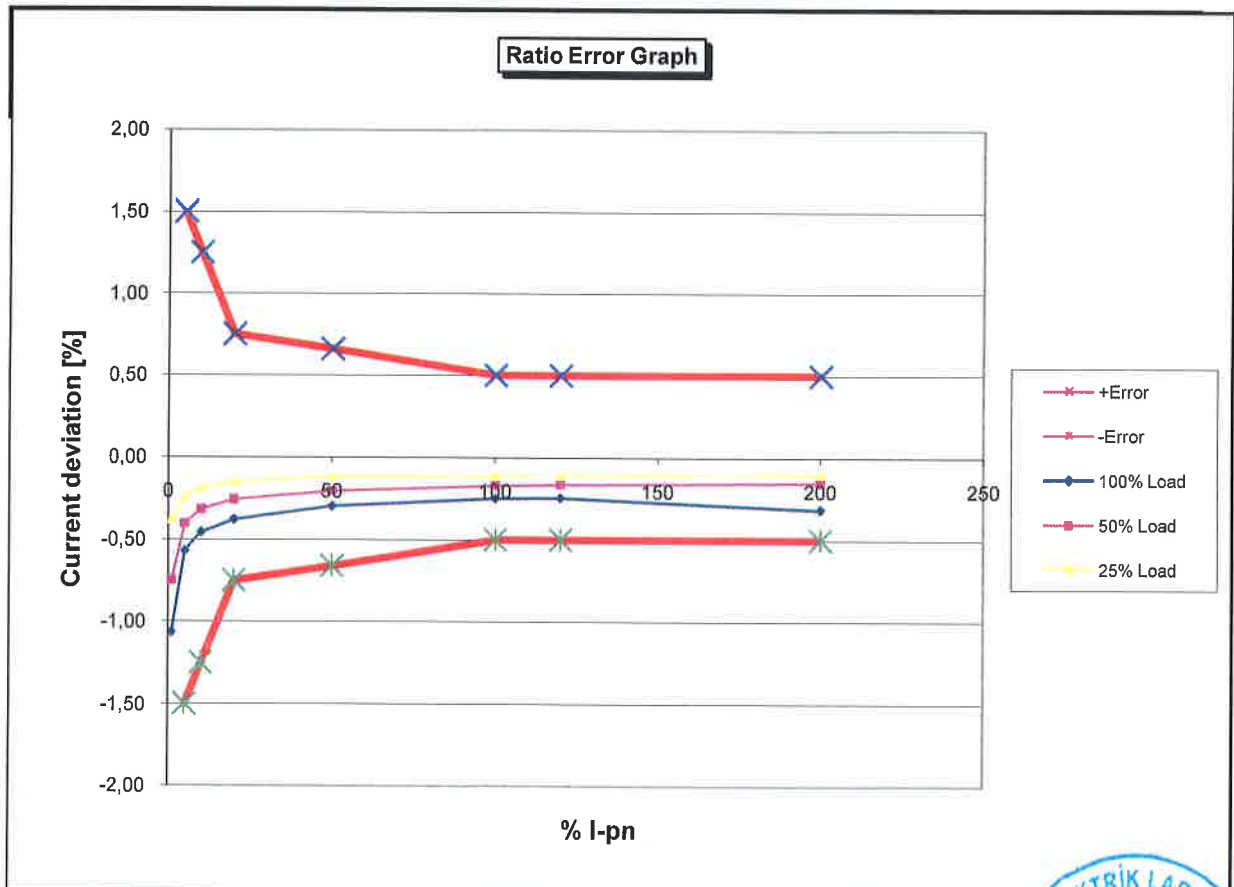
Ratio:	1200,0	:	4,98747	ε:	-0,2506 %	Δφ:	2,07 min	Polarity:	OK	N:	239,97
				εc:	0,2728 %						

Excitation curve data



VA/cosPhi	Current ratio error in % at % of rated current							
	1	5	10	20	50	100	120	200
15 VA/ 0,8	-1,063	-0,571	-0,458	-0,379	-0,299	-0,251	-0,246	-0,315
7,5 VA/ 0,8	-0,746	-0,405	-0,317	-0,259	-0,204	-0,171	-0,163	-0,153
3,75 VA/ 1	-0,376	-0,243	-0,190	-0,153	-0,125	-0,112	-0,108	-0,101
1,88 VA/ 1	-0,318	-0,215	-0,167	-0,133	-0,106	-0,095	-0,092	-0,084
VA/								

VA/cosPhi	Phase displacement in [min] at % rated current							
	1	5	10	20	50	100	120	200
15 VA/ 0,8	27,085	11,830	9,212	7,027	3,800	2,070	2,033	7,770
7,5 VA/ 0,8	26,503	10,925	8,378	6,618	4,340	2,614	2,171	1,975
3,75 VA/ 1	30,243	13,070	9,882	7,839	5,653	4,042	3,634	2,955
1,88 VA/ 1	27,929	11,819	8,846	6,942	5,085	3,722	3,373	2,514
VA/								



Company Name:
Company Address:
Order Number:



General test information:

Date/Time: 2019-08-20, 13:38:56

Test device:	CT-Analyzer	Device Serial No.:	LF491J
File name:	C:\Users\SicakLT\Documents\OMICRON\CTAnalyzer\RemoteEFL\TEMP\XMLData(1).xml		
Assessments:	OK		

Used test settings:

I-pn:	1200,0 A	Location:		Object:	
I-sn:	5,0 A	Company:		Manufacturer:	VTEKE
Rated burden:	15,0 VA / 0,8	Country:		Type:	TK60
Operating burden:	15,0 VA / 0,8	Station:	Testla	Serial number:	07203230
Applied standard:	IEC 61869-2	Feeder/Bay:		Core number:	S1-S2
Core type (P/M):	M	Phase:		Tap:	SC AFTER
Class:	0,5	IEC-ID	61869-2	Optional:	1903.27.04
FS:	5,0	ext (Icth):	120 %		
f:	60,0 Hz	max. Rct:	0,362 Ω		

Resistance test:

Rmeas (25°C):	0,30346 Ω
Rref (75°C):	0,36192 Ω

Burden test:

Burden:	cos ϕ :	Z:
Vmeas:	Imeas:	

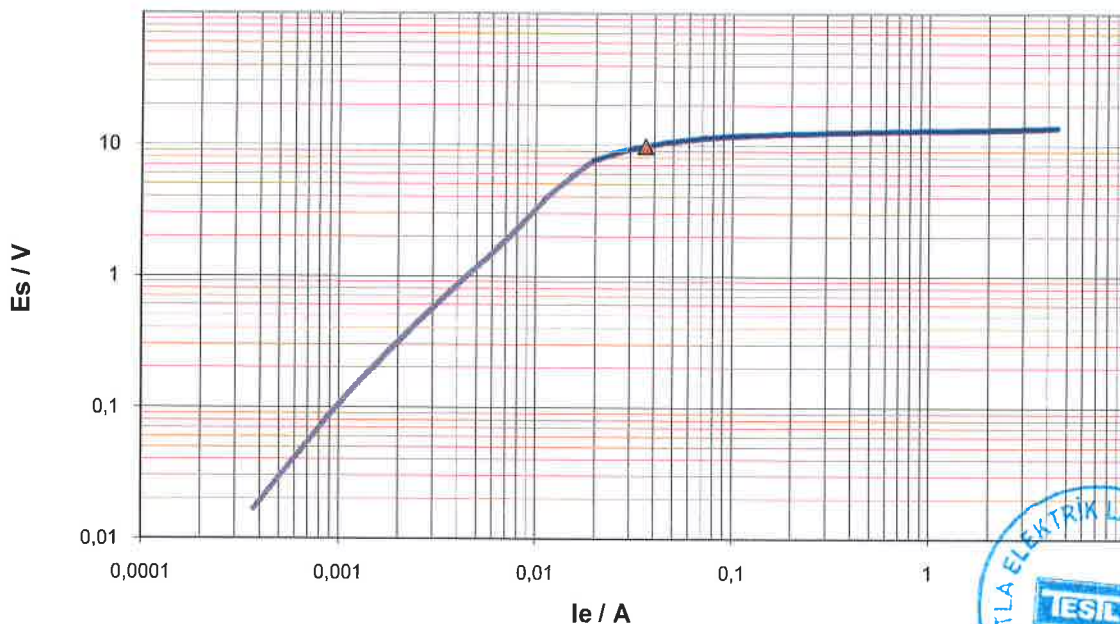
Excitation test:

V-kn:	9,775 V	I-kn:	0,036167 A	Result with rated burden:	Result with operating burden:						
V-kn 2:	#YOK	I-kn 2:	#YOK	FS:	3,01	FSi:	2,83	FS:	3,01	FSi:	2,83
Ls:	0,0000887H	Lm:	0,9856H	Ts:	1,171s	Ts:	1,171s				
Kr:	71,36 %										

Ratio test:

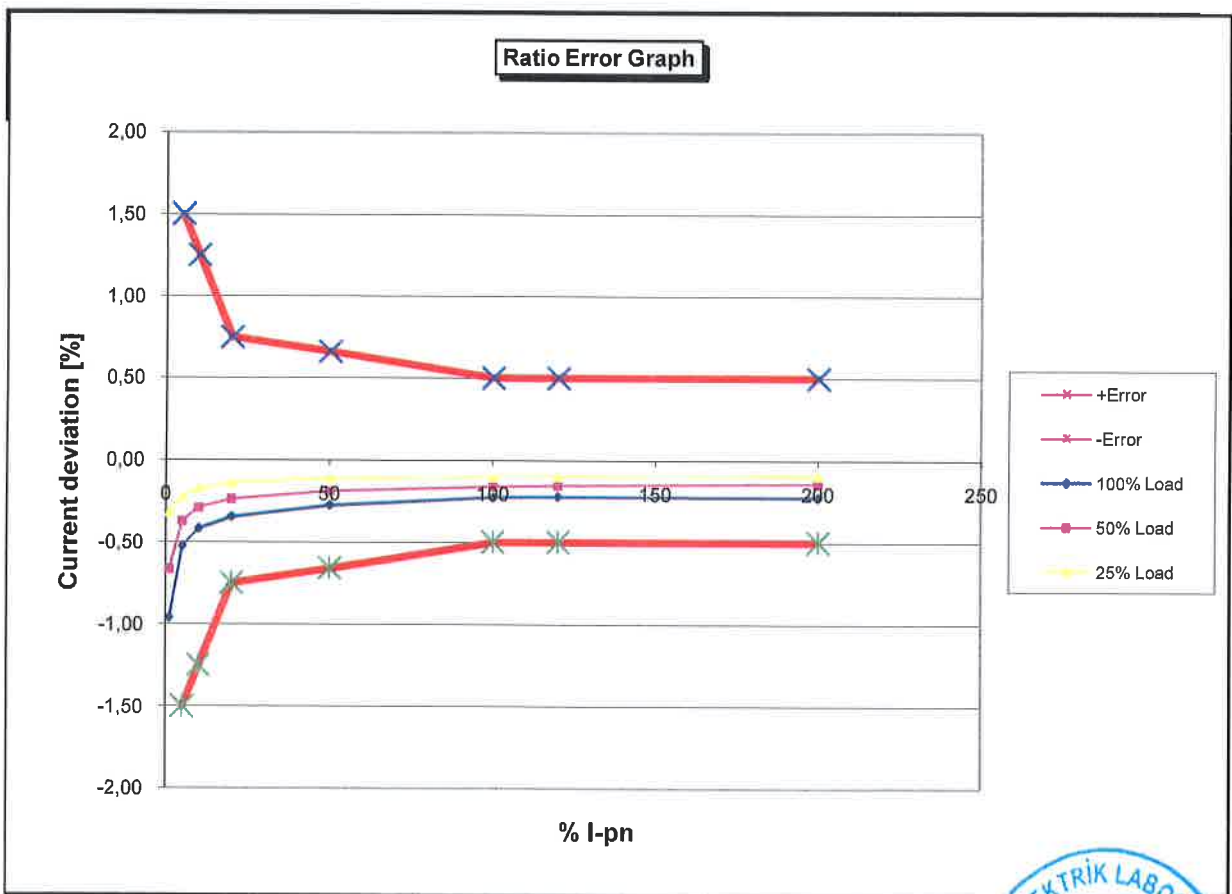
Ratio:	1200,0	:	4,98859	ϵ :	-0,2281 %	$\Delta\phi$:	1,68 min	Polarity:	OK	N:	239,97
				ϵ_c :	0,2467 %						

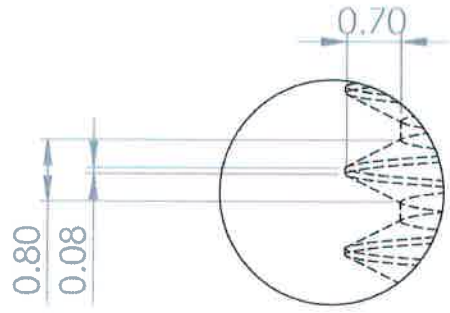
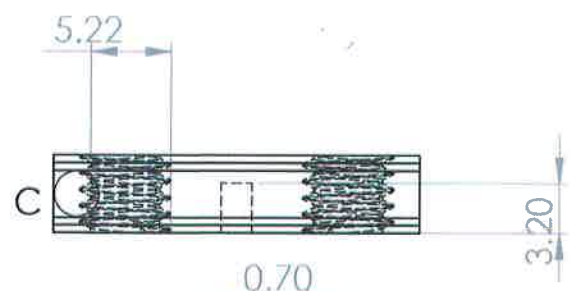
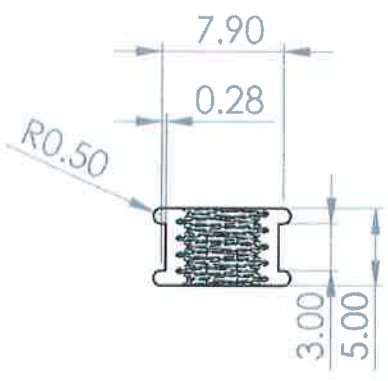
Excitation curve data



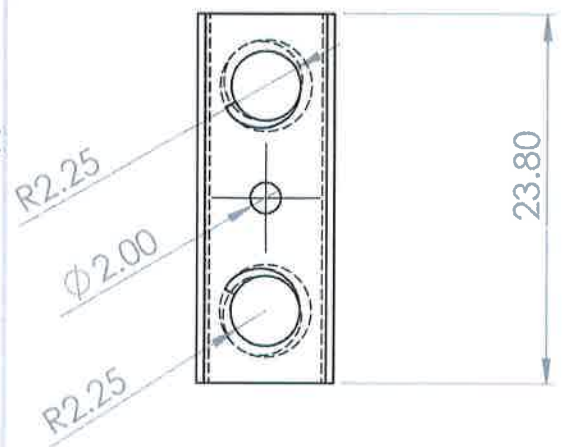
VA/cosPhi	Current ratio error in % at % of rated current							
	1	5	10	20	50	100	120	200
15 VA/ 0,8	-0,962	-0,527	-0,421	-0,349	-0,278	-0,228	-0,223	-0,227
7,5 VA/ 0,8	-0,664	-0,374	-0,291	-0,238	-0,191	-0,160	-0,152	-0,139
3,75 VA/ 1	-0,320	-0,223	-0,176	-0,142	-0,115	-0,103	-0,100	-0,092
1,88 VA/ 1	-0,267	-0,196	-0,155	-0,123	-0,097	-0,087	-0,084	-0,077
VA/								

VA/cosPhi	Phase displacement in [min] at % rated current							
	1	5	10	20	50	100	120	200
15 VA/ 0,8	25,403	10,604	8,154	6,261	3,669	1,683	1,613	3,133
7,5 VA/ 0,8	24,757	9,907	7,497	5,864	4,051	2,546	2,166	1,623
3,75 VA/ 1	27,833	11,951	8,966	7,043	5,200	3,833	3,473	2,591
1,88 VA/ 1	25,621	10,815	8,019	6,253	4,618	3,506	3,197	2,365
VA/								





DETAIL C
SCALE 10 : 1



TEKNİK RESİMİ ÖLÇEKLENDİRMEYİN REVİZYON: R.0

RESİM NO. 1004.2

	İSİM	İMZA	TARİH
ÇİZEN	Burak ÖNLÜTAŞ		08.08.2018
DENET.	Ramazan ÖZCAN		08.08.2018
ONAY.	Abdulmanem Saleh		
ÖRET.	Ahmet Hariri		
KALİTE	Onur Çalok		



Klemens 24 mm

YTEKE

A4

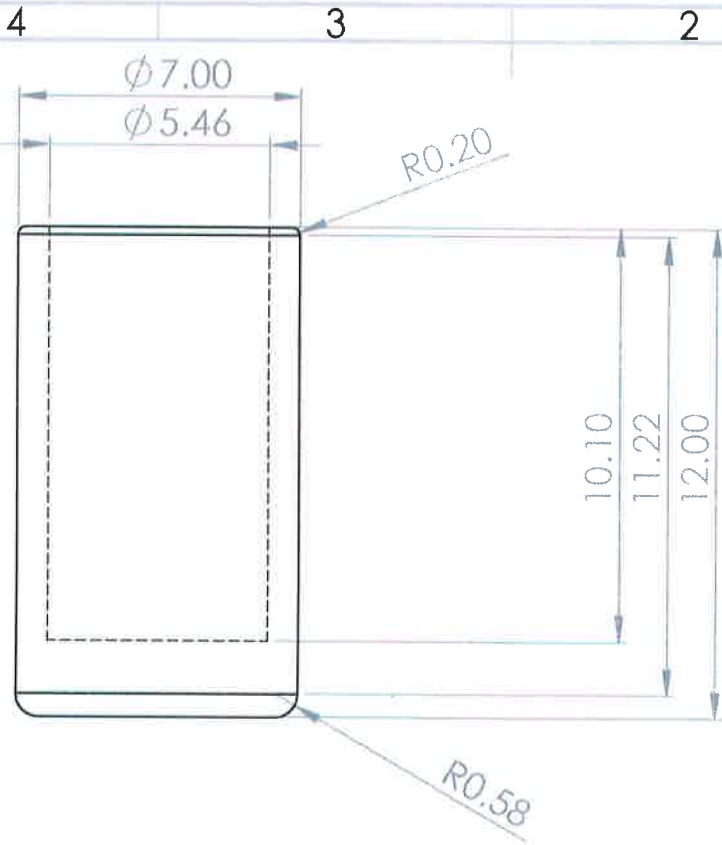
GENEL TOLERANS: DIN ISO 2768 mm

AĞIRLIK:

ÖLÇEK: 1:1

SAYFA 1 / 1

4 3 2 1



TEKNİK RESMİ ÖLÇEKLENDİRMEYİN REVİZYON: R.0



RESİM NO:
15
584
BAŞLIK

Vida Başı

	İSİM	İMZA	TARİH
ÇİZEN	Burak ÖNLÖTAŞ		08.08.2018
DENET.	Ramazan ÖZCAN		08.08.2018
ONAY.	Abdulmonim Saleh		
ÜRET.	Ahmet Hariri		
KALİTE	Onur Çolak		

MALZEME: ABS Yanmaz



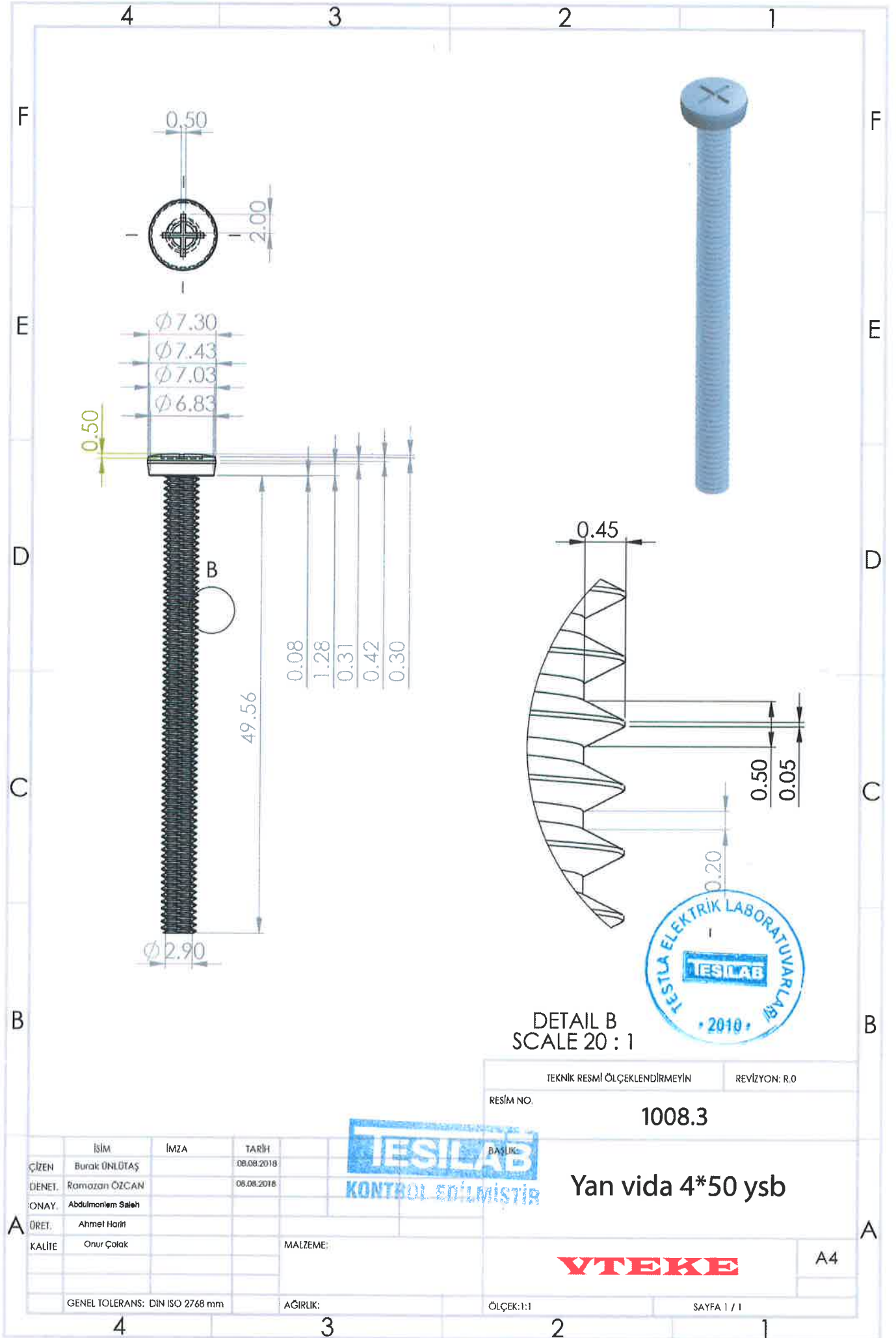
A4

GENEL TOLERANS: DIN ISO 2768 mm

AÇIRLIK:

ÖLÇEK:1:1

SAYFA 1 / 1



DETAIL B
SCALE 20 : 1



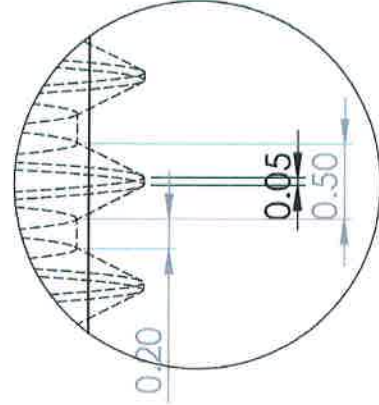
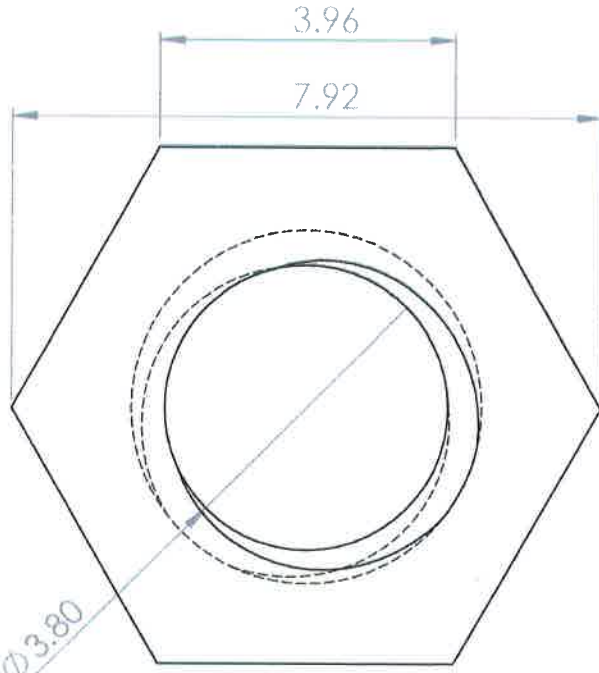
TEKNİK RESİM ÖLÇEKLENDİRMEYİN	REVİZYON: R.0
RESİM NO.	1008.3
Yan vida 4*50 ysb	
YTEKE	
A4	
GENEL TOLERANS: DIN ISO 2768 mm	AÇIRLIK:
ÖLÇEK:1:1	SAYFA 1 / 1

İŞİM	İMZA	TARİH
ÇİZEN	Burak ÖNLÜTAŞ	08.08.2018
DENET.	Ramazan ÖZCAN	08.08.2018
ONAY.	Abdulmonem Saleh	
ÖRET.	Ahmet Hariri	
KALİTE	Onur Çolak	

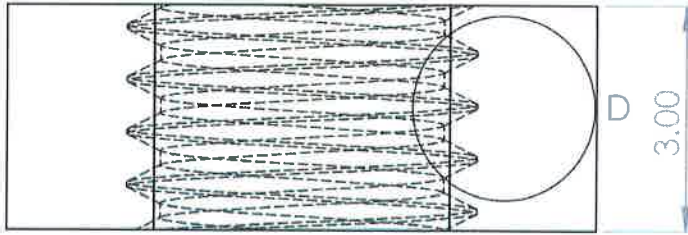


MALZEME:

AĞIRLIK:



DETAIL D
SCALE 20 : 1



TEKNİK RESMİ ÖLÇEKLENDİRMEYİN

REVİZYON: R.0

RESİM NO.

1008.4



Somun

	İSİM	İMZA	TARİH
ÇİZEN	Burak ÜNLÜTAŞ		08.08.2018
DENET.	Ramazan ÖZCAN		08.08.2018
ONAY.	Abdulmanem Saleh		
ÜRET.	Ahmet Hariri		
KALİTE	Onur Çolak		

MALZEME:

VTEKE

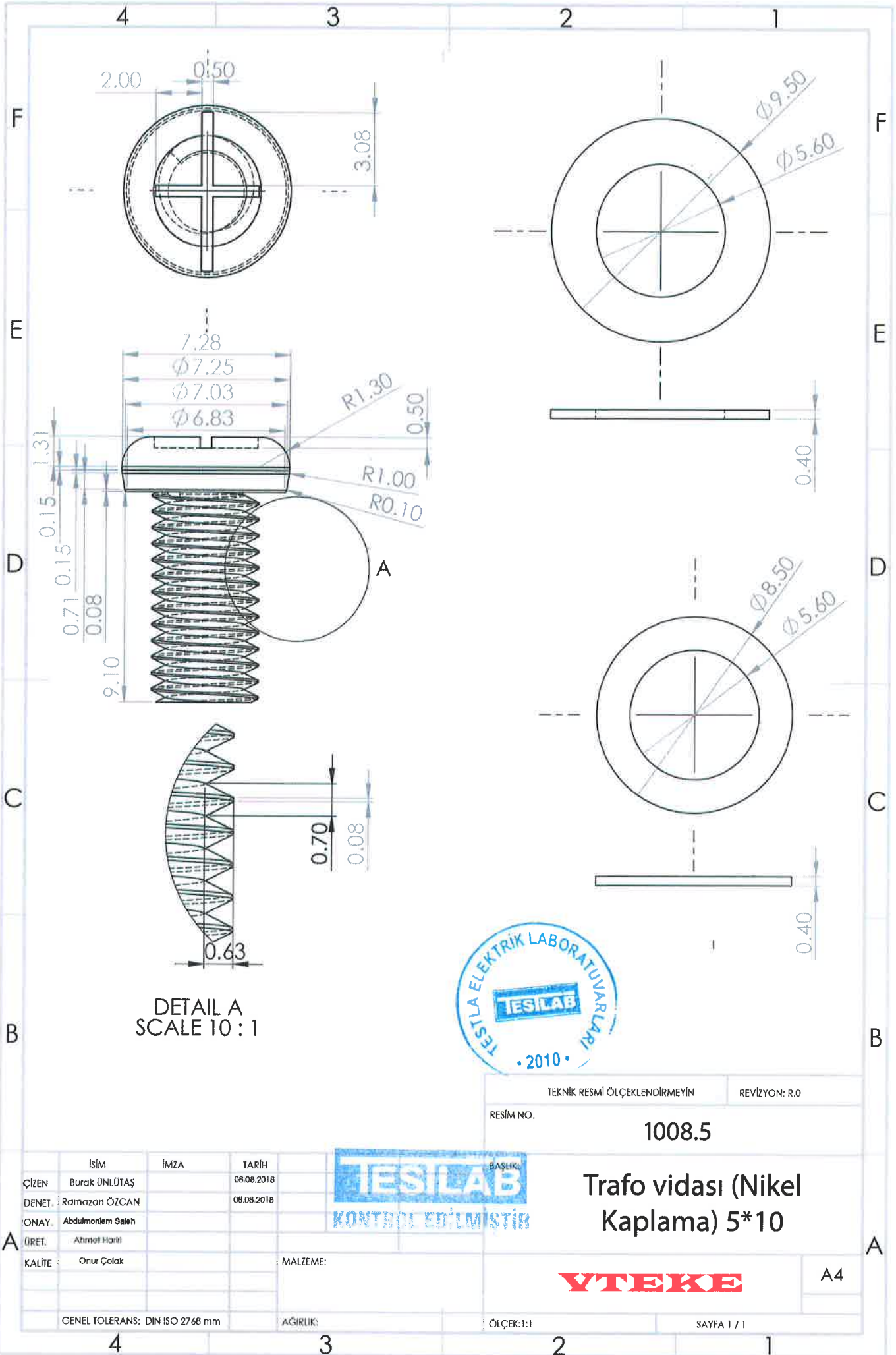
A4

GENEL TOLERANS: DIN ISO 2768 mm

AĞIRLIK:

ÖLÇEK:1:1

SAYFA 1 / 1



DETAIL A
SCALE 10 : 1



TEKNİK RESMİ ÖLÇEKLENDİRMEYİN

REVİZYON: R.0

RESİM NO.

1008.5

İŞİM	İMZA	TARİH
ÇİZEN: Burak ÜNLÜTAŞ		08.08.2018
DENET: Ramazan ÖZCAN		08.08.2018
ONAY: Abdulmonem Saleh		
ÖRET: Ahmet Hariri		
KALİTE: Onur Çolak		



BAŞLIK:

Trafo vidası (Nikel
Kaplama) 5*10

VTEKE

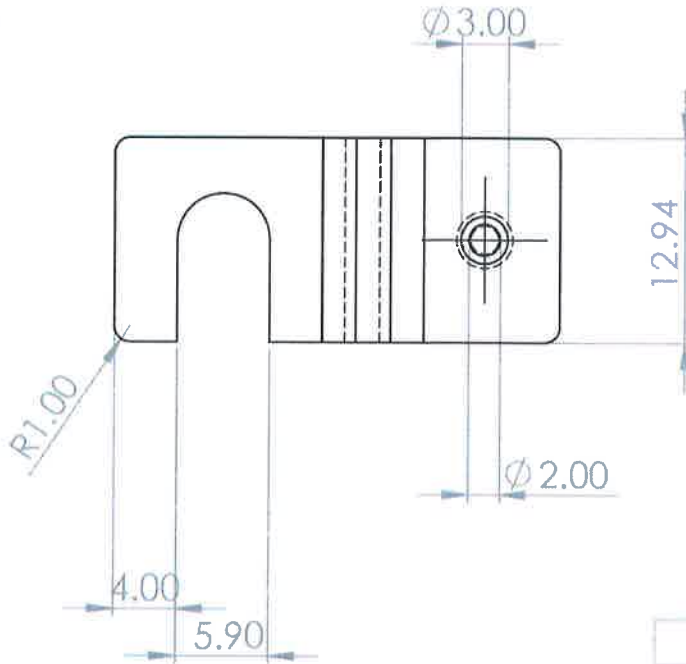
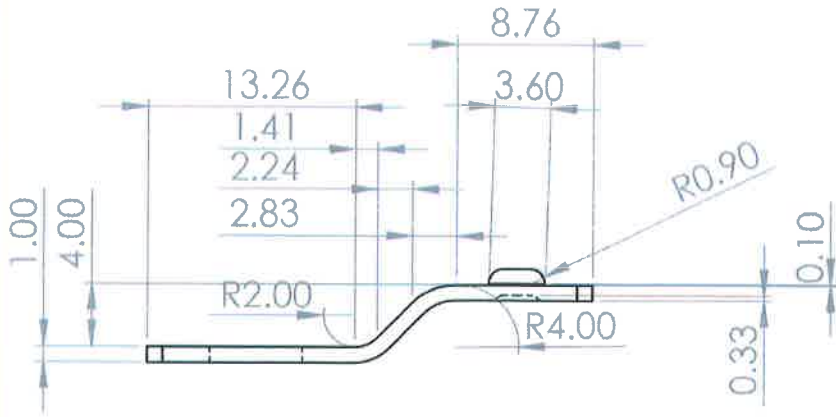
A4

GENEL TOLERANS: DIN ISO 2768 mm

AĞIRLIK:

ÖLÇEK:1:1

SAYFA 1 / 1



TEKNİK RESMİ ÖLÇEKLENDİRMEYİN

REVİZYON: R.0

RESİM NO.

1008.6



Sac ayak

	İSİM	İMZA	TARİH
ÇİZEN	Burak ÖNLÜTAŞ		08.08.2018
DENET.	Ramazan ÖZCAN		08.08.2018
ONAY.	Abdulmanem Saleh		
ÜRET.	Ahmet Hariri		
KALİTE	Onur Çolak		

MALZEME:

GENEL TOLERANS: DIN ISO 2768 mm

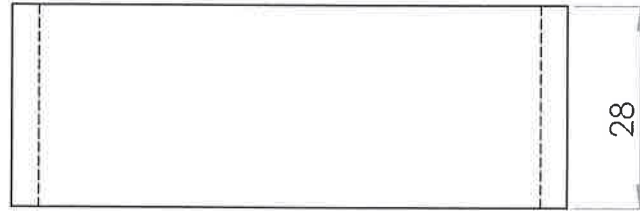
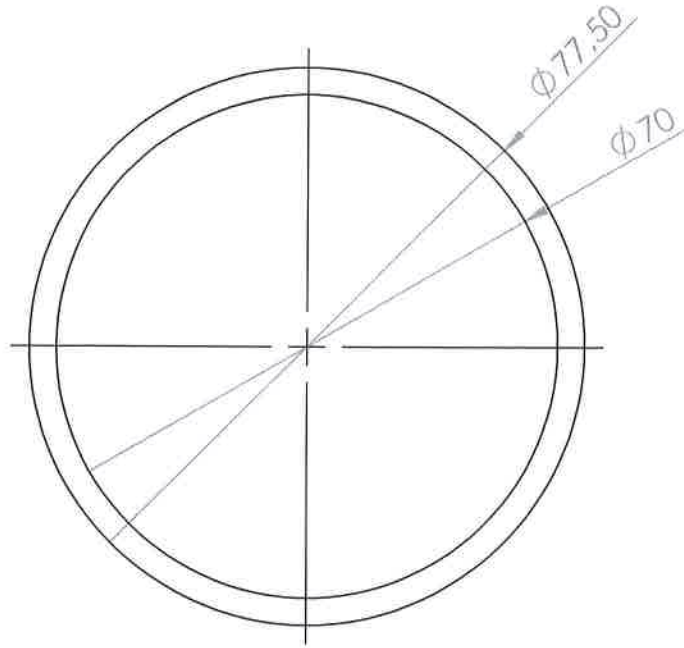
AĞIRLIK:

ÖLÇEK:1:1

SAYFA 1 / 1

YTEKE

A4



TEKNİK RESMİ ÖLÇEKLENDİRMEYİN

REVİZYON: R.0

TK60-Nüve

TK60-Nüve

VTEKE

A4

	İSİM	İMZA	TARİH
ÇİZEN	Burak ÜNLÜTAŞ		08.08.2018
DENET.	Ramazan ÖZCAN		08.08.2018
ONAY.	Abdulmonem Saleh		
ÜRET.	Ahmet Hariri		
KALİTE	Onur Çolak		

MALZEME:
Silicone Steel

GENEL TOLERANS: DIN ISO 2768 mm

AĞIRLIK:

ÖLÇEK:1:1

SAYFA 1 / 1

4

3

2

1

