

**Instruction Manual**

**AC Voltage Test Set  
T 22/1**





## AC Voltage Test Set T 22/1

## Consultation by Megger

These Operating Instruction are intended to help you solve any questions and problems as fast and easily as possible. Please start with reading the manual whenever some problem should arise.

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declare under sole responsibility that our product

## **75 kV AC Voltage Test Set T 22/1**

is in conformity with the Directive of the Council of European Communities for the Harmonization of the Laws of Member States on Electromagnetic Compatibility (EMC Directive 89/336/EEC).

This EC declaration of conformity is the result of a verification test performed by the Department of Quality Assurance of Hagenuk KMT Kabelmesstechnik GmbH according to clause 10 of the Directive in line with the basic technical standards EN 50081-1 Emissions, EN 50082-2 Immunity, product standard EN 55011 as well as basic standards EN 60801-2 Electrostatic Discharge and IEC 1000-4-4 Fast Interfering Transients.

Radeburg, 12 January 1996



Dr.Krieger  
Managing Director

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## **CHAPTER 1**

### **GENERAL INTRODUCTION**



## 1 GENERAL INTRODUCTION

### 1.1 Safety Precautions

Each person involved in the assembly, maintenance, and repair of this system is required to have read this manual carefully.

At the time of supply, this set and its accessories are in line with the state of the art in safety control. In their operation there may be parts and places of the set, however, which cannot be protected properly without unreasonably interfering with their function and control. This is why comprehensive personal experience in safety matters is vital for the protection of both staff and equipment.

**For this reason, always abide by the following safety instructions!**

### GENERAL INSTRUCTIONS

Only trained and / or instructed staff are permitted to deal with this set and its peripherals. Keep other persons away from it.

This manual shall be available to the supervising, operating, and maintenance staff for reference.

Improper use may constitute a high risk of damage to the life and health of the operator, the set and any equipment connected to it as well as its efficient operation (UVV - Prevention of Accidents Regulation). Use the set exclusively to the purpose it has been designed for by its manufacturer.

Always use the appropriate tools for each operation and keep your tools in good condition!

Constantly check the observance of all safety precautions during operation and maintenance.

This set is allowed to be run by authorized staff with sufficient expertise only.

Operate the set and its peripherals only when it is in a good technical condition.

Never use any foreign part on the set and its peripherals since otherwise the indispensable degree of safety may be jeopardized.

Do not carry out any operation which may put the safety of the set at risk.

The user is obliged to immediately report any arising change in the set to the supervisor in charge.

The operator is obliged to immediately shut the set down whenever a fault occurs which may be a safety risk to the staff. The set is permitted to be switched on again only after the fault has been remedied.

## **ELECTROTECHNICAL INSTRUCTIONS**

The set and all its peripherals shall be connected according to instructions. All relevant standards such as **DIN** and **VDE** shall be observed.

For example: DIN VDE 0104 - Installation and operation of electric test sets.

Any repair or maintenance operation may be carried out only after all circuits have been shut down (are in a dead state) and only by an electrical expert according to UVV. A person is regarded an electrical expert to UVV (Prevention of Accidents Regulation) when due to his or her practical training, knowledge, and experience as well as knowledge of all relevant regulations he or she is able to assess the operation to be carried out and detect any possible risk.

## 1.2 AC Voltage Testing

(Methods of voltage testing of electrical power production equipment)

In order to obtain data on the insulating characteristics and dielectric strength of electrical equipment, tests are carried out at determinate voltages in excess of its operating voltage.

Either **AC or DC voltage** can be used for the tests with AC testing getting closer to real conditions in power supply networks than DC testing.

The T 22/1 AC Voltage Test Set can be upgraded by adding a DC voltage adapter (optional extra) to form a DC voltage test set. The rectifier can be reversed thus allowing tests to be made with both polarities.

The effort for carrying out an AC test is mainly determined by the reactive power needed.

One conductor of a series 30 high voltage cable requires a reactive power of approx. 100 kVA at  $2 U_0$  per km. This power has to be supplied by the test set. Such equipment is very heavy and unwieldy. For this reason, DC testing is preferred for cables of older construction. In DC testing the equipment needs only supply the resistive discharge current of the test object at, however, a higher voltage of  $6 U_0$ .

According to VDE 0670, AC testing is stipulated for testing switchgear. In this case the capacitances of common test objects are generally small, so the test output power required is within reasonable limits.

According to VDE Regulations, test voltages for switchgear, either of metal design or encapsulated in insulating material, are

	against earth	over insulating
series 10	28 kV	32 kV
series 20	50 kV	60 kV
series 30	70 kV	80 kV

See also VDE 0670, Parts 6 and 7.

The following table states common test object capacitances of electrical equipment with their required test output power.

Included are: Test voltage value  
 Type of test object  
 Test object capacitance (approx.)  
 Power output rating of test transformers

Test object	C pF	R(react) MΩ	series 10	series 30	series
			(55 kV)	(75 kV)	(35 kV)
			N kVA	N kVA	N kVA
Insulators	20	160	0.008	0.02	0.035
Props					
Bushings	200	16	0.08	0.2	0.35
Transducers	400	8	0.16	0.4	0.7
Combined transd.	600	5	0.24	0.6	1.05
Transformers up to 1 MVA	1000	3.14	0.4	1.0	1.8
Transformers up to 20 MVA	4000	0.8	1.6	4.0	7.0
Cable length 10 m	3000	1.0	1.2	3.0	5.2

Test duration is 1 minute. For this time, the T 22/1 Test Set supplies an output power of 4 kVA. As the above table shows, this output power is sufficient to test complete series 30 switchgear, i.e. the appropriate combination of components listed in the table. If the output power is still inadequate, testing can be restricted to a single conductor.

## 1.3 Test Set T 22/1

The T 22/1 Test Set is primarily for AC voltage testing of switchgear up to series 30 in accordance with VDE Regulation 0670.

Test power output for the test duration of 1 minute as stipulated by VDE is 4 kVA, so a “winding-versus-winding test“ of a transformer with a rating of several MVA can also be carried out.

Due to the SF6-gas insulation technology employed, the test transformer has a very light weight of 29 kg only! This means that 2 persons can easily carry it to a test site.

A rectifier can be attached to the test transformer to enable DC voltage tests to be carried out on cables up to series 20 with  $6 \times U_0$ .

Output voltage can be measured either at the test transformer primary or - after having exchanged a plug-in measuring unit in the control section - at the output through a resistive voltage divider.

In addition to using a single transformer for tests at up to 75 kV, two test sets can be employed for tests at up to 150 kV balanced to earth.





## **CHAPTER 2**

### **TECHNICAL DESCRIPTION**



## 2 TECHNICAL DESCRIPTION

### 2.1 Technical Specification

Output voltage	0 to 75 kV <sub>rms</sub>
with 2 transformers balanced to earth	max. 150 kV <sub>rms</sub>
Maximum test duration	1 kVA: without limit 2 kVA: 20 minutes 4 kVA: 1 minute
Current rating	13 mA
Short-circuit current	max. 50 mA (1 minute)
Test duration under load of	ca. 1000 pF: max. 30 minutes
DC voltage testing (with T 22/121) attachment)	max. 80 kV <sub>DC</sub> at 4 mA current rating rectifier
Power supply	220/240 V ± 10 % 50/60 Hz

#### Dimensions

Operation unit T 22/124	551 x 255 x 380 mm (19" case)
SF-6-gas transformer T 22/12	420 mm Ø, 560 mm high

#### Weights

Operation unit T 22/124	approx. 19 kg
SF-6-gas transformer T 22/12	approx. 29 kg

#### **Subject to alteration**

## 2.2 List of Items Supplied and Optional Extras

### 2.2.1 Items Supplied

#### AC Voltage Test Set T 22/1, Order number: 2502151

The standard equipment includes the following items:

number	name		Order No
1 piece	test transformer	T 22/12	3020637
1 piece	operation unit	T 22/124	2491575
1 piece	AC voltage measuring unit	M 402	2485699
1 piece	terminal clamp	0406	3020642
1 piece	test lead, 1.5 m	0137	3020645
1 piece	earth wire, 25 <sup>2</sup> , 2.5 m	0313	3020641
1 piece	earthing terminal clamp	0403	2480646
1 piece	bag for accessories	0890	2480883
1 piece	mains cable, 4 m	L 304	3020631
1 piece	terminal clamp	L 909	3020646
1 piece	control cable	K 001	3020647
1 piece	earth wire, 25 <sup>2</sup> , 5 m	0319	3020638

## 2.2.2 Optional Extras

(Optional extras are not part of the standard equipment supplied)

### AC Voltage Test Set T 22/1 with secondary voltage measurement

name		Order No
AC voltage measuring unit	M 402/1	9000409

### AC Voltage Test Set T 22/1 with secondary current indication

name		Order No
AC voltage measuring unit	M 402/2	9000407

### 80 kV DC voltage test equipment T 22/1-Z, Order number: 2504480

number	name		Order No
1 piece	rectifier attachment	T 22/121	3020640
1 piece	measuring resistor	T 22/122	3020632
1 piece	DC voltage measuring unit	M 401	2486881
1 piece	test lead, 1.5 m	0137	3020645
1 piece	HF connecting cable	0284	2480689
1 piece	discharge rod 75/80 kV	EST	3003213
1 piece	bag for discharge rod		9000514

## **2.3 Test Set**

The Test Set consists of the T 22/12 high-voltage transformer supplying the test voltage from its top cap and the T 22/124 Operation Unit feeding the HV transformer via Control Cable K 001.

### **2.3.1 Test Transformer T 22/12**

The test transformer is installed in a pressure tank containing SF6 with an excess pressure of 2.5 bar. A pressure-actuated switch monitors the gas filling and will switch the set off whenever gas gets lost in excess.

The transformer is protected from overload by a thermal sensor which allows the set to be used up to a power of 4 kVA.

### **2.3.2 Operation Unit T 22/124**

Apart from the transformer with adjustable primary, the Operation Unit contains a plug-in measuring unit with two meters for measuring voltage and current.

## **2.4 Optional Extra AC Voltage Test Set T 22/1**

In addition to the simplified standard mode of measuring voltage and current (indirect measurement), optional extras are available which allow voltage and current to be measured precisely and directly.

## 2.4.1 Product Versions

### 2.4.1.1 Version 1 (Standard 75 kV<sub>rms</sub> AC Test Set)

Measuring unit **M 402**      **Standard (measurement of primary voltage)**

Measurement of voltage: Measurement of HV transformer primary voltage and conversion into secondary voltage

dial range      0...80 kV rms

Measurement of current: Measurement of secondary current and conversion into primary current

dial range      0...20 A rms

### 2.4.1.2 Version 2 (Changeover):

with measuring resistor T 22/122

Optional feature:      **measurement of secondary voltage**

Measuring unit **M 402 / 1**, Measurement of voltage modified with measuring attachment

Measurement of voltage: Secondary voltage measurement through measuring resistor T 22/122 and measuring attachment of M 402 / 1

dial range      0...80 kV rms

## 2.4.1.3 Version 3 (Changeover)

Optional feature:	<b><u>Indication of secondary current</u></b>
Measuring unit <b>M 402 / 2</b> ,	Measurement of current modified
Measurement of current:	Measurement of secondary current indication of secondary current
Replacement of dial	4 mA <sub>DC</sub> / 20 A <sub>AC</sub> with dial 4 mA <sub>DC</sub> / 60 mA <sub>AC</sub>

## 2.4.1.4 Version 4 (Upgrade to DC Voltage Test Set 80 kV)

with rectifier attachment T 22/121 and measuring resistor  
T 22/122

Optional feature:	<b><u>Measurement of secondary voltage</u></b> <b><u>Measurement of secondary leak current</u></b>
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Measuring unit **M 401**

Measurement of voltage: DC voltage measurement through  
measuring resistor T 22/122,  
measurement of either polarity

dial range      0...120 kV<sub>DC</sub>

Measurement of current: **true leak current measurement**  
200 µA, 2 mA, 20 mA,  
switchable, measurement of either  
polarity

dial range      0...200 µA<sub>DC</sub>  
0...20 mA<sub>DC</sub>



## 2.4.1.5 Version 5 (Upgrade to 150 kV<sub>rms</sub>)

with 2 transformers balanced to earth

Measuring unit **M 402**      **Standard (measurement of primary voltage)**

Measurement of voltage: Measurement of HV transformer primary voltage and conversion into secondary voltage

Measurement of current: Measurement of secondary current and conversion into primary current  
dial range      0...20 A rms



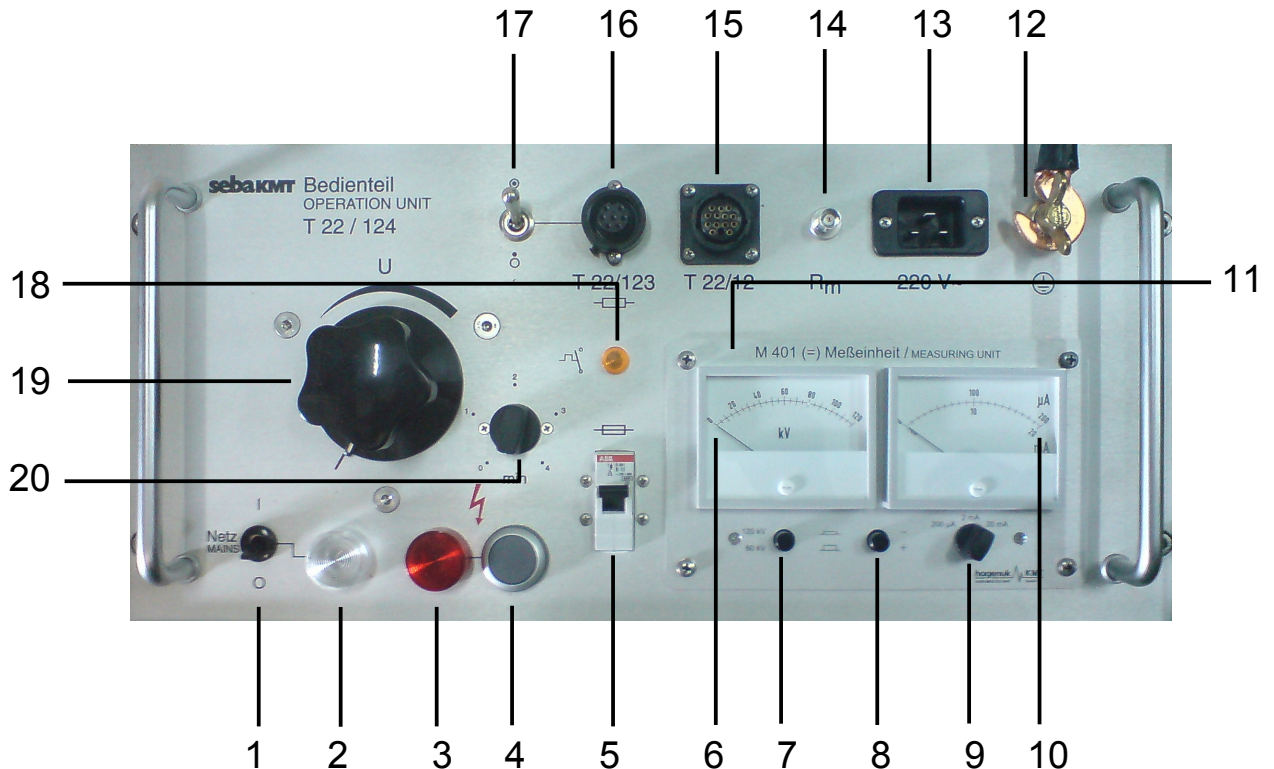
## **CHAPTER 3**

## **OPERATING INSTRUCTIONS**



## 3 OPERATING INSTRUCTIONS

### 3.1 Controls



- 1 Mains switch  
In position "1" power is applied to all auxiliary circuits.
- 2 Mains lamp repeater, white,  
lights up when (1) is in position "1".
- 3 Lamp repeater, red: "HV ON",  
lights up after key (4) has been pressed.
- 4 Key "HV ON"  
This key is to switch the test transformer on provided  
the variable transformer (19) is in its zero position.
- 5 Fuse  
to protect the variable transformer against overload.

- 6 Voltage indicator  
Use the correction chart to eliminate the voltage increase caused by the capacitance of the test object and so improve the precision of your measurement (applies to standard measuring unit M 402 only).
- 7 Voltage display range switch (M 401 only)  
Use this switch to toggle the display range of the voltage indicator (6) between 120 kV and 60 kV.
- 8 Polarity switch button (M 401 only)  
Use this switch to toggle between positive and negative voltage. The correct selection depends on how the rectifier has been mounted on the capacitor:  
conducting direction -> positive voltage -> not pressed  
reverse direction -> negative voltage -> pressed
- 9 Current display range switch (M 401 only)  
Use this switch to toggle the display range of the current indicator (10) between 200  $\mu$ A, 2 mA and 20 mA
- 10 Current indicator  
Intended for measuring the leak current of the test object in the DC mode (up to 4 mA).  
When an AC test is made, the indicator will read out the primary current of the test transformer or, depending on the version selected, its secondary current which is dependent on the capacitance of the test object.
- 11 Mains fuses 20 A  
The fuses are accessible from the front after the plug-in unit has been removed.
- 12 Terminal for Protective earthing cable 0319
- 13 Connecting socket for Mains cable L 304
- 14 Connecting socket for external resistor for DC testing
- 15 Connecting socket for Control cable K 001  
(to test transformer)
- 16 Connecting terminal for series resistor (not used here)
- 17 Switch for series resistor  
In position “ $\odot$ ”, series resistor T 22/123 is connected through socket (16). Switch to “O” when making a test.

- 18 Lamp repeater for failure indication lights up when the test transformer is thermally overloaded or gas pressure has fallen to an inadmissible level.
- 19 Variable transformer for supplying the primary voltage to the test transformer.
- 20 Timer for presetting the test time (up to 4 minutes). HV is automatically disabled after the test time ran out.

## **3.2 Note**

Please make absolutely sure all relevant safety regulations regarding the operation of a high-voltage plant (VDE 0104) are observed before the set is put into operation. Furthermore it is assumed that each operator exactly knows all relevant instructions given in the instruction manual.

## **3.3 How to Carry Out a Test**

Install the set following the connection diagram of your version. Use the metal earthing screw of the test transformer to connect the test object with earth. Leave the red plastics terminal disengaged.

Disconnect earth from the test object no sooner than immediately before the test will be carried out. Restore connection of the test object with earth immediately after the test.

### **3.3.1 AC Testing**

The test object will automatically be discharged through the test transformer secondary.

## 3.3.2 DC Testing

There is no automatic discharging of the test object!

Use discharge rod 75/80 kV to discharge your test object (e.g. cable or capacitive charge store) manually after the test set has been switched off.

Make sure the earthing cable is connected with station earth or system earth when the set is installed!

### **Note:**

Please take into consideration that when the DC test circuit is connected to a resistive load, the built-in indicator will read out the arithmetic mean due to the half-wave rectifier involved. A connected spark gap, on the other hand, responds to the peak value. There is a wide disparity between both values.

This is why it is sensible to take a true DC voltage measurement with this instrument under capacitive load only (this may be, e.g., a 50 m HV test cable or a test capacitor of 5 to 10 nF).

Always pay attention to that when conducting a test.



### 3.2.3 Special Characteristics of an AC Test with Two Transformers (150 kV rms)

As both connection points are voltage-carrying during an AC test with two transformers, the test must be conducted earth-free. This means that no point of the complete test circuit may have contact to earth potential!

#### a) Current measurement

Because both primary windings are supplied from the network (230 V; 50 Hz), but only the primary current of one transformer is displayed, the current display must be multiplied by the factor 2 to obtain the current received from the network or calculate the power.

**Example:** The current display at M 402 shows 2 A. Consequently, current of 4 A is actually taken from the network, i.e., the power consumption is approx. 920 VA.

#### b) Voltage measurement

Because both primary windings are controlled parallel, both the output voltage from transformer T1 – Voltage Urms(T1) – and the output voltage from transformer T2 – Voltage Urms(T2) – are displayed. To obtain the value of symmetric (earth-free) voltage between both transformer outputs, the voltage display must be multiplied by the factor 2.

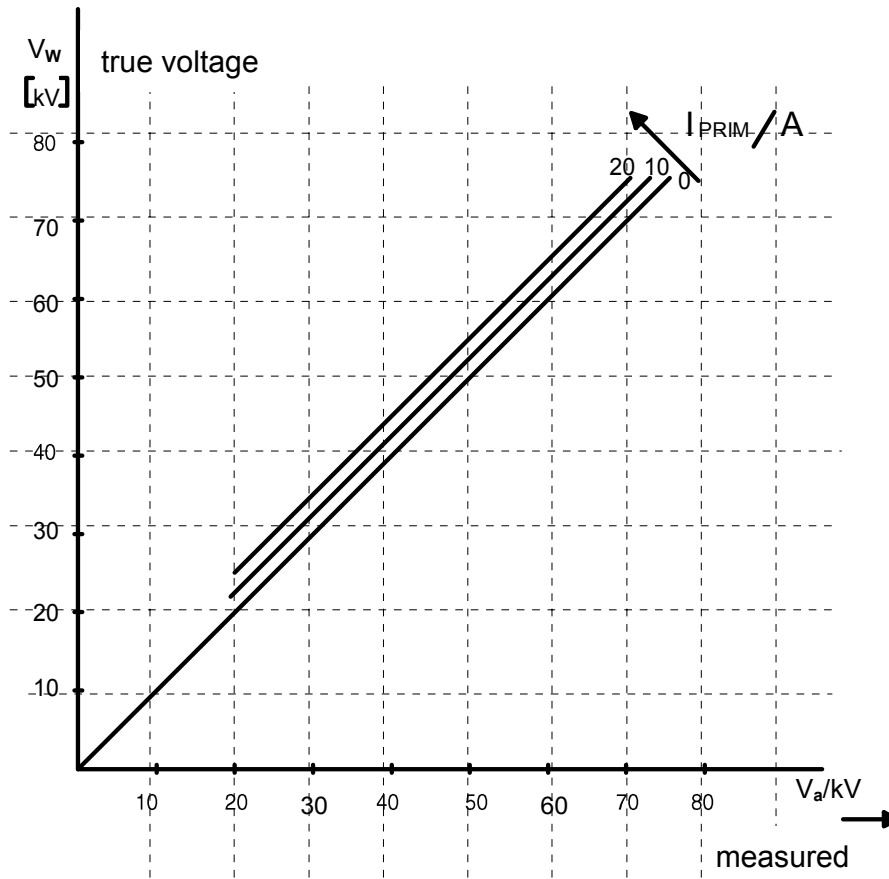
**Example:** The voltage display at M 402 shows 70 kV. As a result, the following voltage is actually present between the connection points:  $2 \cdot 70 \text{ kV} = 140 \text{ kV}$ .

## 3.2.4 How a test is conducted

1. Switch mains switch (1) on, make sure the automatic circuit breaker (5) is on.
2. The white lamp repeater (2) lights up.
3. Move the switch for the series resistor (17) to position “O”.
4. The automatic circuit breaker (5) will trip in case of overload only.
5. Turn the variable transformer (19) anti-clockwise unto stop.
6. Press HV key (4).
7. The red lamp repeater (3) lights up.
8. Slowly turn the variable transformer (19) clockwise while checking the voltage indicated by (6) (e.g. on 80 kV dial).
9. Set to desired test voltage. If need be, read the indicated primary current (10) and use chart (3.4) to correct the test voltage whenever you wish to enhance measuring accuracy.
10. Reduce the voltage and switch mains switch (1) off after the test duration has elapsed.
11. Discharge the test object (applies to DC testing) and connect it to earth!

### 3.4 Correction Chart

Voltage Meter M402



## 3.5 Trouble-Shooting

When the automatic circuit breaker (5) has tripped (e.g. due to flash-over or overload), just switch it on again and continue testing.

Lamp repeater (18) will light up when the test transformer has been overloaded. You have to wait for the lamp to go out before you are able to continue testing.

When lamp repeater (18) lights up immediately after switching the set on, the SF6 gas pressure within the test transformer is too low. An SF6 filling device is needed to restore an operating overpressure of 2.5 bar. Filling device H 902 is well suited. Always observe the relevant Regulations for the Prevention of Accidents for pressurized vessels, in particular when using some other kind of filling device! The maximum admissible overpressure of the transformer container is 3 bar.

Check the mains fuses (11) when, after switching on, the set does not respond. The fuses can be accessed after the measuring plug-in has been removed.

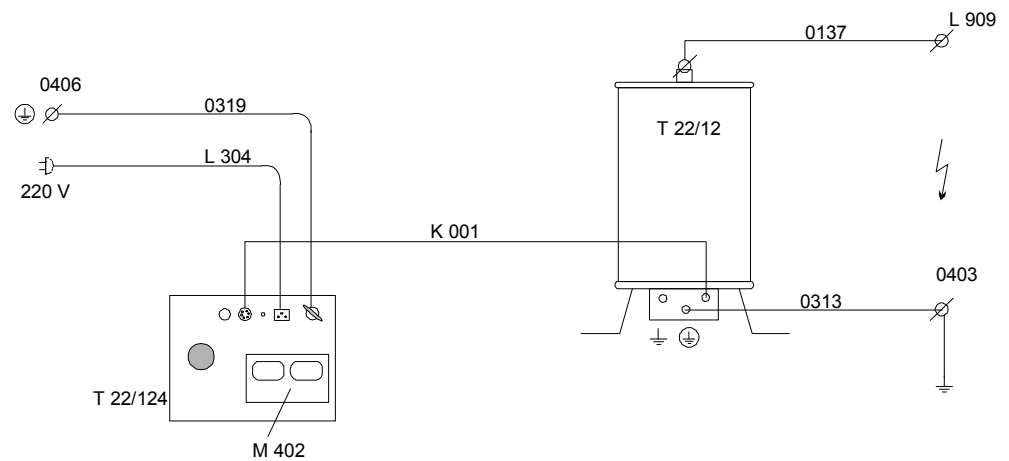
## **CHAPTER 4**

### **TEST SET-UP**

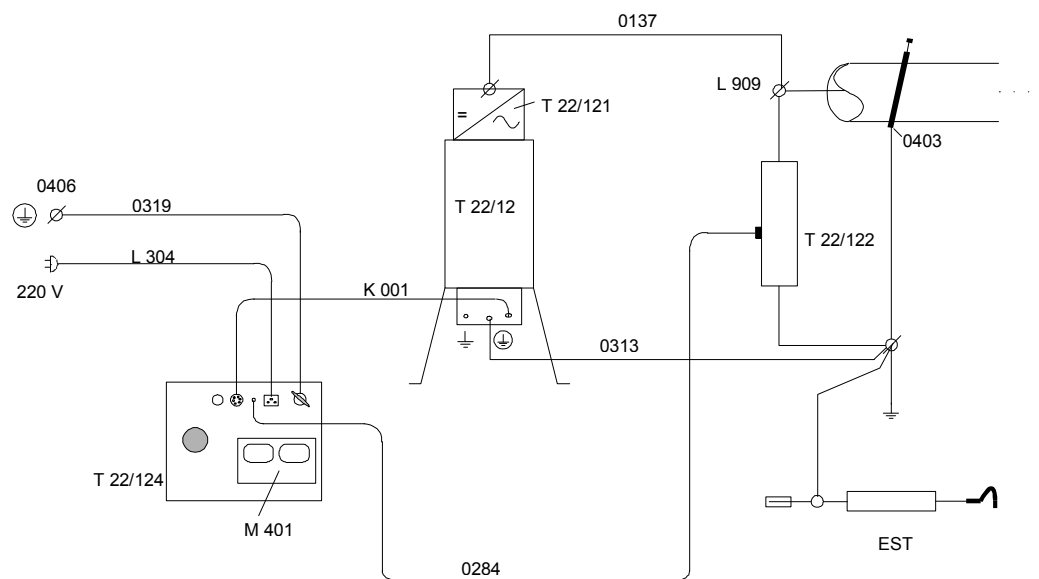


## 4 TEST SET-UP

### 4.1 AC Voltage Testing



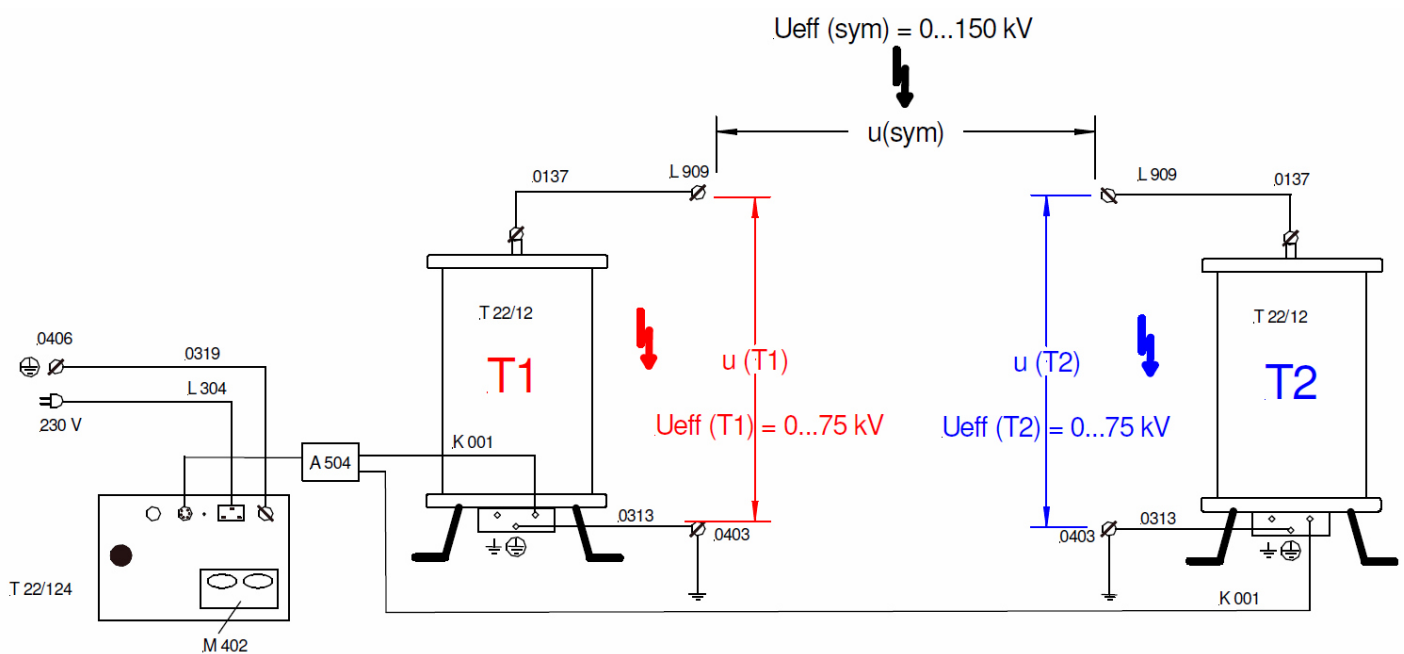
### 4.2 DC Voltage Testing



## 4.3 AC Voltage Testing up to 150 kV

### Note:

The connection adapter A 504 must be used to connect the T 22/124 and the two test transformers T 22/12.





-  Tento symbol indikuje, že výrobek nesoucí takovéto označení nelze likvidovat společně s běžným domovním odpadem. Jelikož se jedná o produkt obchodovaný mezi podnikatelskými subjekty (B2B), nelze jej likvidovat ani ve veřejných sběrných dvorech. Pokud se potřebujete tohoto výrobku zbavit, obraťte se na organizaci specializující se na likvidaci starých elektrických spotřebičů v blízkosti svého působiště.
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-  This symbol indicates that the product which is marked in this way should not be disposed of as normal household waste. As it is a B2B product, it may also not be disposed of at civic disposal centres. If you wish to dispose of this product, please do so properly by taking it to an organisation specialising in the disposal of old electrical equipment near you.
-  Този знак означава, че продуктът, обозначен по този начин, не трябва да се изхвърля като битов отпадък. Тъй като е B2B продукт, не бива да се изхвърля и в градски пунктове за отпадъци. Ако желаете да изхвърлите продукта, го занесете в пункт, специализиран в изхвърлянето на старо електрическо оборудване.
-  Dette symbol viser, at det produkt, der er markeret på denne måde, ikke må kasseres som almindeligt husholdningsaffald. Eftersom det er et B2B produkt, må det heller ikke bortkaffes på offentlige genbrugsstationer. Skal dette produkt kasseres, skal det gøres ordentligt ved at bringe det til en nærliggende organisation, der er specialiseret i at bortkaffe gammelt el-udstyr.
-  Sellise sümboliga tähistatud tooted ei tohi käidelda tavalise olmejäätmena. Kuna tegemist on B2B-klassi kuuluva tootega, siis ei tohi seda viia kohalikku jäätmekeätluspunkti. Kui soovite selle toote ära visata, siis viige see lähimasse vanade elektriseadmete käitlemisele spetsialiseerunud ettevõttesse.
-  Täällä merkinnällä ilmoitetaan, että kyseisellä merkinnällä varustettua tuotetta ei saa hävittää tavallisen kotitalousjätteen seassa. Koska kyseessä on yritysten välisen kaupan tuote, sitä ei saa myöskään viedä kuluttajien käyttöön tarkoitettuihin keräyspisteisiin. Jos haluatte hävittää tämän tuotteen, otakaa yhteys lähimpään vanhojen sähkölaitteiden hävittämiseen erikoistuneeseen organisaatioon.
-  Ce symbole indique que le produit sur lequel il figure ne peut pas être éliminé comme un déchet ménager ordinaire. Comme il s'agit d'un produit B2B, il ne peut pas non plus être déposé dans une déchetterie municipale. Pour éliminer ce produit, amenez-le à l'organisation spécialisée dans l'élimination d'anciens équipements électriques la plus proche de chez vous.
-  Cuireann an siombail seo in iúl nár cheart an táirgeadh atá marcáilte sa tsí seo a dhíuscairt sa chóras fuíoll teaghlaigh. Os rud é gur táirgeadh ghnó le ghnó (B2B) é, ní féidir é a dhíuscairt ach oiread in ionaid dhíuscártha phobail. Más mian leat an táirgeadh seo a dhíuscairt, déan é a thógáil ag eagraíocht gar duit a sainfheidhmiú in ndíuscairt sean-fhearas leictirigh.
-  Dieses Symbol zeigt an, dass das damit gekennzeichnete Produkt nicht als normaler Haushaltsabfall entsorgt werden soll. Da es sich um ein B2B-Gerät handelt, darf es auch nicht bei kommunalen Wertstoffhöfen abgegeben werden. Wenn Sie dieses Gerät entsorgen möchten, bringen Sie es bitte sachgemäß zu einem Entsorger für Elektroaltgeräte in Ihrer Nähe.
-  Αυτό το σύμβολο υποδεικνύει ότι το προϊόν που φέρει τη σήμανση αυτή δεν πρέπει να απορρίπτεται μαζί με τα οικιακά απορρίμματα. Καθώς πρόκειται για προϊόν B2B, δεν πρέπει να απορρίπτεται σε δημοτικά σημεία απόρριψης. Εάν θέλετε να απορρίψετε το προϊόν αυτό, παρακαλούμε όπως να το παραδώσετε σε μία υπηρεσία συλλογής ηλεκτρικού εξοπλισμού της περιοχής σας.
-  Ez a jelzés azt jelenti, hogy az ilyen jelzéssel ellátott terméket tilos a háztartási hulladékokkal együtt kidobni. Mivel ez vállalati felhasználású termék, tilos a lakosság számára fenntartott hulladékgyűjtőbe dobt. Ha a terméket ki szeretné dobni, akkor vigye azt el a lakóhelyéhez közel működő, elhasznált elektromos berendezések begyűjtésével foglalkozó hulladékkezelő központhoz.
-  Questo simbolo indica che il prodotto non deve essere smaltito come un normale rifiuto domestico. In quanto prodotto B2B, può anche non essere smaltito in centri di smaltimento cittadino. Se si desidera smaltire il prodotto, consegnarlo a un organismo specializzato in smaltimento di apparecchiature elettriche vecchie.
-  Št zime noráda, ka izstrádajumu, uz kura tā atrodas, nedrīkst izmest kopā ar parastiem mājsaimniecības atkritumiem. Tā kā tas ir izstrādājums, ko cits citam pārdod un lieto tikai uzņēmumi, tad to nedrīkst arī izmest atkritumos tādās izgāztuvēs un atkritumu savāktuvēs, kas paredzētas vietējiem iedzīvotājiem. Ja būs vajadzīgs šo izstrādājumu izmest atkritumos, tad rīkojieties pēc noteikumiem un nogādājiet to tuvākajā vietā, kur īpaši nodarbojas ar vecu elektrisku ierīču savākšanu.
-  Šis simbolis rodo, kad juo paženklinto gaminio negalima išmesti kaip paprastų buitinių atliekų. Kadangi tai B2B (verslas verslui) produktas, jo negalima atiduoti ir buitinių atliekų tvarkymo įmonėms. Jei norite išmesti šį gaminį, atlikite tai tinkamai, atiduodami jį arti jūsų esančiai specializuotai senos elektrinės įrangos utilizavimo organizacijai.
-  Dan is-simbolu jindika li l-prodott li huwa mmarrat b'dan il-mod m'ghandux jintrema b'hal skart normali tad-djar. Minhabba li huwa prodott B2B , ma jistax jintrema wkoll f'centri civici għar-rimi ta' l-iskart. Jekk tkun tixtieq tarmi dan il-prodott, jekk jogħġbok għamel dan kif suppost billi tiegħu għand organizzazzjoni fil-qrib li tispeċjalizza fir-rimi ta' tagħmir qadim ta' l-elekttriku.
-  Dette symbolet indikerer at produktet som er merket på denne måten ikke skal kastes som vanlig husholdningsavfall. Siden dette er et bedriftsprodukt, kan det heller ikke kastes ved en vanlig miljøstasjon. Hvis du ønsker å kaste dette produktet, er den riktige måten å gi det til en organisasjon i nærheten som spesialiserer seg på kassering av gammelt elektrisk utstyr.
-  Ten symbol oznacza, że produktu nim opatrzonego nie należy usuwać z typowymi odpadami z gospodarstwa domowego. Jest to produkt typu B2B, nie należy go więc przekazywać na komunalne składowiska odpadów. Aby we właściwy sposób usunąć ten produkt, należy przekazać go do najbliższej placówki specjalizującej się w usuwaniu starych urządzeń elektrycznych.
-  Este símbolo indica que o produto com esta marcação não deve ser deixado fora juntamente com o lixo doméstico normal. Como se trata de um produto B2B, também não pode ser deixado fora em centros cívicos de recolha de lixo. Se quiser desfazer-se deste produto, faça-o correctamente entregando-o a uma organização especializada na eliminação de equipamento eléctrico antigo, próxima de si.
-  Acest simbol indică faptul că produsul marcat în acest fel nu trebuie aruncat ca și un gunoi menajer obișnuit. Deoarece acesta este un produs B2B, el nu trebuie aruncat nici la centrele de colectare urbane. Dacă vreți să aruncați acest produs, vă rugăm s-o faceți într-un mod adecvat, ducând-ul la cea mai apropiată firmă specializată în colectarea echipamentelor electrice uzate.
-  Tento symbol znamená, že takto označený výrobek sa nesmie likvidovať ako bežný komunálny odpad. Keďže sa jedná o výrobok triedy B2B, nesmie sa likvidovať ani na mestských skládkach odpadu. Ak chcete tento výrobok likvidovať, odneste ho do najbližšej organizácie, ktorá sa špecializuje na likvidáciu starých elektrických zariadení.
-  Ta symbol pomeni, da izdelka, ki je z njim označen, ne smete zavreči kot običajne gospodinjске odpadke. Ker je to izdelek, namenjen za druge proizvajalce, ga ni dovoljeno odlagati v centrih za civilno odlaganje odpadkov. Če želite izdelek zavreči, prosimo, da to storite v skladu s predpisi, tako da ga odpeljete v bližnjo organizacijo, ki je specializirana za odlaganje stare električne opreme.
-  Este símbolo indica que el producto así señalizado no debe desecharse como los residuos domésticos normales. Dado que es un producto de consumo profesional, tampoco debe llevarse a centros de recogida selectiva municipales. Si desea desear este producto, hágalo debidamente acudiendo a una organización de su zona que esté especializada en el tratamiento de residuos de aparatos eléctricos usados.
-  Den här symbolen indikerar att produkten inte får blandas med normalt hushållsavfall då den är förbrukad. Eftersom produkten är en så kallad B2B-produkt är den inte avsedd för privata konsumenter, den får således inte avfallshanteras på allmänna miljö- eller återvinningsstationer då den är förbrukad. Om ni vill avfallshandera den här produkten på rätt sätt, ska ni lämna den till myndighet eller företag, specialiserad på avfallshandtering av förbrukad elektrisk utrustning i ert närområde.