

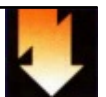
Operating Manual

SHOCK DISCHARGE GENERATOR

SWG 505

Mess- und Ortungstechnik
Measuring and Locating Technologies

Elektrizitätsnetze
Power Networks



Kommunikationsnetze
Communication Networks



Rohrleitungsnetze
Water Networks



Leitungsortung
Line Locating



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1 Description

1.1 General

The shock discharge generator SWG 505 is used for the location of cable faults, by generating flashovers or punctures at the weak point of the cable insulation. For this purpose, the internal impulse capacitor is charged and then discharged into the faulty cable via an operating spark gap. This discharge creates a flashover noise at the fault which is picked up on the ground surface by means of a geophone microphone, amplified via the receiver/amplifier FLE 66 or FLE 90 Q and then indicated acoustically and/or optically.

IMPORTANT:

The SWG 505 is a high voltage instrument. Hence, the safety precautions have imperatively to be observed. These can be found under paragraph 3.1. on page 5.

1.2 Technical data

Surge voltages	:	3 kV	4 kV	5 kV
Output	:	180 Ws	320 Ws	500 Ws
Impulse sequence	:	single-shot pulse or 1,5 - 6 sec.		
Current supply	:	220/240 V, 45-60 Hz		
Current consumption	:	2,5 A (average value)		
Meter	:	0 - 6 kV (direct measurement)		
Weight	:	40 kg		
Dimensions (LxBxD)	:	520 x 255 x 500 mm		
Standard accessories	:	a) Power cable	NK-G 01	
		b) Earthing cable	EK 01	
		c) 4 m high voltage cable	HSK 13	
		d) Operating manual		
Special accessories	:	e) Protective cover SD 500		

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1.3 Design

The shock discharge generator SWG 505 is a completely self-contained instrument and can be operated without any additional units. The four main sub-assemblies viz control unit, high voltage generator, impulse capacitors and the operating spark gap are mounted in a rugged 19" housing. Modern indicating and sensor elements, combined with VDE indicating elements (VDE 0104) facilitate operation and handling of the instrument.

A built-in kV-meter indicates the surge voltage and measures the high voltage directly at the capacitor bank.

All operational and indicating elements are mounted on the front panel of the instrument. The connections for the power supply, earthing cable and the high voltage output have been provided at the rear of the instrument.

The connection of the instrument on the high voltage side to the faulty cable is made by means of a 4 m high voltage lead with a high voltage plug connector. The instrument cannot be put into operation unless this high voltage lead is connected.

1.4 Current supply

The SWG 505 is operated from a 220 V AC mains with a frequency of 45 to 60 Hz. For 240 V operation, an internal voltage matching for the mains supply of the control unit has been provided. If the instrument is to be operated from a 110 V AC mains, the high voltage transformer has to be replaced. The connection change-over for the transformer of the control unit for 110 V operation has been provided.

2 Putting into operation

2.1 Safety

The shock discharge generator SWG 505 releases dangerous contact voltages. Hence the instrument must be operated by specialists or personnel who have been trained or instructed in the use of the instrument. The following safety precautions should be adhered to

- Para. 2.2. Earthing of the instrument
- Para. 2.3. Connection to the faulty cable
- Para. 2.4. Isolation of open cable ends
- Para. 2.5. Selection of a suitable surge voltage
- Para. 2.6. Safety terms.

2.2 Earthing of the instrument

Prior to putting into operation, the instrument has to be earthed. For this purpose, the earthing terminal (11) is to be connected to a reliable protective earth by means of the earthing lead supplied. The protective earthing provided through the earth contact of the mains supply lead is not sufficient.

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2.3 Connection to the faulty cable

The plug of the high voltage lead is connected to the high voltage socket (13) and is secured by means of the fixing screw. Now a micro contact inside the instrument closes and renders the Instrument ready for connection of a mains supply.

After the faulty cable has been disconnected and verified to be dead, the high voltage lead can be connected. For this purpose, the wire clamp is fixed to the faulty phase conductor, whereby care should be taken to ensure a good contact. The sheath clamp is screwed onto the sheath or screen of the defective cable. Additionally, in the case of a fault between two cores, one of these cores has to be connected to the sheath or screen and in the event of plastic cables, to system earth.

2.4 Isolation of open cable ends

Since the high voltage impulses applied to the defective cable assume dangerous values, the cable ends must be isolated as per VDE 0104 in order to avoid physical contact. This also goes for teed low voltage cables which, if need be, have to be disconnected in order to avoid flashovers in the installations or terminal boxes.

Only when dealing with longer cables (exceeding 100 m) it is recommended to short-circuit and earth one cable end. In spite of the shorted conductors, a flashover can be obtained at the fault.

2.5 Selection of the surge voltage

The selection of the surge voltage mainly depends on the test voltage of the faulty cable and the installations. A reduction in surge voltage also reduces the output which is due to the fact that the output is governed by the square of the voltage.

Surge impulses which do not create a breakdown are reflected at the far end of the cable, whereby the Impulse voltage is doubled. This has to be taken into account as per VDE 0298.

2.6 Safety terms as per VDE 0104

2.6.1 Ready for mains connection

Indicated by a white pilot lamp (6).
Mains voltage is connected
Instrument is not on.

2.6.2 Ready for operation

Indicated by a green pilot lamp (7).
Instrument is on.
No high voltage.
Output earthed.

2.6.3 Ready for switching On

Indicated by a red pilot lamp (5).
Instrument is on. DANGER!!
Green pilot lamp goes out.
CAUTION: HIGH VOLTAGE IS ON

NOTE

If the green pilot lamp goes out and the red pilot lamp does not light up, the instrument is also ready for switching on !!

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2.7 Mains connection

The earthed power supply lead is connected to socket (12). The mains voltage should be 220 - 240 V. A mains frequency of 45 - 60 Hz is permissible.

2.8 Setting the surge voltage and output

The desired surge voltage is selected by means of rotary switch (10):

Position I :	3 kV	180 Ws
Position II :	4 kV	320 Ws
Position III :	5 kV	500 Ws

2.9 Switching the instrument On

Prerequisites :	a) Earthing of the instrument
	b) Connection to the faulty cable
	c) READINESS FOR MAINS CONNECTION (white pilot lamp).
Operate :	I: Luminous pushbutton (6) white
Result	: Luminous pushbutton (6) still lights
Switching state	I: READY FOR OPERATION
Indication	: Luminous pushbutton (7) green
Operate	II: Luminous pushbutton (7) green
Result	: Luminous pushbutton (7) goes out
Switching state	II: READY FOR SWITCHING ON or High Voltage connected.
Indication	I: Luminous pushbutton (5) red
Meter	: kV-meter 6 kV

2.10 Setting the impulse sequence

Rotary control (9) is combined with a rotary switch. When the rotary control is turned fully to the left, the automatic impulse sequence is switched off (single-shot pulse). If the rotary control is turned to the right (clockwise), then the Impulse sequence can be continuously selected after the switching threshold has been passed. The shortest impulse sequence (fully to the left) is 1,5 seconds and the longest (fully to the right) 6 seconds. One scale division corresponds to approx. 0,5 seconds.

2.11 Single-shot pulse

In order to trigger single-shot pulses, e.g. by radio command, the rotary control (9) is to be set fully to the left, whereby a switching threshold has to be crossed. A single-shot pulse is triggered by means of pushbutton (8).

3 Switching Off

After completion of the test, the instrument is switched off by operating the luminous pushbutton (5), whereby both the control unit and the high voltage generation are switched off. Simultaneously, the instrument and the connected cable are automatically discharged. The pointer of the kV-meter returns to Zero.

Important:

Prior to disconnecting the high voltage lead from the cable under test, both connections have to be touched with an earthing rod in order to ensure a "visible" discharge and earthing.

4 Description of the operating and connecting panel

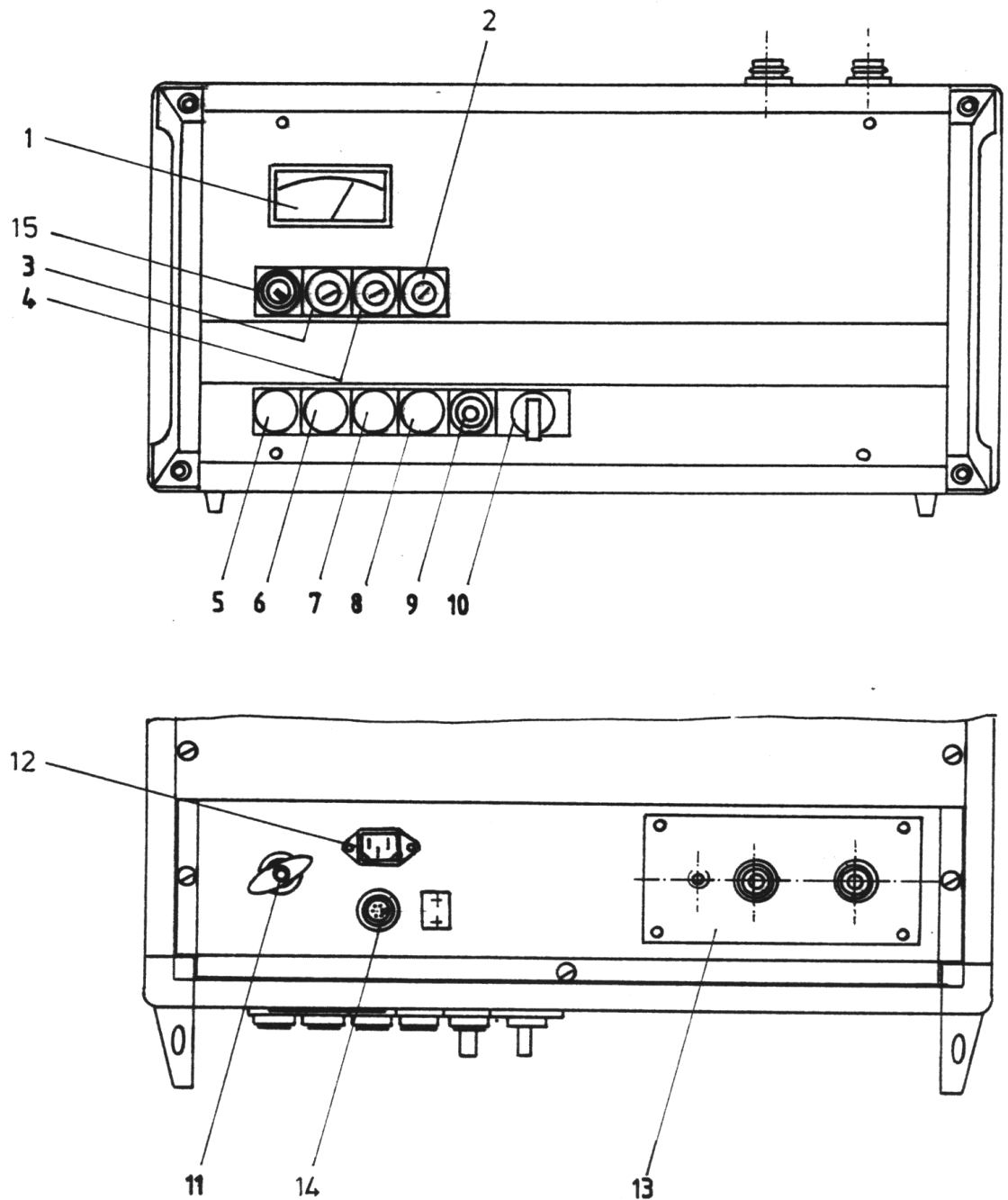


Figure 1 : Operating and connecting panel

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1	kV-meter :	0 - 6 kV
2	Microfuse/Mains circuit :	F3 (T 2 / 250 D)
3	Microfuse/Mains circuit :	F1 (T 2 / 250 D)
4	Microfuse/Control circuit :	F2 (M 0.5 / 250 D)
5	Luminous pushbutton : (red)	when operated: "OFF" Indication "READY FOR SWITCHING ON"
*6	Luminous pushbutton : (white)	when operated: "ON" Indication "READY FOR MAINS CONNECTION"
*7	Luminous pushbutton : (green)	when operated: "HIGH VOLTALE ON" Indication "READY FOR OPERATION"
8	Luminous pushbutton : (blue)	single-shot pulse
9	Rotary control :	Impulse sequence 1,5 - 6 s/pulse
10	Rotary switch :	3 / 4 / 5 kV
11	Connection socket :	for earthing lead
12	Mains connection :	220 V, 45 - 60 Hz (or other voltages)
13	High voltage output :	for the high voltage lead.
14	NAG connector	
15	Key switch	

***IMPORTANT:**

The luminous pushbuttons 5/6/7 have dual functions:

1. PUSHBUTTONS for operation
2. PILOT LAMPS for indication of the switching state.

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WARRANTY

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Any product proved defective under this warranty will be repaired or replaced free of charge at the Seba Dynatronic® factory or approved Seba Dynatronic® repair station. The equipment should be returned to our factory by prepaid transportation after requesting and receiving return authorisation from our Service Department. Seba Dynatronic®'s obligations are limited to repair or replacement of broken or defective parts which have not been abused, misused, altered or accidentally damaged or at the option of Seba Dynatronic®, to refund of the purchase price. Seba Dynatronic® assumes no liability for removal or installation costs, consequential damages or contingent expenses of any other nature.



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.



Dit symbool duidt aan dat het product met dit symbool niet verwijderd mag worden als gewoon huishoudelijk afval. Dit is een product voor industrieel gebruik, wat betekent dat het ook niet afgeleverd mag worden aan afvalcentra voor huishoudelijk afval. Als u dit product wilt verwijderen, gelieve dit op de juiste manier te doen en het naar een nabij gelegen organisatie te brengen gespecialiseerd in de verwijdering van oud elektrisch materiaal.



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 bortskaffes på offentlige genbrugsstationer. Skal dette produkt kasseres, skal det gøres ordentligt ved at bringe det til en nærliggende organisation, der er specialiseret i at bortskaffe gammelt el-udstyr.



Sellese sümboliga tähistatud toodet ei tohi käidelda tavalise olmejäätmena. Kuna tegemist on B2B-klassi kuuluva tootega, siis ei tohi seda viia kohalikku jäätmekäitluspunkti. Kui soovite selle toote ära visata, siis viige see lähimasse vanade elektriseadmete käitlemisele spetsialiseerunud ettevõttesse.



Tällä merkinnällä ilmoitetaan, että kyseisellä merkinnällä varustettua tuotetta ei saa hävittää tavallisen kotilousjätteen seassa. Koska kyseessä on yritysten välisen kaupan tuote, sitä ei saa myöskään viedä kuluttajien käyttöön tarkoitettuihin keräyspisteisiin. Jos haluatte hävittää tämän tuotteen, ottakaa 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 dhíúscairt sa chóras fuíoll teaghlaigh. Os rud é gur táirgeadh ghnó le ghnó (B2B) é, ní féidir é a dhíúscairt ach oiread in ionaid dhíúscairthe phobail. Más mian leat an táirgeadh seo a dhíúscairt, déan é a thógáil ag eagraíocht gar duit a sainfheidhmiú in ndíúscairt sean-fhearas leictreach.



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 Elektrogeräte in Ihrer Nähe.



Αυτό το σύμβολο υποδεικνύει ότι το προϊόν που φέρει τη σήμανση αυτή δεν πρέπει να απορρίπτεται μαζί με τα οικιακά απορρίματα. 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 dobni. 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.



Ští zíme noráda, ka izstrādājumu, 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 simbols 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 mmarkat 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 ghar-rimi ta' l-iskart. Jekk tkun tixtieq tarmi dan il-prodott, jekk jogh'għbok għamel dan kif suppost billi tiegħu għand organizzazzjoni fil-qrib li tispjeczjalizza fir-rimi ta' tagħmir qadim ta' l-eletriku.



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 simbol pomeni, da izdelka, ki je z njim označen, ne smete zavreči kot običajne gospodinjne 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 señalado 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 desechar 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.