ENDRESS®

OPERATING MANUAL

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ESE 607 DBG ES DIN	**Article-No. 151212 / 156212**
ESE 957 DBG ES DIN	**Article-No. 151214 / 156214**

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List of illustrations

List of charts

General note: The illustrations in these operating instructions do not always comply completely with the actual design, in particular with regard to the colour, and are to be considered a representation of basic principles.

We reserve the right to make modifications in terms of ongoing technical development.

These instructions do not include technical modifications that occurred after printing.

1 General information about this manual

These operating instructions must be read carefully and understood before using the generator.

These operating instructions are intended to familiarise you with the basic operation of the generator.

These operating instructions contain important information on using the generator safely and appropriately.

Complying with this information helps to:

- avoid hazards
- reduce repair costs and downtime
- increase the reliability and service life of the generator.

However, not only these operating instructions but also the laws, regulations, guidelines, and standards applicable in the country of use and at the site of operation must be observed.

These operating instructions only describe the generator operation.

The operating manual for the engine is an integral component of these instructions.

A copy of these operating instructions must be available to the operating personnel at all times.

1.1 Documentation and accessories

In addition to these operating instructions, the following documents are relevant for the generator:

- operating instructions and maintenance instructions for the engine (Briggs & Stratton Corporation)
- Briggs & Stratton Service Germany (Briggs & Stratton Corporation)
- test protocol for the power generator
- maintenance instructions for the battery
- circuit diagram for the generator

1.2 Safety warning symbols

The safety warning symbol indicates that a source of danger exists. The safety warning symbols used in the work area of the machine/plant and the entire technical documentation correspond to the Council Directive 92/58/EEC - Minimum requirements for the provision of safety and/or health signs at work.

General hazard warning

This warning symbol indicates activities where several causes can lead to risks.

Potentially explosive materials

This warning symbol indicates activities during which there is an explosive hazard, possibly with lethal consequences.

Dangerous electrical voltage

This warning symbol indicates that the danger of an electric shock, possibly with lethal consequences, exists.

Toxic substances

This warning symbol indicates that danger from toxic substances, possibly with lethal consequences, exists.

Warning of environmentally damaging substances

This warning symbol indicates that the environment could be endangered, possibly with catastrophic consequences.

Hot surfaces warning

This warning symbol indicates that the danger of burns, possibly with lasting consequences, exists.

Notes

2 General safety regulations

This section describes the basic safety regulations covering operation of the generator.

Whoever operates the generator or works with it must read this chapter and comply with its regulations in practice.

2.1 Important safety warning

ENDRESS generators are designed to operate electrical equipment with appropriate power output requirements. Other applications can lead to injury to the operating personnel and to damage to the generator as well as other damage to equipment.

The majority of injuries and damage to equipment can be avoided if all instructions given in this manual and all instructions attached to the generator are followed.

The generator must not be modified in any way. This can lead to an accident occurring and damage to the generator as well as devices.

WARNING!

The following actions are not permitted.

- operation in explosion-prone environments
- operation in fire-prone environments
- operation in confined areas
- operation from a vehicle platform that has not been swung out
- operation without the necessary safety redundancies
- operation in existing power supply networks
- refuelling when hot
- refuelling during operation
- spraying with high-pressure cleaners or fire-extinguishing equipment
- removal of protective devices
- incorrect vehicle installation
- not observed maintenance intervals
- failure to measure and test for early damage identification
- omitted exchange of wearing parts
- incorrectly performed maintenance or repair work
- defectively performed maintenance or repair work
- non-intended use

2.2 Intended use

The generator produces electricity in place of the power grid, in order to supply a mobile distribution system.

The generator is only to be used outdoors within the indicated voltage, output, and nominal rpm ranges (see nameplate).

You are also permitted to use it on a vehicle extension or swivelling platform in both extended and swung out states, providing that the air circulation is uninterrupted on all sides of the alternator and that the exhaust gases are dispersed correctly. This is especially relevant as access to the side with the instrument panel and the side with the exhaust gas connection must be unrestricted.

The method that will be used to install the generator on the surface area of a vehicle requires written approval from the distributor that supplied the generator.

The generator is not to be connected up to other energy distribution systems (e.g. public power supply) or to other energy generation systems (e.g. other generators).

The generator is not to be used in explosion-prone environments.

The generator is not to be used in fire-prone environments.

The generator must be operated according to the specifications in the technical documentation.

Any non-intended use or any activity with the generator not described in these operating instructions is considered forbidden incorrect use and is outside the legal limits of the manufacturer‘s liability.

2.2.1 Foreseeable incorrect use or inappropriate handling

Foreseeable incorrect use or inappropriate handling of the generator nullifies the manufacturer‘s EC Declaration of Conformity and automatically thereby the operating licence.

Foreseeable incorrect use or inappropriate handling include:

- operation in explosion-prone environments
- operation in fire-prone environments
- operation in confined areas
- operation from a vehicle platform that has not been swung out
- operation without the necessary safety redundancies
- operation in existing power supply networks
- refuelling when hot
- refuelling during operation
- spraying with high-pressure cleaners or fire-extinguishing equipment
- safety equipment removal
- incorrect vehicle installation
- not observed maintenance intervals
- failure to measure and test for early damage identification
- omitted exchange of wearing parts
- incorrectly performed maintenance or repair work
- defectively performed maintenance or repair work
- non-intended use

2.2.2 Residual risks

The residual risks were analysed and evaluated before beginning the design and planning of the generator using a risk analysis tool.

Residual risks which cannot be avoided by implementing design measures during the whole life cycle of the generator can be:

- mortal danger
- risk of injury
- environmental hazard
- material damages to the generator
- material damage to other property
- output and/or functionality restrictions

You can avoid existing residual risks by observing and following these guidelines:

- the special warning notices on the generator
- the general safety instructions given in these operating instructions
- the specific warnings given in these operating instructions
- The specific standing instructions (the relevant operational conditions) issued by fire-brigades, civil defence and other relief organisations

Mortal danger

Mortal danger to persons from the generator can arise from:

- incorrect use
- inappropriate handling
- missing protective devices
- defective or damaged electrical components
- fuel vapours
- engine exhaust gases
- an excessively large distribution network configuration

Risk of injury

Risk of injury to persons from the generator can be caused by:

- inappropriate handling
- transport
- hot components
- a recoiling starter rope on the engine

Environmental hazards

Environmental hazards involving the generator may be caused by:

- inappropriate handling
- operating fluids (fuel, lubricants, engine oil, etc.)
- exhaust gas emissions
- noise emissions
- fire hazard
- leaking battery acid

Material damage to the generator

Material damage to the generator may be caused by:

- inappropriate handling
- overloading
- overheating
- an excessively low/high oil level in the engine
- non-compliance with the operating and maintenance specifications
- unsuitable operating fluids
- unsuitable hoisting gear

Material damage to other valuable equipment

Material damage to other valuable equipment in the operating range of the generator can occur through:

- inappropriate handling
- over and/or undervoltage
- incorrect installation in a vehicle

Generator‘s performance or functionality - Limitations

The generator‘s performance or functionality can be limited by:

- inappropriate handling
- inappropriate maintenance or repair work
- unsuitable operating fluids
- an installation altitude greater than 100 metres above sea level
- an ambient temperature exceeding 25°C
- an excessively large distribution network configuration

2.3 Operating personnel - Qualifications and Obligations

Only appropriately authorised personnel may work with or on the generator.

The authorised operating personnel must:

- be of age.
- be trained in First Aid and be able to provide it.
- be familiar with the accident prevention regulations and generator safety instructions and be able to apply them.
- have read the chapter „General safety regulations“.
- have understood the contents of the chapter „General safety regulations“.
- know how to practically use and implement the contents of chapter „General safety regulations“.
- be trained and instructed according to the rules of conduct in the event of malfunctions occurring.
- have the physical and mental abilities to carry out his responsibilities, tasks, and activities on the generator.
- be trained and instructed in his responsibilities, tasks and activities on the generator.
- have understood the technical documentation concerning his responsibilities, tasks and activities on the generator and be able to implement these in practice.

2.4 Personal protective equipment

Personal protection equipment must be worn during all activities at the generator described in these operating instructions:

- hearing protection
- protective gloves
- hard hat
- protective shoes
- fireproof protective clothing (in areas where the danger of fire is high)

2.5 Danger zones and work areas

The danger zones and work areas on the generator are determined by the activities to be performed within the individual life cycles:

Life cycle	Activity	Danger zone	Work area
Transport	in the vehicle	Radius of 1.0 m	none
	by the operating personnel		Radius of 1.0 m
Operation	Setting up		
	Operating	Radius of 5.0 m	
		Radius of 2.0 m	
Service and maintenance	Cleaning	Radius of 1.0 m	
	Shutting down		
	Maintenance		

Table 2.1: Danger zones and work areas on the generator

2.6 Signs on the generator

These signs must be fitted on the generator and be kept in a clearly legible condition:

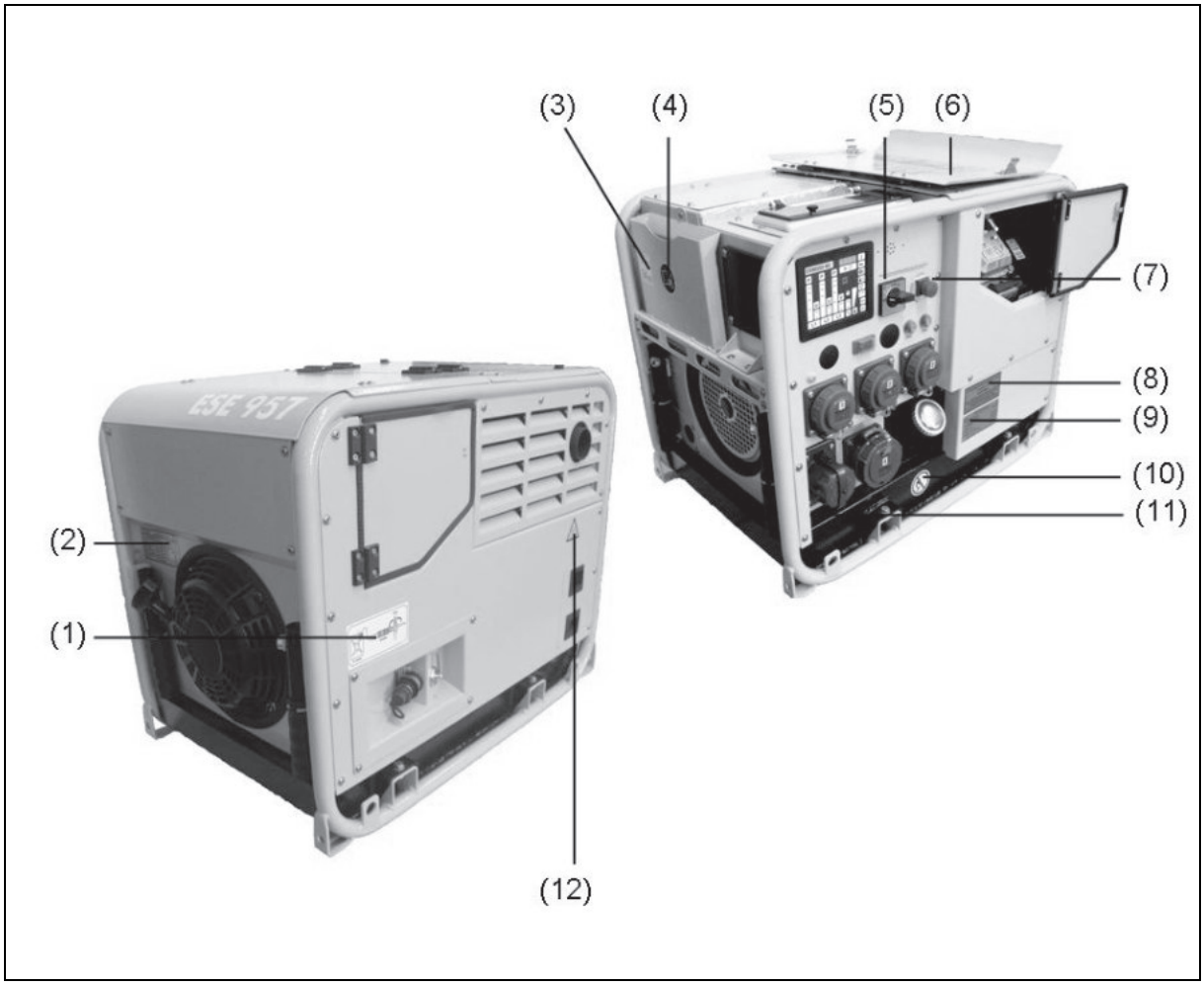
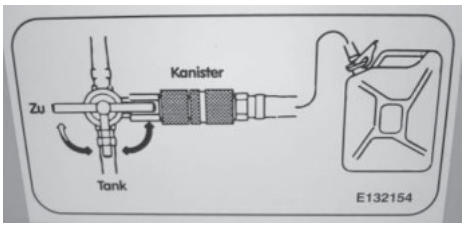
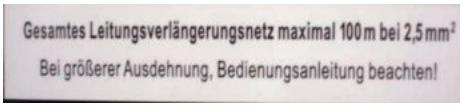
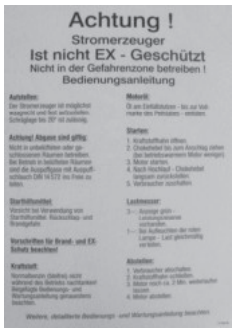


Figure 2-1: Signs on the generator

1 Reference note - three-way valve
2 Nameplate
3 Reference note - noise emission
4 Reference note - read operating instructions
5 Cable extension
6 Abridged operating instructions (inside cover)
7 EMERGENCY-STOP
8 Fuel note
9 Reference note - Engine maintenance
10 Reference note - no naked flames
11 Potential equalisation screw (earthing for an optional FI)
12 Reference note - Hot surface

Sign	Name
	External refuelling
	Nameplate
	Reference note - noise emission
	Reference note - read operating instructions
	Cable extension
	Short operating instructions
	Reference note - EMERGENCY-STOP

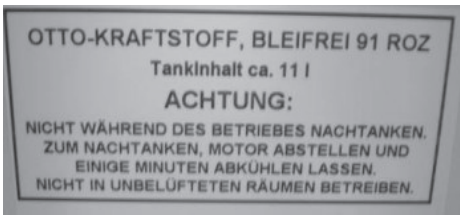
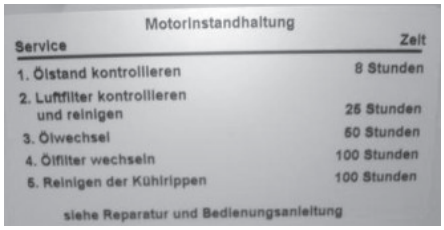
Sign	Name
	Fuel note
	Reference note - maintenance intervals
	Reference note - no naked flames
	Potential equalization (earthing for FI)
	Note on the hot surface

Table 2.2: Signs on the generator

2.7 General safety warnings

The generator‘s construction is not to be modified in any way.

The engine‘s nominal rpm has been set in the factory and is not to be changed.

All protective covers must be at hand and functional.

All signs on the generator must be in place and be in a clearly legible condition.

The operational reliability and functionality must be checked before and after each use/operation.

The generator is only be used outdoors and with sufficient ventilation.

Do not use any open flame, light or spark-generating devices within the generator‘s danger zone.

Protect the alternator against moisture and precipitation (rain, snow) during operation.

Protect the alternator against dirt and foreign matter during operation.

The authorised personnel are responsible for the operational reliability of the alternator.

The authorised personnel are responsible for safeguarding the alternator against unauthorised operation.

The authorised personnel are obligated to observe the applicable accident prevention regulations.

The authorised personnel are obligated to obey the safety and work instructions of superiors and/or safety officers.

The authorised personnel are obligated to wear personal protective equipment.

Only authorised personnel may remain in the generator‘s danger zone.

General Safety Regulations

Smoking is absolutely prohibited in the generator‘s danger zone.

Naked flames and non-safety lights are prohibited in the generator‘s danger zone.
Consumption of alcohol, drugs, medications, or other mind-altering substances is prohibited.

The authorised personnel must be familiar with the alternator components and their function and know how to use them.

Transportation

The generator is only be transported after it has cooled down.

The generator is only be transported in a vehicle after it has been fastened in place correctly (on the transport device).

The generator is only be lifted by the carrying handles provided.

The generator is to be carried by at least one person per carrying handle.

Setting up

The generator is only be set up on sufficiently firm ground.

The generator is only be set up on even ground.

Generating electricity

The electrical safety must be checked before each start-up.

Do not cover the equipment during use.

Do not obstruct or block the air supply.

Do not use starting aids.

Devices must not be connected during start-up.

Only tested and authorised cables may be used for the power network.

It is prohibited to establish a connection between existing neutral conductors, potential equalisation conductors and/or equipment components (safety-separated circuit).

The total power consumed must not exceed the maximum nominal power of the generator.

Do not operate the generator without a sound damper.

It is prohibited to operate the generator without air filters and with an opened air filter cover.

Refuelling

It is prohibited to refill the generator‘s fuel tank during operation.

It is prohibited to refill the generator‘s fuel tank whilst it is still hot.

Use filling aids for refuelling.

Cleaning

It is prohibited to clean the generator during operation.

It is prohibited to clean the generator when it is still hot.

Maintenance and repair work

Operating personnel may only carry out the maintenance or repair work described in these operating instructions.

All other maintenance or repair tasks may only be carried out by specially trained and authorised specialists.

Always remove the ignition key and the spark plug sockets before beginning maintenance and/or repair work.

The maintenance intervals specified in these operating instructions must be observed.

It is prohibited to service the generator during operation.

It is prohibited to service the generator whilst it is still hot.

Laying up

The generator should be laid up if it is not required for longer than 30 days.

Store the generator in a dry and locked room.

Use a petrol additive to prevent resinous residues in the fuel system.

Documentation

A copy of these operating instructions must always be kept in the generator's manual compartment.

The operating instructions and the maintenance instructions for the engine (Briggs & Stratton Corporation) are integral parts of this instruction manual.

Environmental protection

The packaging material must be recycled according to the environmental protection regulations applicable at the place of work.

The workplace must be protected against contamination by leaking operating fluids.

Used or leftover fuels and lubricants must be recycled according to the environmental regulations applicable at the place of use.

Notes

3 Power generator ESE 607 / 957 DBG (ES) DIN description

The components and functionality of the generator are described in this section.

3.1 Views of the generator

The generator components are distributed on all four sides. The standard equipment is described here.

Figure 3-1: Views of the generator

1 Control side
2 Engine side
3 Exhaust gas side
4 Generator side

3.1.1 Operating and engine side components

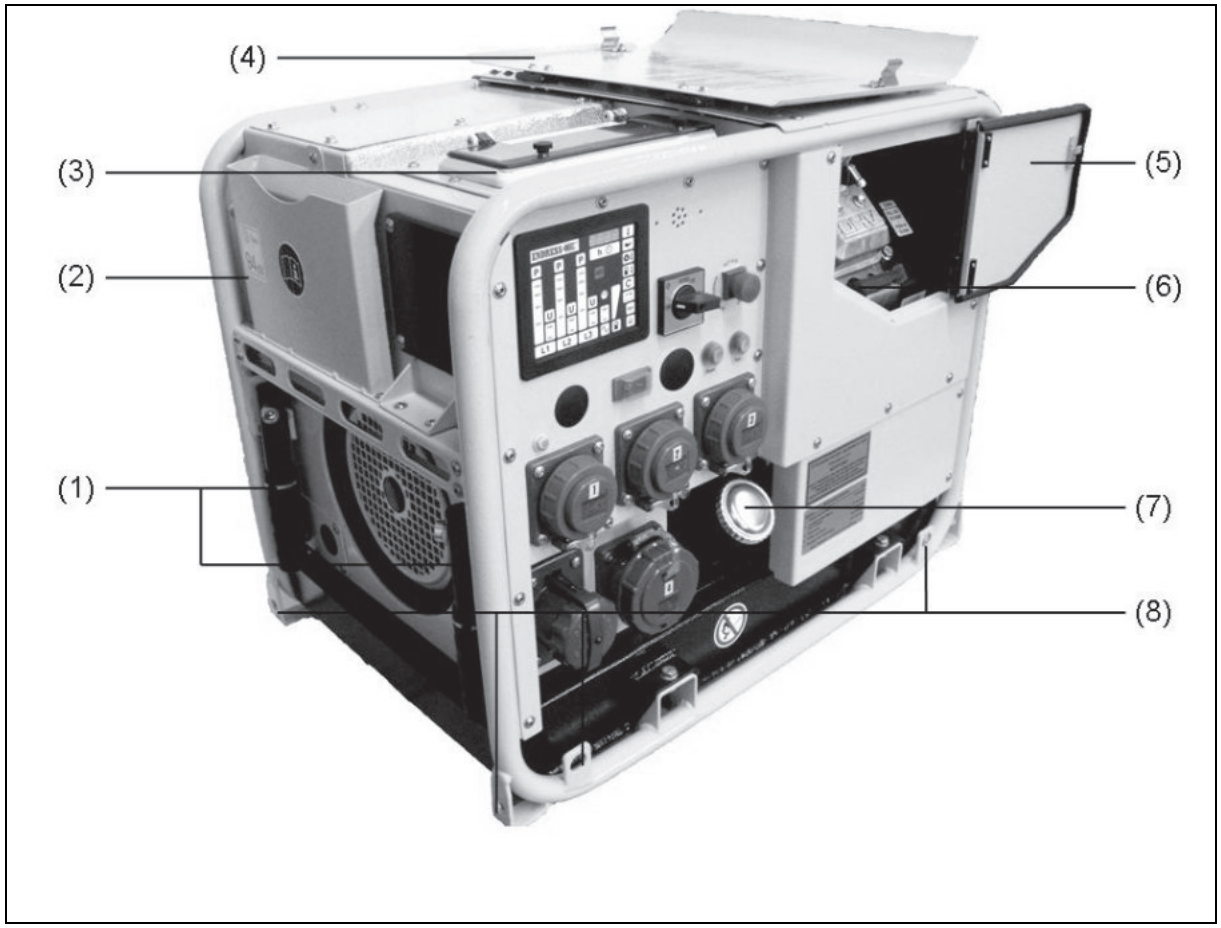


Figure 3-2: Components on the operating and engine side

1 Carrying handle
2 Storage compartment for operating instructions / standard accessories
3 Hinged window circuit breaker
4 Upper flap
5 Side flap
6 Engine spark plug
7 Filler neck
8 Mounting holes according to DIN 14685

3.1.2 Exhaust and generator side components

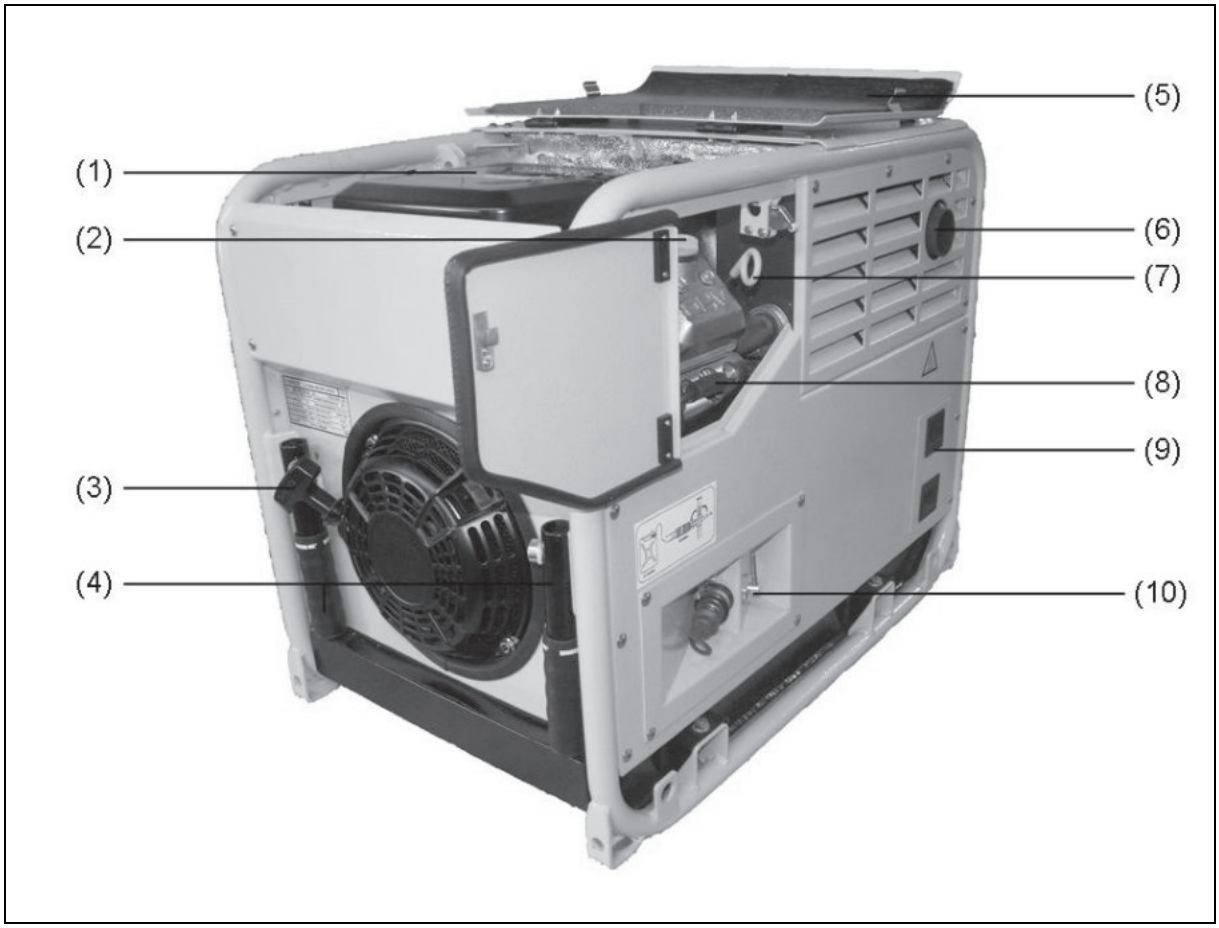


Figure 3-3: Components on the exhaust and generator side

1 Air filter cover
2 Oil filler neck
3 Recoil starter
4 Carrying handle
5 Upper flap
6 Exhaust
7 Oil dipstick
8 Spark plug connector
9 Storage compartment
10 Connection for external refuelling, 3-way valve

3.1.3 Control panel components

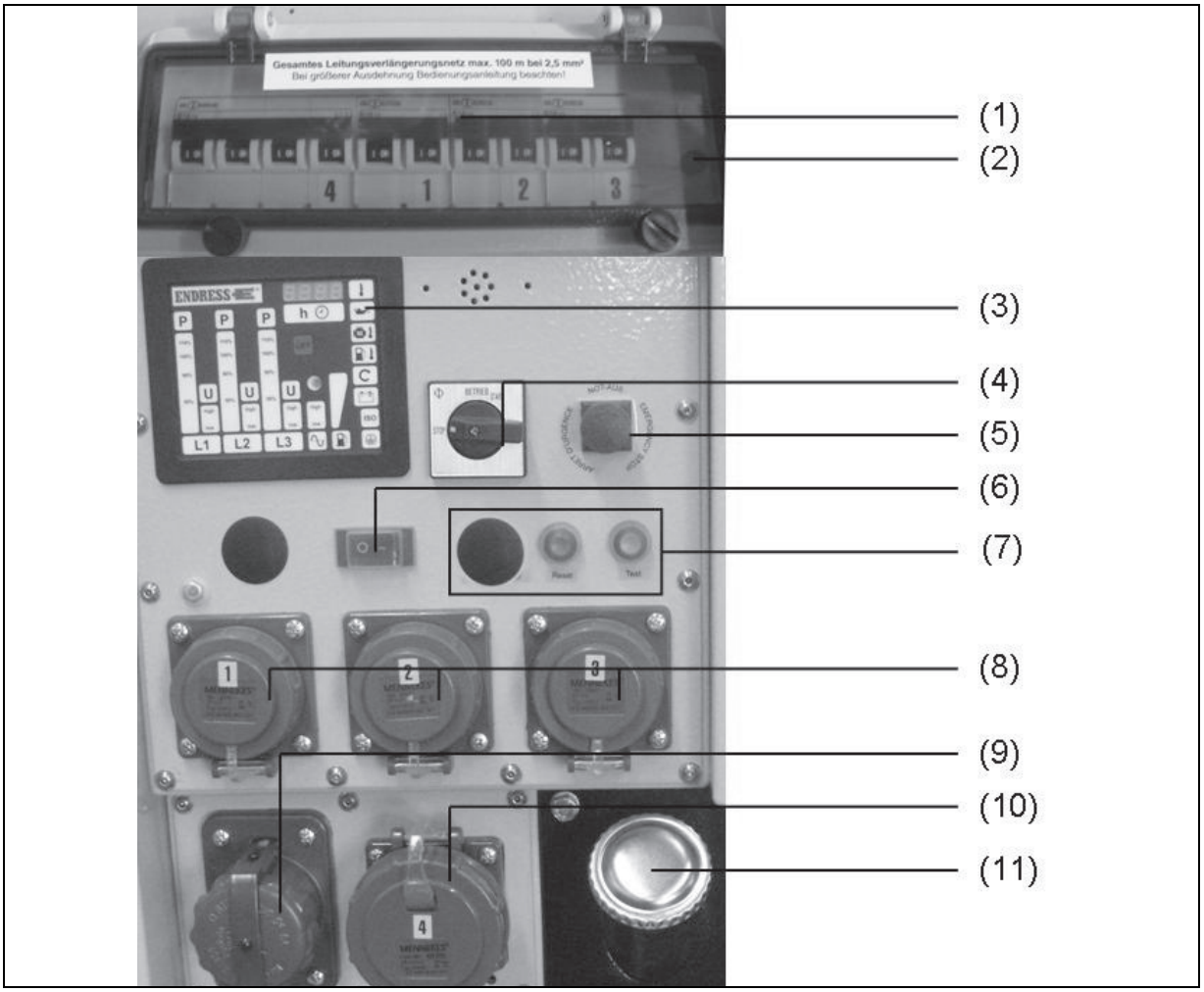


Figure 3-4: Control panel components

1 Circuit breaker / hinged window (under the upper flap)
2 Socket for protective earthing conductor test
3 Multifunction display E-MCS 4.0
4 START-STOP switch
5 EMERGENCY-STOP switch
6 Speed reduction switch (optional)
7 Insulation monitor (optional)
8 230V / ~ Schuko socket
9 Nato external start socket (optional)
10 CEE socket for 400V / 3~
11 Fuel filling neck

3.1.4 Accessory components

3.1.4.1 Standard accessories

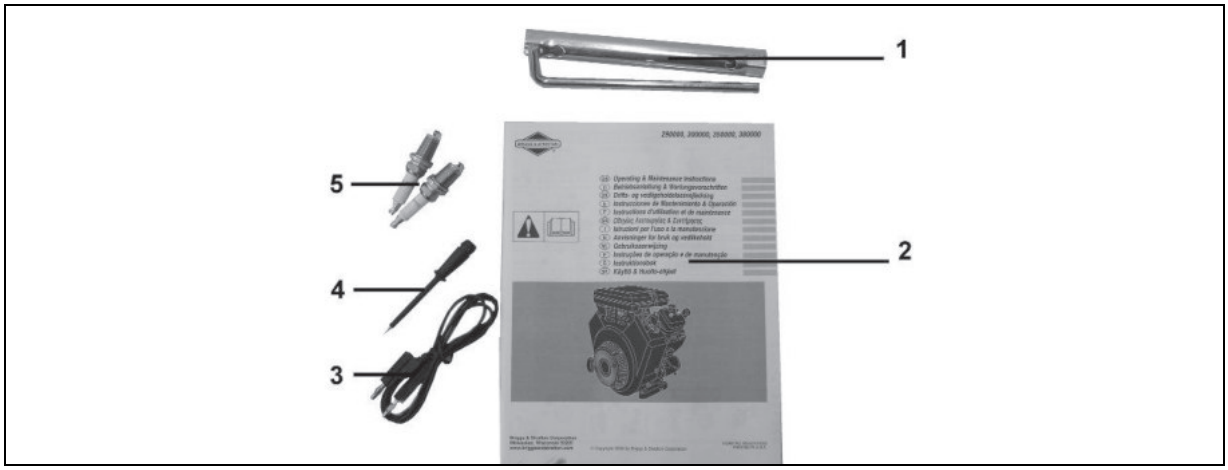


Figure 3-5: Standard accessories components

1 Spark plug socket
2 User information (operating instructions for the engine, as well as these operating instructions)
3 Test cable
4 Test tip
5 Spark plugs (2×)

3.1.4.2 Special accessories

Figure 3-6: Components of the special accessories

1 Fuelling device
2 20 litre standard container
3 Exhaust hose DN 50 – 1500 mm as per DIN 14572

3.2 Function and operating mode

The synchronous alternator is firmly coupled to the drive engine. The assembly is installed in a stable frame and equipped with a flexible, low-vibration suspension.

Splash-proof, shockproof and CEE sockets with a nominal voltage of 230V and/or 400V / 50 Hz supply the power.

On some models the engine rotational speed control (centrifugal governor) is supported at high loads by a special performance management module (Maxdrive).

Voltage regulation of the alternator takes place in the nominal speed range of the alternator by means of an integral voltage regulator.

The generator is designed for mobile operation with one or several electrical consumers (safety-separated circuit according to VDE 100, Part 551). The protective conductor of the ground contact socket assumes the function of the potential equalisation line.

Notes

4 Operating the ESE 607 / 957 DBG (ES) DIN

The operation of the generator is described in this section.

4.1 Transporting the generator

Proceed as follows to transport the generator.

Requirements

The following requirements must be fulfilled:

- the generator is turned off
- the generator has cooled down
- The installed fuel valve is in the “OFF” position
- the fuelling device (a special accessory see 3.1.4.2) is disconnected
- exhaust hose (a special accessory see 3.1.4.2) is not attached
- at least one person per carrying handle

WARNING!

A slipping or falling device can crush hands or feet.

- take the weight into account — about 115 / 145 kg.
- carry the generator using at least one person per carrying handle.
- only lift the generator by the carrying handles.
- lift / lower the generator evenly.
- walk slowly.

Carrying the device

1. Unfold carrying handles.
2. Lift generator evenly.
3. Carry generator to place of use.
4. Lower generator evenly.
5. Fold carrying handles.

✓ The generator has been carried to its work site.

4.2 Setting up the generator

Proceed as follows to set up the generator.

Requirements

The following requirements must be fulfilled:

- an even and firm substratum outdoors
- there are no inflammable materials at the place of work
- there are no explosive materials at the place of work

WARNING!

Leaking engine oil and petrol can contaminate the soil and groundwater.

- prevent leaking of engine oil and petrol.

Setting up the generator

Set up the generator as follows:

1. Prepare the work site.
2. Transport the generator to the work site.
3. Attach the exhaust hose if necessary (a special accessory see 3.1.4.2)

✓ The generator is set up and ready for use.

4.3 Refuelling the generator

Proceed as follows to refuel the generator.

Requirements

The following requirements must be fulfilled:

- switched off generator (see 4.5)
- a cooled down generator
- sufficient ventilation must be available
- appliances switched off or disconnected

WARNING!

Leaking engine oil and petrol can burn or explode!

- prevent leaking of engine oil and petrol.
- generator is switched off.
- generator has cooled down.
- avoid open flames and sparks.

WARNING!

Escaping petrol can contaminate soil and groundwater.

- do not fill the tank completely.
- use a filling aid.

WARNING!

Using the wrong fuel will destroy the engine.

- Only use lead-free ROZ 95 premium petrol.

Refuelling the generator

Refuel the generator as follows:

1. Set any fuel cock present to „closed“ *(Fig. 5-10-(1))*.
2. Unscrew tank cover.
3. Insert filler aid into the filler neck.
4. Add petrol.
5. Remove filler aid.
6. Screw on tank cap

✓ The device is refuelled.

4.4 Starting the generator

Requirements The following requirements must be fulfilled:

- checked electrical reliability (see 6.3)
- filled fuel tank (see 4.3)
- a possibly connected fuelling device (special accessory)
- sufficient oil level (fill with engine oil before initial use, see the engine operating and maintenance instructions)
- sufficient air supply/ventilation
- fit push-on exhaust gas pipe (special accessory) if necessary
- a connected and operational starter battery
- appliances switched off or disconnected

WARNING!

Operating fluids can burn or explode.

- prevent leaking of engine oil and petrol.
- do not use starting aids.
- avoid open flames and sparks.

WARNING!

Exhaust gases can cause fatal asphyxiation.

- provide for sufficient ventilation.
- use an exhaust gas pipe.
- only operate the generator outdoors.

WARNING!

Hot parts can ignite flammable and explosive materials.

- avoid flammable materials at the work location.
- avoid explosive materials at the work location.

WARNING!

Heat or moisture destroys the device.

- avoid overheating (sufficient ventilation).
- avoid moisture.

Starting the engine **Start the engine as follows:**

Figure 4-1: Pull on manually-operated choke

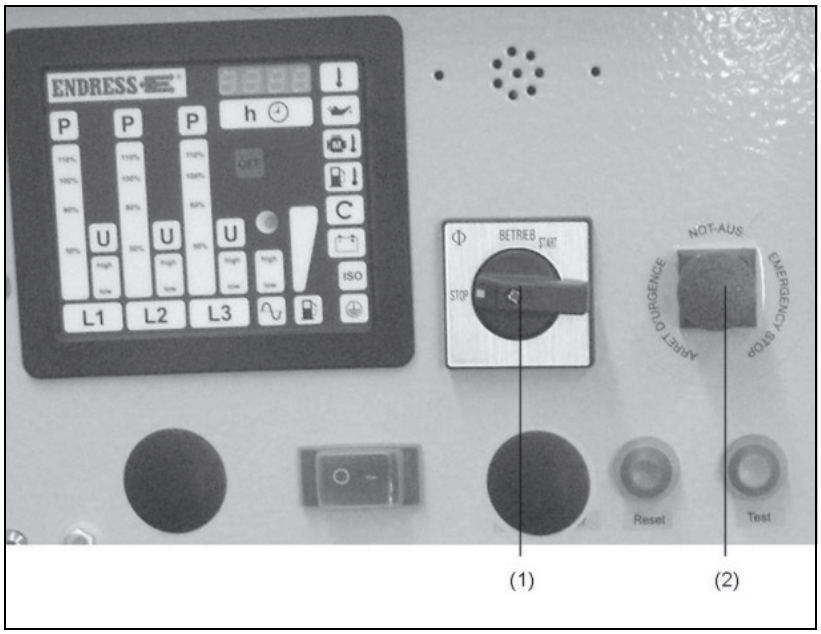


Figure 4-2: Standard design of operating panel

ELECTRICAL START

1. Open on flap side *(see Figure 4-1-(2))*.
2. Pull on the choke *(Figure 4-1-(2))* (completely for a cold engine / appropriately less for a warm engine) and hold firmly.
3. Turn the START-STOP switch *(Figure 4-2-(2))* completely into the position „START“ until the engine starts and then release.

✓ The engine starts.

REFERENCE NOTE Only activate the starter briefly (max. 5 - 10 seconds). Never start or run the engine with the battery disconnected.

4. Move the choke *(Figure 4-1-(1))* back into its start position.

✓ The engine has started.

REFERENCE NOTE The electrical consumer needs a heating up phase of approx. one minute to connect up and switch on.

alternatively upon failure of the electrical start:

(a manual start can be realised more easily by two people)

MANUAL START

1. Open on flap side *(see Figure 4-1-(1))*.
2. Pull on the choke (completely for a cold engine / appropriately less for a warm engine) and hold firmly.
3. Set the START-STOP switch *(Figure 4-2-(1))* to position „1“
4. Pull the reversing starter next to the handle *(Figure 3-3-(3))*.

REFERENCE NOTE Place your foot on the unit‘s frame to support yourself and make it easier to pull the starter.

✓ The engine starts.

5. Move the choke slowly back into its start position.

✓ The engine has started.

WARNING!

Generators with remote controls are fitted with an automatic choke. You do not need to use the manual choke (on the engine).

HAND START (or use the special accessory remote start device)

1. Set the START-STOP switch *(Figure 4-2-(1))* to position „1“
2. Flap above or flap at the side fully open.
3. Push the choke lever on the engine to the right and hold firmly (completely for a cold engine / appropriately less for a warm engine).
4. Pull the reverse starter next to the handle *(Figure 3-3-(3))*.

REFERENCE NOTE Place your foot on the unit‘s frame to support yourself and make it easier to pull the starter.

✓ The engine starts.

5. Release the choke.

✓ The engine has started.

4.5 Switching the generator off

Proceed as follows to shut down the generator.

WARNING!

Hot parts can ignite flammable and explosive materials.

- avoid flammable materials at the work location.
- avoid explosive materials at the work location.
- allow the generator to cool down.

Switching the generator off

The generator is switched off as follows:

Electrical start

1. Switch off or disconnect devices.
2. Continue to run the engine for about two minutes.
3. Set the START-STOP switch *(Figure 4-2-(1))* to position „0“

REFERENCE NOTE

Only use the EMERGENCY-STOP button to switch the unit off in an emergency! Switching off using the EMERGENCY-STOP button only interrupts the ignition so it is still possible for fuel to ignite in the silencer due to residual amounts of fuel in the carburettor.

4.6 Connecting up to consumers

Proceed as follows to connect up consumers to the generator.

Requirements

The following requirements must be fulfilled:

- started generator (see 4.4)
- protective earthing conductor test completed (see 4.7)
- a switched off consumer

WARNING!

Electric shocks cause injury or death.

- do not earth the generator (except for special option FI).
- do not connect protective conductor to an existing potential equalisation line.
- do not connect the generator to an existing electrical grid.

Connecting up consumers

You can connect up consumers using Schuko or CEE sockets.

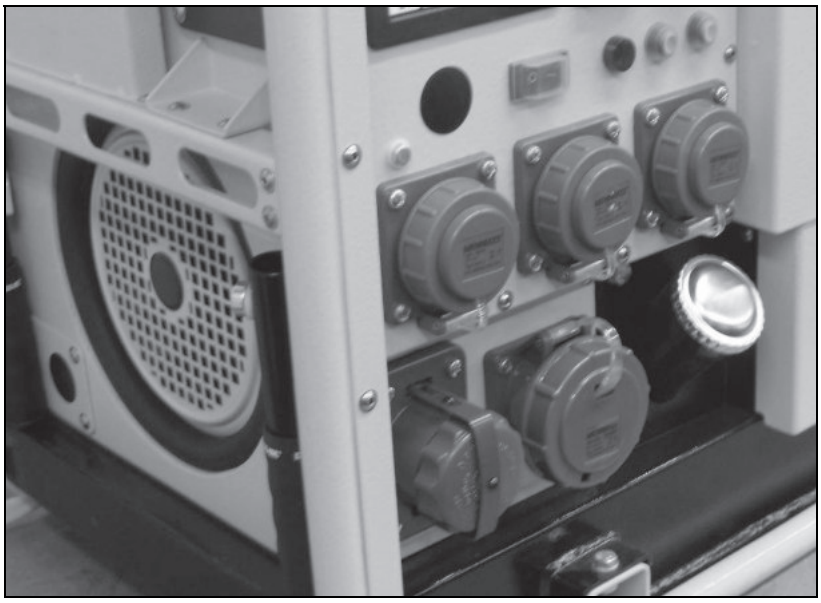


Figure 4-3: Connecting up consumers

4.7 Checking the protective conductor

Proceed as follows to check the protective conductor connection between the generator and the consumer.

Requirements

The following requirements must be fulfilled:

- started generator (see 4.4)
- a connected consumer (see 4.6)
- a switched off consumer

Check the protective conductor

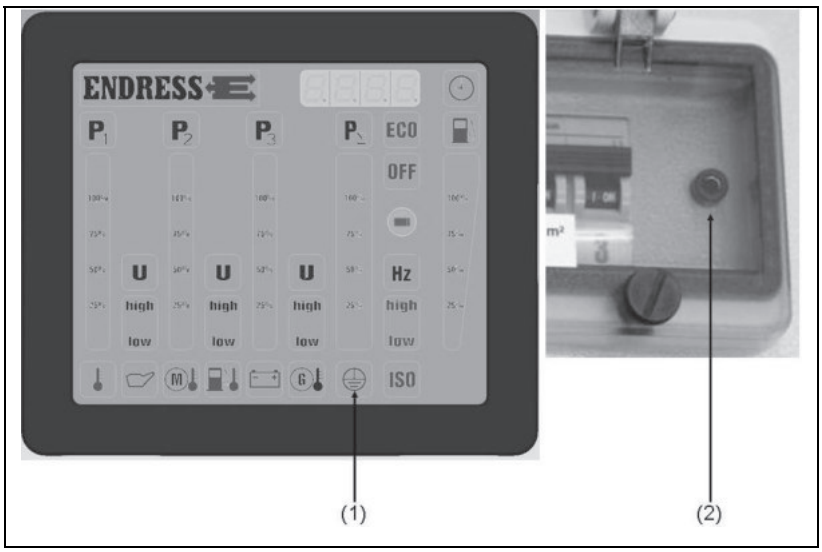


Figure 4-4: Check the protective conductor

Proceed as follows to check the protective conductor between the consumer and the generator:

1. Insert test cable into socket *(Figure 4-4-(2))*.
2. Hold a test tip on a metallic, blank location on the consumer

The test lamp *(Figure 4-4-(1))* on the multifunctional display shows the result:

Test lamp	Significance
lights up green	protective conductor is OK
stays off	Protective conductor defective / not present

Table 4.1: Protective conductor test lamp

✓ The protective conductor / potential equalization for this consumer has been checked.

4.8 Monitoring the operating status using the multifunction display

All LEDs light up for about 2 seconds to allow checking as soon as the START-STOP switch is set to the position „Operate“. The normal operational lighting is then shown afterwards for about 30 seconds. If the engine is not started within this period, the E-MCS 4.0 goes into energy saving mode and the display goes dark. To bring the E-MCS 4.0 back into a ready-to-operate condition again, the START-STOP switch must first be turned into the position „STOP“. The display intensity depends on the ambient light level.

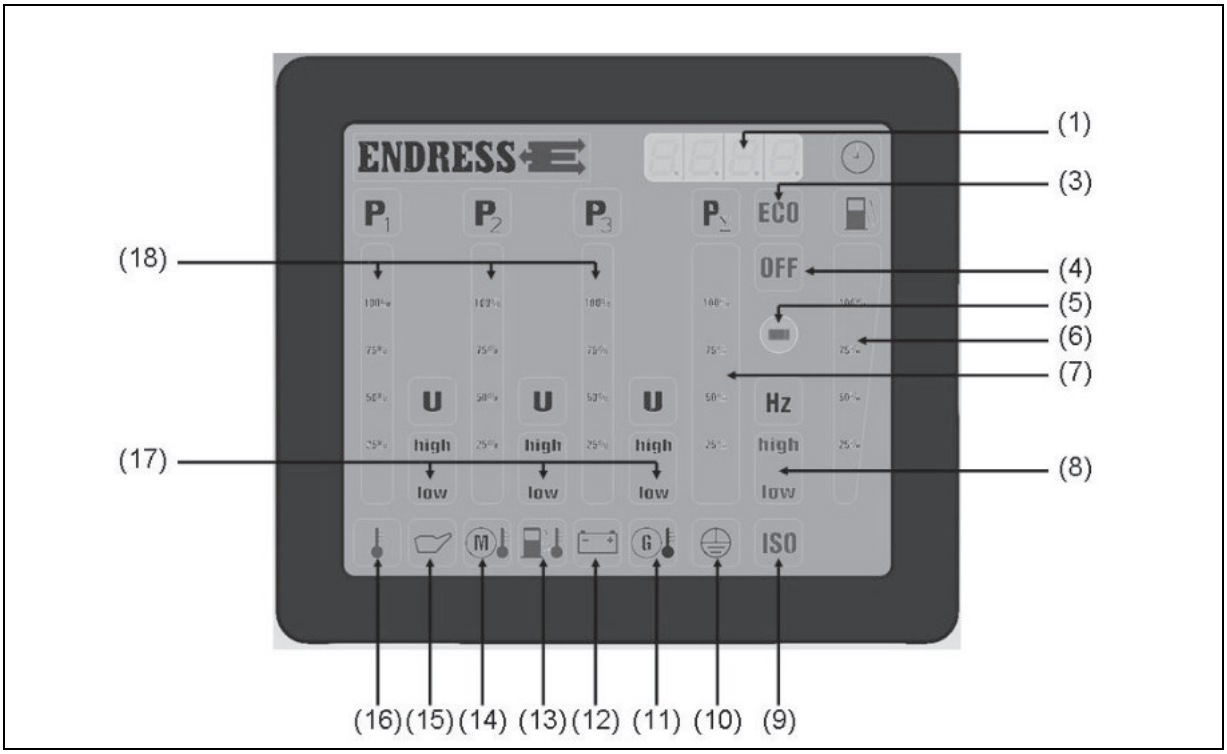


Figure 4-5: Multi-functional display

Operating hours: Displayed *(see Figure 4-55-(1))* when the generator starts or is activated for 30 seconds when the START / STOP switch is turned into the “Operate” position.

Ambient temperature: If the display is red *(see Figure 4-55-(16))* whilst the generator is running then the temperature is too high and the generator must be switched off.
(Only active if the special “Warning signal II”, “Firecan” option is fitted!)

Oil pressure: If the display *(see Fig. 4-55-(15))* lights up red whilst the generator is running then the oil pressure is too low and the generator will switch off automatically or the buzzer will sound and this can be acknowledged using the acknowledgement button.
(Buzzer only active for the ordered "Insulation monitoring" special fitting "Firecan")

Engine temperature: If the display is red *(see Figure 4-55-(14))* whilst the generator is running then the engine temperature is too high and the generator must be switched off.
(Only active if the special "Warning signal II", "Firecan" option is fitted!)

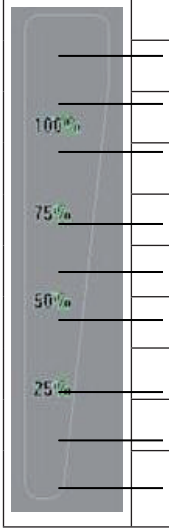
Fuel temperature: If the display is red *(see Figure 4-55-(13))* whilst the generator is running then the fuel temperature is too high and the generator must be switched off.
(Only active if the special "Warning signal II", "Firecan" option is fitted!)

Battery charge check: If the display is red *(see Figure 4-55-(12))* then the alternator's recharging function is not working.
If the display flashes red then the charge voltage of the alternator is too high.

Insulation monitoring: If the display lights up red *(see Figure 4-55-(9))* or if the buzzer sounds then there is an insulation fault present. (see Chapter 5 Insulation monitoring).
(Only active for an ordered insulation monitoring (standard for DIN)!)

Protective earthing conductor test: If the display is green *(see Figure 4-55-(10))* during the protective earth lead test (see Chap. Testing the protective earthing conductor), then the protective earth conductors for the attached devices are OK. If the protective earth conductor function is not available, the display remains blank.

Fuel tank filling level: The display *(see Figure 4-5-(6))* gives a rough indication of the contents of tank.

Symbol	Display	Significance
		
	green	Fill level 100%
	green	Fill level 100%
	green	Fill level 90%
	green	Fill level 70%
	green	Fill level 60%
	green	Fill level 40%
	green, red	Fill level below 30%
	green, red flashes	Fill level below 20%
	red flashes	it must be topped up

Frequency: If the display is green *(see Figure 4-55-(8))* then the frequency is within the correct range (47.5 – 52.5 Hz). If the “high” display is red then the frequency is too high. If the “low” display is red then the frequency is too low.

L1, L2 & L3 phases: The single L1 to L3 phases *(see Figure 4-55-(18))* are displayed separately:

Voltage (V) *(see Figure 4-55-(17))*:
If the field is green then the voltage is OK.
If “high” or “low” is displayed in red then the voltage is too high or too low.

Load (P) *(see Figure 4-55-(18))*:
The utilisation will be displayed in 10% steps for 3-phase loads.
10 - 80% green, 80 - 100% yellow and 100 - 110% red.

If the display is red for single phase utilisation (asymmetric load) then the load should be distributed evenly over the 3 existing phases.

Relative load indicator: Load (P∑) *(see Figure 4-5-(7))*
For a 1 and 3 phase load the total load on the generator is displayed in steps of 10%. 10 - 80% green, 80 - 100% yellow and 100 - 110% red.

EMERGENCY-STOP button: If the “OFF” symbol glows red *(see Fig. 4-55-(4))* and the buzzer sounds, the EMERGENCY STOP button has been pressed. The buzzer can be acknowledged using the acknowledgement button.
(Buzzer only active for the ordered “Insulation monitoring“, “Firecan“) special fitting

4.9 Laying up the generator

The generator should be laid up if it is not required for more than 30 days. It is best to use a cloth to cover the generator.

REFERENCE NOTE The correct laying up procedure is described in the engine's operating manual and maintenance instructions (Briggs & Stratton Corporation) *(Fig. 3-5-(2))*.

4.10 Disposal

Due to environmental protection considerations the generator, battery, engine oil,etc. cannot simply be thrown into the refuse bin. Observe all local laws and regulations concerning correct disposal of such parts and substances.
Your authorised ENDRESS generator dealer is happy to advise you.

Please observe the pertinent environmental protection regulations when disposing of the old oil. We recommend bringing the oil in a closed container to an old oil collection centre for disposal. Do not throw away used engine oil into the refuse bin or pour it onto the ground.

An inappropriately disposed of battery can damage the environment. Always comply with the local regulations when disposing of batteries. Please contact your ENDRESS maintenance dealer for a replacement.

Notes

5 Using special fittings / accessories

5.1 FI protection switch

The FI protection switch option can only be supplied by the factory.

The FI protection switch (RCD) is a protective measure against dangerous body currents according to DIN VDE 0100-551.

Earthing requirements:

1. The assembly‘s earthing connection clamps must be connected at least 16 mm^2 of earthing cable (green/yellow) connected to the earthing spike. The spike must be driven into the ground. BG Bau recommends that an earth resistance of ≤ 50Ω is used (see BGI 867 regarding this).
2. Alternatively, a proper earthing device conforming to VDE 0100-540 can be used (such as the main earthing line in buildings).

Attention!

1. The effectiveness of this protective measure must be checked at least once a month by an electrical expert or, if suitable measuring and testing devices are available, by an electrotechnically trained person under the guidance and supervision of an electrical expert.
2. The user must also check the mechanical operation of the release every working day by activating the test button on the residual current protection device (RCD) *(see Figure 5-1-(10))*.

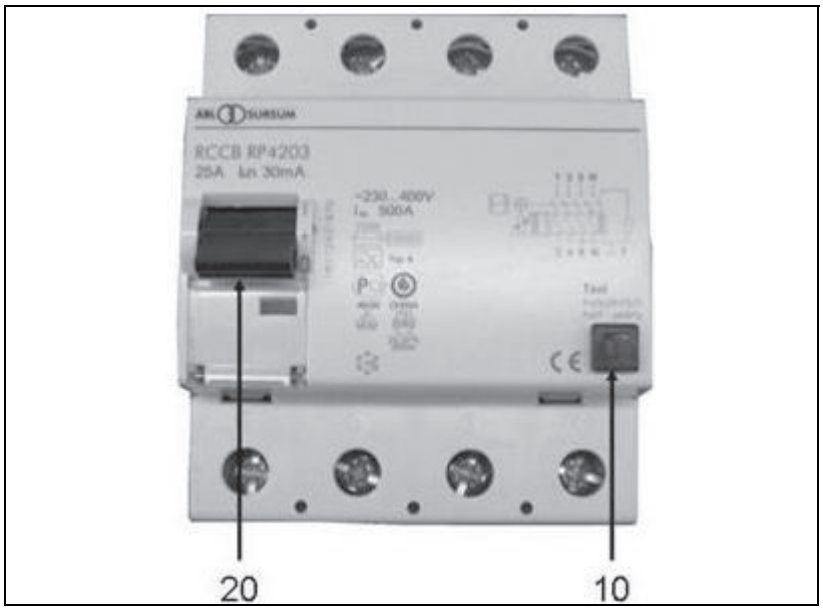


Figure 5-1: FI protection switch

Checking the FI protection switch:

1. The generator must have been started (see 4.4).
2. Move the protection switch *(see Figure 5-1-(20))* into Pos. 1.
3. Activate the test switch *(see Figure 5-1-(10))*.

✓ The switch position displays the result *(see Figure 5-1-(20))*:

Symbol	Significance
Position I	Switch does not trigger. FI protection switch is defective.
Position 0	Switch triggers. FI protection switch is working properly.

Table 5.1: FI protection switch test

✓ The device has been tested in accordance with DIN VDE 0100551.

5.2 Insulation monitoring using E-MCS 4.0 (without switching off)

The insulation monitoring option can only be supplied by the factory.

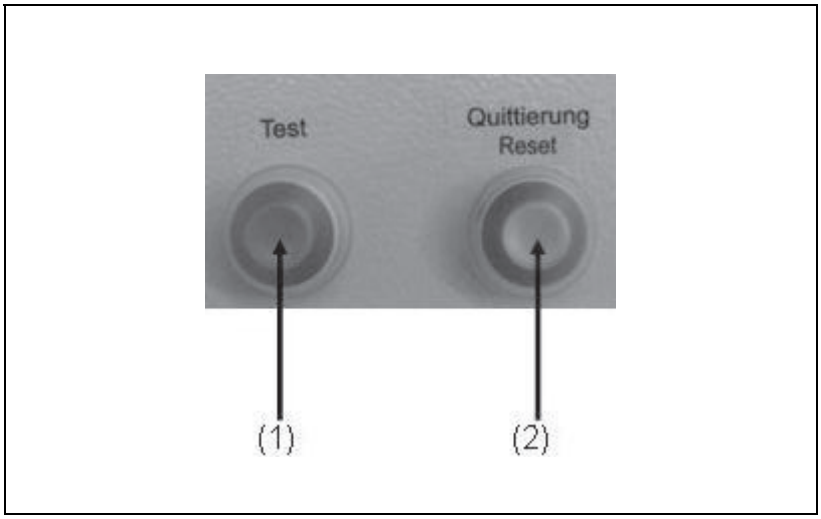


Figure 5-2: Insulation monitoring using E-MCS 4.0

Requirements

The following requirements must be fulfilled:

- a started generator (see 4.4)

Testing the insulation monitoring:

1. Unplug the device
2. Press the Test button *(see Figure 5-2-(1))*

✓ The switch position displays the result *(see Figure 4-5-(9))*:

Symbol	Significance
Buzzer sounds if lit in yellow	Insulation monitoring is OK
stays off	Insulation monitoring is defective

Table 5.2: Insulation monitoring without switching off

✓ The insulation monitoring test has been run.

3. The reset button *(see Figure 5-2-(2))* must be pressed after the test has been completed so that the unit can be used again.

Insulation monitoring whilst running:

1. Plug in the device and switch on.
✓ The switch position displays the result *(see Figure 4-5-(9))*:

Symbol	Significance
Buzzer sounds if lit in yellow	Insulation fault (≤ 23kΩ)
stays off	Connected unit is OK

Table 5.3: Insulation monitoring whilst running without switching off

✓ If an insulation fault exists and the unit was previously OK when tested without a consumer connected up to it (see insulation monitoring above), then the insulation fault has been caused by the consumer.
2. The reset button *(see Figure 5-2-(2))* must be pressed after switching off and disconnecting the consumer so that the unit can be used again.

Reset function / acknowledgement button:

Action	Operation
Press x 1	Acknowledge the buzzer
Press x 2	Reset ISO

5.3 Maxdrive

The Maxdrive option can only be supplied by the factory.

Requirements

The following requirements must be fulfilled:
- an operational generator
- generator started

During heavy loads, such as starting current or impact loads, the drive engine’s centrifugal governor quickly reaches its limit. The throttle opens all the way and this ensures that the engine’s full power is available.

Switching on and off is automatic.

5.4 Speed reduction at idle

Proceed as follows to operate the generator using idle speed reduction.

Requirements

The following requirements must be fulfilled:

- a ready for operation generator
- a started generator (see 4.4)

Switching on idle speed reduction

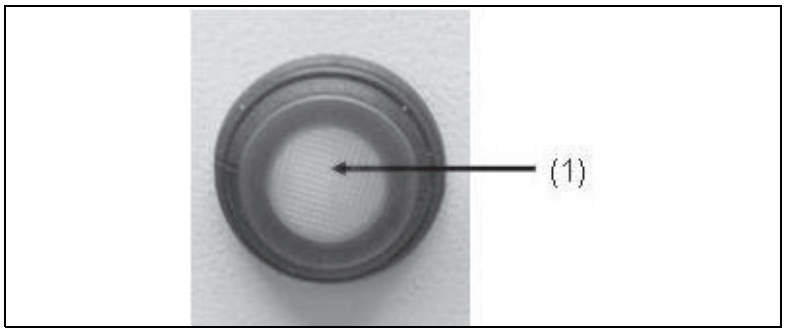


Figure 5-3: Idle speed reduction press switch

Switch on idle speed reduction as follows:

Press the press switch *(Fig. 5-3-(1))* down until it engages (LED lights up green)..

✓ Idle speed reduction is activated.

ATTENTION

Idling speed reduction is active for about 5 minutes after engine start and it lowers the rotational speed of the engine, provided that no load is engaged, to about 1,800 rpm.
The engine speed will be increased to the nominal speed as soon as a load is switched on. The engine always runs within the nominal speed range if the rocker switch is in the „OFF“ position.

Switching idle speed reduction off

Switch idle speed reduction off as follows:

Press the press switch again (LED goes out).

✓ Idle speed reduction is switched off.

5.5 Remote start device

Proceed as follows to operate the generator using the remote start device.

Requirements

The following requirements must be fulfilled:

- an operational generator

WARNING!

Devices with a remote start device are fitted with an automatic choke. You do not have to use the manual choke during an electrical start.

Connecting up the remote start device

Connect up the remote start device as follows (with the Harting socket):

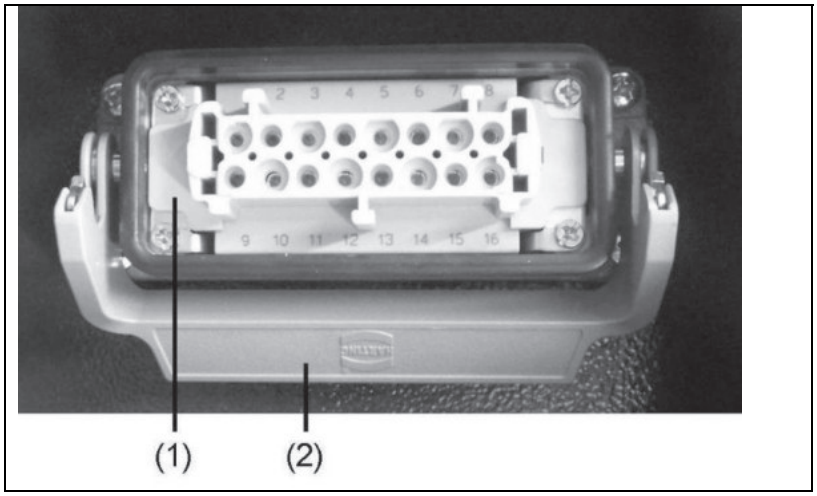


Figure 5-4: Remote start device with Harting plug

Reference note

Battery charging retention might occur simultaneously when using the remote start device.

1. Fold away any protective caps on the remote start socket after unlocking the clip *(see Figure 5-4-(2))*.
2. Plug the remote start operating status / generator connecting cable into the remote start socket *(Figure 5-4-(1))* and then use the clip *(Figure 5-4-(2))* to secure it in place.

✓ Remote start device is ready for use.

Disconnecting the remote start device

Disconnect the remote start device as follows:

1. Release the clip and then pull the remote start operating status / generator connecting cable plug out.
2. Fold down the protective cap (if fitted) onto the remote start socket and lock in place using the clip.

✓ Remote start device is disconnected.

Connecting up the remote start device

Connect up the remote start device as follows (using the CAN socket):

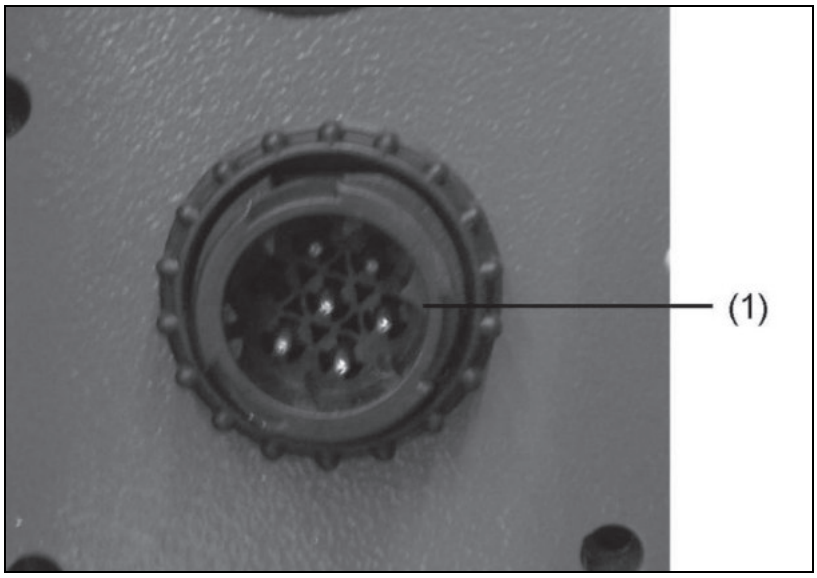


Figure 5-5: Remote start device with CAN plug

Reference note

Battery charging retention might occur simultaneously when using the remote start device.

1. Insert plug for the remote start operating status / generator connecting cable into the remote start socket and lock in place by turning to the right.

✓ Remote start device is ready for use.

Disconnecting the remote start device

Disconnect the remote start device as follows:

1. Release the plug by turning to the left and then pull the remote start operating status / generator connecting cable plug out.

✓ Remote start device is disconnected.

5.6 External start device

Proceed as follows to operate the generator using the external start device.

Requirements

The following requirements must be fulfilled:

- an operational generator

Connecting up the external start device

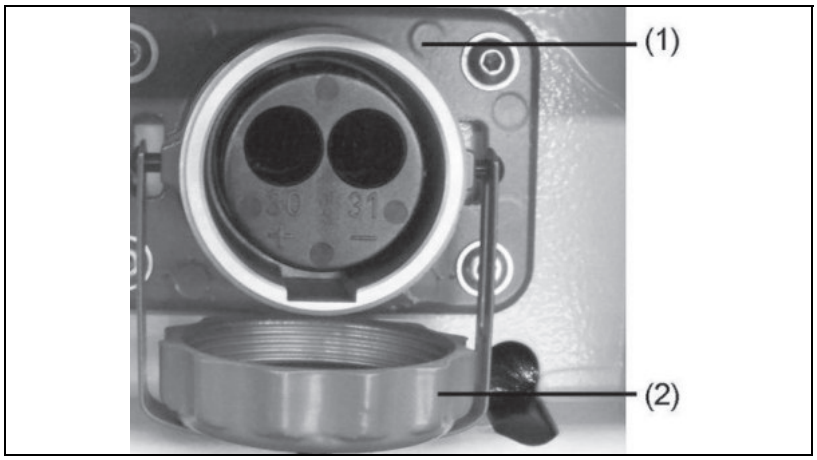


Figure 5-6: Connecting up an external start device

Connect up the external start device as follows:

1. Unscrew cover *(Figure 5-6-(2))* on the external start socket *(Figure 5-6-(1))*.
2. Insert plug for the external energy source connecting cable (e.g. starter battery) / external start socket into the external start socket and lock in place by turning to the right.

✓ Remote start device is ready for use.

✓ The engine can be started using the electrical start.

Disconnecting the remote start device

Disconnect the remote start device as follows:

1. Release the plug by turning to the left and then pull the external energy source / external start socket plug out.
2. Screw protective cap for the external start socket back on again.

✓ Remote start device is disconnected.

5.7 Battery charge retention device

Proceed as follows to charge the starter battery for the generator over the battery charge retention device.

Requirements

The following requirements must be fulfilled:

- an operational generator

Connecting up the battery charge retention device

Connect up the battery charge retention device (charge current socket A DIN 14690) as follows:

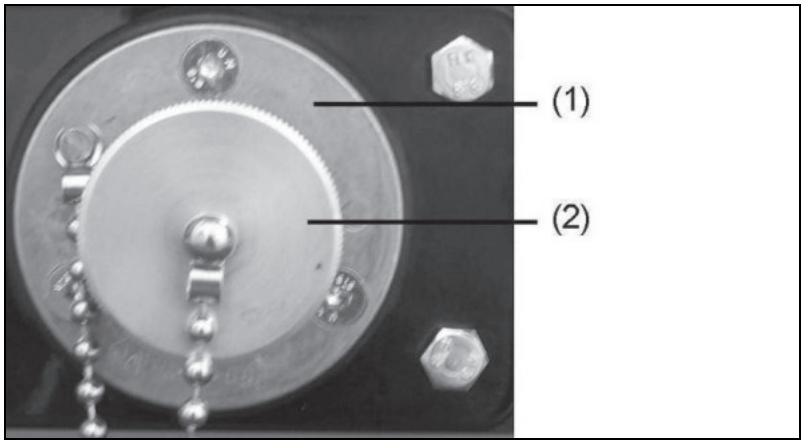


Figure 5-7: Connecting up the battery charge retention device

1. Unscrew cover *(Figure 5-7-(2))* of the start socket *(Figure 5-7-(1))* for the starter battery charge retention device.
2. Insert plug for the external energy source (e.g. a battery charging device) / charge retention device socket connecting cable and lock in place by turning to the right.

✓ The battery charge retention device is ready to operate.

Connecting up the battery charge retention device

Connect up the battery charge retention device (charge current socket BEOS) as follows:

Figure 5-8: Connecting up the battery charge retention device

1. Unscrew cover *(Figure 5-7-(2))* of the start socket *(Figure 5-7-(1))* for the starter battery charge retention device.
2. Insert plug for the external energy source (e.g. a battery charging device) / charge retention device socket connecting cable and lock in place by turning to the right.

✓ The battery charge retention device is ready to operate.

Connecting up the battery charge retention device

Connect up the battery charge retention device (MagCode socket) as follows:

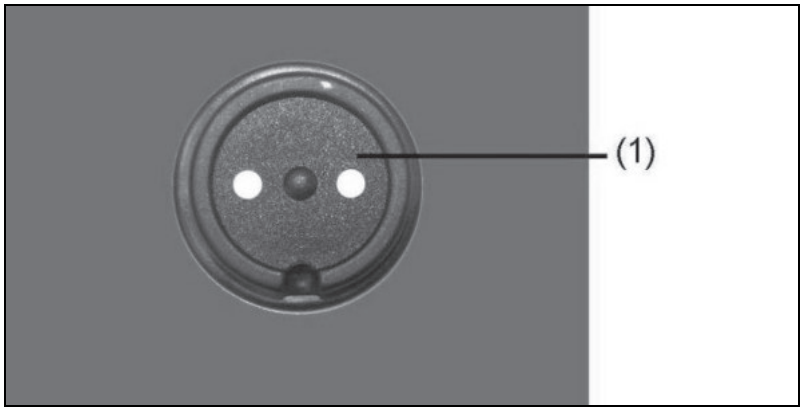


Figure 5-9: Connecting up the battery charge retention device

1. Put plug for the external energy source (e.g. a battery charging device) / charge retention device socket connecting cable in place.

✓ The battery charge retention device is ready to operate.

5.8 3-way fuel valve / Refuelling device

Proceed as follows to use the refuelling device with the generator.

Requirements

The following requirements must be fulfilled:

- a ready for operation generator
- 3-way fuel vale

In the course of supplying fuel you can select between the device‘s own tank and the refuelling device.

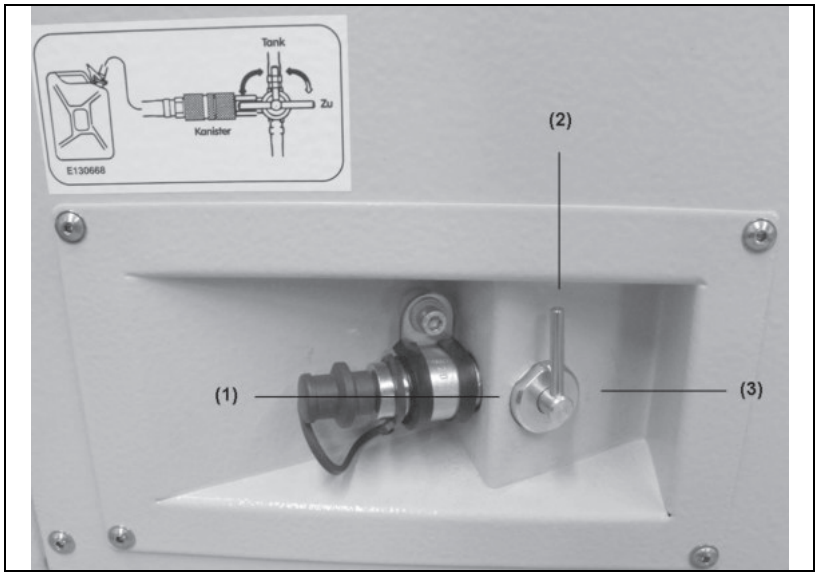


Figure 5-10: 3-way fuel valve

Switch position	Operation
1	EXTERNAL REFUELLING
2	SHUT
3	OWN TANK

Table 5.4: 3-way fuel valve switch positions

Establish a connection to the fuel supply system as follows:

1. Set the fuel valve to the required fuelling mode.

✓ The fuel supply is established.

WARNING!

Leaking engine oil and petrol can contaminate the soil and groundwater.

- do not fill the canister completely.
- allow the fuelling device to drain off.

WARNING!

Using the wrong fuel will destroy the engine.

- Refuel using lead-free regular grade petrol RON 91 only.

NOTE The canister may stand at a maximum of 0.5 m below the level of fuel pump.

Connect up fuelling device:

Connect up fuelling device as follows:

1. Pull off cover plugs from quick-action coupling.
2. Place the quick-action coupling on the external refuelling connection.
3. The quick-action coupling engages.

✓ The fuelling device is attached.

Disconnect fuelling device:

Disconnect fuelling device from the generator by:

1. Pull back the knurled sleeve on the quick-action coupling.

✓ The coupling is released.

2. Pull off quick-action coupling with hose from the connector.
3. Insert the cover plugs again on the quick-action coupling.

✓ The fuelling device is disconnected from the generator.

Connecting up the canister

Connect the cannister up to the fuelling device as follows:

1. Open sealing cap on the canister.
2. Introduce hose.
3. Engage catch on the fuelling device.

✓ The canister is attached.

Changing an empty canister during operation

Proceed as follows to change an empty cannister during operation:

1. Place the full canister next to the empty canister.
2. Open sealing cap on the full canister.
3. Set fuel cock to „own tank“ *(Fig. 5-10-(2))*.

✓ The engine is supplied with fuel over its own tank.

4. Loosen the fuelling device latch on the canister.
5. Remove hose.
6. Introduce hose into the full canister.
7. Engage catch on the fueling device.

✓ The canister is attached.

8. Set fuel cock to „external tank“ *(Fig. 5-10-(1))*.

✓ The empty canister is exchanged.

5.9 Exhaust hose

Proceed as follows to use the exhaust hose with the generator.

Requirements

The following requirements must be fulfilled:

- a ready for operation generator

WARNING!

Exhaust gases can cause fatal asphyxiation.

- provide for sufficient ventilation.
- use an exhaust gas hose.
- only operate the generator outdoors.

Connecting up the exhaust hose

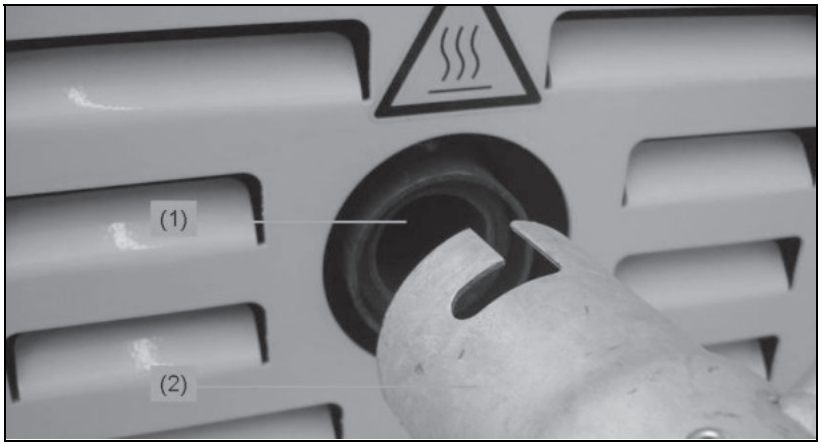


Figure 5-11: Connecting up the exhaust hose

Connect up the exhaust hose as follows:

1. Push the exhaust hose's grip with the larger opening onto the muffler's connection.
2. Turn the exhaust hose to the right to lock it in place.

✓ Exhaust hose is now put on.

Disconnecting the exhaust hose

Disconnect the exhaust hose from the generator as follows:

1. Turn the exhaust hose grip to the left.
2. Pull the exhaust hose off the muffler's exhaust hose connection.

✓ Exhaust hose is now disconnected.

6 Generator ESE 607 / 957 DBG (ES) DIN maintenance

Generator maintenance is described in this section.

Only personnel from the manufacturer may carry out maintenance or repair work not described in this section.

6.1 Maintenance plan

The maintenance work specified in this summary must be carried out after the indicated time intervals.

Maintenance work	Time interval in operating hours [h]					
	after 8 h	every 8 h / daily	every 25 h / annually	every 50 h / annually	every 100 h / annually	annually
Checking the electrical safety	before each start-up					
Checking the oil		X				
Changing the oil	(X)[1)]			X		
Change oil filter					X	
Cleaning the air filter			X[2)]			
Clean area around mufflers, linkages, and springs		X				
Exchange spark plugs						X
Change the fuel filter						X
Check fit of screws, nuts, and bolts					X	
Check condition and tightness of the fuel hoses and connections.					X	

Table 6.1: Generator maintenance plan

1) When operating under a heavy load or at high environmental temperatures every 25 hours.
2) Clean more frequently when used in a dusty environment or in the presence of foreign particles in the air or for longer use in high, dry grass.

6.2 Maintenance work

Only authorised personnel are allowed to carry out maintenance tasks.

Carry out all maintenance tasks specified in the maintenance plan according to the specifications in the enclosed operating and maintenance instructions for the engine *(Figure 3-5-(2))*. These operating and maintenance instructions of the engine manufacturer are an integral component of these operating instructions.

6.2.1 Engine oil

WARNING!

Leaking engine oil can contaminate soil and groundwater.

- use an oil collecting tray
- recycle used engine oil.

WARNING!

Engine oil can be hot — risk of burns.

- allow engine to cool down

Requirements The following requirements must be fulfilled:

- the engine should ideally be slightly warm (allow a cold engine to run for 5 min., then stop it and allow it to cool for 2 min.).

Figure 6-1: Oil dipstick

Checking the oil level

Check the oil level as follows:

1. Pull out the dipstick *(Figure 6-1-(2))* and use a clean cloth to wipe it.
2. Reinsert the dipstick and take it out again.
   Drain off some of the oil if the level is above the upper mark and refill with oil if the level is under the lower mark.

✓ The oil level has been checked.

Refilling with oil

Refill with oil as follows:

1. Unscrew the oil drainage screw *(Figure 6-1-(1))*. Pull out the dipstick for easier filling with oil *(Figure 6-1-(2))*.
2. Fill with oil using a filling aid.
3. Check oil level and add oil if necessary.

✓ The engine has been refilled with oil.

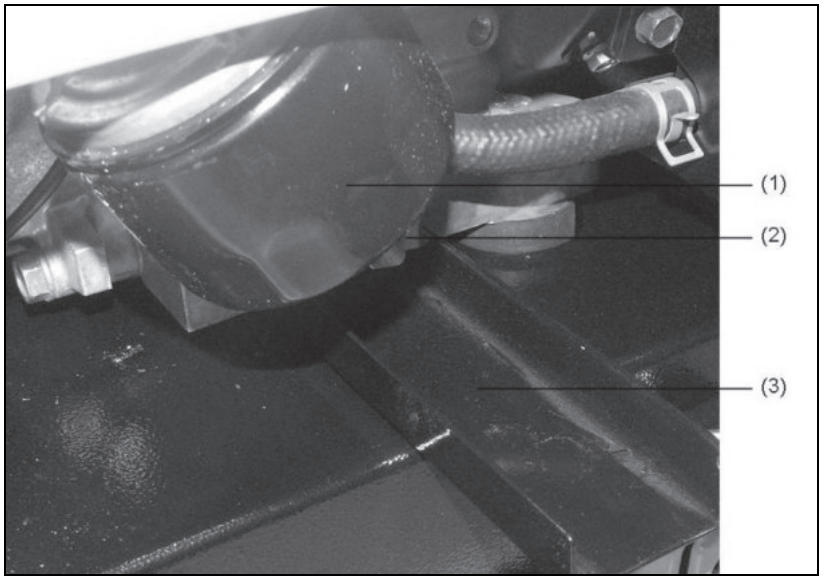


Figure 6-2: Changing the oil

Changing the oil

1. Disassemble the side plate on the operating side of the generator.
2. Attach oil drain channel *(Figure 6-2-(3))* as shown.
3. Remove oil drain screw *(Figure 6-2-(2))* so that engine oil runs off completely.
4. Screw in the oil drainage screw again. Attach the side plate again.
5. Then pour in new oil as already described.

✓ The engine oil has been changed.

WARNING!

The oil escapes immediately after opening the oil drainage valve.

Changing the oil filter

The procedure is as described in the operating instructions for the engine.
To do this the side plate on the generator must be unscrewed and the flap must be opened.

6.2.2 Changing the starter battery

1. Disassemble plate on the exhaust side.
2. Remove the battery from the battery compartment.
3. Unscrew the battery cable. Push the protective terminal caps back for this purpose and loosen the screws. Always disconnect the cable from the NEGATIVE terminal first and then disconnect the cable from the POSITIVE terminal.

✓ Battery is disconnected.

Figure 6-3: Replacing the battery

4. Prepare a new battery.
5. The battery cables must first be screwed to the POSITIVE terminal and then to the NEGATIVE terminal; only then replace the terminal caps.
6. Put the battery back into the battery compartment.
7. Put the battery holder back.

✓ Battery is replaced.

WARNING!

A highly explosive electrolytic gas mixture develops from gassing when charging batteries.

- flames, sparks, an open light and smoking are prohibited.
- avoid sparks when handling cables and electrical devices, as well as electrostatic discharge.
- avoid short-circuits.

WARNING!

The Endress battery is maintenance-free throughout its entire service life.

- never open the battery — this may destroy it.

6.2.3 Replacing fuses

Replacing fuses (only for the special accessory external start socket, socket, charging retention and/or remote start device)

1. Open the fuse holder.
2. Replace the fuse.
3. Close the fuse holder

✓ Fuse is replaced.

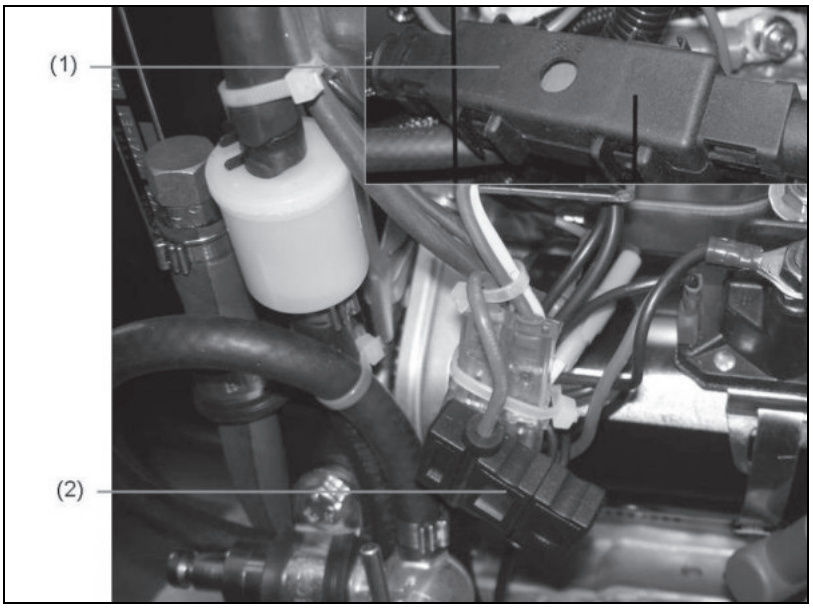


Figure 6-4: Replacing a fuse

Fuse type	Amperes	needed for
2	20	Control system
2	15	Charging retention socket
1	150	External start (Nato) socket

Table 6.2: Location of the fuses

6.3 Checking the electrical safety

Only appropriately authorised personnel may check the electrical safety.

The electrical reliability must be checked in accordance with the applicable VDE regulations, EN and DIN standards and especially the current version of the BGV A3 accident prevention regulations.

7 Troubleshooting

This section describes problems that authorised personnel can eliminate during operation.

Each occurring problem is described with its possible cause and the respective corrective measure.

The authorised personnel must immediately shut down the generator and inform the responsible and authorised service personnel if a problem cannot be solved with the aid of the following table.

Malfunction	Possible cause	Correction
No or insufficient voltage available during idling.	The engine‘s rpm was subsequently readjusted.	Call service staff.
	The electronic controller has been altered.	Call service staff.
	The electronic controller is defective.	Call service staff.
Strong voltage fluctuations occur.	The engine runs irregularly.	Call service staff.
	The speed control works erratically or insufficiently.	Call service staff.
The engine does not start.	The engine is being operated incorrectly.	Follow the engine operating manual.
	Maintenance of the engine was inadequate.	Follow the engine maintenance instructions.
	The oil level monitor actuates.	Check oil level and refill if necessary.
	Oil pressure switch plug is loose.	Check fit of the oil pressure plug.
	Too little fuel in the tank.	Refuel.
	The fuel filter is clogged.	Replace the fuel filter.
	Bad fuel in the tank.	Call service staff.
	The ignition cable does not have any connection to the spark plug.	Attach ignition cable to the spark plug.
	The choke is not activated in a cold condition.	Actuate choke.
	The EMERGENCY-STOP button is pressed and locked in place.	Unlock the EMERGENCY-STOP button.
	The battery connecting cables are unclamped.	Clamp or screw on the battery connecting cables.

Malfunction	Possible cause	Correction
Starter battery has no power.	Battery is discharged.	Charge battery.
	Battery is defective.	Exchange battery.
	Battery terminals are oxidized.	Clean battery terminals and if necessary apply terminal grease.
Starter battery is not being charged.	Alternator / charge regulator defective.	Call service staff.
The engine does not rotate.	Engine defective.	Call service staff.
The engine smokes.	Too much oil in the engine.	Drain excess oil.
	Paper element of the air filter is dirty or oil-soaked.	Clean paper element or replace if necessary.
	Foam element of the air filter is dirty or dry.	Clean foam element and if necessary moisten.
The engine turns briefly and then shuts down.	Too little fuel in the tank.	Refuel.
	The oil level is too low.	Add oil.
	The fuel filter is clogged.	Replace the fuel filter.
The engine splutters.	The 20 litre standard container is empty.	Change the canister
	The refuelling device's sieve is blocked.	Clean the sieve.
	Carburettor/fuel filter/tank are covered with resin.	Call service staff.
The power output is insufficient.	The electronic controller has been altered.	Call service staff.
	The electronic controller is defective.	Call service staff.
	Maintenance of the engine was inadequate.	Follow the engine maintenance instructions.
	Too much power is drawn.	Reduce power draw.
The alternator runs jerkily.	The alternator is loaded beyond the nominal output.	Reduce power draw.
Individual phases appear red on the multifunctional display	Too much power is being taken off / the load is being taken off on one one side.	3~: reduce power take-off / 1~: Distribute the load evenly
The protective conductor test lamp does not light up.	The test cable is not inserted properly.	Insert the test cable properly.
	The test tip is not touching a metallic blank location on the device.	Hold the test tip on a blank metallic place.
	Test lamp is defective	Call service staff.
	The protective conductor is defective.	Disconnect the device from the generator.
	The protective conductor is missing.	Select the device with a protective earth.

Malfunction	Possible cause	Correction
Faults on the special equipment		
The engine does not start in remote start mode.	The remote start equipment connecting plug is not inserted properly.	Insert the remote start equipment connecting plug correctly.
	The automatic choke lifting magnet is defective.	Call service staff.
	The remote start equipment fuse is defective.	Replace the fuse.
The engine does not start in external start mode.	The external start equipment plug is not inserted properly.	Insert the external start equipment plug correctly.
	The high performance external start fuse is defective.	Replace the fuse.
The battery is not charging in charge retention mode.	The charge retention plug is not inserted properly.	Insert the charge retention plug correctly.
	The charge retention fuse is defective.	Replace the fuse.
Reduce idle speed does not work.	Rocker switch is in the OFF position.	Set the rocker switch to the ON position.
	The engine does not run for 5 minutes.	Wait for the minimum running time since an engine start.
	There is a load / electrical device switched in.	Switch off load / electrical device.
	The automatic choke lifting magnet is defective.	Call service staff.

Table 7.1: Problems during generator operation

Notes

8 Technical Specifications

The technical specifications are described in this section.
Describes the operation of the generator.

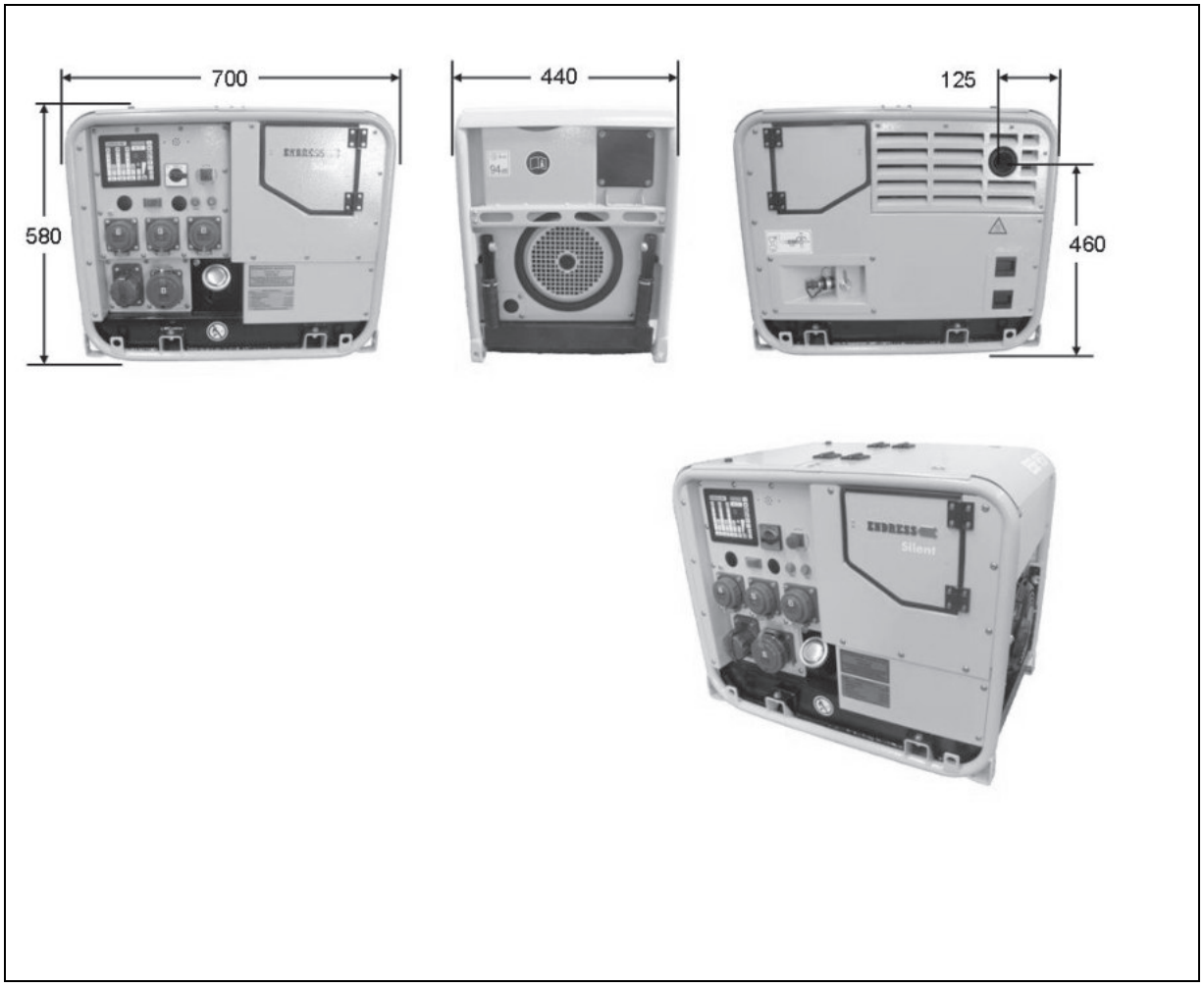


Figure 8-1: Generator dimensions

Technical specifications

Name	Value		Unit
Type	**ESE 607 DBG (ES) DIN**	**ESE 957 DBG ES DIN**	
Nominal output	6.0	9.0	[kVA]
Nominal output factor	0.8	0.8	[cos]
Nominal frequency	50	50	[Hz]
Nominal speed	3000	3000	[min^{-1}]
Nominal voltage 3~	400	400	[V]
Nominal voltage 1~	230	230	[V]
Rated current 3~	8.7	12.9	[A]
Rated current 1~	17.4	26.1	[A]
Voltage tolerance (idling – nominal power)	± 5	± 5	[%]
Weight (ready for use)	115	145	[kg]
Tank capacity (lead-free normal ROZ91 petrol)	18	18	[l]
Length	700	700	[mm]
Width	440	440	[mm]
Height	580	580	[mm]
Sound power level L_{WA} *	93	94	[db (A)]
Sound pressure level L_{PA} at a distance of 7 m *	68	69	
Sound pressure at the work place L_{PA} (1.6m above the machine, 1m distance) *	85	86	[db (A)]
Protection Class	IP 54	IP 54	

Table 8.1: Generator technical data

** Measurement procedure according to ISO 3744 (Part 10)*

Ambient conditions

Name	Value	Unit
Setting up height above sea level	< 100	[m]
Temperature	< 25	[°C]
Relative air humidity	< 30	[%]

Table 8.2: Ambient conditions for the generator

Reduced power

Power reduction	for each additional	Unit
1 %	100	[m]
4 %	10	[°C]

Table 8.3: Generator power reduction dependent on ambient conditions

Distribution network

Line	max. line length	Unit
HO 7 RN-F (NSH öu) 1.5 mm^2	60	[m]
HO 7 RN-F (NSH öu) 2.5 mm^2	100	[m]

Table 8.4: Maximum line length of the distribution network as a function of the cable cross-section

The general limitation of 100 m for the overall length was selected in the interest of safe handling during practical use. Larger dimensioning of the distribution network is only to be undertaken by a qualified electrician or trained personnel.

Notes