



OPERATING INSTRUCTIONS

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ESE 604 DBG ES FS DIN	Article No. 151022
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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



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.

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

1.1 Further documents

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)
- Circuit diagram for the generator
- Test protocol for the power generator
- Regulations for handling the battery

The operating manual and the maintenance instructions from the engine manufacturer are integral components of these instructions and must be observed.

1.2 Used signs and symbols

The signs and symbols in these operating instructions help you to use the operating instructions and the device quickly and safely.

1.2.1 General signs / symbols



Advanced Organizer

The Advanced Organizer informs you briefly about the contents of the following chapter.

NOTE Note

The reference note informs you about the most effective and/or most practicable way to use the equipment and these operating instructions.

1. Operating steps

2. ...

3. The defined sequence of the operating steps facilitates correct and safe use of the equipment.

✓ Result

The result of a sequence of operating steps is described here.

1.2.2 Safety 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 activities during which there is the danger of an electric shock, possibly with lethal consequences.

Poisonous substances



This warning symbol indicates activities during which there is the danger of poisoning, possibly with lethal consequences.

Environmentally damaging substances



This warning sign indicates activities during which the environment could be endangered, possibly with catastrophic consequences.

Hot surfaces



This warning symbol indicates activities during which there is the danger of burns, possibly with lasting consequences.

Notes

2 General Safety Regulations



This section describes the basic safety regulations for operating 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
 - Safety equipment removal
 - Incorrect vehicle installation
 - Non-compliance with maintenance intervals
 - Failure to measure and test for early damage identification
 - Failure to replace wearing parts
 - Incorrectly performed maintenance or repair work
 - Defectively performed maintenance or repair work
 - Unintended use
-

2.1.1 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 generator 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 methods that will be used to install the generator on these vehicle platforms require 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.

Every inappropriate use or all activities on the generator which are not described in these instructions are forbidden misuse outside the legally defined limits of liability of the manufacturer.

2.1.2 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
- Non-compliance with maintenance intervals
- Failure to measure and test for early damage identification
- Failure to replace wearing parts
- Incorrectly performed maintenance or repair work
- Defectively performed maintenance or repair work

- Unintended use

2.1.3 Residual risks

The points analysed and evaluated before beginning the design and planning of the ESE 604 / 854 (ES) (FS) DBG DIN generator were the residual risks using a risk analysis tool according to EN 1050.

Structurally unavoidable residual risks during the entire service life of the ESE 604 / 854 (ES) (FS) DBG DIN generator include:

- Risk of death
- Risk of injury
- Environmental hazards
- Material damage to the generator
- Material damage to other property
- Limited performance or functionality

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

Risk of death Risk of death to persons at the generator can be caused by:

- Incorrect use
- Inappropriate handling
- Missing protective equipment
- Defective or damaged electrical components
- Fuel vapours
- Engine exhaust gases
- Too large a distribution network configuration

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

- Inappropriate handling

- Transport
- Hot components
- 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 emission
- Noise emission
- Fire hazard
- Leaking battery acid

Material damage to the generator Material damage to the generator can occur through:

- Inappropriate handling
- Overloading
- Overheating
- Too low/high oil level of the engine
- Non-compliance with the operating and maintenance specifications
- Unsuitable operating fluids
- Unsuitable hoisting gear

Material damage to other property Material damage to other equipment in the operating area of the generator can be caused by:

- Inappropriate handling
- An overvoltage or an undervoltage
- Incorrect installation in a vehicle

Welding 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
- Too large a distribution network configuration

2.2 Operating personnel – qualifications and obligations

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

The authorised operating personnel must:

- be at least 18 years old.
- be trained in first aid and 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”.
- has understand the content of the chapter “General Safety Regulations”.
- be able to use and implement the content of the chapter “General Safety Regulations” in practice.
- be trained and instructed according to the rules of conduct in the event of a malfunction 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 alternator.
- have understood the technical documentation concerning his responsibilities, tasks and activities on the alternator and be able to implement these in practice.

2.3 Personal protective equipment

This 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)

2.4 Danger zones and work areas

The danger zones and work places (work areas) around the generator are determined by the activities to be undertaken 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	Radius of 5.0 m	Radius of 1.0 m
	Operating		
	Refuelling		
Service and maintenance	Cleaning	Radius of 1.0 m	Radius of 1.0 m
	Shutting down		
	Maintenance		

Table 2.1: Danger zones and work areas on the generator

2.5 Signs on the generator

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

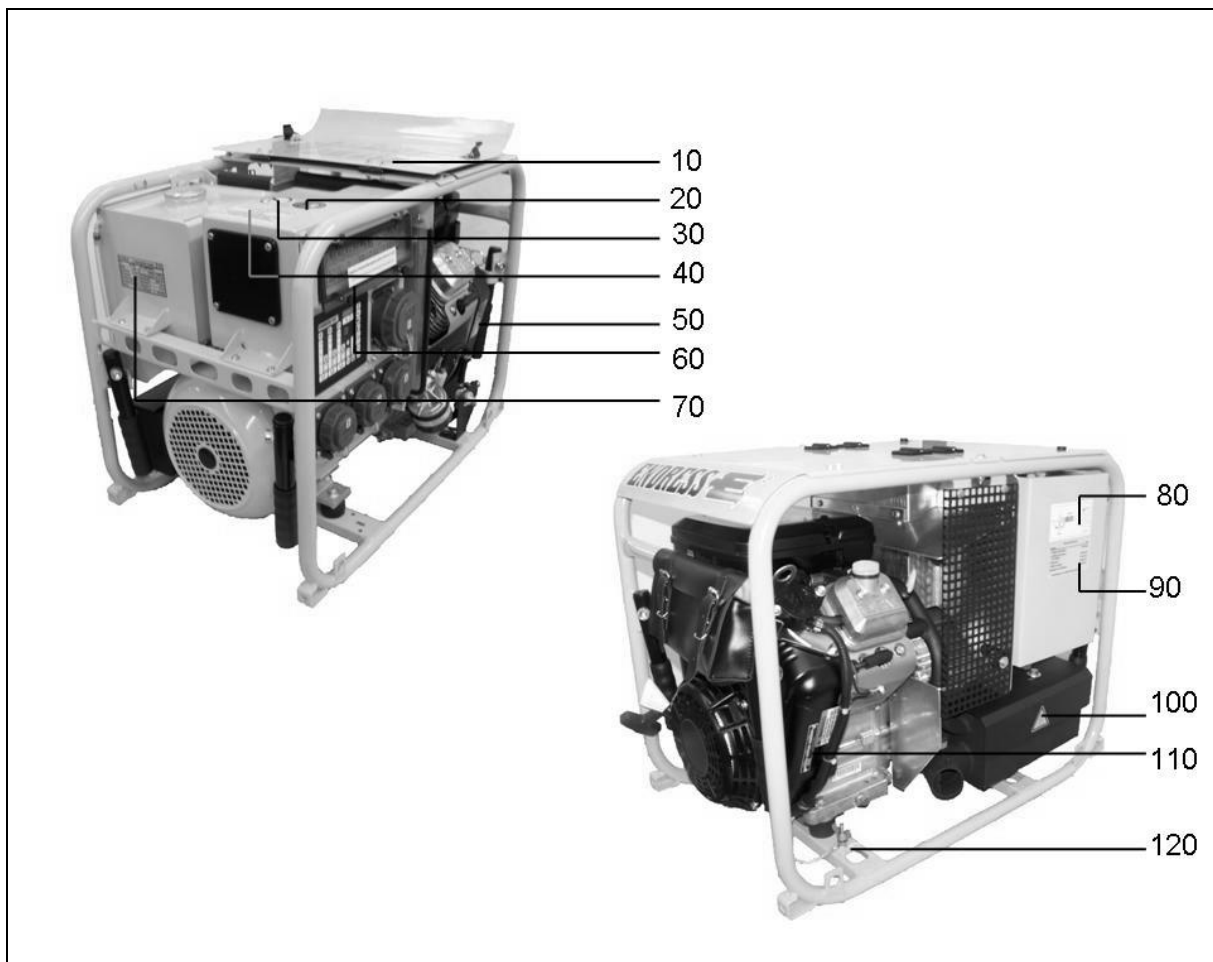


Figure 2-1: Signs on the generator

10	Abridged operating instructions (inside cover)	70	Nameplate
20	Reference note - read operating instructions	80	Reference note - three-way valve
30	Reference note - no naked flames	90	Maintenance note
40	Fuel note	100	Note on the hot surface
50	Note on speed set at the works	110	Motor model plate
60	Note on power network	120	Potential equalisation screw (for an FI earthing connection)

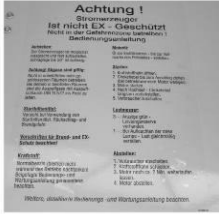


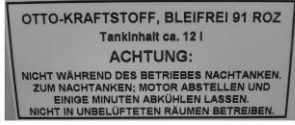
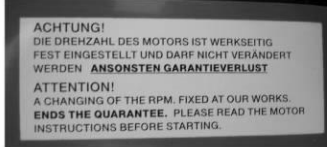
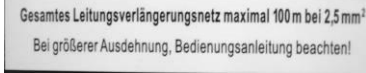
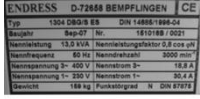
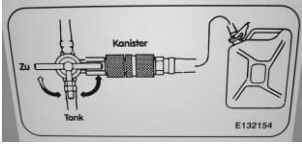
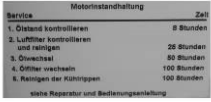



Sign	Name
	Short operating instructions (inner side of the flap)
	Read the operating manual
	Reference note - no naked flames
	Fuel note
	Note on engine speed set at the works
	Note Line extension
	Nameplate
	External refuelling
	Reference note - engine maintenance
	Hot surfaces
	Motor model plate
	Potential equalization (earthing for FI)

Table 2.2: Signs on the generator

2.6 General safety instructions

The generator's construction may not be modified in any way.

The motor's nominal rpm has been set in the factory and may not 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 open flames, lights, or spark-inducing devices in the generator's danger area.

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

Protect the generator against dirt and foreign matter during operation.

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

The authorised personnel are responsible for safeguarding the generator 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.

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

Open flames and light are prohibited in the generator's danger zone.

Consuming alcohol, drugs, medicines, or other consciousness-expanding and/or changing substances is prohibited.

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

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

The generator may only be transported in a vehicle after being 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 may 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 entire drawn output must not exceed the maximum nominal output 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 fuel tank on the generator when 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 when it is still hot.

Decommissioning

The generator should be put out of service if it is not required for more 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

One 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 use.

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 Description of the ESE 604 / 954 DBG DIN generator



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

3.1 Components of the ESE 604 / 954 DBG DIN generator

The generator components are distributed on all four sides.

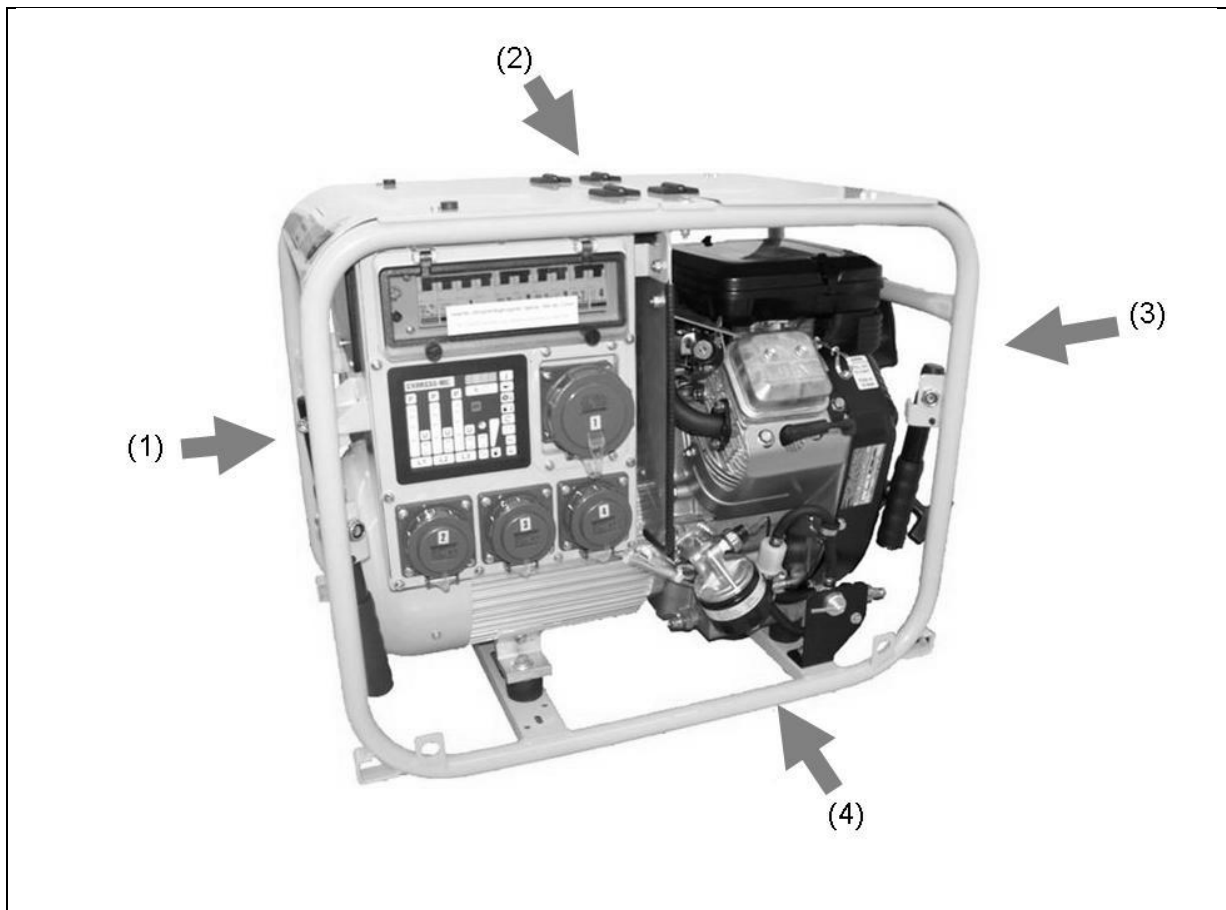


Fig. 3-1: Views of the generator

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

3.1.1 Components of the operating and generator side

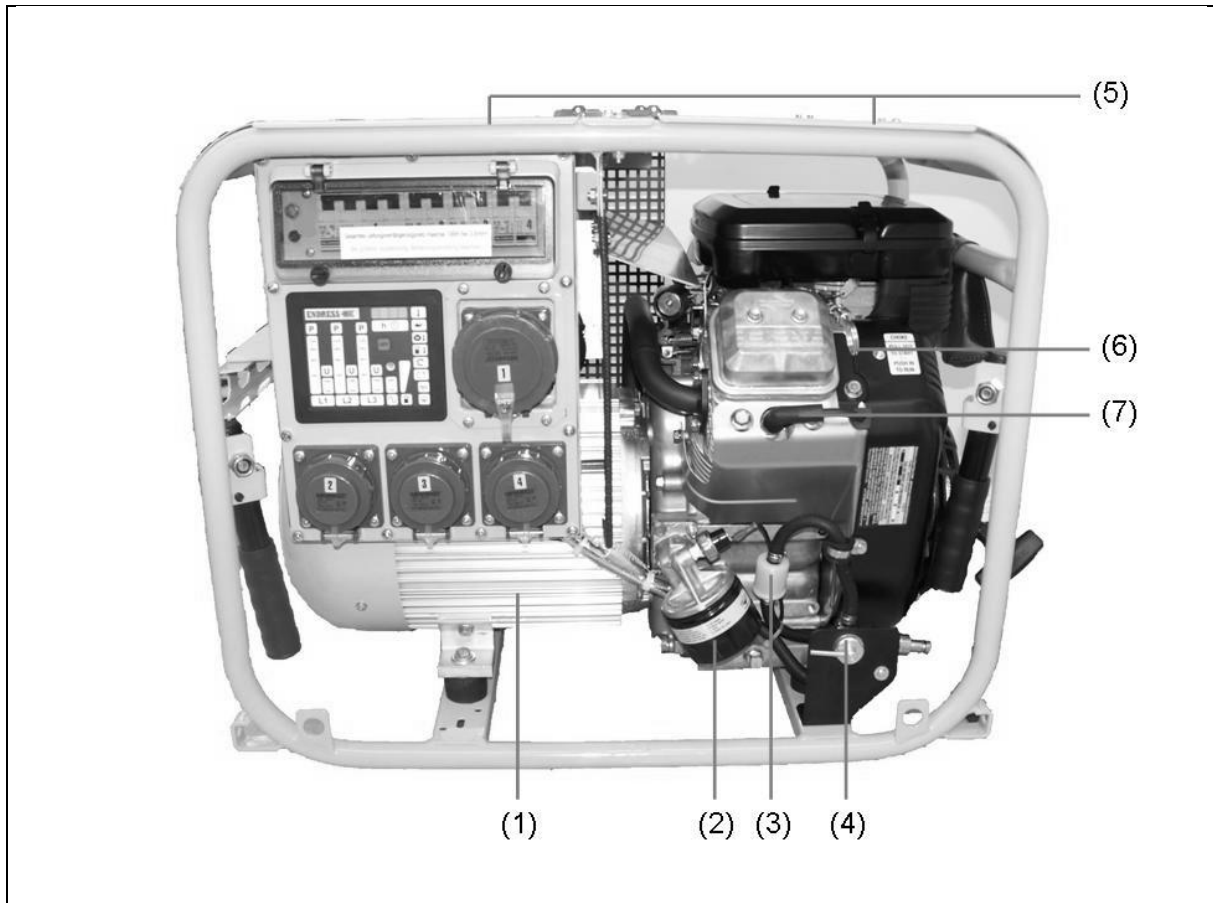


Fig. 3-2: Components of the operating and generator side

1	Alternator	5	Cover flaps
2	Oil filter	6	Cold start (choke), engine
3	Fuel filter	7	Spark plug connector
4	3-way fuel valve (optional)		

3.1.2 Exhaust and engine side components

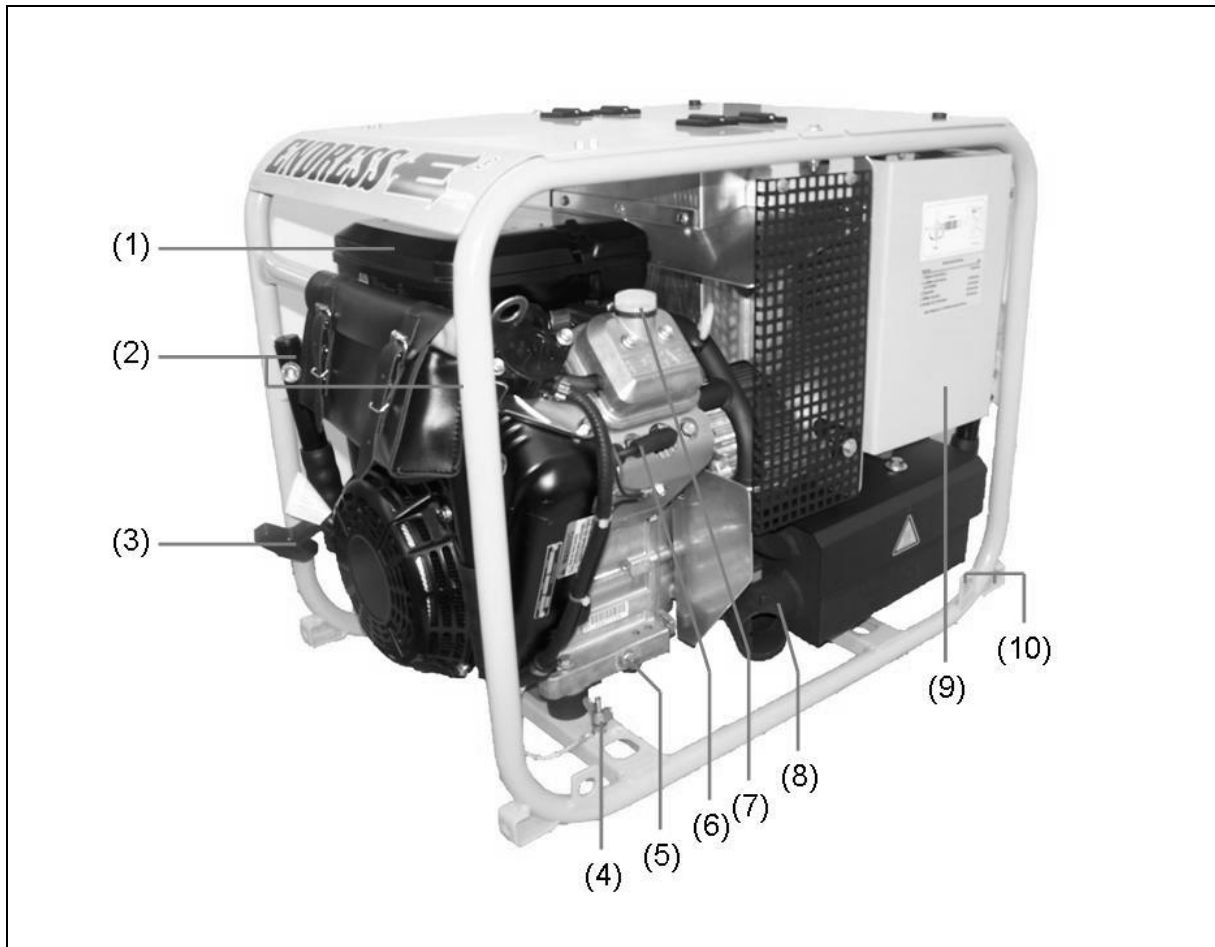


Figure 3-3: Exhaust and engine side components

1	Air filter	6	Spark plug connector
2	Carrying handle	7	Oil filling screw
3	Starter grip for the engine	8	Exhaust
4	Potential equalization (earthing for FI)	9	Tank
5	Oil drain screw	10	Fixing points according to DIN14685

3.1.3 Control panel components

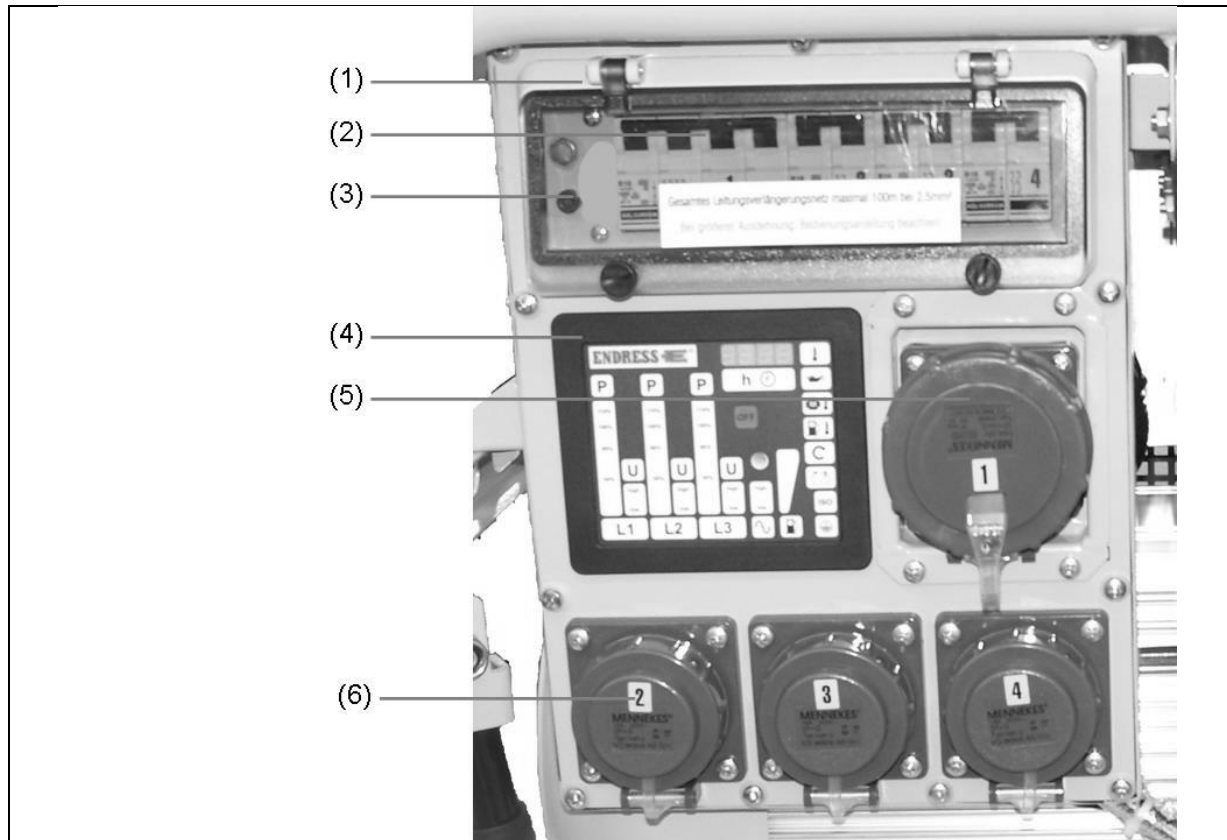


Fig. 3-4: Control panel components

- | | | | |
|---|---|---|---------------------------------------|
| 1 | Frame for fuse boxes | 4 | Multi-functional display |
| 2 | Fuses | 5 | CEE 400V/16A according to
DIN49462 |
| 3 | Insulation monitoring test socket
(valid for devices up to year of construction 12/2015) | 6 | Schuko 230V according to DIN49442 |

3.1.4 Accessory components

3.1.4.1 Standard accessories



Figure 3-5: Components of the standard accessories

- | | | | |
|---|---|---|---|
| 1 | Spark plug wrench | 4 | Test probes
(valid for devices up to year of construction 12/2015) |
| 2 | User information (operating instructions for the engine, as well as these operating instructions) | 5 | Spark plugs (2x) |
| 3 | Testing cable
(valid for devices up to year of construction 12/2015) | | |

3.1.4.2 Special accessories



Fig. 3-6: Components of the special accessories

- | | | | |
|---|-----------------------------|---|---|
| 1 | Fuelling device | 3 | Exhaust hose DN 50 – 1500 mm according to DIN 14572 |
| 2 | 20 litre standard container | | |

3.2 Function and mode of operation

The synchronous generator 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 earthed power and CEE sockets with a nominal voltage of 230 and/or 400 V/50 Hz supply the power.

An integrated voltage regulator controls the voltage of the generator in the nominal speed range of the generator.

The generator is designed for mobile operation with one or more 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 604 / 954 DBG DIN generator



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 met:

- The generator must be turned off
- The generator must have cooled down.
- The 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 of about 120 kg into account.
- Carry the alternator using at least one person per carrying handle.
- Only lift the alternator by the carrying handles.
- Lift / lower the alternator evenly.
- Walk slowly.

Carrying the generator

1. Unfold carrying handles.
 2. Lift generator evenly.
 3. Carry the generator to the work site.
 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 met:

- An even and firm substratum outdoors
- There are no inflammable materials at the operating site
- There are no explosive materials at the operating site

**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 met:

- The generator must be switched off (see 4.5).
- The device must be cooled down.
- Adequate ventilation must always 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!

Leaking engine oil can contaminate the soil and groundwater.

- Do not fill the tank completely.
 - Use a filling aid.
-



WARNING!

Using the wrong fuel will destroy the engine.

- Only refuel with lead-free regular grade petrol RON 91.
-

Refuelling the device

Refuel the generator as follows:

1. Set the fuel cock to “closed” (*Figure 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 cover
- ✓ The device is refuelled.

4.4 Starting the generator

Proceed as follows to start the generator.

Requirements The following requirements must be met:

- Electrical safety check (see 6.3)
- Fuel tank has been filled (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)
- ventilation must be adequate.
- Fit push-on exhaust gas pipe (special accessory) if needed
- 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 operating site.
- Avoid explosive materials at the operating site.

**WARNING!**

Heat or moisture destroys the device.

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

Starting the motor Start the engine as follows:



Figure 4-1: Started by hand:

- HAND START**
1. Pull on the choke (*Figure 4-1-(1)*) (completely for a cold engine / appropriately less for a warm engine) and hold firmly.
 2. Place the red engine switch (*Figure 4-1-(2)*) in Pos. "1".
 3. Advance engine at the hand grip of the reversing starter.

NOTE Support oneself with one hand on the device grip in order to simplify advancing the engine.

- ✓ The motor starts.
- 4. Move the choke slowly back into its start position.
- ✓ The engine has started.

NOTE The electrical devices can be connected and/or hooked up after a warming-up phase of about one minute.

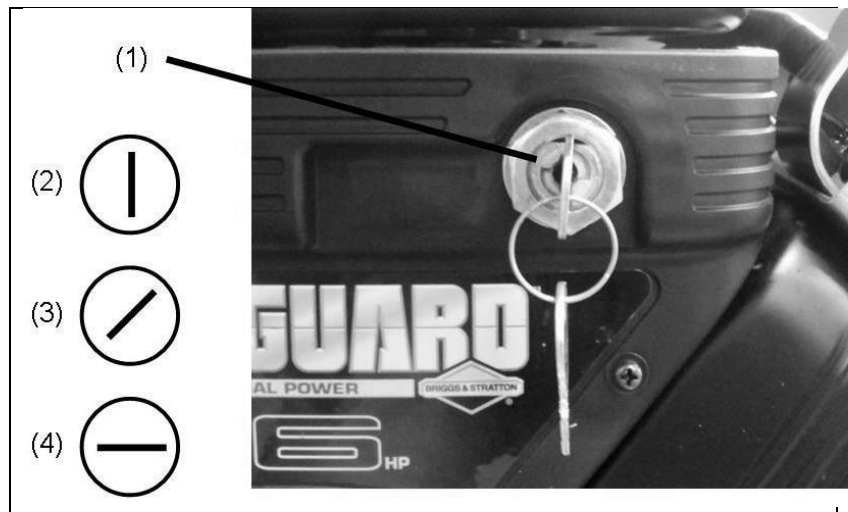


Figure 4-2: Electrical start

ELECTRICAL

1. Pull on the choke (Figure 4-1-(1)) (completely for a cold engine / appropriately less for a warm engine) and hold firmly.
2. Bring the key-operated switch (Figure 4-2-(1)) into pos. Start (Figure 4-2-(4)).

Note

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

- ✓ The motor starts.
3. Bring the key-operated switch into the pos. Operation (Figure 4-2-(3)).
 4. Move the choke slowly back into its start position.
- ✓ The engine has started.

NOTE

The electrical devices can be connected and/or hooked up after a warming-up phase of about one minute.

When the special equipment Remote Start is installed

(Type No: 151022 / 151024)

See Chapter 5.4 Remote start device



WARNING!

Devices with a remote start device are fitted with an automatic choke. You do not need to use the manual choke (on the engine).

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 operating site.
 - Avoid explosive materials at the operating site.
 - Allow the generator to cool down.
-

Switching the device off

The device is switched off as follows:

Started by hand:

1. Switch off or disconnect devices.
2. Continue to run the engine for about two minutes.
3. Place the red engine switch (*Figure 4-1-(2)*) in pos. "0".

Electrical start

1. Switch off or disconnect devices.
2. Continue to run the engine for about two minutes.
3. Place the key-operated switch (*Figure 4-2-(1)*) in pos. STOP (*Figure 4-2-(2)*).

Special equipment Remote Start

See Chapter 5.4 Remote start device

4.6 Connecting up to consumers

Proceed as follows to connect appliances to the generator.

Requirements The following requirements must be met:

- generator started
- protective earthing conductor tested
- device switched off



WARNING!

Electric shocks cause injury or death.

- Do not earth the generator.
- Do not connect protective conductor to an existing potential equalisation line.
- Do not connect the generator to an existing electrical grid.

Connecting up to consumers

You can connect devices using Schuko or CEE sockets.



Fig. 4-3: Connecting up to consumers

Connecting up to consumers

Proceed as follows to connect a device to the control panel:

1. Unscrew covering on the socket .
 2. Push the plug into the socket.
- ✓ The consumer is connected to the generator.

Switching the consumer on

Switch the consumer on as follows:

1. Switch consumer on.
- ✓ Consumer is connected.

**Switching the consumer
off**

Switch the consumer off as follows:

1. Switch consumer off.
- ✓ Consumer is switched off.

**Disconnecting an
appliance**

Disconnect a consumer from the control panel as follows:

1. Remove plug.
2. Screw cover onto the socket .
- ✓ The consumer is disconnected from the generator.

4.7 Check the protective conductor (valid for devices up to year of construction 12/2015)

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

Requirements The following requirements must be met:

- generator has been started (see 4.4)
- device is connected (see 4.6)
- device switched off



WARNING!

Electric shocks cause injury or death.

- Do not earth the generator.
- Do not connect protective conductor to an existing potential equalisation line.
- Do not connect the generator to an existing electrical grid.

Check the protective conductor

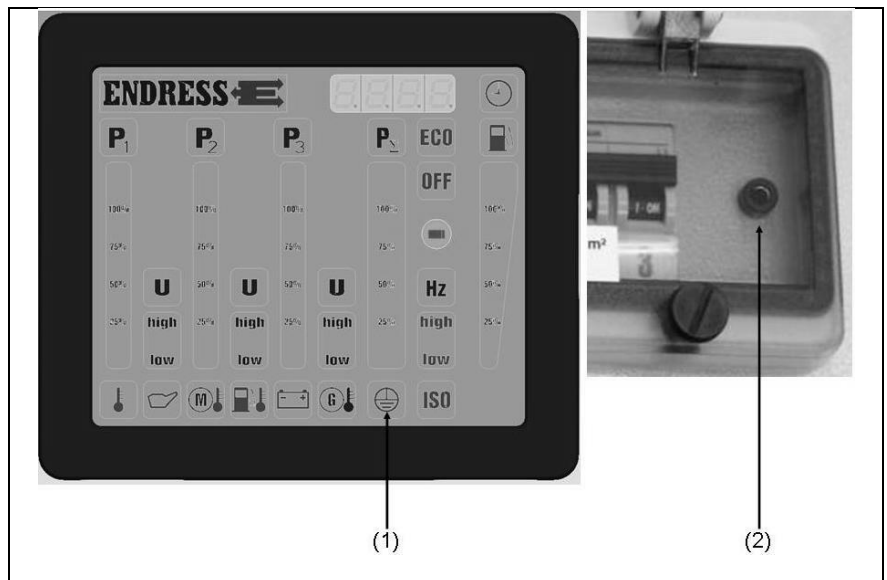


Figure 4-4: Check the protective conductor

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 device.
- ✓ The test lamp (Figure 4-4-(1)) on the multifunction 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 device has been checked.

4.8 Monitoring the operating status using the multifunction display

Manual start / Electrical start The display is only activated after the generator has been started.

Electrical start with Remote Start All LEDs light up for about 2 seconds to allow checking as soon as the START-STOP switch is set to the position "ON". 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 "OFF". The display intensity depends on the ambient light.

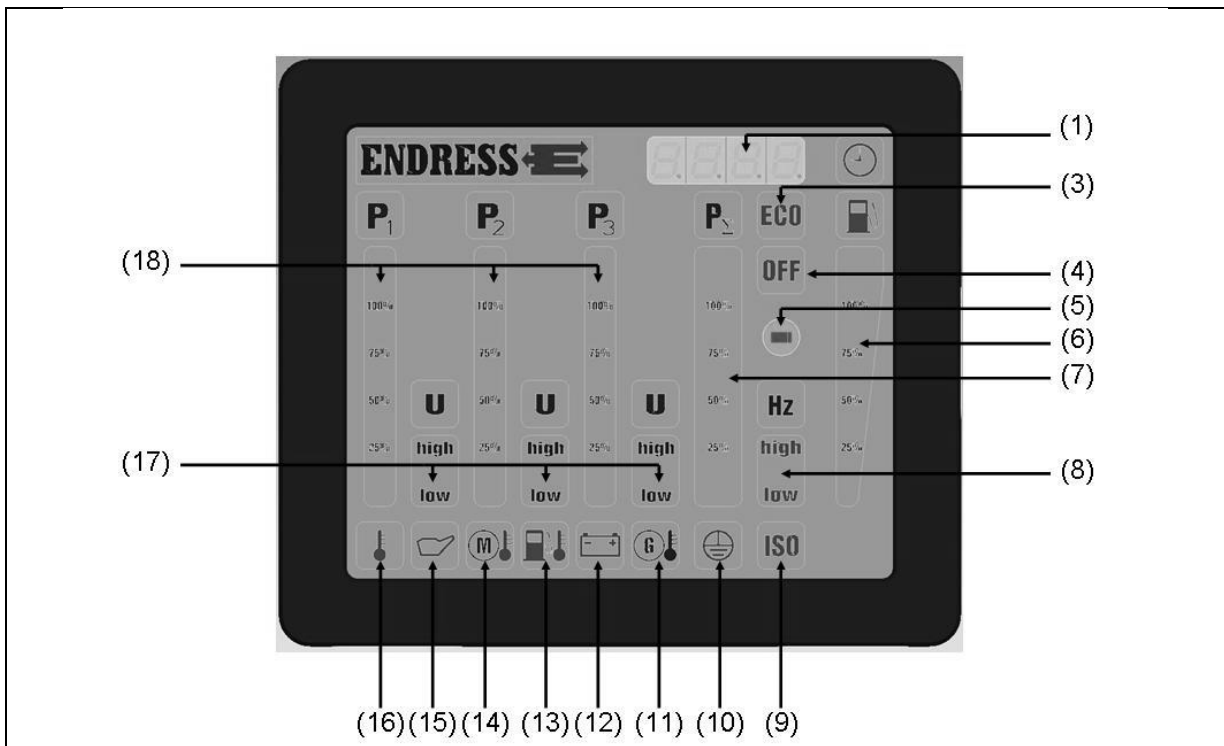


Figure 4-5: Multi-functional display

Operating hours: Displayed (see Figure 4-55-(1)) when the generator has started or is activated for 30 seconds when the START / STOP switch is turned to 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 is red (see Figure 4-55-(15)) whilst the generator is running then the oil pressure is too low and the generator switches off automatically or the buzzer sounds, this can be acknowledged using the acknowledgement button.
(Buzzer only active for the ordered "Insulation monitoring", "Firecan") special fitting
- 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 generator'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 glows green (see Figure 4-55-(10)) during the protective earth lead test (see chapter 4.7 Protective earth lead test), the protective earth leads for the attached devices are OK. If the protective earth conductor function is not available, the display remains blank.
- Fuel tank filling level:** There is no electrical tank sensor for this device. Display is only possible using the optical tank sensor.
- Relative load indicator:** Load (P_{Σ}) (see Figure 4-6-(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 Figure 4-5-(4)) and the buzzer sounds, the EMERGENCY OFF button has been pressed. The buzzer can be acknowledged using the acknowledgement button.
(Buzzer only active for the ordered "Insulation monitoring", "Firecan") special fitting
- Frequency:** If the display glows green (see Figure 4-5-(8)), 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 4-5-(18)*) are displayed separately:

Voltage (U) (see *Figure 4-5-(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 4-5-(18)*):

The utilisation will be displayed in 10% steps for 3-phase loads. 10 - 80% green, 80 - 100% yellow and 100 - 110% red.

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), the load should be distributed evenly over the 3 existing phases.

4.9 Putting the generator out of service

The generator should be put out of service if it is not required for more than 30 days. It is best to use a cloth to cover the generator.

NOTE The correct putting out of service procedure is described in the engine's operating manual and maintenance instructions (Briggs & Stratton Corporation) (*Figure 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 Special fittings / using accessories

5.1 FI protection switch

The FI circuit breaker (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 to the earthing spike by at least 16mm² of earthing cable (green/yellow). The spike must be driven into the ground. BG Bau recommends an earthing resistance of $\leq 50\Omega$ (see BGI 867).
2. Alternatively, a proper earthing device conforming to VDE 0100-540 can be used (such as the main earthing line in buildings).



WARNING!

The generator must be earthed.

- In this special case the generator must be earthed! The above-mentioned safety warnings with other wording are not relevant for this special fitting.

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. Additionally, every work day, the user must check the mechanical operation of the release by activating the test button (*see unterhalb Figure 5-1-10*) on the residual current protection device (RCD).

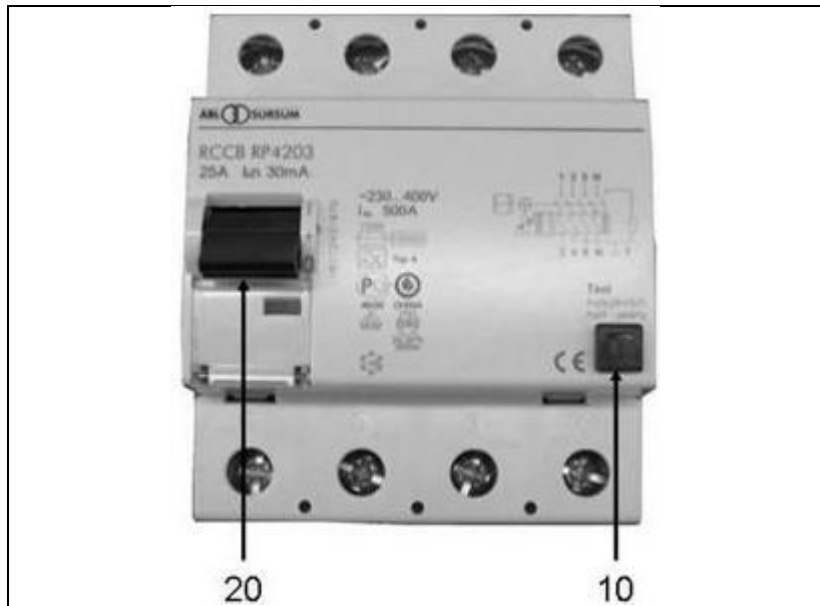


Figure 5-1: FI protection switch

Checking the FI protection switch:

1. The generator must be started.
 2. Put the protection switch (see Figure 5-1-(20)) into position 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 compliance with DIN VDE 0100-551.

5.2 Insulation monitoring using E-MCS 4.0

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

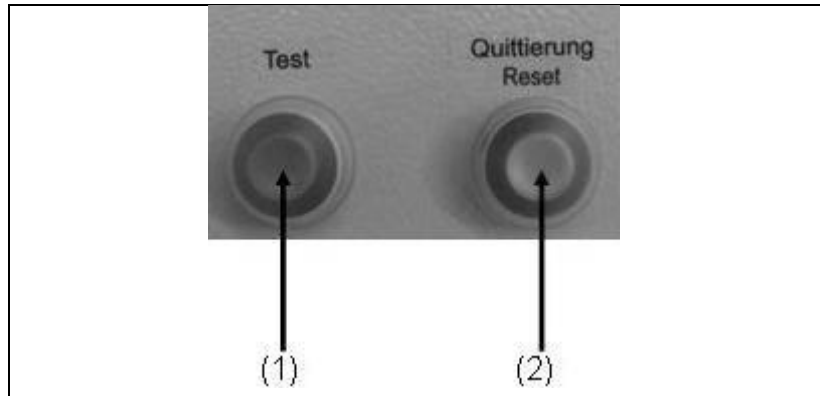


Figure 5-2: Insulation monitoring using E-MCS 3.0

5.2.1 Insulation monitoring without switching off

(Standard for a DIN generator)

Requirements The following requirements must be met:

- Generator has been started (see **Fehler! Verweisquelle konnte nicht gefunden werden.**)

Testing the insulation monitoring:

1. Unplug the device
 2. Press the test button (see Figure 5-2-(1))
- ✓ The displayed symbol (see Figure 4-55-(9)) indicates the result, the buzzer also sounds for insulation monitoring with this and it can be acknowledged over the acknowledgement button (see Figure 5-2-(2)):

Symbol	Significance
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.
1. The reset button (see Figure 5-2-(1)) must be pressed after the test, so that the unit can be operated again.

Insulation monitoring whilst running:

1. Plug in the device and switch on.
- ✓ The displayed symbol (see Figure 4-5-(8)) indicates the result:

Symbol	Significance
Yellow	Insulation fault ($\leq 23 \text{ k}\Omega$)
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 device connected (see insulation monitoring above), the insulation fault has been caused by the device.
2. The reset button (see Figure 5-2-(1)) must be pressed after switching off and disconnecting the consumer so that the unit can be operated again.

Function reset/acknowledgement button:

Action	Operation
Press once	Acknowledge the buzzer
Press twice	Reset ISO

5.2.2 Insulation monitoring with switch off

Requirements The following requirements must be met:

- Generator has been started (see 4.4)

Testing the insulation monitoring:

1. Unplug the device
2. The circuit breaker must be in Pos. 1.
3. Press the test button (see Figure 5-2-(2))
- ✓ The displayed symbol (see Figure 4-5-(8)) and the position of the circuit breaker indicate the result:

Symbol	Result	Significance
lights up red	Circuit breaker jumps to Pos. 0 and the generator cuts out	Insulation monitoring is OK
stays off	Circuit breaker stays in Pos. 1 and the generator continues to run	Insulation monitoring is defective

Table 5.4: Insulation monitoring plus switching off

- ✓ The insulation monitoring test has been run.
- 4. The circuit breaker must be returned to Pos. 1 after the test has been completed and the generator must be re-started so that it can be used again.

Insulation monitoring whilst running:

1. Plug in the device and switch on.
- ✓ The displayed symbol (see *Figure 4-5-(8)*) and the position of the circuit breaker indicate the result:

Symbol	Significance
lights up red	Insulation fault ($\leq 23 \text{ k}\Omega$)
Yellow	Insulation fault ($\leq 34.5 \text{ k}\Omega$)
stays off	Connected unit is OK

Table 5.5: Insulation monitoring whilst running without switching off

- ✓ If an insulation fault exists and the unit was previously OK when tested without a device connected (see above), the insulation fault has been caused by the device.
- 2. After the device has been switched off and unplugged, the circuit breaker must be returned to Pos. 1, and the generator must be restarted, in order for the device to be operated again.

5.3 Speed lowering in idle

Proceed as follows to operate the generator with idle down.

Requirements The following requirements must be met:

- generator is ready for operation
- generator has been started (see 4.4)

Switching the idle down on

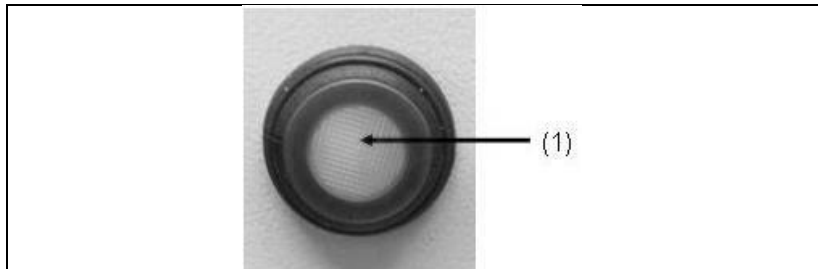


Figure 5-3: Switching the idle down on pressure switch

Switch on idle speed reduction as follows:

Press pressure switch (Figure 5-3-(1)) until it engages (LED lights up green).

- ✓ Idle down is activated.

ATTENTION The idling speed reduction is active for about 5 minutes after engine start and then lowers the rotational speed of the engine, in as far as no load is engaged, to about 1800 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 down off **Switch the idle down off as follows:**

Press the press switch again (LED goes out).

- ✓ Idle down is switched off.

5.4 Remote start device

Standard for type no.: 151022 / 151024

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

Requirements The following requirements must be met:

- generator is ready for operation



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 a remote start device

Connect up the remote start device as follows:

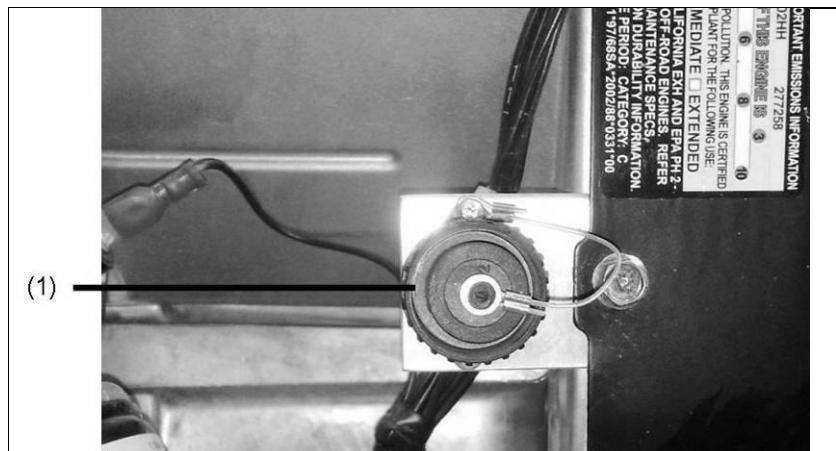


Figure 5-4: Connecting up a remote start device

1. Unscrew protective cap on the remote start socket (Figure 5-4-(1)).
 2. 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.
 2. Screw protective cap onto the remote start socket (Figure 5-4-(1)).
- ✓ Remote start device is disconnected.

Starting the motor

Start the engine manually as follows:

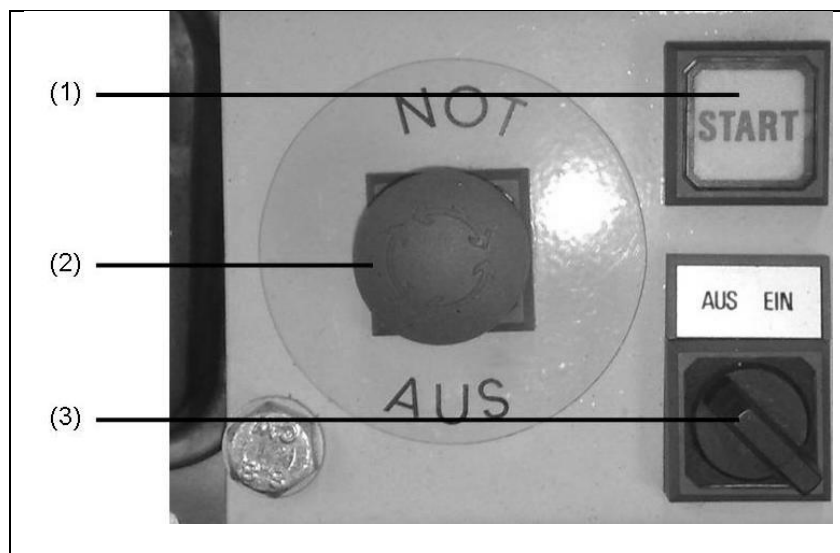


Figure 5-5: Electrical start in combination with remote start

ELECTRICAL

1. The EMERGENCY-OFF button (Figure 5-5-(2)) must not be pressed.
2. Place operating switch (Figure 5-5-(3)) in pos. ON.
3. Press the start knob (Figure 5-5-(1)).

NOTE

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

- ✓ The motor starts.
4. Release the start knob.
- ✓ The engine has started.

NOTE

The electrical devices can be connected and/or hooked up after a warming-up phase of about one minute.

Switching the device off **The device is switched off as follows:**

- Electrical start**
1. Switch off or disconnect devices.
 2. Continue to run the engine for about two minutes.
 3. Place operating switch (*Figure 5-5-(3)*) in Pos. OFF.



WARNING!

In an emergency, the generator can be stopped by pressing the “EMERGENCY-OFF switch” (*Figure 4-2-(1)*). The button is turned to the left or the right to restart the aggregate until the locking is removed again.

Note We request that you only switch off the device using the EMERGENCY-STOP switch in an emergency. Otherwise always switch off using the START-STOP switch! Switching off using the EMERGENCY-STOP switch 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.

5.5 External start device

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

Requirements The following requirements must be met:

- generator has been started (see 4.4)

Connecting up an 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.
- ✓ External start device is ready for use.
 - ✓ The engine can be started using the electrical start.

Disconnecting the external start device

Disconnect the external 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.
- ✓ External start device is disconnected.

5.6 Battery charge retention

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

Requirements The following requirements must be met:

- generator is ready for operation

Connecting up the battery charge conservation device

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

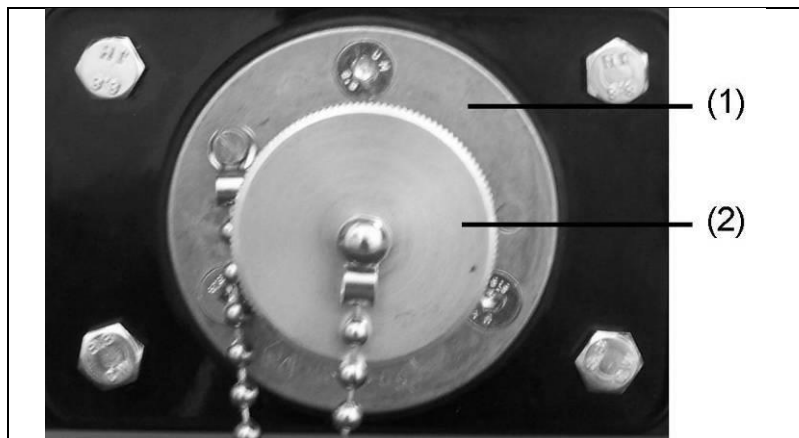


Figure 5-7: Connecting up the battery charge retention device

1. Unscrew cover (Figure 5-7-(2)) for socket (Figure 5-7-(1)) for the starter battery charge conservation 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 conservation device is ready to operate.

Disconnect the battery charge conservation device as follows:

1. Release the plug by turning to the left and then pull the plug for the external energy source (e.g. a battery charging device) / charge conservation device socket connecting cable out.
2. Screw on protective cap (Figure 5-7-(2)) for charge conservation device socket.

- ✓ The charge conservation device is disconnected

Connecting up the battery charge conservation device

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

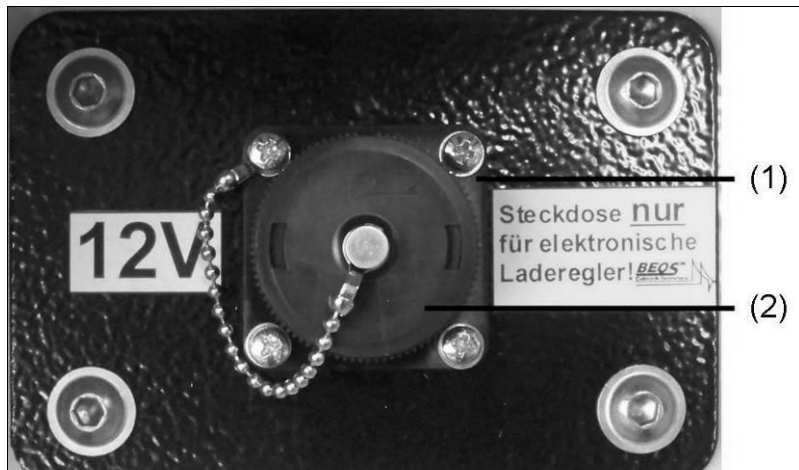


Fig. 5-8: Connecting up the battery charge retention device

1. Unscrew cover (Figure 5-7-(2)) for socket (Figure 5-7-(1)) for the starter battery charge conservation 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 conservation device is ready to operate.

Disconnect the battery charge conservation device as follows:

1. Release the plug by turning to the left and then pull the plug for the external energy source (e.g. a battery charging device) / charge conservation device socket connecting cable out.
 2. Screw on protective cap (Figure 5-7-(2)) for charge conservation device socket.
- ✓ The charge conservation device is disconnected

Connecting up the battery charge conservation device

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

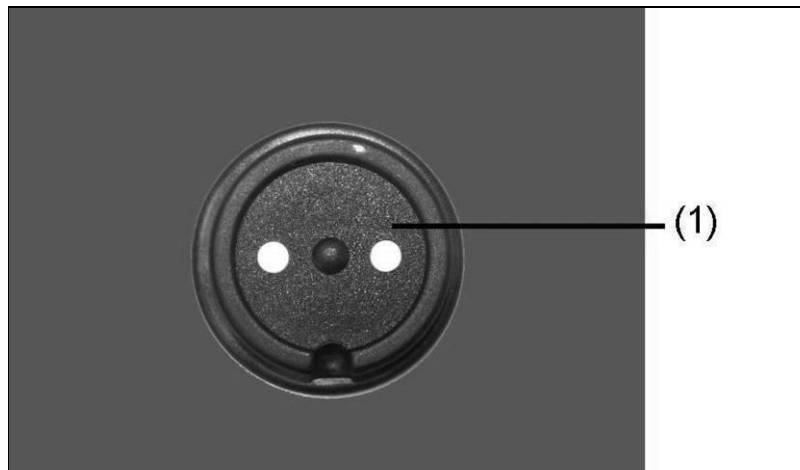


Fig. 5-9: Connecting up the battery charge retention device

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 conservation device is ready to operate.

Disconnect the battery charge conservation device as follows:

1. Pull off plug for the external energy source (e.g. a battery charging device) / charge conservation device socket connecting cable.
- ✓ The charge conservation device is disconnected

5.7 3-way fuel valve / Refuelling device

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

Requirements These requirements must be fulfilled:

- generator is ready for operation
- 3-way fuel valve

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

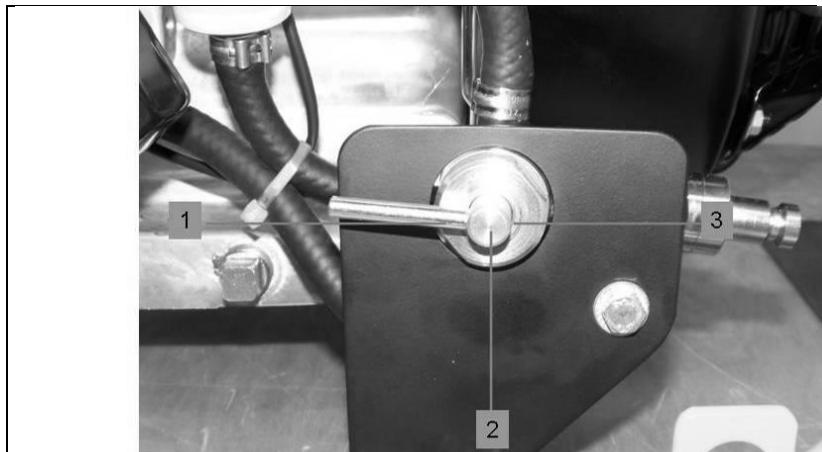


Figure 5-10: 3-way fuel valve

Switch position	Operation
1	CLOSED
2	OWN TANK
3	EXTERNAL REFUELLING

Table 5.6: Switching positions of the 3-way fuel tap

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.

- Only refuel with lead-free regular grade petrol RON 91.

Connect up fuelling device



Figure 5-11: Connect up fuelling device

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 (*Figure 5-11-(1)*) on the external fuelling connection (*Figure 5-11-(2)*).
 3. The quick-action coupling engages.
- ✓ The fuelling device is attached.

Disconnect fuelling device:

Disconnect fuelling device from the generator by:

1. Pulling back the knurled sleeve on the quick-action coupling (*Figure 5-11-(1)*).
- ✓ 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.

Connect up canister Connect the canister 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 the canister during operation Change an empty canister during operation as follows:

1. Place the full canister next to the empty canister.
2. Open sealing cap on the full canister.
3. Set the fuel cock to the internal tank (*Figure 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 fuelling device.
- ✓ The canister is attached.
8. Set the fuel cock to "external fuelling" (*Figure 5-10-(3)*).
- ✓ The empty canister is exchanged.

5.8 Exhaust hose

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

Requirements The following requirements must be met:

- Generator is ready for operation



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

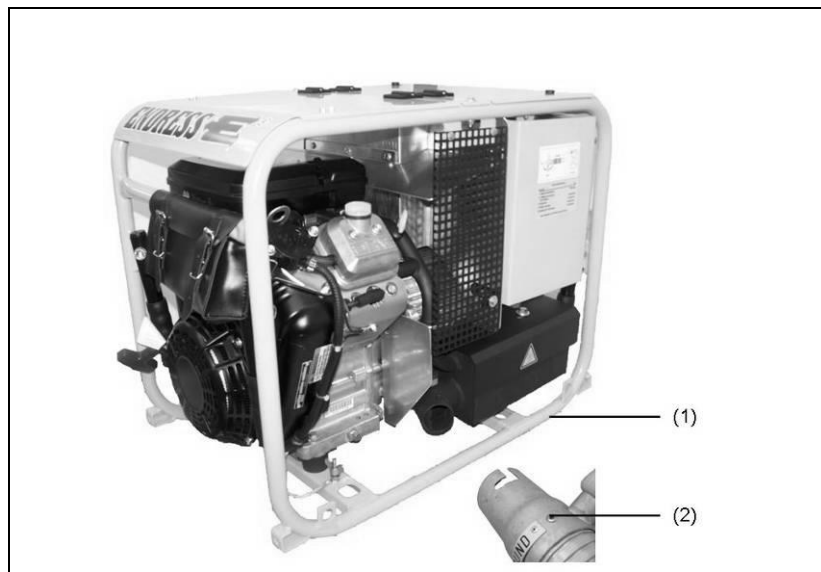


Fig. 5-12 Connecting the exhaust hose

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 plugged in.

**Disconnecting the exhaust
hose**

Disconnect the exhaust hose from the generator by:

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 Servicing and maintaining the ESE 604 / 854 DBG DIN generator



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	annual-ly
Checking the electrical safety	before each start-up					
Checking the oil		X				
Changing the oil	X			(X) ¹⁾		
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) Every 25 hours when operating under a heavy load or at high ambient temperatures.

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.

Perform all work in the maintenance plan according to the information in the engine's operating and maintenance manual (*Figure 3-5-(2)*). These operating and maintenance instructions of the engine manufacturer are an integral component of these operating instructions.

6.2.1 Motor oil



WARNING!

Leaking engine oil can contaminate soil and groundwater.

- Use an oil collection container.
- Recycle used motor oil



WARNING!

Engine oil can be hot — risk of burns.

- Allow motor to cool

Requirements The following requirements must be met:

- 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 Check the oil level as follows:

1. Pull out the dipstick (*Figure 6-1-(2)*) and wipe it off with a clean cloth.
 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 (see below).
- ✓ The oil level has been checked.

Refilling with oil Pour in oil as follows:

1. Remove oil screw plug (*Figure 6-1-(1)*). Pull out the dipstick for easier filling (*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.

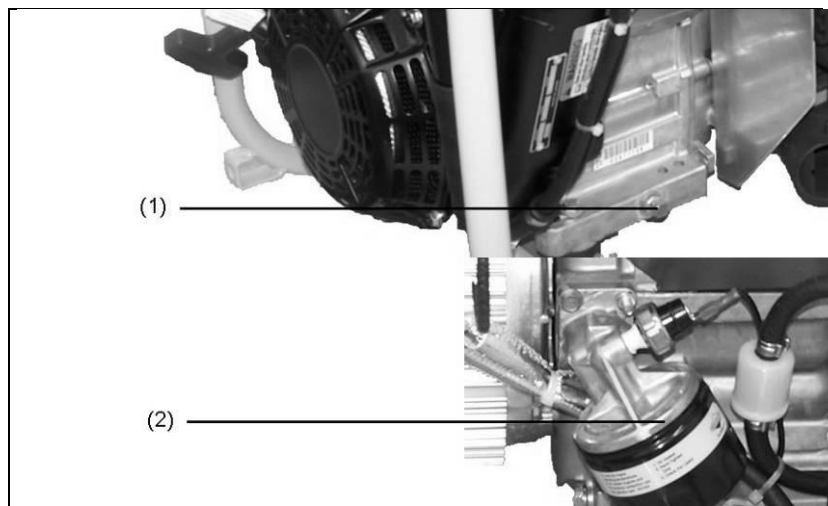


Figure 6-2: Changing the oil

Changing the oil

1. Remove the oil filling screw (*Figure 6-1-(1)*).
 2. Prepare the oil collecting tray.
 3. Unscrew oil drainage screw (*Figure 6-2-(1)*) carefully and wait until oil has completely run off into the collection container.
 4. Screw on oil drainage screw (*Figure 6-2-(1)*) again.
 5. Then refill with fresh oil.
- ✓ Engine oil has been drained.



WARNING!

The oil escapes immediately after unscrewing the oil drain screw.

Change oil filter

When changing the oil filter (*Figure 6-2-(2)*), proceed as described in the engine manual.

6.2.2 Replacing the starter battery

1. Unscrew the battery holder (*Figure 6-3-(1)*).
 2. Remove the battery (*Figure 6-3-(2)*) 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 onto the POSITIVE terminal, then onto the NEGATIVE-terminal and then put on the terminal caps.
 6. Put the battery back into the battery compartment.
 7. Put the battery holder (*Figure 6-3-(1)*) back on.
- ✓ The battery has been 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.



CAUTION!

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
- ✓ The fuse has been replaced.

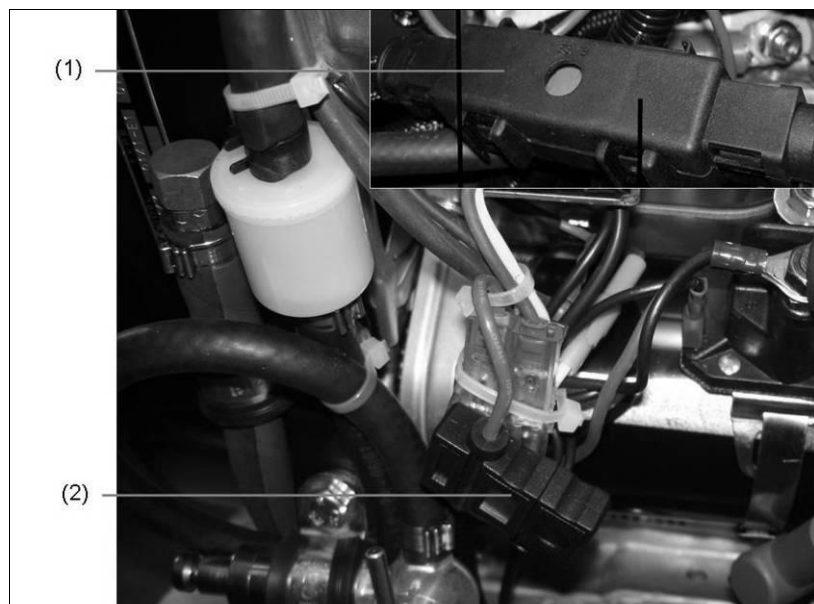


Fig. 6-4: Replacing a fuse

Fuse type	Amperes	needed for
2	20	Remote start device
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 specifically authorised personnel may check the electrical reliability.

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 during operation that authorized personnel can remove.

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 rotational speed of the engine was adjusted afterwards.	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 instructions.
	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.

Malfunction	Possible cause	Correction
	The battery connecting cables are unclamped.	Clamp or screw on the battery connecting cables.
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
	Ventilation holes on tank cover are clogged.	Clean ventilation holes.
	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 generator runs jerkily.	The generator is loaded beyond the nominal output.	Reduce power draw.
The red lamp on the load meter lit up.	Too much power is being taken off / the load is being taken off on one side.	3~: reduce power take-off / 1~: Distribute the load evenly
The oil pressure is too low.	Too little engine oil in the engine.	Refill engine oil.
The protective conductor test lamp does not light up.	The test cable is not inserted properly.	Insert the test cable properly.

Malfunction	Possible cause	Correction
	The test tip is not touching a metallic blank location on the device.	Hold the test tip on a metallic blank location
	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.
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 lifting magnet for speed lowering in idle is defective.	Call service staff.

Table 7.1: Problems arising during generator operation

Notes

8 Technical specifications



The technical specifications concerning use of the generator are described in this section.

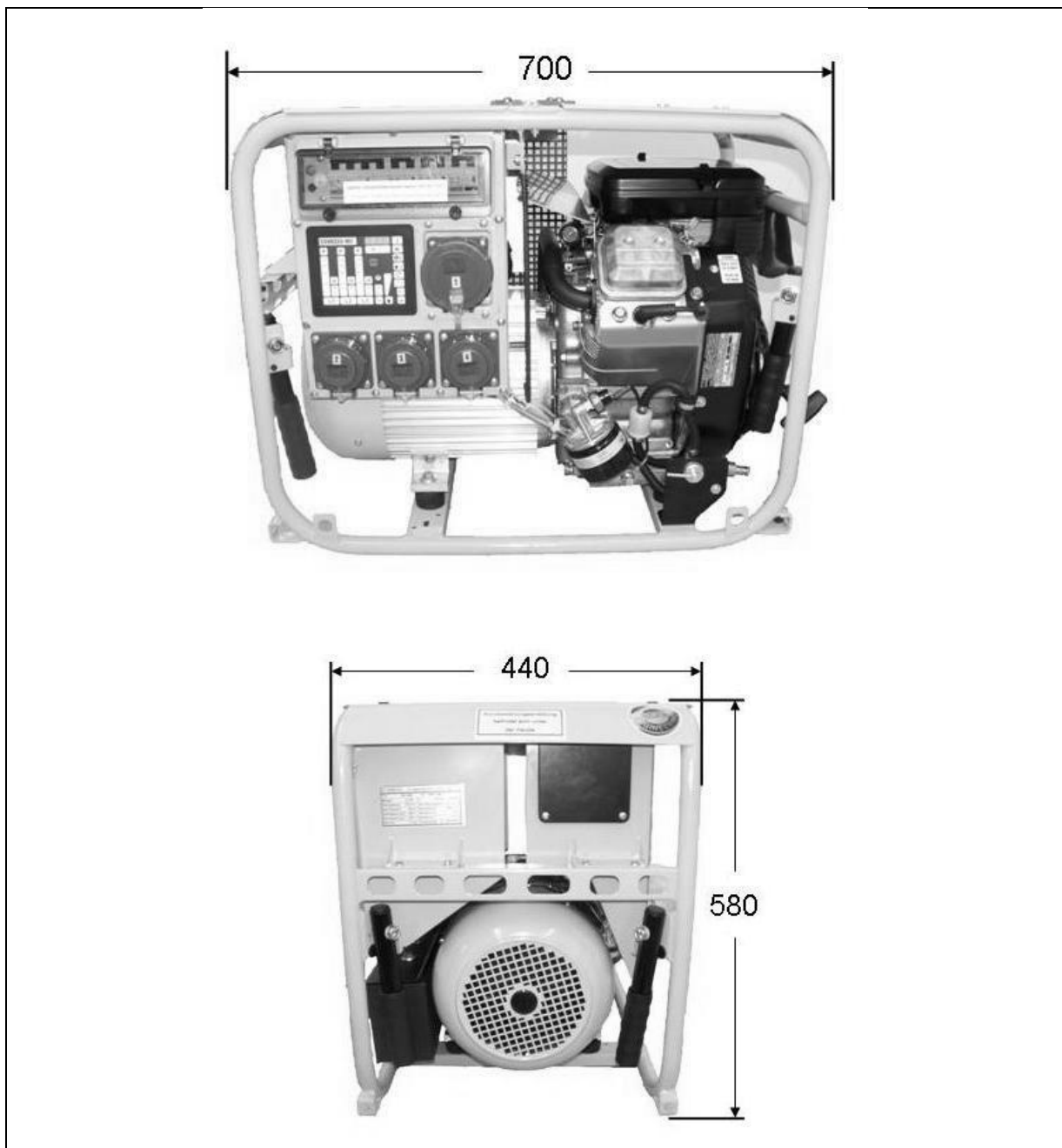


Fig. 8-1: Generator dimensions

Technical specifications

Name	Value		Unit
	ESE 604 DBG (ES) (FS) DIN	ESE 954 DBG (ES) (FS) DIN	
Nominal output	6	8	[kVA]
Nominal output factor	0.8	0.8	[cosφ]
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	12.3	[A]
Rated current 1~	18.0	21.7	[A]
Voltage tolerance (idling – nominal output)	± 1	± 1	[%]
Weight (ready for use)	117	114	[kg]
Tank capacity (lead-free normal ROZ91 fuel)	8.5	8.5	[l]
Length	700	700	[mm]
Width	440	440	[mm]
Height	580	580	[mm]
Sound power level LPA at 7 m	72	72	[db (A)]
Sound pressure at the work place (1.6m above the machine 1m away) *	89	89	[db (C)]
Sound power level LWA *	97	97	[db (A)]
Protection Class	IP 54	IP 54	

Table 8.1: Generator technical data

* measured 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

9 Replacement parts



The replacement parts needed to run the generator are described in this section.

The generator is divided into these component groups:

- Frame with covers, tank and engine
- Generator and electronics
- Standard accessories
- Special accessories
- Special equipment

9.1 Frame with covers, tank and engine

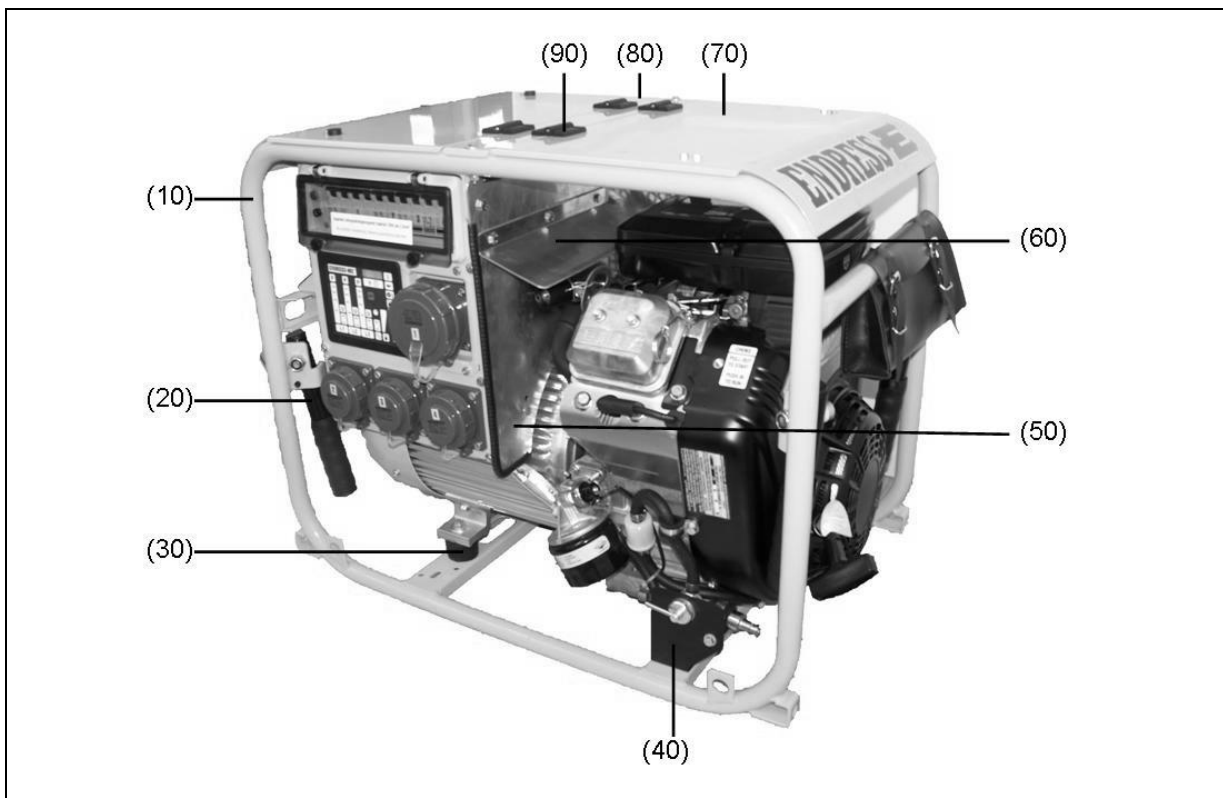


Figure 9-1: Operating and alternator side replacement parts

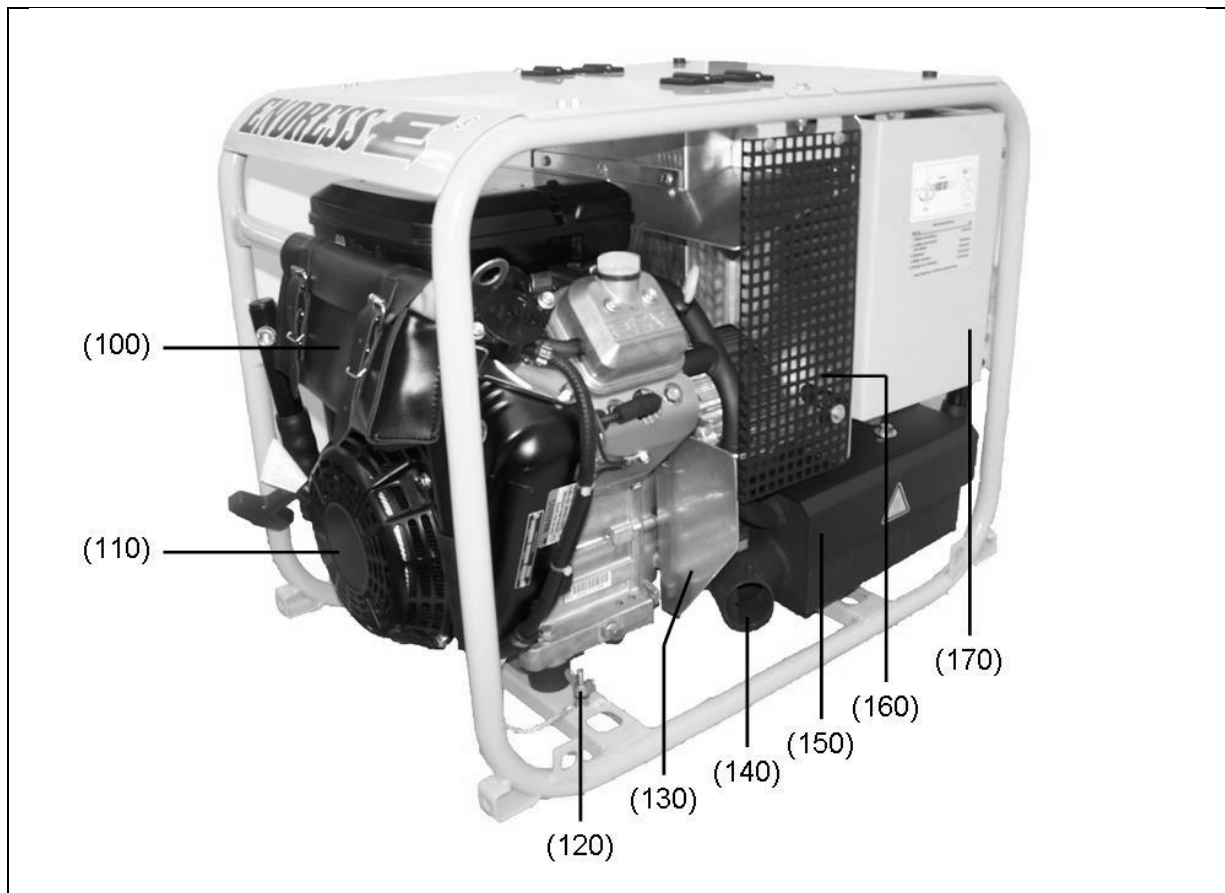


Fig. 9-2: Engine and exhaust side replacement parts

Item	Part number	Quantity	Article name
10	E503828/10	1	Frame complete, yellow
20	E502064/90	4	Carrying handle, black
	E130579	4	Inset handle made of soft PVC
	E133316	4	Plastic end cap for pipe, 25x2
	E130186	4	Polyamide expansion rivets
	E130692	4	12.8-18-3 spacer sleeve
	E133023	4	M12 x 45 cylindrical screw
	E130350	4	Hexagon nut M 12
30	E131296	4	Vibration dampers
40	E503877/99	1	Refuelling bracket (for a three-way valve)
50	E503868/00	1	Heat protection plate - middle
60	E503869/00	1	Smoke deflector
70	E503863/10	1	Yellow hood (alternator side)
	E503864/10	1	Hood with a yellow panel (engine side)
80	E502082/10	1	Hoods with a yellow reinforcing plate

Item	Part number	Quantity	Article name
90	E100641	4	Screw-on hinge, 1056-U6
100	E130471	1	Tool pouch
110	E133415	1	Engine Vanguard.16HP/ES Cooler clean (for 854 and 604)
120	E130563	1	M8 wingnut
	E131063	1	Earth strap in copper
130	E503873/00	1	Engine heat conduction plate
140	E503882/92	1	Silencer elbow
150	E131975	1	Silencer
160	E503871/90	1	Heat protection grid, black
170	E503841/10	1	Yellow tank

Table 9.1: Replacement parts for covers

9.2 Generator and electronics

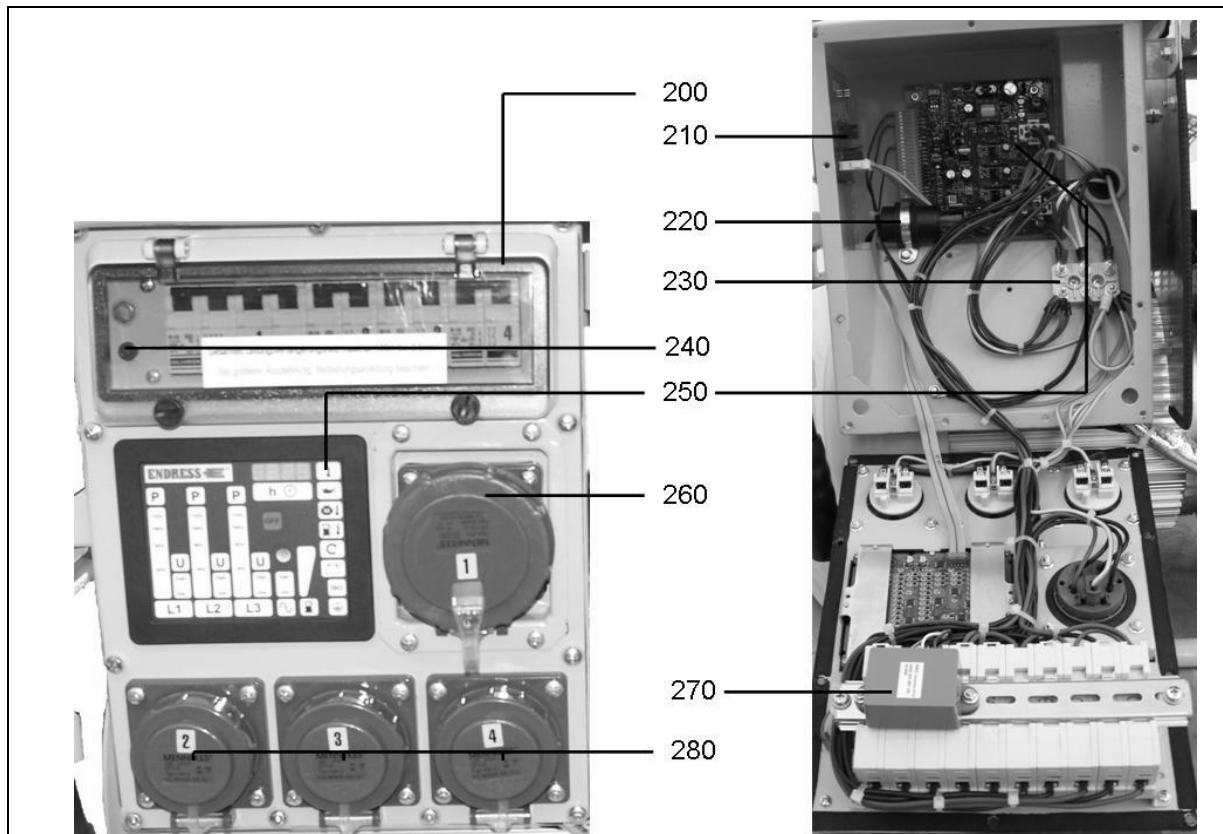


Fig. 9-3: Replacement parts Generator and electronics

Item	Part number	Quantity	Article name
	E130959	1	Gen syn. 7 kVA IP 54 50Hz (for ESE 604)
	E130960	1	Gen syn. 9 kVA IP 54 50Hz (for ESE 854)
	163040	1	Battery, 12V – 18h
200	E130422	1	Hinged window No. 40980
	E100091	1	Mounting rail TS 35/7.5 (0.21 m)
	E503858/10	2	Terminal strip holder yellow
	E130177	3	Circuit breaker 2B.16, 2-pin
	E100541	1	Circuit breaker 4B.16, 4-pin 415V
210		1	Alternator regulator
220	E130760	1	Oil monitoring 2-cyl.B&S
230	E100076	1	6-pin motor terminal board
240	E130442	1	Telephone socket 16A, 4-mm

Item	Part number	Quantity	Article name
			(valid for devices up to year of construction 12/2015)
250	162314	1	Multi-functional display with a circuit board and connecting cable
260	E130424	1	CEE panel mounting socket
270	E131799	1	EFXY3R2 interference elimination filter
280	E133007	3	Schuko attachment socket

Table 9.2: Replacement parts for an engine with an exhaust and fuel system

* When placing an order, please also enter the serial number on the model plate.

** When placing an order, please also enter the design variant.

9.3 Fuses

Only for the devices remote start, battery charge retention or external start.



Figure 9-4: Replacement parts for fuses

Item	Part number	Quantity	Article name
800	E132672	1	Flat fuse holder
	E132680	1	Flat fuse insert 20 A, DIN 72581 Part 3
	E132735	1	Flat fuse insert 15 A, DIN 72581 Part 3
810	E133255	1	Fuse holder for a high performance fuse
	E130915	1	150 A high performance fuse

Table 9.3: Replacement parts for fuses

9.4 Accessories and markings

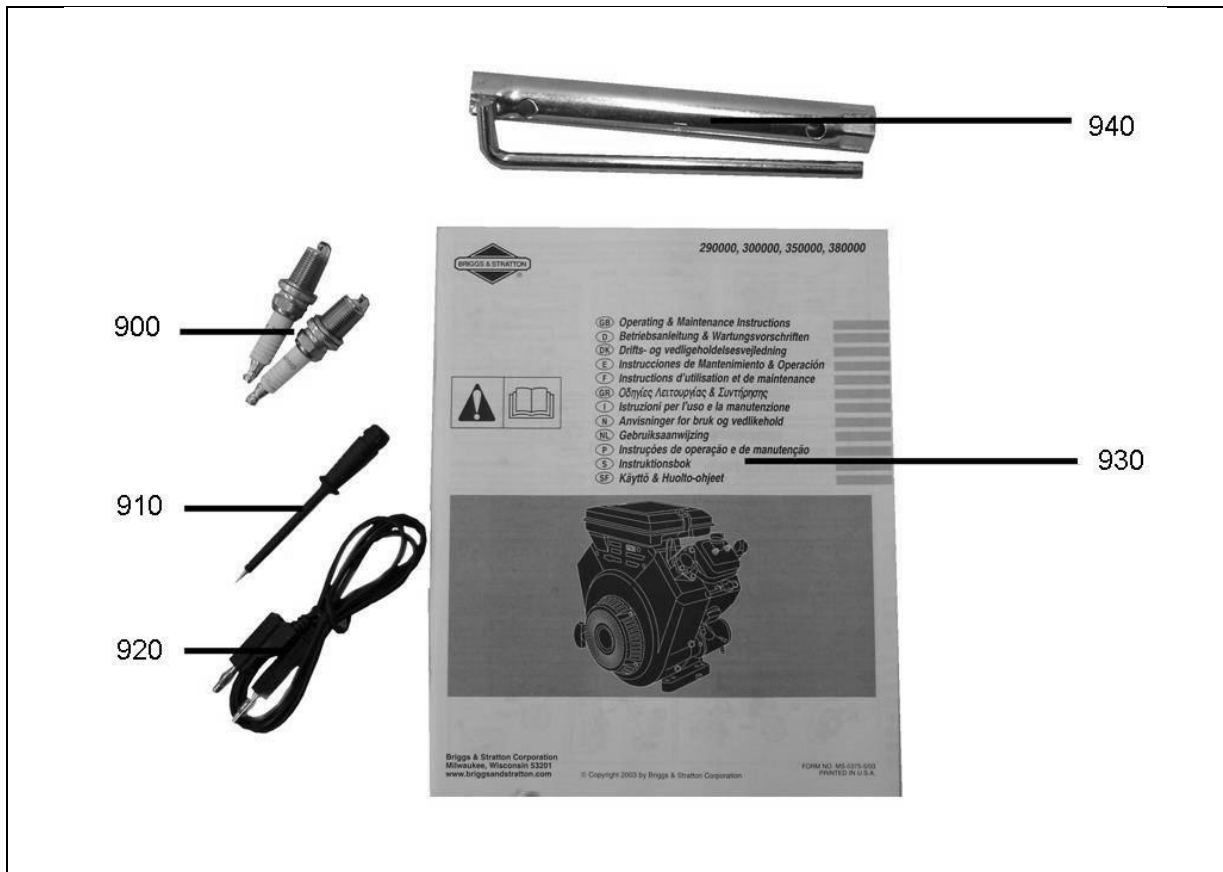


Fig. 9-5: Replacement parts accessories

Item	Part number	Quantity	Article name
900	E130472	2	Champion 12YC spark plugs (no other type may be used)
910	E130545	1	Test probes (valid for devices up to year of construction 12/2015)
920	E130446	1	100 cm measuring line (valid for devices up to year of construction 12/2015)
930		1	Engine operating manual B&S
940	E130534	1	Spark plug wrench
1000	E100592	1	Fuelling device (special accessory)
1010	E100593	1	20 litre canister, Nato standard (special accessory)
1020	E130473	1	DN 50 exhaust hose according to DIN 14572

Item	Part number	Quantity	Article name
			(special accessory)

Table 9.4: Replacement parts for accessories / special accessories



Fig. 9-6: Replacement parts for special accessories