CREATING
POWER
SOLUTIONS

HATZ

INCLUDES SUPPLEMENTAL INFORMATION TO THE OWNER'S MANUAL FOR MODEL YEAR 2025 FOR EPA AND CALIFORNIA CERTIFIED NONROAD COMPRESSION IGNITION ENGINES.

GD 3200 RV

OPERATOR'S MANUAL
Generating Set

Hatz

1 Legal notices

Contact data

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Original manual

This manual has been translated into multiple languages.

The German version is the **original manual**. All other language versions are **translations** of the **original manual**.

Revision

Version	Date	Name
00 - Ver. 00	30.04.2025	GMT-CI / ef

2 General information

Information on the document

This manual was created with due care. It is exclusively intended to offer a technical description of the machine and to provide instructions on commissioning, operating and maintaining the machine. When operating the machine, the applicable standards and legal regulations as well as any in-house regulations apply.

Before commissioning, during operation and before maintenance work is begun on the machine, read this manual carefully and keep it close by for ready access.

Machine

This manual describes the following machine:

Machine name	Generating set
Type number	GD 3200 RV

Exclusion of liability

The manufacturer cannot be held liable for personal injury, damage to property or damage to the machine itself caused by improper use, foreseeable misuse, or failure to follow or adequately follow the safety measures and procedures described in this manual. This also applies to changes made to the machine and the use of unsuitable spare parts.

Modifications, which serve the technical improvements, are reserved.

Customer service

Have service work performed by qualified technicians only. We recommend that you work with one of the over 500 **HATZ service stations**. Trained specialists there will repair your machine with **genuine HATZ spare parts** and with **HATZ tools**. The global HATZ service network is at your disposal to advise you and supply you with spare parts. The address of your nearest **Hatz Service** can be found on the Internet at: **www.hatzamericas.com**

Installation of unsuitable spare parts can lead to problems. We cannot accept liability for direct damage or secondary damage that results from this.

We therefore recommend the use of **genuine Hatz spare parts**. These parts are manufactured according to strict Hatz specifications and achieve maximum operational reliability through their perfect fit and functionality. The order number can be found on the Internet at: **www.hatzamericas.com**

3 Safety

3.1 General information

Introduction

This chapter contains the information you need to work safely with this machine.

To prevent accidents and damage to the machine, it is imperative that these safety instructions be followed.

Read this chapter carefully before beginning work.

3.1.1 Intended use

Intended use

The machine described in this Operator's Manual fulfills the following functions:

- Power supply and current strength as per technical data (see chapter *4.2.3 Inverter, page 30*).

This generating set is only approved for use in mobile homes. Any other use is not intended and therefore not permitted. In this case, the safety of people located in the vicinity of the machine may be impaired. Motorenfabrik HATZ does not accept any liability for harm resulting from this.

The generating set fulfills the basic protection measure of protective separation with equipotential bonding (ungrounded system).
A personal protection device must be integrated in the wiring between the generating set and the AC power connection in the mobile home. It interrupts the current supply to the power sockets if an electrical fault occurs in the system. The personal protection device must meet local regulations.

The operational safety of the machine is only guaranteed if it is used as intended.

The intended use also includes observance of the instructions in this Operator's Manual to preserve the environment, including in the appendix for the model year 2025 as per EPA Nonroad Diesel Engines and for the model year 2025 CARB-certified heavy-duty off-road engines.

Foreseeable misuse

The following is considered to be foreseeable misuse:

- Any use that varies from or extends beyond the uses specified above.
- Failure to comply with the instructions in this Operator's Manual.
- Failure to comply with the safety instructions.
- Failure to immediately eliminate malfunctions that impact safety before continuing work with the machine (working with the machine when it is not in perfect condition, either functionally or in terms of safety).
- Fuel other than specified in the instructions.

- Failure to perform the necessary inspection and maintenance work.
- Any unauthorized modification of or removal of safety equipment.
- Use of spare parts and accessories that are unsuitable or have not been approved by HATZ.
- Operation in flammable or hazardous environments.
- Operation in closed-off or poorly ventilated rooms.
- Operation in an aggressive atmosphere (e.g., high salt content) without further measures for corrosion protection.
- The use of engine cooling air to heat the vehicle.
- Connection of electrical consumers that are not suitable for operation with this machine.
- Connection of electrical consumers whose total power consumption exceeds the power rating of the machine.
- Parallel operation with other energy sources (public network, PV units, energy storage unit, other generating sets etc.).
- Use of the machine as a life-support system. The generating set may switch off without warning. Humans or animals that depend on an uninterruptible power supply may become injured or die if the generating set fails.
- Improper operation at variance with ISO 3046-1 and ISO 8528 (climate, load, safety).
- Improper operation at variance with the standards and regulations ANSI/ RVIA EGS-1, CSA Electrical Bulletin 946 (Requirements for Internal Combustion Engine-Driven Electric. Generators for Use in Recreational Vehicles), NFPA No. 1192 (Recreational Vehicles), NFPA No. 70, Article 551 – (Recreational Vehicles and Recreational Vehicle Parks).

Residual risks

Residual risks result during daily use and in association with maintenance work.

These residual risks will be pointed out in chapter *3.2.2 Machine-specific safety instructions for operation, page 15* and in chapter *3.2.3 Machine-specific safety instructions for maintenance work, page 17* as well as in the further contents of the manual, directly in front of the descriptions or operating instructions concerned.

3.1.2 Obligations of the operator

User obligations

The operator is obliged to only operate the machine when it is in perfect condition. The operator must check the condition of the machine before use and ensure that any defects are eliminated before it is taken into service. Running the machine while identified defects exist is not permitted. The operator must also ensure that all persons who work on the machine are familiar with the contents of this manual, .

Obligations of the operating and maintenance personnel

Personnel assigned with operating and maintaining the machine must have read and understood this manual or must possess the qualifications necessary for working with this equipment, acquired in training/instructional courses. No one may work with the machine without the necessary qualifications, even if for just a brief period.

The operating and maintenance personnel must not be under the influence of drugs, medication or alcohol.

All work performed on the machine must be in compliance with the information provided in this manual.

Storing the Operator's Manual

These instruction and the associated documents are an integral part of this machine (including when sold). They must be stored in the direct vicinity of the machine and be accessible to personnel at all times.

3.1.3 Representation of safety notes

Overview

This machine has been designed and built according to state-of-the-art technology and the recognized safety standards. Despite these precautions, risks exist when operating the machine and during maintenance work.

These risks are identified in this manual by means of safety notes.

The safety notes precede the relevant description or operating step.

Structure of the safety notes

The safety notes consist of:

- Danger symbol
- Signal word
- Description of the danger
- Possible consequences
- Preventative measures

General danger symbol

The general danger symbol is used to identify the danger of personal injury.

Signal words

Signal words identify the magnitude of the risk and the seriousness of possible injury:

Danger symbol/ signal word	Meaning
DANGER	This signal word is used to indicate imminently dangerous situations which, if not avoided, will lead to serious injury or death.
WARNING	This signal word is used to indicate potentially dangerous situations which, if not avoided, may lead to serious injury or death.
CAUTION	This signal word is used to indicate potentially dangerous situations which, if not avoided, may lead to minor or moderate injury.
CAUTION	This signal word, without a danger symbol, is used to indicate the risk of property damage.
NOTICE	This signal word indicates additional useful information, such as operating tips and cross references.

3.1.4 Meaning of safety symbols

Explanation of symbols

The following table describes the meanings of the safety symbols used in this Operator's Manual.

Symbol	Meaning
	Smoking, fire, and open flames are prohibited!
	Warning of personal injury!
	Warning of dangerous voltage levels!
	Warning of hot surfaces!
	Warning of flammable substances!
	Warning of explosive substances!
	Warning of toxic engine exhaust!
	Warning of heavy loads!
	Warning of environmental damage!

Symbol	Meaning
	Comply with the Operator's Manual or additional documentation from other manufacturers or the carrier.
	Additional information that is useful to the reader.

3.2 Safety notes

3.2.1 Operational safety

Introduction

This chapter contains all of the important safety instructions for personal protection and for safe and reliable operation. Additional, task-related safety instructions can be found at the beginning of each chapter.

 **DANGER**	
	**Danger to life, danger of injury or danger of property damage due to failure to comply with this manual and the safety instructions contained therein.** ▪ As the operator of the machine, you must ensure that all people working on the machine are familiar with the content of this manual. ▪ Before working on the machine, read this manual carefully, paying special attention to the safety notes in .. ▪ Fulfill all required safety conditions before working on the machine. ▪ Follow all general safety instructions as well as the specific task-related safety instructions contained in the individual chapters.

Using the machine

- Only operate the machine for the purposes described in chapter *3.1.1 Intended use, page 7*.

Automatic start system

In vehicles with an integrated or additional AGS control (Automatic Generator Start System), the following dangers can arise if the machine is started unexpectedly:

- Danger of poisoning from engine exhaust (carbon monoxide poisoning)
- Danger of injury from rotating parts
- Danger of injury from electric shock

Always switch the AGS off when:

- Maintenance work is performed
- The vehicle is parked in a garage or other closed or poorly ventilated area.

Compliance with other regulations

- The applicable regulations of the relevant professional associations must be observed.
- In addition, local safety, accident prevention and environmental regulations also apply when operating the machine.

Personal protective equipment

During operation and maintenance of the machine, personal protective equipment must be available and must be used if necessary. The use of personal protective equipment is specified in the description of the operating steps.

Personal protective equipment	Pictogram	Function
Safety shoes		Safety shoes offer protection against: ▪ Slipping ▪ Falling objects
Hearing protection		Hearing protection offers protection against ear injuries due to excessive and constant noise.
Safety gloves		Safety gloves protect the hands against injury, e.g., from battery acid.
Safety goggles (with side protection)		Safety goggles protect the eyes from flying objects (e.g., dust particles, spraying liquids, spraying acid).

Personal protective equipment	Pictogram	Function
Fine dust mask		A fine dust mask protects the wearer against particulate pollutants.
Working clothes		Wear close-fitting working clothes. It must not restrict the wearer's freedom of movement, however.

Warning labels and information signs on the machine

The warning labels and information signs on the machine must be followed (see chapter "Labels" *3.3 Labels, page 21*).

The warning labels and information signs must be kept legible and must be replaced if necessary. For this purpose, contact your nearest **HATZ Service**.

Maintenance work

Maintenance work that goes beyond the scope described in this manual must only be performed by qualified technicians (see chapter Customer service).

Independent maintenance work and constructional changes to the machine, especially to the safety equipment, are not permitted.

Safety equipment

Safety equipment must not be modified and must not be rendered ineffective during normal operation.

General safety instructions

DANGER	
	**Danger to life and danger of injury due to failure to follow the warnings on the machine and in this manual.** ▪ Heed the warnings on the machine and in this manual.

WARNING

Danger of injury and danger of incorrect operation due to inadequate personnel qualifications.

- The personnel must have read and understood this manual or must possess the qualifications necessary for working with this equipment, acquired in training/instructional courses.
- Only qualified personnel is permitted to operate and maintain this machine.
- Failure to comply will cause the warranty to become void.

WARNING

Danger of injury from failure to follow the Operating Instructions and from performing unauthorized tasks on the machine.

- Follow all instructions.
- Do not perform activities for which no qualification is available. Contact properly trained personnel if necessary.

CAUTION

Danger of injury from overloading the body.

Lifting the machine to transport it or to move it to another location can lead to injuries (of the back, for example).

- Only lift the machine with a hoist (see chapter *6.1 Transport, page 35*).

3.2.2 Machine-specific safety instructions for operation

Introduction

The machine can pose residual risks during operation. To eliminate these risks, all persons working on the machine must follow the general and machine-specific safety instructions.

Safe operation

- Before switching on the machine, ensure that no one can be injured when the machine is started up.
- During machine operation, ensure that unauthorized persons do not have access to the area in which the machine has an impact.

Machine

- The outlet for cooling air and exhaust gas becomes hot during operation. Risk of injury from touching hot parts! Let the engine cool before maintenance.
- Do not refuel during operation.

Faults

- Immediately eliminate faults that compromise safety.
- Switch off the machine and do not take into service again until all faults have been eliminated.

Safety instructions for operation

⚠ DANGER
 **Danger to life from electric shock.** Live machine connections, feed lines and outgoing lines can cause life-threatening electric shock. ▪ Maintain the machine, and especially the cabling in a proper, undamaged condition. ▪ Only operate the machine when all protective devices are installed and undamaged.

⚠ DANGER
 **Danger to life from inhaling exhaust gases.** Engine exhaust contains carbon monoxide, an odorless, colorless, poisonous gas that can lead to unconsciousness and death. ▪ Never switch on the generating set if the vehicle is parked in a garage or other closed or poorly ventilated area. ▪ Never stay in the vehicle while the generating set is running unless the vehicle has a functioning carbon monoxide detector. ▪ Do not breathe in the exhaust gases.

DANGER

Danger of fire from hot exhaust gas system.

If inflammable materials come into contact with the exhaust gas flow or the hot exhaust gas system, these materials can ignite.

- Keep inflammable materials away from the exhaust gas system.
- Do not operate the engine (exhaust flow or hot exhaust gas system) in the direct vicinity of combustible materials.

DANGER

Fire hazard from fuel.

Leaked or spilled fuel can ignite on hot engine parts and cause serious burn injuries.

- Only refuel when the engine is switched off and has cooled down.
- Never refuel in the vicinity of open flames or sparks that can cause ignition.
- Do not smoke.
- Do not spill fuel.

3.2.3 Machine-specific safety instructions for maintenance work

Introduction

The machine can pose residual risks during maintenance. To eliminate these risks, all persons working on the machine must follow the general and machine-specific safety instructions.

Maintenance work

Maintenance work that goes beyond the scope described in this manual must only be performed by qualified technicians. We recommend that you work with one of the over 500 **HATZ service stations**.

Replacing parts

- When replacing defective components, we recommend that you use **genuine Hatz spare parts** (see chapter Customer service).
- When disposing of parts that can no longer be used, do so in accordance with local environmental regulations or send them to a recycling center.

Measures following maintenance and troubleshooting

- Securely reconnect loose electrical connections; check that the electrical components and equipment are functioning properly.
- Check the entire machine for foreign bodies; remove any foreign bodies.

Safety instructions for maintenance work

DANGER

Danger of injury from voltage.

Serious injury can occur during work on electrical equipment.

- Work on electrical equipment with a rated voltage of more than 50 V may only be performed by certified electricians as per IEC 60050.[IEV 195-4-1]

DANGER

Danger of explosion from flammable cleaning agents.

Cleaning with benzene is an explosion hazard. It is highly flammable, can become electrostatically charged, and can generate an explosive gas/air mixture.

- Use halogen-free, cold cleaners with a high flash point for cleaning.
- Comply with manufacturer's instructions.

WARNING

Danger of injury from compressed air and dust particles.

Eye injuries can occur when cleaning with compressed air.

- Wear safety goggles.

CAUTION

Danger of injury from ignoring the maintenance instructions.

- Only perform maintenance work when the engine is switched off.
- Disconnect the negative battery terminal.
- When the maintenance work has been completed, ensure that all tools are removed from the machine.

CAUTION

Danger of burns.

There is a danger of burns when working on a hot engine.

- Let the engine cool before maintenance.

3.2.4 Electrical equipment

Safety notes

DANGER

Danger to life from electric shock.

Live machine connections, feed lines and extension lines can cause life-threatening electric shock.

- Use the machine, machine feed lines and extension lines only if they are in perfect, undamaged condition.
- Only operate the machine if all protective devices are installed, undamaged and functional.
- Never touch the generating set or connected machines with wet hands.

DANGER

Danger of explosion from flammable substances.

There is a danger of explosion from flammable gases.

- Keep batteries away from open flames and incendiary sparks.
- Do not smoke when working with batteries.

WARNING

Danger of injury or danger of property damage due to incorrect use of batteries.

- Do not place tools on the battery.
- Before performing work on the electrical equipment, always disconnect the negative battery terminal.
- Never swap the positive (+) and negative (–) battery terminals.
- When connecting the machine to the battery, first connect the **positive cable** and then the **negative cable**.
- When disconnecting the connections, first disconnect the **negative cable** and then the **positive cable**.
- It is imperative to prevent short circuits and mass contact of current carrying cables.
- If faults occur, check the cable connections for good contact.

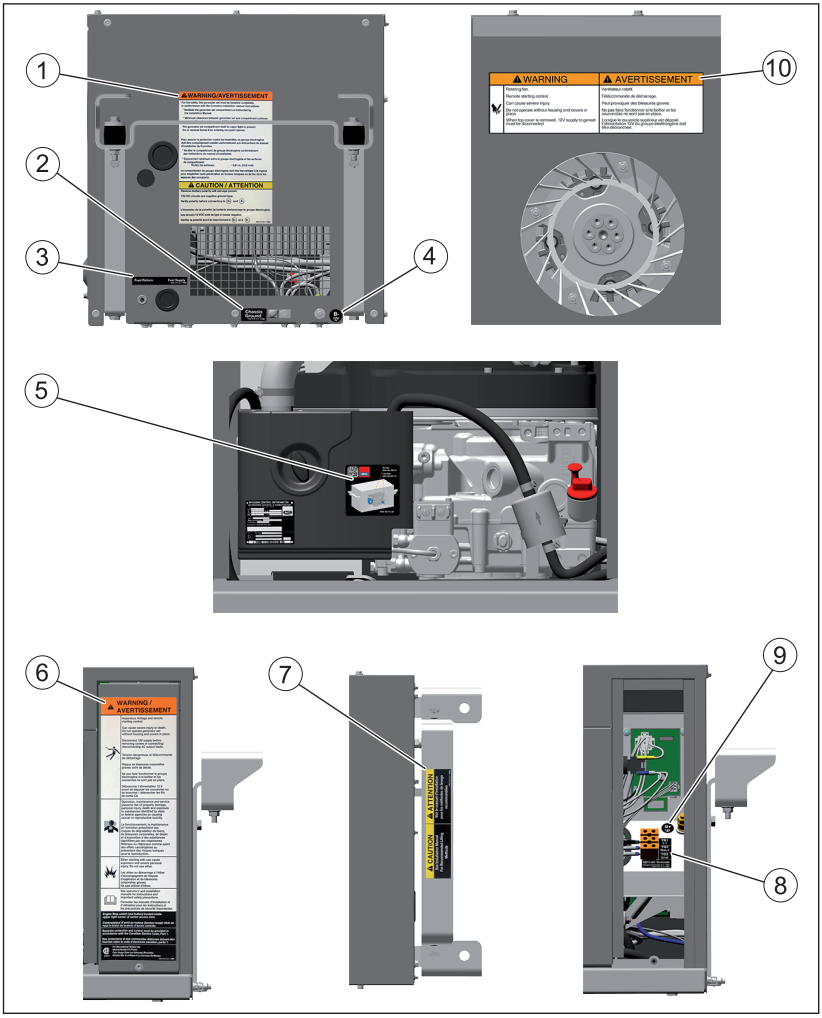
- To avoid the danger of electric shock during an unexpected start, note the following points before beginning work:
  - Switch off the Automatic Generator Start System (AGS), if present.
  - Switch off the operating panel, press the stop switch and disconnect the battery cable negative terminal (B-) from the generating set; see chap. *8.2.2 Before beginning maintenance work, page 48*.
- The electrical output of the generator must be connected by a qualified electrician in accordance with local regulations.
- The generating set is not permitted to be connected to the power grid. Feeding power back into the power grid can lead to electric shocks and damage to the equipment. An approved switching device must be used that prevents interconnection with the power grid.
- Do not disconnect the battery while the machine is running. Resulting voltage peaks could destroy the electronic components.
- Do not use a water jet or high-pressure cleaner to clean the machine.

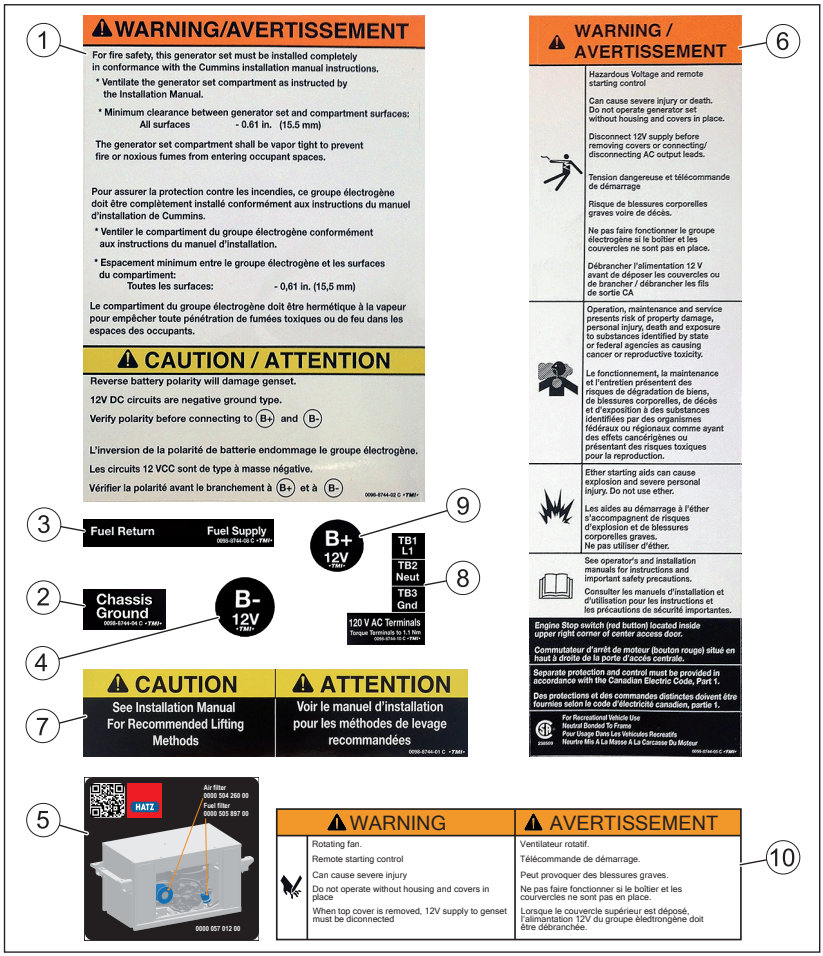
NOTICE

We cannot be held liable for electrical equipment that is not designed according to HATZ wiring diagrams.

3.3 Labels

Warning labels and information signs on the machine





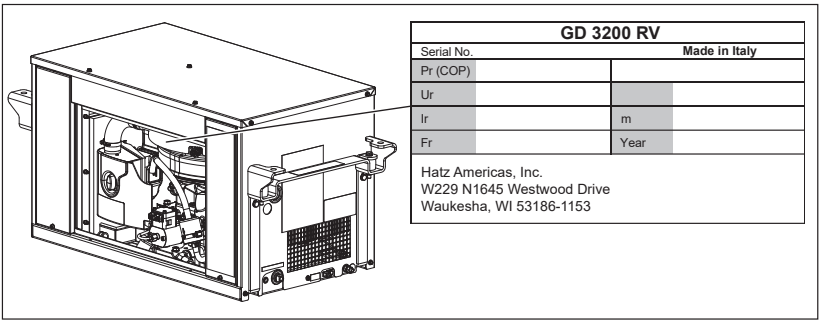
Pos.	Designation
1	Warning of faulty installation of the machine
2	Ground connection to housing
3	Fuel connections
4	Connection to battery negative terminal
5	Service information
6	Main warning message
7	Note on recommended lifting methods
8	Terminal strip wiring

Pos.	Designation
9	Connection to battery positive terminal
10	Warning of injuries from rotating fan

4 Technical data

4.1 Generating set

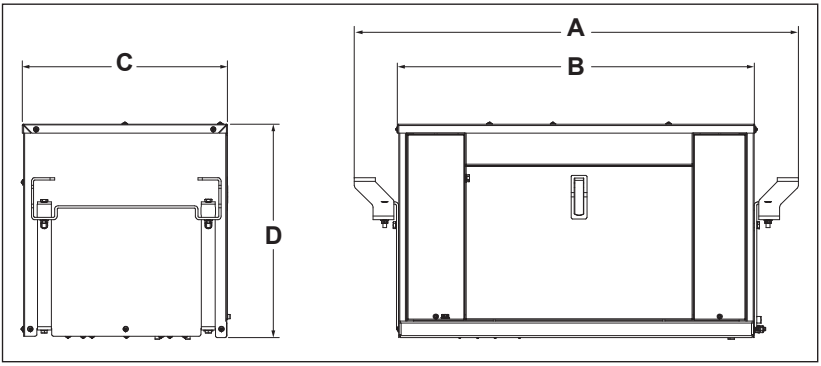
Machine type plate



Please enter the data from the type plate into the following table to ensure you have access to the data even in the event of loss or damage.

Entry	Description	Unit	Value
Serial no.	Engine serial number	–	
Pr (COP)	Rated power	kW	
Ur	Rated voltage	V	
Ir	Rated current	A	
Fr	Frequency	Hz	
m	Weight	kg	
Year	Model year	–	

Dimensions and weights



Parameter	Unit	Value
Total length (A)	mm	952
Length without holders (B)	mm	766
Width (C)	mm	439
Height (D)	mm	453
Weight	kg	97

Noise data

Parameter	Unit	Value
Guaranteed sound power level (LWA)	dB(A)	90
Sound pressure level at half load (LpA at 7 m distance) including measurement uncertainty	dB(A)	65
Measurement uncertainty (K)	dB(A)	2

Explosion protection

The machine does **not feature explosion protection**.

4.2 Components

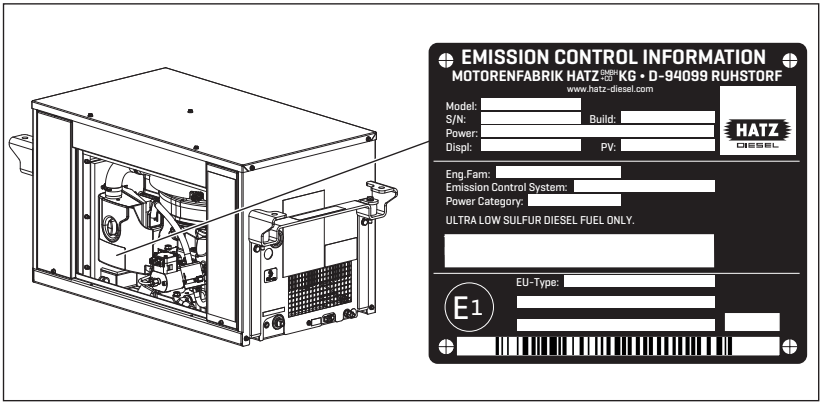
Overview

The machine consists of the following main components:

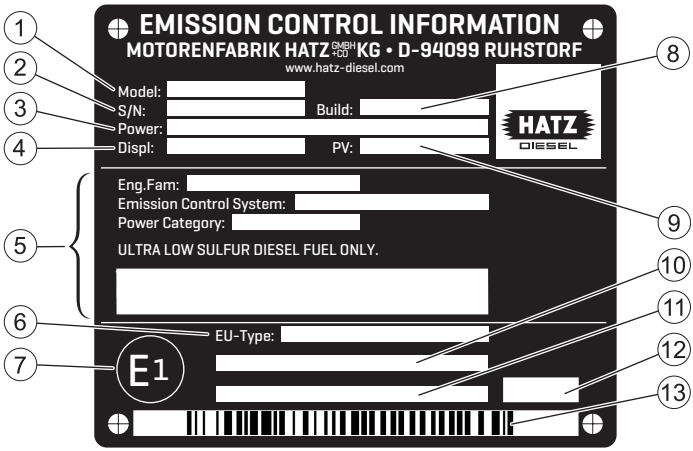
Components	Name/type
Engine	HATZ diesel engine 1B30VE
Alternator	Microtec permanent magnet generator
Inverter	Microtec
Fuel pump	BOSCH EKP3
Housing	Enclosed, soundproof steel plate housing

4.2.1 Engine

Engine type plate



The layout of the EPA/CARB type plate depends on the engine application and is affixed to the air filter cover.
It contains the following information:



1	Model designation of the engine
2	Engine serial number
3	Engine power (kW) at rated speed (rpm)
4	Displacement (liters)
5	Information for US emission certification (EPA/CARB)
6	EU type approval number
7	EU country of origin (Germany)

8	Model year (month/year)
9	Test specification for special settings
10	Engine family designation or exemption code (EM) or transition code (TM) according to regulation (EU) 2016/1628
11	Additional specifications according to Regulation 2017/656 (exceptions) or "Separate shipment information"
12	Code for type plate variant
13	Barcode (engine serial number)

The type plate also defines the applicable emissions-related performance class of the engine.

The figure shows an EPA/CARB type plate.

A text that refers to the exhaust legislation and corresponds to the engine type is printed on the type plate (EPA or EPA and CARB).

The following data must always be specified in case of queries and for spare parts orders:

1	Model designation
2	Engine serial number
3	Rated speed (rpm)

Technical data

Parameter	Unit	Value
Engine type		1B30VE
Type		Air cooled, four stroke diesel engine
Number of cylinders		1
Bore/Stroke	mm	80 / 69
Displacement	cm^3	347
Engine oil capacity	Approx. ltr.	1.1 [1)]
Difference between "max" and "min" marking	Approx. ltr.	0.5 [1)]
Engine oil consumption (after running-in period)	Max.	1 % of fuel consumption, pertaining to full load
Fuel consumption at full load	L/h	1.5
	Gallons/h	0.4

Parameter	Unit	Value
Tappet clearance at 10–30 °C inlet/outlet	mm	0.10

[1] These specifications are approximate values. The max. mark on the dipstick is decisive in any case (see chapter Checking the oil level and adding oil if necessary).

Engine oil

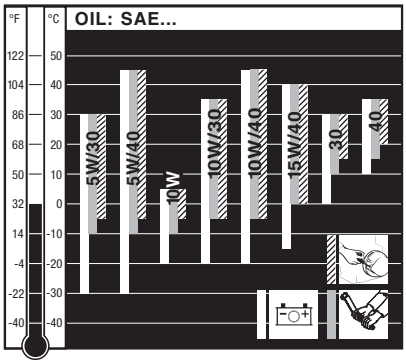
Oil quality

All oil brands that meet at least one of the following specifications are suitable:

- **ACEA E6 or E8** (recommended)
- **ACEA E9 or E11**
- **ACEA C3 / C4** (HTHS ≥ 3.5 mPas)
- **API CK-4 or CJ-4**

	CAUTION
	Damage to the diesel oxidation catalyst (DOC) from using unsuitable engine oil. Unsuitable engine oil diminishes the functionality and service life of the catalytic converter. Only use engine oils with very low quantities of sulfate ash, phosphor and sulfur – so-called "low SAPS" oils which fulfill at least one of the specifications mentioned above.

Oil viscosity



Choose the recommended viscosity based on the type of start (recoil, crank handle or electric) and on the engine temperature at which the engine will be operated.

	CAUTION
	Engine damage from unsuitable engine oil. Unsuitable engine oil considerably reduces engine service life. Only use engine oil that fulfills the specifications stipulated above.

Fuel

Fuel type

All types of diesel fuel that meet the minimum requirements of the following specifications are suitable:

- **Europe: EN 590**
- **UK: BS 2869 A1 / A2**
- **USA: ASTM D 975-09a 1-D S15** or **2-D S15**

	CAUTION
	Danger of engine damage from low quality fuel. The use of fuel that does not meet the specifications can lead to engine damage. ▪ The use of fuels that do not meet specifications require approval by Motorenfabrik HATZ (main plant).

	CAUTION
	Danger of malfunctions due to old fuel. When diesel fuel is stored in a fuel tank or canister for lengthy periods, deposits may form on account of fuel aging. These deposits result in malfunctions due to clogged fuel filters and damage to the injection system. ▪ Perform the prescribed storage steps in machines that will be out of use for more than three months (see chapter *10.1 Storing the machine, page 66*). ▪ Only refuel with fresh diesel fuel such as can be obtained from filling stations.

Winter fuel

Diesel fuel loses its fluidity at low temperatures, which can lead to operating problems. Use cold-resistant winter diesel fuel for outside temperatures below 0 °C.

4.2.2 Alternator

Technical data

Parameter	Unit	Value
Manufacturer		Microtec
Type		Synchronous, permanent magnetic excitation
Max. speed	rpm^{-1}	3100

4.2.3 Inverter

Technical data

Parameter	Unit	Value
Manufacturer		Microtec
Voltage controller		electronic
Rated power	W	3200
Rated voltage	V (AC)	120
Rated current	A	26,7
Frequency	Hz	60
Protection class		IP 21
Voltage accuracy	%	± 5 (ohmic load)

4.2.4 Fuel pump

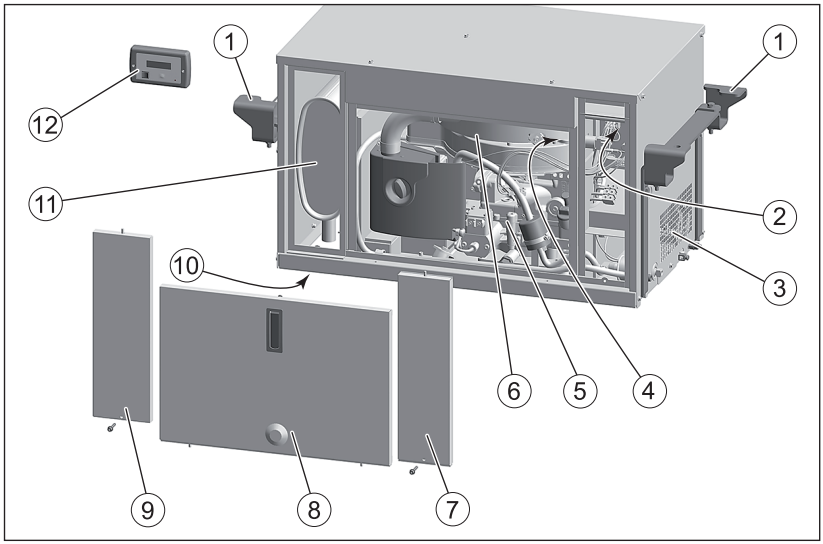
Technical data

Parameter	Unit	Value
Manufacturer		BOSCH
Machine type		EKP3
Suction height	Meter	1.0
Maximum fuel line length	Meter	7.0

5 Configuration and function

5.1 Machine overview

View of machine



1	Fastening system
2	Plug-in fuse on internal control panel
3	Intake opening for cooling and combustion air
4	Stop switch
5	Diesel engine
6	Generator (integrated in diesel engine)
7	Service access to internal control panel
8	Maintenance access to diesel engine
9	Service access to silencer
10	Outlet for hot cooling air
11	Silencer
12	Remote operating panel (option)

Use

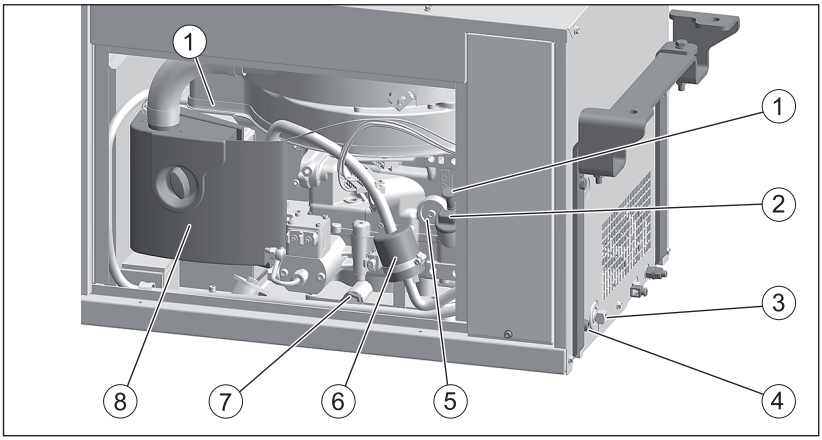
The machine is used to generate current for the operation of electrical machines with alternating voltages and frequencies as specified on the machine type plate. The engine, alternator, inverter, and fuel pump are secured in an enclosed and soundproof housing.

Functional procedure

The engine powers a permanent magnet alternator integrated in the flywheel. The inverter regulates the alternating current in the generator to the necessary voltage and frequency.

5.2 Mechanical components

Engine



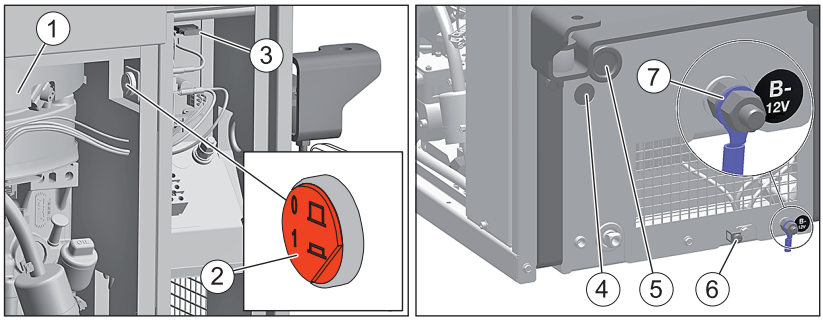
1	Dipstick
2	Oil filler plug
3	Connection for fuel feed line
4	Connection for fuel return line
5	Screw plug for oil filter
6	Main fuel filter
7	Oil drain screw
8	Air filter cover

5.3 Electrical components

Overview of electrical components

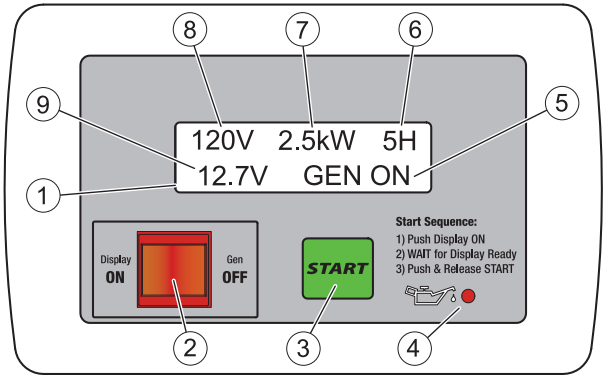
- Alternator with electrical equipment
- Control panel

Alternator with electrical equipment



1	Alternator
2	Stop switch
3	Plug-in fuse on internal control panel
4	Through-hole for AC cable (AC)
5	Through-hole for battery cable (positive terminal) and connection cable for operating panel
6	Ground terminal
7	Connection for battery cable negative terminal (B–)

Operating panel (option)



1	Display
2	Rocker switch for switching the display on (display ON) and switching the machine off (Gen OFF)
3	START button
4	Low oil indicator lamp

	Standard display during operation
5	Status message
6	Operating hours
7	Supplied power
8	Supplied voltage
9	DC voltage of starter battery

The control panel has the purpose of displaying and monitoring all important functions. The integrated fault diagnosis system makes it easier to locate faults. The maintenance indicator indicates when maintenance work is due.

For more information, see chapter *9.2 Display messages, page 62*.

6 Transport and commissioning

6.1 Transport

For lifting and transporting the machine, see installation instructions.

6.2 Filling engine oil (first filling)

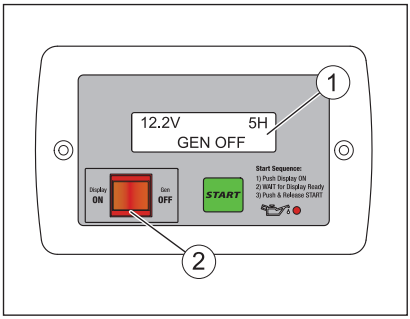
Engines are normally delivered without an engine oil filling.

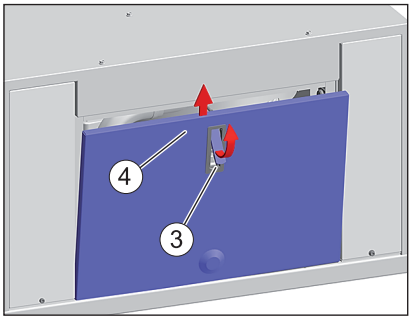
Safety notes

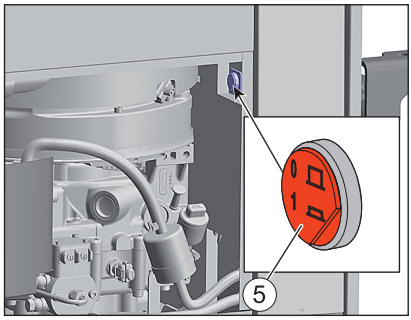
CAUTION	
	**Danger of injury** Prolonged contact with engine oil can lead to irritation of the skin. ▪ Wear safety gloves. ▪ If there is contact with the skin, thoroughly wash the affected areas of the skin with soap and water.

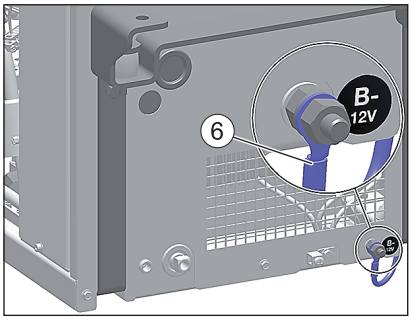
CAUTION	
	Danger of later engine damage. ▪ Operating the engine with an oil level below the **min.** mark or above the **max.** mark can lead to engine damage. ▪ When checking the oil level, the engine must be horizontal and have been switched off for a few minutes.

Overview

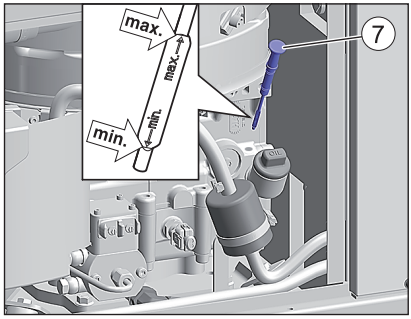


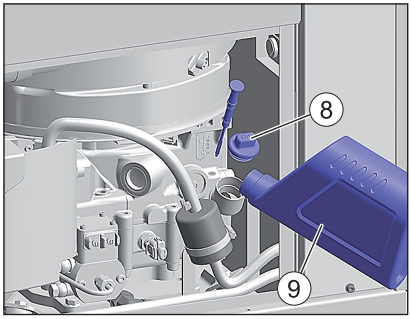






1	Display
2	Rocker switch for switching the display on (display ON) and switching the machine off (Gen OFF)
3	Maintenance door lock
4	Maintenance door (access to diesel engine)
5	Stop switch
6	Connection for battery cable negative terminal (B–)





7	Dipstick
8	Oil filler plug
9	Oil refilling container

Procedure

Step	Activity
1	*Switch off the operating panel:* If the display (1) is switched on, press the rocker switch (2) (Gen OFF) to switch off the operating panel.
2	Open the lock (3).
3	Tilt the maintenance door (4) forward slightly and lift to remove.

Step	Activity
4	*Switch off the machine:* Press the stop switch (5) (pos. 0). Disconnect the battery cable (6) negative terminal (B–) from the generating set. This prevents the machine from starting up during maintenance and service work.
5	Pull out the dipstick (7) and wipe it off with a clean towel.
6	Unscrew the oil filler plug (7).
7	Fill engine oil. For the specification and viscosity, see chapter *4.2.1.1 Engine oil, page 28*. See chapter *4.2.1 Engine, page 27* for the engine oil capacity.
8	Reinsert the dipstick.
9	Pull out the dipstick and check the oil level.
10	If necessary, add engine oil to the max. mark.
11	Reinsert the dipstick.
12	Screw in the oil filler plug.
13	Connect the battery cable negative terminal (B–) to the generating set.
14	Unlock the stop switch (5) (pos. 1).
15	Close the maintenance door. The machine is operational and can be started on the operating panel. **Attention!** **The machine may only be started with the maintenance door closed.**

7 Operation and use

7.1 Safety notes

NOTICE	
	**Comply with the safety chapter!** Follow the basic safety instructions in chapter *3 Safety, page 7*.

WARNING	
	**Danger of injury from damage and defects on the machine.** ▪ Do not take the machine into service if damage has been localized and identified. ▪ Replace defective components.

7.2 Load limits

The generating set can supply AC motors, air conditioners, AC/DC converters, battery chargers and other machines. How many machines can be supplied depends on the generator output. The generating set switches off if the sum of the loads exceeds the generator output (see chap. *9.1 Fault table, page 61*).

To prevent overloading of the generating set and the associated switch-offs, compare the sum of the loads of the machines that likely to be used simultaneously with the rated output of the generating set.

The generating set may switch off due to overloading if a large motor or an air conditioner is started or switched off and on again, even though the sum of loads is less than the rated output of the generating set. The reason is that the starting load of a motor is larger than its operating load. It may be necessary to operate fewer machines if large motors and air conditioners are being switched on and off.

Typical machine loads

Machine	Load (in watts)
Air conditioner	1400 - 2000
Battery charger	Up to 3200
DC converter	300 - 900
Refrigerator	600 - 1000
Microwave oven	1000 - 1500
Electric frying pan or wok	1000 - 1500
Electric stove element	350 - 1000

Machine	Load (in watts)
Electric hot water heater	1000 - 1500
Electric iron	1000 - 2000
Electric hair dryer	800 - 1500
Coffee percolator	550 - 750
Coffee machine	1000 - 1500
Television	100 - 500
Radio	50 - 200
Power drill	250 - 750
Electric broom	200 - 500
Electric blanket	50 - 200

The engine output decreases as the ambient temperature and/or the altitude increases. Therefore, it may be necessary to operate fewer machines under these conditions.

Reduction in output with increasing ambient temperature

At ambient temperatures of more than 25 °C (77 °F), the rated engine output drops by approx. 6% every 5.5 °C (42 °F).

Reduction in output with increasing altitude

Altitude above sea level	Maximum output
Below 500 ft (152 m)	3200 W (rated output)
2500 ft (762 m)	2980 W
5500 ft (1676 m)	2640 W
Above 5500 ft (1676 m)	2640 W minus 112 W every 1000 ft (305 m)

7.3 Performing tests

Before starting

Before starting the machine, several tests need to be performed to ensure the machine is working properly.

Procedure

Step	Test
1	Operation site is adequately ventilated. **Important!** **Never** switch on the generating set if the vehicle is parked in a garage or other closed or poorly ventilated area.
2	There is a sufficient amount of engine oil in the engine housing (see chapter *8.2.3 Checking the oil level, page 49*).
3	There is a sufficient amount of fuel in the fuel tank (see documentation of vehicle manufacturer).
4	The battery is functional (see documentation of vehicle manufacturer).
5	All panel parts are fitted and the maintenance door is closed.
6	All carbon monoxide (CO) detectors in the vehicle have been checked for function.
7	The generating set has been checked for fuel and oil leaks and damage to the exhaust system.
8	The ground clearance of the generating set is not lessened by sloping terrain, curbs, tree trunks or other objects. Move the vehicle if necessary. Remove all objects blocking the air inlet or outlet.
9	Air conditioners and other large consumers are switched off.

7.4 Operating the generating set

Safety note

DANGER	
	**Danger to life from inhaling exhaust gases.** Engine exhaust contains carbon monoxide, an odorless, colorless, poisonous gas that can lead to unconsciousness and death. ▪ Never switch on the generating set if the vehicle is parked in a garage or other closed or poorly ventilated area. ▪ Never stay in the vehicle while the generating set is running unless the vehicle has a functioning carbon monoxide detector. ▪ Do not breathe in the exhaust gases.

Symptoms of carbon monoxide poisoning

Among the symptoms of carbon monoxide poisoning are:

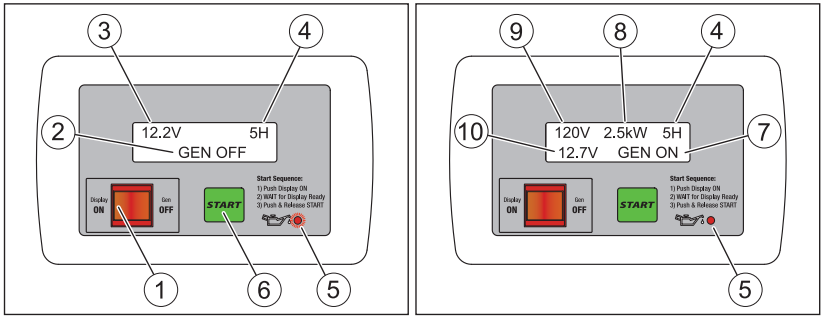
- Dizziness
- Headache
- Nausea
- Weakness and sleepiness
- Vomiting
- Light-headedness

If one or more of these symptoms occur, immediately go out into the fresh air. If symptoms persist, consult a physician.

Switch off the generating set and do not operate again until it has been inspected and repaired.

7.4.1 Starting the generating set

Overview



1	Rocker switch for switching the display on (Display ON) and switching the machine off (Gen OFF)
2	Status message **GEN OFF**
3	DC voltage of starter battery
4	Operating hours
5	Low oil indicator lamp
6	START button
7	Status message **GEN ON**
8	Supplied power
9	Supplied voltage
10	DC voltage of starter battery

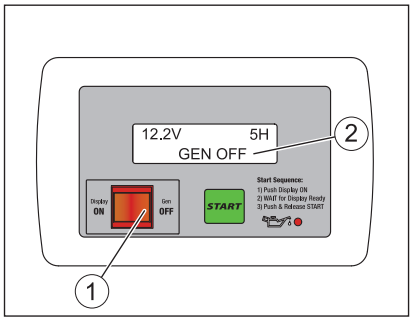
Procedure

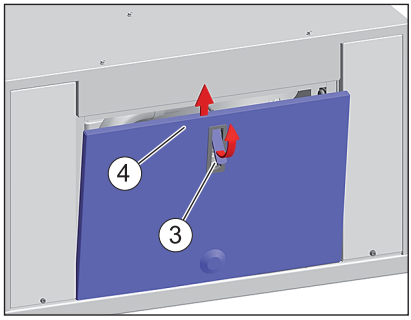
Step	Activity
1	*Switch on the operating panel:* Press the rocker switch (1) (Display ON) and release it again. The display switches on and shows the status message **GEN OFF**. The generating set is in standby mode. In addition, the battery voltage and the operating hours are displayed along with warning and switch-off messages. For details, see chap. *9.1 Fault table, page 61*. The display switches off automatically after 2 minutes if the START button is not activated within this period. Pressing the START button switches the display back on.

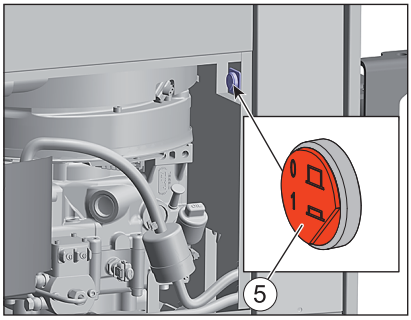
Step	Activity
2	Press the START button and keep it pressed until the status message **GEN ON** appears on the display. *Note:* Up to three start attempts can be made. In the pauses between start attempts, **GEN WAIT** appears on the display. If the generating set still does not start after the third attempt, note chap. *9.1 Fault table, page 61*.
3	When the generating set is in operation, electric machines can be connected or switched on.
4	Check the generating set for fuel, oil and exhaust leaks. Stop the machine immediately if a leak is found and do not restart it until it has been repaired.

7.4.2 Stopping the generating set

Overview







1	Rocker switch for switching the display on (Display ON) and switching the machine off (Gen OFF)
2	Status message
3	Maintenance door lock

4	Maintenance door (access to diesel engine)
5	Stop switch

Procedure

Step	Activity
1	Switch off the connected electric machines.
2	Press the rocker switch (1) (GEN OFF). The machine switches off. The status message displays **GEN OFF**. The generating set is in standby mode. The display switches off automatically after 2 minutes. *Note:* If the generating set does not stop, it can be switched off with the stop switch (5). To do so, open the lock (3), tilt the maintenance door (4) forward slightly and lift to remove it. Press the stop switch (5) (pos. 0).

8 Maintenance

8.1 General maintenance instructions

Safety notes

WARNING

Danger of injury from failure to follow the Operating Instructions and from performing unauthorized tasks on the machine.

- Follow all instructions.
- Do not perform activities for which no qualification is available. Contact properly trained personnel if necessary.

NOTICE

Comply with the safety chapter!

Follow the basic safety instructions in chapter *3 Sicherheit, page 7*.

In addition, comply with all safety instructions in the manufacturer documentation (see the list of additional documentation in the appendix).

- Maintenance tasks may only be performed by trained personnel.
- Adhere to the accident prevention measures in accordance with the local accident prevention regulations.
- Perform setting and maintenance work at the specified intervals.
- Replace defective machine parts as soon as possible.
- Always wear personal protection equipment.
- Only use fully functional tools.
- Installation of unsuitable spare parts can lead to problems. We cannot accept liability for direct damage or secondary damage that results from this. We therefore recommend the use of **genuine Hatz spare parts**.
- Closely adhere to the maintenance conditions prescribed in this Operator's Manual.
- Only make changes to the machine in agreement with the manufacturer.
- Only perform maintenance work when the engine is switched off.
- Adhere to legal regulations when handling and disposing of used oil, filters, and cleaning agents.
- Disconnect the negative battery terminal.
- After completing maintenance work, check that all tools, screws, aids, and other objects are removed from the machine, and that all safety equipment has been replaced.

- Before starting, ensure that no persons are located in the danger zone of the engine or machine.

Performance of maintenance work

The entire machine is designed to be maintenance friendly. Parts that require maintenance are easily accessible.

- Perform maintenance work faithfully at the specified intervals to prevent premature wear of the machine.
- Follow the notice and warning labels on the machine.
- Always retighten screw connections loosened during maintenance work.
- After the necessary maintenance and repair work is completed, perform a function test (test run).
- For maintenance work that is not listed and described in the maintenance documentation, please contact your nearest **HATZ service station**.

8.2 Maintenance work

Safety note

⚠ CAUTION	
	**Danger of injury from ignoring the maintenance instructions.** ▪ Only perform maintenance work when the engine is switched off. ▪ Disconnect the negative battery terminal. ▪ When the maintenance work has been completed, ensure that all tools are removed from the machine.

8.2.1 Maintenance plan

Daily checks

Maintenance interval	Maintenance step/check	Section
Every 20 operating hours or every day before starting	Checking the oil level	*8.2.3 Checking the oil level, page 49*
	Visual check for cleanliness, completeness and general condition	

Initial maintenance of new or rebuilt engines

Maintenance interval	Maintenance step/check	Section
After the first 20 operating hours	Change the engine oil[2)]	*8.2.4 Change the engine oil, page 51*

Maintenance

Symbol	Maintenance interval	Maintenance step/check	Section
250h	Every 250 operating hours or every 12 months	Diagnosis of engine management[1) 2)] (to be performed by trained technicians)	
		Update of the engine control unit[2) 3)] (to be performed by trained personnel)	
		Change the engine oil[2)]	*8.2.4 Change the engine oil, page 51*
		Clean the cooling air area [2)] (to be carried out by a trained specialist)	
		Check the threaded connections [2)] (to be carried out by a trained specialist)	
		Clean the spark arrestor (to be carried out by a trained specialist)	
		Change the main fuel filter [2) 4)]	*8.2.5 Changing the fuel filter, page 54*
		Change the dry air filter[2)]	*8.2.6 Maintaining the dry air filter, page 56*
1000h	Every 1000 operating hours	Clean the oil filter[5)]	*8.2.8 Clean the oil filter, page 58*
		Check and adjust the tappet clearance [2)] (to be carried out by a trained specialist)	

[1)] The engine control module continuously evaluates the engine-relevant data during operation. If an engine fault or deviations from the setpoints occur, these data are written to the error memory. Stored data can be read out and evaluated for fault diagnostics by a Hatz service partner using the Hatz Diagnostic Software HDS². In this way, faults can be detected and eliminated early on or preventative maintenance can be performed.

[2] Maintenance according to the maintenance interval or after 12 months, whichever comes first.

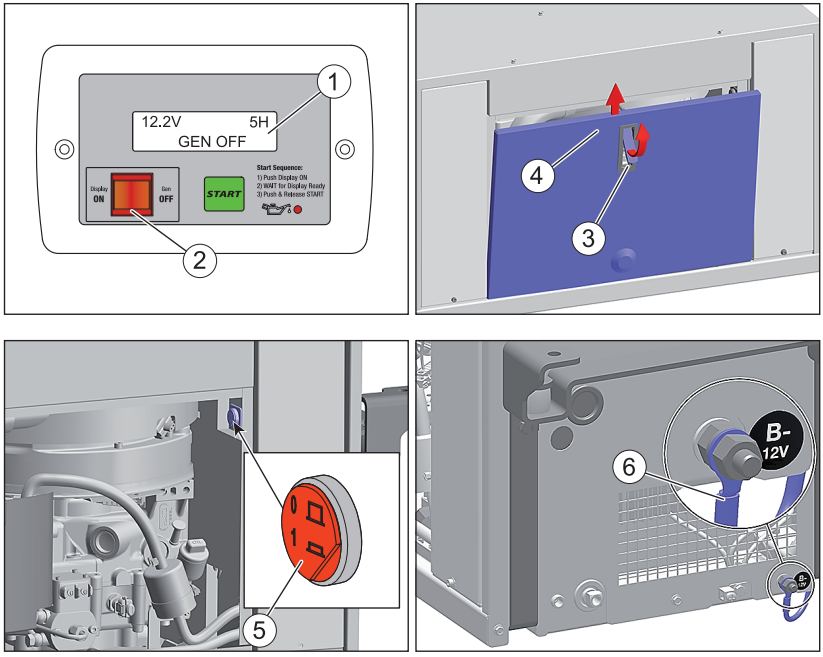
[3] The engine control unit can only be updated using the Hatz diagnostic software HDS[2]. The update installs extensions and improvements of the control software.

[4] The interval at which maintenance work should be performed on the fuel filter depends on the cleanliness of the fuel in use and may need to be shortened to 150 operating hours.

[5] Maintenance according to the maintenance interval or after 4 years, whichever comes first.

8.2.2 Before beginning maintenance work

Overview



1	Display
2	Rocker switch for switching the display on (display ON) and switching the machine off (Gen OFF)
3	Maintenance door lock
4	Maintenance door (access to diesel engine)
5	Stop switch
6	Connection for battery cable negative terminal (B–)

Procedure

Step	Activity
1	**Switch off the operating panel**: If the display (1) is switched on, press the rocker switch (2) (Gen OFF) to switch off the operating panel. The display goes out.
2	Open the lock (3).
3	Tilt the maintenance door (4) forward slightly and lift to remove.
4	**Switch off the machine**: Press the stop switch (5) (pos. 0). Disconnect the battery cable negative terminal (B–) from the generating set. This prevents the machine from starting up during maintenance and service work.
	After completing maintenance work
5	Connect the battery cable negative terminal (B–) to the generating set.
6	Unlock the stop switch (5) (pos. 1).
7	Close the maintenance door. The machine is operational and can be started on the operating panel. **Attention!** **The machine may only be started with the maintenance door closed.**

8.2.3 Checking the oil level

Safety notes

⚠ CAUTION	
	**Danger of burns.** There is a danger of burns when working on a hot engine. ▪ Wear safety gloves.

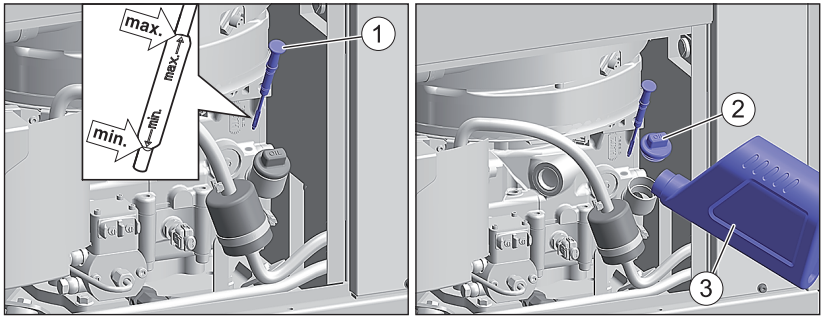
	CAUTION
	**Danger of injury** Prolonged contact with engine oil can lead to irritation of the skin. ▪ Wear safety gloves. ▪ If there is contact with the skin, thoroughly wash the affected areas of the skin with soap and water.

	CAUTION
	Danger of later engine damage. ▪ Operating the engine with an oil level below the **min.** mark or above the **max.** mark can lead to engine damage. ▪ When checking the oil level, the engine must be horizontal and have been switched off for a few minutes.

Preparation

Protect the machine against being started unintentionally; see chap. *8.2.2 Before beginning maintenance work, page 48*.

Overview



1	Dipstick
2	Oil filler plug
3	Oil refilling container

Procedure

Step	Activity
1	After the generating set stops, wait several minutes for the engine oil to collect in the crankcase of the engine. The machine must be horizontal.

Step	Activity
2	Remove contamination on the engine in area of the dipstick (1) and the oil filler plug (2).
3	Pull out the dipstick (1) and wipe it off with a clean towel.
4	Reinsert the dipstick.
5	Pull out the dipstick and check the oil level.
6	If the oil level is close to the **min.** mark, add engine oil to the **max.** mark. For the specification and viscosity, see chapter *4.2.1.1 Engine oil, page 28*.
7	Reinsert the dipstick.

8.2.4 Change the engine oil

This section contains the following subsections:

- **Preparation**
- **Draining the engine oil**
- **Filling the engine oil**

Safety notes

⚠ CAUTION	
	**Danger of burns.** When working on the engine, there is a danger of burns from hot oil. ▪ Wear personal protective equipment (gloves).

⚠ CAUTION	
	**Danger of environmental damage from spilled used oil.** Used oil is water-polluting. ▪ Do no allow them to enter the ground water, water bodies, or sewage system. ▪ Collect the used oil and dispose of it according to local environmental regulations.

CAUTION

Danger of injury

Prolonged contact with engine oil can lead to irritation of the skin.

- Wear safety gloves.
- If there is contact with the skin, thoroughly wash the affected areas of the skin with soap and water.

CAUTION

Danger of later engine damage.

- Operating the engine with an oil level below the **min.** mark or above the **max.** mark can lead to engine damage.
- When checking the oil level, the engine must be horizontal and have been switched off for a few minutes.

NOTICE

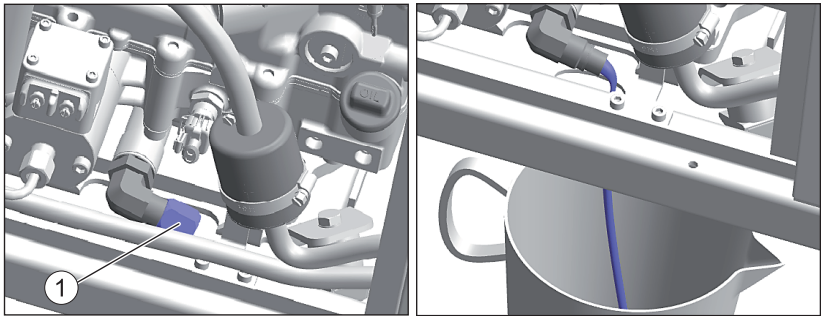
- The engine must be level.
- The engine must be switched off.
- Only drain engine oil while it is warm.

Preparation

- Allow the generating set to warm up for three to five minutes so that the engine oil becomes more fluid and then drains quickly and completely.
- Protect the machine against being started unintentionally; see chap. *8.2.2 Before beginning maintenance work, page 48*.

Draining the engine oil

Overview



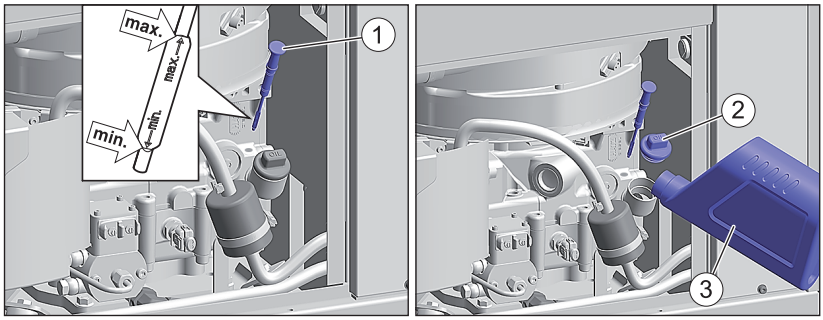
1	Oil drain screw

Procedure

Step	Activity
1	Keep a container ready for collecting the used oil. The container must be large enough to hold the entire amount of engine oil. For the engine oil capacity, see chapter *4.2.1 Engine, page 27*.
2	Unscrew the oil drain screw (1) and drain the used oil entirely.
3	Screw in the cleaned oil drain screw (1) and **tighten**.

Filling the engine oil

Overview



1	Dipstick
2	Oil filler plug
3	Oil refilling container

Step	Activity
1	Pull out the dipstick (1) and wipe it off with a clean towel.
2	Unscrew the oil filler plug (2).
3	Fill engine oil. For the specification and viscosity, see chapter *4.2.1.1 Engine oil, page 28*. See chapter *4.2.1 Engine, page 27* for the engine oil capacity.
4	Reinsert the dipstick.
5	Pull out the dipstick and check the oil level.
6	If necessary, add engine oil to the max. mark.
7	Reinsert the dipstick.
8	Screw in the oil filler plug.

8.2.5 Changing the fuel filter

Safety notes

DANGER

Fire hazard from fuel

Leaked or spilled fuel can ignite on hot engine parts and cause serious burn injuries.

- Do not spill fuel.
- No open flames when working on the fuel system.
- Do not smoke.

CAUTION

Danger of injury.

Repeated contact with diesel fuel can cause chapped and cracked skin.

- Wear safety gloves.
- If there is contact with the skin, thoroughly wash the affected areas of the skin with soap and water.

CAUTION

Danger of environmental damage from spilled fuel.

When the filter is removed, a small amount of fuel is drained as well.

- Collect any escaping fuel and dispose of it according to local environmental regulations.

CAUTION

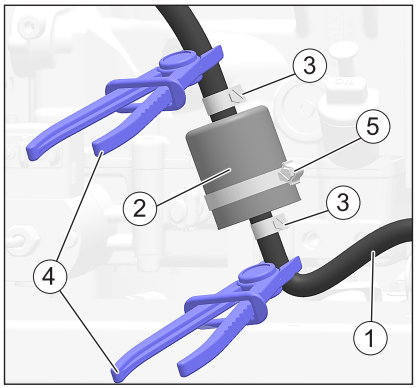
Dirt particles can damage the injection system.

- Maintain clean conditions to ensure dirt does not enter the fuel line.

Preparation

Protect the machine against being started unintentionally; see chap. *8.2.2 Before beginning maintenance work, page 48*.

Overview



1	Fuel line
2	Fuel filter
3	Hose clamp
4	Hose clip
5	Fuel filter fastening clamp

Procedure

Step	Activity
1	Clamp off the fuel line (1) before and after the fuel filter (2).
2	Keep a container ready for collecting escaping fuel.
3	Release the hose clamps (3).
4	Release the fastening clamp (5) and remove from the holder along with the fuel filter.
5	Pull the fuel line off the fuel filter on both sides. Dispose of the old filter in accordance with local environmental regulations.
6	Insert a new fuel filter. Observe the flow-through direction (arrows).
7	Assembly is performed in the reverse order.
8	Check the fuel filter and lines for tightness after a brief trial run.

8.2.6 Maintaining the dry air filter

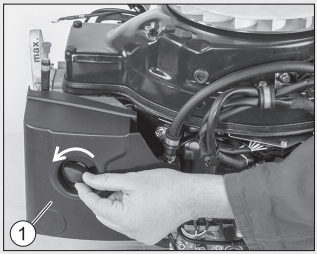
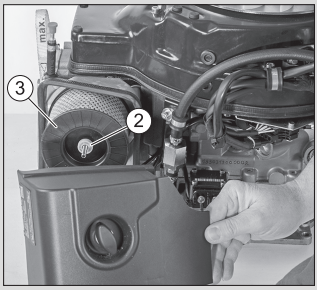
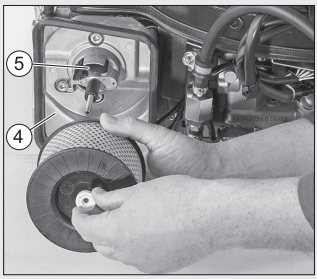
NOTICE

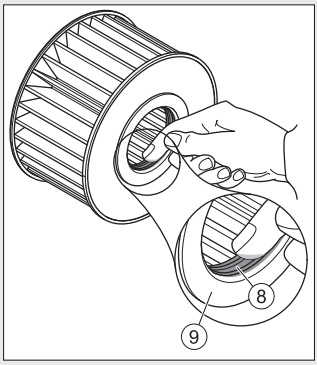
- If the filter cartridge is soiled, the air flow to the engine will be reduced. For the engine to function well, the filter condition must be checked regularly, especially if the generating set is being used in very dusty environments.
- Renew the filter cartridge after a use period of 250 operating hours.

Preparation

Protect the machine against being started unintentionally; see chap. *8.2.2 Before beginning maintenance work, page 48*.

Installing and removing the filter cartridge

Step	Activity	Figure
1	Unscrew the air filter cover (1).	
2	Unscrew the knurled nut (2) and remove the air filter cartridge (3).	
3	Clean the filter housing (4) and cover for the air filter. Ingress of dirt or other foreign bodies into the intake opening (5) of the engine absolutely must be avoided.	

Step	Activity	Figure
4	The air filter cartridge either needs to be replaced, or cleaned or checked depending on the degree of contamination (see chapter *8.2.7 Checking and cleaning the air filter cartridge, page 57*).	
5	Thinly coat the gasket (8) with grease or engine oil to make assembly and disassembly of the air filter cartridge easier. Do **not** coat the face side (9).	
6	Assemble in reverse order.	

8.2.7 Checking and cleaning the air filter cartridge

Safety notes

CAUTION

Danger of injury.

When working with compressed air, foreign bodies may fly into your eyes.

- Wear safety goggles.
- Never direct the compressed air jet toward people or toward yourself.

CAUTION

Danger of injury.

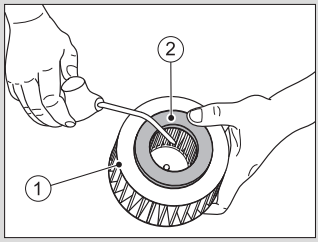
When blowing out the filter cartridge, the ambient air becomes contaminated with dust.

- This dust may contain harmful particles.
- Wear a fine dust mask.

NOTICE

- The pressure must not exceed 5 bar.
- Even minor damage in the areas of the sealing surface, filter paper or filter cartridge makes it impossible to reuse the filter cartridge.

Checking and cleaning the air filter cartridge

Step	Activity	Figure
Dry contamination		
1	Blow out the filter cartridge (1) with dry compressed air from the inside to the outside until dust no longer emerges.	
2	Check the sealing surface (2) of the filter cartridge for damage.	
3	Check the filter cartridge for cracks in the filter paper and other damage by holding it against the light at a slant or letting light from a lamp shine through it.	
4	Replace the filter cartridge if necessary (see note).	
Moist or oily contamination		
1	Renew the filter cartridge.	

8.2.8 Clean the oil filter

Safety notes

CAUTION

Danger of burns.

There is a danger of burns when working on a hot engine.

- Let the engine cool before maintenance.

⚠ CAUTION

Danger of injury

Prolonged contact with engine oil can lead to irritation of the skin.

- Wear safety gloves.
- If there is contact with the skin, thoroughly wash the affected areas of the skin with soap and water.

⚠ CAUTION

Danger of injury.

When working with compressed air, foreign bodies may fly into your eyes.

- Wear safety goggles.
- Never direct the compressed air jet toward people or toward yourself.

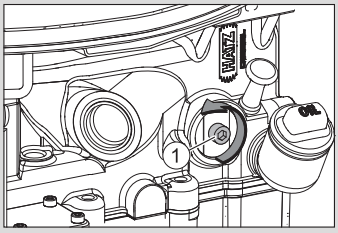
NOTICE

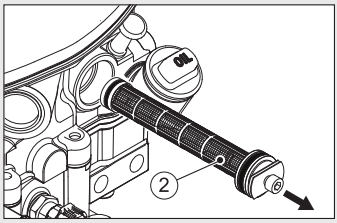
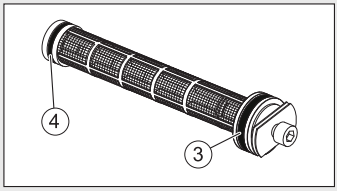
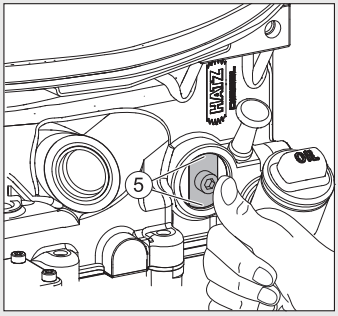
- Collect the emerging oil and dispose of it according to local environmental regulations.

Preparation

Protect the machine against being started unintentionally; see chap. *8.2.2 Before beginning maintenance work, page 48*.

Procedure

Step	Activity	Figure
1	Keep a container ready for collecting the used oil.	
2	Loosen the screw (1) by approx. five turns.	

Step	Activity	Figure
3	Pull the oil filter (2) out of the housing.	
4	Blow out the oil filter from the inside to the outside with compressed air.	
5	Check the sealing rings (3+4) for damage and renew if necessary.	
6	Lightly oil the sealing rings before mounting.	
7	Insert the oil filter and press it all the way in.	
8	Before tightening the screw, ensure that the tension springs (5) rest against the oil filter at both ends. Tighten the screw.	
9	Check the oil level and add oil to the max. mark if necessary (see chapter *8.2.3 Checking the oil level, page 49*).	

9 Faults

9.1 Fault table

General troubleshooting notes

If the cases listed below have been worked through but the fault continues to persist, please contact your nearest **Hatz service**.

The operating panel does not turn on when the on/off switch is pressed.

Possible causes	Remedy	Section
The starter battery is discharged.	Charge the starter battery.	
The current cable is broken or the connector is disconnected.	Contact HATZ Service.	
The fuse (if present) triggered.	Contact HATZ Service.	

The starter does not turn when the START button is pressed

Possible causes	Remedy	Section
The starter battery is weak.	Charge the starter battery.	
The stop switch is in position "0".	Set the stop switch to position "1".	
The PCB is damaged.	Contact HATZ Service.	
The starter is not supplied with current.	Contact HATZ Service.	

The starter is turning but the engine does not start.

The generating set performs up to three start attempts, during which the starter turns for 5 seconds each time. The starter pauses for several seconds between start attempts. "GEN WAIT" appears on the display; see chap. *9.2 Display messages, page 62*.

Possible causes	Remedy	Section
The tank ran out of fuel during operation.	Add fuel.	
The fuel stop valve (if present) is closed.	Open the fuel stop valve.	
Fuel filter is clogged.	Change the fuel filter.	*8.2.5 Changing the fuel filter, page 54*

Possible causes	Remedy	Section
Faulty fuel pump.	Contact HATZ Service.	
Faulty engine.	Contact HATZ Service.	

9.2 Display messages

The following status, warning and error messages appear on the display. Once messages have been deleted, they cannot be called up again. To delete the errors, switch the operating panel off and on again.

Status messages

Message	Fault/Cause	Remedy
GEN OFF	Indicates that the generating set is switched off but ready to start.	
GEN ON	Indicates that the generating set is in operation.	
GEN START	This message appears while the START button is pressed.	If the engine does not start, check the stop switch; see chap. *5.3 Electrical components, page 32*.
GEN CAL	This message appears while the generating set is starting and indicates that it is in calibration mode and not yet ready to generate an output voltage.	The message goes out after a few seconds.
GEN WAIT	Message that appears during pre-glow or in the pause between two start attempts.	Wait for the message to go out, then start the engine.
LOW BATTERY	The battery voltage is under the minimum value (9 V DC) needed to start the generating set.	Check the battery connections and charge the battery or replace it with a new battery.

Maintenance messages

Message	Fault/Cause	Remedy
CHECK OIL LEVEL	This message appears every 20 operating hours and is a reminder to check the oil level of the engine.	Check the oil level; see chap. *8.2.3 Checking the oil level, page 49*. To reset the message, start the generating set and press the START button until the message is gone. If the message is not reset, it will reappear after an hour of operation.
OIL CHANGE	This message appears every time the operating hours counter of the generating set reaches the preset service point for changing the engine oil.	Change the engine oil; see chap. *8.2.4 Change the engine oil, page 51*. To reset the message, start the generating set and press the START button until the message is gone. If the message is not reset, it will reappear after an hour of operation.

Error messages

Message	Fault/Cause	Remedy
GENERATOR ALERT	General alarm message; this means that the system cannot manage its own functions (the generating set stops). ▪ No voltage at the input (CN6) of the inverter. ▪ Communication (CN7) with the inverter is faulty. ▪ The generating set stops because of an engine fault. ▪ The inverter is damaged.	Restart the generating set after a short waiting period. If the problem persists, contact Hatz Service.

Message	Fault/Cause	Remedy
OIL TEMP-PRESS	If this message appears, the engine temperature is too high or the oil pressure is too low. (The generating set stops).	▪ Check the oil level; see chap. *8.2.3 Checking the oil level, page 49*. ▪ Check the cooling air openings for contamination. ▪ Only operate the generating set if the maintenance door is closed.
SHORT CIRCUIT	This message appears if a short circuit occurs in a connected machine (the output is switched off but the engine continues running to cool the generating set).	▪ Switch off the connected machines or disconnect from the power network and then check for damage. ▪ Stop the generating set and then restart it. ▪ Connect and switch on the consumers one after the other to determine which machine has a short circuit. Repair or replace the faulty machine.
OVERLOAD	This message appears if the total output of the connected machines exceeds the rated output of the generating set (see chap. *7.2 Load limits, page 38*) (the generating set stops).	▪ Reduce the number or load of connected machines. ▪ Restart the generating set.

Message	Fault/Cause	Remedy
OVER TEMPERATURE	This message appears if the temperature inside the inverter rises above 70 °C (the output voltage is switched off but the engine continues running to cool the generating set).	▪ After several minutes of cooling time, stop the generating set. ▪ Check the intake opening for cooling and combustion air for contamination. ▪ Check the intake and outlet openings for cooling air to ensure the air current is unhindered. ▪ Start the generating set and let it run without load. If the message appears again after a short period, call Hatz Service.

10 Storage and disposal

10.1 Storing the machine

Safety notes

DANGER

Danger to life from inhaling exhaust gases.

Engine exhaust contains carbon monoxide, an odorless, colorless, poisonous gas that can lead to unconsciousness and death.

- Never switch on the generating set if the vehicle is parked in a garage or other closed or poorly ventilated area.
- Never stay in the vehicle while the generating set is running unless the vehicle has a functioning carbon monoxide detector.
- Do not breathe in the exhaust gases.

WARNING

Danger of chemical burns.

Battery acid is highly corrosive and can cause eye and skin injuries.

- Wear safety goggles and safety gloves.

CAUTION

Danger of injury from incorrect operation.

When removing and attaching electrical connections, dangerous sparkovers can occur.

- When removing the battery, first disconnect the negative terminal and then the positive terminal.
- When installing, first connect the positive terminal and then the negative terminal.

NOTICE

Danger of environmental damage.

- Do not dispose of the battery with the household trash.
- Dispose of the battery at a collection point for possible recycling.

NOTICE

Comply with the safety chapter!

Follow the basic safety instructions in chapter *3 Safety, page 7*.

Storing the machine for a lengthy period

Take the following measures if you intend to take the machine out of service for a lengthy period (3–12 months):

Step	Activity
1	Change the engine oil (see chapter *8.2.4 Change the engine oil, page 51*).
2	Change the fuel filter (see chapter *8.2.5 Changing the fuel filter, page 54*).
3	Let the machine cool down.
4	Close the fuel stop valve (if present).
5	Remove the starter battery of the generating set as per the instructions from the vehicle manufacturer and store according to local regulations and the battery manufacturer instructions.
6	Close and seal all engine openings (air intake openings, air outlet openings and the exhaust gas opening) so that no foreign bodies can enter, but a small amount of air can still be exchanged. This avoids condensation.

Ambient conditions during storage

- Max. permissible storage temperature: -25 °C to +60 °C
- Max. permissible humidity: 70%

Recommissioning

Step	Activity
1	Remove all covers.
2	Check the cables, hoses and lines for cracks and leak tightness.
3	Check the engine oil level.

Step	Activity
4	Install the battery as per the instructions of the vehicle manufacturer.
5	Open the fuel stop valve (if present).

The machine new from the factory can normally be stored for up to 12 months. The protection lasts up to approx. 6 months at very high humidity and in sea air.

For storage periods of more than 12 months, please contact the nearest **HATZ Service**.

10.2 Disposing of the machine

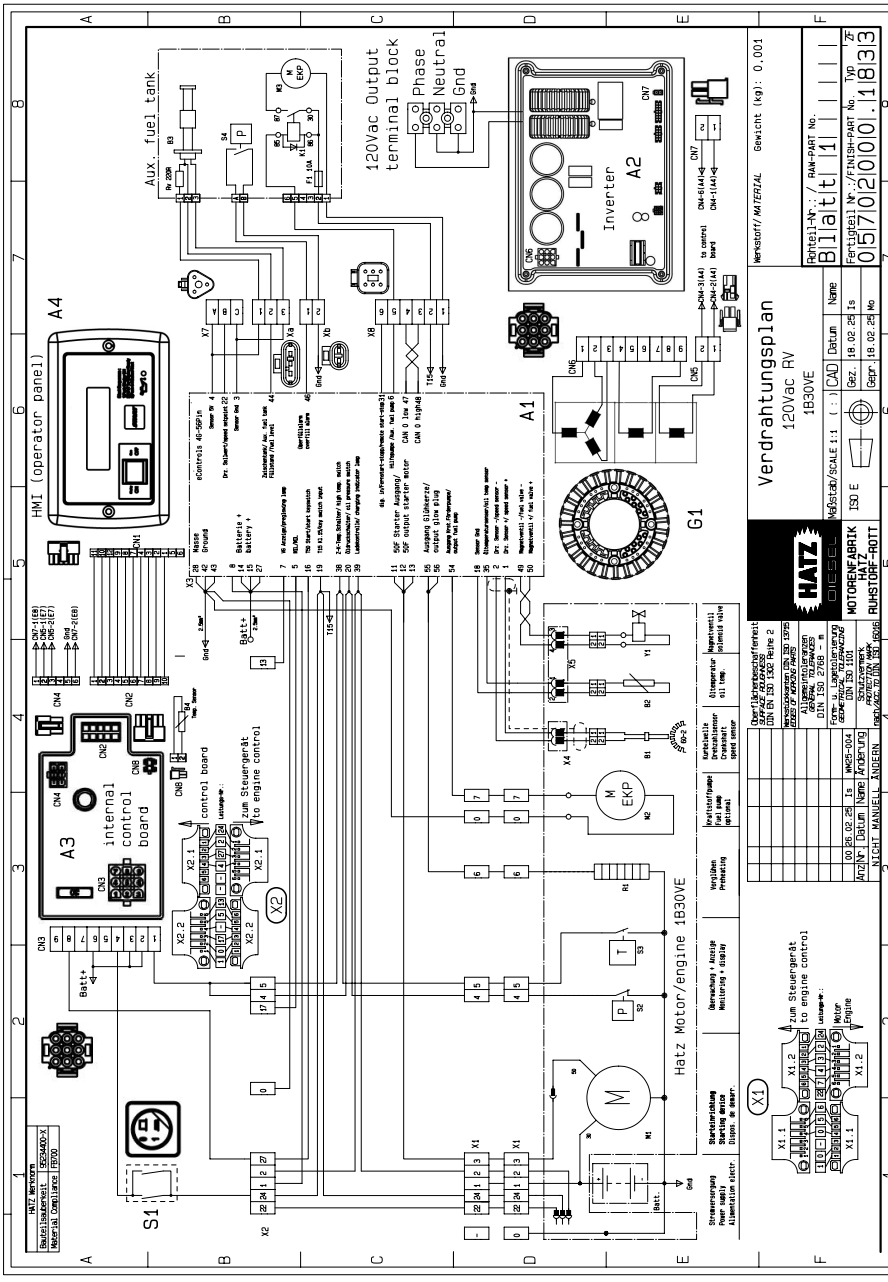
Disposal information

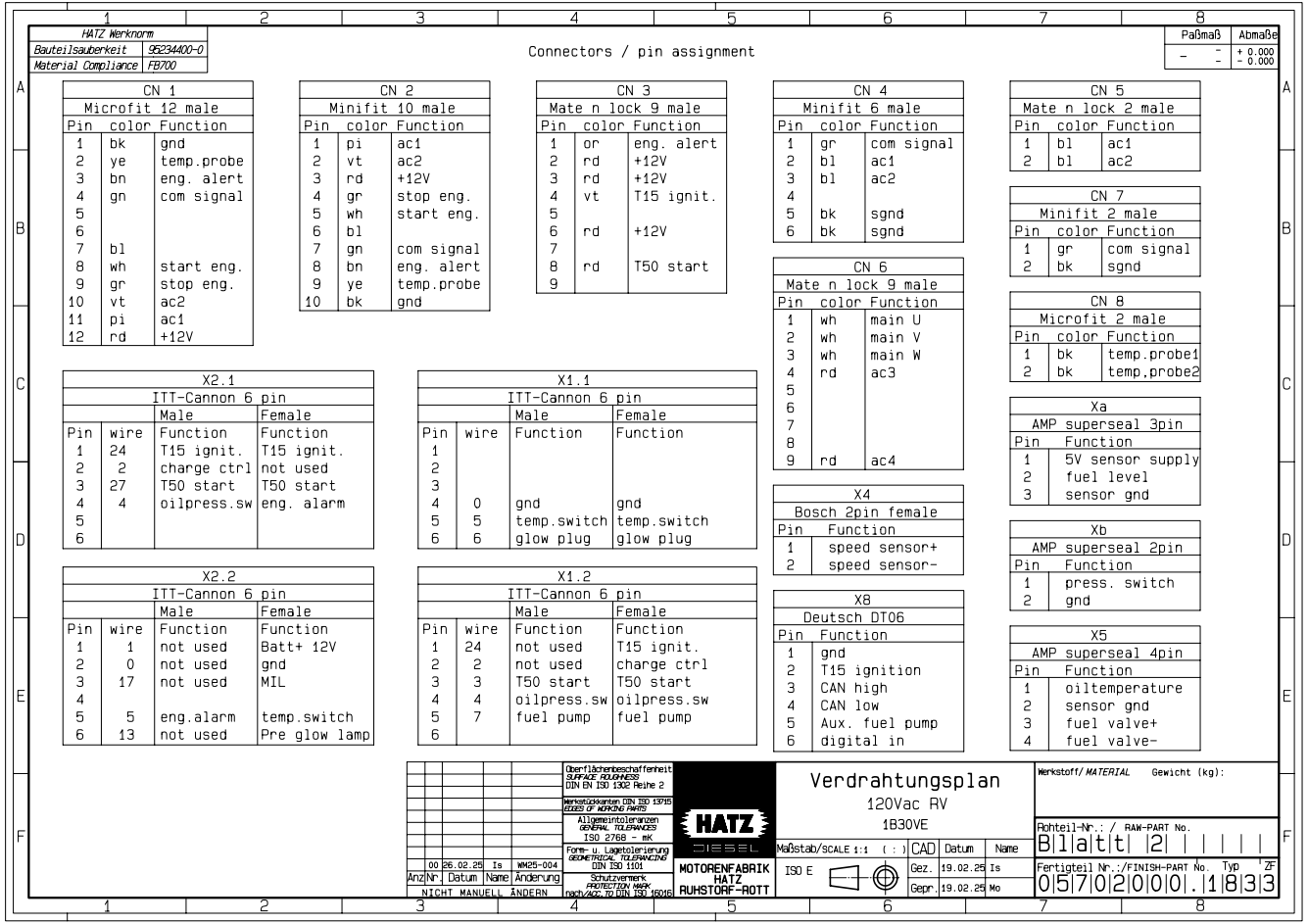
Dispose of the machine (including machine parts, engine oil and fuel) according to the local disposal regulations and the environmental laws in the country of use.

Because of the danger of possible environmental damage, only permit an approved specialist company to dispose of the machine.

	NOTICE
	When the machine has reached the end of its lifecycle, ensure that it is disposed of safely and properly, especially parts and substances that can be dangerous to the environment. These also include fuel, lubricants, plastics, and batteries (if present). ▪ Do not dispose of the battery with the household trash. ▪ Dispose of the battery at a collection point for possible recycling.

11 Wiring plan





HATZ Werknorm
Bauteilsauberkeit 95234400-0
Material Compliance FB700

Connectors / pin assignment

Paßmaß – – | Abmaße + 0.000 – 0.000

CN 1 — Microfit 12 male

Pin	color	Function
1	bk	gnd
2	ye	temp.probe
3	bn	eng. alert
4	gn	com signal
5		
6		
7	bl	
8	wh	start eng.
9	gr	stop eng.
10	vt	ac2
11	pi	ac1
12	rd	+12V

CN 2 — Minifit 10 male

Pin	color	Function
1	pi	ac1
2	vt	ac2
3	rd	+12V
4	gr	stop eng.
5	wh	start eng.
6	bl	
7	gn	com signal
8	bn	eng. alert
9	ye	temp.probe
10	bk	gnd

CN 3 — Mate n lock 9 male

Pin	color	Function
1	or	eng. alert
2	rd	+12V
3	rd	+12V
4	vt	T15 ignit.
5		
6	rd	+12V
7		
8	rd	T50 start
9		

CN 4 — Minifit 6 male

Pin	color	Function
1	gr	com signal
2	bl	ac1
3	bl	ac2
4		
5	bk	sgnd
6	bk	sgnd

CN 5 — Mate n lock 2 male

Pin	color	Function
1	bl	ac1
2	bl	ac2

CN 6 — Mate n lock 9 male

Pin	color	Function
1	wh	main U
2	wh	main V
3	wh	main W
4	rd	ac3
5		
6		
7		
8		
9	rd	ac4

CN 7 — Minifit 2 male

Pin	color	Function
1	gr	com signal
2	bk	sgnd

CN 8 — Microfit 2 male

Pin	color	Function
1	bk	temp.probe1
2	bk	temp.probe2

X2.1 — ITT-Cannon 6 pin

Pin	wire	Male Function	Female Function
1	24	T15 ignit.	T15 ignit.
2	2	charge ctrl	not used
3	27	T50 start	T50 start
4	4	oilpress.sw	eng. alarm
5			
6			

X1.1 — ITT-Cannon 6 pin

Pin	wire	Male Function	Female Function
1			
2			
3			
4	0	gnd	gnd
5	5	temp.switch	temp.switch
6	6	glow plug	glow plug

X2.2 — ITT-Cannon 6 pin

Pin	wire	Male Function	Female Function
1	1	not used	Batt+ 12V
2	0	not used	gnd
3	17	not used	MIL
4			
5	5	eng.alarm	temp.switch
6	13	not used	Pre glow lamp

X1.2 — ITT-Cannon 6 pin

Pin	wire	Male Function	Female Function
1	24	not used	T15 ignit.
2	2	not used	charge ctrl
3	3	T50 start	T50 start
4	4	oilpress.sw	oilpress.sw
5	7	fuel pump	fuel pump
6			

X4 — Bosch 2pin female

Pin	Function
1	speed sensor+
2	speed sensor-

Xa — AMP superseal 3pin

Pin	Function
1	5V sensor supply
2	fuel level
3	sensor gnd

Xb — AMP superseal 2pin

Pin	Function
1	press. switch
2	gnd

X8 — Deutsch DT06

Pin	Function
1	gnd
2	T15 ignition
3	CAN high
4	CAN low
5	Aux. fuel pump
6	digital in

X5 — AMP superseal 4pin

Pin	Function
1	oiltemperature
2	sensor gnd
3	fuel valve+
4	fuel valve-

Oberflächenbeschaffenheit SURFACE ROUGHNESS DIN EN ISO 1302 Reihe 2
Werkstückkanten DIN ISO 13715 EDGES OF WORKING PARTS
Allgemeintoleranzen GENERAL TOLERANCES ISO 2768 - mK
Form- u. Lagetolerierung GEOMETRICAL TOLERANCING DIN ISO 1101
Schutzvermerk PROTECTION MARK nach/acc. to DIN ISO 16016
NICHT MANUELL ÄNDERN

Anz	Nr.	Datum	Name	Änderung
	00	26.02.25	Is	WM25-004

HATZ DIESEL
MOTORENFABRIK HATZ RUHSTORF-ROTT

Verdrahtungsplan

120Vac RV

1B30VE

Maßstab/SCALE 1:1 (:) | ISO E | CAD | Datum | Name
Gez. 19.02.25 Is
Gepr. 19.02.25 Mo

Werkstoff/MATERIAL Gewicht (kg):

Rohteil-Nr.: / RAW-PART No. B|1|a|t|t| |2| | | | | |

Fertigteil Nr.:/FINISH-PART No. Typ ZF 0|5|7|0|2|0|0|0|.|1|8|3|3

12 EPA AND CARB CERTIFIED ENGINES

**SUPPLEMENTAL INFORMATION
TO THE OWNER'S MANUAL FOR MODEL YEAR 2025
FOR EPA AND CALIFORNIA CERTIFIED NONROAD
COMPRESSION IGNITION ENGINES.**

**EPA AND CALIFORNIA EMISSION CONTROL
SUPPLEMENTAL WARRANTY STATEMENT.**

EPA AND CARB EMISSION CONTROL WARRANTY STATEMENT.

YOUR WARRANTY RIGHTS AND OBLIGATIONS.

The California Air Resources Board and Motorenfabrik Hatz GmbH & Co. KG is pleased to explain the emission control system warranty on your Model Year 2025 engine. In California, new heavy-duty off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. The Motorenfabrik Hatz GmbH & Co. KG must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Where a warrantable condition exists, the Motorenfabrik Hatz GmbH & Co. KG will repair your heavy-duty off-road engine at no cost to you including diagnosis, parts, and labor.

MANUFACTURER´S WARRANTY COVERAGE.

The Model Year 2025 heavy-duty off-road engines are warranted for the periods described below. Motorenfabrik Hatz GmbH & Co. KG warrants to the original owner, and to each subsequent owner, of a new, diesel engine that the emission control system of your engine:

- Was designed, built and equipped so as to conform at the time of sale with all applicable regulations of the California Air Resources Board (CARB).
- Is free from defects in material and workmanship that will cause such engine to fail to conform with applicable regulations for the following warranty period:

If your engine is certified as . . .	And its maximum power is . . .	And its rated speed is . . .	Then its warranty period is . . .
Variable speed or constant speed	kW <19 (25 HP)	Any speed	1.500 hours or two years, whichever comes first.
Constant speed	19≤ kW <37 (25≥ HP <50)	3.000 rpm or higher	1.500 hours or two years, whichever comes first.
Constant speed	19≤ kW <37 (50≥ HP <50)	Less than 3.000 rpm	3.000 hours or five years, whichever comes first.
Variable speed	19≤ kW <37 (50≥ HP <50)	Any speed	3.000 hours or five years, whichever comes first.
Variable speed or constant speed	kW ≥37 (>50 HP)	Any speed	3.000 hours or five years, whichever comes first.

If any emission-related part on your engine is defective, the part will be repaired or re- placed by Motorenfabrik Hatz GmbH & Co. KG.

The warranty period shall begin:

- on the date the equipment is first delivered to the first retail purchaser, or;
- if the equipment is placed in service for demonstration purposes prior to sale at retail, on the date the engine is first placed in service.

The emission control systems of your new Motorenfabrik Hatz engine was designed, built and tested using genuine Motorenfabrik Hatz parts, and the engine is certified as being in conformity with CARB and US EPA emission control regulations. Accordingly, it is recommended that any replacement parts used for maintenance, repair or replacement of emission control systems be Motorenfabrik Hatz parts. Any replacement part that is equivalent in all material respects may be used in the performance of any maintenance or repairs, although Motorenfabrik Hatz recommends that the owner obtain assurance that such parts are warranted by their manufacturer to be equivalent to genuine Motorenfabrik Hatz GmbH & Co. KG parts. Such use shall not reduce the remaining warranty obligations of the engine manufacturer, provided they are warranted to be equivalent to genuine Motorenfabrik Hatz parts.

Any warranted part that is not scheduled for replacement, as required maintenance shall be warranted for the warranty period defined above. If any such part fails during the period of warranty coverage, it will be repaired or replaced under warranty. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

Any warranted part that is scheduled only for regular inspection in the written instructions shall be warranted for the warranty period defined above. A statement in the written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period.

Any warranted part that is scheduled for replacement, as required maintenance shall be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by the engine manufacturer under warranty. Any such part repaired or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

Repair or replacement of any warranted part under warranty shall be performed at no charge to the owner at a warranty station.

Motorenfabrik Hatz provides warranty services or repairs at all manufacturer distribution centers (warranty stations) that are franchised to service the subject engines. Please see the Customer Assistance section of this statement for help in locating such service centers.

The owner will not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

Motorenfabrik Hatz is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

OWNER‘S WARRANTY RESPONSIBILITIES.

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Motorenfabrik Hatz recommends that you retain all receipts covering maintenance on your engine, but Motorenfabrik Hatz cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should be aware, however, that Motorenfabrik Hatz may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate ultra-low sulfur fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California’s emissions requirements.

You are responsible for presenting your engine to a Motorenfabrik Hatz authorized service center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

Add-on or modified parts, as defined in CCFR Section 1900(b)(1) and (b)(10), Title 13, that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts shall be grounds for disallowing a warranty claim made in accordance with this article. The engine manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

Customer Assistance
If you have any questions regarding your warranty rights and responsibilities, you should contact HATZ DIESEL OF AMERICA, Inc. at (262)-544-0254.

What is Not Covered by the Emission Warranty
Please note that Emission Warranty does not cover:

- Systems and parts that were not first installed on the new equipment or engine as original equipment by Motorenfabrik Hatz.
- Part malfunctions caused by abuse, misuse, improper adjustment, modification, alteration, tampering, disconnection, improper or inadequate maintenance, or use of non-recommended fuels and lubricating oils.
- Damage caused by accident, acts of nature, or other events beyond Motorenfabrik Hatz’s control.
- Replacement of expendable items made in connection with scheduled maintenance.
- Parts requiring replacement, inspection or adjustment during scheduled maintenance intervals where the part is not defective.
- Parts that are not Motorenfabrik Hatz Service Parts.
- Loss of time, inconvenience, loss of use of equipment/engine or commercial loss.

- Equipment with an altered or disconnected hourmeter where the hours cannot be determined. Equipment normally operated outside the United States.
- Non-defective parts replaced by other than Motorenfabrik Hatz dealers.

What is Covered by the Emission Warranty

The following is a list of systems and parts that are considered a part of the Emission Control System and are covered by the Emission Warranty for engines that were built to conform to EPA and CARB regulations:

IMPORTANT!
This may not include expendable maintenance items. Emission related parts requiring scheduled maintenance are warranted until their first scheduled replacement point only.

The following parts as manufactured according to HATZ specifications are mandatory for engine operation which meets exhaust emission regulations:

- High Pressure Unit-Pump
- Injection nozzle(s)
- Intake and exhaust manifold
- Crankcase breather valve assembly
- Oil filler cap
- Diesel Oxidation Catalyst
- Electronic control unit
- Oil temperature sensor
- Engine speed sensor
- Wiring harnesses
- Fuel hoses
- Intake and exhaust gaskets
- Emission Control Information Labels

Only parts manufactured by Hatz and which have passed the Hatz Quality Assurance Program have been assured of meeting EPA and CARB exhaust emission regulations.

HATZ DIESEL SUPPLEMENTAL WARRANTY FOR MODEL YEAR 2025 EPA AND / OR CARB CERTIFIED ENGINES.

PARTS WITH SUPPLEMENTAL LIMITED WARRANTY.

The following limited warranty is supplemental to the standard HATZ DIESEL LIMITED ENGINE WARRANTY and covers Model Year 2025 EPA and / or CARB certified engines and applies to the exhaust emission-related components are also listed in this manual.

SUPPLEMENTAL LIMITED WARRANTY.

Hatz Diesel of America, Inc. hereinafter referred to as “HATZ” warrants each of the above-listed parts when installed in a new engine sold by Hatz to be free from defects in material and workmanship under normal use and service, only under the named warranty coverage conditions, after the date of delivery to the original retail purchaser and Hatz will at their option, repair or replace at Hatz's sales headquarters, or at a point designated by Hatz, any part or parts which shall appear to the satisfaction of Hatz upon inspection at such point, to have been defective in material or workmanship.

- Any warranted part which is scheduled for replacement as required maintenance is warranted for the period of time up to the first scheduled replacement point for that part.
- Any replacement part which is equivalent in performance and durability may be used in non-warranty maintenance or repairs and will not reduce the overall engine warrranty obligations of Hatz. However, Hatz is not responsible for failure of such replacement parts or failure of any other parts directly caused by failure of such replacement parts.
- This warranty does not obligate Hatz to bear any transportation charges in connection with the repair or replacement of defective parts. This warranty is transferrable to subsequent owners, only under the named warranty coverage conditions.
- In order to obtain service under this warranty, the retail purchaser should contact Hatz Diesel of America, Inc. at (262)-544-0254 for information and the nearest service center. The retail purchaser will not be charged for diagnostic labor which leads to the determination that a warranted part is defective, nor for the repair or replacement of warranted parts if the work is performed at an authorized Hatz service center. If other engine components are damaged due to a failure of the above-listed warranted parts still under warranty, these other engine components will also be repaired or replaced at no charge.
- This warranty shall not apply to any engine which shall have been installed or operated in a manner not recommended by Hatz, nor to any engine which shall have been repaired, altered, neglected, or used in any way which, in the opinion of Hatz, adversely affects its performance, nor to any engine in which parts not authorized by Hatz have been used, which parts or the use of which have damaged or caused defects in or otherwise adversely affected the engine or its performance, nor to normal maintenance service or replacement of normal service items.

Hatz reserves the right to modify, alter, and improve any engine or parts in accordance with the applicable regulations without incurring any obligation to replace any engine or parts previously sold with such modified, altered, or improved engine or parts.

EMISSION-RELATED INSTALLATION INSTRUCTIONS.

“Failing to follow the Emission related installation instructions provided by Motorfabrik Hatz when installing a certified engine in a piece of nonroad equipment violates federal law (40CFR1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.”

The emission related installation instructions can be downloaded at http://www.hatz-diesel.com/doku/assembly-instructions.html

“If you install the engine in a way that makes the engine's emission control information labels hard to read during normal engine maintenance, you must place duplicate labels on the equipment.”

Assembly and handling of emission related components (e.g. catalyst mounting on the non-road equipment) are explained in the manual.

13 EPA CERTIFIED ENGINES WITHIN CALIFORNIA

**SUPPLEMENTAL INFORMATION
TO THE OWNER‘S MANUAL
FOR THE USE OF EPA CERTIFIED ENGINES
WITHIN CALIFORNIA.**

The following information is taken from the official CARB website.

"The 1990 amendments to the federal Clean Air Act preempt California control of emissions from new farm and construction equipment under 175 horsepower. Emissions from these new engines are beyond ARB's authority to regulate. The U.S. EPA has sole authority to establish emission standards for these preempt engines used in new farm and construction equipment under 175 horsepower. However, these equipment types may become subject to ARB's In-Use Off-Road Vehicle Regulations which target diesel particulate matter (PM) and oxides of nitrogen (NOx) emissions from in-use (existing) off-road heavy-duty diesel vehicles, and hydrocarbons (HC) and NOx emissions from in-use large spark-ignition (LSI) engine forklifts and other industrial equipment. For more information, please refer to ARB's In-Use Off-Road Vehicle Regulations web page for in-use off-road diesel vehicles (http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm) requirements.“

For the latest information please see
https://ww2.arb.ca.gov/sore-list-determine-preempt-road-applications

Please also see information regarding the federal non-road engine emissions control program (http://www.epa.gov/nonroad/)

WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel

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