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EC Declaration of Conformity

EC Declaration of Conformity	
1. HYUNDAI CONSTRUCTION EQUIPMENT EUROPE N.V VOSSENDAAL 11, 2440 GEEL (Belgium), as authorized representative in the European Community of HYUNDAI CONSTRUCTION EQUIPMENT Co. Ltd.(Korea) certifies that the construction equipment machinery. Machine Type : ******* Brand : HYUNDAI Model : ***** Serial No : *** Year of Manufacturing : 20**	
2. Manufacturer	Hyundai Construction Equipment Co. Ltd. 12th, Fl., Hyundai Bldg. 75, Yulgok-ro, Jongno-Gu, Seoul, Republic of Korea
Authorized representative : Owner of the technical file for machine production	HYUNDAI CONSTRUCTION EQUIPMENT EUROPE N.V. VOSSENDAAL 11, 2440 GEEL BELGIUM
3. Harmonized European directives :	2006/42/EC (Machinery), 97/68/EC (Exhaust Gas Emission), 2004/108/EC (Electromagnetic Compatibility), 200/14/EC (Noise Emission)
4. Engine Manufacturer :	********
Engine Type :	**********
Gross Power :	*** kW / **** rpm (SAE J1995)
Net Power :	*** kW / **** rpm (SAE J1349)
5. Noise level (Noise Emission Directive 2000/14/EC)	
Certificate No :	**********
Issue Date :	DD/MM/YYYY
Conformity Assesment Procedure :	**********
Notified Body Involved :	**********
	**********
	**********
Measured Sound Power Level :	** dB(A)
Guaranteed Sound Power Level :	** dB(A)
6. EMC Certification (EMC Directive 2004/108/EC)	
Certificate No :	*********
Issued Date :	DD/MM/YYYY
Notified Body Involved :	**********
	**********
Standard(s) :	*******
7. Remarks	
J. C. JUNG MANAGING DIRECTOR Place and date of issue :	

Notes:

1 Foreword

1.1 Operator’s Manual

Information on this Operator’s Manual

The Operator’s Manual is stored in the document box above the control box

This Operator’s Manual contains important information on how to work safely, correctly and economically with the power unit. Therefore, it aims not only at new personnel, but it also serves as a reference for experienced personnel.

Furthermore, the reliability and the service life of the power unit will be increased by following the instructions in the Operator’s Manual. This is why the Operator’s Manual must be kept at hand in the power unit.

The operator must carefully read and understand the Operator’s Manual before starting up, servicing or repairing the power unit.

This Operator’s Manual will help to familiarize yourself more easily with the power unit, thereby enabling you to use it more safely and efficiently.

This Operator’s Manual does not include special superstructures.

The Operator’s Manual for the battery charger of the excavator is also located in the document box mentioned above.

Please contact your dealer if you require more information on the power unit or the Operator’s Manual.

Explanation of symbols and abbreviations

Explanation of symbols

- Identifies a list
  - Identifies a subdivision of a list
  - ➥ Description of a result

1. Identifies an activity
   Follow the order of the activity!
2. Continuation of an activity
   Follow the order of the activity!

A Identifies an alphabetical list

B Continuation of an alphabetical list

Cross references: see page *1-1* (page)

Cross references: **7** (pos. no. or table no.)

Cross references: *Fig. 5* (fig. no. 1)

Cross references: *– see chapter “5.2 Accelerator actuation” on page 5-1* (see chapter)

Cross references: *– see “Accelerator actuation” on page 5-1* (– see text)

Information

Identifies an information that, when followed, provides for a more efficient and economical use of the power unit.

Environment

Failure to observe the instructions identified by this symbol can cause damage to the environment.

Abbreviations

Fig.	Figure
o/h	Operating hours
approx.	approximately
max.	maximum
min.	minimum
Pos.	Position
e.g.	for example

Definitions

Power unit	The electro-hydraulic power unit HPU is referred to as “power unit” in this Operator’s Manual.
Excavator	Unless otherwise indicated, the term **excavator** refers to the HCE dual power hydraulic excavator.
Operation	All work (for example traveling, excavating, daily maintenance, power unit operation) an operator is allowed to or has to perform in connection with the machine. The term **“operation”** does not include maintenance only a HCE service center is allowed to perform.
Three-phase connector	400 V (16 A) CEE three-phase connector according to IEC 60309, used for the power supply of the power unit.
Operators	Persons either traveling or working with a construction machine, or operating the power unit.
Machine	The term **machine** refers to a construction machine supplied with oil by the power unit (hydraulic excavator, for example), or a construction machine in general (the power unit itself, for example, when speaking in general terms).
Operating company/person	A company or person operating the machine and/or the power unit at a specific moment.

Target-group definition

This Operator's Manual is intended both for professional personnel on construction sites accustomed to handling construction machines, and also for private persons, for example, renting and operating a construction machine after they have been instructed by the machine owner/operating company in the proper use of the machine.

A dealer or person renting the machine must instruct the operator and have this confirmed in writing.

The Operator's Manual has been written in a way that allows power unit operation by trained private persons without any special knowledge. As far as possible, no technical terms specific to construction machines are used.

This Operator's Manual must be fully read and understood both by private persons and the professional personnel on construction sites.

Operator qualification and requirements for safe operation

Among other things, safe machine operation depends on the following points:

- Model and equipment
- Maintenance
- Nature of ground and work environment

The most important points are the operator's qualification and power of judgement. A well-trained operator following the Operator's Manual and maintenance plan ensures a long service life and durability of the machine.

Specific training enables the operator to acquire, among other things, the following skills:

- Correct assessment of work situations.
- Recognition of possible risk situations.
- Safe working by making the correct decisions for man, machine and the environment.

The operator is at risk if the power unit is not operated correctly.

Follow the operating procedures and instructions described for the power unit.

Children and persons under the influence of alcohol, drugs or medicine are not allowed to access the power unit or operate it.

Conversion table

The rounded imperial values are indicated in brackets, for example 1060 cm³ (64.7 in³).

Volume unit	
1 cm³	(0.061 in³)
1 m³	(35.31 ft³)
1 ml	(0.034 US fl.oz.)
1 l	(0.26 gal)
1 l/min	(0.26 gal/min)
Unit of length	
1 mm	(0.039 in)
1 m	(3.28 ft)
Weight	
1 kg	(2.2 lbs)
1 g	(0.035 oz)
Pressure	
1 bar	(14.5 psi)
1 kg/cm²	(14.22 lbs/in²)
Force/output	
1 kN	(224.81 lbf)
1 kW	(1.34 hp)
1 PS	(0.986 hp)
Torque	
1 Nm	(0.74 ft.lbs.)
Speed	
1 kph	(0.62 mph)
Acceleration	
1 m/s²	(3.28 ft/s²)

1.2 Warranty and liability

Exemption from warranty and liability

Warranty

Warranty claims can be made only if the conditions of warranty have been observed. They are included in the General Conditions of Sales and Delivery for new machines and spare parts sold by the dealers of HCE Furthermore, all instructions in this Operator's Manual must be observed.

Have the maintenance, delivery inspection and the entries in the service booklet performed by a HCE service center, otherwise warranty claims will not be acknowledged.

Liability

- Modifying HCE products and fitting them with additional equipment and attachments not included in the delivery program requires HCE's written authorization, otherwise warranty and product liability for possible damage caused by these modifications shall not be applicable.
- The safety of the power unit can be negatively affected by performing power unit modifications without proper authority and by using spare parts, equipment, attachments and optional equipment that have not been checked and released by HCE. Warranty and product liability for possible damage caused by these modifications shall not be applicable.
- HCE shall not be liable for personal injury and/ or damage to property caused by failure to observe the safety instructions and the Operator's Manual, and by the negligence of the duty to exercise due care when:
  - handling
  - operating
  - servicing and performing maintenance and
  - repairing the power unit. This is also applicable in those cases in which special attention has not been drawn to the duty to exercise due care, in the safety instructions as well as in the Operator's and maintenance manuals.
  - Read and understand the Operator's Manual before starting up, servicing or repairing the power unit. Observe all safety instructions.

2 Safety

2.1 Safety symbols and signal words

Explanation

The following symbol identifies safety instructions. It is used for warning against potential personal risk or danger.

DANGER

DANGER identifies a situation causing death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

WARNING

WARNING identifies a situation that can cause death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

CAUTION

CAUTION identifies a situation that can cause injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury.

NOTICE

NOTICE identifies a situation that causes damage to the power unit if it is not observed.

► Avoidance of damage to property.

2.2 Qualification of operating personnel

Owner's duties

- Only allow specifically authorized, trained and experienced persons to operate and perform maintenance on the power unit.
- Do not allow persons to be trained or instructed by anyone other than an authorized and experienced person.
- Have persons to be trained or instructed practice under supervision until they are familiar with the power unit and its behavior.
- Children and persons under the influence of alcohol, drugs or medicine are not allowed to access the power unit or operate it.
- Clearly and unequivocally define the responsibilities of the operating and maintenance personnel.
- Clearly and unequivocally define the responsibilities on the job site, also in view of traffic regulations.
- Give the operator the authority to refuse instructions by other persons that are contrary to safety.
- Have the power unit serviced and repaired only by a HCE service center.

Required knowledge of operator

- The operator is responsible for other persons.
- Avoid any operational mode that might be prejudicial to safety.
- The power unit may only be operated by authorized and safety-conscious persons who are fully aware of the risks involved in operating the power unit.
- The operator and owner are obligated to operate the power unit only in a safe and working condition.
- All persons working on or with the power unit must have read and understood the safety instructions in this Operator's Manual before starting work.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention.
- Observe and instruct the operator in regulations regarding road traffic and environmental protection.
- Observe the national and regional regulations, standards and guidelines regarding accident prevention in connection with electrical systems, devices and their operation.

Preparatory measures for the operator

- In order to ensure safe work, check the power unit before starting it.
- Tie back long hair and remove all jewelry.
- Wear close-fitting work clothes that do not hinder movement.

2.3 Conduct

Prerequisites for operation

- The power unit has been designed and built in accordance with state-of-the-art standards and the recognized safety regulations. Nevertheless its use can cause danger to the operator or other persons, or damage to the power unit.
- Store this Operator's Manual in the place provided for this in or on the power unit. Immediately replace a damaged or illegible Operator's Manual and any supplements to it.
- The power unit must only be operated in accordance with its designated use and the instructions set forth in this Operator's Manual.
- The operator and owner are obligated not to put into operation or operate a damaged or malfunctioning power unit.
  - If a damage or malfunction occurs during operation, put the power unit out of operation immediately and secure it against restart.
  - Have all malfunctions jeopardizing the safety of the operator or other persons immediately repaired by a HCE service center.
- Do not put the power unit into operation or operate it after an accident; have it inspected for damage by a HCE service center.
- The owner is responsible for requiring the operating and maintenance personnel to wear protective clothing and equipment as required by the circumstances.
- Put and operate the power unit on horizontal, level and firm ground.
- Keep the power unit at least one meter away from facilities, buildings and other machines during operation.
- Remove all tools, connecting cables and other loose objects from the power unit before starting it.
- The power unit connector must fit into the outlet. The connector must not be modified under any circumstances.
  Do not use adapter connectors.
  Electric extension cables may be used if they have equivalent or higher specifications than the cable to be extended.

2.4 Operation

Preparatory measures

- For connection to the mains supply of a building, the power unit must comply with the power, voltage and frequency conditions of the equipment in the building. Different power, voltage, or frequency, or the wrong connection can cause damage to the equipment, fire, personal injury or even death.
- Keep the power unit clean. This reduces injury, accident and fire hazards.
- Safely store objects you carry with you in the places provided for this (for example in the storage compartment).
- Do not carry objects with you that protrude into the operator’s work space. They can create another danger in case of an accident.
- Observe all safety, warning and information labels.
- Ensure that all safety devices are properly installed and functional before starting work.
- Before putting the power unit into operation, ensure that nobody is in the danger zone.
- Do not operate the power unit near flammable fluids.
- Immediately replace damaged connecting cables.
- Do not use the connecting cable to carry or hang up the power unit, or to pull the connector out of the outlet.
- Keep the connecting cable away from heat, oil, sharp edges or moving parts of devices.

Job site

- The operator is responsible for other persons.
- Before starting work, familiarize yourself with the job site. This applies to, for example:
  - Obstacles in the job site and machine travel area
  - Any barriers separating the job site from public roads
  - Soil weight-bearing capacity
  - Existing overhead and underground lines
  - Special operating conditions (for example dust, steam, smoke, asbestos)
- The maximum dimensions of the power unit must be known to the operator – see “Technical data”.
- Maintain a safe distance (for example from buildings, edges of building pits).
- During work in buildings or in enclosed areas, look out for:
  - Height of the ceiling/clearances
  - Width of entries/passages
  - Maximum load of ceilings and floors
- Due to hot machine parts, maintain a safe distance from easily flammable material (for example from hay, dry leaves).

Operating radius

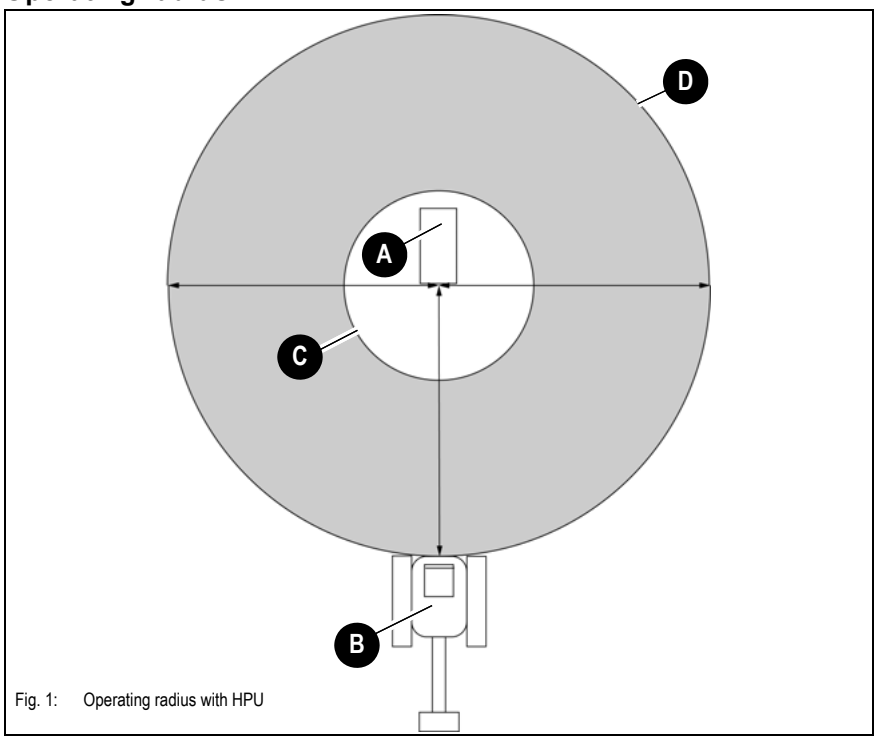


Fig. 1: Operating radius with HPU

Position	Function
A	Electro-hydraulic power unit HPU
B	Hydraulic excavator
C	Minimum operating radius with connected power unit (1.5 m/59 in)
D	Maximum operating radius with connected power unit (10 m/33 ft)
--	Minimum bending radius of Dual Power hydraulic hoses: 30 cm (12 in)

Danger zone

- The danger zone is the area in which persons are in danger due to the movements of the power unit, attachment and/or load.
- The danger zone also includes the area that can be affected by falling material, equipment or by parts that are thrown out.
- Extend the danger zone sufficiently in the immediate vicinity of buildings, scaffolds or other elements of construction.
- Seal off the danger zone should it not be possible to keep a sufficient safety distance.
- Stop machine operation immediately if persons do not stay clear of the danger zone.

Carrying passengers

- Carrying passengers with the power unit is prohibited.
- Carrying passengers on or in attachments/tools is not prohibited.
- Carrying passengers on or in trailers is not prohibited.

Mechanical integrity

- The operator and owner are obligated to operate the power unit only in a safe and working condition.
- Operate the power unit only if all protective and safety-oriented equipment (removable safety devices, for example) is installed and functional.
- Check the power unit for visible damage and defects.
- In case of damage and/or unusual behavior, put the power unit out of operation immediately and secure it against restart.
- Have all malfunctions jeopardizing the safety of the operator or other persons immediately repaired by a HCE service center.

Starting the electric motor

- Start the engine only according to the Operator's Manual.
- Observe all warning and indicator lights.

Operation

- Put the power unit into operation only if visibility is sufficient (have another person guide you if necessary).
- Operate the power unit only on horizontal, level and firm ground.
- The power unit must be at the same level as the excavator.
- Do not pull the power unit with the hydraulic hoses.
- The operator must have permanent visual contact with the power unit.
- Never get on a moving power unit and never jump off the power unit.
- Do not lay the connecting cable on vibrating or hot parts.
- Do not cover a hot or running power unit.
- Do not exceed the maximum power output (1000 W).
- Do not let untrained personnel operate the power unit.
- Keep the immediate area around the power unit clean, tidy and free of flammable material.

Stopping the electric motor

- Only stop the electric motor according to the Operator's Manual.

Stopping and securing the power unit

- Before leaving the power unit, secure it to prevent it from rolling away (suitable wheel chocks, for example).

2.5 Loading and transporting

Crane-lifting

- Seal off the danger zone.
- The crane and the lifting gear must have suitable dimensions.
- Observe the power unit's overall weight – see "Technical data".
- Wear protective clothing and equipment when fastening, guiding and removing the power unit (for example hard hat, safety glasses, safety boots).
- Use only lifting and fastening gear certified by a test/certification body (for example cables, belts, hooks, shackles), observe the inspection intervals.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Perform a visual check to ensure that all slinging points are neither damaged nor worn (no widening, no sharp edges, no cracks).
- Have loads fastened and crane operators only guided by experienced persons.
- The person guiding the crane operator must be within sight or sound of him.
- Observe all movements of the power unit and lifting gear.
- Secure the power unit against unintentional movement.
- Raise the power unit only after it is safely attached and the person attaching the power unit has given his approval.
- Use only the slinging points provided for fastening the lifting gear (for example cables, belts).
- Do not attach the power unit by twining the lifting gear (for example cables, belts) around it.
- Ensure an even load distribution (center of gravity!) when fastening the lifting gear.
- Ensure that no one is on or under the power unit when loading the power unit.
- Observe the national regulations (for example "Merkheft Erdbaumaschinen", leaflet on earth moving machines of the German employers' liability insurance association for construction engineering).
- Load the power unit only in accordance with this Operator's Manual to avoid damage to the power unit.
- Do not raise a power unit that is stuck or frozen onto the ground, for example.
- Bear in mind the weather conditions (wind force, visibility conditions, for example).

Transportation

- For the safe transportation of the power unit:
  - The transport vehicle must have a sufficient load capacity and platform – see chapter “**Technical data**”.
  - The maximum weight rating of the transport vehicle must not be exceeded.
- Use only lifting and fastening gear certified by a test/certification body, observe the inspection intervals.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- In order to secure the power unit on the platform, use only the fastening points provided for this purpose.
- Ensure that nobody is on the power unit during transportation.
- Observe the national regulations (for example “Merkheft Erdbaumaschinen”, leaflet on earth moving machines of the German employers’ liability insurance association for construction engineering).
- Bear in mind the weather conditions (ice, snow, for example).
- Ensure the minimum load on the steering axle(s) of the transport vehicle, and ensure an even load distribution.

2.6 Maintenance

Maintenance

- Observe the intervals prescribed by law and those specified in this Operator’s Manual for routine checks/inspections and maintenance.
- For inspection and maintenance, ensure that all tools and service center equipment are adapted to the performance of the task described in this Operator’s Manual.
- Do not use any damaged or malfunctioning tools.
- Have hydraulic hoses replaced within stipulated intervals even if no visual defects can be detected.
- The power unit must be stopped during maintenance.
- Once maintenance is over, correctly install safety equipment again that has been removed.
- The control box may only be opened by the certified electricians of a HCE service center.
- Wait for the power unit to cool down before touching components.

Personal safety measures

- Avoid any operational mode that might be prejudicial to safety.
- Wear protective clothing and equipment (for example a hard hat, protective gloves, safety boots).
- Tie back long hair and remove all jewelry.
- If maintenance on a running engine cannot be avoided:
  - Only work in groups of two.
  - Both persons must be authorized and trained for the operation of the power unit.
  - Keep a safe distance from rotating parts (for example from fan blades, belts).
  - Keep a safe distance from hot parts (for example from the engine, hydraulic oil reservoir).
- Safely lock/support power unit components before starting work.

Preparatory measures

- Attach a warning label to the control elements (for example “Power unit being serviced, do not start”).
- Before performing assembly work on the power unit, support the areas to be serviced and use suitable lifting and supporting equipment for the replacement of parts over 9 kg (20 lbs.).
- Perform maintenance only if:
  - the power unit is positioned on firm and level ground
  - the power unit is secured to prevent it from rolling away (suitable wheel chocks, for example)
  - the engine is stopped

Measures for performing maintenance

- Perform only the maintenance described in this Operator’s Manual.
- All work that is not described in this Operator’s Manual must be performed by qualified and authorized technical personnel.
- Follow the maintenance plan.
- Always use specially designed or otherwise safety-oriented ladders and working platforms to perform overhead maintenance. Do not use any parts of the power unit as a climbing aid.

Modifications and spare parts

- Do not modify the power unit and the work equipment/attachment (safety equipment, lights, tires, straightening and welding work, for example).
- Modifications must be approved by the manufacturer and performed by a HCE service center.
- Use only original spare parts.

2.7 Measures for avoiding risks

Tires

- Have repair work on the tires only performed by trained technical personnel.
- Check the tires for correct pressure and visible damage (cracks, cuts, for example).
- Check the wheel nuts for tightness.
- Use only approved tires.
- The power unit must have identical tires (profile, revolutions per mile, for example).

Hydraulic and compressed-air system

- Check all lines, hoses and threaded fittings regularly for leaks and visible damage.
- Splashed oil can cause injury and fire.
- Have damage and leaks immediately repaired by a HCE service center.
- Have hydraulic hoses replaced by a HCE service center within stipulated intervals even if no visual defects can be detected.
- Do not travel across hydraulic hoses.
- Protective hoses must be located on the exavator side of the hydraulic hose and must not be removed.
- Do not squeeze hydraulic hoses.
- Do not put hydraulic hoses over edges.
- Do not put anything down on the hydraulic hoses.

Electrical system

- Use only fuses with the specified current rating.
- In case of damage or malfunction in the electrical system:
  - Put the power unit out of operation immediately and secure it against restart.
  - Remove the connecting cable.
  - Have the malfunction repaired.
- Ensure that work on the electrical system is only performed by trained electricians.
- Have the electrical system checked regularly and malfunctions repaired immediately (loose connections, scorched cables, for example).
- Roll out the connecting cable completely before operation.
- Operate the power unit only with an intact and tested connecting cable.
- Only use a connecting cable with grounding conductors and correct grounding conductor connectors for the connector and outlet.
- Only used approved connecting cables that are suitable for use on construction sites. HCE recommends H07RN-F or an equivalent or higher country-specific version.
- Immediately replace connecting cables that are damaged or that have loose connectors and/or outlets. Do not travel over the connecting cable.
- Check the connecting cable for damage and signs of ageing before rolling it up for storage.
- Do the exceed the rated power of the connecting cable.
- Do not put the connecting cable over edges.

- Pay attention to the cable lengths and wire cross sections.

Cable length	Cross section
Max. 50 m (164 ft)	2.5 mm² (AWG 13)
Max. 80 m (262 ft)	4 mm² (AWG 11)
Max. 120 m (394 ft)	6 mm² (AWG 9)

Handling oil, grease and other substances

- When handling oil, grease and other chemical substances (battery electrolyte, coolant, for example), observe the safety data sheets.
- Wear appropriate protective equipment (protective gloves, safety glasses, for example).
- Be careful when handling hot consumables – burn hazard.
- In polluted environment (dust, vapors, smoke, asbestos), work only with appropriate personal protective equipment (breathing mask, for example).

Fire hazard

- Fuel, lubricants and coolants are flammable.
- Do not put the power unit into operation if there is a fire hazard.
- Do not use flammable detergents.
- Due to hot machine parts, maintain a safe distance from easily flammable material (for example from hay, dry leaves).
  - Stop and park the power unit only in fire-protected areas.
- Keep the power unit clean to reduce the fire hazard.

Working near electric supply lines

- Before performing any work, the operator must check whether there are any electric supply lines in the job site.
- Keep a safe distance from existing electric supply lines.
- If this is not possible, the operator must take other safety measures (switching off the current, for example) in agreement with the operating company or owner of the supply lines.
- If supply lines are exposed, they must be fastened, supported and secured accordingly.
- If live supply lines are touched nevertheless:
  - If possible, put the power unit out of the danger zone
  - Warn others against approaching and touching the power unit
  - Have the live wire de-energized

Working near non-electric supply lines

- Before performing any work, the operator must check whether there are any non-electric supply lines in the job site.
- If there are non-electric supply lines, the operator must take safety measures (switching off the supply line, for example) in agreement with the operating company or owner of the supply lines.
- If supply lines are exposed, they must be fastened, supported and secured accordingly.

Behavior during thunderstorm

- Stop work if a thunderstorm is gathering, put down the power unit, stop, secure and leave it, and avoid being near it.

Noise

- Observe the noise regulations (applications in enclosed premises, for example).
- Bear in mind external sources of noise (compressed-air hammer, concrete saw).
- Before starting work, get informed on the noise level of the power unit/ attachment (adhesive label, for example) – wear ear protectors.
- Do not wear ear protectors during machine travel on public roads/sites.

Cleaning

- Injury hazard from compressed air and high-pressure cleaners.
  - Wear appropriate protective clothes.
- Do not use any dangerous and aggressive detergents.
  - Wear appropriate protective clothes.
- Operate the power unit only in a clean condition.
  - Keep the control elements and indicators clean.
  - Keep the safety, warning and information labels clean, and replace damaged and missing labels by new ones.
- Perform cleaning work only if the engine is stopped and cooled down.
- Bear in mind sensitive components and protect them accordingly (for example electronic control units, relays).

Notes:

3 Introduction

3.1 Overall view (7.5 kW version)

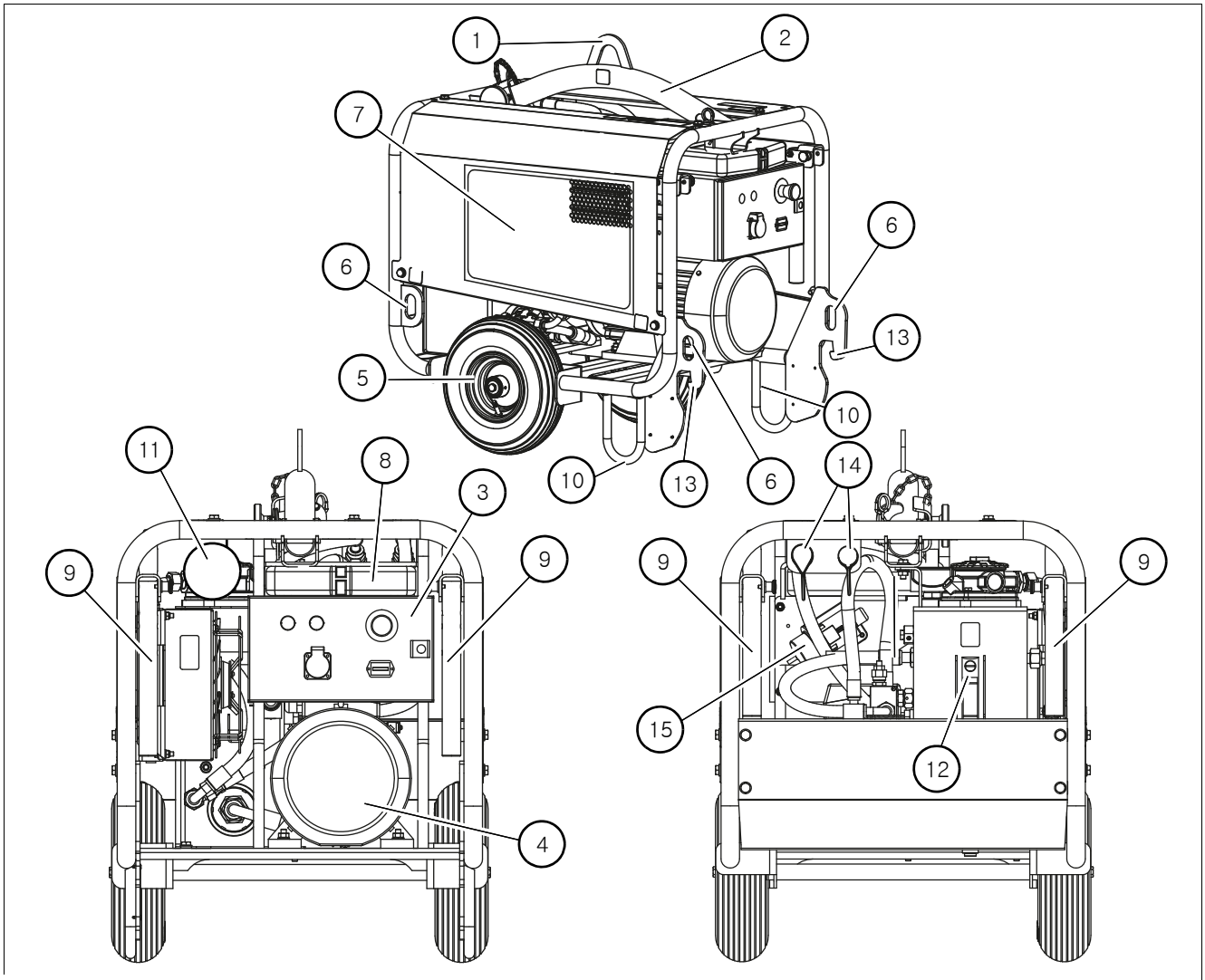


Fig. 2 (symbolic representations)

Position	Designation	Position	Designation
1	Lifting eye	9	Transport handles
2	Lance	10	Supports
3	Control box – *see chapter " Outside view of control box" on page 4-2*	11	Storage compartment for battery charger
4	Electric fan	12	Hydraulic oil sight glass
5	Wheels/tires	13	Stabilizer blade hooks
6	Tie-down points (total of 4)	14	Hydraulic connections
7	Ventilation grid of hydraulic oil radiator	15	Three-phase connector
8	Document box	--	--

3.2 Overall view (9 kW version)

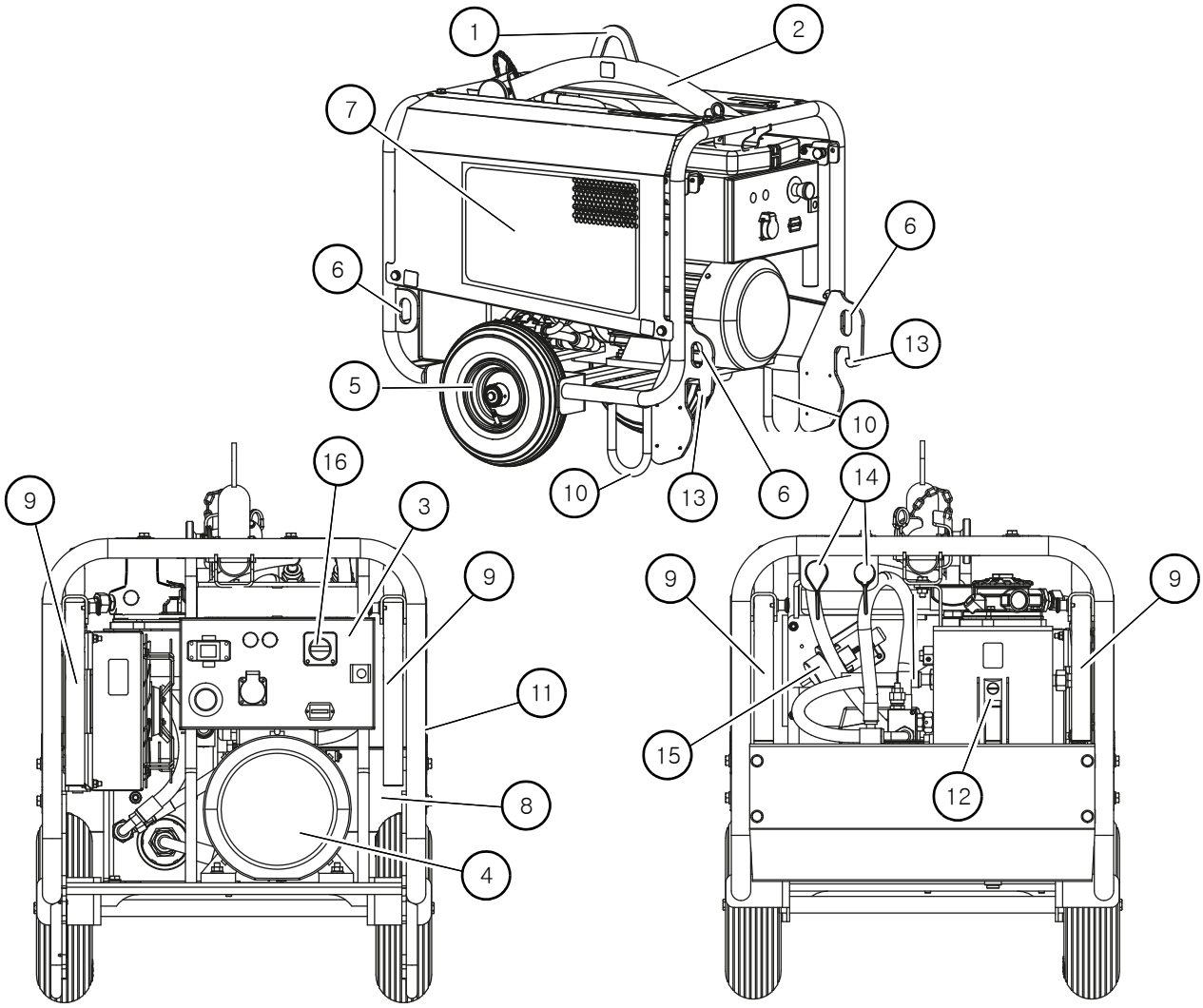


Fig. 3 (symbolic representations)

Position	Designation	Position	Designation
1	Lifting eye	9	Transport handles
2	Lance	10	Supports
3	Control box – *see chapter " Outside view of control box" on page 4-2*	11	Storage compartment for battery charger (laterally)
4	Electric fan	12	Hydraulic oil sight glass
5	Wheels/tires	13	Stabilizer blade hooks
6	Tie-down points (total of 4)	14	Hydraulic connections
7	Ventilation grid of hydraulic oil radiator	15	Three-phase connector
8	Document box	16	Main switch

Overview of models and trade names

Type[1]	Trade name
A01-01 (7.5 kW)	HPU
A01-02 (9 kW)	HPU

1. Depending on the country, either type A01-01 or A01-02 is delivered.

3.3 Brief description of power unit

The power unit is an electro-hydraulic unit that enables zero-emission working. The electric motor drives a gear pump whose oil flow is sent to a HCE dual power hydraulic excavator by means of high-pressure hoses.

The national and regional regulations must be complied with.

The main components of the power unit are:

- Electric motor
- Hydraulic components
- Chassis

Scope of delivery

- Electro-hydraulic power unit HPU
- Operator's Manual HPU
- 12 m (39 ft) hydraulic feed and return hose
- Battery charger
- Operator's Manual for battery charger

3.4 Information and regulations on use

Designated use

The power unit's designated use is to establish the hydraulic-oil flow for zero-emission operation of an excavator.

Every other use is regarded as not designated for the use of the power unit. HCE will not be liable for damage resulting from use other than mentioned above. The operator/operating company alone will bear the risk. Designated use also includes observing the instructions set forth in the Operator's Manual and observing the maintenance and service conditions.

NOTICE

In order to avoid damage to the machine, HCE recommends operating the compact excavator in dual-power operation only with the HPU power unit.

Information

The optimal performance of the compact excavator in dual-power operation can only be ensured with the HPU power unit. Contact a HCE service center if you want to use another brand.

3.5 Labels

WARNING

Injury hazard due to missing or damaged labels!

A missing, incomplete or poor indication of danger can cause serious injury or death.

- ► Do not remove warning and information labels.
- ► Immediately replace damaged warning and information labels.

Type labels

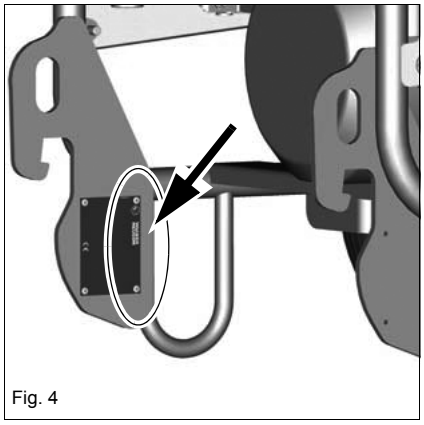


Fig. 4

Serial number

The serial number is stamped on the chassis. It is also located on the type label.

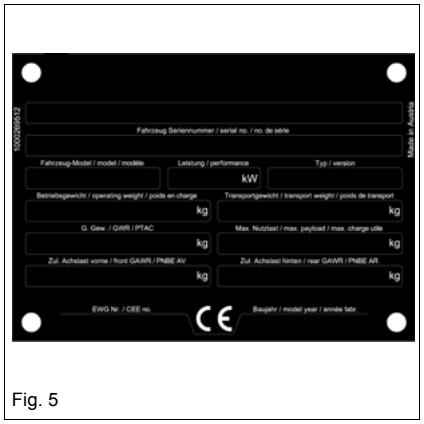


Fig. 5

Type label

The type label is located on the inside of the support.

Description of attachment	Description of attachment
Fahrzeug Seriennummer/serial no./no. de série	Machine serial number
Fahrzeug Modell/model/modèle:	Machine designation
Leistung/performance:	Engine output
Typ/version:	Machine type
Betriebsgewicht/operating weight/poids en charge:	Operating weight
Transportgewicht/transport weight/poids en transport:	Transport weight
G. Gew./GWR/PTAC:	Gross weight rating (permissible)
Max. Nutzlast/max. payload/max. charge utile:	Maximum payload
Zul. Achslast vorne/front GAWR/PNBE AV:	Front gross axle weight rating
Zul. Achslast hinten/rear GAWR/PNBE AR:	Rear gross axle weight rating
EWG Nr./CEE no.:	EEC check number
Baujahr/model year/année fabr.:	Year of construction

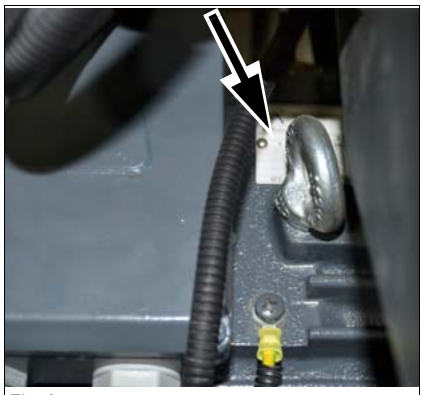


Fig. 6

Electric motor

The type label is located on top of the electric motor.

Warning and information labels

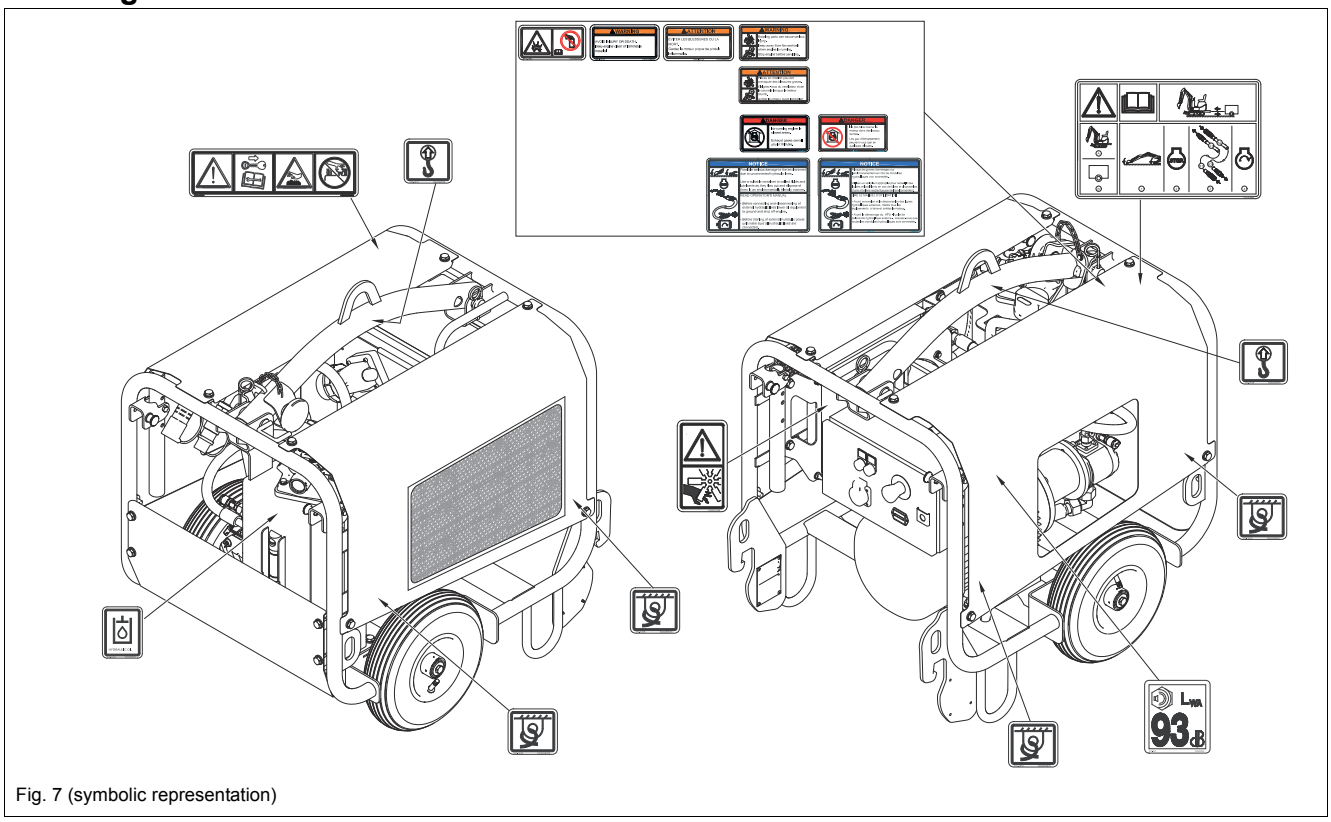


Fig. 7 (symbolic representation)

Information

Number and position of adhesive labels can differ depending on country.

The following states signs and symbols that do not contain explanatory text and that are not explained in the following chapters.

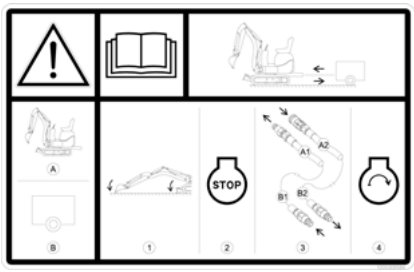


Fig. 8

Meaning

Read the Operator's Manual before connecting the power unit.

Position

On top of the trim.

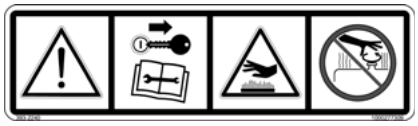


Fig. 9

Meaning

Read the Operator's Manual before starting the power unit.

.

Burn hazard due to hot parts.

Let hot components cool down.

Burn hazard due to hot fluid.

Injury hazard due to fluid escaping under pressure.

Position

On the side trim.

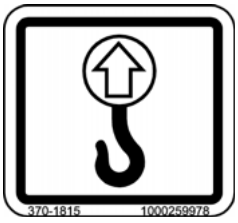


Fig. 10

Meaning

Indicates the lifting point of the power unit.

Position

On the lance.

Fig. 11

Meaning

Caution, rotating fan.

Stay clear of the engine compartment if the fan is still running.

Position

On the fan housing.

Fig. 12

Meaning

Indicates the tie-down points for tying down the power unit.

Position

On the side trim.

Fig. 13

Meaning

Indication of sound power level produced by the power unit.

L_{Wa} = sound power level.

Position

On the side trim.

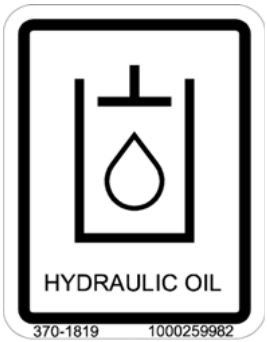


Fig. 14

Meaning

The reservoir contains hydraulic oil.

Position

On the hydraulic oil reservoir.

ANSI label (9 kW version only)

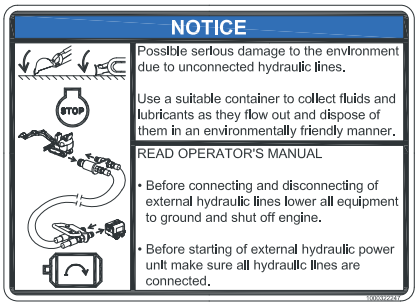


Fig. 15

Position

On the side trim.

Fig. 16

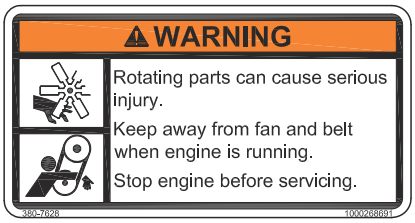
Position

On the side trim.

Fig. 17

Position

On top of the trim.

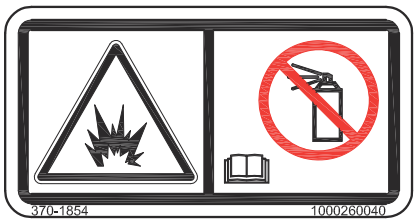


Position

On top of the trim.

Fig. 18

Label (9 kW version only)



Meaning

Do not use starting-aid sprays.

Position

On top of the trim.

Information

Quantity and position of the labels depend on options, country and machine.

Fig. 19

Notes:

4 Putting into operation

Document box

A document box is located above the control panel (7.5 kW version) or on the right side of the power unit (9 kW version). It contains the battery charger and the Operator's Manual for the power unit.

Power supply

NOTICE

Possible damage to the power unit if a consumer is connected to the accessories outlet **B** with a running power unit.

► Stop the power unit before connecting a consumer to the accessories outlet **B**.

► Pay attention to the maximum power output (1000 W/7.5 kW version; 345 W/9 kW version).

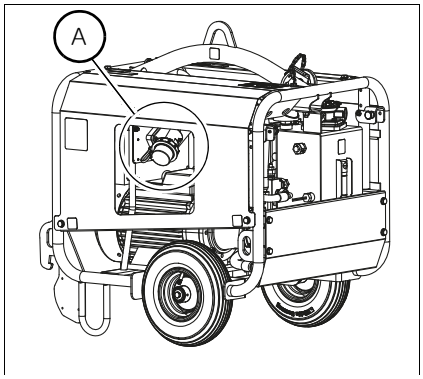


Fig. 20 (symbolic representation)

- Three-phase connector **A**: for power supply of power unit.
  - 7.5 kW version: 400 V/16 A
  - 9 kW version: 480 V/16 A

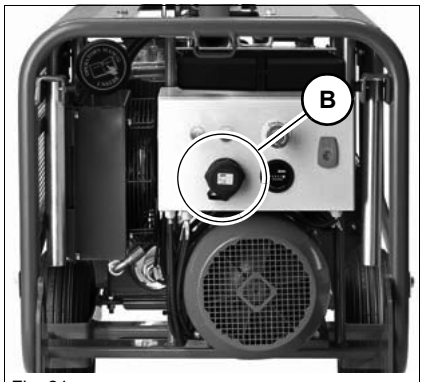


Fig. 21

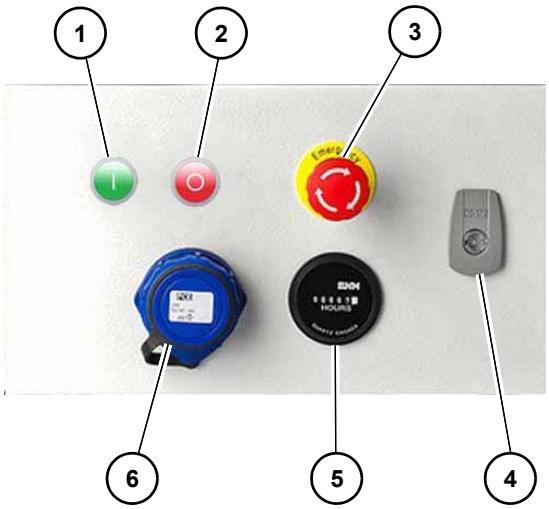
- Accessories outlet **B** (7.5 kW version): supplies the battery charger with electric power, for example.

4.1 Overview of control elements

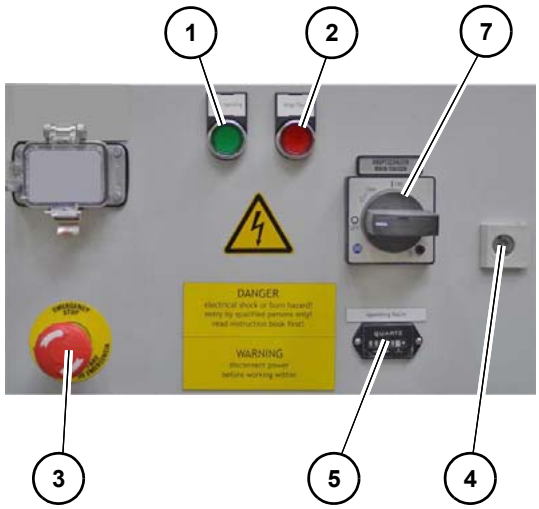
This chapter describes the controls, and contains information on the function and handling of the indicator lights and controls on the power unit.

The pages stated in the table refer to the description of the controls.

Outside view of control box



7.5 kW version



9 kW version

Fig. 22

Designation		See page
1	Power unit start (green)	*4-3*
2	Power unit stop (red)	*4-3*
3	Emergency off switch	*5-4*
4	Control box lock	*8-1*
5	Hour meter	*4-3*
6	Accessories outlet 230 V (7.5 kW version only)	*5-3*
7	Main switch (9 kW version only)	--

4.2 Indicator lights and warning lights (overview)

Indicator lights

The indicator lights provide information on the operating state and possible malfunctions.

Symbol	Color	Designation
	Green	Error-free operation
	Red	Malfunction *– see chapter “8 Malfunctions” on page 8-1*

Hour meter

Counts the operating hours and shows when the next maintenance interval is due.

4.3 Preparations for starting

Information before putting into operation

Before putting the power unit into operation, perform a visual check to ensure that:

- there are no leaks,
- no parts are damaged or loose,
- there are neither persons, objects nor other sources of danger near the power unit.

Before putting the power unit into operation, the operator must familiarize himself with the position of the controls and instruments.

Before the operator uses the power unit in work operation for the first time, we recommend first trying out the power unit on open ground without any obstacles.

When using the power unit, check the surroundings constantly in order to identify potential hazards in time.

The operator must observe the local regulations.

Conformity and registration are void if modifications are made on the power unit.

Follow the safety instructions in chapter **Safety 2.4**.

Requirements and information for the operating personnel

Read, understand and follow this Operator's Manual and all other Operator's Manuals supplied with the power unit.

The power unit may only be put into operation by trained and authorized personnel. See chapter **"Safety 2.2"**.

The operator must know and bear in mind the requirements and risks at the work place.

Perform daily maintenance according to the maintenance plan.

– see chapter " Maintenance plan" on page 7-2

Keep the handles clean. Immediately remove dirt, for example oil, grease, dirt, snow or ice.

The checklists below are intended to assist you in checking and monitoring the power unit before, during and after operation. These checklists cannot claim to be exhaustive.

The checking and monitoring work listed below is described in greater detail in the following chapters.

Start-up checklist

Observe the following points before putting the power unit into operation:

No.	Points	Page
1	The power unit must be positioned on firm, level and horizontal ground.	--
2	Check the hydraulic oil levels of the power unit and excavator.	*4-10*
3	The hydraulic hoses must be connected to the power unit and excavator.	*4-6*
4	The power unit must be connected to the mains.	*4-1*
5	Do not allow anyone to stay in the danger zone of the excavator.	--

Putting into operation for the first time

Before putting into operation for the first time, check the power unit and hydraulic hoses visually for exterior damage, and check whether the equipment supplied with the power unit is complete.

Each power unit is correctly adjusted and checked before it is delivered. The hydraulic hoses are filled with HVLP 46 hydraulic oil at the factory.

- Observe the maintenance plans and perform (or have performed) the mandatory maintenance *– see chapter "7.2 Maintenance overview" on page 7-2*.

4.4 Starting and stopping the power unit

NOTICE

Possible damage to the hydraulic system.

- ► Always couple and uncouple in the correct boom and stabilizer-blade position of the excavator – *see chapter " Coupling" on page 4-6*
- ► Before coupling or uncoupling hoses, stop the power unit and the diesel engine of the excavator.

Environment

Possible serious damage to the environment due to unconnected hydraulic lines.

- ► The hydraulic hoses of the power unit must be connected to the excavator before starting the power unit.

Overview of connections

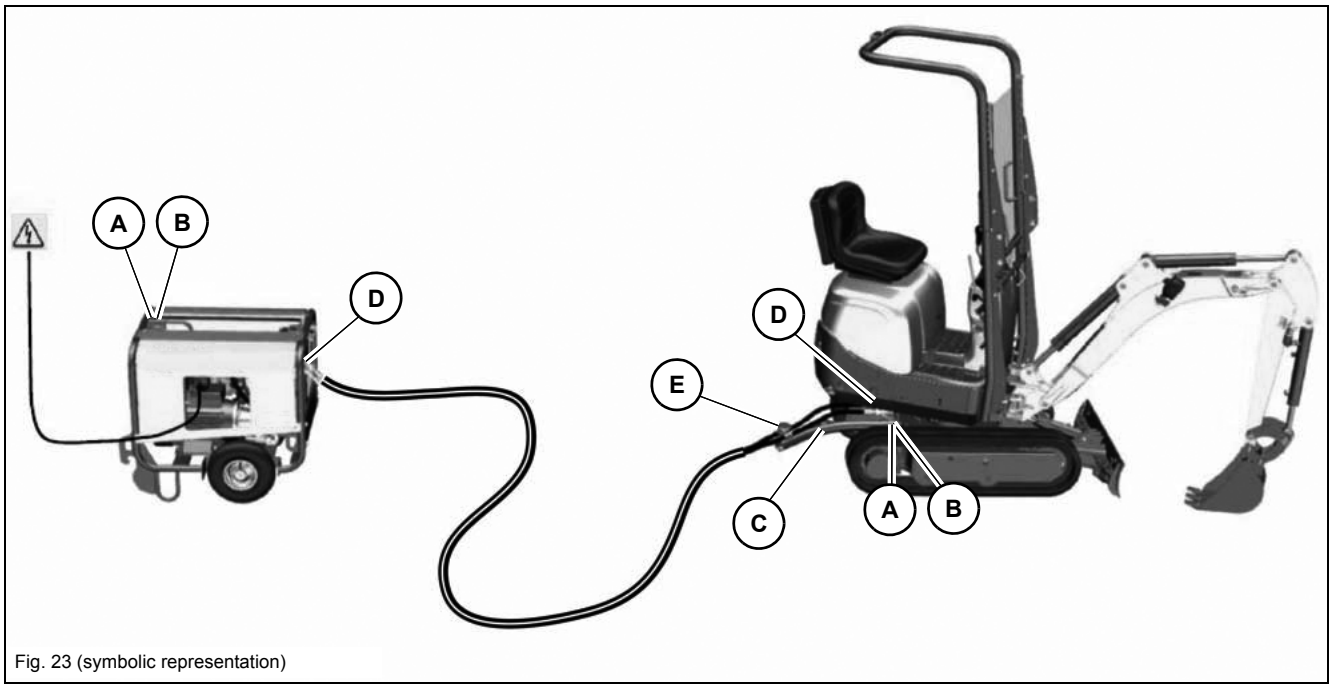


Fig. 23 (symbolic representation)

	Designation
A	Split pin
B	Pins
C	Lance
D	Hydraulic connections
E	Clamping screw

Coupling

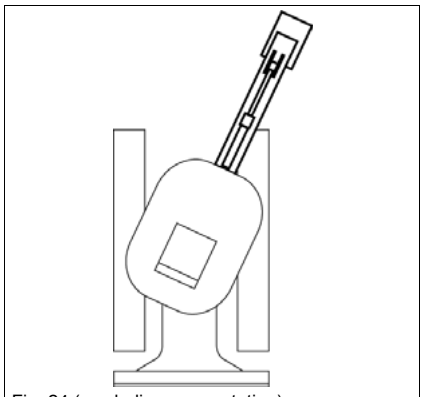


Fig. 24 (symbolic representation)

1. Put the excavator and the power unit on firm, level and horizontal ground.
2. Position the upper carriage as shown. The stabilizer blade must be at the rear.
3. Lower the stabilizer blade to the ground – see *Fig. 8*.

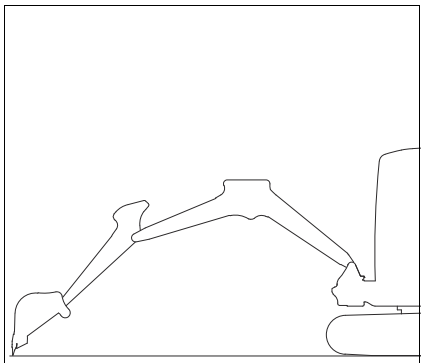


Fig. 25 (symbolic representation)

4. Position the bucket and the stick as shown.
5. Lower the boom to the ground.
6. Stop the diesel engine.
7. Remove the starting key and carry it with you.
8. Operate the control lever repeatedly to release the pressure in the hydraulic system.
9. Stop the power unit.

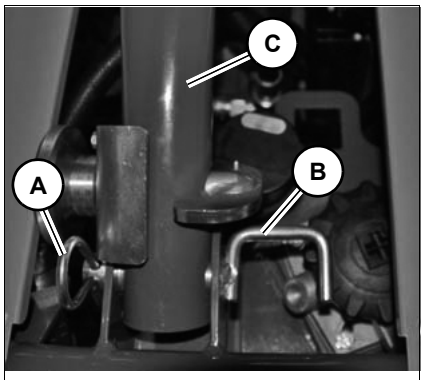


Fig. 26

10. Pull out split pin **A** and pin **B** (at the front and rear) and remove lance **C** from the power unit.
    The lance protects the hydraulic hose near the hydraulic connections of the excavator.
11. Fasten a pin and the split pin on the power unit again.

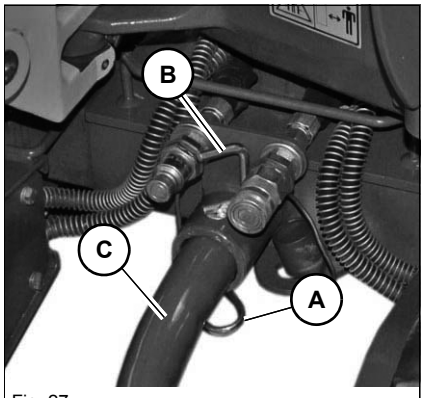
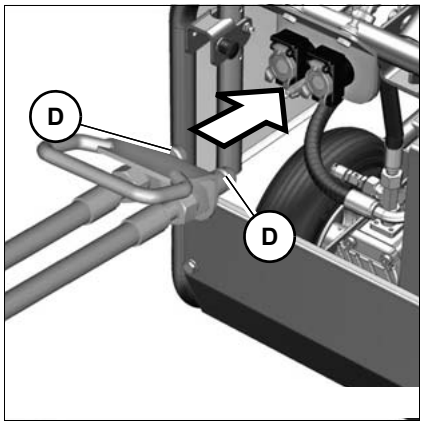


Fig. 27

12. Insert lance **C** in the holder on the excavator and secure it with pin **B** and split pin **A**.



13.Connect the hydraulic hose connections **D** to the power unit.

CAUTION

Injury hazard due to sharp-edged objects!

Can cause injury.

► Wear protective gloves when uncoupling the hydraulic connections of the power unit.

Information

Possible damage due to use of different hydraulic oil.

► The power unit and excavator must be filled with HVLP 46 hydraulic oil. Operation is prohibited if other oil types or grades are used.

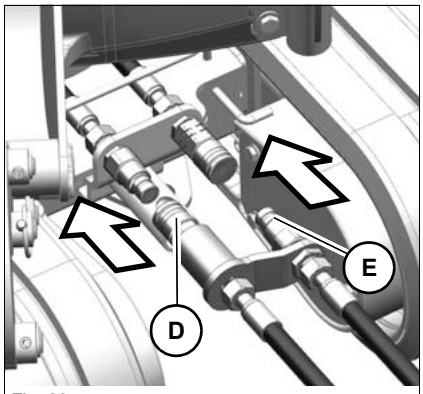


Fig. 29

14.Connect the hydraulic hose connection **D** to the excavator.

15.Connect the hydraulic hose connection **E** to the excavator.

Environment

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

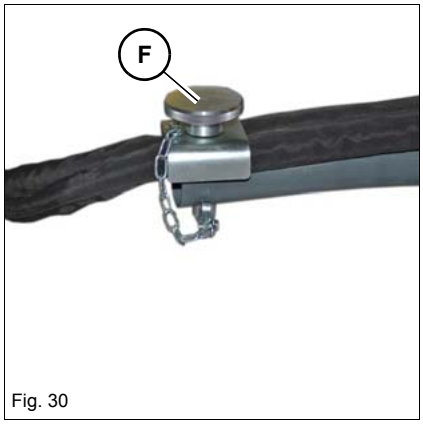


Fig. 30

16.Screw clamping screw **F** and fasten the hose on the lance as shown.

Preparations for starting

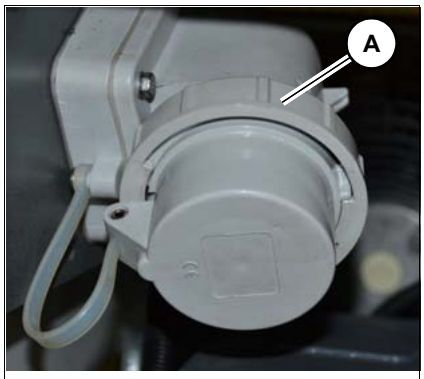


Fig. 31

7.5 kW version

1. Turn ring **A** clockwise to remove the cover.

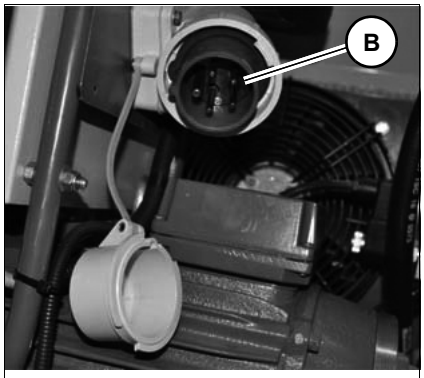


Fig. 32

2. Connect the three-phase connector **B** with the mains.

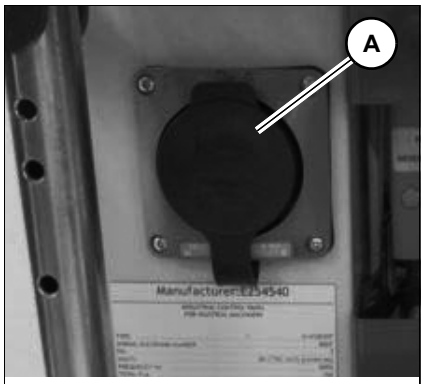


Fig. 33

9 kW version

1. Remove cover **A**.

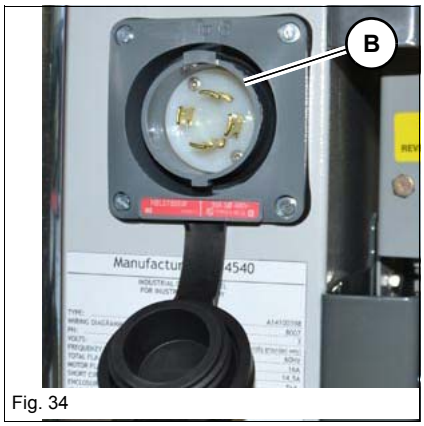


Fig. 34

2. Connect the three-phase connector **B** with the mains.

Putting into operation with empty hydraulic hoses

NOTICE

Possible damage to the hydraulic system when connecting an empty hydraulic hose to the excavator.

Should it be necessary to use a new empty hydraulic hose, follow the instructions given in the assembly instructions **HPU replacement hose** supplied with the replacement hose.

Checking the hydraulic oil levels of the power unit and excavator

Check the hydraulic oil levels before starting the power unit.

NOTICE

Possible damage to power unit or excavator.

► Check the hydraulic oil levels before starting and observe the following measures.

► Do not start the diesel engine of the excavator during power unit operation, otherwise the hydraulic oil levels of the power unit and excavator are changed.

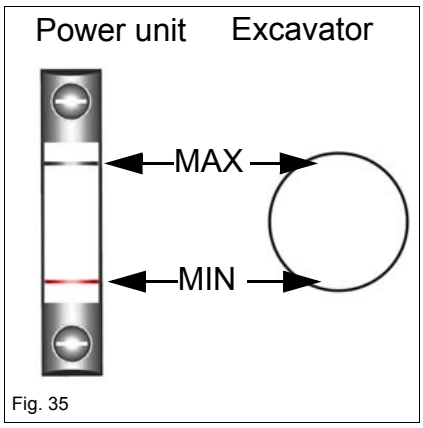


Fig. 35

The power unit and excavator may only be put into operation if the hydraulic oil levels are between the MIN and MAX marks. Both hydraulic oil **(A)** and air **(B)** must be visible in the sight glass.

- Add hydraulic oil if no hydraulic oil can be seen in one of both sight glasses.
- Do not start operation if no air can be seen in one of the sight glasses. Contact a HCE service center.

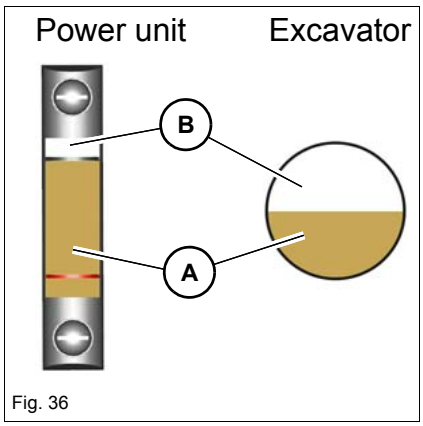


Fig. 36

Starting the power unit

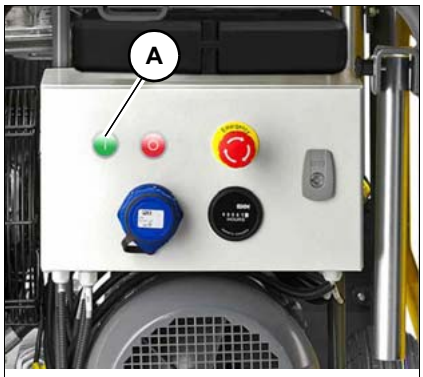


Fig. 37

7.5 kW version

Press start button **A** until the power unit runs.

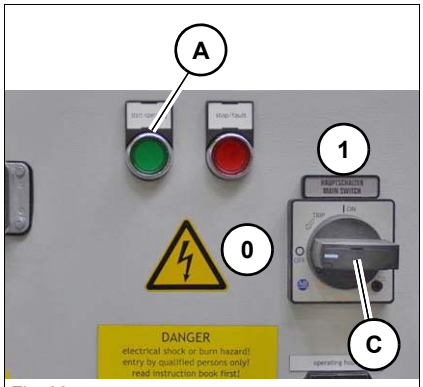


Fig. 38

9 kW version

1. Turn main switch **C** clockwise to position **1**.
2. Press start button **A** until the power unit runs.

Stopping the power unit

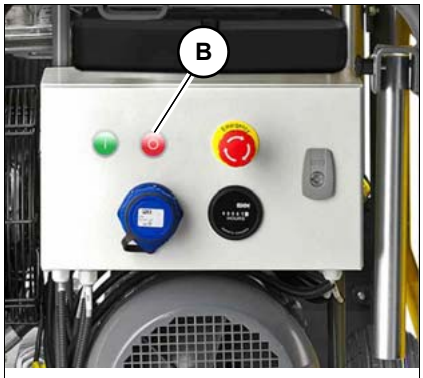


Fig. 39

7.5 kW version

Press stop button **B**.

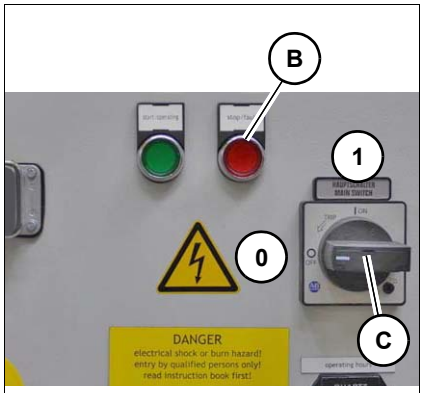


Fig. 40

9 kW version

1. Press stop button **B**.
2. Turn main switch **C** anticlockwise to position **0**.

Uncoupling

CAUTION

Possible injury hazard due to sharp-edged objects!

Can cause injury.

► Wear protective gloves when uncoupling the hydraulic connections of the power unit.

NOTICE

Possible damage to power unit or excavator.

► Always couple and uncouple in the correct boom and stabilizer-blade position of the excavator – *see chapter " Coupling" on page 4-6*

► The power unit and the excavator must be stopped before uncoupling.

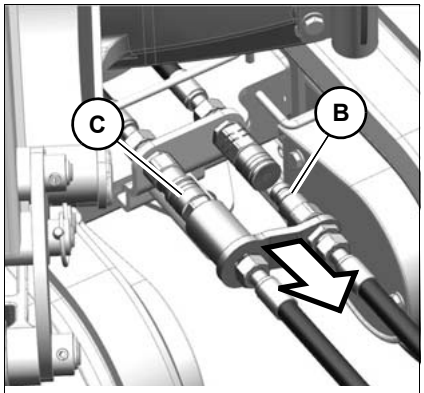
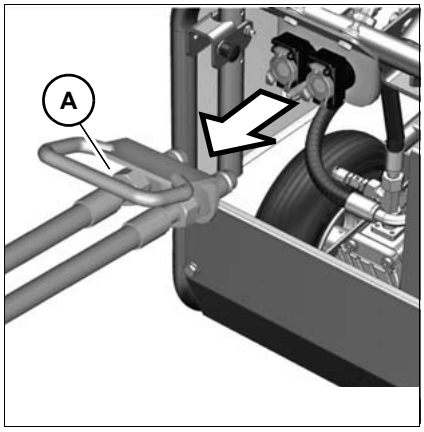


Fig. 41

1. Remove hydraulic connection **B** on the right.
2. Remove hydraulic connection **C** on the left.



3. Pull handle **A** to remove the hydraulic connections from the power unit.

Environment

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

5 Operation

5.1 Charging the excavator battery

The excavator battery is not charged since the diesel engine does not run during excavator operation with the electro-hydraulic power unit. The battery must therefore be charged at regular intervals.

WARNING

Explosion hazard in case of incorrect handling of battery!

Incorrect battery handling can cause serious injury or death.

- ► The engine cover of the excavator must be open during recharging.
- ► Fire, open flames and smoking is prohibited.
- ► Perform charging only on well-ventilated premises.
- ► Do not charge malfunctioning or frozen batteries.

WARNING

Burn hazard due to hot engine parts!

Can cause serious burns.

- ► Stop the excavator engine and let it cool down.
- ► Wear protective equipment.

WARNING

Injury hazard due to rotating parts!

Rotating parts can cause serious injury or death.

- ► Open the excavator engine cover only at engine standstill.

NOTICE

Possible damage to the power unit and excavator.

- ► The power unit must be stopped during charging.

NOTICE

Possible damage to battery charger due to cable installation/routing near rotating parts.

- ► Do not place the battery charger cables near rotating parts.

Information

Only operate battery chargers with the same specifications as the one supplied with the power unit. Observe the Operator's Manual of the battery charger. Contact a HCE service center in case of doubt.

The battery charger is located in the round box above the hydraulic oil radiator.

For more information, refer to the Operator's Manual of the battery charger. The Operator's Manual is located in the document box of the power unit.

The excavator battery can be charged in two different ways.

- With the power unit
- Directly with the mains

Connect the adapter connector and bushing of the battery charger.

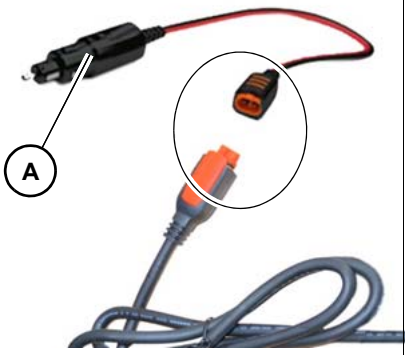


Fig. 43

Connect the 12 V connector **A** to the 12 V outlet **B**.

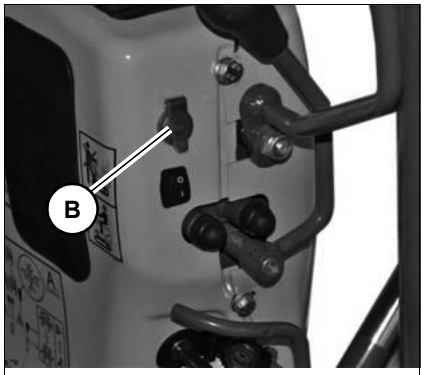


Fig. 44

Charging the battery with the power unit (7.5 kW version only)

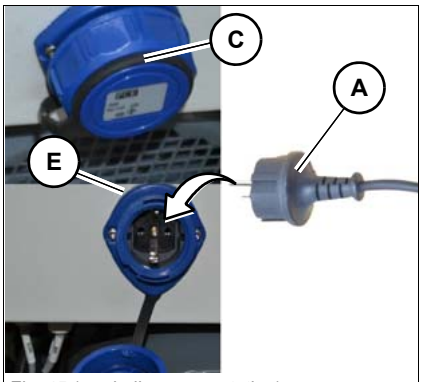


Fig. 45 (symbolic representation)

Turn protective cap **C** anticlockwise and remove it.

Connect safety connector **D** of the battery charger with the accessories outlet **E** of the power unit.

Charging the battery with the mains

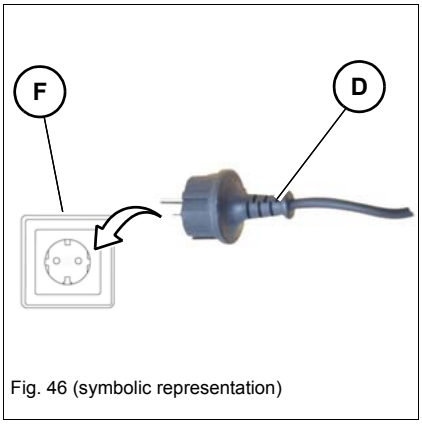


Fig. 46 (symbolic representation)

Connect connector **D** of the battery charger with outlet **F**.

- Voltage for 7.5 kW version: 230 V
- Voltage for 9 kW version: 115 V

Environment

Dispose of old batteries in an environmentally friendly manner.

Emergency off switch

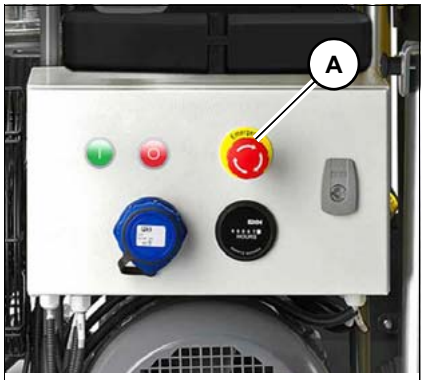


Fig. 47

7.5 kW version

Immediately operate the emergency off switch **A** in a dangerous situation. The power unit is switched off and the power supply is interrupted.

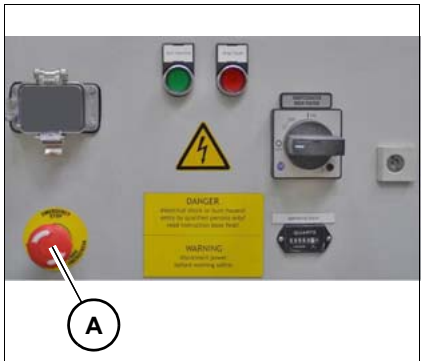


Fig. 48

9 kW version

Immediately operate the emergency off switch **A** in a dangerous situation. The power unit is switched off and the power supply is interrupted.

Automatic shutdown

The power unit has an automatic shutdown feature that is enabled as soon as the hydraulic ol level drops below a certain level.

Environment

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Operating temperature range

The following operating conditions must be fulfilled in order to ensure optimal output and a long service life of the power unit.

Do not operate the power unit at ambient temperatures below −15 °C (−5 °F) or above +45 °C (+104 °F).

General information on operation

Operation in or under water is prohibited.

5.2 Putting out of operation/back into operation

The specified measures refer to putting the power unit out of operation and back into operation after more than 30 days.

Putting out of operation temporarily

Store the power unit indoors if possible.

If the power unit has to be stored outdoors, place it on a wooden base (if possible) and cover it with a watertight tarp to protect it against humidity.

1. Stop the power unit
   – see chapter “ Stopping the power unit” on page 4-11.
2. Check the power unit for leaks and loose threaded fittings.
3. Carefully clean and dry the power unit.
4. Spray an anticorrosion agent onto bare metal parts.
5. Check the hydraulic oil level and if necessary, add oil until the oil level is between the MIN and MAX marks.

Putting back into operation

Information

If the power unit was put out of operation over a longer period of time without performing the specified steps, contact a HCE service center before putting back into operation.

1. Remove anticorrosion agents from bare metal parts.
2. Check the power unit for leaks and loose threaded fittings.
3. Replace the hydraulic oil and hydraulic oil filters after 6 months.

5.3 Permanently putting out of operation

Disposal

All fluids, lubricants, material, etc., used on the power unit are subject to specific regulations. Dispose of different materials and consumables separately and in an environmentally friendly manner.

Disposal may be performed only by a HCE service center.
Follow the relevant national and regional regulations.

If the power unit is no longer used according to its designated use, ensure that it is put out of operation and disposed of according to applicable regulations.

- Observe all applicable safety regulations during power unit disposal.
- Power unit disposal must be performed in accordance with state-of-the-art standards that apply at the time of disposal.

Environment

Avoid damage to the environment. Do not allow environmentally damaging wastes to get into the ground or stretches of water and dispose of them in an environmentally friendly manner.

6 Transportation

WARNING

Accident hazard due to incorrect loading or transportation!

Incorrect loading or transportation can cause accidents and serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Read the transport weight off the type label. The weight of the connected equipment (hydraulic hoses, for example) must be added to the weight of the power unit.
- ► Bear in mind the weight of the power unit.
- ► Transport the power unit and the excavator only on horizontal, level and firm ground. Traveling uphill or downhill (including on ramps, for example) is prohibited.
- ► Raising or carrying the power unit with your hands is prohibited.

NOTICE

Possible damage to power unit or excavator due to incorrect transportation.

6.1 Loading the power unit

Crane-lifting

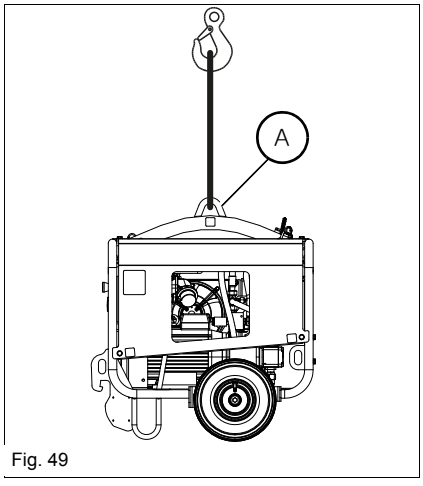


Fig. 49

1. Remove all dirt from the power unit.
2. Close and lock all covers.
3. Fasten suitable slings to lifting point **A**.
4. Slowly raise the power unit until there is no more contact with the ground.
5. Wait until the power unit does not swing any more.
6. If the balance, and the condition and position of the slings is correct, slowly raise the power unit to the required height and load it.
7. Tie down the power unit at the four tie-down points.
8. Transport the power unit only on its wheels.

Information

The manufacturer's warranty shall not apply to accidents or damage caused by loading or transporting.

Loading on a forklift truck

Fig. 50

The power unit can also be loaded with a fork lift truck or construction machine with pallet forks.

6.2 Transporting the power unit

Moving the power unit manually

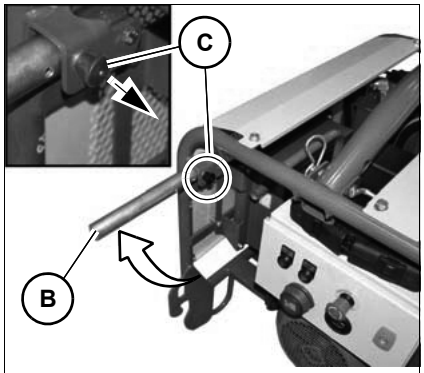


Fig. 51

1. Raise the transport handles **B** as shown (left and right) on the control box side of the power unit. They lock into the horizontal position.
   ➥ The power unit can now be moved manually.
2. To lower the handles, pull both locks **C** (left and right) inward.

Information

The two opposite handles, or all four handles can also be used to move the power unit manually.

Moving the power unit with the hydraulic excavator

NOTICE

Possible damage to hydraulic hose.

► When moving the power unit, roll up the hose so that the excavator cannot travel over the hose.

Information

Traveling with the stabilizer blade is only allowed with the HCE hydraulic excavator.

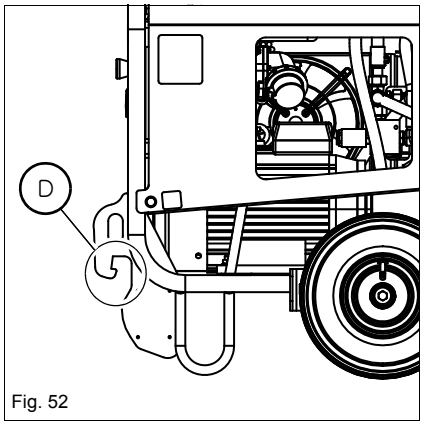


Fig. 52

1. Hitch the stabilizer blade hooks **D** in transport holes **G** to ensure a safe hold of the power unit.

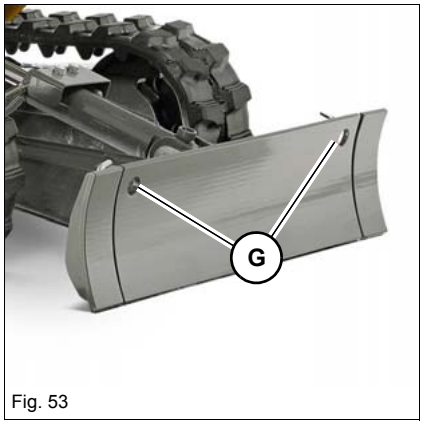


Fig. 53

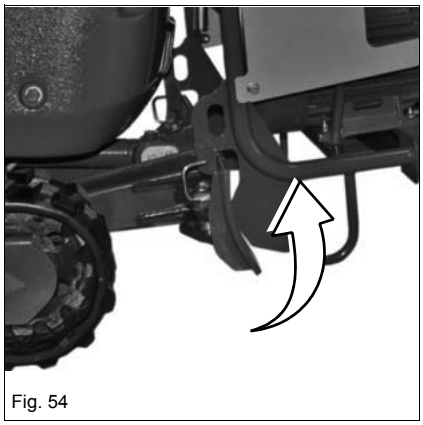


Fig. 54

2. Raise the stabilizer blade.
3. The power unit can now be transported with the excavator.
4.

Tying down

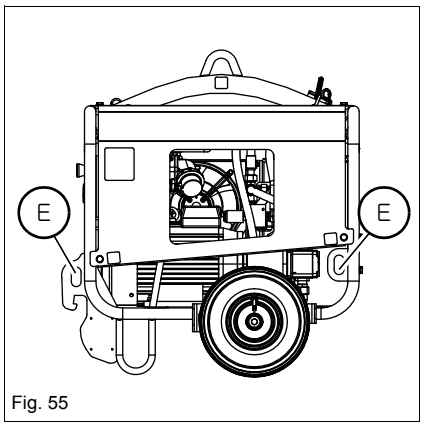


Fig. 55

1. Ensure that the authorized maximum height (transport machine and power unit) is not exceeded.
2. Fasten the power unit at the tie-down points **E**.

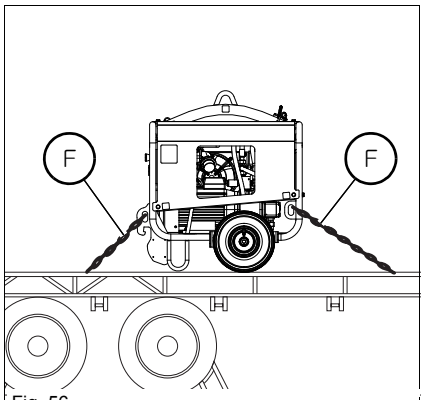


Fig. 56

3. Firmly fasten the power unit on the loading area at the four tie-down points **E** with slings **F** of appropriate size. Observe the legal regulations.
4. Ensure that the driver of the transport vehicle knows the overall height, width and weight of his transport vehicle (including the power unit) before moving off, and the legal transportation regulations of the countries where transportation is taking place.

7 Maintenance

7.1 Information on maintenance

Responsibilities and prerequisites

The working order and the service life of machines are heavily dependent on maintenance.

Daily and weekly servicing and maintenance must be performed by specifically trained personnel.

Have the maintenance, delivery inspection and the entries in the service booklet performed by a HCE service center, otherwise warranty claims will not be acknowledged.

It is therefore in the interest of the machine owner/operating company to perform the mandatory maintenance.

This ensures optimal machine operation. Immediately repair or replace parts that are already damaged or not working properly before they are due for replacement.

Repair or replacement of safety-relevant parts may be performed only by a HCE service center.

Use only original spare parts for repairs.

The manufacturer shall not be liable for damage to the power unit or injury caused by failure to observe the specific notices and descriptions

Important safety instructions on maintenance

- Follow all safety instructions given in this Operator's Manual.
- Follow the instructions given in chapter **Safety, safety instructions on maintenance** and **qualification of the operating and maintenance personnel** in this Operator's Manual.
- Follow the maintenance and safety instructions given in the Operator's Manuals of the attachments.
- Wear protective gloves and clothing.
- Observe the danger indications and safety instructions during maintenance.
- In order to avoid injury hazard, do not perform any work on hot components.
- Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.
- Attach a warning label to the control elements (for example **"Power unit being serviced, do not start"**).
- Stop the power unit.
- Do not re-use self-locking fasteners.

7.2 Maintenance overview

Maintenance plan

Daily maintenance (operator)	
Inspection work (Check the following fluids and lubricants, check the oil levels after a test run and add oil if necessary)	Page
Check the fluids and lubricants (engine oil, engine coolant, hydraulic oil)	--
Check the hydraulic oil radiator for dirt, clean it if necessary	--
Check and if necessary clean the electric fan once a day	--
Check pin lock	--
Check the indicator lights	*7-11*
Check the hydraulic couplings for dirt	--
Check the threaded fittings for tightness	--
Leakage check	
Check for tightness, leaks and chafing: pipes, flexible lines and threaded fittings of the following assemblies and components. Repair if necessary	
Hydraulic system	--
Hoses (visual check)	--
Visual check	
Correct function; deformations, damage, surface cracks, wear and corrosion	Page
Check the wheels for damage	--
Check the travel gear for damage	--
Check the tire pressure and correct the pressure as required	--
Check the hydraulic hoses for damage	*9-1*
Check the lifting point	*7-12*
Weekly maintenance (every 50 operating hours) (operator)	
Check the wheel nuts (visual check)	--

Only once after the first 50 operating hours (HCE service center)	
Hydraulic oil filter insert replacement	--
Check the threaded fittings for tightness	--
Check labels and Operator's Manual for completeness and condition	--
Pressure check of primary pressure limiting valves (operating hydraulics)	--
All steps for maintenance once a day and once a week	*7-2*

Every 250 operating hours (HCE service center)	
Hydraulic oil replacement	--
Hydraulic oil filter insert replacement	--
Check the hydraulic oil radiator for dirt and clean it if necessary	--
Check the electric fan for dirt and clean it if necessary	--
All steps for maintenance once a day and once a week	*7-2*

Every 500 operating hours (HCE service center)	
Drain the condensation water from the hydraulic oil reservoir	--
Check the electric cables and connectors (cable and grounding connections, etc.)	--
Check the threaded fittings for tightness	--
All steps for maintenance once a day and once a week	*7-2*

Every 1000 operating hours or once a year (HCE service center)	
Option	
Lifting eye wear (check at least once a year)	*7-12*

Information

Maintenance with the note **HCE service center** must be performed only by the trained and qualified personnel of a HCE service center.

7.3 Fluids and lubricants

Fluids and lubricants

Power unit	Fluid/lubricant	Specification	Season/temperature	Capacities [1]
Hydraulic oil reservoir	Hydraulic oil	Eurolub HVLP 46[2]	Year-round[3]	9.6 l (2.5 gal)
Hydraulic oil hose				4.6 l (1.2 gal)

1. The capacities indicated are approximate values; the sight glass or the dipstick alone is relevant for the correct level. Capacities indicated are no system fills
2. According to DIN 51524 section 3, ISO-VG 46.
3. Depending on local conditions

Hydraulic oil types (depending on temperature)

Hydraulic oil types		
Hydraulic oil grade	Ambient temperature	
	min.	max.
ISO VG32	−20 °C (−4 °F)	30 °C (86 °F)
ISO VG46	−5 °C (23 °F)	40 °C (104 °F)
ISO VG68	+5 °C (41 °F)	50 °C (122 °F)

7.4 Cleaning and maintenance

Important information on cleaning and maintenance

The wrong choice of cleaning equipment and agents can impair the operating safety of the power unit and undermine the health of the persons in charge of cleaning the power unit. Follow the information below.

Cleaning with washing solvents

- Ensure appropriate room ventilation.
- Wear suitable protective clothing.
- Do not use flammable liquids, such as gasoline or diesel.

Cleaning with compressed air

- Work carefully.
- Wear safety glasses and protective clothing.
- Do not aim the compressed air at the skin or at other people.
- Do not use compressed air for cleaning your clothing.

Cleaning with a high-pressure cleaner or steam jet

- Cover electric parts.
- Do not directly expose electrical components and damping material to the jet.
- Cover the vent filter on the hydraulic oil reservoir and the filler caps for fuel, hydraulic oil, etc.
- Protect the following components from moisture:
  - Electrical components such as the electric motor.
  - Control devices and seals.
  - Fans, etc.

Cleaning with volatile and easily flammable anticorrosion agents and sprays:

- Ensure appropriate room ventilation.
- Do not use unprotected lights or open flames.
- Do not smoke.

Environment

In order to avoid damage to the environment, clean the power unit only in wash bays and places provided to this effect.

Use of solvents

NOTICE

Damage to rubber and electrical parts when cleaning with solvents.

► Do not use solvents, benzine or other aggressive chemicals.

Cleaning the power unit

WARNING

Burn hazard due to hot components!

Can cause serious burns.

- ► Remove the electric cable from the three-phase connector before performing maintenance on the power unit.
- ► Stop the electric motor and let it cool down.
- ► Wear protective equipment.

NOTICE

Possible damage to the electrical/electronic system due to water or steam jet.

- ► Do not point the water jet directly at the electric sensors such as temperature and oil pressure switches or control valves, etc.
- ► Protect all electric parts against humidity.
- ► If water contacts electrical components, dry them with compressed air and apply contact spray to them.

We recommend using the following aids to clean the power unit:

- High-pressure cleaner
- Steam jet

Clean as follows:

1. Put and shut down the power unit in a wash bay or place.
2. Clean the power unit.
3. Allow it to dry (with compressed air) before putting it into operation again.

7.5 Cooling system

Important information regarding the cooling system

The hydraulic oil radiator is located behind the ventilation grid.

Cleaning the radiator

CAUTION

Burn hazard during maintenance on the radiator!

The hot radiator can cause burns.

► Stop the power unit and let the hydraulic oil cool down.

► Wear protective equipment.

NOTICE

Possible damage to the hydraulic system due to dirty hydraulic oil radiator.

► Check and if necessary clean the radiator once a day.

NOTICE

Possible damage to radiator fins during cleaning.

► Keep a safe distance from the radiator during cleaning.

► Use oil-free compressed air (2 bar/29 psi max.) to clean.

Fig. 57

The hydraulic oil radiator is located in the engine compartment.

1. Stop the power unit.
2. Remove dust and other foreign bodies from the fins with compressed air.

7.6 Hydraulic system

Important information on the hydraulic system

WARNING

Burn hazard due to hot hydraulic oil!

Hot hydraulic oil can cause burning to the skin, serious injury or death.

- ► Allow the hydraulic oil to cool down.
- ► Wear protective equipment.

WARNING

Injury hazard due to fluid escaping under pressure!

Hydraulic oil escaping under pressure can penetrate the skin and cause serious injury or death.

- ► Do not operate the power unit with leaking or damaged hydraulic components.
- ► Open the breather filter slowly to release the pressure inside the reservoir slowly.
- ► Wear protective equipment. If oil contacts the eye flush immediately with clean water and seek medical treatment.
- ► Malfunctioning or leaking threaded fittings, hose connections and pressure lines must be immediately repaired by a HCE service center (search for hydraulic leaks with a piece of cardboard).

NOTICE

Possible damage due to wrong hydraulic oil.

- ► Neither the power unit nor the excavator must be filled with biodegradable hydraulic oil.
- ► Only use hydraulic oil according to the **Fluids and lubricants** table.
- ► The power unit and the excavator must be filled with hydraulic oil of the same grade.
- ► Have the hydraulic oil only changed by a HCE service center.

NOTICE

Possible damage to hydraulic system due to incorrect hydraulic oil level.

- ► The hydraulic oil level must be in the middle between the MIN and MAX marks.
- ► Check the hydraulic oil level once a day.

NOTICE

Possible damage to hydraulic system due to dirty hydraulic oil.

► If the hydraulic oil in the sight glass is cloudy, this indicates that there is water or air in the hydraulic system. Contact a HCE service center.

► Contact a HCE service center if the hydraulic oil filter is dirty.

Checking the hydraulic oil level

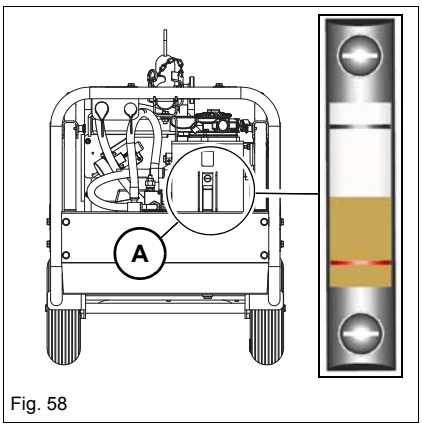


Fig. 58

1. Put the power unit on firm, level and horizontal ground.
2. Check the oil level on sight glass **A**.
   ➥ After the operating temperature is reached, the oil level must be in the middle between the MIN and MAX marks.
   ➥ Add oil if the oil level is lower.

Adding hydraulic oil

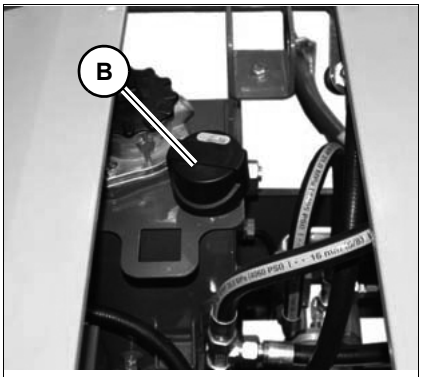


Fig. 59

1. Unscrew breather filter **B** slowly to release the pressure inside the reservoir slowly.

Fig. 60

2. Add hydraulic oil.
3. Close the filler opening with breather filter **B**.

Environment

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Checking the hydraulic system for leaks and general condition

Information

Leaks and damaged pressure lines must be immediately repaired or replaced by a HCE service center. This not only increases the operating safety of the power unit but also helps to protect the environment.

► Have hydraulic hoses replaced every 6 years from the date of manufacture, even if they do not seem to be damaged.

► Do not remove protective hoses from the hydraulic hose.

In this respect, we recommend that you observe all the relevant safety regulations for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country. Also observe DIN 20 066, part 5.

The article number is on each hose connection.

The date of manufacture of the flexible line is on the hose.

Have a line replaced if one of the following problems is detected:

- Damaged or leaky hydraulic seals.
- Worn or torn shells or uncovered reinforcement branches.
- Expanded shells in several positions.
- Entangled or crushed movable parts.
- Foreign bodies jammed or stuck in protective layers.

7.7 Electrical system

Important information regarding the electrical system

Maintenance and repair work on the electrical system may be performed only by a HCE service center!

DANGER

Death hazard due to electric shock!

The electrical system is energized and can cause serious injury or death.

- ► The control box may only be opened by the certified electricians of a HCE service center.
- ► Keep the control box key in a place that is not accessible by the operator.

Checking the indicator lights

Check the indicator lights once a day.

Green indicator light:

Starting the power unit

➥ The green indicator light must illuminate.

Red indicator light:

Press the emergency off button.

➥ The red indicator light must illuminate.

Information

Do not put the power unit into operation if one or more indicator lights are malfunctioning. Have malfunctioning indicator lights immediately replaced by a HCE service center.

7.8 Tires

Inspection work

Perform the following maintenance once a day:

- Visual check of the tire condition,.
- Check the tire pressure.
- Check the outside and inside of the tires and rims for damage.
- Remove foreign bodies from the tire tread.

Tire/wheel replacement

May be performed only by a HCE service center.

7.9 Maintenance of the lifting point

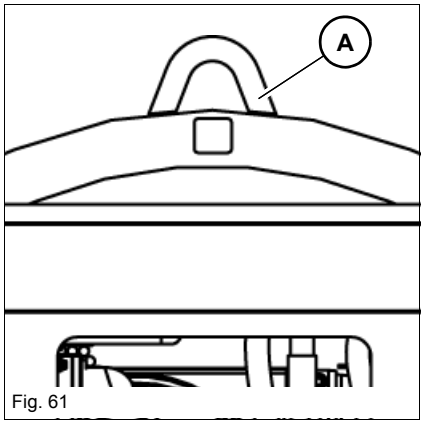


Fig. 61

Do not perform any crane-lifting if the material thickness **B** of lifting point **A** is less than 23 mm (0.9 in).

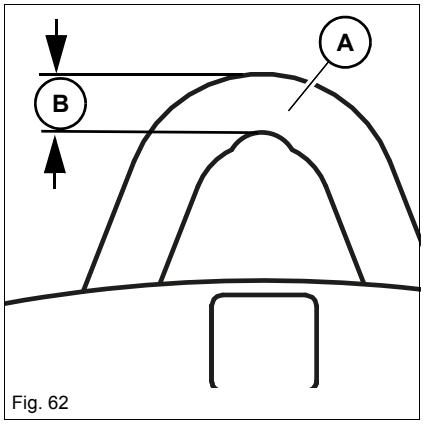


Fig. 62

Contact a HCE service center and have the malfunction rectified.

8 Malfunctions

DANGER

Injury hazard when operating the power unit in a dangerous situation!

The electrical system is energized and can cause serious injury or death.

- ► Immediately operate the emergency off switch in a dangerous situation.
- ► The control box may only be opened by the certified electricians of a HCE service center.

NOTICE

Possible serious damage to property, both to the power unit and the excavator.

- ► Immediately operate the emergency off switch in a dangerous situation.

Information

Contact a HCE service center in case of malfunctions or signs that are not listed in the following tables or that cannot be rectified with specified measures.

8.1 Malfunctions of the hydraulic system

Malfunction/sign	Possible cause	Remedy	See
Power unit does not work	Malfunctioning fuse	Contact a HCE service center	--

8.2 Malfunctions of the electrical system

Malfunction/sign	Possible cause	Remedy	See
Power unit does not work	No power supply established	Connect the power unit to the mains	*4-1*
	Short circuit	Contact a HCE service center	--
	Emergency off switch pressed	Turn and pull out the emergency off switch clockwise	--
Red indicator light illuminates	Hydraulic oil level too low	Add hydraulic oil Operate the emergency off switch Turn and pull out the emergency off switch clockwise	*7-9*
	Power unit overheated	Contact a HCE service center	--
	Electric motor overheated		

Information

The power unit stops automatically as soon as the red indicator light illuminates.

Environment

Possible serious damage to the environment. Remove soil contaminated by fluids and lubricants (for example by hydraulic oil after a hose rupture) as soon as possible and dispose of it in an environmentally friendly manner.

9 Technical data

9.1 Models and trade names

Type	Trade name
A01-01	HPU

9.2 Tires

Tires	HPU
Wheel width	90 mm (3.5 in)
Wheel diameter	340 mm (13.4 in)
Tire pressure	3 bar (44 psi)

9.3 Operating hydraulics

Operating hydraulics	HPU
Type of control	Constant control
Number of pumps	1
Pump type	Gear pump
Flow rate	20 l/min (5.3 gal/min)
Operating pressure for operating hydraulics	210 bar (3.046 psi)
Hydraulic reservoir capacity	9.6 l (2.5 gal)
Hydraulic hose capacity (12 m/39 ft)	4.5 l (1.2 gal)

Hydraulic hose specifications

Hydraulic hose	HPU
Dimension	DN16
Operating pressure	210 bar (3,046 psi)
Minimum bursting pressure	840 bar (12,183 psi)
Maximum length[1]	12 m (39 ft)
Protective hose on excavator side	Yes

1. Pressure losses with hose lengths over 12 meters.

9.4 Electrical system

Electric motor

Electric motor	HPU (7.5 kW)	HPU (9 kW)
Design	Three-phase electric motor	
Rated speed	1460 rpm	1,728 rpm
Engine output according to ISO	7.5 kW	9 kW
Voltage	400 V	480 V
Power consumption	16 A	16 A
Maximum power output of equipment power outlet[1]	1000 W	No equipment power outlet

1. Consumers may only be connected to the accessories outlet if the power unit is stopped.

9.5 Tightening torques

General tightening torques

Property class	8.8	10.9	12.9	8.8	10.9
Screw dimensions	Screws according to DIN 912, DIN 931, DIN 933, etc.			Screws according to DIN 7984	
	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)
M5	5.5 (4)	8 (6)	10 (7)	5 (4)	7 (5)
M6	10 (7)	14 (10)	17 (13)	8.5 (6)	12 (9)
M8	25 (18)	35 (26)	42 (31)	20 (15)	30 (22)
M10	45 (33)	65 (48)	80 (59)	40 (30)	59 (44)
M12	87 (64)	110 (81)	147 (108)	69 (51)	100 (74)
M14	135 (100)	180 (133)	230 (170)	110 (81)	160 (118)
M16	210 (155)	275 (203)	350 (258)	170 (125)	250 (184)
M18	280 (207)	410 (302)	480 (354)	245 (181)	345 (254)
M20	410 (302)	570 (420)	690 (509)	340 (251)	490 (361)
M22	550 (406)	780 (575)	930 (686)	460 (339)	660 (487)
M24	710 (524)	1000 (738)	1190 (878)	590 (435)	840 (620)
M27	1040 (767)	1480 (1,092)	1770 (1,305)	870 (642)	1250 (922)
M30	1420 (1,047)	2010 (1,482)	2400 (1,770)	1200 (885)	1700 (1,254)

Tightening torques/fine-pitch thread					
Property class	**8.8**	**10.9**	**12.9**	**8.8**	**10.9**
Screw dimensions	**Screws according to DIN 912, DIN 931, DIN 933, etc.**			**Screws according to DIN 7984**	
	Nm (ft.lbs.)	**Nm (ft.lbs.)**	**Nm (ft.lbs.)**	**Nm (ft.lbs.)**	**Nm (ft.lbs.)**
M8X1.0	25 (18)	37 (28)	43 (32)	22 (16)	32 (24)
M10X1.0	50 (37)	75 (55)	88 (65)	43 (32)	65 (48)
M10X1.25	49 (36)	71 (52)	83 (61)	42 (31)	62 (46)
M12X1.25	87 (64)	130 (96)	150 (111)	75 (55)	110 (81)
M12X1.5	83 (61)	125 (92)	145 (107)	72 (53)	105 (77)
M14X1.5	135 (100)	200 (148)	235 (173)	120 (89)	175 (129)
M16X1.5	210 (155)	310 (229)	360 (266)	180 (133)	265 (195)
M18X1.5	315 (232)	450 (332)	530 (391)	270 (199)	385 (284)
M20X1.5	440 (325)	630 (465)	730 (538)	375 (277)	530 (391)
M22X1.5	590 (435)	840 (620)	980 (723)	500 (369)	710 (524)
M24X2.0	740 (546)	1070 (789)	1250 (922)	630 (465)	900 (664)
M27X2.0	1100 (811)	1550 (1,143)	1800 (1,328)	920 (679)	1300 (959)
M30X2.0	1500 (1,106)	2150 (1,586)	2500 (1,844)	1300 (959)	1850 (1,364)

9.6 Noise emissions

Measured sound power level LwA [1]	90.3 dB
Guaranteed sound power level LwA[1]	93 dB
Uncertainty factor K_{A2}[2]	0.8
Operator-perceived sound pressure level LpA (without cabin)[3]	-

1. According to ISO 6395 (EC Directives 2000/14/EC and 2005/88/EC)
2. According to EN ISO 4871 (EC Directives 2000/14/EC and 2005/88/EC)
3. According to ISO 6394 (EC Directives 84/532/EEC, 89/514/EEC, 95/27/EEC)

Information

Measurements performed on asphalted surface.

9.7 Vibration

The relevant threshold values are observed.

9.8 Weight

Weight of power unit

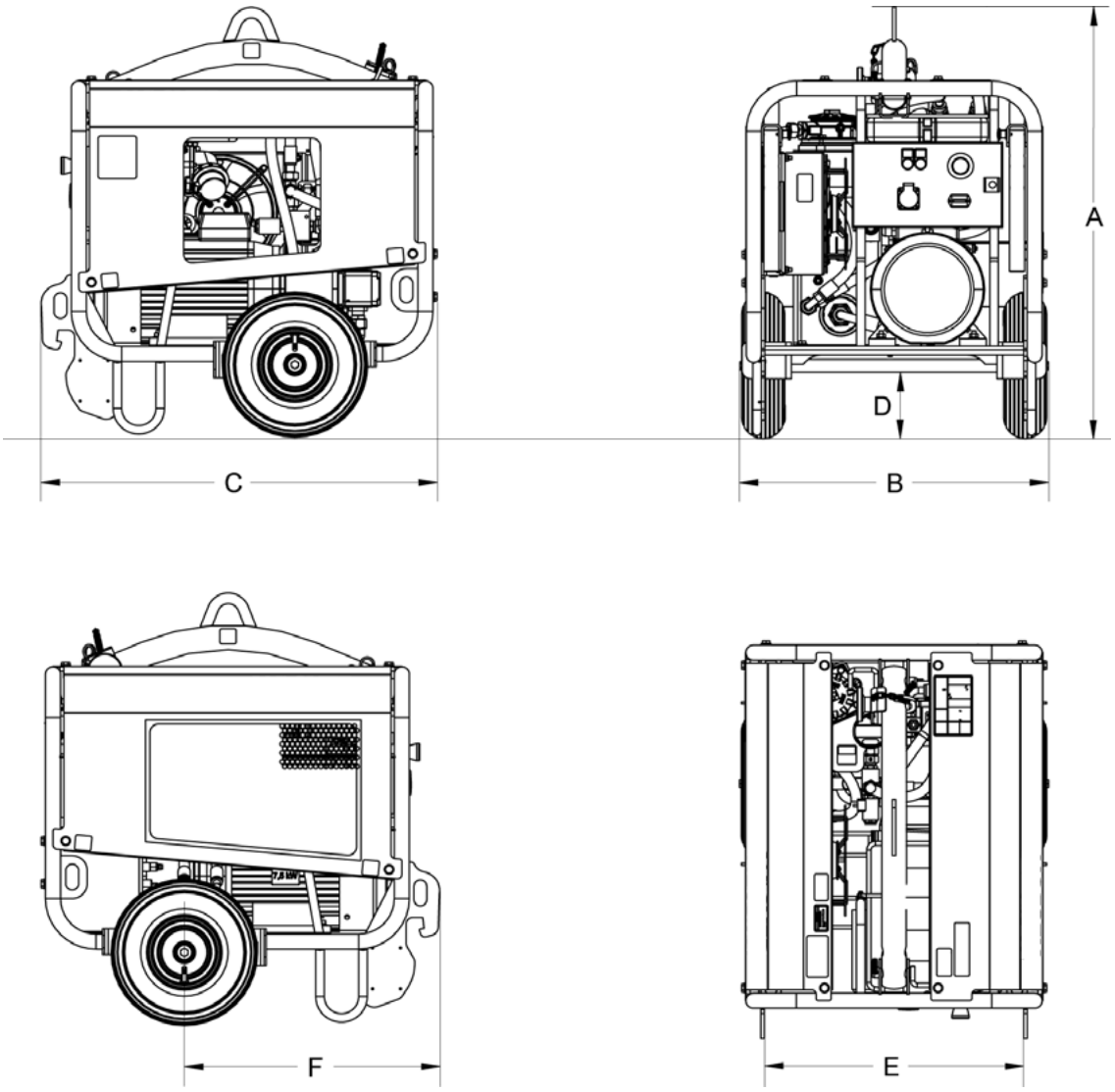
Weight	HPU
Transport/operating weight[1]	192 kg (423 lbs)

1. Power unit with full hydraulic oil reservoir

Information

The weight of all the equipment (hydraulic hoses, for example) must be added to the weight of the power unit.
Weight indications can vary by +/− 2 %.

9.9 Dimensions



Symbolic representations

	HPU	Dimensions
A	Height	1000 mm (39 in)
B	Width	720 mm (28 in)
C	Transport length	930 mm (37 in)
D	Ground clearance	150 mm (6 in)
E	Distance between stabilizer blade hooks	603 mm (24 in)
F	Distance between center of wheel hub and stabilizer blade hooks	593 mm (23 in)

Notes:

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