

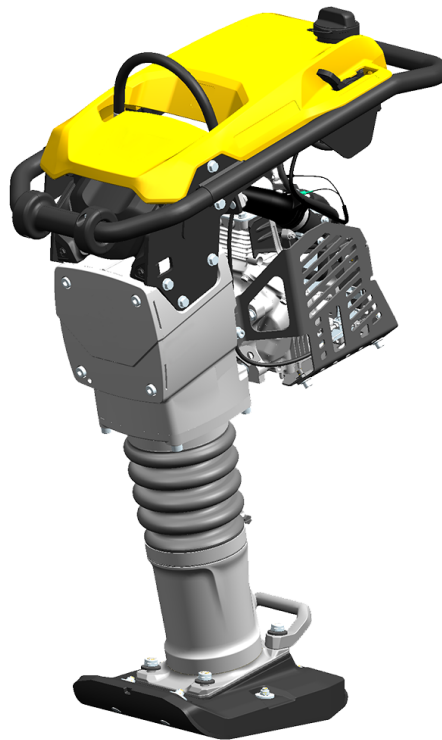


**WACKER  
NEUSON**

*all it takes!*

## Operator's Manual Rammer

**BS**



Machine Type	BS62-4, BS68-4
Material Number	5100069490
Version	5
Date	06/2025
Language	[en-US]

## **Imprint**

### Publisher and copyright holder

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## **Original operator's manual**

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# California Proposition 65 Warning



**⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.



**⚠ WARNING**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.



**⚠ WARNING**

Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



**⚠ WARNING**

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.



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# 1 Declaration of conformity



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## EU Declaration of Conformity

### Manufacturer

Wacker Neuson Produktion GmbH & Co. KG, Wackerstraße 6, 85084 Reichertshofen (DE)  
This declaration of conformity is issued under the sole responsibility of the manufacturer.

<b>Product</b>	<b>BS62-4A/16, BS62-4Ab/16, BS62-4A/25, BS62-4Ab/25, BS62-4A/28, BS62-4Ab/28</b>
Product type	Vibratory rammer
Function of product	Soil compaction
Net installed power	2,7 kW
Measured sound power level	103 dB(A)
Guaranteed sound power level	108 dB(A)

### Conformity assessment procedure

2000/14/EC, Annex VIII

### Notified body

TÜV Rheinland LGA Products GmbH, Tillystr. 2, 90431 Nürnberg (DE) (NB 0197)

### Directives and standards

We hereby declare that this product complies with the relevant provisions and requirements of the following directives and standards:

2006/42/EC • 2000/14/EC • 2014/30/EU • EN 500-1:2006 + A1:2009 • EN 500-4:2011  
EN ISO 13766-1:2018

### Person responsible for technical documents

Wacker Neuson Produktion GmbH & Co. KG, Wackerstraße 6, 85084 Reichertshofen (DE)

Reichertshofen (DE), 18.10.2024

---

Helmut Bauer  
Managing Director

Original Declaration of Conformity

BS62-4A/16, BS62-4Ab/16, BS62-4A/25, BS62-4Ab/25, BS62-4A/28, BS62-4Ab/28\_CE\_en



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## UK Declaration of Conformity

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SI 2001 No. 1701, Schedule 11

### Approved Body

TUV Rheinland UK Ltd., Friars Gate, 1011 Stratford Road, Shirley, Solihull, B90 4BN (GB) (No. 2571)

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SI 2008 No. 1597 • SI 2001 No. 1701 • SI 2016 No. 1091 • EN 500-1:2006 + A1:2009  
EN 500-4:2011 • EN ISO 13766-1:2018

### Person responsible for technical documents

Andy Williams (Operations Manager), Wacker Neuson Ltd, WN Place, Beacon Way, Stafford ST18 0DG (GB)

Reichertshofen (DE), 18.10.2024

\_\_\_\_\_  
Helmut Bauer  
Managing Director

**UK  
CA**

Original Declaration of Conformity

BS62-4A/16, BS62-4Ab/16, BS62-4A/25, BS62-4Ab/25, BS62-4A/28, BS62-4Ab/28\_UKCA\_enuk





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### Manufacturer

Wacker Neuson Produktion GmbH & Co. KG, Wackerstraße 6, 85084 Reichertshofen (DE)  
This declaration of conformity is issued under the sole responsibility of the manufacturer.

<b>Product</b>	<b>BS68-4A/25, BS68-4Ab/25, BS68-4A/28, BS68-4A/28 CN, BS68-4Ab/28, BS68-4A/33, BS68-4Ab/33</b>
Product type	Vibratory rammer
Function of product	Soil compaction
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2000/14/EC, Annex VIII

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TÜV Rheinland LGA Products GmbH, Tillystr. 2, 90431 Nürnberg (DE) (NB 0197)

### Directives and standards

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2006/42/EC • 2000/14/EC • 2014/30/EU • EN 500-1:2006 + A1:2009 • EN 500-4:2011  
EN ISO 13766-1:2018

### Person responsible for technical documents

Wacker Neuson Produktion GmbH & Co. KG, Wackerstraße 6, 85084 Reichertshofen (DE)

Reichertshofen (DE), 18.10.2024

Helmut Bauer

Managing Director

Original Declaration of Conformity

BS68-4A/25, BS68-4Ab/25, BS68-4A/28, BS68-4A/28 CN, BS68-4Ab/28, BS68-4A/33, BS68-4Ab/33\_CE\_en



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### Manufacturer

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This declaration of conformity is issued under the sole responsibility of the manufacturer.

<b>Product</b>	<b>BS68-4A/25, BS68-4Ab/25, BS68-4A/28, BS68-4A/28 CN, BS68-4Ab/28, BS68-4A/33, BS68-4Ab/33</b>
Product type	Vibratory rammer
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SI 2008 No. 1597 • SI 2001 No. 1701 • SI 2016 No. 1091 • EN 500-1:2006 + A1:2009  
EN 500-4:2011 • EN ISO 13766-1:2018

### Person responsible for technical documents

Andy Williams (Operations Manager), Wacker Neuson Ltd, WN Place, Beacon Way, Stafford ST18 0DG (GB)

Reichertshofen (DE), 18.10.2024

\_\_\_\_\_  
Helmut Bauer  
Managing Director

**UK  
CA**

Original Declaration of Conformity

BS68-4A/25, BS68-4Ab/25, BS68-4A/28, BS68-4A/28 CN, BS68-4Ab/28, BS68-4A/33, BS68-4Ab/33\_UKCA\_enuk



## EU-Konformitätserklärung

European Declaration of Conformity



**Hiermit erklären wir, dass das Produkt**

**We herewith declare that the product**

**BEACON 24g**

V930241260

**mit den Vorschriften folgender Europäischen Richtlinien übereinstimmt:**

**complies with the requirements of the following European directives**

- **Radio Equipment Directive (RED) 2014/53/EU**
- **RoHS Directive (RoHS) Directive 2011/65/EU**

**Die Übereinstimmung der Produkte mit den Europäischen Richtlinien wird nachgewiesen durch die Einhaltung folgender harmonisierter Normen:**

*The conformity of the product with the European directives is proven by the compliance with the following harmonised standards:*

**EN 62479: 2010**

**EN 300328: 2019-07**

**EN 301489-17: 2017**

**EN 301489-1: 2019**

**EN 61000-4-2: 2009**

**EN 61000-4-3: 2006 + A1: 2008 + A2: 2010**

**EN IEC 62368-1: 2020 + A11:2020**

**Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.**

*The manufacturer shall bear sole responsibility for drawing up this declaration of conformity.*

**Hersteller:**

manufacturer:

**Sontheim Industrie Elektronik GmbH**

**Georg-Krug-Straße 2**

**D-87437 Kempten / Germany**

Kempten, 17.02.2023

  
Sontheim Industrie Elektronik GmbH



## UK Declaration of Conformity

**We herewith declare that the product**

**BEACON 24g**

**V930241260**

**complies with the relevant fundamental requirements of the following regulation(s):**

- Radio Equipment Regulations 2017
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

**The conformity of the product is proven by the compliance with the following harmonized standards:**

EN 62479: 2010  
EN 300328: 2019-07  
EN 301489-17: 2017  
EN 301489-1: 2019  
EN 61000-4-2: 2009  
EN 61000-4-3: 2006 + A1: 2008 + A2: 2010  
EN IEC 62368-1: 2020 + A11:2020

**responsible contact:**

Wacker Neuson Ltd  
Andy Williams (Operations Manager)  
WN Place, Beacon Way  
Stafford ST18 0DG (GB)

**The manufacturer shall bear sole responsibility for drawing up this declaration of conformity.**

**manufacturer:**

Sontheim Industrie Elektronik GmbH  
Georg-Krug-Straße 2  
D-87437 Kempten / Germany

Kempten, 06.02.2023



Sontheim Industrie Elektronik GmbH





Sontheim 

**Supplier Declaration of Conformity**  
47 CFR § 2.1077 Compliance Information

**We herewith declare that the product**

**Product Name:**

BEACON 24g

**Unique Identifier:**

V930241260

**Responsible Party – U.S. Contact Information:**

**Sontheim Electronic Systems L.P.**

201 West 2nd Street

Davenport, IA 52801

United States of America

Telephone: +1 563 888 1471

Email: info@sontheim-esys.com

**FCC Compliance Statement:**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Davenport, 17.10.2022



Sontheim Industrie Elektronik GmbH



## Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

### Copy of the Compliance Information Statement

18.08.2022, 15:51

FCC - OET TCB Form 731 Grant of Equipment Authorization

## TCB

## GRANT OF EQUIPMENT AUTHORIZATION

## TCB

Certification  
Issued Under the Authority of the  
Federal Communications Commission  
By:

PHOENIX TESTLAB GmbH  
Koenigswinkel 10  
32825 Blomberg,  
Germany

Date of Grant: 10/01/2018

Application Dated: 10/01/2018

u-blox AG  
Zuercherstrasse 68  
Thalwil, Ch-8800  
Switzerland

Attention: Giulio Comar , Certification Manager

#### NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: XPYANNAB1

Name of Grantee: u-blox AG

Equipment Class: Digital Transmission System

Notes: Wireless Communication System Module

Modular Type: Single Modular

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	15C	2402.0 - 2480.0	0.002		

Output power listed is max conducted. This modular transmitter is approved for use in any stand-alone configurations and meets SAR test exclusion for host applications, where the radiating part is 5 mm or less away from the human body. This module can only be used with a host antenna circuit trace layout design in strict compliance with the OEM instructions provided. This module is also approved with a fixed onboard antenna. Only those antenna(s) tested and documented with this device or similar antenna types with equal or lesser gain and identical in- and out-band characteristics may be used with this transmitter. The antenna used for this transmitter module must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. The integrator is responsible for the final compliance of the end-product with the integrated transmitter module. When the conditions of this filing cannot be met installation of this device into specific final products may require the submission of a permissive change application containing appropriate data demonstrating compliance, or a new application for equipment authorization. This device supports Bluetooth BLE 5 with different data rates (1 MBit/s, 2 MBit/s) as documented.

## 2 Foreword

### 2.1 Introduction

This operator's manual contains important information and procedures for the safe, proper and economical operation of this machine. Careful reading, understanding and observing it helps to avoid hazards, reduce repair costs and downtimes and thus increase the availability and service life of the machine.

This operator's manual is not a manual for extensive maintenance or repair work. Such work must be carried out by the service partner or by technically trained personnel. The machine must be operated and maintained in accordance with the instructions in this operator's manual. Improper operation or maintenance can cause hazards.

Defective machine parts must be replaced immediately!

The manufacturer is always available to answer questions about operation or maintenance.

### 2.2 Storage Location of the Operator's Manual

This operator's manual must be kept in the immediate vicinity of the machine and accessible to personnel at all times.

If a second copy of this operator's manual is lost or required, the following options are available for obtaining a replacement:

- On the Internet at <http://www.wackerneuson.com>.
- Contact the service partner

#### 2.2.1 Understanding These Instructions

This section helps to understand the operator's manual and the illustrations used therein.

##### Target group

People working with this machine must be regularly trained with regard to the dangers and risks occurring when using this machine.



This operator's manual is aimed at:

- Operating personnel:
  - These people have been instructed in working with the machine and about possible dangers and risks arising due to improper behavior.
- Technically trained personnel:
  - These people have a professional training as well as additional knowledge and experience. They are capable of assessing the tasks assigned to them and recognizing any possible risks and dangers.

##### Explanation of symbols

Symbol	Explanation
1., 2., 3...	Indicates an activity. The sequence of the steps must be observed.
⇒	Indicates a result or an intermediate result of an action.



Symbol	Explanation
✓	Indicates prerequisites that must be established for the activity.
•	Indicates a list, e.g. if several components are named one after the other.
-	Indicates a sub-list, e.g. if components consist of further components
①	Identifies a position, usually a component or control element, in a graphic. The numbering may be sequential or in Roman numerals.
1; A	Indicates the naming of components in explanatory texts. It is identical with the adjacent positions in the illustrations.
 	Indicates a direction of movement or different positions for switches.
▶	Indicates the avoidance of hazards in warning notices.
[▶52]	Indicates a cross-reference in tables. Here e.g. reference to page 52

### 2.2.1.1 Explanation of symbols

The symbols used in the operator's manual are explained below. The symbols are used exclusively in warning or environmental instructions or information. Warnings must always be observed to protect the operator and third parties from personal injury and damage to property.



#### **Symbol for warnings**

This symbol marks general warnings. It is used to alert you of possible hazards, e.g. risks of injury or accidents.



#### **Symbol for indications of technical damage**

This symbol is a warning symbol that indicates a danger of technical damage. It is used to indicate situations where damage to the machine or third-party property may occur.



#### **Symbol for environmental information**

This symbol indicates environmental information. It is used to warn of possible environmental hazards.



#### **Symbol for information**

This symbol indicates information. This information can include tips on operation, for example. It helps to better understand and use the machine.

## 2.3 Accident Prevention Regulations

In addition to the notes and safety instructions in this operator's manual, the local accident prevention regulations and the national industrial safety regulations apply.

## 2.4 Contact person

Depending on the country, the contact person is a service partner, a subsidiary or a dealer.

- On the Internet at <http://www.wackerneuson.com>.

## 2.5 Limitation of liability

In the event of the following infringements, the manufacturer disclaims any liability for personal injury and damage to property:

- Actions contrary to this operator's manual.
- Non-designated use
- Deployment of untrained personnel.
- Use non-approved spare parts and accessories.
- Improper handling.
- Structural changes of any kind.
- Non-observance of the General Terms and Conditions (GTC).

## 2.6 Use of the operator's manual

This operator's manual:

- must be regarded as an integral part of the machine and must be kept in a safe place throughout its service life.
- must be passed on to each subsequent owner or operator of this machine.
- applies to various machine types from one product range. For this reason, some illustrations may differ from the appearance of the purchased machine. Variant-dependent components that are not included in the scope of delivery can also be described.

The manufacturer reserves the right to change the information in this operator's manual without notice.

It must be ensured that any changes or additions made by the manufacturer are immediately incorporated into this operator's manual.

Type* / Variant**
BS62-4
BS68-4
*Type = a machine derived from the variant. The complete machine type is specified on the type plate.
**Variant = a base version of the machine that must be further configured.

## **3 Usage**

### **3.1 Designated use**

Designated use also includes observing all notes and safety instructions in this operator's manual and observing the prescribed care and maintenance instructions.

Any other use or use that goes beyond this is considered improper use. The manufacturer shall not be liable or liable for any damage resulting therefrom. The risk is borne solely by the operator.

The machine is used for:

- Compaction of cohesive, mixed and granular soils.
- Asphalt compaction
- Soil compaction in trenches.
- Backfilling of structures.
- Use in civil engineering, gardening and landscaping.

### **3.2 Unintended use**

The manufacturer is not liable for personal injury or damage to property resulting from unintended use. The following activities, among others, are not intended:

- Connecting non-permitted components.
- Operating the machine outside the performance data.
- Compaction of strongly cohesive soils.
- Compaction of frozen soils.
- Compaction of hard, non-compactable soils.
- Compaction of non-load-bearing soils.
- Shaking in cobblestones.

## 4 Safety

### 4.1 Safety symbols and signal words

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**

**INFORMATION** identifies a situation that causes damage if it is not observed.

Consequences in case of non-observance.

- ▶ Avoidance of damage to property.

### 4.2 Principle

The machine has been designed and built in accordance with latest state-of-the-art standards and the recognized safety regulations.

**Warning!** Risk of injury due to improper use.

Improper use can result in danger to life and limb for the operator and third parties or machine and other property damage.

- Read and observe the notes and safety instructions in this operator's manual. Failure to follow these instructions may result in electric shock, fire and/or serious injury, as well as damage to the machine and/or other objects.
- Keep safety instructions and information for the future.

## 4.3 Structural changes

**Warning!** Risk of injury due to structural changes.

Unauthorized structural changes to this machine can pose a risk to operators and/or third parties, as well as damage to the machine and/or other property.

- Do not make any structural changes without the manufacturer's written consent.

In particular, a structural change shall be deemed to have occurred:

- When opening of the machine and permanent removal of components.
- Installation of spare parts that do not come from the manufacturer or are not equivalent in design and quality to the original parts.
- Attachment of accessories of any kind that do not originate from the manufacturer.

The manufacturer's liability and warranty are also void in the event of unauthorized structural alterations.

Spare parts or accessories from the manufacturer can be installed or removed safely.

Further information is available on the Internet at - <http://www.wackerneuson.com>.

## 4.4 Responsibility of the operator

The operator is the person who operates this machine himself for commercial or economic purposes or who leaves it to a third party for use/application and bears the legal product responsibility for the protection of personnel or third parties during operation.

- The operator must make the operator's manual accessible to the personnel at all times and ensure that the operator has read and understood the operator's manual.
- The operator's manual must be kept ready to hand at the machine or at the place of use.
- The operator must hand over the operator's manual to any other operator or subsequent owner of the machine.
- The country-specific regulations, standards and directives on accident prevention and environmental protection must also be observed. The operator's manual must be supplemented by further instructions for compliance with operational, official, national or generally applicable safety guidelines.

## 4.5 Obligations of the operator

- Know and implement applicable health and safety regulations.
- In a risk assessment, identify hazards arising from working conditions at the place of use.
- Create operating instructions for the operation of this machine.
- Regularly check whether the operating instructions correspond to the current status of the regulations.
- Clearly regulate and define responsibilities for installation, operation, troubleshooting, maintenance and cleaning.
- Train personnel at regular intervals and inform them about possible dangers.
- Refresh instruction at regular intervals.
- Keep records of the training received and make them available to the competent authority on request.
- Provide personnel with the necessary protective equipment.

## 4.6 Qualification of staff

**Warning!** Risk of injury due to misuse.

In the event of misuse, abuse or operation by untrained personnel, there is a risk to the health of the operator and/or third parties, as well as damage or total failure of the machine and/or other property damage.

- The machine may only be commissioned and operated by trained personnel.

**In addition, the following requirements apply to the operator:**

- Physical and mental suitability.
- Minimum age 18 years.
- No influence on reactivity by drugs, alcohol or medication.
- Familiarity with the safety instructions in this operator's manual.
- Familiarity with the intended use of this machine.
- Instructed in the independent operation of the machine.

## 4.7 General safety instructions

The safety instructions in this chapter contain the "General safety instructions", which must be listed in the operator's manual in accordance with the applicable standards. It may contain instructions which are not relevant for this machine.

### 4.7.1 Workplace

**Hazard!** Hazard of poisoning from exhaust gases.

Exhaust gases contain carbon monoxide. Inhaling exhaust gases can lead to death in a few minutes.

- Do not inhale exhaust gas.
- Do not operate machine in an enclosed/partially enclosed or poorly ventilated or vented area.
- Particular caution is required when operating in ditches, because a high concentration of carbon monoxide can form in ditches after a short time.
- Ensure adequate ventilation/exhaustion.

**Warning!** Risk of explosion from fuel vapors.

Fuel vapors are highly flammable and can cause an explosion. This can seriously injure people and cause damage to property.

- Do not start the engine near spilled fuel.
- Open fire and smoking prohibited.

**Warning!** Risk of injury due to unsafe work environment.

Unsafe working environment can cause the machine to tip, roll, slide and fall. People can be injured as a result.

- Before starting work, familiarize yourself with the working environment, e.g. load-bearing capacity of the floor or obstacles in the environment.
- Always secure the machine against tipping, rolling, slipping and falling.
- Observe the changing ground conditions, especially on uneven and soft ground or on slopes. Secure the machine against slipping!
- When working near pits, ditches or plateaus, exercise caution! The load-bearing capacity of the ground must safely carry the weight of the machine and the operator.

**Warning!** Risk of injury if distracted by third parties.

Distraction by others can result in loss of machine control. This can seriously injure people and cause damage to property.

- Secure work area to public transport area.
- Keep unauthorized persons and children away when working with this machine.

**Warning!** Risk of injury due to adverse working conditions.

Cluttered and poorly lit work areas can lead to accidents. People can trip, fall and be seriously injured as a result.

- Keep work area tidy.
- Provide adequate lighting.

## 4.7.2 Personal safety

**Warning!** Risk of injury due to physical impairment.

Physical impairment can reduce the ability to react. This can lead to loss of machine control. People can be injured as a result.

- Do not work under the influence of drugs, alcohol or medication.

**Warning!** Danger of being drawn in by unsuitable clothing and long hair.

Wide or loose clothing, protective gloves, jewellery and long hair can be caught and pulled in by moving/rotating machine parts. This can result in severe injuries.

- Keep loose or loose clothing and protective gloves away from moving/rotating machine parts.
- Remove jewelry before starting work.
- Tie up long hair or use a hair net.

**Warning!** Danger of falling due to unsafe position.

Working in an unstable position can lead to falls. Falls can cause serious injuries.

- Always ensure a safe footing.
- Always have both feet on the ground.

**Warning!** Risk of injury to third parties

Bystanders can be seriously injured by incidents in the work area.

- Make sure there are no other people in the danger area.

**Caution!** Damage to health from exposure to vibration.

Prolonged use of this machine may result in long-term vibration-related damage or impaired circulation in the fingers, hands or wrists. Signs of this can be body parts falling asleep, tingling, hurting, stinging and discoloring.

In the case of personal predisposition to poor blood circulation, working time can be reduced despite safety gloves and regular breaks from work.

- Take regular breaks from work.
- If these symptoms are detected, consult a doctor immediately.
- Observe national occupational safety requirements.

Vibration exposure, [see Technical Data on page 60](#)

### Personal protective equipment

Suitable protective equipment must be used for all work. Personal protective equipment considerably reduces the risk of injury.

**Warning!** Risk of hearing damage from exceeding permissible noise limits.

Working with the machine without hearing protection can lead to hearing damage in the long-term.

- Always use hearing protection when working with the machine.
- When working with hearing protection, work particularly attentively and carefully, because noises, e.g. screams or beeps, are only perceived to a limited extent.

### 4.7.3 Handling and use

**Warning!** Risk of injury from falling loads.



In the event of improper transport or transport with unsuitable lifting gear, loads can fall. People can be hit and seriously injured or killed.

- Do not stay under lifted loads.
- Only use suitable and tested lifting gear and slings with sufficient load-bearing capacity.
- Secure the machine safely to the lifting gear.
- Use appropriate transport method.

**Warning!** Risk of crushing from swinging loads.

Improper transport can cause loads to swing. People can be hit or crushed by this and be seriously injured or killed.

- Keep a sufficient distance from the lifted loads.
- Secure raised loads against swinging.

**Warning!** Danger to life due to unauthorized troubleshooting

Unauthorized troubleshooting can lead to unforeseen machine states. People can be injured as a result.

- If faults occur on this machine which are not described in this operator's manual, contact the service partner.
- Do not rectify faults on your own.

**Warning!** Risk of injury from defective machines or components.

Defective machines or components can lead to unforeseen machine states. People can be injured as a result.

- Handle machines with care.
- Do not start a defective engine.
- Have defective parts replaced before operating the machine.

**Warning!** Risk of injury due to functionally restricted controls.

Controls that are not fully functional can lead to unforeseen machine states. People can be injured as a result.

- Check the machine's controls for functionality before operation.
- Do not lock, manipulate or alter the machine controls in an inadmissible manner.

**Warning!** Risk of injury due to unauthorized start-up.

Unauthorized start-up can lead to dangerous situations. Persons involved can be seriously injured as a result.

- Only allow the machine to be operated by authorized personnel.
- Secure unused machines against unauthorized putting into operation.
- After operation, store the machine in a locked, clean, frost-free and dry place that is inaccessible to other people and children.
- Use the machine, accessories, tools etc. in accordance with these instructions.

## **4.8 Specific safety instructions for vibratory rammers**

### **4.8.1 External influences**

**Warning!** Fire and explosion hazard.

Operating machines in potentially explosive atmospheres or near open flames can result in an explosion or fire. This can seriously injure people and cause property damage.

- Do not operate the machine in a potentially explosive environment.
- Do not operate machine in oilfield environments - methane gas leaking from ground.
- Do not operate the machine in the vicinity of open flames.
- Do not operate the machine in dry, highly flammable vegetation.

**Caution!** Risk of injury from slipping machine.

In heavy rain, the machine may slip on sloping surfaces. This can injure people and damage the machine.

- Do not operate the machine on inclined surfaces in heavy rain.

## 4.8.2 Operational safety

**Warning!** Risk of injury from uncontrolled guided machine.

Loss of machine control can result in serious injury to the operator or others.

- Always hold the machine with both hands.
- Take a firm stand.

**Caution!** Risk of injury from the machine slipping.

When operating the machine on inclined surfaces, the machine can slip and tip over. This can injure people and damage the machine.

- Only approach gradients from below.
- Stay above the machine during compaction work across the slope.
- Do not leave the designated operating position when the machine is in operation.
- Exercise the utmost degree of caution near abysses or slopes.
- Ensure stability.

**Caution!** Danger of being buried in ditches and pits.

When operating the machine in ditches and pits, side walls can collapse due to vibration. People can be buried and injured.

- Check side walls for stability before starting work.
- Pay close attention to sidewalls in ditches and pits.

**Caution!** Risk of injury to third parties when the machine is running.

When operating the machine, people in the work area can be injured.

- Never let the machine run unattended.
- Block off a large work area and keep unauthorized persons away.
- Make sure people in the work area keep a minimum distance of 2 meters from the running machine.

**Caution!** Risk of injury when starting with the recoil starter.

Improper handling when starting can cause injury to the operator or third parties.

- Only pull the starter handle on the recoil starter when there is sufficient space and no one is in the immediate vicinity.

#### 4.8.2.1 Safety distances

**Note!** Material damage due to careless work.

Careless work can damage lines laid in the floor.

- When operating the machine, make sure that no gas, water or electrical lines or pipes are damaged.

**Note!** Material damage caused by vibrations.

Compaction work in the vicinity of buildings can lead to building damage.

- Check all possible effects and vibrations on surrounding buildings beforehand.
- Observe the relevant regulations and rules for measuring, assessing and reducing vibrations, in particular DIN 4150-3.

**Information!** The manufacturer shall not be liable for any damage to buildings.

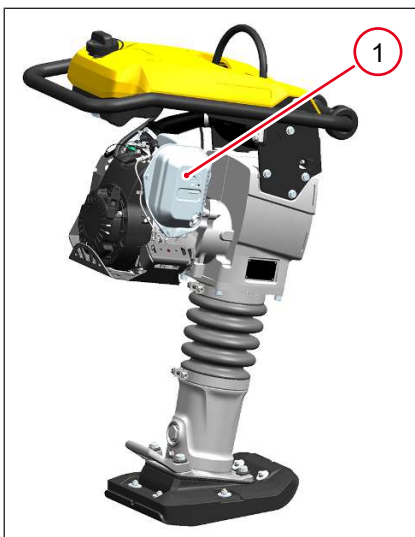
## 4.9 Safety features

Safety features protect the operator of this machine from being exposed to the existing hazards. These are barriers (separating protective devices) or other technical measures that serve to avert or reduce hazards.

**Warning!** Risk of injury due to modified or removed safety devices.

Modified or removed safety devices lose their protective function. People can be injured as a result.

- Operate the machine only when the safety devices are correctly installed and functional.
- Do not change or remove safety devices.
- Reattach safety and protective devices removed for maintenance/service (e.g. V-belt protection).



Burn protection **1** protects the operator from contact with hot surface.

## 4.10 Service

**Warning!** Risk of injury from defective machine.

Machines that are not or improperly maintained/repared may have defects that go unnoticed. This can cause personal injury and property damage.

- Observe maintenance intervals according to maintenance plan.
- Only have the machine repaired or serviced by technically trained personnel.
- Have work not listed in the maintenance plan carried out by the service partner.
- Replace worn or damaged machine parts immediately.
- Only use original spare parts and accessories. The operational safety of the machine is thus maintained.
- Carry out maintenance work in a clean and dry environment (e.g. workshop).
- Replace any missing, damaged or illegible safety labels immediately. Safety and information labels contain important information for the protection of the operator.
- Keep the machine clean.

**Warning!** Risk of injury due to modified or removed safety devices.

Modified or removed safety devices lose their protective function. People can be injured as a result.

- Operate the machine only when the safety devices are correctly installed and functional.
- Do not change or remove safety devices.
- Reattach safety and protective devices removed for maintenance/service (e.g. V-belt protection).

**Caution!** Risk of crushing/risk of burns when the machine is running.

Moving/rotating machine parts can cause crushing. Hot machine parts can cause burns if touched.

- Do not service, repair, adjust or clean the machine when it is switched on.
- Switch off the machine and let it cool down.

#### 4.10.1 Threaded fittings

**Caution!** Risk of injury due to missing or loose screw connections.

Missing or loose screw connections can lead to loose machine parts. People can be injured as a result.

- All threaded fittings must comply with the specified specifications and be firmly bolted together.
- Observe the correct tightening torques.
- Screws and nuts must not be damaged, bent or deformed.
- Particular attention should be paid to the following:
  - Self-locking nuts and micro-encapsulated screws must not be reused after loosening. The fastening effect is lost.
  - Screw connections with thread-securing glue (e.g. Loctite) must be cleaned after loosening and provided with new adhesive before reuse.

**Information!** Follow the instructions given by the manufacturer of the thread-securing glue.

## 4.11 Vehicle fluids

**Warning!** Danger of scalding from hot operating materials.

Operating materials can become very hot after a short operation period. Contact with hot operating materials can lead to severe scalding.

- Switch off the machine and let it cool down.
- Use protective gloves.

**Warning!** Risk of fire and explosion from flammable cleaning agents.

Flammable detergents can cause fires and explosions. People can be injured as a result.

- Do not clean the machine and components with gasoline or other solvents.

**Caution!** Risk of damage to health.

Operating materials can contain toxins that can severely damage the eyes, mucous membranes and skin on contact.

- Do not inhale vapors.
- Avoid eye and skin contact.
- Always wear protective goggles and gloves when handling operating materials.
- Consult a doctor immediately if operating materials get into your eyes.
- In case of skin contact, wash skin immediately with soap and water.
- Do not eat or drink while working with vehicle fluids.

**Note!** Danger of machine damage.

Contaminated operating materials (e.g. dirt, water) can lead to premature wear or machine failure.

- Do not contaminate operating materials.
- Replace contaminated operating materials.
- If vehicle fluids leak from the machine, stop operating the machine and have it repaired immediately by a service partner.

**Environment** Risk of environmental damage.

Operating materials that get into the ground, water bodies or sewage system can cause environmental damage.

- Line work surface with impermeable foil.
- Use collection containers for old operating materials.
- Dispose of discharged or spilled vehicle fuel in accordance with applicable environmental regulations.
- Clean the machine in a suitable place where the dirty waste water can be collected in an environmentally friendly manner.
- Collect contaminated water and dispose of it in an environmentally friendly manner.

## 4.12 Combustion engine

**Warning!** Risk of fire from hot engine parts and fuel.

Hot engine parts can ignite fuel and combustible material. This can cause severe burns to people and damage to property.

- Ensure that the exhaust system of the engine is free of flammable materials.
- Before refueling, switch off the engine and let it cool down.
- Do not spill fuel, wipe up spilled fuel immediately.
- Do not use jump start sprays. These can cause fire, misfires and engine damage.

**Caution!** Risk of burns from hot engine parts.

The engine surface and exhaust system can become very hot after only a short time. Persons can suffer burns on contact.

- Switch off the engine and let it cool down.

**Note!** Machine damage from incorrect, contaminated and leaking fuel.

- Use the correct type of fuel.
- Observe the prescribed mixing ratios for two-stroke engines.
- Use clean filling aids for refueling.
- Before start of work, check the engine for leaks and cracks in the fuel line, tank and filler cap.
- Do not start the defective engine. Replace damaged parts immediately.

**Note!** Machine damage due to incorrectly set engine speed.

- The preset engine speed must not be adjusted. This could lead to engine damage.

## 5 Description of the Machine

### 5.1 Type plates and labels

#### 5.1.1 Type label

A type label is permanently attached to the machine.

##### Other type labels

Furthermore, the following components of the machine are provided with their own type label:

- the combustion engine

##### Symbols on the type label

Various symbols and markings for national and international approvals can be shown on or next to the nameplate.

#### 5.1.1.1 Labeling on the machine

##### Type label data

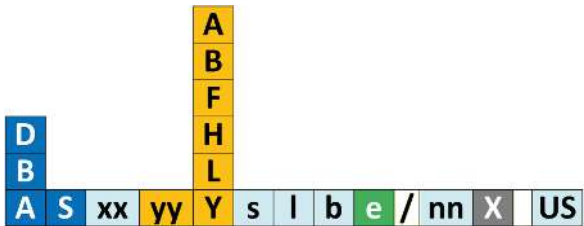
The type label contains information that uniquely identifies this machine. This information is required for ordering spare parts and for technical queries.

Enter the data on the machine in the following table:

Designation	Your details
Group - Type	
Material number (Mat. no.)	
Machine version ( version)	
Machine number (machine no.)	
Year of construction	

#### 5.1.1.2 Identifying the machine

The machine type is specified on the type plate and it is broken down as follows:

	
D	Diesel
B	Gasoline
A	Rechargeable battery
S	Rammer (series)

xx	Weight class
yy	Drive type
A	Honda
B	Briggs & Stratton
F	Farymann
H	Hatz
L	Lombardini
Y	Yanmar
s	Float
l	Low stroke
b	Communication interface
e	Zero Emission
nn	Ramming foot width [cm]
X	OEM
XX	Country-specific version e.g. US

### 5.1.2 Safety and information labels

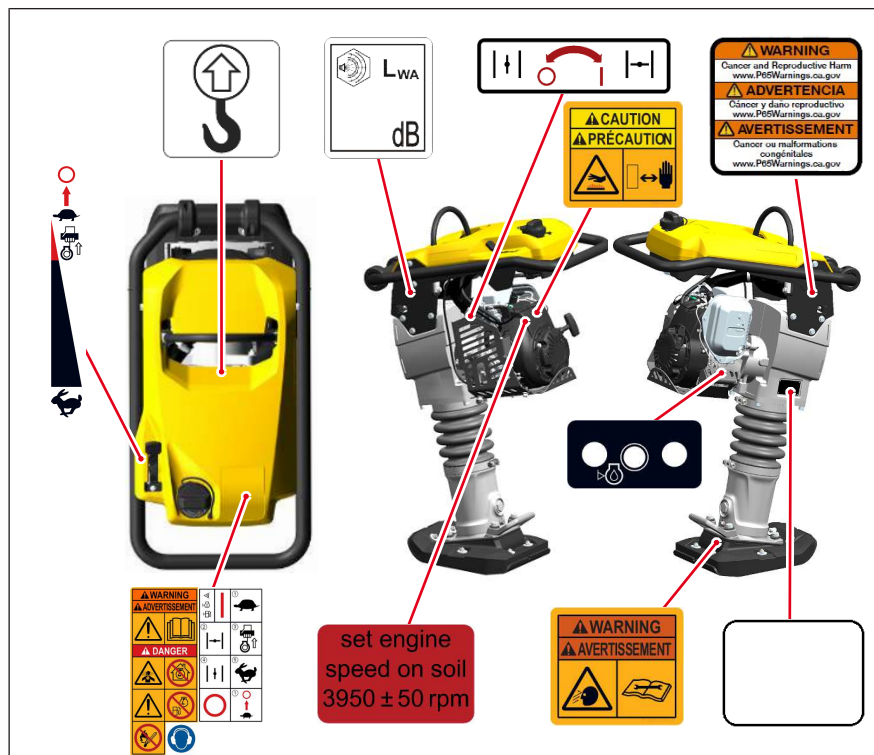


#### ⚠ WARNING

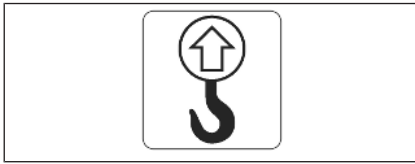
#### Injury hazard due to missing or damaged labels and signs!

Safety labels contain important information to protect the operator.

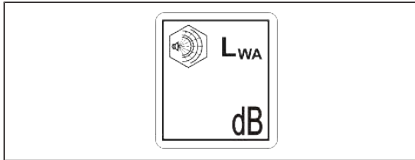
- Keep all safety, warning and operating instructions on the machine in a clearly legible condition.
- Replace missing or damaged labels and signs immediately.



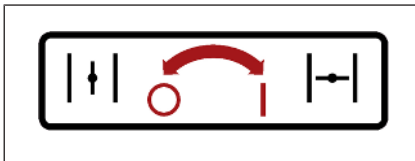




Only lift the machine at the central suspension with tested lifting gear and slinging gear (safety load hook).



Guaranteed sound power level.



Activate choke.

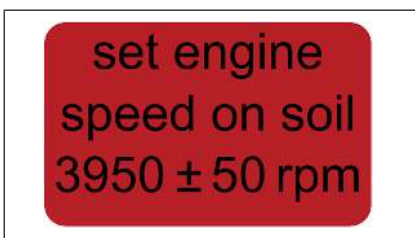


Release the cover slowly so that the spring does not pop out.  
Read the repair instructions.



Caution: Risk of injury

- Risk of burns due to hot surface!
- Keep back.



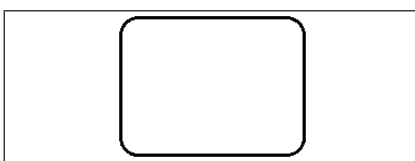
Set the engine speed in the operating range to 3950 ± 50 rpm under load.



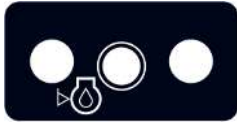
**Warning of health risks**

**WARNING! CALIFORNIA: Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

For more information: [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

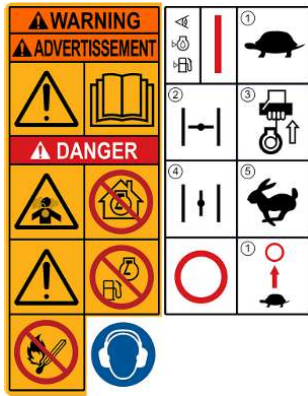


Type label.



Display low oil protection.

- If there is a lack of oil, the indicator light for low oil protection lights up.
- If there is a lack of oil, the engine cannot be started.



Danger of suffocation!

Engines emit carbon monoxide.

Do not operate the machine in closed rooms.

No sparks, flames or burning objects are permitted near the machine.

Take the machine out of operation before topping up with fuel.

Use hearing protection.

Read the operator's manual.

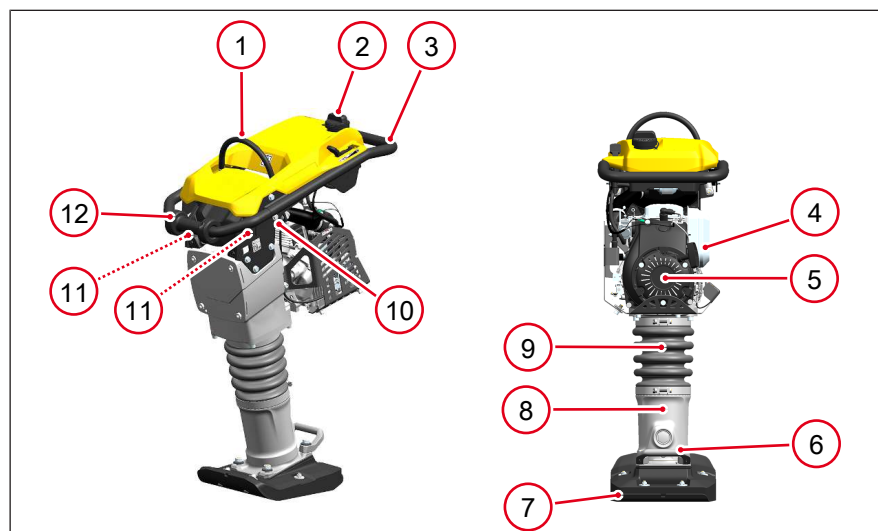
## Start - Stop quick guide.



## Throttle lever positions

- Turtle = Idle / low engine speed.
- Rabbit = High / fast engine speed.

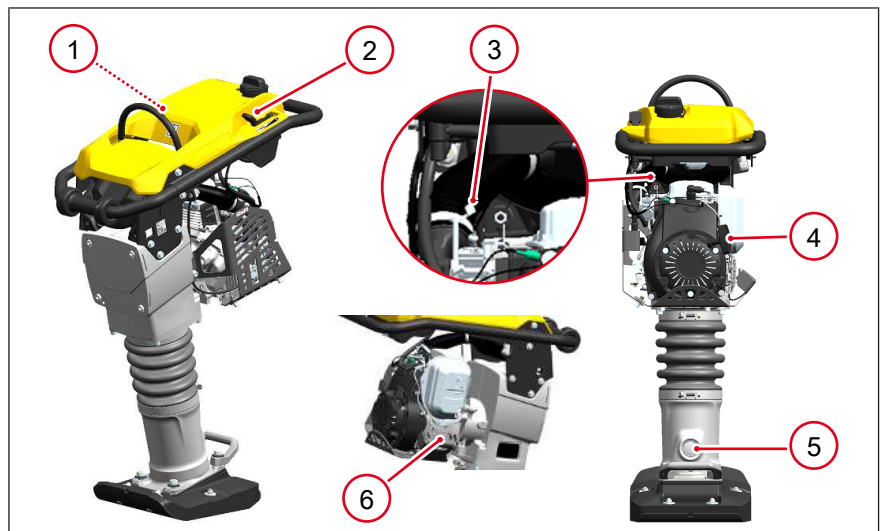
## 5.2 Components



- |   |                    |
|---|--------------------|
| 1 | Central suspension |
| 2 | Fuel tank          |
| 3 | Guide bracket      |
| 4 | Exhaust            |

- |    |                    |
|----|--------------------|
| 5  | Drive engine       |
| 6  | Handle             |
| 7  | Ramming plate      |
| 8  | Ramming system     |
| 9  | Bellows            |
| 10 | Vibration absorber |
| 11 | Transport roller   |
| 12 | Air filter         |

## 5.3 Control elements



- |   |                                    |
|---|------------------------------------|
| 1 | EquipTrack module                  |
| 2 | Throttle lever                     |
| 3 | Choke lever                        |
| 4 | Starting handle                    |
| 5 | Sight glass                        |
| 6 | Low oil protection indicator light |

## 5.4 App

### 5.4.1 WackerNeuson App

The free WackerNeuson App offers the option of retrieving the machine data via a Bluetooth® Low Energyconnection.

Connect the machine with the WackerNeuson App to get access to all WackerNeuson App functions.

Country-specific approval instructions of the radio device and machine-specific installation instructions for the EquipTrack Modul are given in the WackerNeuson App.



WackerNeuson App in AppleAppStore.



WackerNeuson App in GooglePlayStore.

## 6 Transportation

### 6.1 Safety instructions for transport



#### **⚠ WARNING**

##### **Hazard of falling!**

The falling machine can cause serious injuries, e.g. by crushing.

- ▶ Wear protective equipment (gloves, safety shoes).
- ▶ Only use suitable and tested lifting gear and slings (safety hooks) with sufficient lifting capacity.
- ▶ Only lift the machine by the central suspension.
- ▶ Secure the machine safely to the lifting gear.
- ▶ Do not lift the machine by the guide bracket.
- ▶ Leave the danger zone when lifting, do not stand under suspended loads.



#### **⚠ WARNING**

##### **Fire hazard due to fuel!**

Leaking fuel can catch fire and cause severe burns.

- ▶ Empty the fuel tank before transport.



#### **⚠ CAUTION**

##### **Risk of injury from falling machine!**

- ▶ Secure the machine against tipping over, falling down or slipping, e.g. in a closed container.
- ▶ Use safety shoes.



#### **Information**

##### **Fuel leakage!**

During transport, fuel may escape through the pressure relief valve.

- ▶ Drain the fuel system before transport.
- ▶ Observe the dangerous goods regulations of the means of transport and the national safety guidelines.

### 6.2 Prerequisites and preparations

- Switch off the engine and let it cool down.
- Empty the fuel, [see Maintenance on page 45](#).

## 6.3 Lifting the machine



### ⚠ CAUTION

#### Risk of crushing!

Crushing of hands and feet possible.

- ▶ Work cautiously.
- ▶ Use safety shoes.
- ▶ Use safety gloves.



### NOTICE

#### Note on the lifting procedure!

- ▶ Designate a competent instructor for a safe lifting procedure.



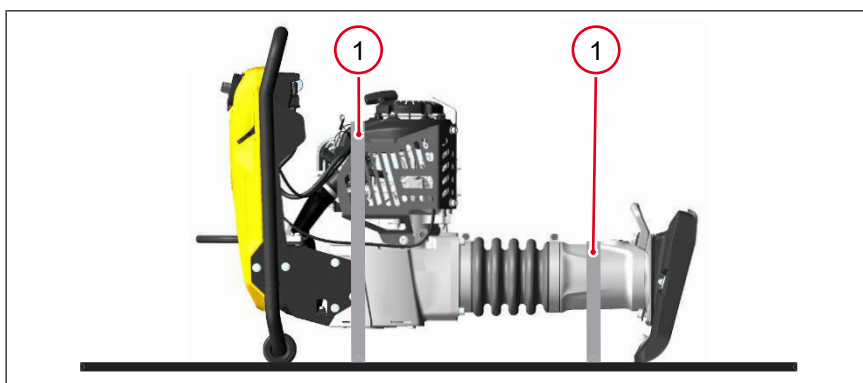
1. Attach suitable sling to central suspension 1.
2. Load the machine into or onto the transport vehicle.
3. Transfer the machine to the front onto the transport roller 2.

## 6.4 Lashing the machine



### NOTICE

Use anti-slip mats to secure the load.



1. Lash the machine to the transport vehicle as shown.
  2. Attach the tension belts 1 over the machine and tighten them.
- ⇒ The machine is secured against unrolling, slipping and tipping over.

## 7 Commissioning

### 7.1 Safety instructions for operation



#### **⚠ WARNING**

##### **Tipping hazard!**

Risk of serious injury from slipping or overturning machine.

- ▶ Ensure sufficient stability.
- ▶ Always secure the machine against tipping over.
- ▶ Park the machine on a level surface with firm ground.



#### **⚠ WARNING**

Improper handling may result in injury or serious material damage.

- ▶ Please read and follow all safety instructions in this operator's manual.



#### **⚠ WARNING**

##### **Risk of hearing damage if the country-specific noise limit is exceeded!**

Working with the machine without hearing protection can lead to hearing damage in the long-term.

- ▶ Wear ear protectors.
- ▶ Work attentively and cautiously when using hearing protection.



#### **⚠ WARNING**

##### **Risk of injury due to missing or non-functioning safety devices!**

- ▶ Only operate the machine if the safety devices are correctly installed and functioning.
- ▶ Do not change or remove safety devices.



#### **⚠ CAUTION**

##### **Health hazard due to vibrations!**

Physical impairments due to vibration.

- ▶ Take regular breaks.



#### **⚠ CAUTION**

##### **Risk of injury due to uncontrolled machine operation!**

- ▶ Always hold the machine with both hands and take a firm stand.
- ▶ Use safety shoes.



### ⚠ CAUTION

#### Risk of crushing!

Crushing of hands and feet possible.

- ▶ Work cautiously.
- ▶ Use safety shoes.
- ▶ Use safety gloves.



### ⚠ CAUTION

#### Risk of injury and material damage due to recoil!

On firm, hard or unyielding floors, injuries and material damage may result from strong rebounds.

- ▶ Avoid hard or unyielding floors.
- ▶ Always hold the machine with both hands.



### ⚠ CAUTION

#### Risk of collapse and spillage!

There is a risk of injury from falling or spilling when working on fracture, pit, dump and embankment edges, on trench edges and heels.

- ▶ Pay attention to side walls and their stability.
- ▶ Ensure stability.

## 7.2 Tests before commissioning



### Information

Further information and detailed descriptions, [see Maintenance on page 45](#).

#### Perform the following checks:

- Check machine and components for damage.
  - Do not put the damaged machine into operation. Damages and defects must be repaired immediately.
- Check the fuel level.
- Check fuel lines for leaks.
- Check engine oil fill level.
- Check reversing starter.
- Check to ensure the screw connections are firmly seated.
- Check control elements for functionality.

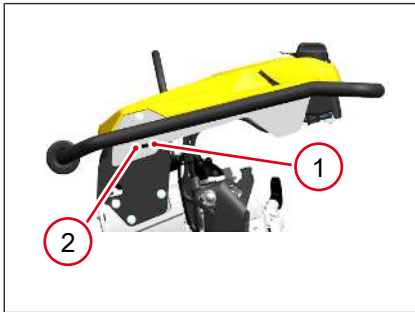


## 7.3 Height adjustment of the guide bracket



### Information

Alternatively, glue the screw in place with liquid adhesive, e.g. Omnifit 100 M, before tightening.



Depending on the selection of available holes, the height of the guide bracket can be adjusted.

1. Take out the screw from the rear hole **1**.
2. Insert a new screw with Precote coat in the front hole **2**. Tightening torque 31 Nm.

## 7.4 Putting into operation



### ⚠ CAUTION

#### Hot exhaust!

Contact may cause burns.

- ▶ Only operate the machine if the safety features are correctly fitted.
- ▶ Do not change or remove safety devices.



### ⚠ CAUTION

#### Risk of injury when starting!

Improper handling during starting can lead to minor injuries.

- ▶ Do not pull the starting handle until there is sufficient space and no persons in the immediate vicinity.



### NOTICE

#### Engine damage due to improper handling!

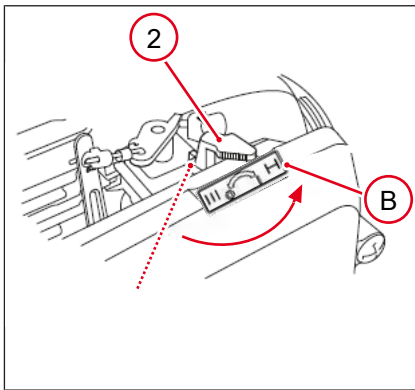
Improper handling can lead to engine damage.

- ▶ Do not pull out starting handle as far as it will go.
- ▶ Let the starting handle retract slowly.

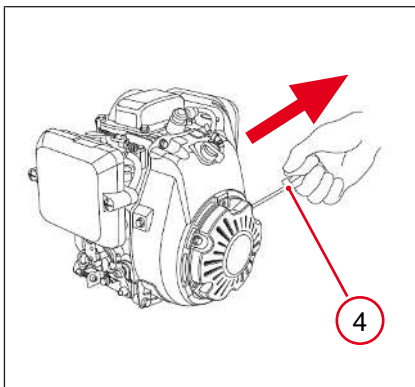
## 7.5 Starting the machine



- ✓ The machine is on a level surface.
- 1. Hold the machine by the guide bracket.
- 2. Move throttle lever **1** to position **B**.
  - ⇒ Fuel tap opens automatically.



3. With cold engine, move choke lever **2** to position **B**.
  - ⇒ Choke is activated.



4. Pull starting handle **4** of reversing starter lightly until resistance is felt.
5. Pull starting handle firmly in the direction of the arrow.
6. Slowly return the starting handle.
  - ⇒ Engine runs.
  - ⇒ If the low oil protection indicator light comes on, the engine will not start.
7. Add motor oil. For oil specification [see Technical Data on page 60](#) and [see Maintenance on page 45](#)



8. Allow engine to warm up briefly.
9. Move throttle lever **1** to position **C**.
10. Deactivate choke.
  - ⇒ Vibration begins when moved forward.

## 8 Operation

### 8.1 Operating the machine



#### **CAUTION**

##### **Risk of injury due to uncontrolled machine operation!**

- ▶ Always hold the machine with both hands and take a firm stand.
- ▶ Use safety shoes.



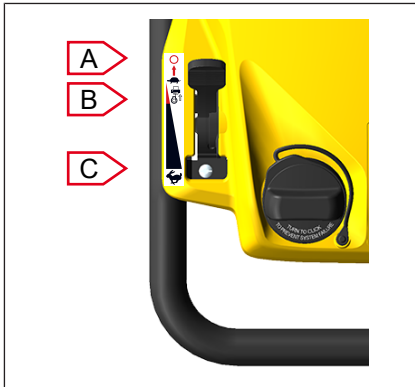
- The operator's designated location is behind the machine.
- Guide and steer the machine using the guide bracket.
- Let the machine move forward on its own. Do not use your muscles to push it forward or pull it back.
- For optimal control, performance and minimum hand and arm vibration, hold the guide bracket on the left and right.
- To avoid damage to the machine, do not move the machine when it is running.
- Exercise caution with rough material. To avoid extreme wear and tear to the ramming plate, ensure that it is always parallel to the ground being compacted.

#### 8.1.1 Compacting material



1. Guide the machine with both hands on the guide handle **1**.
2. Operate throttle lever **2** until the desired speed is reached.
3. When the material has been compacted, move the throttle lever to position **A**.  
⇒ The machine stops.
4. Lift and transfer the machine.

## 8.2 Select speed



Position A: Stop, machine stands still.

Position B: Idle run

Position C: Full throttle, fast driving speed.

## 8.3 Taking the machine out of operation



### ⚠ WARNING

#### Fire hazard due to fuel!

Leaking fuel can catch fire and cause severe burns.

- ▶ Always bring the throttle to the end position after operation.
- ▶ Let the machine cool down.



### ⚠ CAUTION

#### Danger of burns due to hot surfaces!

The machine, engine and exhaust can heat up quickly after a short time; that can lead to severe burns in case of contact with skin.

- ▶ Always allow the machine, engine and exhaust to cool down after use.
- ▶ Use heat-resistant protective gloves if the cooling phase cannot be maintained (e.g. due to an emergency).



✓ The machine is on a level surface.

1. Move the throttle lever **1** into position **A**.
    - ⇒ Fuel tap closes automatically.
    - ⇒ The machine stops.
  2. Allow the machine to come to a complete stop.
  3. Let the machine and engine to cool down.
- ⇒ The machine is out of operation.

## 9 Maintenance

### 9.1 Safety instructions for maintenance



#### **⚠ WARNING**

Improper handling may result in injury or serious material damage.

- ▶ Please read and follow all safety instructions in this operator's manual.



#### **⚠ WARNING**

##### **Hazard of poisoning from exhaust fumes!**

Exhaust fumes contain poisonous carbon monoxide, which can lead to unconsciousness or to death.

- ▶ Only perform maintenance work with the engine switched off and the machine decommissioned.



#### **⚠ WARNING**

##### **Fire and explosion hazard due to fuel and fuel vapors!**

Fuel and fuel vapors can ignite or catch fire and cause serious burns.

- ▶ Do not smoke.
- ▶ Do not refuel near open fire.
- ▶ Switch off the engine and allow it to cool before refueling.



#### **⚠ WARNING**

##### **Risk of injury due to missing or non-functioning safety devices!**

- ▶ Only operate the machine if the safety devices are correctly installed and functioning.
- ▶ Do not change or remove safety devices.



#### **⚠ CAUTION**

##### **Danger of burns due to hot surfaces!**

The machine, engine and exhaust can heat up quickly after a short time; that can lead to severe burns in case of contact with skin.

- ▶ Always allow the machine, engine and exhaust to cool down after use.
- ▶ Use heat-resistant protective gloves if the cooling phase cannot be maintained (e.g. due to an emergency).



### ⚠ CAUTION

#### Health risk from fuel, lubricants and coolants!

- ▶ Do not inhale vapors.
- ▶ Avoid skin and eye contact.



### NOTICE

#### Damage by penetrating water!

Penetrating water can damage electrical operating elements or machine components.

Penetrating moisture can lead to total failure.

- ▶ Do not clean the machine with high pressure or steam cleaners!
- ▶ Use a cloth to remove water that has entered (e.g. due to rain) the housing and then let the machine dry.
- ▶ Only use dry and clean cloths.



### NOTICE

#### Engine damage from operating the engine without an air filter!

If the engine is operated without an air filter, there is a risk of rapid engine wear.

- ▶ Do not operate the engine without an air filter or air filter cover.



### Environment

#### Soil contamination due to vehicle fluid leakage or overflow.

- ▶ Line work surface with impermeable foil.
- ▶ Use collection containers for vehicle fluid.
- ▶ Dispose of vehicle fluid in an environmentally friendly manner in accordance with statutory regulations.

## 9.2 Maintenance plan

Maintenance activities on the machine	Daily (before use)	Half-yearly or every 100 hours	Annually or every 200 hours
Clean the machine.	•		
Visual check for completeness.	•		
Visual check for damage.	•		
Check oil level; fill if necessary: <ul style="list-style-type: none"> <li>• Ramming system</li> </ul>	•		
Check screw connections of rammer foot plate, retighten if necessary.	•		
Check cooling fins, clean as necessary.	•		
Check central suspension for wear, damage or misuse, replace if necessary.	•		
Check starter, clean if necessary.*	•		

Maintenance activities on the machine	Daily (before use)	Half-yearly or every 100 hours	Annually or every 200 hours
Oil change: • Ramming system			• <sup>1</sup>
<sup>1</sup> Change the oil after the first 50 hours			
* Have this work carried out by a service partner.			

Engine maintenance	Daily (before use)	Half-yearly or every 100 hours	Annually or every 200 hours
Check engine oil fill level	•		
Check fuel lines	•		
Check the air filter and change it if necessary. **		•	
Change engine oil.		• <sup>1</sup>	
Check the fuel filter and replace it if necessary.		•	
Check and adjust the spark plug.		•	
Replace spark plug.			•
Check the valve clearance, adjust if necessary.*			•
Check and adjust the idle speed			•
Check timing belt.*			• <sup>2</sup>
Clean combustion chamber.*			• <sup>2</sup>

<sup>1</sup> Change oil for the first time after 20 h or after a month.

<sup>2</sup> Carry out every 300 hours.

\* Have this work carried out by a service partner.

\*\* If there is a loss of performance, check the air filter ahead of time.

## 9.3 Maintenance work

### 9.3.1 Carrying out preparations

1. Place the machine on a level surface.
2. Take the machine out of operation.
3. Let the machine cool down.

### 9.3.2 Cleaning the machine

#### Observe the following when cleaning:

1. Clean machine with compressed air.
2. Clean ventilation slots with a suitable non-metallic tool.
3. Wipe the housing with a damp and clean cloth.

#### Visual check after cleaning:

1. Check cables and lines for damage and leaks.
  2. Check screw connections.
  3. Check all safety, warning and operator's manual for completeness.
- ⇒ Replace missing or damaged labels and signs immediately.
- ⇒ Remedy any deficiencies noted immediately.

### 9.3.3 Add fuel



#### **⚠ WARNING**

##### **Fire and explosion hazard due to fuel and fuel vapors!**

Fuel and fuel vapors can ignite or catch fire and cause serious burns.

- ▶ Do not smoke.
- ▶ Do not refuel near open fire.
- ▶ Switch off the engine and allow it to cool before refueling.



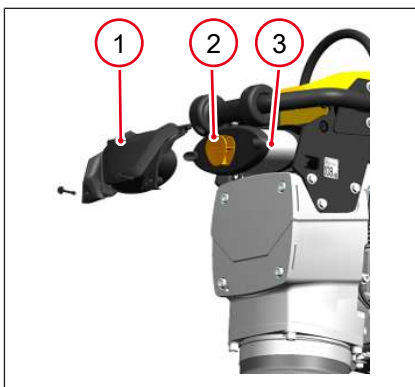
✓ The machine is out of operation.

1. Remove dirt.
2. Open filler cap **1** slowly.
  - ⇒ Any excess pressure can thus slowly escape.
3. Refill fuel to maximum lower edge of the fill opening.
  - ⇒ Fuel specification, [see Technical Data on page 60](#)
4. Close filler cap tightly.

### 9.3.4 Emptying the fuel system

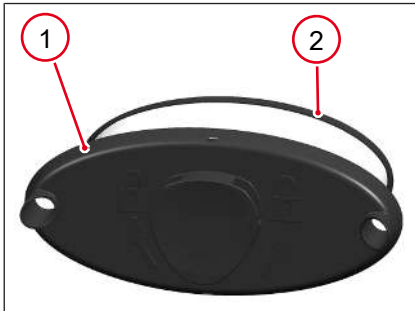
1. Remove dirt.
2. Opening the filler cap.
3. Pump fuel into a suitable container or tank, e.g. with a suction lift pump.
4. Close filler cap tightly.
5. Start the engine and let it run at idle until the fuel in the carburetor is used up and the engine stops.

### 9.3.5 Check and change the air filter



1. Remove air filter lid **1**.
2. Unscrew screw knob **2** on air filter insert **3**.
3. Pull the air filter insert out of the filter housing.





1. Check both seals **1** and **2**, filter element and air filter insert for damage. Replace if damaged.
2. Wipe out filter housing with a cloth.
3. Do not use compressed air!
4. Insert the air filter insert into the filter housing.
5. Tighten the screw knob on the air filter insert.
6. Install air filter cover.

### 9.3.6 Checking and refilling the oil level in the tamping system

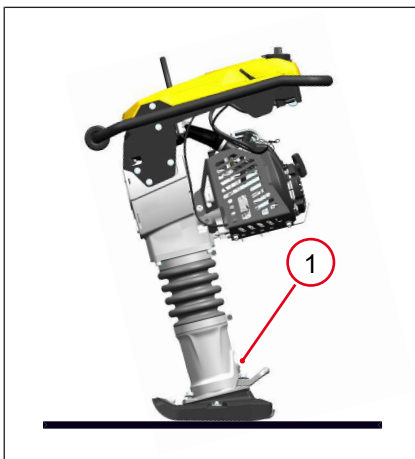


#### **NOTICE**

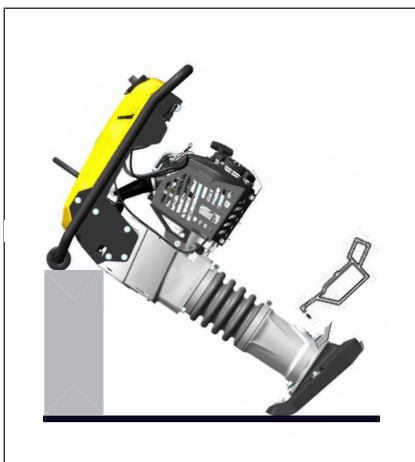
##### **Damage to machine due to incorrect oil level!**

A too high oil level can result in a hydraulic lock in the ramming system. This can lead to faulty operation and damage to the ramming system.

- Do not overfill the ramming system with oil.



- ✓ Machine is out of operation and cooled down.
  - ✓ Machine is in an upright and stable position for at least 15 minutes.
1. Remove dirt in the area of the sight glass **1**.
  2. Check the oil level through the sight glass.  
⇒ The oil level must be between  $\frac{1}{2}$  and  $\frac{3}{4}$ .
  3. If necessary, top up oil, [see technical data on page 60](#).



#### **Refilling the oil level in the ramming system**

1. Tilt the machine forward to access the sight glass.
2. Secure the machine in this position.
3. Unscrew the sight glass.
4. Clean the thread on the sight glass.
5. Pour oil into the housing through the opening in the sight glass.
6. Tighten the sight glass.



7. Stand the machine upright and stable to check the oil level.
8. If necessary, top up oil until the sight glass  $\frac{1}{2}$  to  $\frac{3}{4}$  is filled.
9. Tighten the sight glass again. Tightening torque 10 Nm.
10. Wipe the area of the sight glass with a clean cloth.

### 9.3.7 Changing oil in the ramming system



#### ⚠ CAUTION

##### **Danger of scalding from hot operating materials!**

Hot operating materials can cause burns to the skin.

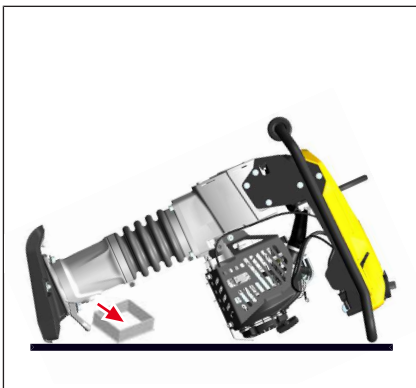
- ▶ Switch off the machine and let it cool down.
- ▶ Use protective gloves.



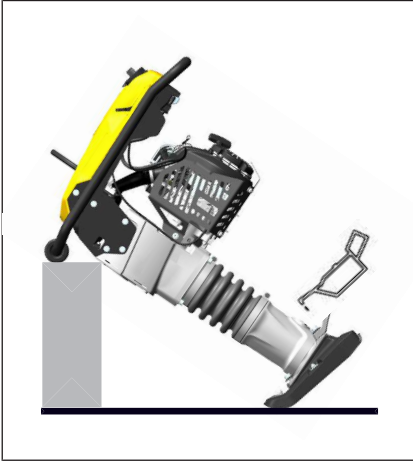
#### **Environment**

##### **Soil contamination due to vehicle fluid leakage or overflow.**

- ▶ Line work surface with impermeable foil.
- ▶ Use collection containers for vehicle fluid.
- ▶ Dispose of vehicle fluid in an environmentally friendly manner in accordance with statutory regulations.



- ✓ Remove any contamination.
  - ✓ A suitable container for draining the used oil is provided.
1. Unscrew the sight glass.
  2. Clean the thread on the sight glass.
  3. Tilt the machine backwards until it is resting on the guide bracket.
  4. Allow the used oil to drain completely.



5. Tilt the machine forward and secure it in this position.
6. Fill oil into the housing through the opening in the sight glass, [see Technical data on page 60](#).
7. Tighten the sight glass.



8. Stand the machine upright and stable to check the oil level.
9. If necessary, top up oil until the sight glass  $\frac{1}{2}$  to  $\frac{3}{4}$  is filled.
10. Tighten the sight glass again. Tightening torque 10 Nm.
11. Wipe the area of the sight glass with a clean cloth.

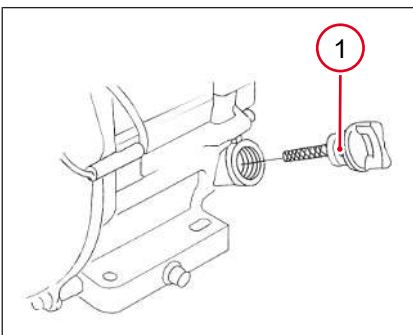
### 9.3.8 Checking and topping up engine oil level



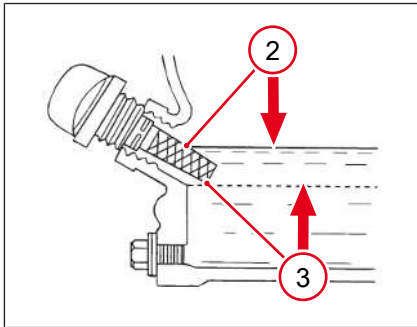
#### NOTICE

##### Danger of engine damage!

- Only change the oil when the engine is at operating temperature.
- Only use engine oil with the correct specification, [see Technical Data on page 60](#).



- ✓ Remove any contamination.
1. The machine must be horizontal.
  2. Unscrew engine oil dipstick 1.
  3. Wipe the engine oil dipstick with clean and fiber-free rags.



4. Insert the engine oil dipstick.
5. Pull out the engine oil dipstick.
6. Check engine oil fill level.  
⇒ If the engine oil level is at the lower fill level limit **3**, top up engine oil if necessary, [see Technical Data on page 60](#).
7. Fill engine oil to the upper fill level limit **2**, do not overfill.
8. Tighten the engine oil dipstick again.

### 9.3.9 Replacing engine oil



#### ⚠ CAUTION

##### **Danger of scalding from hot operating materials!**

Hot operating materials can cause burns to the skin.

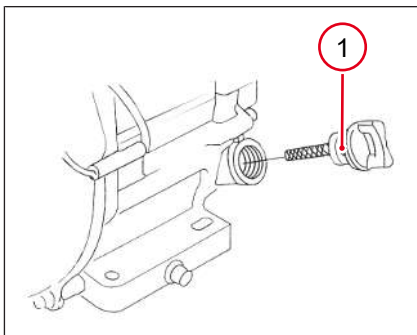
- ▶ Switch off the machine and let it cool down.
- ▶ Use protective gloves.



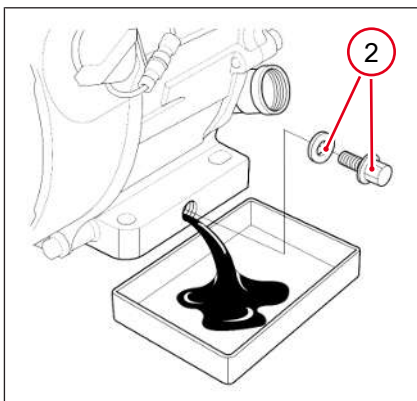
#### **Environment**

##### **Soil contamination due to vehicle fluid leakage or overflow.**

- ▶ Line work surface with impermeable foil.
- ▶ Use collection containers for vehicle fluid.
- ▶ Dispose of vehicle fluid in an environmentally friendly manner in accordance with statutory regulations.

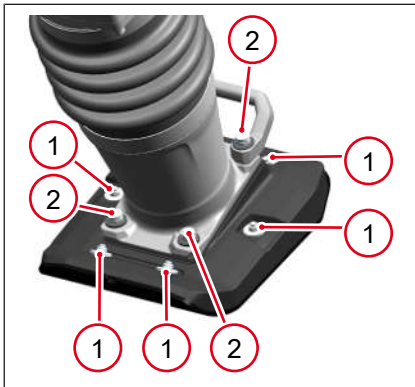


- ✓ Remove any contamination.
  - ✓ A suitable container for draining the used oil is provided.
1. Unscrew engine oil dipstick **1**.



2. Unscrew the engine oil drain plug with sealing ring **2**.
3. Allow the used oil to drain completely.
4. Tighten the engine oil drain plug with new sealing ring, tightening torque 18 Nm.
5. Place the machine in an upright position.
6. Fill in new engine oil, Checking and topping up engine oil level.
7. Tighten the engine oil dipstick again.

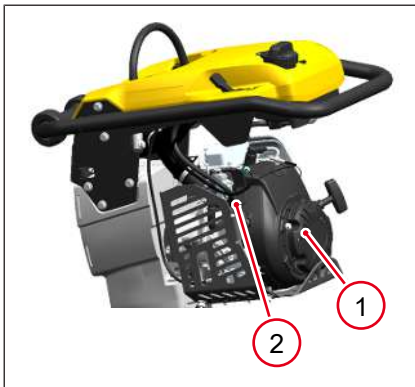
### 9.3.10 Check screw connections of the ramming plate



1. Check all screw connections for tightness at regular intervals.
2. Tighten loose screw connections.

Tightening torque in Nm	
1	25
2	85

### 9.3.11 Cleaning the cooling fins



- Clean cooling fins on reversing starter **1** and on engine **2** with compressed air to remove dirt and residues.

### 9.3.12 Checking and changing the spark plug



#### ⚠ CAUTION

##### Risk of burns!

Contact with hot spark plug can cause burns.

- ▶ Only unscrew the spark plug when the engine has cooled down.
- ▶ Use protective gloves.



#### NOTICE

- ▶ Do not pull the spark plug connector from the spark plug by the ignition cable.



#### NOTICE

##### Danger of engine damage!

An incorrect spark plug can cause engine damage, [see Technical Data on page 60](#).

- ▶ Correct electrode spacing.
- ▶ Free of deposits.



## NOTICE

### Hazard of engine damage!

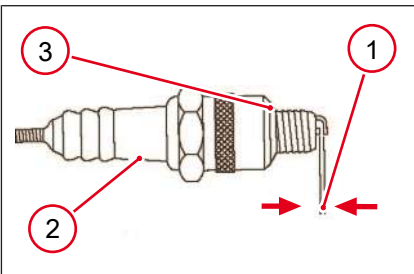
Too loose or too tightly screwed in spark plug can lead to engine damage.

- ▶ Tighten the spark plugs to the prescribed tightening torque.



### Remove spark plug

- ✓ The engine is switched off.
- ✓ The machine has cooled down.
- 1. Pull out spark plug connector **1**.
- 2. Remove dirt in spark plug area **2**.
- 3. Unscrew spark plug and check.



### Checking and cleaning the spark plug

1. Check the isolator **2**.
2. Replace if damaged or heavily soiled.
3. Clean the electrode with a wire brush.
4. Measure electrode distance **1**. [see Technical Data on page 60](#)
5. Correct the electrode spacing by carefully bending it.
6. Check spark plug sealing ring **3**.
7. Replace if damaged.

### Install spark plug.

1. Tighten spark plug, tightening torque 22 Nm.
2. Plug the spark plug connector onto the spark plug.

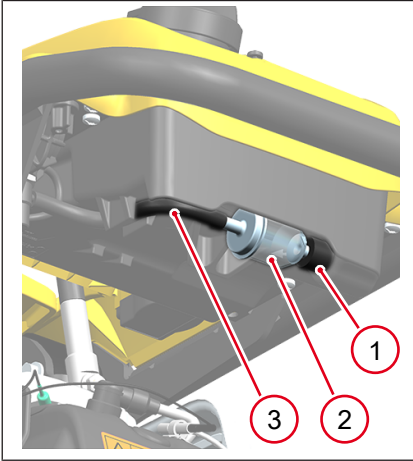
## 9.3.13 Check and replace the fuel filter



## NOTICE

### Connect fuel line correctly!

- ▶ To ensure a safe connection, cut off approx. 10 mm (3/8") from the end of the fuel line and connect to the fuel filter.



- ✓ The fuel tank has been properly emptied.
- 1. Detach fuel line **3** from fuel filter **2**.
- 2. Pull the fuel filter out of tank socket **1**. Do not damage the tank socket.
- 3. Replace damaged or leaking tank bushing.
- 4. Check that the tank socket is seated correctly.
- 5. Insert a new fuel filter into the tank socket.
- 6. Check the tank socket on the filter socket and the fuel filter in the fuel tank for tight seating and leaks.
- 7. Attach fuel line to fuel filter.
- 8. Check the fuel line for tightness and leaks.
- 9. Replace damaged or leaking fuel line.

## 10 Troubleshooting

### 10.1 Troubleshooting



#### **⚠ WARNING**

##### **Danger to life due to unauthorized troubleshooting!**

- ▶ If faults occur on this machine which are not described in this operator's manual, contact the service partner.
- ▶ Do not rectify faults on your own.

Fault	Cause	Remedy
Engine will not start or starts poorly.	Fuel valve is closed.	Set throttle lever to idle.
	Fuel tank is empty.	Refill with fuel.
	Fuel filter is soiled.	Replace the fuel filter.
	Engine oil level is low.	Checking engine oil level and topping up.
	Tank cap ventilation is blocked.	Replace tank cap.
	The air filter is soiled.	Clean the air filter and change it if necessary.
	Spark plug is defective.	Replace spark plug.
	The electrode gap of the spark plug is set incorrectly.	Adjust the electrode gap.
	Spark plug connector is defective.	Have the machine repaired.*
	Ignition system defective.	Have the ignition system repaired.*
	Choke lever is deactivated.	Set throttle lever to idle and activate choke.
	Carburetor is clogged.	Clean the carburetor.*
Idling speed too high or too low.	Idle screw positioned incorrectly.	Adjust the idle using the idle adjustment screw.
	Bowden cable not free.	Check Bowden cable and replace if necessary.
Engine power too low or machine runs erratically.	The air filter is soiled.	Clean air filter replace if necessary.
	Fuel filter is soiled.	Replace the fuel filter.
	Choke lever is still activated.	Disable choke lever.
	Tank cap ventilation is blocked.	Replace tank cap.
	Carburetor is clogged.	Clean the carburetor.*
	Operating speed set too low.	Have the machine repaired.*
	Operating speed set too high.	Have the machine repaired.*
Engine cannot be switched off.	Wrong spark plug installed.	Change spark plugs, <a href="#">▶ 60</a>
	Cable connection on engine loose or slack.	Check connection and correct if necessary.
	Cable connection for throttle actuation defective.	Check the connection and have it changed if necessary.*
* Have this work carried out by a service partner.		



## 11 Shutdown

### 11.1 Temporary decommissioning



#### Information

Further information and detailed descriptions, [see Maintenance on page 45](#).

#### Storage requirements

- Store dust-free and dry.
- Do not store outdoors.
- Protect from direct sunlight.
- Observe storage temperature, [see Technical Data on page 60](#).
- Store in a locked place that is not accessible to children.

If the machine is stationary for more than 1 month, perform the following measures:

Entire machine	<ul style="list-style-type: none"> <li>• Clean thoroughly.</li> <li>• If necessary, rectify all defects.</li> <li>• Check for leaks, rectify any defects if necessary.</li> </ul>
Fuel tank	Drain fuel completely.
Engine	<ul style="list-style-type: none"> <li>• Check engine oil level, fill engine oil if necessary.</li> <li>• Check and clean air filter.</li> <li>• Check the fuel filter.</li> </ul>

If the machine is shut down for more than 6 months, contact a service partner.

### 11.2 Final shutdown

If the machine is no longer in use and is shut down for good, all operating fluids must be drained.

Have the machine professionally dismantled and disposed of by a state-approved recycling company.

Professional disposal of this machine avoids negative effects on human health and the environment, helps with the targeted treatment of pollutants and makes it possible to recycle valuable raw materials.

## 12 Accessories

### 12.1 Accessories



#### ⚠ CAUTION

##### **Risk of injury and possible machine damage!**

Use of non-original spare parts or accessories can lead to injuries or machine damage.

- ▶ Only use original spare parts and accessories.
- ▶ In case of disregard, no liability will be accepted.



#### ⚠ CAUTION

##### **Stability of the machine with wheel set!**

Tipping over or rolling away of the machine can lead to injuries or material damage.

- ▶ Park the machine safely.
- ▶ Secure the wheel set against rolling away or fold it up.



#### **Ramming plate**

Ramming plates are available in different widths. This allows the working width of the machine to be increased or decreased.



#### **Ramming foot extension**

The ramming foot can be extended to 300 mm using the extension piece.

1. Dismantle the ramming as usual.
2. Mount the ramming foot extension using the provided screws.
3. Tightening torque 85 Nm.



#### **EquipTrack Modul**

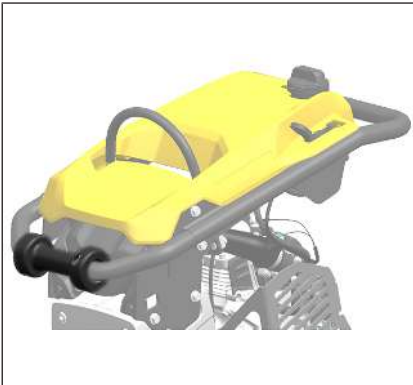
With the EquipTrack Modul, operating data can be recorded and transmitted to a terminal device. It also enables the machine to be identified.

Country-specific approval instructions of the radio device and machine-specific installation instructions for the EquipTrack Modul are given in the EquipTrack App.



#### Wheel set

For easier transport on the construction site.



#### Transport roller

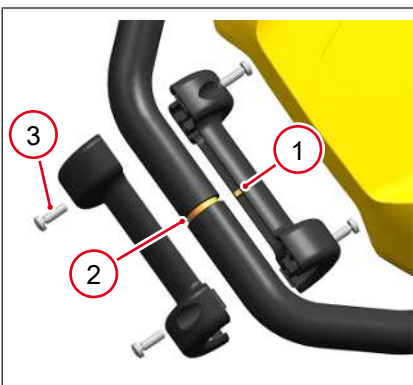
For easier transport on the construction site

## 12.2 Install the transport roller



✓ Machine is switched off.

1. Place the machine upright and stable on a level surface with sufficient load-bearing capacity.
2. Secure machine against overturning.
3. Align half shells 1 in the middle.



4. Insert tongue 1 into groove 2.
5. Tighten four screws 3. Tightening torque 6.5 Nm.

## 13 Technical Data

### 13.1 General instructions



#### Information

For system technical reasons, empty columns can be displayed in the technical data, and numbers and letters that written in superscript or subscript may be displayed incorrectly, e.g:

- ▶ Sound power level LWA instead of  $L_{WA}$
- ▶ Sound pressure level LpA instead of  $L_{pA}$
- ▶ Vibration total value ahv instead of  $a_{hv}$
- ▶ Carbon dioxide CO<sub>2</sub> instead of CO<sub>2</sub>
- ▶ Unit m/s<sup>2</sup> instead of m/s<sup>2</sup>

### 13.2 Noise and vibration data

The noise and vibration data listed have been determined in accordance with the following guidelines for the typical machine operating conditions / special test conditions and using harmonized standards:

- Machinery Directive 2006/42/EC
- Noise Emission Directive 2000/14/EC

During operational use, values may differ depending on the prevailing operating conditions.

#### Sound pressure level at operator station

- $L_{pA}$  was determined according to EN ISO 11201 and EN 500-4.

#### Guaranteed sound power level

- $L_{WA}$  was determined according to EN ISO 3744 and EN 500-4.

#### Weighted vibration total value hand-arm vibration

- $a_{hv}$  was determined according to EN ISO 20643 and EN 500-4.

### 13.3 BS

Type	BS62-4A/28	BS62-4Ab/28
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	17	17
Forward travel [m/min]	12	12
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	920	920
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	280	280
Operating weight [kg]	64	64
Lift at ramming shoe [mm]	68	68

Type	BS62-4A/28	BS62-4Ab/28
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,7	0,7
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	10	10
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1

\* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.

Type	BS62-4A/16	BS62-4Ab/16
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	17	17
Forward travel [m/min]	12	12
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	920	920
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	160	160
Operating weight [kg]	62	62
Lift at ramming shoe [mm]	54	54
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,7	0,7
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	10	10
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1

\* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.

Type	BS62-4A/25	BS62-4Ab/25
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	17	17
Forward travel [m/min]	12	12

Type	BS62-4A/25	BS62-4Ab/25
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	920	920
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	250	250
Operating weight [kg]	64	64
Lift at ramming shoe [mm]	68	68
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,7	0,7
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	10	10
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1

\* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.

Type	BS68-4A/28 BS68-4A/28 CN	BS68-4Ab/28
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	19	19
Forward travel [m/min]	12	12
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	950	950
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	280	280
Operating weight [kg]	70	70
Lift at ramming shoe [mm]	63	63
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,9	0,9
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	9,4	9,4

Type	BS68-4A/28 BS68-4A/28 CN	BS68-4Ab/28
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1
* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.		

Type	BS68-4A/25	BS68-4Ab/25
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	19	19
Forward travel [m/min]	12	12
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	950	950
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	250	250
Operating weight [kg]	70	70
Lift at ramming shoe [mm]	63	63
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,9	0,9
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	9,4	9,4
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1

\* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.

Type	BS68-4A/33	BS68-4Ab/33
Engine type	GXR120	GXR120
Number of strokes [1/min]	689	689
Impact force [kN]	19	19
Forward travel [m/min]	12	12
Length [mm]	662	662
Width [mm]	347	347
Height [mm]	950	950
Length (Ramming shoe) [mm]	340	340
Width (Ramming shoe) [mm]	330	330
Operating weight [kg]	72	72
Lift at ramming shoe [mm]	63	62
Nominal power [P] [kW]	2,7	2,7
Rated speed* [1/min]	3600	3600

Type	BS68-4A/33	BS68-4Ab/33
Oil specifications (Ramming system)	SAE 10W-40	SAE 10W-40
Oil volume (Ramming system) [l]	0,9	0,9
Operating temperature range [°C]	-10-+40	-10-+40
Storage temperature range [°C]	-30-+50	-30-+50
Sound pressure level LpA [dB(A)]	91	91
Sound power level LWa measured [dB(A)]	103	103
Sound power level LWa guaranteed [dB(A)]	108	108
Vibration total value ahv [m/s <sup>2</sup> ]	9,4	9,4
Measurement uncertainty of the total vibration value ahv [m/s <sup>2</sup> ]	1	1

\* The actual operating speed depends on numerous operating parameters and may differ from the rated speed.

## 13.4 Combustion engine

Engine manufacturer	Honda
Material number engine	5100060986
Engine type	GXR120
Combustion processes	four-stroke
Cooling	Air
Cylinder	1
Cubic capacity [cm <sup>3</sup> ]	121
Fuel type	Gasoline
Fuel consumption [l/h]	1
Tank volume [l]	3
Oil specification	SAE 10W-40
Oil filling max. [l]	0,3
RPM [1/min]	3600
Standard	SAE J1349
Exhaust-emission level	EU Stage V, US Stage 3 (EPA), China Stage II
CO <sub>2</sub> emission* [g/kWh]	674
Spark plug type	CR5HSB / U16FSR-UB
Electrode gap [mm]	0,6 - 0,7

\* Determined value of the CO<sub>2</sub> emission during engine certification without consideration of the applications on the machine.

## 13.5 Conversion table

The following conversion tables enable the conversion of the metric values from the instructions, in particular the technical data, into the imperial.

Conversion table	
Volume units	
1 cm <sup>3</sup>	0.061 in <sup>3</sup>
1 m <sup>3</sup>	35.31 ft <sup>3</sup>
1 ml	0.034 US fl.oz.



Conversion table	
1 l	0.26 gal.
1 l/min	0.26 gal./min
<b>Length units</b>	
1 mm	0.039 in
1 m	3.28 ft
<b>Weights</b>	
1 kg	2.2 lbs.
1 g	0.035 oz.
<b>Pressure</b>	
1 bar	14.5 psi
1 kg/cm <sup>2</sup>	14.22 lbs/in <sup>2</sup>
<b>Force/output</b>	
1 kN	224.81 lbf
1 kW	1.34 hp
1 PS	0.986 hp
<b>Torque</b>	
1 Nm	0.74 ft.lbs
<b>Speed</b>	
1 km/h	0.62 mph
<b>Acceleration</b>	
1 m/s <sup>2</sup>	3.28 ft./s <sup>2</sup>







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