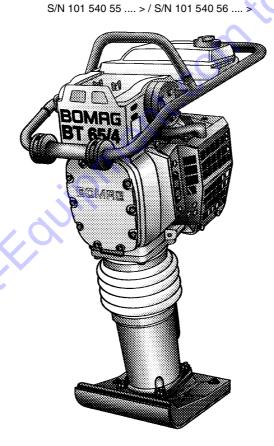


# **Operating instructions Maintenance instructions**

**Original operating instructions** 

## BT 60/4 / BT 65/4



**Vibratory Tampers** 



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Catalogue No. 008 068 01

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10/2011

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We sell worldwide for the brands: Genie, Terex, JLG, MultiQuip, Mikasa, Essick, Whiteman, Mayco, Toro Stone, Diamond Products, Generac Magnum, Airman, Haulotte, Barreto,
Power Blanket, Nifty Lift, Atlas Copco, Chicago Pneumatic, Allmand, Miller Curber, Skyjack, Lull, Skytrak, Tsurumi, Husquvarna Target, Stow, Wacker, Sakai, Mi-T-M, Sullair, Basic, Dynapac, MBW, Weber, Bartell, Bennar Newman, Haulotte, Ditch Runner, Menegotti, Morrison, Contec, Buddy, Crown, Edco, Wyco, Bomag, Laymor, EZ Trench, Bil-Jax, F.S.
Curtis, Gehl Pavers, Heli, Honda, ICS/PowerGrit, IHI, Partner, Imer, Clipper, MMD, Koshin, Rice, CH&E, General Equipment, Amida, Coleman, NAC, Gradall, Square Shooter, Kent, Stanley, Tamco, Toku, Hatz, Kohler, Robin, Wisconsin, Northrock, Oztec, Toker TK, Rol-Air, APT, Wylie, Ingersoll Rand / Doosan, Innovatech, Con X, Ammann, Mecalac, Makinex, Smith Surface Prep,Small Line, Wanco, Yanmar If the machine is equipped with a battery :

## CALIFORNIA

**Proposition 65 Warning** 

part

JUR

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

If the machine is equipped with a diesel engine :

### CALIFORNIA

**Proposition 65 Warning** 

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

sto Dis

### 1 Foreword

These BOMAG machines are products from the wide product range of BOMAG machines for earth and asphalt construction, refuse compaction and stabilizing/recycling.

BOMAG's vast experience in connection with state-of-the-art production and testing methods, such as lifetime tests of all important components and highest quality demands guarantee maximum reliability of your machine.

This manual comprises:

- Safety regulations
- Operating instructions
- Maintenance instructions
- Trouble shooting

Using these instructions will

- help you to become familiar with the machine.
- avoid malfunctions caused by unprofessional operation.

Compliance with the maintenance instructions will

- enhance the reliability of the machine on construction sites,
- prolong the lifetime of the machine,
- reduce repair costs and downtimes.

BOMAG will not assume liability for the function of the machine

- if it is handled in a way not complying with the usual modes of use,
- if it is used for purposes other than those mentioned in these instructions.

No warranty claims can be lodged in case of damage resulting from

- operating errors,
- insufficient maintenance and
- wrong fuels and lubricants.

#### Please note!

This manual was written for operators and maintenance personnel on construction sites. These operating and maintenance instructions are part of the machine.

You should only operate the machine after you have been instructed and in compliance with these instructions.

Strictly observe the safety regulations.

Please observe also the guidelines of the Civil Engineering Liability Association "Safety Rules for the Operation of Road Rollers and Soil Compactors" and all relevant accident prevention regulations.

For your own personal safety you should only use original spare parts from BOMAG.

In the course of technical development we reserve the right for technical modifications without prior notification.

These operating and maintenance instructions are also available in other languages.

Apart from that, the spare parts catalogue is available from your BOMAG dealer against the serial number of your machine.

Your BOMAG dealer will also supply you with information about the correct use of our machines in soil and asphalt construction.

The above notes do not constitute an extension of the warranty and liability conditions specified in the general terms of business of BOMAG.

We wish you successful work with your BOMAG machine.

BOMAG GmbH Printed in Germany Copyright by BOMAG

#### Foreword

#### Please fill in

Machine type (Fig. 1)

Serial number (Fig. 2)

Engine type (Fig. 3)

Engine number (Fig. 3)

#### j Note

Supplement the above data together with the commissioning protocol.

During commissioning our organisation will instruct you in the operation and maintenance of the machine.

Please observe strictly the safety regulations and all notes on risks and dangers!

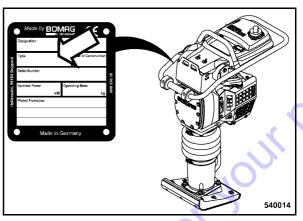


Fig. 1

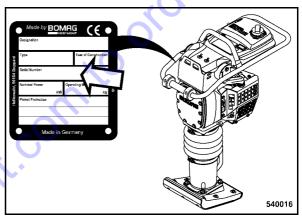


Fig. 2

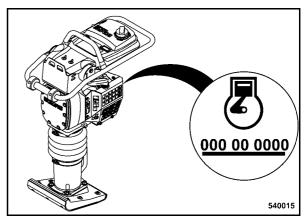


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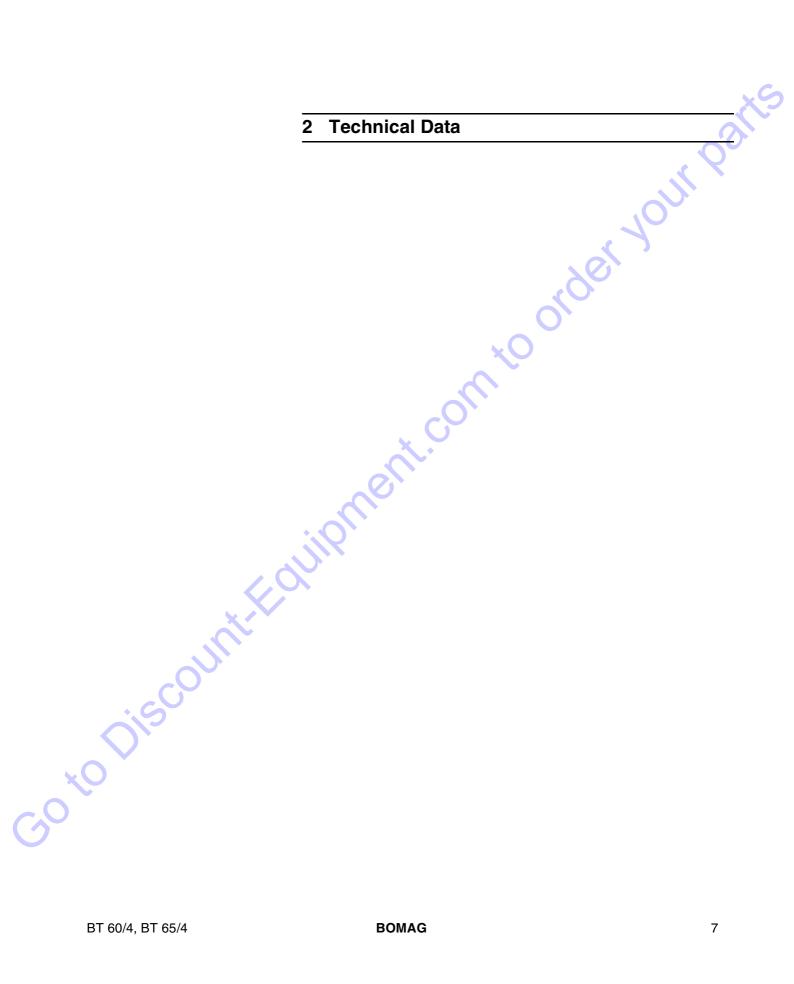


Fig. 4						ats
Dimensions in mr (in)	n B	н	ĴĹ	L1	W	
BT 60/4	350 (13.8)	960 (37.8)	735 (28.9)	335 (13.2)	280 (11.0)	
1	4	JUIL			BT 60/4	
Weight Basic weight Operating weight	(CECE)			kg (lbs) kg (lbs)	61 (134) 62 (137)	
<b>Travel character</b> Max. working spe Max. areal output	ed (depending o	n soil) oil)	m/r r	nin (ft/min) n <sup>2</sup> /h (ft <sup>2</sup> /h)	20 (66) 336 (3616)	
Drive Engine manufacto Type Cooling Number of cylinde Displacement				cm <sup>3</sup>	Honda GX 100 Air 1 98	

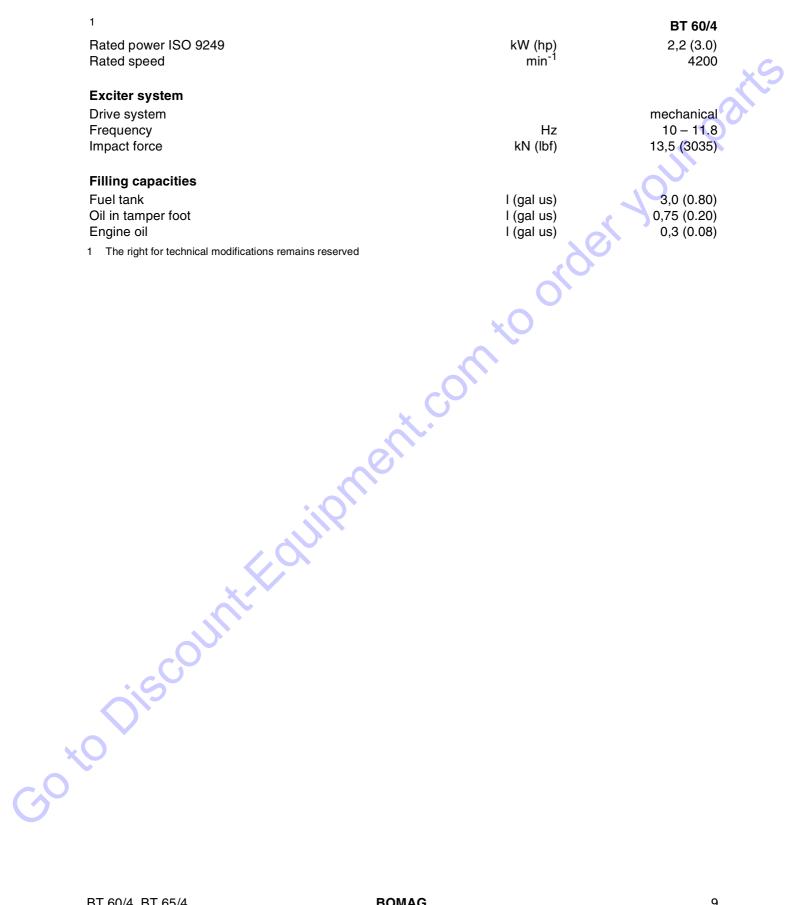
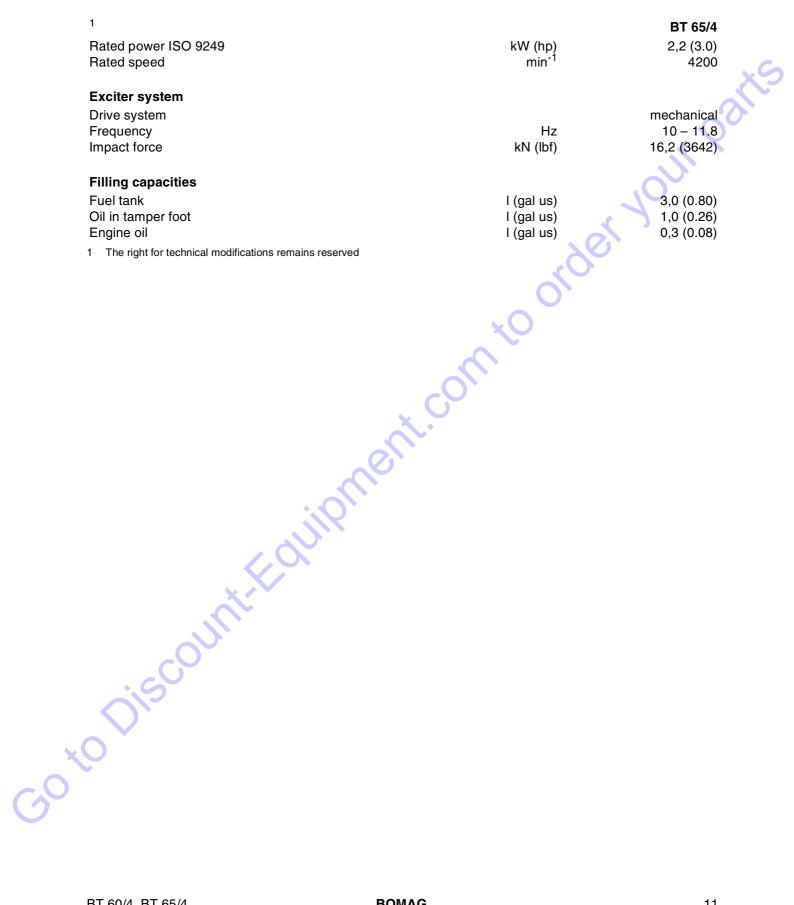


	Fig. 5					540017	arts
	Dimensions in mm (in)	В	Н	L	L1	W	
	("') BT 65/4	350 (13.8)	1000 (39.4)	735 (28.9)	335 (13.2)	280 (11.0)	
	1		×.			BT 65/4	
	Weight						
	Basic weight Operating weight (C	CECE)			kg (lbs) kg (lbs)	67 (148) 68 (150)	
	C				kg (188)	00 (100)	
	Travel characteris Max. working speed		coil)	m/m	in (ft/min)	20 (66)	
	Max. areal output (			m	<sup>2</sup> /h (ft <sup>2</sup> /h)	336 (3616)	
	Drive						
	Engine manufacture Type	er				Honda GX 100	
$\sim 0$	Cooling					Air	
5	Number of cylinders Displacement	S			cm <sup>3</sup>	1 98	
						50	



### **Technical Data**

The following noise and vibration data acc. to

- EC Machine Regulation edition 2006/42/EC
- the noise regulation 2000/14/EG, noise protection guideline 2003/10/EC
- Vibration Protection Regulation 2002/44/EC

were determined during conditions typical for this type of equipment and by application of harmonized standards.

During operation these values may vary because of the existing operating conditions. rdery

#### Noise value

#### Sound pressure level on the place of the operator:

BT 60/4:  $L_{pA} = 94 \text{ dB}(A)$ , determined acc. to ISO 11204 and EN 500 BT 65/4:  $L_{pA}$  = 93 dB(A), determined acc. to ISO 11204 and EN 500

#### Guaranteed sound power level:

BT 60/4:  $L_{WA}$  = 107 dB(A), determined acc. to ISO 3744 and EN 500 BT 65/4:  $L_{WA}$  = 107 dB(A), determined acc. to ISO 3744 and EN 500

#### A Danger

Loss of hearing!

Wear your personal noise protection means (ear defenders) before starting operation.

#### Vibration value

#### Hand-arm vibration:

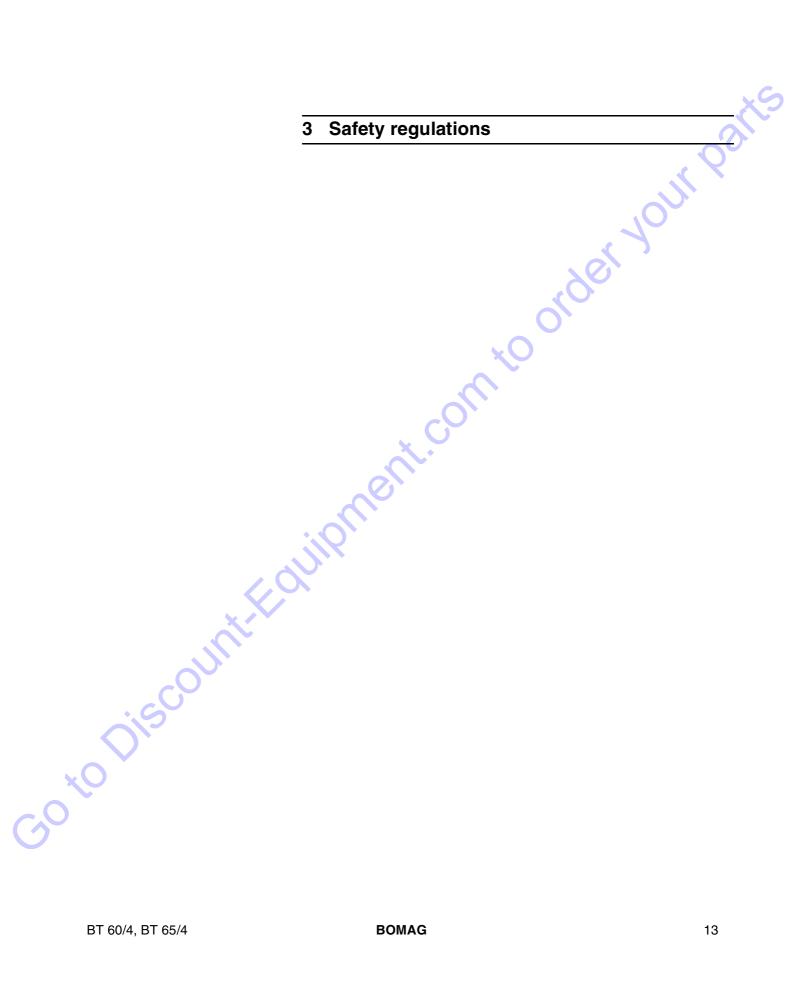
Vector total of the weighted effective acceleration in three orthogonal directions:

#### Weighted total vibration value

BT 60/4  $a_{hv}$  = 9.4 m/sec<sup>2</sup> on crushed rock determined acc. to ISO 5349 and EN 500 BT 65/4  $a_{hv}$  = 8.6 m/sec<sup>2</sup> on crushed rock determined acc. to ISO 5349 and EN 500

**∧** Caution Observe the daily vibration load (Industrial safety acc. to 2002/44/EEC).

**`**\*C



### General

This BOMAG machine has been built in compliance with the latest technical standard and complies with the applicable regulations and technical rules. However, dangers for persons and property may arise from this machine, if:

- it is used for purposes other than the ones it is intended for,
- it is operated by untrained personnel,
- it is changed or converted in an unprofessional way,
- the safety instructions are not observed.

Each person involved in the operation, maintenance and repair of the machine must therefore read and comply with these safety regulations. If necessary, this must be confirmed by obtaining the signature of the customer.

Furthermore, the following obviously also applies:

- applicable accident prevention instructions,
- generally accepted safety and road traffic regulations,
- country specific safety regulations. It is the duty of the operator to be acquainted with these instructions and to apply these accordingly. This applies also for local regulations concerning different types of handling work. Should the recommendations in these instructions be different from the regulations valid in your country, you must comply with the safety regulations valid in your country.

#### Intended use

This machine must only be used for:

- Compaction of all types of soils
- Repair work in all types of soil
- Reinforcement of walkways
- Work in trenches
- Backfills and compaction of marginal strips

#### **Unintended use**

Dangers may arise from the machine when it is used for purposes other than the one it is intended for.

Any danger caused by intended use is the sole responsibility of the customer or driver/operator, the manufacturer cannot be made liable.

Examples for unintended use are:

- Working in horizontal direction
- Ramming of poles
- Vibrating of paving blocks

It is not permitted to stand on the machine while working.

Starting and operation of the machine in explosive environments and in underground mining is prohibited.

#### Remaining dangers, remaining risks

Despite careful work and compliance with standards and regulations it cannot be ruled out that further dangers may arise when working with and handling the machine.

Both the machine as well as all other system components comply with the currently valid safety regulations. Nevertheless, remaining risks cannot be ruled out completely, even when using the machine for the purpose it is intended for and following all information given in the operating instructions.

A remaining risk can also not be excluded beyond the actual danger zone of the machine. Persons remaining in this area must pay particular attention to the machine, so that they can react immediately in case of a possible malfunction, an incident or failure etc.

All persons remaining ion the area of the machine must be informed about the dangers that arise from the operation of the machine.

### **Regular safety inspections**

Have the machine inspected by an expert (capable person) as required for the conditiosn the machine is working under, but at least once every year.

#### Who is allowed to operate the machine?

The machine must only be operated by trained and authorized persons which are at least 18 years of age. The responsibilities for the operation of the machine are to be clearly specified and complied with.

Persons under the influence of alcohol, medication or drugs must not operate, service or repair the machine.

Maintenance and repairs require very specific knowledge and must therefore only be carried out by trained and qualified personnel.

### Conversions and alterations to the machine.

Unauthorized conversions to the machine are prohibited for safety reasons.

Original parts and accessories have been specially designed for this machine. We wish to make expressly clear that we have not tested or authorized any original parts or special equipment not supplied by us. The installation and/or use of such products can impair the active and/or passive driving safety. The manufacturer expressly excludes any liability for damage resulting from the use of non-original parts or accessories.

# Damage, deficiencies, misuse of safety installations

Machines which are not safe to operate must be immediately taken out of service and shall not be used, until these deficiencies have been properly rectified.

Safety installations and switches must neither be removed nor must they be made ineffective.

#### Safety notes in the operating and maintenance instructions:

#### A Danger

Sections marked like this point out possible dangers for persons.

### ▲ Caution

Sections marked like that point out possible dangers for the machine or for parts of the machine.

#### i Note

Sections marked like this provide technical information concerning the optimal economical utilization of the machine.

### Loading the machine

Always shut the engine down to transport the tamper or to lay it on its side.

Make sure that persons are not endangered by the machine tipping or sliding off.

Lash the machine down, so that it is secured against rolling, sliding and turning over.

For lifting the machine attach the lifting gear only to the cross strut of the steering handle.

The machine should not swing about when being lifted.

Do not stand or step under loads being lifted.

Use only safe lifting gear of sufficient load bearing capacity Minimum lifting capacity of lifting gear: see operating weight in chapter "Technical Data".

Check all lifting and lashing points for damage before lifting or lashing down the machine.

### Starting the machine

#### **Before starting**

Become acquainted with the equipment, the control elements, the working principle of the machine and the working area.

Wear your personal protective outfit (hard hat, safety boots, etc.). Wear ear defenders.

Before starting the machine check whether:

- the machine shows any obvious faults
- all guards and safety elements are in place
- the controls are fully functional
- the machine is free of oily and combustible material
- all grips are free of grease, oils, fuel, dirt, snow and ice.

Use only machines which are serviced at regular intervals.

## Starting and operation of the machine is closed rooms and trenches

Exhaust gases are highly dangerous! Always ensure an adequate supply of fresh air when starting and operating in closed rooms and trenches!

#### Operation

- Guide the machine and take care that you do not hurt your hands on any obstructions, danger of accident.
- Watch out for unusual noises and the development of smoke. Find the cause and have the fault corrected.
- Do not hold the throttle lever in the area below I, as this may damage the centrifugal clutch.
- Do not take your hands off the machine while the engine is running.
- Keep your feet away from the tamper foot

### Parking the machine

Stand the machine on ground as level as possible. Before leaving the machine:

• Secure the machine against tipping over.

### Filling in fuel

Refuel only with the engine shut down.

Do not refuel in closed rooms.

No open fire, do not smoke.

Do not spill any fuel. Catch running out fuel, do not let it seep into the ground.

Do not inhale any fuel fumes.

Avoid contact with skin and eyes.

Do not swallow.

### Maintenance work

Maintenance work must only be performed by qualified and authorized persons.

Keep unauthorized persons away from the machine.

Do not perform maintenance work while the motor is running.

Park the machine on level, firm ground.

#### Working on the fuel system

Avoid open fire, do not smoke, do not spill any fuel.

35

Catch running out fuel, do not let it seep into the ground and dispose off environmentally.

Do not inhale any fuel fumes.

Avoid contact with skin and eyes.

Do not swallow.

#### Working on the engine

When working on the air filter no dirt should fall into the air duct.

Do not work on the hot exhaust, danger of burning!

When working on the engine exhaust duct no combustion residues should fall into the cylinder.

Do not touch the piston with the cleaning tools.

#### Working on the tamper foot

Wipe off spilled oil, catch running out oil and dispose of environmentally.

Store oil contaminated materials in a separate, specially marked container and dispose of environmentally.

#### Cleaning work

Do not perform cleaning work while the motor is running.

Do not use gasoline or other easily inflammable substances for cleaning.

When using a steam cleaner for cleaning do not subject electrical parts and insulation material to the direct jet or cover these items beforehand.

Do not guide the water jet directly into air filter, exhaust pipe and air intake opening.

#### After maintenance work

After all maintenance work is completed reinstall all guards and safety installations.

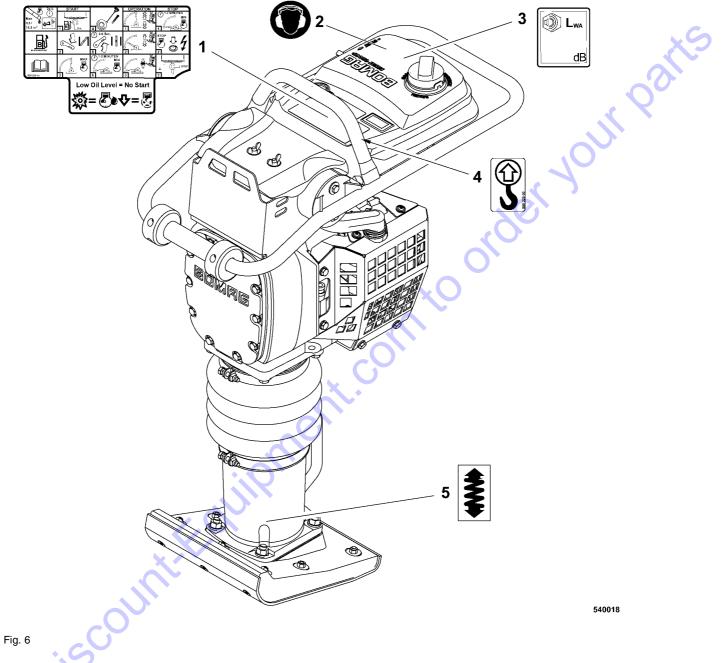
#### Repair

Repairs must only be carried out by qualified and authorized personnel. Always follow our repair instructions.

Exhaust gases are highly dangerous! Always ensure an adequate supply of fresh air when starting in closed rooms!

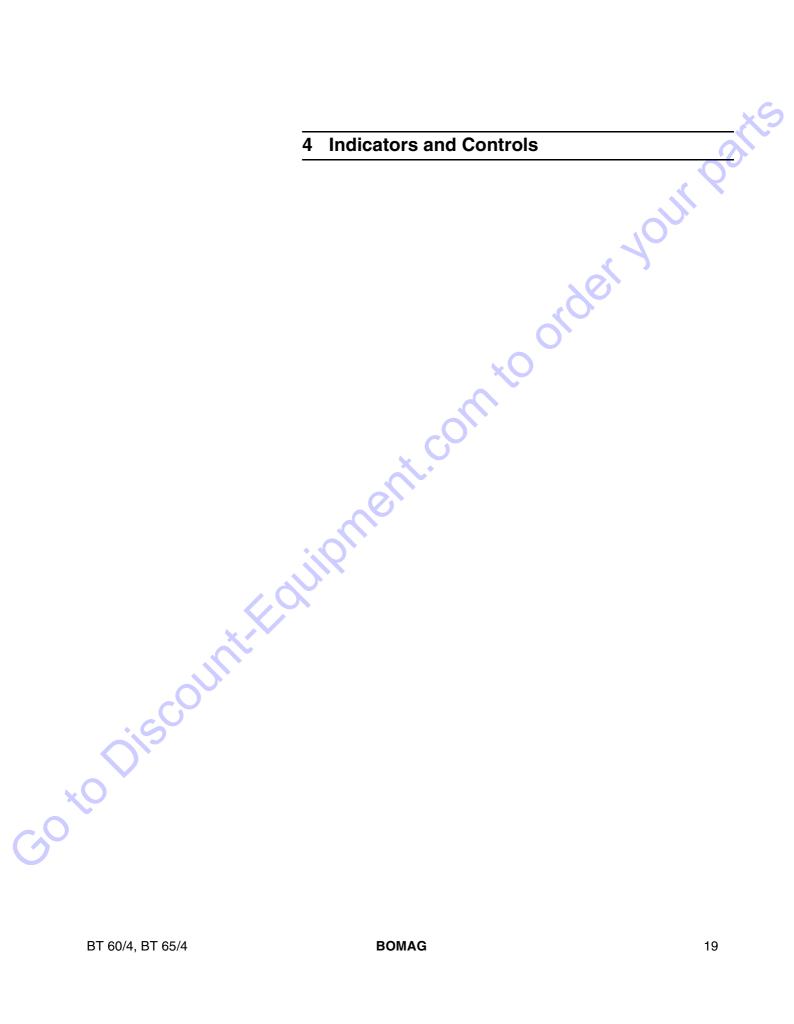
Attach a warning tag to the steering bow if the ma-

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### Stickers and decals

- 1 Brief operating instructions
- 2 Instruction sticker "Wear ear defenders"
- 3 Information sticker "Guaranteed sound capac-
- ity level"
- 4 Information sticker "Lifting point"
- 5 Warning sticker "Spring"



### 4.1 General notes

If you are not yet familiar with the control and display elements on this machine you should read this section thoroughly before starting any operation on the machine. Here all functions are described in detail.

The section "Operation" contains only brief descriptions of the individual control steps.

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### 4.2 Description of indicators and control elements

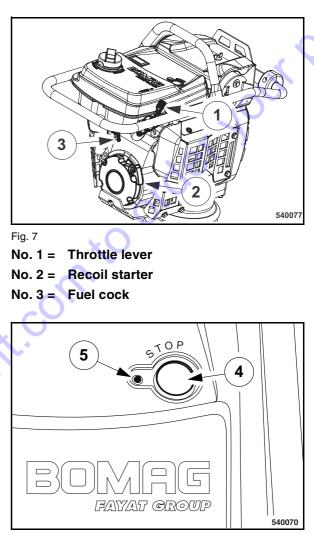
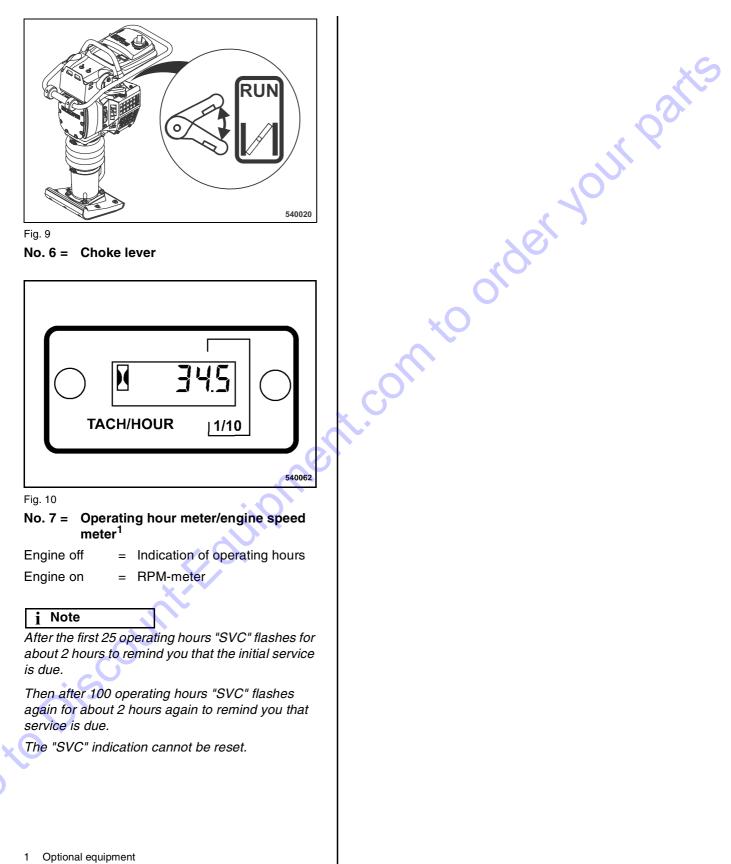


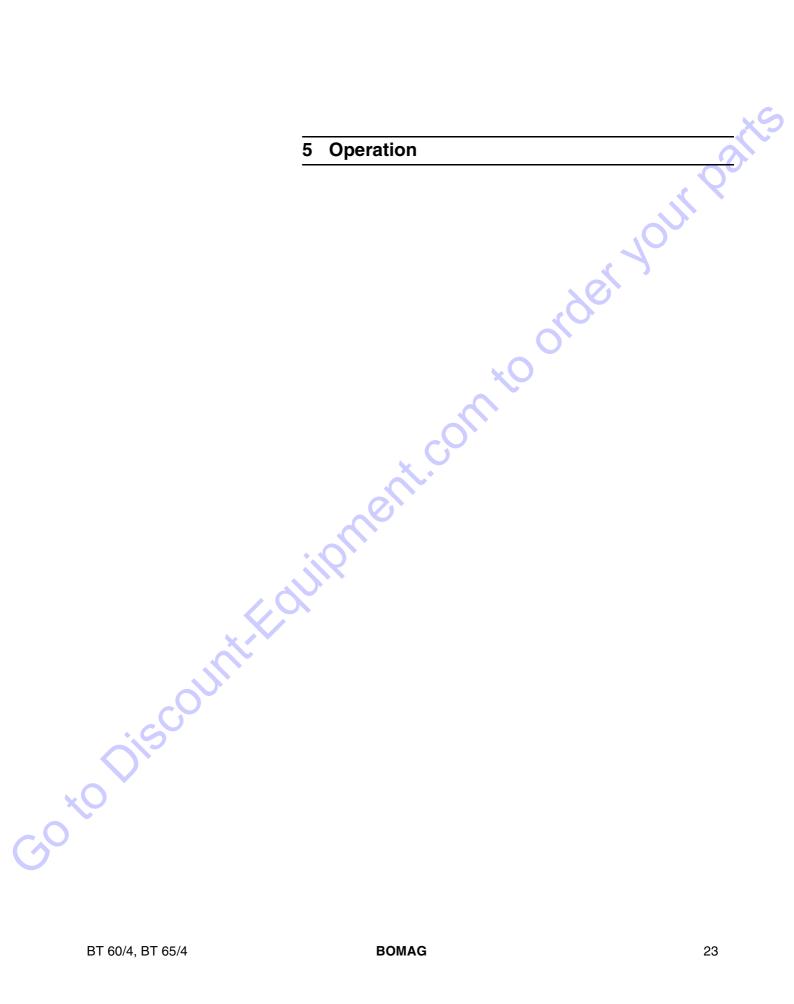
Fig. 8

- No. 4 = Engine stop button
- No. 5 = Engine oil level warning lamp

▲ Caution

If the oil level warning lamp (5) (Fig. 8) lights up when starting the engine, the oil level must be corrected, as otherwise the engine cannot be started.





### 5.1 General

If you are not yet acquainted with the controls and indicating elements on this machine you should thoroughly read chapter "Indicators and control elements" before starting work.

All indicators and control elements are described in detail in this chapter.

oto

### 5.2 Tests before taking into operation

### j Note

During the running in time the idle speed may increase because of the enhanced moveability of the engine. Idle speeds between 1850 and 2000 min<sup>-1</sup>.

The running in time of the vibratory tamper is 10 operating hours.

The following inspections must be carried out before each working day or before a longer working period.

#### A Danger

#### Danger of accident!

Please observe strictly the safety regulations in the corresponding section of this instruction manual!

Park the machine on ground as level as possible.

#### Check:

- condition of engine and machine
- fuel tank and fuel lines for leaks
- screw joints for tight fit

#### j Note

For a description of the following tasks refer to the chapter "Daily maintenance".

- Engine oil level, top up if necessary
- Fuel level, top up if necessary.

### 5.3 Adjusting the steering bow

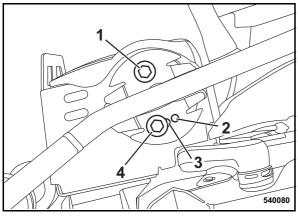


Fig. 11

#### j Note

The steering bow has three positions.

The steering bow can be adjusted to the height of the operator by using the bore holes (2), (3) and (4) (Fig. 11):

- (2) lowest position
- (3) middle position
- (4) highest position
- Loosen the screws (1) on both sides
- Loosen the screws (4) on both sides and pull them out.
- Set the steering bow to the desired height.
- Tighten screws (1) and (4) on both sides.

## 5.4 Starting the engine

#### 🛦 Danger

Exhaust gases are highly dangerous!

Always ensure an adequate supply of fresh air when starting and operating in closed rooms and trenches!

#### A Danger

Danger of accident!

Always hold on to the machine.

Keep your feet away from the tamper plate, because the vibration starts immediately.

Always keep an eye on a running machine.

#### A Danger

Loss of hearing!

Wear your personal noise protection means (ear defenders) before starting operation.

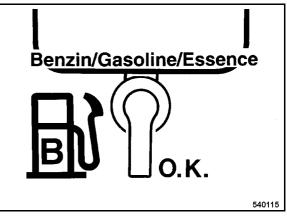


Fig. 12

• Open the fuel cock(Fig. 12).

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### Operation

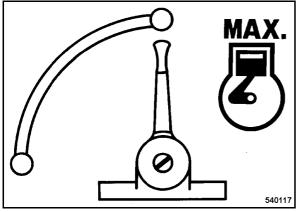


Fig. 13

Set the throttle lever (Fig. 13) to position • "MAX".

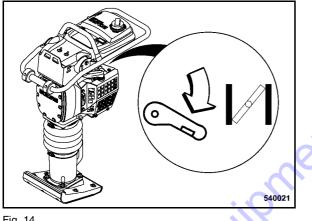


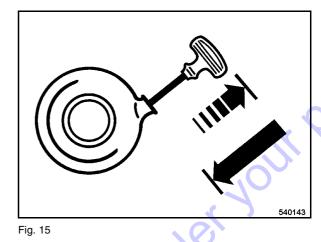
Fig. 14

Close the choke (Fig. 14). •

#### Note i

,oto Dife

Always close the choke to start a cold and warm engine.



- Pull the rope by the starter handle (Fig. 15) un-. til resistance can be felt.
- Let the starter handle run back to initial position.

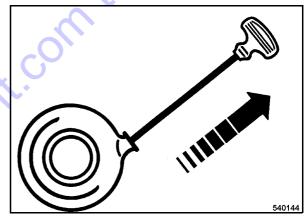


Fig. 16

Pull the starter handle quickly and with power • (Fig. 16).

#### **∧** Caution

#### Do not let the starter handle hit back.

- Guide the starter handle back to initial position • by hand.
- If the engine does not start during the first attempt, repeat the starting process.

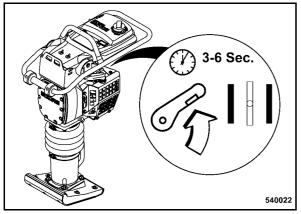


Fig. 17

• Open the choke (Fig. 17) 3 to 6 seconds after the engine has started running.

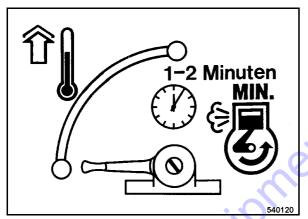


Fig. 18

 Set the throttle lever (Fig. 18) to position "MIN" and let the engine run warm for 1 to 2 minutes.

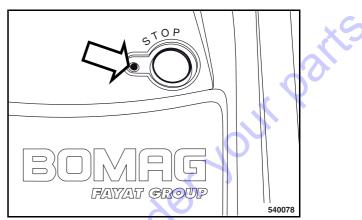
#### j Note

Once the engine has warmed up you can start to work with the tamper.

### Starting under cold weather conditions

 If the engine stops again after approx. 3 to 5 seconds, close the choke again and repeat the starting process.

### Engine oil level too low



#### Fig. 19

The engine does not start if the oil level is too low. This is indicated by the engine oil level warning lamp (Fig. 19) when operating the recoil starter.

- Check the engine oil level, fill up if necessary.
- Repeat the starting procedure.

### Engine "drowned"

j Note

When the choke is closed and the starter rope is pulled several times, the engine draws in too much fuel and will probably not start.

#### Remedy

- Close the fuel cock.
- Open the choke.
- Set the throttle lever to full speed position.
- Operate the recoil starter until the engine starts.

### i Note

If the engine does not start after 10 to 20 attempts

- pull off the spark plug socket.
- unscrew the spark plug.
- operate the starter several times.
- Dry the spark plug with a clean cloth or blow it dry with compressed air. If necessary clean with a wire brush.
- Screw the spark plug back in and plug the spark plug socket back on.

#### Operation

• Repeat the starting procedure.

oto

### 5.5 Work/operation

#### 🛕 Danger

Danger of accident!

Steer the machine only be the steering handle. Always keep an eye on the machine when the engine is running.

Wear your personal noise protection (ear defenders).

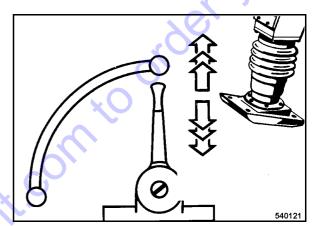


Fig. 20

• Set the throttle lever (Fig. 20) to position "MAX".

The machine works with highest frequency.

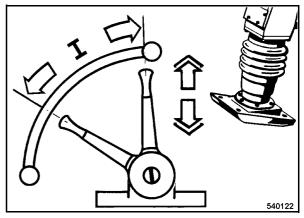


Fig. 21

• To achieve uniform running you should actuate the throttle lever within range "I" (Fig. 21), depending on condition and density of soil.

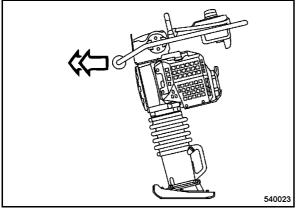
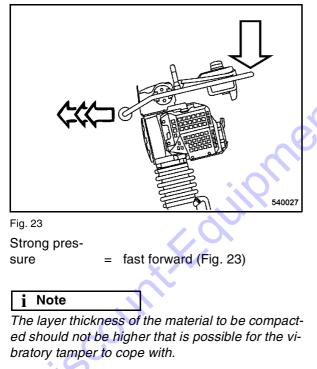


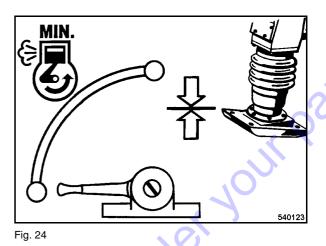
Fig. 22

• The forward moving speed can be influenced by applying weight on the steering bow.

No load = slowly forward (Fig. 22)



Should the tamper get out of its vibrating rhythm on excessively compacted soil, harmonic running of the tamper can be achieved again by slightly altering the steep and/or inclination of the tamper.



• Always shift the throttle lever to position "MIN" for short work breaks (Fig. 24).



This prevents premature wear of the centrifugal clutch and enhances the fuel economy.

## 5.6 Shutting down the engine

#### A Caution

Do not shut the engine down all of the sudden from full speed, but let it idle for a while for temperature equalization.

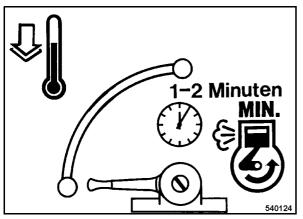


Fig. 25

- Move the throttle lever (Fig. 25) back to idle speed position.
- Run the engine for a short while in idle speed.

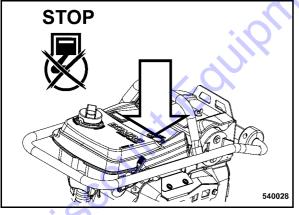


Fig. 26

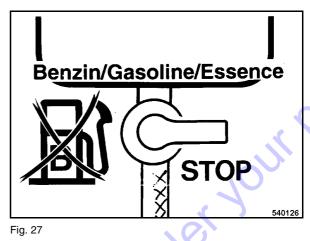
• Press the engine shut-down button (Fig. 26).

#### 🛕 Danger

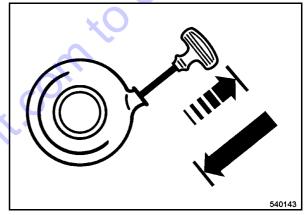
#### Danger of burning!

Immediately after shutting down the engine is still hot, do not touch the exhaust.

Park the machine so that it cannot turn over.



• Set the fuel valve (Fig. 27) to "STOP" position (closed).



#### Fig. 28

- Pull the rope by the starter handle (Fig. 28) until resistance can be felt.
- Let the starter handle run back to initial position.

#### j Note

This procedure protects against moisture deposits inside the engine.

# 5.7 Changing the tamper foot plate

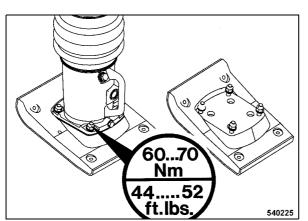


Fig. 29

• After changing the tamper foot plate (Fig. 29) tighten the 4 fastening screws with a tightening torque of 60 to 70 Nm (44 to 52 ft.lbs).

#### i Note

When changing the tamper foot to a different width use only genuine BOMAG parts.

After changing the tamper foot check the engine speed, adjust it if necessary.

## 5.8 Loading/transport

#### 🛦 Danger

Danger of accident!

Always shut the engine down to transport the tamper or to lay it on its side.

Make sure that persons are not endangered by the machine tipping or sliding off.

Lash the machine down, so that it is secured against rolling, sliding and turning over.

For lifting the machine attach the lifting gear only to the cross strut of the steering handle.

The machine should not swing about when being lifted.

Do not stand or step under loads being lifted.

Use only safe lifting gear of sufficient load bearing capacity Minimum lifting capacity of lifting gear: see operating weight in chapter "Technical Data".

Check all lifting and lashing points for damage before lifting or lashing down the machine.

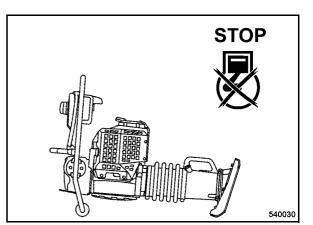
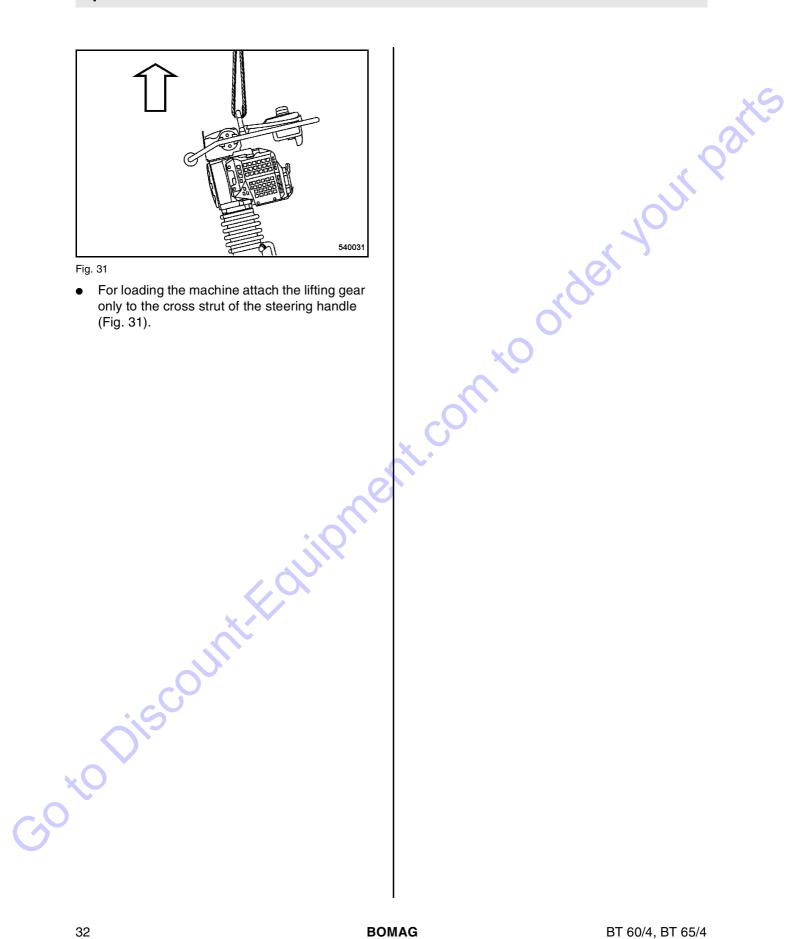
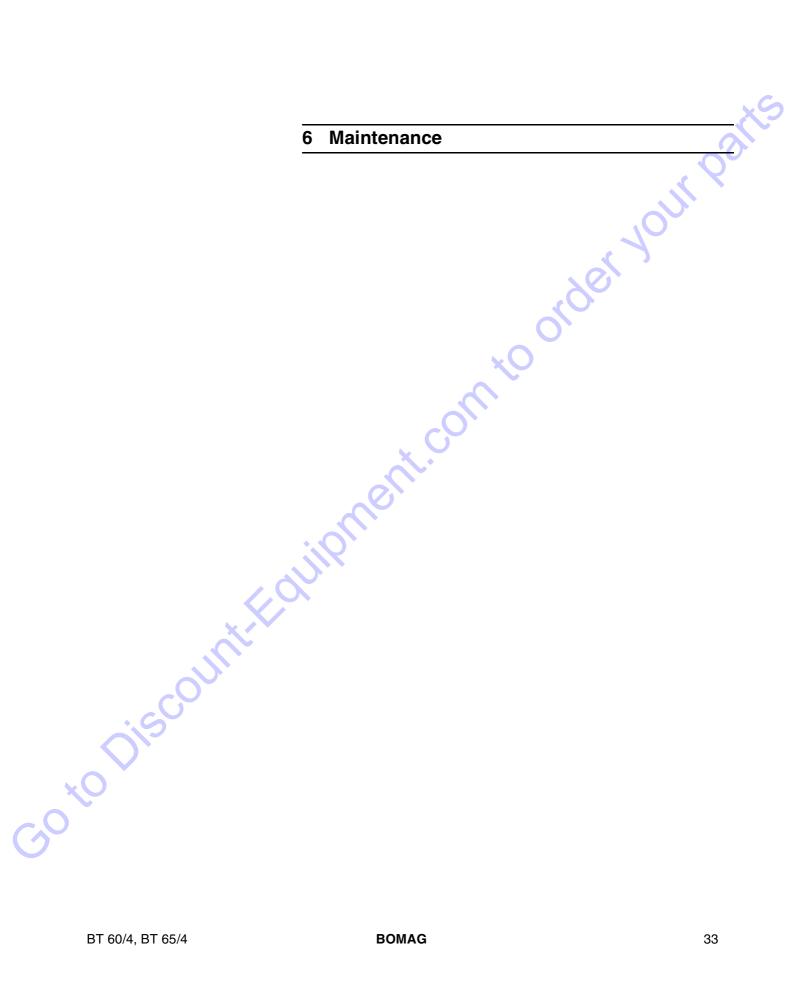


Fig. 30

- Always shut the engine down to transport the tamper or to lay it on its side.
- Lay down the tamper (Fig. 30) to transport it on the rollers.

### Operation





### 6.1 General notes on maintenance

When performing maintenance work ensure strict compliance with the respective safety instructions and particularly the safety regulations mentioned in the corresponding section of these operating and maintenance instructions.

Thorough maintenance of the machine guarantees far longer safe functioning of the machine and prolongs the lifetime of important components. The effort needed for this work is only little compared with the problems that may arise when not observing this rule.

- Always clean machine and engine thoroughly before starting maintenance work.
- For maintenance work stand the tamper on level ground and secure it against tipping over.
- Generally perform maintenance work only with the engine shut down and the spark plug socket disconnected.

#### 🔮 Environment

During maintenance work catch all oils and fuels and do not let them seep into the ground or into the sewage system. Dispose of oils and fuels environmentally.

### Notes on the fuel system

The lifetime of the engine mainly depends on the purity of the fuel.

- Keep fuel clean of any contamination and water.
- Keep used filters in a separate waste container and dispose of environmentally.
- When choosing the storage place for fuel make sure that spilled fuel will not harm the environment.

### Notes on the performance of the engine

On engines both combustion air and fuel injection quantities are thoroughly adapted to each other and determine power, temperature level and exhaust gas quality of the engine. If your engine has to work permanently in "thin air" (at higher altitudes) and under full load, you should consult the customer service of BOMAG or the customer service of the engine manufacturer.

#### Frequent causes of faults

- Operating errors
- Incorrect, inadequate maintenance

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If you cannot locate the cause of a fault or rectify it yourself by following the trouble shooting chart, you should contact the service departments at our branch offices or dealers.

### 6.2 Fuels and lubricants

#### **Engine oil**

#### Quality

The oil is an essential factor for the performance and lifetime of the engine.

Use engine oil for four-stroke engines which meets or even exceeds the requirements for API-service class SJ or higher (or equivalent).

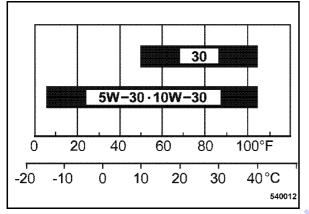


Fig. 32

#### viscosity

Since lubrication oil changes its viscosity with the temperature, the ambient temperature at the operating location of the engine is of utmost importance when choosing the viscosity class (SAEclass) (see diagram (Fig. 32)).

SAE10W-30 is recommended for general use under any temperature. When using single purpose oil you must choose the correct viscosity for the area of use.

Temperature related lubrication oil changes can be avoided by using multi-purpose oils. The following oil change intervals apply also when using multi-purpose oils.

#### Change intervals

The longest permissible time the lubrication oil should remain in an engine is 1/2 year or 100 operating hours.

#### Fuel

#### Quality

The engine has been approved for operation with unleaded gasoline with a octane number of 91 or higher (or Pump Octane Number" 86 or higher).

Use only commercially available brand fuel.

You can use unleaded standard grade petrol with maximum 10 percent by volume of ethanol (E10) or maximum 5 percent by volume of methanol.

Methanol must also contain co-solvents and corrosion inhibitors.

Using fuels with higher ethanol or methanol contents exceeding the values specified above may cause starting difficulties and/or performance problems. Damage may also occur to metal, rubber or plastic parts in the fuel system.

Engine damage and performance problems caused by the use of fuels with higher ethanol or methanol percentages than the ones specified above are not covered under warranty.

### Tamper foot oil

For the tamper foot use a fully synthetic gear oil SAE 75W-90, API GL5.

#### Table of fuels and lubri-6.3 cants

Assembly	Fuel or lubricant		Quantity approx.
	Summer Winter		Attention Observe the level marks
motor			10
-Engine oil	Engine oil API SJ or hi	gher	0.3 I (0.08 USgal) to oil level mark
	SAE 10W-30 (-20 °C to +30 °C (-	4 °F to +86 °F))	2 <b>0</b> 2
	SAE 30 (+10°C to +30°C) (+50 °F to +86°F)	×O	0
- Fuel	Gasoline (unleaded	(t	3.0 I (0.80 USgal)
Padfoot	SAE 75W-90, API GI (BOMAG PN 009 925 05		BT60/4: 0.75 I (0.20 USgal) BT65/4: 1.0 I (0.26 USgal)
	Jipm		
	Folipme		
J.	nt-Folipme		
~O <sup>L</sup>	ntrouipme		
~O <sup>L</sup>	ntration		
	ntration		

### 6.4 Running-in instructions

The following maintenance work must be performed when running in new machines or overhauled engines:

### A Caution

During the running-in period, up to approx. 200 operating hours, check the engine oil level twice every day.

Depending on the load the engine is subjected to, the oil consumption will drop to the normal level after approx. 100 to 200 operating hours.

### After approx. 25 operating hours

- Change the engine oil.
- Check the idel speed and the max. speed of the engine, adjust if necessary.
- Check engine and machine for leaks.
- Retighten the fastening screws on air filter exhaust, fuel tank and other attachments.
- Retighten the bolted connections on the machine.

oto

### 6.5 Maintenance table

No.	Maintenance work	Comment	daily	monthly	annually	
6.6	Clean the machine	in case of extreme dust clean every day	X			K
6.7	Check the engine oil level	Dipstick mark	Х		$\mathbf{O}$	
6.8	Check the fuel level		X		)	T
6.9	Change the engine oil	at least every 100 operating hours or 1x per year	S	х		
6.10	Clean, check the spark plug, replace if nec- essary	0,		Х		
6.11	Check the tamper foot			Х		Ī
6.12	Check, adjust the valve clearance	Intake valve: 0.15 mm (0.006 in) Exhaust: 0.20 mm (0.008 in)			х	
6.13	Change the fuel filter				Х	1
6.14	Clean the fuel screen				Х	
6.15	Check, adjust the engine speed				Х	
6.16	Oil change in tamper foot				Х	
6.17	Clean, change the double dry air filter car- tridge	in case of a drop in the max. en- gine speed				
	discountration					

### Clean the machine 6.6

### **∧** Caution

Perform cleaning work only after the engine has cooled down and with the engine stopped.

Dirty operating conditions, particularly lubrication oil and fuel deposits on the cooling fins of the engine and the cooling air intake opening have an adverse effect on the cooling of the engine.

You should therefore immediately seal any oil or fuel leaks near fuel tank, cylinder or cooling air intake.

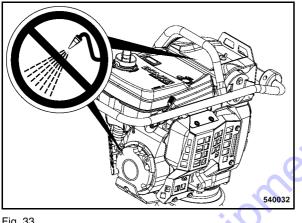


Fig. 33

**x0** 

### ▲ Caution

Do not guide the water jet directly into air filter/ carburettor and starter/air intake (Fig. 33).

After wet cleaning run the engine warm to evaporate all water residues and to avoid corrosion.

### 6.7 Check the engine oil level

### **∧** Caution

Check the engine oil level with highest care, to avoid over or underfilling of the engine. Underfilling can damage the engine. Overfilling causes excessive development of smoke and can also lead to engine damage

For quality of oil refer to the "table of fuels and lubricants".

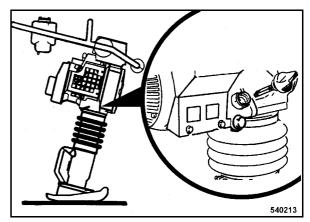


The engine cannot be started if the engine oil level is too low.

- Stand the tamper on flat and level ground.
- Shut down the engine.



Clean oil dipstick and oil filler neck before unscrewing, to prevent contamination of the engine oil.



- Pull out the dipstick (Fig. 34) and wipe it clean with a lint-free, clean cloth.
- Insert the dipstick into the oil filler socket, do not screew it in, but pull it out again to check the oil level.
- If the oil level is near or below the bottom limit mark on the dipstick, fill in recommended oil up to the top dipstick mark (bottom edge of oil filler neck). Do not overfill.

# 6.8 Checking the fuel level

### 🛦 Danger

Fire hazard!

When working on the fuel system do not use open fire, do not smoke, do not spill any fuel.

Do not refuel in closed rooms.

Shut down the engine, close the fuel valve.

### A Danger

Health hazard!

Do not inhale any fuel fumes.

### ▲ Caution

Contaminated fuel can cause malfunction or even damage of the engine.

For quality and quantity of oil refer to the "table of fuels and lubricants".

### 🔮 Environment

Catch running out fuel, do not let it seep into the ground.

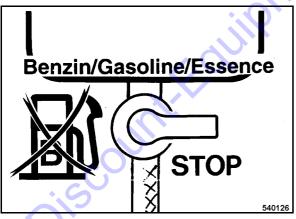
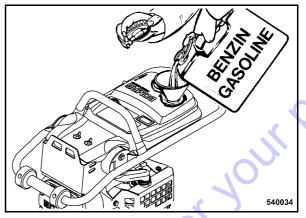


Fig. 35

Set the fuel valve (Fig. 35) to "STOP" position (closed).



- Clean the area around the filler cover, unscrew the filler cover (Fig. 36).
- Fill in fuel through a funnel with screen.
- Close the tank again.

# 6.9 Change the engine oil

### 🛕 Danger

Danger of sclading when draining off hot oil.

### ▲ Caution

Park the machine on level ground.

Clean oil dipstick and oil filler neck before unscrewing, to prevent contamination of the engine oil.

Drain the engine oil only when the engine is warm.

### ▲ Caution

Check the engine oil level with highest care, to avoid over or underfilling of the engine. Underfilling or overfilling can damage the engine.

### 🔮 Environment

Catch running out old oil, do not let it seep into the ground and dispose off environmentally.

### j Note

The engine cannot be started if the engine oil level is too low.

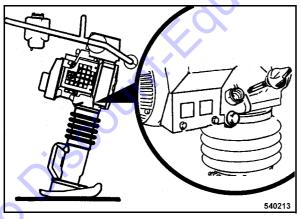


Fig. 37

• Remove the oil dipstick (Fig. 37).

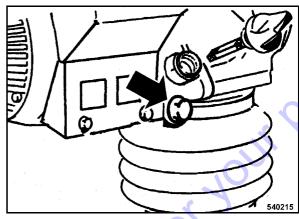
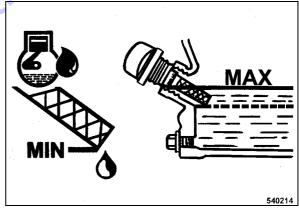


Fig. 38

- Unscrew the oil drain plug (Fig. 38), let the old oil run out and catch it.
- Clean the drain plug and screw it back in with a new seal ring.
- Fill in fresh engine oil through the oil filler opening.

# For quality and quantity of oil refer to the "table of fuels and lubricants".



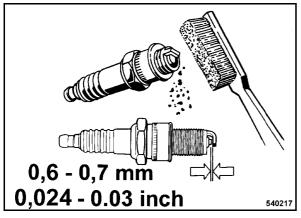
- The oil level must reach the bottom edge of the filler bore (Fig. 39), top up if necessary.
- Insert the oil dipstick.
- Perform a test run, inspect the drain plug for leaks and check the oil level.

# 6.10 Clean, check the spark plug, replace if necessary

### 🛕 Danger

Danger of burning!

Let the engine cool down for approx. 15 minutes before cleaning/replacing the spark plugs.



### Fig. 40

- pull off the spark plug socket.
- Unscrew the spark plug, check the spark plug visually and clean it if necessary (Fig. 40).

### j Note

In case of excessive combustion residuals or burned off electrodes replace the spark plug, ensure correct heat value of the spark plug.

 Check the electrode gap with a feeler gauge, if necessary adjust the gap to 0.6 - 0.7 mm (0.024 - 0.03 in).

### Spark plugs:

NGK: CR5HSB Denso: U16FSR-UB

### ▲ Caution

Do not use spark plugs with incorrect heat value.

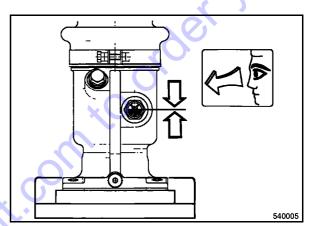
### 6.11 Check the tamper foot

### Check the oil level

### A Caution

Stand the tamper of level ground for a short while, so that all oil can run into the housing.

For quality of oil refer to the "table of fuels and lubricants".



### Fig. 41

- Clean the sight glass (Fig. 41).
- Check the oil level.
- The oil must be visible in the inspection glass, top up if necessary.

### Check the concertina wall

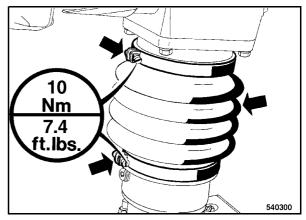
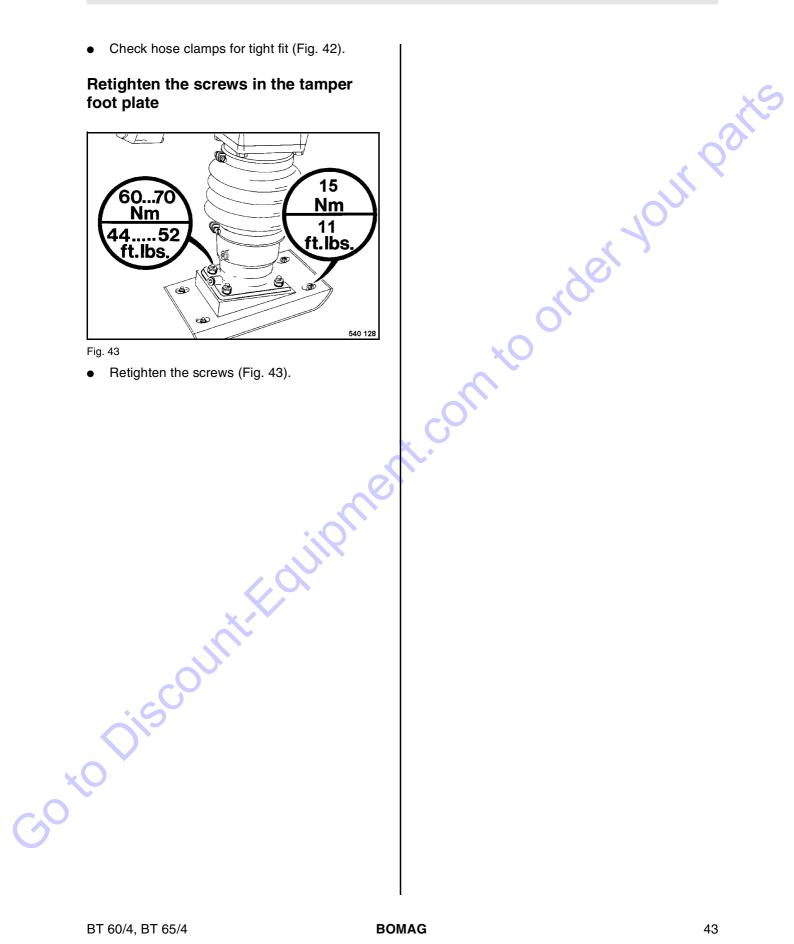


Fig. 42

 Check concertina wall for condition, damage and tight fit. Check hose clamps for tight fit (Fig. 42).



### 6.12 Checking, adjusting the valve clearance

### **∧** Caution

Check and adjust only when the engine is cold (20 °C (68 °F)). If necessary have this work performed by a specialist workshop.

Valve clearance:

Intake valve (IN) = 0.15 mm (0.006 in) Exhaust valve (EX) = 0.20 mm (0.008 in)

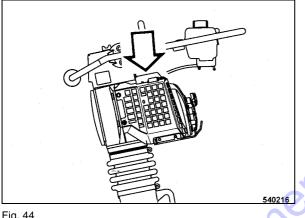
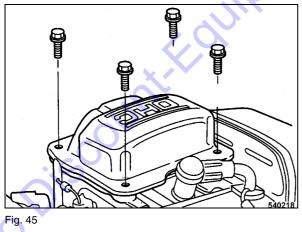


Fig. 44

Remove the top engine cover (Fig. 44). •

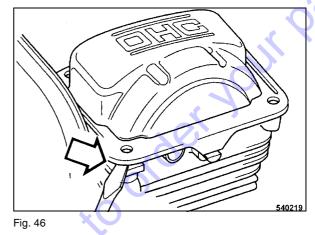


Unscrew the fastening screws for the cylinder head cover (Fig. 45).

**∧** Caution

Do not apply force to remove the cylinder head cover.

Replace the cylinder head cover if it is dented.



Insert the screw driver into the recess (Fig. 46) and take the cylinder head cover carefully off.

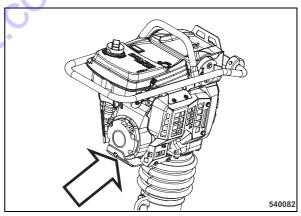


Fig. 47

Remove the top engine cover (Fig. 47).

### Maintenance every year

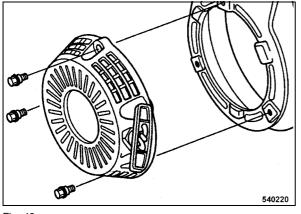


Fig. 48

• Remove the recoil starter (Fig. 48).

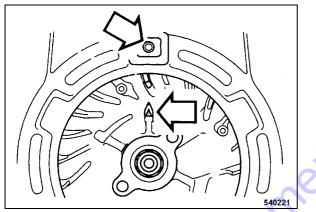


Fig. 49

• Align the alignment mark on the flywheel rib (Fig. 49) with the top bore in the fan cover .

j Note

The piston is in top dead centre of the compression stroke.

However, if the exhaust valve is open when aligning the marks, the flywheel must be turned further by 360°.

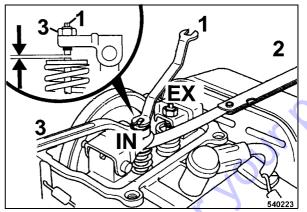


Fig. 50

- Measure the valve clearance between valve adjustment screw and valve with a feeler gauge (2) (Fig. 50).
- To adjust the valve hold valve adjustment screw (1) and slacken locking screw (3).
- Turn the valve adjustment screw in or out, as required.
- Retighten the locking screw with a tightening torque of 7.5 Nm (5.5 ft.lbs).

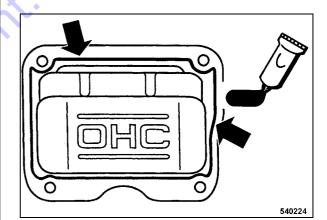


Fig. 51

- Clean the sealing faces on cylinder head cover and cylinder block.
- Apply a bead of liquid gasket (Three Bond 1207B or similar) with a diameter of approx.
   1.5 to 2 mm (0.06 to 0.08 in) to the inside of the cylinder head cover (Fig. 51).

, ~ <sup>\*</sup>(

### j Note

Attach the cylinder head cover within the next 10 minutes.

Wait another 20 minutes before starting the engine.

# 6.13 Changing the fuel filter

### Danger

Fire hazard!

When working on the fuel system do not use open fire, do not smoke. Do not spill any fuel.

### A Danger

Health hazard!

Do not inhale any fuel fumes.

🔂 Environment 🕖

Catch running out fuel, do not let it seep into the ground.

Dispose of the used fuel filter environmentally.

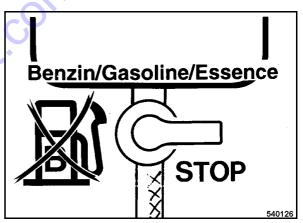
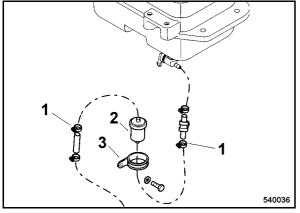


Fig. 52

• Set the fuel valve (Fig. 52) to "STOP" position (closed).

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- Loosen hose clamp (1) (Fig. 53) on the fuel filter and pull off the fuel hoses.
- Loosen the clamping screws (3) and take off the fuel filter (2).
- Install the new fuel filter and observe the flow direction (arrow).
- Fasten clamps and hose clips.

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### 6.14 Clean the fuel screen

### 🛕 Danger

Fire hazard!

When working on the fuel system do not use open fire, do not smoke and do not spill any fuel.

Clean the fuel screen filter only when the engine is cold.

### 🛕 Danger

Health hazard!

Do not inhale any fuel fumes.

🔮 Environment

Catch running out fuel and dispose of environmentally.

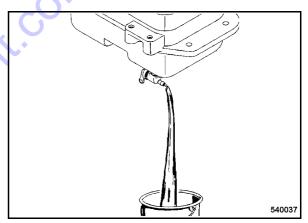
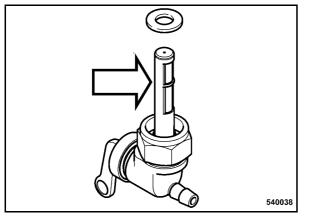


Fig. 54

• Disconnect fuel hose (Fig. 54) from fuel cock. Open the fuel cock, drain off fuel.



• Unscrew the fuel valve (Fig. 55).

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- Check the condition of the screen grid (holes), replace the fuel cock if necessary.
- Screw the fuel cock back in with a new seal.

# 6.15 Check, adjust the engine speed

### A Danger

Danger of accident!

Always hold on to the machine.

Keep your feet away from the tamper plate, because the vibration starts immediately.

Always keep an eye on a running machine.



Loss of hearing!

Wear your personal noise protection means (ear defenders) before starting operation.

### Checking the engine speed

Idle speed: 1850 to 2000 min<sup>-1</sup>.

Maximum speed: 3850 to 4200 min<sup>-1</sup>.

### j Note

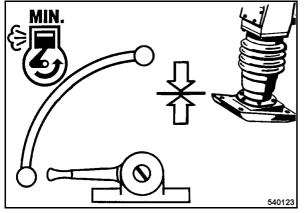
Before checking the engine speeds you should change the air filter and check the engine oil level.

• Start the engine.

j Note

Run the tamper on ground that can be compacted.

Run the engine for approx. 15 minutes to warm up.



• To read the idle speed set the throttle lever to position MIN (Fig. 56).

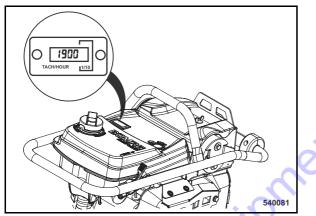


Fig. 57

After approx. 30 to 40 seconds read the idle speed from the existing engine rpm-meter <sup>1</sup> (Fig. 57) or by using a conventional rpm-meter.

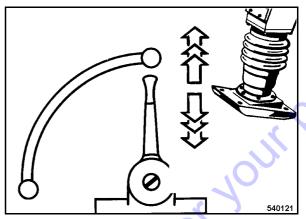


Fig. 58

- To read the maximum speed set the throttle lever to position MAX (Fig. 58).
- After approx. 30 to 40 seconds read the high speed from the existing engine rpm-meter (Fig. 57) or by using a conventional rpm-meter.

### Adjusting the engine speed

• Shut down the engine.

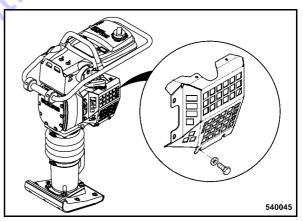
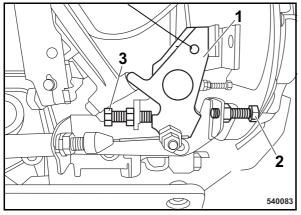


Fig. 59

• Remove the protection grid on the left hand side of the engine ((Fig. 59)).

1 Optional equipment



- Adjust the idle speed using the rear stop screw
   (2) on the engine speed control lever (1) (Fig. 60).
- Adjust the maximum speed by the front stop screw (3).
- Secure the stop screws (2, 3).
- Assemble the protection grid on the left hand side of the engine.

### i Note

Adjust the throttle cable, if this should be necessary.

### 6.16 Oil change in tamper foot

### ▲ Caution

Ensure strict cleanliness.

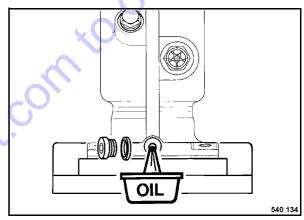
Change the oil at operating temperature.

For quality and quantity of oil refer to the "table of fuels and lubricants".

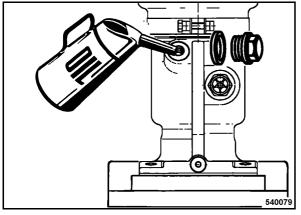
### 🔂 Environment

Catch running out old oil, do not let it seep into the ground and dispose off environmentally.

Tip the tamper backwards.



- Clean and unscrew the oil drain plug (Fig. 61), let the old oil run out and catch it.
- Check the seal on the drain plug, replace if necessary.
- Turn the drain plug in and tighten it.



- Stand the tamper on its foot and secure it • against tipping over.
- Clean the filler plug (Fig. 62) and unscrew it. •
- Fill in new oil. •
- Screw the filler plug back in with a new seal ring.

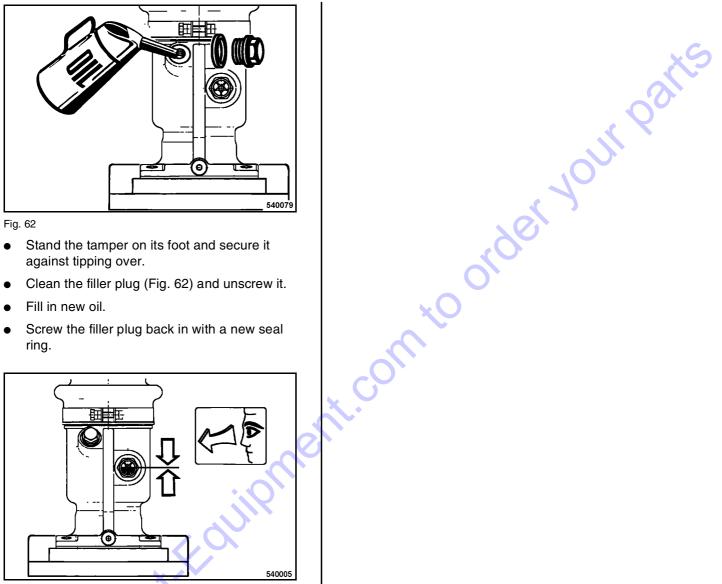


Fig. 63

- Clean the inspection glass (Fig. 63) and check • the oil level.
- The oil must be visible in the inspection glass, if necessary fill in oil accordingly.

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# 6.17 Clean, change the double dry air filter cartridge

### j Note

Contamination of the air filter cartridge depends mainly on the proportion of dust in the intake air, if necessary clean every day.

In case of wet or sticky contamination replace the double filter cartridge.

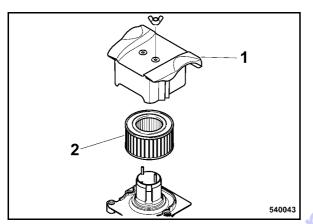


Fig. 64

 Remove cover (1) (Fig. 64), carefully take out filter cartridge (2).

### ▲ Caution

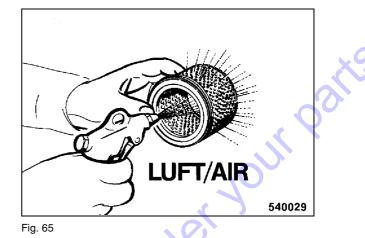
Make sure that no dirt falls into the air intake channel.

### A Danger

Eye injury!

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Wear protective clothing (goggles, gloves).



 In case of dry fine dust blow out the filter cartridge carefully from inside to outside with dry, clean compressed air (Fig. 65) (max. 6 bar (87 psi)).

### j Note

Before installation check seals and filter cartridge for damage, replace if necessary.

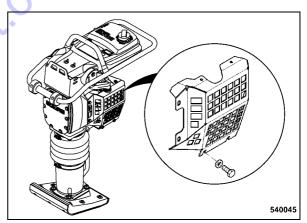
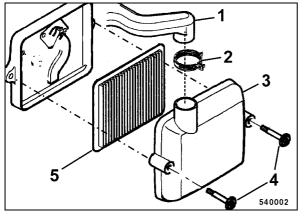


Fig. 66

• Remove the protection grid on the left hand side of the engine (Fig. 66).

### As required



### Fig. 67

- Loosen hose clamp (2) (Fig. 67) and pull the air supply hose (1) off the air filter housing.
- Unscrew two fastening screws (4) and remove cover (3) from the air filter housing.
- Pull the dry air filter cartridge (5) out of the housing.

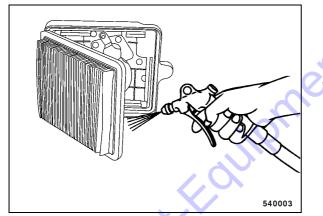


Fig. 68

- If soiled with dry fine dust blow the dry air filterout from the clean air side (Fig. 68).
- Clean the air filter housing.

### **∧** Caution

Make sure that no dirt falls into the air intake channel.

### j Note

Before installation check seals and dry air filter for damage, replace if necessary.

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### 7.1 General notes

The following work must only be performed by professionally trained personnel or by our customer service.

Please observe strictly the safety regulations in the corresponding section of these operating and maintenance instructions.

Malfunctions are frequently caused by incorrect operation of the machine or insufficient maintenance. Whenever a fault occurs you should therefore thoroughly read these instruction on correct operation and maintenance. If you cannot locate the cause of a fault or rectify it yourself by following the trouble shooting chart, you should contact the service departments at our branch offices or dealers.

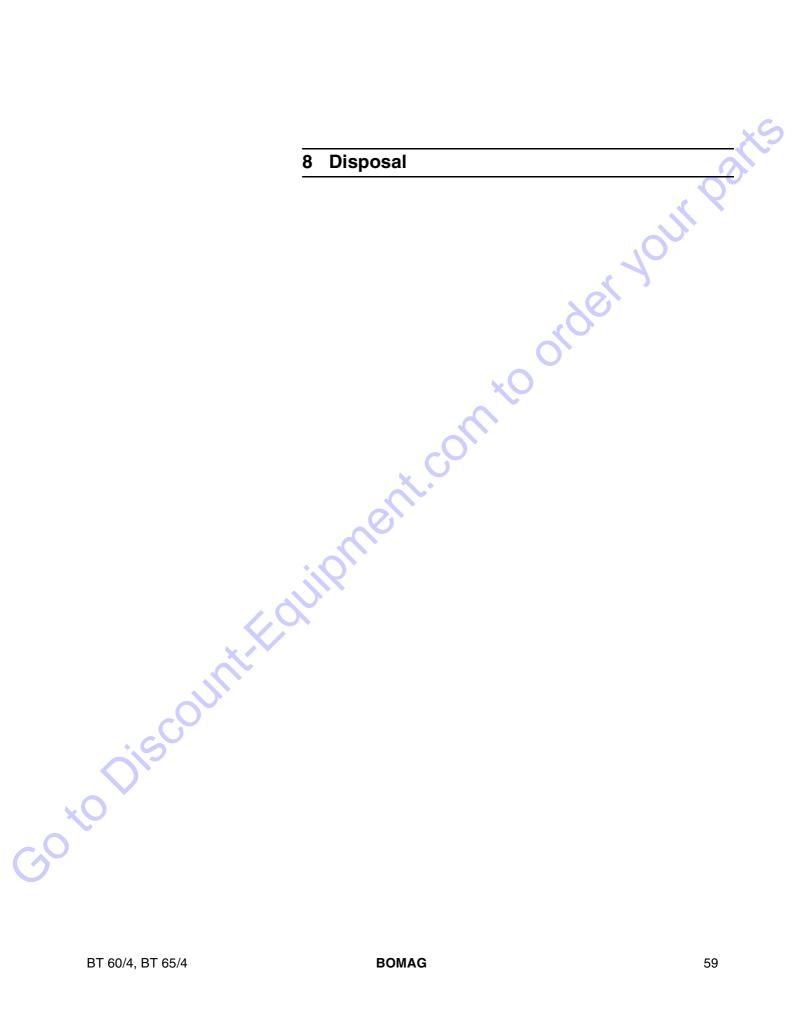
On the following pages you will find a selection of fault remedies. It goes without saying that not all possible reasons for faults could be listed.

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# 7.2 Engine problems

Fault	Possible cause	Remedy
Engine does not start	Fuel tank empty	Filling in fuel
	Fuel system clogged	Clean the fuel screen in the tank Replace the fuel filter Clean the fuel screen in the carburettor
	Fuel nozzle clogged	Clean the fuel nozzle
	No ignition spark	Clean spark plug Replace the spark plug
	Engine oil level too low	Check the engine oil level
	Stop switch defective	Replace stop switch
	No fuel in carburettor	Check the fuel supply
Engine does not crank when	Starter defective	Replace starter
operating the starter	Spring broken	Replace starter
Starter rope of recoil starter	Dirt	Clean the starter
does not return to initial posi- tion	Spring broken	Replace starter
Engine stops frequently in short intervals	Fuel system clogged	Clean the fuel screen in the tank Replace the fuel filter Clean the fuel screen in the carburettor
Engine does not run with full	Throttle cable defective	replace
speed	Throttle cable incorrectly adjust- ed	Adjust the throttle cable
	Air filter clogged	Clean or replace the filter cartridge
	Too high engine oil level	Drain engine oil down to "MAX" level (clean intake manifold)
- COV	Engine defective	Replace the engine/have the fault cor- rected
is	Carburettor defective	Replace the carburettor
$\nabla$	Exhaust blocked	clean
Engine runs with high speed,	Centrifugal clutch defective	Change the centrifugal clutch
but no vibration	Mechanical defect	Have repaired by the customer service of BOMAG.



### **Final shut-down of machine** 8.1

If the machine can no longer be used and needs to be finally shut down you must carry out the following work and have the machine disassembled by an approved specialist workshop.

### C: Environment

t.com to order your parts Catch all fuels and lubricants, do not let them seep into the ground and dispose of in compliance with legal regulations.

- Empty the fuel tank. •
- Drain lubrication oil from engine and tamper foot.

### A Danger

### **Danger of explosion!**

Parts that previously contained combustible fluids must not be cut with a cutting torch.

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