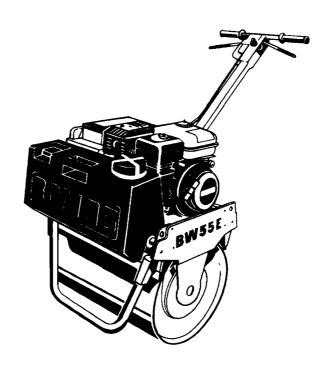


Operating instructions Maintenance instructions

Original operating instructions

BW 55 E

S/N 101 620 02 6001 >



Single-drum vibratory roller

If the machine is equipped with a battery:

CALIFORNIA

Proposition 65 Warning

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.

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.

Always keep this manual close at hand, e.g. in the tool compartment of the machine or in a specially

provided container. 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 No. (Fig. 1 and 2)
Engine type (Fig. 3)
Engine No. (Fig. 3)

j Note

Fill in the above listed data when receiving the machine.

Upon receipt of the machine our organization will instruct you about correct operation and maintenance.

Please observe strictly all safety regulations and notes on potential dangers!

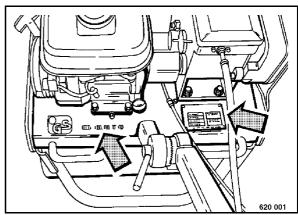


Fig. 1

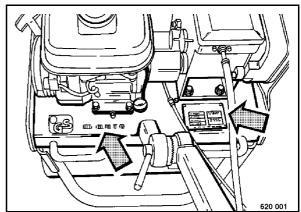


Fig. 2

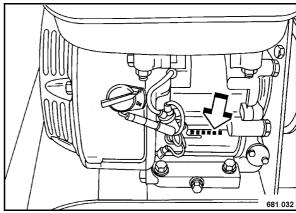


Fig. 3

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1 Technical Data

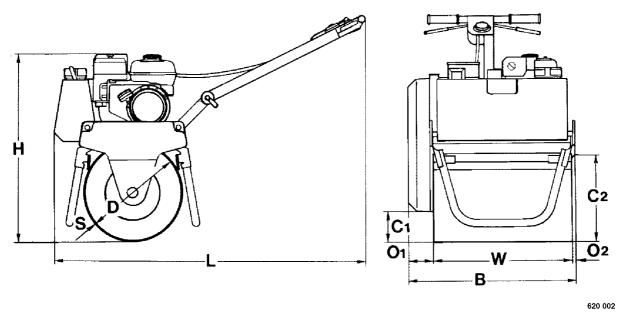


Fig. 4

Dimensions in	В	C ₁	C_2	D	Н	L	O ₁	O_2	S	W	
mm											
BW 55 E	678	125	330	400	900	1100	100	18	5	560	

		BW 55 E
Weights		
Operating weight (CECE)	kg	161
Basic weight	kg	151
Static linear load (CECE)	kg/cm	2.9
Travel characteristics		
Travel speed (forward/reverse)	km/h	0 - 1.6
Travel speed with vibration (forward/reverse)	km/h	0 - 1.1
Max. gradability without/with vibration (soil dependent)	%	25/20
Drive		
Engine manufacturer		Honda
Туре		GX 120
Cooling		Air
Working cycles		4
Number of cylinders		1
Power SAE J1995	kW	2.2
Nominal speed	rpm	2750
Fuel		Gasoline
Drive system		mechanical
Starting device		Recoil starter

Technical Data

•		BW 55 E
Vibration system		
Drive system		mechanical
Frequency	Hz	77
Amplitude	mm	0.50
Centrifugal force	kN	10
Water sprinkler system		
Type of sprinkling		Gravity feed
Filling consolition		

Filling capacities

 Fuel
 I
 2.5

 Water
 I
 16

^{*} Subject to technical alterations.

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.

Noise value

Sound pressure level on the place of the operator:

 L_{DA} = 88 dB(A), determined acc. to ISO 11204 and EN 500

Guaranteed sound power level:

 L_{WA} = 101 dB(A), determined acc. to ISO 3744 and EN 500

▲ 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

 $a_{hv} = 5.0 \text{ m/s}^2$ on crushed rock determined acc. to ISO 5349 and EN 500

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

2 Safety regulations

Safety regulations

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 on all types of soil
- Paving of walkways
- Work in trenches (trench roller)
- Underfilling and compaction of hard shoulders
- Compaction of bituminous material (road surface layers)

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:

- work with vibration on hard concrete, cured bitumen layers or extremely frozen ground
- dragging the machine along as a measure of transportation
- throwing the machine off the transport vehicle
- attaching an additional weight to the machine

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

Any transport ropes fastened to the machine must be removed before operation.

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 ma-

chine is working under, but at least once every year.

Who is allowed to operate the machine?

Only trained, instructed and authorized persons of at least 18 years of age are permitted to drive and operate this machine. For operation of the machine the responsibilities must be clearly specified and complied with.

Persons under the influence of alcohol, medicine or drugs are not allowed to operate, service or repair the machine.

Maintenance and repair work requires specific knowledge and must therefore only be performed by trained specialists.

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 or in traffic 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:

▲ Danger

Sections marked like this point out possible dangers for persons.

Sections marked like this 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 use of the machine.

Sections marked like this highlight activities for the safe and environmental disposal of fuels and lubricants as well as replaced parts.

Observe all environment protection regulations.

Loading the machine

Use only stable loading ramps of sufficient load bearing capacity. The ramp inclination must be less than the gradability of the machine.

Use only safe lifting gear of sufficient load bearing capacity

Fasten the lifting gear only at the specified lifting points.

Check lifting eye for damage before use. Do not use a damaged or in any other way impaired lifting eye.

Persons are highly endangered if

- the step under loads being lifted or
- stand under loads being lifted.

The machine must not swing about when being lifted.

Secure the machine on the transport vehicle against rolling, slipping and turning over.

Starting the machine

Before starting

Use only machines which are serviced at regular intervals.

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.).

Safety regulations

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.

Do not start the machine with defective control elements.

Do not take any loose objects with you or fasten them to the machine.

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!

Driving the machine

Persons in the danger area

Before taking up work, also after breaks, you should always convince yourself that the danger zone is free of persons or obstructions, especially when driving in reverse.

Give warning signals, if necessary. Stop work immediately if persons remain in the danger zone, despite the warning.

Driving

Do not use the machine to transport persons.

Change the travel direction only at standstill.

Actuate the travel lever slowly when starting to drive or when stopping the machine.

Guide the machine in such a way, that your hands to not hit against solid obstructions. Danger of injury!

Keep away from edges and embankments.

In case of unusual noises and development of smoke perform trouble shooting and have the fault corrected.

Always give way to loaded transport vehicles.

Driving on inclinations and slopes

Do not drive on gradients exceeding the maximum gradability of the machine.

On slopes drive extremely careful and always directly up or down the slope.

The steering rod should always point uphill when driving on gradients.

Wet and loose soils considerably reduce the ground adhesion of the machine on inclinations and slopes. Higher risk of accident!

Checking the effect of vibration

When compacting with vibration you must check the effect on nearby buildings and underground supply lines (gas, water, sewage, electric power), if necessary stop compaction work with vibration.

Do not activate the vibration on hard (frozen, concrete) ground. Danger of bearing damage!

Parking the machine

Park the machine on level, firm ground.

Before leaving the machine:

- return the travel direction lever to neutral position
- park the machine so that it cannot turn over,
- Shut down the engine.

Mark machines, which could be in the way, with a clearly visible sign.

Parking on slopes and inclinations

Apply suitable measures to block the machine against rolling away.

Filling the fuel tank

Do not inhale any fuel fumes.

Refuel only with the engine stopped.

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.

Wipe off spilled fuel. Keep dirt and water away from the fuel.

Leaking fuel tanks can cause explosions. Ensure tight fit of the fuel tank cover, if necessary replace immediately.

Fire protection measures

Familiarise yourself with the location and the operation of fire fighting equipment. Observe all fire reporting and fire fighting possibilities.

Maintenance work

Comply with the maintenance work described in the operating and maintenance instructions, including the information concerning the replacement of parts.

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 machine is driving or the engine is running.

Park the machine on level, firm ground.

Working on the engine

Drain the engine oil at operating temperature – danger of scalding!

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

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

Working on the fuel system

Do not inhale any fuel fumes.

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

Catch running out fuel, do not let it seep into the ground and dispose off 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 the oil bath air filter and into the opening for the manual starter.

After maintenance work

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

Repair

Mark defective machines by attaching a warning note to the steering rod.

Repair work must only be performed by qualified and authorized persons. Use our repair instructions for this work.

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

Test

The safety of compaction equipment must be checked by a specialist as required in dependence on the application and the operating conditions, however at least once every year.

Information and safety stickers/decals on the machine

Keep safety stickers in good and legible condition (see parts manual) and comply with their meaning.

Replace damaged and illegible stickers/decals.

Safety regulations

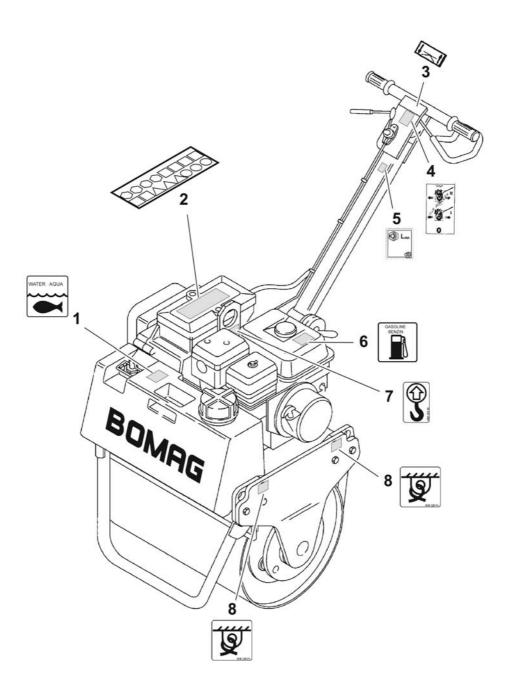


Fig. 5

- 1 Information sticker "Water"
- 2 Maintenance sticker
- 3 Operation sticker "Travel lever"
- 4 Information sticker "Travel stages"
- 5 Information sticker "Guaranteed sound capacity level"

620066

- 6 Information sticker "Gasoline"
- 7 Information sticker "Lifting point"
- 8 Information sticker "Lashing points"

3 Indicators and Controls

3.1 General notes

Please read this section thoroughly before operating this machine if you are not yet conversant with the indicators and control elements. All functions are described in detail hereunder.

Paragraph 4 Operation contains only concise descriptions of the individual operating steps.

3.2 Description of indicators and control elements

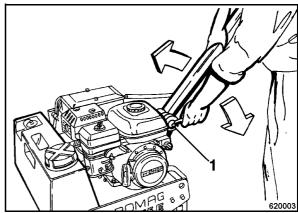


Fig. 6

No. 1 = Twist knob for steering rod adjustment

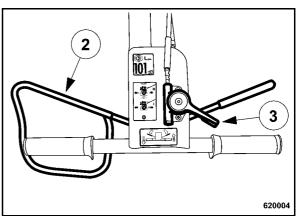


Fig. 7

No. 2 = Travel lever

Right back-

wards = Forward travel Left backwards = Reverse travel

No. 3 = Throttle lever

Position "0" = Idle speed

Position "I" = Travel without vibration
Position "II" = Travel with vibration

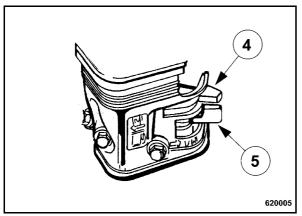


Fig. 8

No. 4 = Choke lever

Position "left" = Choke closed Position "right" = Choke open

No. 5 = Fuel cock

Position "left" = Fuel tap closed. Position "right" = Fuel tap open

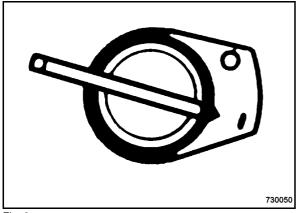


Fig. 9

No. 6 = Ignition switch

Position "0" = Ignition off
Position "I" = Ignition on

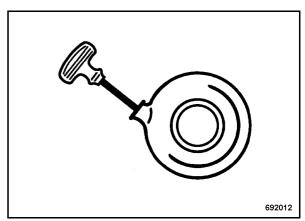


Fig. 10

No. 7 = Recoil starter

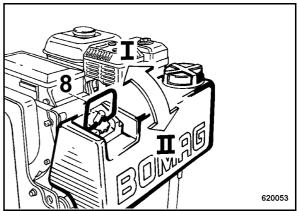


Fig. 11

No. 8 = Lever for water sprinkling system

Position "I" = Sprinkler system switched on
Position "II" = Sprinkler system switched off

Indicators and Controls	

4 Operation

4.1 General

If you are not yet acquainted with the controls and indicating elements on this machine you should thoroughly read chapter 3 "Indicators and control elements" before starting work.

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

4.2 Tests before taking into operation

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

▲ Danger

Danger of accident!

Please observe strictly the safety regulations in chapter 2 of this instruction manual!

- Park the machine on ground as level as possible
- Cleaning the machine.

Check:

- condition of engine and machine
- fuel tank and fuel lines for leaks
- screw joints for tight fit
- Neutral setting of travel system (the vibratory roller must not move forward or backwards when the travel direction lever is in middle position).

i 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.
- Water level, top up if necessary.

4.3 Adjusting the steering rod

i Note

To achieve an optimal working position, the steering rod needs to be adjusted to the size of the operator.

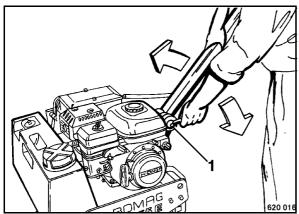


Fig. 12

- Loosen the T-bar 1 (Fig. 12) and adjust the steering rod to operating position.
- Retighten the T-bar.

4.4 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!

▲ Danger

Danger of accident!

Before starting make sure that there are no persons in the danger area of engine or machine and that all safety installations are in place.

Always keep an eye on a running machine.

▲ Danger

Loss of hearing!

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

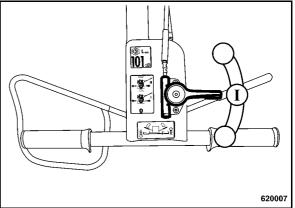


Fig. 13

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

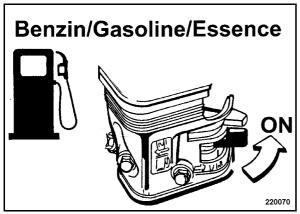


Fig. 14

Open the fuel cock (Fig. 14) by turning in direction of arrow to the end stop.

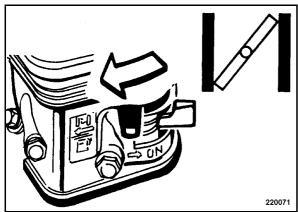


Fig. 15

Close the choke completely by shifting the lever (Fig. 15) in direction of arrow against the end stop.

Do NOT operate the choke lever when the engine is warm or at high ambient temperatures.

The engine is equipped with low oil level safety shut-down. The engine cannot be started if the oil level is too low.

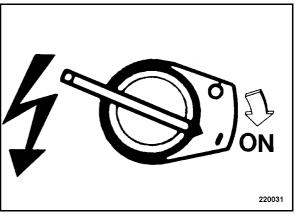


Fig. 16

 Turn the ignition switch (Fig. 16) to position "I" (ON).

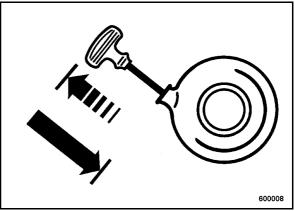


Fig. 17

- Slightly pull the starter handle (Fig. 17), until resistance can be felt (compression pressure), but do not pull out completely.
- Guide the starter rope back by hand.

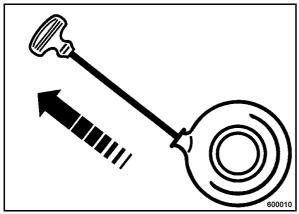


Fig. 18

 Pull the rope by the starter handle quickly and powerful as far out as possible (Fig. 18).

Do not let the starter handle hit back against the engine.

• If the engine does not start during the first attempt, repeat the starting process.

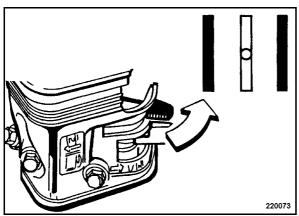


Fig. 19

As the engine warms up open the lever (Fig. 19) of the choke bit by bit.

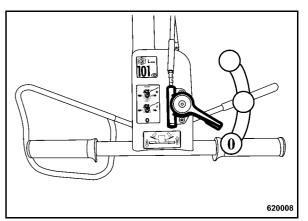


Fig. 20

- Set the throttle lever (Fig. 20) to position "0" (idle speed).
- Run the engine warm for approx. 1 to 2 minutes in idle speed.

j Note

Operation of the vibratory roller can be started as soon as the engine responds to short throttle commands.

When the engine is running leave the ignition switch in position "I".

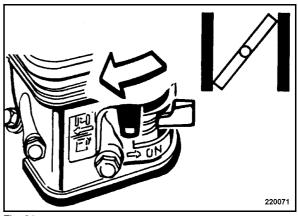


Fig. 21

• If the engine stops again after approx. 3 to 5 seconds, close the choke again with the lever (Fig. 21) and repeat the starting process.

Engine "drowned"

i 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.

Note

If the engine does not start after 10 to 20 attempts

- Open the choke.
- Set the throttle lever to full speed position.
- 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.
- Repeat the starting procedure.

4.5 Driving the machine

▲ Danger

Soil conditions and weather influences impair the gradability of the machine.

Do not drive on gradients exceeding the maximum gradability of the machine.

Before starting to drive make sure that the drive range is absolutely safe.

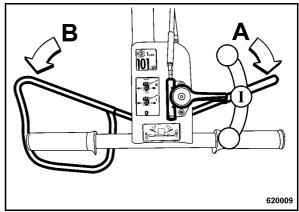


Fig. 22

- Set the throttle lever (Fig. 22) to position "I" (detent position).
- Shift the travel lever to the desired travel direction.

Position "A": Forward travel (infinite)

Position "B": Backward travel (infinite)

▲ Danger

Actuate the travel direction lever only slowly, because the roller may start erratically and the steering rod may hit up or down when moving it too quickly.

i Note

If the machine operator contacts an obstruction when travelling in reverse, the safety control handle will be pressed to forward travel.

▲ Danger

Do not use the machine if the safety control is defective.

 The travel direction lever moves slowly back to position "0" when released. The machine is automatically braked.

For short breaks you should always return the throttle lever to position "MIN" (idle speed).

4.6 Switching the vibration on and off

▲ Danger

Risk of damage!

When compacting with vibration you must check the effect of nearby buildings and underground supply lines (gas, water, sewage, electric power), if necessary stop compaction with vibration.

⚠ Caution

Danger of bearing damage!

Do not activate the vibration on hard (frozen, concrete) ground.

Vibration at standstill causes transverse ruts, therefore:

- Only switch the vibration when the machine is driving.
- Switch the vibration off before stopping the machine.

Switching the vibration on

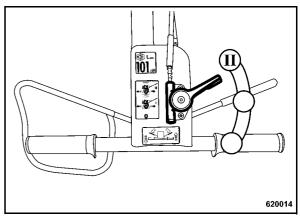


Fig. 23

- Move the machine forward and back.
- Set the throttle lever (Fig. 23) to position "II" (travel with vibration).

Switching the vibration off

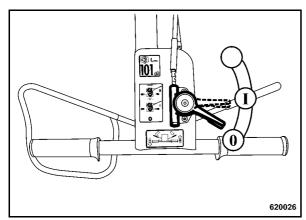


Fig. 24

 Set the throttle lever (Fig. 24) to position "0" (idle speed).

The vibration will come to a stop after a short while.

i Note

For short breaks you should always return the throttle lever to position "0" (idle speed).

4.7 Switching the gravity sprinkling system on and off

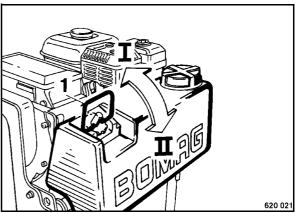


Fig. 25

- Shift lever (1) (Fig. 25) to position "I" to switch on.
- Shift the lever to position "II" to switch off.

If there is a risk of frost the water sprinkler system must be emptied or filled with an antifreeze mixture.

4.8 Shut down the engine

▲ Danger

When parking on slopes apply suitable measures to block the machine against rolling away

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

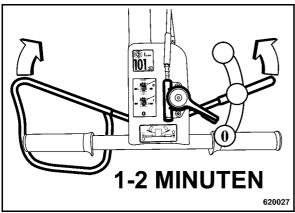


Fig. 26

- Slowly release the travel direction lever 1 (Fig. 26).
- the throttle lever to position "0" (idle speed) and run the engine for a short while in this position for temperature equalization.

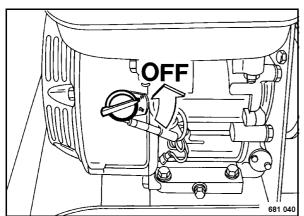


Fig. 27

 Turn the ignition switch (Fig. 27) to position "OFF", the engine will stop.

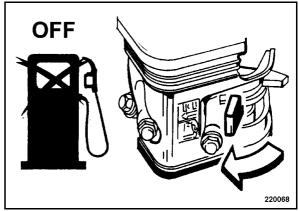


Fig. 28

Close the fuel tap (Fig. 28) by turning in direction of arrow.

4.9 Loading/transport

▲ Danger

Danger of accident!

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.

To lift the machine use only the lifting eye provided for this purpose.

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

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

The machine must not swing about when being lifted.

Do not step or stand under suspended loads.

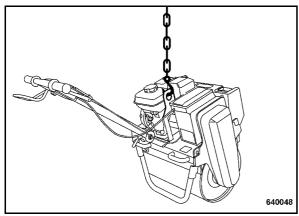


Fig. 29

 Hook the lifting tackle (Fig. 29) into the lifting eye to load the machine on the transport vehicle. 5 Maintenance

5.1 General notes on maintenance

When performing maintenance work ensure strict compliance with the respective safety instructions and particularly the safety regulations mentioned in chapter 2 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 machine on level ground.
- Perform maintenance work only with the engine shut down.

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 free of contaminants and water, since this will damage the injection elements of the engine.
- Drums with inside zinc lining are not suitable to store fuel.
- Keep used filters in a separate waste container and dispose of environmentally.
- The fuel drum must rest for a longer period of time before drawing off fuel.
- Under no circumstances must the drum be rolled to the tapping point just before drawing out fuel.
- When choosing the storage place for fuel make sure that spilled fuel will not harm the environment.

- Do not let the hose stir up the slurry at the bottom of the drum.
- Do not draw off fuel from near the bottom of the drum
- The rest in the drum is not suitable for the engine and should only be used for cleaning purposes.

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

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.

5.2 Fuels and lubricants

Engine oil

Use winter grade engine oil for winter operation!

In order to assure perfect cold starting it is import to chose the viscosity (SAE-class) of the engine oil according to the ambient temperature.

For winter operation below -10 °C the oil change intervals must be shortened.

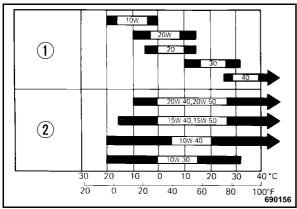


Fig. 30

Lubrication oil with a too high viscosity index causes starting difficulties, the temperature when starting the engine is therefore of highest importance when choosing the viscosity of engine oil for winter operation.

Oil 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 (SAE-class) (see diagram).

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.

Occasional falling short of the temperature limit (e.g. use of SAE 15W/40 down to -15 °C) may effect the cold starting ability of the engine, but will not cause any engine damage.

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.

Oil quality

You should preferably use oils of API-quality class SF or SG, SHPD oils or CCMC-D4-D5-PD2 oils.

The API-classification is used to classify the oil quality.

The oil manufacturer is solely responsible for assigning a product to a certain quality class.

i Note

When changing to a higher alloyed oil quality after a longer period of operation, it is recommended to perform the first oil change of the higher quality oil already after 25 operating hours.

Oil change intervals

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

Fuel

Quality

Use automobile gasoline (preferably unleaded fuel or fuel with a low lead content, in order to reduce the combustion residues to a minimum).

Do not use oil-gasoline mixes or contaminated gasoline. Protect the fuel tank against dirt, dust or water.

Alcohol containing gasoline

If you decide on using alcohol containing gasoline (Gasohol), you should make sure that the octane number is at least as high as for unleaded gasoline.

There are two types of "Gasohol" available: one contains ethanol and the other one methanol. Do not use "Gasohol" with more than 10% ethanol. Do not use any gasoline with admixed methanol (methyl or methyl alcohol), which does not contain solvents or corrosion protection for methanol. Do not use gasoline with more than 5% methanol, even if it contains solvents and corrosion protection agents.

Gear oil

Use only gear oil of specification ATF SAE 75W.

Maintenance

Lubrication grease

For lubrication use only EP-high pressure grease, lithium saponified (penetration 2).

5.3 Table of fuels and lubricants

Assembly	Fuel or I	Quantity approx.	
	Summer	Winter	Attention Observe the level marks
Engine			
- Engine oil	Engine oil A	0.6 I (0.16 USgal) up to oil level mark	
	SAE 10W/30 (-2		
	SAE 10W/40 (-2		
	SAE 10W/40 (-1		
	SAE 30 (+10 °C to +30 °C)		
	SAE 40 (+25 °C to +45 °C)	SAE 20W/20 (-10 °C to +10 °C)	
Water tank	Water	Water with anti-freeze agent	16 I (4.2 USgal)
Transmission	A ⁻	approx. 1I (0.26 USgal)	
Spiral spring, drive chain	EP - high pre	as required	

5.4 Running-in instructions

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

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 25 operating hours

- Change the engine oil.
- Check engine and machine for leaks.
- Check the valve clearance, adjust if necessary
- Retighten the fastening screws on air filter exhaust, fuel tank and other attachments.
- Retighten the bolted connections on the machine.
- Check chain and V-belt for travel and vibration drives, tighten if necessary

5.5 Maintenance table

With all maintenance intervals perform also the work for shorter preceding service intervals.

No.	Maintenance work	Comment	daily	weekly	monthly	half-annually	annually	as required
5.6	Clean the machine		Х					
5.7	Check the engine oil level	Dipstick mark	Х					
5.8	Check the fuel level		Х					
5.9	Fill the water tank		Х					
5.10	Clean the air filter	in case of extreme dust clean every day		Х				
5.11	Clean the cooling fins and the cooling air intake openings				Х			
5.12	Check the transmission oil level	Inspection glass			Х			
5.13	Clean, lubricate the spiral spring on the gearbox				Х			
5.14	Change the engine oil	at least every 100 operating hours				Х		
5.15	Clean, check the spark plug					Х		
5.16	Clean the slurry filter					Х		
5.17	Check the rubber buffers					Х		
5.18	Check, tighten the V-belt/chain, replace if necessary					Х		
5.19	Change the air filter						Х	
5.20	Check, adjust the valve clearance	at least every 300 operating hours					Х	
		Intake: 0.20 mm						
		Exhaust: 0,15 mm						
5.21	Clean the fuel screen						Х	
5.22	Gear oil change						Х	
5.23	Water sprinkler system, maintenance in the event of frost							Х

Maintenance

No.	Maintenance work	Comment	::	weekly	monthly	half-annually	annually	as required
5.24	Adjust the scrapers							Χ
5.25	Tighten all bolted connections							Х
5.26	Engine conservation							Х

5.6 Clean the machine

⚠ Caution

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.

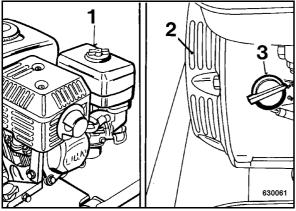


Fig. 31

Do not guide the water jet directly into air filter/carburettor (1) (Fig. 31), starter/air intake (2) and motor switch (3).

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

5.7 Check the engine oil level

Park the machine on level ground so that the engine is in horizontal position.

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

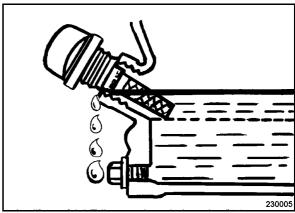


Fig. 32

- Shut down the engine.
- Pull out the dipstick (Fig. 32) 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.

5.8 Check 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.

▲ Danger

Health hazard!

Do not inhale any fuel fumes.

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".

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

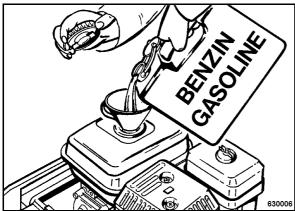


Fig. 33

- Clean the area around the filler cover, unscrew the filler cover (Fig. 33).
- Fill in fuel through a funnel with screen.
- Close the tank again.

5.9 Filling the water tank

Dirty or contaminated water can block the nozzles!

Fill only with clean water.

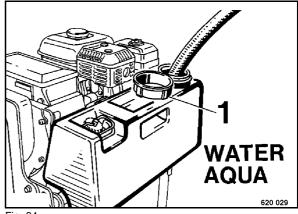


Fig. 34

• Open the lid 1 (Fig. 34), fill up with water and close the lid again.

j Note

If there is a risk of frost observe the special service instructions in chapter "water sprinkler system, maintenance in case of frost".

Make sure that the ventilation bore in the filler cap is free.

The water tank can be taken off.

5.10 Cleaning the air filter

▲ Danger

Do not use gasoline or cleansers with a low flash-point to clean the air filter element. This could cause fire or an explosion.

⚠ Caution

Do not run the engine without an air filter, since this could cause premature wear of the engine.

Contaminants or dirt must not enter into the intake channel.

Contamination of the air filter depends mainly on the proportion of dust in the intake air, if necessary clean several times a day.

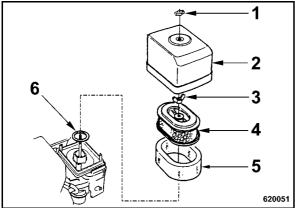
Air filters with damaged filter element or seal ring must be replaced in any case. It is therefore recommended to keep at least one air filter in stock.

The air filter must be changed after several times cleaning, but at the latest after 1 year.

Each cleaning interval must be marked with a cross on the cover of the air filter.

Cleaning does not make sense if the air filter is covered with a sooty deposit. Use a new air filter.

Incorrectly handled air filters may become ineffective because of damage (e.g. cracks) and cause damage to the engine.



Fia. 35

 Unscrew wing nut (1) (Fig. 35) and remove the housing cover (2).

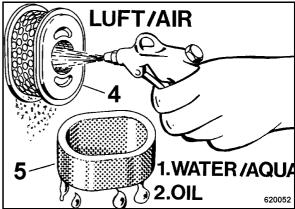
- Clean the housing cover from inside.
- Unscrew wing nut (3) and take off paper element (4) with the foam rubber insert (5).
- Check the rubber seal (6), replace if necessary.

⚠ Caution

The rubber seal (6) frequently sticks to the paper element.

Visual inspection/cleaning

 Examine the filter thoroughly for perforations and cracks and replace if damaged.



Fia. 36

- Clean the paper insert (4) (Fig. 36) carefully by light banging or blow it carefully out from inside to outside with dry, clean compressed air (max. 2 bar).
- In case of excessive dirt replace the paper element.
- Clean the foam insert (5) in warm soapy water, rinse it and let it dry thoroughly.
- Soak the foam insert in clean engine oil. Then squeeze out excess oil.

Wartung wöchentlich	

5.11 Clean the cooling fins and the cooling air intake openings

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.

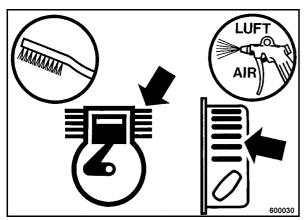


Fig. 37

 Loosen dried on dirt with a suitable brush (Fig. 37) from all cooling fins and cooling air intake openings and blow it off with compressed air.

A Danger

Fire hazard!

Do not use any inflammable solvents.

Do not guide the water jet directly into the cooling air openings of the recoil starter, into the dry air filter and on electrical equipment.

 On a oil contaminated engine use a cold cleansing agent for cleaning.

- After a sufficient soaking time clean off with a water or steam jet and blow out with compressed air.
- Run the engine warm for a while to avoid corrosion.

Look for the cause of oily contamination and have any leaks sealed by the customer service of BOMAG.

5.12 Checking the transmission oil level

i Note

Park the machine on level ground, so that the engine is in horizontal position.

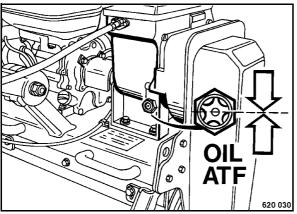


Fig. 38

- Check the oil level in the sight glass (Fig. 38).
- Top up transmission oil if necessary.

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

5.13 Cleaning, lubricating the spiral spring on the gearbox

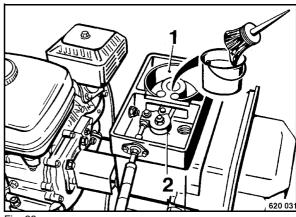


Fig. 39

- Unscrew the cover from the gearbox.
- Clean and lubricate the spiral spring (1) (Fig. 39) and the control (2).

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

5.14 Change the engine oil

▲ Danger

Danger of scalding!

When draining off hot oil.

⚠ Caution

Drain the engine oil only when the engine is warm.

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

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

j Note

Tilt the machine towards the guide handle.

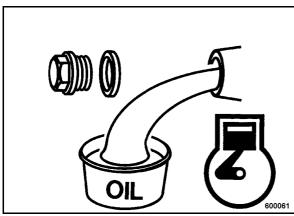


Fig. 40

- Unscrew the oil drain plug (Fig. 40), let the old oil run out and catch it.
- Turn the oil drain plug back in with a new seal ring.

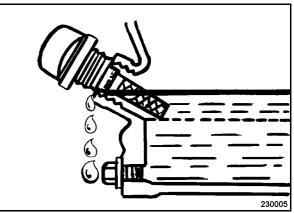


Fig. 41

- Position the engine horizontally and unscrew the oil dipstick (Fig. 41).
- Fill in oil through the oil filler opening, until it reached the filler socket.
- Check the seal on the dipstick, replace if necessary.
- Screw the oil dipstick back in.

5.15 Checking, cleaning the spark plug

▲ Danger

Danger of burning on hot engine!

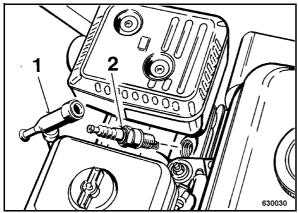


Fig. 42

 Pull off the spark plug socket (1) (Fig. 42) and unscrew the spark plug (2).

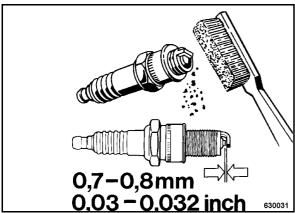


Fig. 43

 Check the spark plug visually and clean it if necessary (Fig. 43).

i Note

In case of excessive combustion residues, burned off electrodes or torn insulator replace the spark plug.

⚠ Caution

Make sure to use a spark plug with correct heat value.

- Check the electrode gap with a feeler gauge, if necessary adjust the gap to 0,7 to 0,8 mm.
- Screw the spark plug in by hand and tighten it until it bottoms.

i Note

A new spark plug needs to be tightened by anoth 1/2 turn after contact, so that the seal is compressed. If an old spark plug is to be used again, tighten it for another 1/8 - 1/4 turn after contact, in order to compress the seal ring.

Tighten the spark plug.

The spark plug must be correctly tightened. An incorrectly tightened spark plug can get very hot and cause engine damage.

5.16 Cleaning the fuel sludge filter

▲ Danger

Gasoline is easily inflammable, do not spill any gasoline.

Do not smoke, no open fire.

Do not inhale any fuel fumes.

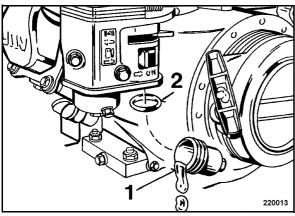


Fig. 44

- Unscrew the fuel sludge filter 1 (Fig. 44) with the fuel cock closed and wash it out with fuel.
- Turn the fuel sludge filter in tightly and mind the O-ring (2).

5.17 Checking the rubber buffers

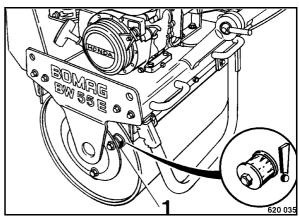
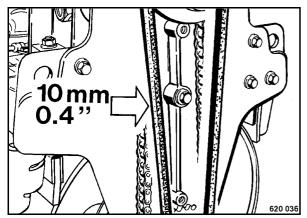


Fig. 45

 Check the condition and tight fit of all rubber buffers 1 (Fig. 45), replace if necessary.

5.18 Checking, tensioning the Vbelt/chain, replacing if necessary

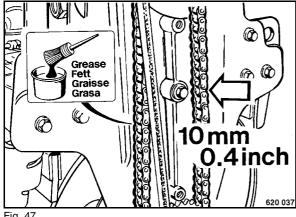
Checking the vibration V-belt



- Remove the guard
- Check condition and tightness of V-belt (Fig.

Compression measurement approx. 10 mm.

Check, lubricate the drive chain



Check condition and tightness of the chain (Fig. 47).

Compression measurement at the longest free section 10 mm.

Remove all old grease and lubricate the chain again.

Caution

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

Tightening the V-belt/chain

▲ Danger

When lifting the machine do not step under the suspended load.

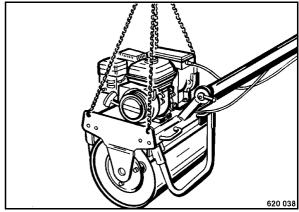
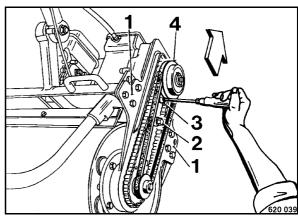


Fig. 48

Slightly lift up the machine (Fig. 48).



- Loosen all fastening screws (1) (Fig. 49).
- Loosen fastening screw (2).

i Note

The weight of the drum will tension both V-belt and chain.

 Additionally insert a screwdriver (3) and force the centrifugal clutch up, until V-belt and chain are correctly tensioned.

Compression measurement approx. 10 mm.

• Tighten all fastening screws (1 and 2).

Observe the tightening torques!

Install the guard.

Changing the V-belt/chain

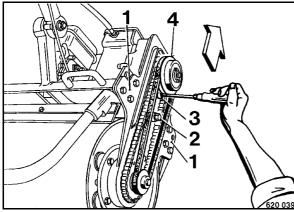


Fig. 50

- Remove the guard
- Loosen all fastening screws (1 and 2) (Fig. 50).
- Press the centrifugal clutch (4) back, until the V-belt or chain can be taken off.
- Assemble a new V-belt or chain.
- Tightening, see description under "Tightening the V-belt/chain"
- Lubricate the chain.
- Install the guard.

Maintenance every 6 months

5.19 Change the air filter

Do not run the engine without an air filter, since this could cause premature wear of the engine.

The air filter must be changed after several times cleaning, but at the latest after 1 year.

Contaminants or dirt must not enter into the intake channel.

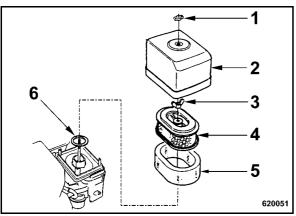


Fig. 51

- Unscrew wing nut (1) (Fig. 51) and remove the housing cover (2).
- Clean the housing cover from inside.
- Unscrew wing nut (3) and take off paper element (4) with the foam rubber insert (5).
- Check the rubber seal (6), replace if necessary.

The rubber seal (6) frequently sticks to the paper element.

- Soak the new foam rubber insert (5) in clean engine oil. Then squeeze out excess oil.
- Pull the foam rubber element (5) over the new paper element (4).
- Insert the air filter correctly and tighten it with the wing nut (3).

⚠ Caution

If the air filter is not correctly inserted, dust and foreign particles can enter into the air intake channel.

 Reassemble the housing cover (2) with the wing nut (1).

5.20 Check, adjust the valve clearance

Check and adjust only when the engine is cold.

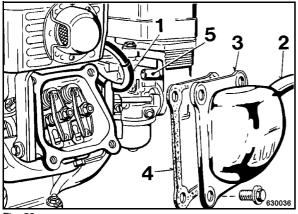
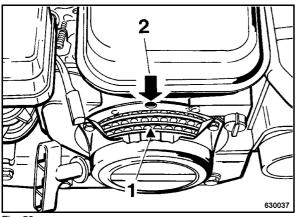


Fig. 52

- Pull off the spark plug socket (1) (Fig. 52).
- Pull off ventilation hose (2).
- Remove the valve cover with the gasket (4).



Fia. 53

- Set the piston to top dead centre position of the compression stroke.
- For this purpose align triangle mark (1) (Fig. 53) on the starter disc to the top bore (2).

Check the valve clearance

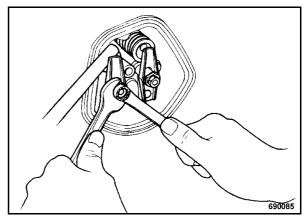


Fig. 54

 Check the valve clearance with a feeler gauge on both valves (1) (Fig. 54).

j Note

Exhaust valve clearance: 0.20 mm Intake valve clearance: 0.15 mm

Adjust the valve clearance

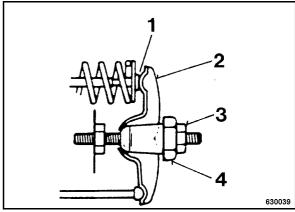


Fig. 55

- Hold hexagon nut (4) (Fig. 55) on the rocker lever and loosen counter nut (3).
- Adjust hexagon nut (4) on the rocker arm so that the feeler gauge fits between rocker arm and valve shaft (1) with noticeable resistance after retightening counter nut (3).
- Install the valve cover with a new gasket and tighten the screws evenly.

5.21 Clean the fuel screen

i Note

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



Fire hazard!

Gasoline is easily inflammable, do not spill.

When working on the fuel system do not use

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

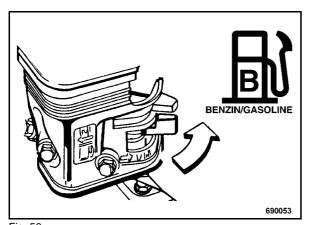


Fig. 56

Open the fuel tap (Fig. 56) by turning in direction of arrow.



Environmental damage!

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

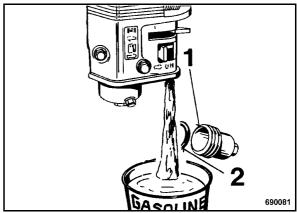


Fig. 57

- Unscrew the fuel sludge filter 1 (Fig. 57) and drain off all gasoline.
- Check seal ring (2) for cracks, replace the seal if damaged.
- Screw the fuel sludge filter with sealing ring (2) in tightly.

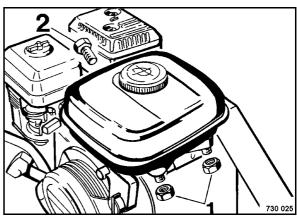


Fig. 58

- Remove the fuel tank.
- For this purpose unscrew hexagon nut (1) (Fig. 58) and hexagon screw (2).

Maintenance every year

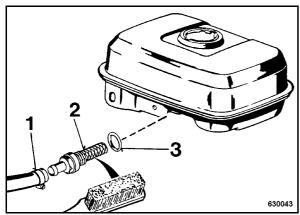


Fig. 59

- Open the hose clamp 1 (Fig. 59), pull off the hose.
- Unscrew fuel screen (2).
- Clean the fuel screen, check the condition of the screen (holes), replace if necessary.

i Note

Check seal (3), replace the seal if damaged.

Turn the fuel screen filter tightly in with the seal.

5.22 Gear oil change

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

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

Remove the water tank.

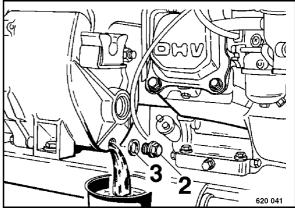


Fig. 60

- Disassemble the cover from the gearbox and unscrew the filler screw (1) (Fig. 61).
- Unscrew the drain screw (2) (Fig. 60), tilt the machine forward and catch running out old oil.
- Turn the oil drain screw (3) back in with a new seal ring.

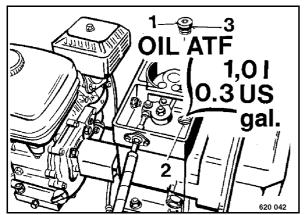


Fig. 61

- Fill in fresh gear oil through the filler opening
 (2) (Fig. 61).
- Turn the filler screw (1) back in with a new seal ring (3).

Maintenance every year

5.23 Water sprinkler system, maintenance in case of frost

The water sprinkler system must be emptied or filled with an antifreeze mixture if there is a risk of frost.

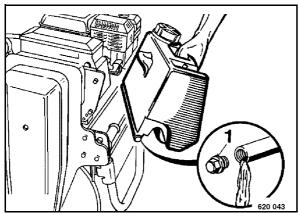


Fig. 62

- Remove the water tank.
- Drain all water out of the tank by removing the plastic plug 1 (Fig. 62).
- Push the plastic plug back on.
- Fill the antifreeze mixture (water and antifreeze agent, e. g. glysanthene) into the tank.

5.24 Adjusting the scrapers

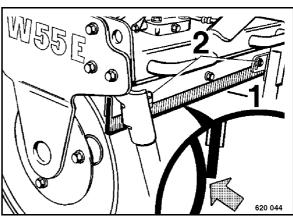


Fig. 63

- Loosen the fastening screws 2 (Fig. 63).
- Adjust the scrapers (1) until they touch the drum lightly (slight bending of the plastic insert).
- Retighten the fastening screws.

5.25 Tightening the screws

j Note

Self locking nuts must always be replaced by new ones after they have been unscrewed.

Bolt dimensions	Tighten	ning torques*	ft - lb
Boit dilliensions	8.8	10.9	12.9
M4	2	3	4
M5	4	7	1 7
M6	7	11	13
M8	18	26	33
M10	37	55	61
M12	65	91	108
M14	101	145	173
M16	156	221	264
M18	213	303	361
M20	304	426	513
M22	413	559	695
M24	524	738	885
M27	774	1092	1308
M30	1047	1482	1770

Fig. 64

*Strength classes for screws with untreated, nonlubricated surfaces. The quality designations are stamped on the screw heads.

8.8 = 8 G

10.9 = 10 K

12.9 = 12 K

The values result in a 90% utilization of the screw's yielding point at a coefficient of friction of μ total = 0.14.

The compliance with the tightening torques is to be checked with torque wrenches.

The tightening torques are not applicable when using MoS_2 lubricants.

5.26 Engine conservation

▲ Danger

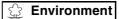
Fire hazard!

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

▲ Danger

Health hazard!

Do not inhale any fuel fumes.



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

If the engine is to be shut down for a longer period of time (e.g. over winter), we recommend the following engine conservation measures to avoid corrosion:

Clean the engine:

- For this purpose use cold cleansing agent or, even better, a steam cleaner.
- Run the engine warm and shut it down.
- Drain the still warm engine oil and fill in fresh engine oil.
- Drain the fuel from the tank.

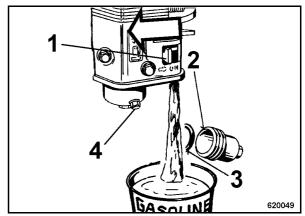


Fig. 65

Open the fuel tap (1) (Fig. 65) in direction of arrow.

- Unscrew the fuel sludge filter (2), empty it and reassemble it leak tight with a new seal ring (3).
- Unscrew the carburettor drain screw (4), let all fuel run out of the carburettor and turn the screw tightly back in again.

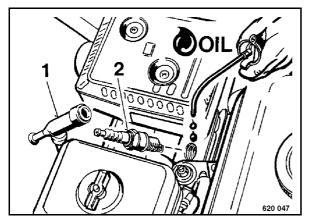


Fig. 66

- Pull off the spark plug socket (1) (Fig. 66) and unscrew the spark plug (2).
- Fill in several drops of fresh engine oil through the ignition plug opening.
- Crank the engine several times with the recoil starter to distribute the oil.
- Screw the spark plug back in.

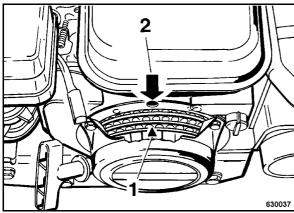


Fig. 67

For this purpose align triangle mark (1) (Fig. 67) on the starter disc to the top bore (2).

i Note

Intake and exhaust valves closed. The combustion chamber is protected against corrosion.

 Cover the engine to protect it against dust and moisture.

i Note

Depending on weather conditions these conservation measures will protect the machine for approx. 6 to 12 months.

A machine with conserved engine must be clearly marked by attaching a clear warning tag.

6 Trouble shooting

Trouble shooting

6.1 General notes

The following work must only be carried out by qualified and trained personnel or by the BOMAG sales service.

Please observe strictly the safety regulations in chapter 2 of these operating and maintenance instructions.

Faults occur frequently due to the fact, that the machine has not been properly operated or serviced. Therefore, whenever a fault occurs, read through these instructions on correct operation and maintenance. If you cannot locate the cause of the fault or eliminate it yourself by following the trouble shooting charts, you should contact our customer service departments at our branch office or dealers.

On the following pages you will find a selection of fault remedies. It is quite obvious that we were not able to list all possible causes for faults.

6.2 Engine faults

Fault	Possible cause	Remedy
Engine does not	Ignition switch in position "0":	Turn the ignition switch to position "I".
start	Oil level too low	Check the oil level, top up if necessary
	Fuel tap closed	Open the fuel tap
	Fuel tank empty	Fill in fuel
	Fuel system clogged	Clean the fuel screen in the carburettor
	Fuel nozzle clogged	Clean the fuel nozzle
	No ignition spark	Clean spark plug Replace spark plug
	Ignition switch defective	Replace ignition switch
Engine does not crank when operating the starter	Starter defective	Replace starter
Engine stops	Oil level too low	Check the oil level, top up if necessary
	Fuel level too low	Fill in fuel
	Clean fuel screen in carburettor	clean
Engine does not	Throttle control defective	Have the fault repaired
run with full speed	Air filter clogged	Clean or replace the filter cartridge
	Engine defective	Replace the engine/have the fault corrected
	Carburettor defective	Replace the carburettor
No vibration	Centrifugal clutch defective	Change the centrifugal clutch
	V-belt broken	Changing the V-belt

Trouble shooting



We will help you - immediately!

Operating, maintenance, repair instructions and spare parts catalogues



- in situ:

- · Safe and simple trouble shooting
- Secure access to required spare parts
- Easy to understand from experts for users
 Contact us or your BOMAG distributor!

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