



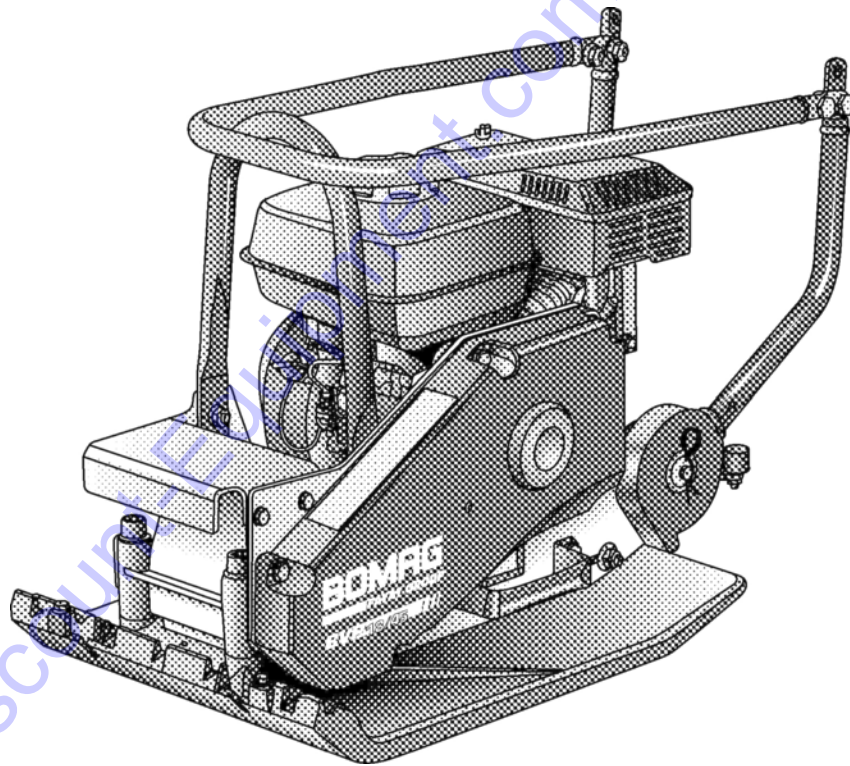
BOMAG

FAYAT GROUP

Operating Instruction Maintenance Instruction

Original Operating Instructions

BVP 10/36 / BVP 18/45



S/N 861 834 03 3962> / S/N 861 834 04 7632> / S/N 861 834 11 1001>

Forward marching vibratory plate

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Table of contents

1	Foreword.....	5
2	Technical data.....	9
3	Safety regulations.....	15
4	Display and control elements.....	25
	4.1 General notes.....	26
	4.2 Description of indicators and control elements.....	27
5	Operation.....	29
	5.1 General.....	30
	5.2 Tests before taking into operation.....	31
	5.3 Mounting the steering bow.....	32
	5.4 Starting the engine.....	33
	5.5 Work/operation.....	38
	5.6 Switching on the water sprinkling system ^{Optional equipment}	39
	5.7 Switching the motor off.....	40
	5.8 Loading/transport.....	41
6	Maintenance.....	43
	6.1 General notes on maintenance.....	44
	6.2 Fuels and lubricants.....	46
	6.3 Table of fuels and lubricants.....	48
	6.4 Running-in instructions.....	49
	6.5 Maintenance table.....	50
	6.6 Maintenance every day.....	51
	6.6.1 Cleaning the machine.....	51
	6.6.2 Check the engine oil level.....	51
	6.6.3 Check the fuel level.....	52
	6.6.4 Filling the water tank ^{Optional equipment}	53
	6.7 Weekly maintenance.....	54
	6.7.1 Check, clean the air filter.....	54
	6.8 Maintenance every month.....	56
	6.8.1 Clean the cooling fins and the cooling air intake openings.....	56
	6.9 Maintenance every 6 months.....	57
	6.9.1 Change the engine oil.....	57
	6.9.2 Check, clean the spark plug, replace if necessary.....	58
	6.9.3 Clean the slurry filter.....	59
	6.9.4 Checking the oil level in the vibrator housing.....	60
	6.9.5 Checking the V-belt, tightening, replacing if necessary.....	60
	6.10 Annual maintenance.....	62
	6.10.1 Check, adjust the valve clearance.....	62
	6.10.2 Cleaning the fuel screen.....	63
	6.10.3 Replacing the starter rope.....	65
	6.10.4 Change the oil in the exciter housing.....	66
	6.10.5 Check the rubber buffers.....	68
	6.11 As required.....	69
	6.11.1 Change the air filter.....	69

Table of contents

6.11.2	Flushing the water sprinkler system ^{Optional equipment}	70
6.11.3	Tightening the screws.....	70
6.11.4	Engine conservation.....	70
7	Trouble shooting.....	73
7.1	General notes.....	74
7.2	Engine problems.....	75
8	Disposal.....	77
8.1	Final shut-down of machine.....	78

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BOMAG manufactures machine for earth, asphalt and refuse compaction, stabilizers/recyclers as well as milling machine and finishers.

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

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Please fill in

.....
Machine type (Fig. 1)

.....
Serial No. (Fig. 1 and 2)

.....
Engine type (Fig. 3)

.....
Engine No. (Fig. 3)

i *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!

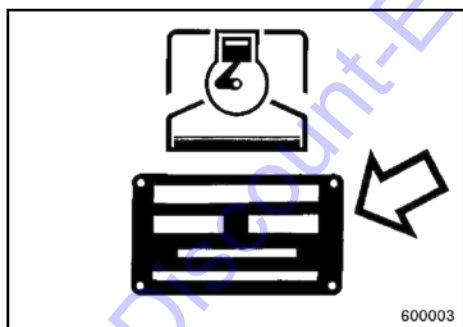


Fig. 1

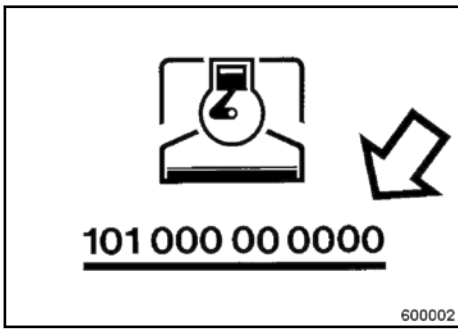


Fig. 2

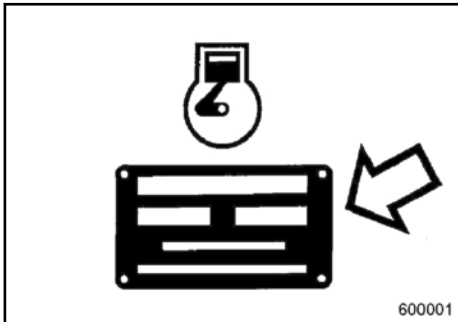


Fig. 3

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Technical data

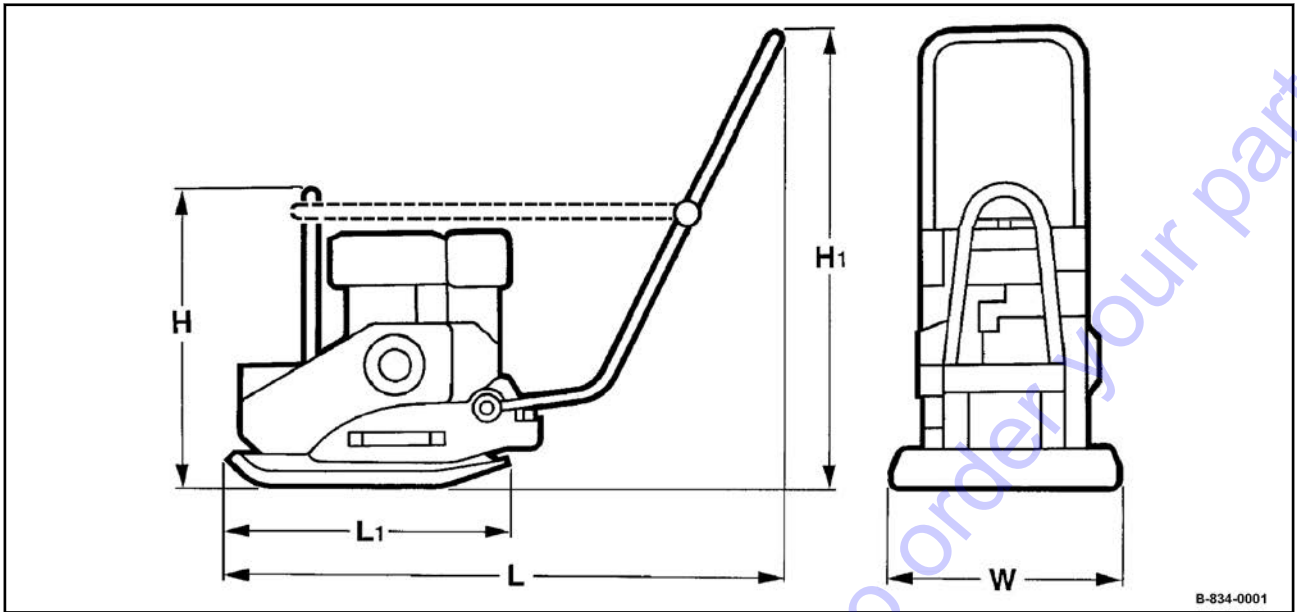


Fig. 4

BVP 10/36	H	H ₁	L	L ₁	W
Dimensions in mm	535	915	1115	558	360
Dimensions in inch	21.1	36.0	43.9	22.0	14.2

BVP 10/36		
Weights		
Operating weight (CECE)	83 kg	183 lbs
Basic weight	82 kg	181 lbs
Water sprinkling system (<i>optional equipment</i>)	+ 10 kg	+ 22 lbs
Transport wheels (<i>optional equipment</i>)	+ 4 kg	+ 9 lbs
Travel characteristics		
Working speed max.	25 m/min	82 ft/min
Max. gradability (depending on soil)	30 %	30 %
Drive		
Engine manufacturer	Honda	Honda
Type	GX 120	GX 120
Cooling	Air	Air

Technical data

BVP 10/36		
Number of cylinders	1	1
Rated power SAE J 1349	2.6 kW	3.5 hp
Rated speed	3600 min ⁻¹	3600 rpm
Drive system	mech.	mech.
Exciter system		
Frequency	90 Hz	5400 vpm
Centrifugal force	10 kN	2250 lbf
Amplitude	0,89 mm	0,035 in
Water sprinkling system (optional equipment)		
Type of sprinkling	Gravity feed	Gravity feed
Filling capacities		
Fuel (gasoline)	2.5 l	0.7 gal us
Water (water sprinkling system)	7.0 l	1.8 gal us



Subject to technical alterations.

Technical data

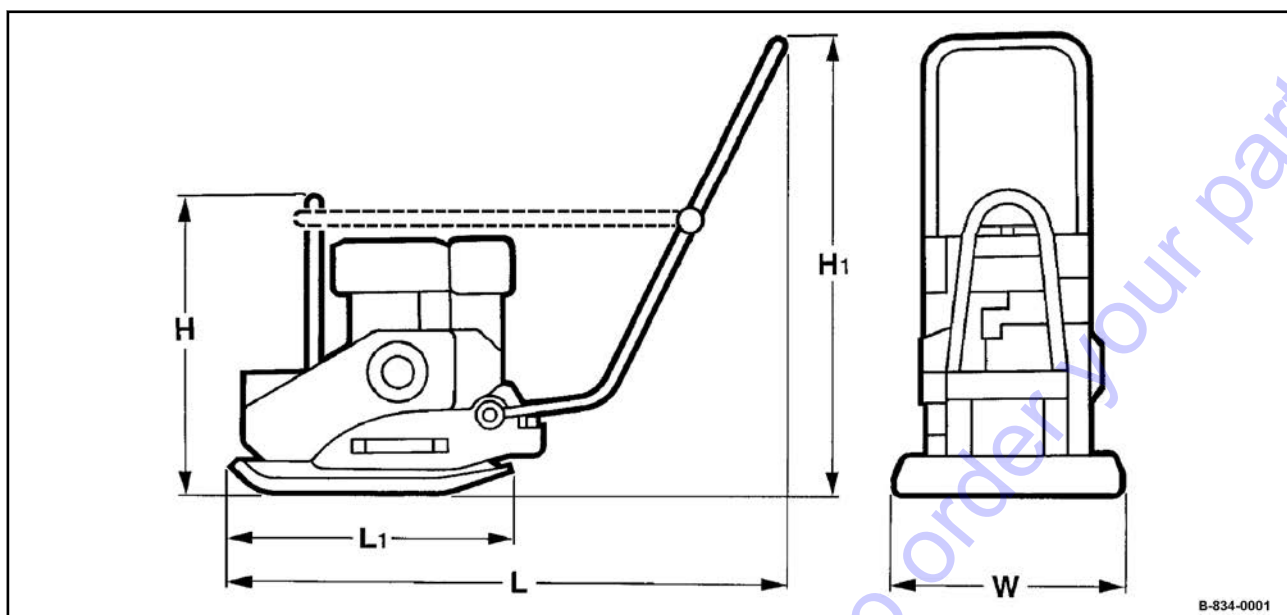


Fig. 5

BVP 18/45	H	H ₁	L	L ₁	W
Dimensions in mm	535	915	1115	558	450
Dimensions in inch	21.1	36.0	43.9	22.0	17.7

BVP 18/45		
Weights		
Operating weight (CECE)	91 kg	201 lbs
Basic weight	90 kg	198 lbs
Water sprinkling system (<i>optional equipment</i>)	+ 10 kg	+ 22 lbs
Transport wheels (<i>optional equipment</i>)	+ 4 kg	+ 9 lbs
Travel characteristics		
Working speed max.	25 m/min	82 ft/min
Max. gradability (depending on soil)	30 %	30 %
Drive		
Engine manufacturer	Honda	Honda
Type	GX 160	GX 160
Cooling	Air	Air

Technical data

BVP 18/45		
Number of cylinders	1	1
Rated power SAE J 1349	3.6 kW	4.8 hp
Rated speed	3600 min ⁻¹	3600 rpm
Drive system	mech.	mech.
Exciter system		
Frequency	90 Hz	5400 vpm
Centrifugal force	18 kN	4050 lbf
Amplitude	1,24 mm	0,049 in
Water sprinkling system (optional equipment)		
Type of sprinkling	Gravity feed	Gravity feed
Filling capacities		
Fuel (gasoline)	3.1 l	0.8 gal us
Water (water sprinkling system)	7.0 l	1.8 gal us



Subject to technical alterations.

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:

BVP 10/36: $L_{pA} = 93$ dB(A), determined acc. to ISO 11204 and EN 500

BVP 18/45: $L_{pA} = 96$ dB(A), determined acc. to ISO 11204 and EN 500

Guaranteed sound power level:

Technical data

BVP 10/36: $L_{WA} = 105$ dB(A), determined acc. to ISO 3744 and EN 500

BVP 18/45: $L_{WA} = 108$ dB(A), determined acc. to ISO 3744 and EN 500



WARNING!

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

BVP 10/36: $a_{hv} = 3.6$ m/s² on crushed rock determined acc. to ISO 5349 and EN 500

BVP 18/45: $a_{hv} = 7.8$ m/s² on crushed rock determined acc. to ISO 5349 and EN 500



NOTICE!

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

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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
- Underfilling and compaction of hard shoulders

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:

- 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 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 in 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 condition the machine 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.

Changes and conversions to the machine

Unauthorized changes to the machine are prohibited for safety reasons.

Original parts and accessories have been specially designed for this machine.

We wish to make explicitly clear that we have not tested or approved any parts or accessories not supplied by us.

The installation and/or use of such products may have an adverse effect on the active and/or passive safety.

The manufacturer explicitly excludes any liability for damage caused by 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 regulations

Notes on safety in the operating and maintenance instructions



WARNING!

Paragraphs marked like this highlight possible dangers for persons.



NOTICE!

Paragraphs marked like this highlight possible dangers for machines or parts of the machine.



Paragraphs marked like this contain technical information for the optimal economical use of the machine.



ENVIRONMENT!

Paragraphs marked like this point out practices for safe and environmental disposal of fuels and lubricants as well as replacement parts.

Observe the regulations for the protection of the environment.

Loading/transporting the machine

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

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

Loads must only be attached and hoisted by an expert (capable person).

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.

Do not lift or lower the machine jerkily.

The tension must always be effective in vertical direction.

The machine must not swing about when being lifted.

Do not step or stand under suspended loads.

Always use suitable lashing gear on the lifting points to lash down the machine.

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

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.

When starting with recoil starter check the starter rope for chafing before starting, replace if necessary. A damaged rope can break and cause injuries during starting.

Use only machines which are serviced at regular intervals.

Do not use starting aid sprays or other inflammable fluids for starting.

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

Operate the machine only with the steering rod mounted.

Steer the machine only by the steering handle.

Guide the machine so that your hands do not hit against solid objects - danger of injury.

Always keep an eye on a running machine.

Watch out for unusual noises and development of smoke. Perform trouble shooting and have the fault corrected.

Operate the machine only with full engine speed, as otherwise the centrifugal clutch will be destroyed.

Parking the machine

Park the machine on level, firm ground.

Before leaving the machine:

- 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.

Refuelling

Do not inhale any fuel fumes.

Do not swallow fuel.

Avoid contact with skin and eyes.

Refuel only with the engine shut down.

Do not refuel in closed rooms.

No open fire, do not smoke.

Safety regulations

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

Keep dirt and water away from the fuel.

A leaking fuel tank can cause an explosion. Ensure tight fit of the fuel tank cover, if necessary replace immediately.

Fuel stabilizer

Fuel stabilizer is inflammable. No open fire, do not smoke. Do not spill any fuel stabilizer.

Do not inhale any fuel stabilizer fumes.

Do not swallow fuel stabilizer.

Avoid contact with skin and eyes.

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 touch hot engine parts.

Generally perform maintenance work only with the engine shut down and the spark plug socket disconnected.

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.

Do not swallow fuel.

Avoid contact with skin and eyes.

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 air filter and air intake or exhaust muffler.

After maintenance work

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

Repair

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

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

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

Welding

Before starting welding work on the machine disconnect the battery and cover the fuel tank with insulating material.

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

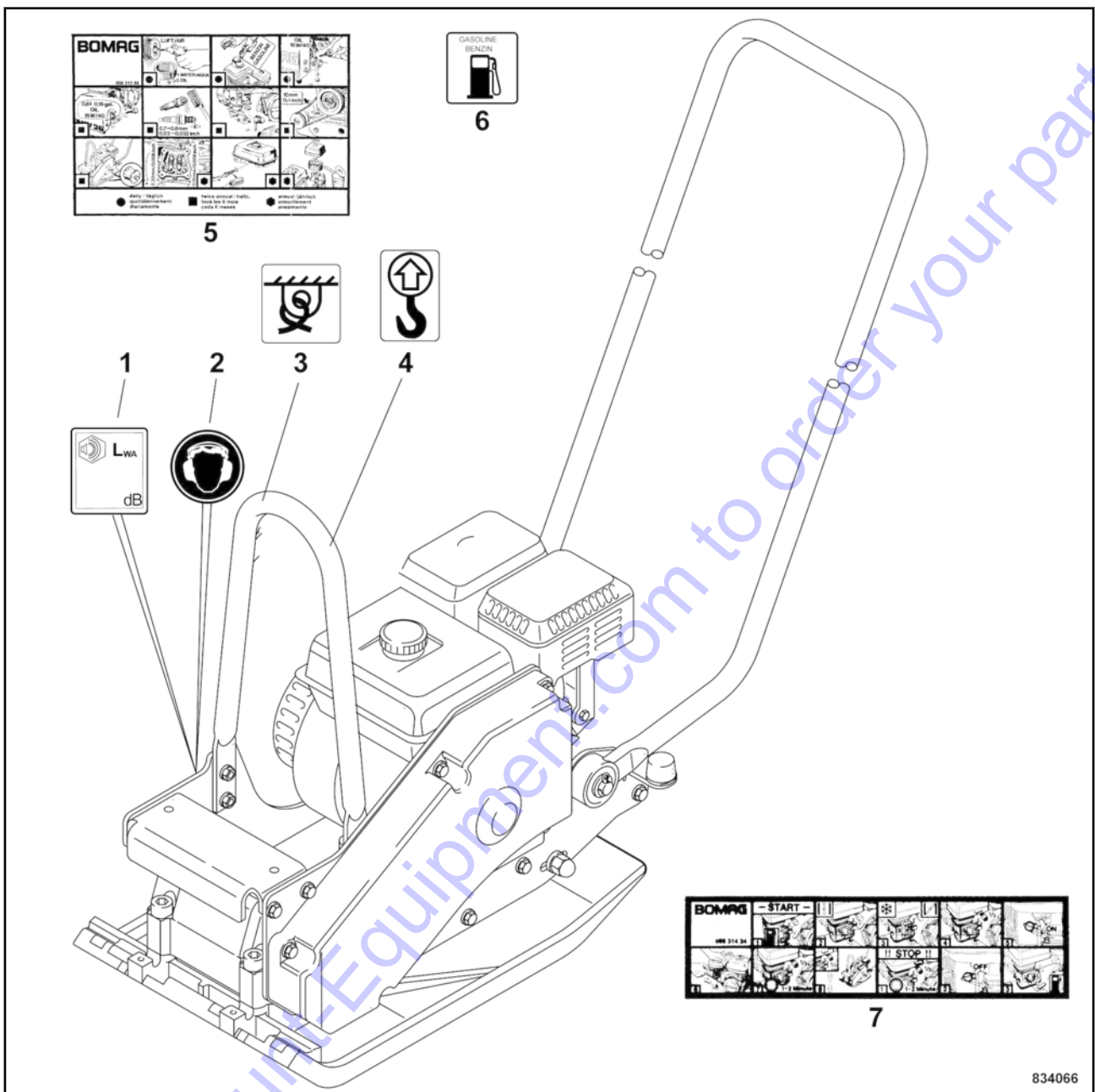
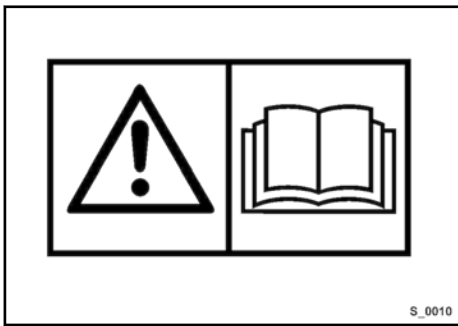


Fig. 6: Stickers and decals BVP 10/36, BVP 18/45

- 1 Information sticker - Guaranteed sound capacity level
- 2 Instruction sticker - Wear ear defenders
- 3 Information sticker - Lashing point
- 4 Information sticker - Lifting point
- 5 Maintenance sticker
- 6 Information sticker - Gasoline
- 7 Brief operating instructions



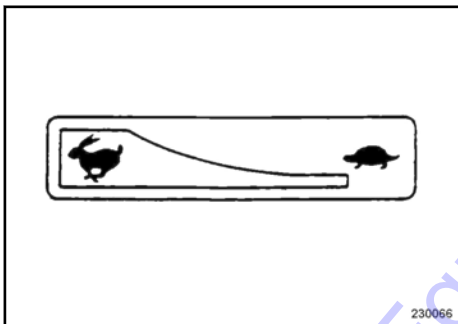
Warning sticker - Read operating instructions

Fig. 7



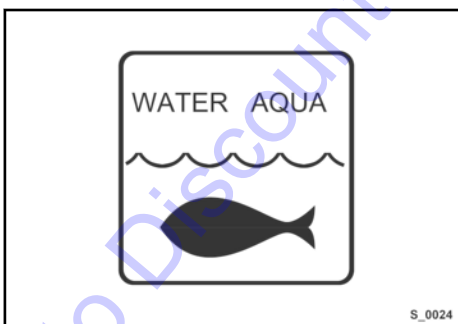
Information sticker - Open choke and fuel valve

Fig. 8



Information sticker - Throttle lever

Fig. 9



Information sticker - Water

Fig. 10

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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

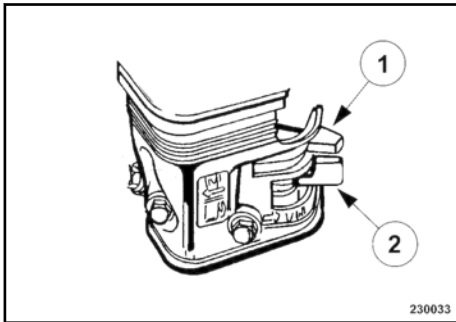


Fig. 11

■ Choke lever (1)

Position "Left"	Choke closed
Position "Right"	Choke open

■ Fuel valve (2)

Position "Left"	Fuel tap closed.
Position "Right"	Fuel tap open

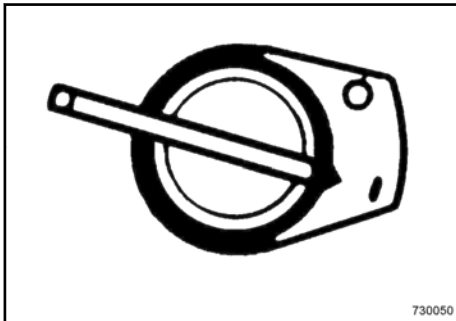


Fig. 12

■ Ignition switch

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

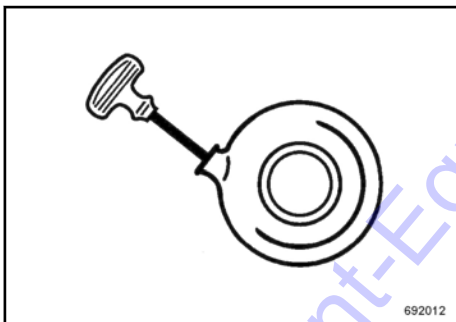


Fig. 13

■ Recoil starter

Display and control elements

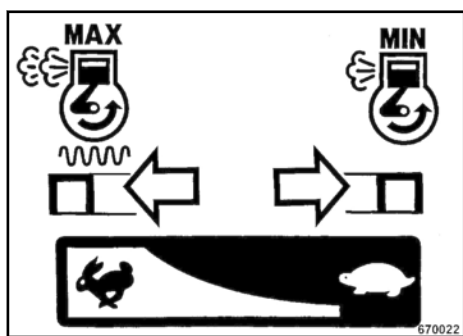


Fig. 14

- Throttle lever

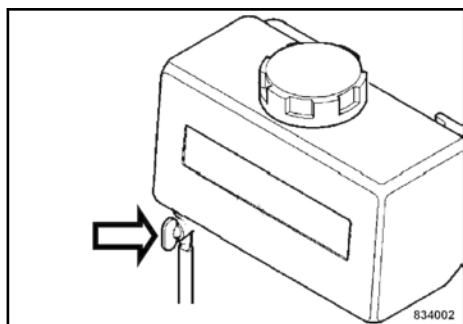


Fig. 15

- Shut-off tap for water sprinkling system Optional equipment

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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.

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5.2 Tests before taking into operation

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

**WARNING!****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.

Cleaning the machine.

Check:

condition of engine and machine

fuel tank and fuel lines for leaks

screw joints for tight fit



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. Optional equipment

5.3 Mounting the steering bow

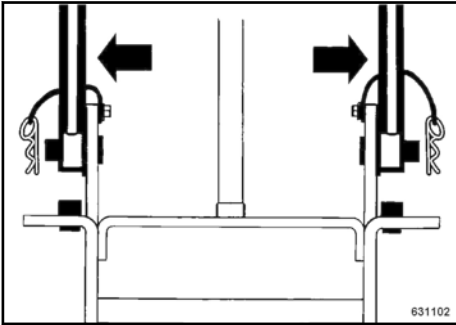


Fig. 16

Force the steering bow ↗ Fig. 16 apart and plug it onto the bracket.

After attaching the steering bow secure on both sides with spring-type cotter pins.

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5.4 Starting the engine

**WARNING!****Exhaust gases are extremely dangerous!**

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

**WARNING!****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.

Before starting check the starter rope for chafing, replace if necessary. A damaged rope can break and cause injuries during starting.

Always hold on to the machine. The machine moves immediately after starting.

Always keep an eye on a running machine.

**WARNING!****Loss of hearing!**

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

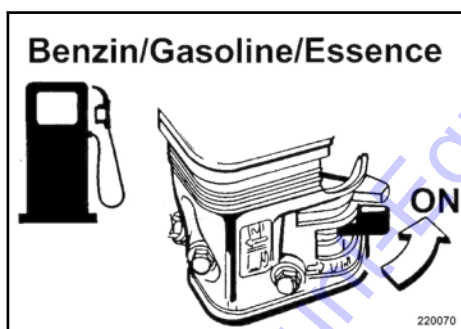


Fig. 17

Open the fuel cock ↗ Fig. 17 by turning in direction of arrow to the end stop.

Operation

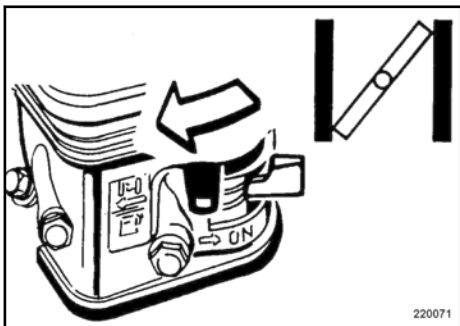


Fig. 18

Close the choke completely by shifting the lever ↵ Fig. 18 in direction of arrow against the end stop.



NOTICE!

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



NOTICE!

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

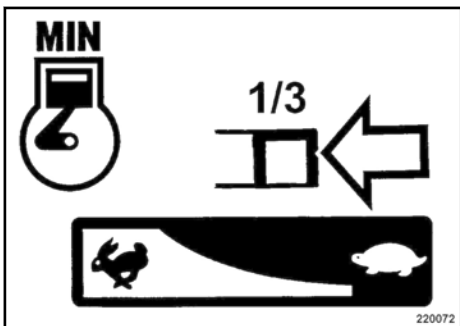


Fig. 19

Set the throttle lever ↵ Fig. 19 to 1/3 throttle position.

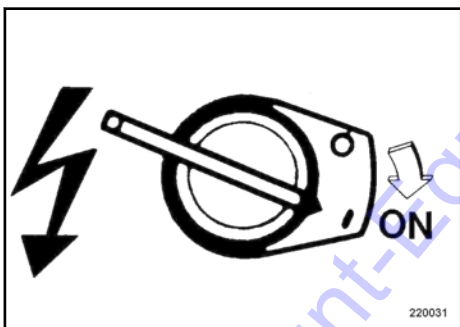


Fig. 20

Turn the ignition switch ↵ Fig. 20 to position "I" (ON).

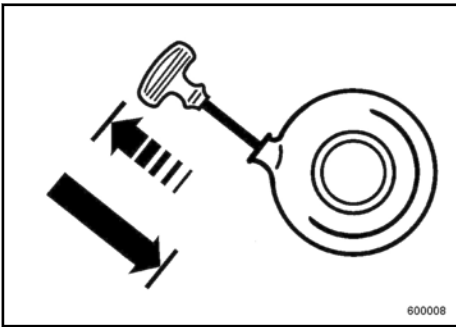


Fig. 21

Slightly pull the starter handle ↩ Fig. 21, until resistance can be felt (compression pressure), but do not pull out completely.

Guide the starter handle back to initial position by hand.

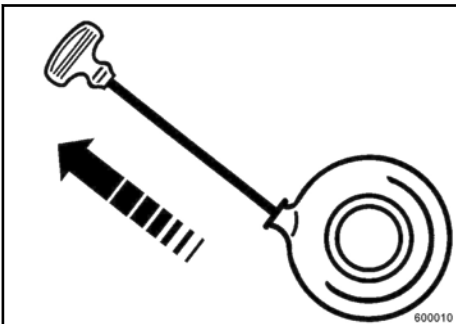


Fig. 22

Pull the rope by the starter handle quickly and powerful as far out as possible ↩ Fig. 22.



NOTICE!

Do not let the starter handle hit back, but guide it back.

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

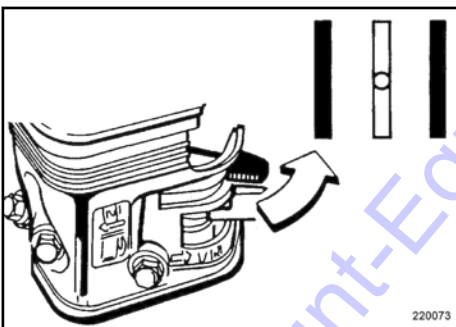


Fig. 23

As the engine warms up open the lever ↩ Fig. 23 of the choke bit by bit.

Operation

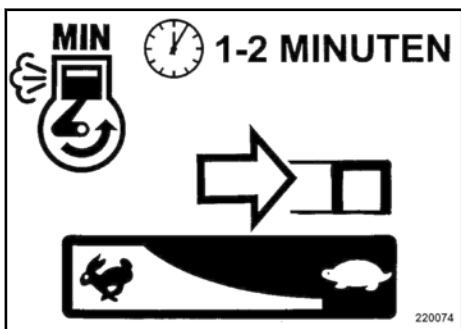



Fig. 24

Move the throttle lever  Fig. 24 back to idle speed position. Run the engine warm for approx. 1 to 2 minutes in idle speed.

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



NOTICE!

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

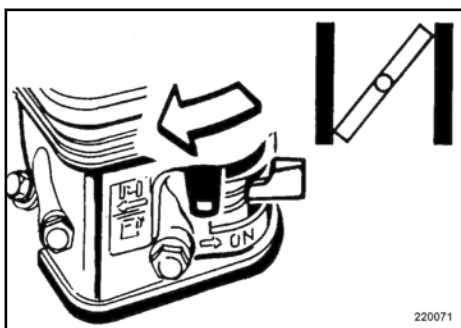



Fig. 25

If the engine stops again after approx. 3 to 5 seconds, close the choke again with the lever  Fig. 25 and repeat the starting process.

Engine "drowned"



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.



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.

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5.5 Work/operation

**WARNING!****Danger of accident!**

Steer the vibratory plate only by the steering handle.

**NOTICE!**

Operate the vibratory plate only with full engine speed, as otherwise the centrifugal clutch will be destroyed.

For short breaks you should always return the throttle lever to idle speed position, this avoids premature wear of the centrifugal clutch.

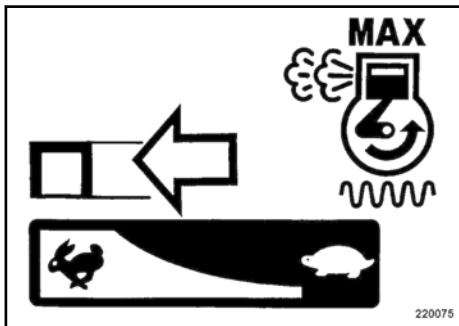


Fig. 26

Shift the throttle lever ↵ Fig. 26 in direction of arrow to full load position.

The vibratory plate works with highest frequency.

5.6 Switching on the water sprinkling system^{Optional equipment}

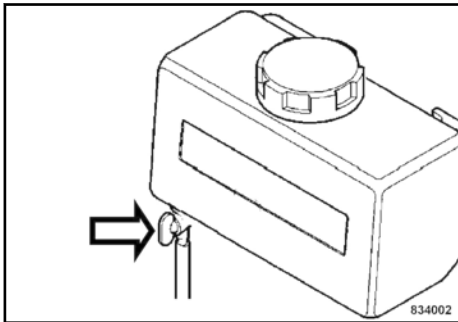


Fig. 27

Set the handle of the shut-off valve ↪ Fig. 27 in flow direction.

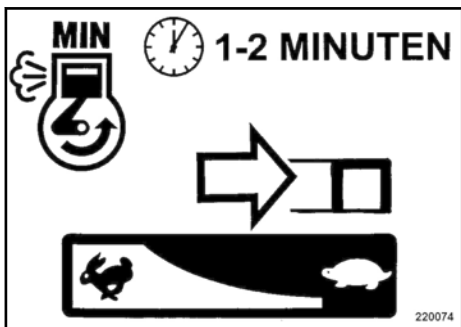
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5.7 Switching the motor off



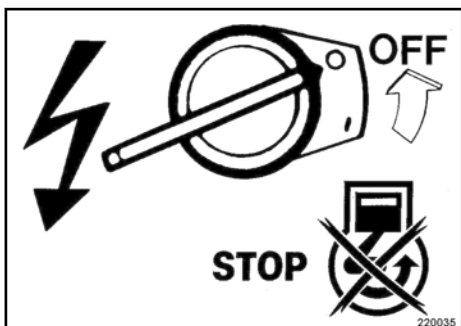
NOTICE!

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



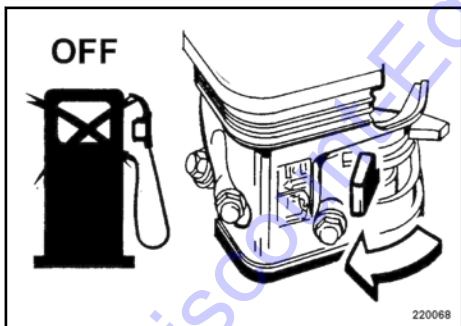
Move the throttle lever ↩ Fig. 28 back to idle speed position.

Fig. 28



Turn the ignition switch to position OFF ↩ Fig. 29, the engine will stop.

Fig. 29



Close the fuel tap ↩ Fig. 30 by turning in direction of arrow.

Fig. 30

5.8 Loading/transport



WARNING!

Danger of accident! Life hazard!

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

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

Loads must only be attached and hoisted by an expert (capable person).

For lifting the machine attach the lifting gear only to the lifting eye provided for this purpose.

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

Do not lift or lower the machine jerkily.

The tension must always be effective in vertical direction.

The machine must not swing about when being lifted.

Do not step or stand under suspended loads.

Always use suitable lashing gear on the lifting points to lash down the machine.

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

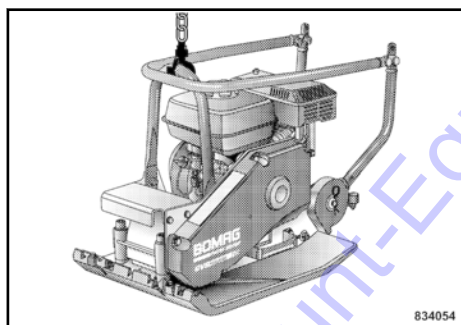


Fig. 31

Always attach the lifting tackle to the lifting eye to load the vibratory plate ↪ Fig. 31 on a transport vehicle.

Lash the vibratory plate down to the transport vehicle, so that it is secured against rolling, sliding and turning over. Fasten the lashing tackle at the marked lashing points.

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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 machine on level ground.

Do not touch hot engine parts.

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.

Keep used filters in a separate waste container and dispose of 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.

When choosing the storage place for fuel make sure that spilled fuel will not harm the environment.

Fresh fuel should not be stored for longer than 3 months, if no fuel stabilizer has been added.

When storing for longer than 3 months:

Directly after buying fresh fuel add the correct amount of fuel stabilizer to the fuel (follow the instructions of the manufacturer).

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 our customer service 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 our customer service department.

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6.2 Fuels and lubricants

Engine oil

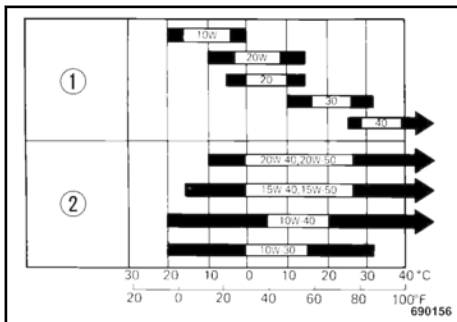


Fig. 32

Oil viscosity

Choose the oil viscosity in dependence on the ambient temperature at the operating location of the engine (see diagram).

SAE 10W-30 is recommended for general use under any temperature. When using single purpose oil you must choose the correct viscosity for the average temperature in the area of use.

Occasional falling short of the temperature limit (e.g. use of SAE 15W-40 down to -15 °C (+5 °F)) 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/SG or higher.

Lubrication oil change intervals

6 months or 100 operating hours



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.

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.

Fuel stabilizer

If the machine is only occasionally used (i.e. if it is out of use for longer than 4 weeks), mix in the correct amount of fuel stabilizer (BOMSAG 009 940 20) directly after you have purchased fresh fuel (follow the instructions of the manufacturer). The fuel stabilizer has a limited shelf life. The effect diminishes over the course of time (store for max. 2 years after opening the bottle).

Fuel cannot be regenerated by using fuel stabilizer.

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Maintenance

6.3 Table of fuels and lubricants

Assembly	Fuel or lubricant		Quantity approx.
	Summer	Winter	
			Attention! Observe the level marks
Motor			
- Engine oil	Engine oil API SF or SG		0.6 l (0.16 USgal) to oil level mark
	SAE 10W-30 (-20 °C to +30 °C) (-4 °F to +86 °F)		
	SAE 10W-40 (-20 °C to +40 °C) (-4 °F to +104 °F)		
	SAE 15W-40 (-15 °C to +40 °C) (+5 °F to +104 °F)		
	SAE 30 (+10 °C to +30 °C) (+50 °F to +86 °F)	SAE 10W (-20 °C to 0 °C) (-4 °F to +32 °F)	
	SAE 40 (+25 °C to +45 °C) (+77 °F to +113 °F)	SAE 20W (-10 °C to +10 °C) (+14 °F to +50 °F)	
- Fuel	Gasoline (unleaded)		BVP 10/36: 2.5 l (0.7 USgal) BVP 18/45: 3.6 l (1.0 USgal)
Water tank	Water	Water with anti-freeze agent	7.0 l (1.8 USgal)
Vibrator shaft housing	as engine oil		0.25 l (0.07 USgal)

6.4 Running-in instructions

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

**NOTICE!**

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 the vibration drive V-belts.

Check the oil level in the vibrator housing.

6.5 Maintenance table

No.	Maintenance works	Page
Maintenance every day		
6.6.1	Cleaning the machine	51
6.6.2	Check the engine oil level	51
6.6.3	Check the fuel level	52
6.6.4	Filling the water tank <small>Optional equipment</small>	53
Weekly maintenance		
6.7.1	Check, clean the air filter	54
Maintenance every month		
6.8.1	Clean the cooling fins and the cooling air intake openings	56
Maintenance every 6 months		
6.9.1	Change the engine oil	57
6.9.2	Check, clean the spark plug, replace if necessary	58
6.9.3	Clean the slurry filter	59
6.9.4	Checking the oil level in the vibrator housing	60
6.9.5	Checking the V-belt, tightening, replacing if necessary	60
Annual maintenance		
6.10.1	Check, adjust the valve clearance	62
6.10.2	Cleaning the fuel screen	63
6.10.3	Replacing the starter rope	65
6.10.4	Change the oil in the exciter housing	66
6.10.5	Check the rubber buffers	68
As required		
6.11.1	Change the air filter	69
6.11.2	Flushing the water sprinkler system <small>Optional equipment</small>	70
6.11.3	Tightening the screws	70
6.11.4	Engine conservation	70

6.6 Maintenance every day

6.6.1 Cleaning the machine

**NOTICE!**

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.

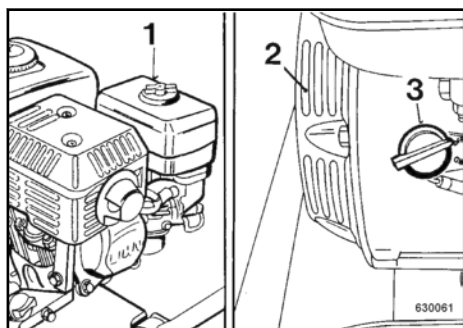


Fig. 33

**NOTICE!**

Do not guide the water jet directly into air filter/carburettor (1) ↘ Fig. 33, starter/air intake (2) and the ignition switch (3).

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

6.6.2 Check the engine oil level

**NOTICE!**

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".

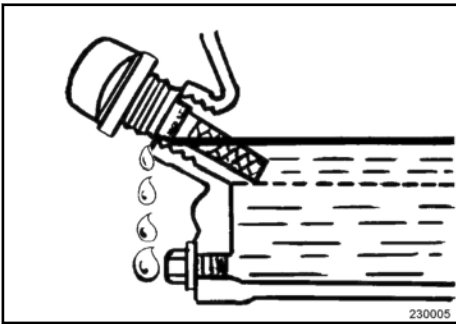



Fig. 34

6.6.3 Check the fuel level

Shut down the engine.

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 screw 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.



WARNING!

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.



WARNING!

Health hazard!

Do not inhale any fuel fumes.



NOTICE!

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.

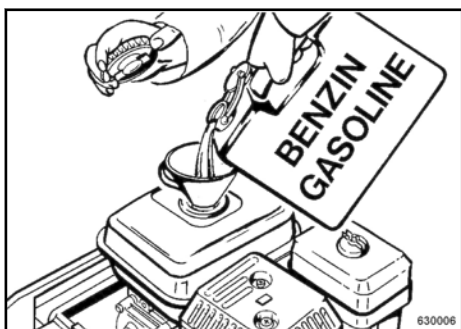


Fig. 35

Clean the area around the filler cover, unscrew the filler cover ↪ Fig. 35.

Fill in fuel through a funnel with screen.

Close the tank again.

6.6.4 Filling the water tank Optional equipment



NOTICE!

Dirty or contaminated water can block the nozzles!

Fill only with clean water.

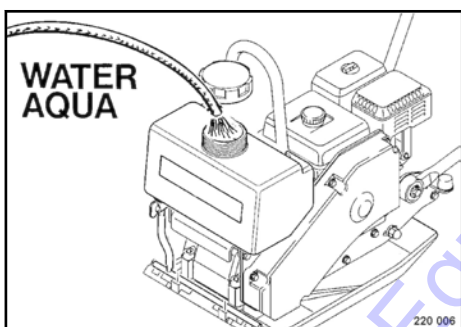


Fig. 36

Open the water tank ↪ Fig. 36 and fill in clean water.

6.7 Weekly maintenance

6.7.1 Check, clean the air filter



WARNING!

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



NOTICE!

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.

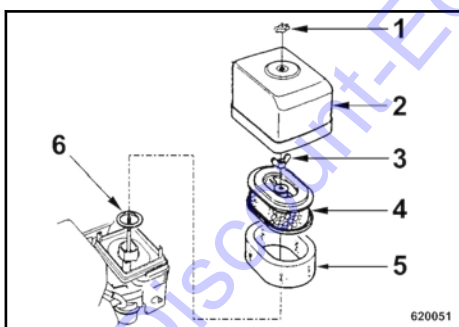


Fig. 37

Unscrew wing nut (1) 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.



NOTICE!

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

Visual inspection/cleaning

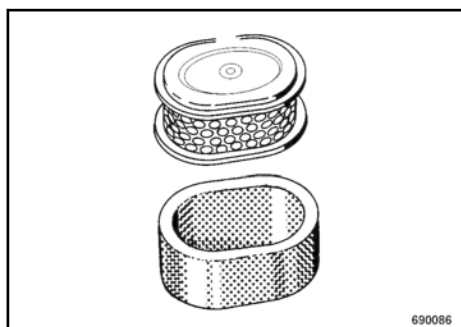


Fig. 38

Separate the foam rubber and paper elements of the air filter ↪ Fig. 38.

Examine both thoroughly for perforations and cracks and replace if damaged.



WARNING!

Danger of injury!

Always wear protective clothes (goggles, gloves) when working with compressed air.

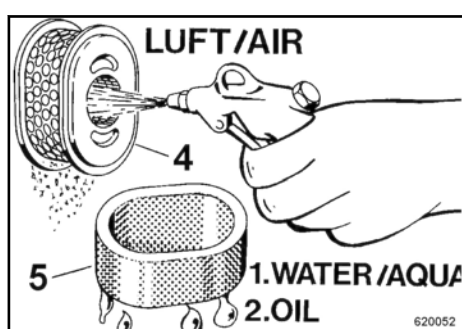


Fig. 39

Clean the paper insert (4) ↪ Fig. 39 carefully by light banging or blow it carefully out from inside to outside with dry, clean compressed air (max. 2 bar (29 psi)).

In case of excessive dirt replace the paper element.

Clean the foam rubber 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.

Insert the air filter:



NOTICE!

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

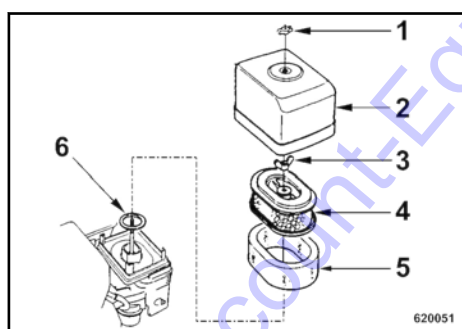


Fig. 40

Pull the foam rubber element (5) over the paper element (4).

Insert the air filter correctly and tighten it with the wing nut (3).

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

6.8 Maintenance every month

6.8.1 Clean the cooling fins and the cooling air intake openings

**WARNING!****Danger of injury!**

Always wear protective clothes (goggles, gloves) when working with compressed air.

**NOTICE!**

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.

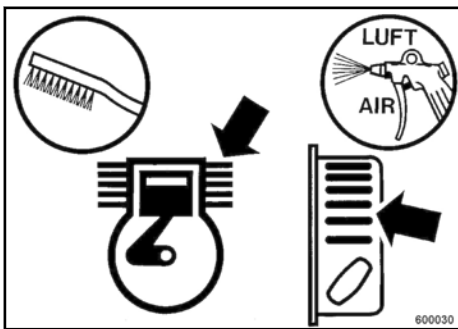


Fig. 41

Loosen dried on dirt with a suitable brush ↘ Fig. 41 from all cooling fins and cooling air intake openings and blow it off with compressed air .

**WARNING!****Fire hazard!**

Do not use any inflammable solvents.

**NOTICE!**

Do not guide the water jet directly into the cooling air openings of the recoil starter, into the 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.

**NOTICE!**

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

6.9 Maintenance every 6 months

6.9.1 Change the engine oil

i Perform this maintenance work at the latest after 100 operating hours



WARNING!

Danger of scalding when draining off hot engine oil.



NOTICE!

Drain the engine oil only when the engine is warm.

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.



Tilt the machine towards the guide handle.

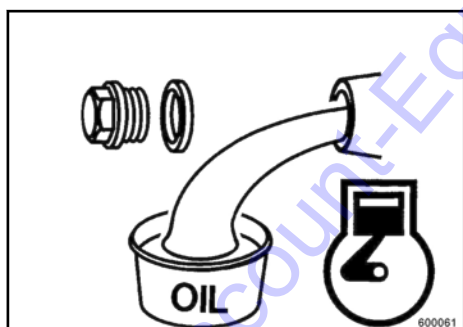


Fig. 42

Unscrew the oil drain plug ↪ Fig. 42, let the old oil run out and catch it.

Turn the oil drain plug back in with a new seal ring.

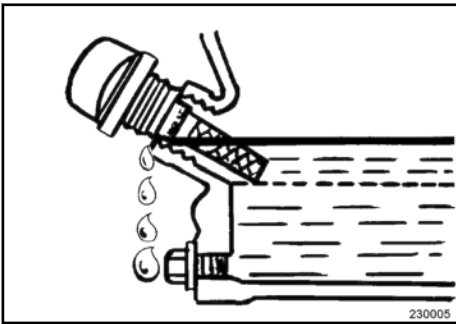


Fig. 43

Position the engine horizontally and unscrew the oil dipstick ↪ Fig. 43.

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.

6.9.2 Check, clean the spark plug, replace if necessary



WARNING!

Danger of burning!

Let the engine cool down before unscrewing the spark plug.



NOTICE!

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

Do not use spark plugs with incorrect heat value. An incorrect spark plug can cause damage to the engine.

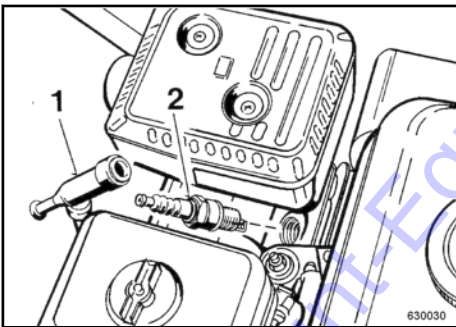


Fig. 44

Pull off the spark plug socket (1) ↪ Fig. 44 and unscrew the spark plug (2).

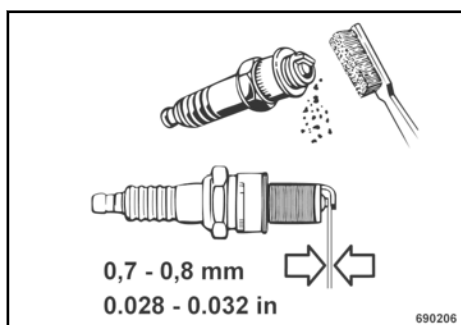


Fig. 45

Check the spark plug ↗ Fig. 45 visually and clean it if necessary.

Check the electrode gap with a feeler gauge, if necessary adjust the gap to 0.7 - 0.8 mm (0.028 - 0.032 in).

Turn the spark plug carefully in by hand.

Once the sealing surface of the new spark plug is in contact tighten for another 1/2 turn with the spark plug spanner.

Once the sealing surface of the used spark plug is in contact tighten for another 1/8 to 1/4 turn with the spark plug spanner.



NOTICE!

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

6.9.3 Clean the slurry filter



WARNING!

Fire hazard!

Gasoline is easily inflammable, do not spill.

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



WARNING!

Health hazard!

Do not inhale any fuel fumes.

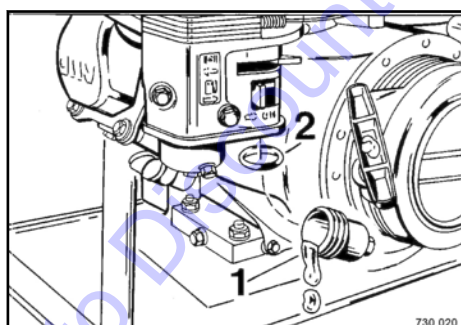


Fig. 46

With the fuel tap closed unscrew the fuel sludge filter (1) ↗ Fig. 46 and wash out in fuel.

Check the O-ring (2) for damage, replace if necessary.

Turn the fuel sludge filter in tightly and mind the O-ring.

6.9.4 Checking the oil level in the vibrator housing



Park the machine on level ground.

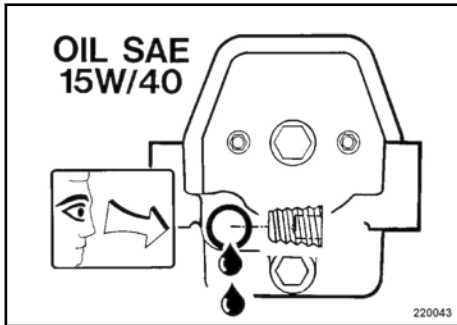


Fig. 47

Unscrew the screw ↪ Fig. 47 and check the oil level.

The oil level must reach the lower edge of the bore, top up oil if necessary.

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

Screw the drain plug tightly back in.

6.9.5 Checking the V-belt, tightening, replacing if necessary

Checking the V-belt

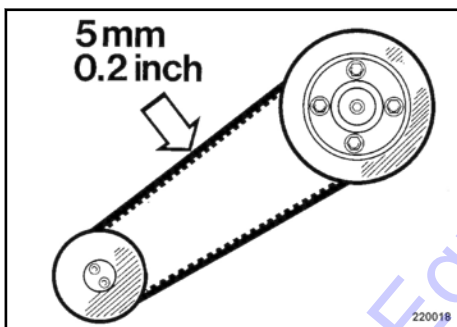


Fig. 48

Remove the V-belt guard.

Check the condition and tension of the V-belt, replace the V-belt if damaged.

Compression measurement approx. 5 mm ↪ Fig. 48.

Changing the V-belt

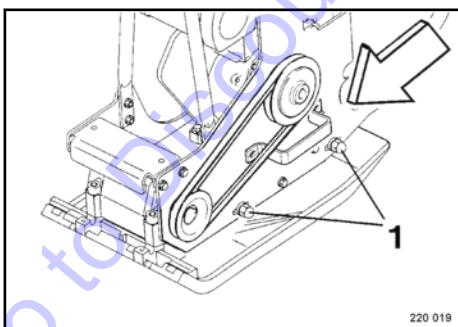


Fig. 49

Slightly loosen two fastening screws (1) ↪ Fig. 49 on both sides of the engine carrier.

Push the motor carrier forward and take the V-belt off.

Install the new V-belt.

Tightening the V-belt

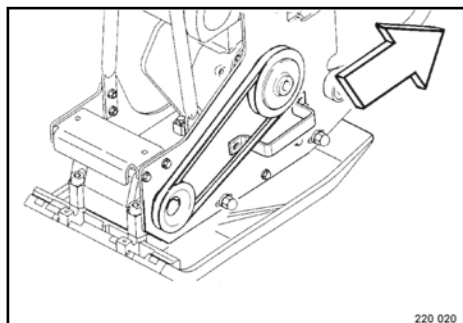


Fig. 50

Pull the engine carrier back ↵ Fig. 50 until the correct V-belt tension is achieved and tighten the four fastening screws.

Assemble the V-belt guard.



NOTICE!

Check the V-belt tension again after a running time of approx. 25 operating hours, retighten if necessary.

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6.10 Annual maintenance

6.10.1 Check, adjust the valve clearance



Perform this maintenance work at the latest after 300 operating hours



NOTICE!

We recommend to have this work carried out by trained personnel or our after sales service.

Check and adjust only when the engine is cold (approx. 20 °C (68 °F)).

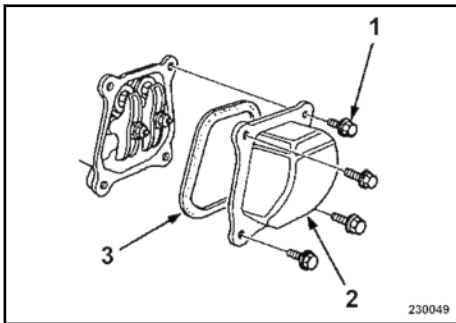


Fig. 51

Loosen the screws (1) ↗ Fig. 51 and take off the valve cover (2) with gasket (3).

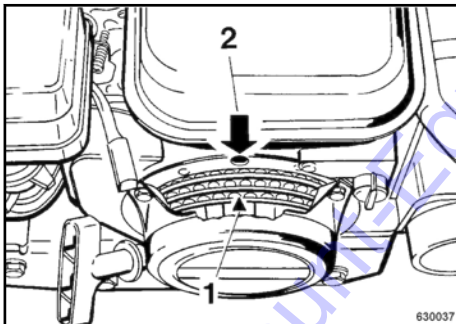


Fig. 52

Set the piston to top dead centre position of the compression stroke.

For this purpose align the alignment mark (1) ↗ Fig. 52 on the starter disc to the top bore (2).

Check the valve clearance

Valve clearance:

Intake valve = 0.15 mm (0.006 in)

Exhaust valve = 0.20 mm (0.008 in)

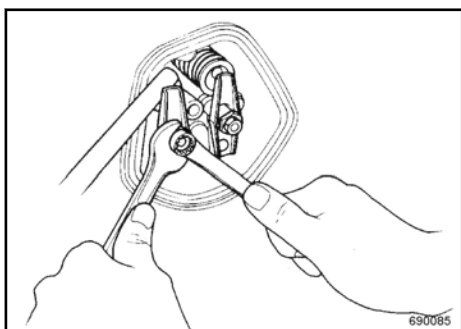


Fig. 53

Check the valve clearance with a feeler gauge on both valves
 ↪ Fig. 53.

Adjust the valve clearance

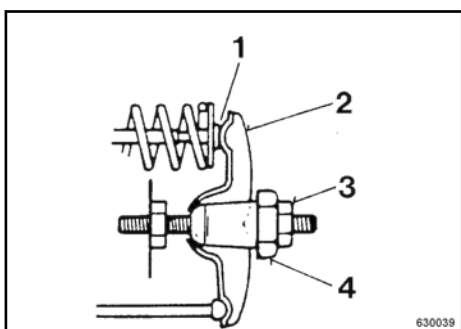


Fig. 54

Hold hexagon nut (4) ↪ Fig. 54 on the rocker lever and loosen counter nut (3).

Adjust hexagon nut on the rocker arm so that the feeler gauge fits between rocker arm (2) and valve shaft (1) with noticeable resistance after retightening counter nut.

Install the valve cover with a new gasket and tighten the screws evenly.

6.10.2 Cleaning the fuel screen



WARNING!

Fire hazard! Danger of burning!

Gasoline is easily inflammable, do not spill.

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

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



WARNING!

Health hazard!

Do not inhale any fuel fumes.

Maintenance

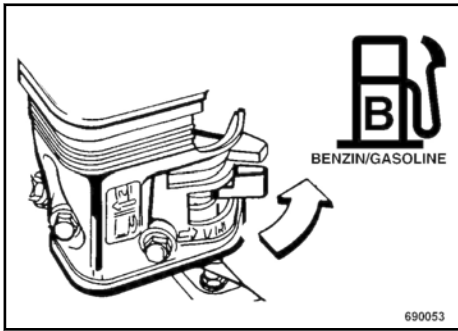


Fig. 55

Open the fuel tap ↺ Fig. 55 by turning in direction of arrow.



ENVIRONMENT!

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

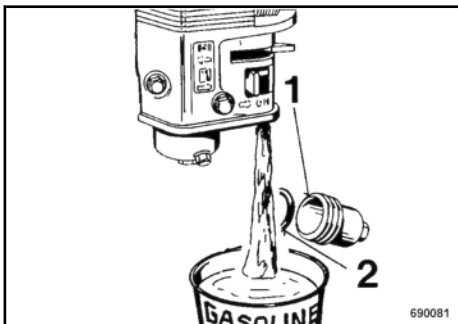


Fig. 56

Unscrew the sediment filter (1) ↺ Fig. 56, drain off and catch all fuel.

Check the seal (2) for damage, change if necessary.

Screw the sediment filter with sealing ring in tightly.

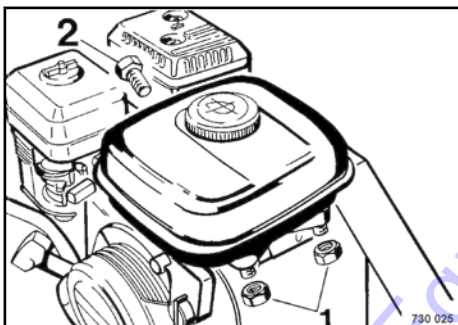


Fig. 57

Unscrew the hexagon nut (1) ↺ Fig. 57 and the hexagon screw (2) and take off the fuel tank.

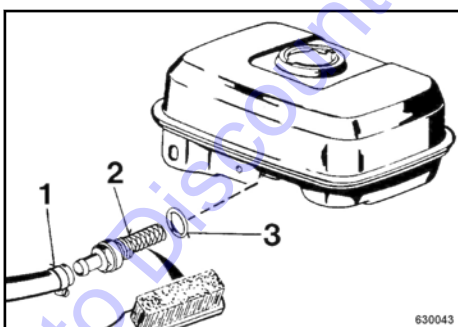


Fig. 58

Open the hose clamp (1) ↺ Fig. 58 and pull off the hose.

Unscrew fuel screen (2).

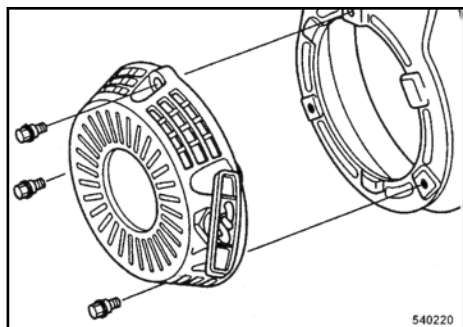
Clean the fuel screen, check the condition of the screen (holes), replace if necessary.

Check the seal (3), replace if necessary.

Turn the fuel screen filter tightly in with the seal.

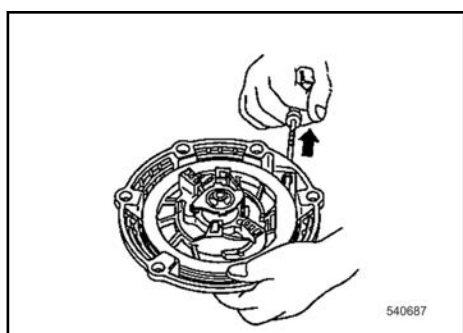
Fasten the hose and reassemble the fuel tank.

6.10.3 Replacing the starter rope



Disassemble the recoil starter from the engine housing
 ↪ Fig. 59.

Fig. 59



Pull the starter rope completely out by the starter handle
 ↪ Fig. 60.

Fig. 60

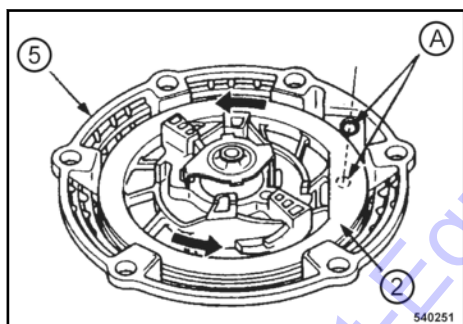


Fig. 61

If the starter rope has been torn or the coil has been turned back:

Before assembling the rope turn the coil (2) ↪ Fig. 61 5 revolutions in anti-clockwise direction and align the rope openings on coil and housing (5) to match (A).

Maintenance

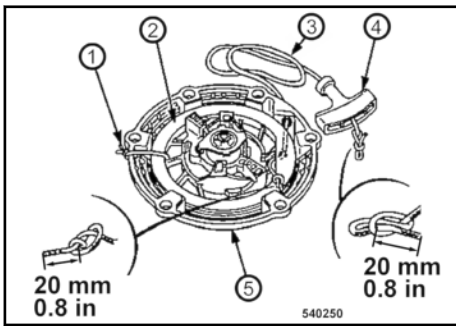


Fig. 62

Secure the coil (2) ↪ Fig. 62 against winding up. For this purpose fix coil and housing (5) with a cable strap (1).

Loosen the knots in the starter rope at both ends and remove the old starter rope.

Thread in the new starter rope (3) and fix at both ends with knots.

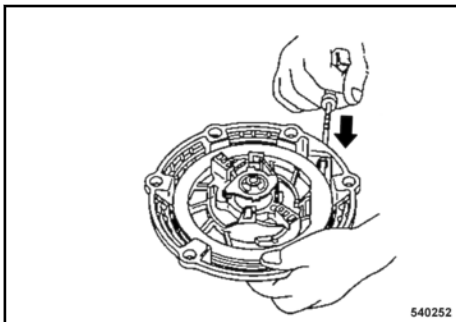


Fig. 63



WARNING!

Danger of injury!

Do not let the starter handle hit back, but guide it back slowly.

Remove the coil fixture and guide the starter handle slowly back to initial position ↪ Fig. 63.

Pull the starter handle to check the function and light movement of the recoil starter.

Mount the recoil starter to the engine housing .

6.10.4 Change the oil in the exciter housing



Perform this maintenance work at the latest after 500 operating hours

Tilt the machine slightly towards the side with the oil drain plug and support it safely.



ENVIRONMENT!

Environmental hazard!

Catch all old oil, do not let it seep into the ground but dispose of environmentally.

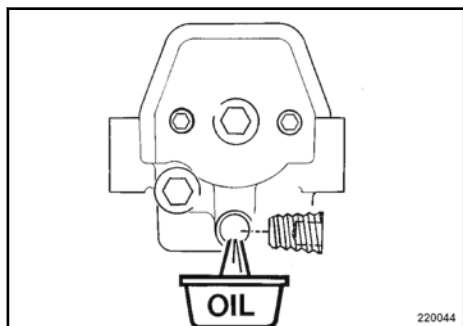


Fig. 64

Unscrew the drain plug ↪ Fig. 64 and catch the old oil.
Screw the drain plug tightly back in.
Stand the machine horizontally.

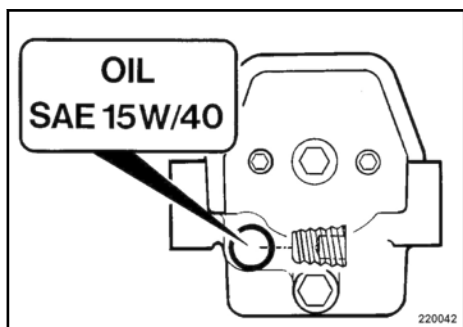


Fig. 65

Unscrew the plug ↪ Fig. 65 and fill with engine oil.

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



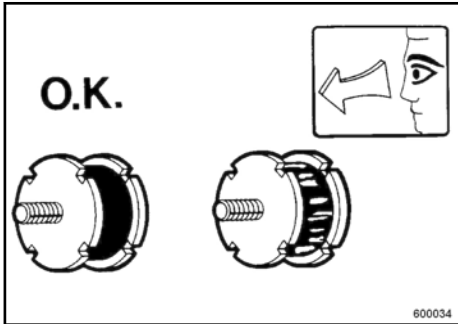
Fig. 66



The oil level must reach the lower edge of the bore ↪ Fig. 66.

Screw the plugs back in ↪ Fig. 65.

6.10.5 Check the rubber buffers



Check all rubber buffers ↪ Fig. 67 for tight fit, cracks and damage and replace immediately if damaged.

Fig. 67

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6.11 As required

6.11.1 Change the air filter

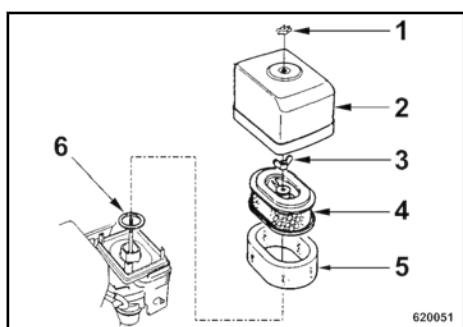


Fig. 68

! NOTICE!

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.

Unscrew wing nut (1) ↗ Fig. 68 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.

! NOTICE!

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).

! NOTICE!

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).

6.11.2 Flushing the water sprinkler system^{Optional equipment}

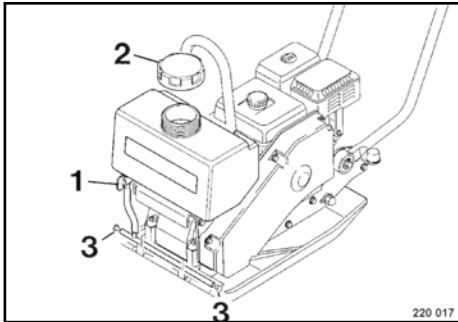



Fig. 69

Remove the cover (2)  Fig. 69 from the water tank and the lateral rubber cap (3) from the sprinkler tube.

Open the shut-off cock (1).

Flush the water tank with a strong water jet, until all dirt has run out.

Press the rubber cap back on.



NOTICE!

In case of frost drain the water tank completely.

6.11.3 Tightening the screws



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

Bolt dimensions	Tightening torques* ft - lb		
	8.8	10.9	12.9
M4	2	3	4
M5	4	7	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. 70

*Strength classes for screws with untreated, non-lubricated 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 $\mu_{\text{total}} = 0.14$.

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

The tightening torques are not applicable when using MoS_2 lubricants.

6.11.4 Engine conservation



WARNING!

Fire hazard!

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



WARNING!

Health hazard!

Do not inhale any fuel fumes.



ENVIRONMENT!

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.

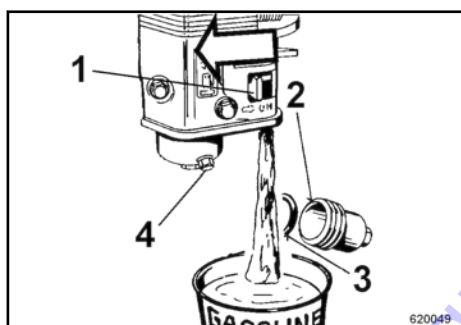


Fig. 71

Open the fuel tap (1) ↷ Fig. 71 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.

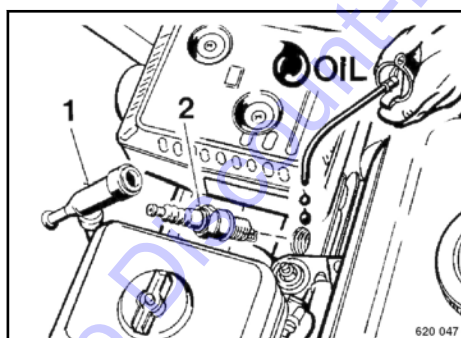


Fig. 72

Pull off the spark plug socket (1) ↷ Fig. 72 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.

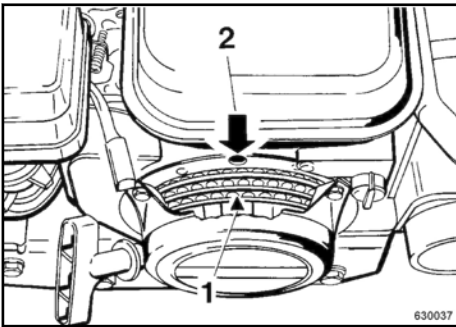


Fig. 73

For this purpose align triangle mark (1) ↺ Fig. 73 on the starter disc to the top bore (2).

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

Cover the engine to protect it against dust and moisture.

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



NOTICE!

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

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7.1 General notes

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 our customer service department.

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7.2 Engine problems

Fault description	Cause	Remedy
Engine does not start	Turn the ignition switch to position "0" (OFF).	Turn the ignition switch to position "I" (ON).
	Engine oil level too low	Check the engine oil level, top up if necessary
	Fuel tap closed.	Open the fuel tap.
	Fuel tank empty	Check the fuel level, top up if necessary.
	Fuel system clogged	Clean the fuel screen in the carburettor
	No ignition spark	Clean, check the spark plug, replace if necessary
	Fuel nozzle clogged	Have examined by a specialist
	Ignition switch defective	Have examined by a specialist
Engine does not crank when operating the starter	Starter defective	Have examined by a specialist
Low engine power	Air filter clogged	Clean the air filter, replace if necessary.
	Throttle control defective	Have examined by a specialist
	Engine defective	Have examined by a specialist
	Carburettor defective	Have examined by a specialist
Engine overheating	Lack of cooling air	Clean air filter and/or engine
Engine stops	Engine oil level too low	Check the engine oil level, top up if necessary
	Fuel tank empty	Check the fuel level, top up if necessary.
	Clean fuel screen in carburettor	Clean the fuel screen in the carburettor
No vibration	Centrifugal clutch defective	Replacing the centrifugal clutch
	V-belt broken	Replacing the V-belt

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Disposal

8.1 Final shut-down of machine

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.



ENVIRONMENT!

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 exciter housing.



WARNING!

Danger of explosion!

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

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Model:	<input type="text"/>
Description:	<input type="text"/>
Part Number:	<input type="text"/>
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