BOMAG

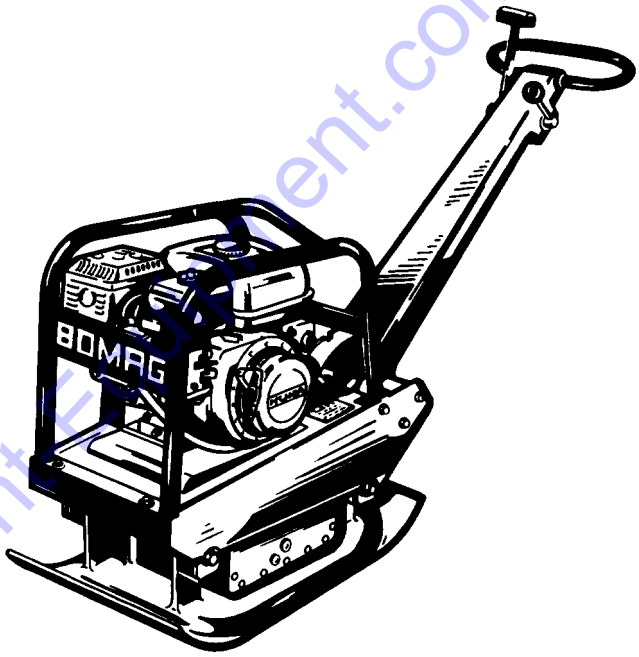
Operating instructions

Maintenance instructions

This manual is in accordance with product liability laws and safety regulations

BPR 25/32 - BPR 25/40

S/N 101 730 00 ..... S/N 101 730 10 .....



CE

Vibratory plate compactor

Catalogue number
008 133 64

05/2002

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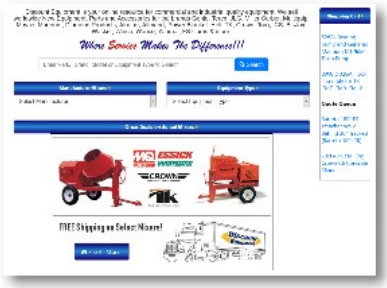

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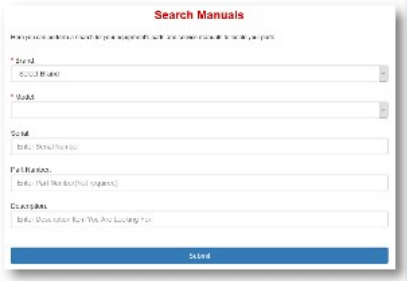

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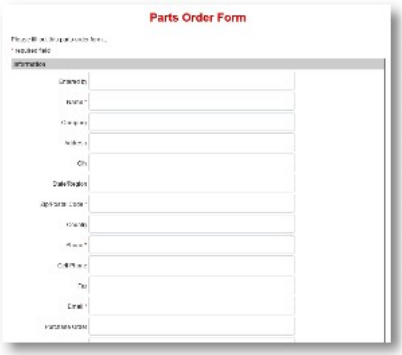

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We sell worldwide for the brands: Genie, Terex, JLG, MultiQuip, Mikasa, Essick, Whiteman, Mayco, Toro Stone, Diamond Products, Generac Magnum, Airman, Haulotte, Barreto, Power Blanket, Nifty Lift, Atlas Copco, Chicago Pneumatic, Allmand, Miller Curber,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

If the machine is equipped with a battery :

CALIFORNIA
Proposition 65 Warning

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.

CE

EC - Declaration of Conformity

as defined by Machinery Directive 98/37/EEC, Annex II A

Herewith we declare that this series production machine

Designation: **Vibratory plate**

Type: **BPR 25/32, BPR 25/40, BPR 25/40 D**

Manufacturer: **BOMAG GmbH & Co. OHG, Boppard**

Serial number: **(see information on type plate)**

complies with the substantial provisions of EEC-Directive:

Machinery:

98/37/EEC

EMC:

89/336/EEC, amended by directive 91/263/ECC + 92/31/ECC + 93/68/ECC

and the harmonized standards:

EN 500-1 and 500-4

A specimen of the above mentioned product has been checked and approved by the committee civil engieneering/testing and certificated under the number: 95441-E .

This EU-declaration of conformity is only valid together with the appropriate scope of delivery of BOMAG GmbH & Co. OHG and clearly visible CE-sign on the machine integrated in the type plate.

Boppard, 05/2002

BOMAG GmbH & Co. OHG

i. V. R. Steinadler

R. Steinadler

Project Manager

BOMAG GmbH & Co. OHG, Industriegebiet Hellerwald, D-56154 Boppard

(GB)

Machines marked with the CE -sign are in accordance with the latest improved safety regulations for the market within the European Union.

For machines to be used outside this area and where these regulations are not binding, BOMAG recommends the application of the same safety standards.

BOMAG machines are products from the wide range of BOMAG compaction equipment. 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.

Using this manual will

- help youto become acquainted with the machine.
- avoidmalfunctions caused by operating errors.

Compliance with the maintenance instructions will

- increasethe reliability of the machine on the site,
- prolongthe lifetime of the machine,
- reducerepair costs and downtime.

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.

You should only operate the machine if you are fully acquainted with the contents of 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.

Furthermore, 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 & Co. OHG

Printed in Germany

Please fill in

. . . . . .

Machine type (Fig. 1)

. . . . . .

Serial No. (Fig. 1 and 2)

. . . . . .

Engine type (Fig. 3)

. . . . . .

Engine No. (Fig. 3)

i 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!

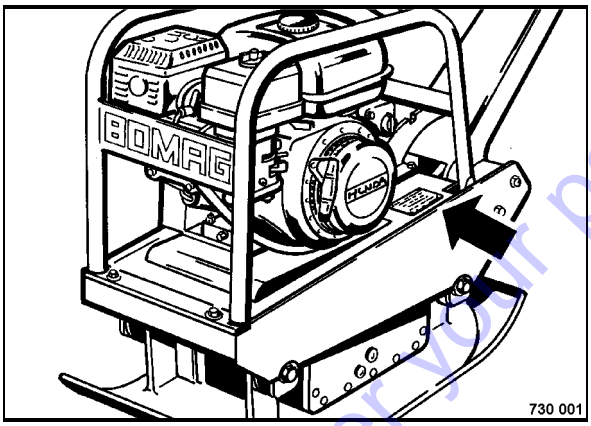

Fig. 1

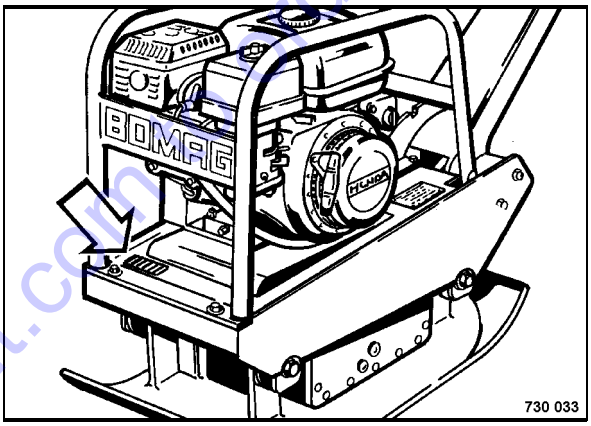

Fig. 2

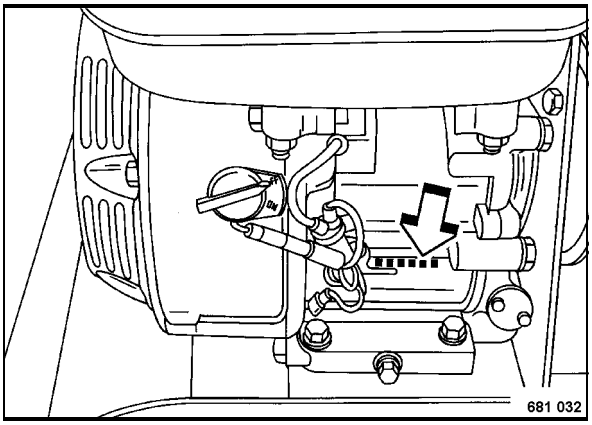

Fig. 3

Table of Contents

1 Technical Data

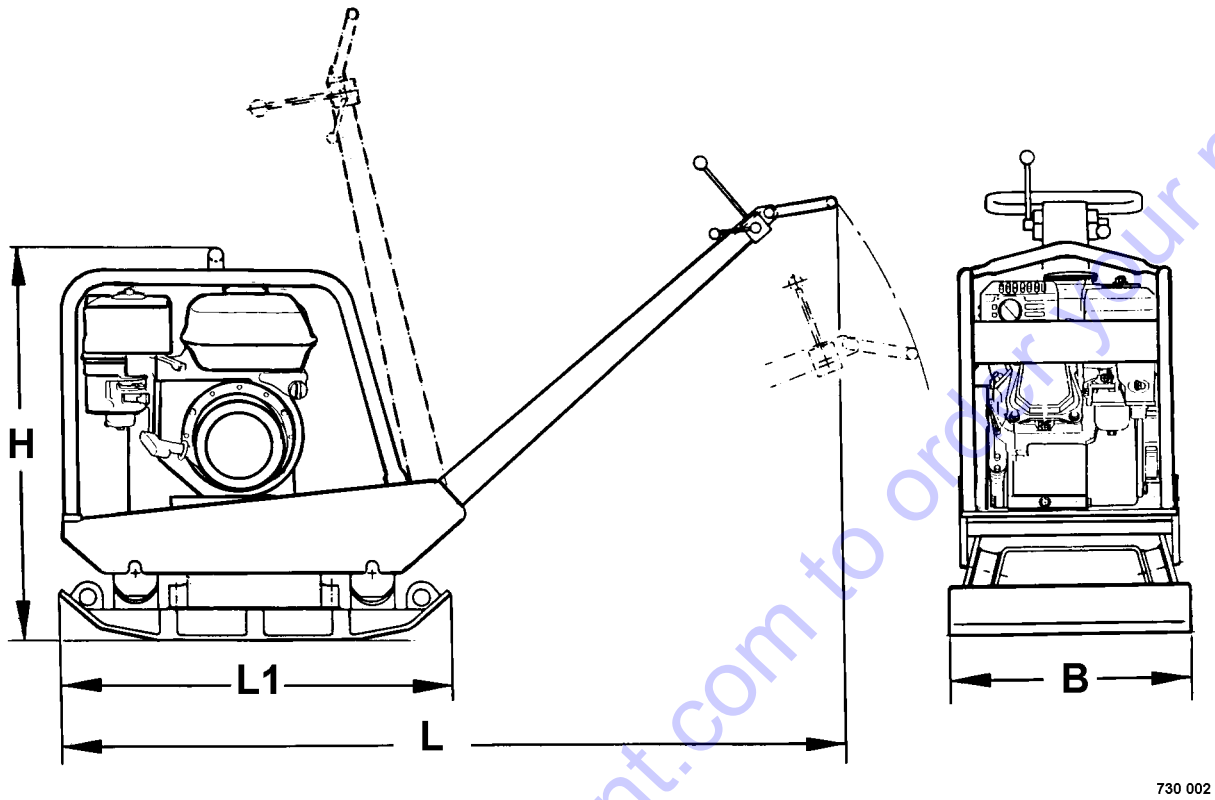

Fig. 4

Dim. mm (inch)	H	L	L_1	W
BPR 25/32	655 (25.79)	1440 (56.7)	760 (29.92)	320 (12.6)
BPR 25/40	655 (25.79)	1440 (56.7)	760 (29.92)	400 (15.7)

*		**BPR 25/32**	**BPR 25/40**
Weights			
Basic weight	kg	117 (258)	121 (266.8)
Operating weight (CECE)	kg	120 (264.6)	124 (273.4)
Area load	kg/m^2	1172	969
Dimensions			
Dimensions		see sketch	
Drive			
Engine manufacturer		Honda	Honda
Type		GX 160 KIV	GX 160 KIV
Cooling		air	air
Working cycles		4-stroke	4-stroke
Number of cylinders		1	1

*		BPR 25/32	BPR 25/40
Rated power DIN 6271 IFN	kW (PS)	4 (5,4)	4(5,4)
Speed	rpm	3600	3600
Rated power SAE J 1349	kW (PS)	4 (5,4)	4(5,4)
Speed	rpm	3600	3600
Starting device		Recoil starter	Recoil starter
Drive system		mechanical	mechanical
Max. working speed	m/min	22	20
Max. gradability	%	30	30
Vibration system			
Frequency 1 or min.	Hz	78	78
Centrifugal force 1	kN	25	25
Filling capacities			
Fuel tank (standard grade gasoline)	l	3,7 (1)	3,7 (1)

* Technical modifications reserved

The following noise and vibration values according to the EC-machine regulation of revision (93/68/EEC) have been measured under typical operating conditions for this machine over a specified travel distance (DIN 45635).

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

Noise values

The sound level according to enclosure 1, paragraph 1.7.4. f of the EC-machine regulation is

Sound pressure level at the place of the operator:

L_{pA} = 91,3 dB(A)

Sound capacity level:

L_{pA} = 104,5 dB(A)

These sound values were determined according to ISO 3744 for the sound capacity level (L_{WA}) and ISO 6081 for sound pressure level (L_{pA}) at the place of the operator.

Vibration values

The vibration values according to enclosure 1, paragraph 2.2 or 3. 6. 3. a of the EC-machine regulation are:

Hand-arm-vibration values

The weighted effective acceleration value determined according to ISO 8662 part 1, DIN 45675, part 9 is 4,5 m/sec^2.

2 Safety regulations

General notes

This BOMAG machine has been built in according to 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 instructions and regulations must obviously also be complied with:

- applicable accident prevention regulations
- generally accepted safety and road traffic regulations
- regulations specific for a country

Intended use

This machine must only be used for:

- the compaction of all types of soil
- repair work on all types of soil
- enforcement of paths and walkways
- work in trenches
- backfills and compaction of hard shoulders

Unintended use

However, dangers may arise from this machine if it is operated by untrained personnel or if it is subject of unintended use.

Who has permission to operate the machine?

Only trained and instructed 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.

Conversions and changes to the machine

For safety reasons unauthorized changes to the machine are not allowed.

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 driving safety. The manufacturer explicitly excludes any liability for damage caused by the use of non-original parts or accessories.

Notes on safety in the operating and maintenance instructions:

⚠ Danger

Paragraphs marked like this highlight possible dangers for persons.

⚠ Caution

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

i Note

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

Safety stickers on the machine

Keep safety stickers in good condition and legible and follow their meaning.

Replace damaged and illegible safety stickers.

Loading the machine

Secure the machine against turning over or slipping off.

Persons are highly endagered if they

- step or stand under loads being lifted,
- the machine must not swing about when being lifted.

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

Starting the machine

Before starting

Familiarize yourself with the equipment, the control elements and the working principle of the machine and your working area.

Use 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 control elements are fully functional
- the machine is free of oily and combustible material
- all handles are free of grease, oils, fuel, dirt, snow and ice.
- Always wear ear defenders when working with the vibratory plate.

Use only machines which are serviced at regular intervals.

For emergency starting take a correct position to the engine and hold the crank handle correctly.

Do not use any starting aids like start pilot or ether.

Starting in closed rooms

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

Operation

The machine must only be operated with the steering rod folded down.

Guide the machine so that you to not hit your hands against any hard obstacles. Danger of injury!

Stop the machine if you notice unusual noises and the development of smoke, detect the cause and have the fault corrected.

Operate the machine only at full engine speed, as otherwise the centrifugal clutch will be damaged.

Never let the machine run unattented.

Parking the machine

Park the machine on level and firm ground.

Before leaving the machine:

- Park the machine so that it cannot tip over,
- shut the engine down and turn the ignition switch to "OFF"-position.

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

Filling the fuel tank

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.

Do not inhale any fuel fumes.

Maintenance work

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

Keep unauthorized persons away from the machine.

Do not perform maintenance work on a running engine.

Park the machine on level and 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

No open fire, do not smoke, do not spill any fuel.

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

Cleaning work

Do not clean the machine while the engine is running.

Do not use gasoline or other 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 air filter and into the air intake.

After maintenance work

After completion of maintenance work reinstall all guards and safety features.

Repair

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!

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 it with insulation material.

3 Operation

3.1 General notes

Please read section 3 Indicators and Control Elements thoroughly before operating the machine if you are not yet fully familiar with the indicators and control elements of the machine.

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

3.2 Inspections before starting operation

⚠ Danger

Loss of hearing!

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

Observe the safety regulations.

Refer also to the detailed description in the maintenance instructions.

- Top up missing lubricants according to the maintenance instructions.
- Park the machine on level ground.
- Check fuel tank and fuel lines for leaks
- Check condition of engine and machine
- Check bolted connections for tight fit
- Check engine oil level
- Check fuel level

3.3 Folding the steering rod down

⚠ Danger

Danger of accident!

Operate the machine only with the steering rod folded down.

Guide the machine only by the steering rod.

The steering rod is elastically suspended in operating position.

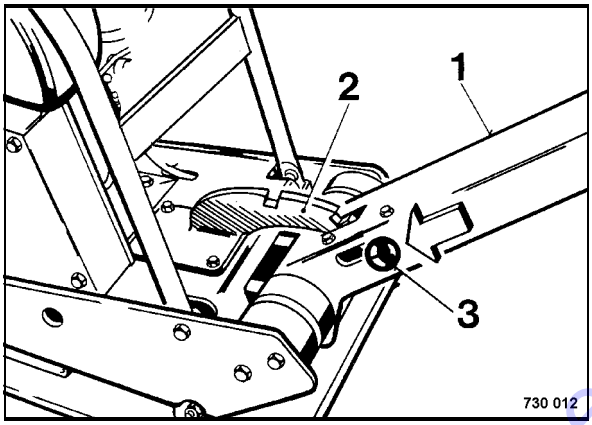

Fig. 5

- Push locking lever 3 (Fig. 5) in direction of arrow and fold the rod down, so that steering rod (1) can swing freely.

3.4 Starting the engine

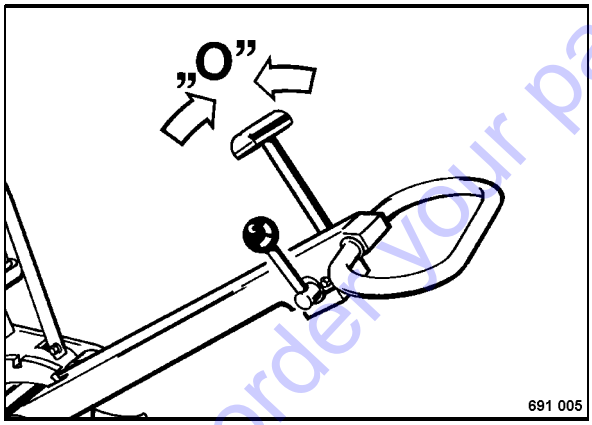

Fig. 6

- Set the travel lever (reversing lever) (Fig. 6) to position '0'.

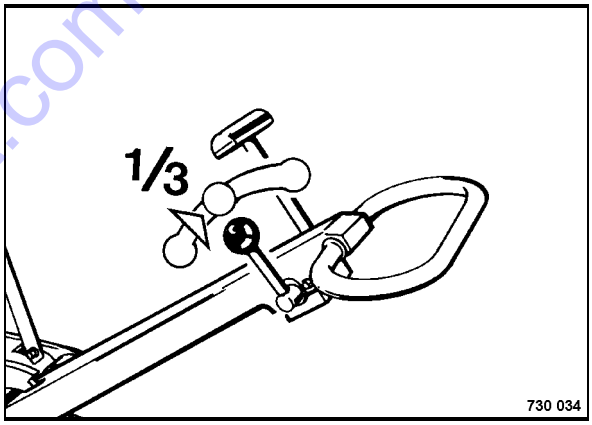

Fig. 7

- Shift throttle lever (Fig. 7) to approx. 1/3 engine speed.

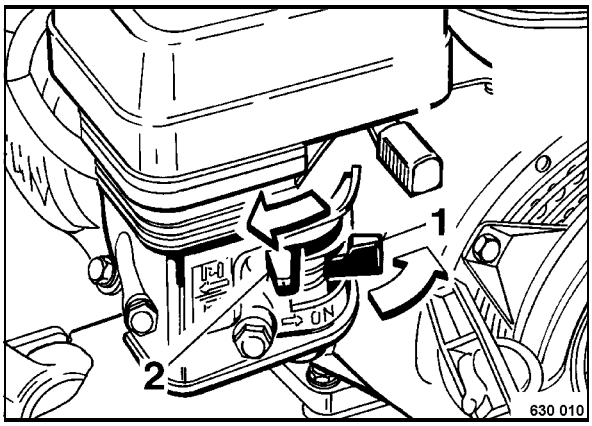

Fig. 8

- Open fuel cock 1 (Fig. 8) completely by turning in direction of arrow.
- Close the choke completely by shifting lever (2) in direction of arrow.

i Note

With warm engine or high ambient temperature do NOT operate chike lever (2).

Also operation position.

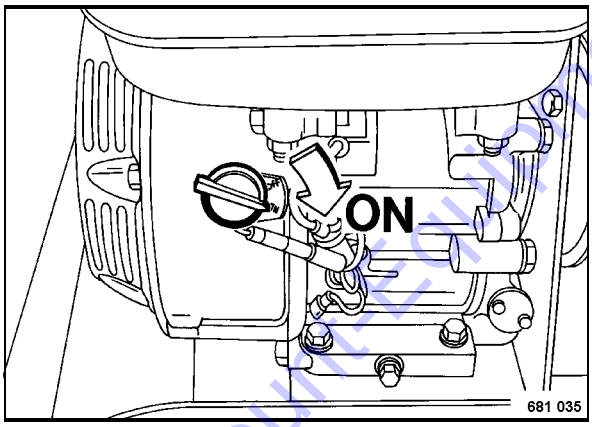

Fig. 9

- Turn ignition switch 1 (Fig. 9) to position "ON".

⚠ Caution

The engine is equipped with a low oil level safety feature. The engine cannot be started if the oil level is too low.

⚠ Danger

Danger of burning!

Use safety gloves when the engine is hot.

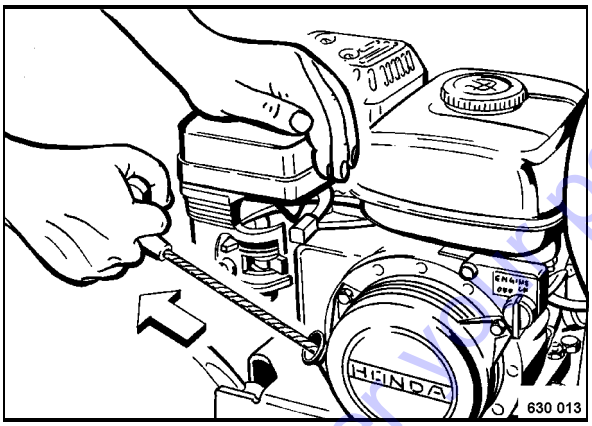

Fig. 10

- Stand in a correct position to the machine.
- Slightly pull the starter handle (Fig. 10), until resistance can be felt (compression pressure), then pull with power, but do not pull the cord out completely.
- Guide the starter rope back by hand.

i Note

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.

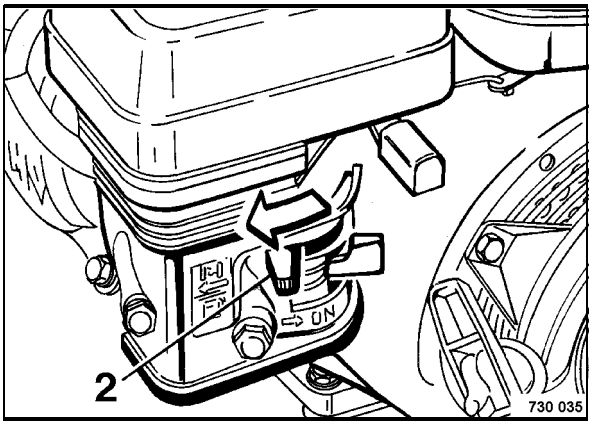

Fig. 11

- If the engine stops again under cold weather conditions after approx. 3 to 5 seconds, close the choke again with lever 2 (Fig. 11) and repeat the starting process.

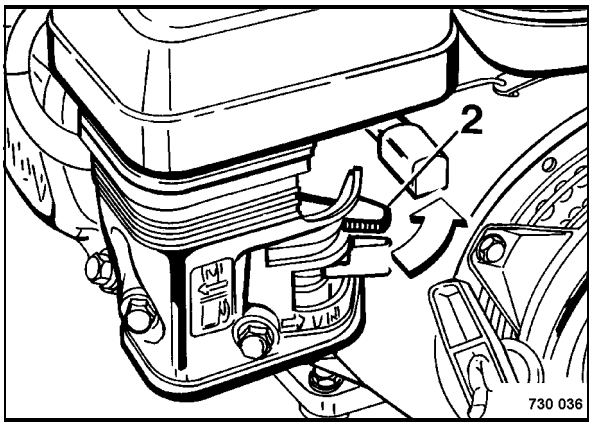

Fig. 12

- Slowly close the choke with lever 2 (Fig. 12) while the engine is warming up.

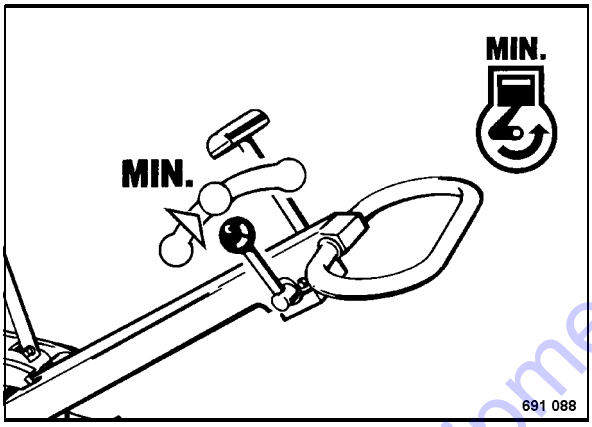

Fig. 13

- Shift the throttle lever (Fig. 13) to idle speed position "MIN".

i Note

Run the engine warm for a short while before starting work.

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

3.5 Work/operation

⚠ Caution

Operate the vibratory plate only with full engine speed, as otherwise the centrifugal clutch may burn.

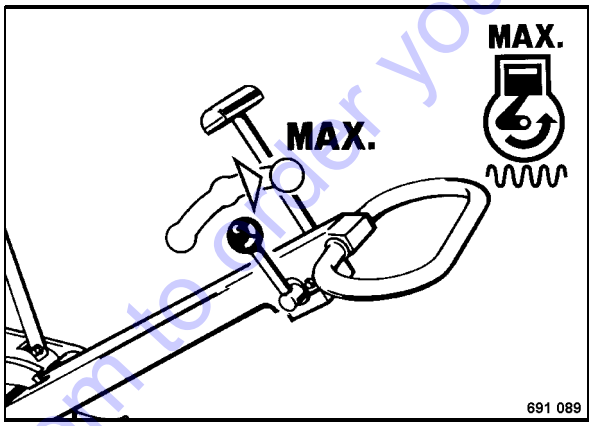

Fig. 14

- Shift the throttle lever (Fig. 14) to position "MAX" (full speed).

i Note

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

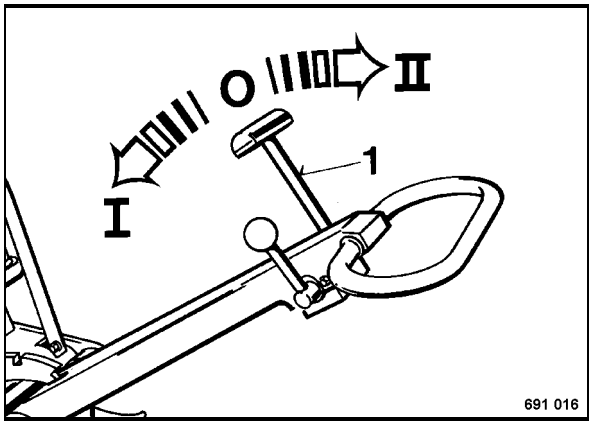

Fig. 15

- Actuate travel lever 1 (Fig. 15) to forward 'I' or reverse 'II', according to the required travel speed.

i Note

The machine vibrates forward or backwards with a speed, which is in accordance with the chosen travel lever position.

⚠ Danger

Danger of accident!

As a measure to avoid injury the machine must only be guided from the side by the steering rod.

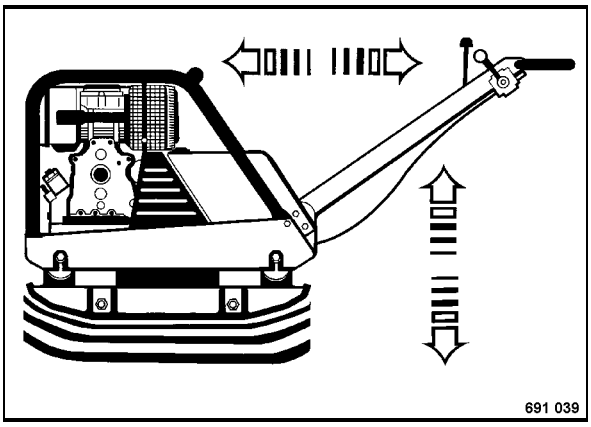

Fig. 16

- The vibratory plate compacts in forward and reverse or on the spot (Fig. 16).

3.6 Vibratory plate getting stuck

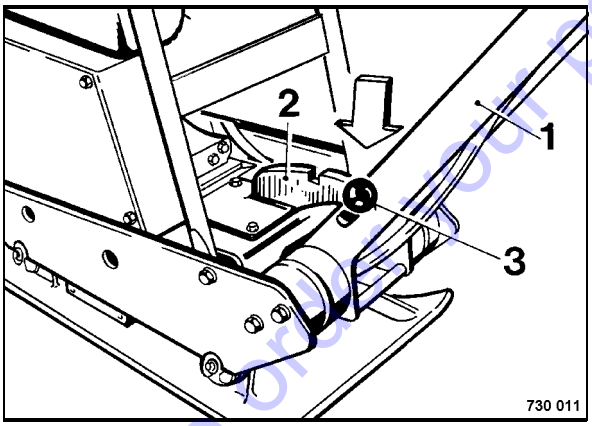

Fig. 17

- Lock steering rod 1 (Fig. 17) with locking lever (3) in the first locking position of notched rail (2).

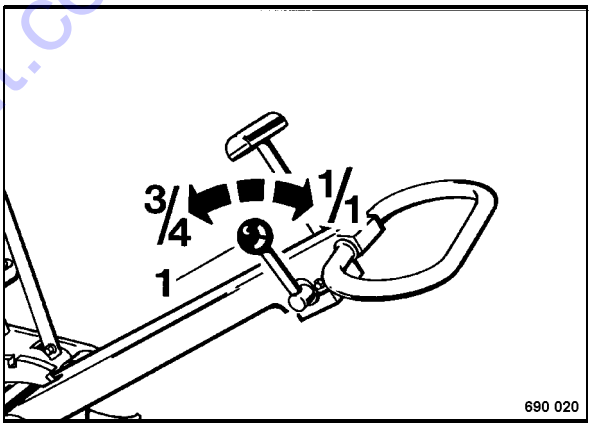

Fig. 18

- Keep moving throttle lever 1 (Fig. 18) between 3/4 and full throttle.
- At the same time pull the vibratory plate by the steering rod to left and right, until it comes free.

3.7 Stopping the engine

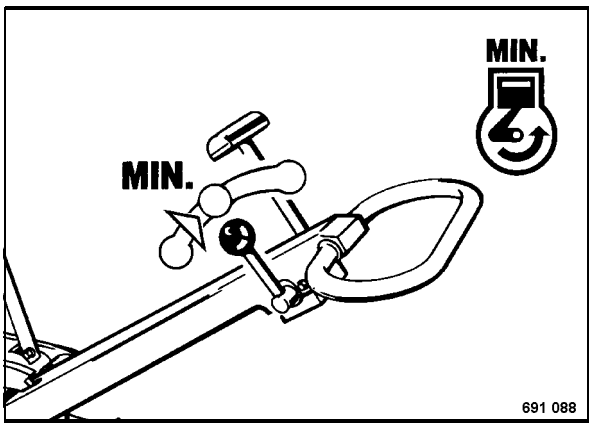

Fig. 19

- Shift the throttle lever (Fig. 19) to position 'MIN.' and let the engine run with idle speed for a short while.
- Vibration is shut down.

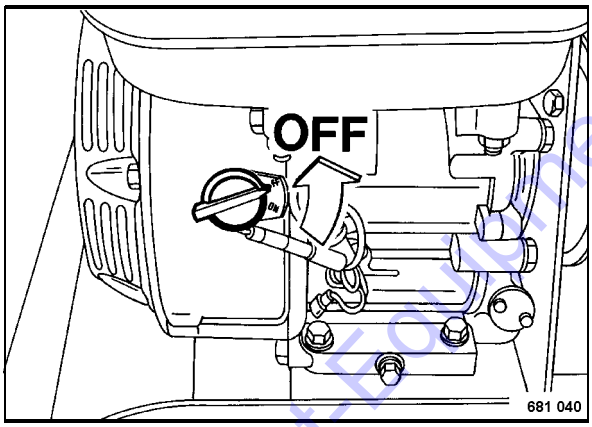

Fig. 20

- Turn the ignition switch to position "OFF" (Fig. 20), the engine will stop.

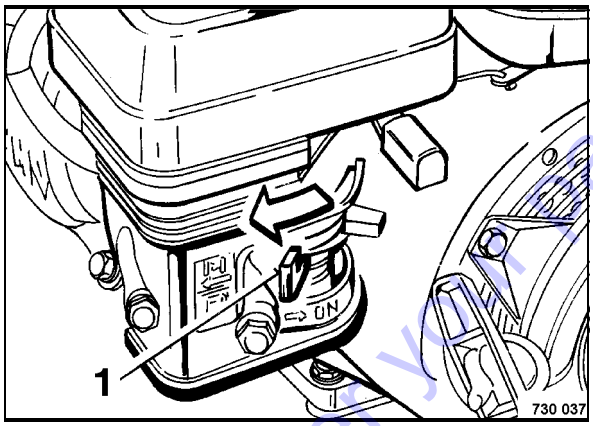

Fig. 21

- Close fuel cock 1 (Fig. 21) by turning in direction of arrow.

3.8 Loading

⚠ 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.

For lifting the machine attach the lifting gear only to the cross strut on the engine protection bow.

The machine must not swing about when being lifted.

Do not step or stand under loads being lifted.

Use only safe lifting gear of sufficient load bearing capacity.

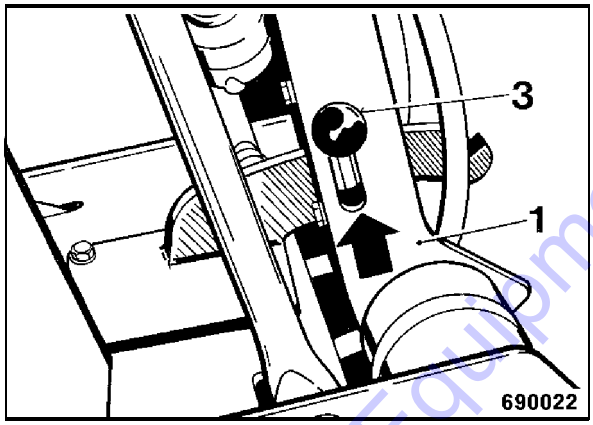

Fig. 22

- Adjust steering rod 1 (Fig. 22) upright and engage locking lever (3) in the notched rail.

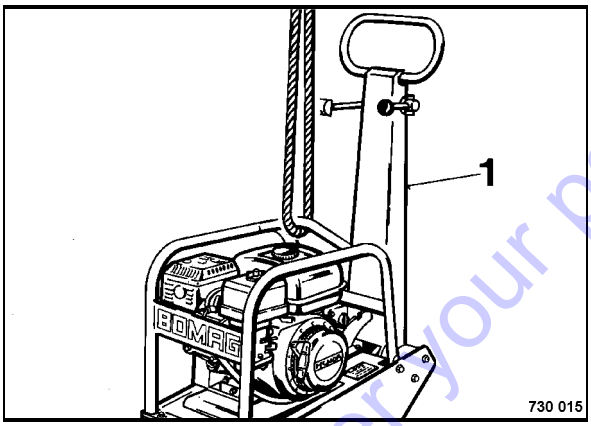

Fig. 23

- Always attach the lifting gear (rope) to the engine protection bow to load the vibratory plate on a transport vehicle.

4 Maintenance

4.1 General notes on maintenance

When performing maintenance work always comply with the appropriate safety regulations.

Thorough maintenance of the machine guarantees far longer safe function 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 generally with the engine stopped.
- During maintenance work catch all oils and fuel environmentally and do not let them seep into the ground or into the sewage system. Dispose of oils and fuel environmentally.

Notes on the fuel system

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

- Keep fuel free of dirt and water, as otherwise the injection components on the engine may be destroyed.
- Zinc lined drums are not at all suitable for the storage of fuel.
- Store used filters in a separate waste container and dispose of environmentally.
- Before drawing out fuel the drum should rest for a longer period of time.
- Under no conditions must the drum be rolled to the filling location just before drawing out fuel.
- Choose the storage location for fuel so that spilled fuel will not cause any damage.
- Do not stir up the sludge at the bottom of the drum with the suction hose.
- Do not draw out fuel directly from the bottom of the drum.
- The fuel rest in the drum is not suitable for the engine and should only be used for cleaning.

Notes on the performance of the engine

On this engine combustion air and fuel injection quantity are perfectly adjusted 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" (in high altitudes) and with full load, you should consult the service department of BOMAG or the service department of the engine manufacturer.

Frequent reasons for failures

- Operating errors
- Wrong, insufficient maintenance

If you are not able to detect and rectify the reason of a fault by following the trouble shooting chart, you should consult our service stations at our branch offices or dealers.

4.2 Fuels and lubricants

Engine oil

For winter operation use only winter-grade engine oil!

To ensure excellent cold starting, the viscosity (SAE-class) of the engine oil must be chosen according to the ambient temperature.

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

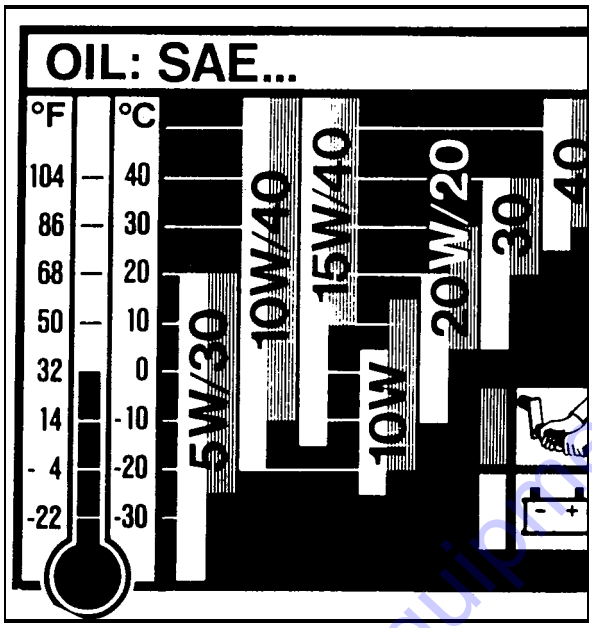

Fig. 24

Lubrication oil of too high viscosity will cause starting difficulties, during winter operation the starting temperature is therefore of highest importance for the selection of the viscosity.

Oil viscosity

Since lubrication oil changes its viscosity with the temperature, the ambient temperature at the operating location (see diagram) of the engine is decisive for the selection of the viscosity class (SAE-class).

Occasional operation below the temperature limit (e.g. use of SAE 15W/40 down to -15 °C) may impair the cold start ability, but does not lead to engine damage.

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

Regular lubrication oil changes

The longest time a lubrication oil filling should remain in the engine is 6 months.

Oil quality

You should preferably use oils of API-quality class CD/SE or CD/SF, SHPD oils or CCMC-D4-D5-PD2 oils. When using oils of API-quality class CC/SE the oil change intervals must be shortened.

Lubrication oil quality classes

The API-classification is used as a characteristic for the oil quality.

The oil manufacturer is solely responsible for the quality classification of a product.

i Note

When changing to a higher alloyed oil quality after a longer operating period, we recommend to perform the first oil change of the higher quality oil after approx. 25 operating temperature.

4.3 Fuels, lubricants and filling capacities

Assemblies	Fuels, Lubricants		Approx. quantity
	Summer	Winter	Attention Observe level marks
Engine	Engine oil API: CD/SE or CD/SF SAE 10W/40 (-20 °C to +30 °C)		0,6 l to oil level mark
	Engine oil SHPD: CCMC-D2-D3-PD1 SAE 15W/40 (-10 °C to +40 °C)		
	SAE 30 (5 °C to 30 °C) SAE 40 (25 °C to 40 °C)	SAE 10 W (-5°C to -30°C) SAE 20W/20 (+10°C to -10°C)	
- Air filter	Engine oil		as required
- Fuel	Gasoline (unleaded or standard grade)		3,7 l
Vibrator shaft housing	Engine oil		0,4 l

4.4 Running-in instructions

For the start-up or new machines of overhauled engines the following maintenance work must be performed:

⚠ Caution

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

Depending on the engine load the oil consumption will drop to its normal level after a running time of 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 for air filter, exhaust silencer, fuel tank and other attachments.
- Tighten the screw connections on the machine.
- Check the vibration drive V-belt, retighten it if necessary.

4.5 Maintenance table

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

Pos.	Description	Note
Maintenance every day		
4.6	Clean machine/engine	
4.7	Check the engine oil level	to bottom edge of filler opening
4.8	Check the fuel level	
4.9	Check/clean the air filter	
Maintenance every month		
4.10	Clean cooling fins and cooling air intake	
4.11	Check the oil level in the vibrator shaft housing	to bottom edge of filler opening
Maintenance every 6 months		
4.12	Change the engine oil	
4.13	Check, clean the spark plug	
4.14	Clean the fuel sludge filter	
4.15	Check, tension, change the V-belt	
Dim. mm (inch)		
4.16	Clean, change the air filter	
4.17	Check, adjust the valve clearance	
4.18	Clean the fuel screen	
4.19	Change the oil in the vibrator shaft housing	
4.20	Check the rubber buffers	
As required		
4.21	Tightening torques for screws with metric unified thread	Observe the tightening torques
4.22	Tighten all bolted connections	
4.23	Engine conservation	

i Note

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

4.6 Cleaning the machine

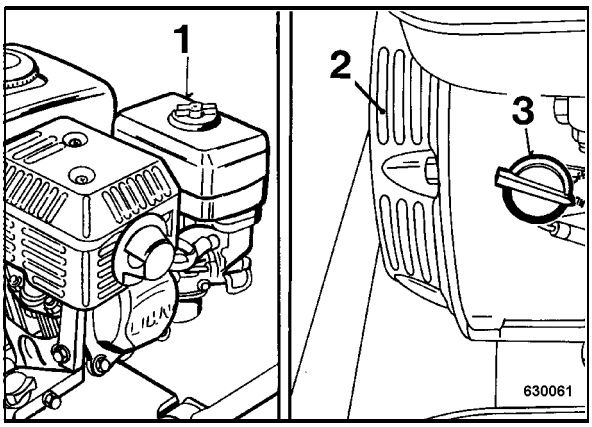

Fig. 25

⚠ Caution

Do not guide the water jet directly into air filter/ carburettor 1 (Fig. 25), starter/air intake (2) and ignition switch (3).

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

4.7 Checking the engine oil level

i Note

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

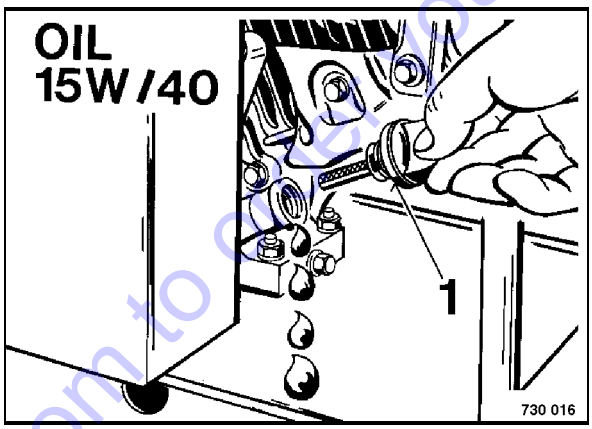

Fig. 26

- Shut the engine down.
- Unscrew the oil filler cap 1 (Fig. 26).
- The oil level must reach up to the bottom edge of the oil filler neck.
- If the oil is below this level top up oil immediately.

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

- Check the oil level again after running the engine for approx. 1 minute.

4.8 Checking the fuel level

⚠ Danger

Fire hazard!

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

Do not refuel in closed rooms.

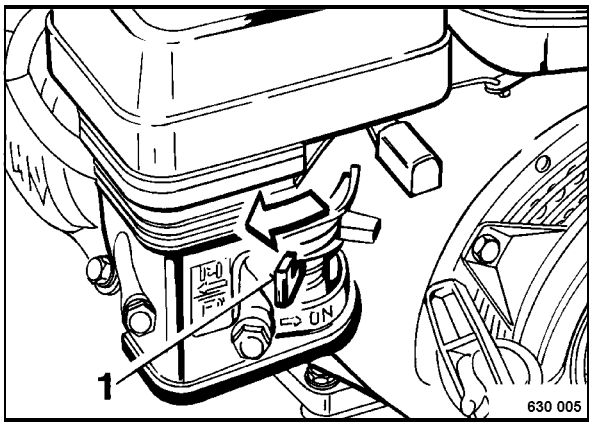

Fig. 27

- Close fuel cock 1 (Fig. 27).

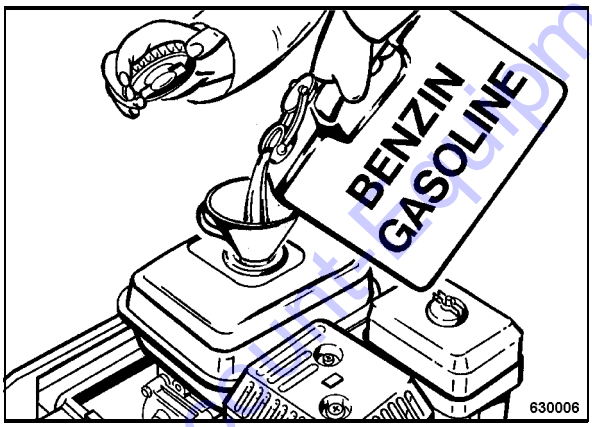

Fig. 28

- Clean the area around the fuel filler neck.
- Open the fuel filler cap and check the fuel level visually.
- Fill in fuel through a funnel with screen (Fig. 28).
- Screw the filler cap back on.

⚠ Caution

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

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

4.9 Checking/cleaning the air filter (under extremely dusty conditions)

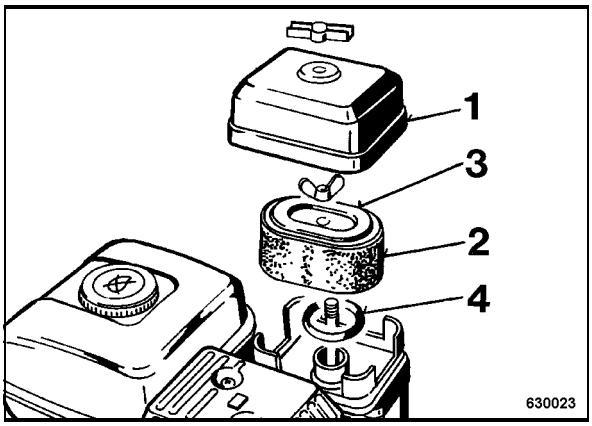

Fig. 29

- Loosen the fastening for the cover and remove the cover (Fig. 29).
- Loosen the air filter fastening nut.
- Take the air filter out.
- Pull the foam insert off.

⚠ Caution

Make sure that no dirt falls into the carburettor.

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

Incorrectly handled inserts may be ineffective because of damage (e.g. cracks) and cause damage to the engine.

⚠ Danger

Eye injury!

Wear your protective outfit (safety goggles, gloves).

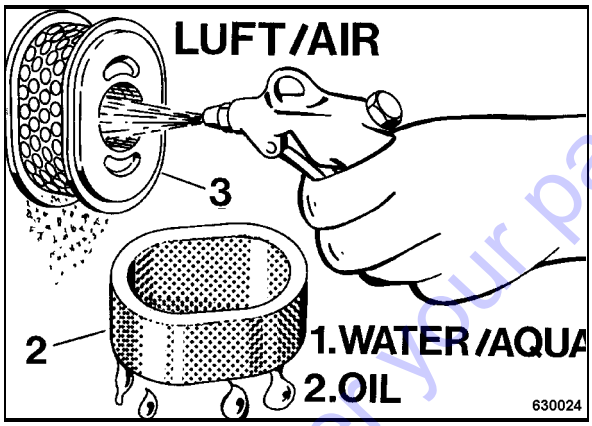

Fig. 30

- Blow the paper insert 3 (Fig. 30) carefully out from inside to outside with dry, clean compressed air.
- Clean the foam insert (2) in warm soapy water, rinse it and let it dry thoroughly.
- Soak the foam insert with clean engine oil and press excessive oil out.
- Pull the foam insert (2) over the paper insert (3).
- Insert and fasten the air filter.
- Attach and fasten the cover.

4.10 Cleaning cooling fins and air intake openings

i Note

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 he engine. You should therefore immediately seal any oil or fuel leaks near cooling fan, cylinder or cooling air intake and subsequently clean the cooling fins.

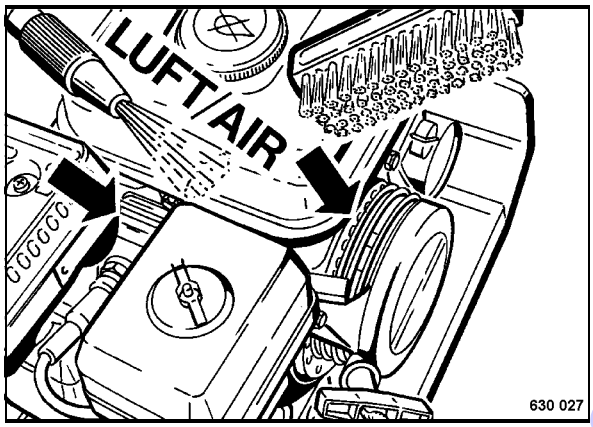

Fig. 31

- Brush off dried on dirt from all cooling fins and cooling openings and blow the dirt off with compressed air (Fig. 31).
- Clean an oily dirt with a cold cleansing agent.

⚠ Caution

Do not guide the water jet directly into air filter/ carburettor, starter/air intake and ignition switch.

- 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.

4.11 Checking the oil level in the vibrator shaft housing

i Note

Park the machine on level ground.

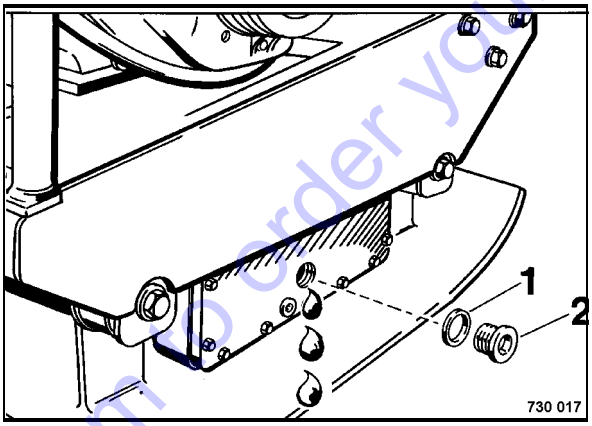

Fig. 32

- Unscrew filler and level plug 2 (Fig. 32) and check the oil level.
- The oil level must reach the bottom edge of the filler and level bore.
- If the oil is below this level top up oil immediately.

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

- Turn the filler and level plug back in with a new seal ring (1).
- Check the oil level again after running the engine for approx. 1 minute.

4.12 Changing the engine oil

⚠ Danger

Danger of scalding!

When draining hot engine oil.

⚠ Caution

Environmental damage!

Catch old oil and dispose of environmentally.

i Note

Drain the engine oil only when the engine is warm.

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

Observe information concerning fuels and lubricants.

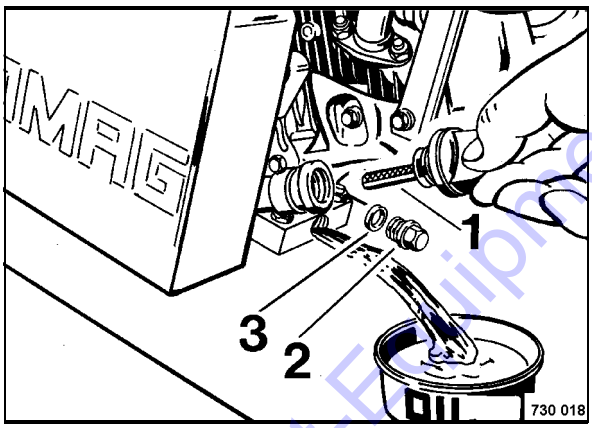

Fig. 33

- Tilt the machine towards the steering handle.
- Support the machine safely.
- Unscrew the oil filler cap 1 (Fig. 33).
- Unscrew oil drain plug (2) and catch running out old oil.
- Clean the drain plug and turn it in with a new seal ring (3).

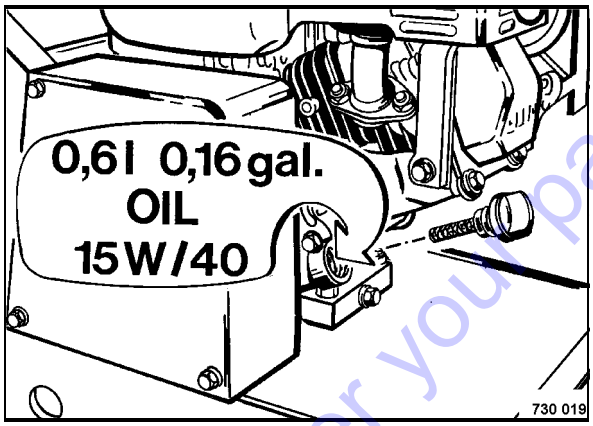

Fig. 34

- Adjust the engine horizontally.
- Fill in new engine oil through the filler opening (Fig. 34).

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

- Screw the oil filler plug in.
- Check the oil level again after running the engine for approx. 1 minute.
- The oil level must reach up to the bottom edge of the oil filler neck.
- If the oil is below this level top up oil immediately.

4.13 Cleaning, checking the spark plug

⚠ Danger

Danger of burning!

Wear your protective outfit (gloves) if the engine is hot

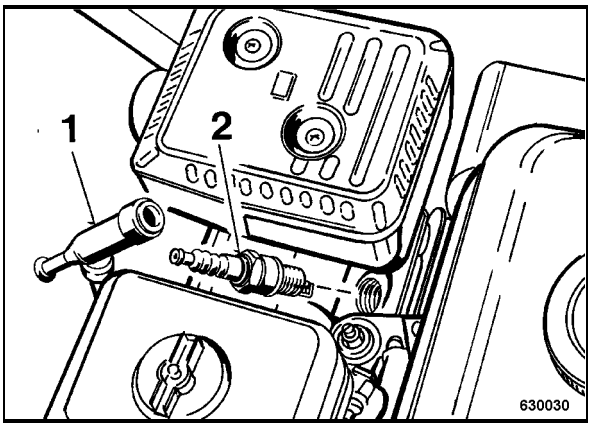

Fig. 35

- Pull spark plug socket 1 (Fig. 35) off and unscrew spark plug (2).

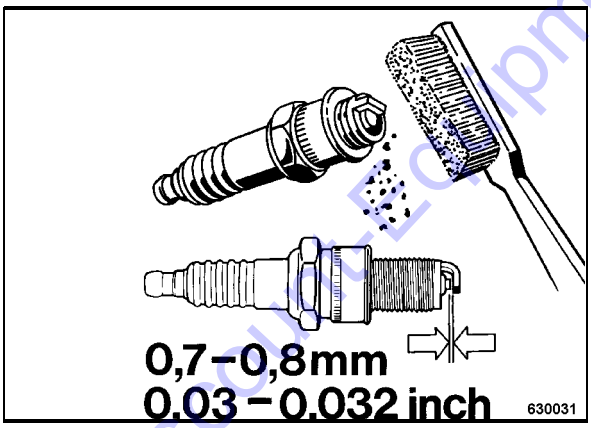

Fig. 36

- Clean the spark plug (Fig. 36).
- Check the electrode gap with a feeler gauge.
- Adjust the gap to a measurement of 0,7 to 0,8 mm.

i Note

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

4.14 Cleaning the fuel sludge filter

⚠ Danger

Fire hazard!

Gasoline is easily inflammable, do not spill any gasoline.

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

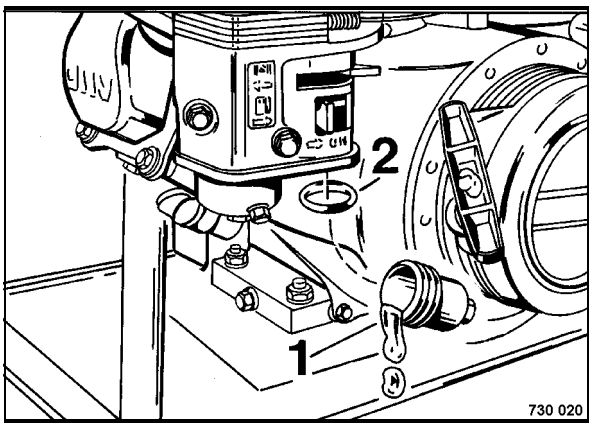

Fig. 37

- Close the fuel cock, unscrew fuel sludge filter 1 (Fig. 37) and wash it out with gasoline.
- Check the O-ring for damage, if necessary use a new one.
- Turn the fuel sludge filter in tightly and mind the O-ring (2).

4.15 Checking, tensioning, changing the V-belt

Checking the V-belt

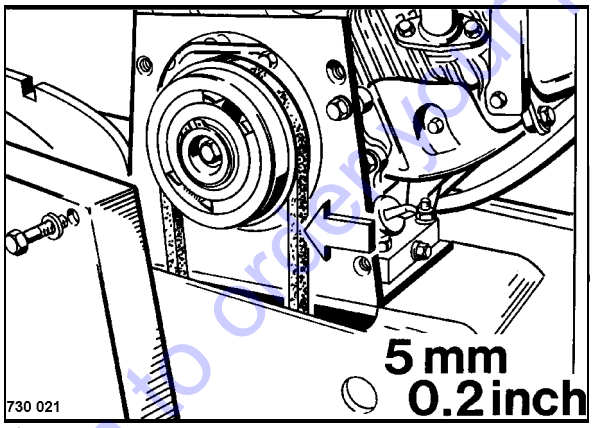

Fig. 38

- Remove the V-belt guard.
- Check condition and tension of V-belt (Fig. 38).
- Compression measurement approx. 5 mm.
- Change a damaged V-belt.

Tensioning the V-belt

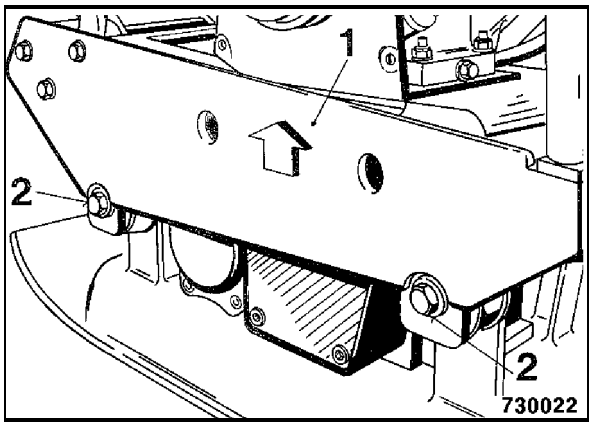

Fig. 39

- Loosen the fastening screws 2 (Fig. 39) on the V-belt side first.
- Pull the engine carrier plate (1) up and tighten the fastening screws.
- Loosen the fastening screws on the starter side.

- Pull the engine carrier plate up and tighten the fastening screws.
- Check the V-belt tension.

Changing the V-belt

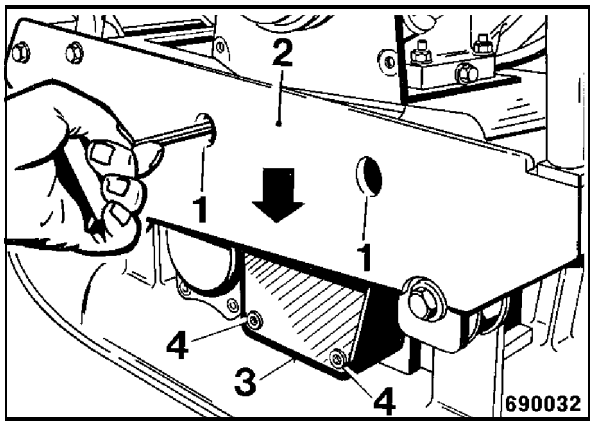

Fig. 40

- Remove the V-belt guard.
- Loosen fastening screws 1 (Fig. 40) on the V-belt side.
- Press engine carrier plate (2) down.
- Unscrew fastening screws (1) through the bores.
- Unscrew socket head cap screws (4).
- Remove covering plate (3).
- Replace the V-belt.
- Attach the covering plate.
- Turn socket head cap screws (4) in.
- Turn fastening screws (1) in.

Tighten the V-belt.

- Install the V-belt guard.

4.16 Cleaning/changing the air filter

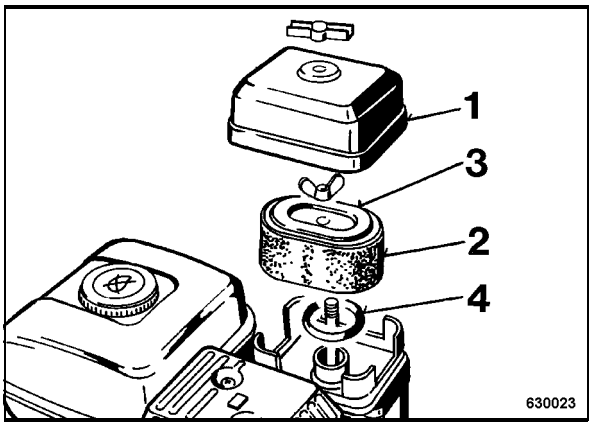

Fig. 41

- Loosen the fastening for the cover and remove the cover (Fig. 41).
- Loosen the air filter fastening nut.
- Take the air filter out.
- Pull the foam insert off.

⚠ Caution

Make sure that no dirt falls into the carburettor.

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

Incorrectly handled inserts may be ineffective because of damage (e.g. cracks) and cause damage to the engine.

⚠ Danger

Eye injury!

Wear your protective outfit (safety goggles, gloves).

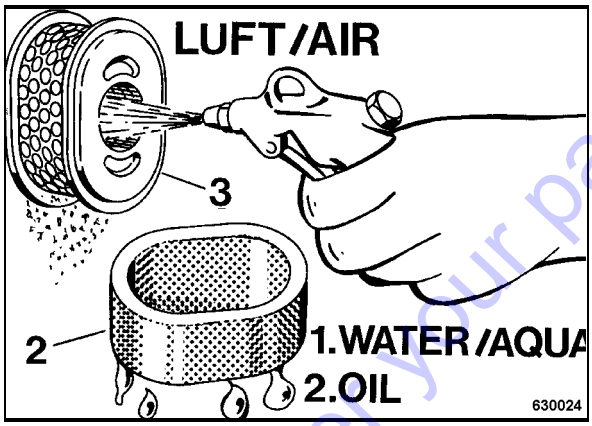

Fig. 42

- Blow the paper insert 3 (Fig. 42) carefully out from inside to outside with dry, clean compressed air.
- Clean the foam insert (2) in warm soapy water, rinse it and let it dry thoroughly.
- Soak the foam insert with clean engine oil and press excessive oil out.
- Pull the foam insert (2) over the paper insert (3).
- Insert and fasten the air filter.
- Attach and fasten the cover.

4.17 Checking, adjusting the valve clearance

Note

Check and adjust only when the engine is cold.

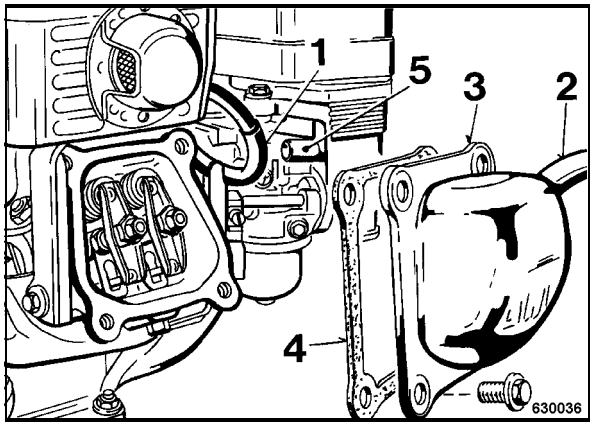

Fig. 43

- Pull spark plug socket 1 (Fig. 43) off.
- Pull ventilation hose (2) off.
- Remove valve cover (3) with seal gasket (4).

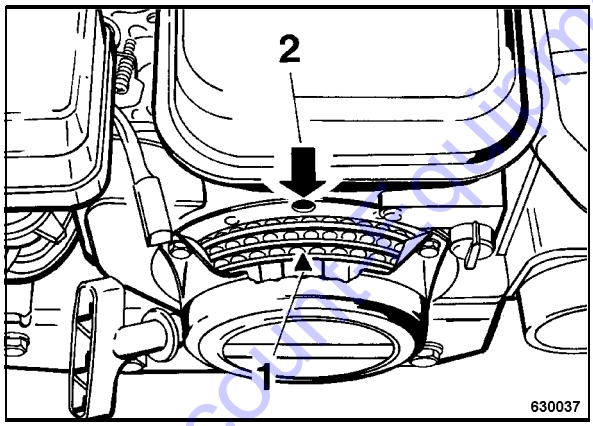

Fig. 44

- Set the piston to top dead centre position of the compression stroke.
- For this purpose align triangle mark 1 (Fig. 44) on starter disc to the top bore (2).

Checking the valve clearance

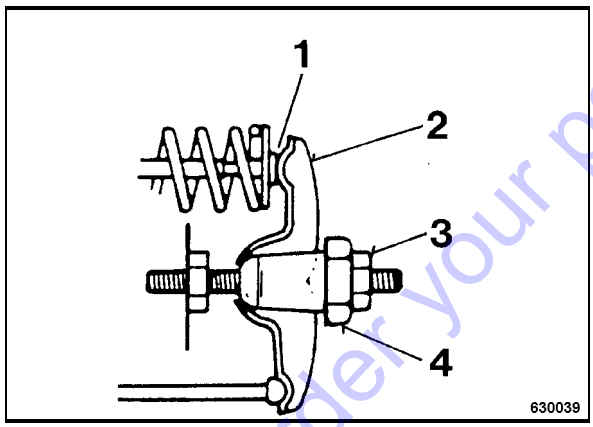

Fig. 45

- Check the valve clearance with a feeler gauge on both valves 1 (Fig. 45).

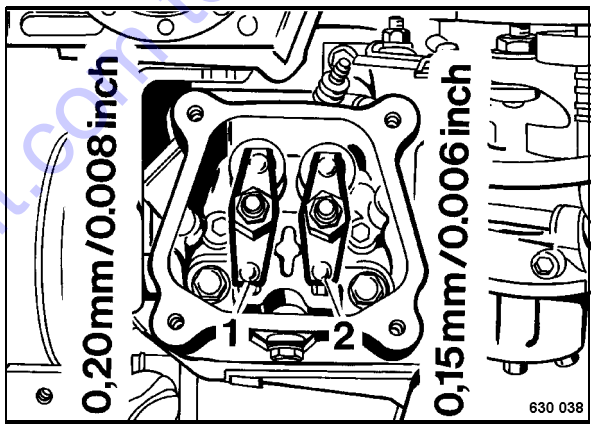

Fig. 46

Note

Exhaust valve 1 (Fig. 46) = valve clearance 0,20 mm

Intake valve (2) = valve clearance 0,15 mm

Adjusting the valve clearance

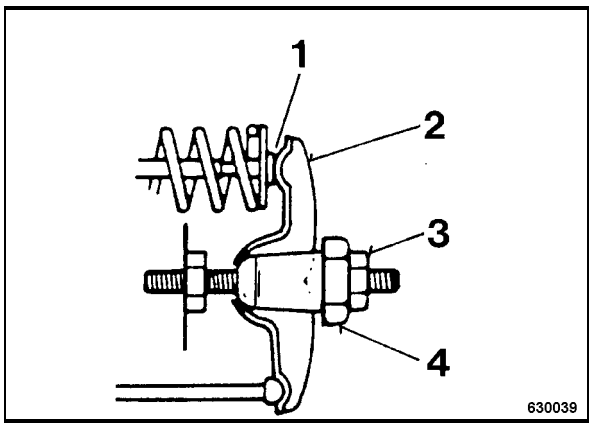

Fig. 47

- Hold hexagon nut 4 (Fig. 47) on the rocker arm 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 with noticeable resistance after retightening counter nut (3).

⚠ Caution

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

Plug ventilation hose (2) into socket (5).

4.18 Cleaning the fuel screen

i Note

Clean the fuel screen only when the engine is cold.

⚠ Caution

Fire hazard!

Gasoline is easily inflammable, do not spill any gasoline.

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

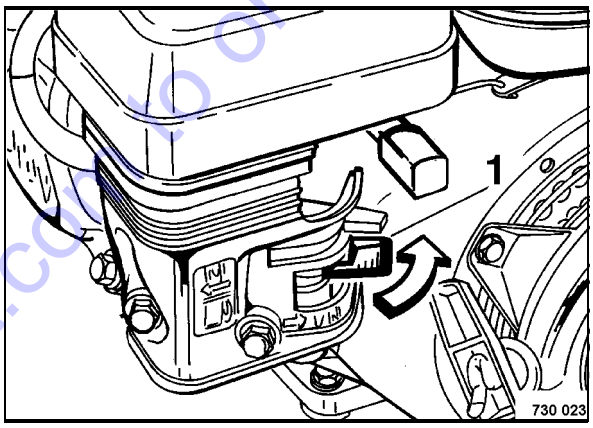

Fig. 48

- Open fuel cock 1 (Fig. 48) by turning in direction of arrow.

⚠ Caution

Environmental damage!

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

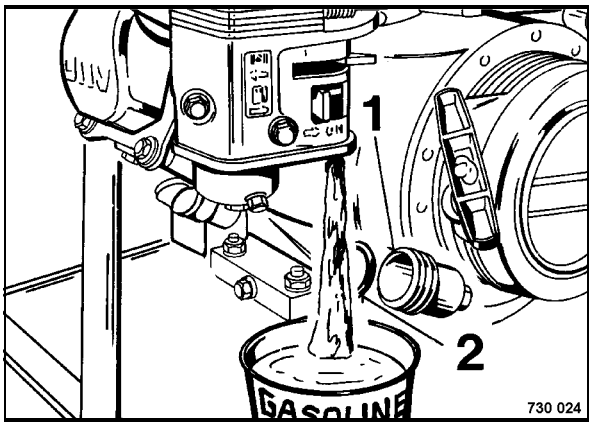

Fig. 49

- Unscrew fuel sludge filter 1 (Fig. 49) and drain off gasoline.
- Check seal ring (2) for cracks, replace the seal if damaged.
- Screw the fuel sludge filter with seal ring (2) tightly in.

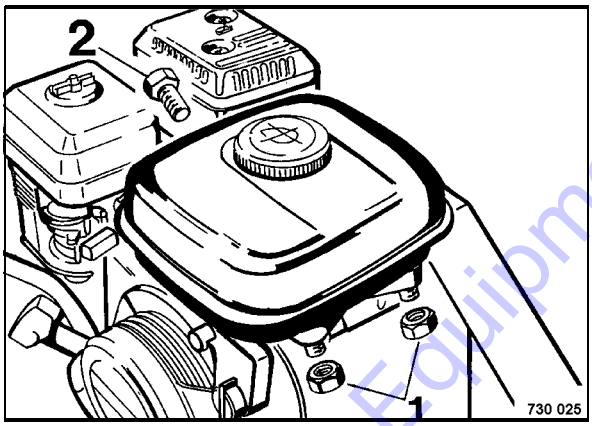

Fig. 50

- Disassemble the fuel tank.
- For this purpose unscrew hexagon nut 1 (Fig. 50) and hexagon screw (2).

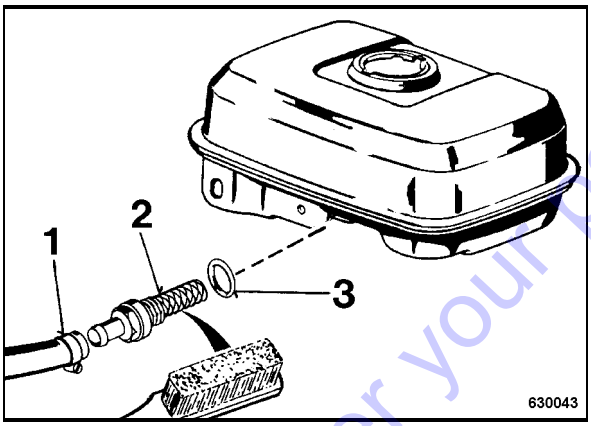

Fig. 51

- Open hose clamp 1 (Fig. 51), pull the hose off.
- 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 with seal in tightly.

4.19 Changing the oil in the vibrator shaft housing

⚠ Caution

Environmental damage!

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

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

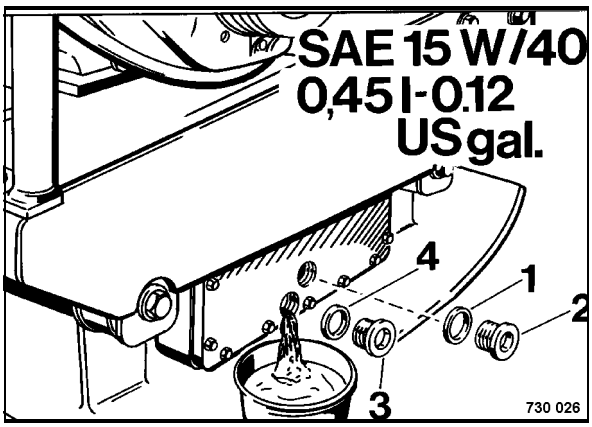

Fig. 52

- Unscrew filler and level plug 2 (Fig. 52).
- Unscrew oil drain plug (3), drain and catch running out old oil.
- Turn the drain plug tightly back in with a new seal ring (4).
- Park the machine on level ground.
- Fill in oil through the filling and oil level control bore up to the bottom edge of the filling bore.

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

- Turn the filler and level plug tightly back in with a new seal ring (1).

4.20 Checking the rubber buffers

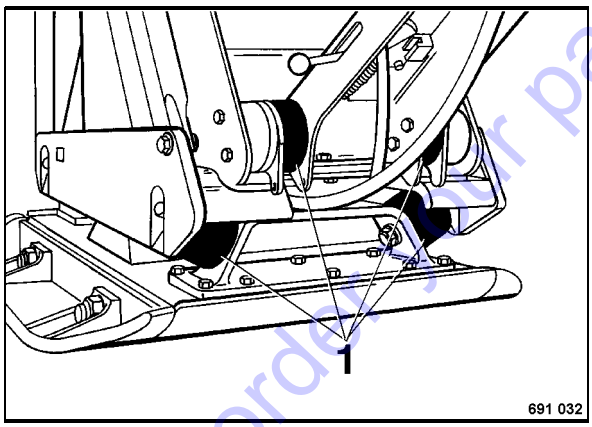

Fig. 53

- Check all rubber buffers 1 (Fig. 53) for cracks and damage and replace immediately if damaged.
- Check rubber buffers for tight fit.

4.21 Tightening torques for screws with metric unified thread

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. 54

* Strength classes for screws with untreated, non-lubricated surface. Screw 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 yield point at a coefficient of friction μ total = 0,14.

Compliance with the tightening torque is checked with torque wrenches.

i Note

Self-locking nuts must always be replaced once they have been unscrewed.

4.22 Tightening bolted connections

- Check all screws for tight fit, tighten if necessary.
- Check the machine for damage and leaks, if necessary have faults corrected.

4.23 Engine conservation

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

- Clean engine and cooling system: With cold cleansing agent and water jet or, even better, with steam cleaning equipment.
- Run the engine warm and shut it down.
- Drain the still warm engine oil and fill in anti-corrosion engine oil.
- Drain and catch the fuel from the fuel tank, mix it well with 10% anti-corrosion oil and fill it back in. Instead of mixing the fuel with anti-corrosion oil you may also fill the tank with injection pump testing oil with anti-corrosive properties (e.g. Calibration fluid B).
- Then run the engine for 10 minutes, so that lines, filter, pump and nozzles are filled with the conserving mixture and the new engine oil is distributed to all parts.
- Take the cylinder head cover off, spray the rocker chamber with a mixture of diesel fuel and 10% anti-corrosion oil. Then fasten the cover again.
- Crank the engine several times to spray the combustion chamber (throttle lever in stop position).
- Take the V-belt off and spray the grooves of the V-belt pulleys with anti-corrosion oil. Remove the anti-corrosion oil before taking the machine back into service.
- Close air intake on air filter and exhaust opening tightly.

i Note

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

Before taking the machine back into service you must drain off the conservation oil and replace it with engine oil (see table of fuels and lubricants) according to API-(MIL-) classification.

Anti-corrosion oils are all oils which comply with the specification MIL-L-21260 B or TL 9150-037/2 o Nato Code C640/642.

⚠ Caution

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

5 Trouble shooting

5.1 General notes

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

Strictly observe the safety regulations.

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

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

5.2 Engine problems

Faults	Possible cause	Remedy
Fuel supply	Fuel tank empty	Fill the fuel tank
	Fuel system clogged	Clean the fuel screen in the carburettor
	Fuel nozzle clogged	Clean the fuel nozzle
	No ignition spark	Change the spark plug
	Ignition switch defective	Change the ignition switch
Engine start	Engine does not crank	Replace the starter
	Starter defective	
Low engine power	Throttle control defective	Have the fault corrected
	Air filter clogged	Clean or replace the filter cartridge
	Engine defective	Change the engine/have the fault rectified
	Carburettor defective	Replace the carburettor
No vibration	Centrifugal clutch defective	Replace the centrifugal clutch
	V-belt broken	Replace the V-belt
Engine compression	Valve clearance	Check and adjust the valve clearance
Engine overheating	Insufficient cooling air supply	Clean engine air filter and/or engine
Engine goes out	Lack of oil	Return engine for repair, do not continue to work (risk of total damage!)
	Fuel screen in carburettor clogged	clean

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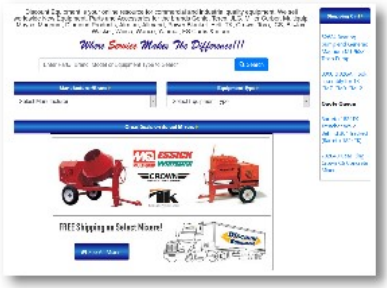

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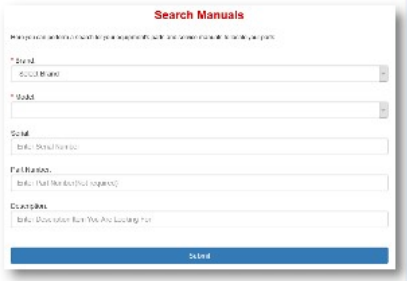

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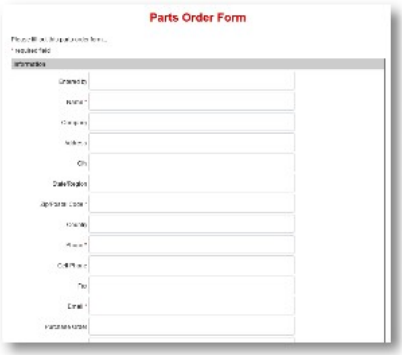

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