

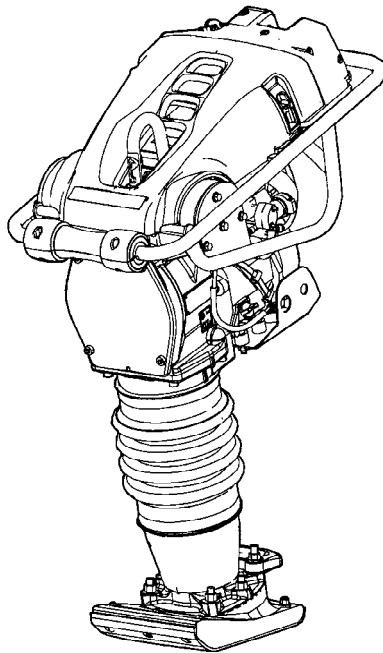
Instruction manual

IMS690-1EN1.pdf
Operation & Maintenance

Rammer
MS690

Petrol engine
Honda GX100

Serial number
76103889-



The Tremix MS690 rammer is suitable for compaction of soil in trenches, around pillars and in confined spaces. It has been designed to comply with the highest demands set by contractors for efficiency, simplicity and operator comfort.

The MS rammers must only be used in well-ventilated areas, which applies to all machines with combustion engines.

Table of Contents

Introduction	1
Safety - General instructions.....	3
Technical specifications - Noise/Vibrations/Electrical	7
Technical specifications - Dimensions	9
Technical specifications - Weights and volumes	11
Technical specifications - General	13
Machine plate - Identification	15
Machine specifications- Decals.....	17
Operation - Starting.....	19
Operation - Driving.....	21
Operating - Stopping.....	23
Miscellaneous	25
Long-term parking	27
Maintenance - Lubricants and symbols	29
Maintenance - Maintenance schedule	31
Maintenance - 10h	35
The first 20 hours of operation	37
Maintenance - 100h	39
Maintenance - 500h	41
Maintenance - Adjusting the carburetor	45

Introduction

Warning symbols



WARNING ! Marks a danger or a hazardous procedure that can result in life threatening or serious injury if the warning is ignored.



CAUTION ! Marks a danger or hazardous procedure that can result in damage to the machine or property if the warning is ignored.

Safety information



We recommend that the operator reads the safety instructions in this manual carefully. Always follow the safety instructions. Ensure that this manual is always easily accessible.



Read the entire manual before starting the machine and before carrying out any maintenance.



Ensure good ventilation (extraction of air by fan) where the engine is run indoors.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

The machine should be kept clean so that any leakages, loose bolts and loose connections are discovered at as early a point in time as possible.

Inspect the machine every day, before starting. Inspect the entire machine so that any leakages or other faults are detected.

Check the ground under the machine. Leakages are more easily detected on the ground than on the machine itself.



THINK ENVIRONMENT ! Do not release oil, fuel and other environmentally hazardous substances into the environment. Always send used filters, drain oil and fuel remnants to environmentally correct disposal.

This manual contains instructions for periodic maintenance normally carried out by the operator.



Additional instructions for the engine can be found in the manufacturer's engine manual.

Safety - General instructions

(Also read the safety manual)

Symbols

The signal words WARNING and CAUTION used in the safety instructions have the following meanings:



WARNING! Indicates danger or hazardous procedure that could result in serious or mortal injury if the warning is disregarded.



Caution! Indicates danger or hazardous procedure that could result in damage to machinery or property if the warning is disregarded



Important rules for your safety

The machine must not be modified without the prior consent of the manufacturer. Use only original parts.

Use only the accessories recommended by TREMIX.

If modifications not approved by TREMIX are carried out, these could result in serious injury to yourself or others.

- These recommendations are based on international safety standards. You must also observe any local safety regulations which may be in force. Read all instructions carefully before operating the machine. Keep the instructions in a safe place.
- Signs and stickers giving important information about safety and maintenance are supplied with every machine. Make sure they are legible. The ordering numbers for new stickers can be found in the spare parts list.
- Machine and accessories may only be used for their intended purpose.
- For reasons of product safety, the machine must not be modified in any way.
- Replace damaged parts immediately. Replace all wear parts in good time.

Always pay attention to what you are doing.

Use your common sense. Do not use the machine if you are tired or under the influence of drugs, alcohol or other substances which can effect your vision, reaction ability or judgement.



Safety equipment

Long exposure to loud noise without ear protectors can cause permanent damage to hearing.



Long exposure to vibrations can damage the hands, fingers and wrists. Do not use the machine if you experience discomfort, cramp or pain. Consult a doctor before resuming work with the machine.

Always use approved safety equipment.

The operator, and people in the immediate vicinity of the working area, must wear:

- A protective helmet
- Protective goggles
- Hearing protection
- Mask in dusty environments
- Reflective clothing
- Protective gloves
- Protective shoes

Avoid wearing loosely fitting clothing that might get caught in the machine. If you have long hair, cover it with a hair net.

This will occur regardless of whether the forward/reverse lever is in neutral or the drive mode.

TREMIX machines feature a handle design that absorbs a large part of the machine vibrations. Depending on the operation, ground conditions and exposure time, the recommended limits for hand/arm vibrations may be exceeded. Where necessary, take suitable measures such as wearing protective gloves or not vibrating on previously compacted material.

Be alert to acoustic signals from other machines in the working area.

Do not use a machine that is leaking fuel.

The working area

Do not use the machine near flammable material or in explosive environments. Sparks can be emitted from the exhaust pipe, and these can ignite flammable material. When you take a pause or have finished working with the machine, do not park it on or near flammable materials.

The exhaust pipe can get very hot during operation, and can cause certain material to ignite. Make sure that there are no other personnel inside the working area while the machine is in use. Keep the worksite clean and free of extraneous objects.

Store the machine in a safe place, out of unauthorized's reach, preferably in a locked container.

Filling up fuel (Petrol/Diesel)

Petrol has an extremely low flash point and can be explosive in certain situations. Do not smoke! Ensure there is good ventilation.



Keep away from all hot or spark-generating objects when handling fuel. Wait until the machine has cooled before filling the tank. Fill the tank at least 3 metres away from where you intend to use the machine to avoid fire. Avoid spilling petrol, diesel or oil on the ground.

Protect your hands from contact with petrol, diesel and oil. Open the tank cap slowly to release any overpressure that might exist in the tank. Always take care to use the right type of fuel. Do not overfill the tank. Inspect the machine for fuel leakage regularly.

Before starting

read the instruction manual and thoroughly familiarise yourself with the machine and all its functions, and check that:



- All handles are free from grease, oil and dirt.
- The machine has no visible faults.
- All protective devices are securely fastened into place.
- All control levers are in the neutral position.

Start the machine according to the instruction book.

**Operation**

Keep your feet well clear of the machine



Do not operate the machine in poorly ventilated spaces. There is a risk of carbon monoxide poisoning.

Only use the machine for the purpose for which it is intended. Ensure that you know how to stop the machine in the event of an emergency.



Always exercise extreme caution when driving the machine on slopes. Always ensure that all personnel in the vicinity are higher up the slope than the machine. Always drive straight up and down on slopes. Do not exceed the maximum gradability of the machine according to the instruction book. Always stay clear of the machine when operating on slopes or in trenches.

Never touch the engine, exhaust system or eccentric element of the machine. They become extremely hot during operation and may result in burns. Do not touch the V-belts or the rotating parts during operation.

Parking

Always park the machine on ground which is as level and firm as possible.

Before leaving the machine:

- Apply the parking brake
- Turn off the engine and remove the ignition key.

**Loading/Unloading**

Under no circumstances remain under or in the immediate vicinity of the machine when it is being lifted by a crane or similar appliance. Only use marked lifting points. Always make sure that all lifting devices are dimensioned for the weight of the machine.

Maintenance

Maintenance work may only be carried out by skilled personnel. Never carry out any type of maintenance work while the machine is in motion or the engine running.

Working with the hydraulic system

Regular maintenance of hydraulic systems is extremely important. Minor damage or split hoses/couplings can have devastating consequences. Bear in mind that the hydraulic hoses are made of rubber and can deteriorate with age, with the consequent risk of splitting. Whenever there are uncertainties as to durability and wear, replace hoses with new original hoses from TREMIX.

Working with batteries

Batteries contain toxic and corrosive sulphuric acid. Wear protective glasses and avoid getting acid on your skin, clothes or on the machine. If you get acid in your eyes, rinse them with water for at least 15 minutes and seek immediate medical treatment. The gas that is emitted by the battery is inflammable and explosive. When fitting or changing batteries, always be careful not to short circuit the battery terminals.

Repairs

Never use a machine that is damaged.

As qualified repairs require trained personnel, please get in touch with your nearest authorized workshop.

Extinguishing fires

In the case of a fire in the machine, if possible use an ABE-class powder extinguisher. However, a BE-type carbon dioxide fire extinguisher may also be used.

Battery charging

Use a voltage-regulated battery charger (constant voltage). A switched two-stage charger with constant voltage is recommended. A two-stage charger automatically reduces the charging voltage (14.4 V) to trickle charging (13.3 V) when the battery is fully charged.

Suitable battery chargers for 230 Volt:

Optima Model RTC 12/7-S-230

LADAC Model LADAC 512

Tudor Model 61715 Tudor

Storage/Trickle charging

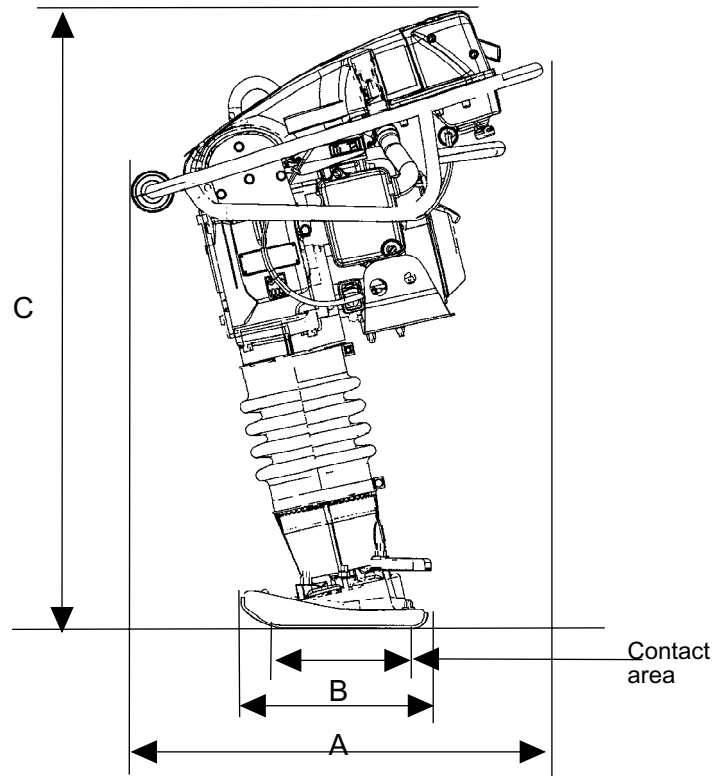
A discharged battery will freeze at a temperature of about (-7°C). A fully charged battery will freeze at (-67°C). A battery that is not being used should be fully charged before being put aside. Trickle charging is not normally required during a period of 6 to 8 months. If a battery has not been in use for a long period, it is recommended that it be fully charged before being used. Trickle charging is recommended a couple of times during the season (especially in winter).

**Technical specifications -
Noise/Vibrations/Electrical****Noise levels**

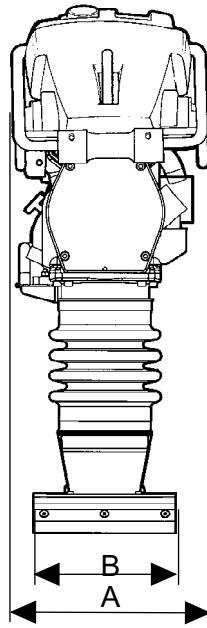
**The below noise and vibration levels have been determined in accordance with Honda
the operating cycle on a macadam base described in EU Directive 2000/14/EC**

Guaranteed acoustic power level, L_{wA} dB (A)	104
Sound pressure level at operator's ear (ISO 6396), L_{pA} dB (A)	91
Hand and arm vibrations (ISO 5349-1), a_{hv} m/s ²	7

Values may differ from those above depending on operating conditions.

Technical specifications - Dimensions

Dimensions	
A mm (in)	730 (28.7)
B mm (in)	330 (13)
C mm (in)	1102 (43.3)
Contact area, m2, (sq feet)	0,053 (0.57) / 0.065 (0.70)



Dimensions	
A mm (in)	395 (15.3)
B mm (in)	230 (9) / 280 (11)

Technical specifications - Weights and volumes**Weights**

	9" Shoe width	11" Shoe width
Net weight, kg (lbs)	67 (147)	68 (149)
Operating weight EN500, kg (lbs)	68 (149)	69 (151)

Fluid volumes

Fuel tank, lit (qts)	2,5 (2,6)
Crank case, l (qts)	0,3 (0,31)
Eccentric cylinder, l (qts)	0,9 (0,95)
Fuel consumption, l/h	0,69

Technical specifications - General**Compaction data**

Vibration frequency, Hz (rpm)	12 (720)
Amplitude, mm (in)	65-75 (2.5-2.9)

Engine

Manufacture/Model	Honda GX 100 4-stroke Manual start
Power	2.2 kW (3 hp)
Rated Speed	3,800-3,900 rpm
Idling	1,600-1,900 rpm

Performance

Working speed m/min	15-18
---------------------	-------

Machine plate - Identification

Machine plate

Fill in all data below when delivering and commissioning the machine

TREMIX®		CE	
Tremix Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated power kW	Year of Mfg
Product Identification Number			385136SE

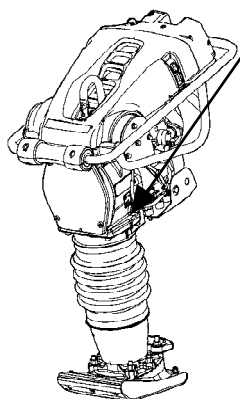


Fig. Location of machine plate.

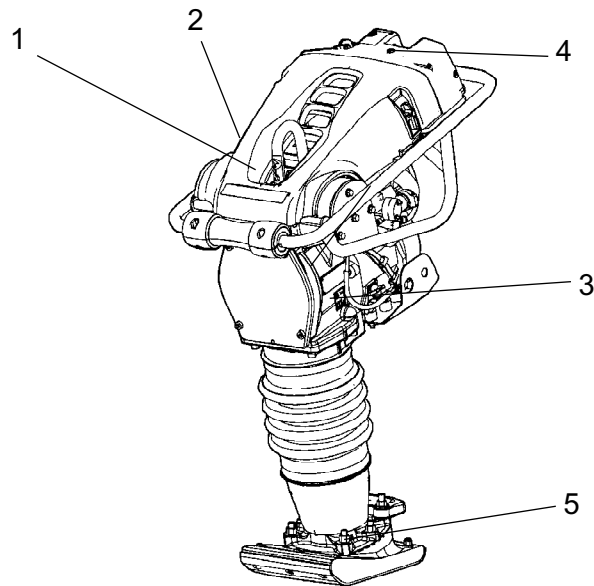
TREMIX®		CE	
Tremix Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated power kW	Year of Mfg
Product Identification Number			385136SE

Engine model

Engine number

The plate specifies the manufacturer's name and address, the type of machine, the PIN product identification number (serial number), operating weight, engine power and year of manufacture. (on machines supplied to outside the EU, there are no CE markings and in some cases no year of manufacture.)

When ordering spare parts specify the machine's PIN number.

Machine specifications- Decals**Location of decals**

- 1. Lifting point
- 3. Noise level
- 5. Pressurized spring package

Item no.
281269
791292
791088

- 2. Warning decal
- 4. Collection decal

Item no.
904366
385495

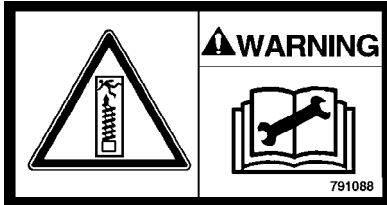
Safety decals

Always make sure that all safety decals are completely legible, and remove dirt or order new decals if they have become illegible. Use the part number specified on each decal.

791088

- Compressed spring package

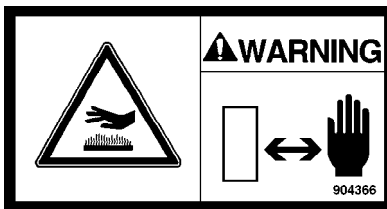
Read the service manual.



904366

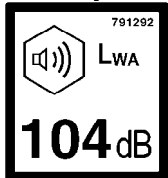
- Warning for hot surfaces

The muffler and exhaust system must not be touched.

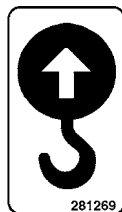


Info-decals

Noise power level



Lifting point



Collection decal



Operation - Starting

Before starting, Honda

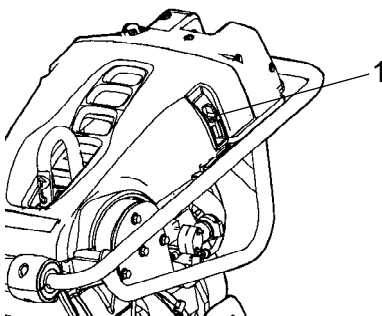
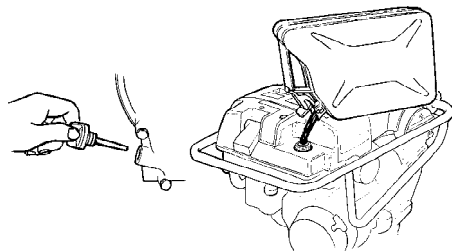
Follow the general safety precautions supplied with the machine on delivery. Check that daily maintenance has been carried out.

We recommend that you also read the detailed motor instructions supplied with the machine.

- The rammer must be standing on the shoe when the oil level is checked in the engine.
- Fill the fuel tank with fuel.
- Check that all the controls are working.
- Make sure that there is no leakage of oil, and that all bolted joints are tightened.
- Check that the hood locks (1) are locked.



On new machines the oil must be changed after 20 working hours.



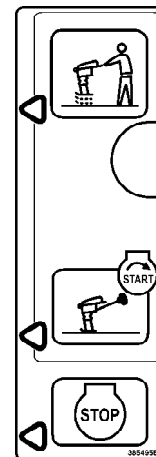
Checking the hood lock
1. Hood lock (x2)

Description of starting decal:

Working mode

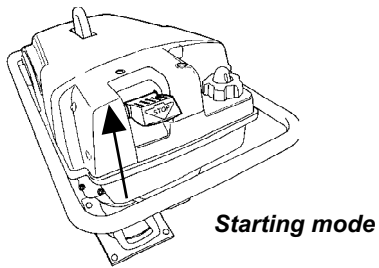
Start/Idling

Stop/Transport/Refueling

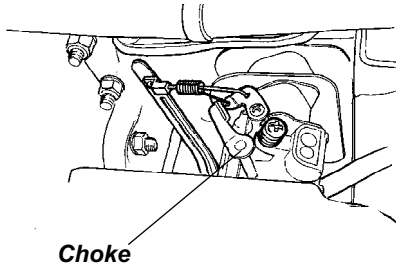


Starting the engine

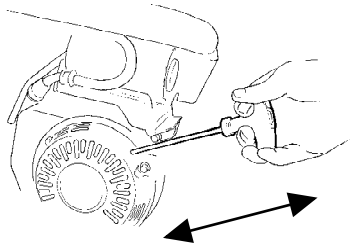
1. Set the throttle in starting mode.



2. Close the choke lever if the engine is cold. If the engine is warm or the ambient temperature is high, close the choke halfway or leave it open. See decal on the air filter.



3. Grip the handle of the Magna pull start and turn over the engine until there is resistance. Release the handle back to the initial position, then pull sharply until the engine starts. Now gradually move the choke lever to the fully open position.

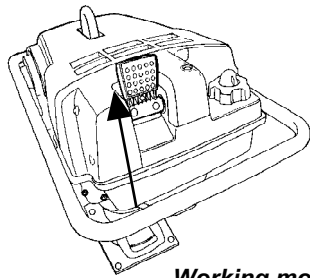


4. Allow the engine to idle a few minutes before revving up to full power.

Operation - Driving

Operating

1. Set the trottle in working mode, and the rammer will start to move forward.



Working mode

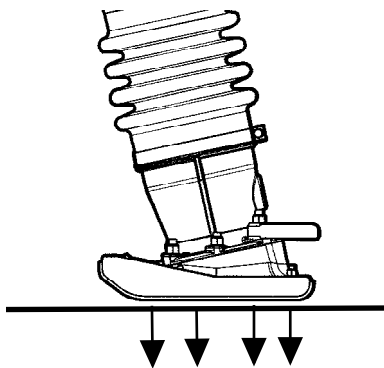


During operation, the engine must always work at full throttle (working mode).

2. Steer the rammer with the handle.
3. Make sure the shoe impacts parallel to the ground.
4. Do not overload or force the machine.



Stop the engine. Never use the machine on hard surfaces (solid rock, hardened concrete or the like). Always check that a trench is wide enough before starting the compaction work. When working in narrow trenches there is a risk that the plate can jam between the walls. The rammer can then hit at an angle and become damaged. This can above all cause severe damage to the ramming shoe. Check that the rammer is only steered by means of the handle. It must only be pushed forward. The rammer must not be pressed down into the material being compacted. Excessive pressure on the handle will lead to unsatisfactory compaction results by obstructing the vibration. If the machine falls over during the work, switch off the engine before lifting it up.

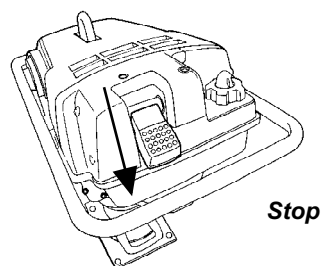


Operating - Stopping

Stopping the engine

1. Set the speed control in stop mode.

In this position the fuel supply to the engine is switched off and the engine switch is in the Off position.



Miscellaneous

Lifting

Lifting/Towing



Never walk or stand under a lifted machine.



Use only the machine's lifting eye (1) to lift the machine.



The lifting equipment must be in dimensioned in order to fulfill all regulations. Before lifting check that rubber elements (2) and safety frame (1) are correctly attached and not damaged.

Information on the weight is shown on the machine plate.



Keep your feet away from the machine.

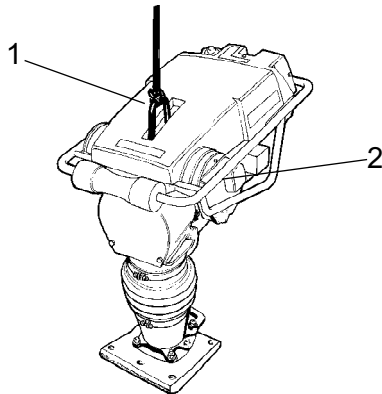


Fig. Machine ready for lifting
1. Lifting hook
2. Rubber element

Transport

Transport



Lay the machine down when it is switched off and not being used.



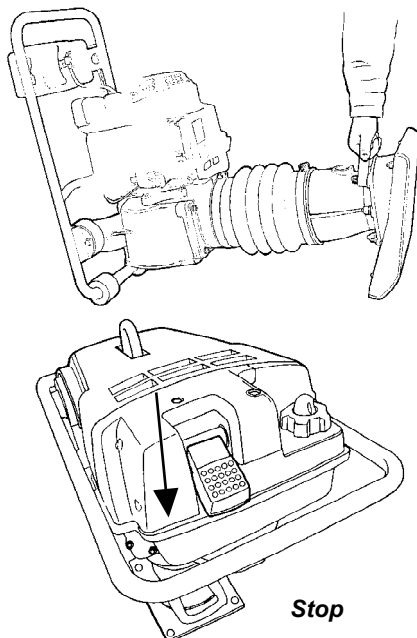
Always strap the machine secure during all transportation.

When moving short distances the machine can be tilted forward, so that it rests on the plastic wheels on the handle. Lift with the transport handle and roll the machine forwards and backwards.

Set the throttle in stop mode so that no fuel runs out.



Keep your feet away from the machine.



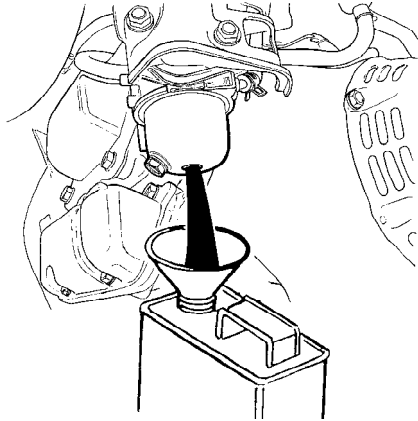
Long-term parking

1. Clean the machine. Remove any clay and sand from the shoe.

2. Clean the air cleaner.



Drain all the fuel from the fuel tank and carburetor. Collect the contents in a container, and dispose of it properly.






3. Carefully pull the starter handle until you feel a slight resistance.

4. Wipe off any oil and dust that has accumulated on the rubber parts.

5. Apply a light coat of oil on the shoe to prevent it rusting.

6. Cover the machine and store it in a dry, dust-free area.

Maintenance - Lubricants and symbols

	ENGINE OIL	Use SAE 15W/40, Shell Universal Engine Oil TX15W-40
	ECCENTRIC ELEMENT OIL	Use SAE 15W/40: Shell universal 15W-40
	FUEL	Use unleaded petrol of standard quality



Stop the engine before refilling the fuel tank. Never refuel near an open flame or sparks, which could start a fire. Do not smoke. Use pure fuel and clean filling equipment. Take care not to spill fuel.

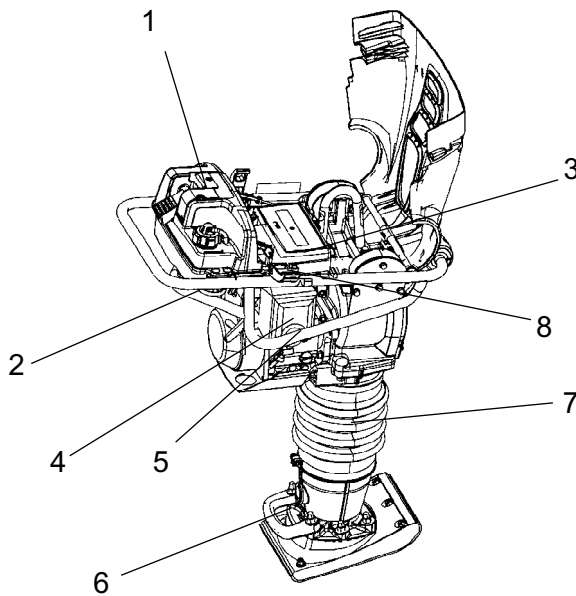
Maintenance - Maintenance schedule**Service and service points**

Fig. Service and service points

- | | |
|------------------|-------------------------------------|
| 1. Fuel tank | 5 Oil plug |
| 2. Fuel filter | 6 Springloaded leg oil, sight glass |
| 3. Air filter | 7 Bellows |
| 4. Dipstick | 8 Main lock |
| 5 Cooling system | |
| 6 Fuel filter | |



Study the engine instruction book and also follow the maintenance instructions.

Every ten operating hours (Daily)

Please consult the list of contents for page and section references!

Action	Comment
Before the first start of the day	
Check and replenish fuel	
Check and replenish lube oil	
Check for oil leaks	
Check the air cleaner's drain valve	For engines equipped with cyclone Refer to the engine manual
Clean / replace air filter	
Check the tightness of all nuts and bolts	
Keep the machine clean	
Check / Clean the engine's cooling flanges	Refer to the engine manual
Check the engine's air filter indicator	Refer to the engine manual
Check that the controls are not damaged or do not jam	
Checking the oil level in the springloaded leg	Applies to TREMIX's MS series

After the first 20 hours of operation

Please consult the list of contents for page and section references!

Action	Comment
Change lube oil	
Clean / replace air cleaner elements	
Change the oil in the eccentric element/springloaded leg.	Only for oil-lubricated eccentric element. Applies to TREMIX's MV and MS series.
Check the engine speed	
Check and adjust valve clearance	Applies to diesel engines Refer to the engine manual

Every 100 hours of operation

Please consult the list of contents for page and section references!

Action	Comment
Change engine oil	Applies to petrol engines Refer to the engine manual
Check and clean the spark plug	Applies to petrol engines Refer to the engine manual
Check the vibration dampers	
Check the engine speed	
Check the V-belt	Applies to belt-driven machines
Clean the carburettor's fuel cock	Applies to petrol engines Refer to the engine manual
Clean the silencer's spark catcher	Applies to petrol engines Refer to the engine manual

Every 500 hours of operation (Yearly)

Please consult the list of contents for page and section references!

Action	Comment
Adjust valve head clearance for intake and exhaust valves	Refer to the engine manual
Clean / check fuel filter / tank	Refer to the engine manual
Replace air filter	
Change the oil in the eccentric element/springloaded leg.	Only for oil-lubricated eccentric element. Does not apply to TREMIX's MR series.
Clean the engine's cooling flanges	Refer to the engine manual
Clean and adjust the carburettor	Applies to petrol engines Refer to the engine manual
Check the fuel injection pump	Applies to diesel engines Refer to the engine manual
Check the fuel injection nozzle	Applies to diesel engines Refer to the engine manual
Change the oil in the engine	Refer to the engine manual
Drain the fuel system of water	Applies to diesel engines Refer to the engine manual
Replace the fuel filter.	Applies to diesel engines Refer to the engine manual
Clean the oil filter	Applies to diesel engines Refer to the engine manual

Spare parts for service

Air filter element for the engine	Honda GX100
Oil filter for engine	377328
Fuel filter for engine	-
Spark plug	378965
	938934

Maintenance - 10h

Checking the engine, Honda

1. Check the oil level (1)
2. Check the fuel level (2)
3. Check for oil leaks

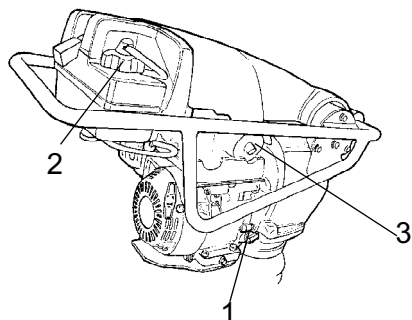


Fig. Engine 1. Oil dipstick
2. Fuel cap
3. Air filter



Save the oil and dispose of it in an approved manner.

Checking bolted joint

Check and, where necessary, tighten screws and nuts.

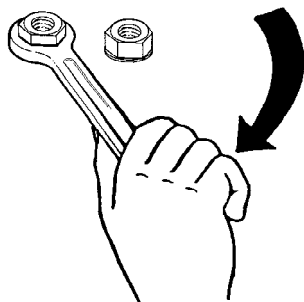


Fig. Checking bolted joint

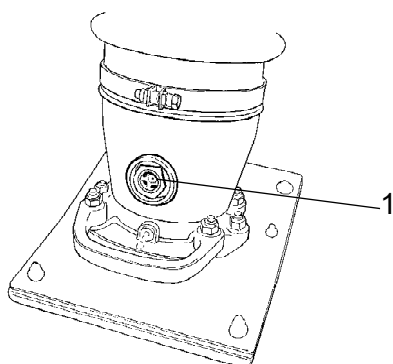


Fig. Engine 1. Sight glass

Checking the oil level in the springloaded leg

1. Check the oil level in the springloaded leg through the sight glass (1)

The level should be at the middle of the sight glass.



Save the oil and dispose of it in an approved@@manner.

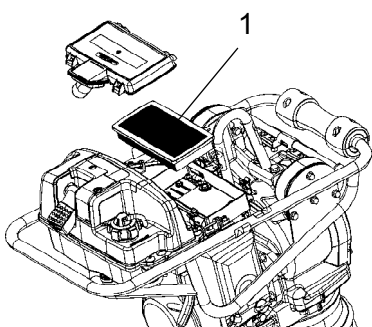


Fig. Replacing the air filter
1. Air filter

Replacing the air filter

Clean or replace the air filter (1).



Fig. Cleaning the machine.

Cleaning the machine.

Keep machine clean.



Never aim a water jet directly at the fuel filler cap. This is particularly important when using a high-pressure cleaner.

Do not spray water directly onto electrical components or the instrument panels. Place a plastic bag over the fuel filler cap and secure with a rubber band. This will prevent water from entering the venting hole in the filler cap. This could otherwise cause operational disturbances, such as clogged filters.

The first 20 hours of operation

Changing the engine oil

Change the oil in the engine.

Check the engine speed

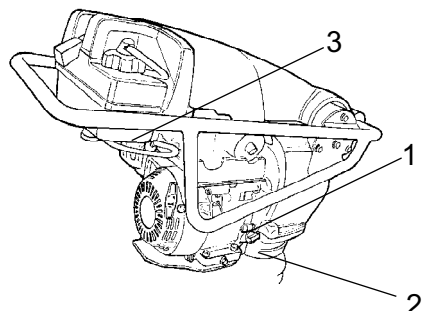


Fig. Engine
1. Dipstick
2. Oil plug
3. Spark plug



Use the oil drainage hose on machines that are equipped with this.



Save the oil and dispose of it in an approved manner.

Replacing the air filter

Clean or replace the air filter (1).

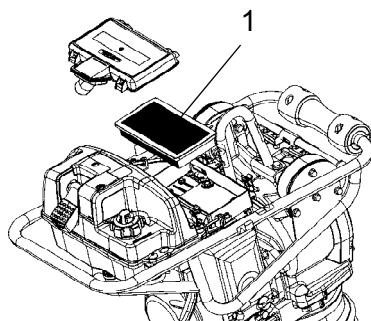


Fig. Replacing the air filter
1. Air filter

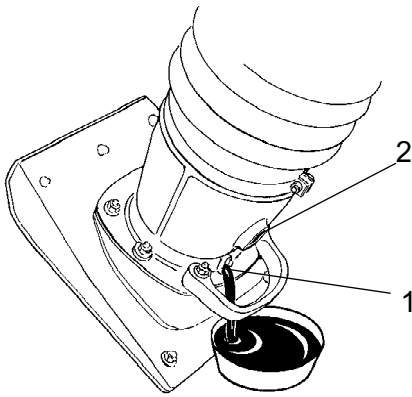


Fig. Springloaded leg
1. Oil drain
2. Sight glass

Changing the oil in the springloaded leg

1. Unscrew the oil drain plug (1).
2. Empty the oil into a container
3. Refit the plug and tighten, making sure that the sealing washer is undamaged.
4. Remove the sight glass (2) and fill with new oil.
5. Refit the sight glass and tighten. The oil level should be at the middle of the sight glass.



Save the oil and dispose of it in an approved manner.

Maintenance - 100h

Changing the engine oil

Change the oil in the engine.

Check the engine speed

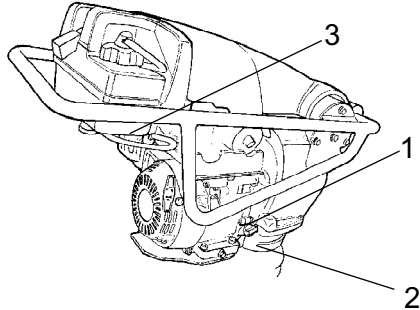


Fig. Engine
1. Dipstick
2. Oil plug
3. Spark plug



Use the oil drainage hose on machines that are equipped with this.



Save the oil and dispose of it in an approved manner.

Checking spark plug

1. Check and clean/replace the spark plug.

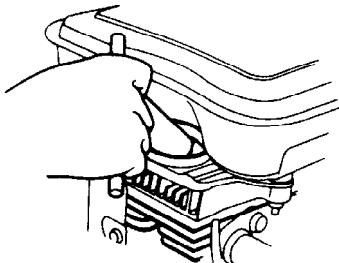


Fig. Replacing spark plug.

Maintenance - 500h

Checking the engine, Honda

1. Check the oil level (1)
2. Check the fuel level (2)
3. Check for oil leaks

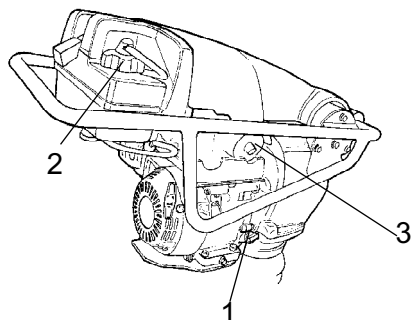


Fig. Engine 1. Oil dipstick
2. Fuel cap
3. Air filter



Save the oil and dispose of it in an approved manner.

Replacing the air filter

Clean or replace the air filter (1).

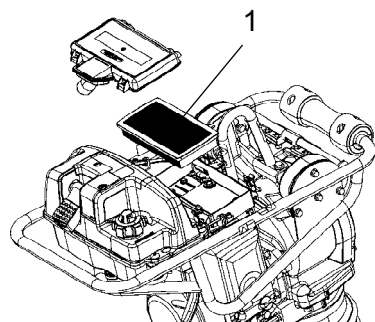


Fig. Replacing the air filter
1. Air filter

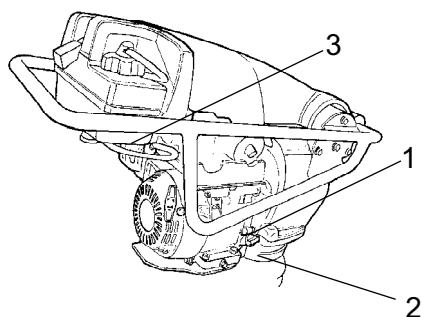


Fig. Engine
1. Dipstick
2. Oil plug
3. Spark plug

Changing the engine oil

Change the oil in the engine.

Check the engine speed



Use the oil drainage hose on machines that are equipped with this.



Save the oil and dispose of it in an approved manner.

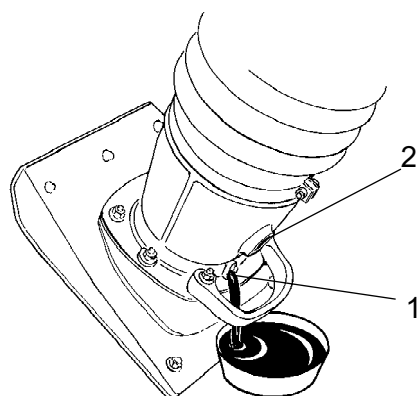


Fig. Springloaded leg
1. Oil drain
2. Sight glass

Changing the oil in the springloaded leg

1. Unscrew the oil drain plug (1).
2. Empty the oil into a container
3. Refit the plug and tighten, making sure that the sealing washer is undamaged.
4. Remove the sight glass (2) and fill with new oil.
5. Refit the sight glass and tighten. The oil level should be at the middle of the sight glass.



Save the oil and dispose of it in an approved manner.

Checking the main lock

1. Check that the rubber straps are in good condition.

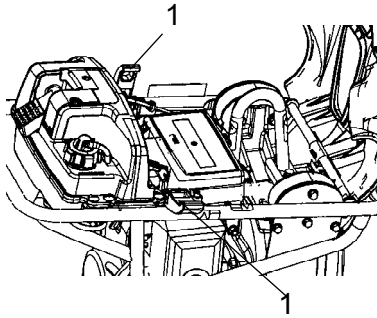


Fig. Main lock
1. Rubber straps

Maintenance - Adjusting the carburetor**Adjusting the carburetor**

The air filter must be cleaned and the engine must be run warm before adjusting the revs.

Tachometer P/N: 924729

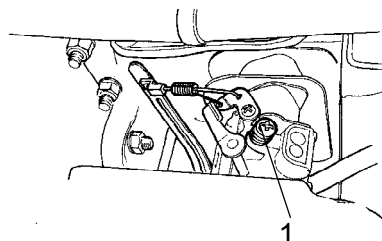
Revs:

Idling speed: 1,600-1,900 rpm

Engaging speed for centrifugal clutch, approx.: $2,300 \pm 200$ rpm

Working speed 3,800 - 3,900 rpm

Adjusting the idling speed (1)



1. Screw for adjusting the idling speed

Adjusting the idling speed

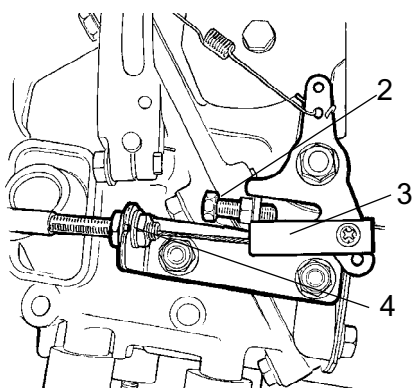
Start the engine and run it until it is warm. When the engine is running, turn the adjusting screw to the engine's standard idling speed.

Go up to the working speed, and down again. Wait for 30 - 60 seconds, and then check the idling speed again.

Adjusting the working speed

Adjust the working speed with the screw (2). Make sure that there is an approx. 5 mm pretension on the throttle wire spring (3) at full throttle.

Adjust the length of the wire (4) to obtain the pretension.



2. Adjusting screw for working speed

3. Spring

4. Adjusting screw for throttle wire



Nordic Construction Equipment AB
P.O. Box 224, SE-127 24 Skärholmen, Sweden
Tel.+46(0)8 603 32 00 Fax. +46(0)8 646 72 61



Nordic Construction Equipment AB
P.O. Box 224, SE-127 24 Skärholmen, Sweden
Tel.+46(0)8 603 32 00 Fax. +46(0)8 646 72 61