

DYNAPAC

Forward Moving Vibrating Plate CM 13

Operation & Maintenance ICM013EN2, December 2001

**Engine:
Hatz 1B20
Honda GX160**

These instructions apply from PIN (S/N):

CM 13	*20002804*	Hatz
CM 13	*20001300*	Honda



The Dynapac CM 13 is a fast and efficient vibratory plate for compaction work where powerful capacity is required in cramped spaces. The CM 13 is a good choice for efficient compaction in backfilling operations and for compaction work around concrete foundations and concrete pipes. The Dynapac CM 13 is equipped with transport wheels as standard.

Like all other machines that are powered by combustion engines, the plate is designed for operation in well-ventilated areas.

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WARNING SYMBOLS



WARNING Indicates danger or hazardous procedure that could result in serious or fatal personal injury if the warning is ignored.



CAUTION Indicates danger or hazardous procedure that could result in damage to machine or property if the warning is ignored.

SAFETY INSTRUCTIONS



The safety instructions are included in this manual and must be studied by the operator. Always follow the safety rules and keep the manual available for future use.



Read through the entire manual before starting any maintenance operations.



Ensure good ventilation (air extraction) if the engine is run indoors.

CALIFORNIA

Proposition 65 Warning

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

GENERAL

It is important that the machine is maintained correctly to ensure proper function. It should be kept clean so that any leakage, loose bolts and loose connections can be discovered in time.

Make a habit of inspecting the machine every day before starting up by checking all round it to detect any sign of leakage or other faults.



SPARE A THOUGHT FOR THE ENVIRONMENT!
Do not let oil, fuel and other environmentally hazardous substances contaminate the environment. Always dispose of used filters, drained oil and any remaining fuel properly.

This manual contains instructions for periodic attention which should normally be carried out by the operator.



There are additional instructions relating to the engine, for which the manufacturer's instructions are detailed in the engine manual.

MACHINE PLATE

Fill in all data below, when delivering and commissioning the machine.

DYNAPAC 			
Metso Dynapac AB Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated Power kW	Year of Mfg
Product Identification Number			
			358090SE



.....
Engine Model

.....
Engine Number

SAFETY INSTRUCTIONS (FOR ALL LIGHT PRODUCTS)

Symbols

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



WARNING: Indicates danger or hazardous procedure that could lead to serious or mortal injury if the warning is neglected.



CAUTION: Indicates danger or hazardous procedure that could lead to machine or property damage if the warning is neglected.

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 Dynapac. If modifications not approved by Dynapac are carried out, these could result in serious injury to yourself or other personnel.

- 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 that they are always legible. The ordering numbers for new stickers can be found in the spare parts list.
- Use of the machine and its accessories is restricted to the applications specified in the product literature.
- 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.

Be alert

Always pay attention to what you are doing, and 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 affect 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:

- Safety helmet
- Safety goggles
- Ear protectors
- Dust mask in dusty environments
- High-visibility 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. Vibrations from hand-held machines are transmitted into the hands via the handles of the machine. Dynapac machines feature a handle design that absorbs a large part of the machine vibrations. The vibrations are not eliminated entirely, but it is possible to use the machines for longer periods of time without the risk of injury.

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

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.

SAFETY INSTRUCTIONS (FOR ALL LIGHT PRODUCTS)

Filling with fuel (Gasoline/diesel)



Petrol has an extremely low flash-point and can be explosive in certain situations. Do not smoke. Make sure that worksite ventilation is good.

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. 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. Do not overfill the tank. Inspect the machine for fuel leakage regularly.

Do not use a machine that is leaking fuel.

Starting the machine



Before starting read instruction book and make your self familiar with the machine and make sure that:

- All handles are free from grease, oil and dirt.
- The machine does not show any obvious faults.
- All protective devices are securely fastened in their places.
- All control levers in "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.

Use the machine only for the purpose for which it is intended. Make sure you know how to stop the machine quickly in the event of an emergency situation.



Always take extreme care when driving the machine on slopes. Always drive straight up and down on slopes. Do not exceed the maximum gradability of the machine according to the instruction book. Stay clear of machine when operating on a slope or in a trench.

Do not touch the engine, the exhaust pipe or the eccentric element of the machine. They gets very hot during operation and can cause burn injuries.

Do not touch V-belts or rotating parts during operation.

Parking

Park the machine on ground as level and firm as possible. Before leaving machine:

- Apply the parking brake.
- Shut off the engine and pull the ignition key out.

Loading/Unloading



Never remain under or in the immediate vicinity of the machine when it is lifted by a crane. Only use marked lifting points. Always make sure that all lifting devices are dimensioned for the weight of the products.

Maintenance

Maintenance work must only be carried out by skilled personnel. Keep unauthorized persons away from the machine. Do not carry out maintenance work while the machine is moving or the engine is running.

SAFETY INSTRUCTIONS (FOR ALL LIGHT PRODUCTS)

Working with the hydraulic system

Regular maintenance of the hydraulic system is important. Minor damage or a split hose or coupling can have devastating consequences. Bear in mind that the hydraulic hoses are made of rubber and can deteriorate with age, which can result in splitting. In all cases of uncertainty with regard to durability or wear, replace the hoses with new original hoses from Dynapac.

Working with battery

The battery contains poisonous and corrosive sulphuric acid. Wear protective glasses and avoid getting acid on your skin, clothes or on the machines. If you get sulphuric acid on yourself, rinse the skin with water. 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 explosive. When fitting or replacing a battery, always take care so that you do not short-circuit the battery poles.

Repair

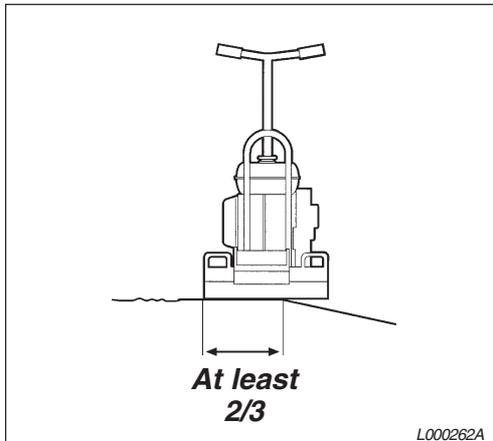
Never use a machine that is damaged. Qualified repair work requires trained personnel, please contact your nearest authorized workshop.

Extinguishing fires

If there is a fire in or on the machine, it is best to use an ABE-class fire extinguisher. However, a BE-class CO₂ extinguisher is also suitable.

SAFETY WHEN DRIVING

Driving near an edge



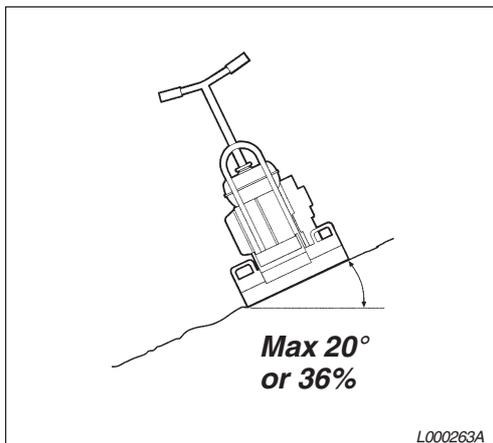
Machine location when operating on edges

When driving near an edge, at least two thirds of the plate must be on firm solid ground.



If the machine tips over, switch off the engine before attempting to lift the machine.

Slopes



Tipping angle on side slopes

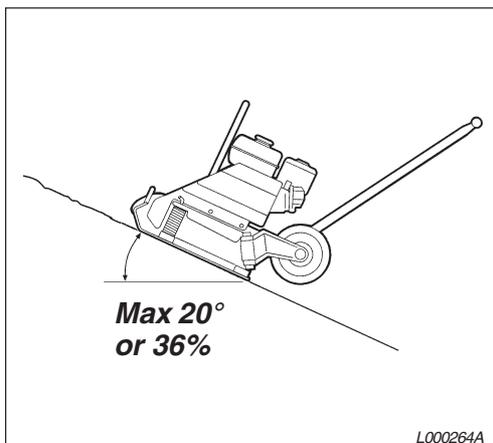
Make sure that the work site is safe. Wet and loose earth reduces manoeuvrability especially on sloping ground. Always observe particular caution on sloping and uneven terrain.



Where possible, avoid all driving across a slope. Instead, drive up and down on sloping ground.

Never work on slopes that are greater than the capability of the machine. Maximum slope of the machine in operation is 20° (depending on condition of the ground).

The tilting angle is measured on a hard, level surface with the machine stationary. Vibration switched OFF and all tanks full. Remember that loose ground, vibration switched ON, and driving speed can all cause the machine to topple even on a smaller slope than specified here.

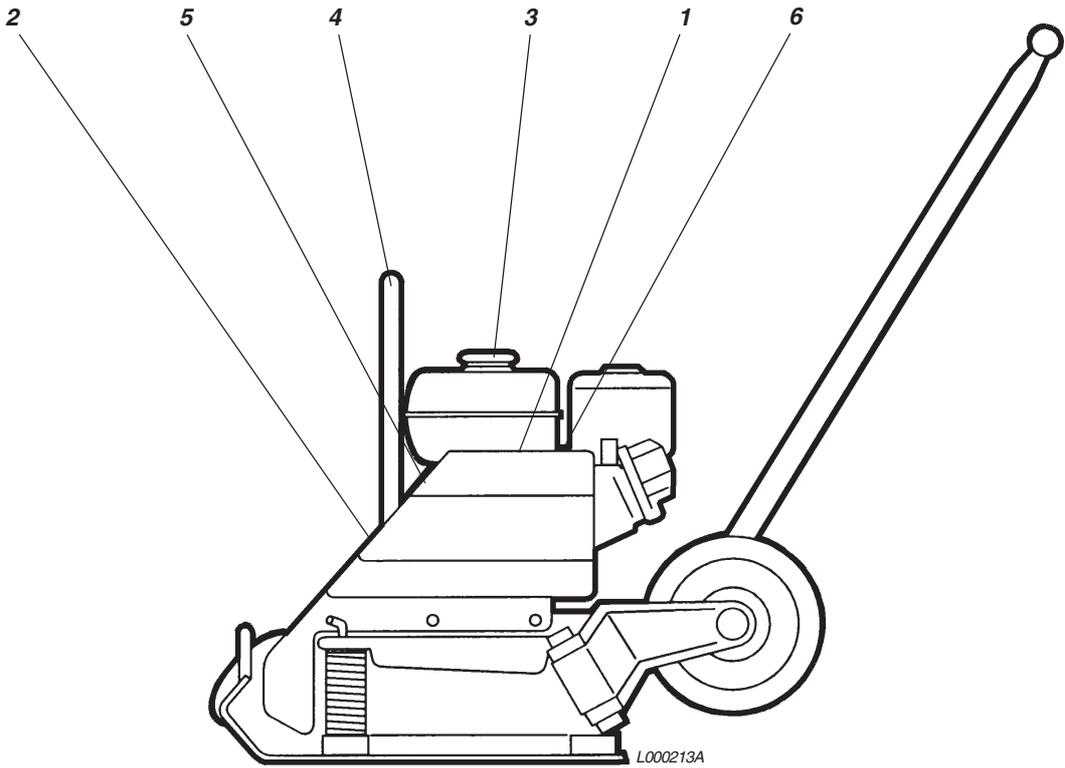


Driving on slopes



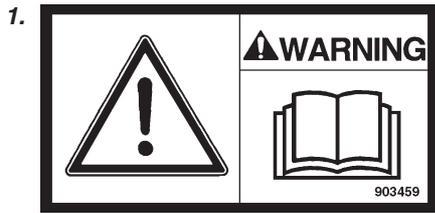
Never leave the machine unattended with the engine running.

SAFETY DECALS, LOCATION/DESCRIPTION



L000213A

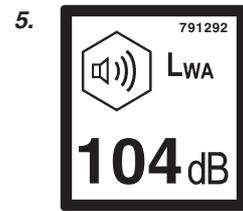
SAFETY DECALS, LOCATION/DESCRIPTION



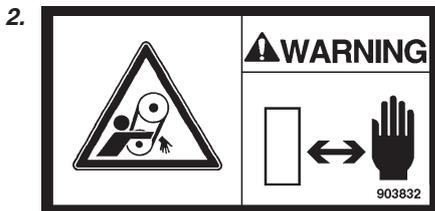
The operator must read the safety manual, and the operation and maintenance instructions before using the machine.



Petrol
(Honda)



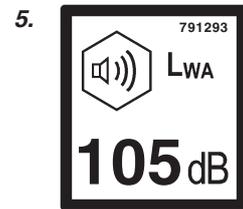
Guaranteed Sound Power level
(Honda)



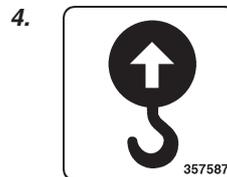
Warning, hand and arm entanglement. Never reach into the hazardous area.



Diesel
(Hatz)



Guaranteed Sound Power level
(Hatz)



Lifting point



Use ear protectors

FUEL AND LUBRICANTS



ENGINE OIL

Use SAE 15W/40,
Shell Universal Engine Oil TX15W-40 or equivalent:
Hatz 1B20 0,9 l (0.95 qts)
Honda GX160 0,6 l (0.63 qts)



FUEL

Honda GX160
Use ordinary grade petrol (unleaded)
Volume: 3,8 l (4.0 qts)



FUEL

Hatz 1B20
Use diesel oil which satisfy EN 590 or DIN 51601
Volume: 5,0 l (5.3 qts)



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

Service parts P/N

	Honda GX160	Hatz 1B20
Engine air filter element	23 93 23	93 70 13
Engine spark plug	23 95 65	—
V-belt	41 00 06	41 30 49

TECHNICAL DATA

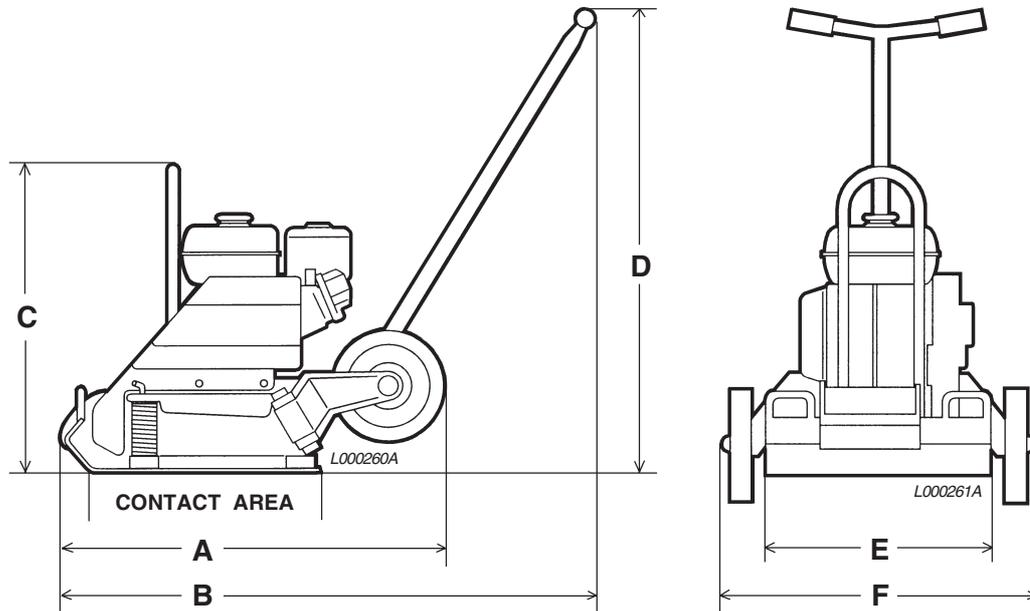
	CM 13, Honda	CM 13, Hatz
Weight		
Net weight, kg (lbs)	130 (287)	142 (313)
Operating weight EN500, kg (lbs)	131 (289)	144 (317)
Compaction data		
Vibr. frequency, Hz	75	75
Vibr. frequency, vpm	4500	4500
Centrifugal force, kN (lbf)	16 (3597)	16 (3597)
Amplitude, mm (in)	1,1 (0.043)	1,1 (0.043)
Operating data		
Speed of travel, m/min (feet/min)	25 (82)	25 (82)
Max. tilt, °	20	20
Volumes		
Fuel tank, lit. (qts)	3,6 (3.8)	5,0 (5.3)
Crank case, lit. (qts)	0,6 (0.6)	0,9 (1.0)
Engine		
Model	Honda GX160 Recoil start	Hatz 1B20 Recoil start
Output, kW (hp)	4,0 (5.4)	2,8 (3.8)
Engine speed, rpm	3600	3000
Noise and Vibrations		
Noise level	Sound pressure level at the operator's ear according to ISO 6394	
L_{pA} dB (A) =	89	92
	Sound power level according to ISO 3744:	
L_{wA} dB (A) =	103	104
Vibration values	Hand - arm vibration values according to ISO 5349:	
a m/s ² =	5,01	5,31

The above noise level and vibration values were determined at normal engine speed with vibration on. The machine was placed on an elastic base. During operation these values may differ because of the actual operational conditions.

Noise level according to EU directive 2000/14/EC for EU equipped machine, on macadam course with vibration switched ON:

Measured sound power level,		
L_{wA} , dB(A) =	102	104
Guaranteed sound power level,		
L_{wA} , dB(A) =	104	105

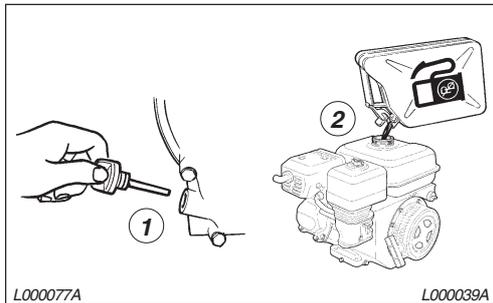
TECHNICAL DATA – DIMENSIONS



	CM 13	CM 13
A mm (inch)	780 (30.7)	780 (30.7)
B mm (inch)	1050 (41.3)	1050 (41.3)
C mm (inch)	770 (30.3)	770 (30.3)
D mm (inch)	970 (38.2)	970 (38.2)
E mm (inch)	460 (18.1)	460 (18.1)
F mm (inch)	690 (27.2)	690 (27.2)
Contact area, m ² (sq feet)	0,19 (2.05)	0,19 (2.05)

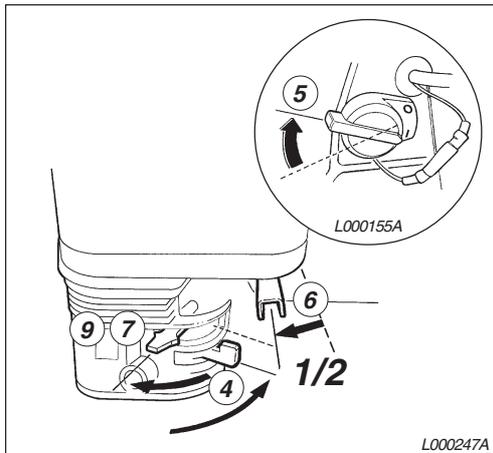
OPERATION – HONDA GX160

Before start

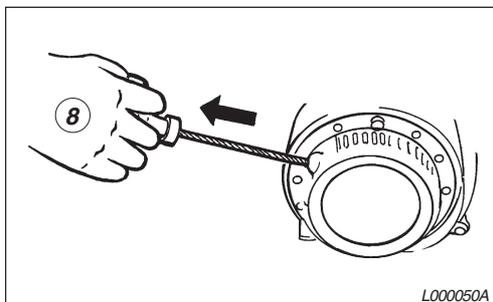


1. Check the oil level in the engine.
2. Fill the fuel tank with fuel.
3. Check that all operating controls are working.

Starting the engine

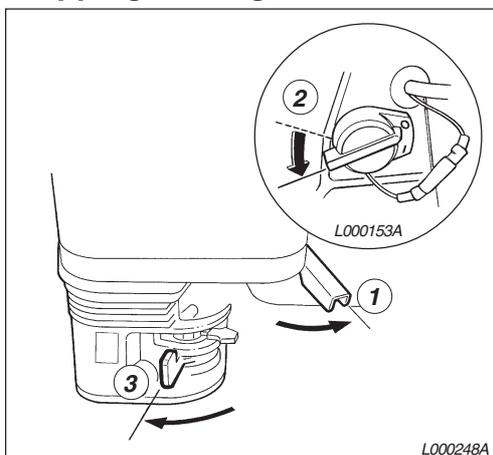


4. Open the fuel cock.
5. Turn the engine switch to position I.
6. Put the throttle lever to the middle position.
7. Close the choke if the engine is cold; if the engine is warm or the ambient temperature high, push it in half way or leave it open.



8. Pull slowly on the magnapull starter handle (4) until you feel it engage, then let the handle return a short distance and pull sharply to start the engine.
9. While the engine is warming up, move the choke control slowly to the right to open the choke fully.

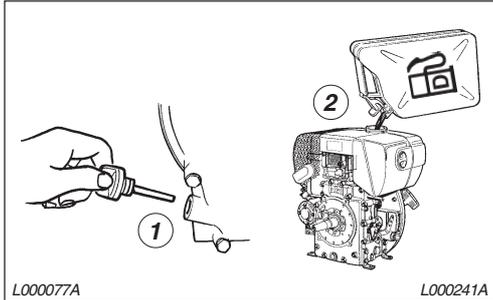
Stopping the engine



1. Reduce the throttle setting and let the engine idle for a minute or so.
2. To stop the engine, turn the engine switch to O.
3. Close the fuel tap.

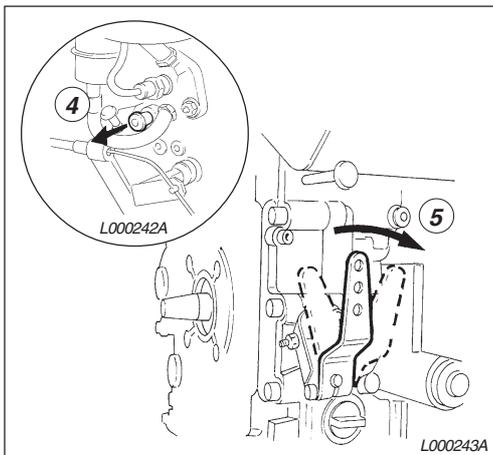
OPERATION – HATZ 1B20

Before start

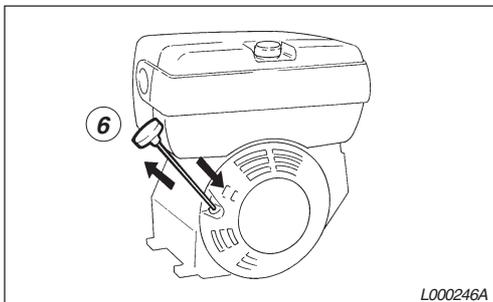


1. Check the oil level in the engine.
2. Fill the fuel tank with fuel.
3. Check that all operating controls are working.

Starting the engine



4. Open the fuel cock.
5. Set speed control lever either 1/2 START or max. START position, as desired or necessary. Starting at a lower speed will help to prevent exhaust smoke.

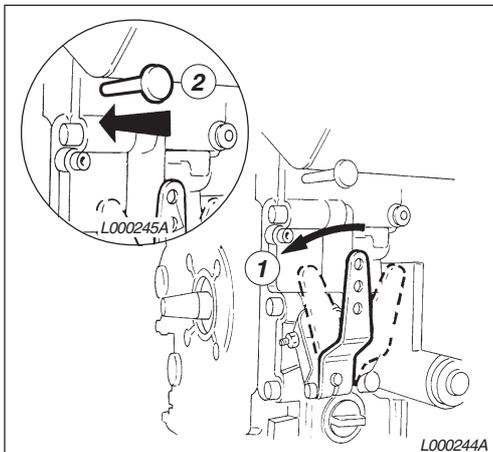


6. Pull the starting cable out by the handle until you feel a slight resistance. Let the cable run back; in this way the entire length of the starting cable can be used to start the engine.



If after several attempts of starting the exhaust begins to emit white smoke, move the speed control lever to the stop position and pull the starting cable out slowly 5 times. Repeat the starting procedure.

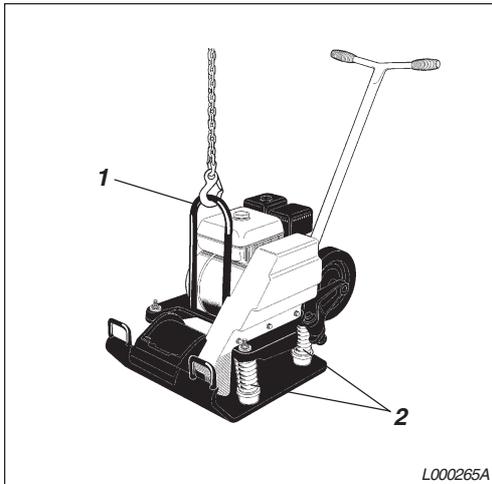
Stopping the engine



1. Throttle in neutral position. Let the engine idle a few minutes.
2. Press the engine stop switch to OFF position.

LIFTING, TRANSPORTATION AND TOWING

Lifting/Towing



Machine ready for lifting

1. Lifting hook
2. Shock absorbers



Never walk or stand underneath a hoisted machine.

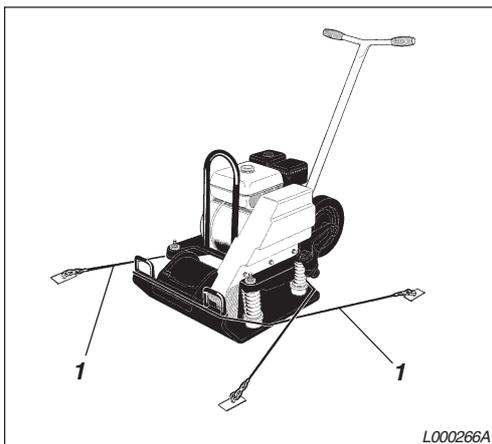


Use only the frame lifting hook (1) to lift the machine.



All lifting equipment must be dimensioned in conformance with current regulations. Ensure before lifting that the shock absorbers (2) are securely fixed and undamaged.

Transportation



Machine ready for transportation

1. Lashing strap



Always secure the machine firmly during all transportation. Place lashing band in a U shape around the bottom plate and secure both front and rear.

MAINTENANCE – SERVICE POINTS

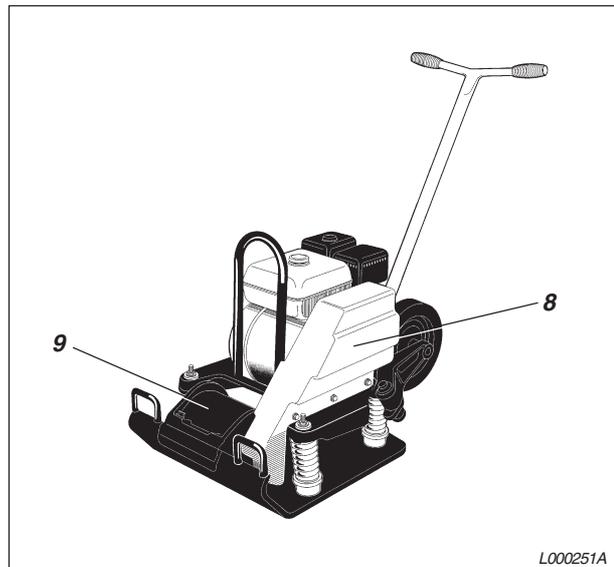


Fig. 1 CM 13
8. V-belt
9. Eccentric element

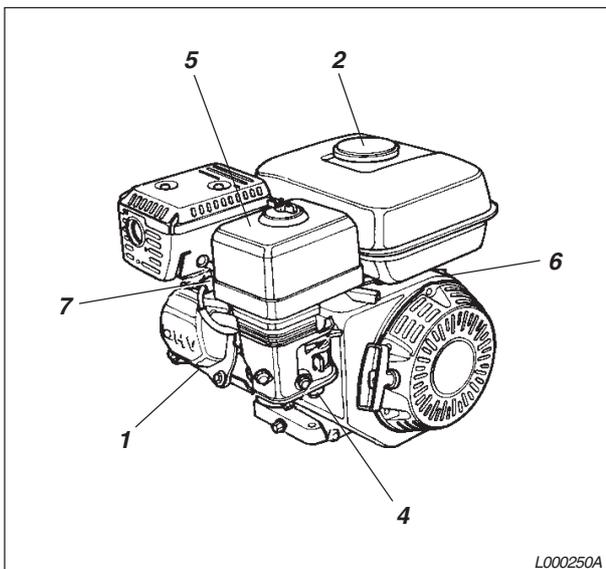


Fig. 2 Honda GX160 – Gasoline engine

1. Engine oil
2. Fuel tank
4. Fuel filter (Gasoline)
5. Air filter, engine
6. Cooling system, engine
7. Spark plug (Gasoline)

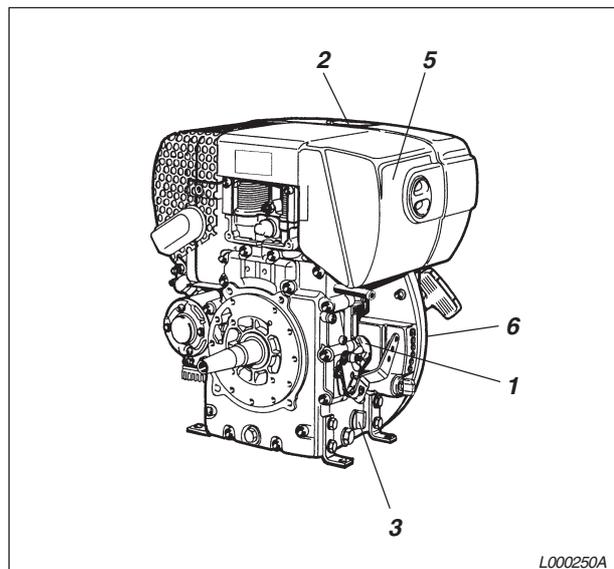


Fig. 3 Hatz 1B20 – Diesel engine

1. Engine oil
2. Fuel tank
3. Oil filter, engine (Diesel)
5. Air filter, engine
6. Cooling system, engine

MAINTENANCE – SERVICE POINTS

Every 10 hours of operation (daily)

Item in fig.	Maintenance	see page	Comments
2	Check and replenish fuel		
1	Check and replenish lube oil	19	
	Check for oil leakage		
	Check and tighten engine parts	19	
5	Clean / replace air cleaner elements	19	

After the first 20 hours of operation

Item in fig.	Maintenance	see page	Comments
1	Change lube oil	20	
3	Clean / replace oil filter (Diesel)		See engine manual
5	Clean / replace air cleaner elements	19	See engine manual
	Check and adjust the engine valve clearance (Diesel)		See engine manual

MAINTENANCE – SERVICE POINTS

Every 100 hours of operation

Item in fig.	Maintenance	see page	Comments
1	Change engine oil	20	
5	Clean / replace air cleaner elements	19	See engine manual
8	Check V-belt	20	

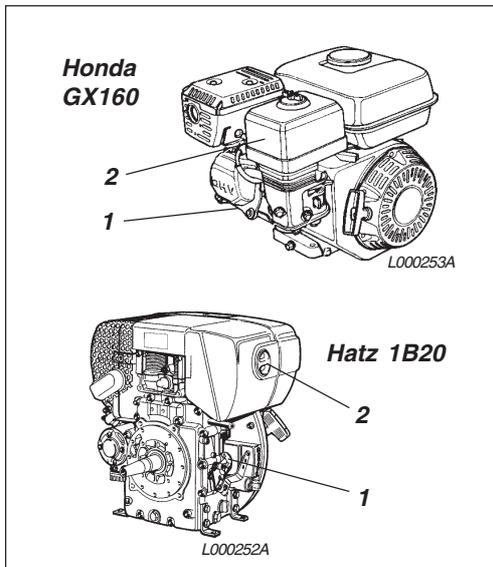
Every 300 hours of operation (once every year)

Item in fig.	Maintenance	see page	Comments
9	Change eccentric element oil	21	
6	Clean / replace oil filter (Diesel)		See engine manual
	Check fuel injection pump (Diesel)		See engine manual
	Check fuel injection nozzle (Diesel)		See engine manual
	Adjust valve head clearance for intake and exhaust valves		See engine manual

Every 1000 hours of operation (once every year)

Item in fig.	Maintenance	see page	Comments
	Lap intake and exhaust valves		See engine manual
	Replace pistong rings		See engine manual

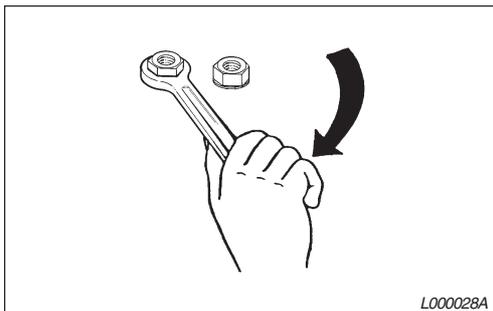
MAINTENANCE – EVERY 10 HOURS OF OPERATION



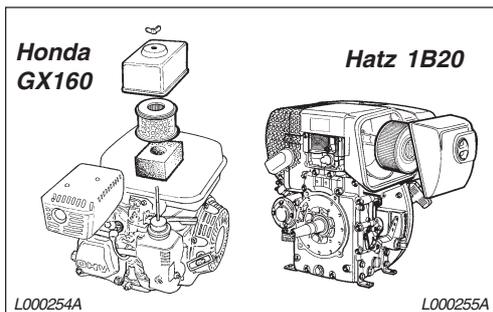
1. Oil dipstick
2. Air cleaner

1. Check oil level engine's crankcase.
2. Check air cleaner.

We recommend reading the detailed motor instructions supplied with the machine.



3. Check and, where necessary, tighten screws and nuts.



4. Clean or replace the air filter, depending on its condition.



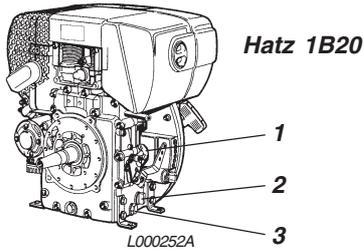
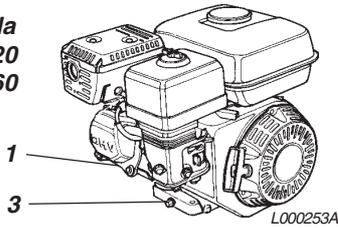
5. Keep machine clean.



When washing the machine, do not aim a jet of water directly at the fuel cap. This is especially important when using a high-pressure jet. Put a plastic bag over the filler cap of the fuel tank and secure with an elastic band.

MAINTENANCE – EVERY 100 HOURS OF OPERATION

**Honda
GX120
GX160**



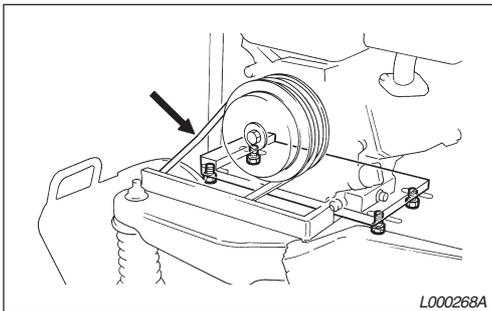
1. Oil dipstick
2. Oil filter
3. Oil drain plug/drain hose

1. Change oil (first change after 20 hours, together with engine oil filter).

Use the accompanying hose to drain the oil.



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



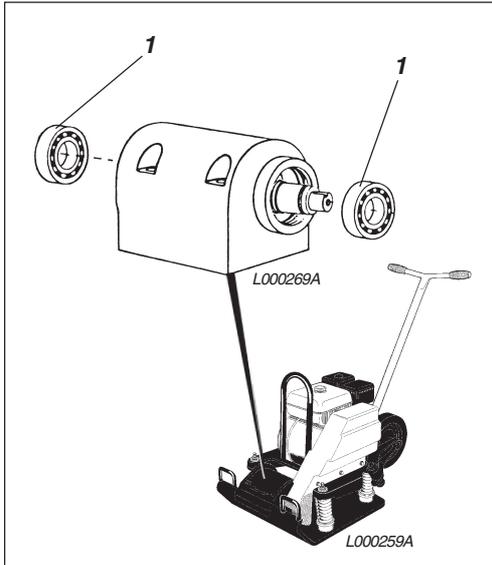
1. Take off the protective cover and inspect the V belt.
2. To adjust belt tension, loosen the four engine-plate bolts and slide it into position.
3. Tighten the bolts and replace the protective cover.



Never run the machine without the protective cover over the V belt.

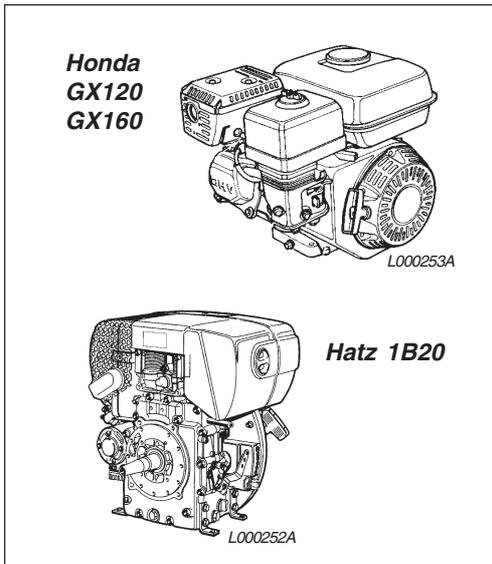
MAINTENANCE – EVERY 500 HOURS OF OPERATION

Lubricate the eccentric element



1. Bearing

1. Inspect grease lubrication.



1. Clean / replace oil filter.
(For diesel, see the engine instruction manual.)
2. Check fuel injection pump.
(For diesel, see the engine instruction manual.)
3. Check fuel injection nozzle.
(For diesel, see the engine instruction manual.)
4. Adjust valve head clearance for intake and exhaust valves. (See the engine instruction manual).



Save the oil and dispose of it in an approved manner. Also dispose of used oil filters properly.

DYNAPAC

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