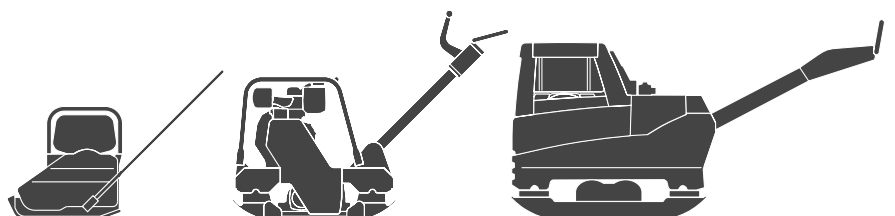




Safety regulations Operating instructions

AVP 1240 H
AVP 1250
AVP 1850 H
AVP 1850 1B20





These instructions include:

- Safety regulations
- Operating instructions
- Maintenance instructions

These instructions have been prepared for operation on the construction site and for the maintenance motorer.

These instructions are intended to simplify operation of the machine and to avoid malfunctions through improper operation.

Observing the maintenance instructions will increase the reliability and service life of the machine when used on the construction site and reduce repair costs and downtimes.

Always keep these instructions at the place of use of the machine.

Only operate the machine as instructed and follow these instructions.

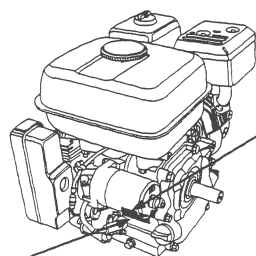
Observe the safety regulations as well as the guidelines of the civil motorering trade association „Safety rules for the operation of road rollers and compactors“ and the pertinent regulations for the prevention of accidents.

Ammann Verdichtung GmbH is not liable for the function of the machine when used in an improper manner and for other than the intended purpose.

Operating errors, improper maintenance and the use of incorrect operating materials are not covered by the warranty.

The above information does not extend the warranty and liability conditions of business of Ammann Verdichtung GmbH.

○ Serial No.		○
Fabr. No.		
Service weight (kg)		
Power output (kW)		
Constr. year		
AMMANN Verdichtung GmbH		CE
○ D-53773 Hennef	Made in Germany	○



Please enter (data on machine type plate)

→ Mach.-type :

→ Mach.-No. :

→ Engine-type :

→ Engine-No. :

Ammann Verdichtung GmbH

Josef-Dietzgen-Straße 36 • D-53773 Hennef / Postfach 11 63 • D-53758 Hennef

FAX 02242/8802-59 • FAX 02242/8802-89 (Service)

1. Safety regulations

This AMMANN machine has been built according to the state of the art in compliance with the pertinent rules. Nevertheless, these machines can still constitute a hazard to persons and property if:

- not used for the intended purpose,
- not operated by suitably qualified and instructed personnel,
- modified or converted in an improper manner,
- the pertinent safety regulations are not observed

For this reason, any person entrusted with the operation, maintenance or repair of the machine is obliged to read and follow the operating instructions and particularly to observe the safety regulations. If necessary, this must be confirmed by the signature of the company using the machine.

Furthermore, the following must be made known and observed:

- pertinent regulations for the prevention of accidents,
- generally recognised safety rules,
- country-specific regulations

Normal use

This machine is only intended for all compaction work in the fields of civil engineering and road construction.

All ground materials such as sand, gravel, sludge, crushed stone, asphalt and composite sett paving can be compacted.

Improper use

The machine can constitute hazards if not used by instructed personnel or for other than the intended purpose. Not be used on hard concrete, hardened bituminous surfacing or frozen soil.

Who is allowed to operate the machine?

Only suitably qualified, instructed and authorised persons over 18 years of age may operate the machine. Maintenance and repairs, particularly on the hydraulic system, require special knowledge and must be undertaken only by qualified personnel.

Conversions and modifications to the machine

Unauthorised modifications and conversion of the machine are not permitted for safety reasons.

Spare parts and special equipment not delivered by us are also not approved by us. The installation and/or the use of such parts can also have a detrimental effect on the operating safety.

The manufacturer disclaims all liability for any damage resulting from the use of non-original parts or special equipment.

Safety information in the operating and maintenance instructions

The following signs and designations are used in the manual to designate instructions of particular importance.

Important

Refers to special information on how to use the machine most efficiently.

Attention

Refers to special information and/or orders and prohibitions directed towards preventing damage.

Danger

Refers to orders and prohibitions designed to prevent injury or extensive damage.

Transporting the machine

Only load and transport the machine as specified in the operating instructions.

Only use suitable means of transport and lifting gear with sufficient bearing capacity!

Attach suitable slinging means to the points of attachment provided.

Only use sturdy loading ramps with sufficient bearing capacity. The ramp inclination must be flatter than the gradient climbing ability of the machine.

Secure the machine to prevent it from tilting or slipping.

It is highly dangerous to walk or stand under suspended loads.

Secure the machine on transport vehicles to prevent it from rolling, slipping and tilting.

Starting the machine

Prior to starting

Familiarise yourself with the operating and control elements and the mode of operation of the machine and the working environment. This includes, e.g. obstacles in the working area, bearing capacity of the ground and the necessary safety provisions.

Use personal protective equipment (safety footwear, hearing protectors, etc.).

Check to ensure that all safety devices are firmly in place.

Do not start the machine if instruments or control devices are faulty.

Starting

For machines with handstart, only use the safety cranks tested by the manufacturer, and precisely follow the operating instructions of the engine manufacturer.

To crank-start diesel engines, note the correct position to the engine and the correct hand position on the crank.

The handcrank must be turned with maximum force until the engine starts, otherwise the crank can rebound.

Precisely follow the starting and stopping procedures specified in the operating instructions and observe indicator lights.

Only start and operate machines with an electrical starter from the instrument panel.

Starting and operation of the machine in potentially explosives atmospheres is forbidden!

Starting with battery jump leads.

Connect positive to positive and negative to negative (earthing lead). Always connect the earthing lead last and disconnect first! Incorrect connection will cause serious damage to the electrical system.

Starting and operation of the machine in potentially explosives atmospheres is forbidden!

Starting in enclosed spaces, tunnels, mines or deep ditches

Engine exhaust fumes are highly dangerous!

For this reason, when operating the machine in enclosed spaces, tunnels, mines or deep ditches, it is important to ensure that there is sufficient air to breath (see UVV „Construction work“, VBG 37, paragraphs 40 and 41).

Machine control

Operating devices which adjust themselves automatically when released in normal use, must not be locked.

Check protective devices and brakes for proper functioning prior to operation.

When reversing, particularly on the edges and banks of ditches, as well as in front of obstacles, the machine operator cannot fall or be crushed.

Always keep a safe distance away from the edges and banks of ditches and refrain from any actions which could cause the machine to topple over!

Always control the machine, so that hand injuries through hard objects are avoided!

Always ascend slopes carefully in a direct path.

Reverse up steep slopes to prevent the machine from toppling over on to the machine operator.

If faults on the safety devices or other faults detrimental to the safe operation of the machine are noticed, operation of the machine must be stopped immediately and the faults remedied.

When undertaking compaction work in the vicinity of buildings or above pipelines and similar, check the effect of the vibrations on the buildings and pipes and stop compaction work if necessary.

Parking the machine

Park the machine on a firm and level surface.

Shutdown the drive and secure it to prevent accidental movement and unauthorised use. If available, close the fuel valve. Do not place or store equipment with integrated moving gear on the chassis. The moving gear is intended only for transportation purposes.

Filling petrol

Only fill petrol with the engine shutdown.

No open fire, do not smoke.

Do not spill any fuel, collect discharging fuel in a suitable container, prevent fuel from seeping into the soil.

Ensure that the filler cap is tight.

Leaky fuel tanks constitute an explosion hazard and must therefore be replaced immediately.

Maintenance and repairs

Observe the maintenance, inspection and adjustments and intervals specified in the operating instructions, as well as the information for part replacement.

Maintenance work must be undertaken only by qualified and authorised persons.

Maintenance and repairs must only be undertaken with the drive stationary.

Only carry out maintenance and repairs when the machine is parked on a firm and even surface and is secured to prevent it from rolling.

When changing larger assemblies and individual components, only use suitable and perfectly functioning hoisting and lifting gear with suitable bearing capacity. Attach and secure parts to lifting gear carefully!

Spare parts must comply with the technical requirements of the manufacturer. Therefore only use original spare parts.

Before working on hydraulic lines, these must previously be rendered pressureless. Hydraulic oil discharging under pressure can cause serious injuries.

Work on hydraulic devices must be undertaken only by persons with a special knowledge of hydraulics and the necessary experience!

Do not adjust pressure relief valves.

Drain hydraulic oil at operating temperature—caution risk of scalding!

Collect discharging hydraulic oil and dispose of the same in an environmentally-friendly manner.

Do not start the engine with hydraulic oil drained!

After completing all work (with the system still pressureless), inspect all connections and bolted connections for leaks.

Inspect all hoses and bolted connections for leaks at regular intervals and externally visible damage! Rectify any damage immediately.

Replace externally damaged hydraulic hoses at regular intervals (depending on time used), even when no safety-relevant faults are visible.

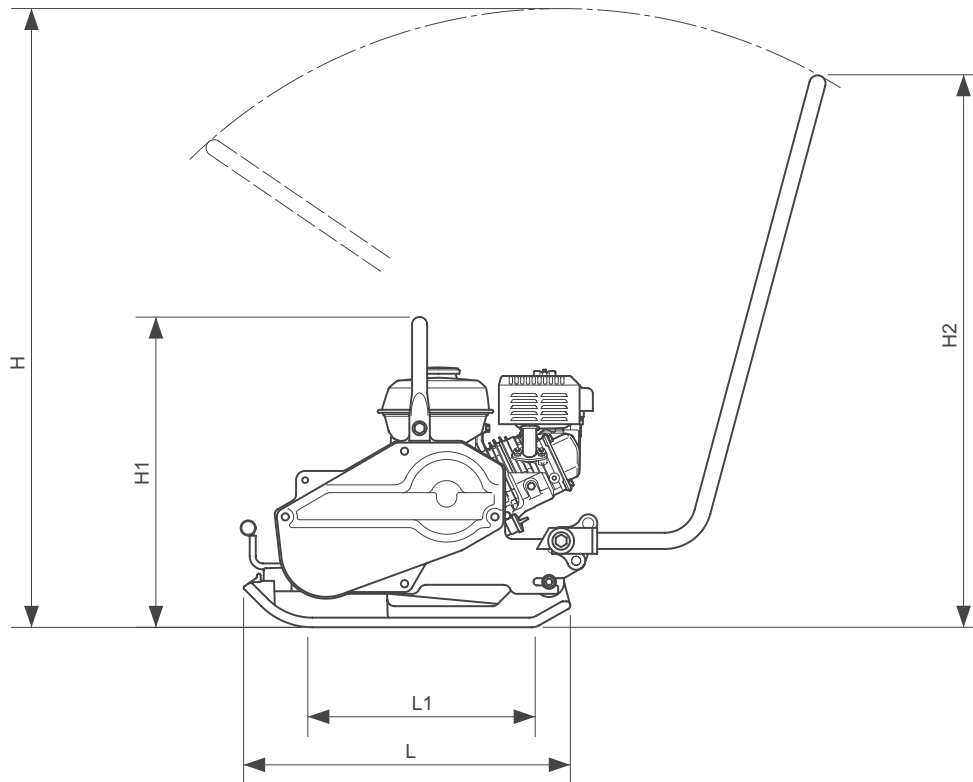
Inspect the electrical equipment of the machine at regular intervals. Faults such as loose connections, worn or scorched cables must be immediately.

Properly refit and inspect all protective devices after maintenance and repairs.

Testing

Road rollers, trench rollers and vibrating plates must be tested for safety by an expert depending on the particular application and operating conditions as required, however at least once a year.

2. Technical Data



	AVP 1240 H	AVP 1250	AVP 1850 H	AVP 1850 1B20
1. Dimensions				
Length L	540 mm	523 mm	615 mm	
Length L1	340 mm	353 mm	398 mm	
Height H	980 mm		1110 mm	
Height H1	510 mm		520 mm	615 mm
Height H2	880 mm		950 mm	
Working width	400 mm	500 mm	500 mm	
2. Weights				
Operating weight	75 kg		100 kg	117 kg
3. Drive				
Motor-type	Honda GX 120		Honda GX 160	Hatz 1B20
Type of construction	1-cyl-4-stroke gasoline			1 cyl-4-stroke diesel
Power	2.6 kW (3.6 hp)		3.7 kW (5.0 hp)	3.1 kW (4.2 hp)
by speed	3600 1/min		3200 1/min	3000 1/min
shift in of centrifugal clutch	2000 1/min			
Cooling	Air			
Fuel capacity	2.5 ℓ		3.6 ℓ	3.0 ℓ
Fuel consumption	0.8 ℓ/h		1.1 ℓ/h	0.9 ℓ/h
max. sloping position	20°			
max. grade ability	30 %			
Drive	via centrifugal clutch and V-belt			

2. Technical Data

	AVP 1240 H	AVP 1250	AVP 1850 H	AVP 1850 1B20
4. Speed				
Speed	max. 20 m/min			
5. Vibration				
Vibration force	12 kN		18 kN	
Vibration frequency	98 Hz		85 Hz	
6. Working surface				
Working surface	0.14 m²	0.18 m²	0.20 m²	
7. Spec. surface pressure				
Spec. surface pressure	8.6 N/cm²	7.2 N/cm²	9.0 N/cm²	
8. Optional equipment				
Water tank 10 ℓ	X	X	X	—
Water tank 5 ℓ	—	—	—	X
Undercarriage	X	X	X	X
Vibration damped towbar	X	X	X	X
9. Noise and Vibration data				
The following listed noise and vibration data according to the EC machine directive in the version (91/368/EEC) was determined at the rated speed of the drive motor with vibration with the machine placed on a resilient base. Values can deviate in normal use depending on the conditions prevailing at the place of use.				
9.1 Noise data				
The noise emission specified in appendix 1, subclause 1.7.4.f of the EC machine directive for:				
the sound pressure level at the operator place is L _{PA}	91 dB		93 dB	94 dB
Measured sound power level L _{WA,m}	103 dB	105 dB	106 dB	
Guaranted sound power level L _{WA,g}	108 dB			
The noise levels were measured according to ISO 3744 for the sound power level (L _{WA}) and ISO 6081 for the sound pressure level (L _{PA}) at the operator workplace.				
9.2 Vibration data (basic unit / vibration damped towbar)				
Hand-arm vibration values according to appendix 1, sub-clause 3.6.3.a of the EC machine directive:				
The weighted effective value of acceleration, determined according to ISO 8662, part 1, is	5.3 / 1.2 m/s²		5.8 / 2.4 m/s²	



*Since the permissible noise rating level of 89 dB(A) can be exceeded with this machine, the operator must wear suitable hearing protection.

3. Operation

3.1 Description

The AVP 1240 / 1250 / 1850 is a vibration plate which operates according to the trailer vibratory system and moves only in one direction.

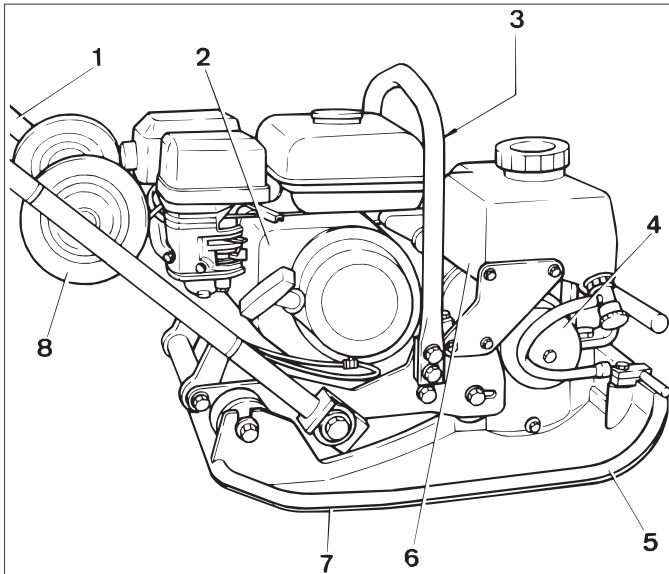
The engine drives the vibrator through a centrifugal clutch and a V-belt.

The equipment is used for compacting sand, gravel (possibly also coarse gravel), cohesive soils, lean concrete, medium- and finegrained asphalt-coated gravel and also composite stone paving.

Danger

Do not operate on hard concrete or set bitumen toppings.

3.1.1 Equipment overview



- 1 Towbar
- 2 Engine
- 3 V-belt pulley with centrifugal clutch
- 4 Vibrator
- 5 Base plate
- 6 Water sprinkler*
- 7 Vulkollan plate*
- 8 Bogie*

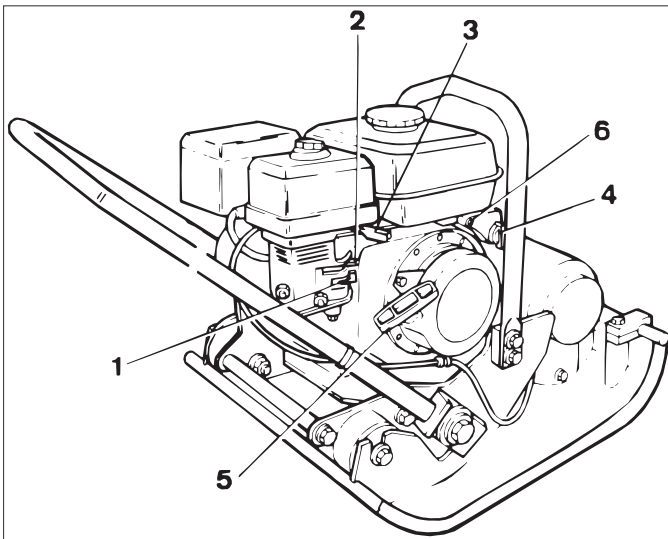
*Optional equipment

3.2 Before operation

Danger

- **Wear personal sound of protection equipment. - Loss of hearing.**
- **Observe the**
 - **safety conditions**
 - **operation instructions and maintenance instructions.**
- **Read the engine operating instructions. Observe the importants on safety, operation and maintenance contained in them.**
- Stand the machine on an even surface and check
 - the engine oil level
 - the fuel supply
 - that screw connections are secure
 - the condition of the engine and the machine.
- Top up any missing lubrication in accordance with the lubrication table.

3.3 Engine operation (Honda)



3.3.1 Starting the engine

Important

To prevent engine damage through oil deficiency, the engine is provided with a low oil warning system. If the oil level is too low, the engine switches off automatically (the engine switch remains in the «ON»-position).

- Move fuel tap (1) to «ON».
- Move choke lever (2) to «CLOSE».
- Adjust engine speed control lever (3) to full load.
- Move engine switch (4) to «ON».
- Pull starter handle (5) slightly until resistance is felt, then pull out sharply.

Attention

- Do not allow starter handle to rebound against the engine. Guide starter cable back by hand to reset position.
- Do not operate choke lever (2) if engine is warm or at high outside temperature.

If the engine starts:

- Adjust engine speed control lever (3) to idle position.
- Allow the engine to warm up for 1 ... 2 minutes.
- As the engine warms up, gradually move the choke lever (2) to the «OPEN»-position.

3.3.2 Switching off the engine

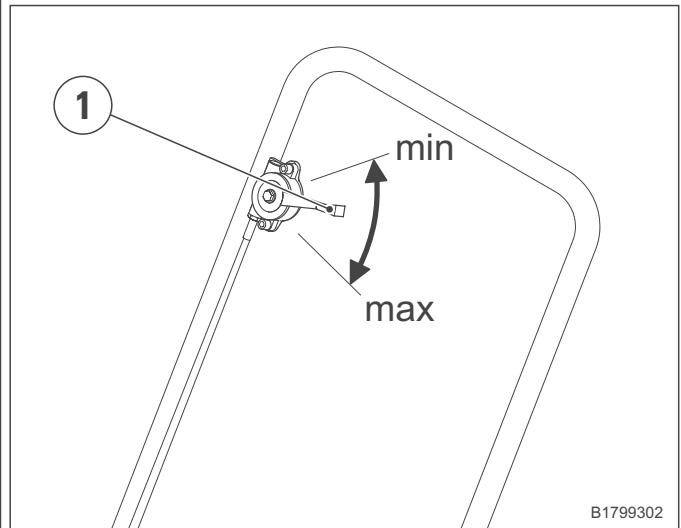
- Adjust engine speed control lever (3) to idle position.
- Turn engine switch (4) to «OFF».
- Move fuel tap (1) to «OFF».

Important

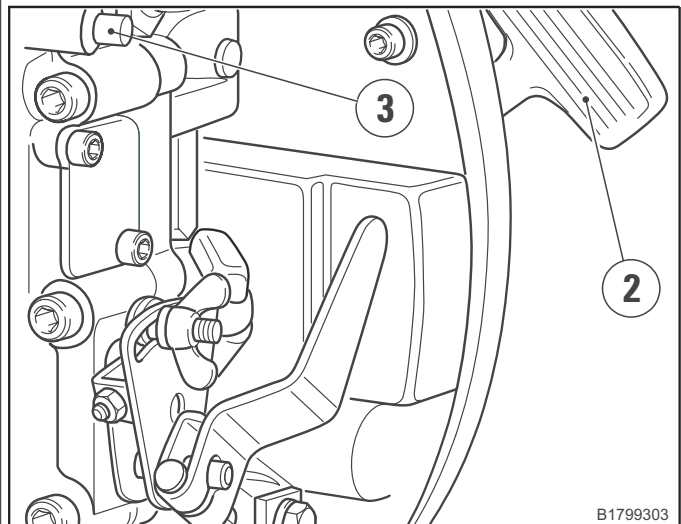
In an emergency situation, set the engine switch (4) to «OFF» in order to switch off the engine.

3.4 Engine operation (Hatz)

3.4.1 Starting the engine



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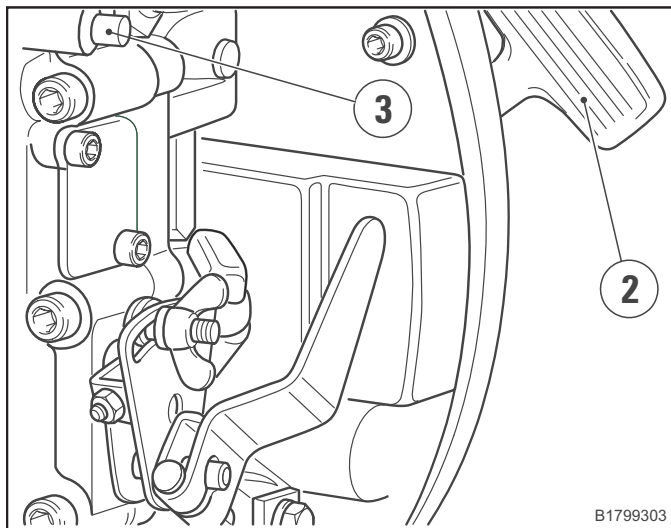
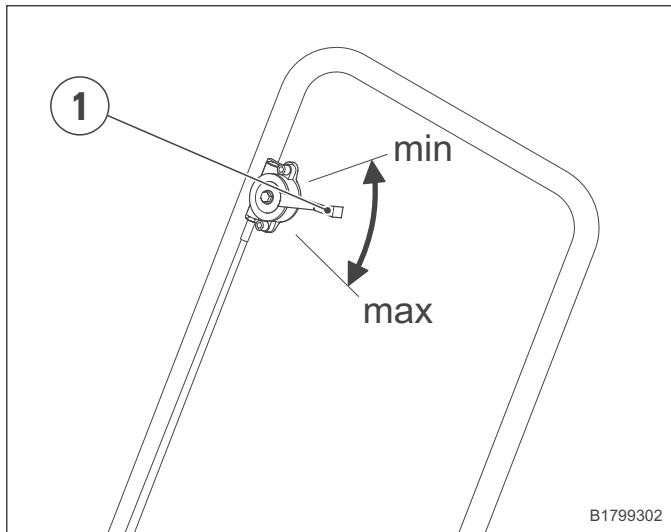
- Adjust engine speed control lever (1) to full load „II“.
- Slowly pull out handle (2) with rope, until detectable resistance can be felt.
- Allow the rope to run back in, to enable you to utilise the whole length of rope for the starting procedure.
- Take hold of the handle (2) with both hands.
- Pull the starting rope with increasing speed, until the motor starts up.
- Allow engine to warm up for 1 ... 2 minutes when idling.

Important

If the motor does not ignite after several unsuccessful attempts at starting, move the speed control lever back into stop position and pull the starting rope through slowly, 5 times. Then repeat the starting procedure.

3. Operation

3.4.2 Switching off the engine



- Adjust engine speed control lever (1) to idle position.
- Press motor stop button (3), until the motor stops running.
- Release the stop button (stop button must return to its initial position).

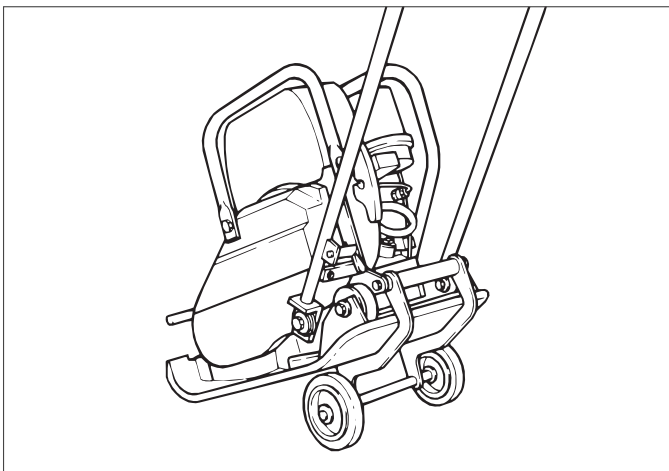
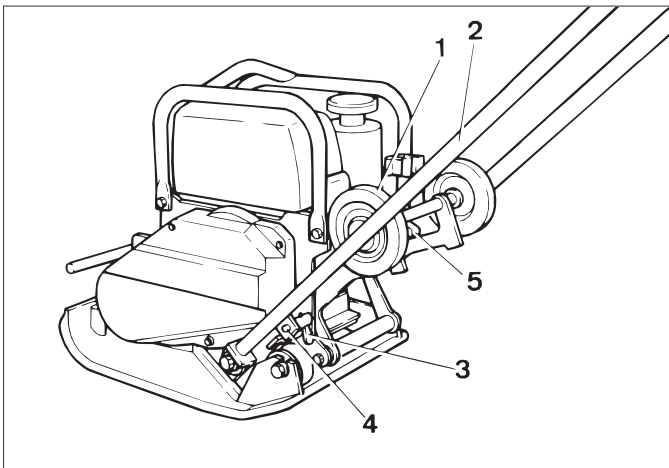
3.5 Operation

- The vibration plate can be operated as soon as the engine reacts to brief acceleration.
- Move engine speed control lever to full load.
- The vibration plate is steered by moving the towbar to the side. The towbar can also be moved over to the other side when working in confined areas.
- The vibration plate can only be stopped by moving the engine speed control lever to the idle position.

Attention

Operate vibration plate only at full throttle and during brief rest periods, always move vibration plate to idle speed otherwise the centrifugal clutch will slip and be damaged!

4.1 Bogie

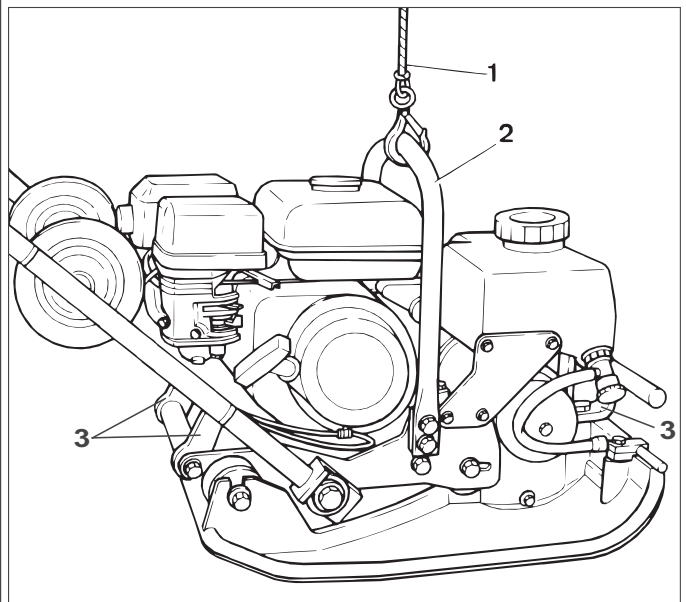


Use the bogie enables the vibration plate to be easily transported over short distances.

- Press towbar (2) down as far as the stop.
- Move locking pin (3) into opening (4) on the towbar.
- Detach bogie from fixture (5) and place on the ground.
- Tilt vibration plate with towbar locked onto its front edge. The bogie swings down below the plate (see illustration).
- Tilt vibration plate back with the towbar until the plate is positioned horizontally on the bogie. The equipment can now be moved.

After transporting, adopt the reverse procedure and attach bogie.

4.0 Loading and transportation



Danger

- Only use sufficiently strong and secure loading ramps when loading.
- Check the contact points (frame, lifting rings) before use for damage and wear. Immediately replace damaged parts.
- Secure the machine against rolling or slipping off and against tipping over.
- Ensure that no persons will be endangered. – When loading, lashing down and lifting the machine always use the provided lifting points.
- Persons are in danger, if they
 - go near swinging loads or
 - stand under swinging loads
- After loading lock the tow bar.

After being loaded on to the means of transportation, the machine should be lashed in place (3).

Use the centre-of-gravity suspension point (2) in order to lift the machine.

5. Maintenance

5.1 General notes

Careful maintenance:

- ⇒ increased service life
- ⇒ increased function
- ⇒ reduced downtimes
- ⇒ increased reliability
- ⇒ reduced repair costs

- Observe the safety regulations!
- Maintenance works should only be carried out when the engine is shut off.
- The engine and machine should be cleaned thoroughly before carrying out maintenance work.

- Park the machine on a flat surface and secure it against rolling away and slipping.
- Ensure that operating materials and replaced parts are disposed of safely and in an environmentally - friendly way.
- It is essential that short-circuits be prevented in cables carrying current.
- When cleaning the machine with a high-pressure water jet, do not spray the electrical components directly.
- After washing the components, blow-dry them with compressed air in order to prevent surface leakage current and corrosion.

5.2 Maintenance schedule (Honda = ● / Hatz = ▲)

Intervals	daily	20 h	50 h	100 h	250 h	500 h	as required
Works							
Clean machine	●▲						
Check engine oil level ¹⁾	●▲						
Change engine oil ¹⁾		①▲		●	▲		
Clean engine oil filter ¹⁾		▲			▲		
Check air filter ¹⁾	●▲						
Change air filter element ¹⁾						▲	●▲
Change fuel filter ¹⁾						▲	
Check, adj. the valve clearance ¹⁾		①▲			●▲		
Exciter: Check oil level			●▲				
Exciter: Change oil ²⁾				①▲	●▲		
Check rubber buffer				●▲			
Check V-belt				●▲			
Retightened screw connections				●▲			
①▲ → first time ¹⁾ Observe the engine manual ²⁾ or annually							

5.3 Lubrication schedule

Lubrication point	Quantity [ℓ]	Change intervals [op. hrs.]	Lubricant	Order No.
1. Engine				
AVP 1240 H	0,6	100*	Engine oil API SG-CE SAE 10W40	806 01 100
AVP 1250				
AVP 1850 H				
AVP 1850 1B20	0,9	250*		
2. Exciter				
AVP 1240 H	0,6	250** or annually	Engine oil API SG-CE SAE 10W40	806 01 100
AVP 1250	0,25			
AVP 1850 H	0,75 ³⁾			
AVP 1850 1B20				
1)first time after 20 h 2)first time after 100 h 3)to mach.-no. 51100: 1,00ℓ				

5.4 Alternative lubricant schedule

	Motor oil API SG-CE SAE 10W40	Gear oil in acc. with JDM J 20 A	Special hydro-oil ISO-VG 32	ATF oil
DEUTZ OEL	HD-C 10W40 TLL 10W40*	GO-SP	Spez. Hydro-Öl W32 H-EP 32 BA**	Dexron II D
ARAL	Multi Turboral	Fluid HGS	—	Dexron II D
BP	Vanellus Multigr. Vanellus FE*	Hydromatic TF-SD	Energol EHPM 32	Dexron II D
ESSO	XD 3+LDX CDX	Torque Fluid 56	Univis N 32	Dexron II D
FINA	Kappa FE Kappa Turbo DI	Transfluid AS	Hydran TSX 32 Biohydran TMP 32**	Finamatic II D
SHELL	Engine Oil DG 1040	Donax TD	Tellus TD	Donax TA Donax TX
TOTAL	Rubia XT Rubia FE*	—	—	Dexron II D
Fuchs DEA	Titan Unic MC	Titan Hydra	Renolin ZAF 520 Plantohyd 32 S**	Titan ATF 3000

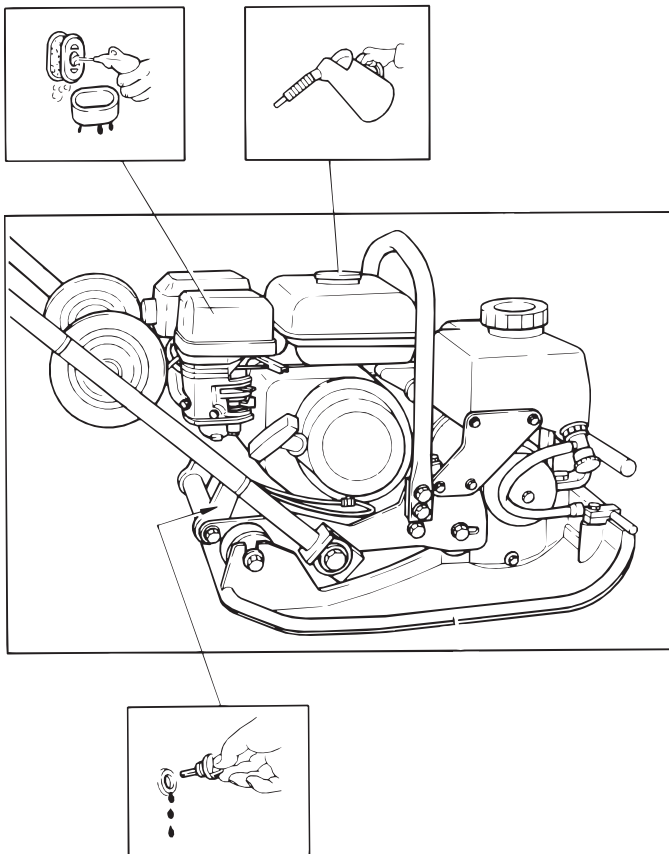
* semi-synthetic light-duty oils

** biological multi-purpose hydraulic-oils;

The miscibility and compatibility with mineral oil based hydraulic oils and biological hydraulic-oils should be examined in the individual case. The residual mineral oil content should be reduced acc. to VDMA specification 24 569.

5. Maintenance

5.5 Maintenance work (Honda-engine)



Attention

Only the maintenance work which has to be performed daily is included in this operating manual. Please refer to the engine operating manual and to the maintenance instructions and intervals listed therein.

5.5.1 Filling up with fuel

Danger

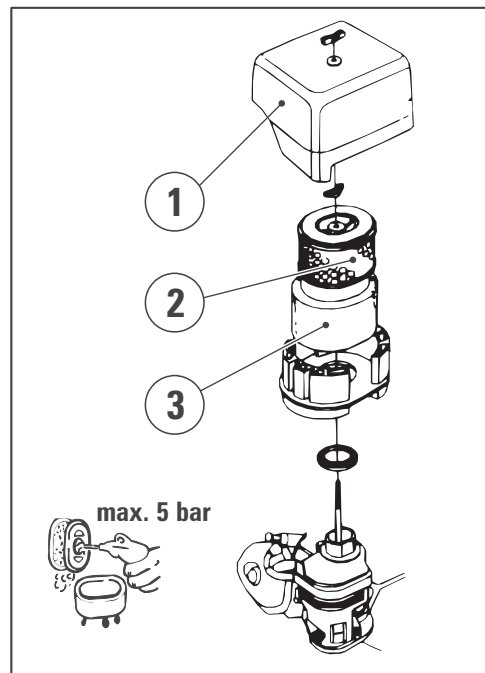
- Fill fuel tank only when engine is switched off
- No open fire.
- No smoking.
- Fill fuel tank never in enclosed areas.
- Clean the area around the fuel filling socket.
- Open the cap and
- check the fuel level visually.
- If necessary, fill up with fuel¹⁾

¹⁾unleaded automotive gasoline

5.5.2 Checking the engine oil level

- Park the machine horizontally.
- Clean the area around the fuel filler cap.
- Open the fuel filler cap.
- Check the oil level and
- refill up to the edge of the fuel filler cap if necessary.
- Check the seal on the dipstick and replace if necessary.
- Close the fuel filler cap.
- Allow the engine to run for approximately 1 min. and check oil level again with engine switched off.

5.5.3 Cleaning the air filter element



Attention

- Never run the engine without the air cleaner. — Rapid engine wear will result.
- Do not allow dust to enter into carburator.

- Remove the filter cover (1) and
- take out the filter element (2+3).
- Check the filter element, replace if damaged.

For slight clogging:

- Clean the filter element (2) by tapping lightly or
- blow it from inside to the outside with dry compressed air.

For heavy clogging:

- Wash the filter element (3) in a non-flammable cleaning solution and allow to dry thoroughly.

Danger

- Never use petrol or cleaning solutions with a low flash point for cleaning the filter element!
- Do not smoke in the working area; avoid open fire and sparks – fire and explosion hazard!
- Hazard of eyehurts – use safety goggles!

- Soak the filter element (3) with clean motor oil, squeeze out excess oil.
- Replace the filter element (2+3).
- Fit the cover (1) and fasten.

Important

If the intake air has a high dust content, it may be necessary to clean the air filter several times daily.

5.6 Maintenance work (HATZ-engine)

Attention

Only the maintenance work which has to be performed daily is included in this operating manual. Please refer to the engine operating manual and to the maintenance instructions and intervals listed therein.

5.6.1 Filling up with fuel

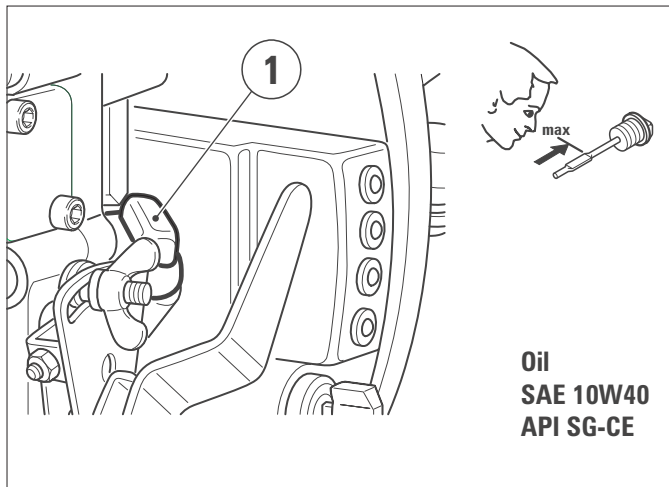
Danger

- Fill fuel tank only when engine is switched off.
- No naked flames.
- No smoking.
- Fill fuel tank never in enclosed areas.
- Clean the area around the fuel filling socket.
- Open the cap and
- check the fuel level visually.
- If necessary, fill up with fuel¹⁾.

¹⁾All diesel oils which satisfy the following specifications are suitable:

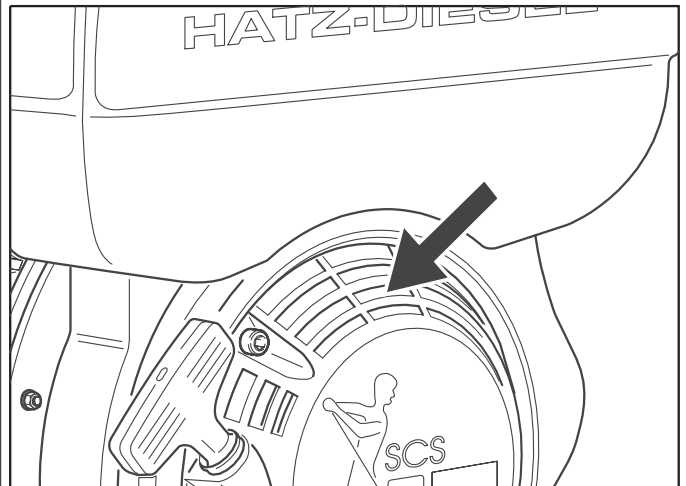
EN 590 or DIN 51601-DK or BS 2869 A1/A2 or ASTM D 975-1D/2D

5.6.2 Checking the engine oil level



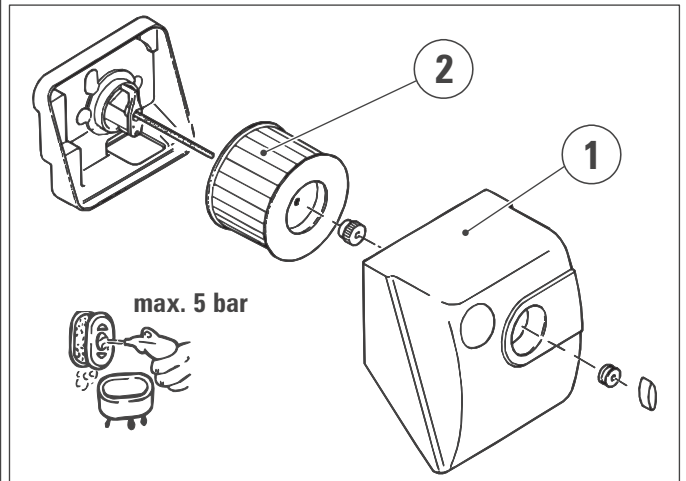
- Position the vibration plate so that the motor is in vertically upright position.
- Clean around the dipstick area.
- Pull out dipstick (1) and wipe clean.
- Push dipstick back in with twisting movement by hand, then pull out again with similar twisting movement.
- Read off the oil level on the dipstick, and if necessary top to the "maximum" mark.

5.6.3 Checking Cooling air-/combustion air-intake



Check intake opening for combustion air and cooling air intakes. Remove coarse obstructions such as leaves, stones and earth.

5.6.4 Cleaning the dry air filter



The maintenance intervals for the filter cartridge depend on the amount of dust. A blocked filter is apparent from a lack of performance and/or black smoke.

- Unscrew lid of air filter (1).
- Remove filter cartridge(2).
- Check the filter element for damage to the filter paper and check sealing surfaces. Change damaged filter elements.
- Clean filter housing and cover.

Attention

Make sure that no dirt or foreign parts enter into the suction intake.

- Replace filter element or clean appropriate:

If there is any dry pollution:

Blow out the filter cartridge with dry air under pressure (max. 5 bar) from the inside outwards, until no more dust comes out.

Danger

Hazard of eyehurts – use safety goggles!

If there is damp or oily pollution:

Replace the filter cartridge.

5. Maintenance

5.7 Maintenance work on the machine

5.7.1 Cleaning

Clean the machine thoroughly daily.

Attention

- After cleaning, check all cables, hoses, pipes and screwed fittings for leaks, loose connections, chafe marks and other damage.
- Any faults which are detected should be rectified immediately.
- Do not use any flammable or aggressive substances for cleaning purposes.

5.7.2 Torque information

Ø	8.8		10.9		12.9	
	Nm	ft lb	Nm	ft lb	Nm	ft lb
M 4	3	2	4,4	3	5	4
M 5	6	4	8,7	6	10	7
M 6	10	7	15	11	18	13
M 8	25	18	36	26	43	31
M 10	49	36	72	53	84	61
M 12	85	62	125	92	145	106
M 14	135	99	200	147	235	173
M 16	210	154	310	228	365	269
M 18	300	221	430	317	500	368
M 20	425	313	610	449	710	523
M 22	580	427	830	612	970	715
M 24	730	538	1050	774	1220	899

The tightness categories relate to bolts with untreated, unlubricated surface.

The figures result in 90% exploitation of the limit of elasticity for a friction coefficient $\mu=0.14$.

Use a torque wrench to check that the tightening torques are observed.

The figures indicated do not apply if lubricant MoS2 is used.

Hinweis

Self tightened nuts have to be replaced after every disassembly.

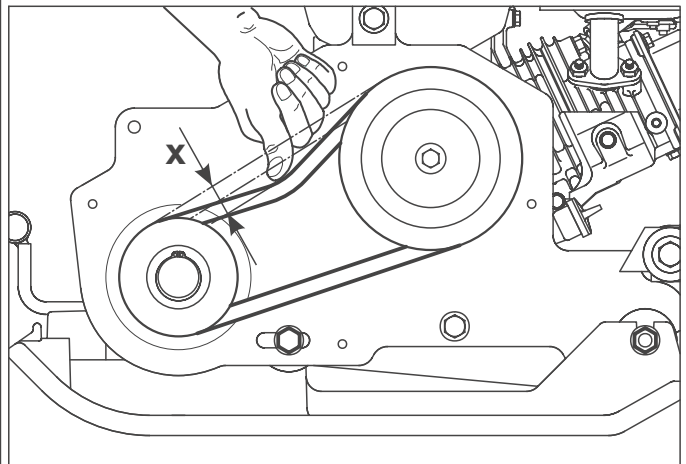
5.7.3 Screw connections

With vibration equipment, it is important to check the screwed connections periodically to ensure that they are screwed tight. Observe tightening torques.

5.7.4 Checking rubber buffer

Check the rubber buffer for cracks and fractures and for a tight fit; replace immediately if damaged.

5.7.5 Checking V-belt



- Remove V-belt guard.
- Check V-belt for tension and condition.
- Slacken the nuts of the rubber buffers on the outside.
- Push the engine frame back.
x = ca. 10 mm (ca. 0.4 in)

Important

It is important to ensure that the frame is also actually pushed on the rubber buffer contact surfaces and not just that the rubber elements are stretched and then spring back. If necessary, apply light blows with a hammer to knock the rubber buffers forward.

- Both buffers should be equally pre-tensioned.
- Tighten nuts.
- Crank the drive manually and recheck tension and correct if necessary.

Danger

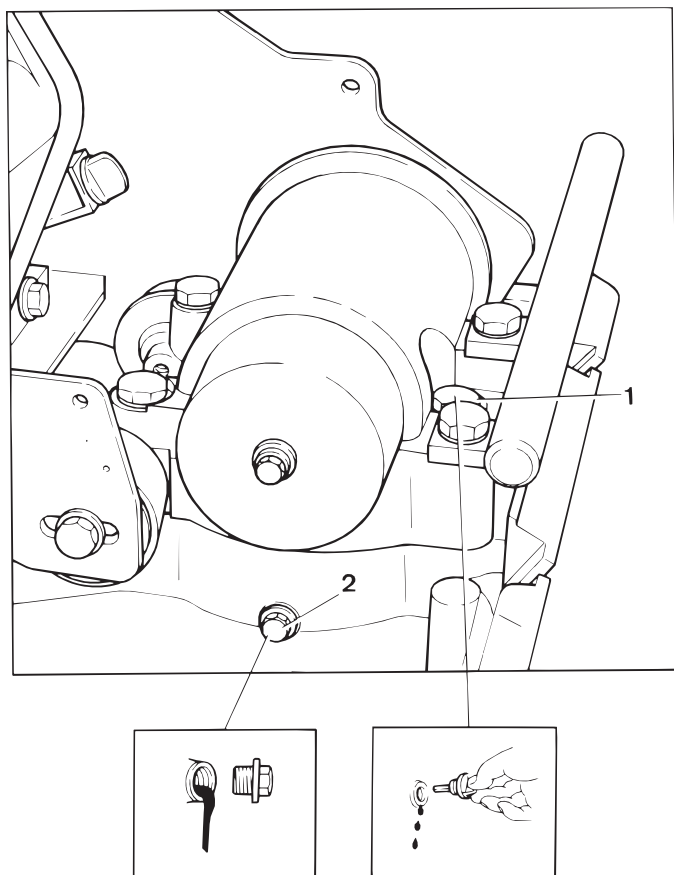
Do not start the engine without V-belt guard. Danger of injuries.

- Replace V-belt guard.

Important

Check the tension of the V-belt after 25 op. hrs. again. Adjust the tension if necessary.

5.7.6 Exciter: Oil level / Oil change



Important

Change the oil when its warm.

- Unscrew oil measuring plug (1) and oil drain plug (2).

Attention

- **Collect oil which flows out and dispose of oil without harm to the environment.**
- **Take care when draining hot oil: risk of scalding.**
- Check seals.

After the old oil has been drained:

- Screw in oil drain plug (2).
- Pour in fresh oil; oil quantity and quality, see lubrication schedule.
- If the oil level is correct, the oil film will extend up to the middle of the marking when oil measuring plug (1) is screwed in.
- Screw in oil measuring plug (1).

