

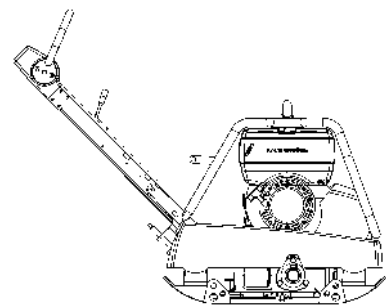
Translation of the original Operating instructions (EN)

APR 2220 Serial Nr. 10985720-

APR 2620 Serial Nr. 11003014-

APR 3020 Serial Nr. 10985720-

APR 3520 Serial Nr. 11003032-



These instructions include:

- Safety regulations
- Operating instructions
- Maintenance instructions

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

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.

Do not fail to comply with the safety provisions, as well as the rules for safety and health protection at work («BGR 118 - Dealing with moving road construction machinery») of the German federation of institutions for statutory accident insurance and prevention (HVBG), as well as the applicable accident prevention regulations.

Also observe the corresponding rules and regulations valid in your country.

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.

We reserve us the right to take changings due to technical development without announcement.

Please enter (data on machine type plate)

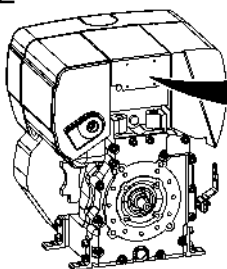
1. Mach.-type: _____

2. Mach.-No.: _____

3. Engine-type: _____

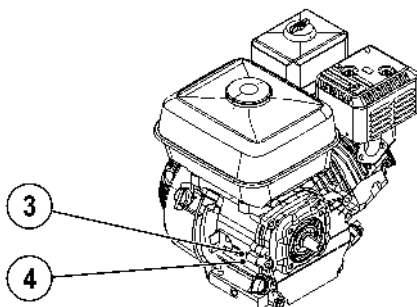
4. Engine-No.: _____

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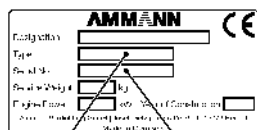
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1. Safety regulations

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, it 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

The machine is suitable for all compaction jobs in civil works 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 personnell or for other than the intended purpose.

Weighing down and riding on the machine is forbidden.

The machine must not be used on slopes with a gradient of more than 25° (Honda 20°).

Do not use the machine on hard concrete, set asphaltic surfaces, highly frozen or unstable surfaces.

Who is allowed to operate the machine?

Only suitable qualified, instructed and authorised persons over 18 years of age may operate the machine.

In variance from this, minors can be employed, as long as it is necessary to their training objective and their protection is assured by a supervisor.

Persons under the influence of alcohol, medication or drugs must not operate, maintain or repair the machine.

Maintenance and repairs, in particular of hydraulic systems and electronic components require special knowledge and must be carried out only by skilled persons (mechanics specialising in construction and agricultural machinery).

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.



Environment

Information on safe and environmentally-friendly disposal of operating and ancillary agents as well

Transporting the machine

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

Only use suitable means of transport and hoisting with sufficient loading capacity!

Attach suitable slinging means to the points of attachment provided.

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, loading 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 motor manufacturer.

To crank-start diesel motors; Important is the correct position to the motor and the correct hand position on the crank.

The handcrank must be turned with maximum force until the motor 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 junction cables

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 in enclosed spaces, tunnels, mines or deep ditches

Engine exhaust gas 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», BGV C22, 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 device is intended only for transportation purposes.

Filling petrol

Only fill petrol by switched-off motor.

No open fire, do not smoke.

Do not spill any fuel, collect discharging fuel in a suitable container, prevent fuel from seeking 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 only by switched-off drive.

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 hoistings and lifting gears with suitable loading capacity. Attach and secure parts on hoisting carefully!

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

Hydraulic lines must previously be rendered pressureless, before working on them. 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 motor when hydraulic oil has been drained off.

After completing all work (by pressureless system), 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.

Before working on the electrical system of the machine, disconnect the battery and insulate by covering or remove.

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

During transport, secure the battery to prevent it from tilting, short-circuit, slipping and damage.

Dispose of used batteries in a proper manner.

Do not place any tools on the battery.

Handling acid-batteries

Transport filled batteries upright to prevent acid spillage.

Keep away from sparks, open fire and other sources of ignition.

Avoid contact of acid with skin and clothing. In case of contact, wash off acid immediately with clear water and go to medical institution.

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.

Disposal of the machine after finish of its service life

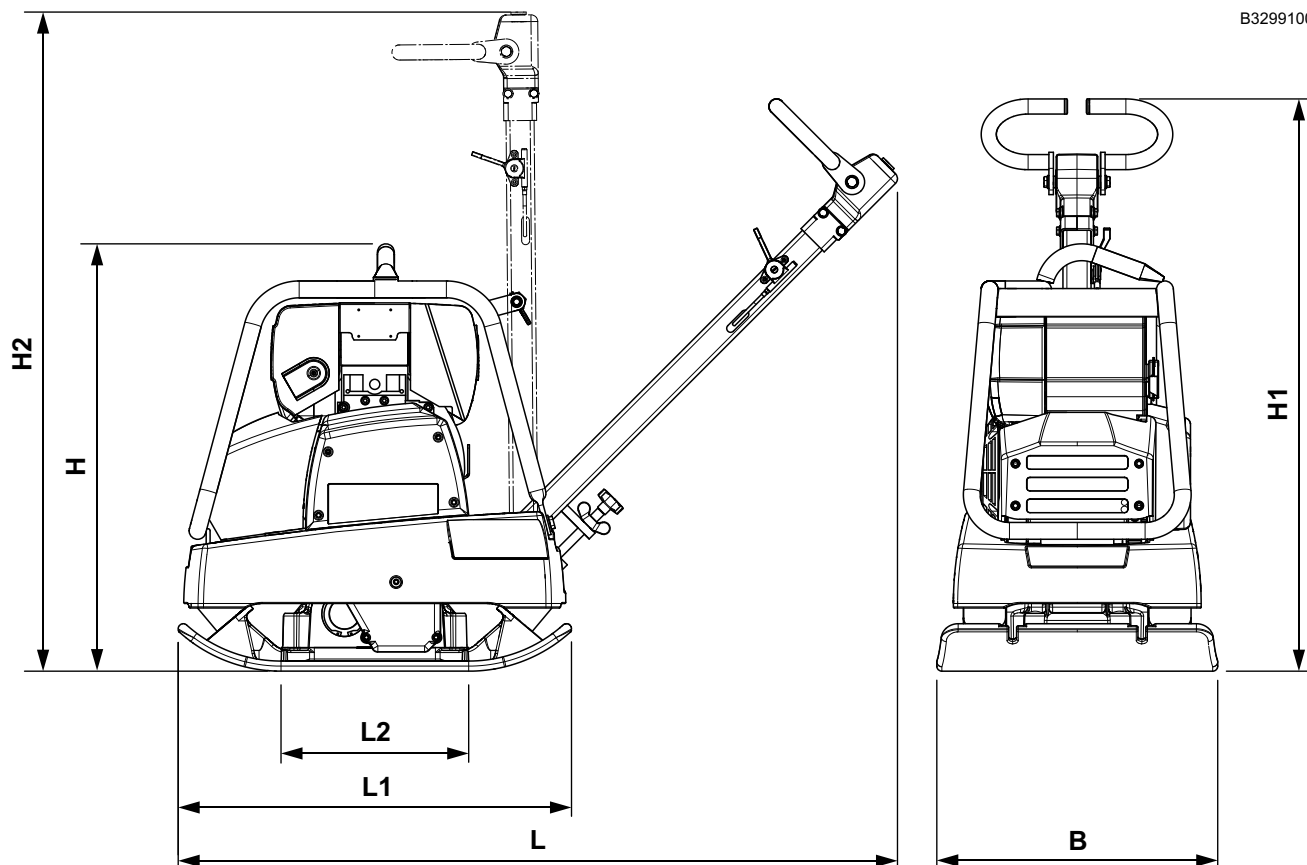
At disposal of the machine after finish of its service life, the owner is obliged to comply with national regulations and laws on wastes and protection of environment. Therefore we recommend in such cases to contact the following:

- professional specialized companies engaged in such activities and having the relevant certificate
- the manufacturers or contracting service organizations authorized by him.

The manufacturer is not responsible for damages to health of owners neither for damages to the environment in events of failing to comply with above mentioned hygienic and ecological principles.

2. Technical data

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	APR 2220	APR 2620	APR 3020	APR 3520	APR 2220 (H)	APR 3020 (H)	APR 3520 (H)
1. Dimensions							
Length L	1140 mm			1365 mm	1140 mm		1365 mm
Length L1	600 mm	700 mm		860 mm	600 mm	700 mm	860 mm
Length L2	254 mm	330 mm		410 mm	254 mm	330 mm	410 mm
Height H	730 mm	740 mm		780 mm	610 mm	740 mm	750 mm
Height H1	1000 mm						
Height H2	1180 mm						
Working width B1	400 mm	380 mm	500 mm	450 mm	400 mm	500 mm	450 mm
Working width B2	—	500 mm	600 mm	600 mm	—	600 mm	600 mm
2. Weights							
Basic unit B1	121 kg	130 kg	213 kg	257 kg	100 kg	199 kg	242 kg
Basic unit B2	128 kg	135 kg	217 kg	271 kg	—	205 kg	257 kg
Transportation kit	+8 kg	+ 9 kg	+ 10 kg	—	+ 8 kg	+ 10 kg	
Electrical starter	—	—	+ 13 kg	+ 15 kg			
3. Drive							
Motor-type	Hatz 1B20		Hatz 1B30		Honda GX 120	Honda GX 270	
Type of construction	1 cyl., 4-stroke-diesel				1 cyl., 4-stroke-gasoline		
Power	3,1 kW (4,2 hp)		4,5 kW (6,1 hp)	4,6 kW (6,3 hp)	2,9 kW (4,0 hp)	6,3 kW (8,6 hp)	
by speed	3000 1/min		2900 1/min	3000 1/min	3600 1/min	3100 1/min	
Cooling system	air						
Fuel consumption	0,9 l/h		1,3 l/h		0,9 l/h	2,1 l/h	
max. sloping position	30°				20°		
max. grade ability	35 %						

2. Technical data

	APR 2220	APR 2620	APR 3020	APR 3520	APR 2220 (H)	APR 3020 (H)	APR 3520 (H)
Drive	via centrifugal clutch and V-belt						
Shift (forward/reverse)	hydraulic						
4. Operating speed							
Basic unit B1	0 - 25 m/min	0 - 23 m/min	0 - 22 m/min	0 - 26 m/min	0 - 25 m/min	0 - 22 m/min	0 - 26 m/min
Basic unit B2	—	0 - 21 m/min	0 - 20 m/min	0 - 26 m/min	—	0 - 20 m/min	0 - 26 m/min
5. Vibration							
Centrifugal force	22 kN	24 kN	30 kN	38 kN	22 kN	30 kN	38 kN
Vibration frequency	98 Hz	95 Hz	90 hz	65 Hz	98 Hz	95 Hz	65 Hz
6. Maximum performance							
Basic unit B1	600 m²/h	550 m²/h	660 m²/h	700 m²/h	600 m²/h	660 m²/h	700 m²/h
Basic unit B2	—	630 m²/h	720 m²/h	936 m²/h	—	720 m²/h	936 m²/h
7. Filling quantities							
Fuel tank	3,0 l		5,0 l		2,5 l	6,0 l	
Water tank	—	7,5 l	—				
8. Optional extras							
Vulkollan plate	O	O	O	O	O	O	O
Transportation kit	O	O	O	—	O	O	—
Protective cover	O	O	O	O	O	O	O
Water sprinkling	—	O	—	—	—	—	—
Electrical starter	—	—	O	O	—	O	—
Mounting brackets 75	—	—	—	S	—	—	S
	O = Option / S = Serial / — = Not available						
9. Noise and vibration data							
The following noise and vibration data according to EC Machinery Directive in the version (2006/42/EC), was determined, taking into account the following standards and directives. In operational use, values can deviate depending on the prevailing conditions.							
9.1 Noise data ²⁾							
The noise data specified in Appendix 1, sub-clause 1.7.4.u of the EC Machinery Directive is for:							
the sound pressure level at the operator place is L _{PA}	92,0 dB	97,3 dB	97,3 dB	104,7 dB	97,3 dB	92,3 dB	103,7 dB
Measured sound power level L _{WA,m}	106 dB				104 dB	105 dB	
Guaranted Sound power level L _{WA,g}	108 dB				105 dB	108 dB	
The noise values were determined, taking into account the following directives and standards: Directive 2000/14/EC / EN ISO 3744 / EN 500-4							
9.2 Vibration data							
Hand/arm vibration values according to Appendix 1, sub-clause 3.6.3.1 of the EC Machinery Directive:							
Total vibration value of the acceleration a _{hV}	4.9 m/s²	5.2 m/s²	2.8 m/s²	3.1 m/s²	4.3 m/s²	2.4 m/s²	2.0 m/s²
Uncertainty K	0.5 m/s²						
The acceleration value was determined, taking into account the following directives and standards: EN 500-4 / DIN EN ISO 5349							



²⁾Since the permissible noise rating level of 85 dB(A) can be exceeded with this machine, the operator must wear suitable hearing protection.

3. Operation

3.1 Description

The APR 2220/2620/3020/3520 is a reversible vibrating plate operating on the basis of the twin-shaft vibration system principle. The engine drives the exciter on the baseplate via a centrifugal clutch and a V-belt. The exciter produces the vibration required for compaction as a result of the built-in imbalance.

The machine is guided at the tow-bar grip. It is operated with the operating controls on the tow-bar.

The APR 2220/2620/3020/3520 is suitable for all compaction work in the fields of civil engineering and road construction.

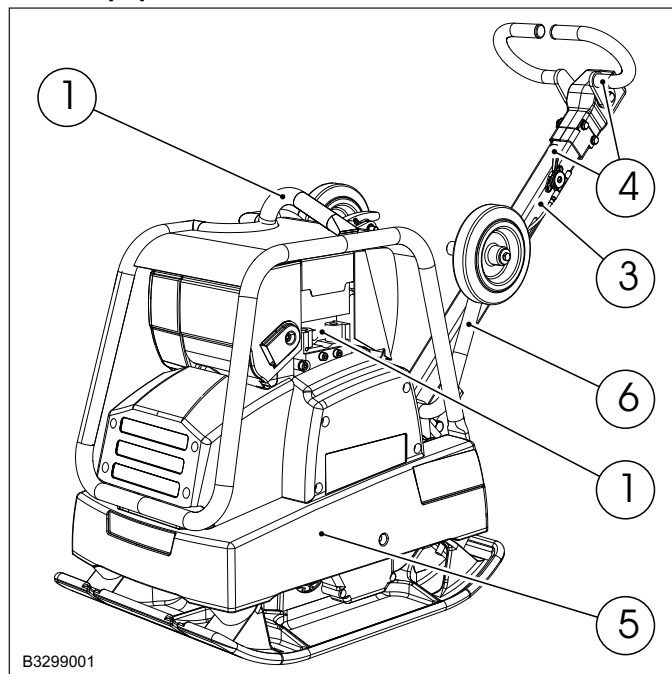
It can be used to compact all ground materials such as sand, gravel, slag, crushed stone, asphalt and composite sett paving.



Take great care on downslopes. The machine could slip down owing to loose material or if the surface is slippery.

Do not use the machine on hard concrete, set asphaltic surfaces, highly frozen or unstable surfaces.

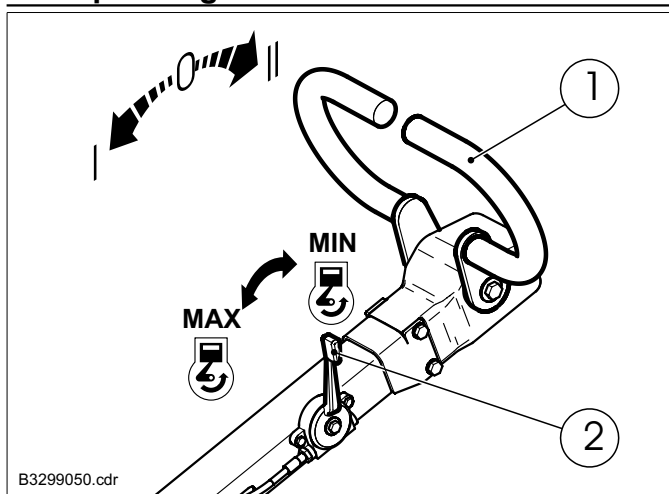
3.1.1 Equipment overview



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- 1 Engine
- 2 Central point suspension
- 3 Tow-bar
- 4 Operating control/tow-bar
- 5 Base plate with exciter
- 6 Transport truck (Special equipment)

3.2 Operating control at the tow-bar



1 Control lever

The control lever serves for adjustment of the unbalances in the exciter and in turn for continuous regulation.

- I Forward
- 0 Point compacting
- II Reverse

The control lever remains automatically in position only when set to the maximum forward travel setting (a). In any other position, the control lever moves in the direction of maximum forward travel when released.

If the control lever is operated too quickly several times, the shift lever will block in reverse travel. In this case:

- Release lever in forward travel position up to maximum forward travel position
- Blocking is cleared within a few seconds and perfect shifting is possible

The control lever can be operated only with the engine running. The lever blocks if operated when the machine is stationary. Blocking is immediately cleared when the engine is restarted.

2 Engine speed control lever

- STOP Engine stop (APR 3520 only)
- MIN Idle (detent position)
- MAX Full load

The motor speed can be adjusted steplessly with the control lever. At minimum motor speed (min), the drive to the exciter is disconnected at the centrifugal clutch and the motor idles. The centrifugal clutch engages when the control lever is moved approximately $\frac{1}{4}$ of its adjustment travel.

3.3 Before operation



Use personal protective equipment (in particular hearing protectors and safety shoes). Risk of loss of hearing!

Observe the safety conditions.

Observe the operation and maintenance instructions.

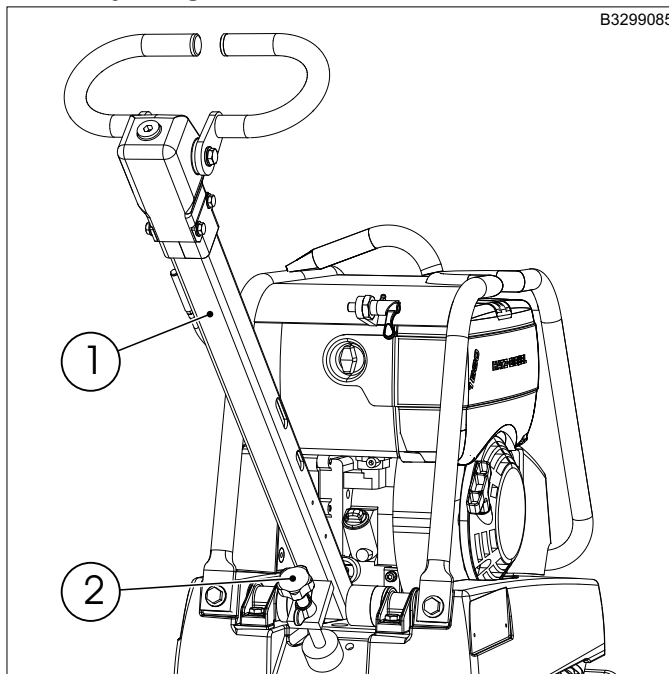
Read the Engine operating instructions. Observe the Important points on safety, operation and maintenance contained in them.

- Stand the machine on an even surface.
- Check
 - the Engine oil level
 - the hydraulic oil level
 - the fuel supply
 - that screw connections are secure
 - condition and function of hydraulic hose lines
 - the condition of the Engine and the machine.
- Top-up any missing lubrication in accordance with the lubrication table.

3.4 Adjusting / Locking the tow bar

3.4.1 Adjusting the tow-bar

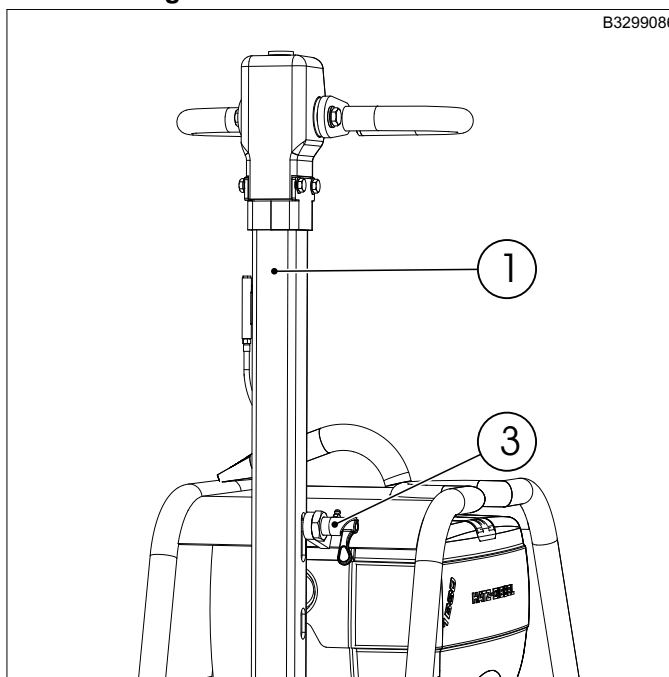
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By turning adjustment-screw (2), the tow-bar (1) can be set to any positions so as to obtain the best working height on the tow-bar grip.

3.4.2 Locking the tow-bar

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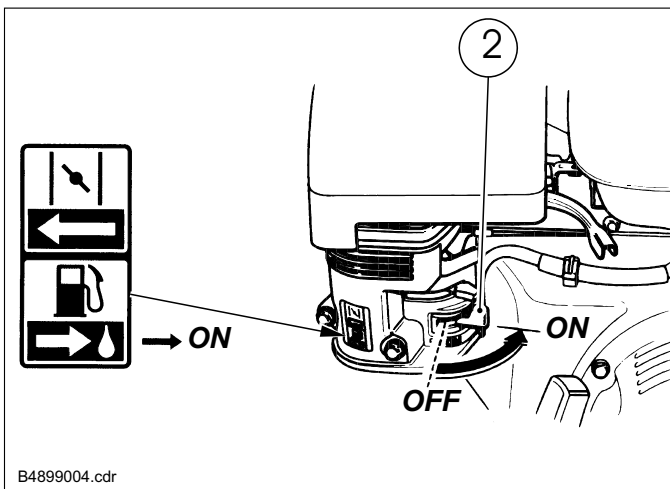


In case of loading and transport the tow-bar (1) has to be locked in an upright position by turning up the locking bolt (3).

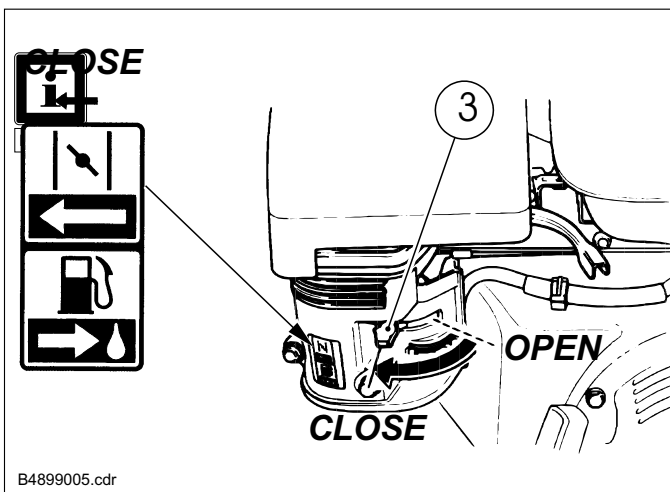
3. Operation

3.5 Engine operation – Honda

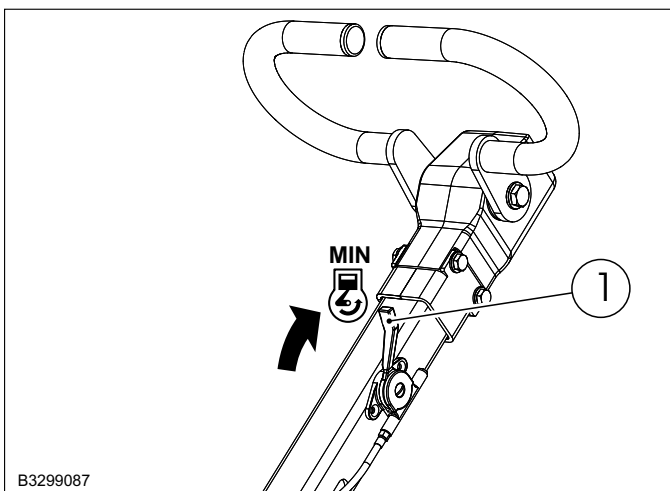
3.5.1 Starting the Engine



- Move the fuel valve lever (2) to the «ON» position.



- Move the choke lever (3) to the «CLOSE» position.

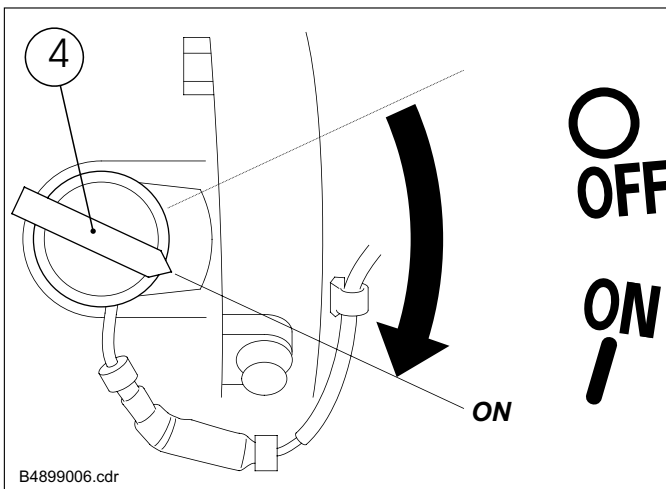


- Set the engine speed lever (1) to MIN.

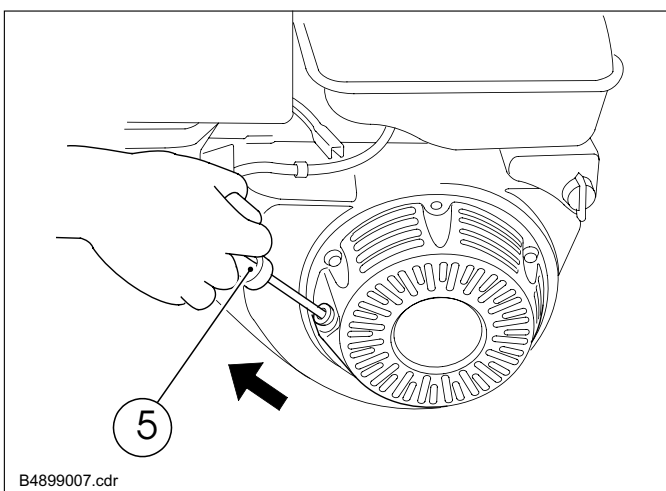


Important

If the motor doesn't start, set the accelerator lever about 1/3 of the way to «MAX».



- Turn the engine switch (4) to the «ON» position.



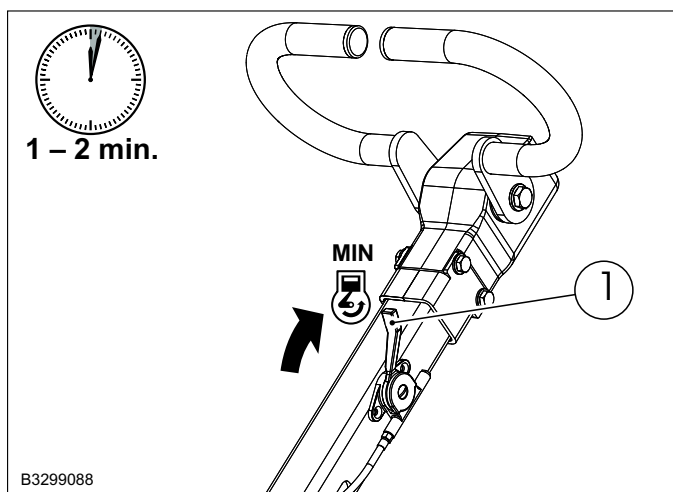
- Pull the starter grip (5) lightly until you feel resistance, then pull briskly in the direction of the arrow as shown below.
- Return the starter grip gently.



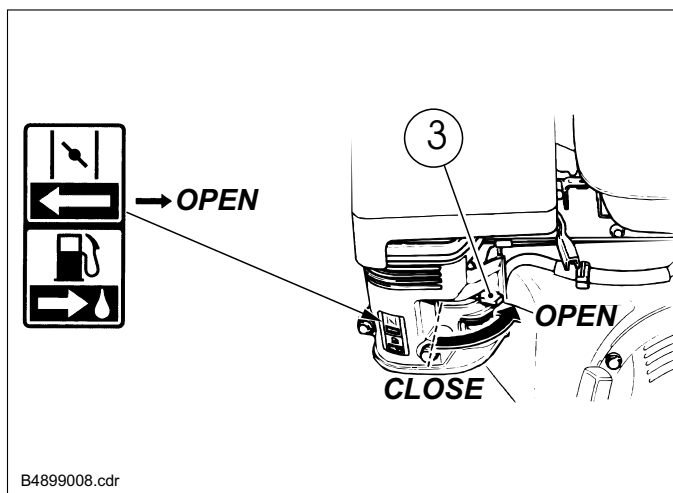
Important

Do not allow the starter grip (5) to snap back against the engine. Return it gently to prevent damage to the starter.

3.5.2 If the engine starts



- Set the engine speed lever (1) to idle (*MIN*).
- Allow the engine to run for 1-2 minutes in order to warm up.



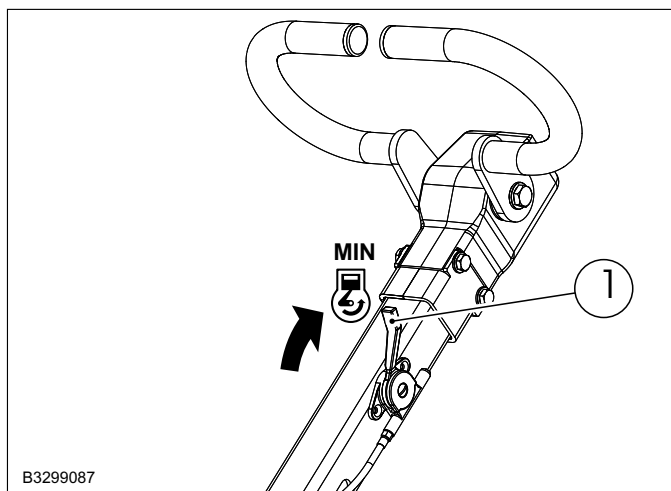
- If the choke lever (3) has been moved to the «CLOSED» position to start the engine, gradually move it to the «OPEN» position as the engine warms up.

3.5.3 Stopping the engine

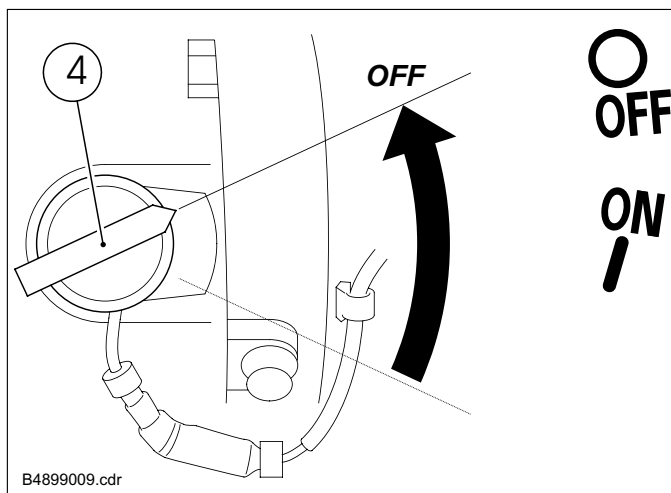


Important

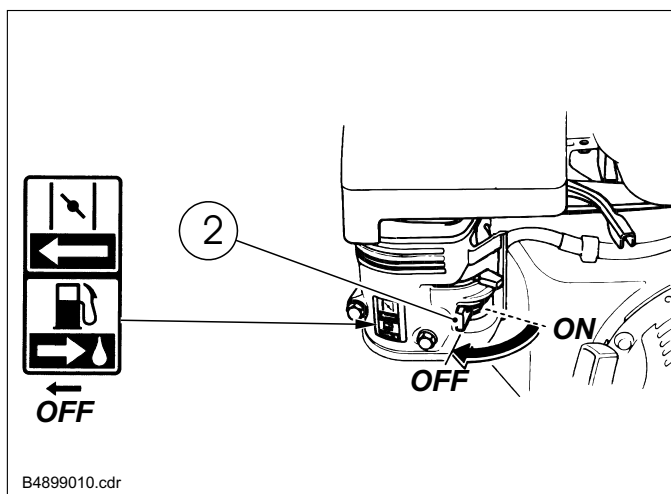
To stop the engine in an emergency, simply turn the engine switch to the «OFF» position.



- Set the engine speed lever (1) to the «MIN» position.



- Turn the engine switch (4) to the «OFF» position.

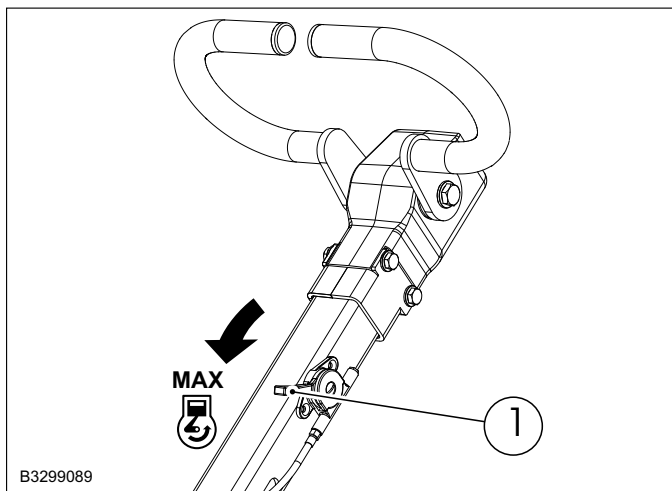


- Turn the fuel valve lever (2) to the «OFF» position.

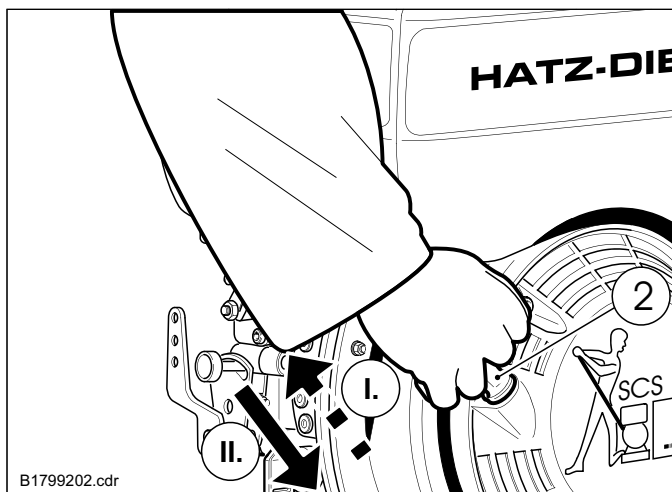
3. Operation

3.6 Engine operation – Hatz

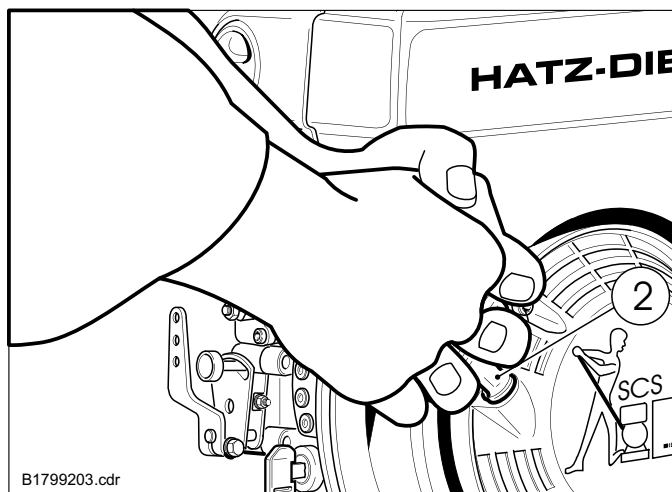
3.6.1 Starting the Engine – Manual start



- Set the engine speed lever (1) to full load (MAX).



- Slowly pull out handle (2) with rope, until detectable resistance can be felt (I.).
- Allow the rope to run back in, to enable you to utilise the whole length of rope for the starting procedure (II.).



- Take hold of the handle (2) with both hands.

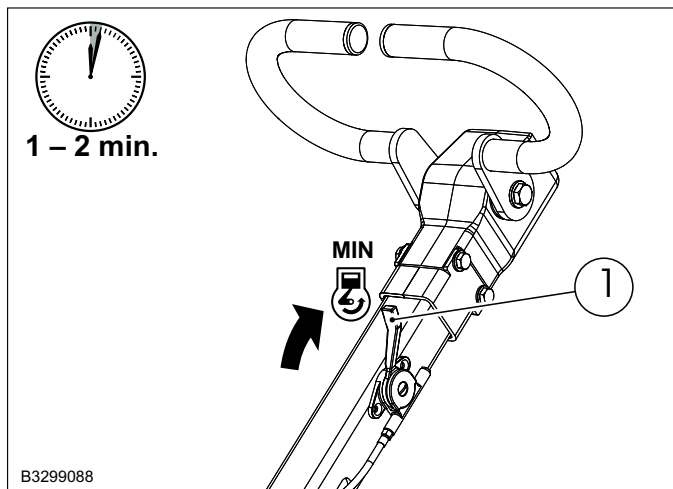


- Pull the starting rope with increasing speed, until the motor starts up.



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.

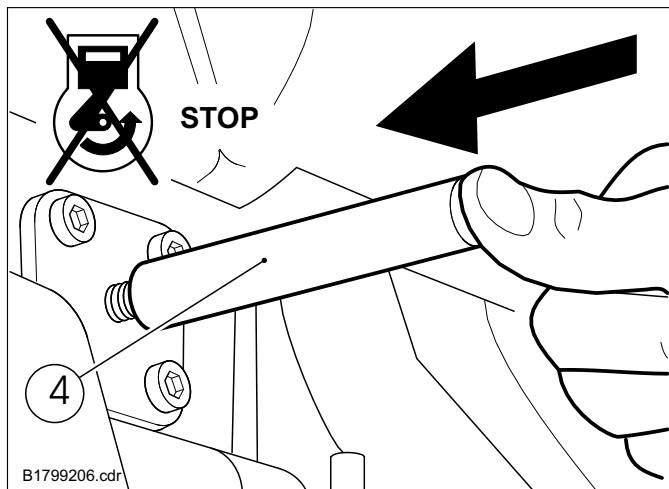
3.6.2 If the engine starts:



- Set the engine speed lever (1) to idle (*MIN*).
- Allow the engine to run for 1-2 minutes in order to warm up.

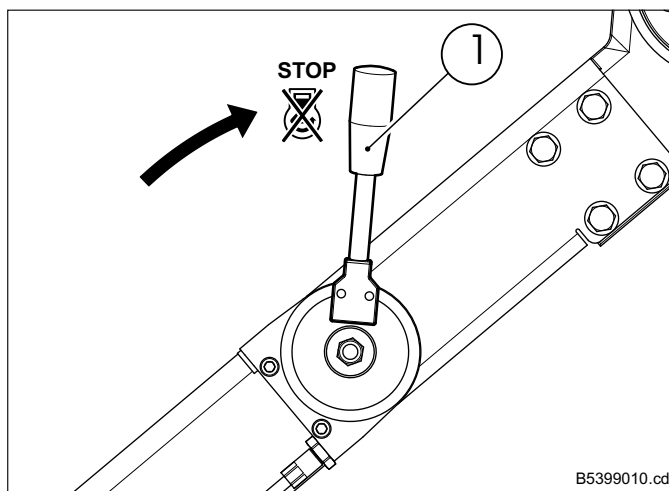
3.6.3 Stopping the engine

- Set the engine speed lever (1) to idle (*MIN*).
- Allow the engine to run for 1-2 minutes.
- **APR 2220 / 2620 / 3020**



- Press motor stop button (4), until the motor stops running.
- Release the stop button (stop button must return to its initial position).

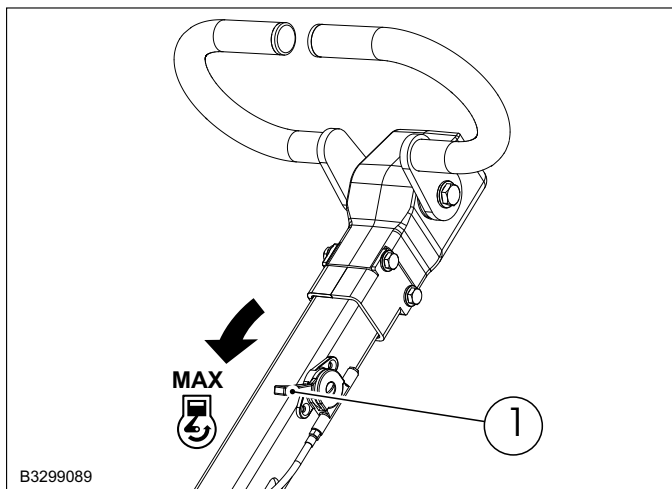
- **APR 3520**



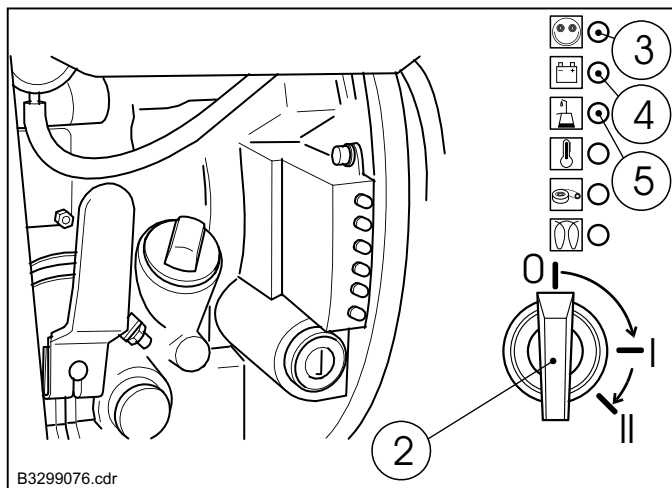
- Set the engine speed lever (1) to «STOP».

3. Operation

3.6.4 Electrical start (APR 3020 / 3520)¹⁾



- Set the engine speed lever (1) to full load (MAX).



- Insert the ignition key (1) and turn to «I»; charging indicator lamp (4) and oil pressure lamp (5) must light.
- Turn ignition key «II»; as soon as the engine starts, release the ignition key.



The ignition key must spring back to Pos. «I» automatically and must remain in this position during operation.

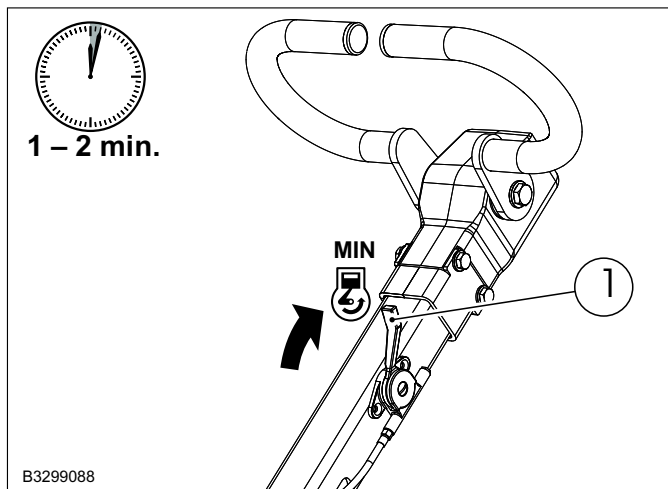
The charging and oil pressure indicator lamps must extinguish directly after each start.

Before each new start, turn the ignition key back to «0».

¹⁾Special equipment

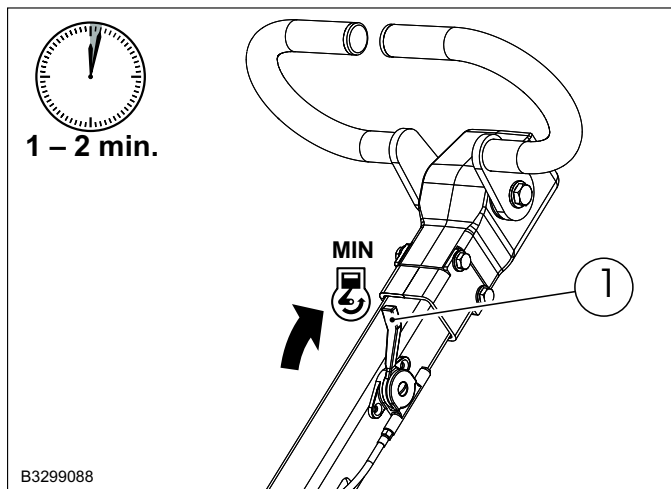
3.6.5 If the engine starts

- Indicator lamp (3) lights to show that the engine is operating.

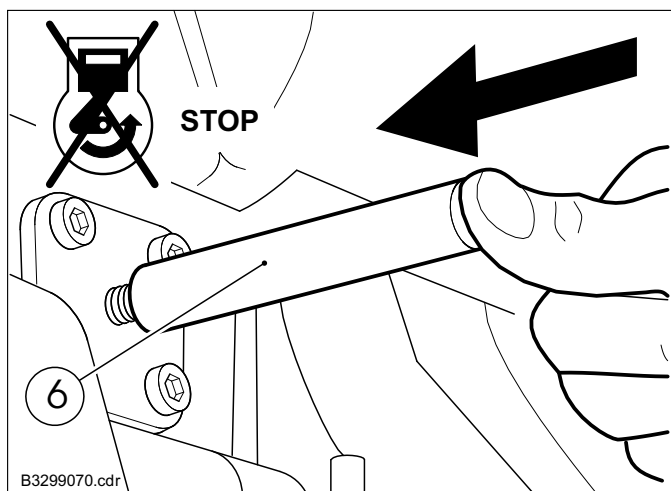


- Set the engine speed lever (1) to idle (MIN).
- Allow the engine to run for 1-2 minutes in order to warm up.

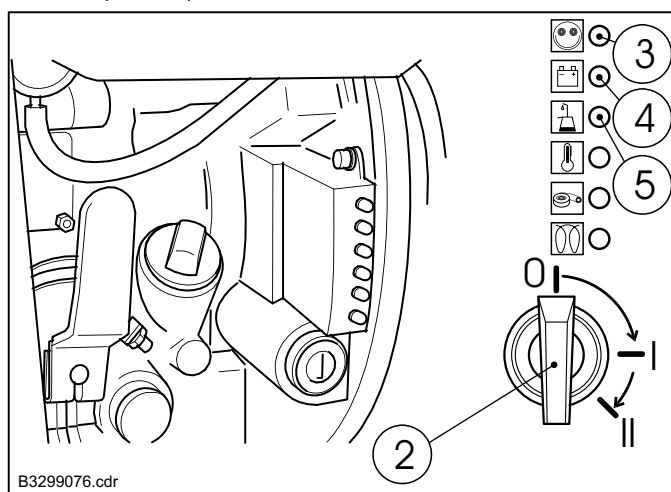
3.6.6 Stopping the engine



- Set the engine speed lever (1) to idle (*MIN*).
- Allow the engine to run for 1-2 minutes.
- **APR 3020**



- Press motor stop button (6), until the motor stops running.
- Release the stop button (stop button must return to its initial position).

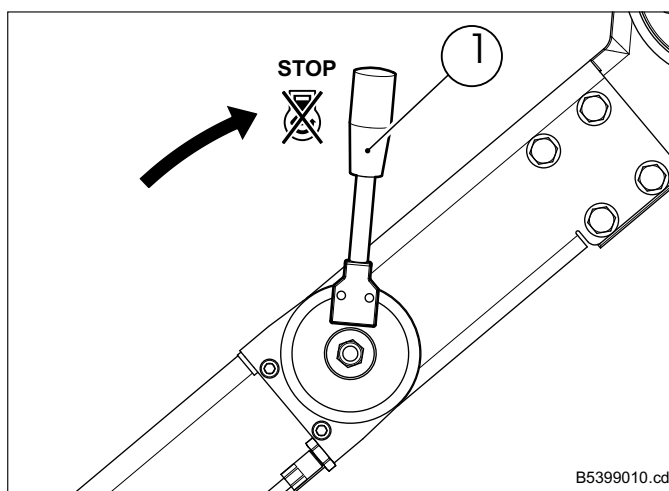


- Charging indicator (4) and oil pressure indicator (5) lights up.
- Turn ignition key to «0» and remove.



At the end of work or interruptions, take measures to prevent unauthorised access to the ignition key.

• APR 3520



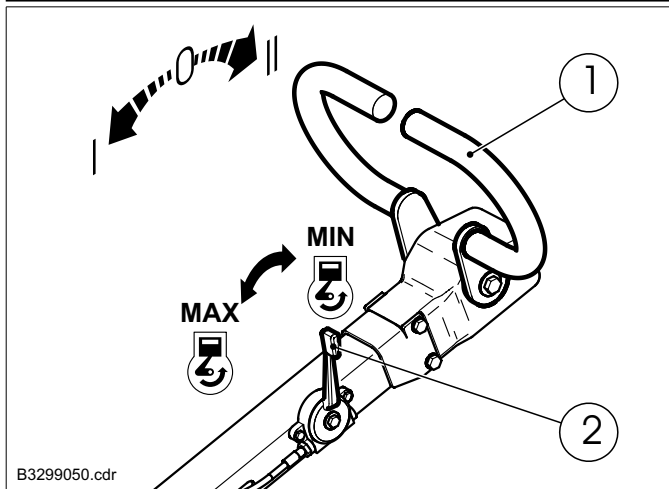
- Set the engine speed lever (1) to «STOP».
- Charging indicator (4) and oil pressure indicator (5) lights up.
- Turn ignition key to «0» and remove.



At the end of work or interruptions, take measures to prevent unauthorised access to the ignition key.

3. Operation

3.7 Operation

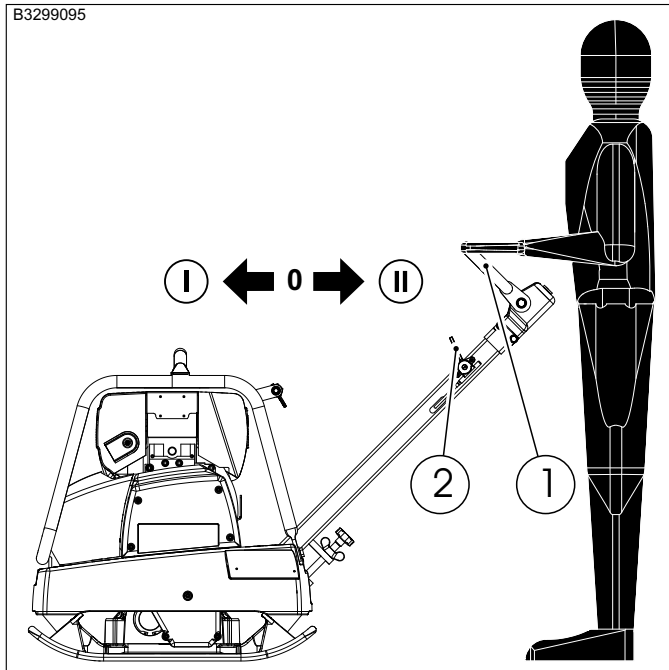


- Set the engine speed lever (2) to full load (MAX).



Operate the machine only at full throttle and turn the machine always in idle position during short rest periods. Otherwise Danger of clutch damages or slipping of centrifugal clutch.

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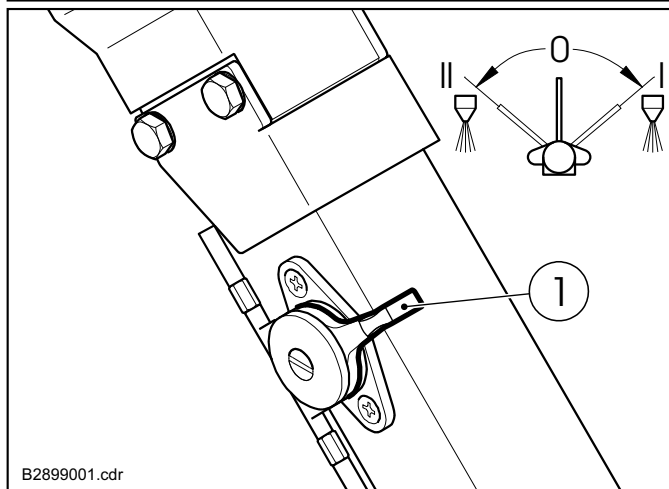
- The proper position for the operator is behind the machine.
- Control and steer the machine using the tow bar grip (1).
- Set the travel direction and speed with the travel lever (1).



Important

For compaction of paving stones, it is recommended to use Vulkollan plates and protective brackets (special accessories) to prevent damages to the compaction material and to the machine.

3.8 Water spray (APR 2620)¹⁾



The water spray is switched on and off by the lever (1).

- 0 OFF
- I Water spray front
- II Water spray back



Important

If there is a risk of frost, the spraying system should be completely emptied resp. filled with antifreeze.

¹⁾Special equipment

4.1 Loading and transportation



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.

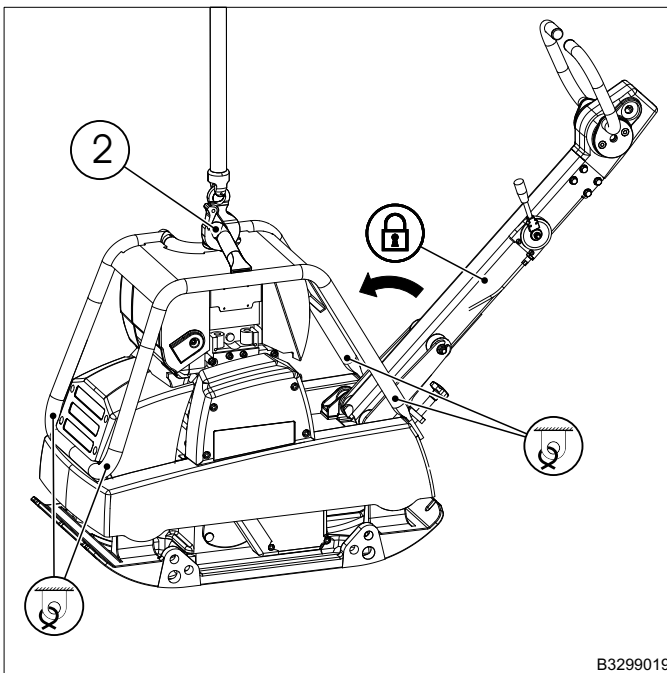
Ensure that no persons will be endangered.

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

Lock the tow-bar to loading and transport.



B3299019

After loading the machine should be lashed in place.

Use the centre-of-gravity suspension point (1) in order to lift the machine.

4. Transport

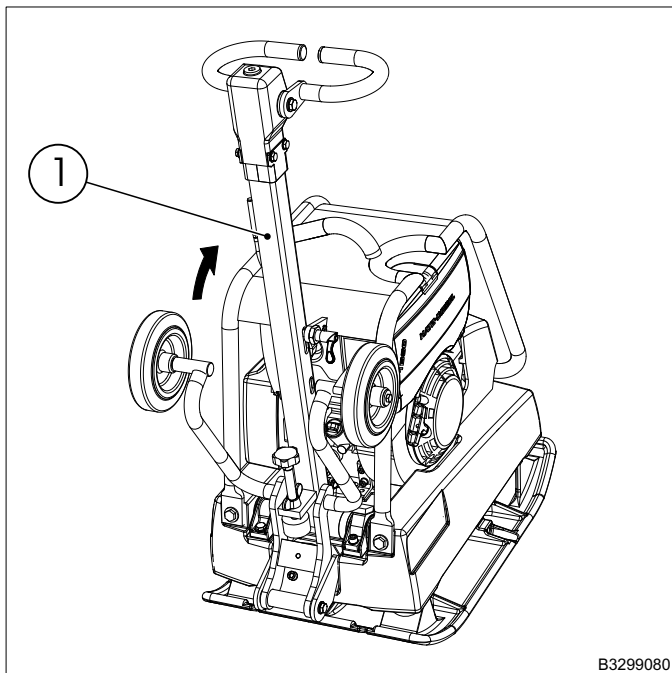
4.2 Transport trolley¹⁾



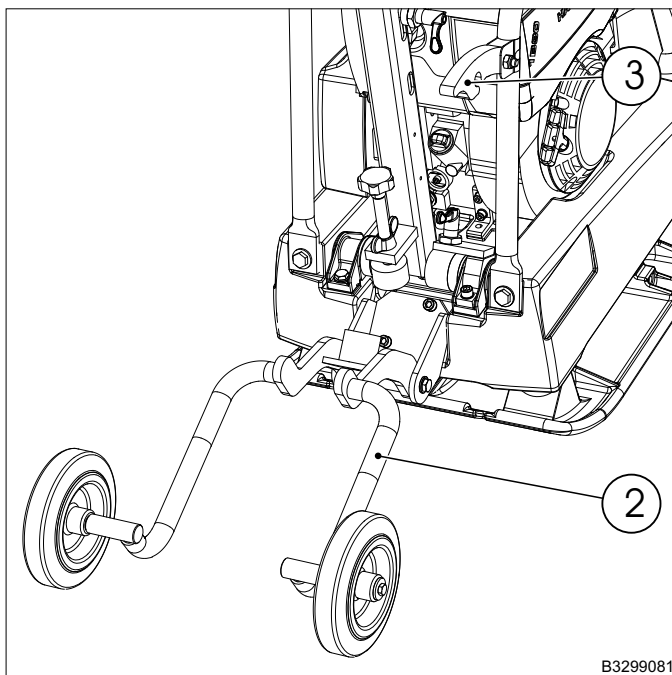
During longer work breaks, e.g. at the end of the work day, do not place the machine on the transport trolley so that the stability of the machine is not compromised.

Take care when riding over uneven or sloping floors. The machine can slip or tip over.

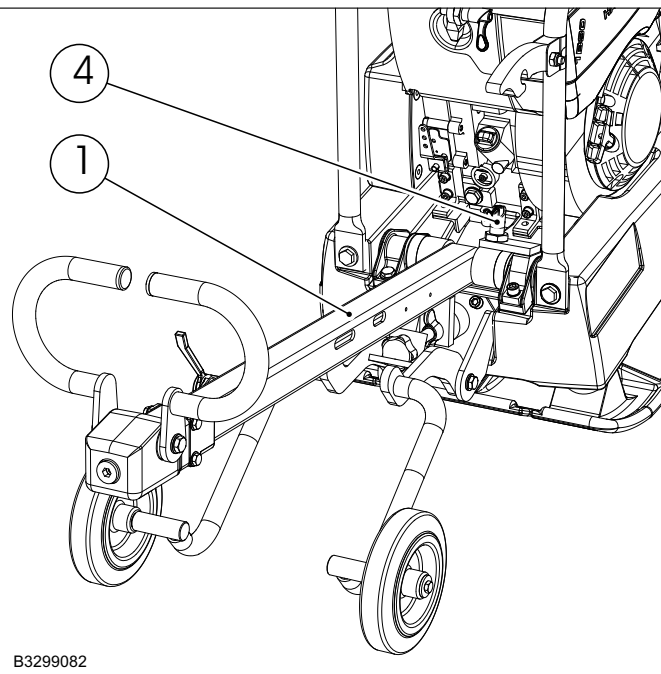
The transport trolley can be used for problem-free transport of the machine.



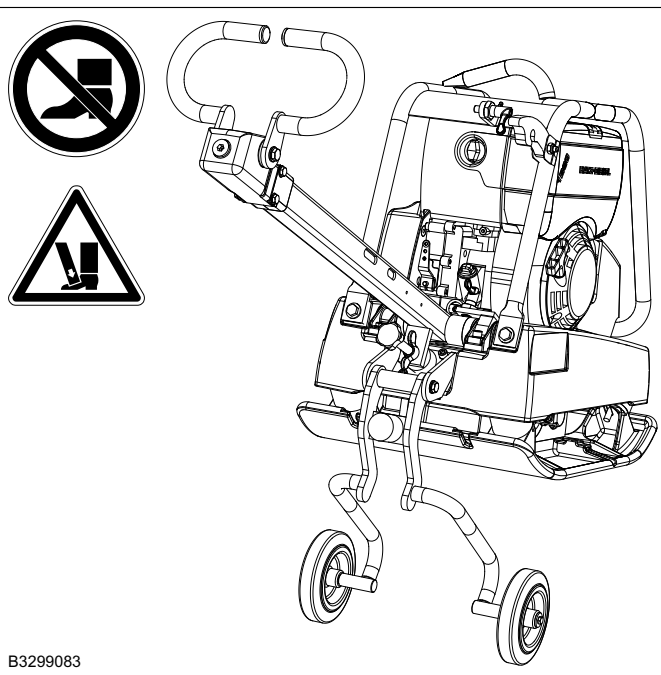
- Position the towing bar (1) vertically.



- Remove the undercarriage (2) from the mounting bracket (3) and place it on the floor.



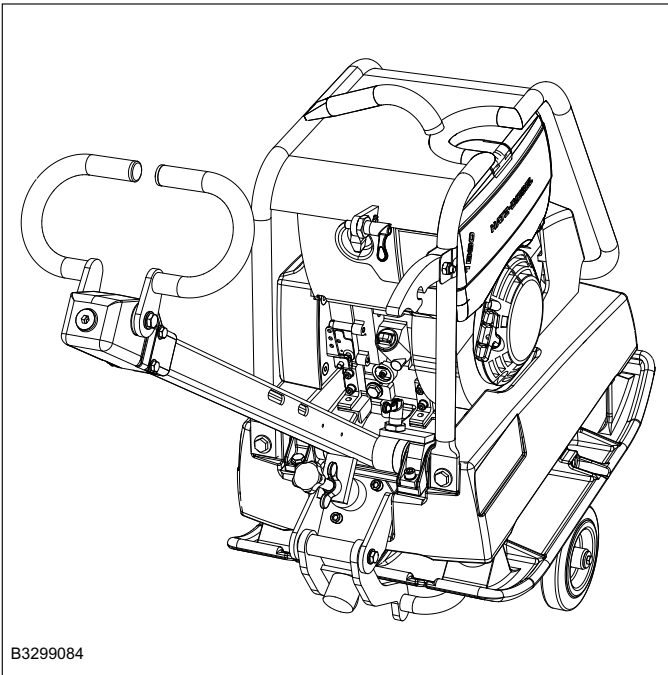
- Position the towing bar (1) horizontally and lock in position (4).



- With the towing bar locked in position tip the machine on to the front edge, the undercarriage will swing under the board.



Be careful when raising and lowering the machine. Do not place your feet under the raised base plate. Danger of foot injuries!



- Using the towing bar, tilt the machine backwards until the machine is horizontally seated on the undercarriage. The device is ready to be moved.
- After transport hook the undercarriage back into position by proceeding in reverse order.

¹⁾Special equipment

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.

- Before commencing work on any electrical equipment, disconnect the battery and cover it with insulating materials.
- Do not confuse «PLUS» and «MINUS» poles on the battery.
- It is essential that short-circuits be prevented in cables carrying current.
- Burn-out lightbulbs in indicator lamps should be replaced immediately.
- 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.
- When carrying out welding work on the engine or machine, earth the welding instrument as close as possible to the welding point and disconnect the battery.

5.2 Maintenance schedule (HATZ = ● / Honda = ■)

Works	Intervals							
	Daily	20 h	50 h	100 h	200 h	250 h	400 h	If necessary
Clean machine	●■							
Check engine oil level ¹⁾	●■							
Change engine oil ¹⁾		●■ ³⁾		■		●		
Check the water trap ¹⁾	●							
Clean engine oil filter ¹⁾		● ³⁾				●		
Clean fuel filter ¹⁾				■				
Change fuel filter ¹⁾							●	
Check air filter ¹⁾	●■							
Change air filter element ²⁾							●	(●■)
Check valve clearance ¹⁾		●■ ³⁾				●		
Exciter: Check oil level			●■					
Exciter: Change oil ²⁾				●■ ³⁾		●■		
Check hydraulic oil level	●■							
Change hydraulic oil								●■
Check the hydraulic hose lines ²⁾				●■				
Check rubber buffers				●■				
Check V-belt				●■				
Check screwed connections for tightness		●■ ³⁾		●■				

¹⁾See engine operating manual

²⁾Minimum once a year

³⁾For the first time

5.3 Lubrication schedule

Lubrication point	Quantity	Change intervalls [Operating hours]	Lubrication	Order-No.
1. Engine				
APR 2220	0,9 l	First time after 20 h; then every 250 h	Engine-oil API SG-CE SAE 10W40	2-80601100
APR 2620				
APR 3020	1,1 l			
APR 3520				
APR 2220 H	0,6 l	First time after 20 h; then every 100 h		
APR 3020 H	1,1 l			
APR 3520 H				
2. Exciter				
APR 2220	0,5 l	First time after 100 h; then every 500 h or annually	Engine-oil API SG-CE SAE 10W40	2-80601100
APR 2620				
APR 3020	0,75 l			
APR 3520	1,0 l			
3. Hydraulic				
APR 2220	0,17 l	not necessary	Hydro-Oil HVLP 46	2-80601070
APR 2620				
APR 3020				
APR 3520	0,65 l			

5.4 Alternative lubrication table

	Engine oil API SG-CE SAE 10W40	Gear oil in acc. with JDM J 20 C	Special hydro-oil ISO-VG 32	Hydr.-oil HVL P 46	ATF – oil
ARAL	Extra Turboral SAE 10W40	Fluid HGS	Vitam GF 32	Vitam HF 46	ATF 22
BP	Vanellus C6 Global Plus SAE 10W40	Hydraulik TF-JD	Energol HLP-HM 32	Bartran HV 46	Autran MBX
CASTROL	Tecton SAE 10W40	Agri Trans Plus	Hyspin SP 32	Hyspin AVH-M 46	TQ-D
ESSO	Ultra 10W40	Torque Fluid 56	Univis N 32	Univis N 46	ATF 21611 II-D
FINA	a. Kappa FE b. Kappa Turbo DI	Transfluid AS	a. Hydran TSX 32 b. Biohydran TMP 32 ²⁾	—	Finamatic II D
FUCHS	Titan Unic MC	Agrifarm UTTO MP	a. Renolin ZAF 520 b. Plantohyd 32 S ²⁾	Renolin B 46 HVI	Titan ATF 3000
KLEENOIL PANOLIN	—	—	Panolin HLP Synth 32 ²⁾	—	—
MOBIL	a. Delvac SHC b. Mobil Super M 10W40 c. Mobil Super S 10W40 ¹⁾	a. Mobilfluid 424 b. Mobilfluid 426	Mobil DTE 24	Univis N 46	ATF 220
SHELL	Engine Oil DG 1040	Donax TD	Tellus T32	Tellus T 46	a. Donax TA b. Donax TX
TOTAL	Rubia Polytrafic 10W-40	Transmission MP	Azolla ZS 32	Equivis ZS 46	Fluide ATX

¹⁾Semi-synthetic light-duty oils

²⁾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 engine – Honda

Only the maintenance work which has to be performed daily is included in the 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



Only top-up by stationary engine.

No open fire.

Do not smoke.

Do not fill-up in closed rooms.

Do not inhale petrol fumes.

Collect spilt fuel in a suitable container and prevent spillage entering the soil.

**NORMAL
STANDARD
NORMALE**

**AVP 2220 (H):
MAX (2.5 // 0.66 US gal)**

**AVP 3020 (H) / 3520 (H):
MAX (6.0 // 1.58 US gal)**



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- Stop the engine.
- Clean around the fuel filler socket.
- Open the fuel filler socket and visually check the fuel level. Refill the tank if the fuel level is low.



Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

- Add fuel to the bottom of the maximum fuel level limit of the fuel tank. Do not overfill. Use unleaded automotive gasoline only.
- Wipe up spilled fuel before starting the engine.
- Close the tank tightly.

5.5.2 Checking the engine oil level

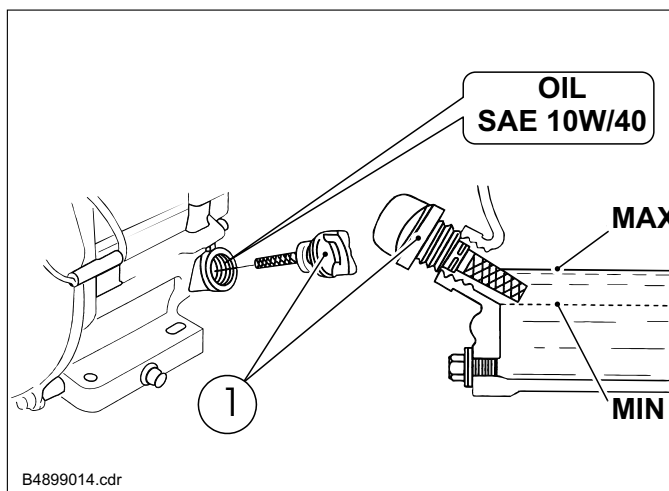


Immediately replace damaged seals.

Collect old oil and dispose of it in an environment friendly manner.

Do not permit oil to run onto the floor into the drains.

- Stand the machine horizontally.
- Stop the engine.



- Remove the oil filler cap/dipstick (1) and wipe it clean.
- Insert the oil filler cap/dipstick (1) into the oil filler neck as shown, but do not screw it in, then remove it to check the oil level.
- If the oil level is near or below the lower limit mark on the dipstick, fill with the recommended oil to the upper limit mark (bottom edge of the oil fill hole). Do not overfill.
- Reinstall the oil filler cap/dipstick (1).

5.5.3 Cleaning the air filter

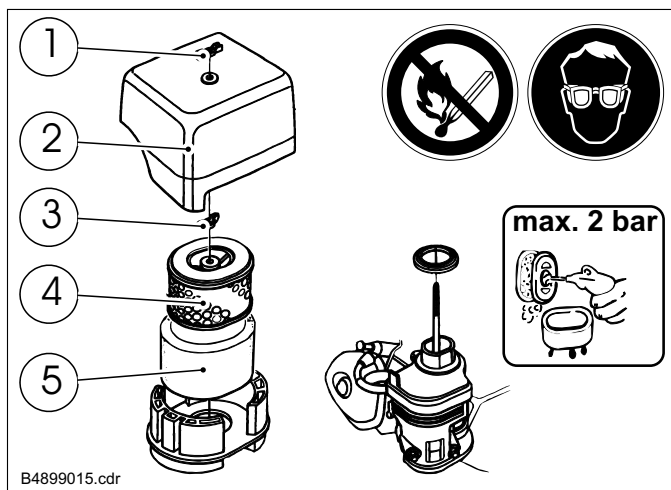


Change the filter element:

- if the filter element is damaged
- if moist or oily deposits are present
- if engine performance reduces
- minimum once a year

Never operate the engine without air filter.

Do not allow dust to enter into carburetor.



- Remove the wing nut (1) from the air cleaner cover (2), and remove the cover.
- Remove the wing nut from the air filter (3), and remove the filter.
- Remove the foamfilter (5) from the paper filter (4).



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!

Risk of eye injuries! – Wear safety goggles.

- Inspect both air filter elements, and replace them if they are damaged. Clean the air filter elements if they are to be reused:
- **Paper air filter element:**
 - Blow compressed air [not exceeding 207 kPa (2.1 kgf/cm², 30 psi)] through the filter element (4) from the inside.
- **Foam air filter element (5):**
 - Clean in warm soapy water, rinse, and allow to dry thoroughly. Or clean in non-flammable solvent and allow to dry.
 - Dip the filter element (5) in clean engine oil, then squeeze out all excess oil. The engine will smoke when started if too much oil is left in the foam.
- Wipe dirt from the inside of the air cleaner case and cover using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
- Place the foam air filter element (5) over the paper element (4).
- Reinstall the assembled air filter. Be sure the gasket is in place beneath the air filter.
- Tighten the air filter wing nut securely.
- Install the air cleaner cover (2), and tighten the wing nut securely.

5. Maintenance

5.6 Maintenance work engine – Hatz

Only the maintenance work which has to be performed daily is included in the 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



Only top-up by stationary engine.

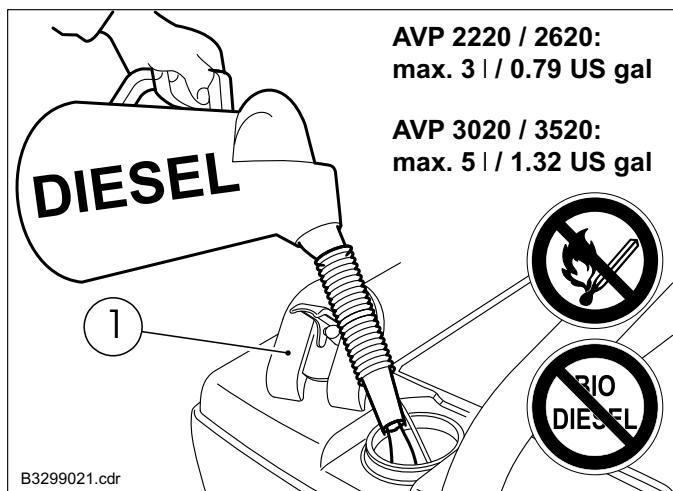
No open fire.

Do not smoke.

Do not fill-up in closed rooms.

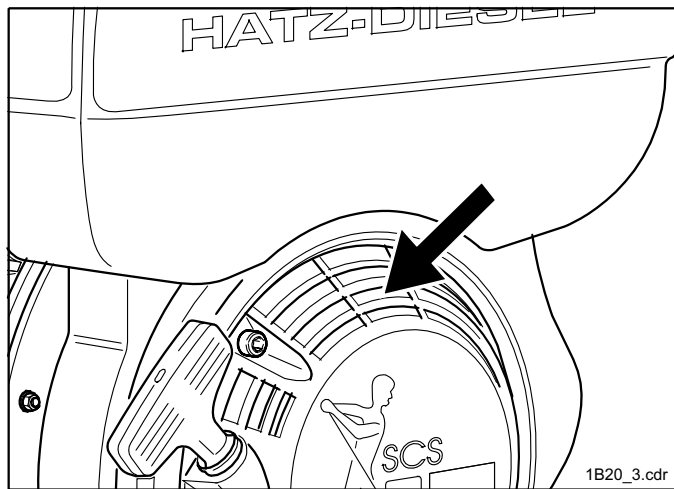
Do not inhale fuel fumes.

Collect spilt fuel in a suitable container and prevent spillage entering the soil.



- Stop the engine.
- Clean around the fuel filler socket.
- Open the fuel filler socket and
- Visually check the fuel level. An unusable amount of fuel remains in the tank due to the design.
- Top-up if necessary; all diesel oils sold as fuel and complying with the following minimum specification can be used: EN 590; DIN 51601 - DK; BS 2869 A1 / A2; ASTM D 975 - 1D / 2D.
- Close the tank tightly.

5.6.2 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.

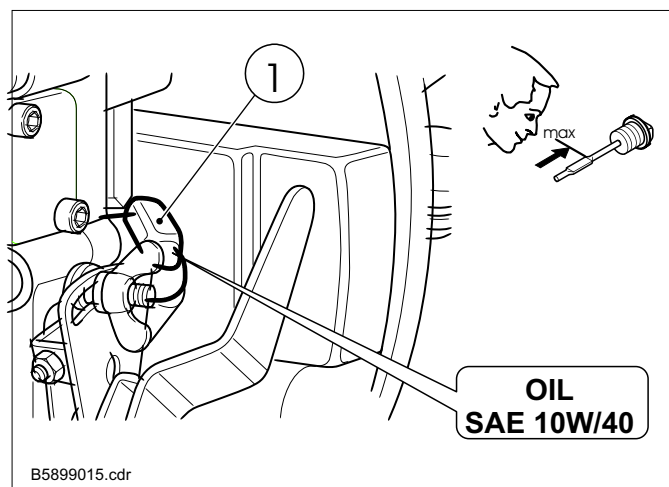
5.6.3 Check the engine oil level



Immediately replace damaged seals.

Collect old oil and dispose of it in an environment friendly manner.

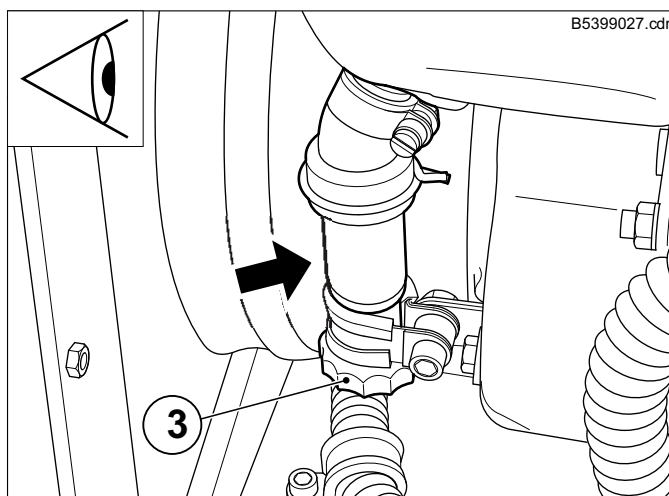
Do not permit oil to run onto the floor into the drains.



- Stand the machine horizontally.
- Stop the engine.
- Clean the area around the dipstick (5).
- Withdraw the dipstick (5) and wipe with a clean, fibre free cloth.
- To check the oil, screw the dipstick back in and then remove it again.
- Check the dipstick oil level and, if necessary, add oil to the «max» mark.

5.6.4 Check the water trap

Check the water trap on its water content every day, when the engine oil level is checked. The water which has collected is separated at a clearly visible line from the diesel fuel above it.



- Open drain plug (3) and
- drain the water out into a suitable vessel.

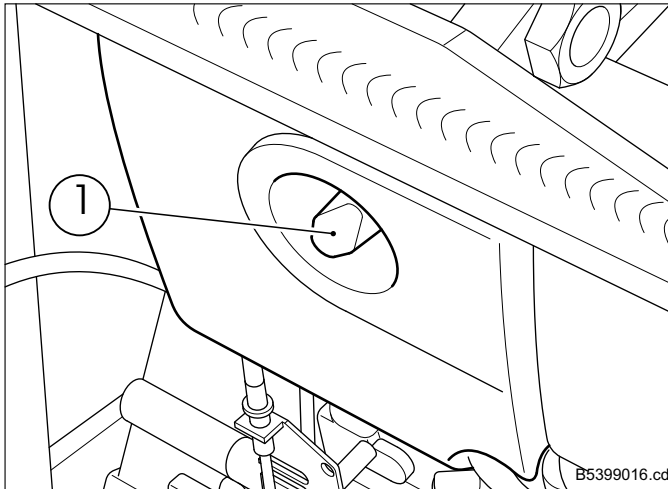
5.6.5 Cleaning the air filter



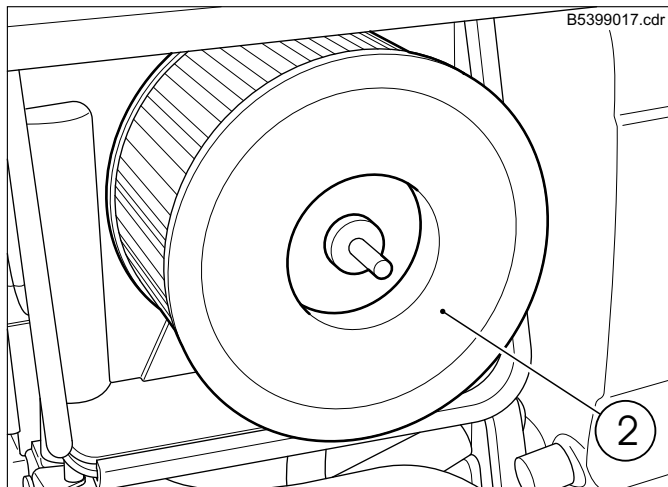
Change the filter element:

- if the filter element or sealing ring is damaged
- if sooty deposits are present
- if moist or oily deposits are present
- if engine performance reduces or
- if the exhaust gas changes colour
- minimum once a year

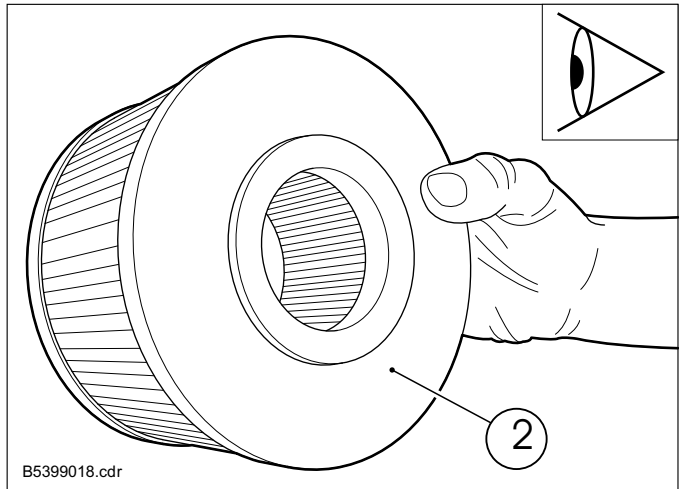
Never operate the engine without air filter element.



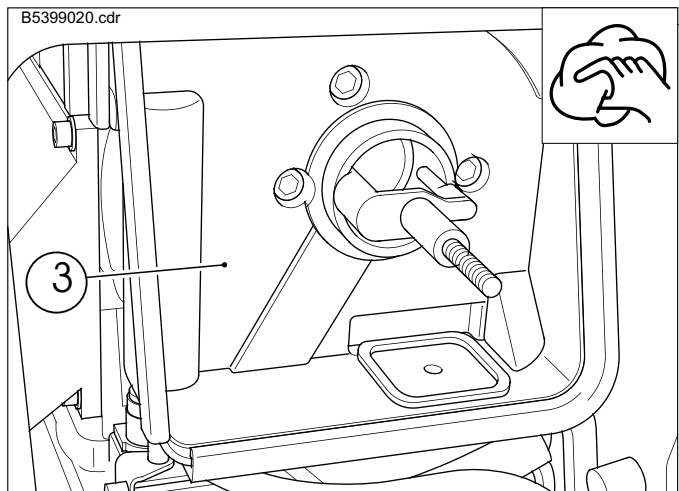
- Remove cover (1).



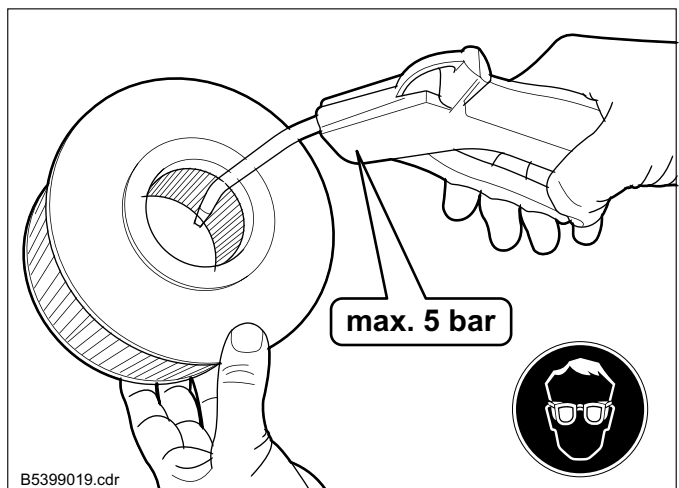
- Carefully remove filter element (2).



- Check filter element (2) for cracks or other damage by holding against the light or using a lamp.



- Clean filter cover (1) and housing (3).
- 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.



Risk of eye injuries! – Wear safety goggles.

- Care refit filter element (2).
- Fit cover (1).

5. Maintenance

5.7 Maintenance machine

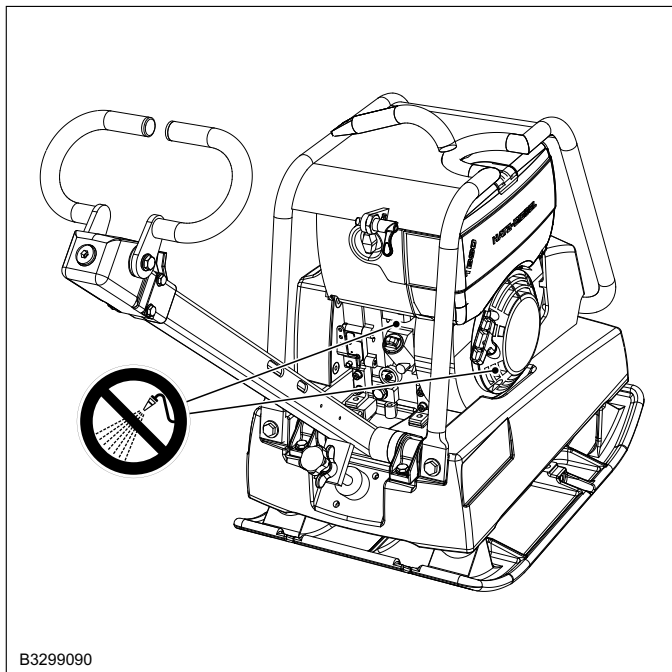
5.7.1 Cleaning



For cleaning, do not use any flammable or aggressive materials.

When cleaning the machine with a pressure washer, do not spray the electrical components directly.

When cleaning the machine with a pressure washer, do not hold it directly over the air filter.



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- Clean the machine on a daily basis.
- After cleaning all cables, hoses, connections and connectors are to be checked for leakage, holed connections, chafing points and other damage.
- Detected faults are to be eliminated immediately.

5.7.2 Tightening torque

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

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Strength grades for screws with untreated, unlubricated surfaces. The values show 90% use of the yield strength; at a friction coefficient of $\mu_{\text{tot}} = 0.14$.

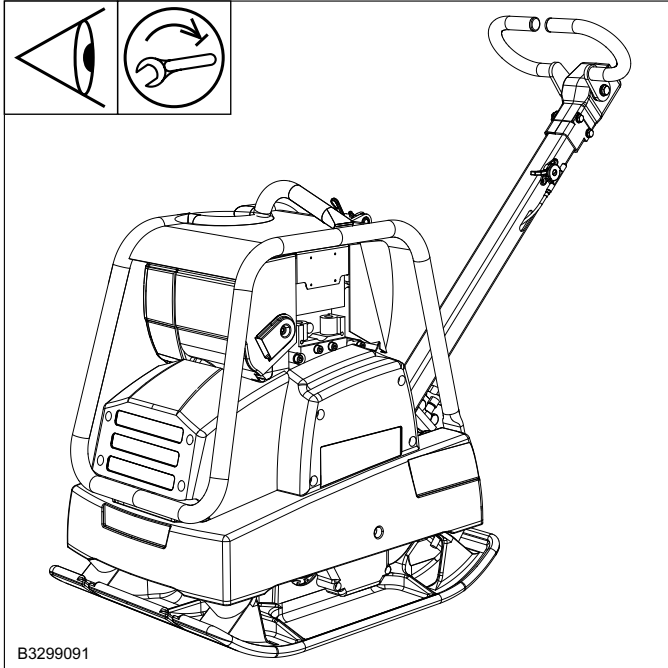
Tightening torque is controlled with torque wrenches.

The values given do not apply when MoS2 lubrication is used.



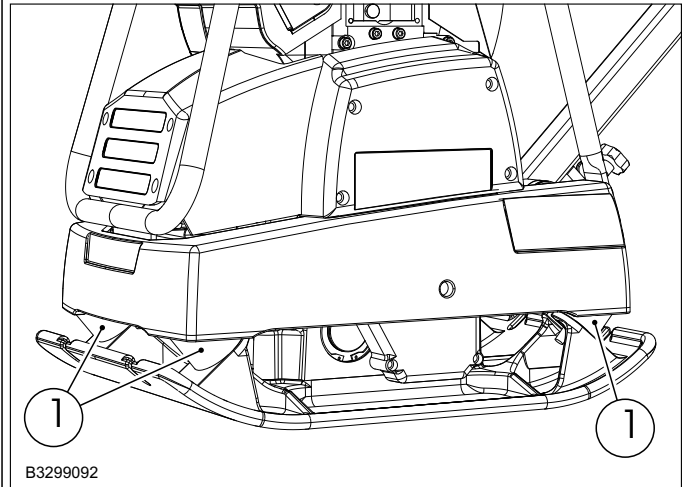
Replace all self-locking nuts after each disassembly.

5.7.3 Screw connections



With vibrating devices, it is important to check intermittently the screw connections for tightness. Pay attention to the tightening torque.

5.7.4 Checking the rubber buffers

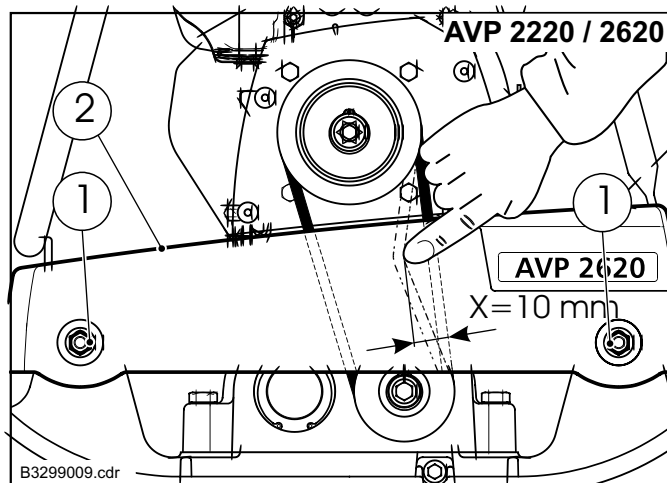


Check the rubber buffers (1) for tears and outbreaks, as well as for secure fit. If they are damaged, replace them immediately.

5. Maintenance

5.7.5 V-belt: Tension / Condition – APR 2220 / 2620

- Remove V-belt guard.
- Check V-belt for tension and condition.
- Tension if necessary:



- Unscrew the nuts (1) of the rubber stops on the outside.
- Push the upper tray (2) upwards on both sides.



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

- Both buffers should be equally pre-tensioned.
- Tighten nuts (1).
- Crank the drive manually and re-check tension and correct if necessary.
- Replace V-belt guard.

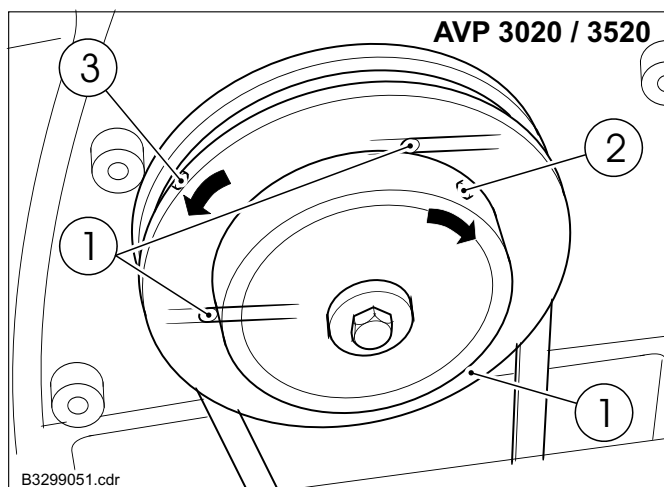


Do not start the engine without V-belt guard. Danger of injuries.

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

5.7.6 V-belt: Tension / Condition – APR 3020 / 3520

- Remove V-belt guard.
- Check V-belt for tension and condition.
- Tension if necessary:



- Loosen set screws (1), do not unscrew.
- Insert auxiliary tools (ø 6 mm) into bores (2) and (3).
- Tension vee-belt by turning clutch halves (2) and (3) in opposite directions
- Tension clutch halves (2) and (3). X= 10 mm.
- Crank the drive manually and re-check tension and correct if necessary.
- Replace V-belt guard.



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

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

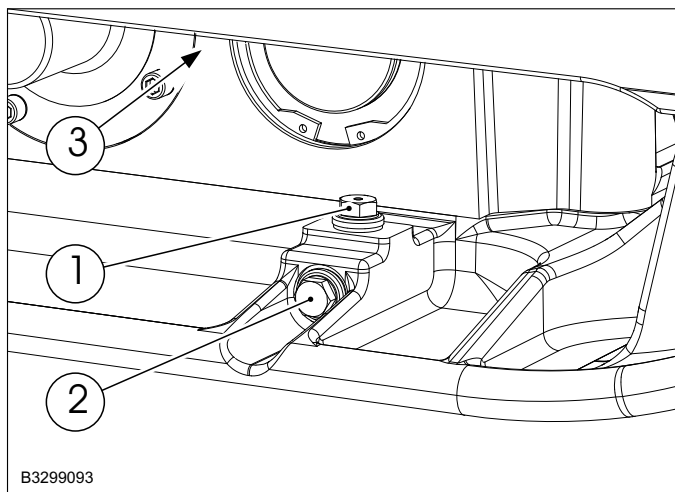
5.7.7 Exciter: Oil level / Oil change



Important

Check / change exciter oil when its warm.

APR 3520: The venting screw (3) must always first be unscrewed when checking the oil level or changing the oil.



- Unscrew venting screw (3), oil filling plug/dipstick (1) and oil drain plug (2).
- Drain-off old oil.



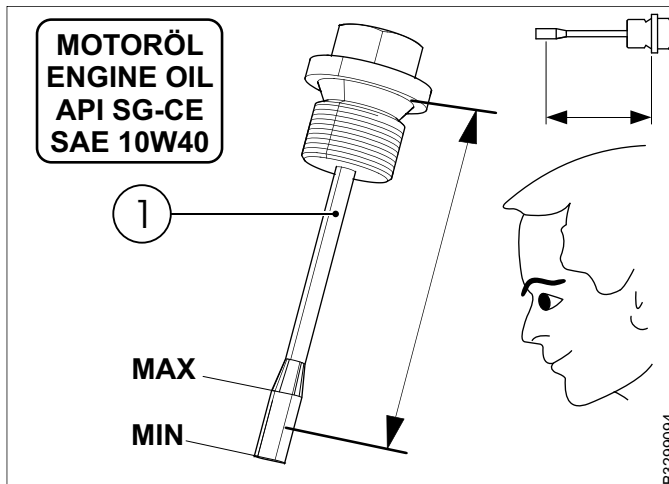
Care is to be taken with the draining of hot oil:
Danger of scalding!



Collect oil which has run out or overflowed and dispose it in an environment friendly manner.

- Screw-in oil drain screw (2).

- Fill-in new oil through the oil fill hole (1). See lubrication plan for quantity and quality.

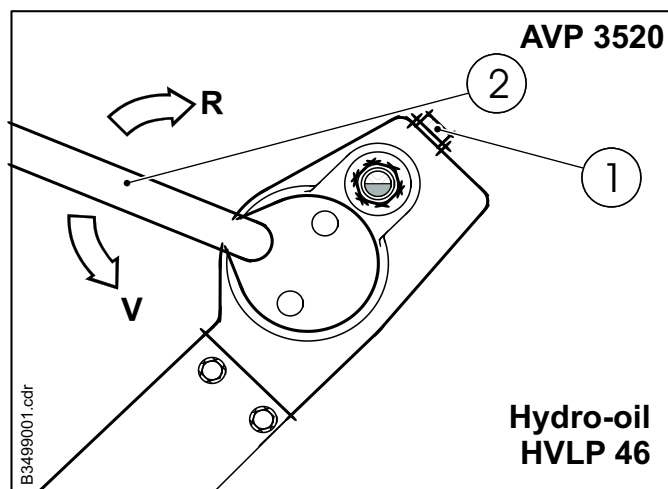
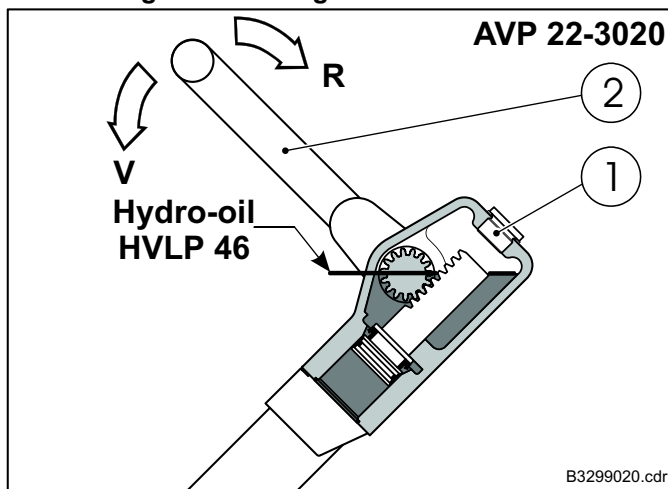


When the dipstick is screwed in, the optimal oil level is between the «MIN» and «MAX» markings.

- Replace oil filling plug/dipstick (1) and venting screw (3).
- Unscrew oil filling plug/dipstick (1), check the oil level again and top up with oil if necessary.

5. Maintenance

5.7.8 Filling and bleeding the circuit



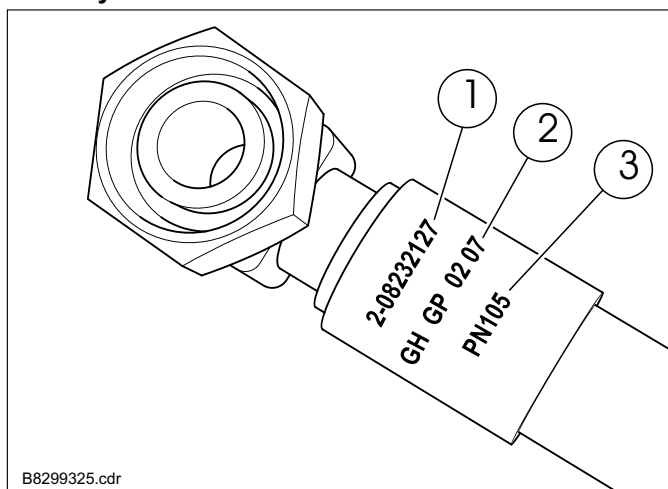
- Release locking screw (1).
- Set throttle lever (2) to «V».
- Pour in hydraulic fluid whilst continually changing the throttle lever position. To ensure correct bleeding, from time place the shaft vertically.
- Stop filling when
 - a distinct «clicking»-noise is heard in the exciter whilst shifting the lever
 - you no longer feel a cushion of air when moving the throttle lever.



When filling, the circuit path is shortened.

- To check oil level, start engine and bring up to operating speed.
- Move throttle lever several times backwards and forwards between «V» and «R».
- The correct oil level should be somewhere in the area shown (See Illus.); at this point the throttle lever must be in the «V» position.
- If the level is too low, top up with hydraulic fluid; if too high, drain off excess fluid.
- With the machine running and the throttle lever in the «V» position, close locking screw (1).

5.7.9 Hydraulic hose lines



- 1 Ammann Article No.
- 2 Manufacturer/Month and year of manufacture
- 3 Max. operating pressure

The function of hydraulic hose lines must be tested at regular intervals (minimum once a year) by an expert (with a knowledge of hydraulics).

Hose lines must immediately be replaced in the following instances:

- Damage to the outer layer to the inner lining (abrasion marks, cracks, cuts, etc.).
- Brittleness of the outer layer (cracking of hose covering).
- Unnatural deformations of the hose line. This applies to both a pressureless and pressurised condition (e.g. layer separation, blister formation, crushed areas, kinks).
- Leaks.
- Damage or deformation of hose fittings (impaired sealing function).
- Hose slips out of the fitting.
- Corrosion of fitting (degrading of function and strength).
- Improper installation.
- Use beyond the expiry date of max. 6 years.

6.1 General information

- Observe the safety information
- Only qualified and authorised persons may carry out repair work (mechanics specialising in construction and agricultural machinery).
- In case of faults, the operating and maintenance instructions must be referred to for correct operation and maintenance.

- If the cause of the fault cannot be located or remedied, an authorised Ammann Service Centre should be contacted.
- Always first check the most likely causes (fuses, LEDs, etc.).

6.2 Fault table

Possible cause	Remedy	Remarks
Engine does not start		
Speed control lever in «STOP»-position	Set lever to «START»-position	
No fuel		
– Tank run dry	Add fuel	
– Fuel filter blocked	Renew fuel filter	
– Fuel valve «OFF»	Move lever to «ON» position	HONDA
– Defective feed pump	Function must be checked	
Oil pressure lost	Check engine oil level	
Compression too low	Contact a Ammann-service station	
Engine switch «OFF»	Turn engine switch to «ON» position	HONDA
Choke «OPEN»	Move lever to «CLOSE» position	HONDA (Unless the engine is warm)
Spark plug faulty, fouled or improperly gapped	Gap or replace spark plug	HONDA
Spark plug wet with fuel (flooded engine)	Dry and reinstall spark plug	HONDA (Start engine with throttle lever in «MAX» position)
Engine stops by itself during regular operation		
Fuel supply is interrupted		
– Tank run dry	Add fuel	
– Fuel filter blocked	Renew fuel filter	
– Defective feed pump	Function must be checked	
Oil pressure lost	Check engine oil level	
Mechanical defects	Contact a Ammann-service station	
Reduced engine performance		
Fuel supply is obstructed		
– Tank run dry	Add fuel	
– Fuel filter blocked	Renew fuel filter	
– Tank venting is inadequate	Ensure that tank is adequately vented	
– Leaks at pipes unions	Check threaded pipe unions	
Air cleaner blocked	Remove dirt from air cleaner	
Incorrect valve clearance	Adjust valve clearance	
Too much oil in engine	Correct the engine oil level	
Too much oil in exciter	Check exciter oil level	
Default in hydraulic system	Contact a Ammann-service station	
Engine runs, machine does not move forward		
Insufficient V-belt tension	Retention V-belt	
V-belt broken	Replace V-belt	
Centrifugal clutch lining worn	Replace linings and springs	
Too much oil in exciter	Check exciter oil level	
Default in hydraulic system	Contact a Ammann-service station	

