JCB VIBROMAX

TÜV CERT
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VM 75 D / PD

Vibratory Single Drum Roller

Instruction Manual

07222/28435A

Edition: November 2005

Valid from serial no.: **JCB 18 000 00**

This symbol means: CAUTION YOUR SAFETY IS RISK!
This is a warning note which relates to safety and must be read through carefully. Ensure that it is understood correctly in order to avoid possible injuries or death.

If this machine is rented or leased, ensure that the following two instructions ase followed:

Before starting the engine:

1. Explain safe and correct use of the machine to the machine operator.

2. Make sure that the machine operator reads through this instruction manual carefully and acts in accordance with it.

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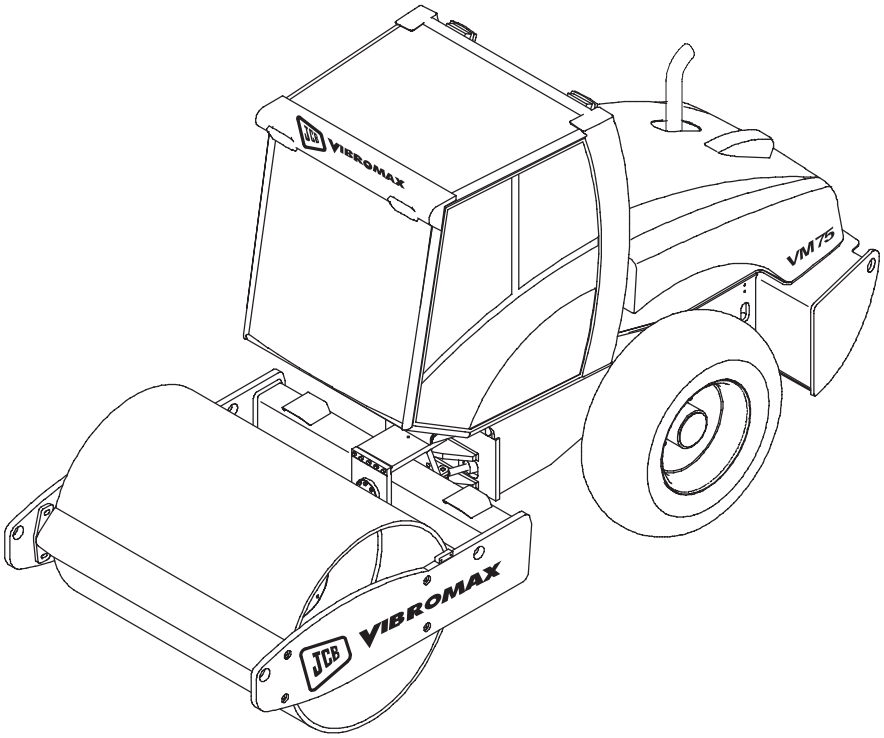
1.0 FOREWORD TO THE INSTRUCTION MANUAL



This instruction manual is intended to make it easier to learn about the machine and to use it for the applications for which it was intended.

The instruction manual includes important notes on operating the machine safely, properly and economically. Observing these notes will help to avoid danger, to reduce repair costs and downtime and to increase the reliability and service life of the machine.

The instruction manual must always be available at the machine job site.

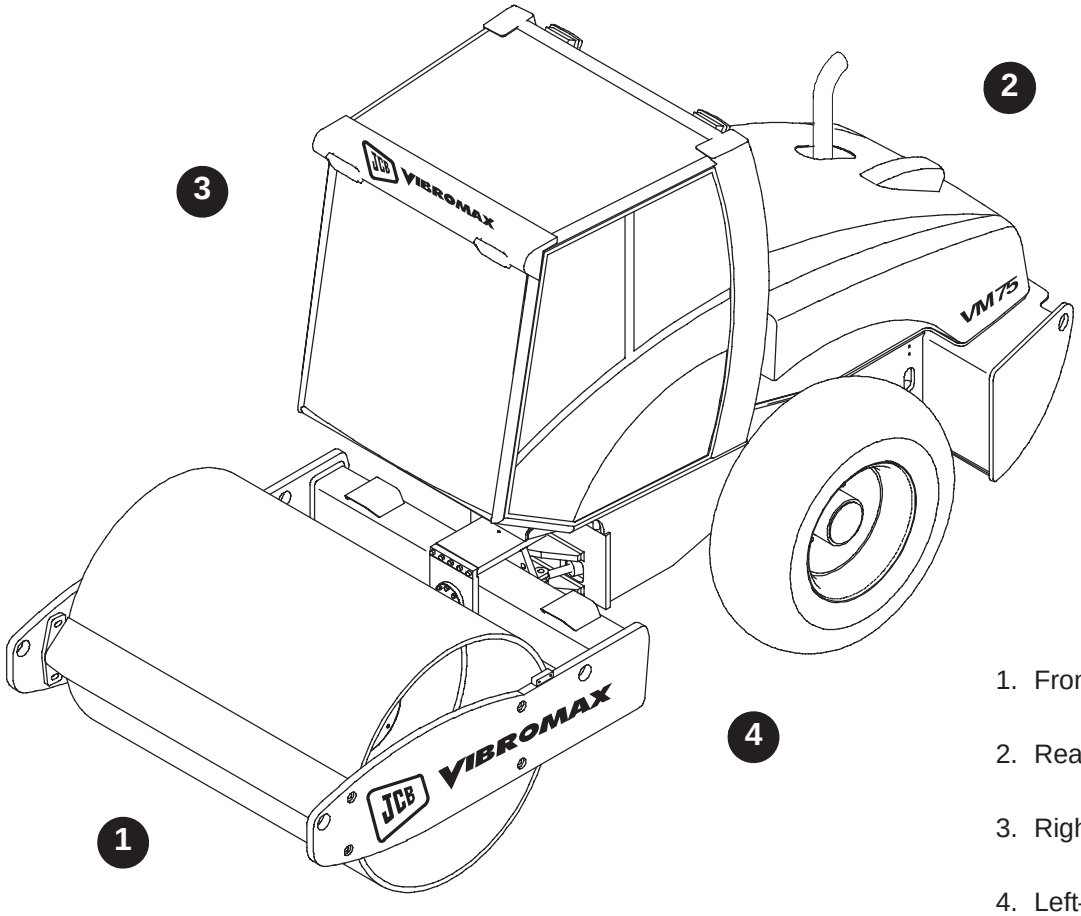
The instruction manual must be read and applied by all persons working with/on the machine, e.g.

- **Operation** including assembly, elimination of faults during the course of work, care, disposal of operating agents and process materials
- **Maintenance** service and/or repairs
- **Transport**.

In addition to the instruction manual and the regulations for accident prevention applicable at the place of operation, the recognized technical rules for safe and competent work must also be observed. In particular the ”Richtlinien für Straßenwalzen und Bodenverdichter” (”Guidelines for Road Rollers and Soil Compactors”), ZH1/530.

2.0 BRIEF DESCRIPTION OF THE MACHINE

The terms ”right”, ”left”, ”front” and ”rear” used in this instruction manual refer to the sides of the machine as seen from the operator’s seat.



1. Front
2. Rear
3. Right–hand side
4. Left–hand side

The self–propelled vibratory roller was designed as a modular system and is characterized by smooth or tamping foot drum shells.

The large selection of equipment which can be fitted, such as cab, heating, air–conditioning system, sound proofing, and ROPS, make the machine comfortable and functional in all situations.

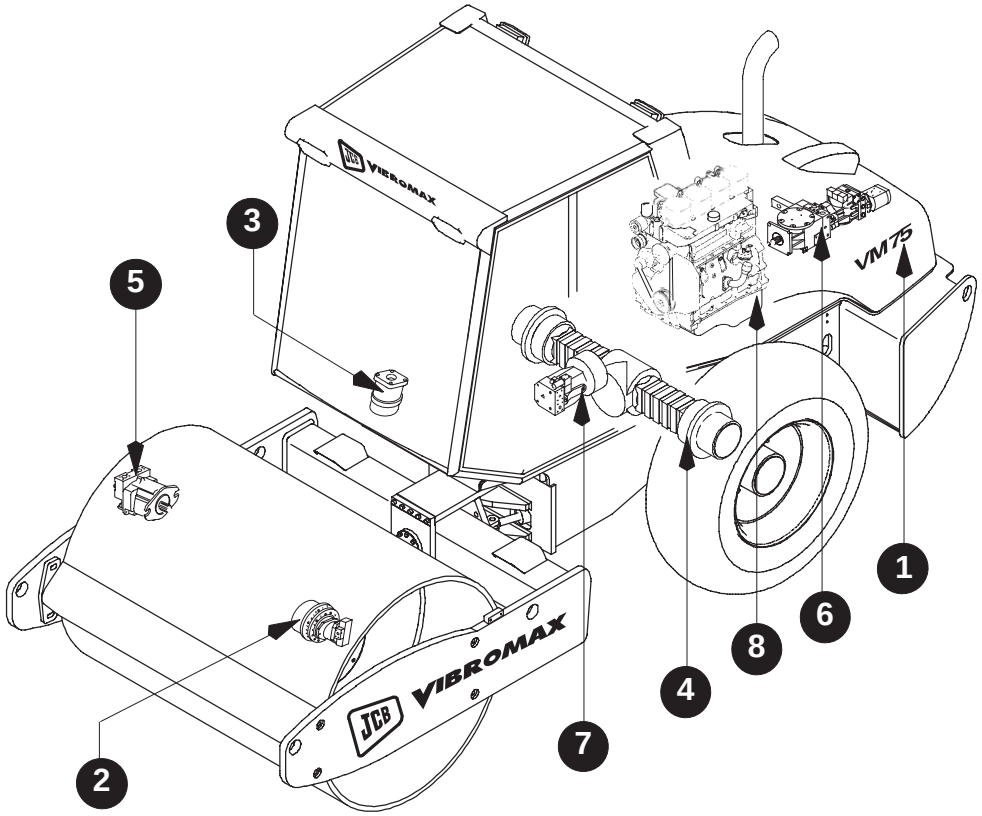
Using its hydrostatic drives, the self–propelled roller can develop different driving or vibration power outputs, depending on which equipment is installed.

The self–propelled roller may be provided only with the components described in this instruction manual.

3.0 PRODUCT IDENTIFICATION AND SERIAL NUMBERS

Enter the serial numbers (Product Identification Numbers P.I.N.) on the following lines. When ordering spare parts or requesting information on the machine, you must quote these numbers to the VIBROMAX dealer.

Make a list of these numbers. Keep this list in a safe place. If the machine is stolen, these numbers should be given to the authorities investigating the theft.



1. Model (circle where applicable) _____ VM 75D VM 75PD

   Serial number (Product Identification Number P.I.N.) _____

2. Drum drive gear box, serial number _____

3. Steering unit, serial number _____

4. Rear axle, serial number _____

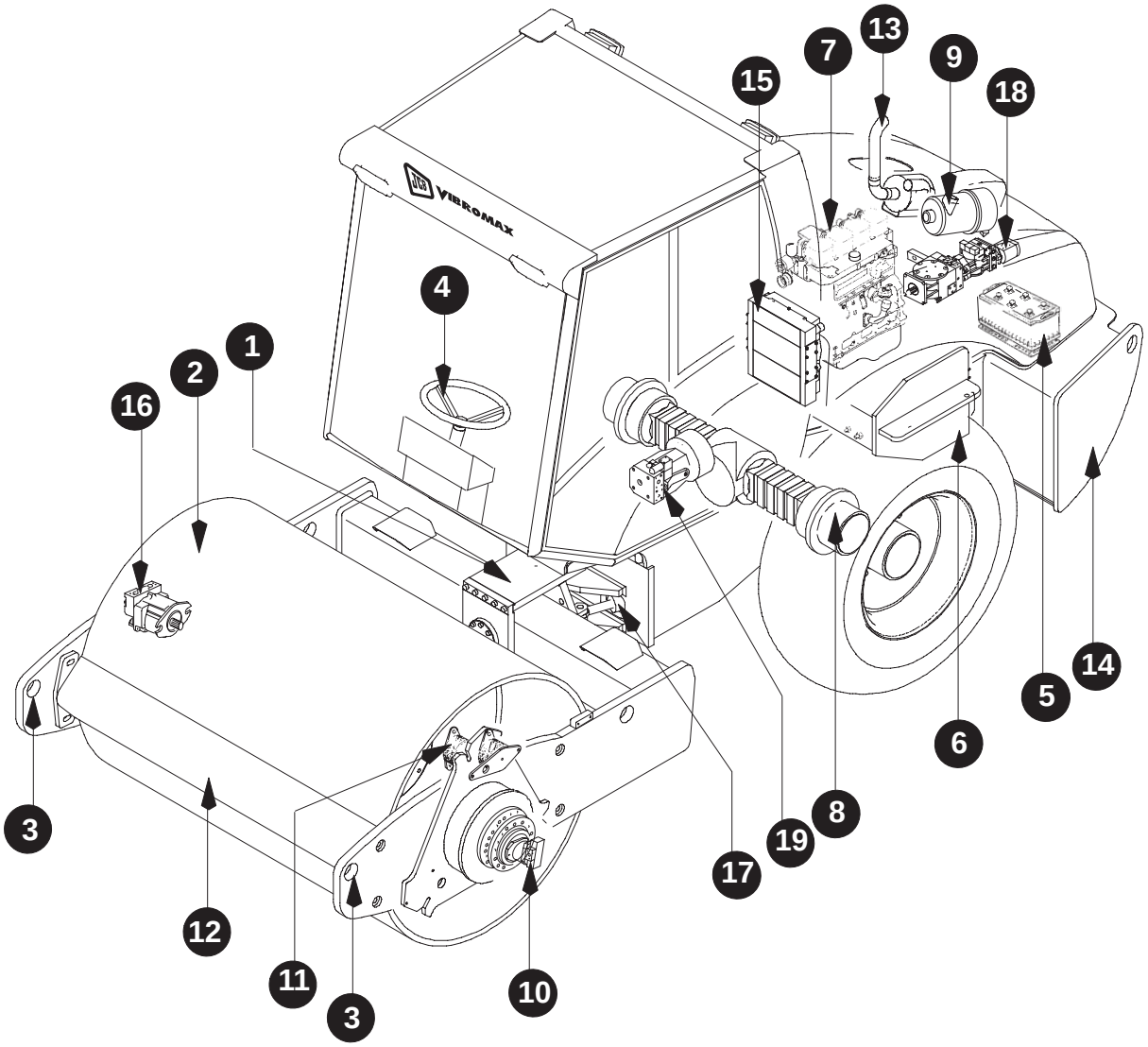
5. Vibration motor, serial number _____

6. Hydropump block, serial number _____

7. Drive motor (axle), serial number _____

8. Diesel engine, serial number _____

4.0 IDENTIFYING THE MACHINE PARTS



1. Articulation joint
2. Smooth drum
3. Lifting and towing eyes
4. Operator’s stand
5. Battery
6. Hydraulic oil tank
7. Diesel engine
8. Axle
9. Air filter
10. Drum drive gear box (Drum)
11. Buffer pad
12. Scraper
13. Exhaust
14. Fuel tank
15. Cooler
16. Vibration motor
17. Steering cylinder
18. Hydropump block
19. Hydraulic motor (Axle)

5.0 BASIC SAFETY NOTES

WARNING NOTES AND SYMBOLS

In the instruction manual, the following designations or signs are used for especially important information:

Note: *Special information relating to economical use of the machine.*

Caution: *Special information or orders or bans for preventing damage.*

Danger: *Information or orders or bans for preventing personal injury or serious damage to property.*

BASICS; USE AS INTENDED

1. The machine is built according the state of the art and in accordance with the recognized safety rules. Nevertheless, its use can cause danger to life and limb of the user or third parties or damage to the machine and other material assets.

2. Use the machine only when it is in technically perfect condition. Use it in the manner for which it was intended. Be aware of safety measures and possible hazards. Always observe the instruction manual. In particular, immediately eliminate faults which could impair safety (or have them eliminated).

3. The machine is intended only for compacting beds of earthy building materials when running over the subgrade in the forward or reverse direction with or without vibration.

   These building materials include soil types ranging from stones to silty sand and having water contents ranging from 40% to 110% of the optimum water content according to the standard Proctor test as given in DIN 18127.

   Fine–grained soils or soils having higher water contents require a qualified trial compaction.

   The machine is intended to be used only on a subgrade gradient up to the permissible gradient.

   Definition of grade ability

   The grade ability of a roller is the gradient angle of a firm, hard and level roadway on which a roller of the basic–equipment version with its longitudinal axis pointing in the incline direction can start in the forward and reverse directions by means of its own propulsion and then travel further for a short period.

Definition of permissible gradient

The permissible gradient when the machine is being used as intended is that gradient of a firm, hard and level roadway on which the roller with its longitudinal axis pointing in the incline direction can be accelerated or braked without any danger and can be reliably held at standstill by means of a parking brake which can be actuated from the operator's stand. It is, however, at most, the permissible longitudinal inclination.

The levelling blade is intended to be used only when the machine is being driven backwards and the blade is lowered.

The machine is not intended for use in any other way.

Use for which it is not intended includes, in particular:

– It is not permissible to drive on a gradient which is greater than the permissible gradient of the machine during operation.

  Before driving on a gradient, it is still necessary to check, at the start of the gradient as seen in the intended driving direction, whether there is adequate frictional engagement between the wheels and the drum and the roadway, i.e. whether, on the gradient, the machine can be driven uphill with medium acceleration and can be braked downhill.

  It is not permissible to drive on a gradient if the wheels and the drum spin or if they skid during braking.

– Vibration at standstill.

– Vibrating travel on blocks, rocks, concrete or frozen soil.

– Vibrating travel in the vicinity of buildings if this could damage parts or installations; This should normally be assumed for vibrational speeds of 8 mm/s or more at the endangered parts.

– Earth–moving during forward driving with the pusher blade lowered.

– Operation in extraordinary applications (see below) without additional safety measures.

– Driving from above onto an untested gradient / inclinqatión.

– Driving on a subgrade having a gradient greater than the permissible gradient in a direction other than the incline direction.

– Use of the roller other than from the operator's seat.

Extraordinary applications are, in particular:

– Work on a subgrade having a gradient greater than the permissible gradient.

– Work on the edges of hillsides or trenches.

– Work in regions having continuous construction site traffic .

Additional safety measures can be:

– Securing by means of ropes attached to winches or accompanying heavy construction vehicles.

– Adequate escape lanes.

– Appointment of guides.

– Testing the function of the brakes when first diving onto the gradient at the lower end of the gradient.

– Correspondingly: testing the directional stability of the longitudinal axis of the roller when switching on the vibration.

The manufacturer/supplier is not liable for damage resulting from such use. The user alone bears the risk.

It is also intended that the instruction manual is observed and that the servicing and main–tenance regulations are followed.

When interrupting the driving operation of the machine, safeguard it against unintentional starting by pressing down the brake button or engaging the machine starting lock.

ORGANIZATIONAL MEASURES

1. Always keep the instruction manual ready to hand at the site of application of the machine.

2. In addition to the instruction manual, observe generally applicable legal and otherwise binding regulations regarding accident prevention and environmental conservation, and see that they are applied.

   Such obligations can also relate, for example, to dealing with dangerous materials or to the provision/wearing of personal safety equipment or to road traffic regulations.

3. Add instructions, including details of responsibility for supervision and obligations to register, relating to company peculiarities, e.g. with regard to work organization, work sequences, staff appointed, to the instruction manual.

4. Staff appointed to work on the machine must have read the instruction manual, and, in particular, the section ”Safety Notes” before starting work. It is too late once work has started. This applies particularly to staff which works on the machine only occasionally, e.g. during assembly and maintenance.

5. Check that the staff are aware of safety measures and possible hazards as they work and that they observe the the instruction manual.

6. Staff may not have long hair hanging freely or wear loose clothing or jewellery, including rings. Injury can result, e.g. from items getting caught on or pulled into machinery.

7. If necessary or required by regulations, use personal safety equipment.

8. Observe all safety and danger notes on the machine.

9. Keep all safety and danger notes on the machine legible.

10. If there are any changes to the machine or its operational behaviour which might have an effect on safety, immediately stop the machine and report the fault to the person/office in charge.

11. Do not make any alterations to the machine, attach any parts or convert the machine without the approval of the manufacturer, if these measures might impair the safety of the machine. This applies also to the installation and adjustment of safety devices and safety valves and to welding onto load–bearing parts and onto the protective bow.

12. Spare parts must satisfy the technical requirements laid down by the manufacturer. This is always ensured in the case of original spare parts.

13. Replace hydraulic hose lines at the specified intervals or at appropriate intervals, even if no deficiencies are visible which might have an effect on safety.

14. Keep to the deadlines for recurring checks/services which are laid down or are given in the instruction manual.

15. Workshop equipment appropriate to the work is essential for performing maintenance operations.

16. Publicize the location and operation of fire extinguishers.

17. Observe the fire alarm possibilities and fire–fighting possibilities.

SELECTION OF STAFF AND STAFF QUALIFICATIONS; BASIC DUTIES

1. Work on or with the machine may be carried out only by reliable staff and only on express instructions. Observe the minimum permitted legal age.

2. Only use trained staff or staff which has been given instructions. Clearly lay down which staff is responsible for operating, assembly, maintenance, repairs.

3. Ensure that only appointed staff works on the machine.

4. Establish the responsibilities of the machine operator, also with regard to road traffic regulations, and allow him to reject instructions of third parties which might threaten safety.

5. Staff being trained or receiving instruction should be allowed to work on the machine only under permanent supervision by an experienced person.

6. Work on the machine's electrical equipment should be performed only by a qualified electrician or under the guidance and supervision of a qualified electrician and in accordance with the electrotechnical rules.

7. Work on the travelling mechanisms and braking and steering systems may be carried out only by qualified staff trained for this.

8. Only staff with specialist knowledge of and experience with hydraulics may work on hydraulic installations.

SAFETY NOTES FOR PARTICULAR PHASES OF OPERATION

Normal Operation

1. Refrain from any method of working which might threaten safety.

2. Before starting work, become acquainted with the working environment at the place of application. The working environment includes, for example, obstacles in the working or traffic region,including the turn–around areas at the ends of the working region, the load–bearing capacity of the ground and the necessary sealing–off of the building site from the public traffic region.

3. Take measures to ensure that the machine is operated only in a safe condition in which it is capable of functioning properly.

   Only operate the machine when all protective devices and devices serving a safety function, e.g. detachable protective devices, emergency switch–off devices, sound proofing and extraction devices are present and operational.

4. At least once per shift, check whether the machine has externally recognizable damage and deficiencies. Immediately report any changes which have occurred (including those in operating behaviour) to the office/person in charge. If necessary shut down and secure the machine.

5. If malfunctions occur, immediately stop and secure the machine. Have faults eliminated immediately.

6. Machines having an operator's seat should be operated only from the operator's area.

7. Observe the indicator displays in accordance with the instruction manual.

8. Before switching on/ starting the machine, ensure that no–one can be threatened by the machine starting.

9. Before commencing driving/starting work, check whether the brakes and steering and signalling and lighting devices are operational.

10. Before moving the machine, always check that the accessories are accommodated in a manner which does not involve any danger of accident.

11. When driving on public roads, paths and squares, observe the applicable road traffic regulations and, if necessary, modify the machine so that it satisfies the traffic laws before putting it on the road (cf §21 StVZO (Motor Vehicles Regulations)).

12. As a rule, switch on the lights in darkness and when visibility is poor.

13. When passing underpasses, bridges, tunnels, overhead cables etc., always ensure that there is sufficient clearance.

14. Always keep a sufficient distance away from the edges of excavations and from hillsides.

15. Refrain from any method of working which might impair the stability of the machine.

16. Do not drive in the transverse direction on inclines. Always carry the working equipment close to the ground, especially when driving downhill.

17. On an incline, always match the driving speed to the conditions. Never change to the lower gear on the incline, but always before the incline.

18. When leaving the operator's seat, always switch off the engine and safeguard the machine against rolling away unintentionally and against unauthorized use.

19. **Note:** *For driving on gradients and inclines*

    It is not permissible to drive on a gradient when the latter is greater than the permissible gradient of the machine in operation.

    Before driving on a gradient, it is still necessary to check, at the beginning of the gradient in the intended driving direction, whether the wheels and the drums have sufficient frictional engagement with the roadway, i.e. whether, on the gradient, the machine can be started uphill with medium acceleration and can be braked downhill.

    It is not permissible to drive on a gradient if the wheels and the drum spin or if they skid during braking.

SPECIAL TASKS DURING USE OF THE MACHINE AND MAINTENANCE WORK AND FAULT ELIMINATION DURING THE COURSE OF WORK; DISPOSAL

1. Carry out adjustment, maintenance and service work, including replacement of parts/ equipment as stipulated in the instruction manual. Keep to the deadlines laid down in the instruction manual. Only qualified staff may perform this work.

2. Inform the operating staff before beginning special work and maintenance work. Nominate supervisors.

3. For all work which relates to the operation, conversion or adjustment of the machine and its devices serving a safety function, and to servicing, maintenance and repairs, observe the switching–on and switching–off processes in accordance with the instruction manual and notes for maintenance work.

4. Close off as large an area as necessary around the maintenance area.

5. If the machine is completely switched off for maintenance and repair work, it must be safeguarded against being switched on again unexpectedly:

   – Lock the main controls and remove the key and/or
   – attach a warning sign to the main switch.

6. Only carry out maintenance work when the the machine is parked on level ground capable of bearing its weight and is safeguarded against rolling away and breaking down.

7. When being replaced, individual parts and larger assemblies must be carefully attached to lifting gear and secured, so that no danger can arise. Only use suitable lifting gear which is technically in perfect condition and load receiving means having sufficient carrying force. Do not wait or work below suspended loads.

8. Appoint only experienced persons to give instruction. The instructor must remain in view of the machine operator or be in voice contact with him.

9. In the case of assembly work above head height, use climbing aids and working stages provided for this purpose or other safe climbing aids and working stages. Do not use machine parts as climbing aids.

   Keep all handles, steps, railings, platforms, stages and ladders free of dirt, snow and ice.

10. At the beginning of maintenance/repair work, clean machines and, in particular, connections and screw connections of oil, fuel and cleaning products. Do not use any aggressive cleaning agents. Use lint–free cleaning cloths.

11. Before cleaning the machine with water or a steam jet (high–pressure cleaner) or other cleaning means, cover up / stick over all openings into which, for safety reasons, water / steam / cleaning agent must not penetrate. The electrical system is particularly threatened.

12. After cleaning, the covers / items stuck over must be completely removed.

13. After cleaning examine all fuel lines, engine oil lines and hydraulic oil lines for leaks, loose connections, abraded regions and damage. Immediately repair any deficiencies detected.

14. Always tighten screw connections which have been loosened during maintenance and repair work.

15. If it is necessary to remove safety devices during assembly, maintenance and repair work, the safety devices must be refitted and checked immediately after the maintenance and repair work has been completed.

16. Ensure that operating agents, process materials and replacement parts are disposed of in a safe and environmentally friendly manner.

NOTES ON SPECIAL TYPES OF DANGERS

Electrical energy

1. Use only original fuses with the correct current strength. Immediately switch off the machine in the event of faults in the electric power supply.

2. Keep a sufficient distance from overhead electric cables with the machine. When working in the vicinity of overhead electric cables, the equipment must not come into the vicinity of the lines. Such work can be highly dangerous. Inform yourself about about safety distances which must be kept.

3. After touching lines carrying high–voltage current

   – Do not leave the machine.
   – Drive the machine out of the danger area.
   – Warn bystanders not to come closer or touch the machine.
   – Have the voltage switched off.
   – Leave the machine only when the line touched/damaged has definitely been de–energized.

4. Work on electrical systems or working stock may be performed only by a qualified electrician or under the guidance and supervision of a qualified electrician and in accordance with the electrotechnical rules.

5. Machine parts on which service, maintenance and repair work are to be carried out must be de–energized.

   First check that the disconnected parts are de–energized, then earth and short–circuit them and insulate adjacent energized parts.

6. The electrical equipment of a machine must be inspected/checked regularly. Deficiencies, such as loose connections or scorched cables, must be repaired immediately.

7. If work is necessary on energized parts, enlist the aid of a second person to actuate the emergency off–switch or or the main switch in case of emergency. Close off the work area with a red and white safety chain and a warning sign. Use only user–insulated tools.

Gas, dust, steam, smoke

1. Use internal combustion engines and fuel–operated heating systems only in adequately ventilated spaces. Before starting in a closed space, ensure that there is adequate ventilation.

   Observe the regulations applicable at the place of use.

2. Carry out welding, burning and grinding work on the machine only when this has been expressly approved. For example, there can be a danger of fire and explosion.

3. Before welding, burning and grinding work, clean the machine and its environment of dust and combustible substances and ensure that there is adequate ventilation (danger of explosion).

Hydraulics

1. Work on hydraulic systems may be carried out only by persons with specialist knowledge of and professional experience with hydraulics.

2. Regularly check all lines, hoses and screw connections for leaks and externally recognizable damage. Repair damage immediately. Oil spraying out can cause injuries and fires.

3. Before starting repair work, system sections and pressure lines (hydraulic system) which are to be opened should be depressurised in accordance with the assembly description.

4. Lay and install hydraulic lines properly. Do not confuse connections. The fittings and the length and quality of the hose lines must satisfy the requirements.

Noise

1. During operation, the noise insulation devices on the machine must be in the protection position.

2. Wear the prescribed personal ear protection.

Oils, fats and other chemical substances

1. When dealing with oils, fats and other chemical substances, observe the safety regulations applicable to the product.

2. Be careful when dealing with hot operating agents and process materials (danger of burns or scalding).

TRANSPORT AND TOWING ; RENEWED START–UP

1. Towing, loading and transporting should be carried out only in accordance with the instruction manual.

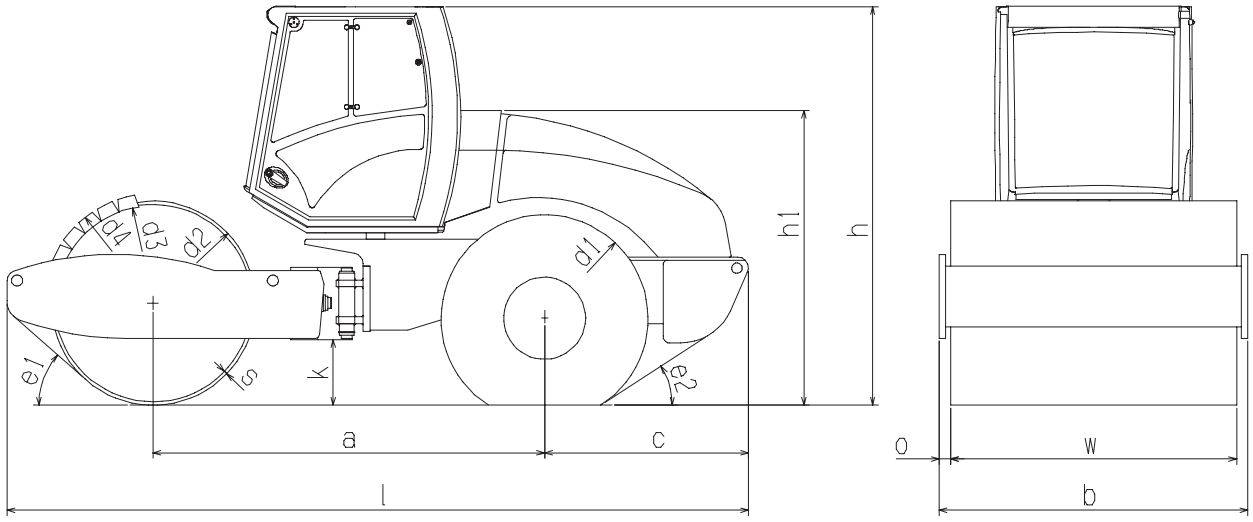
2. When towing, keep to the transport position stipulated and the permissible speed and route.

3. Use only suitable transport means and lifting gear with sufficient load bearing capacity.

4. When starting the machine up again, proceed only in accordance with the instruction manual.

6.0 TECHNICAL DATA

Machine Dimensions



a	2514 mm
b	1870 mm
c	1470 mm
d_1	1298 mm
d_2	1220 mm
d_3	1140 mm
d_4	1300 mm
h	2845 mm
h_1	2070 mm
k	389 mm
l	4887 mm
o	60 mm
s	25 mm
w	1750 mm
e_1	40°
e_2	28°

Filling quantities

Fluids and lubricants . . . . . See page 52

Electrical system

Type of construction . . . . . 12 V–system with negative mass
Battery . . . . . (1) 12 V; 143 Ah

Engine

Manufacturer and model . . . . . CUMMINS B 3.3
Type . . . . . Four–cylinder, water–cooled, four–storke, turbo–charged diesel engine
Injection sequence 1–3–4–2
Bore x stroke . . . . . 95 x 115 mm
Capacity . . . . . 3260 cm^3
Diesel fuel . . . . . See page 50
Power B DIN 6271 . . . . . 60 kW (80HP) at 2200 rpm

Engine speeds
Operating speed . . . . . 2200 rpm
Idling speed . . . . . 800 rpm

Weights

	VM75D	**VM75PD**
Operating axle load, front	3600	3900 kg
Operating axle load, rear (with tyre ballast)	3700	3700 kg
Operating weight, max.	7300	7600 kg

Speed

	VM75D	**VM75PD**
1 st gear, forward and reverse	0–6,9	0–6,9 km/h
2 nd gear, forward and reverse	0–11,0	0–11,0 km/h

Tyre pressure

	VM75D	**VM75PD**
Tyre size	14,9–24 6 PR AWT	14,9–24 DT II
Tyre layers	6	6
Tyre profile	cross–country tread PR–AWT	cleat tread profile PR–TSG
Tyre pressure	0,9 to 1,4 bar	0,9 to 1,4 bar

Vibration system

1st vibration stage	**VM75D**	**VM75PD**
Frequency	1740 rpm (29Hz)	1740 rpm (29Hz)
Nominal amplitude	2,0 mm	2,0 mm
Centrifugal force	138 kN	156 kN

2nd vibration stage	**VM75D**	**VM75PD**
Frequency	2160 rpm (36Hz)	2160 rpm (36Hz)
Nominal amplitude	0,80 mm	0,80 mm
Centrifugal force	84 kN	96 kN

Miscellaneous

Depth of compaction	1st vibration stage	65 cm
	2nd vibration stage	50 cm
Steering lock angle		± 28°
Turning radius, inner		2970 mm
Oscillation angle		± 15°
Permissible longitudinal inclination (gradient)		30° (58%)
Permissible transverse inclination		25° (46%)

	VM75D	**VM75PD**
Theoretical gradeability, forwards	up to 31° (60%)	up to 33° (65%)

Immission

During operation without cab, it may happen that the assessment level according to DIN 45 645 will exceed the lead value of 90 dB (A).

Based on the UVV ”Noise” (VGB 121), the operator is required to wear personal hearing protection means in case of an assessment level exceeding 90 dB (A).

7.0 DECALS

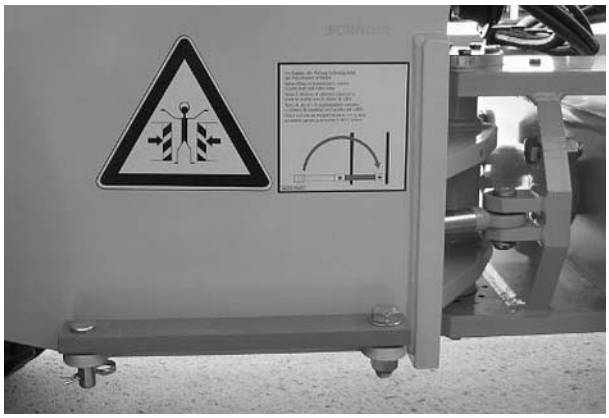
Damaged, missing or dirty safety decals can cause the operator to behave incorrectly and can lead to incorrect operation and maintenance thus resulting in injury or death. Replace all damaged or missing safety decals and keep all safety decals clean. The safety decals are available from your VIBROMAX dealer.

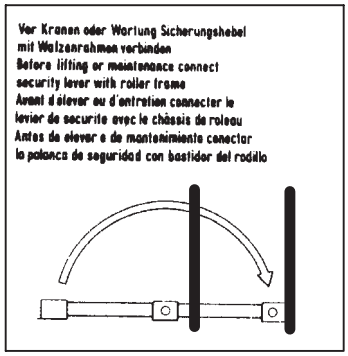
Inspect all note decals and safety decals ”Every 10 operating hours or daily, whichever is sooner”.

Clean illegible decals with water, soap and a cloth. Do not use solvents, petrol etc.

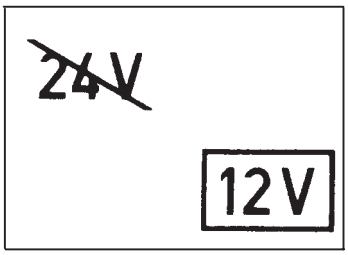
Damaged, missing or illegible decals must be replaced.
If a decals is located on a part which is to be replaced, you must ensure that a new decals is attached to the replacement part.

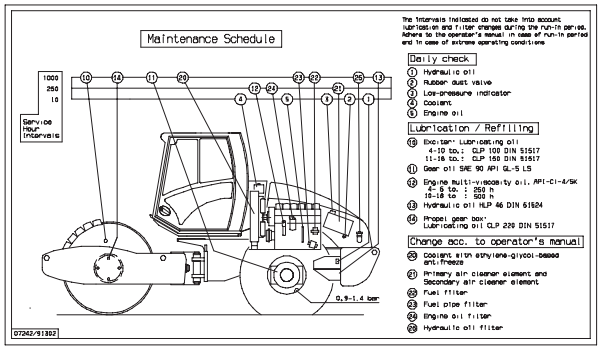
All decals are available from your VIBROMAX dealer.

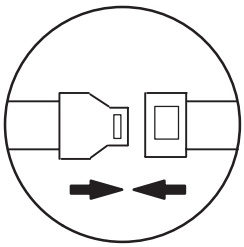




Note: *This decals is located on the lifting and towing eyes.*







This decal is located at the instrument panel (if the roller is fitted with cab or ROPS).

This decal is located at the instrument panel (if NO cab is mounted)

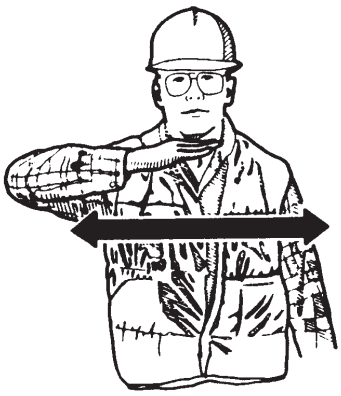
8.0 HAND SIGNALS

If you cannot see the entire work area properly while the machine is being operated, it is advisable for you to communicate with a guide by means of hand signals. Before you start the machine, ensure that you and the guide know the hand signals to be used.

Start the engine

Drive forward
Wave hands back and forth (palms turned inwards)

Stop the engine

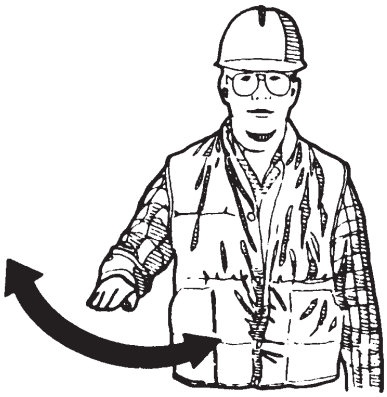


Drive back
Wave hands back and forth (palms turned outwards)

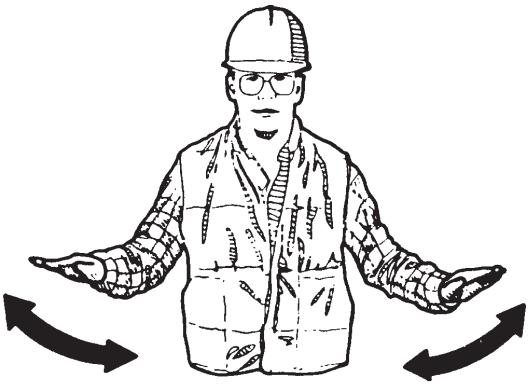
Drive further by this distance

Stop and wait

Stop
Wave one hand back and forth



Stop immediately
Wave both hands back and forth

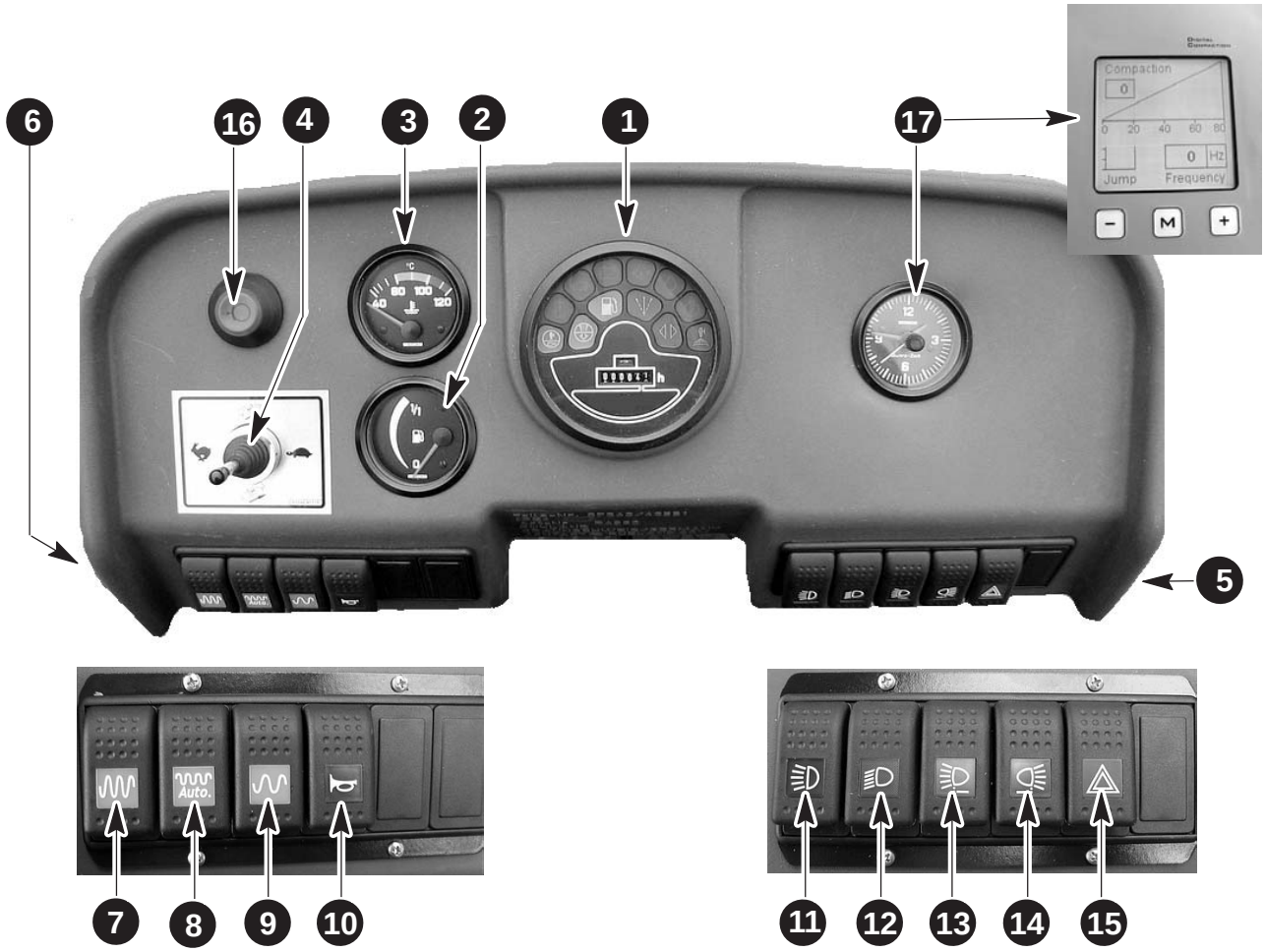


Turn the machine left
To stop turning, stop moving hand and clench it to form a fist

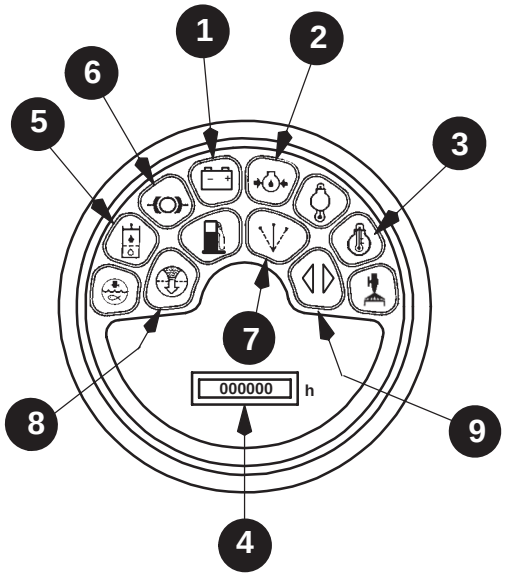
Turn the machine right
To stop turning, stop moving hand and clench it to form a fist

9.0 OPERATOR'S STAND

Overview



1. Combination indicator



– 1. Charging current indicator light

This light comes on when the key is in the ON position or there is a fault in the charging current circuit. If this light comes on while the engine is running, stop the engine and repair the fault.

– 2. Engine oil pressure warning light

This light comes on when the key is in the ON position or when the engine oil pressure is too low. If this light comes on while the engine is running, stop the engine and repair the fault.

– 3. Engine temperature warning light

This light comes on and the horn sounds when the fan belt fails (the engine operating temperature exceeds the safe operating range). If this light comes on while the engine is running, stop the engine and repair the fault.

– 4. Operating hour counter **h**

This counter indicates the total number of hours and minutes the engine has been running.

– 5. Hydraulic oil filter warning light

This light comes on if the hydraulic oil filter element is clogged.

– 6. Parking brake light

This light comes on when the parking brake is engaged and the switching key is in the ON position.

– 7. Zero position light

This light comes on when the drive lever is in the ZERO–position and the keyis in the ON position. This light must come on before the engine can be started.

– 8. Air filter warning light

This indicator comes on when the air filter element is clogged.

–*9. Flasher

* Special accessories

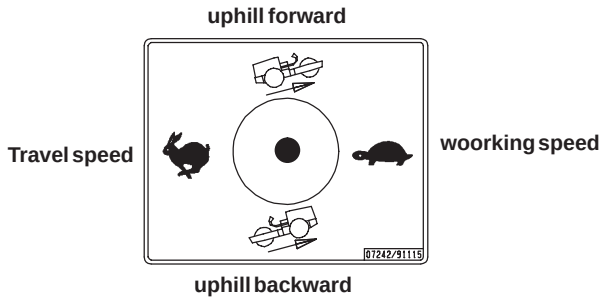
2. Fuel indicator

This indicator indicates the quantity of fuel in the fuel tank.

3. Engine temperature indicator

This indicator indicates the engine temperature. While the engine temperature is normal, the pointer remains in the green region. If the pointer is in the red region while the machine is being operated, stop the engine and repair the fault.

4. Gear shift switch



5. Ignition lock

This switch has three positions, OFF, ON and START. Turn the ignition key clockwise to the first notch ON to switch on the electrics. Turn the ignition key further clockwise to the START position to start the engine.

After it has been released, the ignition key automatically returns to the ON position.
Stopping the engine– Turn the ignition key to the OFF position and remove it.

6. Socket

7. Vibration switches
high frequency

***8. Automatic vibration switch**

Auto

This switch has two positions; ON and OFF. When a certain working speed is exceeded, the vibration switches on automatically. When the working speed falls below a value, the vibration is switched off automatically befor neutral position.

9. Vibration switches
low frequency

10. Horn

Note: *The horn signal sounds when the engine temperature is too high. If it sounds when the engine is running, stop the engine and check the fan belt and/or the engine cooling system. The horn signal sounds if the parking brake is engaged while the machine is being driven.*

11. Main switch lighting

Lighting instrument panel

***12. Light for road traffic**

13. Working lighting system, front

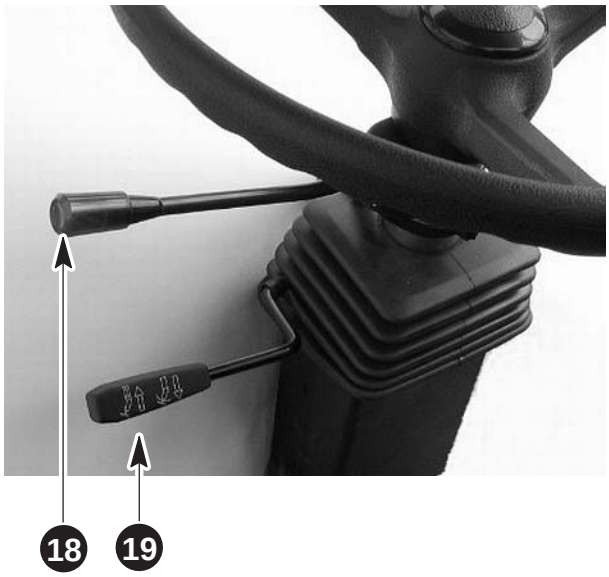
14. Working lighting system, rear

***15. Hazard warning lights**

16. Parking brake switch

This switch has two positions, ENGAGE and DISENGAGE .
Push the switch into the ENGAGE (BRAKE) catch position. Push the switch and release it so that it moves into the DISENGAGE (RELEASE) position. When the parking brake engages and the key is in the ON position, the parking brake light comes on. If the parking brake is engaged and the machine is started, a horn sounds.

17. Clock or * Compatronic



***18. Flasher switch**

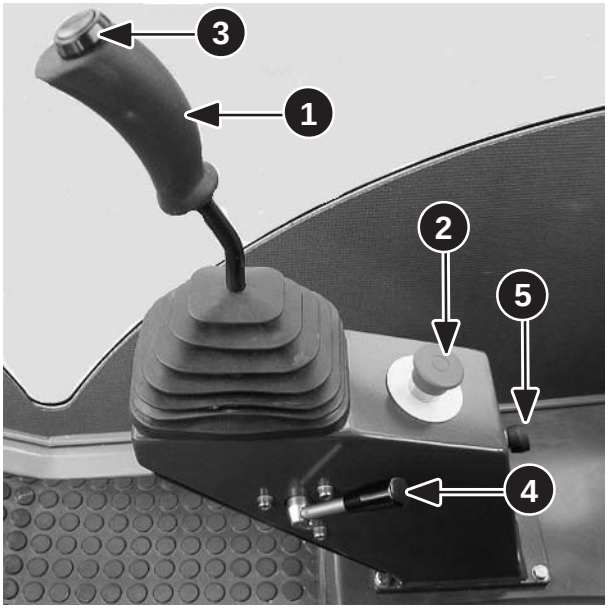
19. Steering column adjustment

Height: move lever up

Pitch: move lever down

* Special accessories

CONSOLE



1. Drive lever

This lever has three positions, FORWARD ZERO and REVERSE. Use this lever for reversing the driving direction and for adjusting the speed. Move the lever forward to drive forward. Move the lever backward to reverse (back alarm sounds if installed). The further the lever is moved forward or backward from the ZERO position, the greater the driving speed. To stop the machine, move the lever into the ZERO position.

Machine starting lock

This lock is locked in the ZERO position of the drive lever. To release the lock, pull the drive lever to the left and then select the desired driving direction. For starting or stopping the engine, ensure that the drive lever is in the ZERO position and has clicked into position.

*Backup alarm

During backward travel, the alarm sounds intermittently.

2. EMERGENCY – switch

Before the start of each work shift, especially before driving on gradients, check the EMERGENCY – switch:

– After pushing the switch all systems (incl. Diesel engine) power down.

3. Vibration switches

Preselect vibration. The vibration is switched ON and OFF with the switch, in the drive lever.

4. Engine throttle control

The lever, item 4, has two positions, ENGINE IDLING and OPERATION. Push the lever forwards into the OPERATION position to drive the machine. Pull the lever fully to the rear into the IDLING position to park the machine.

It is important to note that the IDLING position is required after operation of the machine in order to cool the engine and the hydraulic oil.

*5. Heating system switch

ON/OFF switch, two fan–levels

* Special accessories

OPERATOR'S SEAT

1. Fore and aft adjustment lever
2. Back–rest angle adjustment lever
3. Weight adjustment handle
4. Weight indicator

Fore and aft adjustment

Raise the lever and slide the seat forwards or backwards. (Adjustment 150 mm in increments of 15 mm). Release the lever to lock.

Angle adjustment of back–rest

Raise the lever and move the back–rest into the desired position. Adjustment of back–rest 12,5° forward and 15° backward in increments of 2,5°.

Weight adjustment

Adjust the weight adjustment handle to the respective driver's weight. Adjustment 110–285 lbs (50kg–130 kg) infinitely.

Arm rest adjustment

The arm rests can be folded into the desired position by being moved up and down.

Maintenance

The following should be performed every 1000 operating hours:

– Check the operator's seat, the seat belt and their fastening parts.

– Replace damaged parts.

– Tighten screws with the stipulated tightening torques.

– Keep the seat belts clean and dry. If necessary, clean them by hand with hot soap solution. Do not use bleach or dye as this can damage the seat belt.

10.0 OPERATOR'S STAND AND CAB

The operator's stand is equipped with an operator's seat on a seat box cover which can be tilted upwards.

The heating (optional) is located at the seat box.

Keys and Tools

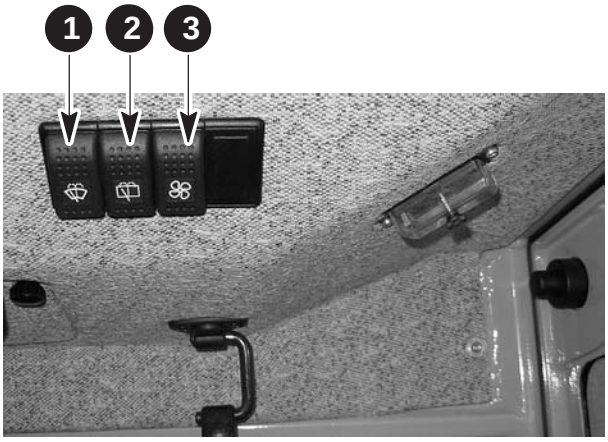
The following keys belong to the machine:

1. Switching key for the switching lock.

2. Hexagonal wrench for hatches: hatchbrack (battery), seat box (fuses)

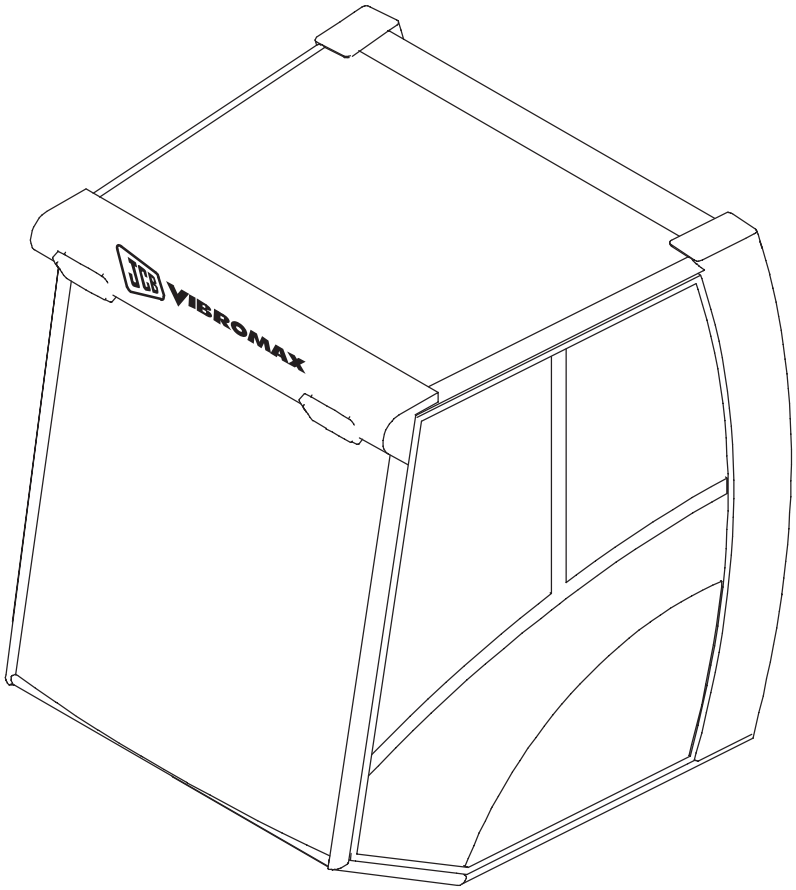
3. Key for the motor hood.

4. Keys for the door lock for when a cab is mounted.



1. windsceen wiper–washer system (front)
2. windsceen wiper–washer system (rear)
3. fan (two–stage)

CAB



Equipment

– Cab frame welded from special sections, with two hinged doors fitted with pneu–matic springs

– Side windows with locking device

– Arched windshield

– Two–stage fan in roof integrated

– Front and rear window wipers with washer system

– Interior light, interior rearview mirror and sun visor

– Cab has ROPS and FOPS function

– Two halogen headlights front and rear

– Two exterior rearview mirrors with folding mountings

– Air vents for the front windows

– Heating and air condition optional

– Radio–fitting provided

11.0 SPECIAL EQUIPMENT

Tamping foot – equipment

As a special – equipment version, the VM 75 PD roller, is equipped with a tamping foot drum.

The machine is specially suited for working on cohesive ground with a high water content.

The tamping foot equipment includes a tamping foot scraper, which is mounted on the drum frame.

Tamping foot – shells

The special accessories also include a tamping foot shell set. Which can be mounted of the smooth drum.

Is consist of three shell segments which are bolted together and fitted around the smooth drum shells.

Levelling equipment

Levelling equipment can be fitted on the VM 75 PD roller.

The levelling blade is bolted onto two lifting arms which are actuated by two lifting cylinders. The lifting cylinders and the lifting arms are articulated on the drum frame.

Located on the diesel engine is an additional gear pump which supplies the lifting cylinders with oil via hoses, control block and throttle valve.

A pedal actuates the control block.

The levelling blade can be raised, lowered or brought into the ”floating position”.

Heating – Air condition

1. Fan

Switch on the fan with (1), there are 3 fan–stages.

2. Fan nozzles

The direction of the outpouring air can be adjusted with the nozzles.

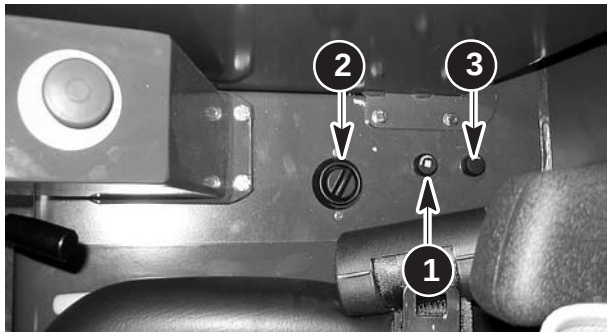
3. Heating

For heating switch on the fan (1) and adjust the temperature by turning the ball valve (2).

4. Air condition

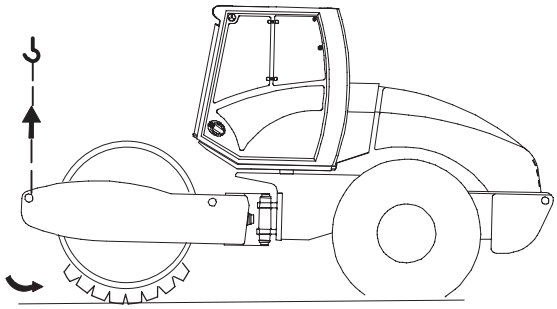
For cooling switch on fan (1) **and** air condition (3). The desired temperature can adjusted by turning the ball valve (2).

Note: *The fan will be switched OFF for 10–15 seconds in air–condition–mode every 10 till 15 minutes.*
If the air cindition is not used for a month, it to switched on one time for 10 minutes.

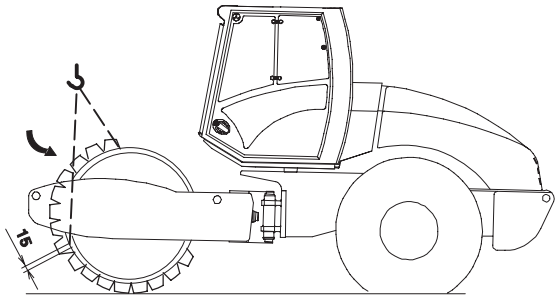


1. Switch for the fan
2. Ball valve
3. Switch for the air condition

Tamping foot – shells

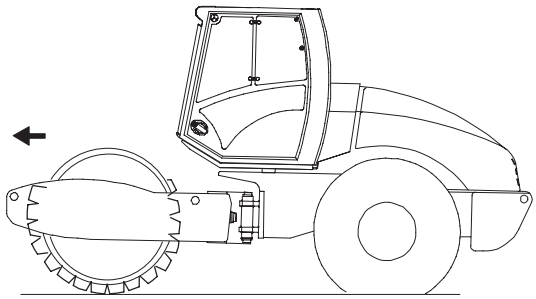


Phase 1
Raise roller with lifting gear and position first shell part below the drum shell. Lower the rol–ler. Remove smooth drum scraper.

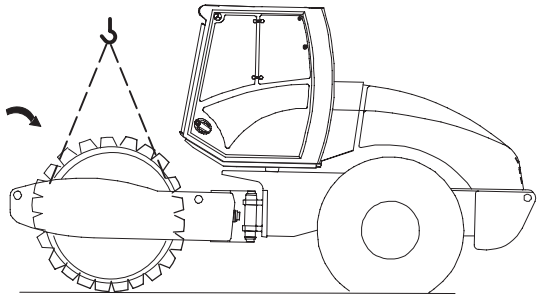


Phase 2
Mount second shell part with lifting gear. Insert screws and tighten nuts by hand.

Assembly aid:
On both sides, insert a flat steel of 15 mm thickness (approx. 0.5 m long) into the joint gap.



Phase 3
Drive the roller forwards slowly to receive third shell part.



Phase 4
Mount the third shell part with lifting gear. Use assembly aid (flat steel of thickness 15 mm). Insert screws and tighten nuts by hand.
Remove the flat steel bars and tighten all nuts. Ensure that the joint gaps are even. Repeat the tightening procedure several times until the shells are fitted securely on the drum shell.
Mount the tamping foot scraper.

Compaction Measurement Device: Compatronic

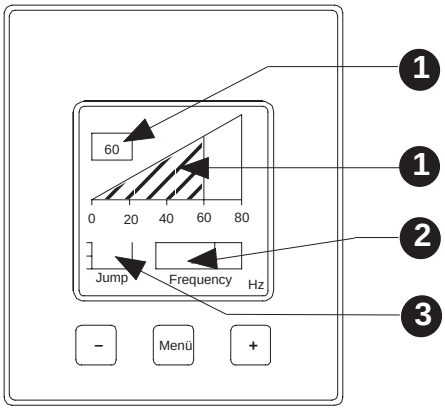
The compaction measurement device shows the relative compaction of the subsoil during the rolling process.

Display:

Compaction: The more compressed the soid is, the higher the value here.

Frequency: The curren vibrator frequency as a figure expressed in hertz.

Jump: Jump motion.
A highly compressed subsoil can lead to sudden jump mo–tions which damage the roller.



1. Compaction (relative)
2. Frequency
3. Jump motion

The keys (M), (+) and (–) are used to adjust display brightness and contrast.

1. Brightness

push (M) once:

adjust brightness with (+) and (–).

2. Contrast

push (M) twice

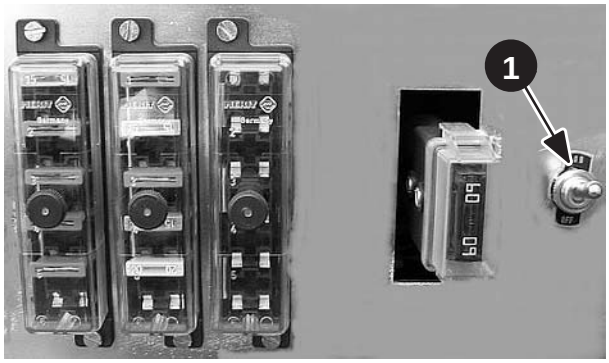
adjust contrast with (+) and (–).

Note: *For a detailed description see end of these instruction manual.*

12.0 ASS – SWITCH

The ASS–switch (1) is located on the con-sole below the instrument panel.
The position of the ASS–switch has to be as follows:

Drum type	Switch position
D	ON
PD	OFF
PD–Shells	OFF



13.0 INSTRUCTIONS FOR SAFE OPERATION

The following explanation corresponds to points 5 to 8 of the ”Guidelines for Road Rollers and Soil Compactors” published by the main federation of the professional associations in Germany.

In addition, all of the **notes** relate to this machine.

General Information

1. Only persons who

   – are 18 years of age or above.

   – are physically and mentally suitable.

   – have been instructed in operating or maintaining the rollers and have proved to the employer that they are qualified to do this

     and of whom

   – it can be expected that they will reliably complete the tasks may be employed to operate or maintain the roller.

   They must be designated to operate or maintain the roller by the employer.

2. Rollers may be operated only in the manner for which they were intended and with due regard being paid to the manufacturer’s instruction manual.

3. In the case of extraordinary applications, the employer must draw up and announce any instructions necessary in addition to these safety rules.

Note: *Extraordinary applications are, for example, simultaneous use of several rollers and use on hillside edges.*

Note: *If it is not fitted with a protection device, this machine may be used only in work areas which, together with their surroundings, are so level and stable that the machine cannot slide, turn over or fall.*

   The machine must be operated with a rollover protection structure in work areas excluded by the above.

   In this connection, compare VBG 40, UVV ”Erdbaumaschinen” (”Earth–Moving Machinery”), § 37, paragraph 2:

   ” In the vicinity of excavations, shafts and trench or hillside edges, earth–moving machinery should be safeguarded against rolling away or sliding”.

   UVV = Accident Prevention Regulations
   VBG = Federation of Professional Associations

4. Roller must be used and operated in such a manner that itis stability is en–sured.

5. The roller operator must keep the operator’s stand and the tread surface in such a state that a firm foothold is provided.

6. The safety of rollers must be inspected as required in accordance with the conditions of use and the operating conditions, at least once annually, by a competent person.

Competent persons are persons who due to their specialist training and experience, have sufficient knowledge in the field of rollers and are acquainted with the relevant national health and safety regulations, accident prevention regulations, guidelines and the generally recognized technical rules to such an extent that they can assess whether rollers are in a state safe for operation.

A record must be made of the inspection and must be kept until the next inspection.

BEFORE STARTING THE ENGINE

The following points must be checked daily before the engine is started:

1. Check the machine for leaks.
2. Check the tyres for wear or damage.
3. Check the drums for wear or damage.
4. Check the machine for damaged, missing or loose parts.
5. Clean dirt from the machine.
6. Clean or replace all illegible note stickers or safety decals.
7. Clean steps, railings and the operator’s stand.
8. Carry out the work described in ”Every 10 operating hours or daily”, in accordance with the maintenance schedule.

Note: *In a new machine or a machine having a replacement engine, observe the maintenance schedule for the running–in period.*

ENGINE STARTING AIDS

Cold–start spray

Note: *If the machine is not equipped with a cold–start knob!*

When using cold–start spray agent, enlist the aid of a second person. Observe the instructions on the cold–start spray agent container.

1. Carry out points 1 to 9 under STARTING THE ENGINE.

2. Turn the ignition key to the START position. Have the second person spray cold–start spray agent into the air intake port at intervals of 1/2 second of spraying and 1/2 second interruption from a distance of approximately 0.9 m as soon as the starter is operating. Release the ignition key when the engine starts to run.

3. Carry out point 10 under STARTING THE ENGINE.

Important rules for using the cold–start spray agents

1. Learn how to use the cold–start spray agent correctly.

2. Before welding, grinding or torch–cutting work on the machine, remove the cold–start spray agent container from the machine. Remove spray agent vapors from the work area with compressed air.

3. Do not inhale any spray agent vapor. Do not allow spray agent to get on your hands.

4. Keep the cold–start spray agent container out of reach of children.

5. At temperatures above 4°C, remove the cold–start spray agent container from the machine.

6. Before throwing away a cold–start spray agent container, put on rubber gloves and actuate the spray valve of the container to let off pressure. Never puncture the spray agent container or throw it into a fire.

7. Do not store any additional cold–start spray agent containers in the machine.

8. Read and observe the instructions on the spray agent can.

Caution: *An explosion can result if sparks or flames come into contact with the cold–start spray agent or if a cold–start spray agent container is stored in an environment having a high temperature. Read the instructions about engine–starting aids before dealing with cold–start spray agent and before servicing the cold–start spray agent system, which is available as special equipment. Serious injury can result if these instructions are not observed.*

Jump start

First make sure, that the vehicle (and it's battery), that gives you jump start, has a voltage of 12 V.

Carry out the following steps:

1. Connect the positive battery poles.
2. Connect the negative battery poles.
3. Start the vehicle, that gives jump start.
4. Start the vehicle, that receives jump start.
5. Set down the vehicle, that gives jump start.
6. Disconnect the negative poles.
7. Disconnect the positive poles.

STARTING THE ENGINE

1. Ensure that the transport mounting is in the driving position.
2. Ensure that there are no blocks under the machine.
3. Ensure that the drive lever is in the ZERO position.
4. Ensure that the vibration switch is in the OFF position.
5. Push brake butten (the parking break must be engaged).)
6. Turn the ignition key to the ON position.
7. Check the following indicator lights on the combinations indicator and replace them if they do not shine:
   - Charging current indicator light
   - Engine oil pressure warning light
   - Parking brake light
   - ZERO position light
8. If engine is not at operating temperature set throttle control to full speed!

Note: *If the air temperature is less than 4°C, use cold–start spray agent as a starting aid.*

9. Turn the switching key to the START position. Release the key when the engine starts to run. If the engine starts to run and immediately s tops running again, do not actuate the starter until the engine is at a standstill. Do not actuate the starter for more than 30 seconds at one time. Wait for 3 minutes before actuating the starter again.

10. Check the following indicator lights and ensure that lights have gone out. If one of the indicator lights is shining, stop the engine and repair the fault:

    – Charging current indicator light

    – Engine oil pressure warning light

    – Engine oil temperature warning light

Fasten seat belt when operating machine with cab or ROPS!

When operating the machine without cab or without ROPS do not use your seat belt (if national regulations permit this)!

14.0 MACHINE OPERATION

General instructions

General practical advice concerning this machine is given below. Ask a VIBROMAXdealer if you require additional information regarding specific problems or special applications.

Using vibration on hard, compaction–averse surface can cause heavy dama–ges and is not permitted!

Know the limits of the machine. Keep the machine under control at all times. Do not perform too many operations at once.

Always pay attention. Keep the work area clear of persons who are not entitled to be in the vicinity of the machine. Know the positions of authorized persons in the work area.

If the operator looses control of a machine, injury or death can result. The operator must decide if the weather and the soil conditions permit safe handling on a slope, a gradient or uneven ground. On a slope, a gradient or uneven ground, the machine may be driven only at a low speed.

If the machine starts to move without an operator, injury or death can result. Before leaving the operator's platform, actuate the parking brake and stop the engine. See PARKING THE MACHINE in the instruction manual.

When compacting a new road bed or a new road surface, drive on the filling material or the bituminous layer with the full width of the machine. The machine can tip over if it is not resting on the surface with its full width.

Operation on a gradient can be dangerous. Rain, snow, loose crushed rock, soft ground etc. change the soil conditions. The operator must judge whether the machine can be driven on a gradient or ramp. Thus, before driving on a gradient or ramp, inspect the work area and then drive at low speed, as the machine can otherwise go out of control and tip over.

MACHINE OPERATION WITHOUT VIBRATION

Set engine to full speed!

Note: *Make the first pass for pressing the filling material without vibration. When driving forwards, the tyres leave tracking grooves in the loose filling material. Make the last pass for smoothing the filling material without vibration.*

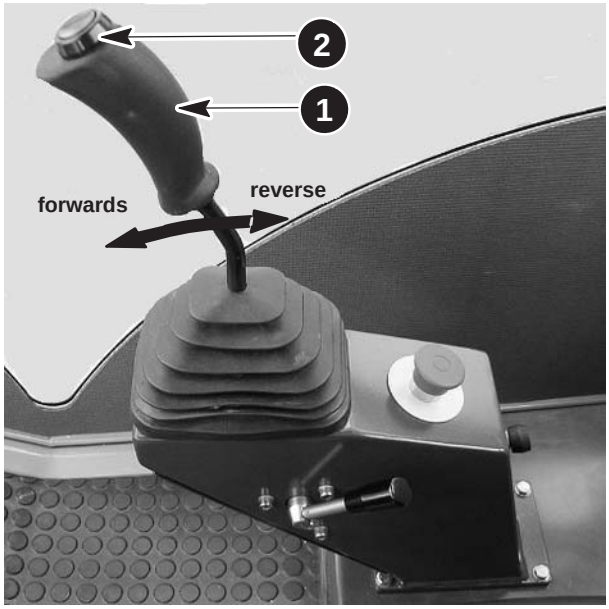
Note: *Do not adjust the speed of the machine with the engine speed lever but with the drive lever.*

1. Actuate gear shift.

2. Actuate the parking brake switch (light goes out) in order to disengage the parking brake.

3. Slowly move the drive lever (1) forwards or backwards. The machine is moved into the corresponding position.

4. Put the drive lever (1) into the ZERO position in order to stop the machine.



1. Drive lever
2. Vibration switch

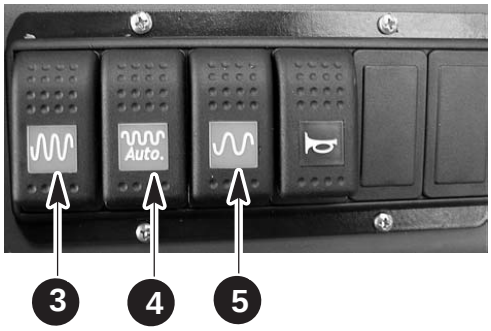
Before reversing, keep the area behind the machine clear of other persons. If this is not observed, injury or death can result.

Know and observe the guide's hand signals.

MACHINE OPERATION WITH VIBRATION

Set engine to full speed!

Note: *First observe the instructions given under MACHINE OPERATION WITHOUT VIBRATION.*



1. Select vibration stage (switch 3 or 5).

2. Select automatic vibration, if desired (switch 4).

3. Move drive lever slowly from neutral position for– or backward.

Note: *The recommended driving speed with vibration is 1....*3 km/h.

4. Activate vibration with switch 2.

Note: *Switch on the vibration only when the machine is driving. Switch off the vibration before the machine is stopped. Do not vibrate when the machine is stationary.*

5. To switch off the vibration, actuate the vibration switch on the forward reverse lever.

6. After the optimum compaction of the filling material has been achieved, do not make any further vibration passes as this can impair the result of vibration.

7. Test the compaction achieved using a recognized measuring method.

Caution: *When the machine is used in the immediate vicinity of a building, it is possible for the vibration to cause the building to vibrate severely and thus be damaged. It is therefore necessary, in such cases, to check what effects the operation of the machine has on the building, for example in accordance with DIN 4150, part 3.*

The vibrations from this machine can cause trench walls or high hillsides to collapse. If it is necessary to work in the vicinity of a trench or a high hillside, ensure that these are propped up. If this precaution is not taken, people working in the area can be injured or killed.

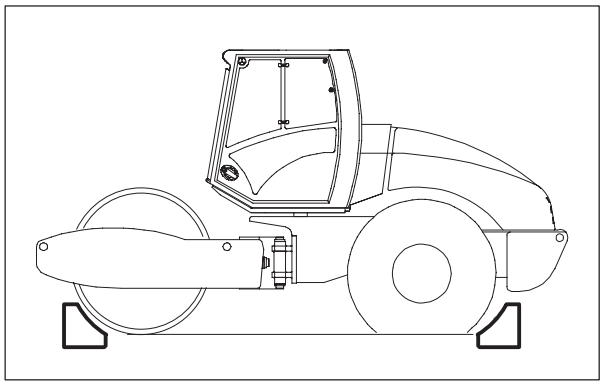
Using vibration on hard, compaction–averse surface can cause heavy damages and is not permitted!

15.0 PARKING THE MACHINE

1. Switch vibration OFF.
2. Drive the machine onto level ground.
3. Place the drive lever in the ZERO position.
4. Turn engine throttle control to IDLE.
5. Actuate the parking brake switch (light comes on).
6. Move the ignition key to zero position and remove him.
7. Lock cab (if mounted).

Important: *If the machine must temporarily be parked on a gradient, park the machine with the front pointing uphill. Ensure that the machine is blocked by a fixed object.*

Safeguard the machine against moving unintentionally by means of blocks.



Note: *The brakes apply automatically, if the engine shuts off.*

Note: *Do not suddenly stop the engine when it is running under the operating load. Instead, allow it to idle for a short period with no load so that the internal temperature can fall slowly and a coolant loss through boiling is avoided.*

General note: *If the machine is to be shut down for a long period, if must be prepared for storage.*

16.0 TOWING THE MACHINE

If the machine is damaged, the machine operator must decide whether it can be moved without being damaged further.

Note: *If possible, repair the machine at the building site.*

If the machine has to be towed, read the following instructions and proceed with caution.

Tow the machine with a suitable towing vehicle. See the instruction manual for the towing vehicle.

Note: *Ensure that the towing vehicle has sufficient tractive force and braking power to move and brake the damaged machine.*

Note: *Do not tow the machine faster than 3 km/h or further than 1 km.*

Note: *For distances greater than 1 km, transport the machine on a suitable vehicle. See PREPARING THE MACHINE FOR TRANSPORT.*

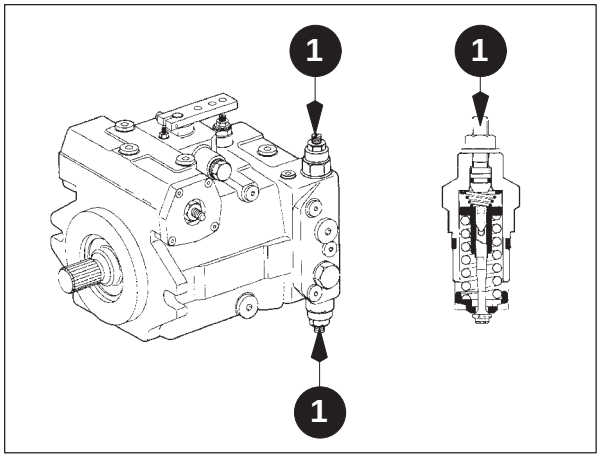
1. Attach a tow–bar to the front or rear of the machine.

Note: *Rollers may be towed only with adequately dimensioned tow–bars attached at the points provided for this purpose by the manufacturer.*

This machine may be towed only with a tow–bar.

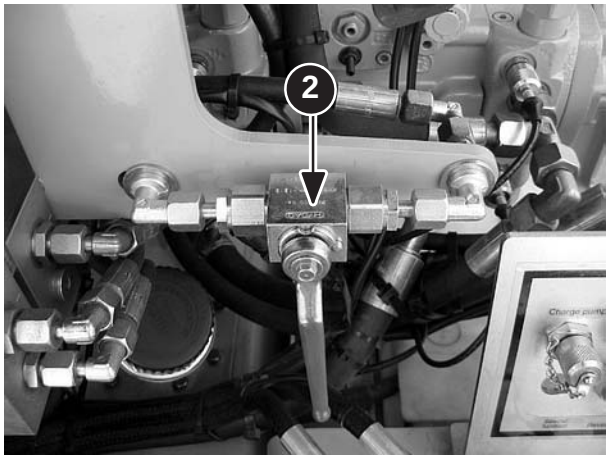
2. Ensure that the transport mounting is in the DRIVE position.

DRIVE position



3. Turn in the bypass screw (1) of the multi–ple function valve as far as possible.

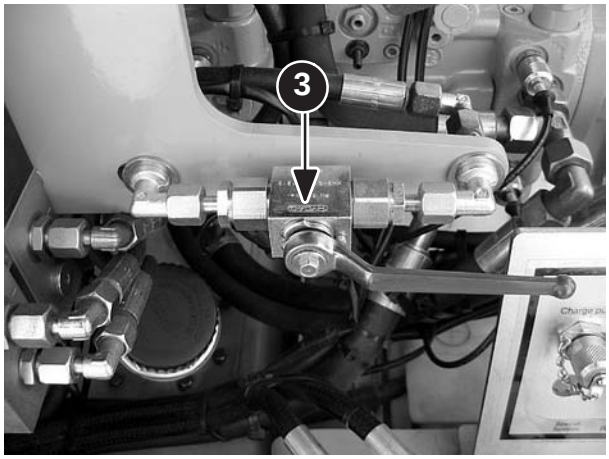
4. Turn the towing valve into TOWING POSITION (2).



2. Towing valve into TOWING POSITION.

   For this loosen the screw of the towing valve lever (s=8) detach the lever to–gether with the washer from square end and turn the washer 180°. After that set the washer and lever again on the square end and tighten the screw firmly.

5. Unbrake the machine by actnating the handpump producing hydraulic pressure in the brake system.



3. Towing valve into DRIVE POSITION.

6. Tow the machine

7. After you have finished towing, turn the lever into the horizontal (DRIVE) position (3).
   After towing return the washer on the square end into original position to avoid an unintended actuation of the towing valve.

8. Unscrew the bypass screw as far as it will go.

The machine is unbraked in TOWING POSITION.

17.0 PREPARING THE MACHINE FOR TRANSPORT

Before transporting a machine, observe the safety rules and laws. Ensure that the transport vehicle and the machine are equipped with the correct safety equipment.

1. Secure the wheels of the transport vehicle with blocks.

Note: *Ensure that the ramp can support the weight of the machine.*

2. Move the machine onto the transport ve–hicle.

3. Push the parking brake switch and stop the engine.

4. Secure the transport mounting in the locking position.

5. Secure the machine with blocks at the front and rear.

6. Secure the machine to the transport ve–hicle with chains attached to the lifting and towing eyes.

7. Ensure that doors and motor hood are closed and locked.

8. Measure the total height of the transport vehicle and the machine. It is necessary to know this measurement.

9. Before transport, the air pressure in the machine's tyres should be set at 1,8 bar.

   This ensures greater stability of the machine when it is being secured to the transport vehicle.

Note: *After transporting the machine, set the tyre pressure as described on page 19.*

Warning: *Before driving the machine onto the transport vehicle, remove all ice, oil or grease from the transport vehicle and the ramp.*

Warning: *Drive the machine squarely over the ramp onto and off the transport vehicle in order to prevent the machine from driving off the side and tipping over.*

18.0 BEFORE MAINTENANCE/LUBRICATION

If the machine is not inspected and serviced properly, accidents can result. Always follow the inspection and maintenance instructions in this instruction manual.

If maintenance and repair work is not carried out properly, injury or death can result. If you do not understand the maintenance procedures for this machine, consult your VIBROMAX dealer or your workshop manual.

The cooling system of the machine will not properly function with an opened motor hood. Start the engine only for a shout time. Watch the temperature indicator constantly.

General Information

Before carrying out maintenance and lubrication work on this machine, observe the following:

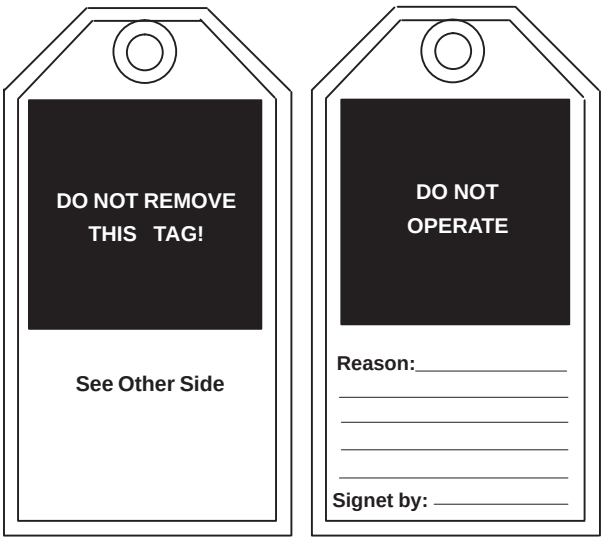
1. Read the instructions in this instruction manual.

2. Read all note and safety decals on the machine.

3. Wear the correct safety clothing and equipment.

4. Use the maintenance schedule and the operating hour counter to service the machine at the correct intervals.

5. Hang a ”DO NOT OPERATE” tag on the engine controls.



Transport mounting

Before carrying out maintenance work, secure the mounting in the locking position.

Locking position

After maintenance and lubrication work, secure the mounting in the drive position.

Drive position

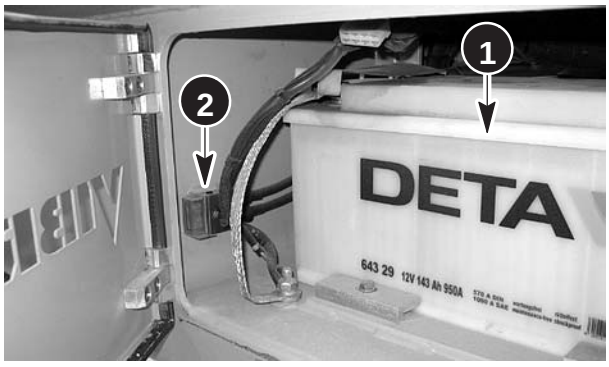
ACCESS

Engine hood opening:

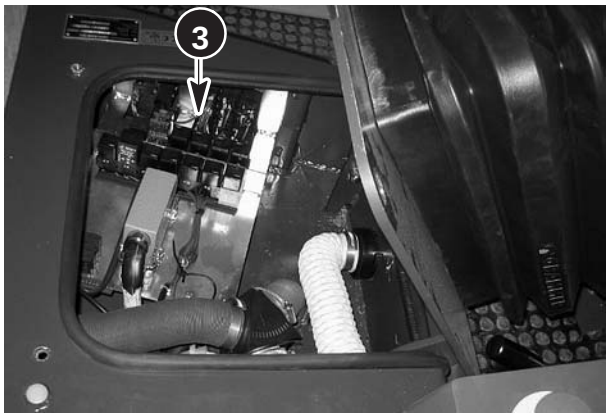
To open hood first open the rear flap and pull the lever (1) incline downward.

1. Lever

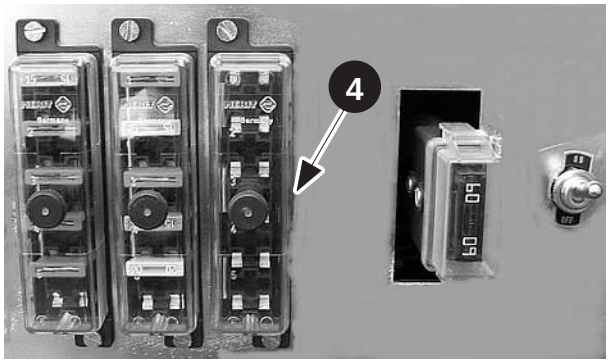
After opening the motor hood it is possible to reach the engine compartment from three sides.
All necessary tasks for service and maintenace are possible at the engine, hydraulic system as well as refueling and filling hdraulic system.



1. Battery
2. Main relay



3. Relay plate



4. Relay

With opened motor hood you can reach the mesurement points to check the hydraulic pressure.

Mesurement points of hydraulic circuits

19.0 NOTES FOR SAFE OPERATION

A machine can be safe only if it is properly serviced.

If maintenance steps are not carried out, the machine can suddenly behave in an unexpected manner during operation.

This can surprise the machine operator to such an extent that he fails to immediately recognize the possible and, above all, correct measures and does not take them.

Such situations are dangerous!

They can be prevented if the roller is serviced in accordance with this instruction manual.

In this conjunction, it is important, for example, to:

1. Fill up with fuel.

2. Check the engine oil level.

3. Check the hydraulic oil level.

4. Test the parking brake.

5. Keep the ascent steps and the operator's platform clean.

6. Carry out a visual check for leaks.

7. Have the roller checked annually by a competent person.

DIESEL FUEL

At temperatures above 0°C, use no 2 diesel fuel in the engine of this machine. See the following.

Note. At temperatures below 0°C, use no 1 diesel fuel.

Note: *If the fuel temperature falls below the cloud point of diesel fuel, paraffin crystals will start to form in the fuel. Paraffin crystals cause the fuel filter to clog. The engine power will decrease as a result. Please consult your VIBROMAX dealer for further information.*

FUEL STORAGE

If fuel is stored for a long time, foreign particles or water can collect in the fuel storage tank. Many engine problems are caused by water in the fuel.

Keep the fuel storage tank outside and keep the fuel as cold as possible. Drain water from the fuel storage tank at regular intervals.

MINIMUM REQUIREMENTS FOR NO 2 DIESEL FUEL

Max. cloud point . . . . . – 23°C
Max. pour point . . . . . 6 degrees Celsius below the lowest ambient air temperature at which the engine must be started and operated.

Cetane number, min. . . . . 40 (45 to 55 in winter or when used at high altitudes)
Max. sulphur content, by weight . . . . . 0.50 %
Max. water content and sediment, by volume . . . . . 0.05 %
Max. ash content, by weight 0.01%
Max. carbon residue (10% point) 0.20%

Distillation temperature
90% point . . . . . 282 to 329°C
End point . . . . . 357°C
Min. flash point . . . . . 52°C or in accordance with legal regulations

Viscosity at 38°C
centistokes (cST) . . . . . 2.0 to 4.3
Saybolt Universal seconds (SUS) . . . . . 32 to 40
Copper strip test, 3 hours at 100°C . . . . . No 3 ASTM
Min. API gravity 30

Fuel is easily ignited. It can burn or explode. When filling fuel into the fuel tank or servicing the fuel system, do not work in the vicinity of an open flame, welding work or burning cigarettes.

FLUIDS AND LUBRICANTS

Machine part	Capacity	Specification
Fuel tank	230 l	Diesel fuel . . . . . see pages 51
Crank case	8 l	Engine oil API classification . . . . . API–CI–4 / SK Multigrade engine oil: SAE 10 W–40
Hydraulic system Reservoir	80 l 60 l	HLP 46 DIN 51524 Tropics . . . . . HLP 68 DIN 51524
Rear axle Drum drive gear box	9 l 1,3 l	SAE 90 API GL–5 LS Oil according CLP 220 DIN 51517
Vibration system	3 l	Oil according CLP 100 DIN 51517
Battery	As required	Distilled water
Lubricating nipple	As required	KP3K DIN 51502
Coolant	14 l	50% ethylene glycol and 50% water
Tyres		see page 19 and 20

20.0 RUNNING–IN PERIOD–MAINTENANCE SCHEDULE

During the run–in period, the following points must be observed in addition to the tasks in the maintenance schedule on the following pages.

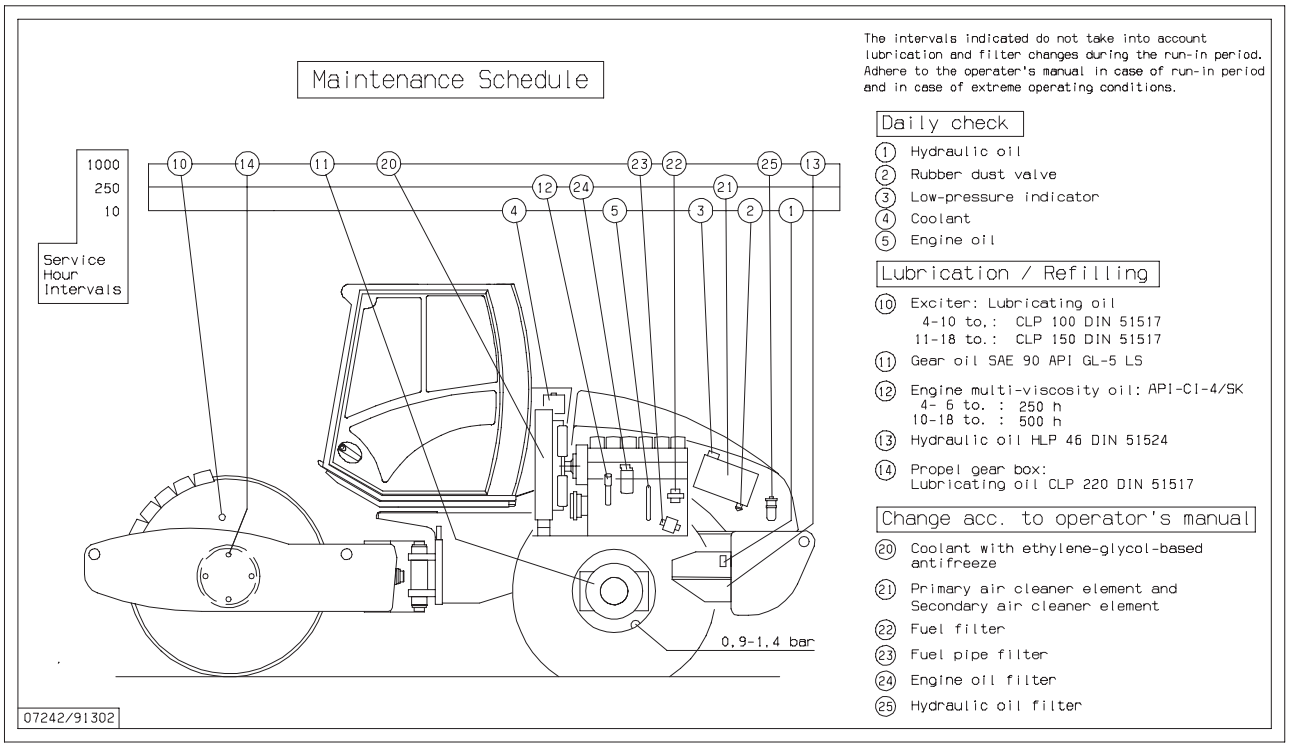
After the first 8 hours of operation

Check the tightness of the wheel nuts.

Warning: *If the equipment is raised or if the machine is operated without an authorized operator, injury or death can result. Before the machine is serviced, the following points must be observed:*

1. *Park the machine on level ground.*
2. *Support raised equipment (levelling blade if present) or lower it onto the ground.*
3. *Engage the parking brake.*
4. *Stop the engine.*
5. *Block the machine (wheels, drums etc.) in order to prevent the machine from moving unintentionally.*

Warning: *When performing adjustments or maintenance work on the machine, always follow the instructions in this instruction manual and the workshop manual. If the engine must be kept running, engage the aid of a second person. Do not leave the operator's area while the engine is running. If these instructions are not observed, injury can result.*



MAINTENANCE SCHEDULE

The intervals given in this maintenance schedule must not be exceeded. If the machine is operated under severe conditions (high temperature, dust, water etc.), shorten the intervals.

As required

Clean the machine . . . . . –
Fill the fuel tank . . . . . see page 61
Service the air filter . . . . . see page 59
Service the hydraulic oil filter if the hydraulic oil filter warning light is illuminated . . . . . see page 65
Check the condition of the drive belts . . . . . see page 71
Clean and fill the engine cooling system . . . . . see page 60
Bleed the engine fuel system . . . . . see page 63
Check the tightness of the wheel nuts after a wheel change . . . . . see page 72

Every 10 hours of operation or daily, whichever occurs first

Perform the check ”BEFORE STARTING THE ENGINE” . . . . . see page 37
Clean or replace all note or safety decals which cannot be read . . . . . see page 21–22
Clean the rubber dust valve for the air filter . . . . . See page 59
Check the condition of the drive belts . . . . . see page 71
Check the engine oil level . . . . . see page 57
Check the hydraulic oil reservoir level . . . . . see page 64
Check the drum scrapers . . . . . see page 68
Check the tyres for damage and correct air pressure . . . . . see page 72
Check the engine cooling system . . . . . see page 60
Check wheel nuts . . . . . see page 72

First time after 250 hour

Change the drum drive gear box oil . . . . . see page 70
Adjust valve clearance . . . . . see your VIBROMAX dealer

Every 250 hours

Change the engine oil . . . . . see page 57
Replace the engine oil filter . . . . . see page 58
Drain water out of the fuel tank . . . . . see page 61
Ckeck generator – belt tension . . . . . see page 71
Check oil level in the rear axle . . . . . see page 66–67
Check the rubber pads . . . . . see page 69
Check engine suppension . . . . . –
Check air–, coolant– and water hoses . . . . . –
Check the drum drive gear box oil . . . . . see page 70
Clean the battery and check the fluid level . . . . . see page 83

First time after 500 hour

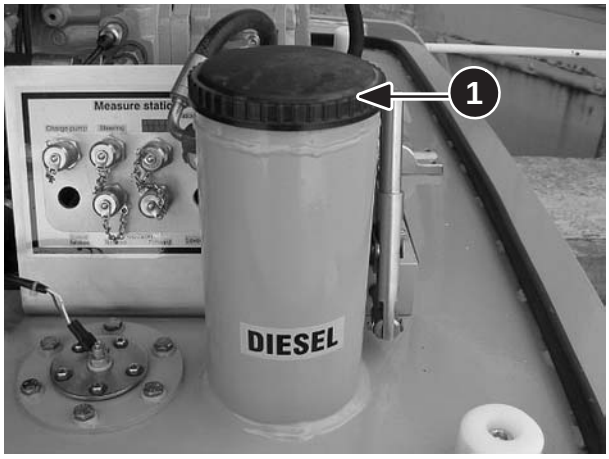
Change oil level in the rear axle . . . . . see page 66–67

Every 1000 hours or annually

Clean the fuel tank and the filler screen . . . . . see page 61
Check the valve adjustment . . . . . see your VIBROMAX dealer
Check ROPS . . . . . see page 73–74
Check the operator's seats . . . . . see page 30
Change the filling filter . . . . . see page 62
Change the hydraulic oil filter . . . . . see page 65
Change the hydraulic oil, clean the filler screen
and the hydraulic oil reservoir . . . . . see page 64
Change the fuel line filter . . . . . see page 62
Change oil level in the rear axle . . . . . see page 66–67
Change the vibration system oil . . . . . see page 69
Change the drum drive gear box . . . . . see page 70
Insepection (CUMMINS service) . . . . . –
Check the valve adjustment . . . . . see your VIBROMAX dealer
Air condition . . . . . service by qualified, staff

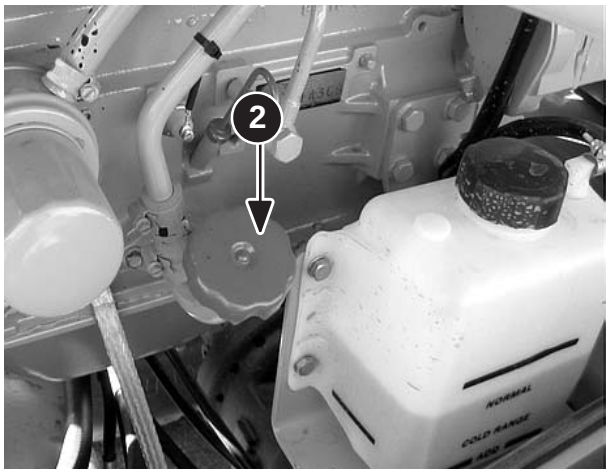
GREASE AND FLUID LEVELS

Fuel



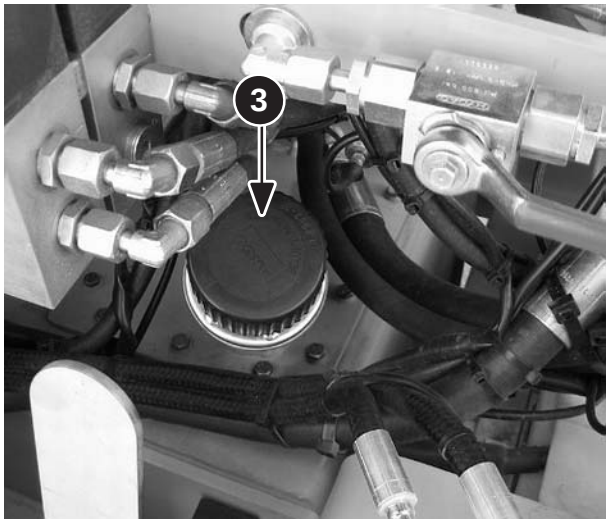
a) Cover

Engine oil



b) Engine oil filler cover

Hydraulic oil



c) Cover

d) Filling opening with filter

Filter elements

Engine	JCB Vibromax Part No.
Oil filter	07211/50720
Air filter	07222/50252
	07222/50253
Hydraulic oil filter	02611/00046
Fuel line filter	04029/69675
Fuel filter	07211/50730

ENGINE LUBRICATING SYSTEM

Park the machine on level surface and ensure that the engine is not running when you measure the oil level or drain the oil.

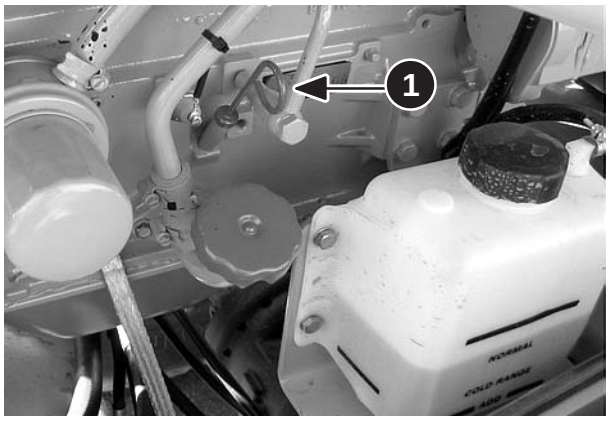
Oil level

Check the engine oil level every 10 hours of operation or daily.

Note: *If the engine has been running, wait approximately 5 minutes before measuring the oil level.*

1. Open the motor hood of the engine compartment.

2. Clean the area around the dip stick.



1. Dip stick

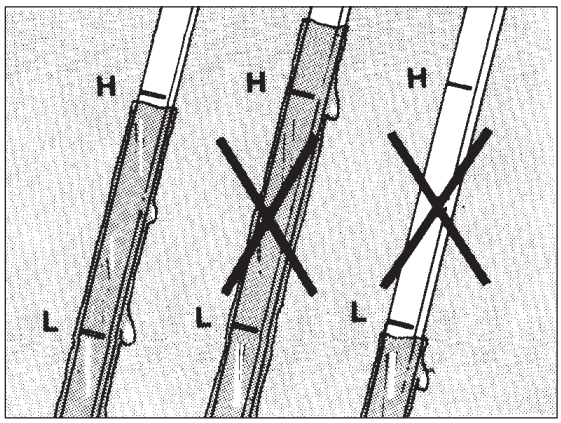
3. Remove the dip stick.

4. The oil level must be between the MAXIMUM and MINIMUM marks at the end of the dip stick.

5. If the oil level is too low, add oil until the MAXIMUM mark is reached. Do not fill above the MAXIMUM mark.

6. Insert the dip stick.

7. Close the left–hand side door.



H Upper mark = MAX.
L Lower mark = MIN.

Capacity between L and H 1.89 litres.

Oil change

After running–in period oil change every 250 hours of operation.

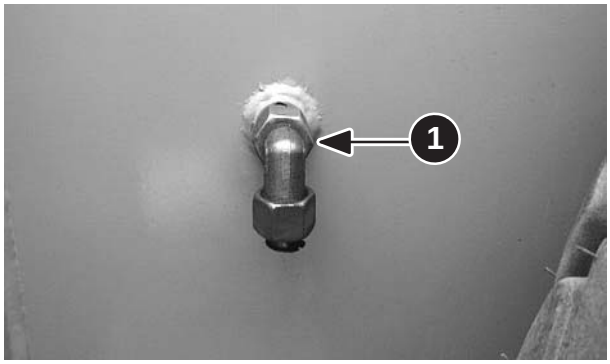
If possible, change the oil while it is warm. Contamination is removed from the lubricating system more effectively when the oil is warm.

1. Open the motor hood of the engine compartment.

2. Remove the filler cover.

3. Have a collecting container with a capacity of 20 l ready.

4. Remove the drain plug (located left hand side behind the wheel) and let the oil run off into an appropriate container.

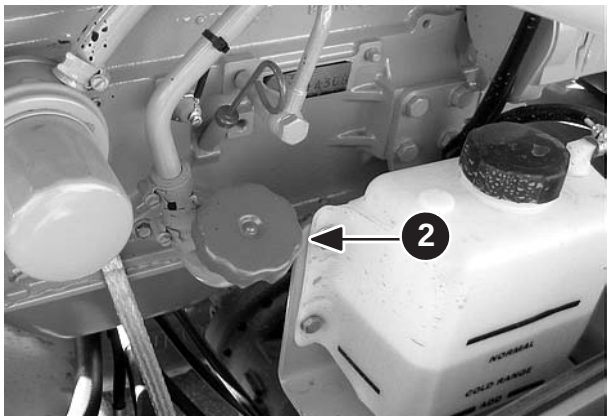


a) Drain plug

5. If the oil filter has to be cleaned, see Oil filter on this page.

6. Fit the drain plug, using a new gasket.

7. Fill oil into the crank case.



b) Filler cover

8. Fit the filler cover.

9. Start the engine and let it idle for a few minutes.

10. Stop the engine.

11. Wait approximately 5 minutes and check the oil level. If necessary, add oil.

12. Check the oil filter and drain plug for leaks.

13. Close the motor hood.

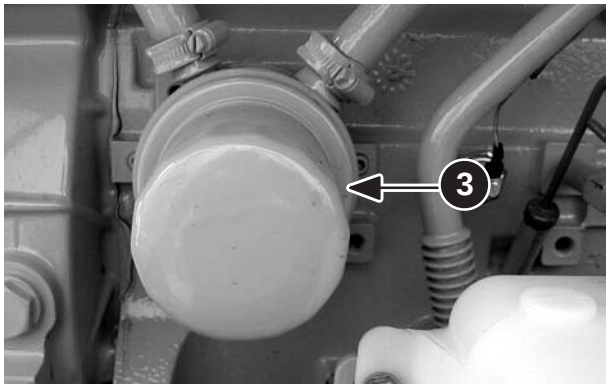
Oil filter

After the run–in period, change the oil filter every 250 hours of operation.

1. Turn the oil filter connterclockwise and remove it.

2. Clean the sealing face on the filter head with a clean cloth.

3. Apply a thin layer of oil to the seal of the new filter. Fill the new filter with clean lu–bricating oil and apply a light film of lu–brication oil to the gasket sealing surface.



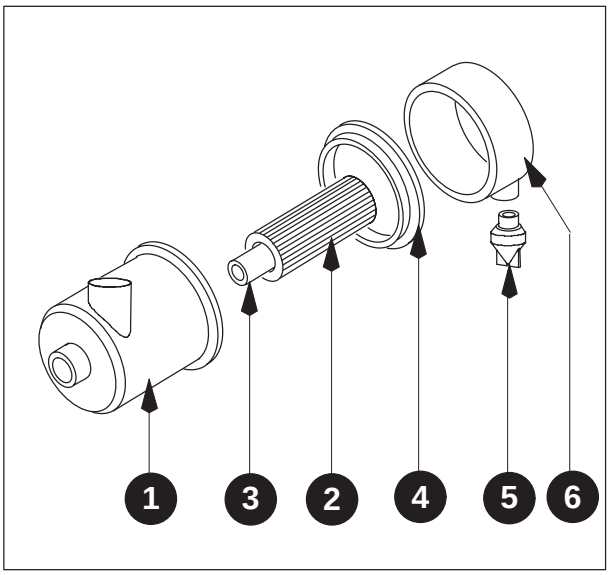
c) Oil filter

4. Screw the filter in by hand until it is touching the filter head and then tighten it 1/2 to 3/4 turn. Do not a use strap spanner to tighten the filter.

Engine lubricant analysis service

The normal oil change interval is 500 hours. The operating conditions, the quality of the engine oil and the sulphur content of the fuel can shorten this interval.

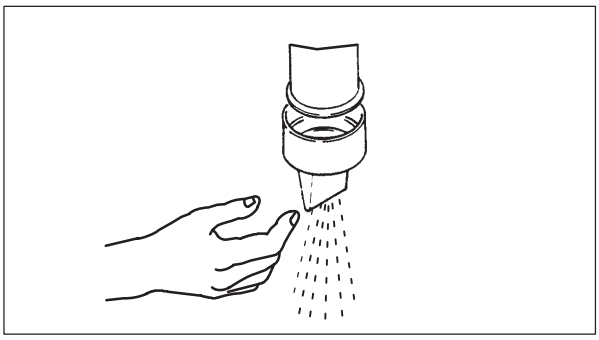
AIR FILTER



1. Housing
2. Primary filter element
3. Secondary element
4. Ring
5. Rubber dust vave
6. Cap

Rubber dust valve

Compress rubber dust valve several times a day, if necessary and drain dust.



Note:

Change the primary filter element if the “Air filter warning light” in combination indicator lights up.

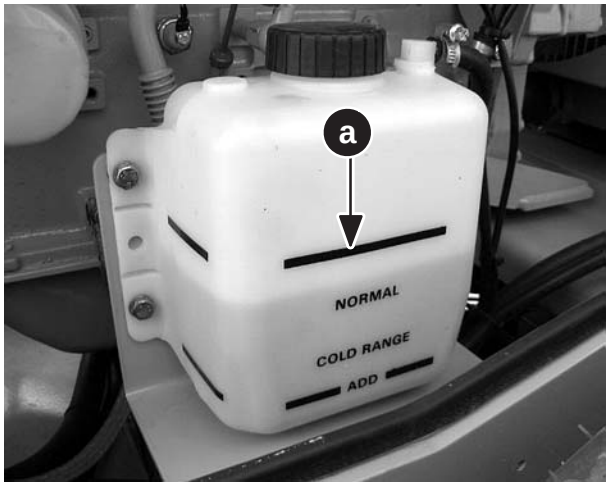
Replacing the filter elements

1. Open the engine hood.
2. Remove the cap (item 6).
3. Replace the primary filter element (item 2).
4. Replace the secondary element (item 3), if the primary element is being changed for the third time or damaged.

Note: *We do NOT recommend washing or blowing out filter elenmts!*

ENGINE COOLING SYSTEM

Make sure that engine is not running while checking coolant level and sytem cleaning.



Check coolant level

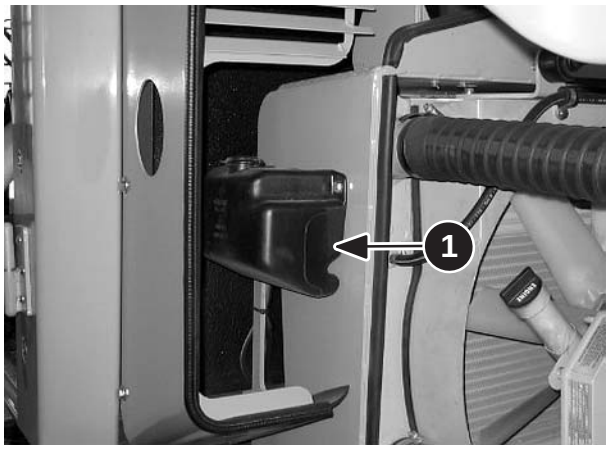
Caution: *Never remove the cap when the coolant is hot. When removing the cap, always exercise caution since you can be burned by boiling, pressurized coolant.*

Inspect the coolant tank and the radiator and, if necessary, top them up.

– Do not fill coolant over “Maximum” (a) level

1. Fill the system with a solution of 50% water and 50% ethylene–glycol–based antifreeze.

WINDSCREEN WASHER SYSTEM



1. Tank for windsreen washer liquid

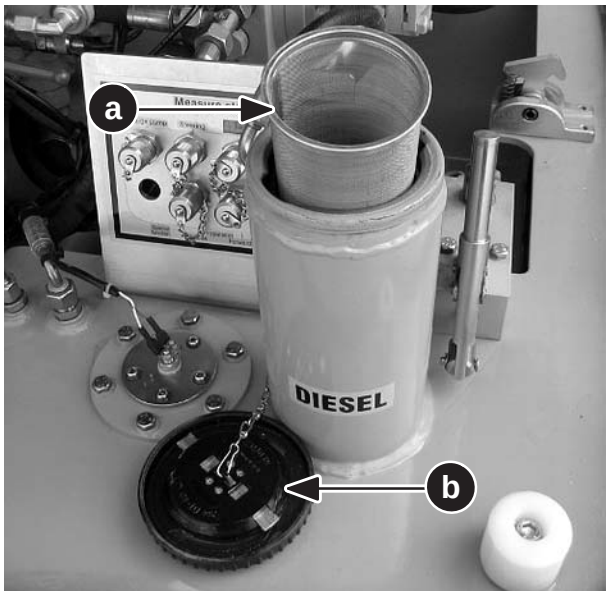
ENGINE FUEL SYSTEM

Fuel tank and filler screen

Fill the fuel tank at the end of every working day in order to prevent water condensation. Use of diesel fuel additive likewise serves to reduce water condensation.

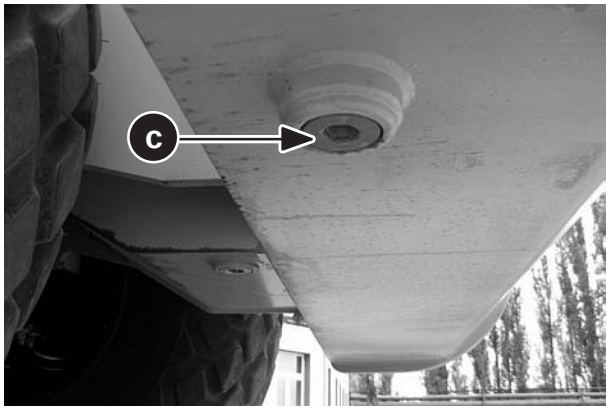
Drain water and impurities from the fuel tank every 250 hours of operation. Clean the fuel tank and the filler screen (a) every 1000 hours of operation.

1. Unlock and remove the filler cover (b).



Note: *The fuel tank can hold 230 litres of diesel fuel.*

2. Remove the drain plug (c) of the fuel tank and drain the fuel.



3. Flush the fuel tank with diesel fuel.

4. Fit the drain plug (c).

5. Remove the filler screen (a), clean it in diesel fuel and fit it.

6. Fill fuel into the fuel tank and watch out for leaks.

7. Screw on and lock the filler cover (b).

Caution: *Fuel is easily ignited. It can burn or explode. When filling fuel into the fuel tank or servicing the fuel system, do not work in the vicinity of an open flame, welding work or burning cigarettes.*

Replacing the fuel filter

Replace the fuel filter every 1000 hours of operation or annually or when the performance of the engine has deteriorated.

1. Open the motor hood.

2. Remove and replace the fuel filter with a strap spanner.

Fuel filter

3. Fill the new filter with clean fuel.

4. Moisten the seal with clean oil.

Caution: *Tightening too far can damage the thread or the filter seal.*

5. Remove and replace the fuel line filter.

Note: *For the correct choice of filter, see page 56.*

VENTING THE FUEL SYSTEM FOR INJECTION PUMPS

1. Controlled bleeding is already present in the injection pump by way of the fuel drain manifold. Small quantities of air entering when the filter is replaced or entering through the supply line to the injection pump are automatically bled as long as the fuel filters are replaced in accor dance with the notes on page 65.

2. Additional manual bleeding is, however, necessary if:

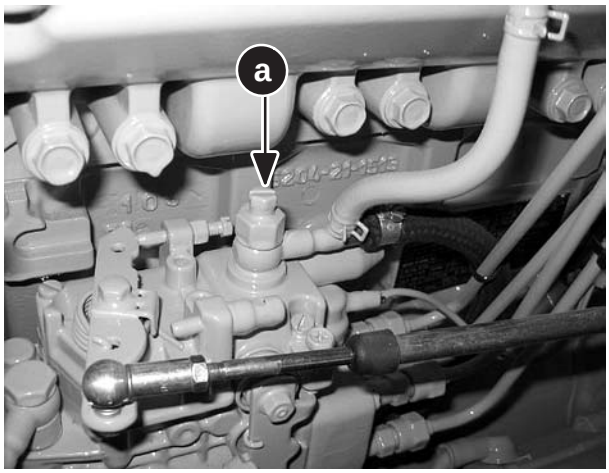
   – the fuel filter was not filled before being mounted,

   – the injection pump was replaced

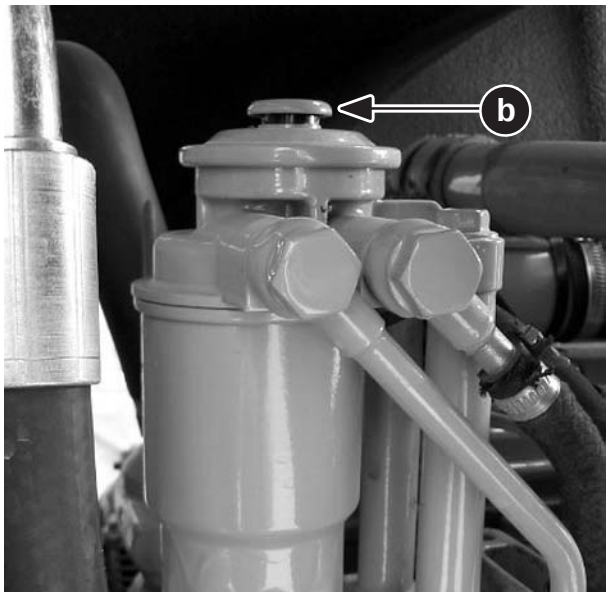
   – high–pressure fuel lines were replaced or detached.

3. Venting the fuel system.

   a) Open the vent screw (a), wrench size 8 mm.



   b) Actuate the butten of fuel pump (b) until the fuel escapes without bubbles. Tighten the bleed screw to a tightness of 8 Nm.



Note: *If no fuel escapes when the hand pump is actuated, turn the crankshaft of the engine approximately 1/2 revolution and re-peat points a and b.*

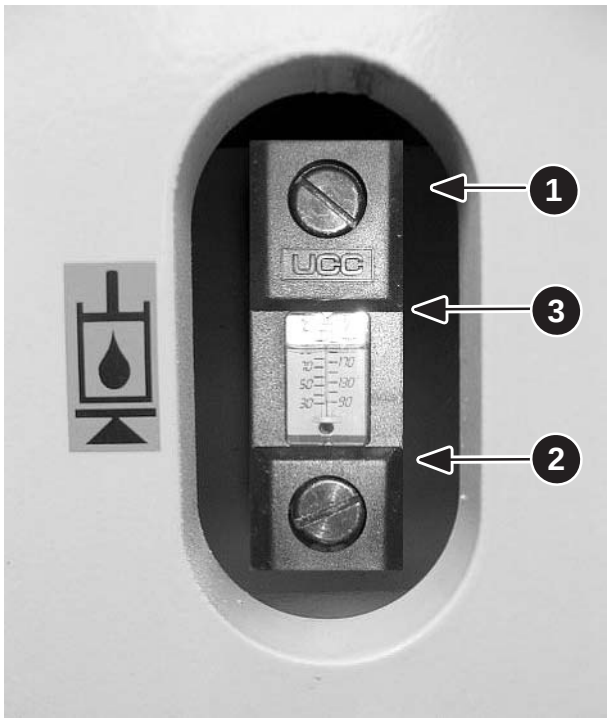
Caution: *Do not bleed the engine while it is still hot. Fuel running out could start a fire.*

HYDRAULIC SYSTEM

Park the machine on level ground when the oil level is to be checked or the hydraulic oil reservoir is to be emptied.

Oil level

Check the oil level in the the hydraulic oil reservoir every 10 hours of operation or daily.



Hydraulic oil level gauge behind operator's seat

1. Inspection glass
2. Top–up mark (red)
3. Full mark (black)

The oil level must be between the top–up and full marks in the inspection glass. If necessary, add oil.

The inspection glass has a thermometer for the hydraulic oil temperature.

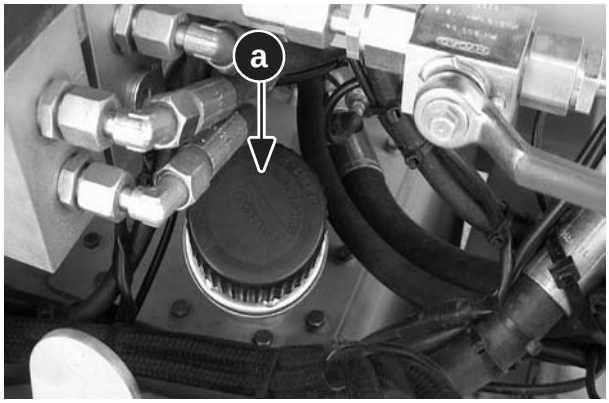
Oil change

Change the hydraulic oil every 1000 hours of operation or annually or when there is dirt in the hydraulic system.

Change the hydraulic oil when it is warm. More dirt is removed from the hydraulic system with warm oil than with cold.

1. Clean the filler cap (breather) and the surface of the hydraulic oil reservoir.

2. Unlock and open the filler cap.



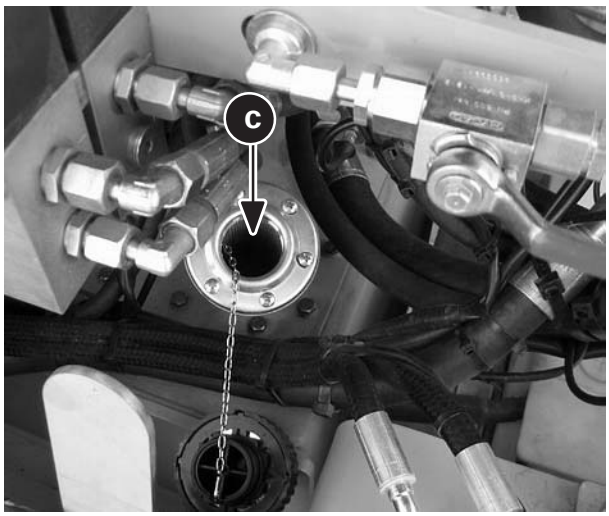
a) Filler cap

3. Place a collecting tank having a capacity of approximately 85 l below hydraulik oil tank.

4. Open the drain plug (b)and drain the oil.

b) Drain plug

5. Check the O–ring on the filler cap for damage. If necessary, replace the O–ring.



d) Filler screen

6. Check the filler screen or damage and impurities. If necessary, clean or re place the filler screen.

7. Set the drain plug (b) with a new sealing ring into the oil tank.

8. Fill the hydraulic oil reservoir above the filler screen (d) with clean hydraulic oil.

9. Close the filler cap (a).

10. Start the engine and let it idle for approximately 2 minutes. Stop the en–gine and check the oil level.

11. Add oil if necessary.

12. Check the oil filter and the drain plug for leaks.

Oil filter

Change the filter element, if the hydraulic oil filter warning light in the combination indicator (page 27) lights up.
Change the filter element at the same time as the hydraulic oil (every 1000 hours).

1. Clean the area around filter.

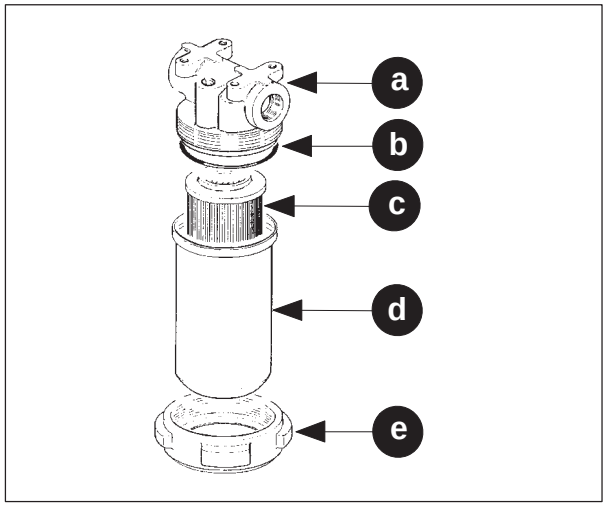
2. Loosen the union nut.

3. Remove the filter bowl and dispose of the filter element.

4. Clean the filter bowl.

5. Check the O–ring on the filter head. If necessary, replace the O–ring.

6. Put both the new filter element and the filter bowl on the filter head and tighten the union nut.

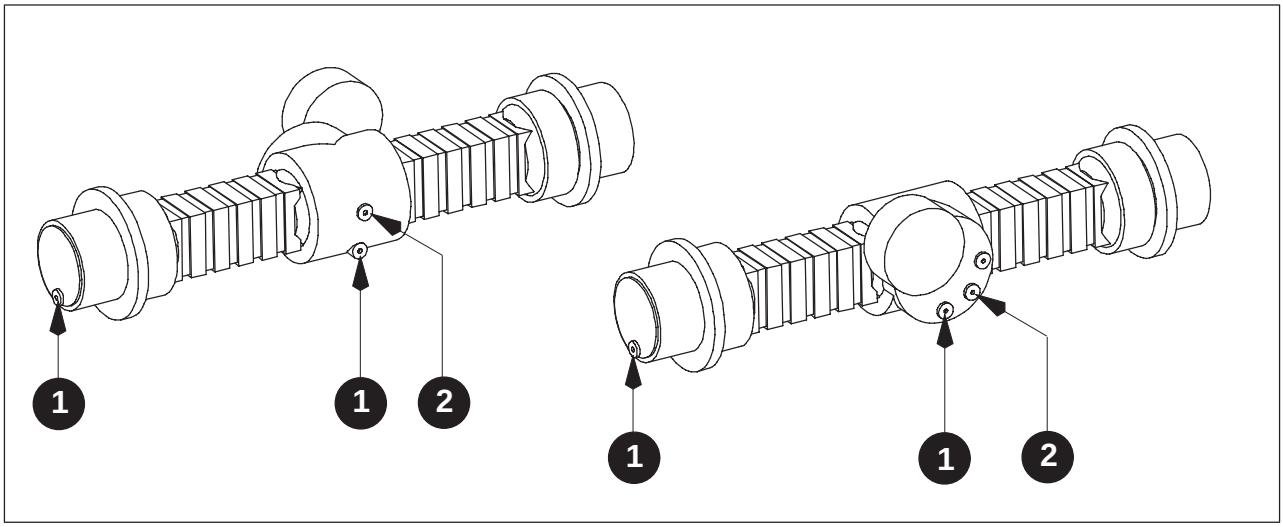


a) Filter head
b) O–ring
c) Filter element
d) Filter bowl
e) Union nut

REAR AXLE

Caution: *Before you carry out maintenance work below the machine, park the machine on a level surface, actuate the parking brake and stop the engine. Place blocks in front of and behind the drum. If this instruction is not observed, injury can result.*

Oli level check

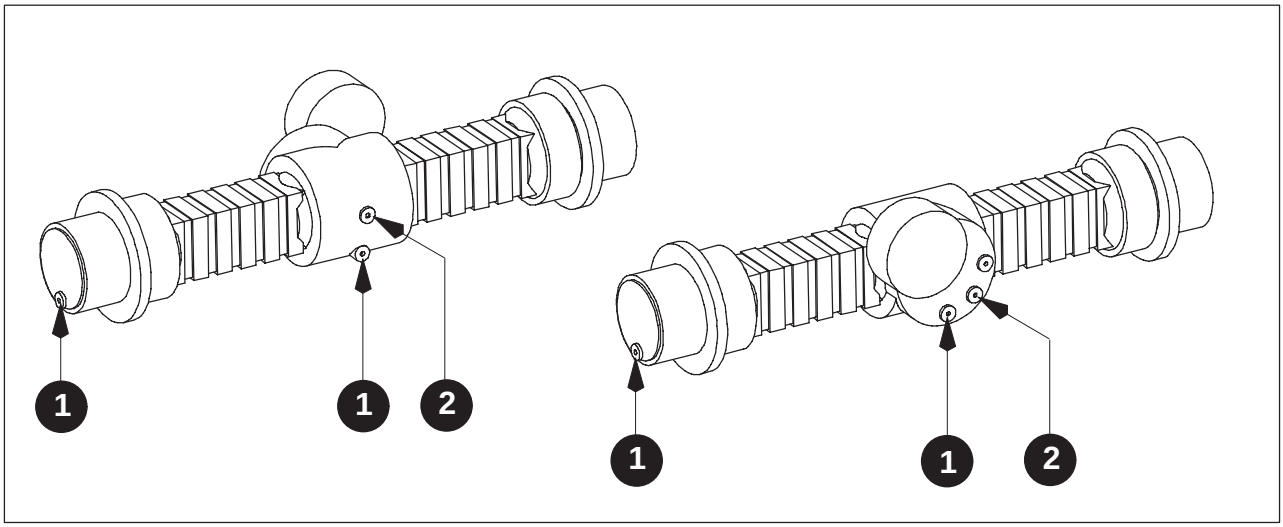


1. Drain plug
2. Filler plug

1. Remove filler plug (2).
2. Oil must reach the lower edge of the bore.
3. Add oil if necessary.
4. Check O–ring of the filler plug.
5. Fit filler plug (150 Nm).

Oil change

Note: It is useful to change oil while the axle is warm.



1. Drain plug
2. Filler plug

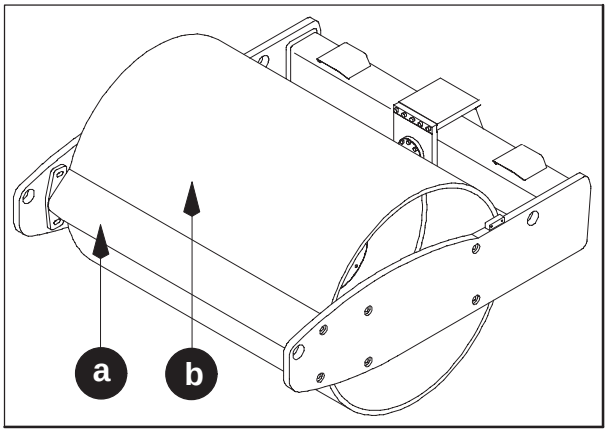
1. Place a container of appr 20 l below the axle.
2. Remove both filler and drain plug.
3. Check the O–rings of the plugs.
4. Fit the drain plug (150 Nm)
5. Put in clean oil until it reaches the filler plug bore.
6. Wait a few minutes and add oil if neces–sary.
   Repead it until the oil level stands still.
7. Fit the filler plug (150Nm)

DRUM

Smooth drum

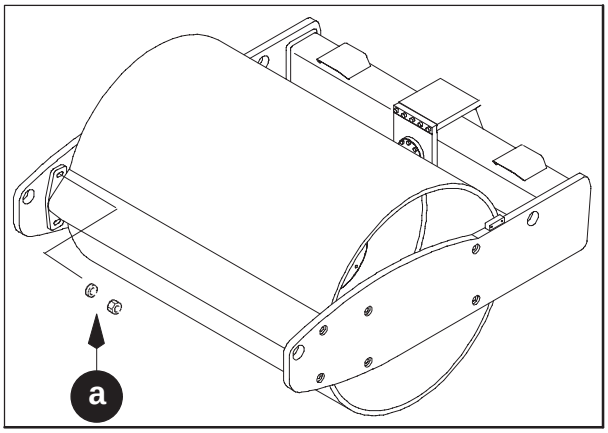
Inspect the smooth drum every 10 hours of operation or daily.

1. Check the distance between the drum and the scraper. The distance must be 16 mm.



a) Smooth drum scraper
b) Drum

2. If necessary, loosen the nuts on one side of the scraper and adjust to the correct distance. Tighten the nuts.



a) Nuts

3. Repeat points 1 and 2 on the other side of the scraper.

Note: *The scrapers are fastened on the frame by means of nuts. The tightening torque is 366 to 390 Nm.*

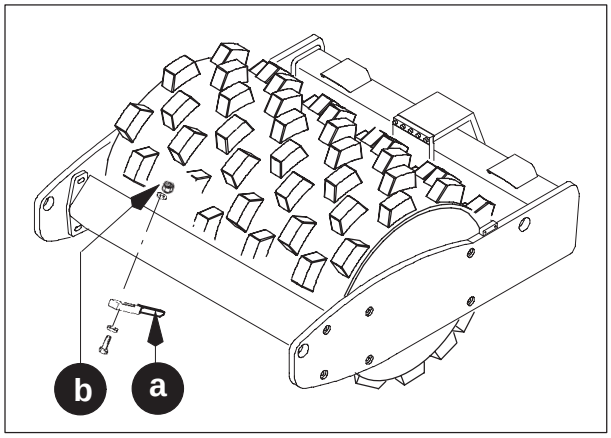
Note: *The Vulcollan scrapers are each fastened on the scraper with 8 screws. The tightening torque is 185 to 197 Nm.*

Tamping foot scraper

Inspect the tamping foot scraper every 10 hours of operation or daily.

1. Check the distance between the drum and the end of each scraper. The distance must be 12 to 15 mm.

2. If necessary, loosen the nuts and adjust to the correct distance. Tighten the nuts.



a) Tamping foot scraper
b) Nuts

Note: *In order to simplify scraper adjustment, loosen the 4 nuts and adjust the front cross–member to the correct distance for all of the tamping foot scrapers by swivelling or sliding it.*

3. Repeat points 1 and 2 on the other side of the scraper.

Note: *The tightening torque for each nut or screw is 185 to 197 Nm.*

Rubber buffers

Check the rubber buffers on both sides of the drum for damage and tears every 250 hours of operation.

Use a thin steel rule for measuring the depth of a tear between the rubber and the flange.

The depth of the tear must not exceed 12 mm. If a tear is deeper than 12 mm, the rubber buffers or buffers must be replaced.

Note: *Rubber buffers should be replaced only by trained staff.*

VIBRATION SYSTEM

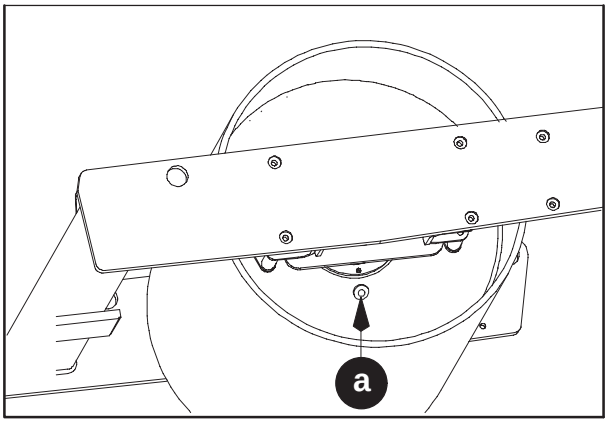
See page 52 regarding lubricating oil.

Park the machine on a level surface when the oil level is to be checked or the vibration system is to be emptied.

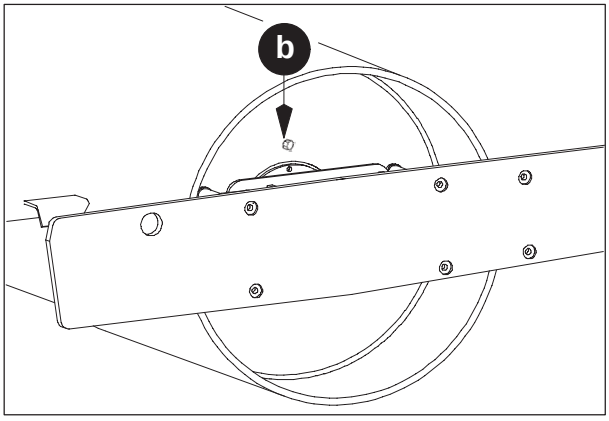
Oil change

Change the oil every 1000 hours of operation.

1. Move the machine so that the plug on the right–hand side of the drum is at the bottom.
2. Have a collecting container with a capacity of 5 litres ready.
3. Remove the plug and drain the oil.
4. Move the machine so that the bore for the plug is at the top.
5. Pour in 3 liter oil into the bore hole.
6. Fit the plug.



a) Plug, bottom



a) Plug

DRUM DRIVE GEAR BOX

Caution: *Before you carry out maintenance work below the machine park the machine on a level surface, actuate the parking brake and stop the engine!*

General information

Perform visual inspections weekly. Also check the gear box for unusual noise.

Check the tightness of all screws monthly.

Oil level

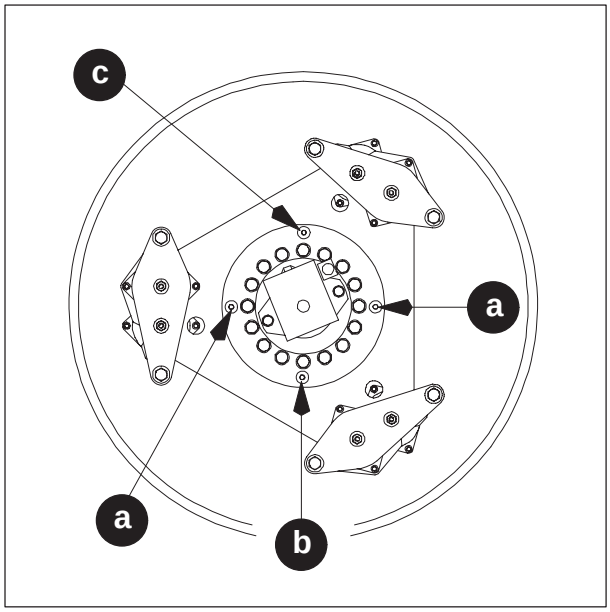
Check the oil level every 250 operation hours.

1. Remove the control plug (a).
2. Check the oil level. The oil must reach the lower edge of the bore for the control plug.
3. If necessary add oil. Remove the filler plug (c) and put in clean oil.
4. Fit filler (c) and control plugs (a).

Oil change

First oil change after 250 operation hours, then change the oil after every 1000 operation hours or annually.

1. Place a collecting container having a capacity of approximately 5 litres beloe the drain plug (b) of the drum shell gear box.
2. Remove the drain plug (b) and drain warm oil. Contamination is removed more effectively when the oil is warm.
3. Fit the drain plug (b). Into filler bore (c) put in approximately 1,3 litres clean oil as far as the lower edge of the bore for the control plug (a).
4. Fit filler (c) and control plugs (a).



a) Control plug
b) Drain plug
c) Filler plug

Parking brake

The hydraulically released, wet running multi disk brake, integrated in the gear box, is a parking brake. It is normally closed by spring force and released when pressurised by hydraulic oil.

The brake is maintenace–free.

DRIVE BELT–ENGINE

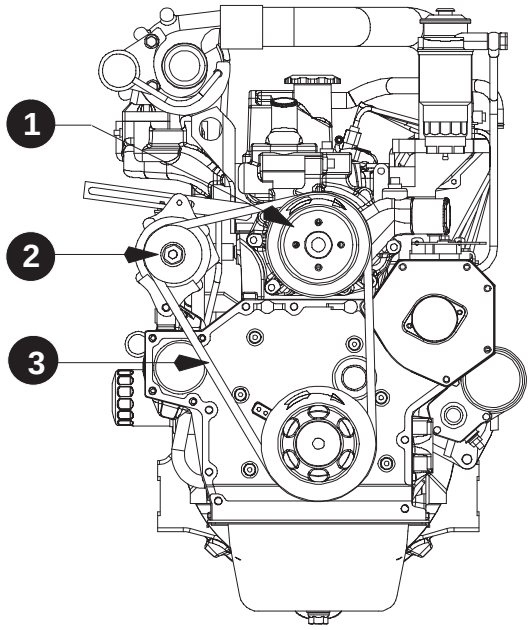
Caution: *Rotating drive belts can cause injury. Do not touch them. Before checking V–belts, shut down engine!*

General information

Check the condition of the drive belt every 10 hours of operation or daily.

Change the drive belt when cuts, tears, loose fabric, grease, oil or twisting are found.

Check the V–belt tension by thumb pressure.



1. Engine fan disc
2. Generator
3. V–belt

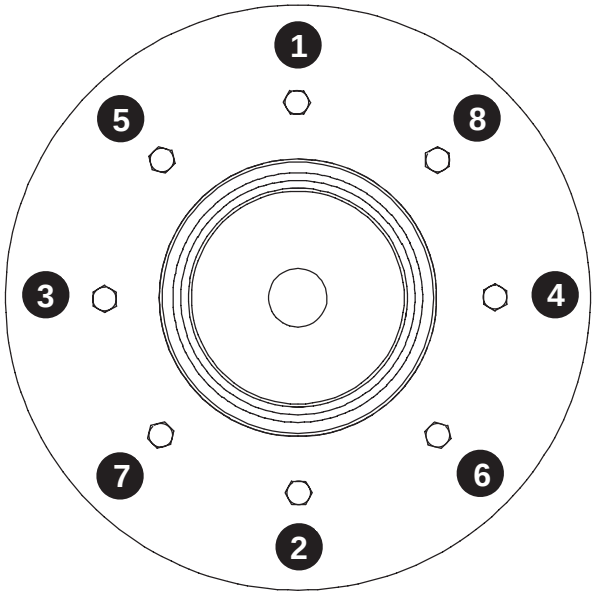
WHEELS AND TYRES

Warning: *Forcible separation of tyres and rims can lead to injury. If tyre maintenance is necessary, have it done out by a qualified person.*

Wheel nuts

Check the tightness of the wheel nuts every 8 hours of operation until the tightness is reached and no longer changes.

Tighten the wheel nuts in the sequence given below. Tighten them to 366 to 413 Nm.



Maintenance of tyres and rims

See page 19 regarding tyre pressure.

Check the tyre pressure and the condition of the tyres every 10 hours of operation or daily. Procedure for inflating a tyre on this machine:

Note*: Do not inflate a tyre with compressed air if it is completely deflated. In this case, have the tyre dealt with by a qualified tyre specialist.*

1. Make sure that the wheel is positioned with the valve at the top.

2. Use an air hose with an additional shut–off valve and a self–locking closure for the tyre valve.

3. Before inflating the tyre, step behind the tyre and make sure that there are no other persons by the tyre.

4. Inflate the tyre to the pressure recom–mended on page 19. Do not inflate the tyre to a higher pressure.

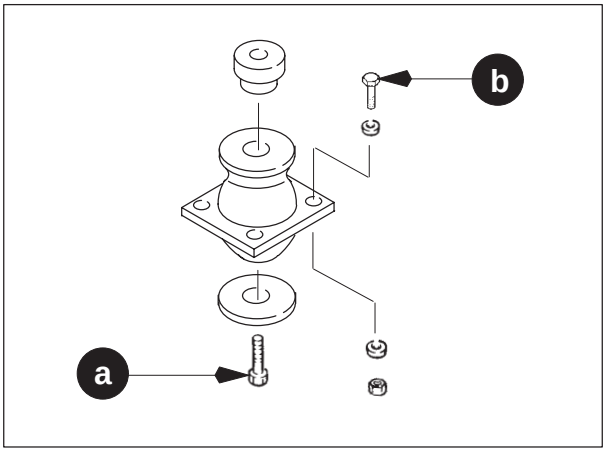
21.0 OPERATOR'S STAND

Maintenance

Check the rubber pads on the operator's stand for tears and damage every 250 hours of operation.
If necessary, consult a VIBROMAX dealer regarding replacement of the rubber pads.

Tightening torques

The operator's stand is held on the frame by means of four rubber buffer.



a) Tightening torque 210 Nm
b) Tightening torque 49 Nm

ROLL–OVER PROTECTION STRUCTURE

Before operating the machine, ensure that the ROPS is fastened properly and is not damaged in any way.

Maintenance

Carry out the following work every 1000 hours:

1. Check the tightness of the fastening screws and, if necessary, tighten the screws.

2. Check the ROPS for damage.

Damage

If the ROPS has been damaged by the machine rolling over, by striking an obstruction during transport etc., the damaged parts must be replaced before the machine is operated again.

After such damage has occurred, check the following:

– Check the ROPS for compression, bend ing, notches, cracks etc.

– Inspect the fastening screws of the ROPS and check their tightening torques.

– Inspect the operator's seat and the seat belt and their mounting parts. Check the tightening torques.

Before operating the machine again, replace all damaged parts (see the spare parts catalogue) or see a VIBROMAX dealer regarding the correct parts.

Do not attempt to weld or straighten the ROPS.

Do not mount or attach any additional equipment or ballast which could lead to the maximum weight being exceeded.

Do not modify the ROPS in any manner. Unauthorized modifications such as welding, drilling, cutting or attaching parts could weaken ROPS and thus reduce the protection it offers. Replace the ROPS after the machine has rolled over or any other damage has occurred. Do not attempt any repairs. See the instruction manual for complete instructions relating to inspection and maintenance.

Special mounting parts are prescribed for fastening the ROPS on the machine. Only use fastening parts in accordance with the spare parts catalogue for this machine.

Remove the ROPS only to service the machine and mount it properly before operating the machine.

22.0 STORING THE MACHINE

Preparation for storage

Park the machine in a building if it is to be stored for longer than 30 days. If a building is not available, park the machine in a dry area or on planks and cover it with a waterproof cover.

1. Clean the machine.

2. Paint any areas where the paint has been damaged.

3. Operate the controls of the hydraulic system in such a manner that the pressure is reduced in the hydraulic system. In addition, open and close the filler cap of the hydraulic oil reservoir in order to equalize the air pressure.

4. Empty the fuel tank.

Note: *Put approximately 8 l of diesel flushing oil in the fuel tank. Run the engine until the exhaust is blue–white. Drain the flushing oil from the fuel tank.*

5. Put one spoonful of Shell Oil Company VPI 260 crystals in the fuel tank.

6. Change the engine oil and clean the oil filter.

7. Service the air filter.

8. Loosen or remove the drive belts.

9. Grease all lubricating nipples.

10. Treat the steering cylinder rods with corrosion preventive.

11. Charge the battery. Remove the battery and store it on a wooden base in a cool, dry area. If possible, store the battery in a building where the temperature is above 0°C. Ensure that the battery is clean.

12. Hang a DO NOT OPERATE tag on the battery box.

Note: *Check the battery regularly for the correct electrolyte level. Test the electrolyte with a hydrometer. If the reading is 1.215 or lower, charge the battery.*

Caution: *Batteries produce explosive gases. Keep sparks, flames and burning cigarettes away from the battery. Protect your eyes when working in the vicinity of batteries.*

Initial operation after storage

Do not start the engine until points 1 to 12 have been carried out.

1. Replace the fuel filter.

2. Check the engine oil level.

3. Check the hydraulic oil level.

4. Check the oil level in the intermediate, axle and hub gears.

5. Check the oil level in the vibration system.

6. Grease all lubricating nipples.

7. Use cleaning agent containing paraffin oil to remove the corrosion preventive on the steering cylinder rods.

8. Tension or install the drive belts.

9. Put fuel in the fuel tank.

10. Bleed the fuel system.

11. Install the battery.

12. Remove the ”DO NOT OPERATE” tag from the machine.

13. Start the engine in accordance with the instruction on page 39.

Note: *Check the filter and the drain plug for leaks.*

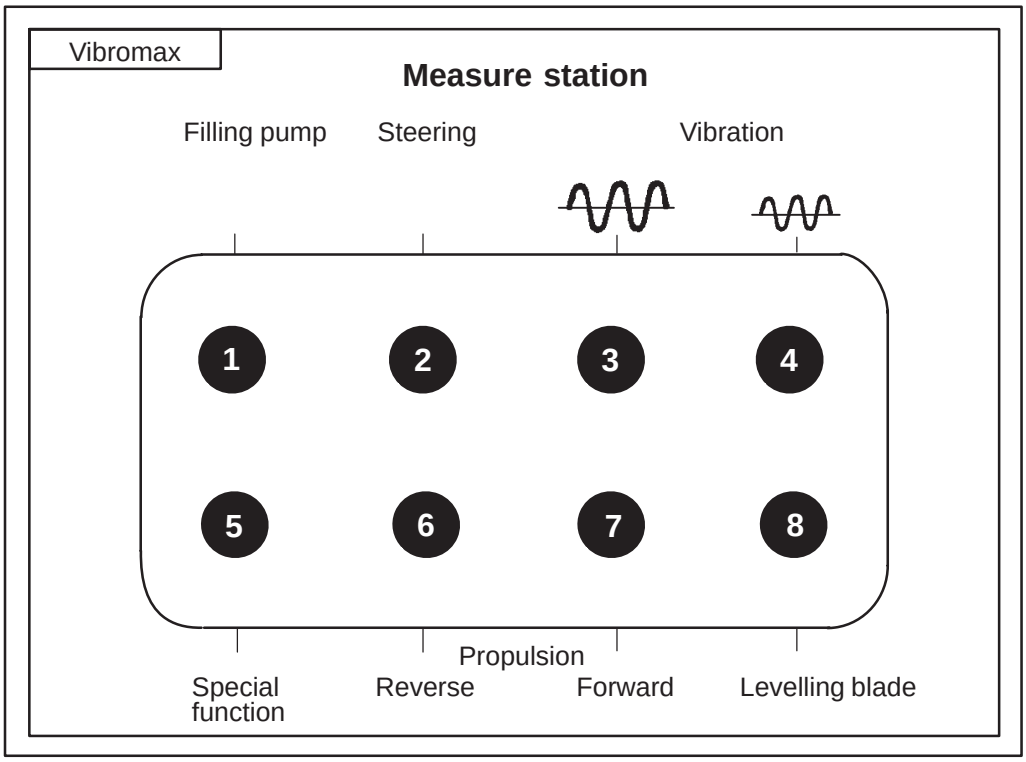
14. Stop the engine and check the fluid levels in the engine and the hydraulic system.

23.0 HYDRAULIC CIRCUIT DIAGRAM – MEASUREMENT POINTS AND MULTIPLE – FUNCTION VALVE

See pages 64 and 65 regarding the hydraulic system.

The hydraulic system should be inspected only by trained staff.
See pages 80 and 81 regarding identification of the hydraulic components.

Hydraulic measurement points



HYDRAULIC FUNCTIONAL DESCRIPTION

All of the propulsion units are hydrostatic.

Located on the engine (flywheel side) is the hydropump block which is driven via a flexible coupling and comprises the variable displacement hydropump for the propulsion, the variable displacement hydropump for the exciter drive and the fixed displacement hydropump for the hydrostatic steering.

Propulsion

The variable displacement hydropump for the propulsion is connected via hose lines to the variable displacement hydraulic motor arranged on the axle in the wheeled part and to the variable displacement hydraulic motor arranged on the drum.

The wheels and the drum are driven = all–wheel drive.

Located on the variable displacement hydropump for the propulsion is a control lever which is shifted by movement of the drive lever.

The start–lock switch located on the drive lever keeps the starting circuit operative only when the drive lever is in the zero position.

Shifting the drive lever effects stepless changing of the flow rate to the hydraulic motors (speed change), and shifting the drive lever from forward beyond the zero position to reverse and vice versa effects a reversal of the flow to the hydraulic motors (reversal of driving direction). Accelerations, decelerations and reversal of the driving direction are effected smoothly and without jolting.

The rear variable displacement hydraulic motor drives the wheels via an intermediate gear box, an axle transmission and a hub gear.

The front variable displacement hydraulic motor drives the drum via a gaer box flange and rubber buffers.

Exciter drive

The variable displacement hydropump for the exciter drive is connected via hose lines to the fixed displacement hydraulic motor arranged on the right–hand side of the drum.

The drum contains the single–shaft circular exciter with unbalance weights for the vibration–stage switch which is mounted in roller bearings and is connected via a flexible coupling to fixed displacement hydraulic motor mounted on the drum–side flange of the right–hand elastic suspension.

The variable displacement hydropump for the exciter drive charges the fixed displacement hydraulic motor on the right–hand side of the drum and provides for rotation in both directions of the vibration shaft. The direction of rotation of the vibration shaft is switched via the driving magnetic valve of the pump.

The conterclockwise direction of rotation of the vibration shaft is set to 29 Hz and the clockwise direction to 36 Hz.

Steering

The fixed displacement hydropump for the hydrostatic steering is connected via hose lines to the steering unit and to the steering cylinders and delivers oil via the steering unit to the steering cylinders when the steering wheel is turned.

The steering cylinders for the articulated joint are attached to the rear frame and their piston rods to that part of the articulated joint which is connected to the drum frame.

The steering wheel with the steering unit is located at the operator's area.

The articulated joint at the central point provides for a small turning circle and tracking stability of the drum and wheels during forward and reverse driving. For exact driving, the roller operator needs only to observe the left or right–hand drum edge or wheel edge. The articulated joint also permits a steering angle between the drum part and the wheeled part.

The steering angle is proportional to the rotation of the steering wheel. It is limited by stops in the frame.

Brakes

The brakes differ according to the following criteria:

– Service brake
– Auxiliary and parking brake

The service brake is provided by the hydrostatic propulsion; a separately mounted service brake is not necessary.

The auxiliary and parking brake is a hydrostatically actuated multi–disc brake which is mounted on the axle and on the drum shell drive motor.

The brakes are actuated via a lock–down push button which is located on the console of the machine (red indicator light) and has the position:

– Apply brake: Light comes on. When the machine is driven off, a horn signal sounds.

– Release brake: Light goes out

When the engine is shut down, the brakes are automatically held in the "brake" position by spring force.

This machine is provided with an EMERGENCY OFF–switch which is located on the control column in the vicinity of the drive lever.

When the EMERGENCY OFF–switch is pressed, the brakes are applied and the yellow warning light comes on.
At the same time, the variable displacement hydropump of the propulsion is set to zero delivery. The machine comes to a standstill immediately.

Towing

The towing valve, which is located on the left rear side of the engine compartment, serves to release the brakes in case of damage to the machine, so that it can be towed.

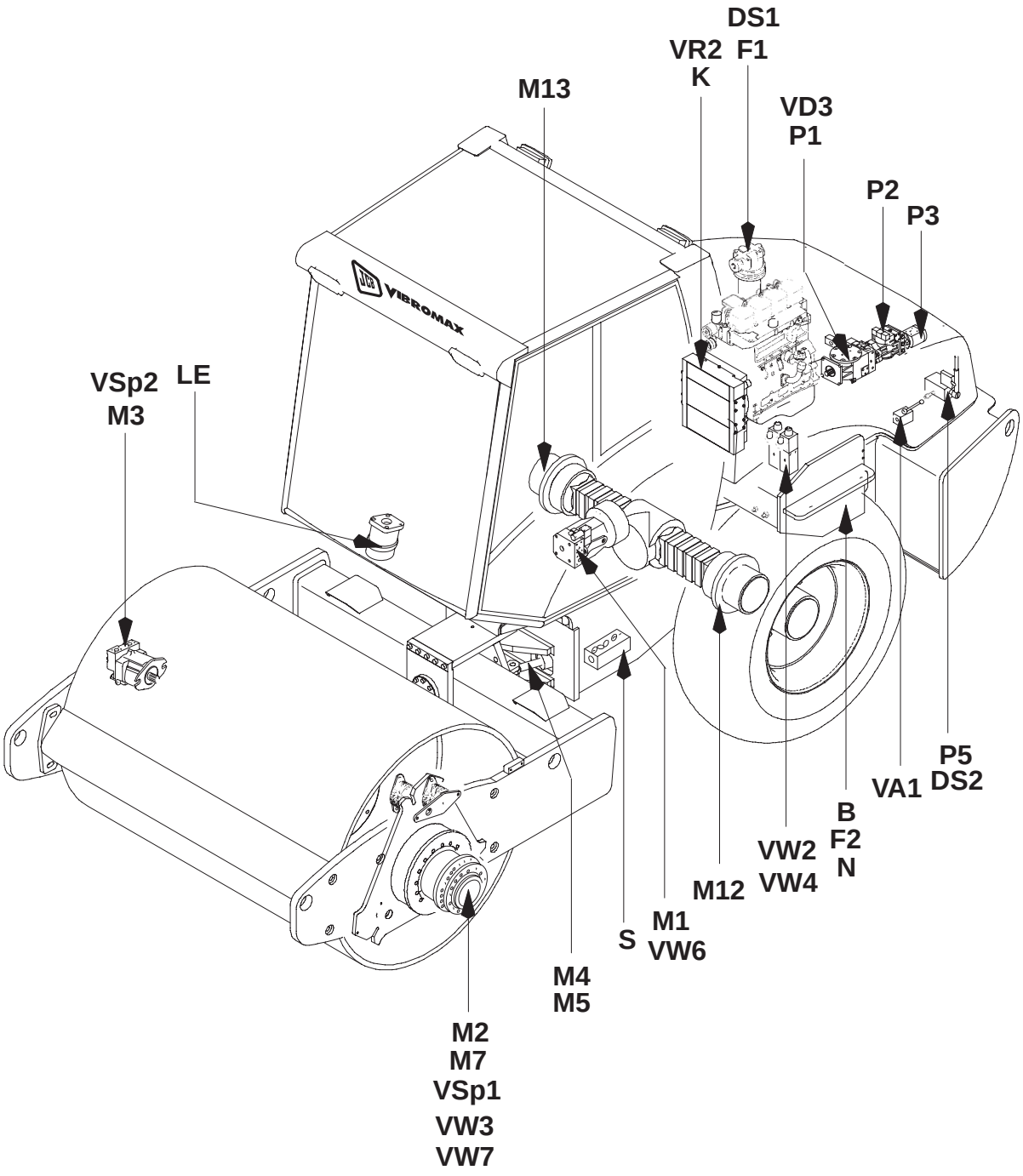
By turning the valve lever to the ”TOWING” position, the handpump – brakes connection is established. By pumping with the handpump, the parking brake are released. Pump until the brake light in the combination indicator on the steering colum has gone out.

HYDRAULIC CIRCUIT DIAGRAM

Legend to the identifying the hydraulic components
Legend to the circuit diagram

P1	Drive pump
P2	Vibration pump
P3	Steering pump
P5	Manual pump – towing
M1	Drive motor
M2	Drive motor
M3	Vibration motor
M4,M5	Steering cylinder
M7	Parking brake drum
M12,M13	Parking brake axle
LE	Orbitrol – steering unit
F1	Hydraulic oil filter
F2	Filling filter
B	Hydraulic oil tank
K	Hydraulic oil cooler
VW2	Way valve – short circuit valve
VW4	Control valve – parking brake
VW6	Control valve – Gear shift rear
VW3,VW7	Control valve – Gear shift front
VD3	Oil pressure limiting valve – filling
DS1	Pressure switch – filling
DS2	Pressure switch – parking brake
VA1	Valve – Towing
VR2	Non – return valve – radiator bypass
S	Bloc distributor
VSp1	Flushing valve – drive motor
VSp2	Flushing valve – vibration motor
N	Oil level gauge – hydraulic oil tank

IDENTIFYING THE HYDRAULIC COMPONENTS



24.0 ELECTRICAL SYSTEM

General Information

Before servicing parts belonging to the electrical system, first disconnect the ground cable (–).

Disconnect the cable at the generator if the engine has to run with the battery cables disconnected.

Before using electric welding equipment on the machine, disconnect the cables at the generator.

Do not clean the generator with a steam jet or with cleaning solution.

BATTERY

Clean the battery every 250 hours of operation.

Note: *Dirt, moisture and corrosion on the battery lead to its discharge. Clean the battery with a battery cleaning product. Observe the instructions on the can.*

Batteries produce explosive gases. Keep sparks, flames and burning cigarettes away from the battery. Protect your eyes when working in the vicinity of batteries.

When removing a battery, always disconnect the ground cable (–) first. When installing a battery, always connect the positive cable (+) first. This procedure can prevent an explosion resulting from sparks.

Battery acid causes severe burns. The batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Antidotes EXTERNAL: Flush with water. INTERNAL: Drink large amounts of water or milk. Then drink milk of magnesia, a beaten egg or vegetable oil. Call a doctor immediately. EYES: Flush with water for 15 minutes and then call a doctor.

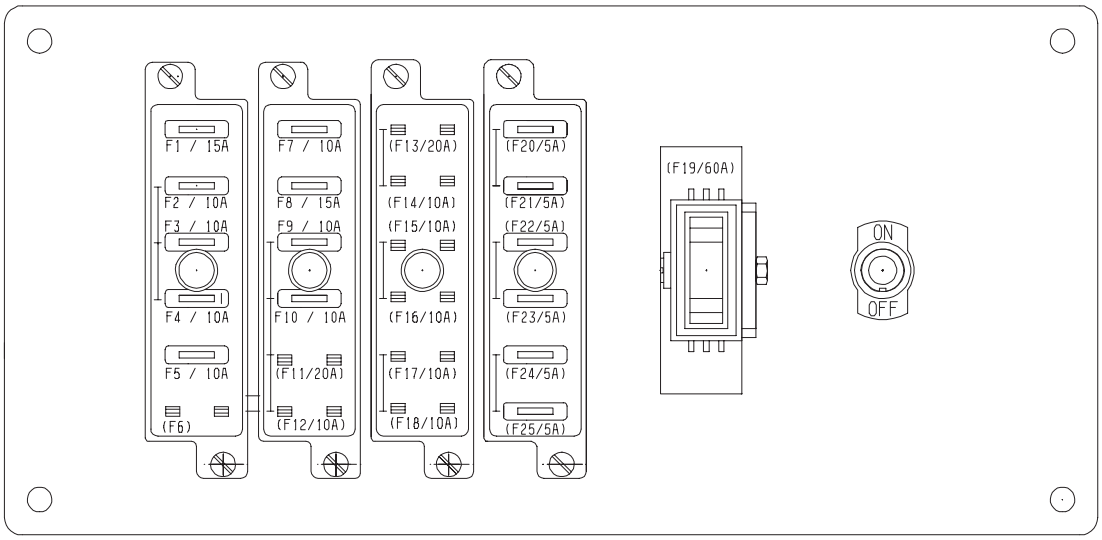
Battery fluid level

Check the fluid level in the battery every 250 hours of operation. If the fluid level is too low, add distilled water to every cell until the fluid level has reached the bottom edge of the respective level mark.

Important: *If the air temperature is below 0°C and distilled water has been added, do the following: Connect the battery to the charger or run the engine for approximately two hours. This is necessary in order to mix the water with the electrolyte.*

FUSES

In order to reach the fuses, unlock the door below the seat box.

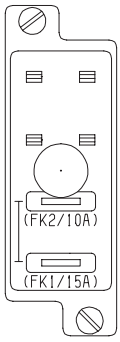


Note: *Before changing the fuse, ensure that the ignition key is in the OFF position. To change a fuse, remove the fuse box cover, remove the fuse, insert the new fuse and put the cover on.*

F0	100A	Main fuse
F1	15A	fuse for control and warning equipment
F2	10A	fuse for the generator
F3	10A	fuse for the parking brake
F4	10A	fuse for the vibrator
F5	10A	fuse for the gear shift
*F6	5A	fuse for the wireless
F7	10A	fuse for the EMERGENCY OFF switch
*F8	15A	fuse for heating installation/ Compatronic
F9	10A	fuse for the lighting system
F10	10A	fuse for the socket
*F11	20A	fuse for the working lighting system
*F12	10A	fuse for the flashing light
*F13	20A	use for the lighting system
*F14	10A	fuse for the hazard warning lights
*F15	10A	fuse for the limit light, left–hand side
*F16	10A	fuse for the limit light, right–hand side
*F17	10A	fuse for the dimmed light, left–hand side
*F18	10A	fuse for the dimmed light, right–hand side
*F19	60A	fuse for the cabin

* optional

FUSES – CAB

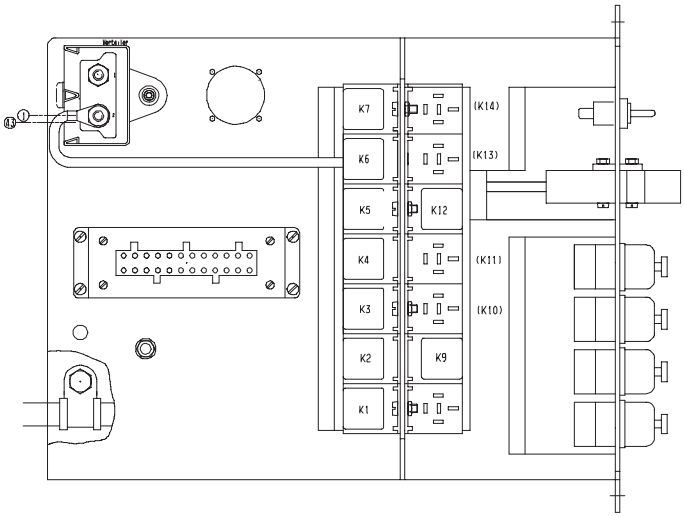


FK1 15A Fuse for fan

FK2 10A Fuse for windsreen wiper–washer system

RELAYS

In order to reach the relays, unlock the door below the seat box



K0 Relay for motor start

K1 Relay for the starting interlock

K2 Relay for brake monitoring, generator

K3 Relay for brake monitoring, neutral position

K4 Relay for drive lever, zero position

K5 Relay for brake control

K6 Relay Switching on vibration drive lever

K7 Relay for interlock: vibration ↔ travel speed (rapid motion)

K9 Relay for EMERGENCY OFF switch

K10 Relay for lighting system

K11 Relay for reversing horn

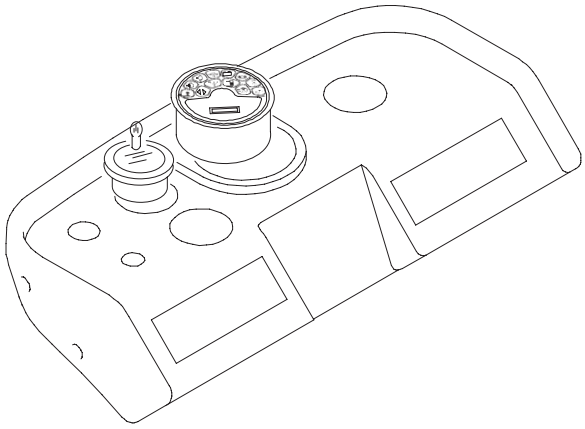
K12 Relay for vibration automatics

K13 Relay for flasher device

K14 Relay for cabin

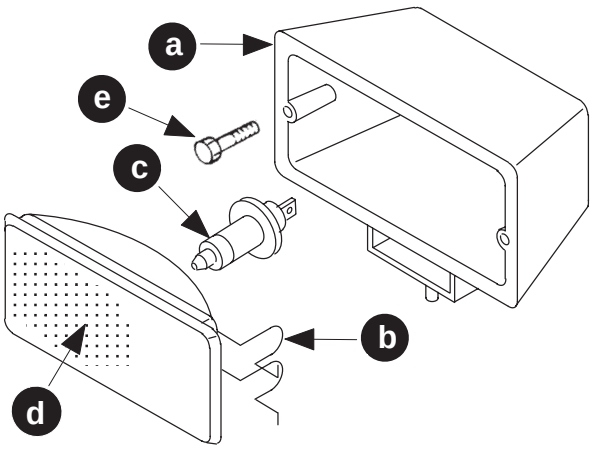
CHANGING BULBS

Changing the bulb in an indicator or in the combination indicator



1. Unscrew the screws from the instrument panel.
2. Raise the instrument panel.
3. Pull out the corresponding light socket.
4. Replace the bulb.
5. Insert the lamp socket.
6. Fit the instrument panel.

Changing the bulb in a working headlight



a) Light housing
b) Clamp
c) Bulb
d) Lens/reflector
e) Screw

1. Remove the screws
2. Remove the lens/reflector
3. Release the clamp
4. Remove the bulb
5. Insert a new bulb
6.. Fasten the clamp
7. Insert the lens/reflector
8. Put the screws in and tighten them

Caution: *Never touch the lens with your fingers!*

ELECTRICAL SYSTEM CIRCUIT DIAGRAM

Key to the electrical system circuit diagram

AC	Air conditioning	84
E1	Lighting system, temperature indicator	51
E2	Lighting system, tank indicator	52
E3	Working lighting system, front left	69
E4	Working lighting system, front right	70
E5	Working lighting system, rear left	72
E6	Working lighting system, rear right	73
E7	Parking light, left front	55
E8	Tail light, left	56
E9	Parking light, right front	57
E10	Tail light, right	58
E11	Tail light, left	59
E12	Dimmed light, right	60
E13	Cab lighting system	81
F0	Main fuse	1
F1	Fuse circuit 15	2
F2	Fuse generator	3
F3	Fuse brake	25
F4	Fuse vibrator	31
F5	Fuse gear / Compatronic	37
F6	Fuse wireless	83
F7	Fuse EMERGENCY OFF	23
F8	Fuse heating / AC	84
F9	Fuse lighting system	52
F10	Fuse socket	75
F11	Fuse working lighting system	70
F12	Fuse flashing light	63
F13	Fuse lighting system*	56
F14	Fuse warn flashing light	62
F15	Fuse limit light, left	56
F16	Fuse limit light, right	57
F17	Fuse tail light, left	59
F18	Fuse tail light, right	60
F19	Fuse cab	79
F20	Fuse condenser *	89
F21	Fuse compressor *	91
FK1	Fuse fan	80
FK2	Fuse windscreen washer system	76
G1	Battery	1
G2	Generator	3
H1	Charging indicator	4
H2	Indicator lamp zero position	8

H3	Indicator lamp	brake	14
H4	Indicator lamp	horn	16
H5	Indicator lamp	engine temperature excursion	17
H6	Indicator lamp	engine oil pressure	19
H8	Indicator lamp	reversing horn	13
H9	Indicator lamp	hydraulic oil filter	18
H10	Indicator lamp	air cleaner	22
H11	Indicator lamp	vibration automatics	32
H12	Indicator lamp	gear	35
H13	Indicator lamp	light	53
H15	Indicator lamp	hazard warning light indicator	65
H16	Indicator lamp	flasher indicator, indicator instrument	68
H21	Indicator lamp	flashing light, front left	63
H22	Indicator lamp	flashing light, rear left	64
H23	Indicator lamp	flashing light, front right	65
H24	Indicator lamp	flashing light, rear right	66

K0	Relay	engine start	0
K1	Relay	starting interlock	7
K2	Relay	brake monitoring, generator	5
K3	Relay	brake monitoring, generator	9
K4	Relay	drive lever, zero position	10
K5	Relay	brake control	25
K6	Relay	switching on vibration, drive lever	3°
K7	Relay	locking	31
K8	Relay	air condition / condenser*	86
K9	Relay	EMERGENCY OFF	23
K10	Relay	lighting system	53
K11	Relay	reversing horn	12
K12	Relay	vibration automatics	30
K13	Relay	flasher relay	64
K14	Relay	cab	82
K15	Relay	magnetic clutch compressor*	87
K16	Relay	air condition / condenser*	88

M1	Starter	2
M2	Windscreen wiper, front	76
M3	Windscreen wiper, rear	78
M4	Windscreen washer system front	77
M5	Fan motor	80
M6	Windscreen washer system rear	79
M7	fan heating / air condition *	84
M8	fan condenser *	89
M9	fan condenser *	90

P1	Operating hour counter	4
P2	Engine temperature indicator	20
P3	Tank indicator	21

R1	Engine temperature sensor	20
R2	Tank sensor	21
S1	Switch ignition lock	1
S2	Drive lever zero position (initiator)	10
S3	Switch brake pressure	14
S4	Horn push button	16
S5	Switch engine temperature excursion	17
S6	Switch engine oil pressure	19
S7	Switch vibration, high frequency	31
S7A	Switch vibration, low frequency	31
S7B	Switch vibration automatics	31
S8	Switch gear / automatic traction control *	37
S10	Switch cab lighting system	81
S11	Switch lighting system	52
S12	Switch windscreen wiper, front	76
S13	Switch windscreen wiper, rear	78
S15	Switch fan	80
S16	Switch air cleaner	22
S17	Switch hydraulic brake	25
S18	Switch hydraulic oil filter	18
S19	Switch reversing horn (initiator)	12
S20	Switch ASS	37
S21	Switch blower / heating *	84
S22	Schalter AC *	85
S23	Switch EMERGENCY OFF	23
S24	Switch vibration (drive lever)	35
S25	Switch lighting system*	56
S26	Switch direction indicators	64
S27	Switch hazard warning lights	64
S28	Switch working lighting system, front	70
S28A	Switch working lighting system, rear	73
S29	Switch water present	28
S30	Switch cold start advance	27

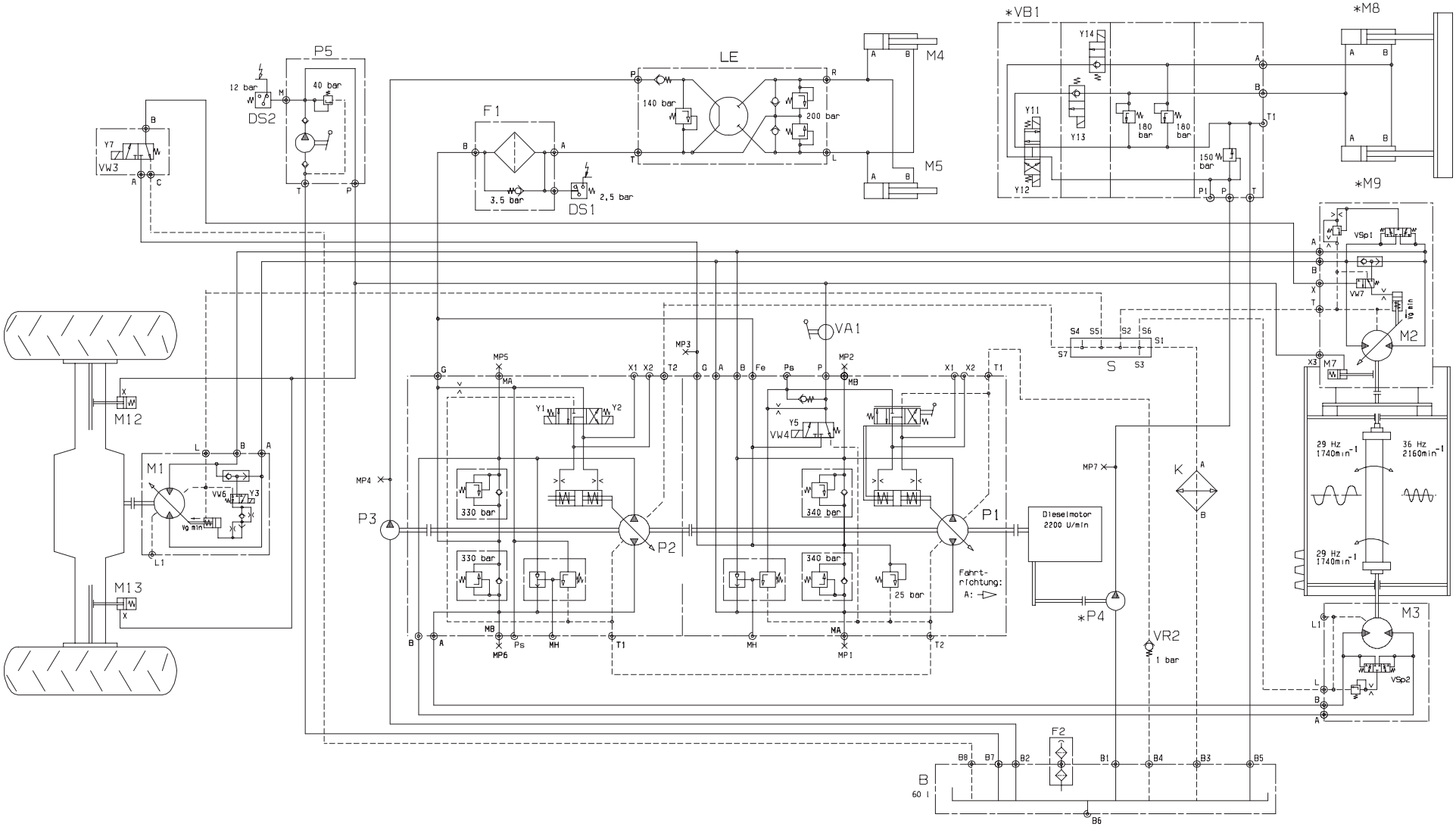
X1	Plug connector	operator’s stand, wheeled part
X2	Plug connector	drive lever
X3	Plug connector	on–board socket
X4	Plug connector	hydraulic filter
X5	Plug connector	cab
X6	Plug connector	cab
X7	Plug connector	lighting system front
X8	Plug connector	lighting system hinten
X9	Plug connector	working lighting system front
X10	Plug connector	Compatronic
X11	Plug connector	reversing horn
X12	Plug connector	heating installation
X13	Plug connector	gear front
X14	Plug connector	indicator
X15	Plug connector	steering column (gear/automatic traction control) *

X16	Plug connector	steering column
X17	Plug connector	steering column
X18	Plug connector	steering column
X19	Plug connector	flasher switch
X20	Plug connector	windscreen wiper, front
X21	Plug connector	EMERGENCY OFF
X22	Plug connector	fan heating / air condition *
X23	Plug connector	compressor air condition *
X24	Plug connector	condenser air condition *
X25	Plug connector	dryer *
X26	Plug connector	condenser *
X27	Plug connector	timer*
X28	Plug connector	proportional amplifier *

Y1	Solenoid valve	high frequency	31
Y2	Solenoid valve	low frequency	32
Y3	Solenoid valve	gear rear	38
Y5	Solenoid valve	hydraulic brake	25
Y6	Solenoid valve	engine shutoff	26
Y7	Solenoid valve	gear front	37
Y8	Solenoid valve	hydraulic short circuit*	24
Y9	Solenoid valve	cold start advance	27

V.... Blocking diodes

* optional

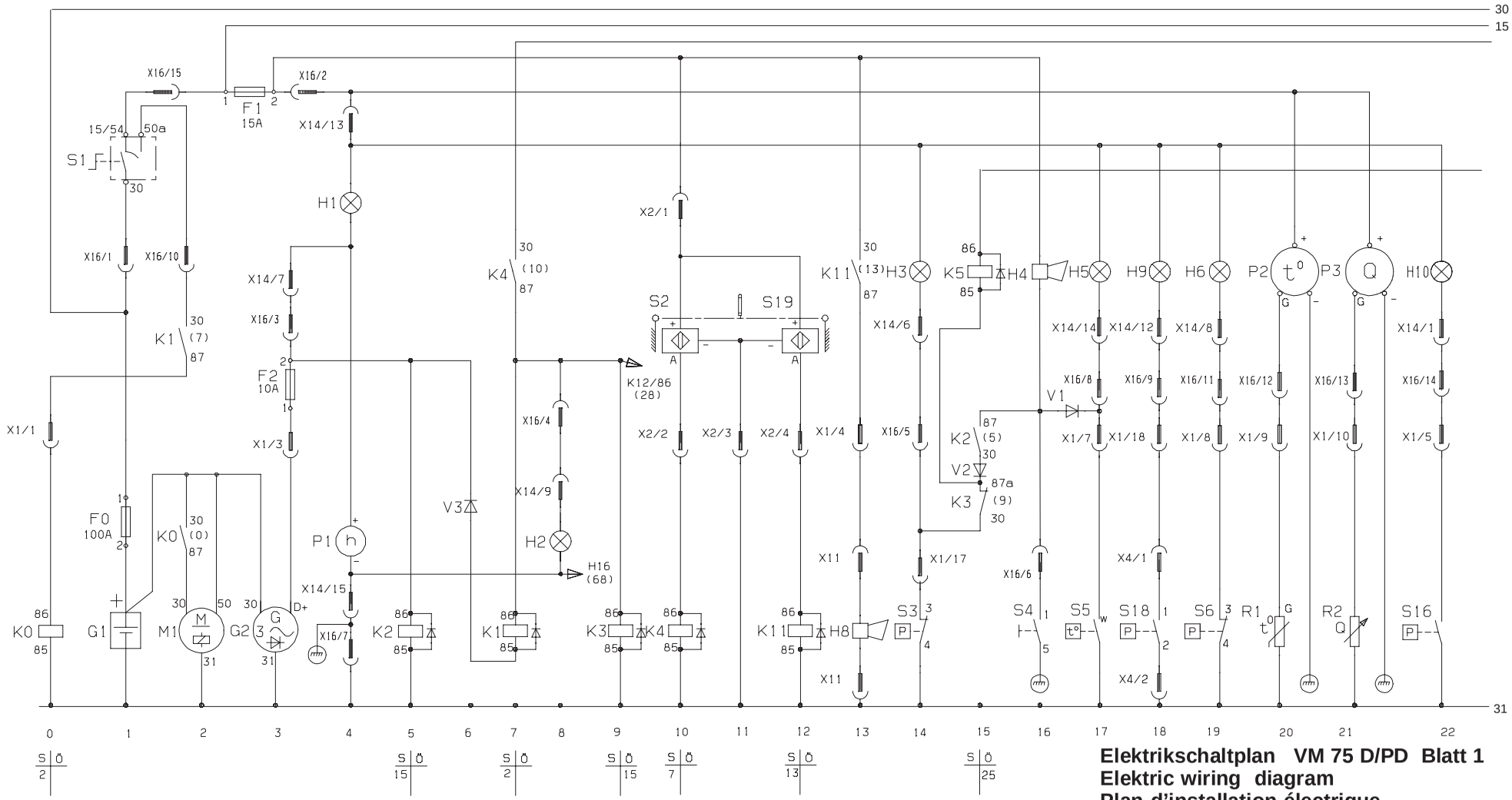


Hydraulikschaltplan VM 75 D/PD – GFT 9
Hydraulic circuit diagram
Plan d'installation hydraulique
Esquema hidraulico
Circuito hidráulico
Schema idraulico

*** Option**

07222/72002

Batterie	Anlasser	Generator	Betriebs–stunden	Motor–Abstellung	Anlaßsperre	Fahrhebel / Rückfahrhorn *	Bremse	Horn	Motorüb.–temperat.	Hydr. ölfilter	Motor–öldruck	Motor–tempera.	Tank	Luftfilter
Battery	Starter	Alternator	Operating hours	Shut down device	Starting – lock	Drive lever / Back–up alarm *	Brake	Horn	Engine tempe–rature	Hydr. oilfilter	Engine oil pressure	Engine tempe–rature	Fuel tank	Air cleaner
Batterie	Démarreur	Alternateur	Heures de service	Dispositif d'arrêt	Blocage de démarrage	Levier d'marche / Avertissement de marche arrière *	Frein	Klaxon	Tempé–rature du moteur	Filtre d' huile hydr.	Pression d'huile de moteur	Tempé–rature du moteur	Kanister réservoir	Filtre d'air
Bateria	Starter	Alternador	Horas de servicio	Dispositivo de parada	Bloqueo de arranque	Palanca de marcha / Alarma de marcha atrás *	Freno	Bocina	Tempe–ratura del motor	Filtro de aceite hydr.	Presión de aceite para mot.	Tempe–ratura del motor	Depósito	Filtro de aire
Bateria	Motor de arranque	Alternador	Horas de funcionamento	Paragem do motor	Bloqueio de arranque	Alavanca de marcha / Buzina de marcha atrás *	Travão	Buzina	Sobreaque. mento do motor	Filtro do óleo hidraulico	Pressão do óleo do motor	Temperatura do motor	Depósito	Filtro do ar

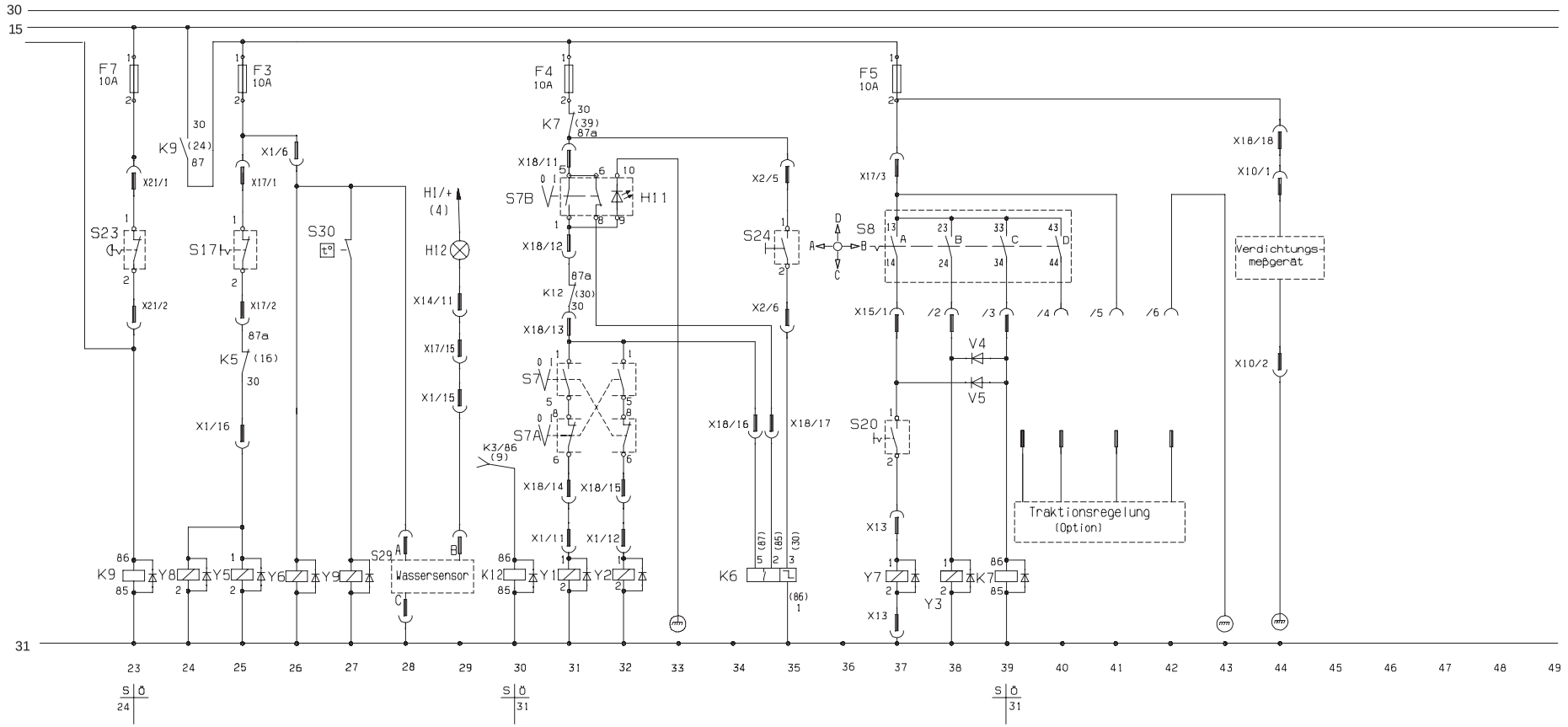


Elektrikschaltplan VM 75 D/PD Blatt 1
Elektric wiring diagram
Plan d'installation électrique
Esquema éléctrico
Circuito eléctrico

*** Option**

07242/80505C

Not–Aus	Hydraul. Bremse	Motor–abstellung	Wasser im Diesel	Vibration: Auto–matik	Hohe Frequenz	Niedrige Frequenz	Vibrationseinschaltung Fahrhebel	Gangschaltung: vorn	hinten	vorn hinten		Verdichtungs–messgerät *
Emergency–off	Hydraul. brake	Shut down device	Water in fuel	Vibration: Auto–matik	High fréquency	Low fréquency	Vibration switch Drive lever	Gear shifting: front	rear	front rear		Compactometer *
Détresse–hors	Frein hydraul.	Dispositif d' arrêt		Vibration: Auto–matique	Fréquence grande	Fréquence petite	Commande de vibrati. Levier d'marche	Changement des vitesses: devant	derrière	devant derrière		Compactometer *
Urgencia–desconectar	Freno hidraul.	Dispositivo de parada		Vibración: Auto–mática	Frecuencia grande	Frecuencia pequena	Mando de vibración Palancade marcha	Cambio de marchas: delante	detrás	delante detrás		Compactometer *
Paragem de emergência	Travão hidráulico	Paragem do motor		Vibração: Auto–mática	Alta–frequência	Baixa frequência	Accionamento da vibração Alavanca de marcha	Mudanças: Para frente	Para trás	Frente Tras		Dispositivo medidor de compactação *

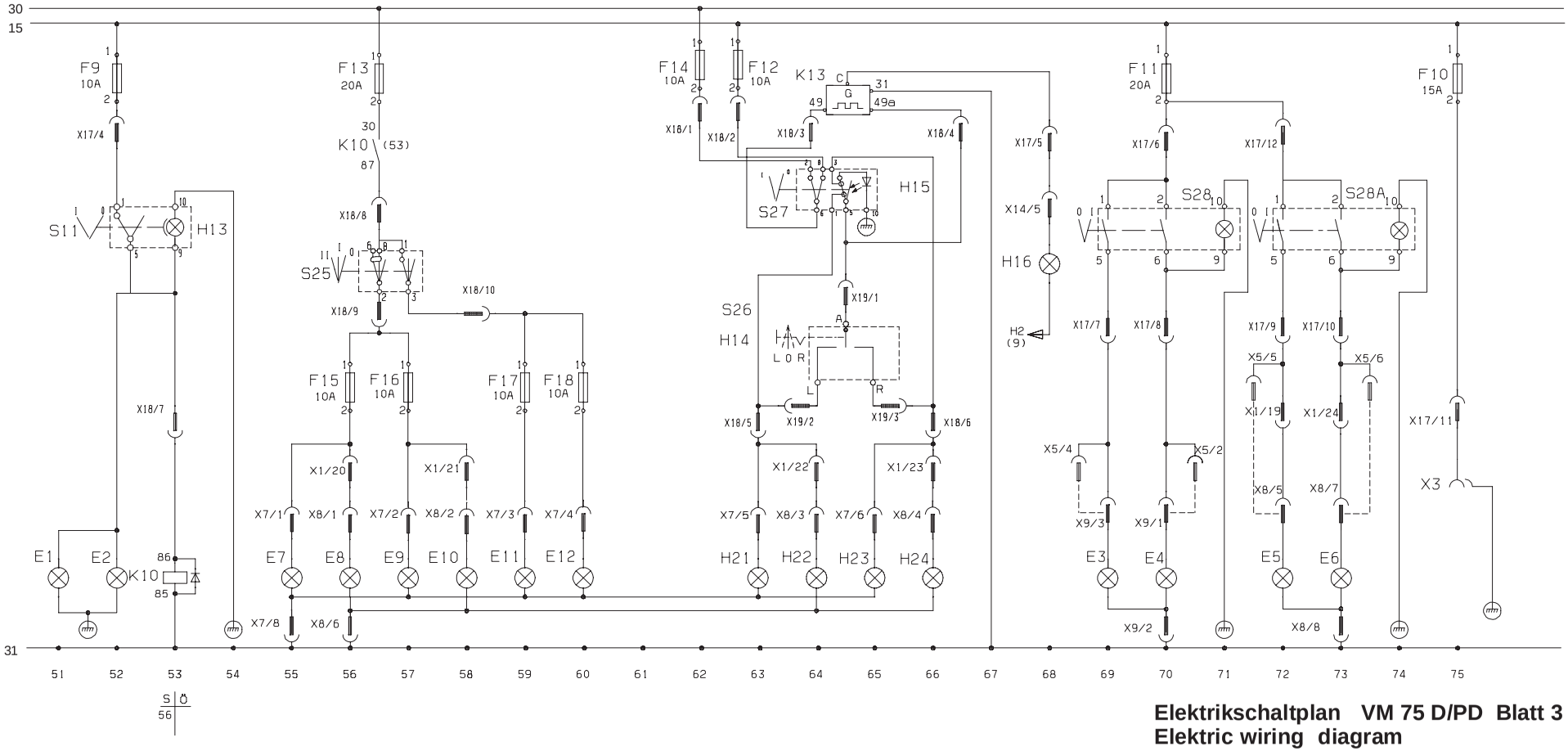


Elektrikschaltplan VM 75 D/PD Blatt 2
Elektric wiring diagram
Plan d'installation électrique
Esquema eléctrico
Circuito eléctrico

07242/80505C

*** Option**

Beleuchtung	Beleuchtung *	Blinkanlage *	**Arbeitsbeleuchtung** * vorn | hinten	Steckdose
Lighting system	Lighting system *	Flsher device *	**Working lighting** * front | rear	Plug socket
Eclairage	Eclairage *	Dispositif clignotant *	**Eclairage de travail** * devant | derrière	Prise de courant
Iluminación	Iluminación *	Instalación de intermitencia *	**Iluminación de trabajo** * delante | detrás	Base de enchufe
Iluminação	Iluminação *	Sistema de luzes de pisca *	**Iluminação de trabalho** * dianteira | traseira	Ficha (tomada)

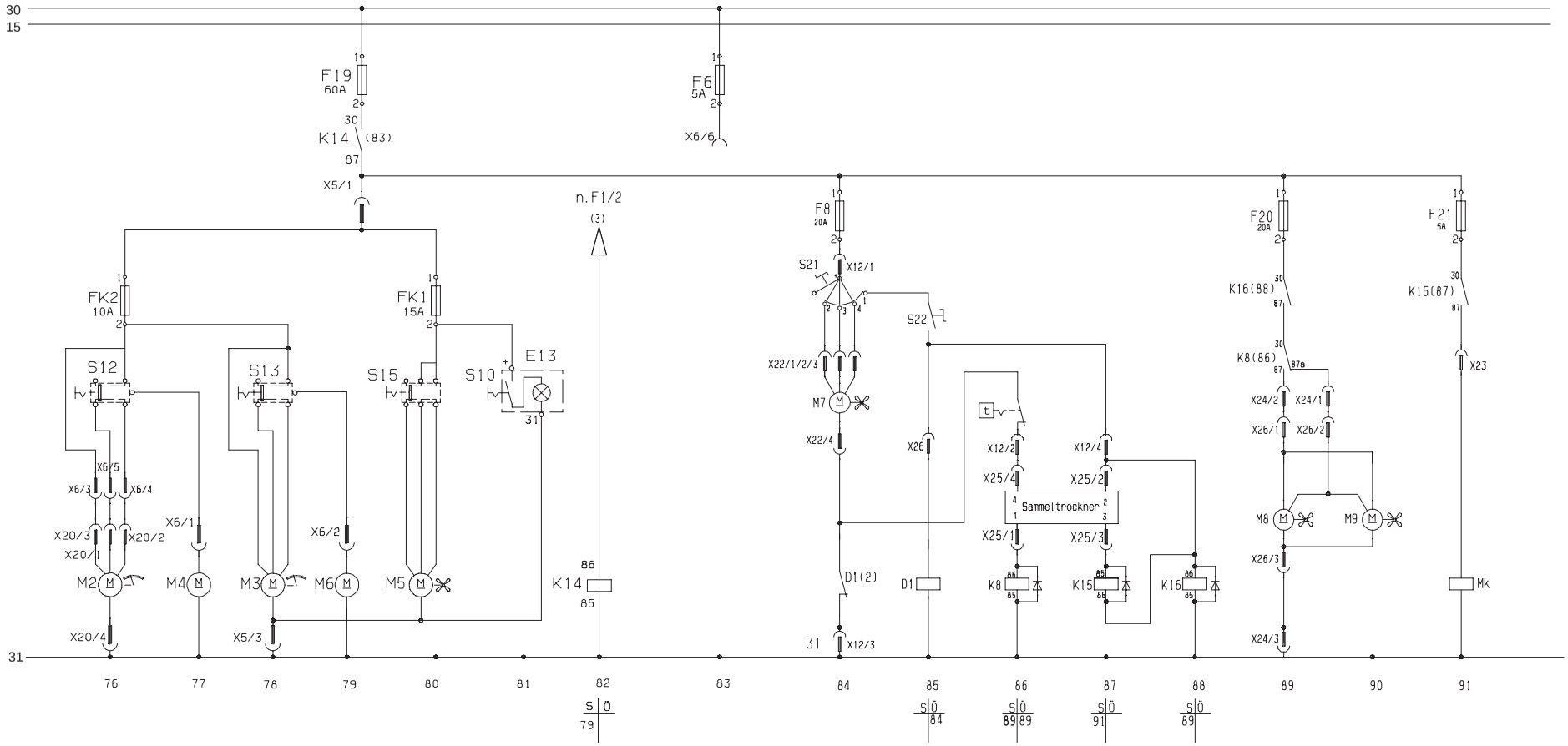


Elektrikschaltplan VM 75 D/PD Blatt 3
Elektric wiring diagram
Plan d'installation électrique
Esquema eléctrico
Circuito eléctrico

07242/80505C

*** Option**

Kabinenfunktionen					Radio *	Heizung / AC *
Scheibenwischer vorn	hinten	Gebläse	Beleuchtung			
Other cabine functions						
Windscreen wiper front	rear	Fan	Lighting system		Radio *	Heater / AC *
Autres fonctionnements de la cabine						
Essuie–glaces devant	derrière	Soufflant.	Eclairage		Radio *	Chauffage / AC *
Otros funcionamientos de la cabina						
Limpiapara brisas delante	detrás	Ventilad.	Iluminación		Radio *	Calefacción / AC *
Funções da cabina						
Limpa pára–brisas dianteiro	traseiro	Ventilação	Iluminação		Rádio *	Aquecimento / AC *



07242/80505C

*** Option**

Elektrikschaltplan VM 75 D/PD Blatt 4
Elektric wiring diagram
Plan d'installation électrique
Esquema éléctrico
Circuito eléctrico