OPERATOR'S AND SERVICE MANUAL (Tier4F)

HR70C-9

Table of contents

1 Machine designation, manufacturer and notes

1.1 Machine designation and intended use

Designation:

Hyundai compaction roller

Type:

HR70C-9

1.1.1 Intended purpose and designated use

The compaction roller serves to compact soil.

The compaction roller may only be used for the purposes and work mentioned in this manual. Any use of the machine for further purposes is considered as misuse and is not permitted.

1.3 Type plate and serial number

1.3.1 Type plate labeling and serial number

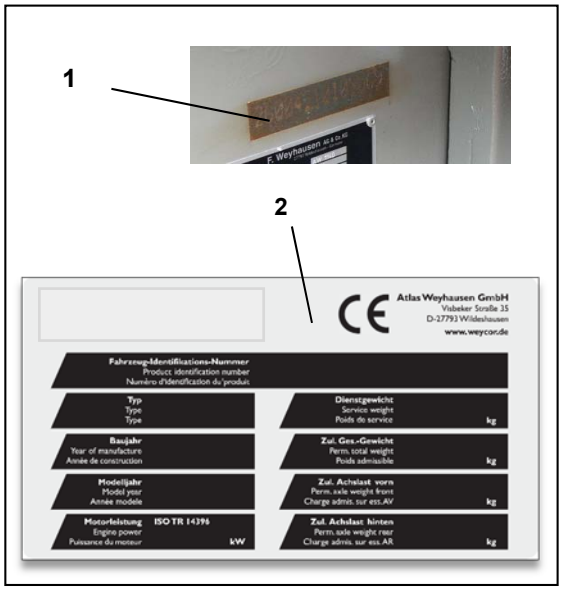


Fig. 1 Type plate basic frame

2510 XXXX E123456

The serial number features reference numbers **X** in order to identify optional equipment. It can be found on the type plate (**2**) on the right, below the cab. In addition to this, it has been engraved on the basic frame.

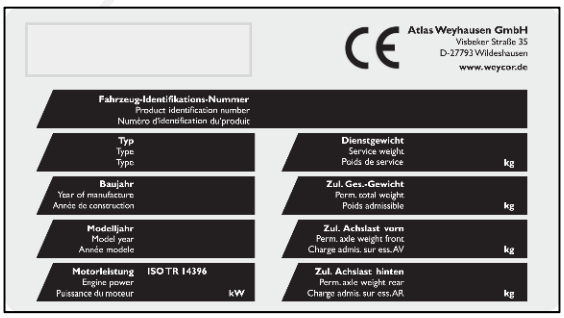


Fig. 2 Type plate

The following information is provided by the type plate:

- Vehicle identification number (serial number)
- Type
- Year of manufacture
- Engine output (kW)
- Service weight
- Maximum permissible total weight
- Maximum permissible axle weight, front
- Maximum permissible axle weight, rear

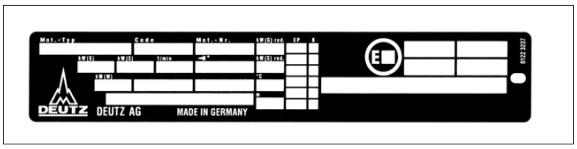


Fig. 3 Type plate Diesel engine

EC Declaration of Conformity

(Original instruction)

This declaration of conformity is issued under the sole responsibility of manufacturer:

HYUNDAI CONSTRUCTION EQUIPMENT CO., LTD.
12th Fl., Hyundai Bldg. 75, Yulgok-ro, Jongno-gu,
Seoul 03058, Korea

Hyundai Construction Equipment Europe N.V located at Hyundailaan 4, 3980 Tessenderlo, Belgium, as authorized repre sentative in the European Community is authorized to compile the technical construction file and declares that the product:

Type:	*********
Model:	******
Serial number (PIN):	**********

is in conformity with the relevant provisions of the Community harmonization legislation:

2006/42/EC - Machinery directive
2014/30/EU - Electromagnetic compatibility directive
2000/14/EC - Noise emission outdoor equipment directive
2002/44/EU - Exposure of workers to vibration risks directive
their amendments, and other applicable directives.

EMC (2014/30/EU)

Certificate number:	**********
Date:	DD/MM/YYYY
Notified body:	**********

Noise levels (2000/14/EC)

Certificate number:	**********
Date:	DD/MM/YYYY
Conformity assessment proc.:	Annex VIII Full Quality Assurance
Notified body:	**********
	**********
Measured sound power level:	nnn.n dB(A)
Guaranteed sound power level:	nnn.n dB(A)

Engine information

Manufacturer :	*********
Engine model name:	********
Type-approval number:	**********
Stage (Regulation) :	STAGE ** (**/**/**)
Gross Power (SAE J1995):	***kW / ****rpm
Net Power (SAE J1349):	***kW / ****rpm

Harmonized standards, other technical standards and specifications applied:

EN 474-1:2006+A*:**** (EMM - Safety - Part 1); EN 474-3:2006+A*:**** (EMM - Safety - Part 3); EN ISO 3471:2008 (EMM - ROPS: Lateral/Vertical/Longitudinal loads); EN ISO 3449:2008 (EMM - FOPS: Level II cabin); ISO 2631-1:1997 & ISO 2631-1:1997/Amd1 :2010 (Whole-body vibration); EN ISO 5349-1:2001 &EN ISO 5349-2:2001 & EN ISO 5349-2:2001/A1:2015 (Hand-arm vibration)

****
Managing Director

Place, date of issue:	Tessenderlo Belgium, DD MM YYYY

1.5 User instructions

1.5.1 Responsibility of the contractor

The **contractor** is the **owner** or **hirer** of the compaction roller.
The responsibility to ensure that the compaction roller is exclusively operated, serviced and maintained by staff that is

- physically, mentally and professionally fit and
- has read and understood the operating and maintenance manual rests entirely with the owner or hirer of the vehicle.
- Prompt the operating and service staff to confirm this in written form before authorizing them to use the vehicle.
- Individuals under the influence of alcohol or drugs must not operate the compaction roller.
- Make sure that, in addition to the instructions and guidelines stated in this manual, the mandatory national or local safety regulations and laws referring to the operation of construction machinery are observed.

1.5.2 Responsibility of the driver and the service staff

Any individual intending to operate the compaction roller must have read and understood this operating and maintenance manual before starting to carry out any work related to the vehicle.
The **driver of the compaction roller** is the person who operates and drives the compaction roller.

- Before starting to operate the compaction roller, it is the driver`s obligation to ascertain that the vehicle is in faultless condition. In addition, the driver must observe the instructions concerning the operation of the compaction roller while it is being used.
- The responsibility to ensure that the machine and its operation do not cause any danger rests entirely with the driver of the compaction roller.
- Before working with the compaction roller, be sure to familiarize yourself with all its control elements and functions as well as its driving characteristics.

The **service staff** includes all individuals involved in servicing, maintaining and repairing the compaction roller.

- The service staff must abide by the default maintenance intervals and is responsible for carrying out the required inspections and work.
- The staff needs to ensure that the execution of the maintenance and service work in question does not cause any dangers to the environment.

1.6 Change in ownership (e.g. by selling the compaction roller)

NOTICE	This operating and maintenance manual is an essential component of the compaction roller and is to be stored in the vehicle in case it is sold or a change in ownership occurs. If the manual is not available, contact an authorized *Hyundai* dealer to order a copy (please state the serial number).

1.7 Notes on this operating and maintenance manual

- This operating and maintenance manual serves to ensure the correct operation and maintenance of the compaction roller.
- It is an essential part of the compaction roller and needs to be kept close at hand in the cab at all times.
- This manual contains all the information required for putting the compaction roller into operation, for working with it and driving it.
- Furthermore, it contains instructions regarding service and maintenance measures which need to be taken by the driver or the service staff. They serve to ensure that the vehicle is always ready for operation and contribute to a prolonged service life.
- Observing the safety instructions both in the corresponding chapters and in the descriptions is of vital importance.
- If you have any further questions concerning the operation or maintenance of the compaction roller, please contact your local authorized *Hyundai* dealer.
- In case you lose the operating and maintenance manual, order a new copy. Please state the serial number and the order number (if available).
- The owner or hirer of the compaction roller will be held liable for any damage resulting from inexpert operation or lack of skill on the part of the staff.

1.7.1 Symbols in the operating and maintenance manual

The warning notices in this operating and maintenance manual are accentuated by means of signal words and symbols which reflect the extent and the type of danger involved.
In order to prevent bodily injury and material damage, observing the warning notices in this operating and maintenance manual is **of vital importance**!

⚠ **DANGER**	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ **CAUTION**	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	This signal word is used to address practices not related to physical injury.
SAFETY INSTRUCTIONS	Indicates general instructions relative to safe work practices, reminders of proper safety procedures or the location of safety equipment.

This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death!

1.7.2 Further notes on this operating and maintenance manual

- Every effort has been made to provide accurate and complete information. However, we cannot guarantee that there will be no errors. Hyundai does not assume any liability for the accuracy or completeness of the information in this operating and maintenance manual.
- Due to the permanent development, advancement and improvement of our products, we reserve the right for modifications without prior notice. All descriptions, illustrations, indications of weight and technical specifications are without obligation and represent the state as of printing this issue.
- All images and drawings are merely intended to serve as an illustration of certain aspects of the operation and maintenance of the compaction roller in question. The illustrations may differ from the actual scope of delivery of the compaction roller.

1.8 Vibrations

1.8.1 Hand and arm vibration

The hand and arm vibration that occurs under normal working conditions, with the machine put to its designated use, is less than **2.5 m/s^2** (weighted effective value) in accordance with ISO 8041.

1.8.2 Whole-body vibration

The level of whole-body vibration in a construction machine is largely determined by a variety of factors, such as the manner of handling the vehicle, the type of soil and the working speed set by the driver.

In addition, these factors vary with the different designs of the machines.

- The whole-body vibration level of the machine in real working conditions within the designated areas of application is less than **0.5 m/s^2** (weighted effective value), in accordance with ISO 8041.
- In order to keep the level of whole-body vibration as low as possible and to prevent damage to the driver`s health, please note:
- The driver`s seat is to be set to the individual weight and height of the driver.
- Make sure the soil at the construction site is always kept in good condition.
- The compaction roller shall be put to the designated use only.
  Handling of the machine and the operation mode need to be adjusted to the environmental conditions, such as the type of soil.

2 Safety instructions

2.1 General use of the compaction roller

⚠ WARNING	**Risk of accidents!** Before starting the compaction roller, the driver needs to be informed of the specific safety requirements for work in the danger zone and is obliged to check whether the necessary precautions have been taken.

⚠ CAUTION	**Unknown environmental and working conditions!!** Prior to starting your work, make sure that the weather, the road and the condition of the ground allow for a safe operation of the compaction roller. Watch out for potential sources of danger and act accordingly

⚠ WARNING	**Before transporting the compaction roller!** • The compaction roller may be loaded and unloaded by experienced and adequately skilled & qualified individuals only. • Make sure you load and unload the compaction roller on even and solid ground. • Do not overload the transport vehicle. • Clean the tires of the compaction roller in order to remove snow, ice and dirt.

⚠ CAUTION	**Risks resulting from a faulty condition of the compaction roller!** • Carry out the required checks and maintenance measures, see chapters on maintenance. • Repair damage immediately or contact the *Hyundai* service team. • Do not resume your work before the damage is repaired.

⚠ WARNING	**Danger of falling while getting on/off the compaction roller!** • Always face the cab, use handles, stairs and steps! • Always keep stairs, steps and handles clean and dry! • Do not use any control elements as handles!

⚠ WARNING	**Risk of accidents caused by restricted visibility!** • Stop the vehicle or reduce speed until visibility improves. • Be sure to keep the windows clean, free of ice, steam, frost. • Do not hang up any clothes or other objects which might restrict your view.

NOTICE	**Ensure the operational readiness of the compaction roller!** Prior to starting your work, check the fill levels and add the required consumables, see maintenance instructions. Carry out the work required for Inspection certificate A, see chapters on maintenance.

2.2 Working with the compaction roller

⚠WARNING	**Watch out for individuals in the work area and within the operating range of the vehicle!** During work with the compaction roller, no individuals may be present in the operating range of the machine. Secure the work area against unauthorized trespassing. Transporting people on the compaction roller is strictly prohibited! Before and while driving backwards, check the area behind you by looking backwards.

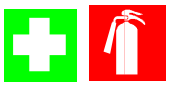
⚠ DANGER	**Risk of fatal electric shocks, explosions and intoxication due to damaged conduits!** • Watch out for subterranean objects! • Gather information about the position of conduits, tubes and pipes and clearly point them out in the work area. • If necessary, have them shut off beforehand. • Remove the vehicle from the danger zone. In case this is not possible: • Stay in the cab. • Ask other individuals to stay away from the work area. • Have the power switched off.
	

⚠ CAUTION	**Risk of accidents and injuries in unknown and/or complex environments!** • Find a skilled person to give you instructions and directions! • Agree on hand signals and warning calls beforehand!

⚠ CAUTION	**Risk of sliding, breaking in of the compaction roller!** • Exercise extra caution when working near water! • Before starting to work, check the inclination and the carrying capacity of the ground. •
	

2.3 Safety instructions in emergencies

⚠WARNING	**Risk of intoxication when working in closed areas!** • Ensure sufficient ventilation! • Make sure all emissions are conducted outside the work area. • Observe all regulations concerning noise protection.
	

⚠WARNING	**Need for emergency equipment to treat injuries** • In the event of an accident, the emergency equipment can save lives! • Always keep a first aid kit and a fire extinguisher close at hand. • Make sure the emergency equipment is always ready for use. • Familiarize yourself with using the emergency equipment beforehand.
	

3 Technical specifications

3.1 Operating data

With smooth drum	HR70C-9
General:	
Service weight	7100 kg (15653 lbs)
Axle load, front	3800 kg (8378 lbs)
Axle load, rear	3300 kg (7275 lbs)
Compaction capacity:	
Static linear load	22.35 kg/cm
Amplitude high / low	1.6 / 0.7 mm (0.06 / 0.03 in)
Frequency with high / low amplitude	30 /40 Hz
Centrifugal force with high / low amplitude	120 / 90 kN
Drum:	
Drum width	1700 mm (66.93 in)
Drum diameter	1250 mm (49.21 in)
Drum thickness	20 mm (0.79 in)
Drive / transmission:	
Max. driving speed	10 km/h (6.2 mph)
Pendulum angle	± 12°
Gradeability with / without vibration	45% / 50%
Noise level:	
Average sound power level L_{WA} (2000/14/EG & annexes)	104.1 dB (A)
Guaranteed sound power level L_{WA} (2000/14/EG & annexes)	106 dB (A)
Sound pressure level L_{PA} (ISO 6396)	76 dB (A)
Vibration levels:	
Hand-arm / Whole-body vibration (ISO 8041)	< 2.5 / 0.5 m/s^2

Deviating data for operation with pad foot drum (PD)	HR70C-9
General:	
Service weight	7700 kg (16976 lbs)
Axle load, front	4400 kg (9700 lbs)
Drum diameter	1140 mm (44.88 in)
Gradeability with / without vibration	48% / 53%

3.2 Tires

Standard	16.9 – 24 (with PD drum: 16.9 – 24 TR)

3.3 Fill levels

Fuel tank	167 ltrs (44.12 gallons)
Hydraulic oil tank	68 ltrs (17.96 gallons)
Engine oil	11 ltrs (2.91 gallons)
Coolant	11 ltrs (2.91 gallons)
Rear axle	10 ltrs (2.64 gallons)
Transmission drum drive	1.8 ltrs (0.48 gallons)
Vibration drive	3.5 ltrs (0.92 gallons)

3.4 Diesel engine

Make	DEUTZ TD 2.9 L4 TIER4I
Nominal capacity	54 kW at 2300 min $^{-1}$
Type	Water-cooled
Number of cylinders	4 in line

3.5 Roll-over protection system (ROPS)

The cab of the compaction roller corresponds to the stipulations of standard ISO 3471 (2008). It has been tested in accordance with the currently valid acceptance test specifications for roll-over protection systems (ROPS) and a ROPS authorization has been issued.

NOTICE	
	Any modification of the cab is permitted only after a written form of approval has been issued by Hyundai within the scope of the certification tests. Otherwise, the ROPS certificate loses its validity. No liability will be assumed for any modifications of the cab (drilling, welding, etc.) carried out without prior explicit approval of the manufacturer.

3.6 Dimensions

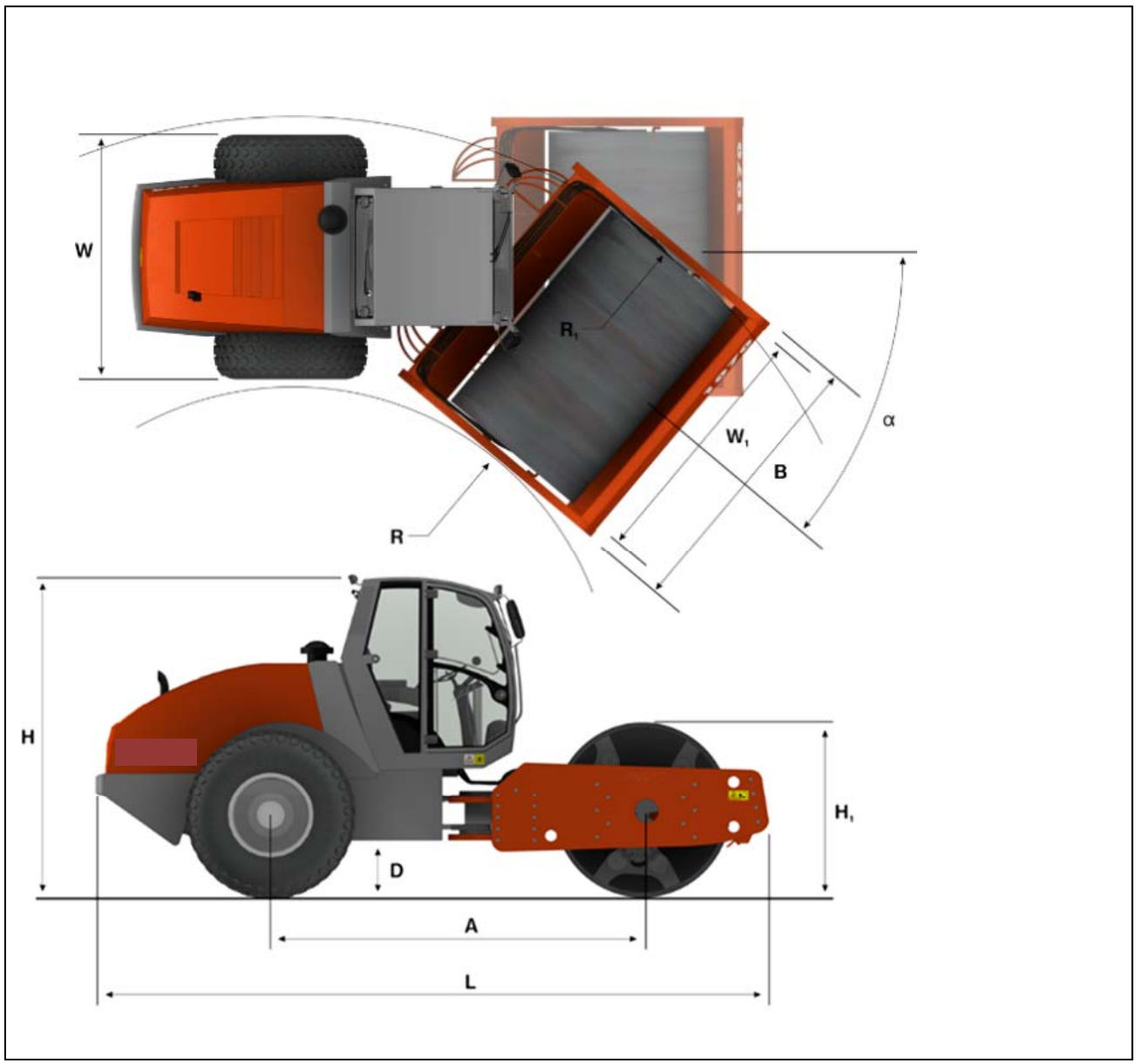


Fig. 4 Dimensions

HR70C-9	with smooth drum	with pad foot drum
A	2720 mm	2720 mm
B	1850 mm	1850 mm
D	375 mm	375 mm
H	2723 mm	2728 mm
H1	1250 mm	1140 mm
L	5032 mm	5032 mm
R	3900 mm	3900 mm
R1	5600 mm	5600 mm
W	1700 mm	1700 mm
W1	1700 mm	1700 mm
α	± 30°	± 30°

4 Transporting the compaction roller

4.1 Securing and loading the compaction roller before transporting it

⚠WARNING	**Secure attachments and objects in the cab before carrying out the transport!** • Remove any objects attached to the exterior of the vehicle and transport them separately. • Remove or fasten objects that are kept in the vehicle.

⚠WARNING	**Precautionary measures for transporting the compaction roller!** • The compaction roller may be loaded and unloaded by adequately trained persons only. • It may only be loaded and unloaded on level, solid ground. • Do not overload the transport vehicle. • Observe the total weight of the compaction roller, see **Technical specifications**.

4.1.1 Loading the compaction roller onto a flat bed truck

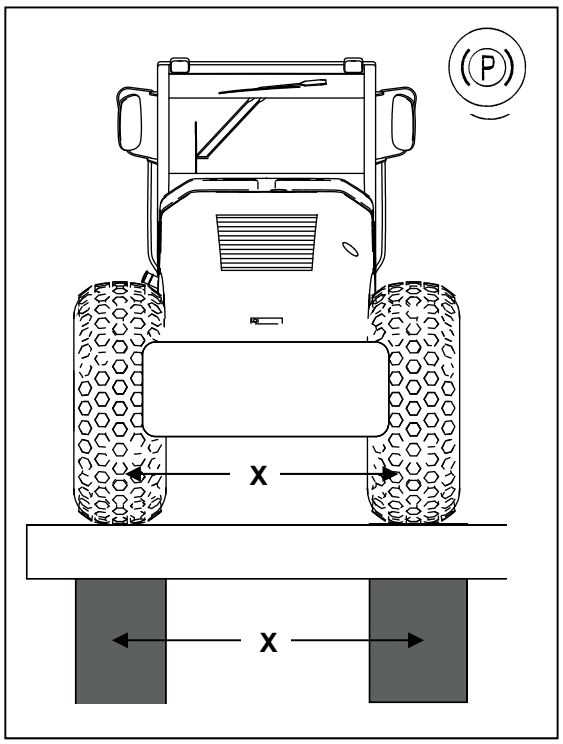
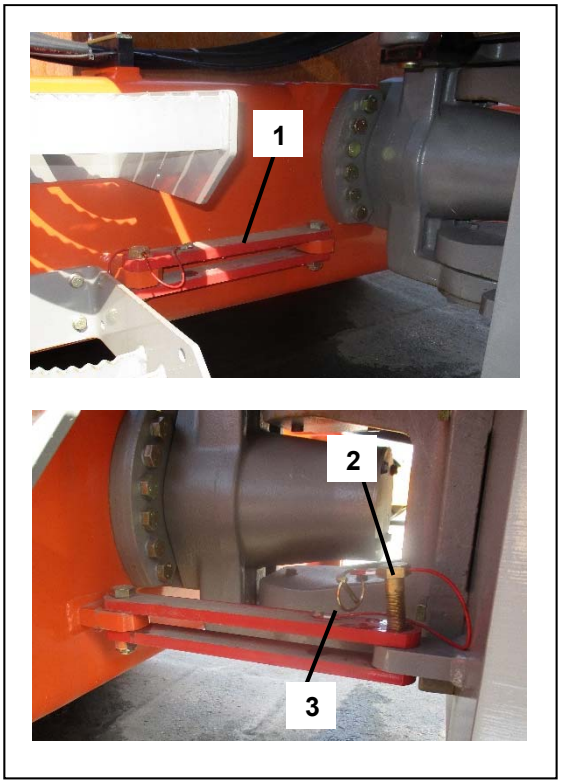


Fig. 5 Driving onto a flat bed truck

- Check the position **X** of the ramps of the flat bed truck before driving the compaction roller onto it.
- The ramps need to be positioned in a way that ensures that the tires roll on the center of the ramps.
- Start the Diesel engine.
- Release the parking brake. The symbol for the parking brake on the dashboard is deactivated.
- Drive the compaction roller onto the flat bed truck in reverse gear, with the rear of the roller ahead.
- Activate the parking brake and stop the diesel engine. The activation of the parking brake is indicated by the corresponding symbol on the dashboard.
- Remove the ignition key and lock the doors after getting off the vehicle.

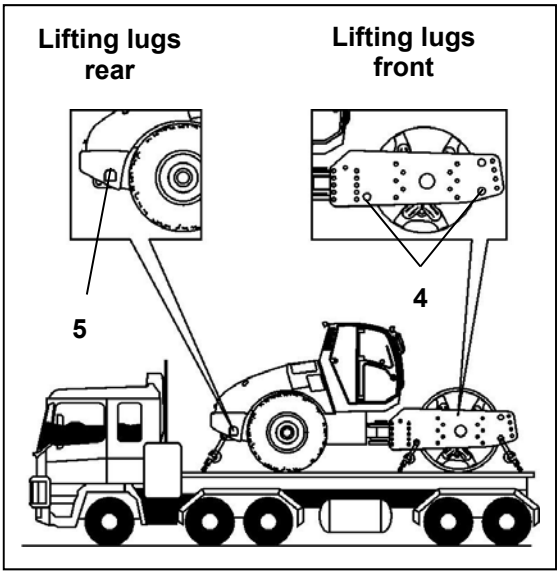
4.1.2 Securing the compaction roller on the transport vehicle



Attach the articulation-lock device (**1**) on the left side, between the front and rear end.
Secure the bolt (**2**) by means of a safety splint pin (**3**).

Fig. 6 Articulation-lock device

4.1.3 Tying the compaction roller to the transport vehicle



- The compaction roller disposes of four lifting lugs (**4**) at the front frame and two lifting lugs at the rear end (**5**).
- Use chain hoists to secure the compaction roller on the flat bed truck at the six lifting lugs.
- Make sure the distances and the length of the chains are sufficient.

Fig. 7 Securing the compaction roller

NOTICE	Observe the national laws regarding tie-down safety standards!

⚠ WARNING	The compaction roller may only be fastened to the transport vehicle at the labeled lifting lugs at the front frame and at the rear end.

4.1.4 Carrying out the transport

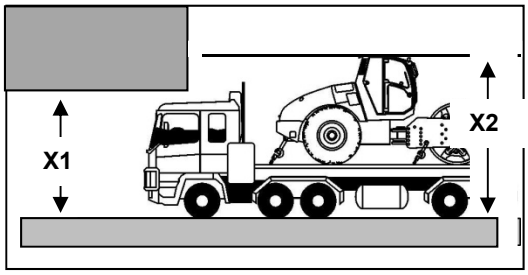


Fig. 8 Carrying out the transport

Be sure to inform yourself of the height **X2** of the transport vehicle with the compaction roller tied to it.

Observe the applicable national and local laws regarding the execution of the transport.

⚠ WARNING	Consider the height of the transport vehicle with the compaction roller fastened to it (**X2**) before attempting to pass underbridges with a height of **X1**!

5 Getting acquainted with the compaction roller

5.1 Overview: Assembly groups

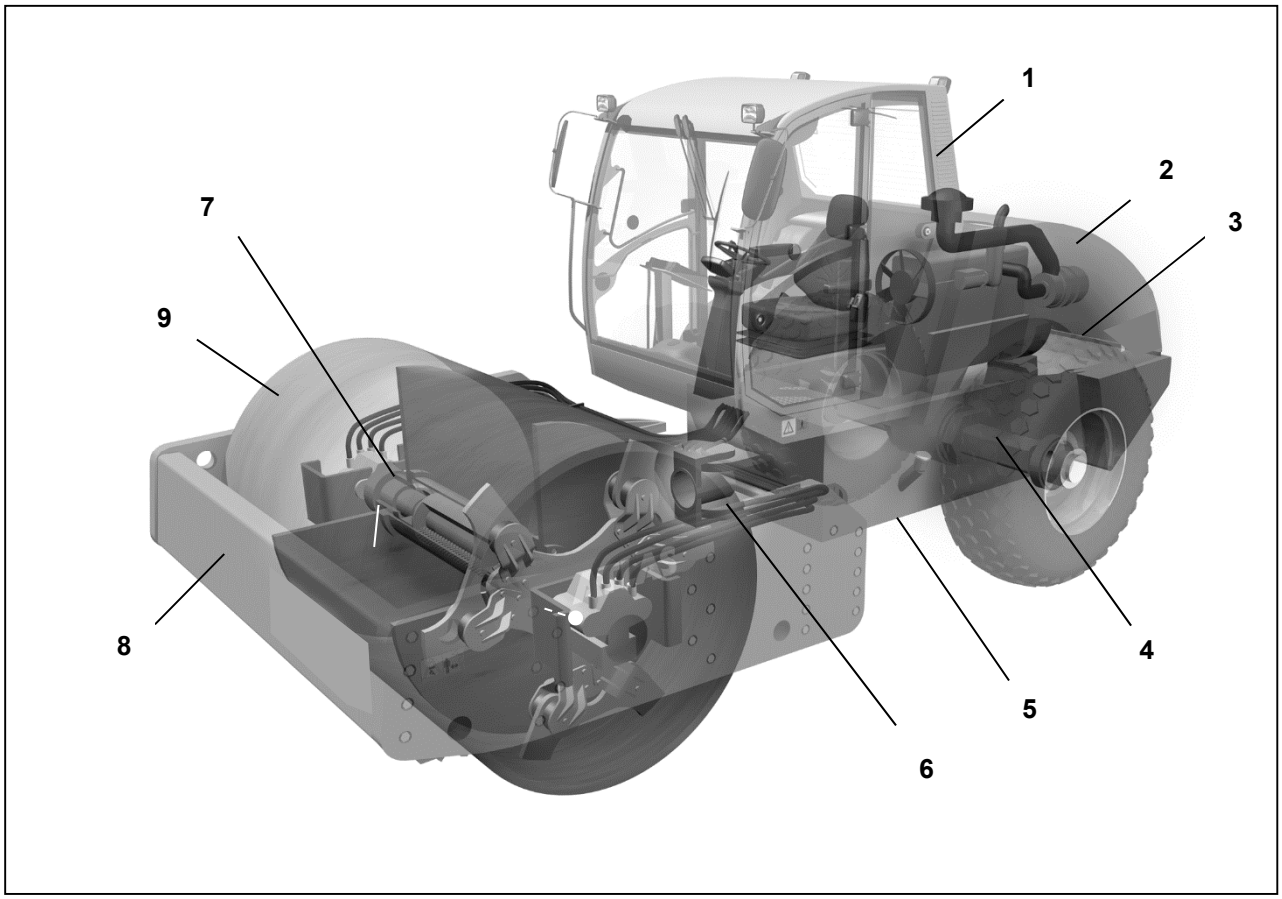


Fig. 9 Overview: Assembly groups

Captions assembly groups

1 Cab
2 Engine compartment with engine hood
3 Diesel engine and hydraulic system
4 Rear axle and wheels
5 Basic frame
6 Articulated pendulum joint
7 Vibration system
8 Drum frame
9 Drum

5.2 Overview: Driver´s compartment

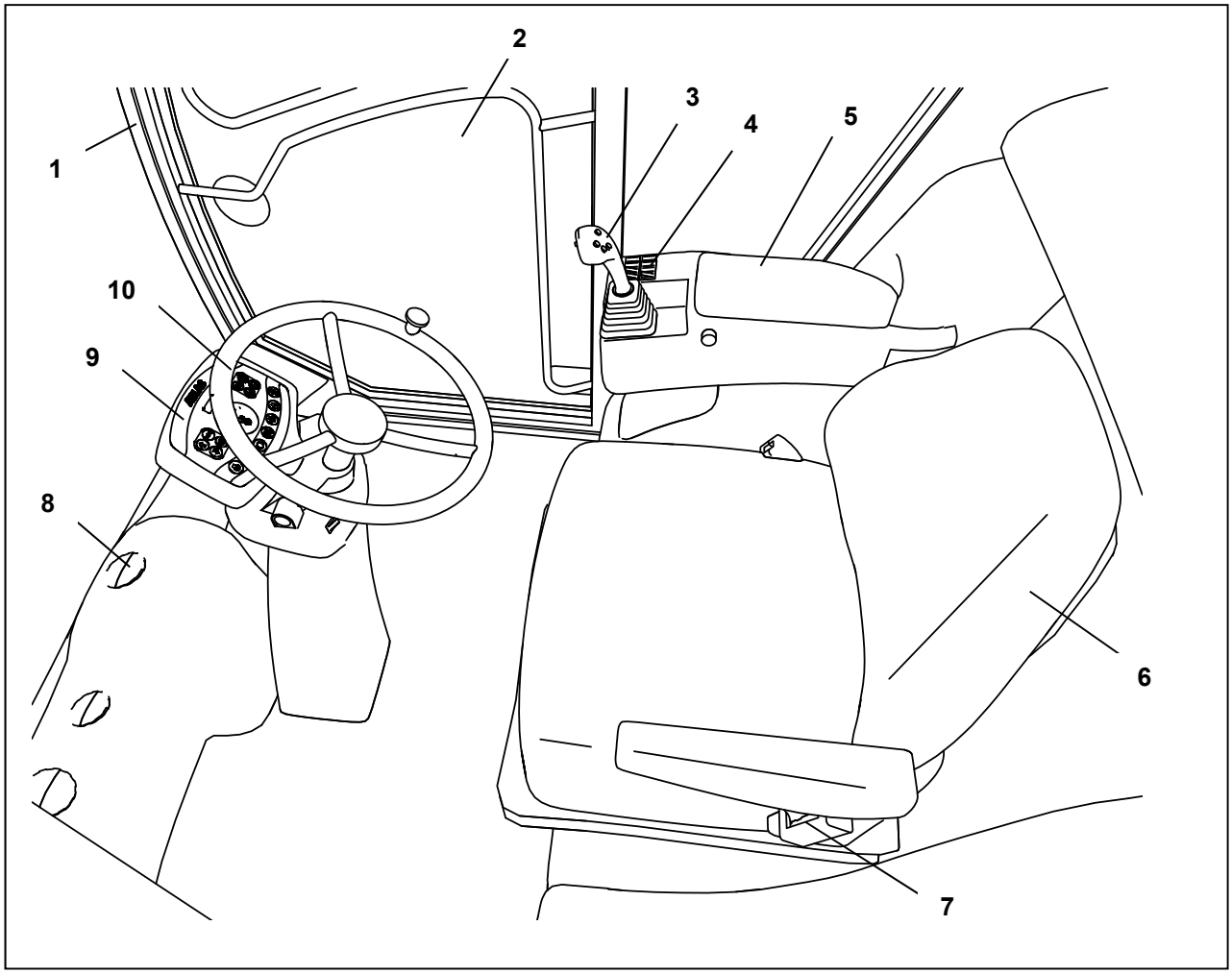


Fig. 10 Driver´s compartment

Captions driver´s compartment

1 Cab frame
2 Cab door
3 Joystick
4 Panel of switches, armrest
5 Adjustable armrest
6 Adjustable driver‘s seat
7 Safety belt
8 Air nozzle heating and ventilation
9 Dashboard
10 Steering wheel

5.3 Warning notices and labels

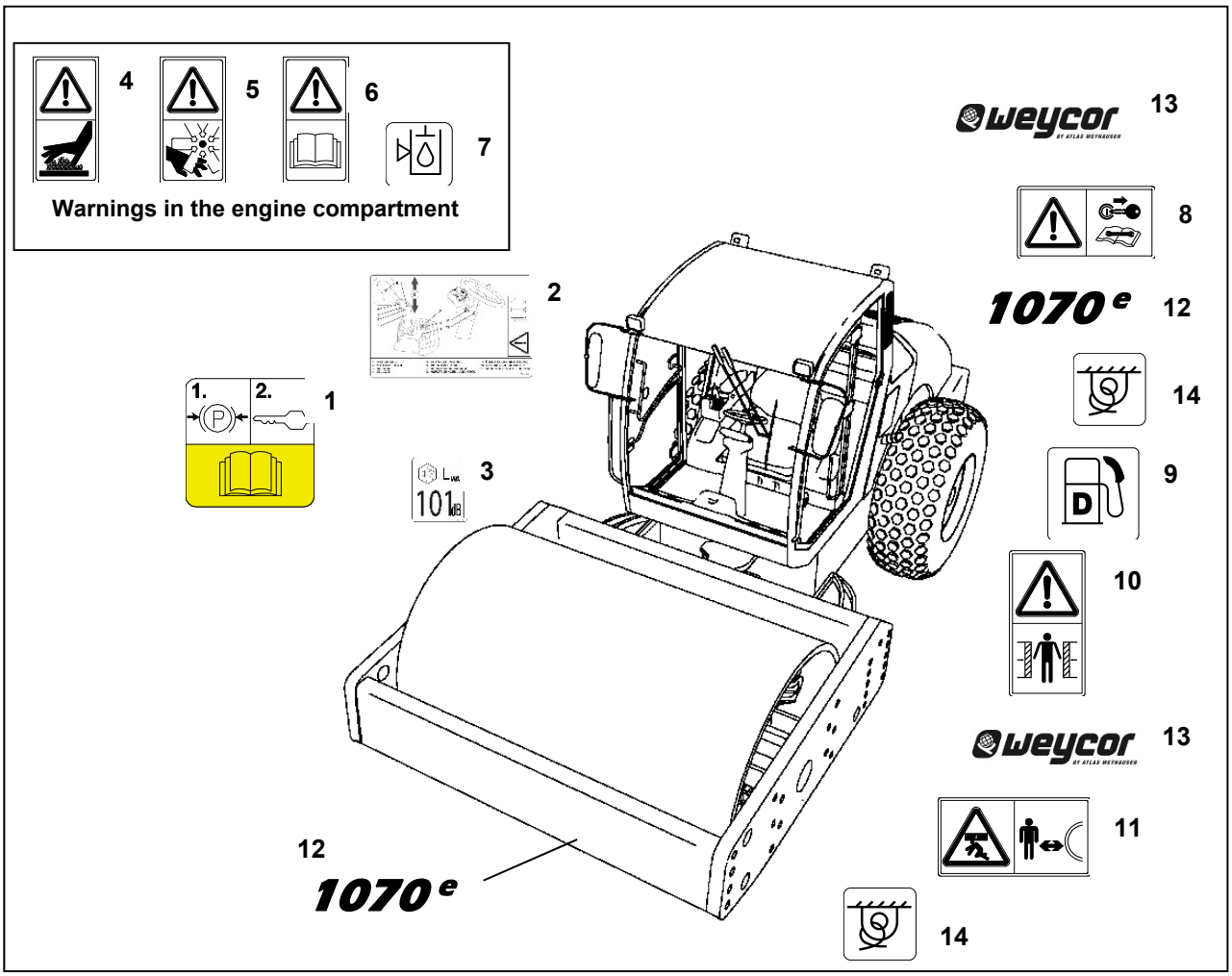


Fig. 11 Warning notices and labels

Captions warning notices and labels

1 Start (actuate the parking brake & read the operating manual)
2 Joystick operation
3 Sound emission level
4 Warning: Hot surfaces
5 Warning: Hand injuries
6 Read the operating manual
7 Fill level hydraulic oil
8 Lock the engine hood
9 Diesel only
10 Danger of crushing!
11 Warning: Safety Distance - Risk of being run over
12 Type
13 logo
14 Lifting lugs

6 Before starting the compaction roller

6.1 Prior to the initial start

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • Inform yourself of all issues related to operating the compaction roller. • Read the safety instructions before starting the compaction roller. In addition to this, be sure to observe the national and local laws and directives concerning the operation of earth-moving construction machines. In case of doubt, contact your local *Hyundai* dealer.

6.2 Checking the compaction roller: Visual inspection

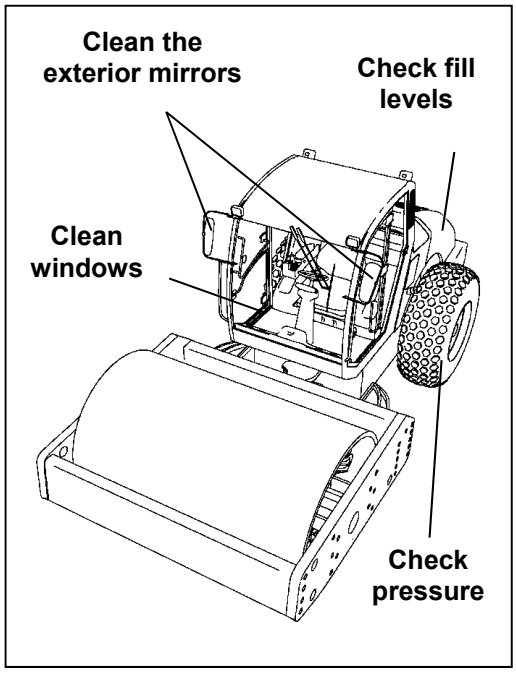


Fig. 12 Visual inspection

Prior to starting the compaction roller, perform a visual inspection to get a picture of the current condition of the compaction roller.

Check:

- the accumulation of dirt and clean the compaction roller by means of a high pressure washer, if necessary.
- the drum and the condition of the contact scrapers with flexible vulcollan bar.
- the condition and the air pressure of the tires (adjust the tire pressure, if necessary: 1.6 bars for standard tires with water filling; for special tires, consult the tire manufacturer.
- the following fill levels:
  - Fuel (Diesel)
  - Hydraulic oil
  - Engine oil
  - Water level for the windscreen washer system
- whether the windows of the cab are dirty - clean the exterior and interior window panes, if required
- whether the exterior mirrors are dirty - clean them, if required.

Tires	Pressure	Equipment
Standard tires	1.2 to 1.6 bar (17.4 to 23.2 psi)	with water filling
Special tires	Please contact the tire manufacturer for information on the required pressure!	

6.2.1 Checking the drum area

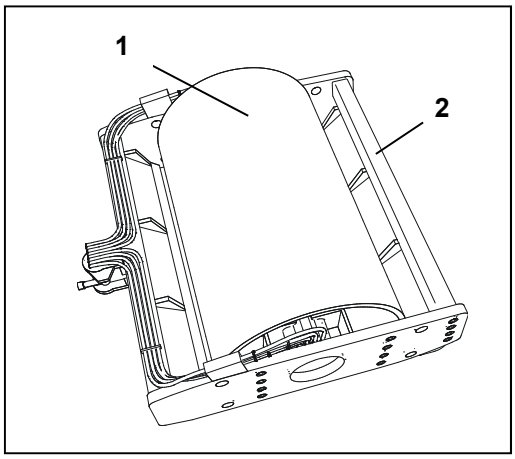


Fig. 13 Checking the scrapers

Before accessing the cab and starting the compaction roller, check its drum area.

Check the scraper(s) of the smooth or pad foot drum and the drive area for the accumulation of dirt.
If required, clean the entire drum area by means of a high pressure washer.

Checking the scrapers:
The smooth roller drum can be equipped with one of the following scraper types:

- Standard scraper, rigid metal bar
- Contact scraper, spring-loaded
- Contact scraper with flexible vulcollan bar.

After cleaning the drum area, check whether the scraper is correctly fitted at the smooth roller drum. If the scraper (**2**) is not properly seated at the smooth drum (**1**), adjust it.

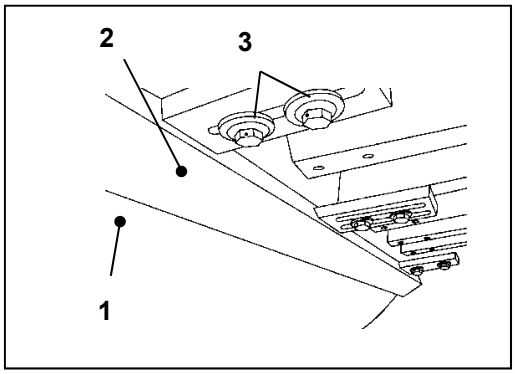


Fig. 14 Standard scrapers

Standard scrapers (with rigid metal bar):

- Loosen the fastening bolts (**3**) of the scraper.
- Move the scraper (**2**) toward the smooth roller drum (1), to a distance of approx. **20 mm**.
- Tighten the fastening bolts (**3**).

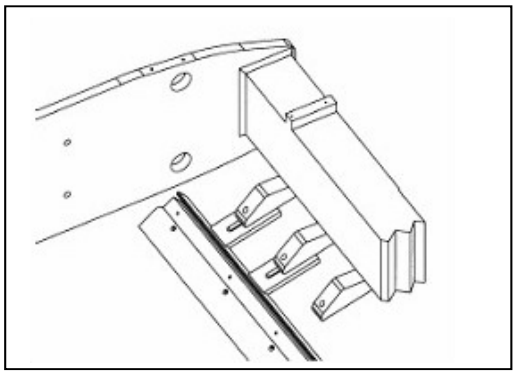


Fig. 15 Contact scrapers

Contact scrapers, spring-loaded or vulcollan bar:
Proceed as described above, but in this case, the scraper in question (flexible or spring-loaded) needs to fit tightly at the smooth roller drum.

6.3 Refueling (Diesel)

Before starting your daily work with the compaction roller, make sure there is a sufficient quantity of Diesel in the fuel tank.

NOTICE	**Environmental protection!** Make sure that neither oil nor fuel can penetrate the soil, pollute water or leak into the sewer system!

Type of fuel	according to standard	temperature range
Diesel	DIN EN 590 Summer Diesel	above / = 0° C
Diesel	DIN EN 590 Winter Diesel	below 0° C to - 15° C
Diesel	DIN EN 590 Super Diesel, see Deutz Service manual	below -15° C to - 20° C

Fig. 16 Filler neck

- Unlock the engine hood and open it.
- The filler neck (**1**) for the fuel tank is located on the left side of the vehicle, behind the cab.
- Open the tank cover and add a sufficient quantity of Diesel fuel.
- Close the tank cover and lock it.

6.4 Opening the door and accessing the vehicle

NOTICE	**Environmental protection!** • Prior to accessing the cab, the checks described above need to be completed, see previous sections. • The upper windows and the door need to be properly locked .

⚠ WARNING	**Danger of falling while getting on/off the compaction roller!** • Dirty shoes may cause you to slip while you are accessing the cab. • Clean the soles of your shoes before getting on the compaction roller. • Always keep stairs and handles dry and clean! • Use handles and steps to access the cab! • Always face the compaction roller while you are getting on the vehicle! • Do not use any control elements as handles!

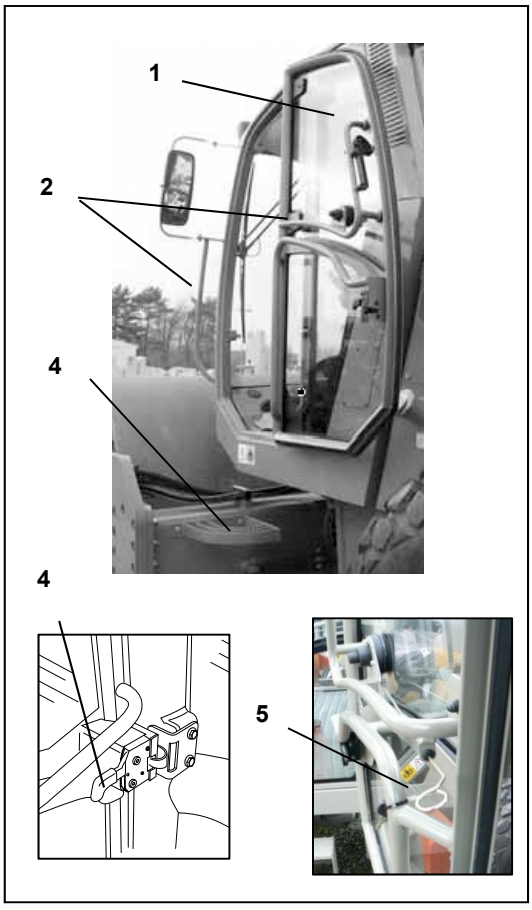


Fig. 17 Opening the door

- Unlock both doors.
- Open the doors with the upper windows (**1**) and make sure the open windows click into place.
- Hold on to both handles (**2**) and use the steps (**4**) to access the cab.
- After accessing the cab, immediately sit down on the driver‘s seat.
- In order to release the doors, actuate the mechanism (**5**) of the release button (**6**).
- After releasing the door, immediately close it and make sure it is securely engaged in the door lock.
-

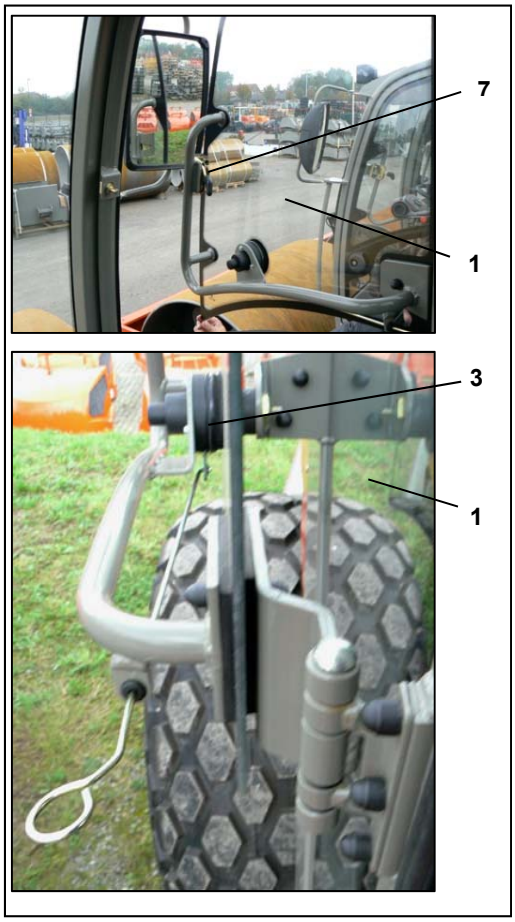


Fig. 18 Opening the windows

Opening and closing a window:

- In order to open a window, release the lock (**7**) and open the window on the desired side of the compaction roller.
- Open the window and make sure it clicks into place (**3**).
- After releasing the window on the driver´s side, close the door and make sure it is securely engaged in the door lock.

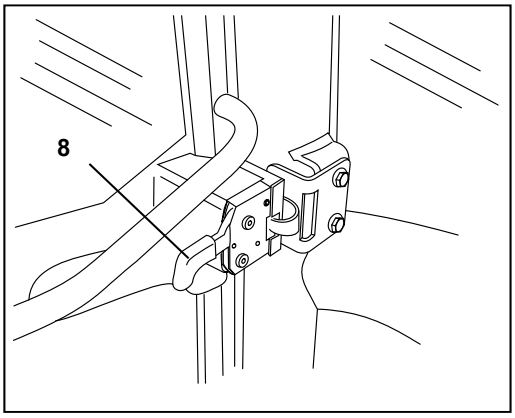


Fig. 19 Opening the door

Opening the door:

- Release the door by means of the door lock lever.
- Open the door until it clicks into place.

NOTICE	Close the window and make sure it is securely fastened before opening the door!

7 Individual settings

7.1 Adjusting the driver´s seat

Features of the driver´s seat:

- Check the features of your driver‘s seat.
- Your seat may not dispose of all the optional features described in this section.

WARNING Always make sure you have made all the required adjustments **before** starting the compaction roller.

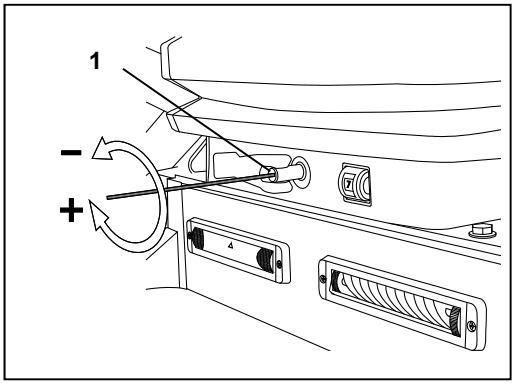


Fig. 20 Weight adjustment

Weight adjustment:

- In order to make the necessary adjustments, the seat has to be unoccupied.
- Turn the adjustment lever (**1**) in the desired direction until it corresponds to your weight.
- The current setting is displayed on the vision panel.

NOTICE The driver‘s seat has been designed for a maximum weight of **130 kg**. In order to prevent damage to your health, check and adjust the settings of the driver‘s seat each time before putting the compaction roller into operation.

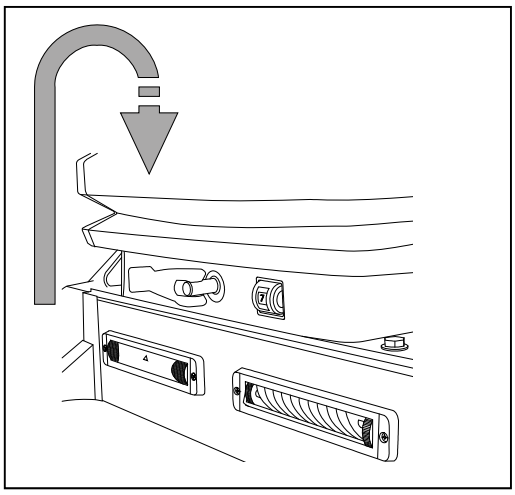


Fig. 21 Height adjustment

Height adjustment:

- Lift the driver‘s seat until it audibly locks into the desired position.
- If you lift the driver‘s seat beyond the maximum height (stop), the seat will move back to its lowest position.

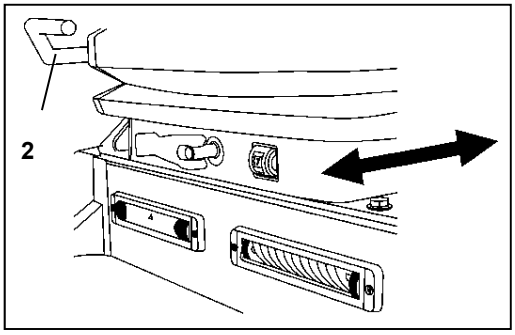


Fig. 22 Longitudinal adjustment

Longitudinal adjustment

- Make the necessary adjustments by means of the corresponding locking lever (**2**).
- Lift the locking lever and move the driver‘s seat into the desired position until the locking lever clicks into place.

⚠ WARNING	After making the required adjustments, ensure that the locking lever has clicked into place. If this is the case, the position of the driver‘s seat is fixed, i.e. it must not be possible to move it into another position any more!

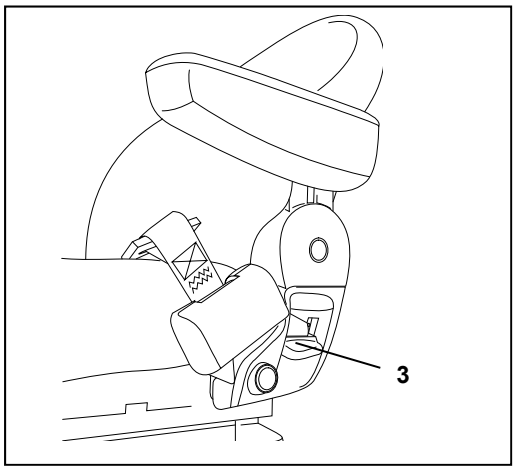


Fig. 23 Backrest inclination

- Adjust the backrest by means of the corresponding lever (**3**).
- Lift the locking lever and move the backrest into the desired position.
- Check whether the locking lever (**3**) has clicked back into place after you have made the adjustment.

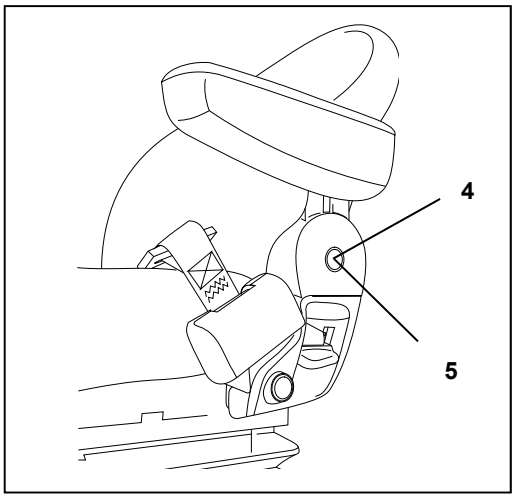


Fig. 24 Left armrest

- The armrest on the left is foldable and its height can be adjusted.
- In order to adjust the height of the left armrest, remove the cap (**4**) covering the adjusting nut.
- Loosen the adjusting nut (**5**).
- Move the armrest to the desired height and tighten the adjusting nut again.
- Attach the cap.

⚠ WARNING	After making the required adjustments, ensure that the locking lever has clicked into place. As long as it is still possible to move the seat or the backrest, you may not start the compaction roller!

7.2 Adjustable steering column

In order to establish an ergonomically correct position, you may have to adjust the steering column to your individual needs.

⚠ WARNING	**Risk of accidents and injury due to incorrect steering column position!** • If the distance between the driver and the steering wheel is too small or too big while the driver is properly seated on the driver`s seat and the safety belt is fastened, the steering column needs to be adjusted. • Atfer making the adjustments, make sure that the steering column is safely locked. As long as it can still be moved, you must not start the machine.

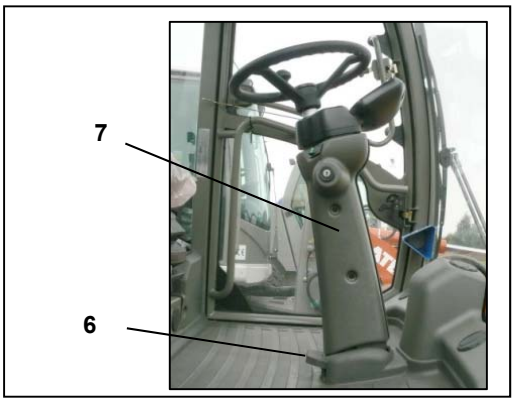


Fig. 25 Adjusting the steering column

Adjusting the steering column:

- Step on the latch (**6**) of the steering column.Move the steering column (**7**) into the desired position.
- Release the latch (**6**) which locks the steering column in its current position.

7.2.1 Adjusting the exterior mirrors

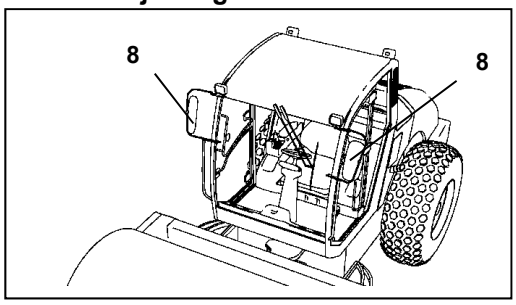


Fig. 26 Adjusting the exterior mirrors

Adjusting the exterior mirrors:

- The exterior mirrors (**8**) are installed at the right and left side of the front frame of the cab.
- The mirrors can be turned and their inclination adjusted.
- Adjust the exterior mirrors (**8**) in a way that ensures the best possible view from the driver‘s seat.

7.2.2 Fastening the safety belt

DANGER	**Risk of death!** Fastening the safety belt before starting the Diesel engine and before driving the compaction roller is of vital importance to your safety! After locking it, the safety belt has to fit tightly.

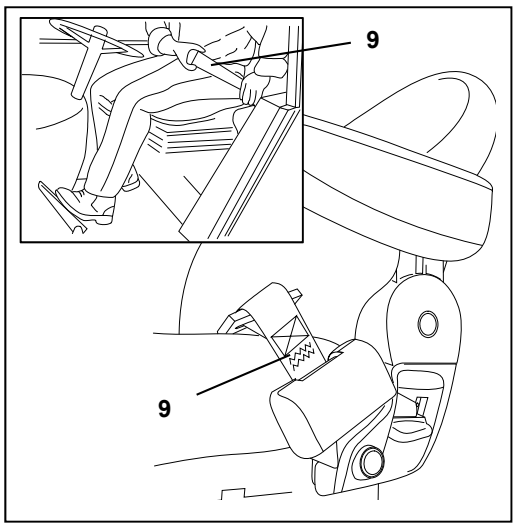


Fig. 27 Safety belt

- The safety belt (**9**) is part of the driver‘s seat and can be found at the left side of the seat.
- Sit down on the driver‘s seat.
- Take the clasp of the safety belt and pull the belt around your upper body.
- Attach the clasp to the lock of the safety belt.
- Ascertain that the clasp audibly clicks into the lock and is securely fastened.

7.3 Driver´s seat: Optional features

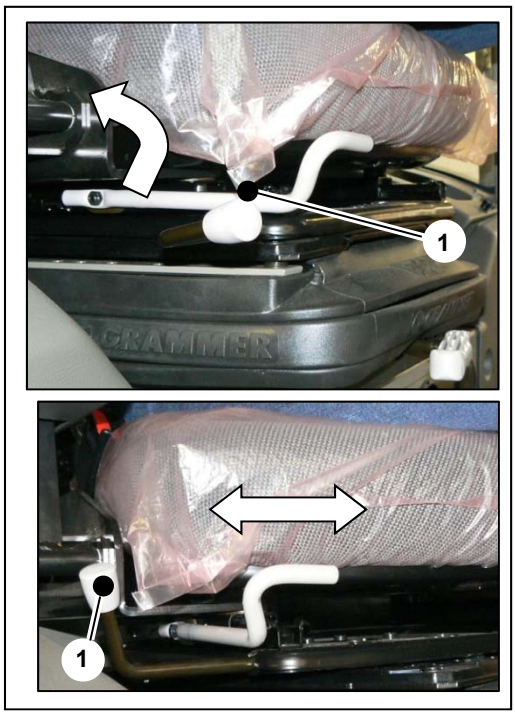


Fig. 28 Turnable seat

If your driver‘s seat is turnable, you can swivel it to the right.
The armrest with the joystick is adjusted with the driver’s seat.
Pull the lever upwards (**1**) to the back.
Turn the seat in the desired direction.
Lock the position of the seat by pressing down the lever (**1**).

⚠ WARNING

Risk of accidents and injuries!
Never adjust the seat while the compaction roller is in motion!

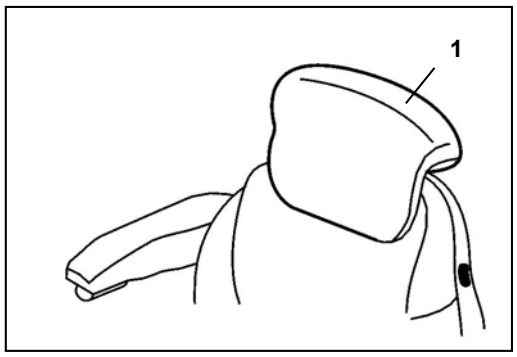


Fig. 29 Backrest extension

- The **backrest extension** (**1**) may be adjusted by pulling it to the desired height.
- In order to cancel the back rest extension, pull past the limit stop.

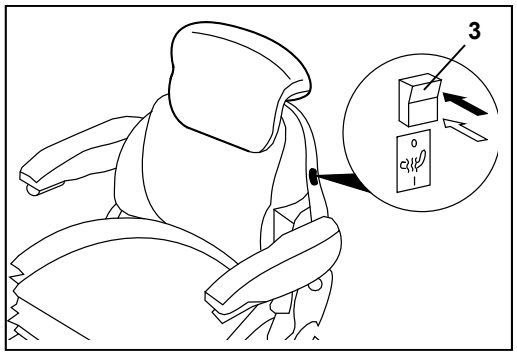


Fig. 30 Seat heating

- Activate the **seat heating** by actuating the switch (**3**) in the backrest.

8 Control elements and displays in the cab

8.1 Overview: Dashboard

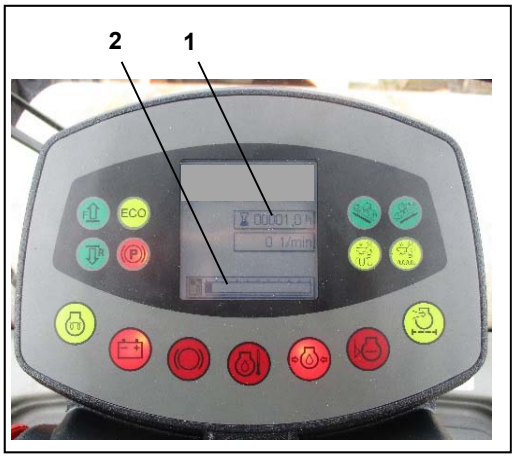


Fig. 31 Dashboard

The dashboard of the compaction roller provides the driver with important information regarding the vehicle‘s functions and operating conditions by means of displays, symbols and lights.

1 Operating hour meter
2 Fuel level in the tank

8.1.1 Display

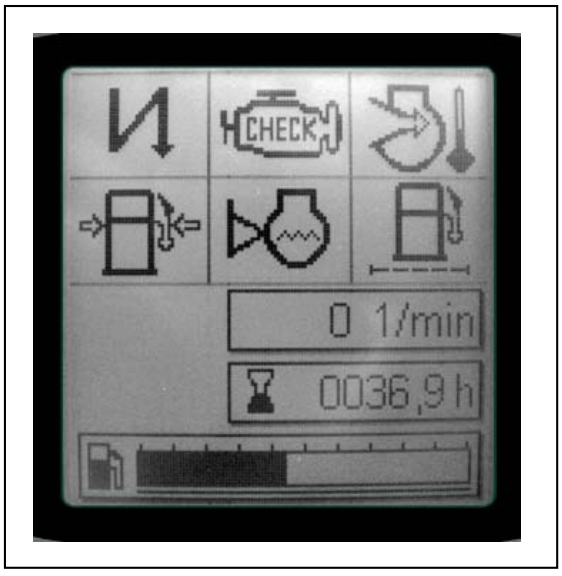


Fig. 32 Display

The symbols on the display represent error messages and maintenance alerts.

Symbol	Function	Description
	**Display Parking Brake (red)**	Activation indicates the application of the parking brake. The Diesel engine can only be started with the parking brake applied. If the parking brake is applied during operation, the compaction roller stops.
	**Display Forward motion (green)**	Indicates that the compaction roller is moving forward
	**Display Reverse motion (green)**	Indicates that the compaction roller is moving backward
	**Display ECO Speed Option (yellow)**	Lights up on activation of the ECO speed mode, see chapter on the compaction of soil with ECO speed.
	**Display Preheating (yellow)**	LED lights up while the Diesel engine is being preheated (ignition lock position I) and goes out as soon as the starting temperature is reached.
	**Charge control (red)**	Lights up on activating the ignition. Goes out after the Diesel engine and the generator have started.
	**Brake pressure (red)**	Red light indicates insufficient hydraulic oil pressure in the brake system.
	**Diesel engine oil temperature (red)**	If this lamp lights up, immediately stop the compaction roller and let the Diesel engine idle to cause the engine oil to cool! See Deutz operating manual.
	**Diesel engine oil pressure (red)**	If this symbol lights up, stop the diesel engine and do not resume operation before the problem has been eliminated.
	**Coolant fill level Diesel engine (red)**	Indicates an insufficient level of coolant in the cooling circuit, see chapters on maintenance.
	**Accumulation of dirt in the air filter**	If this lamp lights up, clean / replace the filter, see chapters on maintenance.
	**Display high amplitude (yellow)**	Indicates that “**high** amplitude“ has been selected by means of the switch “soil compaction“ on the panel next to the joystick .
	**Display low amplitude (yellow)**	Indicates that “**low** amplitude“ has been selected by means of the switch “soil compaction“ on the panel next to the joystick .
	**Override function drum (green)**	Indicates that the switch “Override function hydraulic engine drum“ on the panel next to the joystick is **activated**. The engine is manually set to its highest swallowing capacity (maximum rotational speed).
	**Optional feature: Rear axle drive (green)**	Indicates that the switch for the HD system of the rear axle has been turned **on**.

8.1.2 Status and error messages

Symbol	Function	Description
	**CAN Bus Failure (Electronic error)**	Start the Diesel engine again. Contact the *Hyundai* service team.
	**General fault message Diesel engine**	Permanent activation indicates faults related to the engine. Please contact the customer service of the diesel engine manufacturer.
	**Charge air temperature**	The charge air temperature is too high.
	**Preliminary fuel pressure**	Insufficient preliminary fuel pressure
	**STOP Lamp (Critical fault message Diesel engine)**	Flashing symbol indicates a critical Diesel engine error. Stop the Diesel engine immediately! Please contact the customer service of the diesel engine manufacturer and do not resume the operation of the compaction roller unless the problem has been eliminated.
	**Water in fuel**	Immediately empty the preliminary fuel filter.

8.1.3 Switches in the steering column

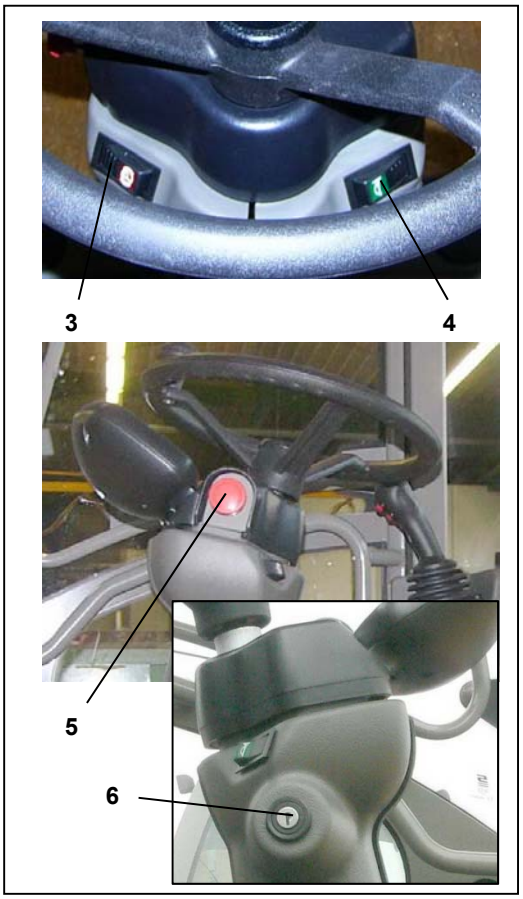


Fig. 33 Switches steering column

Below the dashboard, switches, buttons and the ignition lock can be found.

- Switch parking brake (**3**)
- Switch horn (**4**)
- Emergency stop push-button (**5**) on the left side.
- Ignition lock (**6**) on the right side.

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, push the **emergency stop push-button (5)**.

8.1.4 Warning features

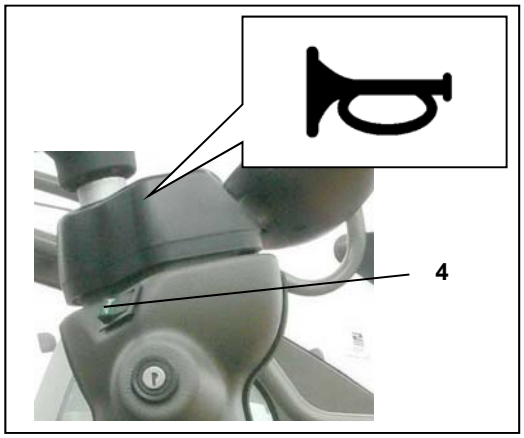


Fig. 34 Horn

Horn
In order to activate the horn, press the button (**4**) on the steering column.
The warning sound continues as long as the button (**4**) is pressed.

NOTICE	The horn is to be used as an acoustic warning device in exceptional cases only.

8.1.5 Joystick and panel of switches in the right armrest

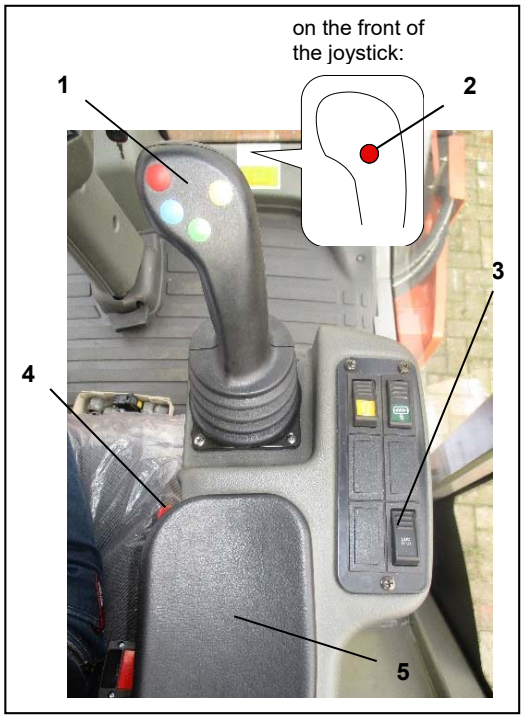


Fig. 35 Joystick & panel of switches

The console of the adjustable armrest on the right features the controls for the functions of the compaction roller:

- Control lever / Joystick (**1**)
- Button Vibration on/off on the front of the joystick (**2**)
- Panel of switches: Roller functions (**3**)
- Armrest lock (**4**)
- Right armrest (**5**)

- You can adjust the right armrest (**5**), e.g. in order to get on or off the vehicle, by pressing the locking button (**4**).
- In order to get on / off the vehicle, move the armrest (**5**) into the rear position. In order to work, move it into the front position.

⚠ WARNING

Risk of accidents and injuries!
Never adjust the armrest with the compaction roller in motion!

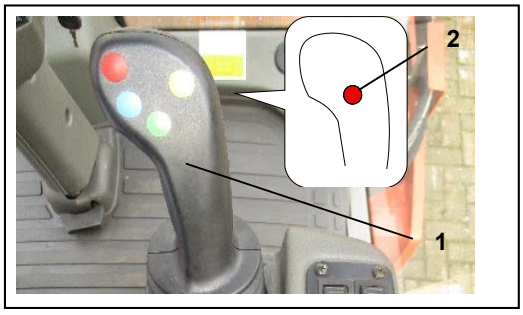


Fig. 36 Joystick functions

Functions of the joystick:

- The control lever/joystick (**1**) in the right armrest is used to set the direction of motion and the driving speed of the compaction roller.
- The red button (“Vibration on/off”, **2**) can be found on the front of the joystick.

NOTICE

- The more the control lever is moved into the desired direction of motion, the higher the speed of the compaction roller.
- As soon as the control lever has reached the end position, the maximum speed is set.
- Putting the joystick into the neutral position **N** stops the compaction roller.

Fig.37 Functions of the switches

Panel of switches in the right armrest:
The switches in the panel of switches (**3**) in the right armrest control the functions for driving and vibration.

Selector switch Vibration type soilcompaction (**3.1**):
Middle position (**0**) = Vibration off

- Front pressed down (**H**) =
  Deep compaction / high amplitude
- Rear pressed down (**L**) =
  Surface compaction / low amplitude

- Override Hydraulic motor Drum on/off (**3.2**)
  (see section on HA control in this manual)

w/o illustration, optional feature:

- Switch HD system rear axle (**3.3**)
- Serves to activate / deactivate the 2nd stage of the rear axle.
- Front of switch pressed down: 1st stage, low tractive power
- Rear of switch pressed down: 2nd stage, high tractive power

NOTICE	By setting the type of vibration, the vibration itself has not been activated.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** These settings are required in order to drive on heavy soil and on slopes. Please refer to the corresponding sections in this operating manual.

8.1.6 Panel of switches below the roof of the cab

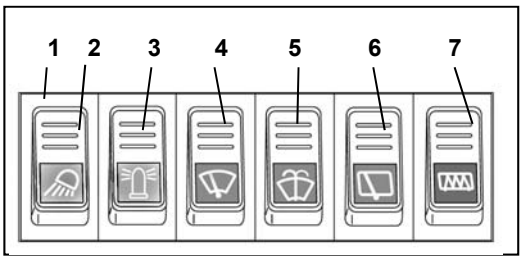


Fig. 38 Panel of switches

The switches on the panel (**1**) below the cab roof serve to activate / deactivate the following functions:

- Front and rear work lights (**2**)
- Rotating light (optional feature), **3**)
- 2-stage front wiper (**4**)
- Front windscreen washer system (**5**)
- Rear wiper and rear windscreen washer system (**6**)
- Rear window heating (**7**)

8.1.7 Heating & ventilation

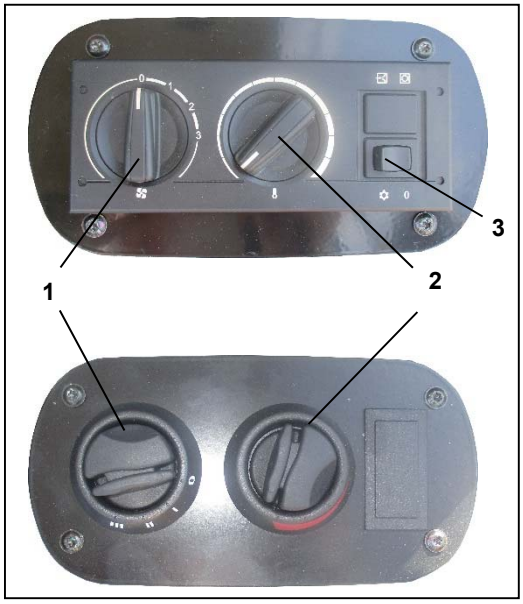


Fig. 39 Controls heating & ventilation

The controls for heating and ventilation are installed on the panel to the left of the driver‘s seat.

Top: Heating & ventilation unit with optional feature A/C (**3**)

Bottom: Standard heating & ventilation unit, without A/C

- Rotary switch (**1**) fan stages 0, I - III.
- Rotary switch (**2**) heating,
- Switch (**3**) A/C on / off (optional feature).

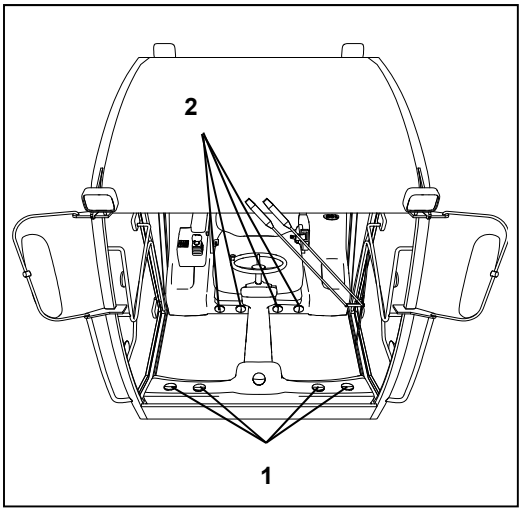


Fig. 40 Air nozzles in the cab

Distribution of air:
In the cab, the following devices serve to ensure the air supply:

- 5 air nozzles in the front console (**1**),
- 4 air nozzles below the driver‘s seat (**2**).

9 Starting, driving and stopping the compaction roller

9.1 Prior to starting

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • Inform yourself of all issues related to operating the compaction roller. • Read the safety instructions before starting the compaction roller. In addition to this, be sure to observe the national and local laws and directives concerning the operation of earth-moving construction machines. In case of doubt, contact your local *Hyundai* dealer.

9.2 Starting the Diesel engine

NOTICE	Prior to putting the compaction roller into operation, the necessary daily checks and maintenance measures need to have been completed (see **Inspection Certificate A**).

NOTICE	**Battery main switch (optional feature)** If your compaction roller is equipped with a battery main switch, it needs to be switched on before activating the ignition. In order to do so: • Open the engine hood. • Switch on the battery main switch.

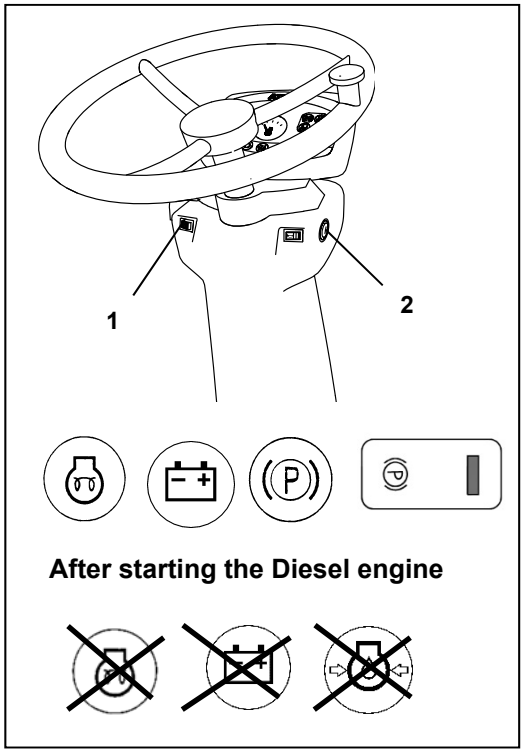


Fig. 41 Starting the Diesel engine

- Insert the ignition key into the ignition lock (**2**) and activate the ignition.
- Apply the parking brake (**1**). As soon as the ignition has been activated, the symbol indicating the application of the parking brake lights up on the dashboard.
- Turn the ignition key to the right:
- Position **I**: Ignition on and preheating. The symbol for preheating goes out after the preheating phase is completed. The symbols for charge control and for engine oil pressure light up.
- Position **II**: Start. The symbols for charge control and for engine oil pressure must automatically go out after the Diesel engine has started.
- As soon as the engine has started, immediately release your grip on the ignition key.

⚠ WARNING	A warming-up phase of **10 minutes** with the Diesel engine running at idle speed is required prior to driving the compaction roller or to carrying out any movements of the attachments! The functions of the hydraulic system are not available before the hydraulic oil has sufficiently warmed up!

⚠ WARNING	**Risk of injuries!** Be sure to fasten the safety belt before starting the Diesel engine!

9.2.1 Trouble-shooting: Diesel engine start

If the diesel engine does not start, make sure that:

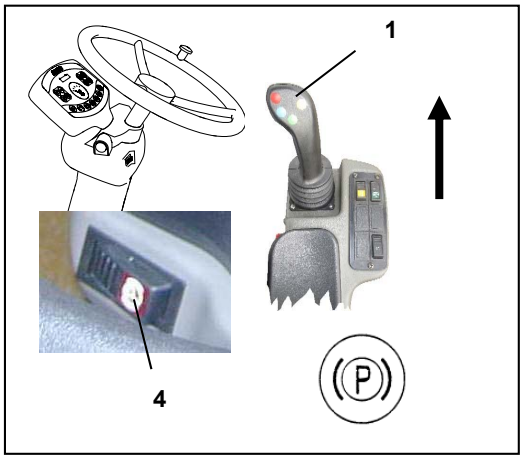
- the parking brake is applied
- the battery main switch (if installed) is switched on
- the battery is sufficiently charged
- there is enough Diesel in the fuel tank
- the engine compartment is faultless by performing a visual inspection

If the problem persists, contact the *Hyundai* service staff.

9.3 Driving the compaction roller

⚠ WARNING	**Risk of accidents and injuries!** • Always fasten the safety belt before driving the compaction roller! • Driving the compaction roller with the doors open is strictly prohibited! • You may open the windows before starting.

9.3.1 Forward motion: start



- Deactivate (i.e. release) the parking brake by means of the switch (**4**). The symbol indicating the activation of the parking brake goes out.
- Please note that, for safety reasons, after releasing the brake, you need to wait for a few seconds before the joystick can be moved out of its neutral (middle) position.
  - Make sure that the selector switch for setting the type of vibration is in the middle position **0**.
  - Hold on to the steering wheel.
  - Move the joystick (**1**) forward.
  - The symbol indicating forward motion lights up on the dashboard.
  - The compaction roller starts to move forward.

Fig. 42 Forward motion

NOTICE	The farther you move the joystick forwards, the higher the speed of the compaction roller. As soon as the joystick has reached the end position, maximum speed is set. Setting the joystick to the neutral position "**N**" causes the compaction roller to stop.

9.3.2 Forward motion: stop

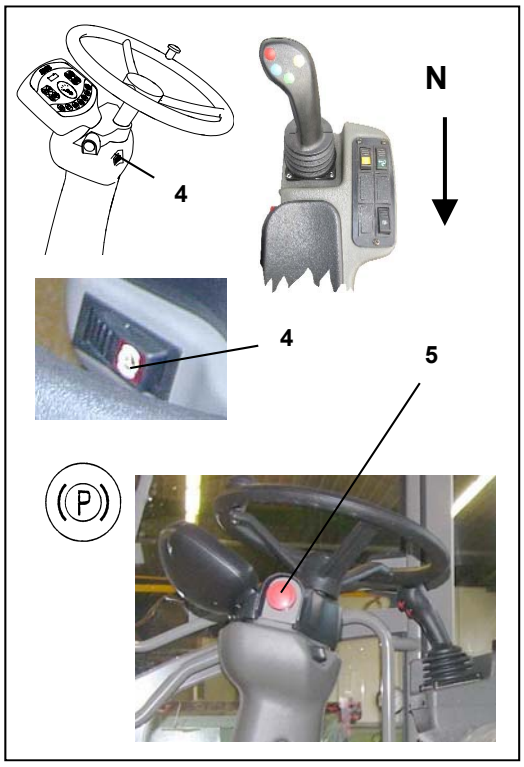


Fig. 43 Stopping forward motion

- Stop the forward motion by means of the joystick (**1**) or, in the event of an emergency, by pressing the emergency stop pushbutton (**5**).
- Move the joystick back to the neutral position **N**. The compaction roller stops.
- Apply the parking brake via switch **4**.
- The symbol indicating the activation of the parking brake lights up on the dashboard.

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button (5)**.

9.3.3 Reverse motion: start

⚠ WARNING	**Risk of accidents!** • Prior to any reverse movement of the compaction roller, make sure that your view to the rear is unobstructed! • Before and while driving backwards, always check the area behind you by looking backwards.

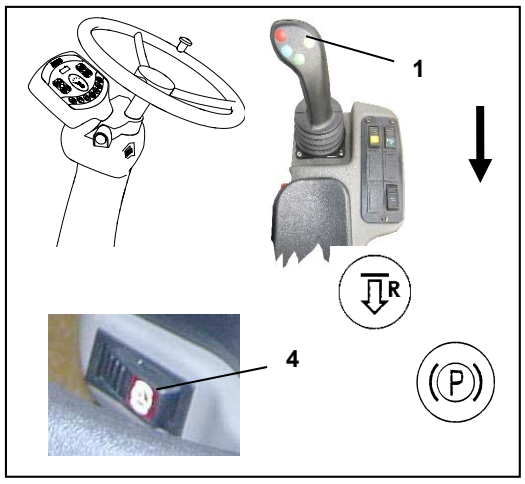


Fig. 44 Reverse motion

Deactivate (i.e. release) the parking brake by means of the switch (**4**). The symbol indicating the activation of the parking brake goes out.

- Make sure that the selector switch for setting the type of vibration is in the middle position **0**.
- Hold on to the steering wheel.
- Move the joystick (**1**) backward.
- The symbol indicating reverse motion lights up on the dashboard.
- The compaction roller starts to move backward.

NOTICE	The farther you move the joystick backwards, the higher the speed of the compaction roller. As soon as the joystick has reached the end position, maximum speed is set. Setting the joystick to the neutral position “**N**” causes the compaction roller to stop.

9.3.4 Reverse motion: stop

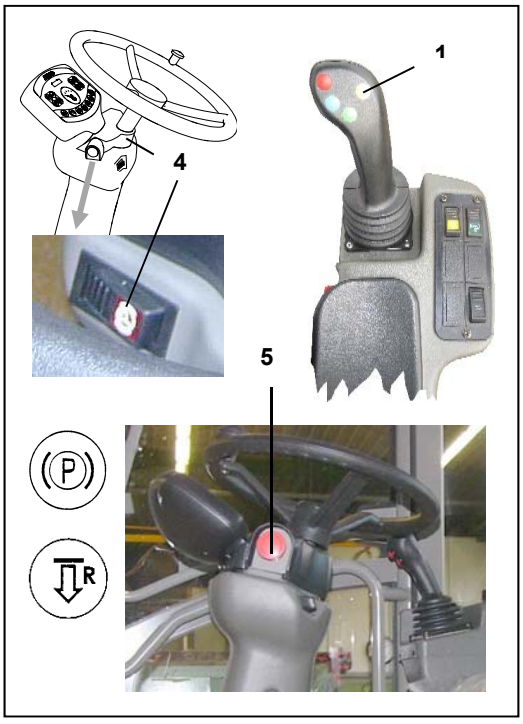


Fig. 45 Stopping the reverse motion

Stop the reverse motion by means of the joystick or, in the event of an emergency, by pressing the emergency stop push-button (**5**).

- Move the joystick back to the neutral (**N**) position. The compaction roller comes to a stop.
- Apply the parking brake by actuating the switch **4**.
- The symbol indicating the activation of the parking brake lights up on the dashboard.

DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button (5)**.

9.3.5 Changing direction

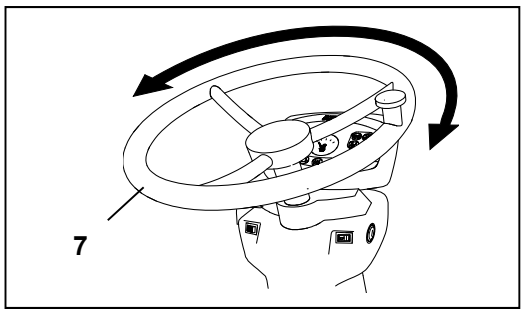


Fig. 46 Steering motions

- Turn the steering wheel (**7**) in the desired direction of motion.
- Turning the steering wheel to the right causes the
- compaction roller to turn right.
- Turning the steering wheel to the left causes the compaction roller to turn left.
- The steering angle determines the turning radius.

9.3.6 Driving in the rain

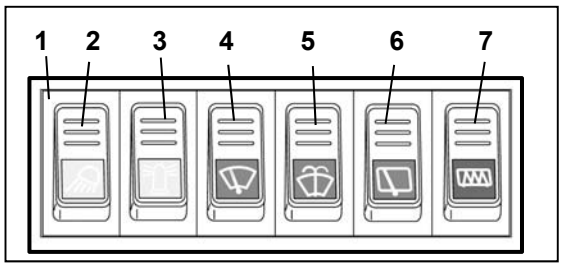


Fig. 47 Switches wipers

Front & rear wipers:

- Activate the front wiper by means of the switch (**4**) on the panel at the cab roof (**1**).
- In case the front screen is dirty, press the switch for the windscreen washer system (**5**) and clean the front screen.
- Activate the rear wiper by means of the corresponding switch (**6**) on the panel at the cab roof (**1**).
- If the rear window is icy or steamed up, actuate the switch for the rear window heating (**7**).

⚠ WARNING	**Risk of accidents!** • If the windows are fogged up or icy or if fog or precipitation cause restricted visibility,immediately stop the vehicle or reduce its speed to render an instant stop possible. Do not resume operation unless a sufficient allround view has been attained.

9.3.7 Driving in the dark or with restricted visibility

⚠ WARNING	**Risk of accidents!** Make sure the work lights are always activated while operating the compaction roller.

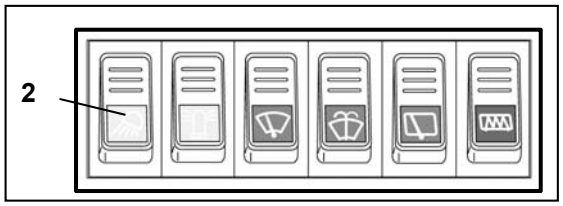


Fig. 48 Switch work lights

Activation of the work lights:

- The switch for the front and rear work lights (**2**) is installed on the panel at the cab roof.
- At dusk, immediately activate the front and rear work lights by means of the corresponding switch (**2**).

⚠ WARNING	**Danger due to limited visibility!** If the visibility range, despite of the activation of the working lights, is shorter than the braking distance of the compaction roller, immediately stop the operation of the compaction roller.

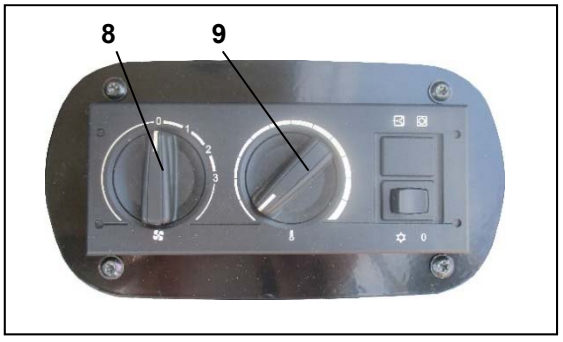


Fig. 49 Fogged up windows

Fogged up or icy windows:

- If the windows are fogged up, set the fan to the highest stage by means of the corresponding rotary switch (**8**).
- Set the rotary switch for the heating (**9**) to the red area.
- Adjust the air nozzles so the warm air flow points to the cab windows.
- In case the rear window is fogged up, actuate the switch for the rear window heating (**7**) on the panel at the cab roof.

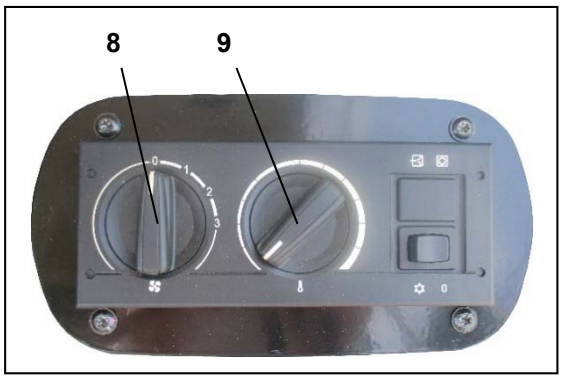


Fig. 50 Heating & ventilation

Heating & ventilation:

- The heating is fed by the warm cooling water of the Diesel engine.
- Use the rotary switch for the fan to set the fan to the desired stage.
- Set the rotary switch for the heating to the red area.
- Adjust the air nozzles to distribute the warm air in the cab.
- Warm air enters the cab as it flows through the ventilation slots at the cab windows and below the driver‘s seat.
- The filter mat in the air intake opening needs to be clean (see chapters on maintenance for further information) to ensure an unrestricted air supply for the fan.
- Ventilation (A/C as an optional feature)

9.4 Line-of-sight obstruction

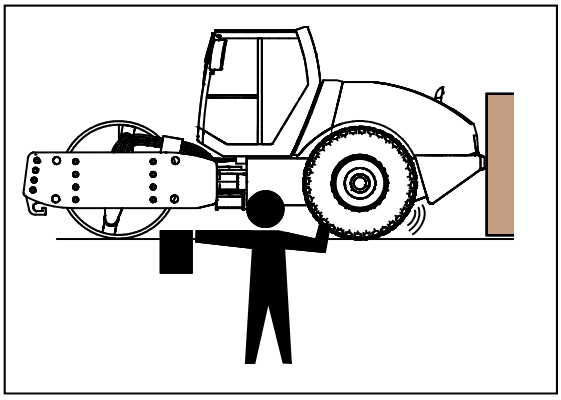


Fig. 51 Giving hand signals & instructions

In order to compensate for the drawbacks caused by line-of sight obstruction, the following measures are to be taken:

- Find a skilled person to give you the required instructions and hand signals.
- Block access to the operating area of the compaction roller.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • In countries where official regulations concerning this issue exist, a special permit must be obtained. • In Germany, an official authorization subject to §70 StVZO is required in the event of a line-of-sight obstruction as defined by §35b StVZO. • The control elements of the vehicle must allow for easy and safe operation. • A sufficient field of vision must be ensured for the driver at all times, regardless of the operating and weather conditions.

9.5 Stopping and parking the compaction roller

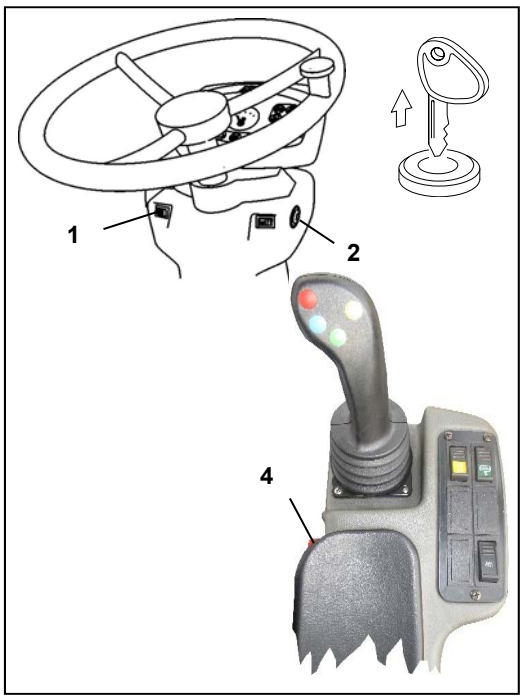


Fig. 52 Parking the compaction roller

Stopping the Diesel engine:

- Stop the compaction roller on solid and level ground.
- In order to stop the compaction roller, set the joystick to the neutral (**N**) position.
- Actuate the switch (**1**) to apply the parking brake. The corresponding symbol lights up on the dashboard.
- Turn the ignition key counterclockwise into the neutral position and remove it from the ignition lock (**2**).
- Press the locking button (**4**) in the right armrest and move it to the rear position in order to get off the vehicle.

NOTICE	Never shut off the Diesel engine while it is running at a high engine speed. Let the Diesel engine idle until a temperature compensation has been established.

NOTICE	**Battery main switch (optional feature)** In case your machine is equipped with a battery main switch, after stopping the diesel engine, wait for a minimum of **60** seconds before pulling out the ignition key and switching off the battery main switch.

9.5.1 Leaving the compaction roller

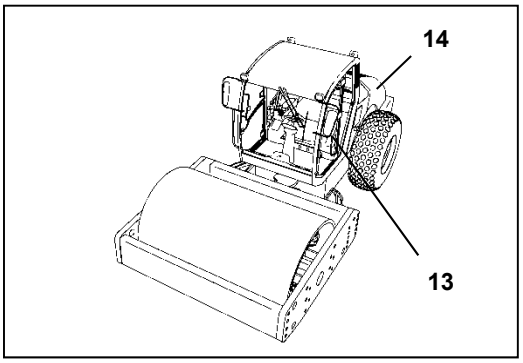


Fig. 53 Leaving the compaction roller

After leaving the cab, lock the door (**13**) and the engine hood (**14**).
In addition, use wheel chocks to secure the compaction roller against rolling.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** If you intend to park the compaction roller in areas that are part of public road traffic, be sure to observe the applicable regulations, safety guidelines and laws.

10 Driving on heavy soils and on slopes

10.1 HA control (Optional feature)

The hydraulic HA (rear axle) control can be used to drive the compaction roller on level grounds or on slopes, either with or without vibration.

10.1.1 Overriding the hydraulic HA control

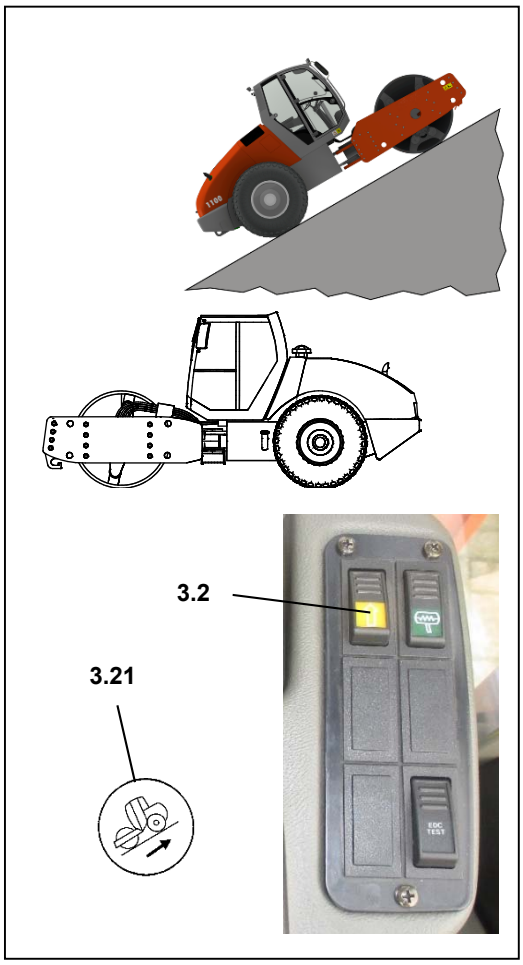


Fig. 54 HA control

In certain situations, e.g.

- when starting the compaction roller with the rear wheels or the drum sunk into the ground or
- while driving at a carefully set speed or
- for driving on slopes,

it may be necessary to override the HA control.

- In order to do so, actuate the switches “Override function Drum” (**3.2**), which deactivates the HA control at the roller drum.
- Rear of the switch pressed down: HA control **off**.
- The corresponding symbol on the dashboard (**3.21**) lights up.
- The maximum driving torque is established at the roller drum.

⚠ WARNING	**Danger due to insufficient stability and lack of propulsion** If, even with the override function activated, the required thrust cannot be established, do not continue operation on the slope in question and back up.

NOTICE	The HA control prevents the drum from spinning on slopes or in heavy terrain.

10.2 HD system of the rear axle

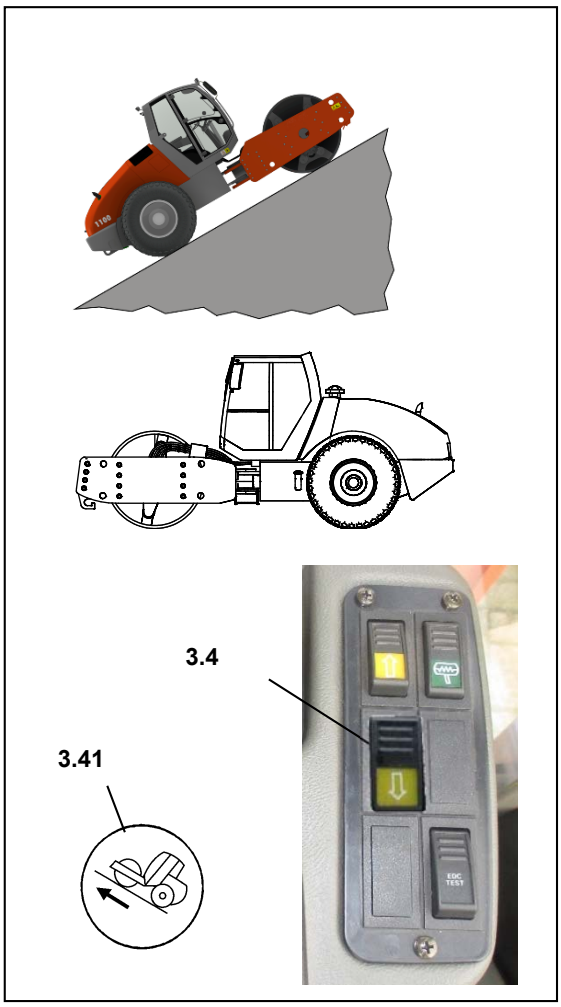


Fig.55 HD system

If your compaction roller disposes of the HD system for the rear axle drive, you may activate it while driving on slopes or on slippery grounds.

- Set the desired stage by means of the switch for the HD system of the rear axle (**3.4**).
- Switch pressed down at the front: 1st stage, low tractive force (default mode for driving the compaction roller).
- Switch pressed down at the rear: 2nd stage, high tractive force (on slopes or in heavy terrain).
- The corresponding symbol (**3.41**) on the dashboard lights up.
- If the 2nd stage is set, the maximum driving torque is established at the rear wheels.

NOTICE	**Material damage** If, even with the 2nd stage activated (i.e. high tractive force established), the required thrust cannot be established, do not continue operation on the slope in question and back up.

10.3 Slopes

⚠ WARNING	**Danger of tipping!** Never drive or park the compaction roller across slopes, as operation involving lateral inclinations increases the danger of tipping. Never turn the vehicle around on a slope! Take the maximum climbing ability (gradeability) of the compaction roller into account.

10.3.1 Maximum gradeability of the compaction rollers (depending on the ground)

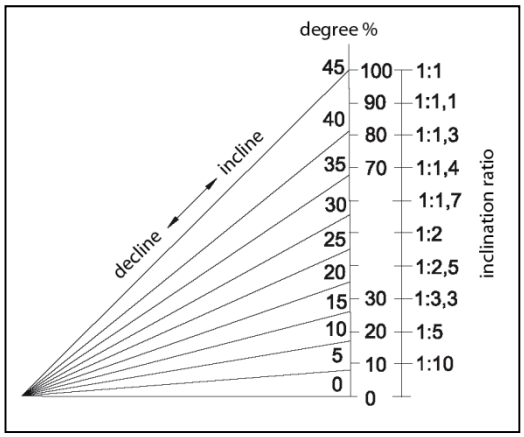


Fig. 56 Gradeability

Table:

Type	w/ compaction (%)	w/o compaction (%)
1070e	45	50

See illustration on the left for information on the inclination ratio.

NOTICE	**Material damage** The gradeability of the compaction roller depends on the type of soil and can vary for different soil characteristics.

10.3.2 Operation on slopes: Start

Fig. 57 Driving on slopes

- Turn off (i.e. release) the parking brake by means of the switch (**3**), which causes the corresponding symbol on the dashboard to go out.
- Check whether the switch for selecting the type of vibration is set to the middle position **0**.
- Hold on to the steering wheel.
- Move the joystick (**1**) into the desired direction (drum or rear end of the compaction roller ahead).

⚠ CAUTION	Going uphill or downhill, always drive very slowly and avoid aprupt steering motions!

10.3.3 Driving uphill with the roller drum ahead

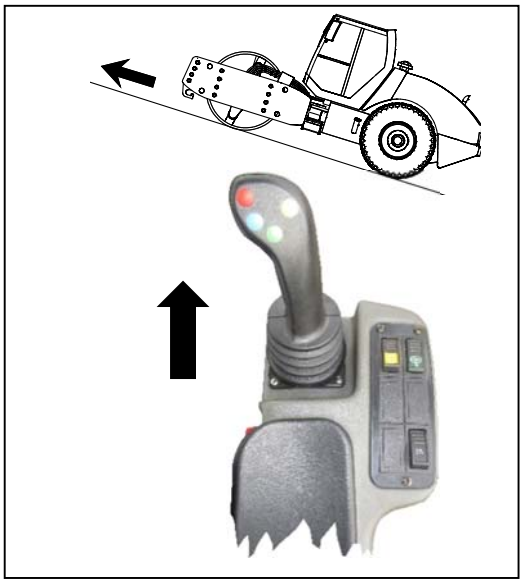


Fig. 58 Uphill, forward motion

For uphill forward motion, the roller drum needs to point uphill, in the direction of motion.

The operating procedure for driving uphill with the roller drum ahead is basically identical to forward travel:

Move the joystick forward to set the compaction roller in motion and drive uphill.

10.3.4 Driving uphill with the rear end ahead

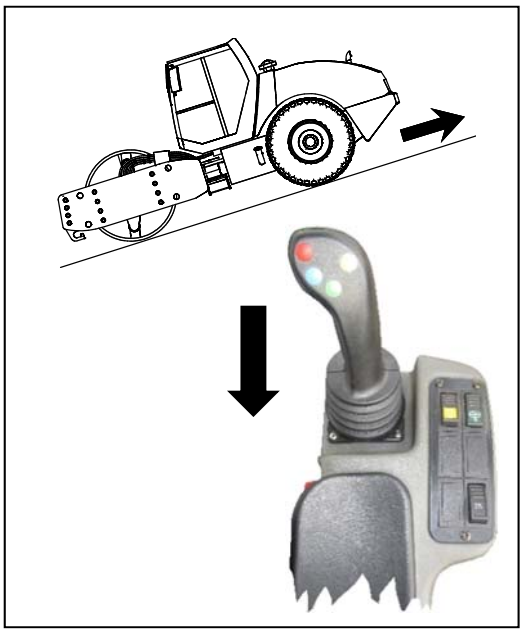


Fig. 59 Uphill, reverse motion

For uphill reverse motion, the rear of the compaction roller needs to point uphill, in the direction of motion.

The operating procedure for driving uphill with the rear end ahead is basically identical to reverse travel:

Move the joystick backward to set the compaction roller in motion and drive uphill in reverse.

10.3.5 Driving downhill

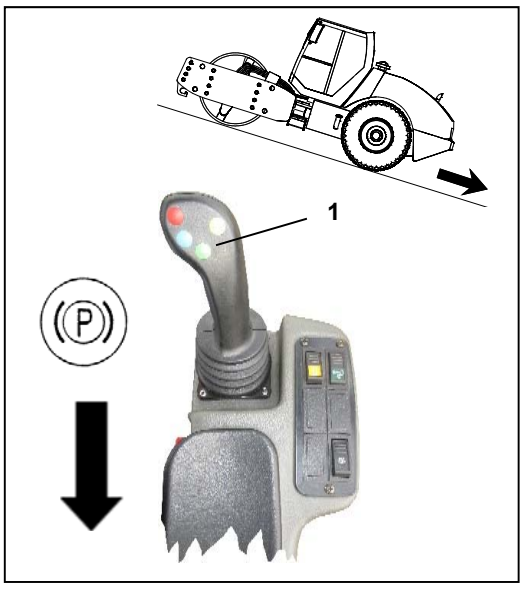


Fig. 60 Driving downhill

For downhill reverse motion, the rear of the compaction roller needs to point downhill, in the direction of motion.

- Check whether the switch for selecting the type of vibration is set to the middle position **0**.
- Hold on to the steering wheel.
- Move the joystick (**1**) backward for downhill reverse motion.

10.3.6 Stopping the operation on slopes

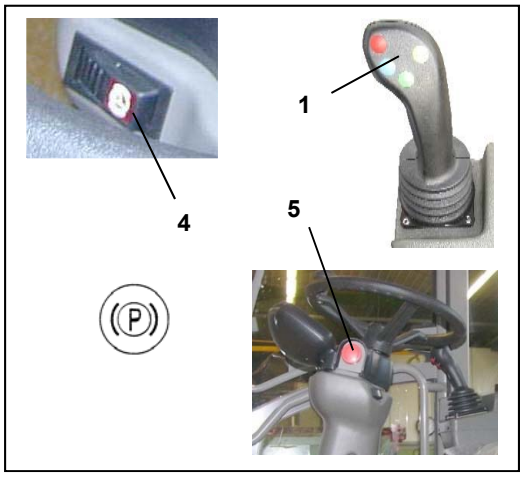


Fig. 61 Stopping the operation on slopes

Stop the compaction roller by actuating the joystick (**1**) or, in the event of an emergency stop, by means of the emergency stop push-button (**5**).
Move the joystick back into the neutral (**N**) position.
Press the switch (**4**) to apply the parking brake. The symbol indicating the activation of the parking brake lights up on the dashboard.

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button (5)**.

⚠ DANGER	**Risk of death!** To prevent the compaction roller from rolling, be sure to secure it by placing wheel chocks under the rear wheels after every operation. If the compaction roller is parked on a slope and needs to be towed, make sure that the rear wheels and the drum are adequately secured!

11 Towing the compaction roller

11.1 Safety instructions referring to the towing process

⚠ WARNING	**Precautionary measures for towing!** The towing preparations and the towing process itself may only be carried out by experienced and skilled persons who have undergone the specific training required for these measures. Make sure the towing vehicle disposes of the required tractive force. The total weight of the compaction roller needs to be taken into account, see chapter **Technical specifications**.

⚠ WARNING	**Towing distance!** The compaction roller may only be towed within the working zone. The towing distance is to be kept as short as possible and may not exceed **500 meters / 550 yards.**

NOTICE	**Material damage** • Before starting the towing process, make sure that the required preparations at the driving hydraulics and the parking brake have been completed. • Set the towing vehicle in motion very slowly. • Maximum towing speed: **1 km/h / 0.62 mph.**

11.2 Measures to be taken prior to towing

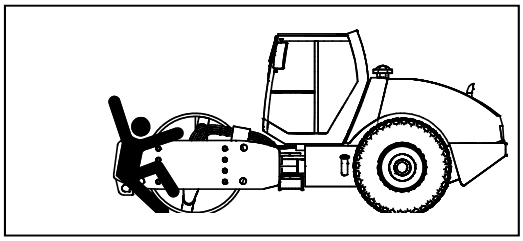


Fig. 62 Danger of rolling

Put wheel chocks under the rear wheels and the drum!

⚠ DANGER	**Risk of death!** Use the wheel chocks to prevent the compaction roller from rolling, since there is no braking effect after releasing the parking brake and the HP valves! If the compaction roller is parked on a slope and needs to be towed, make sure that the rear wheels and the drum are adequately secured!

11.2.2 Releasing the parking brake and the HP valves

DANGER	**Risk of death!** If the compaction roller is not properly secured against rolling, you must **not** carry out any of the work described below.

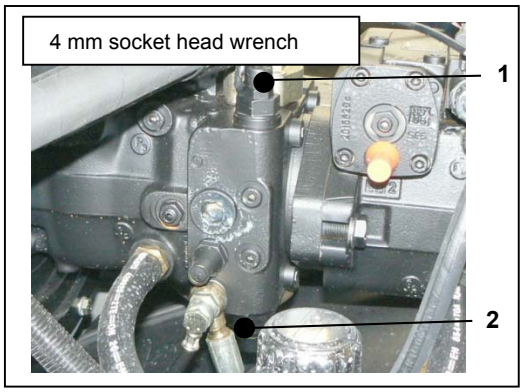


Fig. 63 Opening the HP valves

In order to tow the compaction roller, short-circuit the hydraulic circuit between the traction pump and the hydraulic traction motors.

- Access the HP valves from the left side of the engine compartment (in the direction of motion).
- You need a socket head wrench (size **WW 4**) to loosen the HP valves (**1**) and (**2**).
- Unscrew the protecting caps.
- Use the socket head wrench to screw in the adjusting spindles until they are level with the valve housing.

11.2.3 Deactivating (releasing) the parking brake

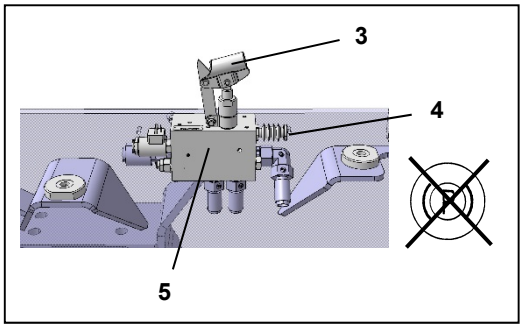


Fig. 64 Deactivating the parking brake

In order to tow the compaction roller, you need to release the parking brake in the rear axle and in the drum via the hand pump (**5**).

- The hand pump (**5**) is installed in the engine compartment (on the right side, in the direction of motion).
- Actuate the push-button (**4**).
- Put a pipe extension into the pump actuation (**3**).
- Build up pressure by manually pumping, which releases the parking brake und causes the corresponding light on the dashboard to go out.
- Remove the pipe extension.

11.2.4 Carrying out the towing process

WARNING	**Towing distance and speed** • The compaction roller may only be towed within the working zone. • The towing distance is to be kept as short as possible and may not exceed 500 meters / 550 yards! • Before starting the towing process, make sure the necessary preparations concerning the driving hydraulics and the parking brake have been completed. • Set the towing vehicle in motion very slowly (max. towing speed **1 km/h / 0.62 mph**).

Fig.65 Tie-down points

- Always make sure the compaction roller is attached at both tie-down points on the front (**1**) / rear (**2**) in order to set up a towing connection.
- First of all, secure the compaction roller against rolling by establishing the connection with the towing vehicle.
- Remove the wheel chocks and the additional safety equipment used for preventing the compaction roller from rolling.
- The towing distance is to be kept as short as possible.

11.2.5 After towing

DANGER	**Risk of death!** Immediately after completing the towing process, secure the compaction roller against rolling by means of the wheel chocks and further equipment, if required.

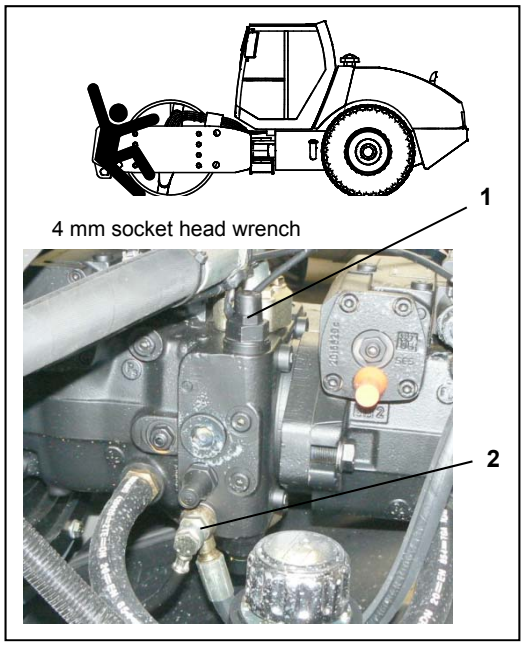


Fig. 66 Closing the HP valves

Closing the HP valves:
After the towing process, the hydraulic circuit between the traction pump and the traction motor must be closed and the parking brake needs to be put in working order again.

- Access the HP valves from the left side of the engine compartment (direction of motion).
- In order to activate the HP valves (**1** and **2**), you need a socket head wrench (WW 4).
- Use the wrench to loosen the adjusting spindles until they have reached their initial position.
- Attach the protecting caps.

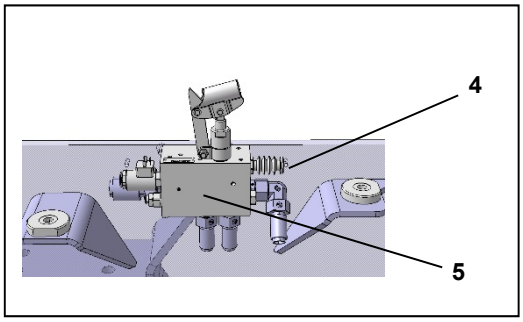


Fig. 67 Activating the parking brake

Activating the parking brake:
After towing the compaction roller, you must activate the parking brake in the rear axle and the drum again.

- The hand pump (**5**) is situated in the engine compartment, on the right side (direction of motion).
- After starting the engine, the push-button (**4**) will be in its original position again.
- The oil pressure escapes into the tank and the parking brake is activated, which is confirmed by the display on the dashboard, where the corresponding symbol needs to light up.

12 Working with the compaction roller

12.1 Safety instructions referring to work with the vehicle

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • Inform yourself of all issues related to operating the compaction roller. • Read the safety instructions before starting the compaction roller. In addition to this, be sure to observe all laws concerning the operation of earth-moving construction machines. • In case of doubt, contact your *Hyundai* dealer.

⚠ DANGER	**Risk of death!** • Using the attachment to transport, lift or lower people is strictly prohibited! • Make sure other individuals at the construction site keep off the operating range of the compaction roller! • Secure the work zone against unauthorized trespassing. • Before and while driving backwards, check the area behind you by looking backwards.

12.2 Control elements related to working

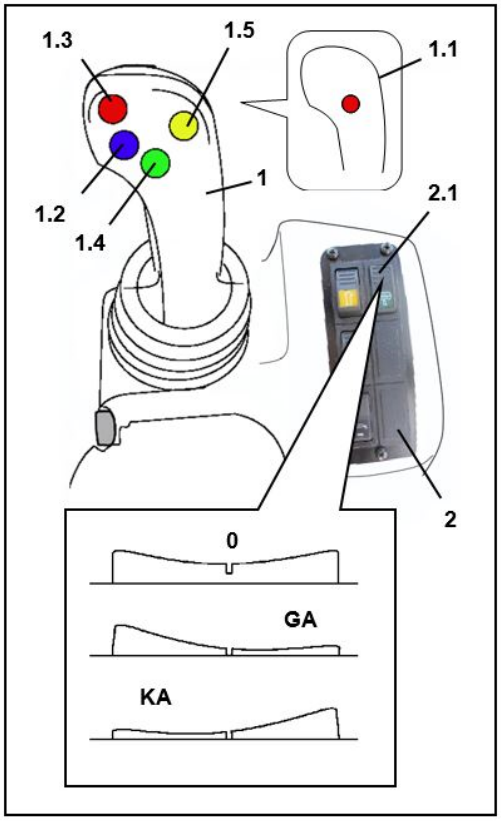


Fig. 68 Control elements

The functions related to working with the compaction roller are controlled by means of the joystick (**1**) and the switch for selecting the type of vibration (**2.1**) on the panel of switches (**2**) next to the joystick.
Different colors serve to identify the functions of the ergonomically arranged buttons:

Green = idle mode of the Diesel engine (**1.4**)
Blue = driving without working (**1.2**)
Red = driving & working (**1.3**)
Yellow = ECO speed (**1.5**, optional feature*)

*If this feature is not available, the button serves to reduce the diesel engine speed (working is not possible in this mode)
For further information on ECO speed, please see: **Working with the compaction roller: Soil compaction** in this manual.

On the front of the joystick:

- **Red** button “Vibration on/off” (**1.1**)
- Selector switch Vibration type soil compaction (**2.1**):
  - Middle position (**0**) = Vibration off
  - Front pressed down (**KA**) = Surface compaction / low amplitude
  - Rear pressed down (**GA**) = Deep compaction / high amplitude

NOTICE	Selecting the type of vibration does not activate the vibration itself.

12.3 Fields of application of the compaction roller

The compaction rollers offer the following work modes:

- Simple operation (driving without vibration)
- Surface soil compaction
- Deep soil compaction

12.3.1 Basic information on soil compaction

During a soil compaction process, the vehicle should run at a speed of about **1.2 to 3.0 km/h**, i.e. **20-50 m/min** (**0.75 to 1.9 mph**, i.e. **22 to 55 yards/min**), depending on the composition of the soil and the dumping height.

The first rolling cycle should be performed statically (i.e. without vibration, see chapter **Working with the compaction roller)** and on loose material.

Variations in the composition of different kinds of soil render it impossible to state generally valid figures regarding the number of compaction passes required to achieve the desired result. Therefore, trial runs are recommended means of determining the necessary amount of passes and the layer thickness.

As for too many passes, not only are they uneconomical but can, on finely graded material, be the cause of extreme vibration of the roller frame which subjects the vehicle to overstraining. Under normal conditions, the required degree of compaction is generally established after 4 to 8 passes. If the roller frame vibrates strongly, which might particularly be the case during the last passes, which call for a high degree of compaction, increase the speed to the upper limit of the recommended speed range.

While carrying out static compaction passes, the maximum speed may be set as required. In order to compact soils containing rock, the size of the biggest particle may never exceed two thirds of the dumping height because only insufficient compaction will be achieved under such conditions.

12.3.2 Simple operation: Forward motion (without vibration)

NOTICE	**Measures to be taken prior to driving!** The compaction roller needs to be ready for operation with the Diesel engine started and running at operating temperature (see chapter **Starting, driving and stopping the compaction roller**).

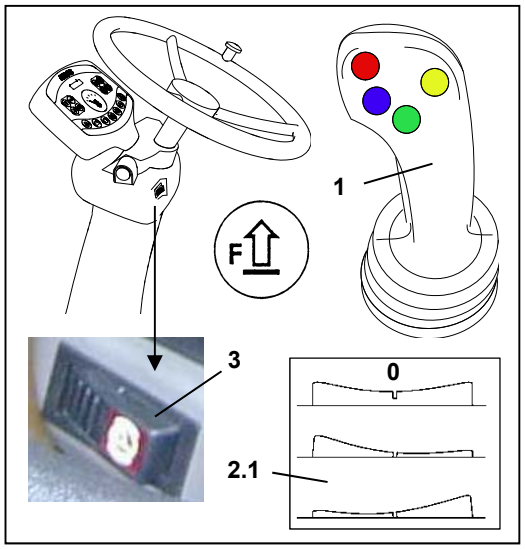


Fig. 69 Forward motion

- Actuate the switch (**3**) to deactivate the parking brake. The corresponding symbol on the dashboard is deactivated.
- Check whether the switch for selecting the type of vibration (**2.1**) is set to the middle position (**0**) - **OFF**.
- Set a high engine speed by means of the buttons on the joystick (**1**).
- Move the joystick (**1**) forward. The symbol for forward motion lights up on the dashboard.
- The compaction roller starts to move forward.

12.3.3 Simple operation: Reverse motion (without vibration)

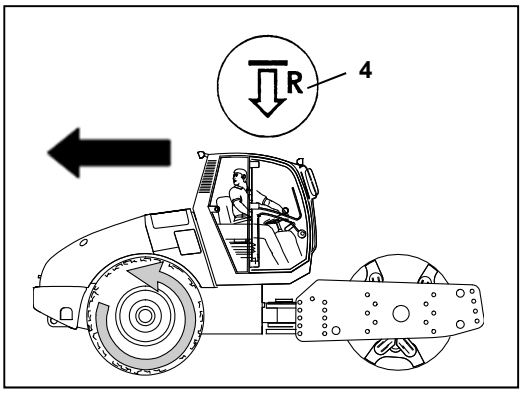


Fig. 70 Reverse motion

Proceed as described above (**Simple operation: Forward motion (without vibration)**, but move the joystick backward instead of forward.

- The symbol indicating reverse motion (**4**) lights up on the dashboard.
- The compaction roller starts to move backwards.

⚠ WARNING	**Risk of accidents!** • Prior to any reverse movement of the compaction roller, make sure that your view to the rear is unobstructed! • Before and while driving backwards, always check the area behind you by looking backwards.

12.4 Soil compaction by means of the smooth roller drum

12.4.1 Surface soil compaction

NOTICE	**Measures to be taken prior to driving!** The compaction roller needs to be ready for operation with the Diesel engine started and running at operating temperature (see **Starting, driving and stopping the compaction roller**).

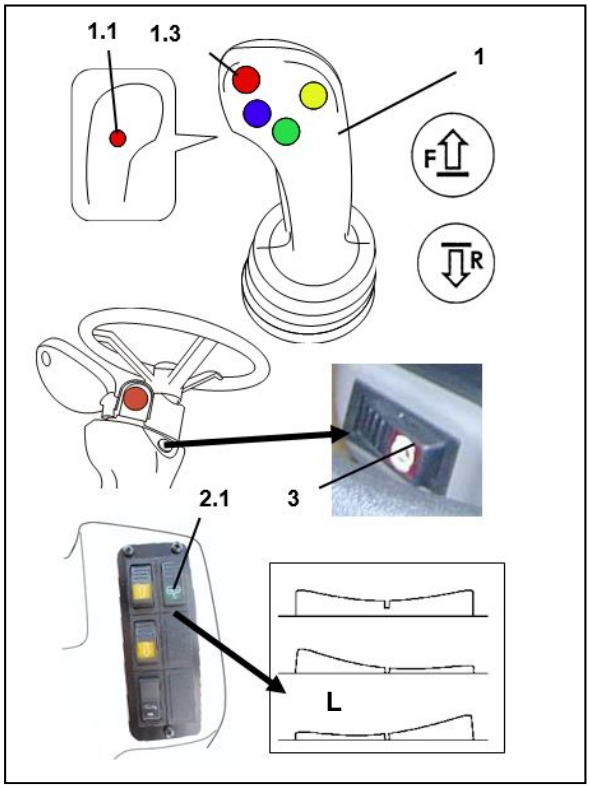


Fig. 71 Surface soil compaction

- Release the parking brake by means of the switch (**3**). The corresponding symbol on the dashboard goes out.
- Make sure that the vibration type selector switch (**2.1**) is in the middle position (**0**) – **OFF**.
- On the joystick (**1**), push the red button (**1.3**) to set the diesel engine speed to drum operation.
- Press down the front of the vibration type selector switch (**2.1**) to activate surface compaction at a low amplitude (**L**).
- Move the joystick (**1**) forward or backward, depending on the desired direction of motion.
- The symbol indicating the direction of motion lights up on the dashboard.
- In order to activate roller vibration, push the red button **Vibration on / off** (**1.1**) on the joystick (**1**).
- The compaction roller starts to move in the desired direction of motion and performs surface soil compaction.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** For surface compaction on slopes, see **Driving on heavy soils and on slopes.**

12.4.2 Deactivating surface soil compaction

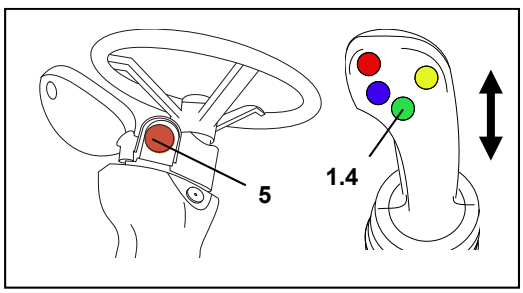


Fig. 72 Deactivating surface soil compaction

- To stop the surface compaction process, push the **red** button **Vibration on / off** (**1.1**, see illustration above) again.
- The vibration is deactivated. However, the previously selected type of vibration remains preselected.
- In order to stop the compaction roller, move the joystick (**1**) back to the neutral (middle) position.
- Set the Diesel engine to idle speed by pushing the green button (**1.4**).
- Apply the parking brake. The symbol on the dashboard lights up.

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button (5)**.

12.4.3 Deep soil compaction

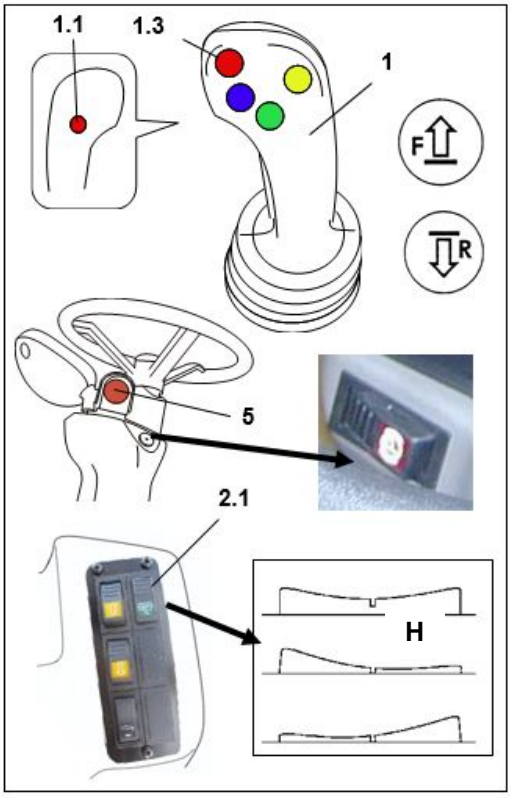


Fig. 73 Deep soil compaction

- Proceed as described above, in the section on surface soil compaction.
- Push the red button (**1.3**) on the joystick to set an appropriate engine speed for roller operation.
- Press down the back of the vibration type selector switch (**2.1**) to set it to deep soil compaction at a high amplitude (**H**).
- Move the joystick (**1**) forward or backward, depending on the desired direction of motion.
- The symbol indicating the direction of motion lights up on the dashboard.
- In order to activate vibration, push the red button
- Vibration on / off (**1.1**) on the front of the joystick (**1**).
- The compaction roller starts to move in the desired direction of motion and performs deep compaction.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** For deep soil compaction on slopes, see **Driving on heavy soils and on slopes.**

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button (5)**.

12.4.4 Deactivating deep soil compaction

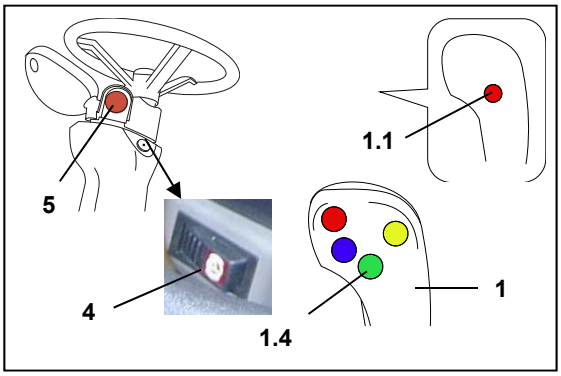


Fig. 74 Deactivating deep compaction

- In order to deactivate the deep soil compaction mode, push the red button Vibration on / off again (**1.1**).
- Vibration stops. However, the previously set type of vibration remains preselected.
- Move the joystick (**1**) back into the neutral (middle) position to stop the compaction roller.
- Push the green button (**1.4**) on the joystick to set the Diesel engine speed to idling.
- Apply the parking brake (**4**), which causes the corresponding symbol on the dashboard to light up.

⚠ DANGER	In any emergency which requires you to stop the compaction roller at once, press the **emergency stop push-button**.

12.5 Soil compaction with the pad foot drum

12.5.1 Basic information on the fields of application of the pad foot drum

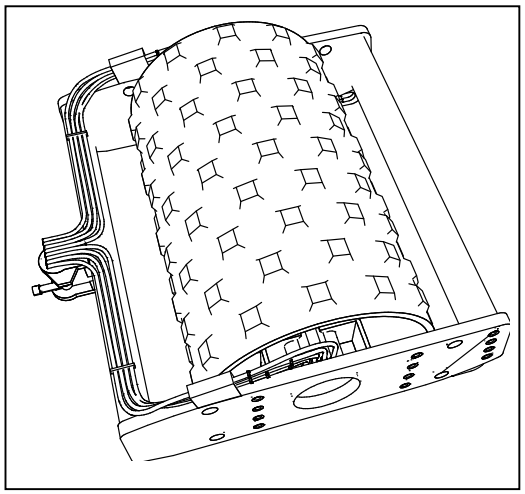


Fig. 75 Pad foot drum

Using the pad foot drum always requires vibration and serves the following purposes:

- compaction of cohesive soils and mix soils containing a high concentration of water
- compaction of schistous soils and brittle rock as well as particle size reduction
- mixing hydraulic binders into the soil in order to stabilize the soil

The rolling speed should be between **30-60 m/min (33 to 66 yards/min)**, i.e. approx. **1.8-3.6 km/h (1.1 to 2.2 mph).**.
In case a high concentration of moisture is encountered, perform three compaction passes and allow several hours for the soil to dry prior to compacting it further.
As for compacting cohesive soils and mix soils, the progress of the compaction is indicated by the increasing ascent of the pad feet in the soil until they finally penetrate it only lightly.
As soon as the desired degree of compaction has been achieved and no new layers will be added, the compacted surface must be rolled by means of a smooth drum to prevent the top layer from being soaked by rain. In addition, the surface should be slightly inclined to render it possible for water resulting from precipitation to drain.

See **Working with the compaction roller** for information regarding operation with a pad foot drum.

13 Compaction measurement (Optional feature)

If your compaction roller is equipped with a compaction measurement device (optional feature), the oscillation and acceleration of the drum are measured. The respective values are established by a sensor (**1,** see photo below) and forwarded to a computer. The computer transfers the values to a display (**2**) in the cab. The representation on the display enables the driver to inform him-/herself of the current values concerning the degree of compaction and vibration at all times.

NOTICE	• The compaction measurement system establishes values and provides information on the degree of compaction. • It does not interfere with the operational processes of the compaction roller.

13.1.1 Variants of the compaction measurement system

The system is available in two optional variants:

Variant 1:
Display and printing of the compaction data only

Variant 2:
Display of the compaction data and recording for subsequent analysis / printouts

13.1.2 Advantages of compaction measurement

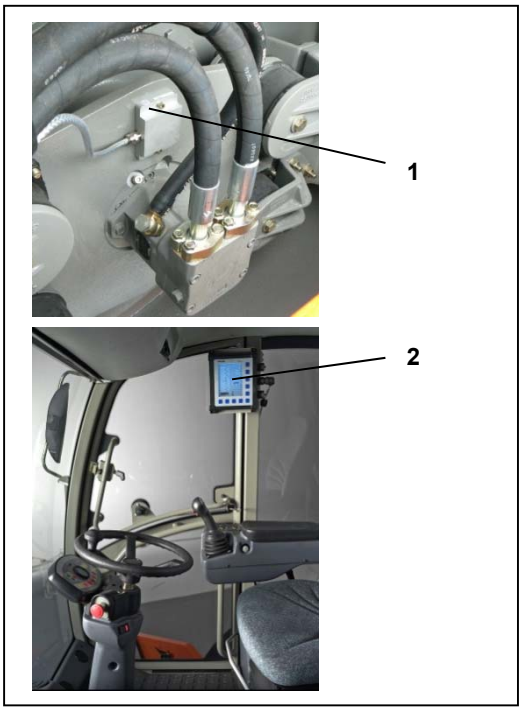


Fig. 76 Compaction measurement

- The information retrieved by the compaction measurement system (**2**) enables the driver to better assess (and possibly reduce) the amount of passes required to attain a certain result in a specific environment.
- Thus, time and fuel can be saved as well as unnecessary wear and tear avoided.
- The compaction results are not worsened by carrying out more passes than required any more.
- Potential problems due to certain characteristics of the soil or the material are detected and adequate measures can be taken to prevent them.
- The compaction roller may be operated in locations where area-wide compaction measurement for construction work is mandatory.

13.1.3 Compaction measurement Variant 1

Fig. 77 Compaction measurement

- An easy-to-install measurement system which serves to inform the driver of the degree of soil compaction.
- The compaction of the soil is continuously measured by an acceleration measurement device.
- If the degree of compaction increases, the acceleration of the drum is increased, which, in turn, causes the values on the instrument to increase as well.
- As soon as the maximum compaction capacity of your vehicle has been reached, the maximum degree of compaction is set as a fixed value.
- The process of compacting the soil can then be terminated.
- In case no solid value can be established, an analysis of the roadbed is required.

The following parameters are displayed:

- The relative degree of **compaction**
  The more the soil is compacted, the higher the respective value.
- The **frequency**
  Displays the current frequency of the vibration drive as a numerical value in Hertz [Hz].
- **Jump**
  Operation on soil which has been compacted too much can cause the vehicle to jump.

NOTICE	**Material damage!** If the vehicle starts to jump, immediately stop operating the compaction roller.

13.1.4 Installing and dismantling the compaction measurement system

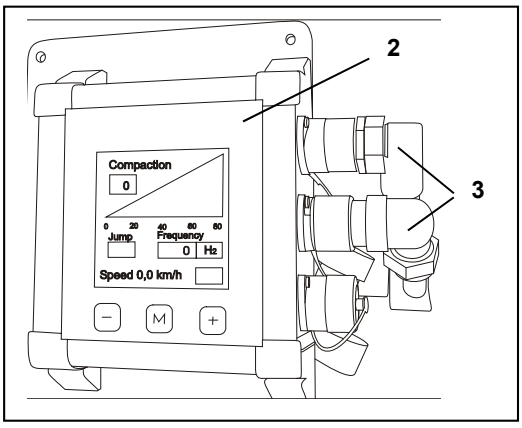


Fig. 78 Compaction measurement

Installing and dismantling the compaction measurement system in the cab is easy. Removing it from the cab after each operation prevents the device from being stolen or damaged.

- Attach/ remove the protecting caps of the plug-in connections.
- Screw on/off the plug-in connections (**3**) of the compaction measurement system.
- Make sure the mounting brackets (**4**) click into place. / Unlock the mounting brackets
- Remove the compaction measurement system from the mounting.

13.1.5 Compaction measurement system, variant 2: Display & recording

In addition to displaying the current information regarding vibration and compaction, this type of measurement system is able to gather, record and save all the respective information available, once operation of the vehicle has started.

- The memory capacity allows you to record approx. a week's operation data at construction sites.
- The data is recorded per track, which ensures reliable recordings even for complex construction measures and intricate maneuvering.
- The data thus retrieved can be transferred to a personal computer and evaluated by means of the corresponding software.

NOTICE	From an economic point of view, the most relevant advantages of compaction measurement with storage function are: quality enhancement of the operation as a result of controlled compaction and the comprehensible documentation of the compaction results both for the building contractor and the client.

Analysis and evaluation of the data

The data of the entire construction project can be graphically displayed and printed as an overview.

- Areas of the image that contain values which are smaller than a set default value are marked in red. The overview can be gradually enlarged in order to represent certain parts in greater detail.
- The overview can be gradually enlarged in order to represent certain parts in greater detail.
- Not only can each compaction roller track be marked separately, but it is possible to display and print the individual tracks as line diagrams.
- With the aid of a movable cursor, the compaction results achieved by different tracks and passes can be compared.
- The compaction values can easily be calibrated with the results of selective standard test runs.

14 Conversion from a smooth drum to a pad foot drum

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • Inform yourself of all issues related to operating the compaction roller. • Read the safety instructions before starting the compaction roller. In addition to this, be sure to observe the national and local laws and directives concerning the operation of earth-moving construction machines. • In case of doubt, contact your *Hyundai* dealer.

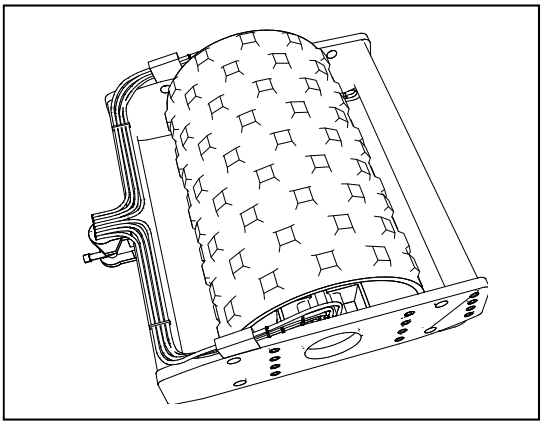


Fig. 79 Pad foot drum

In order to operate the compaction roller with a pad foot drum, you can order a conversion kit containing three pad foot segments as an optional feature from the manufacturer.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • In order to mount the 3 pad foot segments on a smooth roller drum, observing the following instructions is of vital importance! Make sure you maintain the correct sequence! • A crane with a lifting capacity of at least **8 tons** is required to retrofit the compaction roller.

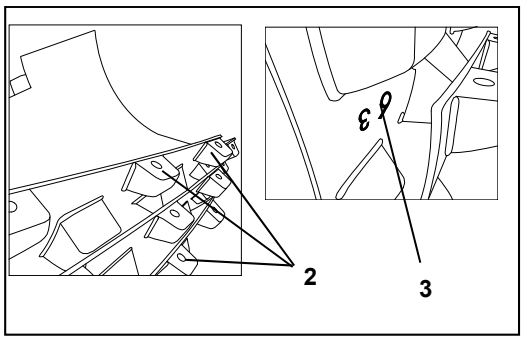


Fig. 80 Pad foot segments

Each of the three pad foot segments (**2**) is individually labeled next to the split pad feet (**3**).

NOTICE	• Pay close attention to the labeling (**3**) of the segments (**2**) and the correlation of the serial numbers. • Only the corresponding segments (**2**) and identical serial numbers match up for this particular compaction roller.

14.1.1 Mounting the pad foot segments on a smooth roller drum

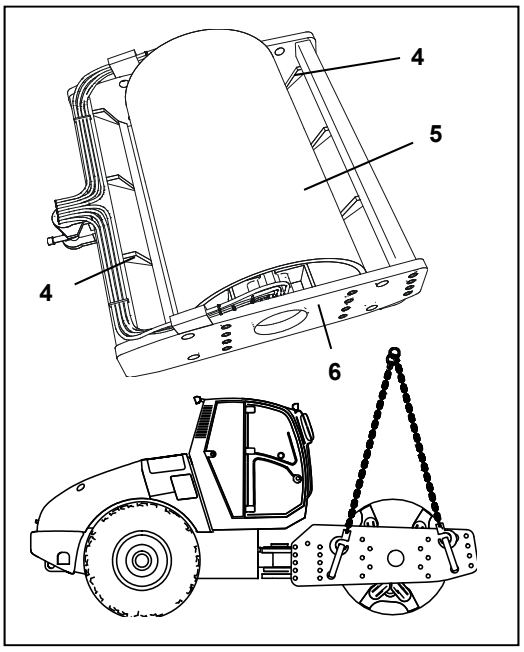


Fig. 81 Lifting the roller frame

Step 1: Dismantling the attached part s of the smooth roller drum
Remove the front and rear scrapers (**4**) from the smooth roller drum (**5**).

- Make sure the roller frame is securely fastened by appropriate tie-down equipment (**6**) before lifting it by means of a crane. The lifting height is sufficient if a pad foot segment can be placed under the smooth roller drum (**5**).
- Prior to starting work, put struts under the roller frame to support it.
- Use a high pressure washer to clean the smooth roller drum (**5**).

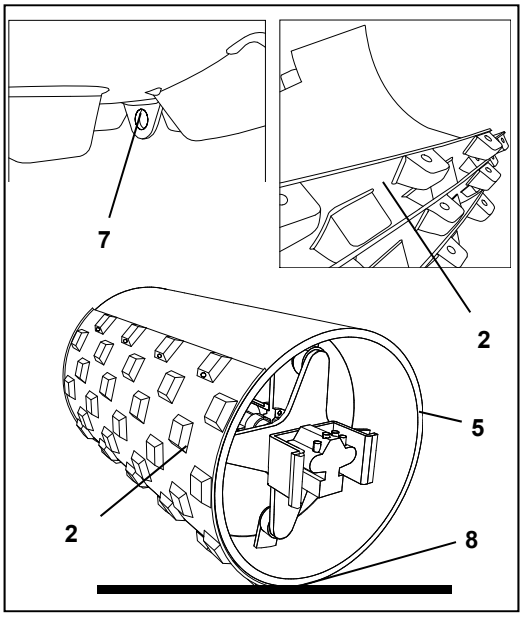


Fig. 82 Mounting the first segment

Step 2: Mounting the first pad foot segment
Use a crane to lift the first segment (**2**) at the lifting lug (**7**) and to place it onto a transport vehicle at the lifting lugs. Drive the transport vehicle under the smooth roller drum (**5**), put down the segment (**2**) and adjust its position.

- Lower the roller frame (**6**) by means of the crane and place the smooth roller drum (**5**) on the segment (**2**).
- Remove the tie-down equipment.
- Advance the compaction roller until the smooth roller drum (**5**) rests only on the rear edge (**8**) of the first segment (**2**).

NOTICE	In order to approach the segment slowly, it may be necessary to overmodulate both the drum and the rear axle (see the respective information in this operating and maintenance manual).

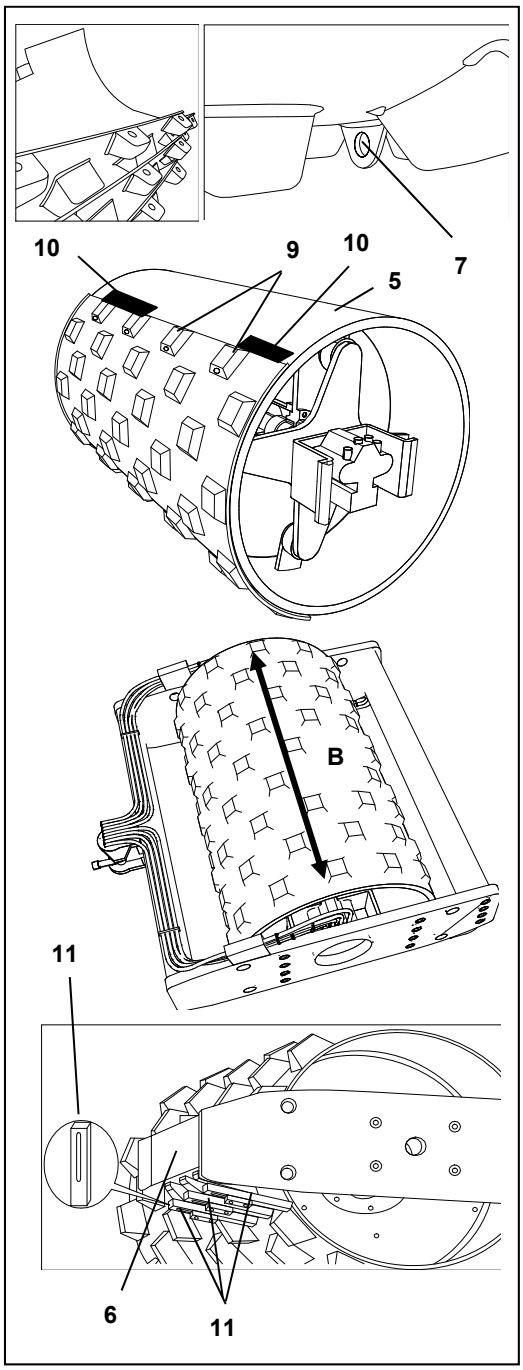


Fig. 83 Mounting the pad foot segments

Step 3: Mounting the 2nd & the 3rd pad foot segment

- Lift the second segment at the lifting lug (**7**). Place it on the top of the smooth roller drum (**5**), adjust it and connect it to the first segment (**2**) by bolting them together at the junctions (**9**).
- Use clamps (**10**) to attach the loose edge of the second segment to the smooth roller drum (**5**).
- Make sure there is enough space between the mounted segments and the roller frame.
- Back up the compaction roller until the bare part of the surface of the smooth drum (**1**) points upward, rendering it possible to mount the third segment (2).
- Attach the third segment (**2**). Connect it to the first and the second segment (**2**) by bolting them together at the junctions (**9**).
- Tighten all screws at the junctions evenly (**9**) along the entire width of the roller (**B**).
- Repeatedly drive the compaction roller forward and backward so the segment junctions point upward.
- Check all screw connections at the junctions (**9**) and tighten them (tightening torque: **660 Nm)**.
- Install the corresponding pad foot scrapers (**11**) in order to use the drum as a pad foot roller (**6**).

NOTICE	After approx. 10 hours of operation, check all screw connections again (**9**). If necessary, tighten them. Tightening torque: **660 Nm**.

15 Tires at the rear axle

15.1.1 Water filling of the tires

In order to improve the propulsional properties of the tires at the rear axle, on delivery, they are filled with water and an additive composed of magnesium chloride which serves as antifreeze.

NOTICE	• Magnesium chloride is commercially available granulated salt with a 47% share of dry substance which can be purchased at (chemical) wholesale. • In countries where the exterior temperatures never fall below zero degrees Celsius, the tires can be filled with industrial water, without any additives.

15.1.2 Filling procedure: Water and antifreeze additive

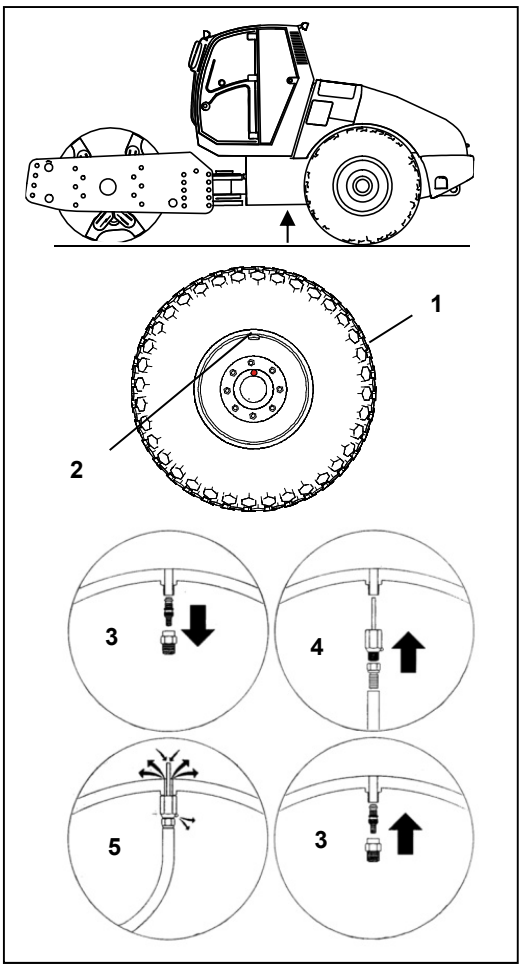


Fig. 84 Filling the tires

Lift the compaction roller at the rear axle by means of a sufficiently dimensioned hydraulic jack.

- Turn the tire (**1**) until the charge valve (2) is in the **top** position.
- Slowly unscrew the valve core (**3**).
- Screw a hose line (**4**) onto the charge valve (**2**).
- The saline solution (see “Preparation of the saline solution below) can be poured into the tire (**1**) by means of a container placed above the tire or via a special pump.
- The filling procedure (**5**) must be interrupted repeatedly because the tire needs to be bled.
- In case the tire is not sufficiently filled after pouring in the saline solution, add industrial water to establish the required fill level.
- After completing the process, attach the valve core (**3**) and fill the tire (**1**) with compressed air.
  Prescribed pressure: **1.6 bar (for standard tires).**

Preparation of the saline solution:

- Mix magnesium chloride and water at a weight ratio of 1:1 in a clean container. Stir until the salt has completely dissolved.
- Always add the salt to the water, never vice versa.

NOTICE	• Since air must be exhausted from the tire (**5**), repeatedly interrupt the filling process. As soon as the level of water/saline solution has reached 75% of the volume of the tire (i.e. it is on a level with the charge valve), stop the filling process. • The remaining air in the upper part of the tire is essential to ensuring its springiness. • As soon as the required fill level of 75% has been reached, the saline solution must not leak from the tire with the charge valve (**2**) opened.

15.1.3 Filling procedure: Pure water

In order to fill the tire with water, use industrial water.

- The filling procedure is identical to the one with antifreeze additive as described above.

15.1.4 Emptying the tires

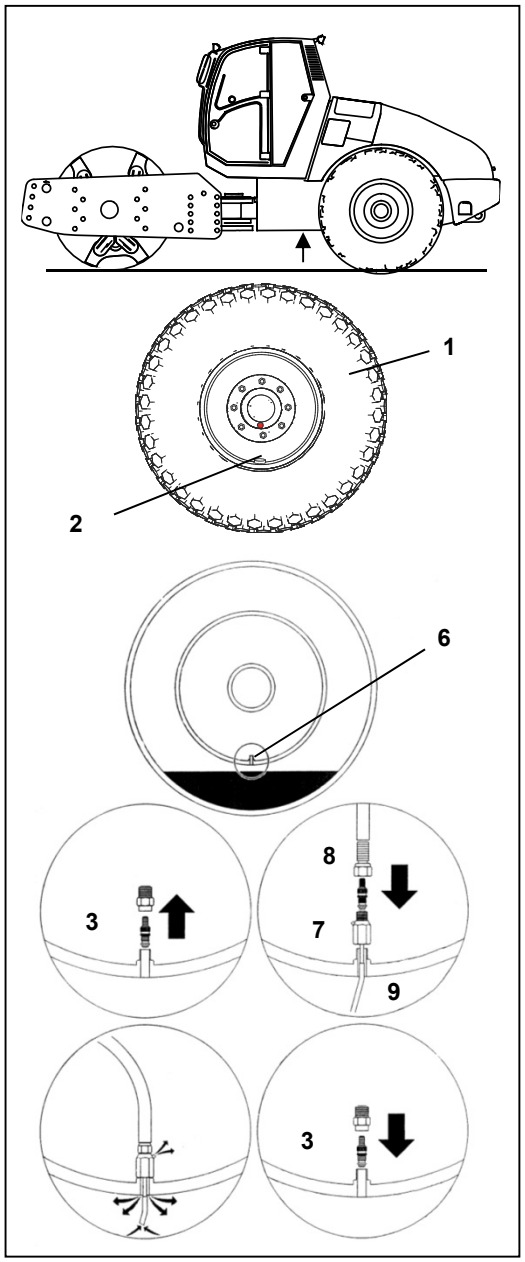


Fig. 85 Emptying the tires

Lift the compaction roller at the rear axle by means of a sufficiently dimensioned hydraulic jack.

- Turn the tire (**1**) until the charge valve (**2**) is in the **lowest** position.
- Slowly unscrew the valve core (**3**).
- Due to the overpressure in the tire, water will pour out of the tire down to the level of the charge valve (6).
- Extend the vent pipe of the composite valve (7) by means of a thin rubber hose (**9**).
- In order to remove the remaining quantity of water from inside the tire, screw the composite valve (**7**) onto the charging valve (**2**) and charge with compressed air (**8**).
- The compressed air drives the remaining water out of the tire via the rubber hose (**9**) until it finally leaks from an opening at the side of the composite valve.
- As soon as the tire is empty, attach the valve core (**3**) and fill the tire (**1**) with compressed air.

Prescribed pressure: **1.6 bar (for standard tires).**

⚠ WARNING	**Risk of injuries!** • Antifreeze may leak from the tire while its tire pressure is being checked. • This can lead to chemical burns. Wear protective clothing to protect your skin!

15.1.5 Filling procedure: Using the ”Hanauer Maus“

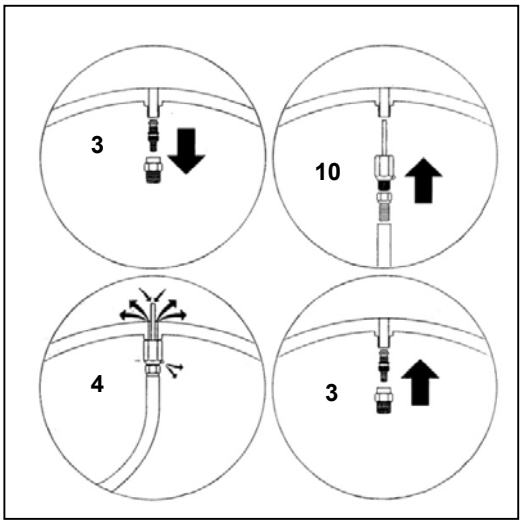


Fig. 86 Filling the tires

In order to fill or empty a tire by means of the so-called “Hanauer Maus“ (“Mouse of Hanau“), carry out the following instructions:

- Use a sufficiently dimensioned hydraulic jack to lift the compaction roller at the rear axle.
- Turn the tire (**1**) until the charge valve (**2**) is in the **top** position.
- Slowly screw off the valve core (**3**).
- Screw the fill valve (**10**) into the charge valve (**2**).
- Screw a hose line (**4**) onto the fill valve (**10**).
- The air escapes from the tube and the opening at the side of the fill valve (**10**).
- Twist off the fill valve (**10**) and tighten the valve core (**3**).
- At the end of the filling procedure, unscrew the fill valve (**10**) and screw in the valve core (**3**).
- Fill the tire (**1**) with compressed air until the required pressure of **1.6 bar** (for standard tires) has been established.
- The filling procedure is complete as soon as a constant jet of water exits the opening.

15.1.6 Checking the tire inflation pressure

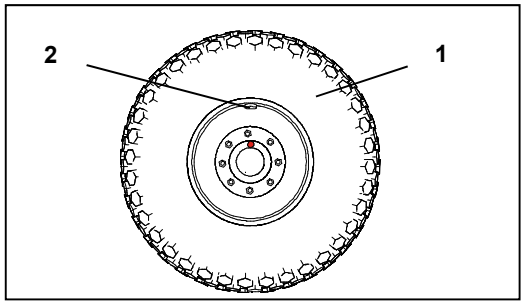


Fig. 87 Checking the tire inflation pressure

In order to check the tire inflation pressure, the charge valve (**2**) needs to be in the top (“12 o‘clock“) position.

- Drive the compaction roller forward and backward to establish this position of the tires (**1**).
- Unscrew the safety cap of the charge valve.
- Press the charge valve until the saline solution stops leaking from the charge valve (**2**).
- Attach the tire gauge and check the tire inflation pressure.
- If necessary, adjust the tire pressure.

NOTICE	**Material damage!** Always empty the tire and make sure no water and saline solution can leak from the charge valve before checking the tire inflation pressure. Moisture destroys the tire gauge.

Type of tires	Inflation pressure	Note
Standard tires	1.2 to 1.6 bars (17.4 to 23.2 psi)	Water filling
Special tires	Please contact the tire manufacturer for information on the required pressure!	Water filling

15.1.7 Mounting the tires

NOTICE	**Material damage!** • Have tires replaced or mounted by an authorized *Hyundai* dealer or a trained expert only. • In order to prevent the tire from sliding on the wheel rim, the tire must not be mounted with the aid of lubricants. • Tightening torque of the wheel nuts: **500 Nm**.

16 Failures and trouble shooting

NOTICE	**Material damage!** In case faults or failures occur which you cannot detect or repair yourself, contact the service staff immediately.

Fault / Failure	Possible cause(s)	Trouble shooting
Diesel engine does not start	Environmental temperature too low ►►►	Preheat sufficiently. Repeat the starting procedure.
	The fuel tank is empty. ►►►►	Add Diesel. Have the fuel system ventilated by the service staff, if required.*
	The fuel filter is plugged. ►►►►	Clean or replace the fuel filter.
	Cold weather causes paraffine to leak ►►►►	Add fuel (winter Diesel) with the necessary specifications for cold weather.
	Leaking fuel pipes or connections ►►►	Contact the service staff.
	⚠ WARNING — **Environmental protection!** Immediate action is required to prevent fuel from penetrating the ground!	
	After activating the ignition, The control lamp for the battery does not light up. ►►►►	Check the charge condition of the battery; if necessary, charge the battery. If required, carry out a jump-start.
	NOTICE — The compaction roller disposes of an electrical system with an operating voltage of 12V. Be sure to take this into account when jump-starting the vehicle.	
	The starter does not turn. ►►►►	Contact the *Hyundai* service team.
After starting the engine, the battery charge lamp does not go out 	Defective contact in the electrical system. ►►►►	Cable connections or plug-in connections are loose or defective. Contact the service staff.
	The engine speed of the generator Is too low. ►►►	Insufficient V-belt tension; tension the V-belts, if required.*
	The generator is defective or a V-belt torn ►►►►	Replace the V-belt.*
	The generator is activated, but the battery is not charged ►►►►	Contact the *Hyundai* service team.

* Be sure to follow the instructions in the Deutz service manual for these measures!

Fault / failure	Possible cause(s)	Trouble shooting
After starting the Diesel engine, the compaction roller does not move.	The parking brake is applied. ►►►►	Release the parking brake by means of the switch.
	The desired direction of motion been set (joystick), but the compaction roller does not move. ►►►►	Contact the *Hyundai* service staff.
	The compaction roller does not move after a towing process ►►►►	HP valves not screwed in, see **Towing the compaction roller** Contact the *Hyundai* service team.
	Driving hydraulics not activated ►►►►	
The warning lamp for the air filter lights up. 	The filter cartridge is dirty. ►►►►	Clean the air filter and the filter cartridge. For operation with a high formation of dust, insert a new filter cartridge and be sure to store a sufficient amount of filter cartridges.
The warning lamp for engine oil pressure lights up. 	Insufficient engine oil pressure or pressure does not build up after starting the Diesel engine ►►►►	Immediately **stop** the Diesel engine!

NOTICE	**Material damage!** Stop the operation of the compaction roller without any delay! Do not resume the work before the problem has been eliminated!

►►►►	Check the fill level of the engine oil. In case it is insufficient, add oil according to the specifications in the **Table of lubricants** (see **Maintenance Instructions**).
►►►►	If the engine oil level turns out to be correct, **stop the compaction roller and do not start it again.**
►►►►	Immediately contact the *Hyundai* service team.

17 Maintenance instructions

17.1 Safety instructions referring to maintenance work

NOTICE	**Material damage!** In case faults or failures occur which you cannot detect or repair yourself, contact the service staff immediately.

SAFETY INSTRUCTIONS 	**Obligation to inform yourself!** • Read the safety instructions and warnings in this operating manual before starting any maintenance work and follow them! • Be sure to take all safety precautions and to observe all instructions regarding the operation of the compaction roller when carrying out maintenance work!

⚠ **CAUTION**	**Risk of property damage and accidents due to lack of information for other people in the work area!** Use signs and warning notices to point out that maintenance work is being carried out.

⚠ **WARNING**	**Risk of accidents caused by an inadvertent engine start!** Prevent the compaction roller from unintentionally starting by removing the ignition key from the ignition lock!

NOTICE	**Spare parts** You may only use genuine *Hyundai* spare parts! For information on spare parts, including safety-related ones, please see the spare parts catalogue.

17.1.1 Safety precautions to be taken prior to maintenance work

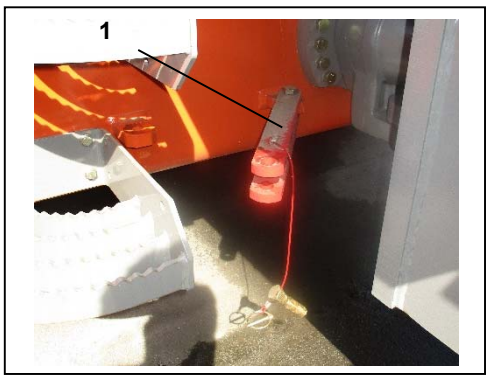


Fig. 88 Articulation-lock device

- Secure the compaction roller before starting work.
- Stop the Diesel engine and secure it against unintentional activation by pulling out the ignition key.
- Activate the parking brake.
- Secure the wheels at the rear axle by means by means of wheel chocks.
- In case the maintenance work needs to be carried out in the work zone, be sure to create a safe working environment.
- Ensure the compaction roller´s stability.
- Protect the work area against moisture and dirt.
- Check whether the hydraulic system is depressurized.
- For work on the roller drum, the roller frame or the steering system, always install the articulation-lock device (**2**) between the roller frame and the rear end.
- Use only tools and accessories which are described in this operating and maintenance manual.

17.1.2 After completing maintenance work

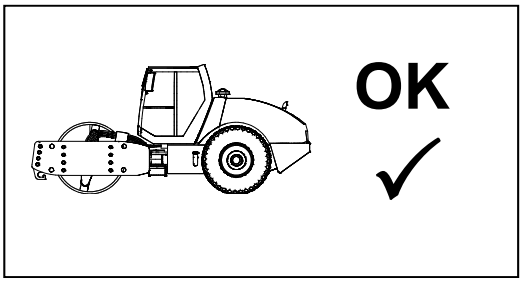


Fig. 89 Checking the compaction roller

- Ascertain that the compaction roller is in a safe operating condition.
- Check the hydraulic system of the compaction roller for leaks after starting it.
- Test the roller functions.
- Do not resume your work with the compaction roller before thoroughly checking the vehicle.

17.2 Overview: Maintenance

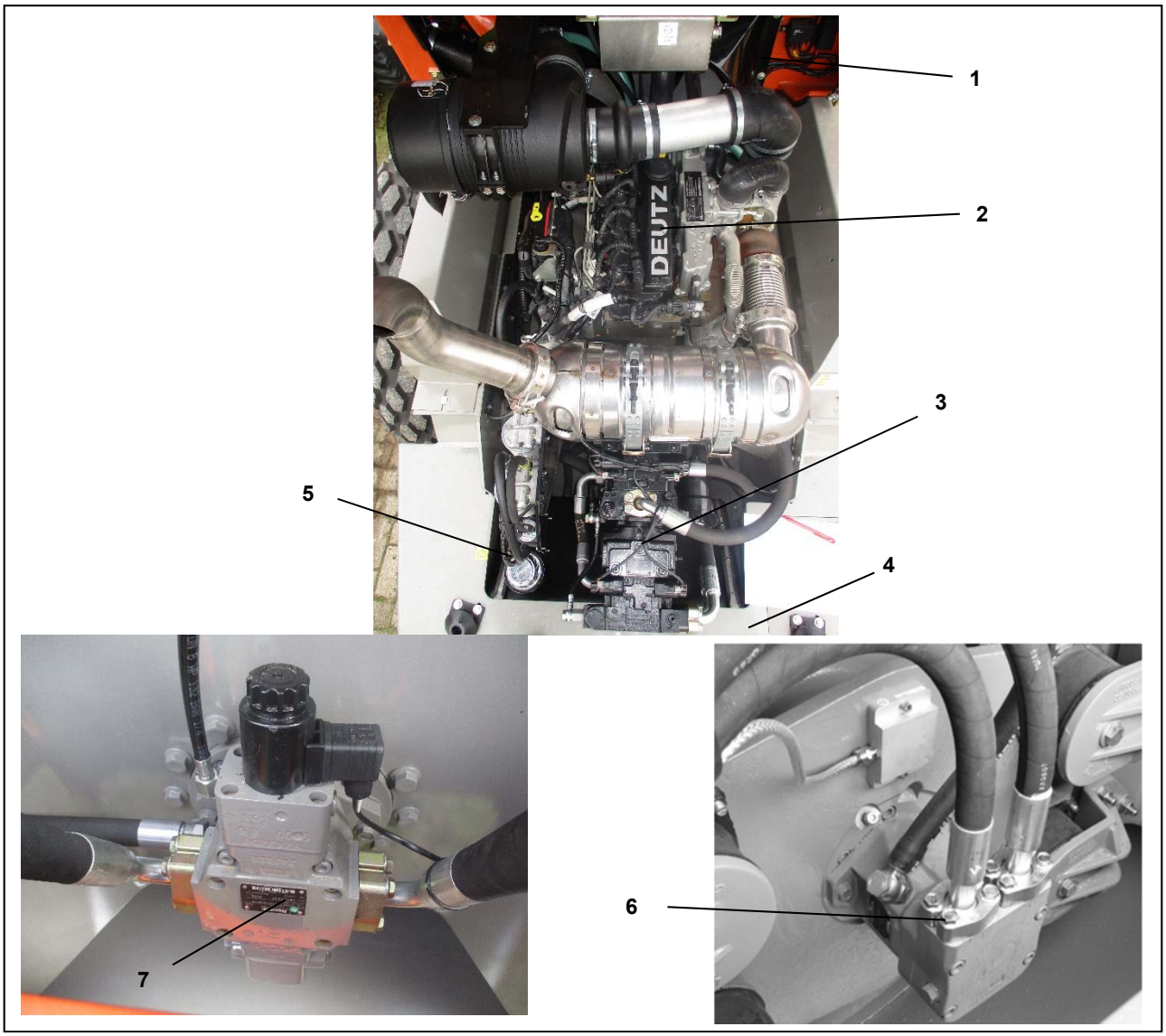


Fig. 90 Engine compartment, drum & vibration drive

Captions: Maintenance overview
1 Engine compartment
2 Diesel engine
3 Hydraulic pump assembly
4 Battery
5 Hydraulic tank
6 Vibration drive
7 Drum drive

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** Be sure to consult the Deutz service manual and to follow the instructions!

⚠ WARNING	**Risk of burns and scalding caused by hot surfaces** For all work at the Diesel engine: Beware of hot surfaces!

18 Maintenance instructions for the driver

NOTICE	If you do not have the skills and knowledge required to perform the maintenance work, have it carried out by qualified service staff. **Never neglect the required maintenance work!**

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** Before taking any maintenance measures at the compaction roller, be sure to consult the chapters on safety instructions and safety precautions for maintenance work.

18.1.1 Table of lubricants

Greasing point	Lubricant	Viscosity	Equvalent standard
Diesel engine	See Deutz service manual		API classification
Choose the viscosity of the lubricant so it suits the ambient temperature	Standard quality DQC II-05		CG-4 or CH-4 or CI-4 Or CI-4 Plus or CJ-4
Arctic climate		SAE 0W - 30 SAE 0W - 40	
Temperate climate		SAE 10W - 30 SAE 10W - 40	
Tropical climate		SAE 20W - 50	
All clime zones		SAE 15W - 40	
Axles **Transmission**	HLS		Approved: Fuchs TITAN GEAR LS-90 Shell rear axle oil LS-BMW ELF Tranself BM-LS 90
Roller bearing **Floating bearing** **General greasing points**	Order no. 0346905 KPF-2 K – 30 DIN 51825 with MoS_2 additives	NLGI 2 DIN 51818	Lithium grease with MoS_2 additives which enhance the emergency running properties
Hydraulic oil	Spezial 46	46	Observe the specifications of the hydraulic oil to be used! Pay particular attention to the specifications referring to operation at temperatures below 0°C. Be sure to preheat the oil sufficiently.
Bio-degradable oil	HYDR OEL HE 46[1]	at 40 °C: 50.8 mm^2/s	Adhesive label 3616077 (light blue triangle) Adhesive label 3616102
Brake fluid container	Brake fluid Hydraulic oil ATF Dexron II	at 40 °C: 34 mm^2/s	
Protective cooler fluid	Monoethylenglycol with organic Inhibitors		Approved: TOTAL GLACELF AUTO SUPRA

[1] **HYDR OEL HE46**

- Bio-degradable high-quality fluid for advanced hydraulic systems.
- The majority of the requirements laid down in part 3 of DIN 51524 for HVLP hydraulic oils are met.
- Besides, it disposes of additional features not covered by DIN 51524/part 3.
- If thus equipped by the manufacturer, the vehicles are provided with adhesive labels at the hydraulic tank, in the cab and at the attachment.

- **HYDR OEL HE46**:
  Adhesive label 3616077 (light blue triangle)
  (light blue triangle)
  Adhesive label 3616102

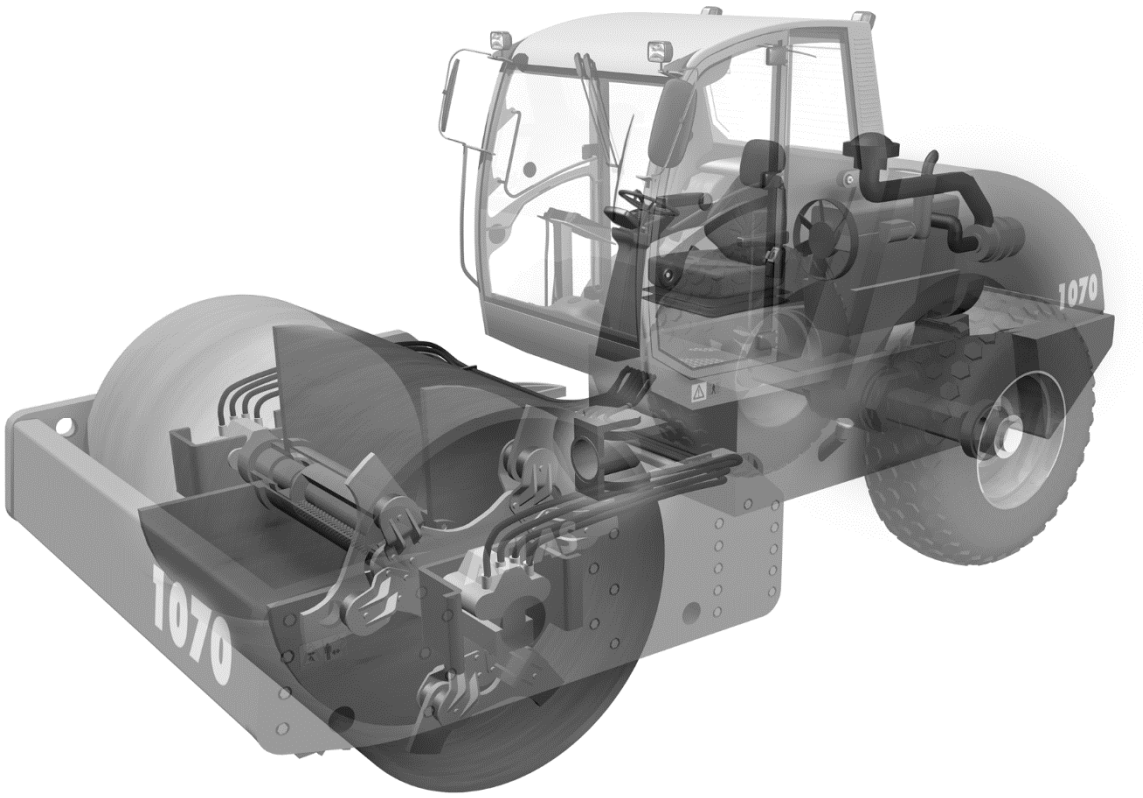
18.1.2 Required spare parts for maintenance work: Maintenance kit

In order to carry out the required maintenance work on the compaction roller, a maintenance kit, which is available from the Hyundai spare parts service team or from your authorized *Hyundai* dealer, is required.

18.2 Check list: Required maintenance work for maintenance certificate A

- □ Conduct a visual inspection.
- □ Check the fuel level.
- □ Check the preliminary fuel filter.
- □ Check the coolant level*.
- □ Check the V-belt tension.
- □ Check the engine oil level*.
- □ Check the hydraulic oil level*.
- □ Check the air filter.
- □ Check the tire inflation pressure.
- □ Check the fill level of the windshield washer system.
- □ Check and clean the drum.

*add oil/coolant, if required



18.3 Maintenance certificate A Daily maintenance work

18.3.1 Checks and cleaning procedures prior to starting the compaction roller

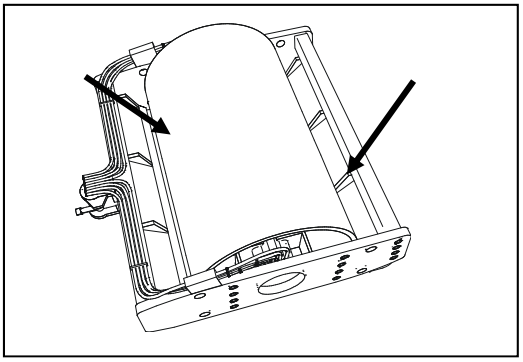


Fig. 91 Daily check

- Conduct a visual inspection to check the exterior of the compaction roller. Clean it, if necessary.
- Check the hydraulic components and the hoses for leakage.
- Check the distance of the scrapers to the drum.
- Check the scrapers for damage.
- Remove coarse dirt from the roller drum and the scrapers.
- Watch out for damage at the vehicle.

18.3.2 Fuel level

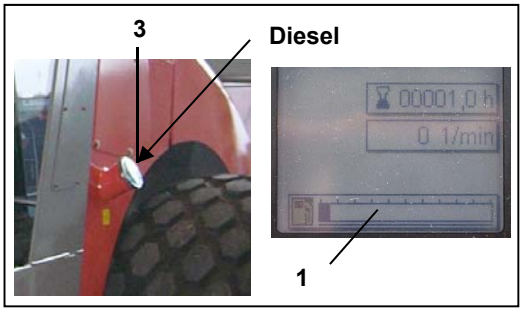


Fig. 92 Fuel level

- Prior to any operation of the compaction roller, check the fuel level (**1**) on the display.
- If necessary, top up on Diesel via the fuel filler neck (**3**).

18.3.3 Preliminary fuel filter

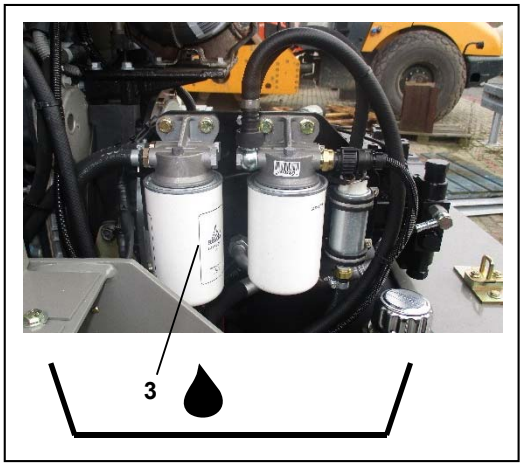


Fig. 93 Preliminary fuel filter

- Check the preliminary fuel filter (**3**).
- The preliminary fuel filter is installed on the left side of the diesel engine.
- Drain the preliminary fuel filter (**3**).

18.3.4 Coolant level

Fig. 94 Coolant level

- Check the coolant level (inspection glass on the right side of the compensation reservoir).
- Add coolant, if required.
- Ascertain the correct mixing ratio of the coolant.

⚠ WARNING	**Risk of burns and scalding caused by hot coolant** Make sure the engine has cooled down before you open the lid.

18.3.5 V-belt tension

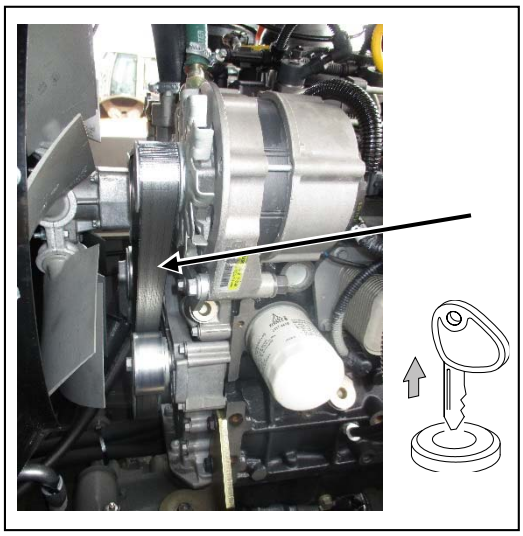


Fig. 95 V-belt tension

Check the V-belt tension and check for damage.
Turn off the diesel engine and pull out the ignition key.
See the service manual of the Diesel engine manufacturer for instructions if the V-belt needs to be replaced.

⚠ WARNING	**Risk of burns and scalding caused by rotating parts** • The V-belt tension may only be checked with the Diesel engine stopped. • Turn off the Diesel engine and remove the ignition key.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** For information on tensioning and replacing the V-belt, see the service manual of the Diesel engine manufacturer, which is included in the scope of delivery of the compaction roller.

18.3.6 Engine oil level

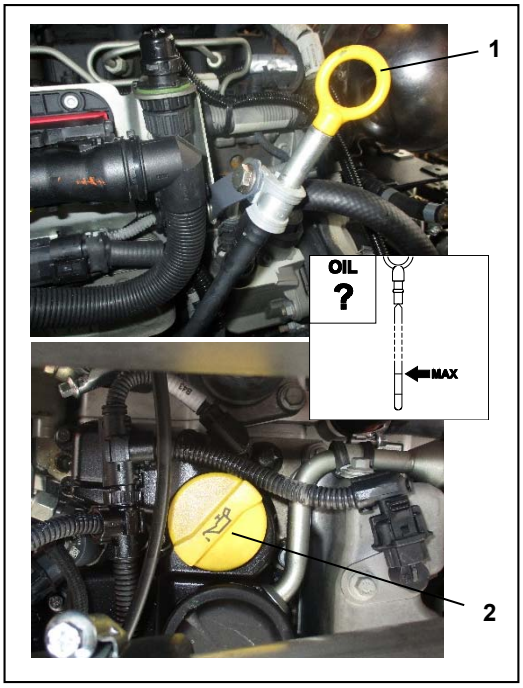


Fig. 96 Engine oil level

- Check the engine oil level of the Diesel engine at the oil dipstick (**1**).
- If necessary, use the filler neck to add engine oil.
- Unscrew the lid (**2**) of the filler neck and carefully fill in engine oil.
- After adding oil, screw the lid (**2**) back on.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** • Pay attention to the information on the engine oil to be used in the engine compartment. • If no information is displayed in the engine compartment, consult the **Table of lubricants** for the required specifications.

NOTICE	**Material damage** In order to prevent damage to the Diesel engine, never mix different types of oil!

18.3.7 Hydraulic oil level

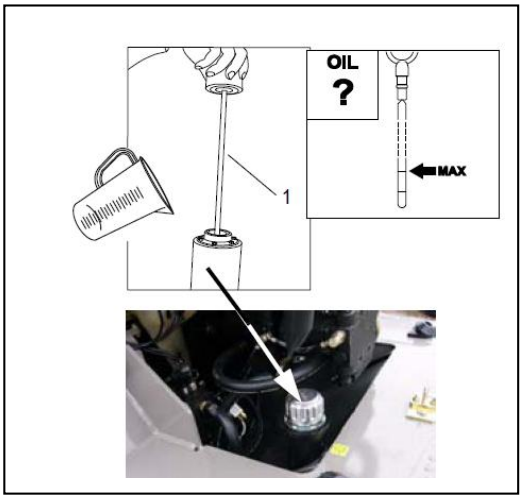


Fig. 97 Hydraulic oil

- Unscrew the filler neck with the oil dipstick (**1**) and check the oil level.
- Add hydraulic oil, if necessary.
- Fill in hydraulic oil by means of the filler neck.

NOTICE	**Risk of damage to the hydraulic system** • In order to check the hydraulic oil level, the compaction roller needs to be parked on level ground. • Be sure to exercise extreme cleanliness when filling in hydraulic oil! • Inform yourself of the type of hydraulic oil in the hydraulic system. Please refer to the table of lubricants for the required specifications. Never mix different types of hydraulic oil!

18.3.8 Air filter

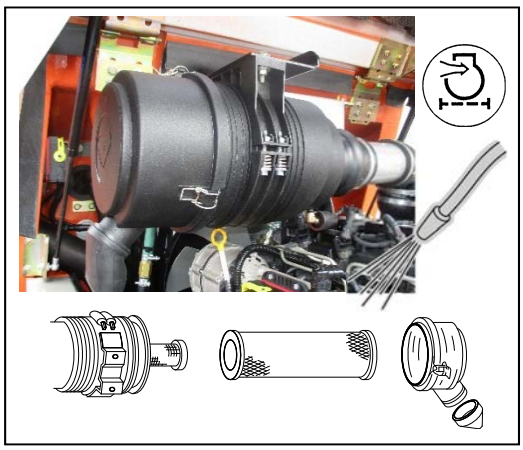


Fig. 98 Air filter

- If the respective lamp on the dashboard indicates an accumulation of dirt at the air filter for the combustion air of the Diesel engine, clean or replace the air filter.
- After a maximum of five cleanings by means of compressed air, replace the filter cartridge.
- Wash the interior of the air filter housing and clean it; if necessary, vacuum it.

NOTICE	**Damage to the Diesel engine!** Never attempt to clean the air filter housing by blowing air into it!

18.3.9 Check the tire inflation pressure

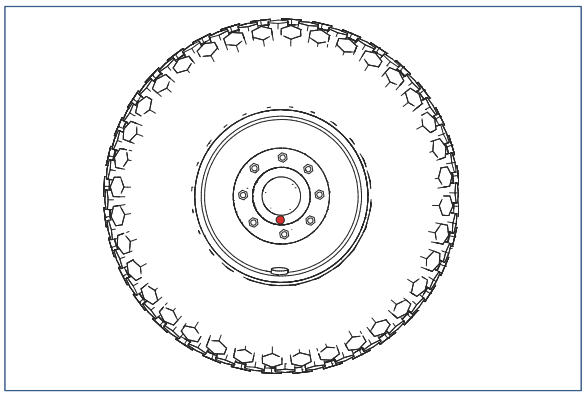


Abbildung 99 Tire inflation pressure

Check the tire inflation pressure and adjust it, see chapter **Tires at the rear axle**.

Type	Pressure	
Standard tires	1.2 to 1.6 bar (17.4 to 23.2 psi)	with water filling
Special tires	Please contact your local *Hyundai* dealer for information on the required pressures.	with water filling

18.3.10 Windshield washer system

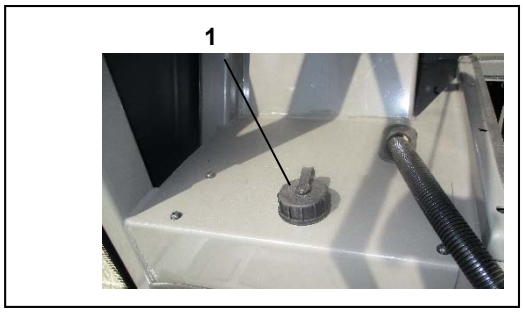


Fig. 100 Washing water container

- Check the fill level of the washing water container (**1**).
- If you need to add water, use an appropriate can to fill it in.
- Depending on the season, antifreeze may have to be added to the washing water.

18.3.11 Cleaning the cab after each operation

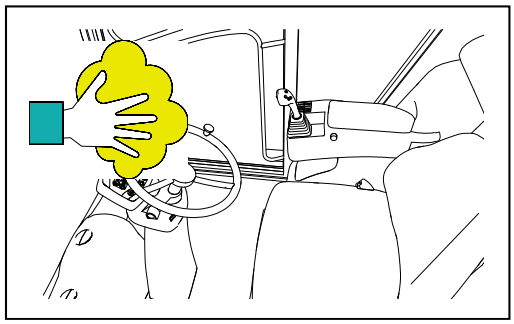


Fig. 101 Cleaning the cab

- Check the cab by performing a visual inspection and clean it, if required.
- After parking the compaction roller, clean the exterior of the vehicle. If necessary, use a high pressure washer.
- Be sure to clean the steps to prevent dirt from accumulating there.

NOTICE	Make sure the high-pressure washer is not directed at one of the following components: • the sealings of the cab door, • ventilation grills and slots.

18.3.12 Cleaning the scrapers

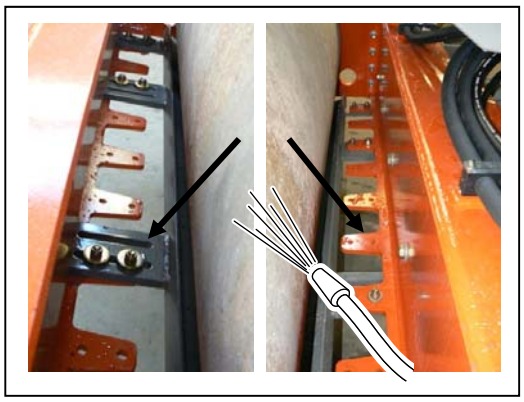


Fig. 102 Cleaning the scrapers

- Clean the scrapers of the roller drum before any dirt can harden.

19 Maintenance certificates B & C: Maintenance work to be performed by service staff

- □ Ascertain that the required work for maintenance certificate **A** has been carried out.
- □ Be sure to perform all maintenance work related to the Diesel engine according to the instructions in the Deutz service manual

- **At intervals of 100 operating hours / on a weekly basis (maintenance certificate B)**
  - □ Check the water-fuel separator
  - □ Check the coolant level*

- **After the initial 50 operating hours / at intervals of 500 operating hours (maintenance certificate C)**
  - □ Replace the preliminary fuel filter
  - □ Change the engine oil
  - □ Replace the oil filter
  - □ Check the oil level at the drum drive*
  - □ Check the oil level in the rear axle*
  - □ Check the oil level at the vibration drive*
  - □ Replace the oil filter cartridge
  - □ Change the oil in the wheel drives
  - □ Check the oil level in the wheel drives (rear axle)*
  - □ Change the oil in the axle housing
  - □ Maintenance work related to the battery
  - □ Check the printed circuit board, the fuses and relays
  - □ Maintenance work related to the ventilation system, the drum & vibration drives

- **As soon as the service indicator lights up on the display or after carrying out repair work:**
  - □ Check the cooling system
  - □ Replace the combustion air filter

- **At intervals of 2000 operating hours:**
  - □ Hydraulic oil change

*add oil/coolant, if required

NOTICE	The following maintenance measures need to be taken in a workshop. They may be carried out by the trained service staff of an authorized *Hyundai* dealer only.

⚠ WARNING	**Risk of burns!** If you need to perform any work related to the Diesel engine or the engine compartment, make sure all components have cooled down before you start. Before carrying out any maintenance work related to the Diesel engine, read and observe the Deutz service manual.

SAFETY INSTRUCTIONS	Prior to carrying out the maintenance work in this chapter, make sure that the work described in the chapter **Maintenance instructions for the driver** has been completed.

⚠ WARNING	**Risk of intoxication when working in closed areas!** • Ensure sufficient ventilation. • Make sure all emissions are conducted outside the work zone. • Take noise protection measures, if necessary.

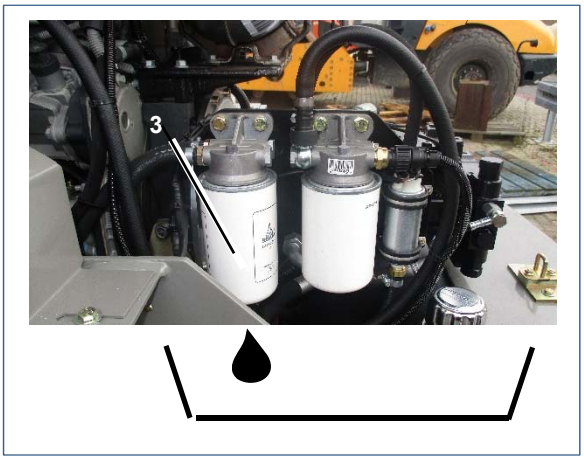
20 Maintenance certificate B: At intervals of 100 operating hours

20.1 Maintenance work referring to the Diesel engine

- After the initial operation, the first inspection of the engine needs to be conducted after 50 operating hours, unless stated otherwise in the operating manual of the Diesel engine manufacturer.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** Please refer to the operating and service manual(s) of the Diesel engine manufacturer for information on maintenance work / intervals related to the Diesel engine.

20.1.1 Checking the water-fuel separator



The fuel is cleaned and water is filtered from it before it reaches the diesel engine. The water-fuel separator (which is a part of the preliminary fuel filter) needs to be checked.

- The preliminary fuel filter / water-fuel separator (**3**) can be found on the left side, at the back of the engine.
- Drain the preliminary fuel filter/ fuel-water separator (**3**).

Fig. 103 Preliminary fuel filter / Water-fuel separator

20.1.2 Cooling system

To be carried out if the warning lamp lights up or after repair work:

- Check the coolant level.
- If coolant needs to be added:
- Carefully screw off the lid of the coolant receptacle.
- Check the coolant level.
- If coolant needs to be added or after repair work, the following mixing ratio is required:
- Capacity of the cooling system: approx. 15 liters.
- Mixing ratio: 0.5 liter of water and 0.5 liter of coolant per liter (i.e. water: 50% / coolant: 50%)

Fig. 104 Coolant level

⚠ WARNING	**Risk of burns caused by hot coolant!** Before you open the lid of the cooler, make sure that the Diesel engine and the cooling system have cooled down.

21 Maintenance certificate C: At intervals of 500 operating hours

21.1.1 Replacing the filter cartridges of the preliminary fuel filter

Fig. 105 Preliminary fuel filter

- 50 operating hours after the initial operation or subsequently, at intervals of 500 operating hours, you need to check the preliminary fuel filter.
- At intervals of 500 operating hours (or every 12 months, whichever applies first), replace the filter cartridges of the preliminary fuel filter (**2**).
- Put a receptacle under the fuel filter in order to collect any leaking fuel.
- Unscrew both filter housings (cartridges) and dispose of them in accordance with waste disposal key 150299 (EU).
- Use clean oil to slightly lubricate the sealing surfaces of the new filter cartridges.
- Attach the filter cartridges and screw them on manually.
- Let the Diesel engine turn by actuating the starter.
- Open the fuel ventilation screw and ventilate the fuel system (see Deutz service manual for instructions).

21.1.2 Engine oil change

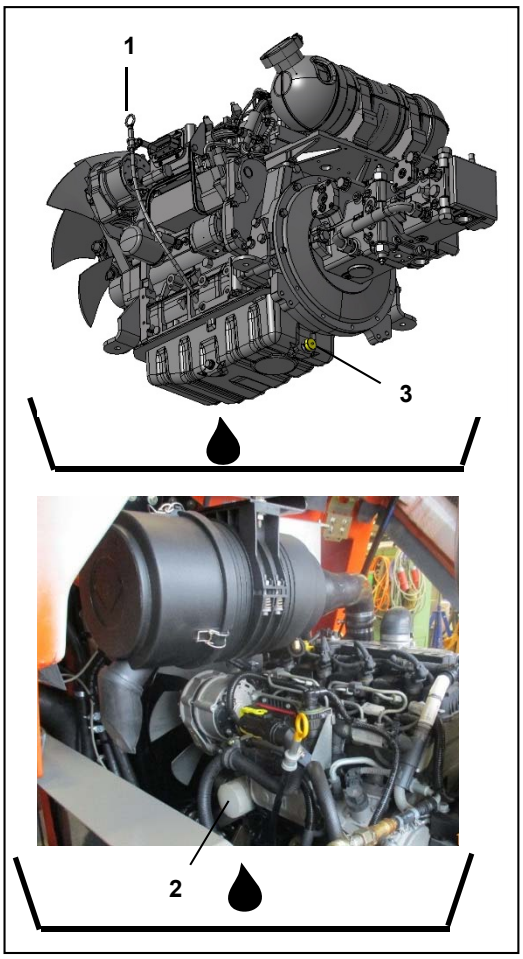


Fig. 106 Engine oil change

50 operating hours after the initial operation; subsequently, at intervals of 500 operating hours:

- Start the Diesel engine and wait until it has reached operating temperature.
- Stop the Diesel engine and pull out the ignition key.
- Place a sufficiently dimensioned receptacle under the drain plug (**3**) of the Diesel engine.
- Unscrew the oil drain plug (**3**), pull out the oil dipstick (**1**) and drain the oil.
- Dispose of the waste oil in an environmentally friendly way, according to the applicable regulations.
- EU waste disposal key: 130202 (EU).
- Screw in the oil drain plug (**3**) with a new o-ring.

Replacing the oil fiter:

- Place a receptacle under the oil filter (**2**) to collect any leaking oil.
- Unscrew the filter cartridge and dispose of it in an environmentally friendly way, according to the applicable regulations.
- EU waste disposal key:150299 (EU).
- Use clean oil to lubricate the surface of the filter sealing.
- Attach the filter cartridge and screw it on manually.

21.1.3 Topping up on engine oil

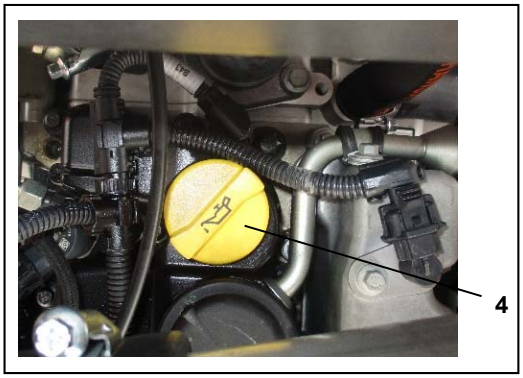


Fig. 107 Topping up on engine oil

- Add a sufficient quantity of engine oil (approx. 10 liters/2.6 gallons) via the filler neck (**4**).
- After filling in the engine oil, screw off the lid and let the Diesel engine turn via the starter.
- Check the oil level at the oil dipstick and add oil, if necessary.
- Start the Diesel engine and let it idle to reach operating temperature.

SAFETY INSTRUCTIONS	Refer to the table of lubricants for specifications of the oil to be used.

NOTICE	**Environmental protection!** The engine oil must not penetrate the ground, pollute water or leak into the sewer system. Be sure to collect it in sufficiently dimensioned receptacles and dispose of it in an environmentally friendly way (EU waste disposal key 130202).

21.1.4 Replacing the combustion air filter

Fig. 108 Combustion air filter

- If the respective lamp on the dashboard indicates an accumulation of dirt at the air filter for the combustion air of the Diesel engine, clean or replace the air filter.
- After a maximum of five cleanings by means of compressed air, replace the filter cartridge.
- Wash the interior of the air filter housing and clean it; if necessary, vacuum it.

NOTICE	**Damage to the Diesel engine!** Never attempt to clean the air filter housing by blowing air into it!

21.2 Maintenance work referring to the hydraulic system

SAFETY INSTRUCTIONS	Before carrying out any maintenance work related to the hydraulic system, refer to the table of lubricants for information on the required type of hydraulic oil.

21.2.1 Replacing the hydraulic oil and the oil filter cartridge

NOTICE	Prior to replacing the filter cartridge (**3**), place an oilpan under the hydraulic pump.

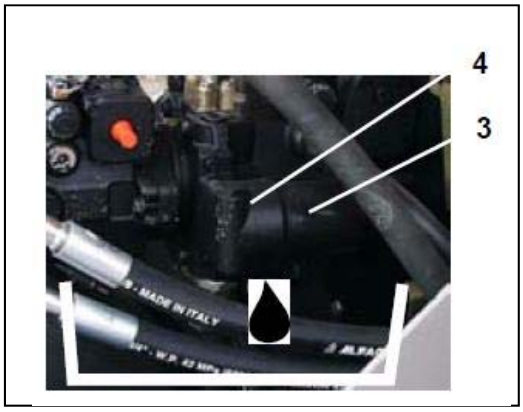


Fig. 109 Replacing the oil filter cartridge

Replace the oil filter cartridge for the hydraulic oil **50 hours** after the initial operation and subsequently, at intervals of **500 operating hours:**

- Slightly loosen the filter cartridge (**3**) by means of a tension band or a similar tool, but do not screw it off yet.
- In order to prevent the contents of the suction pipe from leaking, stop loosening the filter cartridge as soon as a suction sound is audible. The air intake causes the oil in the suction pipe to flow back into the tank.
- As soon as the suction sound stops, unscrew the oil filter cartridge and remove it in an environmentally friendly way.
- EU waste disposal key: **150299 (EU**).
- Use clean oil to lubricate the sealing of the filter head (**4**).
- Lubricate the new oil filter cartridge (**3**) with clean hydraulic oil.
- Attach the new oil filter cartridge and screw it on manually.

NOTICE	Do not use a tension band to tighten the filter cartridge! To prevent the content of the suction hose from pouring out, loosen the oil filter cartridge only until a suction sound is audible. The entering air causes the oil in the hose to flow back into the tank.

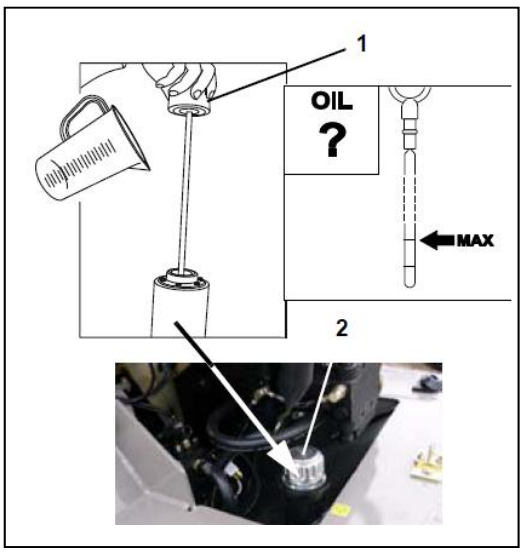


Fig. 110 Hydraulic oil level

Unscrew the filler neck with the oil dipstick (**1**) and check the oil level.

- If necessary, add hydraulic oil.
- Clean the ventilation head (**2**).
- In case hydraulic oil needs to be added, observe the required specifications in the **Table of lubricants**.

21.2.2 Hydraulic oil change

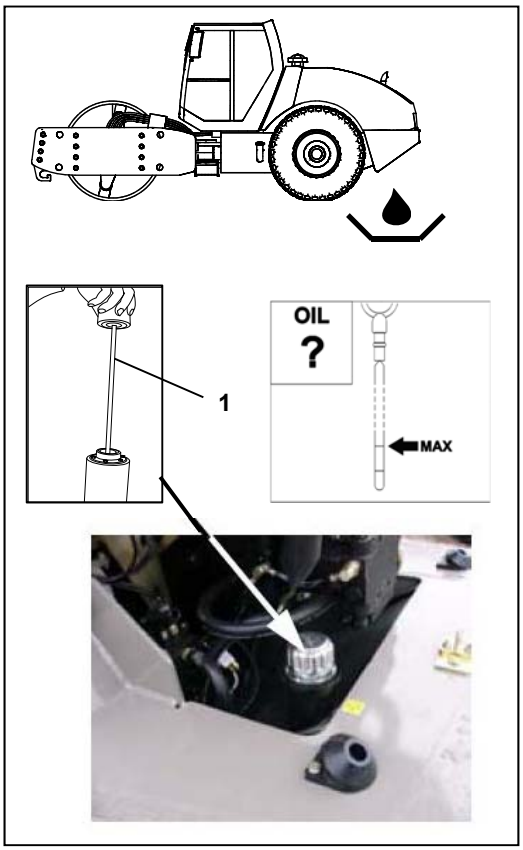


Fig. 111 Hydraulic oil

Replace the hydraulic oil at intervals of **2000 operating hours** or if another type of oil is to be used.
Start the Diesel engine and let it run until the hydraulic oil has warmed up.

- Stop the Diesel engine and pull out the ignition key.
- Place an oil receptacle under the hydraulic tank.
- Unscrew the filler neck with the oil dipstick (**1**).
- Unscrew the oil drain plug, remove the oil dipstick and drain the hydraulic oil.
- Dispose of the waste oil in an environmentally friendly way.
- EU waste disposal key: 130202 (EU).
- Replace the oil filter cartridge, see description above.
- Screw in the oil drain plug with a new O-ring.
- Add hydraulic oil via the filler neck.
- Start the Diesel engine and let it run until the hydraulic oil has warmed up.
- Stop the Diesel engine and pull out the ignition key.
- Check the hydraulic oil level again.

NOTICE	• Take the compaction roller to a workshop in order to carry out the oil change. • Take the amount of hydraulic oil to be drained into account and be sure to choose a sufficiently dimensioned oil receptacle. • Be sure to exercise extreme cleanliness when filling in hydraulic oil! • Inform yourself of the type of hydraulic oil in the hydraulic system. Please refer to the **Table of lubricants** for the required specifications.

NOTICE	**Environmental protection!** • The engine oil must not penetrate the ground, pollute water or leak into the sewer system. • Collect it in sufficiently dimensioned receptacles and dispose of it in an environmentally friendly way (EU waste disposal key 130202).

21.3 Maintenance work referring to the rear axle

SAFETY INSTRUCTIONS	Before carrying out any maintenance work related to the rear axle, refer to the table of lubricants for information on the required type of axle oil.

⚠ WARNING	**Risk of injuries and accidents caused by insufficient safety measures and inexperienced maintenance work** • Take the compaction roller to a workshop in order to carry out the oil check. • Before carrying out any work related to the rear axle, secure the compaction roller against rolling. • Apply the parking brake and put wheel chocks under the tires.

NOTICE	**Environmental protection!** Prevent the oil from penetrating the ground, polluting water or leaking into the sewer system.

21.3.1 Checking the oil level in the wheel drives and changing oil

Check the oil level in the rear axle and in the wheel drives after the **50 initial operating hours** and subsequently, at intervals of **500 operating hours**.

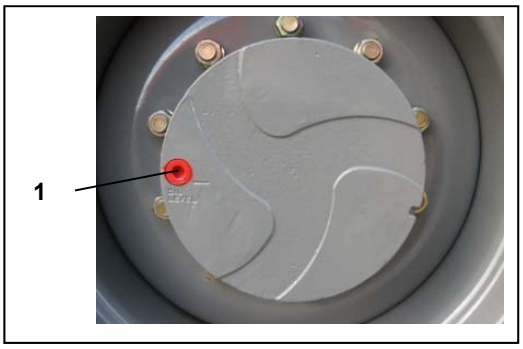


Fig. 112 Oil level in the wheel drives

Checking the oil level in the wheel drives:

- Advance the compaction roller until the oil drain plug (**1**) is in the correct position (see photo on the left).
- Unscrew the oil drain plug (**1**).
- The oil level should be barely visible underneath the opening or tangible with a finger.
- In case oil needs to be added, be sure to consult the **Table of lubricants** for information on the required specifications.
- Screw the oil drain plug (**1**) back in.

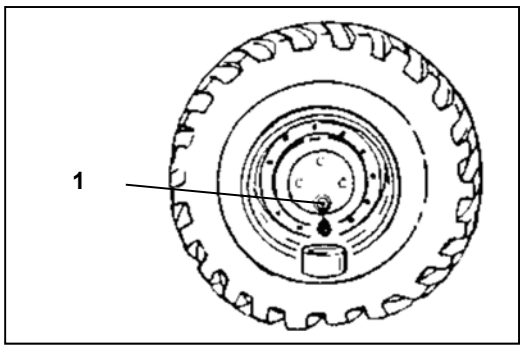


Fig. 113 Oil change wheel drives

Oil change in the wheel drives:

- In order to replace the oil in the wheel drives, advance the compaction roller until the oil drain plug (**1**) is in the lowest position (6 o'clock).
- Place a sufficiently dimensioned receptacle under the respective wheel drive.
- Unscrew the oil drain plug (**1**) and drain the oil.
- Screw the oil drain plug (**1**) back in and add axle oil by following the instructions above.

21.3.2 Oil level check and oil change in the rear axle

NOTICE	• Prior to carrying out any maintenance work at the rear axle, please inform yourself of the permissible axle oil specifications, see **Table of lubricants.** • Take the compaction roller to a workshop in order to carry out the oil check. • Before carrying out any work related to the rear axle, secure the compaction roller against rolling: Apply the parking brake and put wheel chocks under the tires.

Check the oil level in the rear axle after the initial **50 operating hours** and subsequently, at intervals of **500 operating hours**.

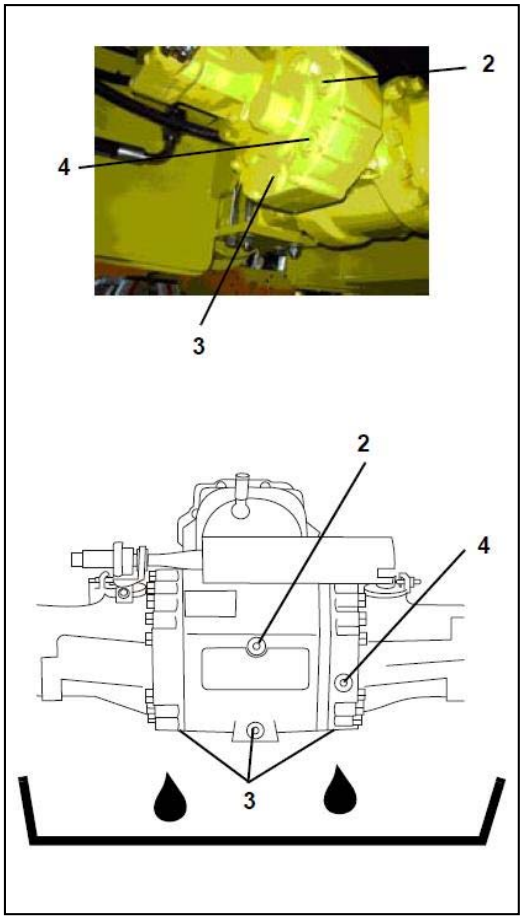


Fig. 114 Oil level and oil change- rear axle

Checking the oil level in the axle housing

- The filler screws (**2**) and the oil drain plugs (**3**) must point backwards (direction of motion).
- Uscrew the filler screws (**2**) and remove them from the axle housing.
- The oil level should be barely visible underneath the opening or tangible with a finger.
- Screw the filler screws (**2**) back in.

Replacing the oil in the axle housing

- Place a sufficiently dimensioned oil receptacle under the three oil drain plugs (**3**).
- Unscrew the oil drain plugs (**3**) and drain the oil.
- Dispose of the waste oil in an environmentally friendly way.
- EU waste disposal key: 130202 (EU).
- Screw the oil drain plugs (**3**) back in.
- Refer to the table of lubricants for information on the required specifications of the axle oil.
- Provide the axle housing with new axle oil via the filler screws (**2**).
- Attach and tighten the filler screws (**2**).

21.3.3 Maintenance work referring to the drum and vibration drive

SAFETY INSTRUCTIONS	Before carrying out any maintenance work related to the components of the drum, be sure to consult the **Table of lubricants** for information on the specifications of the required type of oil. In addition, clean the drum area to prevent dirt from contaminating the oil.

21.3.4 Oil level check: drum drive

⚠ WARNING	**Risk of injuries and accidents caused by insufficient safety measures and inexperienced maintenance work** • Take the compaction roller to a workshop in order to carry out the oil check. • Before carrying out any work related to the rear axle, secure the compaction roller against rolling. • Apply the parking brake and put wheel chocks under the tires.

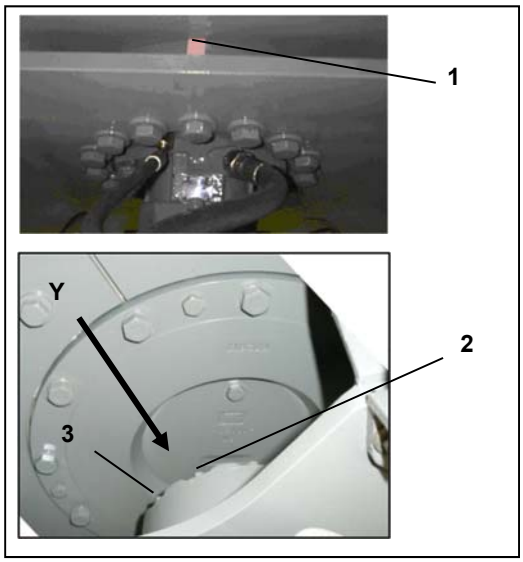


Fig. 115 Drum drive

Check the oil level at the drum drive after the initial **50 operating hours** and subsequently, at intervals of **500 operating hours**.

- Advance the compaction roller until the label (**1**) at the gear flange is visible and points upward.
- The filler and the oil drain screw (**2**, **3**) are both situated on the interior gear side Y.
- If the label (**1**) is in the correct position, the control screw (**2**) is on the left side and the drain screw (3) points downward.
- Remove the filler screw (**2**) from the gear box.
- The oil level should be tangible with a finger underneath the opening.
- If required, add the necessary amount of gear oil.
- Be sure to consult the **Table of lubricants** for information on the specifications of the required gear oil.

21.3.5 Oil level check: vibration drive

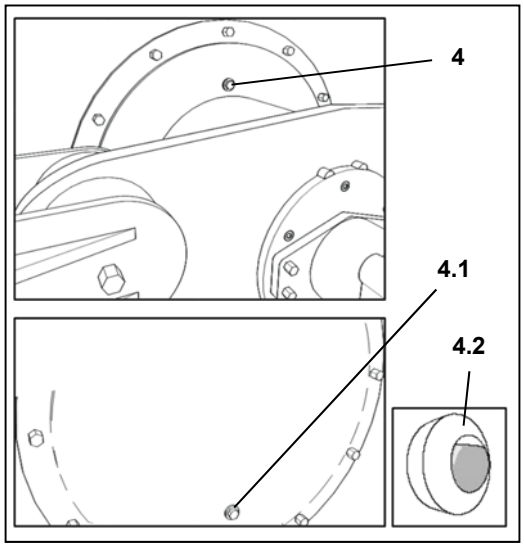


Fig. 116 Vibration drive

Check the oil level at the vibration drive after the initial **50 operating hours** and subsequently, at intervals of **500 operating hours**.

- Advance the compaction roller until the inspection glass (**4**) is in the lowest position (6 o‘clock) (**4.1**).
- This implies that the filler screw (4) is in the top position (12 o‘clock).
- If, in this position, the oil level does not correspond to
- the illustration (**4.2**), oil needs to be added.
- Be sure to consult the table of lubricants for information on the specifications of the required oil (engine oil 15W40).
- Remove the filler screw (**4**) from the housing.
- Add oil until the correct oil level is reached, see illustration.
- Screw the filler screw back in.

21.4 Maintenance work referring to the electrical system

21.4.1 Maintenance work related to the battery

⚠ WARNING	**Risk of explosions and injuries** Battery gases are highly explosive. Keep away sparks and open fire from the battery. Do not smoke. Avoid all skin contact with battery acid, as it may lead to severe chemical burns! Protect your eyes and your skin!

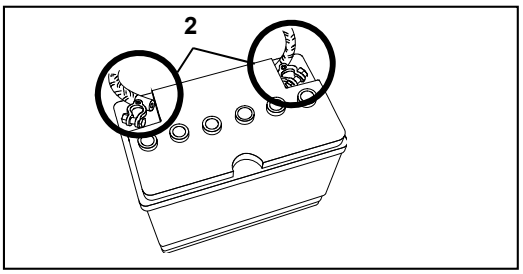


Fig. 117 Battery

- Check the battery poles (**2**) for the accumulation of dirt and for signs of corrosion.
- Lubricate the poles and terminals.
  Grease: order no. 0830684.

21.4.2 Printed circuit board, fuses and relays

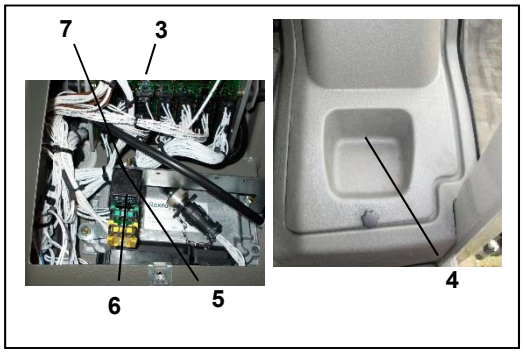


Fig. 118 Printed circuit board

- Check the printed circuit board (**3**), particularly fuses **F24** (**5**), **F18** (**6**) and relay **K42** (**7**).
- The printed circuit board is installed next to the driver's seat (on the left) and is covered by a faceplate.
- Open the faceplate (**3**) covering the printed circuit board (**4**) and check the printed circuit board by conducting a visual inspection.
- Always replace defective fuses by new ones, see **Maintenance instructions for the service staff**.

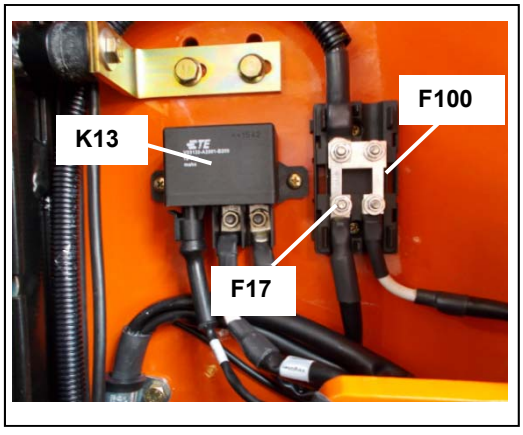


Fig. 119 Fuses and relays

Fuses and relays in the engine compartment:

- Check fuses **F17**, **F100** and relay **K13** in the engine compartment for the accumulation of dirt and damage.
- Always replace defective fuses, see table below for the allocation of the fuses on the printed circuit board.

21.4.3 Allocation of the fuses on the printed circuit board

No.	Ampère	Function	No.	Ampère	Function
F1	30	Ignition lock	**F14**	15	Connection for socket, engine speed sensor, connection compaction measurement (option)
F2	7.5	Terminal 30 – Radio	**F15**	10	Emergency stop, parking brake, drive control
F3	25	Optional feature: K08	**F16**	15	Drive control, accumulation of dirt (air filter), vibration, engine speed control, diesel control, ECO control (option), joystick, backup warner
F4	25	Rear window defroster	**F17**	150	Preheating
F5	25	Optional feature A/C	**F19**	7.5	Rear light (right), parking light (right)
F6	7.5	Control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	**F20**	7.5	Rear light (left), parking light (left)
F7	7.5	Gearshift (or override function) axle, drum	**F21**	7.5	Low-beam light (right)
F8	15	Horn, control rear window defroster, radio, interior lighting, electrical equipment driver‘s seat	**F22**	7.5	Low-beam light (left)
F9	15	Front/rear wipers & windscreen washer system	**F23**	15	Lighting system (Optional feature)
F10	15	Rotating light (optional feature), front work lights	**F24**	30	Terminal 30: Diesel control unit
F11	15	Rear work lights	**F100**	80	Primary fuse for the electrical system of the vehicle
F12	25	Fan (heating and ventilation)			
F13	7.5	Optional feature A/C, HCC water valve			

21.5 Maintenance work referring to the ventilation system

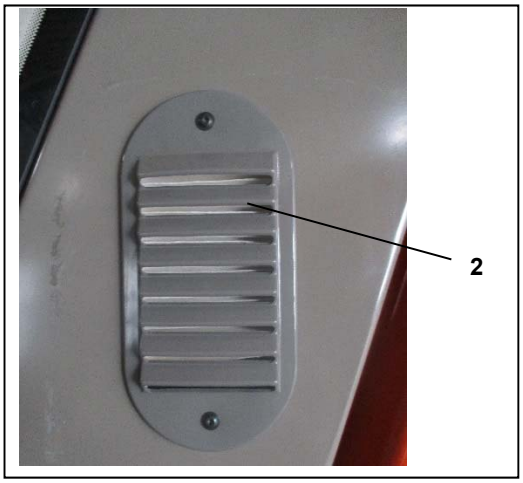


Fig. 120 Ventilation system

- The filter units of the ventilation system need to be replaced at intervals of 500 operating hours or in the event of a high accumulation of dirt.
- Clean the ventilation slots by means of an industrial vacuum cleaner.
- Open the cover plate (**2**) of the filter unit and replace the filter unit.

NOTICE	**Material damage!** Never clean the ventilation slots with water jets or a high-pressure washer!

22 Cleaning and preservation

22.1 Cleaning the engine

The accumulation of dust on the cooling fins, particularly in combination with fuel and oil, reduces the cooling capacity. The most suitable cleaning method depends on the kind of soiling:

- **Steam jet:**

We recommend cleaning the engine by means of a steam jet. Carry out the cleaning at a temperature of **80 to 90 ºC (176 to 194 ºF)** and use a pressure of approx. **60 bar (870.23 psi).**.

- **Compressed air:**

Compressed air is to be used to remove minor, dry dirt only. Start blowing at the exhaust side.

- **Water and solvent:**

In case water and solvent are used to clean the engine, use solvents which dissolve compounds of dust, fuel and lubricants. Apply the solvent by means of a brush. Let it set before washing it down with water.

⚠ WARNING	**Risk of property damage and health hazards!** Never use fuel to clean the engine! The cleaning effect is poor and it is harmful both to your health and the environment.

- Clean the protective grid, the engine cooling fan and the air guiding plates.
- Never point directly at sensitive parts, e.g. the fan wheel.
- Prevent the cleaning fluid from reacting with electrical components.
- After a thorough and careful cleaning, run up the engine in order to cause the remaining water to vaporize, thus preventing corrosion.

22.2 Long-term storage

- Remove the battery. Store it in a frost-proof room. Fill and recharge it at regular intervals.

In case the compaction roller is put out of operation for more than 6 months:

- Thoroughly lubricate all greasing points.
- Replace the engine oil by anti-corrosive oil.
- Add **10%** of anti-corrosive oil to the fuel. Fill the tank to the top. Run the Diesel engine for a few minutes.
- Seal the air filter suction hose and the muffler by means of duct tape and plastic foil.
- In areas with a high humidity (tropical regions), fill the hydraulic tank to the top.
- Apply a thick film of anti-corrosion grease to all exposed cylinder piston rods.

NOTICE	**Material damage!** With biodiesel, standstill periods of more than 4 weeks are to be generally avoided.

Before putting the vehicle into service again:

- Check the hydraulic oil level.
- Drain the anti-corrosive oil and fill in new engine oil.
- Replace the hydraulic oil in case the compaction roller has not been put into operation for more than a year.
- Remove the anti-corrosion grease.
- Open the air filter suction hose and the muffler by removing the duct tape and the plastic foil.

22.3 Final shutdown of the compaction roller

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** Prior to the final shutdown of the compaction roller, inform yourself of all applicable laws, guidelines and directives concerning the shutdown procedure and the disposal and observe them!

NOTICE	**Environmental protection!** • Dispose of all materials separately and at official and authorized locations! • Oil and fuel may not penetrate the soil, pollute water or leak into the sewer system! • Dispose of all consumables and lubricants separately and in an environmentally friendly way!

- Ensure that the compaction roller is not put into operation in the period between the shutdown and its disposal!
- Secure the compaction roller against unauthorized operation by locking the door, the engine hood and the windows.
- Take all measures necessary in order to prevent any danger resulting from the machine (see notes on securing the compaction roller against rolling in this manual, for instance).
- Remove the battery from the vehicle.
- Eliminate any leakage (engine, tank, hydraulic system) and make sure no consumables or lubricants which might represent a risk to the environment can escape!

23 Initial operation

23.1 Delivery receipt of the compaction roller

NOTICE	• Make sure all checks and maintenance measures required for the initial operation are carried out in the presence of the customer or his/her staff. • Obtain a written confirmation.

NOTICE	Inform the customer and his/her staff of the warranty terms as provided in the contract. As for the liability of the manufacturer, refer to the corresponding section in the operating and maintenance manual.

□ Ascertain the completeness of the delivery (including all accessories and the technical documentation).

□ Make a note of any damage found.

□ Refer to the chapter **Note of delivery and verification of inspections** for information on the default maintenance intervals (maintenance certificates).

23.1.1 Checking the operating state of the compaction roller

NOTICE	• Make sure all checks and maintenance measures required for the initial operation are carried out in the presence of the customer or his/her staff. • Obtain a written confirmation. • Indicate the respective chapters in this manual.

- **Check the following fill levels:**

  Ensure that the following fill levels correspond to the required levels (see **Technical Specifications**):

□ Engine oil level

□ Coolant level

□ Hydraulic oil level

□ Oil level in the drum drive

□ Oil level in the vibration drive

□ **Check (correct) the tire inflation pressure**

□ **Screw connections:**

□ Tighten the wheel nuts by means of a torque key (tightening torque: **500 Nm**).

□ Check all screw connections.

- **Check the hydraulic system**

□ Check the hydraulic hoses and screw connections for signs of leakage.

23.2 Instruction and demonstration at the machine

23.2.1 Vehicle documents and operating manual

- Hand out the documents related to the compaction roller and point out their relevance.
- Explain the structure and the contents of the operating and maintenance manual.
- Be sure to refer to the safety instructions and stress the importance of observing them.
- Explain the operation and the functions based on the instructions in this manual.

SAFETY INSTRUCTIONS	**Obligation to inform yourself!** Bear in mind that, after your initial instruction and demonstration, the operating and maintenance manual will be the only resource for obtaining information on the operation of the vehicle.

23.2.2 Operating elements and displays in the cab

When giving the operating staff instructions related to the controls and displays in the cab, adhere to the sequence provided by the operating and maintenance manual:

- Begin by explaining the adjustment of the driver‘s seat.
- Explain the functions of the switches, the buttons and the symbols of the dashboard and the steering column.
- Point out the connections between certain functions, e.g. the parking brake and engine start.
- Explain the joystick control.
- Point to the specifications of the required hydraulic - , gear-, axle - and engine oil types, the coolant and the brake fluid.

23.2.3 Working with the compaction roller

- Soil compaction modes
- Vibration modes
- Roller drum types
- Driving on slopes

23.2.4 Driving the compaction roller

- Transporting the compaction roller
- Refer to the corresponding instructions in the operating and maintenance manual when explaining the towing process.

23.2.5 Maintenance work

- □ Fill the tires
- □ Check the tire inflation pressure
- □ After a practical demonstration, eliminate any signs of leakage and
- □ Check the function of the brakes and the electrical system.
- □ Provide information on maintenance measures and intervals.
- □ Point out that the use of supplies and substances other than the ones approved by the manufacturer inevitably voids the warranty.

23.3 Check list: First inspection after the initial 50 operating hours

NOTICE	See **Note of delivery & verification of inspections** for the corresponding form.

23.3.1 Fill levels

- □ Check the engine oil level.
- □ Check the hydraulic oil level.
- □ Check the fill level in the wheel drives of the rear axle.
- □ Check the fill level in the axle housing of the rear axle.
- □ Check the oil level of the drum drive.
- □ Check the oil level of the vibration drive.
- □ Replace the breathers of the rear axle.
- □ Check the water filling in the tires, see section on filling the tires.
- □ Check the tire inflation pressure, see **Tires at the rear axle**.

23.3.2 Diesel engine

SAFETY INSTRUCTIONS	In addition to the instructions given here, be sure to consult the operating and maintenance manual of the Diesel engine manufacturer and adhere to the maintenance intervals and measures mentioned in it.

- □ Replace the air filter cartridge of the Diesel engine. Clean the air filter housing, if required.
- □ Tighten the fastening screws of the air intake system.
- □ Tighten the fastening screws of the exhaust system.

NOTICE	**Material damage!** Disregard of the instructions related to the air intake system results in damage to the Diesel engine!

23.3.3 Screw connections

- □ Check the screw connections of the engine mounting at the Diesel engine.
- □ Tighten the screw connections of the rear axle (tightening torque: **550 Nm**).
- □ Tighten the screw connections at the articulated pendulum joint (tightening torque: **120 Nm**, tightening torque counter screws: **70 Nm**).
- □ Check all other screw connections.

SAFETY INSTRUCTIONS	For further information, refer to the tables of tightening torques in the service manual.

23.3.4 Hydraulic system

- □ Replace the filter cartridge at the pump assembly.
- □ Check the ventilation filter of the hydraulic tank.
- □ Check the hydraulic hoses and screw connections for leakage.

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