# **COMPACTION ROLLER**

# HR110/120/140-9



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## 2 MACHINE DESIGNATION, MANUFACTURER AND NOTES

## 2.1 Machine designation and intended use

Designation	Туре		
HYUNDAI compaction rolle	HR110/120/140C-9		
Purpose of use:			
The compaction roller serves to compact soil.			
Intended use:			
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.			
Name of the manufacturer:			

### 2.2 Manufacturer

# ATLAS WEYHAUSEN

F. Weyhausen AG & Co. KG Maschinenfabrik

### Address:

27793 Wildeshausen, Visbeker Straße 35 (Germany)

### Contact:

Phone:	+49 (0) 4431 981-0
Fax:	+49 (0) 4431 981-139
E-Mail:	info@f-weyh ausen.de
Web:	http://www.radlader.com

## 2.2A Distributor

### Distributor, Adderss

Hyundai Heavy Industries co., Ltd. 1000, Bangeojin sunhwan-doro, Dong-Gu, Ulsan, 682-792, Korea

## 2.3 Type plate and serial number



### Type plate labeling

## 2601 XXX E123456X

The serial number (1) features reference numbers X in order to identify specific equipment.

The serial number (1) can be found on the type plate (2) on the right side, below the cabin, and in addition, it has been engraved on the basic frame.

### Serial number

## 2601 XXX E123456X

The serial number is engraved on the basic frame.

## 2.4 Position of the type plates

### 2.4.1 Type plate vehicle



### 2.4.2 Type plate cabin







### Type plate labeling

## 2601 XXX E123456X

The serial number (1) features reference numbers X in order to identify specific equipment.

The serial number (1) can be found on the type plate (2) on the right side, below the cabin, and in addition, it has been engraved on the basic frame.

The following information is provided by the type plate:

• Type

.

- Year of manufacture
- Vehicle identification number (serial number)
  - Service weight
- Engine type
- Engine output (kW)
- Maximum permissible total weight

### Serial number

## 2601 XXX E123456X

The serial number is engraved on the basic frame.

#### **Declaration of conformity** 2.5

#### EC DECLARATION OF CONFORMITY

THE SIGNATORY FA. F. WEYHAUSEN AG & CO. KG, VISBEKER STRASSE, 27793 WILDESHAUSEN, GERMANY

ACTING AS AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER

#### FA. F. WEYHAUSEN AG & CO. KG, VISBEKER STRASSE, 27793 WILDESHAUSEN, GERMANY

HEREBY DECLARES THAT THE MACHINE / EQUIPMENT DESCRIBED BELOW

- 1. MACHINE DESCRIPTION Compaction roller
- MANUFACTURER: FA, F, WEYHAUSEN AG & CO, KG, VISBEKER STRASSE, 27793 WILDESHAUSEN, GERMANY 2.
- TYPE: AW 3. 4.
- SERIAL NUMBER.: YEAR OF MANUFACTURE: 2035
- 5. ENGINE TYPE:
- ENGINE OUTPUT 6.
- ESTABLISHED AVERAGE SOUND POWER LEVEL (WITH REFERENCE TO ITEM 2 OF THE DIRECTIVES BELOW) WITH AN EQUIPMENT CORRESPONDING TO THIS TYPE: LWA 99.8 DB/1 PW 8. WARRANTED SOUND POWER LEVEL (WITH REFERENCE TO ITEM 2 OF THE DIRECTIVES BELOW) FOR THIS EQUIPMENT: LWA XXX DB/ 1 PW

COMPLIES WITH THE REQUIREMENTS OF THE FOLLOWING EUROPEAN DIRECTIVES AND GUIDELINES:

- 1. MACHINE DIRECTIVE: 89/392/EC SUPPLEMENTED BY 91/368/EC, 93/44/EC AND 93/68/EC AND ALL FURTHER APPENDICES; HOWEVER, NOT RESTRICTED TO THE CONSOLIDATION IN 98/37/EC NOISE LEVEL DIRECTIVES: 2000/14/EC AND APPENDICES
- 3. ELECTROMAGNETIC COMPATIBILITY : 89/336/EC AND APPENDICES/
- 4 ENGINE EMISSION GUIDELINES: 97/68 AND APPENDICES

#### HARMONIZED STANDARDS: EN 474, PART 1, EN 474 PART 3, EN 292 PART 2 (1994 RATIFICATION) AND OTHERS, WHERE APPLICABLE

- APPLICABLE NATIONAL TECHNICAL SAFETY GUIDELINES:
  - 1. GUIDELINES REGARDING ROAD WORTHINESS / ROAD TRAFFIC REGULATIONS (STVZO) I
  - 2. ACCIDENT PREVENTION GUIDELINES FOR VEHICLES (VBG 12)

#### THE FOLLOWING CONFORMITY EVALUATION PROCESS (CONCERNING THE DIRECTIVES MENTIONED ABOVE, ITEM 2); 2000/14/EC APPENDIX (INDICATE VI)

#### NOTIFIED BODY

- 1. TÜV NORD CERT, EUROPEAN NOTIFIED BODY 0044, AM TÜV 1, 30519 HANNOVER, GERMANY.
- 2. TECHNICAL DOCUMENTATION (CONCERNING THE DIRECTIVES MENTIONED ABOVE) AVAILABLE AT: F. WEYHAUSEN, VISBEKER STRASSE, 27793 WILDESHAUSEN, GERMANY

ISSUED	
COUNTRY:	GERMANY
TOWN:	WILDESHAUSEN
DATE:	XX.XX.XX
BY:	Fa. F. WEYHAUSEN AG & CO. KG
SURNAME:	GABRIEL
FIRST NAME:	ARTUR
POSITION:	HEAD OF THE CONSTRUCTION DEPARTMENT

#### SIGNATURE

THIS IS AN ELECTRONICALLY GENERATED DOCUMENT: THE ORIGINAL DOCUMENT IS AVAILABLE AT THE COMPANY.



## 2.6 User instructions

### 2.6.1 Using the compaction roller

Responsibility of the contractor



# Responsibility of the driver and the service staff





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.

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.

This also applies to individuals that are familiar with the operation and maintenance/servicing of this particular type of machine or similar vehicles.

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.

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### Notes on this operating and maintenance manual

## 2.7 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 cabin 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.

### 2.7.1 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!

Warns of an imminently dangerous situation which may result in severe bodily injury or death if it is not avoided.



### WARNING!

Warns of a dangerous situation which may result in severe bodily injury or death if it is not avoided.



### **CAUTION!**

Warns of a dangerous situation which may result in slight injury if it is not avoided.



### **CAUTION!**

Warns of a dangerous situation which may result in material damage if it is not avoided.



### NOTE

Refers to further information and gives advice in order to ensure trouble-free and efficient operation.



## **3** SAFETY INSTRUCTIONS

## 3.1 General use of the compaction roller



### Driving and working with the compaction roller



## CAUTION!

### Parking the compaction roller!

- Secure the compaction roller after each operation. Activate the parking brake and pull out the ignition key.
- Lock the door after leaving the cabin.

## DANGER!

- Risk of injuries!
- Secure the compaction roller against rolling!





### **DANGER!**

Watch out for individuals in the work area and within the operating range of the vehicle!

- Secure the work area against unauthorized trespassing.
- Before and while driving backwards, check the area behind you by looking backwards.



### **DANGER!**

### Working in unknown and/or complex environments!

- Find a skilled person to give you instructions!
- Agree on hand signals and warning calls beforehand!!



### **DANGER!**

### Risk of injuries!

- Transporting individuals on the vehicle is strictly prohibited!
- Never transport people, neither on the steps nor in the cabin!



### DANGER!

Sliding, breaking in of the compaction roller!

- Exercise extra caution when working near water!
- Before starting to work, check the inclination and carrying capacity of the ground.

## 3.3 Safety instructions in emergencies



### **CAUTION!**

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.

## 4 **TECHNICAL SPECIFICATIONS**

## 4.1 Operating data

Type with smooth drum	HR110C-9	HR120C-9	HR140C-9
General data:			
Service weight	11700 kg	12300 kg	1400 <b>0</b> kg
Axle load, front	6300 kg	7100 kg	8100 kg
Axle load, rear	5400 kg	5200 kg	5900 kg
Compaction capacity:			
static linear load	H€.00 kg/cm	3H8F kg/cm	38.Í Ï kg/cm
Amplitude high / low	1.8 / 0.8 mm	1.8 / 0.6 mm	1.9 / 0.7 mm
Frequency with high / low amplitude	30 / 38 Hz	30 / 40 Hz	30 / 40 Hz
Centrifugal force with high/ low amplitude	220 / 150 kN	240 / 140 kN	280 / 180 kN
Drum:			
Drum width	2100 mm	2100 mm	2100 mm
Drum diameter	1500 mm	1500 mm	1500 mm
Drum thickness	25 mm	30 mm	30 mm
Drive / transmission:			
Speed	0-12.5 km/h	0-12.5 km/h	0-12.5 km/h
Pendulum angle	±12°	±12	±12°
Gradeability with / without vibration	43% / 48%	45% / Í €%	40% / 45%
Noise level:			
Sound power level L <sub>wa</sub>	106 dB	106 dB	106 dB

Type with pad foot drum	HR110C-9	HR120C-9	HR140C-9
General data:			
Service weight	13F00 kg	1HÏ 00 kg	1Í I 00 kg
Axle load, front	7Ï 00 kg	Ì Í 00 kg	JÍ 00 kg
Axle load, rear	5100 kg	5100 kg	5900 kg
Compaction capacity:			
Static linear load			
Amplitude high / low	1.8 / 0.6 mm	1.8 / 0.6 mm	1.9 / 0.7 mm
Frequency with high / low amplitude	30 / 38 Hz	30 / 40 Hz	30 / 40 Hz
Centrifugal force with high / low amplitude	220 / 150 kN	240 / 140 k	N 280 / 180 kN
Drum:			
Drum width	2100 mm	2100 mm	2100 mm
Drum diameter	1390 mm	1390 mm	1390 mm
Drum thickness	30 mm	30 mm	30 mm
Drive / Transmission:			
Speed	0-12,5 km/h	0-12,5 km/h	0-12,5 km/h
Pendulum angle	±12	±12	±12°
Gradeability with / without vibration	48% / 52%	48% / 52%	48% / 52%
Noise level:			
Sound power level L <sub>wa</sub>	106 dB	106 dB	106 dB

## 4.2 Tires

Types HR110C - 114C-9	with smooth drum	with pad foot drum	
Standard	23.1-26	23.1-26 TR	

## 4.3 Fill levels

Types HR110C - 114C-9	Capacity in liters
Fuel tank	300 I
Hydraulic tank	106 I

## 4.4 Engine

Type HR	HR110C-9	HR120C-9	HR140C-9
Make	Deutz Diesel engine TCD 2012 L4		
Nominal output	96 kW (130 HP)	96 kW (130 HP)	103 kW (140 HP)

## 4.5 Dimensions



Fig.5 Dimensions Compaction rollers HR110C - 140C-9

Dimensions Types HR110C - 140C-9	with smooth drum	with pad foot drum
А	3195 mm	3195 mm
В	2270 mm	2270 mm
D	490 mm	490 mm
н	2920 mm	2920 mm
L	5757 mm	5757 mm
R	4860 mm	4860 mm
R <sub>1</sub>	7015 mm	7015 mm
W	2090 mm	2090 mm
W <sub>1</sub>	2100 mm	2100 mm
α	±30°	±30°

## 4.6 Roll-over protection system (ROPS)

The cabin of the compaction roller corresponds to the stipulations of standard ISO 3471 (1994). 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.



### CAUTION!

Any modifications of the cabin are permitted only after a written form of approval has been issued by F. Weyhausen AG & Co. KG within the scope of the certification tests. Otherwise, the ROPS certificate loses its validity. No liability will be assumed for any modifications of the cabin (drilling/welding) carried out without prior explicit approval of the manufacturer!

## **5 TRANSPORTING THE COMPACTION ROLLER**

5.1 Securing the compaction roller before transporting it



### WARNING!

Secure attachments and objects in the cabin before transporting the compaction roller! Remove objects attached to the exterior of the cabin and transport them separately. Remove or fasten objects that are kept in the cabin.

## 5.1.1 Loading and securing the compaction roller



## CAUTION!

Precautionary measures for transporting the compaction roller!

The compaction roller may be loaded and unloaded by experienced and adequately trained persons only.

The compaction roller may only be loaded and unloaded on level and solid ground.

 Transporting the compaction roller requires a flat bed truck with a sufficient load capacity, which is adequately equipped for securing the compaction roller. Observe the total weight of the compaction roller before loading it onto the truck; see chapter on technical specifications.

## 5.1.2 Loading and unloading the compaction roller

Driving the compaction roller onto a flat bed truck



- Check the position 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.

### 5.1.3 Securing the compaction roller on the transport vehicle

Fastening the anti-buckling device between the front and the rear end

- Install the anti-buckling device (1) between the front and the rear end.
- Secure the bolt (2) by means of a safety splint pin (3).



# Tying the compaction roller to the transport vehicle



5.1.4 Carrying out the transport



The compaction roller disposes of four lifting lugs at the front end (4) and two lifting lugs at the rear frame (5).



### **WARNING!**

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



### NOTE

Observe the national regulations and guidelines regarding tie-down safety standards!

Use chain hoists to secure the compaction roller (2) on the flat bed truck at the six lifting lugs.

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



## CAUTION!

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!

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

Getting acquainted with the compaction roller

## 6 GETTING ACQUAINTED WITH THE COMPACTION ROLLER

## 6.1 Overview: Assembly groups



### **Captions Assembly groups**

- 1 Cabin
- 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
- 8 Drum frame
- 9 Drum





**Captions Driver's compartment** 

- 1 Cabin frame
- 2 Cabin door
- 3 Control lever (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

Warning notices and labels



## 6.3 Warning notices and labels

### Captions warning notices and labels

- 1 Start, actuate the parking brake & read the operating manual
- 2 Operation of the control lever
- 3 Warning notices air filter
- 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 CE label
- 12 Warning Safety Distance Risk of being run over
- 13 Туре

## 7 BEFORE STARTING THE COMPACTION ROLLER

## 7.1 **Prior to the initial start**





### 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.

## 7.2 Checking the compaction roller

### 7.2.1 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 condition and the air pressure of the tires (adjust the tire pressure, if necessary),

Tires	Pressure	Туре
Standard	1.6 bar water filling	
Special	Please consult the tire manufacturer!	water filling

- the fill levels:
- Fuel (Diesel)
- Hydraulic oil
- Engine oil
- Coolant and
- Water level for the windscreen washer system,
- whether the windows of the cabin are dirty clean the exterior and interior window panes, if required,
- whether the exterior mirrors are dirty clean them, if required.

### 7.2.2 Checking the drum area

### Cleaning the drum area

### Checking the scrapers



### Standard scrapers rigid metal bar

Fig.15 Standard scrapers

# Contact scrapers, spring-loaded or Vulcollan bar



Before accessing the cabin 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.
- 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 elastic 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.

- 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).

• 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.

### 7.2.3 Refueling (Diesel)

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



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### CAUTION! 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 fuel	ASTM D975-No. 1	for temperatures from below 0° C to - 30° C	
Diesel fuel	ASTM D975-No. 2	for temperatures from above -10° C to 40° C	



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

### Opening the doors and accessing the vehicle

## 7.3 Opening the doors and accessing the vehicle

Opening and securing the doors





### WARNING!

Danger of falling while getting on/off the compaction roller!

- Dirty shoes may cause you to slip while you are accessing the cabin.
  - 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 cabin!
- Always face the compaction roller while you are getting on the vehicle!
- Do not use any control elements as handles!

### Accessing the cabin





### NOTE

Prior to accessing the cabin, the checks described above need to be completed, see previous sections.

- Unlock one of the doors.
- Open the doors with the upper windows (1) and make sure the open windows click into place.



### NOTE

- Prior to accessing the cabin, the upper windows (1) and the doors need to be properly locked .
- Hold on to both handles (2) and use the steps to access the cabin (4).
- After accessing the cabin, 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 doors, immediately close them and make sure they are securely engaged in the door lock.

### Opening and closing the windows



### Opening the doors



### Opening the doors and accessing the vehicle

- In order to open the windows (1), release the lock (7) and open the window on the desired side.
- Open the window and make sure it clicks into place (3).
- After releasing the windows, close the doors and make sure they are securely engaged in the door lock.



### NOTE

Close the windows and make sure they are securely fastened before opening the doors!

- Release the door by means of the door lock lever (8).
- Open the door until it clicks into place.

## 8 INDIVIDUAL SETTINGS

## 8.1 Adjusting the driver's seat

### **Driver's seat - Features**

- 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.

### Weight adjustment



### Height adjustment





*NOTE* 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.

- 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.
- 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.

### Adjusting the driver's seat

### Longitudinal adjustment



### **Backrest inclination**



- 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.



### **CAUTION!**

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!

- Adjust the backrest by means of the corresponding locking 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.



### CAUTION!

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/the backrest is fixed, i.e. it must not be possible to move it into another position any more!

### Adjustable steering column

### Armrest on the left side of the seat



• The armrest on the left is foldable and its height can be adjusted.



Before using the compaction roller and before leaving the seat, lift the left armrest.

- 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.

## 8.2 Adjustable steering column

Adjusting the steering column



The steering column may have to be adjusted in order to meet your individual needs.



### NOTE

If your distance to the steering wheel is too small or too big while you are properly seated on the driver's seat with the safety belt fastened, the steering column has to be adjusted.

- 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 (7) in its current position.
- Make sure that the steering wheel is securely locked. It must not be possible to move it into another position. If this is the case, the machine may not be started!

## 8.3 Adjusting the exterior mirrors



## 8.4 Fastening the safety belt



### Fastening the safety belt





### WARNING!

**Restricted visibility!** Dirty and incorrectly adjusted exterior mirrors restrict your view to the rear. Clean the exterior mirrors and adjust them according to your individual needs.

- The exterior mirrors (8) are installed at the right and left side of the front frame of the cabin.
- 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.



### 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!

- 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.



**NOTE** After locking it, the safety belt has to fit tightly.

## 9 **OPTIONS**

## 9.1 Driver's seat: Optional features

### **Turnable seat**



### **Backrest extension**



- If your driver's seat is turnable, you can swivel it to the right.
- The armrest with the control lever is adjusted with the driver's seat.



### WARNING!

Never adjust the seat while the compaction roller is in motion!

- 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).

- 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.

### Driver's seat: Optional features

### Spinal disk support



### \_\_\_\_\_



- Turn the hand wheel (2) to the left or the right in order to adjust both the height and the bulge of the back rest.
- This feature contributes both to the driver's comfort and his/ her productivity.

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

## **10 CONTROL ELEMENTS AND DISPLAYS IN THE CABIN**

## 10.1 Overview: Cabin

### 10.1.1 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.

- Operating hour meter (1)
- Fuel level in the tank (2).

Symbol	Function	Description	
FI	Display forward motion (green)	Activation indicates that the compaction roller is moving forward	
	Display reverse motion (green)	Activation indicates that the compaction roller is moving backward	
ECO	Display ECO speed (Option) (yellow)	Lights up on activation of the ECO speed mode, see chapter on the compaction of soil with ECO speed.	
	Control 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.	
	Control preheat (yellow)	LED lights up while the Diesel engine is being preheated (igni- tion lock position I) and goes out as soon as the starting tempe- rature 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)	Indicates an insufficient hydraulic oil pressure of the braking system.	
Symbol	Function	Description	
--------	--	--	--
	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 operating manual Deutz Diesel engine 2012.	
(a)	Diesel engine oil pressure (red)	If this lamp lights up during operation, immediately stop the Diesel engine.	
	Coolant fill level Diesel engine (red)	Indicates an insufficient level of coolant in the cooling circuit, see chapters on maintenance.	
	Dual display Accumulation of dirt in the fuel filter / air filter of the Diesel engine (yellow)	If this lamp lights up, determine the cause and clean / replace the filter, see chapters on maintenance.	
	Display high amplitude (yellow)	Indicates that " <b>high</b> amplitude" has been selected by means of the switch "soil compaction" on the panel next to the control lever.	
	Display low amplitude (yellow)	Indicates that " <b>low</b> amplitude" has been selected by means of the switch "soil compaction" on the panel next to the control lever.	
	Display drum overmodulation (green)	Indicates that the switch "overmodulation hydraulic engine drum" on the panel next to the control lever is <b>activated</b> . The engine is manually set to its highest swallowing capacity (maximum rotational speed).	
	Display rear axle overmodulation (green)	Indicates that the switch "overmodulation hydraulic engine rear axle" on the panel next to the control lever is <b>activated</b> . The engine is manually set to its highest swallowing capacity (maximum rotational speed).	

# 10.1.2 Switches in the 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, press the **emergency stop push-button**.

# 10.1.3 Warning features

# Horn



# $\triangle$

#### WARNING!

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

- 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.

# 10.1.4 Control lever and panel of switches in the right armrest



The console of the adjustable armrest on the right features the control lever (1) and the panel of switches (2) for controlling the functions of the compaction roller.

- You can adjust the right armrest (4), e.g. in order to get on or off the vehicle, by pressing the button (3).
- In order to get on / off the vehicle, move the armrest (4) into the rear position. In order to work, move it into the front position.

Functions of the control lever



- The control lever (1) in the right armrest serves to control the functions of the compaction roller during operation.
- The buttons for certain functions are colored and have been laid out ergonomically.
  - green = Diesel engine idling
  - **blue** = driving the compaction roller without working
  - red = driving and working with the compaction roller.
  - yellow = ECO Speed (optional feature) If your vehicle is not equipped with ECO Speed, the button serves to reduce the Diesel engine speed (i.e. it is not possible to work).
  - Function ECO Speed, see section on soil compaction in the chapter Working with the compaction roller.
- The button at the front of the control lever (1.1) disposes of the functions Vibration **on / off**.
- Red button = Vibration on / off.

# Panel of switches in the right armrest



# • The switches on the panel (2) of the right armrest (4) serve to control the functions related to driving and drum operation.

- Switch: select the type of vibration for soil compaction (2.1).
  - Central position (**0**) = Vibration off.
  - Press down the front part of the switch (**KA**) to activate surface soil compaction (low amplitude).
  - Press down the rear part of the switch (**GA**) to activate deep soil compaction (high amplitude).



# NOTE

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

- Overmodulation Hydraulic engine drum on / off (2.2).
- Overmodulation Hydraulic engine rear axle on / off (2.3).



# NOTE

These settings are required in order to drive on heavy soil and on slopes. Please refer to the corresponding sections in this operating manual.

# 10.1.5 Panel of switches below the cabin roof



10.1.6 Heating and ventilation

 1
 2
 3

 Image: Control sheating and ventilation
 3

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

- Front and rear working 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)

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

- Rotary switch (1) fan stages 0, I III.
- Rotary switch (2) heating, red area: hot, blue area: cold.
  - Switch (3) air conditioning on / off (optional feature).

# **Overview:** Cabin

# **Distribution of air**



- In the cabin, 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).

# **11** STARTING, DRIVING AND STOPPING THE COMPACTION ROLLER

# **11.1 Prior to the initial start**



# 11.2 Starting the Diesel engine

# Starting the Diesel engine



# Diesel engine does not start!

- Insert the ignition key into the ignition lock (2).
- 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.



# **CAUTION!**

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!

- Check:
  - whether the parking brake is applied,
  - the charge condition of the battery,
  - the battery main switch (if your vehicle is equipped with this optional feature),
  - the amount of Diesel in the fuel tank.
  - the engine compartment by performing a visual inspection,
- the emergency stop push-button.
- Contact the HYUNDAI service staff.

#### Diesel engine still does not start!

# 11.3 Driving the compaction roller



# WARNING!

Driving the compaction roller with the doors open is strictly prohibited.

You may open the windows in the doors before starting.

# 11.3.1 Starting forward and reverse motion

# Forward motion



# • Deactivate (i.e. release) the parking brake by means of the switch (3). The symbol indicating the activation of the parking brake goes out. A short holding time of approx. 2 seconds is required before the joystick can be moved out of its central position.

- Make sure that the switch for selecting the type of vibration is in the central position **0**, see chapter Working with the compaction roller.
- On the control lever (1), set a Diesel engine speed which enables you to drive the compaction roller by means of the buttons (see fig.43).
- Hold on to the steering wheel.
- Move the control lever (1) forward.
- The symbol indicating forward motion lights up on the dashboard.
- The compaction roller starts to move forward.



# Stopping the forward motion

Stop the forward motion by means of the control lever or, in the event of an emergency, by pressing the emergency stop pushbutton (5).

- Move the control lever back to the neutral position.
- Set the Diesel engine to idling by means of the green button (1.4).
- Use the corresponding switch (3) to apply the parking brake. The symbol indicating the activation of the parking brake lights up on the dashboard.



# **DANGER!**

In emergencies which call for an immediate stop, press the **emergency stop push-button** (5).

#### Driving the compaction roller

# Starting reverse motion





# Stopping the reverse motion





# DANGER!

#### **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!
- Deactivate (i.e. release) the parking brake by actuating the switch (3), which causes the lamp indicating the activation of the parking brake to go out.
- Make sure that the switch for selecting the type of vibration is in the central position **0**, see chapter Working with the compaction roller.
- By means of the buttons of the control lever (1), set an appropriate Diesel engine speed which enables you to drive the compaction roller (see fig. 43).
- Hold on to the steering wheel.
- Move the control lever (1) backward.
- The symbol for reverse motion lights up on the dashboard.
- The compaction roller starts to move backward.

Stop the forward motion by means of the control lever or, in the event of an emergency, by pressing the emergency stop pushbutton (5).

- Move the control lever back to the neutral position.
- Set the Diesel engine to idling by means of the green button (1.4).
- Use the corresponding switch (3) to apply the parking brake. The symbol indicating the activation of the parking brake lights up on the dashboard.



#### **DANGER!**

In emergencies which call for an immediate stop, press the **emergency stop push-button** (5).

# 11.3.2 Changing direction

# **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.

# 11.4 Driving in the rain or with restricted visibility



# DANGER!

*Risk of accidents!* If the windows are steamed 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.

# **11.4.1** Driving in the rain

# **Front wiper**



# Rear wiper

- Activate the front wiper by means of the switch (4) on the panel at the cabin 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 cabin roof (1).
- If the rear window is icy or steamed up, actuate the switch for the rear window heating (7).

#### Driving in the rain or with restricted visibility

# 11.4.2 Driving in the dark or with restricted visibility



windows.

#### NOTE

DANGER!

Make sure the working lights are always activated while operating the compaction roller.

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

The switch for the front and rear working lights (2) is

lights by means of the corresponding switch (2).

Danger due to limited visibility!

operation of the compaction roller.

If the windows are steamed up, set the fan to the highest

In case the rear window is steamed up, actuate the switch for the rear window heating (7) on the panel at the cabin roof.

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 cabin

At dusk, immediately activate the front and rear working

installed on the panel at the cabin roof (1).

Activation of the working lights



#### Steamed up or icy windows



# 11.4.3 Heating and ventilation



The heating is fed by the warm cooling water of the Diesel.

- 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 cabin.
- Warm air enters the cabin as it flows through the ventilation slots at the cabin 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 (air-conditioning, optional feature)

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# 11.5 Line-of-sight obstruction



- In order to compensate for the drawbacks caused by line-ofsight obstruction, the following measures are to be taken:
  - Find a skilled person to give you the required instructions and hand signals.
  - Block the access to the operating area of the compaction roller.



- In countries where official regulations concerning this issue exist, a special permit must be obtained.
  - 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.

#### Stopping and parking the compaction roller

# 11.6 Stopping and parking the compaction roller



#### Stopping the Diesel engine

- Stop the compaction roller on solid and level ground.
- In order to cause the compaction roller to come to a stop, put the control lever (4) into the neutral position.
- Actuate the green button (7) so the Diesel engine runs at idle speed.



#### NOTE

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.

- 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 (12) in the right armrest and move it to the rear position in order to get off the vehicle. Put the steering column into its front position.

11.6.1 Leaving the compaction roller



- After leaving the cabin, lock both doors (13) and the engine hood (14).
- In addition, secure the compaction roller against rolling by means of wheel chocks.



# WARNING!

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.

# 12 DRIVING ON HEAVY SOILS AND ON SLOPES

# 12.1 HA control

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

# 12.1.1 Notes on the functions of the hydraulic HA control

# **Deactivating the 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 (see section 12.2),

it may be necessary to overmodulate the HA control.

- In order to do so, actuate the switches Overmodulation Drum (2.2) or Overmodulation Axle (2.3), which deactivates the HA control at the roller drum / at the rear axle.
- The maximum driving torque is established at the roller drum and the rear wheels (depending on the setting of the switches).



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# WARNING!

Driving on slopes

If, even with the overmodulation activated, the required thrust cannot not established, do not continue operation on the slope in question and back up.

# 12.2 Driving on slopes



# DANGER!

**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.

# 12.2.1 Maximum gradeability of the compaction rollers (depending on the ground)



12.2.2 Starting operation 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 central position **0**, see chapter Working with the compaction roller.
- Push the red button (1,3) on the control lever (1) in order to set a high Diesel engine speed required for driving the vehicle on slopes.
- Hold on to the steering wheel.
- Move the control lever (1) into the desired direction (forward or backward).

# 12.2.3 Driving uphill with the roller drum ahead



Drive uphill, with the drum ahead.

# 12.2.4 Driving uphill with the rear end ahead



• Drive uphill, with the compaction roller reversed, i.e. the rear end ahead.

# 12.2.5 Driving downhill





# 12.2.6 Stopping the operation on slopes





# NOTE

Reverse gear, the rear of the compaction roller points downhill, in the direction of motion.

- Turn off (i.e. release) the parking brake by means of the switch (3). The light indicating the activation of the parking brake on the dashboard goes out. Put the joystick into the neutral position.
- Check whether the switch for selecting the type of vibration is set to the central position **0**, see chapter Working with the compaction roller.
- Push the red button (1.3) on the control lever (1) to select the maximum Diesel engine speed.
- Hold on to the steering wheel.
- Move the control lever (1) backward in order to drive down the hill.

Stop the compaction roller by actuating the control lever or, in the event of an emergency stop, by means of the emergency stop push-button (5).

- Put the control lever back into the neutral position.
- Press the switch for the parking brake (3) to apply the parking brake. The symbol indicating the activation of the parking brake lights up.
- Set the Diesel engine to idling speed by actuating the green button (1.4).



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**DANGER!** 

In emergencies which call for an immediate stop, press the **emergency stop push-button** (5).

**13 TOWING THE COMPACTION ROLLER** 

# **13.1** Safety instructions referring to the towing process



# **CAUTION!**

# 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!

The compaction roller may only be towed if its emergency steering is in working order.



# WARNING!

*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.

# 13.2 Measures to be taken prior to towing

# 13.2.1 Secure the compaction roller against rolling





# 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!

• Put the wheel chocks under the rear wheels.



# WARNING!

**Operation on slopes!** 

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!

#### Measures to be taken prior to towing

# 13.2.2 Releasing the parking brake and the HP valves



motors.

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#### WARNING! Risk of death!

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

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

You need a socket head wrench (size WW 4) to loosen the

Access the HP valves from the left side of the engine

Use the socket head wrench to screw in the adjusting spindles until they are level with the valve housing.

compartment (in the direction of motion).

Opening the HP valves



#### Deactivating (releasing) 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 left side, in the direction of motion).
  - Put a pipe extension into the pump actuation (3).
- Close the relief valve (4).

HP valves (1) and (2).

Unscrew the protecting caps.

- 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.

# 13.3 Carrying out the towing process



# WARNING!

The compaction roller may only be towed if its emergency steering is in working order.



# WARNING!

# Material damage!

- 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.
- The compaction roller may only be towed within a work zone.
- 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.



# DANGER

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

- 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.

# 13.3.1 After towing



# Closing the HP valves



#### Carrying out the towing process

# Activating the parking brake

After towing the compaction roller, you need to activate the parking brake in the rear axle again.

The hand pump (5) is situated in the engine compartment, on the left side (direction of motion).

- Slowly open the relief valve (4).
- The oil pressure escapes in 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.

# **14 WORKING WITH THE COMPACTION ROLLER**

# 14.1 Safety instructions referring to work with the vehicle





# 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.



# Risk of death!

**DANGER!** 

Using the attachment to transport, lift or lower people is strictly prohibited!

# 14.2 Control elements related to working

The functions related to working with the compaction roller are activated by means of the control lever (1) and the switch for selecting the type of vibration for soil compaction on the panel (2) next to the control lever (joystick).



- The control lever (joystick) in the right armrest serves to control the functions of the roller operation.
- The buttons for certain functions are colored and have been laid out ergonomically.
  - green (1.4) = Diesel engine idling
  - blue (1.2) = driving the compaction roller without working
  - red (1.3) = driving and working with the compaction roller
  - yellow (1.5) = ECO Speed (optional feature) If your vehicle is not equipped with ECO Speed, the button serves to reduce the Diesel engine speed (i.e. it is not possible to work).
  - Function ECO Speed, see section on soil compaction
- The button at the front of the joystick disposes of the following functions:
  - Button red (1.1) = Vibration on / off.
- Switch for selecting the type of vibration (soil compaction) (2.1):
  - Central position (0) = Vibration off
  - Press down at the front (**KA**) to activate surface compaction (low amplitude)
  - Press down at the rear (**GA**) to activate deep compaction (high amplitude)



# NOTE

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

# Functions related to working

# 14.3 Fields of application

The compaction rollers dispose of the following work modes:

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

# 14.3.1 Basic information on soil compaction



#### NOTE

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), 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.

# 14.3.2 Simple operation, forward motion (without vibration)



#### NOTE

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#### 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).

- 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 central position (0) Off.
- Press a button on the joystick (1) to set an engine speed for roller operation (see 11.3.1, fig. 43).
- Move the joystick (1) forward.
- The symbol indicating forward motion lights up on the dashboard.
- The compaction roller starts to move forward.

#### Soil compaction by means of the smooth roller drum

#### 14.3.3 Simple operation, reverse motion (without vibration)

Proceed as described above (Simple operation, forward motion (without vibration).





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!
- Move the joystick (1) backward.
- The symbol indicating reverse motion lights up on the dashboard.
- The compaction roller starts to move backwards.

#### 14.4 Soil compaction by means of the smooth roller drum

#### 14.4.1 Surface soil compaction

# Activating surface compaction



# NOTE

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#### 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).

- Actuate the switch to turn off the parking brake (3). Make sure the corresponding symbol indicating the activation of the parking brake goes out.
- Check whether the switch for selecting the type of vibration (2.1) is set to the central position (0) Off.
- On the joystick (1), push the red button (1.3) to set the Diesel engine speed for roller operation.
- Press the switch for selecting the type of vibration down at the front (2.1), which activates the surface compaction mode low amplitude (KA).
- 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) at the front of the joystick (1).
- The compaction roller starts to move in the desired direction of motion and performs surface compaction.



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#### For surface compaction on slopes, be sure to consult the section Driving on heavy soils and on slopes.

# Deactivating surface compaction



#### Soil compaction by means of the smooth roller drum

- If you intend to deactivate the surface compaction, push the **red** button **Vibration on / off** (1.1) 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 position.
- Set the Diesel engine to idling by actuating the **green** button (1.4).
- Apply the parking brake (3), which causes the corresponding symbol on the dashboard to light up.

# **DANGER!**

In emergencies which call for an immediate stop, press the **emergency stop push-button** (5).

# 14.4.2 Soil compaction with ECO Speed (optional feature)



If your compaction roller is equipped **ECO Speed** (optional feature), the vibration frequency is kept at a constant level if the Diesel engine speed is reduced.

- Activate **ECO Speed** by means of the corresponding button (1.5).
- The Diesel engine speed is reduced while the frequency of the selected type of vibration does not change.

This enables you to perform the required soil compaction work at a reduced Diesel engine speed, without any limitations to the compaction capacity.

• Deactivate the **ECO Speed** mode by actuating the corresponding button (1.5).

# 14.4.3 Deep soil compaction

# Activating deep compaction



# Deactivating deep compaction



- Proceed as described above, in the section on surface soil compaction.
- Push the red button (1.3) on the joystick (1) in order to establish the Diesel engine speed for roller operation.
- Set the switch for selecting the type of vibration (2.1) to the rear position, i.e. deep compaction **high amplitude (GA)**.
- Move the control lever (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) at the front of the joystick.
- The compaction roller starts to move in the desired direction and performs deep compaction.



#### NOTE

Be sure to consult the chapter Driving on heavy soils and on slopes before activating deep compaction during operation on slopes.

- In order to deactivate the deep compaction mode, push the **red** button **Vibration on / off** again (1.1).
- Vibration stops.
- However, the previously set type of vibration (2.1) is still preselected.
- Move the control lever (1) back into the neutral position to stop the compaction roller.
- Set the Diesel engine to idling by actuating the **green** button (1.4).
- Apply the parking brake (3), which causes the corresponding symbol on the dashboard to light up.



#### **DANGER!**

In emergencies which call for an immediate stop, press the **emergency stop push-button** (5).

# 14.5 Soil compaction with the pad foot drum

# 14.5.1 Basic information on the fields of application of the pad foot drum

# NOTE

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, i.e. approx. 1.8-3.6 km/h.

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.

# 14.5.2 Compacting soil with the pad foot drum



# NOTE

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After converting from a smooth roller drum to a pad foot drum, in order to operate the compaction roller, proceed as described in the section on soil compaction, see chapter Working with the compaction roller.



# **15 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) and forwarded to a computer. The computer transfers the values to a display (2) in the cabin. 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.



- It does not interfere with the operational
  - processes of the compaction roller.

# 15.1 Advantages of the compaction measurement system

Variants of the compaction measurement system

The system is available in two variants:

- Display and printing of the compaction data only
- Display of the compaction data and recording for subsequent analysis / printouts



# Advantages of 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.

#### Installing and dismantling the compaction measurement system

#### **Displays of the compaction measurement**



Display

- 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.



# WARNING!

Material damage!

If the vehicle starts to jump, immediately stop operating the compaction roller.

# 15.2 Installing and dismantling the compaction measurement system



Installing and dismantling the compaction measurement system in the cabin is easy. Removing it from the cabin 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.

# 15.3 Compaction measurement system, variant 2: Display and 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.



• 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.

# 15.3.1 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.

# **16 CONVERTING THE COMPACTION ROLLER**

16.1 Safety instructions referring to work with the compaction roller



**ΝΟΤΕ** 

1

# 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.

# 16.2 Converting from a smooth to a pad foot roller drum



In order to operate the compaction roller with a pad foot drum (1), you can order a retrofit kit containing three pad foot segments as an optional feature from the manufacturer.



- 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.

# Labeling of the pad foot segments



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



#### NOTE

- 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.

# 16.2.1 Mounting the pad foot segments on a smooth roller drum



Dismantling the attached parts of the smooth roller drum

# Mounting the pad foot segments



- 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).

- 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).



# NOTE

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 chapter 12).





# 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

- 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).

# NOTE

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(9).

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

#### 17 TIRES AT THE REAR AXLE

#### 17.1 Water filling of the tires at the rear axle

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.



# 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.

#### 17.1.1 Filling procedure: Water and antifreeze additive



- 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
- 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

# NOTE

- 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.
- 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).

# NOTE

# 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.

#### Water filling of the tires at the rear axle

# 17.1.2 Filling procedure: Pure water

- In order to fill the tire with water, use industrial water.
- The filling procedure is identical to the one described in section 17.1.1.

# (© 1 2 <u>je kon</u> 6 8 7 3 9 3 Fig.83 **Emptying the tires**

# 17.1.3 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).

# Water filling of the tires at the rear axle

# 17.1.4 Filling procedure: Using the "Hanauer Maus"



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).



# NOTE

- The filling procedure is complete as soon as a constant jet of water exits the opening.
- 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.

#### Checking the tire inflation pressure

# 17.2 Checking the tire inflation pressure



Checking the tire pressure

DANGER!

- 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!
- Check the tire pressure once a week:

Type of tires	Pressure	Description	
Standard tires	1.6 bar	water filling	
Special tires	Please contact the tire manufacturer for information on the required pressure!	water filling	

- 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).



# WARNING!

#### 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.
- Attach the tire gauge and check the tire inflation pressure.
- If necessary, adjust the tire pressure.

# 17.3 Mounting the tires



# WARNING!

#### 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 (2): 500 Nm.
#### **18** FAILURES AND TROUBLE SHOOTING

#### 18.1 Detecting faults and failures



NOTE

In case faults or failures occur which you cannot detect or repair yourself, contact the service staff immediately.

#### 18.1.1 Faults and failures during operation

Fault/Failure	Possible causes	Trouble shooting	
	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. See sections on maintenance.	
	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 use in cold weather.	
does not start.	Leaking fuel pipes or connections.	Immediate action is required to prevent fuel from penetrating the ground! Contact the service staff.	
	After activating the ignition the	Check the charge condition of the battery; if necessary, charge the battery. If required, carry out a jump-start.	
	control lamp for the battery does not light up.	<b>NOTE</b> The compaction roller disposes of an electrical system with an operating voltage of 12 V. Be sure to take this into account when jump-starting the vehicle.	
	The starter does not turn.	Contact the service staff.	
After starting the	Defective contact in the electrical system.	Cable connections or plug-in connections are loose or defective. Contact the service staff.	
engine, the bat- tery charge lamp does not go out.	The engine speed of the generator is too low.	Insufficient V-belt tension; tension the V-belts, if required. See Deutz 2012 operating and maintenance instructions.	
	The generator is defective or a V-belt torn.	Replace the V-belt. See Deutz 2012 operating and maintenance instructions.	
	The generator is activated but the bat- tery is not charged.	Contact the HYUNDAI service team.	
After starting the	The parking brake is applied.	Release the parking brake by means of the switch.	
compaction roller does not move.	The desired direction of motion has been set (joystick) but the compaction roller does not move.	After releasing the parking brake, wait for approx. 2 seconds before actuating the joystick (see 11.3.1). If the problem persists, contact our service team.	
	The compaction roller does not move after a towing process.	HP valves not screwed in, see chapter Towing the compaction roller.	
	Driving hydraulics not activated.	Contact the HYUNDAI service team.	

#### Detecting faults and failures

Fault/Failure	Possible causes	Trouble shooting
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 the engine oil temperature lights up.	The engine oil temperature is too high.	Immediately stop the compaction roller! Let the Diesel engine idle in order to cause the engine oil to cool down. If the warning lamp goes out, stop the Diesel engine and check the fill level of the engine oil. For all work relating to the Diesel engine, exercise extra caution - hot surfaces! See maintenance instructions. If it takes a long time for the engine oil to cool down, clean the engine oil cooler. Contact the HYUNDAI service staff.
The warning lamp for the cooling system lights up.	The fill level in the cooling system is too low.	Add coolant, see chapter on maintenance.
The warning lamp for engine oil pres- sure lights up.	Insufficient engine oil pressure or pressure does not build up after starting the Diesel engine.	Immediately stop the Diesel engine! Check the fill level of the engine oil. In case it is insufficient, add engine oil according to the specifications in chapter 4. 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.

#### **19 MAINTENANCE INSTRUCTIONS**

#### 19.1 Safety instructions referring to maintenance work



#### **19.1.1** Safety precautions to be taken prior to maintenance work



- 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 at the roller drum, the roller frame or the steering system, always install the anti-buckling device (2) between the roller frame (3) and the rear end (1).
- Use only tools and accessories which are described in this operating and maintenance manual.

#### 19.1.2 After completing the maintenance work



- 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.

# 2 3 6、

#### 19.2 Overview: Maintenance



#### Captions Engine compartment, drum and vibration drive

- 1 Engine compartment
- 2 Diesel engine
- 3 Hydraulic pump assembly
- 4 Battery

- 5 Hydraulic tank
- 6 Vibration drive
- 7 Drum drive

#### **19.3** Maintenance instructions for the driver

#### 19.3.1 Required maintenance measures



#### NOTE

Before taking any maintenance measures at the compaction roller, be sure to consult the chapters on safety instructions and safety precautions for maintenance work.



#### WARNING!

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!

#### 19.3.2 Table of lubricants

Greasing point	Lubricant	Viscosity	Equivalent standard
Diesel engine	API classification	SAE 10 W	
Arctic climate	CG 4/CH 4	SAE 20 W - 20	
Temperate climate		SAE 30	
Tropical climate		SAE 40	
All climes		SAE 15 W - 40	New machine
Axles, Gear box, Roller bearing, Floating bearing	HLS		Approved: Fuchs Renogear HLS 90, Shell rear axle oil LS-BMW, ELF Tranself BM-LS 90
<b>Hydraulic</b> oil	ATRAS Spezial 46	ISO VG 32 ISO VG 46 ISO VG 68	New machine Pay particular attention to the specifications referring to ope- ration with temperatures below 0° C. Be sure to preheat the hydraulic oil sufficiently.

# 19.3.3 Checks and work to be carried out on a daily basis, before starting work with the compaction roller (Maintenance certificate A)

Illustration	Daily work
	<ul> <li>Conduct a visual inspection to check the exterior of the compaction roller. Clean it, if necessary.</li> <li>Check the hydraulic components and the hoses for leakage.</li> <li>Check the distance of the scrapers to the drum.</li> <li>Check the scrapers for damage.</li> <li>Remove coarse dirt from the roller drum and the scrapers.</li> <li>Watch out for damage at the vehicle.</li> </ul>
	<ul> <li>Check the fuel level.</li> <li>Before starting work, check the fuel level and add Diesel, if required. See chapter Before starting the compaction roller.</li> </ul>
<image/> <text></text>	<ul> <li>Check the preliminary fuel filter.</li> <li>The preliminary fuel filter is situated at the stiffener wall to the cabin (on the right, in the direction of motion).</li> <li>Open the cover (1) of the ventilation grills and drain the preliminary fuel filter (3).</li> </ul>

Illustration	Daily work
	Check the coolant level.     DANGER!     Risk of burns caused by hot coolant!     Make sure the engine has cooled down before you     open the lid.
	<ul> <li>Open the cover of the ventilation grill and twist off the lid of the combination cooler.</li> <li>Check the coolant level.</li> <li>Add coolant, if required.</li> <li>Ascertain the correct mixing ratio of the coolant.</li> </ul>
	Check the V-belt tension and check for damage.
	<ul> <li>WARNING!</li> <li>The V-belt tension may only be checked with the Diesel engine stopped.</li> <li>Turn off the Diesel engine and remove the ignition key.</li> </ul>
	<b>NOTE</b> For information on tensioning and replacing the V- belt, please refer to the Deutz 2012 operating and maintenance manual.
	Check the engine oil level of the Diesel engine at the oil
	dipstick (1).
	<ul> <li>If necessary, use the filler neck to add engine oil.</li> <li>Unscrew the lid (2) of the filler neck and carefully fill in engine oil.</li> </ul>
	<ul> <li>NOTE</li> <li>Pay attention to the information on the engine oil to be used in the engine compartment.</li> <li>If no information is displayed in the engine compartment, consult the table of lubricants for the required specifications.</li> </ul>
	CAUTION!
	Never mix different types of oil!
	After adding oil (2) screw the lid back on.

Illustration	Daily work		
	1 NO In c com grou	<b>TE</b> order to check the hydraul paction roller needs to be nd.	ic oil level, the parked on level
	<ul> <li>Unscrew the the oil level.</li> <li>Add hydrauli</li> </ul>	filler neck with the oil dipstick	< (1) and check
	CA Be s fillin Infor hydra cants	UTION! ure to exercise extreme cle g in hydraulic oil! m yourself of the type of hy aulic system. Please refer to s for the required specification	anliness when draulic oil in the the table of lubri- ns.
	Fill in hydrau	UTION! age to the hydraulic system or mix different types of hydra lic oil by means of the filler ne	<b>n!</b> ulic oil! eck.
	NO If the an a com repla clean filter hous	TE e respective lamp on the das accumulation of dirt at the bustion air of the Diesel e ace the air filter. After a r nings by means of compresse cartridge. Wash the interio sing and clean it; if necessary	shboard indicates air filter for the engine, clean or naximum of five ed air, replace the r of the air filter , vacuum it.
	CA Dam • No bl	UTION! hage to the Diesel engine! ever attempt to clean the air owing air into it!	filter housing by
	Check the tir	e inflation pressure.	
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Type of tires	Pressure	Description
	Standard tires	1.6 bar	water filling
	Special tires	Please contact the tire manufacturer for information on the required tire pressure	water filling
E C C C C C C C C C C C C C C C C C C C	<ul> <li>Check the til Tires at the r</li> </ul>	e inflation pressure and adjuster and adjuster axle.	st it, see chapter

Illustration	Daily work
	<ul> <li>Check the fill level of the washing water container.</li> <li>If you need to add water, use an appropriate can to fill it in.</li> </ul>
	Depending on the season, antifreeze may have to be added to the washing water.
	<ul> <li>Check the cabin by performing a visual inspection and clean it, if required.</li> </ul>

#### Maintenance instructions for the service staff

Illustration	Daily work	
	<ul> <li>Check the cabin by performing a visual inspection and clean it, if required.</li> </ul>	
	<ul> <li>After parking the compaction roller and closing the doors, clean the exterior of the vehicle. If necessary, use a high- pressure washer.</li> </ul>	
	<ul> <li>CAUTION!</li> <li>Make sure the high-pressure washer is not directed at one of the following components:</li> <li>the seals of the cabin doors,</li> <li>ventilation grills and slots.</li> </ul>	
	• Be sure to clean the steps to prevent dirt from accumulating there.	
	<ul> <li>Clean the scrapers of the roller drum before the dirt can harden.</li> </ul>	

#### 19.3.4 Daily checks and work to be carried out after compaction roller operation

- **19.4** Maintenance instructions for the service staff
- 19.4.1 Required maintenance work referring to the Diesel engine, the hydraulic system and the electrical system



#### NOTE

Consult the chapter Maintenance instructions for the service staff for a description of the required work.

19.4.2 Work to be carried out at intervals of 500 operating hours (Maintenance certificate C)



#### NOTE

These 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.

#### **20** MAINTENANCE INSTRUCTIONS FOR THE SERVICE STAFF

#### 20.1 Required maintenance measures



#### NOTE

Before taking any maintenance measures at the compaction roller, be sure to consult the chapters on safety instructions and safety precautions for maintenance work.



#### WARNING!

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!



#### **DANGER!**

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.



#### **CAUTION!**

Environmental protection!

- Make sure no hydraulic oil or fuel penetrates the ground, pollutes water or leaks into the sewer system. Collect the oil in suitable waste containers.
- When working in nature protection areas, use environmentally friendly hydraulic oil.



#### **DANGER!**

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.

#### Required maintenance measures

- 20.1.1 Lubricants for maintenance work
- 20.1.2 **Table of lubricants**

**Maintenance intervals Diesel engine** 

Illustration



#### NOTE

The table of lubricants can be found in the chapter Maintenance instructions for the driver.

#### 20.1.3 Maintenance work referring to the Diesel engine



. . . .

#### NOTE

Before carrying out any maintenance work related to the Diesel engine, read and observe the Deutz 2012 operating and maintenance instructions.

- After the initial operation, the first inspection of the vehicle needs to be conducted after 50 operating hours.
- All subsequent maintenance work has to be carried out according to the table of maintenance intervals.

# 1 3

#### Fuel system

Maintenance work and intervals
Weekly or at intervals of 100 operating hours
• Before the fuel enters the Diesel engine, the fuel is cleaned
and water is filtered from it

Checking the fuel-water separator:

The water-fuel separator (3) is to be found at the
stiffener wall to the cabin (right, in the direction of
motion).

- Open the cover (1) with the ventilation grills (right, in the direction of motion).
- Drain the fuel-water separator (3) by means of the drain plug below the separator.

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

- Checking the fuel filter:
  - At intervals of 500 operating hours or of 12 months, replace the cartridges of the fuel filter (2).
  - Open the cover (1) with the ventilation grills (right, in the direction of motion).
  - Place a receptacle under the fuel filter, in order to collect leaking fuel.
  - Unscrew both filter cartridges and dispose of them in an environmentally friendly way.
  - Waste disposal key in the EU:150299 (EU).
  - Use clean oil to lubricate the surface of the filter sealing.
  - Attach the filter cartridges and screw them on manually.
  - Let the Diesel engine turn via the starter.
  - Open the fuel vent plug and ventilate the fuel system, see Deutz 2012 operating manual.

#### Engine oil system

Illustration	Maintenance work and intervals	
	<b>50 operating hours after the initial operation;</b> <b>subsequently, at intervals of 500 operating hours.</b> Oil change Diesel engine:	
	NOTETake the compaction roller to a workshop in order to carry out the oil change.	
	<ul> <li>WARNING!</li> <li>Environmental protection!</li> <li>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).</li> </ul>	
	<ul> <li>Start the Diesel engine and wait until it has reached operating temperature</li> </ul>	
	<ul> <li>Stop the Diesel engine and pull out the ignition key.</li> </ul>	
	<ul> <li>Place a sufficiently dimensioned receptacle under the exterior drain plug of the Diesel engine.</li> </ul>	
	• Unscrew the oil drain plug (3), pull out the oil dipstick (1) and drain the oil.	
?	<ul> <li>Dispose of the waste oil in an environmentally friendly way, according to the applicable regulations.</li> </ul>	
	EU waste disposal key: 130202 (EU).	
	• Screw in the oil drain plug (3) with a new o-ring.	
	Replacing the oil filter:	
	Place a receptacle under the oil filter in order to collect leaking oil.	
	<ul> <li>Unscrew the filter cartridge and dispose of it in an environmentally friendly way, according to the applicable regulations.</li> </ul>	
4	<ul> <li>EU waste disposal key:150299 (EU).</li> </ul>	
	• Use clean oil to lubricate the surface of the filter sealing.	
	<ul> <li>Attach the filter cartridge and screw it on manually.</li> </ul>	
	Adding oil:	
	<ul> <li>NOTE</li> <li>Refer to the table of lubricants for specifications of the oil to be used</li> </ul>	
	<ul> <li>Add a sufficient amount of engine oil (approx. 10 l) by</li> </ul>	
	<ul><li>means of the filler neck (2).</li><li>After filling in the engine oil, screw off the lid and let the</li></ul>	
	Diesel engine turn via the starter.	
	<ul> <li>Cneck the oil level at the oil dipstick and add oil, if necessary.</li> </ul>	
	<ul> <li>Start the Diesel engine and let it idle to reach operating temperature.</li> </ul>	

#### Required maintenance measures

#### **Cooling system**

Illustration	Maintenance work and intervals
	<ul> <li>To be carried out if the warning lamp lights up or after repair work</li> <li>Check the coolant level.</li> </ul>
	<ul> <li>WARNING!</li> <li><i>Risk of burns caused by hot coolant!</i></li> <li>Before you open the lid of the cooler, make sure that the Diesel engine and the cooling system have cooled down.</li> </ul>
2	<ul> <li>Open the cover (1) with the ventilation grills (right, in the direction of motion).</li> <li>Carefully screw off the lid (2) of the combination cooler.</li> <li>Check the coolant level.</li> <li>If coolant needs to be added or after repair work, the following mixing ratio is required:</li> <li>Capacity of the cooling system: approx. 15 liters. 40% coolant for 1 liter of water</li> <li>Mixing ratio: 0.6 liter of water and 0.4 liter of coolant.</li> </ul>

#### Checking the V-belts

Illustration	Maintenance work and intervals
	Check the V-belt tension and watch out for damage.
	<ul> <li>WARNING!</li> <li>Never check the V-belt tension with the Diesel engine running!</li> <li>Turn off the Diesel engine and pull out the ignition key.</li> </ul>
	<b>NOTE</b> Refer to the Deutz 2012 operating manual for instructions on tensioning and replacing the V-belt.

#### Replacing the combustion air filter

Illustration	Maintenance work and intervals
	• 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.
	CAUTION! Damage to the Diesel engine! Never attempt to clean the air filter housing by blowing air into it!

#### 20.1.4 Maintenance work referring to the hydraulic system



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.

## Replacing the hydraulic oil and the oil filter cartridge

Illustration	Maintenance work and intervals
4	Replace the oil filter cartridge for the hydraulic oil 50 hours after the initial operation and subsequently, at intervals of 500 operating hours
3	<b>NOTE</b> Prior to replacing the filter cartridge (3), place an oilpan under the hydraulic pump.
	<ul> <li>Slightly loosen the filter cartridge (3) by means of a tension band or a similar tool, but do not screw it off yet.</li> </ul>
	<b>NOTE</b> 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.
	<ul> <li>As soon as the suction sound stops, unscrew the oil filter cartridge and remove it in an environmentally friendly way.</li> <li>EU waste disposal key: 150299 (EU).</li> <li>Use clean oil to lubricate the sealing of the filter head (4).</li> <li>Lubricate the new oil filter cartridge (3) with clean hydraulic oil.</li> <li>Attach the new oil filter cartridge and screw it on manually.</li> </ul>
	<ul> <li>NOTE</li> <li>Do not use a tension band to tighten the filter cartridge!</li> </ul>
	<ul> <li>Checking the hydraulic oil level:</li> <li>Unscrew the filler neck with the oil dipstick (1) and check the oil level.</li> <li>If necessary, add hydraulic oil.</li> <li>Clean the ventilation head (2).</li> <li>In case hydraulic oil needs to be added, observe the required specifications in the table of lubricants.</li> </ul>

#### **Required maintenance measures**



#### **Required maintenance measures**

#### 20.1.5 Maintenance work referring to the rear axle



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.

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

Illustration	Maintenance work and intervals	
	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.	
	<ul> <li>NOTE</li> <li>Take the compaction roller to a workshop in order to carry out the oil check</li> </ul>	
	<ul> <li>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.</li> </ul>	
1	<ul> <li>WARNING!</li> <li>Environmental protection!</li> <li>Prevent the axle oil from penetrating the ground, polluting water or leaking into the sewer system.</li> </ul>	
	<ul> <li>Checking the oil level in the wheel drives:</li> <li>Advance the compaction roller until the oil drain plug (1) is in the correct position (see photo on the left).</li> <li>Unscrew the oil drain plug (1).</li> <li>The oil level should be barely visible underneath the opening or tangible with a finger.</li> <li>In case oil needs to be added, be sure to consult the table of lubricants for information on the required specifications.</li> <li>Screw the oil drain plug (1) back in.</li> </ul>	
	<ul> <li>Oil change in the wheel drives:</li> <li>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).</li> <li>Place a sufficiently dimensioned receptacle under the respective wheel drive.</li> <li>Unscrew the oil drain plug (1) and drain the oil.</li> <li>Screw the oil drain plug (1) back in and add axle oil by following the instructions above.</li> </ul>	

# Checking the oil level in the rear axle and changing oil

Illustration	Maintenance work and intervals		
2 2	Check the oil level in the rear axle after the initial 50 operating hours and subsequently, at intervals of 500 operating hours.		
LE LA	<ul> <li>NOTE</li> <li>Take the compaction roller to a workshop in order to carry out the oil check.</li> <li>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.</li> </ul>		
	<ul> <li>WARNING!</li> <li>Environmental protection!</li> <li>Prevent the oil from penetrating the ground, polluting water or leaking into the sewer system.</li> </ul>		
3	Checking the oil level in the axle housing:		
	<ul> <li>NOTE</li> <li>The filler screws (2) and the oil drain plugs (3) point backwards (in the direction of motion).</li> </ul>		
	<ul> <li>Unscrew the filler screws (2) and remove them from the axle housing.</li> <li>The oil level should be barely visible underneath the opening or tangible with a finger.</li> <li>Screw the filler screws (2) back in.</li> </ul>		
	Replacing the oil in the axle housing:		
3 3 3	• Place a sufficiently dimensioned oil receptacle under the 3 oil drain plugs (3).		
	Unscrew the oil drain plugs (3) and drain the oil.		
	<ul> <li>Dispose of the waste oil in an environmentally friendly way.</li> </ul>		
	• EU waste disposal key: 130202 (EU).		
	<ul> <li>Screw the oil drain plugs (3) back in.</li> <li>Refer to the table of lubricants for information on the required specifications of the axle oil.</li> </ul>		
	<ul> <li>Provide the axle housing with new axle oil via the filler screws (2).</li> </ul>		
	• Attach and tighten the filler screws (2).		

#### **Required maintenance measures**

#### 20.1.6 Maintenance work referring to the drum and vibration drive



#### NOTE

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.

#### Checking the oil level

Illustration	Maintenance work and intervals
1	Check the oil level at the drum drive after the initial 50 operating hours and subsequently, at intervals of 500 operating hours.
	<ul> <li>NOTE</li> <li>Take the compaction roller to a workshop in order to carry out the oil check.</li> <li>Before carrying out any work related to the drum drive, secure the compaction roller against rolling. Apply the parking brake and put wheel chocks under the tires.</li> </ul>
	<ul> <li>Advance the compaction roller until the labeling (1) at the gear flange is visible and points upward.</li> <li>The filler and the oil drain screw (2, 3) are both situated on the interior gear side Y.</li> <li>If the labeling (1) is in the correct position, the control screw (2) is on the left side and the drain screw (3) points downward.</li> <li>Remove the filler screw (2) from the gear box.</li> <li>The oil level should be tangible with a finger underneath the opening.</li> <li>If required, add the necessary amount of gear oil.</li> <li>Be sure to consult the table of lubricants for information on the specifications of the required gear oil.</li> <li>Check the oil level at the vibration drive after the initial 50 operating hours and subsequently, at intervals of 500 operating hours.</li> <li>Advance the compaction roller until the inspection glass (4) is in the lowest position (6 o'clock) (4.1).</li> <li>This implies that the filler screw (4) is in the top position (12 o'clock).</li> <li>If, in this position, the oil level does not correspond to the illustration (4.2), oil needs to be added.</li> <li>Be sure to consult the table of lubricants for information on the specifications of the required oil (engine oil 15W40).</li> <li>Remove the filler screw (4) from the housing.</li> </ul>
4.2	<ul> <li>Add oil until the correct oil level is reached, see illustration.</li> <li>Screw the filler screw back in.</li> </ul>

#### 20.2 Maintenance work referring to the electrical system

#### 20.2.1 Maintenance work related to the battery



#### CAUTION! Risk of explosions!

Keep away sparks and open fire from the battery. Do not smoke.

Illustration	Maintenance work and intervals
	<ul> <li>Check the battery poles (2) for the accumulation of dirt and for signs of corrosion.</li> </ul>
	Lubricate the poles and terminals.
	<ul> <li>Open the cover caps (1) of the battery and check the fill level above the cells.</li> </ul>
	• Make sure the fill level is sufficient, i.e. above the cells.
	Add distilled water only!
1	

#### 20.2.2 Printed circuit board, fuses and relays

Illustration	Maintenance work and intervals	
	Check the printed circuit board, the fuses and relays printed circuit board.	on the
	The printed circuit board is installed next to the driver (on the left) and is covered by a faceplate.	's seat
	Open the faceplate (4) covering the printed circuit board and check the printed circuit board by conducting a vinspection (3).	ard (3) ⁄isual
3	Check the fuses and relays for the accumulation of d damage.	irt and
	Always replace defective fuses by new ones, see characteristic maintenance instructions for the service staff.	apter

#### 20.2.3 Allocation of the fuses on the printed circuit board

No.	Ampere	Function	No.	Ampere	Function
F1	30 A	Ignition lock	F10	15 A	Rotating light, front working lights
F2	7.5 A	Terminal 30 - Radio	F11	15 A	Rear working lights
F3	25 A	Diesel control EMR3	F12	25 A	Fan (heating and ventilation)
F4	25 A	Rear window heating	F13	7.5 A	Option air-conditioning
F5	25	Option air conditioning	F14	15 A	Connection for socket, engine speed sensor, connection compaction measurement (option)
F6	7.5 A	Control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	F15	10 A	Emergency stop, parking brake, drive control
F7	7.5	Gearshift (or overmodulation) axle, drum	F16	15 A	Drive control, accumulation of dirt (air filter), vibration, engine speed control, diesel control, ECO control (option), joystick, backup warner
F8	15 A	Horn, control rear window heating, radio, inte- rior lighting, electrical equipment driver's seat	F 17	80 A	Preheat
F9	15 A	front/rear wipers & windscreen washer system			

#### Maintenance work referring to the ventilation system

Illustration	Maintenance work and intervals
5	<ul> <li>Check the fuses (F13) and relays (K5) in the engine compartment for the accumulation of dirt and damage.</li> <li>Always replace defective fuses, see section in the allocation of the fuses on the printed circuit board.</li> </ul>

20.2.4 Fuses and relays in the engine compartment

#### 20.3 Maintenance work referring to the ventilation system

Illustration	Maintenance work and intervals
1	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.
	Note!
	• Do not clean the ventilation slots (1) by means of water jets or a high-pressure washer.
	• Instead, clean the ventilation slots (1) with an industrial vacuum cleaner.
2	• Open the cover plate (2) of the filter unit and replace the filter unit.

#### 21 MAINTENANCE INSTRUCTIONS REFERRING TO THE INITIAL OPERATION

#### 21.1 Delivery receipt of the HYUNDAI compaction roller



#### NOTE

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.

- Ascertain the completeness of the delivery (including all accessories and the compaction roller documentation).
- Make a note of any damage found.

NOTE

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

#### 21.1.1 Checking the operating state of the compaction roller



Carry out the maintenance work described below in the presence of the operating staff (i.e. the driver of the compaction roller) and the service staff of the customer. Refer to the corresponding sections in this operating and maintenance manual.

Checking the fill levels

Ensure that the following fill levels correspond to the required levels as stated in the maintenance manual:

- Engine oil level
- Hydraulic oil level
- Oil level, drum drive
- Oil level, vibration drive
- Check the tire inflation pressure, see chapter Tires at the rear axle.
- Tighten the wheel nuts by means of a torque key (tightening torque: 500 Nm).
- Check all screw connections.
- Check the hydraulic hoses and screw connections for leakage.

Hydraulic system

Screw connections

#### Delivery receipt of the HYUNDAI compaction roller

#### 21.1.2 Instruction and demonstration at the machine



#### NOTE

Perform the instruction in the presence of the operating staff (i.e. the driver) and the service staff of the customer. Make sure that your instruction is understood and that the individuals in question will read and comprehend the operating and maintenance 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 of the compaction roller, based on the instructions in this manual.



#### NOTE

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.

Operating elements and displays in the cabin

Vehicle documents and operating manual

Working with the compaction roller

Driving the compaction roller

Maintenance work

- When giving the operating staff instructions related to the controls and displays in the cabin, 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 and the brake fluid.
- Soil compaction modes
- Vibration modes
- Roller drum types
- Driving on slopes
- Transporting the compaction roller.
- Refer to the corresponding instructions in the operating and maintenance manual when explaining the towing process.
- Filling the tires
- Checking 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 leads to the expiry of the warranty.

#### 21.1.3 Check list: First inspection after the initial 50 operating hours

See chapter Note of delivery and verification of inspections for the corresponding form.

Diesel engine	
	<b>NOTE</b> In addition to the measures stated here, refer to the operating manual of the Diesel engine manufacturer and observe the instructions.
Checking the fill levels	<ul> <li>Check the engine oil level.</li> <li>Check the hydraulic oil level.</li> <li>Check the fill level in the wheel drives of the rear axle.</li> <li>Check the fill level in the axle housing of the rear axle.</li> <li>Replace the breather of the rear axle.</li> <li>Check the oil level of the drum drive.</li> <li>Check the oil level of the vibration drive.</li> <li>Check the water filling in the tires, see section on filling the tires.</li> <li>Check the tire inflation pressure, see chapter Tires at the rear axle.</li> </ul>
Screw connections	<ul> <li>Check the screw connections of the engine mounting at the Diesel engine.</li> <li>Tighten the screw connections of the rear axle (tightening torque: <b>550 Nm</b>).</li> <li>Tighten the screw connections at the articulated pendulum joint (tightening torque: <b>120 Nm</b>, tightening torque counter screws: <b>70 Nm</b>).</li> <li>Check all other screw connections.</li> </ul>
Hydraulic system	<ul> <li>Replace the filter cartridge at the pump assembly.</li> <li>Check the ventilation filter of the hydraulic tank.</li> <li>Check the hydraulic hoses and screw connections for leakage.</li> </ul>
Diesel engine	<ul> <li>Replace the air filter cartridge of the Diesel engine. Clean the air filter housing, if required.</li> <li>Tighten the fastening screws of the air intake system.</li> <li>Tighten the fastening screws of the exhaust system.</li> </ul>

• Follow the instructions in the operating and maintenance manual of the Diesel engine manufacturer in order to carry out any maintenance work related to the Diesel engine!

#### 23 ANNEX

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