

OPERATOR'S AND SERVICE MANUAL (Tier4F)



HR110/120/140C-9

Operating & maintenance manual

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1 Machine designation, manufacturer and notes

1.1 Machine designation and intended use

Designation:

Hyundai compaction roller

Type:

HR110C-9 ~ 140C-9

1.1.1 Intended purpose and designated use

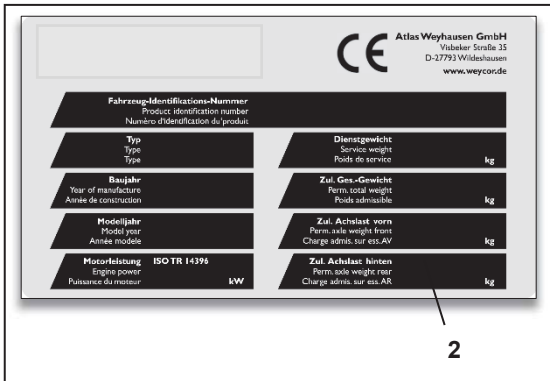
The compaction roller serves to compact soil.

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

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1.3 Type plate and serial number

1.3.1 Type plate labeling and serial number



----- **E123456**

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

Fig. 1 Type plate basic frame

The following information is provided by the type plate:

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

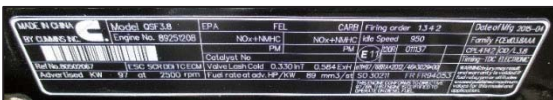


Fig. 2 Type plate Cummins Diesel engine

EC Declaration of Conformity
(Original instruction)

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

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

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

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

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

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

EMC (2014/30/EU)

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

Noise levels (2000/14/EC)

Certificate number: *****
Date: DD/MM/YYYY
Conformity assessment proc.: Annex VIII Full Quality Assurance
Notified body: *****

Measured sound power level: nnn.n dB(A)
Guaranteed sound power level: nnn.n dB(A)

Engine information

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

Harmonized standards, other technical standards and specifications applied:

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

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

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1.5 User instructions

1.5.1 Responsibility of the contractor

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

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

1.5.2 Responsibility of the driver and the service staff

Any individual intending to operate the compaction roller must have read and understood this operating and maintenance manual before starting to carry out any work related to the vehicle.

The **driver of the compaction roller** is the person who operates and drives the compaction roller.



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

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

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

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

NOTICE	Risk of damage caused by lack of information! In the event of any damage, hazard or doubt concerning the operation of the compaction roller, the operating and maintenance manual is an important resource for obtaining information. Thus, this operating and maintenance manual is considered an essential component of the compaction roller and is to be stored in the vehicle in case it is sold or a change in ownership occurs. If the manual is not available, contact an authorized Hyundai dealer to order a copy (please state the serial number).
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Operating & maintenance manual

1.7 Notes on this operating and maintenance manual

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

1.7.1 Symbols in the operating and maintenance manual

The warning notices in this operating and maintenance manual are accentuated by means of signal words and symbols which reflect the extent and the type of danger involved (as defined by the ANSI Z535.6 and ANSI Z535.4 standards).
In order to prevent physical injury and property damage, observing the warning notices in this operating and maintenance manual is **of vital importance!**

 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	This signal word is used to address practices not related to physical injury.
SAFETY INSTRUCTIONS	Indicates general instructions relative to safe work practices, reminders of proper safety procedures or the location of safety equipment.
	This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death!

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1.7.2 Further notes on this operating and maintenance manual

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

1.8 Vibrations

1.8.1 Hand and arm vibration

The hand and arm vibration that occurs under normal working conditions, with the machine put to its designated use, is less than **2.5 m/s² (8.2 ft/ s²)** (weighted effective value) in accordance with ISO 8041.

1.8.2 Whole-body vibration

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

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

- The whole-body vibration level of the machine in real working conditions within the designated areas of application is less than **0.5 m/s² (1.6 ft/ s²)** (weighted effective value), in accordance with ISO 8041.
- In order to keep the level of whole-body vibration as low as possible and to prevent damage to the driver's health, please note:
- The driver's seat is to be set to the individual weight and height of the driver.
- Make sure the soil at the construction site is always kept in good condition.
- The compaction roller shall be put to the designated use only.
Handling of the machine and the operation mode need to be adjusted to the environmental conditions, such as the type of soil.

2 Safety instructions

2.1 General use of the compaction roller

⚠ WARNING	Risk of accidents! Before starting the compaction roller, the driver needs to be informed of the specific safety requirements for work in the danger zone and is obliged to check whether the necessary precautions have been taken.
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⚠ CAUTION	Unknown environmental and working conditions!! Prior to starting your work, make sure that the weather, the road and the condition of the ground allow for a safe operation of the compaction roller. Watch out for potential sources of danger and act accordingly
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⚠ WARNING	Before transporting the compaction roller! <ul style="list-style-type: none">• The compaction roller may be loaded and unloaded by experienced and adequately skilled & qualified individuals only.• Make sure you load and unload the compaction roller on even and solid ground.• Do not overload the transport vehicle.• Clean the tires of the compaction roller in order to remove snow, ice and dirt.
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⚠ CAUTION	Risks resulting from a faulty condition of the compaction roller! <ul style="list-style-type: none">• Carry out the required checks and maintenance measures, see chapters on maintenance.• Repair damage immediately or contact the Hyundai service team.• Do not resume your work before the damage is repaired.
------------------	---

⚠ WARNING	Danger of falling while getting on/off the compaction roller! <ul style="list-style-type: none">• Always face the cab, use handles, stairs and steps!• Always keep stairs, steps and handles clean and dry!• Do not use any control elements as handles!
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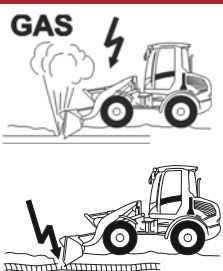
⚠ WARNING	Risk of accidents caused by restricted visibility! <ul style="list-style-type: none">• Stop the vehicle or reduce speed until visibility improves.• Be sure to keep the windows clean, free of ice, steam, frost.• Do not hang up any clothes or other objects which might restrict your view.
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NOTICE	Ensure the operational readiness of the compaction roller! Prior to starting your work, check the fill levels and add the required consumables, see maintenance instructions. Carry out the work required for Inspection certificate A, see chapters on maintenance.
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2.2 Working with the compaction roller

⚠ WARNING	Watch out for individuals in the work area and within the operating range of the vehicle! <p>During work with the compaction roller, no individuals may be present in the operating range of the machine. Secure the work area against unauthorized trespassing. Transporting people on the compaction roller is strictly prohibited! Before and while driving backwards, check the area behind you by looking backwards.</p>
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⚠ DANGER	Risk of fatal electric shocks, explosions and intoxication due to damaged conduits!
	<ul style="list-style-type: none">• Watch out for subterranean objects!• Gather information about the position of conduits, tubes and pipes and clearly point them out in the work area.• If necessary, have them shut off beforehand.• Remove the vehicle from the danger zone. In case this is not possible:• Stay in the cab.• Ask other individuals to stay away from the work area.• Have the power switched off.

⚠ CAUTION	Risk of accidents and injuries in unknown and/or complex environments! <ul style="list-style-type: none">• Find a skilled person to give you instructions and directions!• Agree on hand signals and warning calls beforehand!
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⚠ CAUTION	Risk of sliding, breaking in of the compaction roller! <ul style="list-style-type: none">• Exercise extra caution when working near water!• Before starting to work, check the inclination and the carrying capacity of the ground.•
	

⚠ WARNING	Risk of intoxication when working in closed areas! <ul style="list-style-type: none">• Ensure sufficient ventilation!• Make sure all emissions are conducted outside the work area.• Observe all regulations concerning noise protection.
	

2.3 Safety instructions in emergencies

⚠ WARNING	Need for emergency equipment to treat injuries <ul style="list-style-type: none">• In the event of an accident, the emergency equipment can save lives!• Always keep a first aid kit and a fire extinguisher close at hand.• Make sure the emergency equipment is always ready for use.• Familiarize yourself with using the emergency equipment beforehand.
	

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3 Technical specifications

Max. driving speed	HR110 / 120 / 140C-9
	11.5 km/h (7.1 mph)

3.1 Operating data

With smooth drum	HR110C-9	HR120C-9	HR140C-9
General:			
Service weight	11700 kg (25794 lbs)	12300 kg (27116 lbs)	14000 kg (30865 lbs)
Axle load, front	6300 kg (13889 lbs)	7100 kg (15653 lbs)	8100 kg (17857 lbs)
Axle load, rear	5400 kg (11905 lbs)	5200 kg (11464 lbs)	5900 kg (13007 lbs)
Compaction capacity:			
Static linear load	30.00 kg (66.14 lbs)	33.81 kg (74.54 lbs)	38.57 kg (85.03 lbs)
Amplitude high / low	1.8 / 0.8 mm (0.07 / 0.03 in)	1.8 / 0.6 mm (0.07 / 0.02 in)	1.9 / 0.7 mm (0.07 / 0.03 in)
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 (82.7 in)		
Drum diameter	1500 mm (59.1 in)		
Drum thickness	25 mm (1 in)	30 mm (1.2 in)	30 mm (1.2 in)
Drive / transmission:			
Pendulum angle	+/- 12°	+/- 12°	+/- 12°
Gradeability with / without vibration	48 / 53 %	45 / 50 %	40 / 45 %
Noise level (2000/14/EG & annexes):			
Average sound power level L_{WA}	104.1 dB	103.9 dB	104.8 dB
Guaranteed sound power level L_{WA}	106 dB	106 dB	106 dB
Sound pressure level L_{PA} (ISO 6396)	77 dB	78 dB	76 dB
Vibration levels (ISO 8041):			
Hand-arm / Whole-body vibration	< 2.5 / 0.5 m/s ²		

3.2 Tires

	HR110C-9	HR120C-9	HR140C-9
Smooth drum	23.1 - 26	23.1 - 26	23.1 - 26
Pad foot drum	23.1 - 26 TR	23.1 - 26 TR	23.1 - 26 TR

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3.3 Fill levels

HR110-140C-9	with Deutz diesel engine EU2 or EU3	with Cummins Diesel engine EU4 or Deutz EU5
Fuel tank	300 ltrs (79.3 gal)	263 ltrs (69.5 gal)
Hydraulic oil tank	106 ltrs (28 gal)	106 ltrs (28 gal)
AdBlue® / DEF tank	16 ltrs (4.2 gal)	16 ltrs (4.2 gal)

3.4 Diesel engine Deutz (EU2)

HR110-140C-9	
Make	Deutz BF4M2012C
Nominal capacity	100 kW / 2400 1/min

3.5 Diesel engine Deutz (EU3)

HR110-140C-9	
Make	Deutz TCD2012
Nominal capacity	103 kW / 2400 1/min

3.6 Diesel engine Cummins (EU4)

HR110-140C-9	
Make	CUMMINS QSF3.8 TIER 4 Final
Nominal capacity / Engine speed	97 kW / 2200 1/min
Exhaust gas aftertreatment	DOC - SCR

3.7 Diesel engine Deutz (EU5)

HR110-140C-9	
Make	Deutz TCD3.6
Nominal capacity / Engine speed	100 kW / 2200 1/min
Exhaust gas aftertreatment	DOC – DPF - SCR

3.8 Roll-over protection system (ROPS)

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

NOTICE	Risk of property damage and loss of ROPS validation caused by unauthorized modifications! <ul style="list-style-type: none">• Any modification of the enclosed cab is permitted only after a written form of approval has been issued by Hyundai within the scope of the certification tests.• Otherwise, the ROPS certificate loses its validity.• No liability will be assumed for any modifications of the cab (drilling, welding, etc.) carried out without prior explicit approval of the manufacturer.
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3.9 Warranty for add-ons and conversions

NOTICE	Warranty <ul style="list-style-type: none">• Any modification of any Hyundai machine, any add-ons and conversions, are permitted only after a written form of approval has been issued by Hyundai.• The use of non-approved add-on parts and/or any unauthorized modifications will void our warranty with immediate effect.
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3.10 Dimensions: Compaction roller with enclosed cab

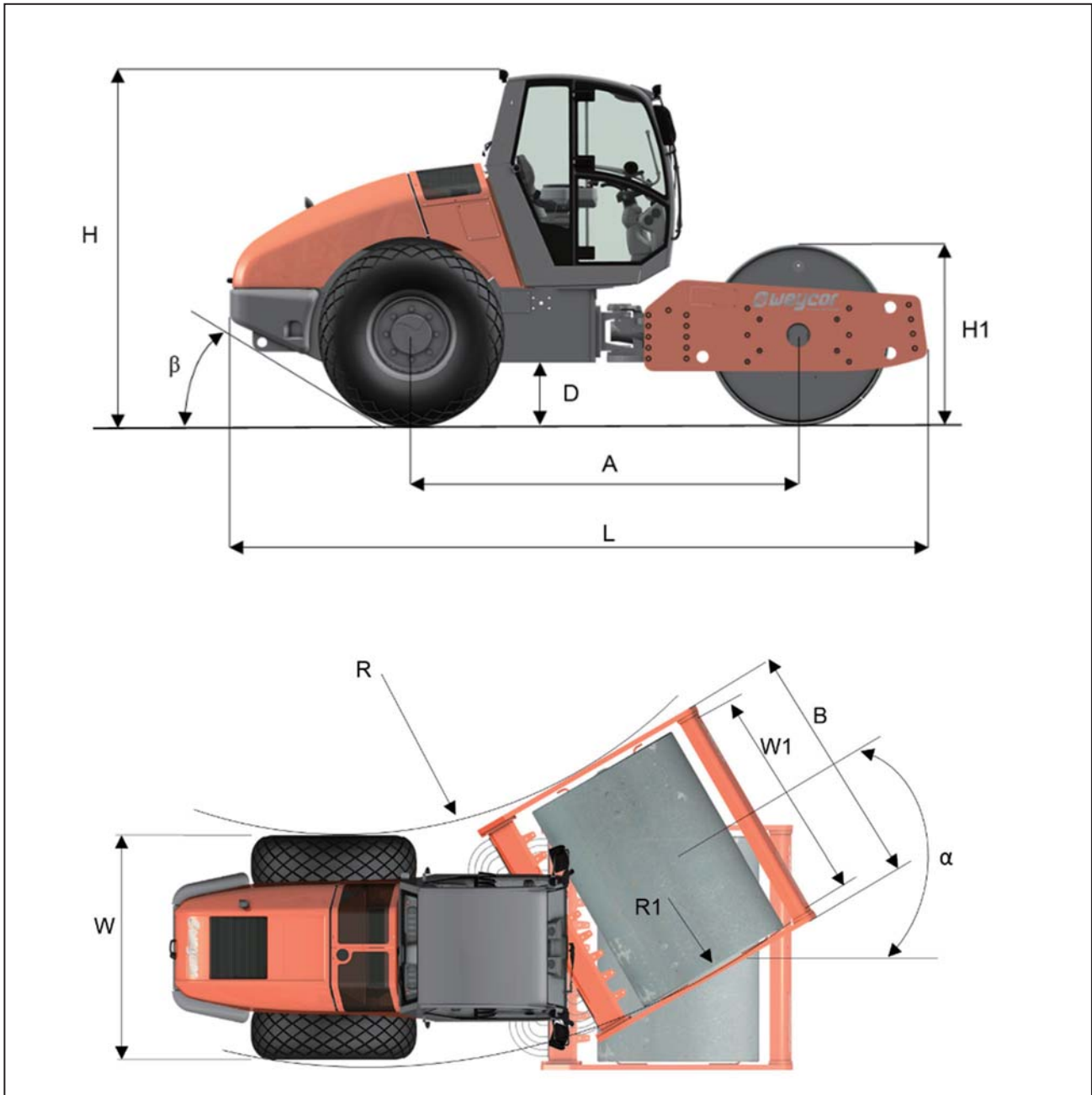


Fig. 3 Dimensions

Dimensions (in mm)	with smooth drum	with pad foot drum
A	3195 mm (125.8 in)	3195 mm (125.8 in)
B	2270 mm (89.4 in)	2270 mm (89.4 in)
D	490 mm (19.3 in)	490 mm (19.3 in)
H	2920 mm (115.0 in)	2920 mm (115.0 in)
H ₁	1500 mm (59.1 in)	1390 mm (54.7 in)
L	5757 mm (226.7 in)	5757 mm (226.7 in)
R	4860 mm (191.3 in)	4860 mm (191.3 in)
R ₁	7015 mm (276.2 in)	7015 mm (276.2 in)
W	2090 mm (82.3 in)	2090 mm (82.3 in)
W ₁	2100 mm (82.7 in)	2100 mm (82.7 in)
α	+/- 30°	+/- 30°

3.11 Dimensions: Compaction roller with open cab

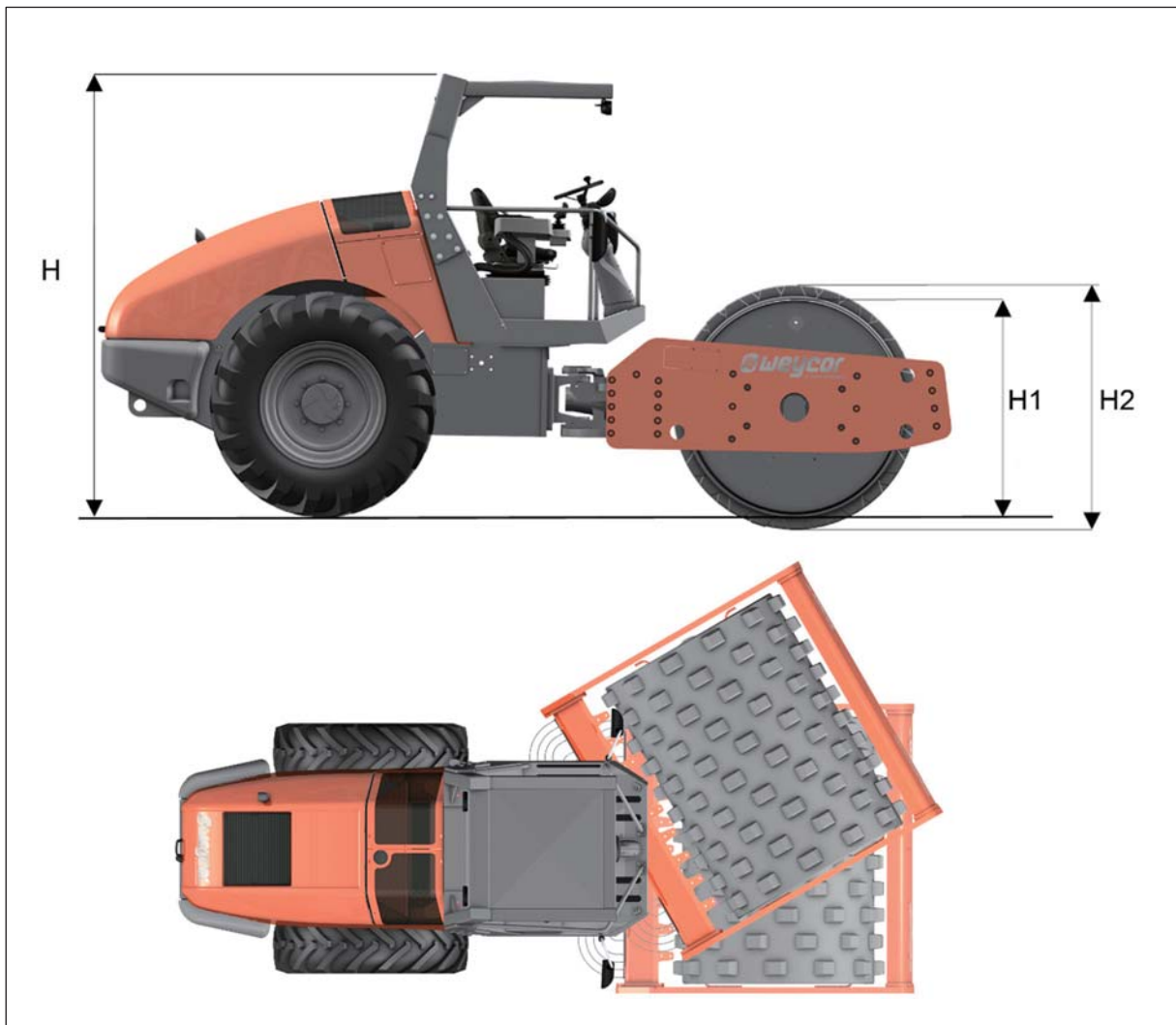


Fig. 4 Dimensions with open cab / pad foot drum

Type AW 1110 - 1140	with smooth drum	with pad foot drum
H	2920 mm	2920 mm
H1	1500 mm	1390 mm
H2	./.	1590 mm

4 Transporting the compaction roller

4.1 Securing and loading the compaction roller before transporting it

⚠ WARNING

Secure attachments and objects in the cab before carrying out the transport!

- Remove any objects attached to the exterior of the vehicle and transport them separately.
- Remove or fasten objects that are kept in the vehicle.

⚠ WARNING

Precautionary measures for transporting the compaction roller!

- The compaction roller may be loaded and unloaded by adequately trained persons only.
- It may only be loaded and unloaded on level, solid ground.
- Do not overload the transport vehicle.
- Observe the total weight of the compaction roller, see **Technical specifications**.

4.1.1 Loading the compaction roller onto a flat bed truck

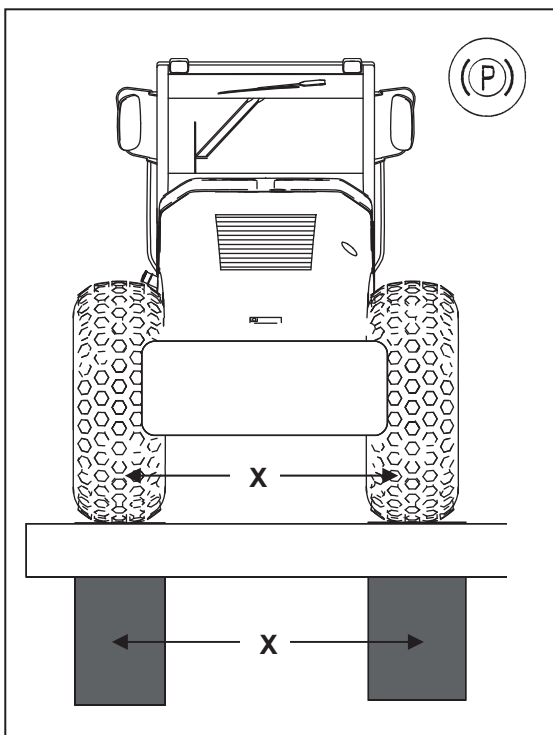
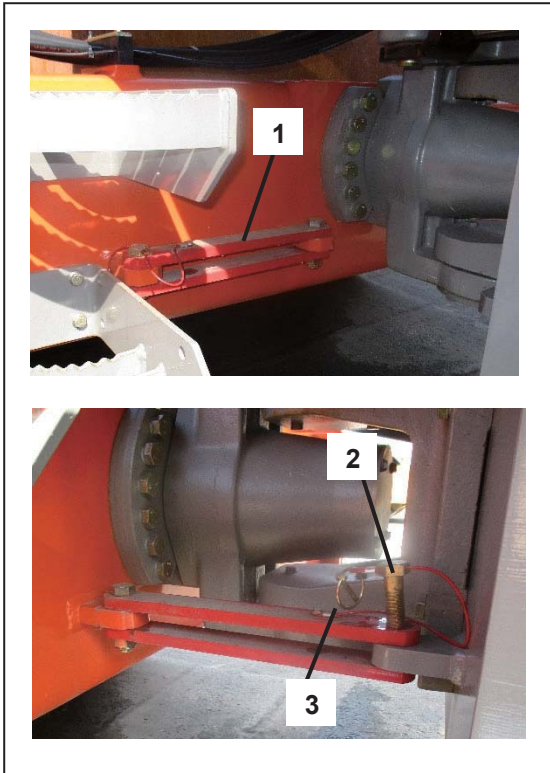


Fig. 5 Driving onto a flat bed truck

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

Operating & maintenance manual

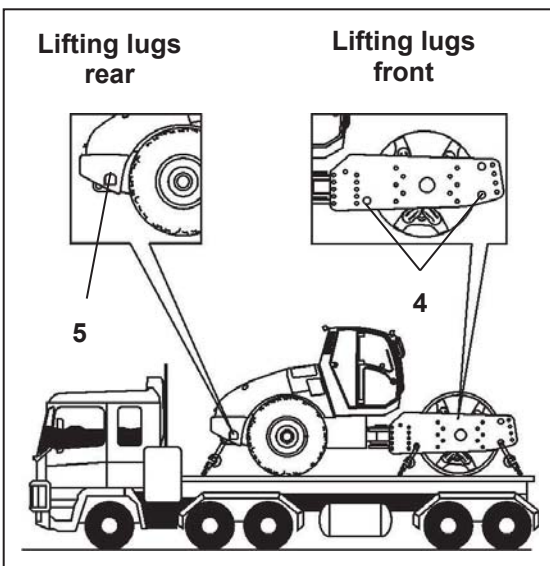
4.1.2 Securing the compaction roller on the transport vehicle



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

Fig. 6 Articulation-lock device

4.1.3 Tying the compaction roller to the transport vehicle



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

Fig. 7 Securing the compaction roller

NOTICE

Observe the national laws regarding tie-down safety standards!

⚠ WARNING

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

Operating & maintenance manual

4.1.4 Carrying out the transport

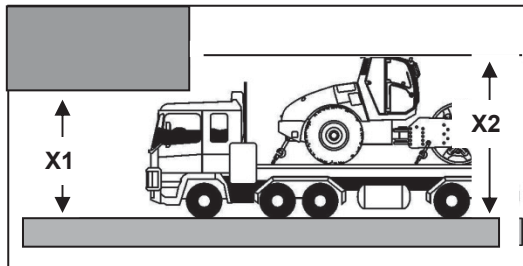


Fig. 8 Carrying out the transport

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

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

⚠ WARNING

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

5 Getting acquainted with the compaction roller

5.1 Overview: Assembly groups

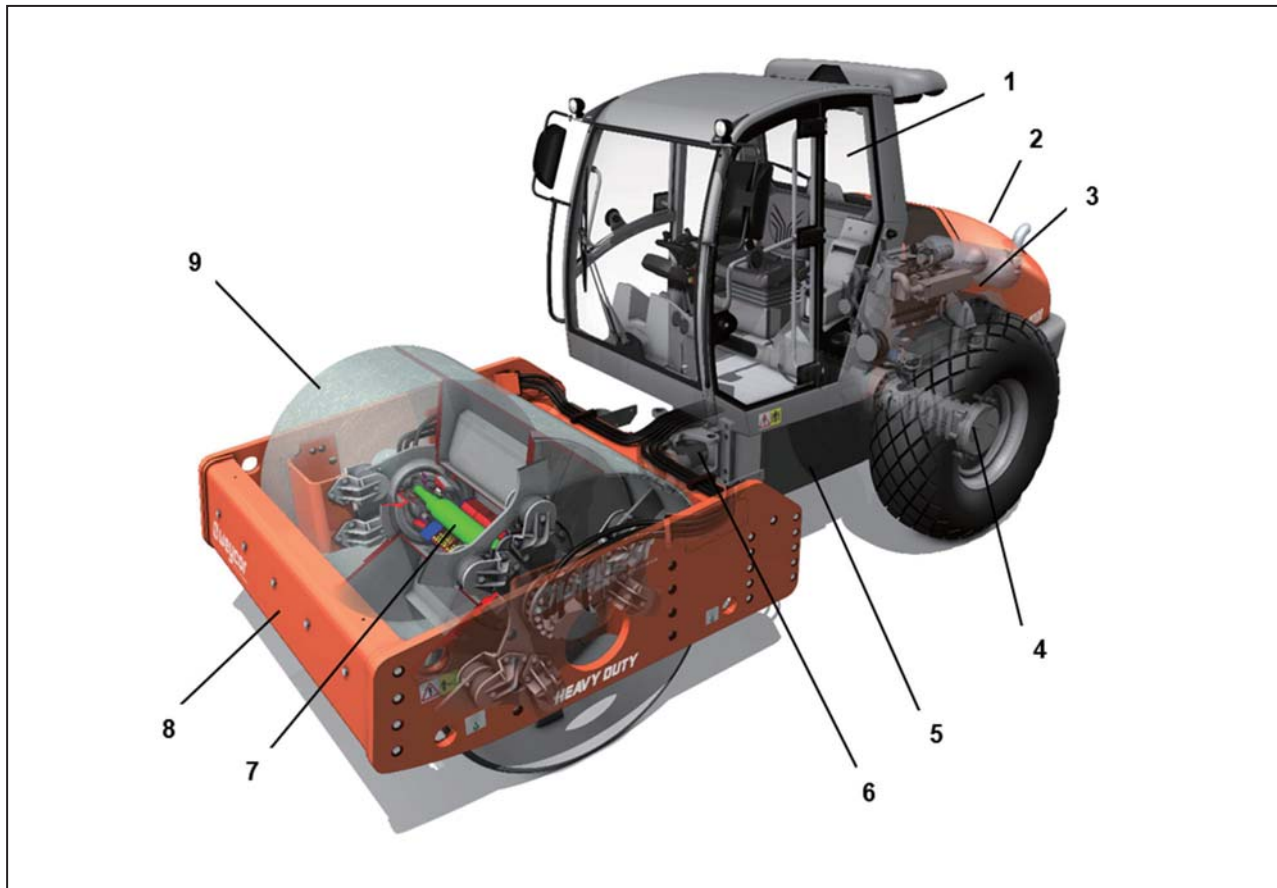


Fig. 9 Overview: Assembly groups

Captions assembly groups

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

5.2 Overview: Operator's station with enclosed cab

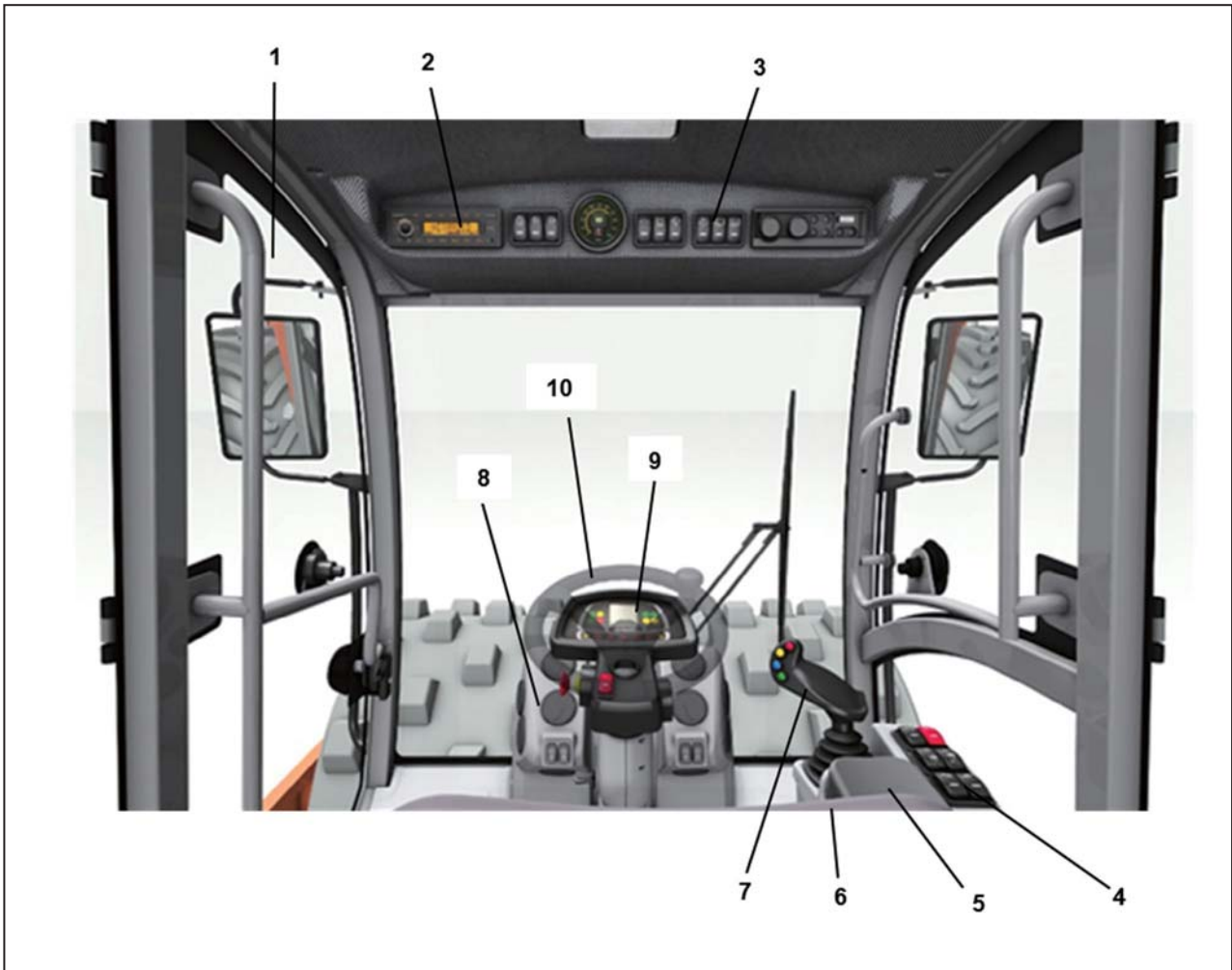


Fig. 10 Operator's station enclosed cab

Captions operator's station enclosed cab

- 1 Cab door
- 2 Radio (optional feature)
- 3 Control panel, roof lining
- 4 Control panel, armrest
- 5 Adjustable armrest
- 6 Adjustable driver's seat with safety belt
- 7 Joystick
- 8 Air nozzle heating and ventilation
- 9 Dashboard
- 10 Steering wheel

5.3 Overview operator's station with open cab

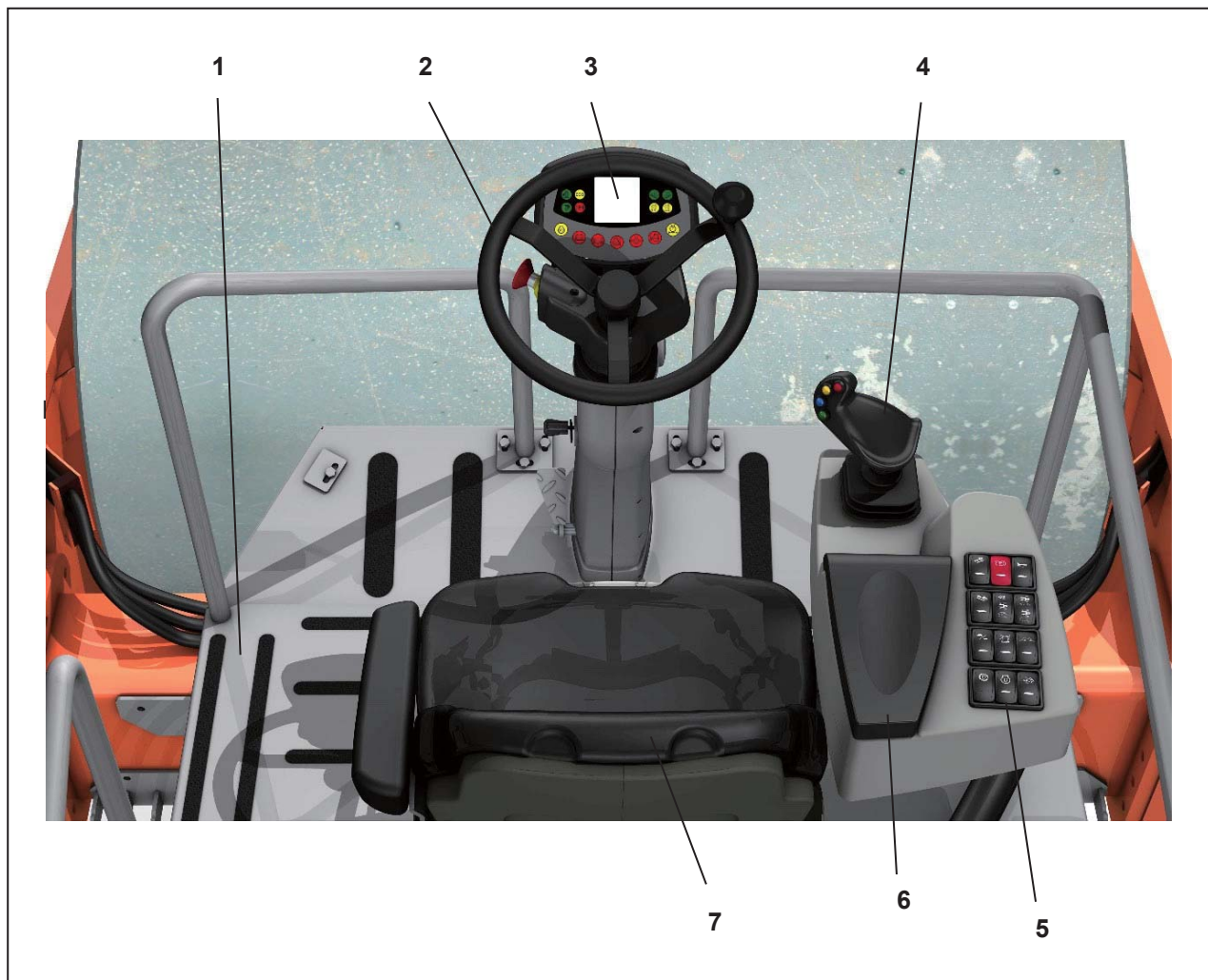


Fig. 11 Overview open cab

Captions operator's station open cab

- 1 Steps
- 2 Steering wheel
- 3 Dashboard
- 4 Joystick
- 5 Control panel, armrest
- 6 Armrest
- 7 Driver's seat with safety belt

Operating & maintenance manual

5.4 Warning notices and labels

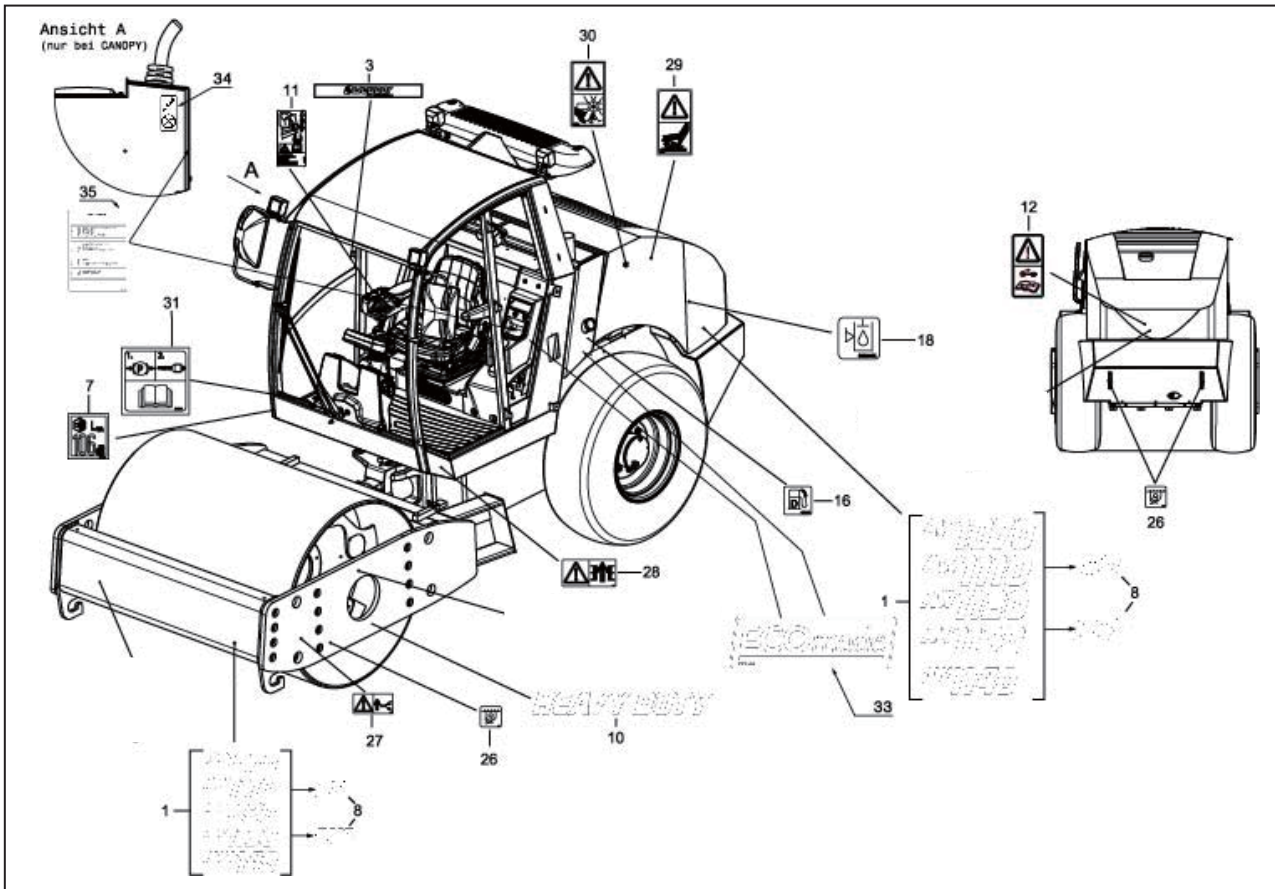


Fig. 12 Warning notices and labels

Captions warning notices and labels

- 1 Type (1110 / 11120 / 1130 / 1140)
- 3 sun protection
- 4 logo (side)
- 5 logo (rear)
- 6 logo (front)
- 7 Noise emission level
- 8 Model variant (HD / PHD)
- 10 HEAVY DUTY label
- 11 Joystick control
- 12 Maintenance work – engine off
- 16 Diesel / B 7
- 18 Hydraulic oil level
- 26 Tie-down lug
- 27 Safety distance
- 28 Risk of crushing
- 29 Risk of burns
- 30 Risk of cuts
- 31 Start
- 33 ECO mode
- 34 High-pressure washer (with open cab only)
- 35 Fuses

6 Before starting the compaction roller

6.1 Prior to the initial start

SAFETY INSTRUCTIONS

Obligation to inform yourself!

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

6.2 Checking the compaction roller: Visual inspection

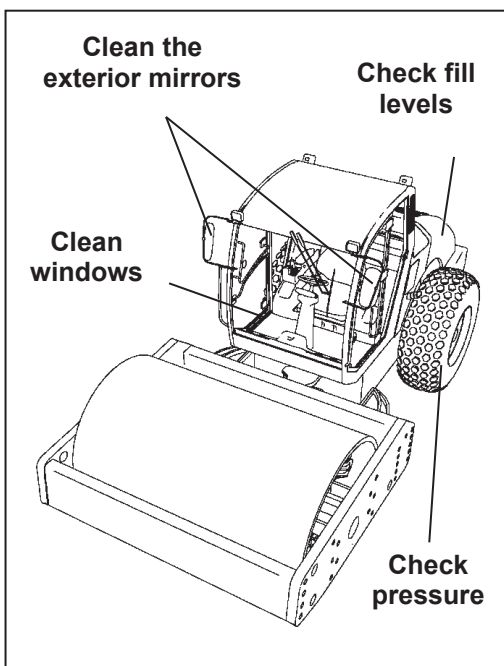


Fig. 13 Visual inspection

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

Check:

- the accumulation of dirt and clean the compaction roller by means of a high pressure washer, if necessary.
- the drum and the condition of the contact scrapers with flexible vulcollan bar.
- the condition and the air pressure of the tires (adjust the tire pressure, if necessary: 1.6 bars (23.2 psi) for standard tires with water filling; for special tires, consult the tire manufacturer.
- the following fill levels:
 - Fuel (Diesel)
 - Hydraulic oil
 - Engine oil
 - AdBlue®
 - Water level for the windshield washer system
- whether the windows of the cab are dirty - clean the exterior and interior window panes, if required
- whether the exterior mirrors are dirty - clean them, if required.

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6.2.1 Checking the drum area

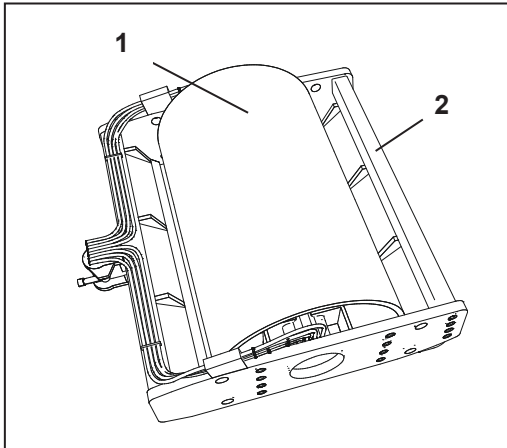


Fig. 14 Checking the scrapers

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

Check the scraper(s) of the smooth or pad foot drum and the drive area for the accumulation of dirt.

If required, clean the entire drum area by means of a high pressure washer.

Checking the scrapers:

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

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

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

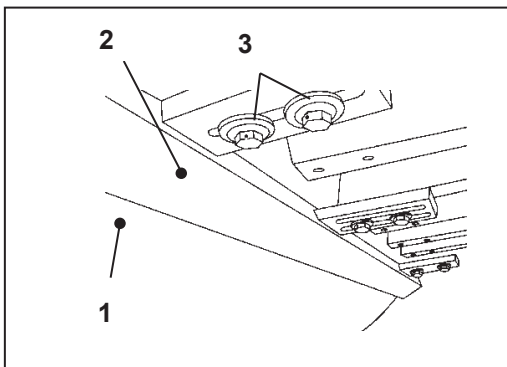


Fig. 15 Standard scrapers

Standard scrapers (with rigid metal bar):

- Loosen the fastening bolts (3) of the scraper.
- Move the scraper (2) toward the smooth roller drum (1), to a distance of approx. **20 mm (0.8 in)**.
- Tighten the fastening bolts (3).

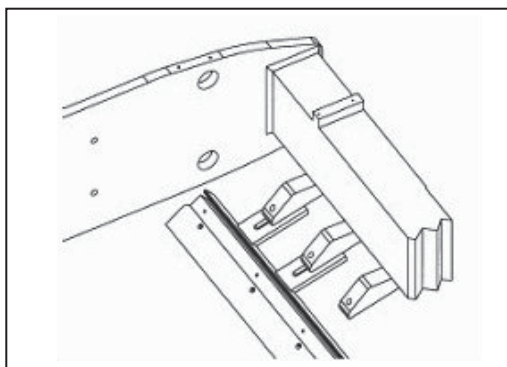


Fig. 16 Contact scrapers

Contact scrapers, spring-loaded or vulcollan bar:


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

6.3 Refueling (Diesel)

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

NOTICE	Risk of damage to the environment - 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.
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Diesel fuel specifications: Diesel fuel should comply with one of the following specifications. The table lists several specifications for acceptable fuels.	
ASTM D975	Bio-diesel fuel
No. 1-D S15	Biodiesel blends up to B5
No. 2-D S15	ASTM D6751, D7467

Fuel type	Standard	Temperature range	
Diesel	DIN EN 590 Summer diesel	below 0°C (32°F)	
Diesel	DIN EN 590 Winter diesel	from below 0°C (32°F) up to -15°C (5 °F)	
Diesel	DIN EN 590 Super diesel	From below -15°C (5 °F) up to -20°C (-4 °F)	

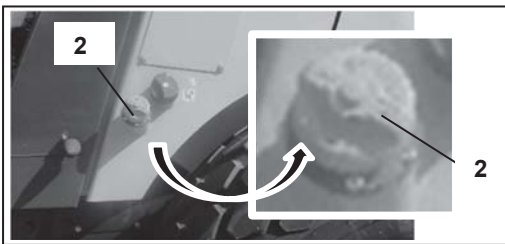


Fig. 17 Filler neck

- Unlock the engine hood and open it.
- The filler neck (2) for the fuel tank is located on the left side of the vehicle, behind the cab.
- Open the tank cover and add a sufficient quantity of Diesel fuel.
- Close the tank cover and lock it.

6.4 With Diesel engines EU4 and EU5 only: Refueling (AdBlue® / DEF)

Prior to the operation of the compaction roller, fill the AdBlue® / DEF tank with a sufficient amount of NOx reduction additive /urea-water solution.

NOTICE	Risk of damage to the environment Immediate action is required to prevent fuel and oil from penetrating the ground.
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NOTICE	Risk of property damage! <ul style="list-style-type: none"> • The urea-water solution may only be filled into the AdBlue® / DEF tank. • Filling the tank with any other type of fuel (e.g. Diesel) will result in irreversible damage to the SCR system. • In case a wrong fuel type has been filled in, do not start the ignition and do not start the diesel engine! • The condition of the SCR system needs to be checked by the Hyundai customer service team, which may replace SCR components, if necessary.
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NOx reduction additive AUS 32		
AdBlue® / DEF	DIN 70070 / ISO 22241-1 ASTM D 7821	Urea-water solution (urea: 32.5 %)

NOTICE	<p>Risk of property damage!</p> <ul style="list-style-type: none"> • Thinning down the urea-water solution by means of water or using a urea-water-solution with a share of urea that is lower than 31.8 % (according to standard DIN 70070, ISO 22241-1 or ASTM D 7821) is not permitted! • The urea concentration is checked by the on-board diagnosis system. • In case quality requirements are not met any more, the engine output will be reduced.
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NOTICE	<p>Risk of property damage!</p> <ul style="list-style-type: none"> • Stop the engine before filling the tank with urea-water solution. • Make sure the urea-water solution is not contaminated by dust.
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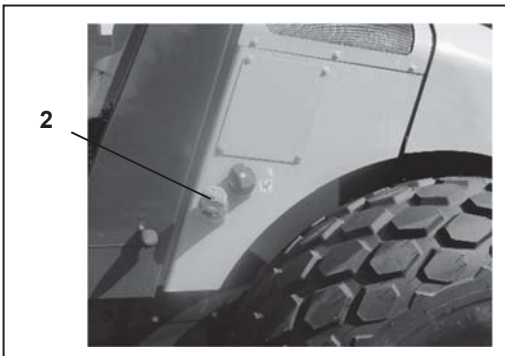


Fig. 18 Filler neck AdBlue® / DEF

- Stop the diesel engine.
- The filler neck (**2**) for AdBlue® / DEF is installed on the left side of the vehicle, behind the cab, below the diesel filler neck.
- Open the filler neck and fill in AdBlue® / DEF.
- Close the filler neck and lock it.



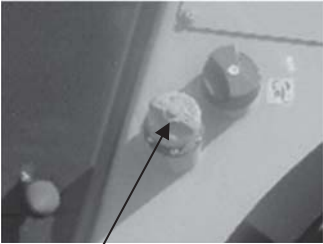






Minimum top-up quantity

The following minimum top-up quantities are to be observed when adding urea-water solution. Filling the tank with less than the prescribed minimum top-up quantity is permitted only in case the current tank capacity is not sufficient at the point of time in question.

Tank capacity	Minimum top-up quantity
< 20 liters / < 5.3 gallons	5 liters / 1.3 gallons or full tank
≥ 20 liters / ≥ 5.3 gallons	10 liters / 2.6 gallons or full tank

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6.4.1 AdBlue® / DEF: Warning displays

Warning displays		Signification	Impact	Remedy
	(lights up)	Remaining quantity in the AdBlue® / DEF tank: 10% or less		<ul style="list-style-type: none"> Top up on AdBlue® / DEF.
	(lights up)	Remaining quantity in the AdBlue® / DEF tank: 2,5% or less	The torque value of the diesel engine is reduced to 75%.	 <p>Filler neck AdBlue® / DEF</p>
	(lights up)			
	(flashes)	The AdBlue® / DEF tank is completely empty.	The torque value of the diesel engine is reduced to 50%.	
	(lights up)			
	(flashes)	The AdBlue® / DEF tank has been empty for >30 minutes, but the operation of the compaction roller has not been interrupted.	The torque value of the diesel engine is limited to idling speed.	<ul style="list-style-type: none"> Park the compaction roller and turn off the diesel engine. Top up on AdBlue® / DEF.
	(lights up)			
	(lights up)			

As soon as you have added AdBlue® / DEF, the full capacity of the diesel engine and the full torque value are available again.

6.5 Opening the door and accessing the vehicle

NOTICE

Environmental protection

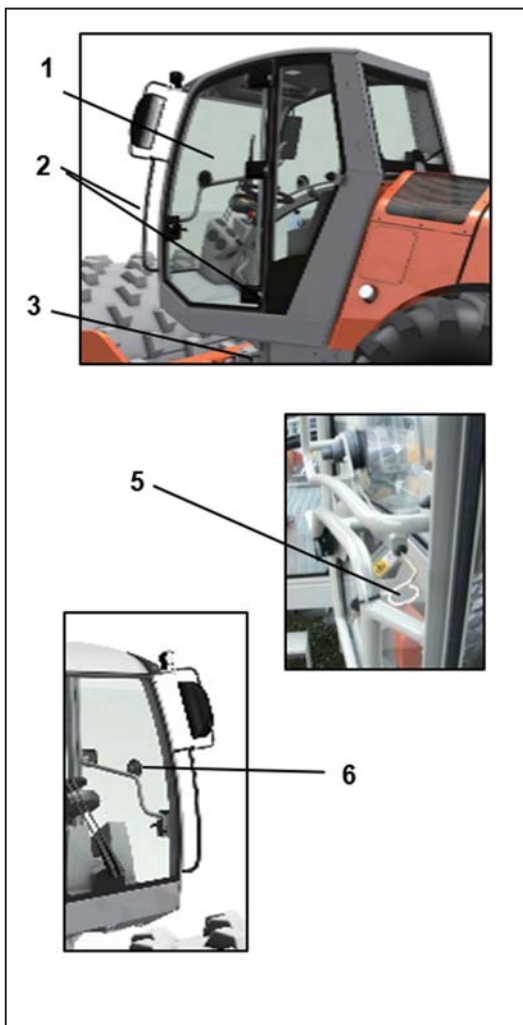
- Prior to accessing the cab, the checks described above need to be completed, see previous sections.
- The upper windows and the door need to be properly locked.

⚠ WARNING



Danger of falling while getting on/off the compaction roller

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



- Unlock the door.
- Open the door (1) and make sure the open window clicks into place.
- Hold on to both handles (2) and use the steps (3) to access the cab.
- After accessing the cab, immediately sit down on the driver's seat.
- In order to release the door, actuate the mechanism (5) of the release button (6).
- After releasing the door, immediately close it and make sure it is securely engaged in the door lock.

Fig. 19 Opening the door and accessing the cab

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6.5.1 Opening and closing the window

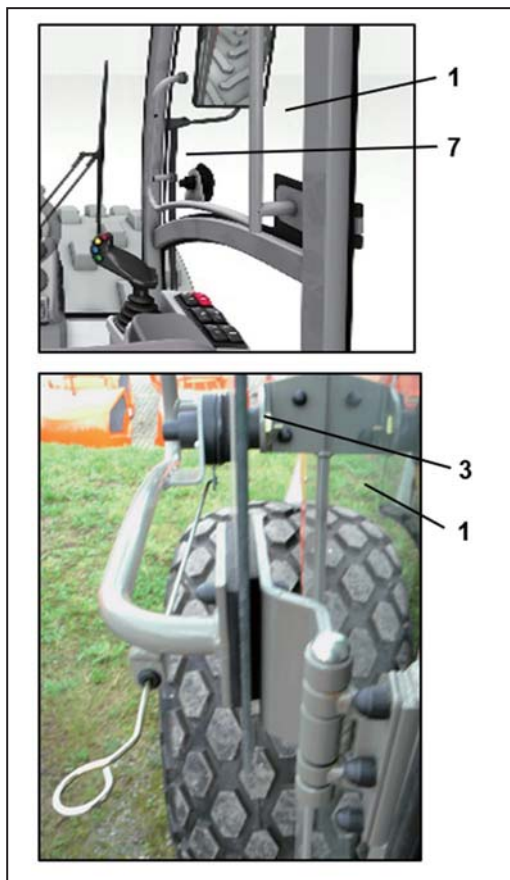


Fig. 20 Opening a window

- To open the window (1), release the lock (7) and open the window on the desired side of the compaction roller.
- Open the window and make sure it clicks into place (3).

6.5.2 Opening the door

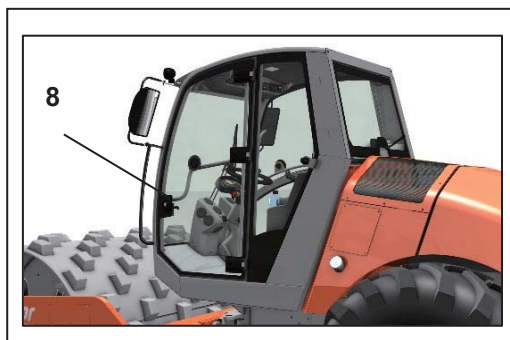


Fig. 21 Opening the door

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

NOTICE

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

7 Individual settings

7.1 Adjusting the driver's seat

Features of the driver's seat:

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

⚠ WARNING

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

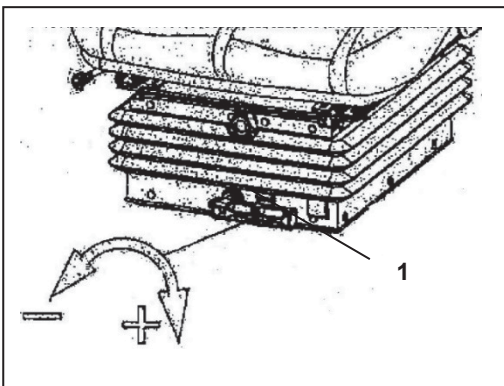


Fig. 22 Weight adjustment

Weight adjustment:

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

NOTICE

The driver's seat has been designed for a maximum weight of **130 kg (286.6 lbs)**.

In order to prevent damage to your health, check and adjust the settings of the driver's seat each time **before** putting the compaction roller into operation.

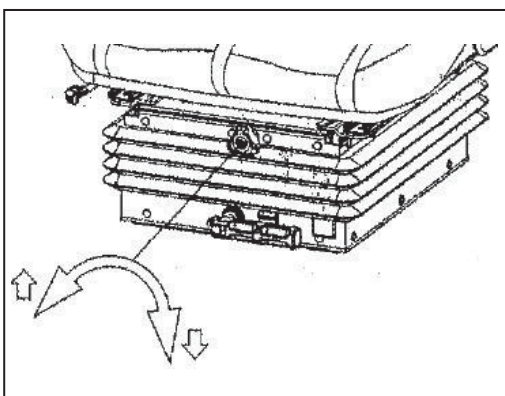


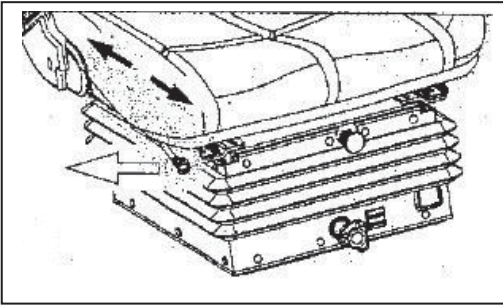
Fig. 23 Height adjustment

Height adjustment:

- Sit down on the driver's seat.
- Turn the rotating button into the corresponding direction of the arrows to set the seat to the desired height.

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7.1.1 Longitudinal adjustment



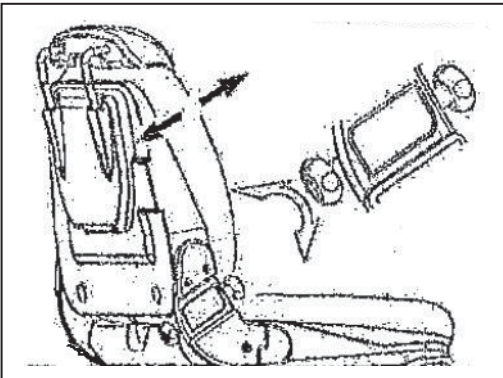
- Make the necessary adjustments by means of the corresponding locking lever on the right side of the seat.
- Pull the locking lever outwards and move the driver's seat into the desired position until the locking lever clicks into place.

Fig. 24 Longitudinal adjustment

⚠ WARNING

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

7.1.2 Position of the backrest



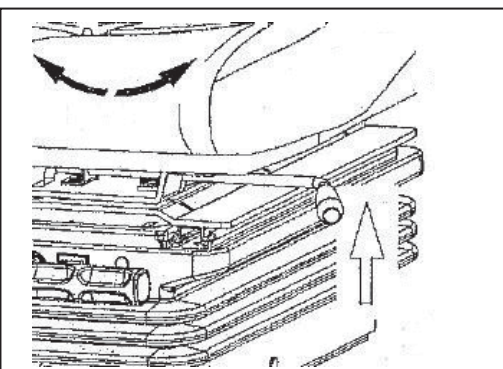
- Adjust the backrest by means of the corresponding handle on the right side of the seat.
- Turn the handle into the desired direction and adjust the backrest as required.

Fig. 25 Backrest inclination

NOTICE

After making the required adjustments, ensure that the inclination of the backrest is correct. As long as it is still possible to move the seat or the backrest, you may not start the compaction roller.

7.1.3 Rotation of the driver's seat



- You can rotate the seat by means of the lever on the left side of the seat.
- Pull the lever upwards.
- Sit down on the seat and rotate it into the desired direction.
- Let go of the lever and make sure it clicks into place.

Fig. 26 Rotating the seat

⚠ WARNING

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

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7.1.4 Left armrest

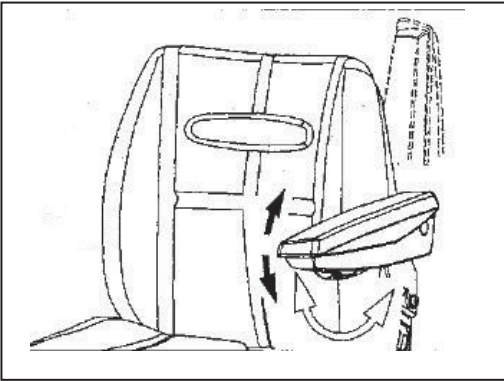


Fig. 27 Left armrest

- You can fold the left armrest upwards and adjust its height.
- Move the armrest into the desired position.

7.1.5 Backrest extension (headrest)

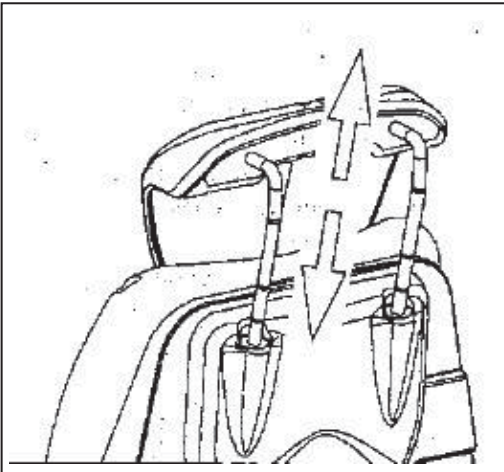


Fig. 28 Backrest extension (headrest)

- You can choose from five different height settings for the headrest.
- Pull or push to set the headrest to the desired position.
- Cancel the extension by pulling it beyond the limit stop.

NOTICE

After making the required adjustments, ensure that the adjustable parts of the seat have clicked into place. As long as it is still possible to move the seat or its components, you may not start the compaction roller.

NOTICE

You must not make any adjustments while the compaction roller is in motion.

7.2 Adjustable steering column

For a healthy and ergonomic seating position, adjust the steering column so it suits your individual needs.

⚠ WARNING

Risk of accidents and injury due to incorrect steering column position!

If the distance between the driver and the steering wheel is too small or too big while the driver is properly seated on the driver's seat and the safety belt is fastened, the steering column needs to be adjusted.

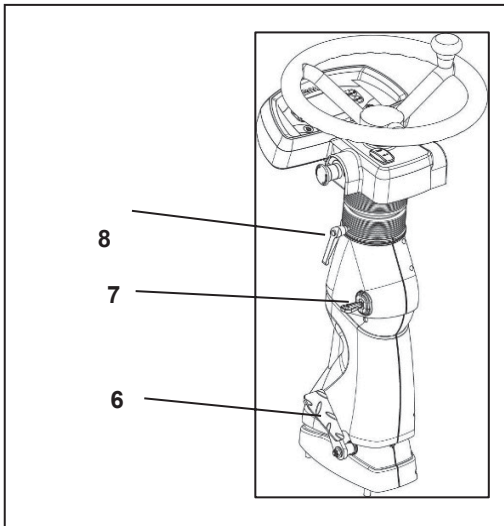


Fig. 29 Adjusting the steering column

Adjusting the steering column:

- Step on the latch (6) of the steering column.
- Move the entire steering column into the desired position.
- Release the latch (6) which locks the steering column in its current position.
- To pan the upper part of the steering column, press down the lever (7).
- Pan the upper part of the steering column into the desired position.
- Let go of the lever (7).
- The steering column has now locked into place.
- Release the lever (8) by turning it counterclockwise.
- Set the steering column to the desired height.
- Turn the lever (8) clockwise to lock the steering column at the desired height.

NOTICE

After making the required adjustments, ensure that the steering column has locked into place. As long as it is still possible to move the steering column, you may not start the compaction roller.

7.2.1 Adjusting the exterior mirrors

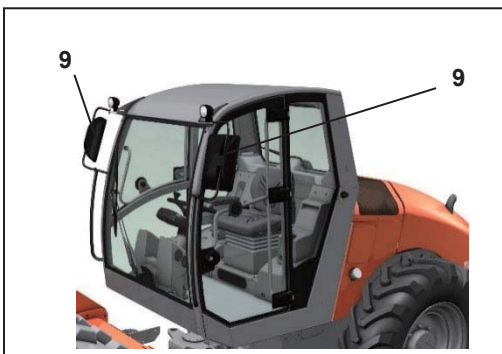


Fig. 30 Adjusting the exterior mirrors

The exterior mirrors (9) are installed at the right and left side of the front frame of the cab.

- The mirrors can be rotated and their inclination adjusted.
- Adjust the exterior mirrors (9) in a way that ensures the best possible view from the driver's seat.

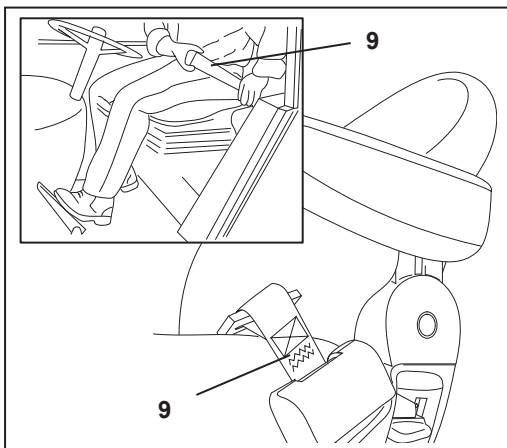
7.2.2 Fastening the safety belt



DANGER

Risk of death!

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



- 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.

Fig. 31 Safety belt

8 Control elements and displays in the cab

8.1 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.

- 1 Operating hour meter
- 2 Fuel level in the tank
- 3 AdBlue® / DEF level
- 4 Diesel engine speed











Fig. 32 Dashboard

Symbol	Function	Description
	Display Parking Brake	Activation indicates the application of the parking brake. The Diesel engine can only be started with the parking brake applied. If the parking brake is applied during operation, the compaction roller stops.
	Display Forward motion (green)	Indicates that the compaction roller is moving forward
	Display Reverse motion (green)	Indicates that the compaction roller is moving backward
	Display ECO Speed Option (yellow)	Lights up on activation of the ECO speed mode, see chapter on the compaction of soil with ECO speed.
	Display Preheating (yellow)	LED lights up while the Diesel engine is being preheated (ignition lock position I) and goes out as soon as the starting temperature is reached.
	Charge control (red)	Lights up on activating the ignition. Goes out after the Diesel engine and the generator have started.
	-	-
	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 down (see operating manual of the diesel engine manufacturer).
	Diesel engine oil pressure (red)	If this symbol lights up, stop the diesel engine and do not resume operation before the problem has been eliminated.
	Coolant fill level Diesel engine (red)	Indicates an insufficient level of coolant in the cooling circuit, see chapters on maintenance.
	Accumulation of dirt in the air filter	If this lamp lights up, clean / replace the filter, see chapters on maintenance.
	Display high amplitude (yellow)	Indicates that "high amplitude" has been selected by means of the switch "soil compaction" on the panel next to the joystick .
	Display low amplitude (yellow)	Indicates that "low amplitude" has been selected by means of the switch "soil compaction" on the panel next to the joystick .

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Symbol	Function	Description
	Override function drum (green)	Indicates that the switch "Override function hydraulic motor drum" on the control panel next to the joystick is activated . The engine is manually set to its highest swallowing capacity (max. engine torque).
	Override function rear axle drive (green)	Indicates that the switch for the override function of the rear axle has been turned on . The engine is set to its maximum swallowing capacity (max. engine torque).

8.1.1 Status and error messages

Symbol	Function	Description
	CAN Bus Failure (Electronic error)	Start the Diesel engine again. Contact the <i>Hyundai</i> service team.
	Regeneration	The exhaust system needs to be cleaned.
	Regeneration off	The automatic regeneration procedure has been deactivated by means of the corresponding switch and will not be performed.
	General fault message Diesel engine	Permanent activation indicates faults related to the engine. Please contact the customer service of the diesel engine manufacturer.
	Charge air temperature	The charge air temperature is too high.
	DEF Lamp	Insufficient fill level in the AdBlue® / DEF tank.
	Preliminary fuel pressure	Insufficient preliminary fuel pressure
	HEST Lampe (High Exhaust System Temperature Lamp)	Indicates excess exhaust temperature, e.g. during a manually initiated regeneration process.
	STOP Lamp (Critical fault message Diesel engine)	<ul style="list-style-type: none"> Indicates critical faults related to the engine. Stop the Diesel engine immediately! Please contact the Cummins service team.
	Water in fuel	Immediately empty the preliminary fuel filter.

8.1.2 Regeneration of the Diesel engine (optional feature, depends on the exhaust gas aftertreatment)



Fig. 33 Regeneration

Note that the illustrations are generic and their design does not necessarily correspond to the switches in your compaction roller.

The regeneration of the SCR catalytic converter serves to burn any crystallized AdBlue® / DEF in the catalytic converter. In order to do so, the exhaust temperature is raised significantly.

If necessary, the diesel engine automatically regenerates the SCR catalytic converter. This prevents a power loss, which means you can continue your work with the compaction roller.

The release button "Regeneration" (1) in the control panel of the right armrest needs to be in the middle position (b).

The HEST lamp and the "Regeneration" symbol light up on the display.

You can postpone the regeneration process to a later point in time. In order to do so, press the bottom end (c) of the release button. The "Regeneration off" symbol lights up on the display.

However, postponing the regeneration should be avoided, unless an increased engine temperature presents a serious danger.

The engine electronics record the load spectrum and determine the point in time when the initiation of the regeneration becomes inevitable.

For the regeneration process, the engine sets itself to park regeneration and the diesel engine speed is set to 1200 rpm. The "regeneration" symbol and the general fault message for the diesel engine light up on the display.

Park the vehicle and actuate the top of the release button "regeneration". The "regeneration" symbol flashes on the display. During the regeneration process, you cannot work with the compaction roller.

After completing the park regeneration, the full capacity of the diesel engine is available again.

Manual initiation of the regeneration (by pressing the top end a of the button) is possible only in case the automatic initiation of the regeneration process was previously prevented (i.e. c was pressed) or if the automatic regeneration process was not completed, e.g. due to a shutdown of the machine in the course of the regeneration process.

As long as no regeneration is necessary, the regeneration process cannot be initiated manually.

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8.1.3 Control elements on the steering column



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

- Switch for the acoustic warning signal (horn) (4)
- Emergency stop push-button (5) on the left side.
- Ignition lock (6) on the right side.

Fig. 34 Control elements on the steering column



DANGER

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

8.1.4 Warning features

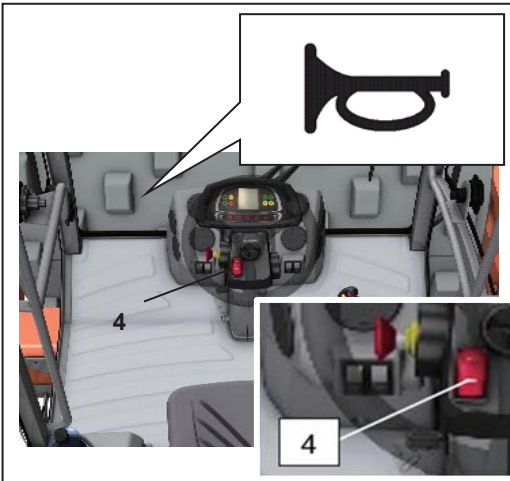


Fig. 35 Horn

Horn

In order to activate the horn, press the button (4) on the steering column.

The warning sound continues as long as the button (4) is pressed.

NOTICE

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

8.1.5 Joystick and panel of switches in the right armrest



Fig. 36 Joystick & panel of switches

The control panel of the adjustable armrest on the right features the control elements for the functions of the compaction roller:

- Control lever / Joystick (1)
 - Button Vibration on/off (2)
 - Panel of switches: Roller functions (3) (illustration includes optional features)
 - Lock (5) of the armrest (4)
- You can adjust the right armrest (4), e.g. in order to get on or off the vehicle, by pressing the locking 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.

⚠ WARNING

Risk of accidents and injuries

Never adjust the armrest with the compaction roller in motion.

Operating & maintenance manual

8.1.6 Functions of the joystick

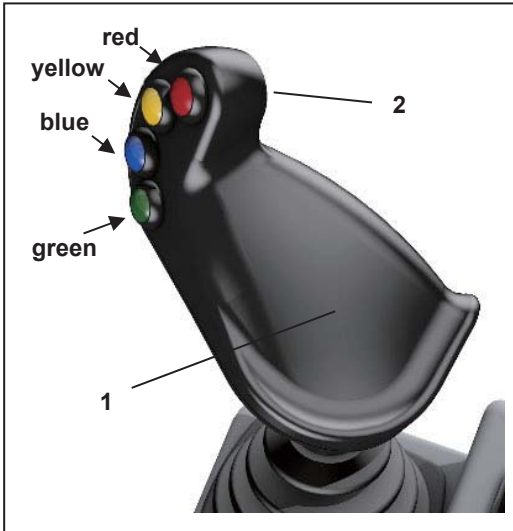


Fig. 37 Joystick functions

- The joystick (1) in the right armrest is used to control the direction of motion and the speed of the compaction roller.
- The “vibration” button (2) on the front of the joystick activates and deactivates the vibration. Different colors serve to identify the functions of the ergonomically arranged buttons:
Green = idle mode of the Diesel engine
Blue = driving without working
Red = driving & working
Yellow = ECO speed (optional feature*)

*If this feature is not available, the button serves to reduce the diesel engine speed (working is not possible in this mode)

For further information on ECO speed, please see:

Working with the compaction roller: Soil compaction in this manual.

The colored buttons on the joystick are not available for all engine variants.

In connection with emission stage EU2 Diesel engines, adjust the rotational speed via the hand gas lever.

NOTICE	<ul style="list-style-type: none"> • Compaction rollers with emission stage EU2 Diesel engines only dispose of the button for vibration (2) on the joystick. With these compaction roller types, use the bowden cable with the hand gas lever to adjust the rotational speed. • Compaction rollers with emission stage EU3, EU4 and EU5 are equipped with the colored buttons on the joystick, as described above.
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NOTICE	<ul style="list-style-type: none"> • The more the joystick is moved into the desired direction, the higher the speed of the compaction roller. • The max. speed is reached in the respective final position of the joystick. • In the middle (neutral) position, the compaction roller stops.
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8.1.7 Control panel in the right armrest



Fig. 38 Functions of the switches

The following switches in the control panel (2) in the right armrest (4) control the functions for driving and the operation of the drum.

1	Operating modes
	<ul style="list-style-type: none"> • Turtle: Front of the switch pressed down • Rabbit: Rear of the switch pressed down
2	Parking brake
3	Vibration type, soil compaction
	<ul style="list-style-type: none"> • Middle position (0): Vibration off • Front pressed down (KA): Surface compaction / low amplitude • Rear pressed down (GA): Deep compaction / high amplitude
4	Vibration control
	<ul style="list-style-type: none"> • Front pressed down: Automatic • Rear pressed down: Manual actuation
5	Override Rear Axle on/off
6	Override Hydraulic motor Drum on/off

NOTICE

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

SAFETY INSTRUCTIONS

Obligation to inform yourself

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

8.1.8 Panel of switches below the roof of the enclosed cab

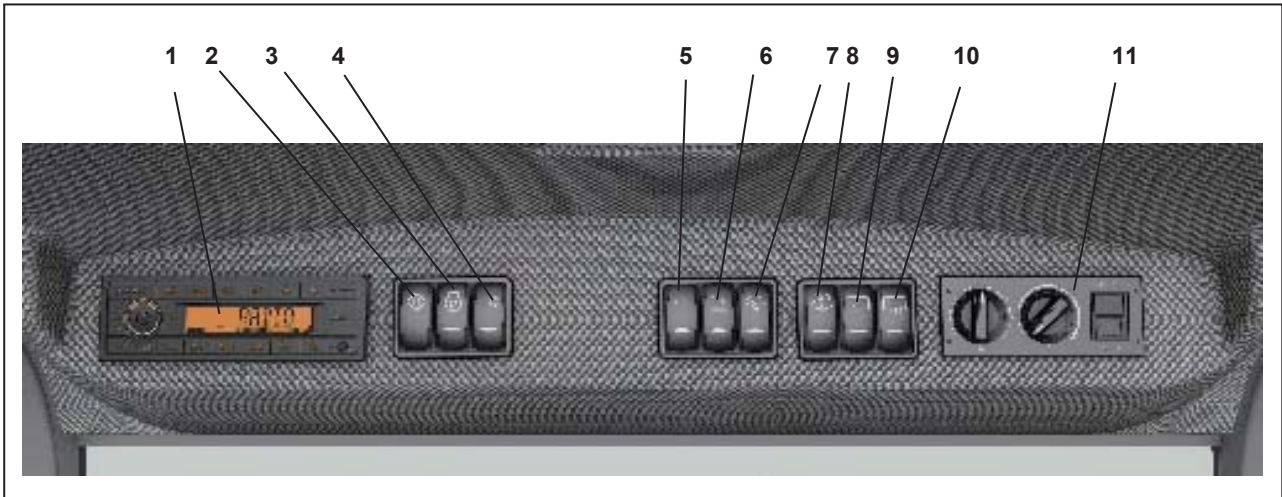


Fig. 39 Panel of switches

The control elements below the roof of the enclosed cab serve to activate / deactivate the following functions:

- 1 Radio
- 2 Drive control diagnosis
- 3 Diesel engine diagnosis
- 4 Regeneration of the diesel engine
- 5 Front and rear work lights
- 6 Rotating light (optional feature)
- 7 2-stage front wiper
- 8 Front windshield washer system
- 9 Rear wiper and rear windshield washer system
- 10 Rear window defroster
- 11 Heating and ventilation system

8.1.9 Heating & ventilation

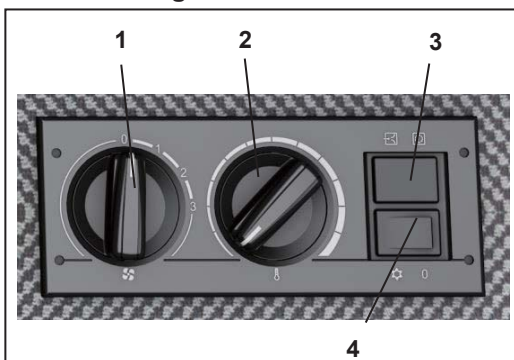


Fig. 40 Controls heating & ventilation

The controls for heating and ventilation are installed below the roof of the enclosed cab, on the right side.

- 1 Fan stages 0, I - III.
- 2 Heating
 - Area on the left: cold
 - Area on the right: warm
- 3 no function
- 4 A/C on / off (optional feature)

8.1.10 Distribution of air in the enclosed cab

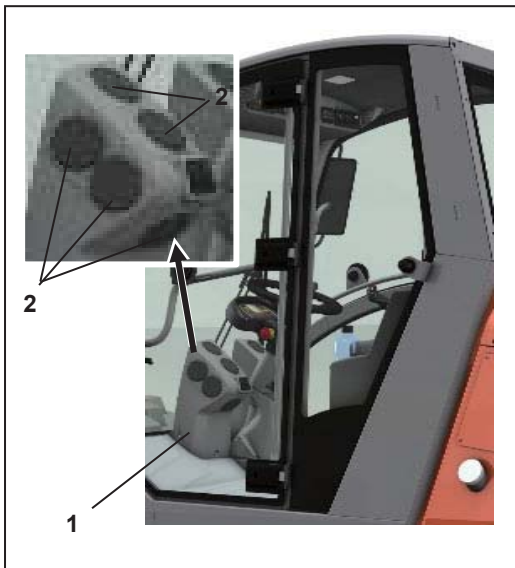


Fig. 41 Air nozzles in the cab

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

- Ten air nozzles in the front panel (1)
(five on the right side and five on the left side, 2)
- The air intake nozzles for interior ventilation are installed in the panel below the driver's seat.

9 Starting, driving and stopping the compaction roller

9.1 Prior to the initial start

SAFETY INSTRUCTIONS	<p>Obligation to inform yourself!</p> <ul style="list-style-type: none"> • 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 <i>Hyundai</i> dealer.
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9.1.1 Activating the battery main switch (optional feature)

If your compaction roller is equipped with a battery main switch, activate the battery main switch before turning on the ignition.

- Open the engine hood.
- Activate the battery main switch.

9.2 Starting the Diesel engine

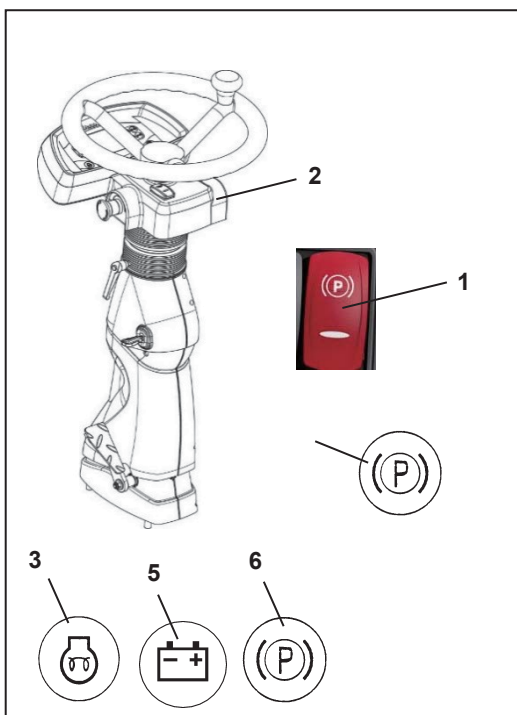


Fig. 42 Starting the Diesel engine

- Insert the ignition key into the ignition lock (2) and activate the ignition.
- Apply the parking brake (1). As soon as the ignition has been activated, the symbol indicating the application of the parking brake (4) 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 (5) and for engine oil pressure (6) light up.
- Position II: Start. The symbols for charge control (5) and for engine oil pressure (6) must automatically go out after the Diesel engine has started.
- As soon as the engine has started, immediately release your grip on the ignition key.

⚠ WARNING	<p>Risk of property damage and physical harm caused by limited range of functions of the hydraulic system</p> <p>A warm-up period of 10 minutes with the Diesel engine running at idle speed is required prior to operating the compaction roller!</p> <p>The functions of the roller drum are not available before the hydraulic oil has sufficiently warmed up.</p>
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⚠ WARNING	<p>Risk of injuries!</p> <p>Be sure to fasten the safety belt before starting the Diesel engine.</p>
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Operating & maintenance manual

9.2.1 Trouble-shooting: Diesel engine start

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

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

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

9.3 Driving the compaction roller

⚠ WARNING

Risk of accidents and injuries!

- Always fasten the safety belt before driving the compaction roller!
- Driving the compaction roller with the door open is strictly prohibited!
- You may open the windows before starting.

9.3.1 Forward motion: start

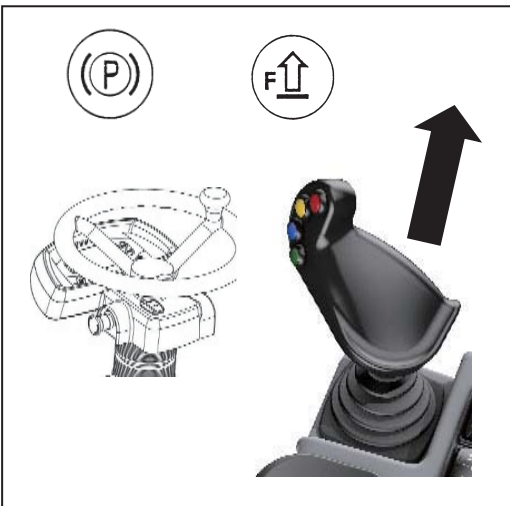


Fig. 43 Forward motion

1. Deactivate (i.e. release) the parking brake by means of the switch. The symbol indicating the activation of the parking brake goes out. Please note that, for safety reasons, after releasing the brake, you need to wait for a few seconds before the joystick can be moved out of its neutral (middle) position.
2. Make sure that the selector switch for setting the type of vibration is in the middle position **0**.
3. By means of the buttons on the joystick (or the hand gas lever, depending on your compaction roller type), set the Diesel engine speed for driving.
4. Select the operating mode:

Turtle	Slow speed, front of the switch pressed down
Rabbit	High speed, rear of the switch pressed down

5. Hold on to the steering wheel.
6. Move the joystick (**1**) forward. The symbol indicating forward motion lights up on the dashboard.
The compaction roller starts to move forward.

NOTICE

- The farther you move the joystick forwards, the higher the speed of the compaction roller.
- As soon as the joystick has reached the end position, maximum speed is set.
- In the middle (neutral) position, the compaction roller stops.

Operating & maintenance manual

9.3.2 Forward motion: stop

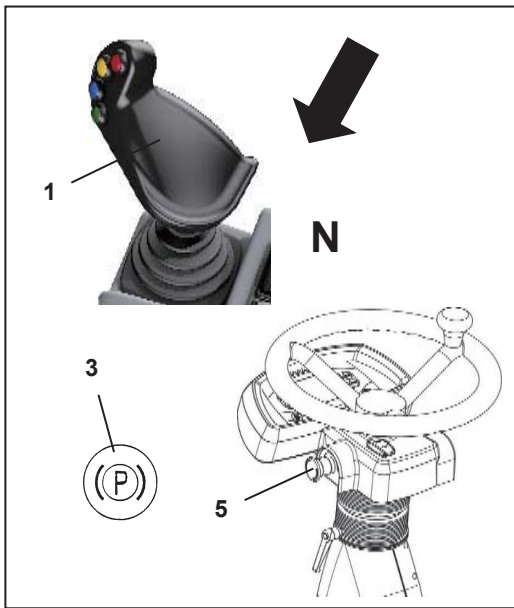


Fig. 44 Forward motion: Stop

- Stop the forward motion by means of the joystick (1) or, in the event of an emergency, by pressing the emergency stop pushbutton (5).
- Move the joystick back to the neutral position N.
- Use the green button to set the engine to idle speed.
- Apply the parking brake via switch 3. The symbol indicating the activation of the parking brake lights up on the dashboard.



DANGER

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

9.3.3 Reverse motion: start



WARNING



Risk of accidents

- Prior to any reverse movement of the compaction roller, make sure that your view to the rear is unobstructed.
- Before and while driving backwards, always check the area behind you by looking backwards.



Fig. 45 Reverse 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.

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

NOTICE

- The farther you move the joystick backwards, the higher the speed of the compaction roller.
- As soon as the joystick has reached the end position, maximum speed is set.
- In the middle (neutral) position, the compaction roller stops.

9.3.4 Reverse motion: stop

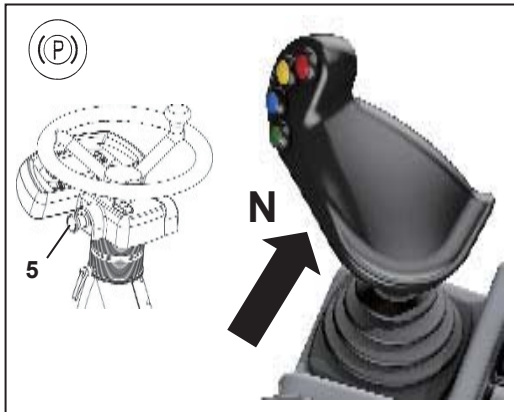


Fig. 46 Reverse motion: Stop

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

- Move the joystick back to the neutral (middle) position. The compaction roller comes to a stop.
- Push the green button to set the engine to idle speed.
- Apply the parking brake by actuating the switch.
- The symbol indicating the activation of the parking brake lights up on the dashboard.



DANGER

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

9.3.5 Changing direction

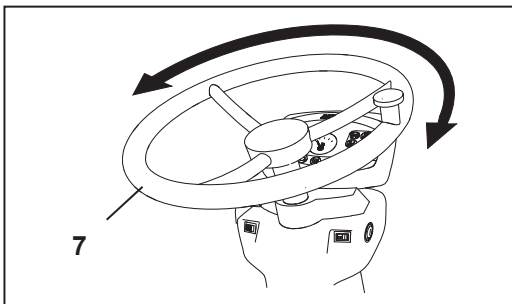


Fig. 47 Steering motions

- 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.

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9.4 Driving in the rain

9.4.1 Front wiper

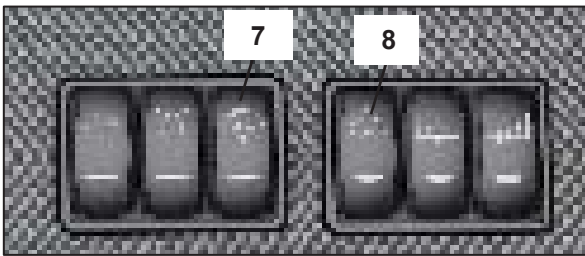


Fig. 48 Front wiper

- Activate the front wiper by means of the switch (7) on the control panel in the roof lining of the enclosed cab.
- In case the front screen is dirty, press the switch for the windshield washer system (8) and clean the front screen.

9.4.2 Rear wiper

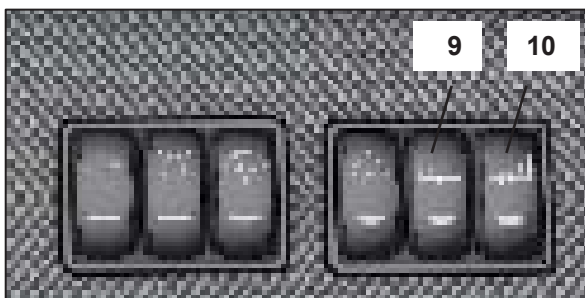


Fig. 49 Rear wiper

- Activate the rear wiper by means of the corresponding switch (9) on the panel at the cab roof.
- If the rear window is icy or steamed up, actuate the switch for the rear window defroster (10).

⚠ WARNING

Risk of accidents!

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

9.5 Driving in the dark or with restricted visibility

⚠ WARNING

Risk of accidents!

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

9.5.1 Work lights

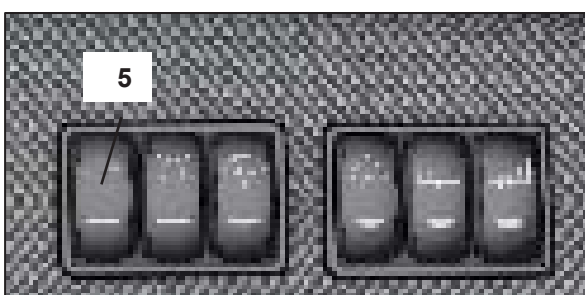


Fig. 50 Work lights

- The switch for the front and rear work lights (5) is installed on the panel at the cab roof.
- At dusk, immediately activate the front and rear work lights by means of the corresponding switch (5).

⚠ WARNING

Danger due to limited visibility!

If the visibility range, despite of the activation of the working lights, is shorter than the braking distance of the compaction roller, immediately stop the operation of the compaction roller.

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9.5.2 Taking action against fogged up or icy windows

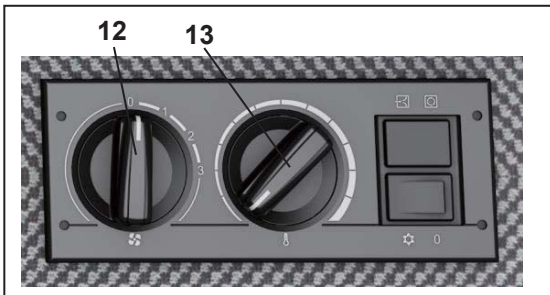


Fig. 51 Fogged up windows

1. If the windows are fogged up, set the fan to the highest stage by means of the corresponding rotary switch (12).
2. Set the rotary switch for the heating (13) to the red area.
3. Adjust the air nozzles so the warm air flow points to the cab windows.
4. In case the rear window is fogged up, actuate the switch for the rear window defroster (10) on the panel at the cab roof.

9.5.3 Heating & ventilation

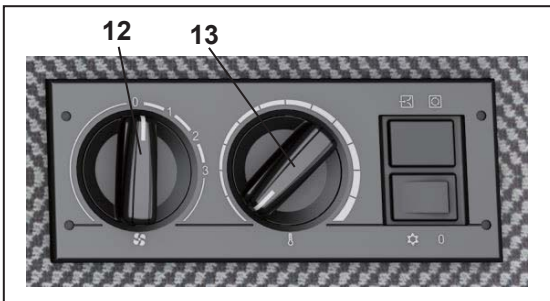


Fig. 52 Heating & ventilation

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

1. Use the rotary switch for the fan to set the fan to the desired stage.
2. Set the rotary switch for the heating to the red area.
3. Adjust the air nozzles to distribute the warm air in the cab.

Warm air enters the cab as it flows through the ventilation slots at the cab windows and below the driver's seat.

- The filter mat in the air intake opening needs to be clean (see chapters on maintenance for further information) to ensure an unrestricted air supply for the fan.
- Ventilation (A/C as an optional feature)

9.5.4 Line-of-sight obstruction

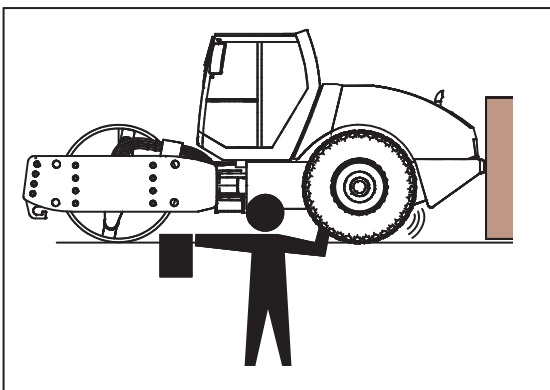


Fig. 53 Giving hand signals & instructions

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

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

SAFETY INSTRUCTIONS

Obligation to inform yourself!

- In countries where official regulations concerning this issue exist, a special permit must be obtained.
- The control elements of the vehicle must allow for easy and safe operation.
- A sufficient field of vision must be ensured for the driver at all times, regardless of the operating and weather conditions.

9.6 Stopping and parking the compaction roller

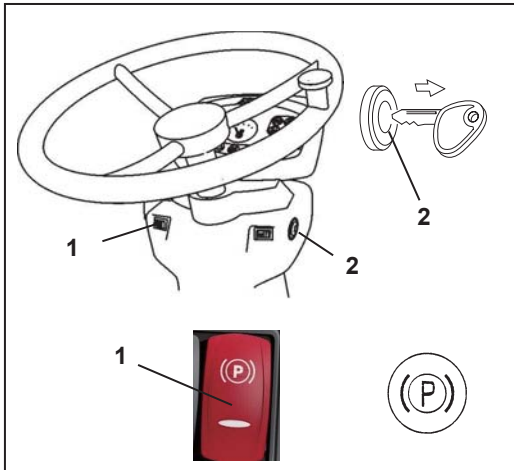


Fig. 54 Parking the compaction roller

Stopping the Diesel engine:

- Stop the compaction roller on solid and level ground.
- In order to stop the compaction roller, set the joystick (4) to the neutral (middle) position.
- Use the green button (7) to set the diesel engine speed to idling.
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 in the right armrest and move it to the rear position in order to get off the vehicle.
- Move the steering column forward.

NOTICE

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

9.6.1 Turning off the battery main switch (optional feature)

In case your machine is equipped with a battery main switch, after stopping the diesel engine, wait for a minimum of **100** seconds before pulling out the ignition key and switching off the battery main switch.

9.6.2 Leaving the compaction roller

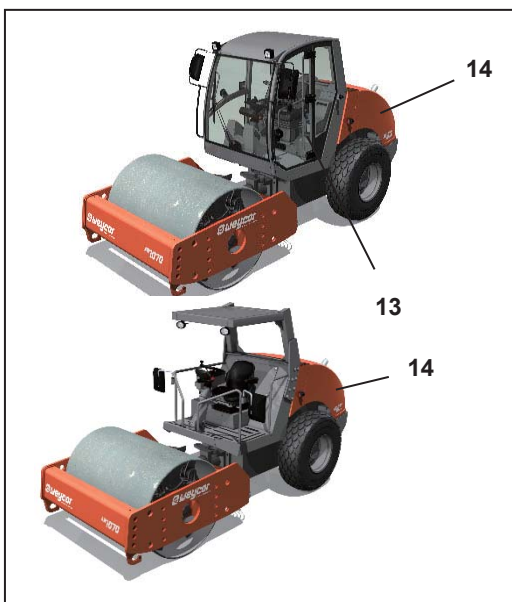


Fig. 55 Leaving the compaction roller

• Enclosed cab:

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

• Canopy:

After leaving the operator's station, lock the engine hood (14).
In addition, use wheel chocks to secure the compaction roller against rolling.

SAFETY INSTRUCTIONS

Obligation to inform yourself!

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

10 Driving on heavy soils and on slopes

10.1 Optional automatic traction control

You can use the optional automatic hydraulic traction control to drive the compaction roller on level grounds or on slopes, either with or without vibration.

NOTICE

The optional automatic hydraulic traction control reduces spinning of the drum when driving on slopes or in heavy terrain.

10.1.1 Override function: Drum (optional feature)

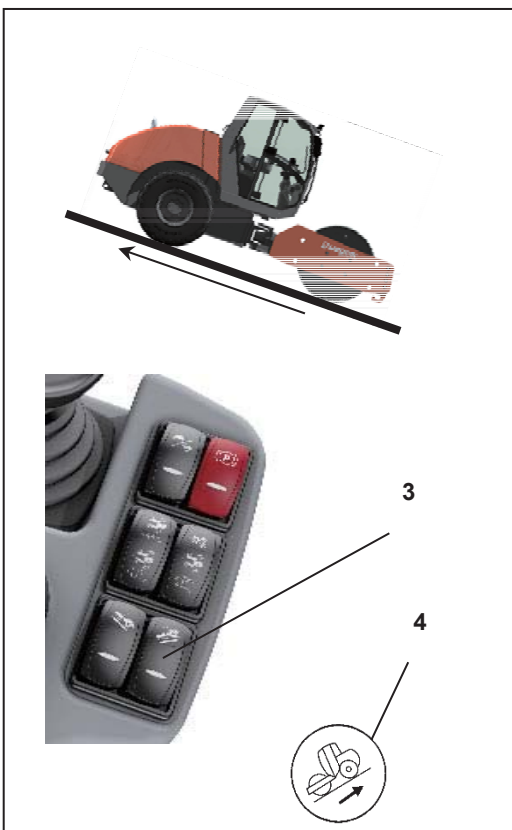


Fig. 56 Override function: Drum

In certain situations, e.g.

- when starting the compaction roller with the rear wheels or the drum sunk into the ground or
- while driving at a carefully set speed or
- for driving on slopes, it may be necessary to override the HA control.

- In order to do so, actuate the switch “Override function Drum” (3), which deactivates the automatic traction control of the drum.

Toggle switch pressed down at the rear: automatic traction control off. The corresponding light (4) on the display lights up.

- The maximum driving torque is established at the roller drum.

This function is available for the Heavy Duty (HD) system only.

With the standard drive of the roller drum, the driving torque is not controlled. Switching to an increased driving torque of the drum is possible.

In order to do so, actuate the switch (3).

⚠ WARNING

Danger due to insufficient stability and lack of propulsion

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

10.1.2 Override function: Rear axle (optional feature)

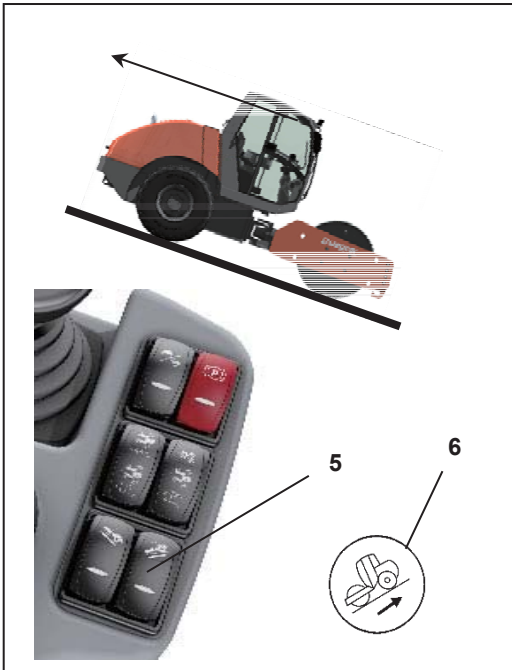


Fig. 57 Override function: Rear axle

If your wheel loader is equipped with the Heavy-Duty (HD) system for the rear axle drive, you can activate this system when driving on slopes or on slippery grounds.

In order to do so, set the switch “HD system rear axle” (5) to the desired stage.

- Toggle switch pressed down at the front:
1st stage, low traction (standard function, driving mode)
- Toggle switch pressed down at the rear:
2nd stage, high traction (on slopes or heavy grounds)

The corresponding light (6) on the display lights up. At the second stage, the rear tires are set to the max. driving torque.

⚠ WARNING

Danger due to insufficient stability and lack of propulsion

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

11 Driving on slopes

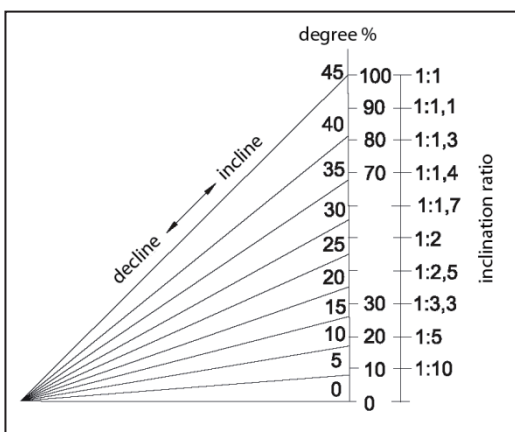
11.1 Slopes

⚠ WARNING

Danger of tipping!

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

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



See Section “Technical specifications” for the climbing capacity of your compaction roller type.

Fig. 58 Climbing capacity

11.1.2 Operation on slopes: Start



- Check whether the switch for selecting the type of vibration (3) is set to the middle position 0.
- Set the Diesel engine to a high engine speed by pushing the red button on the joystick (2).
- Hold on to the steering wheel.
- Release the parking brake via the switch (1).
- Move the joystick (2) into the desired direction (drum or rear end of the compaction roller ahead).

Fig. 59 Driving on slopes

⚠ CAUTION

Going uphill or downhill, always drive very slowly and avoid abrupt steering motions.

Operating & maintenance manual

11.1.3 Driving uphill with the roller drum ahead

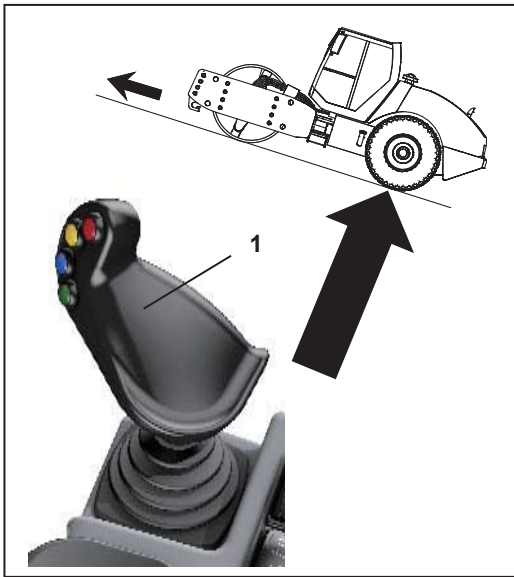


Fig. 60 Uphill, forward motion

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

- The instructions for driving uphill correspond to the ones for forward motion.
- Move the joystick (1) forward.
- With the drum ahead, drive the compaction roller uphill.

NOTICE

If the compaction roller unexpectedly stops during the forward motion, you need to manipulate the drive manually by using the override function for the hydraulic motor of the rear axle.

11.1.4 Driving uphill with the rear end ahead



Fig. 61 Uphill, reverse motion

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

- The instructions for driving uphill with the rear end ahead correspond to the ones for reverse motion.
- Move the joystick (1) backward.
- With the rear end ahead, drive the compaction roller uphill.

NOTICE

If the compaction roller unexpectedly stops during the forward motion, you need to manipulate the drive manually by using the override function for the hydraulic motor of the drum.

Operating & maintenance manual

11.1.5 Driving downhill

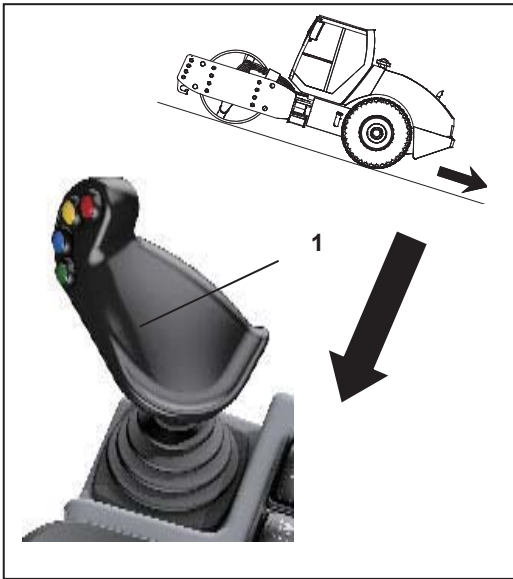


Fig. 62 Driving downhill

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

- Turn off (i.e. release) the parking brake by means of the switch, which causes the corresponding symbol on the dashboard to go out.
- Hold on to the steering wheel.
- Move the joystick (1) backward for reverse motion.

11.1.6 Stopping the operation on slopes

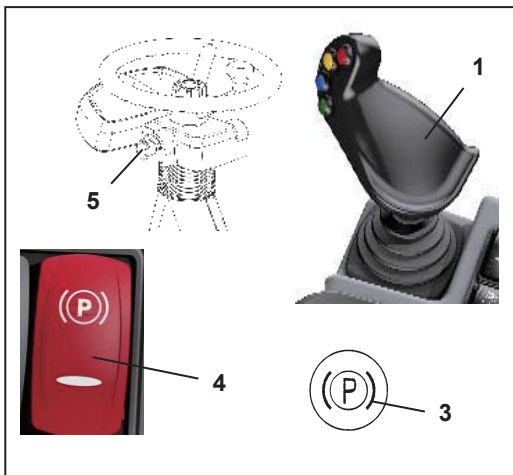


Fig. 63 Stopping the operation on slopes

Stop the compaction roller by actuating the joystick (1) or, in the event of an emergency stop, by means of the emergency stop push-button (5).

Move the joystick back into the neutral (middle) position. Press the switch (4) to apply the parking brake. The symbol (3) indicating the activation of the parking brake lights up on the dashboard.

Push the green button (1.4) to set the diesel engine to idling.

DANGER

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

DANGER

Risk of death!

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

12 Towing the compaction roller

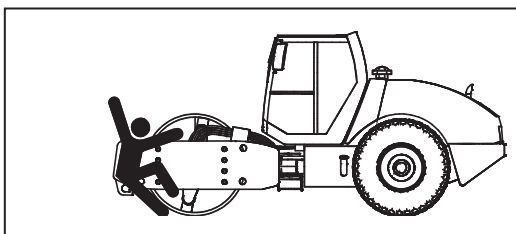
12.1 Safety instructions referring to the towing process

⚠ WARNING	Precautionary measures for towing! The towing preparations and the towing process itself may only be carried out by experienced and skilled persons who have undergone the specific training required for these measures. Make sure the towing vehicle disposes of the required tractive force. The total weight of the compaction roller needs to be taken into account, see chapter Technical specifications .
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⚠ WARNING	Towing distance! The compaction roller may only be towed within the working zone. The towing distance is to be kept as short as possible and may not exceed 500 meters (546 yards)!
------------------	---

NOTICE	Material damage <ul style="list-style-type: none">• Before starting the towing process, make sure that the required preparations at the driving hydraulics and the parking brake have been completed.• Set the towing vehicle in motion very slowly.• Maximum towing speed: 1 km/h (0.6 mph).
---------------	---

12.2 Measures to be taken prior to towing



Put wheel chocks under the rear wheels and the drum!

Fig. 64 Danger of 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! 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!
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12.2.2 Releasing the parking brake and the HP valves



DANGER

Risk of death!

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

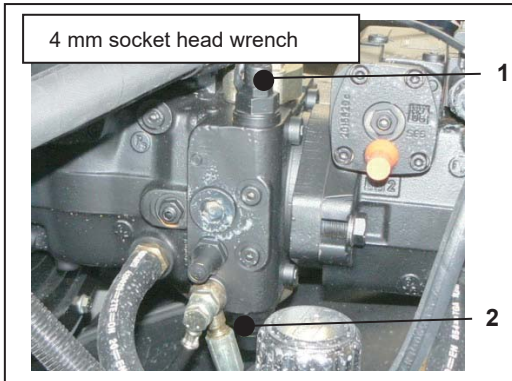


Fig. 65 Opening the HP valves

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

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

12.2.3 Deactivating (releasing) the parking brake

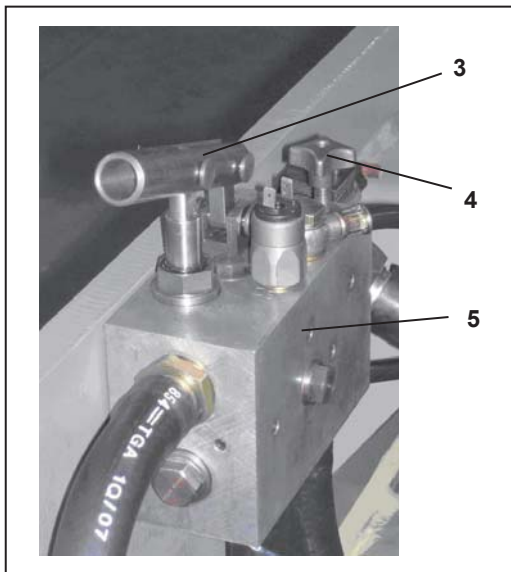


Fig. 66 Deactivating the parking brake

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

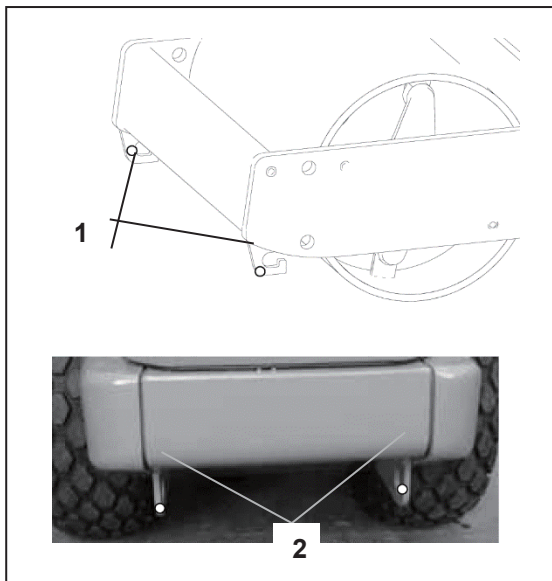
- The hand pump (5) is installed in the engine compartment (on the right side, in the direction of motion).
- Actuate the release valve (4).
- Put a pipe extension into the pump actuation (3).
- Build up pressure by manually pumping, which releases the parking brake.
- The light for "Drive control diagnosis" starts to flash as soon as the ignition is activated and the switch for the parking brake is actuated.

12.3 Carrying out the towing process

⚠ WARNING

Towing distance and speed

- The compaction roller may only be towed within the working zone.
- The towing distance is to be kept as short as possible and may not exceed **500 meters (546 yards)**!
- Before starting the towing process, make sure the necessary preparations concerning the driving hydraulics and the parking brake have been completed.
- Set the towing vehicle in motion very slowly (max. towing speed **1 km/h / 0.6 mph**).



- Always fasten the compaction roller on both points of attachment at the front (1) and at the rear (2) of the vehicle.
- Secure the compaction roller against rolling by establishing the connection with the towing vehicle.
- Remove the wheel chocks and the additional safety equipment used from the roller drum and the tires.
- Keep the towing distance as short as possible.

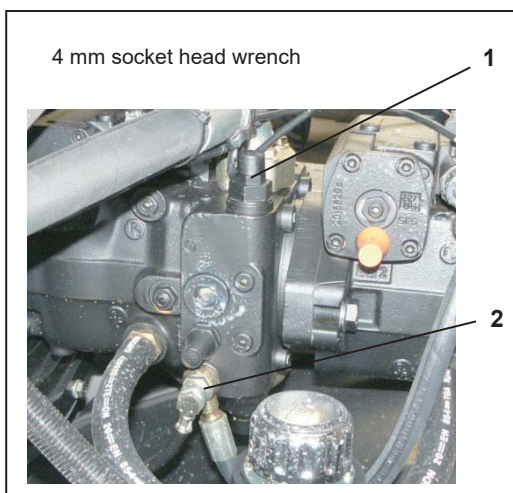
Fig. 67 Fastening the compaction roller

12.3.1 After towing

⚠ DANGER

Risk of death

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



Closing the HP valves:

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

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

Fig. 68 Closing the HP valves

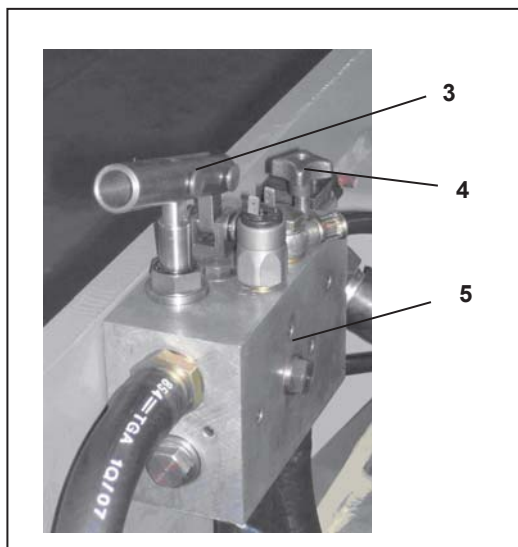


Fig. 69 Activating the parking brake

Activating the parking brake:

After towing the compaction roller, activate the parking brake at the rear axle and at the drum.

- Turn on the ignition.
- The hand pump (5) is situated in the engine compartment.
- Slowly open the release valve (4).
- The oil pressure escapes into the tank and the parking brake is activated.
- If you have not open the release valve (properly), the light for "Drive control diagnosis" starts to flash as soon as the ignition is activated and the switch for the parking brake is actuated.

13 Working with the compaction roller

SAFETY INSTRUCTIONS	<p>Obligation to inform yourself!</p> <ul style="list-style-type: none"> • Inform yourself of all issues related to operating the compaction roller. • Read the safety instructions before starting the compaction roller. <p>In addition to this, be sure to observe all laws concerning the operation of earth-moving construction machines.</p> <ul style="list-style-type: none"> • In case of doubt, contact your <i>Hyundai</i> dealer.
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⚠ DANGER	<p>Risk of death!</p> <ul style="list-style-type: none"> • Using the attachment to transport, lift or lower people is strictly prohibited! • Make sure other individuals at the construction site keep off the operating range of the compaction roller! • Secure the work zone against unauthorized trespassing. • Before and while driving backwards, check the area behind you by looking backwards.
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13.1 Control elements related to working



Fig. 70 Control elements

The functions related to working with the compaction roller are controlled by means of the joystick (1) and the switch for selecting the type of vibration (2) on the panel of switches next to the joystick. Use the joystick to select the desired direction of motion.

Different colors serve to identify the functions of the ergonomically arranged buttons:

- Green** = idle mode of the Diesel engine (3)
- Blue** = driving without working (4)
- Red** = driving & working (6)
- Yellow** = ECO speed (5, optional feature*)

*If this feature is not available, the button serves to reduce the diesel engine speed (working is not possible in this mode)

Depending on the Diesel engine, buttons 3-6 may not be present. In this case, to work with vibration, set the rotational speed of the diesel engine to the max. by means of the hand gas lever.

1. Use the button on the front of the joystick (7) to turn the vibration on or off.
2. Use the selector switch (2) to set the vibration type:

Vibration type, soil compaction
• Middle position (0): Vibration off
• Front pressed down (KA): Surface compaction / low amplitude
• Rear pressed down (GA): Deep compaction / high amplitude

3. Select the operating mode (8):

Operating modes
• Turtle: Front of the switch pressed down, low speed
• Rabbit: Rear of the switch pressed down, high speed

4. Use the button for vibration control (9) to choose between the automatic or the manual actuation of the vibration:

Vibration control	
Manual	Vibration is manually activated, as soon as you actuate switch 7 (rear of the switch pressed down)
Automatic	At a low driving speed, the vibration, as pre-set via switch 2, is turned on, after you actuated switch 7 (front of the switch pressed down)

NOTICE

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

13.2 Fields of application of the compaction roller

The compaction rollers offer the following work modes:

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

13.2.1 Basic information on soil compaction

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

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

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

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

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

13.2.2 Simple operation: Forward motion (without vibration)

NOTICE	Measures to be taken prior to driving! The compaction roller needs to be ready for operation with the Diesel engine started and running at operating temperature (see chapter Starting, driving and stopping the compaction roller).
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1. Actuate the switch (4) to deactivate the parking brake.
The corresponding symbol on the dashboard is deactivated.
2. Check whether the switch for selecting the type of vibration (3) is set to the middle position (0) - OFF.
3. Set an engine speed by means of the buttons on the joystick (1).
4. Choose the desired speed:

Operating modes
• Turtle: Front of the switch pressed down, low speed
• Rabbit: Rear of the switch pressed down, high speed

5. Move the joystick (1) forward. The symbol for forward motion lights up on the dashboard.
6. The compaction roller starts to move forward.

Fig. 71 Forward motion

NOTICE	<ul style="list-style-type: none"> The farther you move the joystick forwards, the higher the speed of the compaction roller. As soon as the joystick reaches the end position, maximum speed is set. In the middle (neutral) position, the compaction roller stops.
---------------	---

13.2.3 Simple operation: Reverse motion (without vibration)

⚠ WARNING	Risk of accidents! <ul style="list-style-type: none"> 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.
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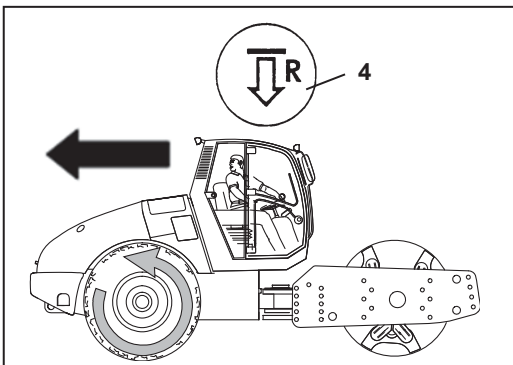


Fig. 72 Reverse motion

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

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

13.3 Soil compaction by means of the smooth roller drum

13.3.1 Surface soil compaction

NOTICE

Measures to be taken prior to driving

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



Fig. 73 Surface soil compaction

- Start operating the compaction roller, as described in the preceding section.
- Select the “turtle” operating mode (3) to set a low driving speed (front of the switch pressed down).
- Choose the rotational speed for the diesel engine to operate the roller drum by means of the buttons on the joystick (1) or the hand gas lever (depending on the type of compaction roller).
- Set the selector switch for the type of vibration to **low amplitude** (front of the switch pressed down).
- The symbol for low amplitude lights up on the display.
- 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.
- If you have chosen manual actuation via the vibration control switch (5), turn the vibration on or off by pushing button 2 on the joystick (1).
OR:
- Choose automatic vibration control via the vibration control switch (5) and push button 2. The symbol for low amplitude starts flashing, and the vibration is automatically initiated, as set via the selector switch (4), as soon as the compaction roller has reached a certain driving speed.
- If this is the case, the symbol for the low amplitude lights up.
- Below this speed, vibration stops again and is started anew as soon as the respective speed is reached again.
- The compaction roller starts to move in the desired direction of motion and performs surface soil compaction.

SAFETY INSTRUCTIONS

Obligation to inform yourself!

For surface compaction on slopes, see **Driving on heavy soils and on slopes**.

13.3.2 Stopping the surface soil compaction



- To stop the surface compaction process, push the button **Vibration on / off (2)** again.
- The vibration is deactivated.
- If you had chosen automatic actuation via the vibration control switch (6), the vibration stops automatically as soon as the speed of the compaction roller decreases. The symbol for low amplitude starts to flash.
- However, the previously selected type of vibration remains preselected.
- In order to stop the compaction roller, move the joystick (1) back to the neutral (middle) position.
- Set the Diesel engine to idle speed by pushing the green button (4) on the joystick or actuating the hand gas lever.
- Apply the parking brake (5). The symbol on the display lights up.

Fig. 74 Stopping surface soil compaction



DANGER

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

13.3.3 Deep soil compaction

NOTICE

Measures to be taken prior to driving

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



Fig. 75 Deep soil compaction

- Start operating the compaction roller, as described in the preceding section.
- Select the “turtle” operating mode (3) to set a low driving speed (front of the switch pressed down).
- Choose the rotational speed for the diesel engine to operate the roller drum by means of the buttons on the joystick (1) or the hand gas lever (depending on the type of compaction roller).
- Set the selector switch for the type of vibration to **high amplitude** (rear of the switch pressed down).
- The symbol for high amplitude lights up on the display.
- 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.
- If you have chosen manual actuation via the vibration control switch (5), turn the vibration on or off by pushing button 2 on the joystick (1).
OR:
- Choose automatic vibration control via the vibration control switch (5) and push button 2. The symbol for high amplitude starts flashing, and the vibration is automatically initiated, as set via the selector switch (4), as soon as the compaction roller has reached a certain driving speed.
- If this is the case, the symbol for the low amplitude lights up.
- Below this speed, vibration stops again and is started anew as soon as the respective speed is reached again.
- The compaction roller starts to move in the desired direction of motion and performs deep soil compaction.

SAFETY INSTRUCTIONS

Obligation to inform yourself!

For deep soil compaction on slopes, see **Driving on heavy soils and on slopes**.



DANGER

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

13.3.4 Stopping the deep soil compaction



Fig. 76 Stopping deep soil compaction

- To stop the deep compaction process, push the button **Vibration on / off (2)** again.
- The vibration is deactivated.
- If you had chosen automatic actuation via the vibration control switch (6), the vibration stops automatically as soon as the speed of the compaction roller decreases. The symbol for high amplitude starts to flash.
- However, the previously selected type of vibration remains preselected.
- In order to stop the compaction roller, move the joystick (1) back to the neutral (middle) position.
- Set the Diesel engine to idle speed by pushing the green button (4) on the joystick or actuating the hand gas lever.
- Apply the parking brake (5). The symbol on the display lights up.



DANGER

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

13.4 Soil compaction with the pad foot drum

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

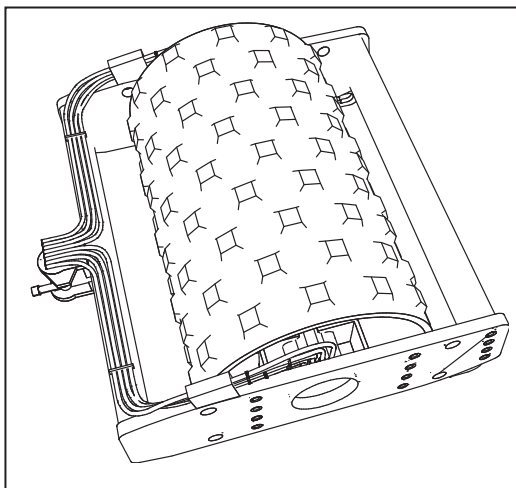


Fig. 77 Pad foot drum

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

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

The rolling speed should be between **30 and 60 m/min (33 and 66 yards/min)**, i.e. approx. **1.8 to 3.6 km/h (1.1 to 2.2 mph)**.

In case a high concentration of moisture is encountered, perform three compaction passes and allow several hours for the soil to dry prior to compacting it further. As for compacting cohesive soils and mix soils, the progress of the compaction is indicated by the increasing ascent of the pad feet in the soil until they finally penetrate it only lightly.

As soon as the desired degree of compaction has been achieved and no new layers will be added, the compacted surface must be rolled by means of a smooth drum to prevent the top layer from being soaked by rain. In addition, the surface should be slightly inclined to render it possible for water resulting from precipitation to drain.

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

14 Compaction measurement (optional feature)

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

NOTICE

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

14.1 Variants of the compaction measurement system

The system is available in several optional variants:

- Analog display
- Track monitor with optional printer
- CompDoc with LCD display of the compaction data and storage function for subsequent evaluation or printouts

14.1.1 Advantages of compaction measurement

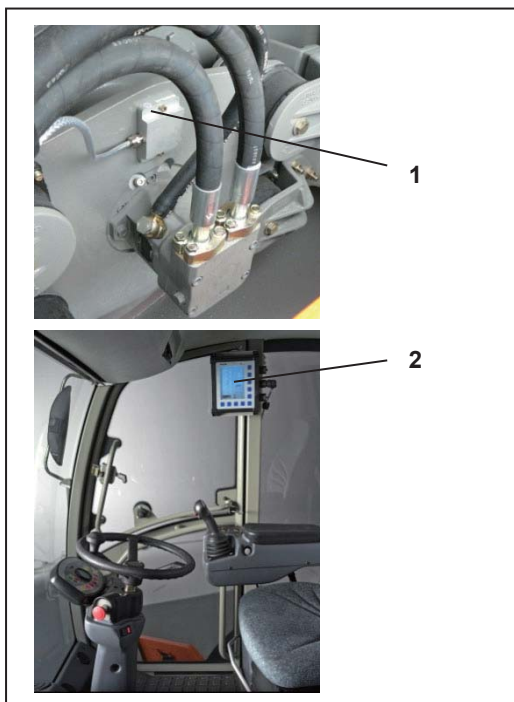


Fig. 78 Compaction measurement

- 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.

14.2 Analog display

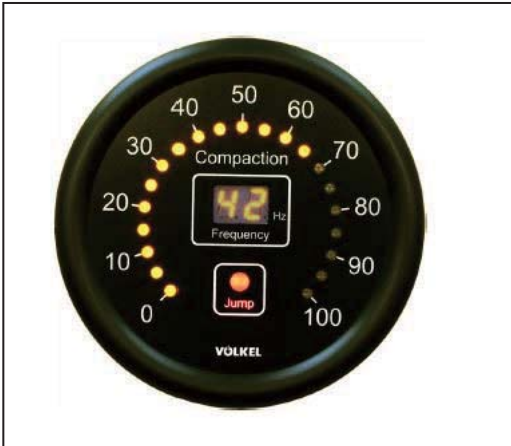


Fig. 79 Analog display

- 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.

- **Identifying weak points**

Even for the first compaction pass, the value indicates if the soil is suitable for compaction or not.

- **Avoiding unnecessary compaction cycles**

The progress and the completion of the compaction work is visualized: The driver keeps on compacting the soil until the value does not rise any more.

- **Preventing excessive compaction**

The "Jump" light warns of grain crushing and damage to the machine.

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.

14.3 Display of the compaction measurement system without data storage



Fig. 80 Compaction measurement

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

The following parameters are displayed:

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

NOTICE

Risk of property damage caused by jumps

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

14.4 Optional recording and documentation of the compaction work



Fig. 81 Display and printer

The compaction values for the current pass are saved, up to a track distance of 800 meters (875 yards).

You can directly print the saved compaction data from the optional handy thermo printer.

Simply connect the printer to the display via a cable.

This enables you to print the compaction course after the completion of a pass.

Furthermore, there is an output option that prints the compaction data as a detailed list, which can be checked at a glance.

14.4.1 Installing and dismantling the compaction measurement system

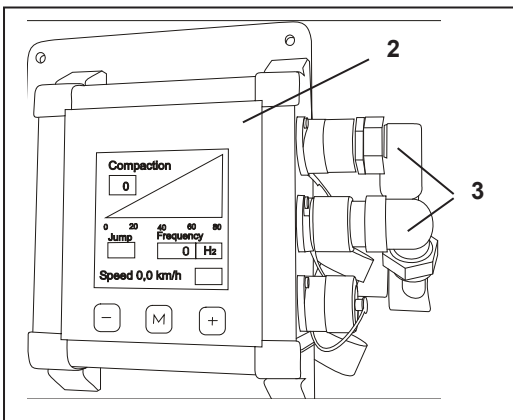


Fig. 82 Compaction measurement

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

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

14.5 Compaction measurement system with dynamic compaction control

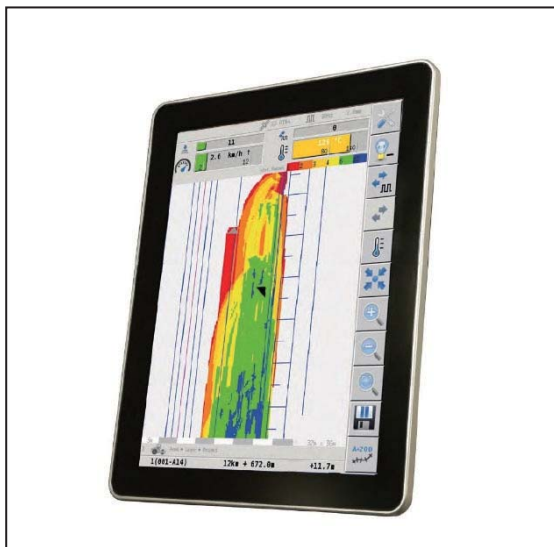


Fig. 83 Compaction measurement system with dynamic compaction control

Not only does the “comprehensive dynamic compaction control” with data storage display the current vibration data, but it also saves any compaction information recorded since the activation of the device.

- The information can be transferred to any PC and analyzed with suitable software.
- Detailed technical support is thus provided for the compaction work.

NOTICE

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

NOTICE

For details regarding settings, step-by-step instructions, recording and storage as well as for the subsequent analysis of the compaction data, see the operating manual of the manufacturer of the compaction measurement system.

15 Conversion from a smooth drum to a pad foot drum

SAFETY INSTRUCTIONS

Obligation to inform yourself!

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

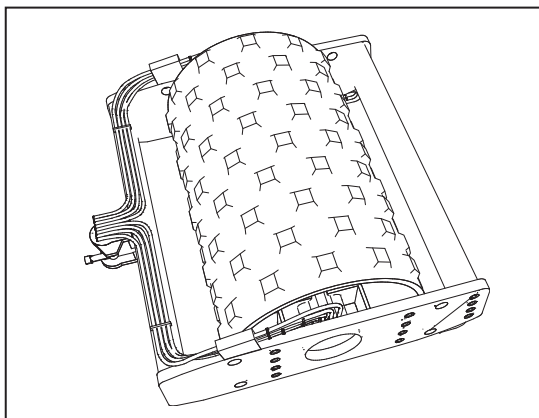


Fig. 84 Pad foot drum

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

SAFETY INSTRUCTIONS

Obligation to inform yourself!

- In order to mount the 3 pad foot segments on a smooth roller drum, observing the following instructions is of vital importance. Make sure you maintain the correct sequence.
- A crane with a sufficient lifting capacity is required to retrofit the compaction roller.

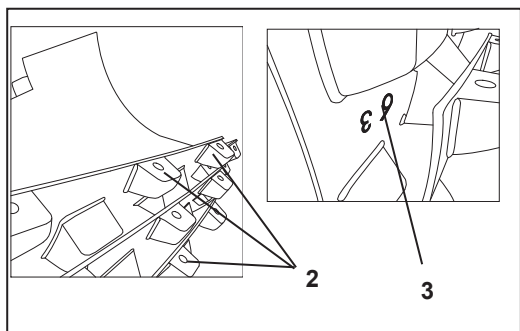


Fig. 85 Pad foot segments

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

NOTICE

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

Operating & maintenance manual

15.1.1 Mounting the pad foot segments on a smooth roller drum

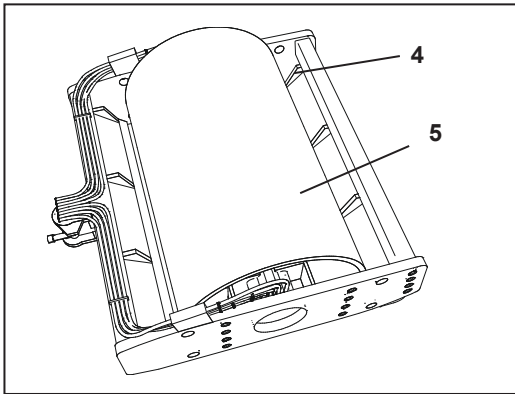


Fig. 86 Removing the scrapers

Step 1: Dismantling the attached parts of the smooth roller drum

Remove the front and rear scrapers (4) from the smooth roller drum (5).

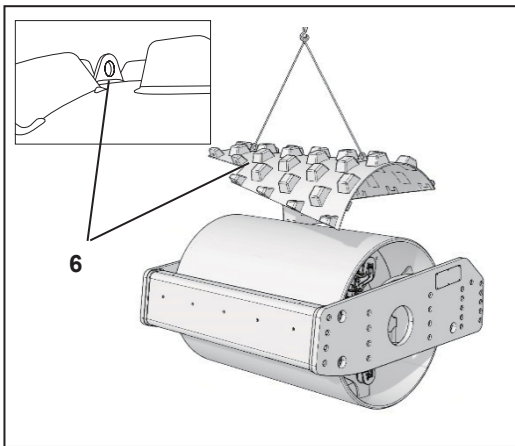


Fig. 87 Mounting the first segment

Step 2: Mounting the first pad foot segment

- With the segment fastened at the lifting lugs and lifted by a crane, place the first segment on the smooth drum.
- Adjust its position carefully and use the fixing clamps (included in the scope of delivery) to attach the segment to the edges of the smooth drum.

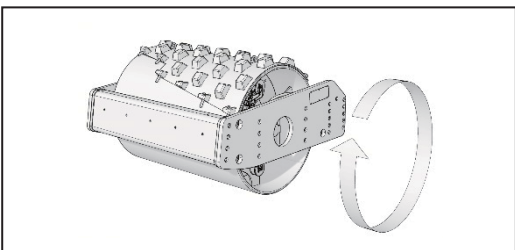


Fig. 88 Backing up the compaction roller

Step 3: Backing up the compaction roller

Slowly back up the compaction roller.

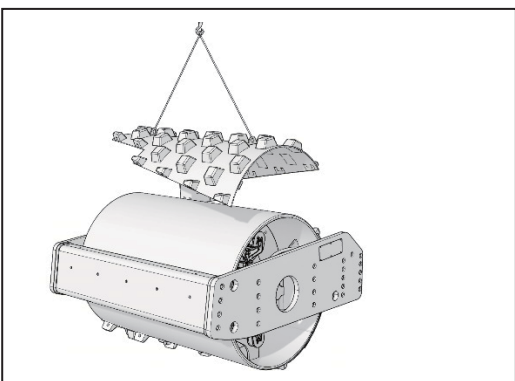


Fig. 89 Second segment

Step 4: Mounting the second segment

- Position the second segment carefully.
- Screw the first segment to the second segment.
- Use the fixing clamps to attach the loose side of the second segment to the edge of the smooth roller drum.

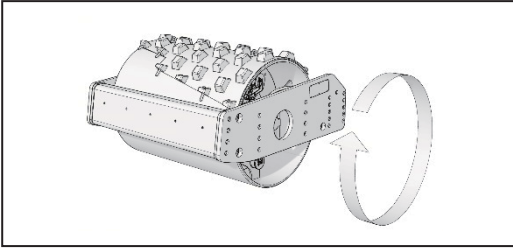


Fig. 90 Backing up the compaction roller

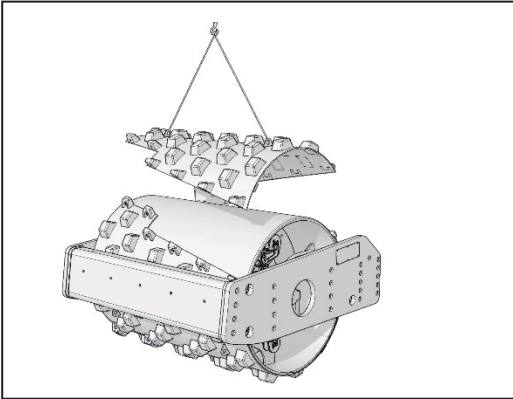


Fig. 91 Third segment

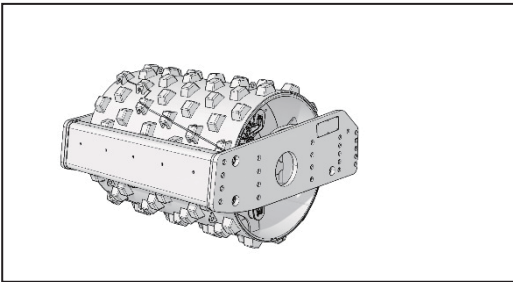


Fig. 92 Screw connections

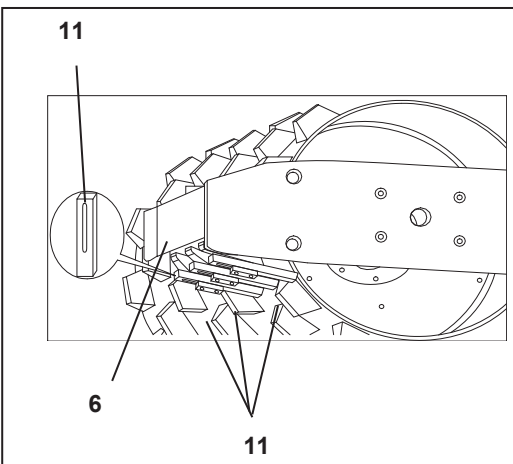


Fig. 93 Mounting the pad foot segments

Step 5: Backing up the compaction roller

Slowly back up the compaction roller again.

Step 6: Mounting the third segment

- Position the third segment carefully.
- Screw the third segment to the two previously mounted segments.
- Remove the fixing clamps of the first two segments from the edges of the smooth drum.

Step 7: Establishing the screw connections at the segment junctions

- Repeatedly drive the compaction roller forward and backward so the segment junctions point upward.
- Evenly tighten the screws at all segment junctions along the entire width of the drum.
- Check all screw connections at the junctions (9) and tighten them (tightening torque: **660 Nm**).

Step 8: Mounting the pad foot scrapers

- Install the corresponding pad foot scrapers (11) in order to use the drum as a pad foot roller (6).
- Make sure there is enough space.

NOTICE

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

16 Tires on the rear axle

16.1.1 Water filling of the tires (optional)

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

NOTICE

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

16.1.2 Filling procedure: Water and antifreeze additive

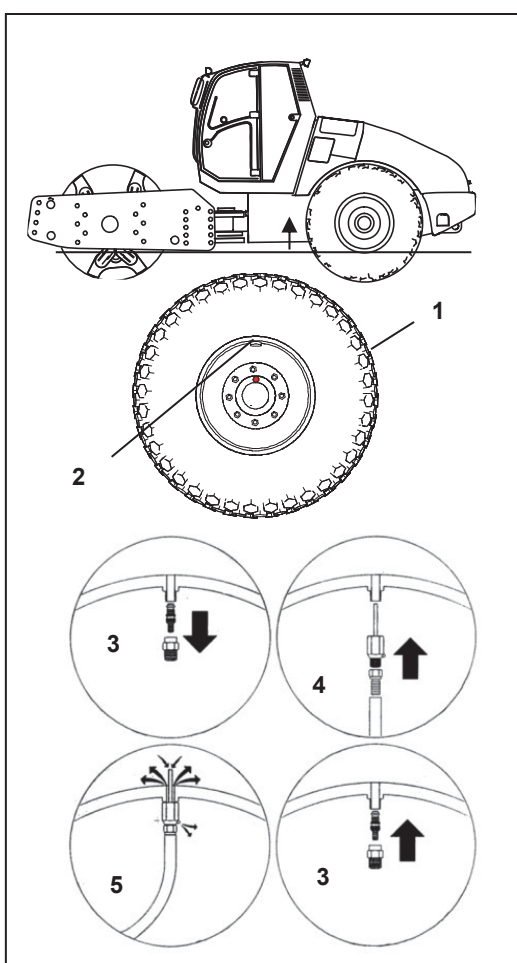


Fig. 94 Filling the tires

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

- Turn the tire (1) until the charge valve (2) is in the **top** position.
- Slowly unscrew the valve core (3).
- Screw a hose line (4) onto the charge valve (2).
- The saline solution (see "Preparation of the saline solution below) can be poured into the tire (1) by means of a container placed above the tire or via a special pump.
- The filling procedure (5) must be interrupted repeatedly because the tire needs to be bled.
- In case the tire is not sufficiently filled after pouring in the saline solution, add industrial water to establish the required fill level.
- After completing the process, attach the valve core (3) and fill the tire (1) with compressed air.
Prescribed pressure: **1.6 bar (23.2 psi)** for standard tires.

Preparation of the saline solution:

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

NOTICE

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

⚠ WARNING

Risk of injuries

- While checking the tires, antifreeze can escape from the tires.
- On skin contact, coolant can lead to chemical burns.
- Always wear protective clothing.

16.1.3 Filling procedure: Pure water

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

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

16.1.4 Emptying the tires

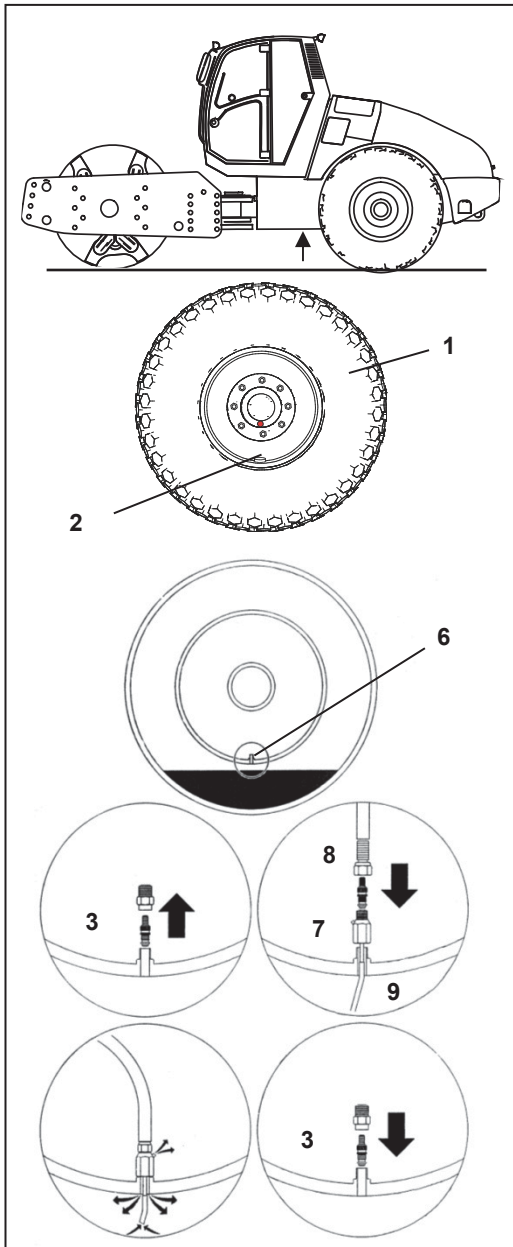


Fig. 95 Emptying the tires

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 (23.2 psi)** for standard tires.

⚠ WARNING

Risk of injuries

- Antifreeze may leak from the tire while its tire pressure is being checked.
- This can lead to chemical burns. Wear protective clothing to protect your skin.

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16.1.5 Filling procedure: Using the "Hanauer Maus"

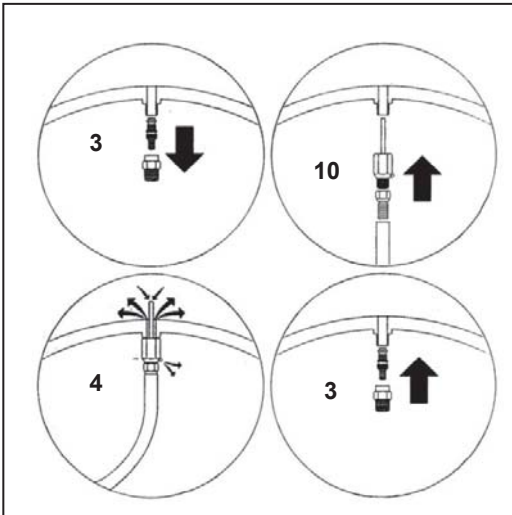


Fig. 96 Filling the tires

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

- Use a sufficiently dimensioned hydraulic jack to lift the compaction roller at the rear axle.
- Turn the tire (1) until the charge valve (2) is in the **top** position.
- Slowly screw off the valve core (3).
- Screw the fill valve (10) into the charge valve (2).
- Screw a hose line (4) onto the fill valve (10).
- The air escapes from the tube and the opening at the side of the fill valve (10).
- Twist off the fill valve (10) and tighten the valve core (3).
- At the end of the filling procedure, unscrew the fill valve (10) and screw in the valve core (3).
- Fill the tire (1) with compressed air until the required pressure of **1.6 bar (23.2 psi)** - for standard tires - has been established.
- The filling procedure is complete as soon as a constant jet of water exits the opening.

16.1.6 Checking the tire inflation pressure

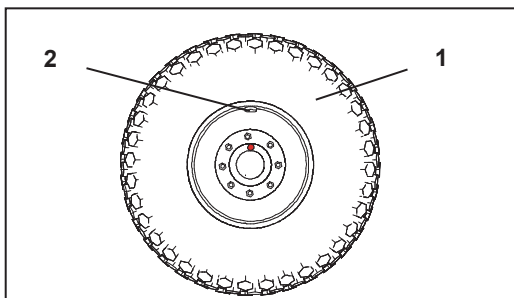


Fig. 97 Checking the tire inflation pressure

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

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

NOTICE

Material damage!

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

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

16.1.7 Mounting the tires

NOTICE

Material damage!

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

17 Failures and trouble shooting

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

Fault / Failure	Possible cause(s)	Trouble shooting
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Diesel engine does not start

- Environmental temperature too low ▶▶▶▶ Preheat sufficiently. Repeat the starting procedure.
- The fuel tank is empty. ▶▶▶▶ Add Diesel. Have the fuel system ventilated by the service staff, if required.*
- The fuel filter is plugged. ▶▶▶▶ Clean or replace the fuel filter.
- Cold weather causes paraffine to leak ▶▶▶▶ Add fuel (winter Diesel) with the necessary specifications for cold weather.
- Leaking fuel pipes or connections ▶▶▶▶ Contact the service staff.


⚠ WARNING	Environmental protection! Immediate action is required to prevent fuel from penetrating the ground!
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- After activating the ignition, The control lamp for the battery does not light up. ▶▶▶▶ Check the charge condition of the battery; if necessary, charge the battery. If required, carry out a jump-start.

NOTICE	The compaction roller disposes of an electrical system with an operating voltage of 12V. Be sure to take this into account when jump-starting the vehicle.
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- The starter does not turn. ▶▶▶▶ Contact the *Hyundai* service team.



After starting the engine, the battery charge lamp does not go out



- Defective contact in the electrical system. ▶▶▶▶ Cable connections or plug-in connections are loose or defective. Contact the service staff.
- The engine speed of the generator is too low. ▶▶▶▶ Insufficient V-belt tension; tension the V-belts, if required.*
- The generator is defective or a V-belt torn ▶▶▶▶ Replace the V-belt.*
- The generator is activated, but the battery is not charged ▶▶▶▶ Contact the *Hyundai* service team.

* Be sure to follow the instructions in the diesel engine service manual for these measures.

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Fault / failure	Possible cause(s)	Trouble shooting
<p>After starting the Diesel engine, the compaction roller does not move.</p>	<p>The parking brake is applied. ▶▶▶▶</p> <p>The desired direction of motion been set (joystick), but the compaction roller does not move. ▶▶▶▶</p> <p>The compaction roller does not move after a towing process ▶▶▶▶</p> <p>Driving hydraulics not activated ▶▶▶▶</p>	<p>Release the parking brake by means of the switch.</p> <p>Contact the <i>Hyundai</i> service staff.</p> <p>HP valves not screwed in, see <i>Towing the compaction roller</i> Contact the <i>Hyundai</i> service team.</p>
<p>The warning lamp for the air filter lights up.</p> 	<p>The filter cartridge is dirty. ▶▶▶▶</p>	<p>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.</p>
<p>The warning lamp for engine oil pressure lights up.</p> 	<p>Insufficient engine oil pressure or pressure does not build up after starting the Diesel engine ▶▶▶▶</p>	<p>Immediately stop the Diesel engine!</p>
<p>NOTICE</p>		<p>Material damage! Stop the operation of the compaction roller without any delay! Do not resume the work before the problem has been eliminated!</p>
		<p>▶▶▶▶ Check the fill level of the engine oil. In case it is insufficient, add oil according to the specifications in the <i>Table of lubricants</i> (see <i>Maintenance Instructions</i>).</p> <p>▶▶▶▶ If the engine oil level turns out to be correct, stop the compaction roller and do not start it again.</p> <p>▶▶▶▶ Immediately contact the <i>Hyundai</i> service team.</p>

18 Maintenance instructions

18.1 Safety instructions referring to maintenance work

SAFETY INSTRUCTIONS	<p>Obligation to inform yourself Be sure to take all safety precautions and to observe all instructions regarding the operation of the compaction roller when carrying out maintenance work! Read the safety instructions and warnings in this operating manual before starting any maintenance work and follow them!</p>
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NOTICE	<p>Material damage In case faults or failures occur which you cannot detect or repair yourself, contact the service staff immediately.</p>
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SAFETY INSTRUCTIONS	<p>Obligation to inform yourself</p> <ul style="list-style-type: none"> • Read the safety instructions and warnings in this operating manual before starting any maintenance work and follow them! • Be sure to take all safety precautions and to observe all instructions regarding the operation of the compaction roller when carrying out maintenance work!
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⚠ CAUTION	<p>Risk of property damage and accidents due to lack of information for other people in the work area! Use signs and warning notices to point out that maintenance work is being carried out.</p>
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⚠ WARNING	<p>Risk of accidents caused by an inadvertent engine start Prevent the compaction roller from unintentionally starting by removing the ignition key from the ignition lock!</p>
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NOTICE	<p>Spare parts You may only use genuine Hyundai spare parts! For information on spare parts, including safety-related ones, please see the separately available spare parts catalogue.</p>
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18.1.1 Safety precautions to be taken prior to maintenance work

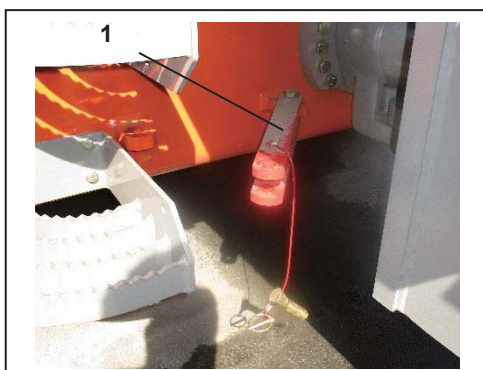


Fig. 98 Articulation-lock device

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

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18.1.2 After completing maintenance work

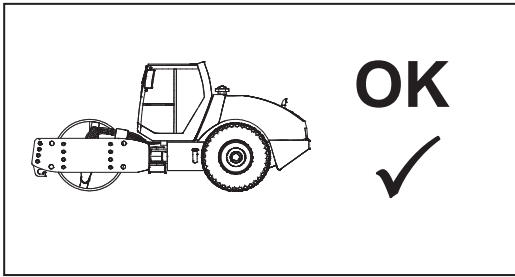


Fig. 99 Checking the compaction roller

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

18.2 Overview: Maintenance

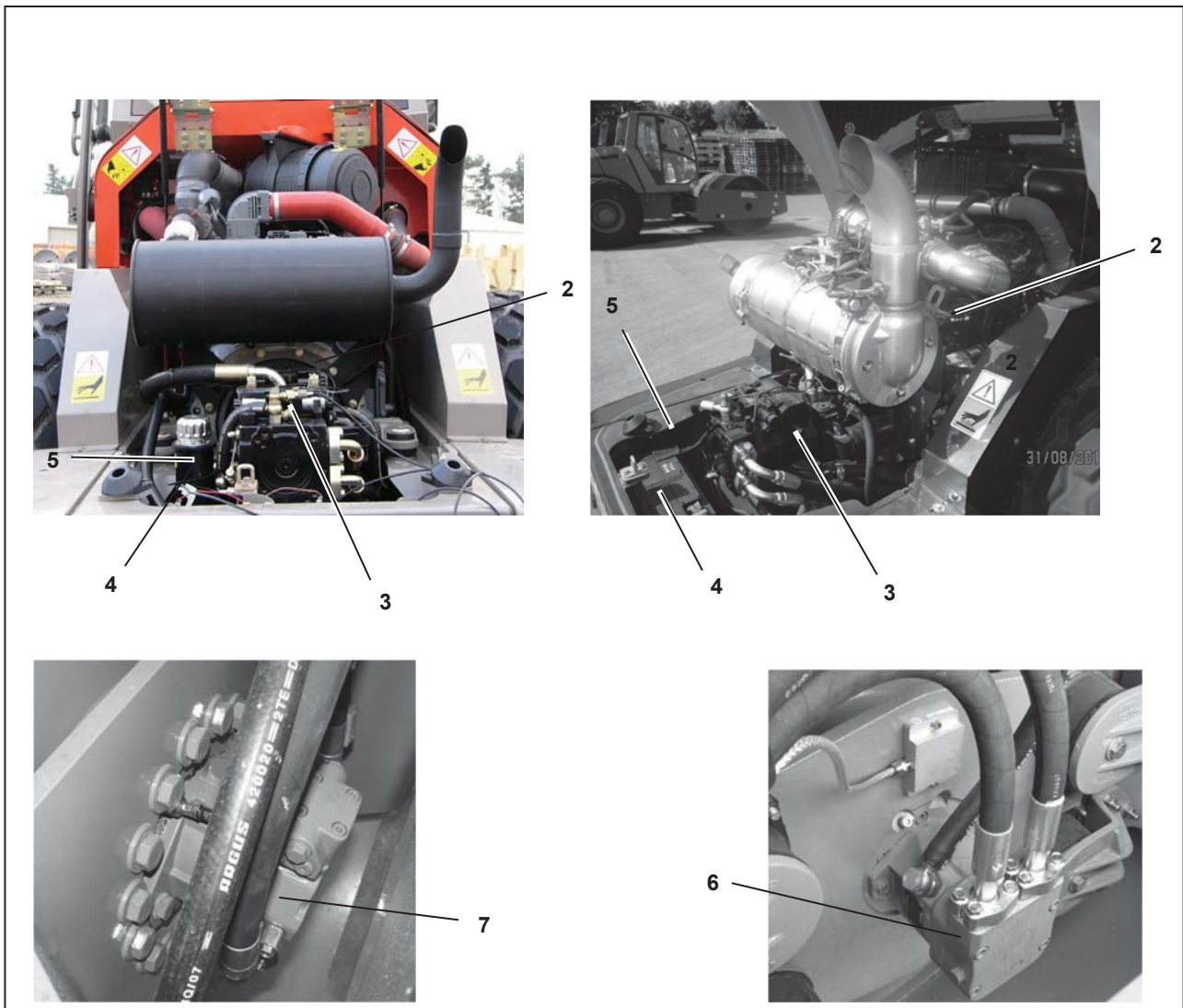


Fig. 100 Engine compartment, drum & vibration drive

Captions: Maintenance overview

- 1 Engine compartment
- 2 Diesel engine
- 3 Hydraulic pump assembly
- 4 Battery
- 5 Hydraulic tank
- 6 Vibration drive
- 7 Drum drive

SAFETY INSTRUCTIONS	Obligation to inform yourself Be sure to consult the service manual of the Diesel engine and to follow the instructions.
----------------------------	--

⚠ WARNING	Risk of burns and scalding caused by hot surfaces For all work at the Diesel engine: Beware of hot surfaces.
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19 Maintenance instructions for the driver

⚠ WARNING	<p>Risk of property damage and accidents caused by inexperienced maintenance work and ignorance of default maintenance intervals!</p> <ul style="list-style-type: none"> • 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!
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SAFETY INSTRUCTIONS	<p>Obligation to inform yourself!</p> <p>Before taking any maintenance measures at the compaction roller, be sure to consult the chapters on safety instructions and safety precautions for maintenance work.</p>
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19.1.1 Spare parts required for maintenance work: Maintenance kits

In order to carry out the required maintenance work, order our maintenance kits from the customer service.

19.1.2 Table of lubricants

Greasing point	Lubricant	Viscosity	Equivalent standard
Diesel engine	See service manual for the diesel engine	Choose the viscosity of the lubricant so it suits the ambient temperature	API classification
	Standard quality DQC II-05		CG-4 or CH-4 or CI-4 Or CI-4 Plus or CJ-4
Arctic climate		SAE 0W - 30 SAE 0W - 40	
Temperate climate		SAE 10W - 30 SAE 10W - 40	
Tropical climate		SAE 20W - 50	
All climate zones		SAE 15W - 40	
Axles Transmission	HLS		Approved: Fuchs TITAN GEAR LS-90 Shell rear axle oil LS-BMW ELF Tranself BM-LS 90
Roller bearing Floating bearing General greasing points	Order no. 0346905 KPF-2 K – 30 DIN 51825 with MoS ₂ additives	NLGI 2 DIN 51818	Lithium grease with MoS ₂ additives which enhance the emergency running properties
Hydraulic oil	Spezial 46	46	Observe the specifications of the hydraulic oil to be used! Pay particular attention to the specifications referring to operation at temperatures below 0°C (32°F). Be sure to preheat the oil sufficiently.
Bio-degradable oil	HYDR OIL HE 46 ¹	at 40 °C (104 °F): 50.8 mm ² /s	
Brake fluid container	Brake fluid Hydraulic oil ATF Dexron II	at 40 °C (104 °F): 34 mm ² /s	
Protective cooler fluid	Monoethylenglycol with organic Inhibitors		Approved: TOTAL GLACELF AUTO SUPRA

¹ HYDR OIL HE46

Bio-degradable high-quality fluid for advanced hydraulic systems.

The majority of the requirements laid down in part 3 of DIN 51524 for HVLP hydraulic oils are met.

Besides, it disposes of additional features not covered by DIN 51524/part 3. If thus equipped by the manufacturer, the vehicles are provided with adhesive labels at the hydraulic tank, in the cab and at the attachment.

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20 Maintenance certificate A: Maintenance work to be performed by the driver

20.1 Check list: Required maintenance work for maintenance certificate A

Daily maintenance work prior to operating the compaction roller:

- Conduct a visual inspection.
- Check the Diesel fuel level.
- Check the AdBlue® / DEF level (not applicable to compaction rollers with emission stage EU2 and EU3 Diesel engines)
- Check the water-fuel separator.
- Check the coolant level.
- Check the V-belt tension.
- Check the engine oil level.
- Check the hydraulic oil level.
- Check the air filter.
- Check the tire inflation pressure.

Daily maintenance work after operating the compaction roller:

- Check the fill level of the windshield washer system (not applicable to Canopy/open operator's station).
- Check and clean the enclosed cab or the operator's station, respectively.
- Clean the compaction roller.

20.2 Maintenance certificate A: Daily checks and procedures

20.2.1 Cleaning and inspecting the compaction roller

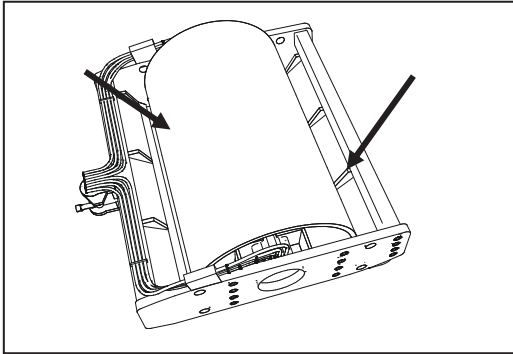


Fig. 101 Daily checks

Prior to any operation of the compaction roller:

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

20.2.2 Checking the Diesel fuel level

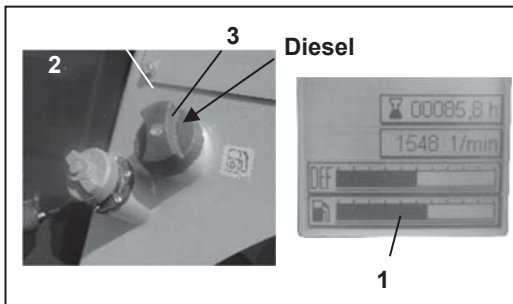


Fig. 102 Diesel fuel level

Prior to any operation of the compaction roller, check the Diesel fuel level (1) on the display.

- If necessary, top up on Diesel via the fuel filler neck (3).

NOTICE

Risk of damage to the machine!

Be sure not to mix up the two filler necks (Diesel and AdBlue® / DEF)!
If you are unsure, please refer to the chapter on **Refueling** in this manual.

20.2.3 Checking the AdBlue® / DEF level (applies to emission stage EU4 and EU5 machines only)

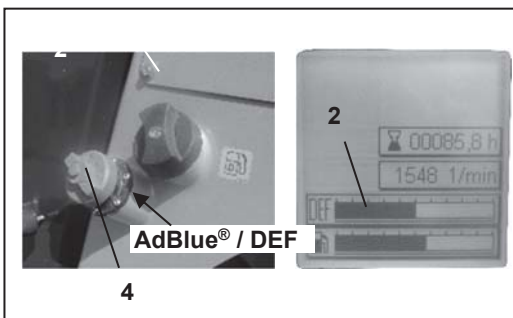


Fig. 103 AdBlue® / DEF level

1. Prior to any operation of the compaction roller, check the AdBlue® / DEF level (2) on the display.
2. If necessary, top up on a sufficient amount of NOx reduction additive /urea-water solution via the AdBlue® / DEF filler neck (4).

NOTICE

Risk of damage to the machine!

Be sure not to mix up the two filler necks (Diesel and AdBlue® / DEF)!
If you are unsure, please refer to the chapter on **Refueling** in this manual.

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20.2.4 Water-fuel separator



Fig. 104 Water-fuel separator

Prior to any operation of the compaction roller, check the fuel-water separator:

- The water-fuel separator (1) is to be found at the stiffener wall to the cab (right, in the direction of motion).
1. Open the cover (1) of the ventilation grills.
 2. Check the water-fuel separator.
 3. Drain the water-fuel separator (1) by means of the drain plug.

20.2.5 Coolant level

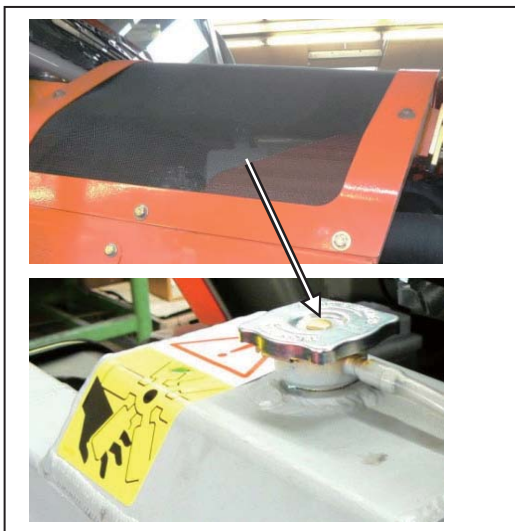


Fig. 105 Coolant level

Prior to any operation of the compaction roller:

1. Check the coolant level.
2. Open the cover of the ventilation grill (3) and twist off the lid of the combination cooler.
3. Check the coolant level.
4. Add coolant, if required.
5. Ascertain the correct mixing ratio of the coolant:
 - Capacity of the cooling system: approx. 15 liters (4 gallons).
 - Adhere to the following mixing ratio:
60% water : 40% coolant
☞ for example, mix 0.6 ltr (20.2 oz) of water with 0.4 ltr (13.5 oz) of coolant)

⚠ WARNING

Risk of burns and scalding caused by hot coolant

Make sure the engine has cooled down before you open the lid.

20.2.6 V-belt tension

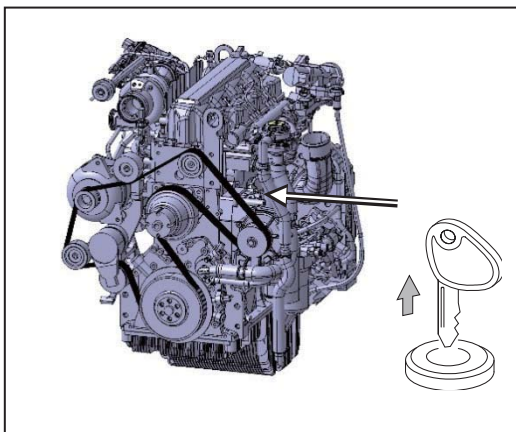


Fig. 106 V-belt tension

Prior to any operation of the compaction roller, check the V-belt tension and check the V-belt for damage.

(Note that the illustration only serves as a generic example. It can differ from the engine installed in your compaction roller).

⚠ WARNING

Risk of burns and scalding caused by rotating parts

- The V-belt tension may only be checked with the Diesel engine stopped.
- Turn off the Diesel engine and remove the ignition key.

SAFETY INSTRUCTIONS

Obligation to inform yourself!

For information on tensioning and replacing the V-belt, see the service manual of the Diesel engine manufacturer, which is included in the scope of delivery of the compaction roller.

20.2.7 Engine oil level

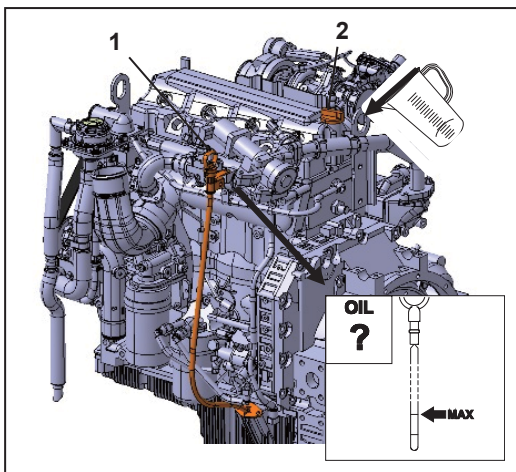


Fig. 107 Engine oil level

Prior to any operation of the compaction roller:

1. Check the engine oil level of the Diesel engine at the oil dipstick (1).
2. If necessary, use the filler neck to add engine oil.
3. Unscrew the lid (2) of the filler neck.
4. Carefully fill in engine oil.
5. After adding oil, screw the lid (2) back on.

(Note that the illustration only serves as a generic example. It can differ from the engine installed in your compaction roller).

SAFETY INSTRUCTIONS

Obligation to inform yourself!

- Pay attention to the information on the engine oil to be used in the engine compartment.
- If no information is displayed in the engine compartment, consult the **Table of lubricants** for the required specifications.

NOTICE

Material damage

In order to prevent damage to the Diesel engine, never mix different types of oil.

Operating & maintenance manual

20.2.8 Hydraulic oil level

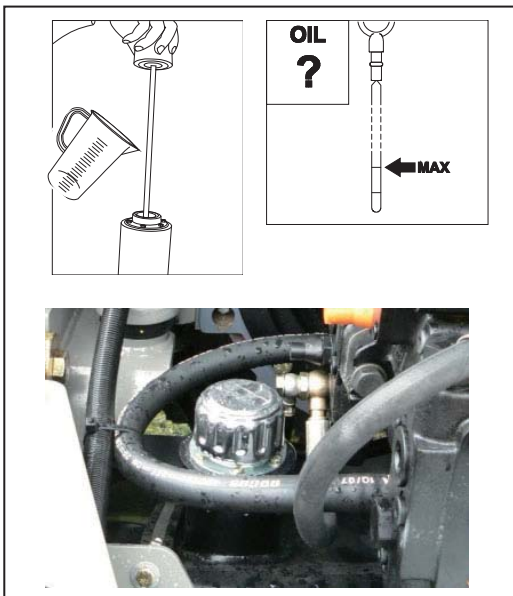


Fig. 108 Hydraulic oil

Prior to any operation of the compaction roller:

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

NOTICE

Risk of damage to the hydraulic system

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

20.2.9 Air filter

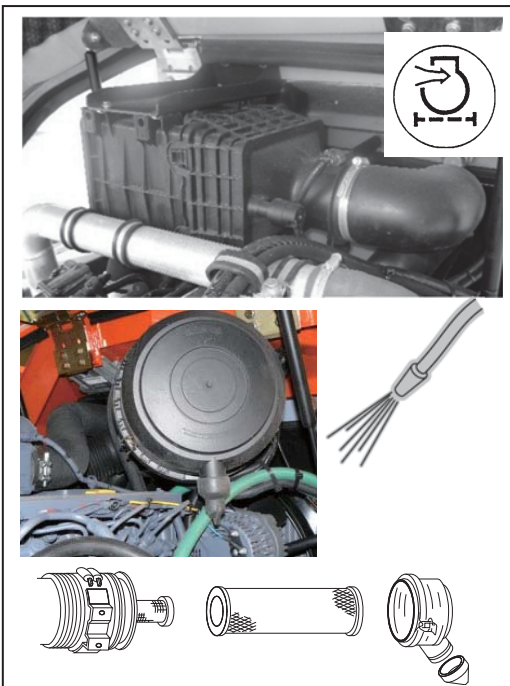


Fig. 109 Air filter

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

Note that the design of the air filter depends on the engine type and that the air filter installed in your compaction roller can differ from the illustration.

NOTICE

Damage to the Diesel engine

Never attempt to clean the air filter housing by blowing air into it.

Operating & maintenance manual

20.2.10 Checking the tire inflation pressure

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

20.2.11 Windshield washer system

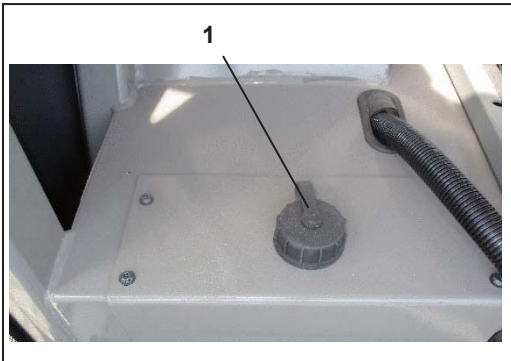


Fig. 110 Washing water container

After any operation of the compaction roller:

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

20.2.12 Cleaning the cab

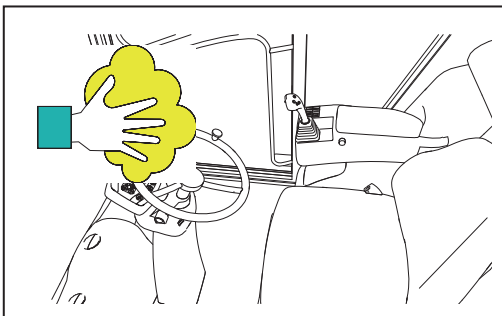


Fig. 111 Cleaning the cab

After any operation of the compaction roller:

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

NOTICE

Make sure the high-pressure washer is not directed at one of the following components:

- the sealings of the cab door,
- ventilation grills and slots.

20.2.13 Cleaning the scrapers

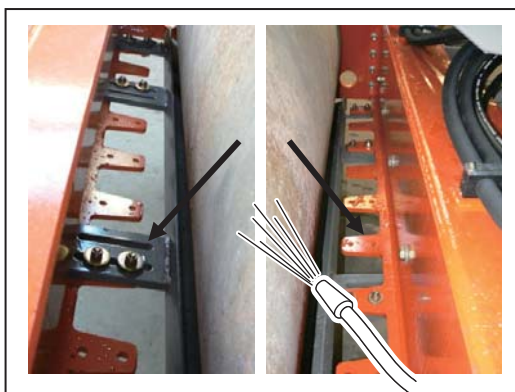


Fig. 112 Cleaning the scrapers

After any operation of the compaction roller:

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

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

- Ascertain that the required work for maintenance certificate **A** has been carried out.
- Be sure to perform all maintenance work related to the Diesel engine according to the instructions in the service manual of the Diesel engine manufacturer.
- **After the initial 50 operating hours / at intervals of 500 operating hours:**
 - Replace the cartridge of the water-fuel separator.
 - Replace the fuel filter.
 - Vent the Diesel engine.
 - Change the engine oil.
 - Replace the oil filter.
 - Check the V-belt tension.
 - Check the hydraulic oil level.*
 - Replace the hydraulic oil filter cartridge.
 - Check the oil level in the rear axle wheel drives.*
 - Change the oil in the wheel drives.
 - Check the oil level in the rear axle.*
 - Change the oil in the axle housing.
 - Check the oil level at the drum drive.*
 - Check the oil level at the vibration drive.*
 - Replace the filter units of the ventilation system.
 - Clean the ventilation slots.
- **At intervals of 100 operating hours / on a weekly basis:**
 - Drain the water-fuel separator.
 - Check the battery.
 - Check the printed circuit board, the fuses and the relays.
- **As soon as the service indicator lights up on the display or after carrying out repair work:**
 - Check the cooling system.
 - Replace the air filter.
- **At intervals of 2000 operating hours:**
 - Change the hydraulic oil.

*add oil, if required

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

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

SAFETY INSTRUCTIONS Prior to carrying out the maintenance work in this chapter, make sure that the work for maintenance certificate A has been completed.

WARNING **Risk of intoxication when working in closed areas**

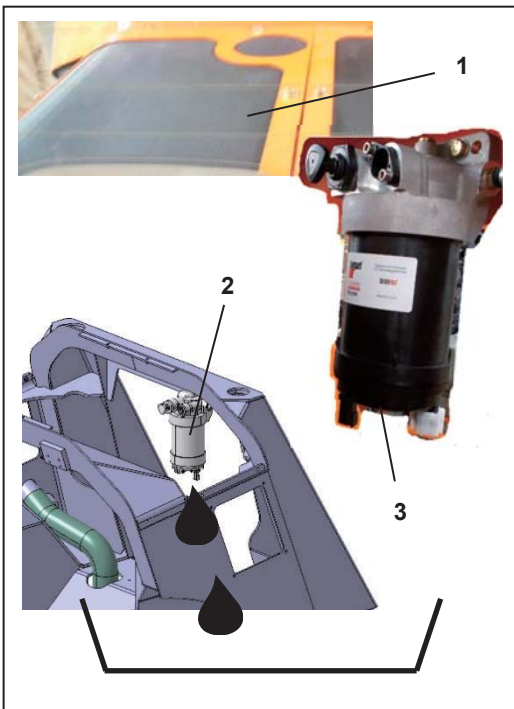
- Ensure sufficient ventilation.
- Make sure all emissions are conducted outside the work zone.
- Take noise protection measures, if necessary.

21.1 Maintenance work referring to the Diesel engine

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

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

21.1.1 Water-fuel separator



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.

Check the fuel-water separator:

- The water-fuel separator (2) is to be found at the stiffener wall to the cab (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 (2) by means of the drain plug (3) below the separator.

Fig. 113 Water-fuel separator

Operating & maintenance manual

21.1.2 Replacing the filter cartridge and the fuel filter

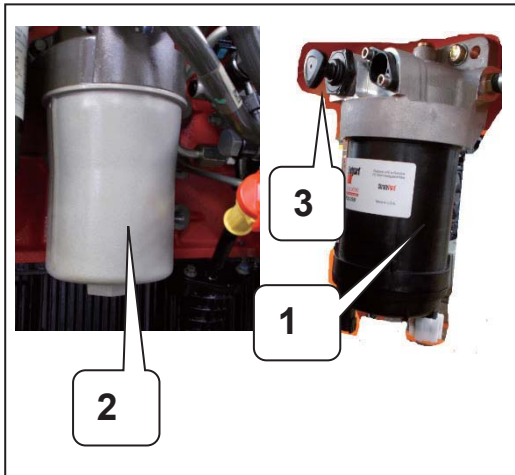


Fig. 114 Replacing the filter cartridges

At intervals of 500 operating hours (or every 12 months, whichever applies first):

1. Open the cover with the ventilation grills (on the right, in the direction of motion).
2. Put a receptacle under the fuel filter in order to collect any leaking fuel.
3. Unscrew both filter housings (cartridges) and dispose of them in accordance with the applicable waste disposal regulations. EU waste disposal key: 150299 EU.
4. Use clean oil to slightly lubricate the sealing surfaces of the new filter cartridges.
5. Attach the filter cartridges and screw them on manually.
6. Vent the Diesel engine*:
(*and be sure to adhere to the instructions of the Diesel engine manufacturer)
 1. Turn the handle of the hand suction pump (3) counterclockwise to release it.
 2. Actuate the pump until you feel a resistance (approx. 140 to 150 pumping motions).
 3. Lock the handle of the suction pump again.
 4. Activate the ignition. If the engine does not start within 30 seconds, deactivate the ignition again.
 5. Actuate the suction pump again, as described before, until the engine starts.
 6. After starting, the engine may generate noise and it may run irregularly for several minutes.

21.1.3 Engine oil change

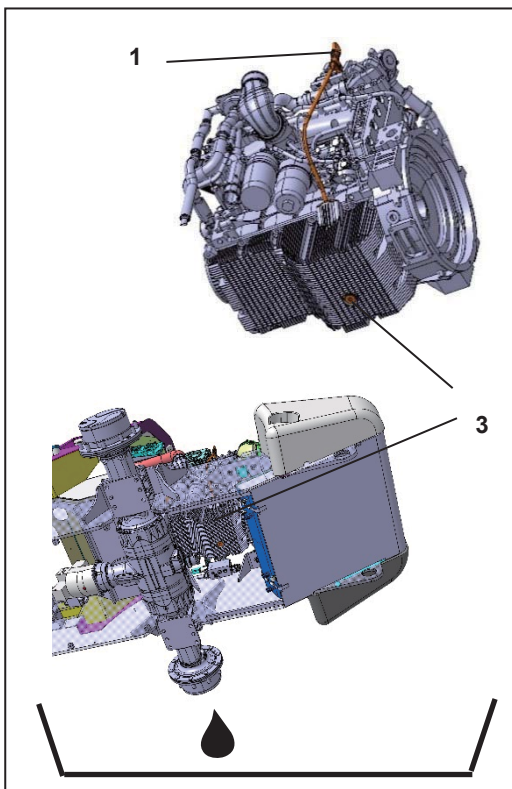


Fig. 115 Engine oil change

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

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

Replacing the oil filter:

- Place a receptacle under the oil filter to collect any leaking oil.
- Unscrew the filter cartridge and dispose of it in an environmentally friendly way, according to the applicable regulations.
- Use clean oil to lubricate the surface of the filter sealing.
- Attach the filter cartridge and screw it on manually.

Operating & maintenance manual

21.1.4 Topping up on engine oil

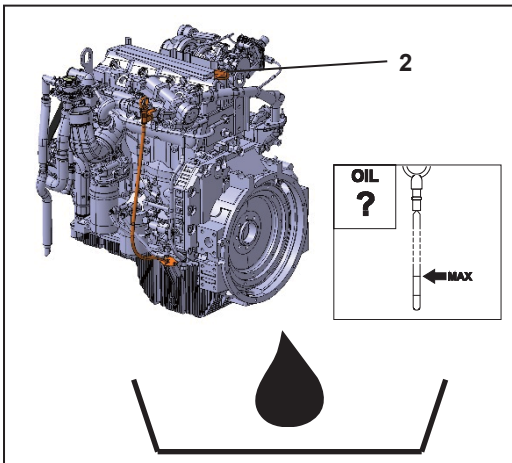


Fig. 116 Adding engine oil

- Add a sufficient quantity of engine oil (approx. 12 liters/4 gallons) via the filler neck (2).
- After filling in the engine oil, screw off the lid and let the Diesel engine turn via the starter.
- Check the oil level at the oil dipstick and add oil, if necessary.
- Start the Diesel engine and let it idle to reach operating temperature.

SAFETY INSTRUCTIONS

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

NOTICE

Environmental protection!

The engine oil must not penetrate the ground, pollute water or leak into the sewer system.

Be sure to collect the engine oil in sufficiently dimensioned receptacles and dispose of it in an environmentally friendly way.

21.1.5 Cooling system

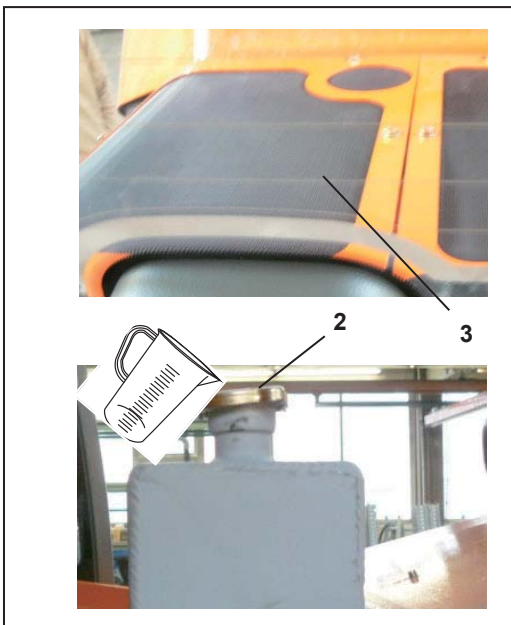


Fig. 117 Coolant level

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

- Check the coolant level.
- Open the cover (3) with the ventilation grills (right, in the direction of motion).
- Carefully screw off the lid (2) of the combination cooler.
- Check the coolant level.
- If coolant needs to be added or after repair work, the following mixing ratio is required:
- Capacity of the cooling system: approx. 15 liters (4 gallons).
- Mixing ratio: 0.6 liter (20 oz.) of water and 0.4 liter (13.5 oz) of coolant per liter (i.e. water: 60% / coolant: 40%)

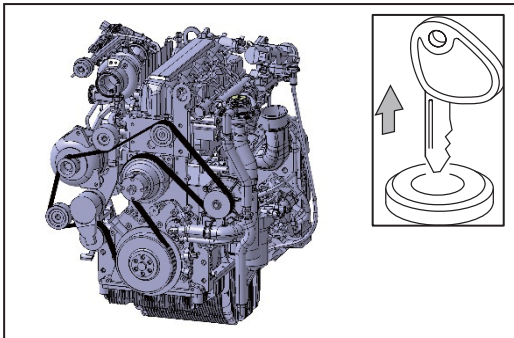
⚠ WARNING

Risk of burns caused by hot coolant

Before you open the lid of the cooler, make sure that the Diesel engine and the cooling system have cooled down.

Operating & maintenance manual

21.1.6 V-belt tension



Check the V-belt tension and watch out for damage.

Fig. 118 V-belt

WARNING

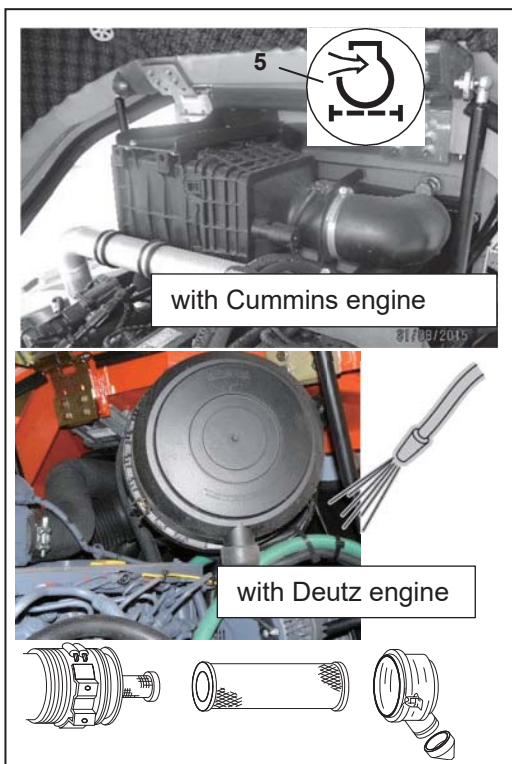
Risk of injuries caused by rotating parts!

- Never check the V-belt tension with the Diesel engine running!
- Turn off the Diesel engine and pull out the ignition key.

SAFETY INSTRUCTIONS

Refer to the service manual of the diesel engine manufacturer for instructions on tensioning and replacing the V-belt.

21.1.7 Replacing the combustion air filter



- If the respective lamp on the dashboard (5) 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.
- Clean the interior of the air filter housing; if necessary, vacuum it.

The design of the air filter depends on the engine type, so the illustrations may differ from the filter installed in your compaction roller.

Fig. 119 Air filter

NOTICE

Damage to the Diesel engine

Never attempt to clean the air filter housing by blowing air into it.

21.2 Maintenance work referring to the hydraulic system

SAFETY INSTRUCTIONS

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

21.2.1 Hydraulic oil and oil filter cartridge

NOTICE

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

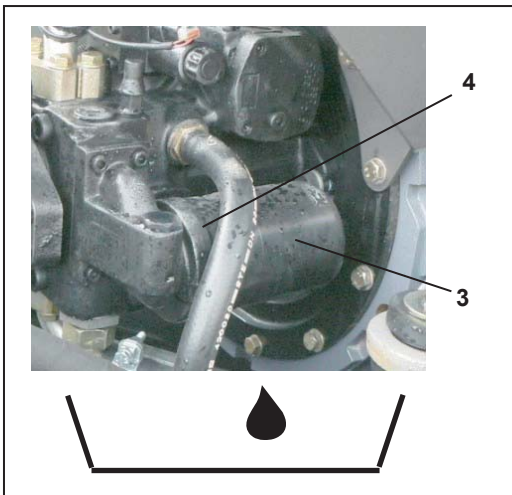


Fig. 120 Replacing the oil filter cartridge

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

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

NOTICE

Do not use a tension band to tighten the filter cartridge.

21.2.2 Checking the hydraulic oil level

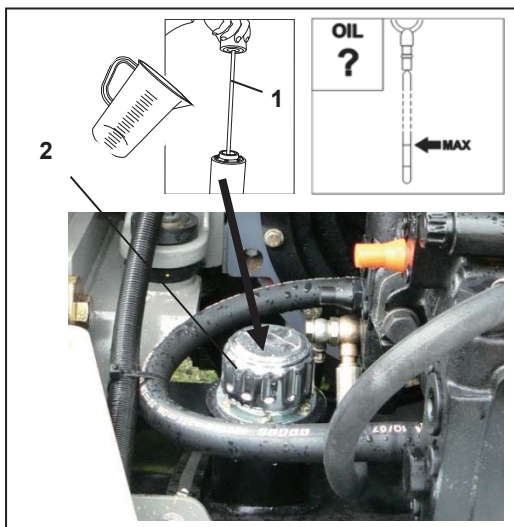


Fig. 121 Hydraulic oil level

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

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

21.2.3 Hydraulic oil change

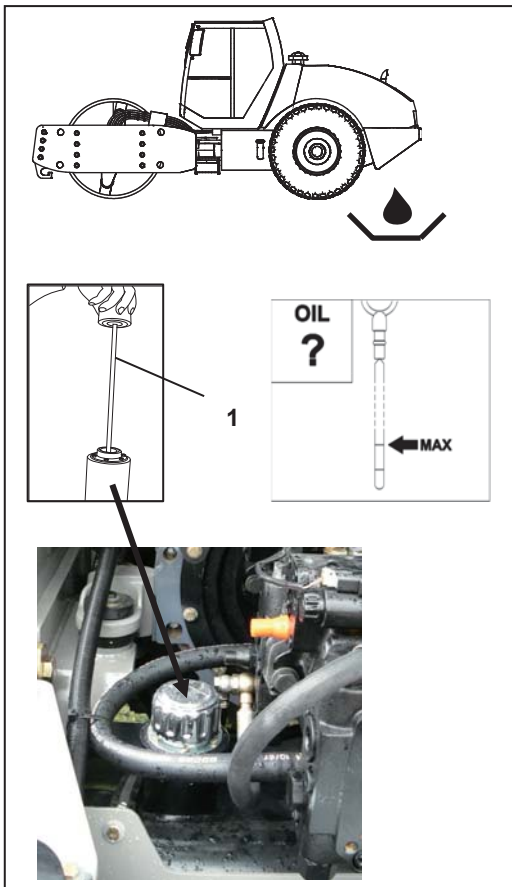


Fig. 122 Hydraulic oil

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

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

NOTICE

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

NOTICE

Environmental protection

- The engine oil must not penetrate the ground, pollute water or leak into the sewer system.
- Collect it in sufficiently dimensioned receptacles and dispose of it in an environmentally friendly way.

21.3 Maintenance work referring to the rear axle

SAFETY INSTRUCTIONS

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

WARNING

Risk of injuries and accidents caused by insufficient safety measures and inexperienced maintenance work

- Take the compaction roller to a workshop in order to carry out the oil check.
- Before carrying out any work related to the rear axle, secure the compaction roller against rolling.
- Apply the parking brake and put wheel chocks under the tires.

NOTICE

Environmental protection

Prevent the oil from penetrating the ground, polluting water or leaking into the sewer system.

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

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

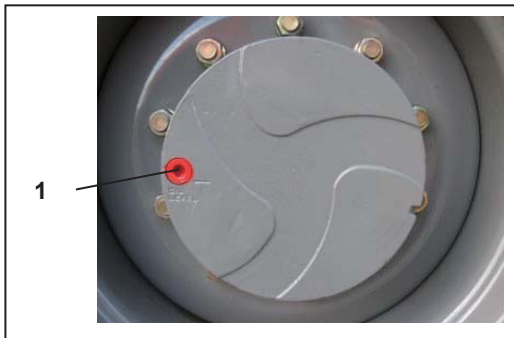


Fig. 123 Oil level in the wheel drives

Checking the oil level in the wheel drives:

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

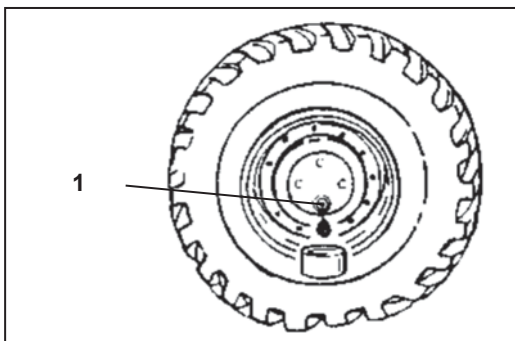


Fig. 124 Oil change wheel drives

Oil change in the wheel drives:

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

Operating & maintenance manual

21.3.2 Oil level check and oil change in the rear axle

NOTICE

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

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

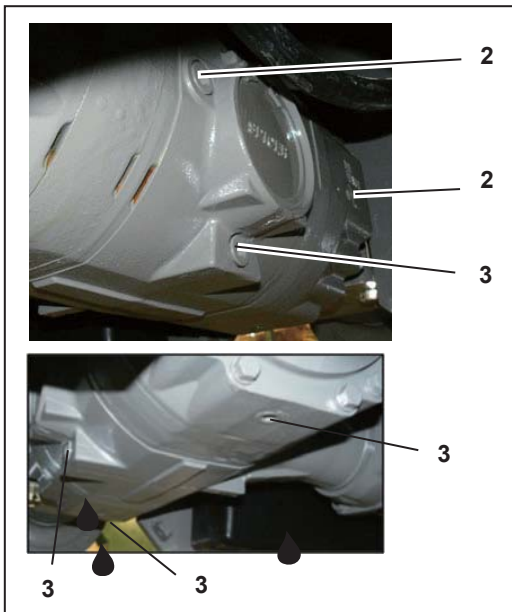


Fig. 125 Oil level and oil change- rear axle

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

21.3.3 Replacing the oil in the axle housing

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

21.4 Maintenance work referring to the drum and vibration drive

SAFETY INSTRUCTIONS

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

21.4.1 Oil level check: drum drive

⚠ WARNING

Risk of injuries and accidents caused by insufficient safety measures and inexperienced maintenance work

- Take the compaction roller to a workshop in order to carry out the oil check.
- Before carrying out any work related to the rear axle, secure the compaction roller against rolling.
- Apply the parking brake and put wheel chocks under the tires.

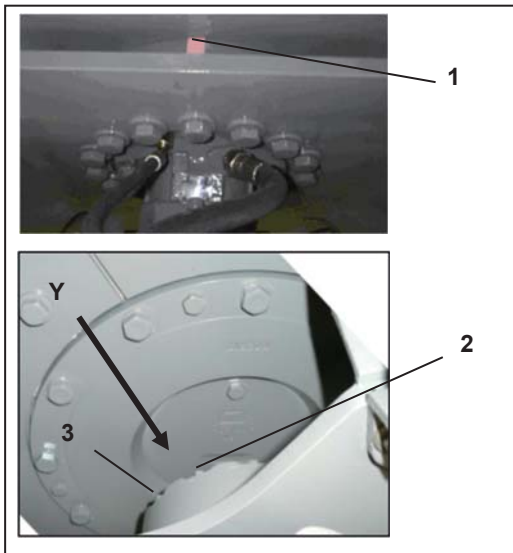


Fig. 126 Drum drive

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

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

21.4.2 Oil level check: vibration drive

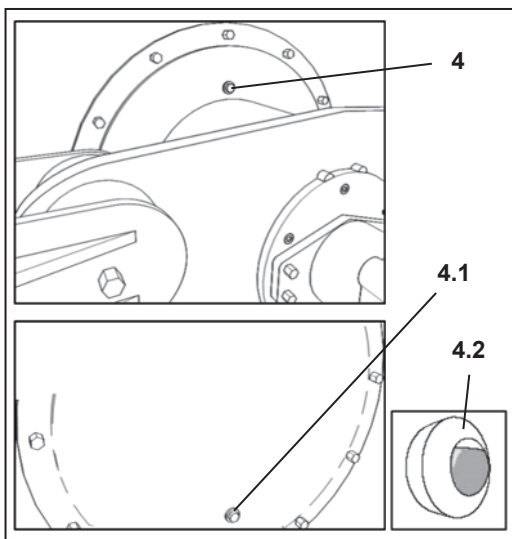


Fig. 127 Vibration drive

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

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

21.5 Maintenance work referring to the electrical system

21.5.1 Maintenance work related to the battery

⚠ WARNING

Risk of explosions and injuries

Battery gases are highly explosive. Keep away sparks and open fire from the battery. Do not smoke.

Avoid all skin contact with battery acid, as it may lead to severe chemical burns! Protect your eyes and your skin!

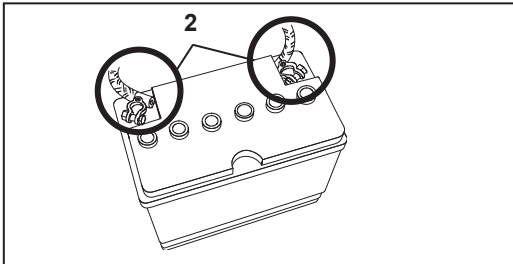


Fig. 128 Battery

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

21.5.2 Printed circuit board, fuses and relays

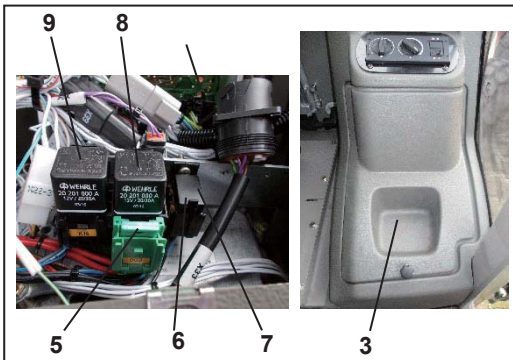


Fig. 129 Printed circuit board

- Check the printed circuit board, the fuses and relays on the printed circuit board.
- The printed circuit board is installed next to the driver's seat (on the left) and is covered by a faceplate.
- Open the faceplate (3) covering the printed circuit board (4) and check the printed circuit board by conducting a visual inspection.
- Check all fuses and relays, particularly fuses **F24 (5)**, **F25 (6)**, **F26 (7)** and relays **K14 (8)** and **K16 (9)**, for the accumulation of dirt and damage.
- Always replace defective fuses by new ones, see **Maintenance instructions for the service staff**.

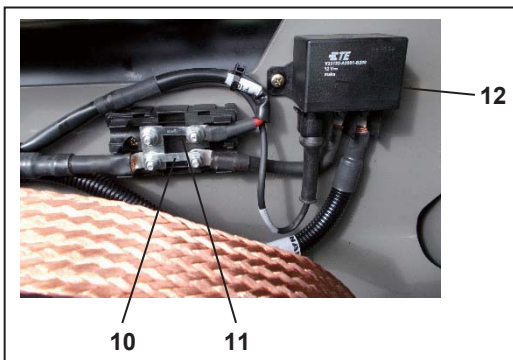


Fig. 130 Fuses and relays

Fuses and relays in the engine compartment:

- Check fuses **F17 (10)**, **F100 (11)** and relay **K09 (12)** in the engine compartment for the accumulation of dirt and damage.
- Always replace defective fuses, see table below for the allocation of the fuses on the printed circuit board.

Operating & maintenance manual

21.5.3 Allocation of the fuses on the printed circuit board (Deutz BF4M2012C EU2)

No.	Ampère	Function	No.	Ampère	Function
F1	30	Ignition lock	F14	15	Connection for socket, engine speed sensor, connection compaction measurement (option)
F2	7.5	Terminal 30 – Radio	F15	10	Emergency stop, parking brake, drive control
F3	25	Vibration	F16	15	Drive control, vibration, excess flow valve, fuel pump, diesel valve, joystick, backup warner
F4	25	Rear window defroster	F19	7.5	Rear light (right), parking light (right)
F5	25	Optional feature A/C	F20	7.5	Rear light (left), parking light (left)
F6	7.5	Sensors, control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	F21	7.5	Low-beam light (left)
F7	7.5	Gearshift (or override function) axle, drum	F22	7.5	Low-beam light (right)
F8	15	Horn, control rear window defroster, radio, interior lighting, electrical equipment driver's seat	F23	15	Lighting system
F9	15	Front/rear wipers & windshield washer system	F29	30	Drive control Terminal 30: Charge
F10	15	Rotating light, front work lights	F30	5	Drive control Terminal 30: Electronics
F11	15	Rear work lights	F31	5	Drive control Diagnosis Plug X30-1
F12	25	Fan (heating and ventilation)			
F13	7.5	Optional feature A/C			

21.5.4 Allocation of the fuses on the printed circuit board (Deutz TCD2012 EU3)

No.	Ampère	Function	No.	Ampère	Function
F1	30	Ignition lock	F14	15	Connection for socket, engine speed sensor, connection compaction measurement (option)
F2	7.5	Terminal 30 – Radio	F15	10	Emergency stop, parking brake, drive control
F3	25	Vibration	F16	15	Drive control, vibration, excess flow valve, fuel pump, diesel valve, joystick, backup warner
F4	25	Rear window defroster	F19	7.5	Rear light (right), parking light (right)
F5	25	Optional feature A/C	F20	7.5	Rear light (left), parking light (left)
F6	7.5	Sensors, control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	F21	7.5	Low-beam light (left)
F7	7.5	Gearshift (or override function) axle, drum	F22	7.5	Low-beam light (right)
F8	15	Horn, control rear window defroster, radio, interior lighting, electrical equipment driver's seat	F23	15	Lighting system
F9	15	Front/rear wipers & windshield washer system	F29	30	Drive control Terminal 30: Charge
F10	15	Rotating light, front work lights	F30	5	Drive control Terminal 30: Electronics
F11	15	Rear work lights	F31	5	Drive control Diagnosis Plug X30-1
F12	25	Fan (heating and ventilation)			
F13	7.5	Optional feature A/C			

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21.5.5 Allocation of the fuses on the printed circuit board (Cummins QSF3.8 TIER4Final EU4)

No.	Ampère	Function	No.	Ampère	Function
F1	30	Ignition lock	F17	150	Preheating
F2	7.5	Terminal 30 – Radio	F18	20	Fuel pump
F3	15	DEF Heating pump module	F19	7.5	Rear light (right), parking light (right)
F4	25	Rear window defroster	F20	7.5	Rear light (left), parking light (left)
F5	25	Optional feature A/C	F21	7.5	Low-beam light (left)
F6	7.5	Sensors, control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	F22	7.5	Low-beam light (right)
F7	7.5	Gearshift (or override function) axle, drum	F23	15	Lighting system
F8	15	Horn, control rear window defroster, radio, interior lighting, electrical equipment driver's seat	F24	30	Diesel control unit
F9	15	Front/rear wipers & windshield washer system	F25	15	DEF relay NoX sensors
F10	15	Rotating light, front work lights	F26	10	DEF supporting hose heating
F11	15	Rear work lights	F27	5	DEF tank (fill level/quality/temperature)
F12	25	Fan (heating and ventilation)	F28	5	Throttle flap
F13	7.5	Optional feature A/C	F29	30	Drive control Terminal 30: Charge
F14	15	Connection for socket, engine speed sensor, connection compaction measurement (option)	F30	5	Drive control Terminal 30: Electronics
F15	10	Emergency stop, parking brake, drive control	F31	5	Drive control Diagnosis Plug X30-1
F16	15	Drive control, vibration, excess flow valve, fuel pump, diesel valve, joystick, backup warner	F100	80	Primary fuse for the electrical system of the vehicle

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21.5.6 Allocation of the fuses on the printed circuit board (Deutz TCD 3.6 EU5)

No.	Ampère	Function	No.	Ampère	Function
F1	30	Ignition lock	F17	150	Preheating
F2	7.5	Terminal 30 – Radio, Hazard warning lights	F18	20	Fuel pump
F3	15	Optional (K08)	F19	7.5	Rear light (right), parking light (right)
F4	25	Rear window defroster	F20	7.5	Rear light (left), parking light (left)
F5	25	Optional feature A/C	F21	7.5	Low-beam light (left)
F6	7.5	Control lights H01, 02, 05, 09, 10, 11, 12, 13, 16, fuel gauge, D+	F22	7.5	Low-beam light (right)
F7	7.5	Gearshift (or override function) axle, drum	F23	15	Lighting system
F8	15	Horn, control rear window defroster, radio, interior lighting, electrical equipment driver's seat	F24	30	Diesel control unit
F9	15	Front/rear wipers & windshield washer system	F25	15	DEF relay NoX sensors
F10	15	Rotating light, front work lights	F26	10	DEF supporting hose heating
F11	15	Rear work lights	F27	5	DEF tank (fill level/quality/temperature)
F12	25	Fan (heating and ventilation)	F28	5	Throttle flap
F13	7.5	Optional feature A/C	F29	30	Drive control Terminal 30: Charge
F14	15	Connection for socket, engine speed sensor, connection compaction measurement (option)	F30	5	Drive control Terminal 30: Electronics
F15	10	Emergency stop, parking brake, drive control	F31	5	Drive control Diagnosis Plug X30-1
F16	15	Drive control, accumulation of dirt (air filter), vibration, engine speed control, diesel control, ECO control (option), joystick, backup warner	F100	80	Primary fuse for the electrical system of the vehicle

21.6 Maintenance work referring to the ventilation system

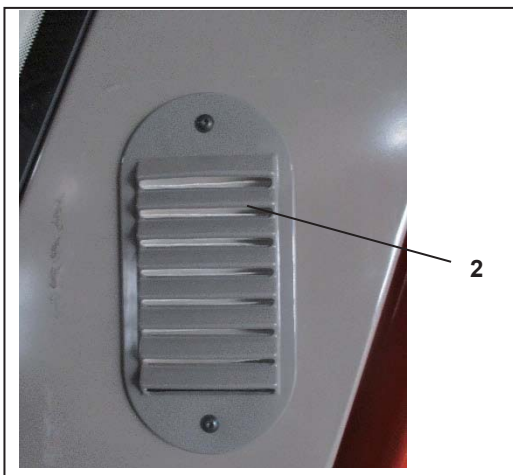


Fig. 131 Ventilation system

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

NOTICE

Material damage

Never clean the ventilation slots with water jets or a high-pressure washer.

22 Storage and preservation

22.1 Long-term storage

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

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

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

NOTICE

Material damage!

With biodiesel, standstill periods of more than 4 weeks are to be generally avoided.

Before putting the vehicle into service again:

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

22.2 Final shutdown of the compaction roller

SAFETY INSTRUCTIONS

Obligation to inform yourself

Prior to the final shutdown of the compaction roller, inform yourself of all applicable laws, guidelines and directives concerning the shutdown procedure and the disposal and observe them.

NOTICE

Environmental protection

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

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

23 Initial operation

23.1 Delivery receipt of the compaction roller

NOTICE

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

NOTICE

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

- Ascertain the completeness of the delivery (including all accessories and the technical documentation).
- Make a note of any damage found.
- Refer to the chapter **Note of delivery and verification of inspections** for information on the default maintenance intervals (maintenance certificates).

23.1.1 Checking the operating state of the compaction roller

NOTICE

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

- **Check the following fill levels:**

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

- Engine oil level
- Coolant level
- Hydraulic oil level
- Oil level in the drum drive
- Oil level in the vibration drive
- Check the Diesel / AdBlue® / DEF levels
- Check the water level for the washing water pump
- **Check (correct) the tire inflation pressure**
- **Screw connections:**
 - Tighten the wheel nuts by means of a torque key (tightening torque: **500 Nm**).
 - Check all screw connections.
- **Check the hydraulic system**
 - Check the hydraulic hoses and screw connections for signs of leakage.

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23.2 Instruction and demonstration at the machine

23.2.1 Vehicle documents and operating manual

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

SAFETY INSTRUCTIONS

Obligation to inform yourself

Bear in mind that, after your initial instruction and demonstration, the operating and maintenance manual will be the only resource for obtaining information on the operation of the vehicle.

23.2.2 Operating elements and displays in the cab

When giving the operating staff instructions, 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.

23.2.3 Working with the compaction roller

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

23.2.4 Driving the compaction roller

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

23.2.5 Maintenance work

- Fill the tires.
- Check the tire inflation pressure.
- After a practical demonstration, eliminate any signs of Leakage.
- Check the function of the brakes and the electrical system.

Operating & maintenance manual

- 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.

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

NOTICE

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

23.3.1 Fill levels

- Check the engine oil level.
- Check the hydraulic oil level.
- Check the fill level in the wheel drives of the rear axle.
- Check the fill level in the axle housing of the rear axle.
- Check the oil level of the drum drive.
- Check the oil level of the vibration drive.
- Replace the breathers of the rear axle.
- Check the water filling in the tires, see section on filling the tires.
- Check the tire inflation pressure.
- Check the Diesel / AdBlue® / DEF levels.
- Check the fill level for the washing water pump.

23.3.2 Diesel engine

SAFETY INSTRUCTIONS

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

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

NOTICE

Material damage!

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

23.3.3 Screw connections

- Check the screw connections of the engine mounting at the Diesel engine.
- Tighten the screw connections of the rear axle (tightening torque: **600 Nm**).
- Check all other screw connections.

SAFETY INSTRUCTIONS

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

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23.3.4 Hydraulic system

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

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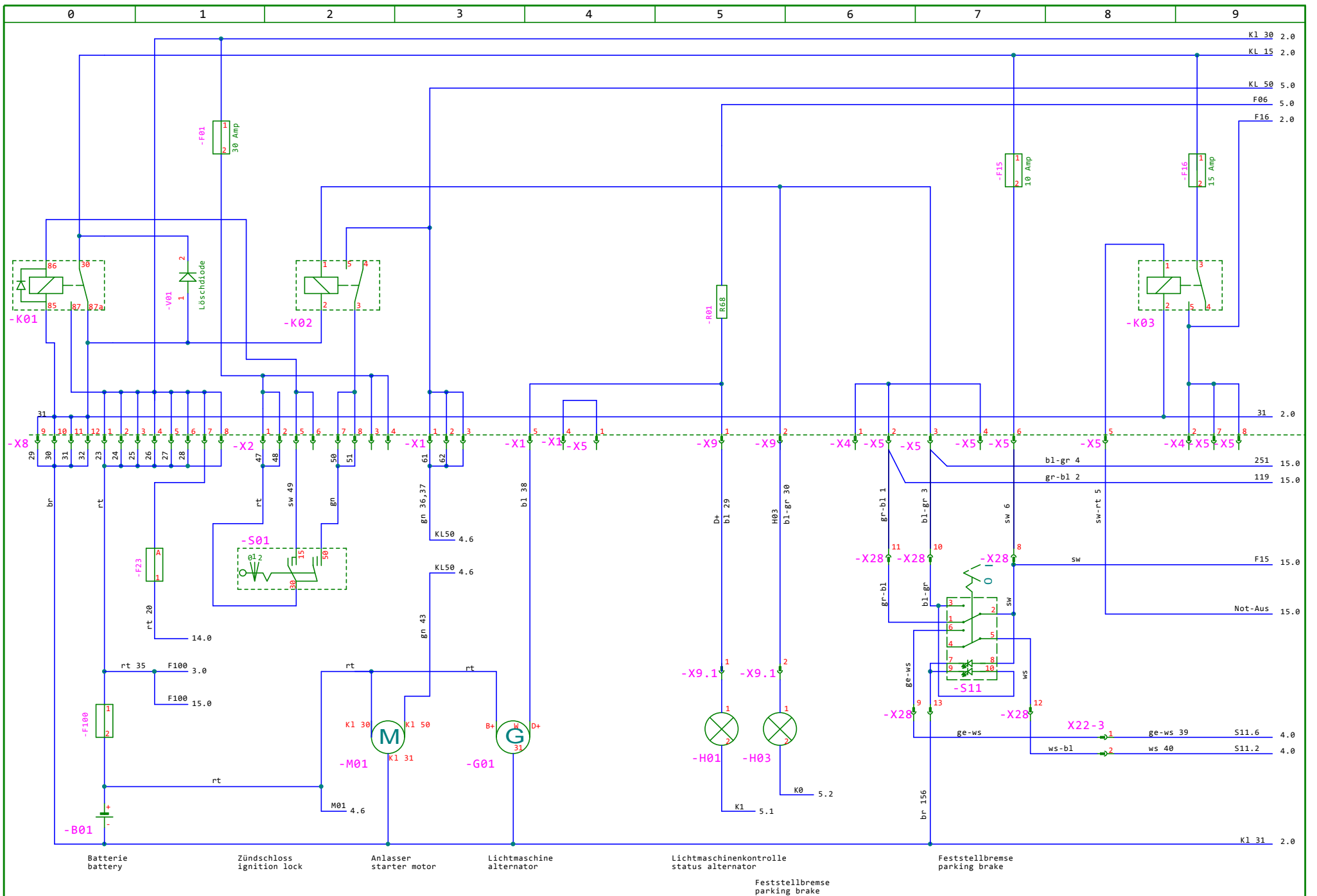
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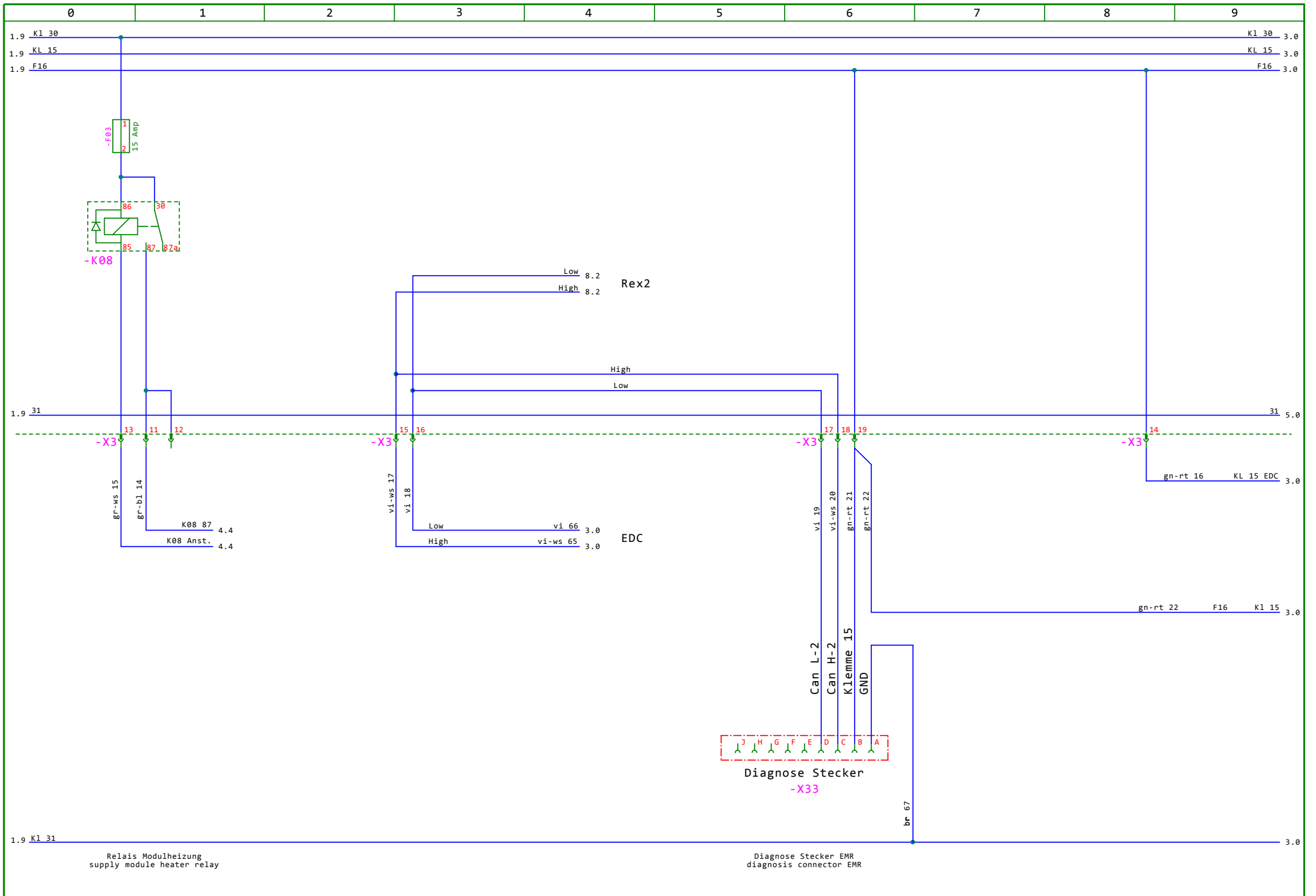
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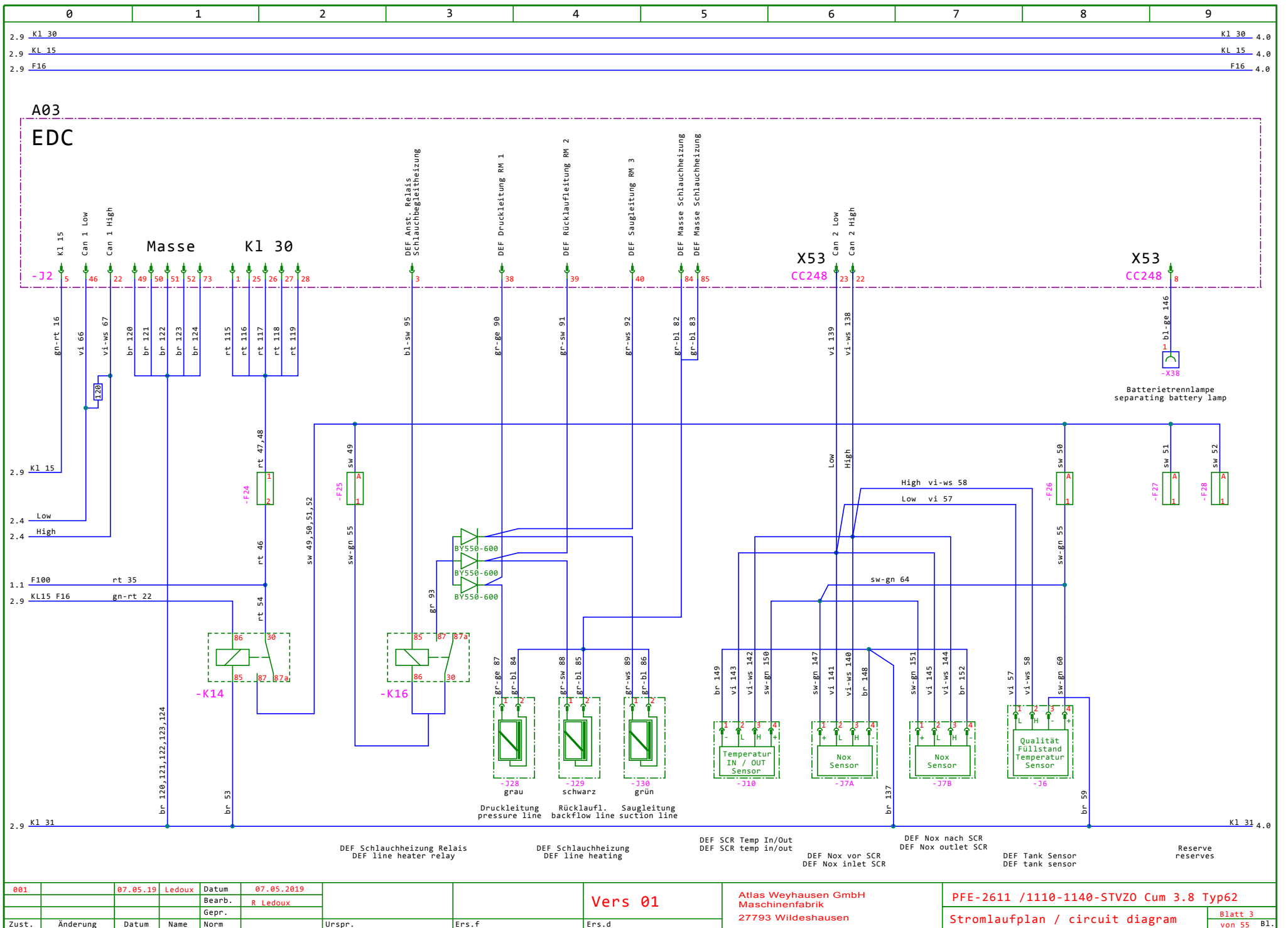
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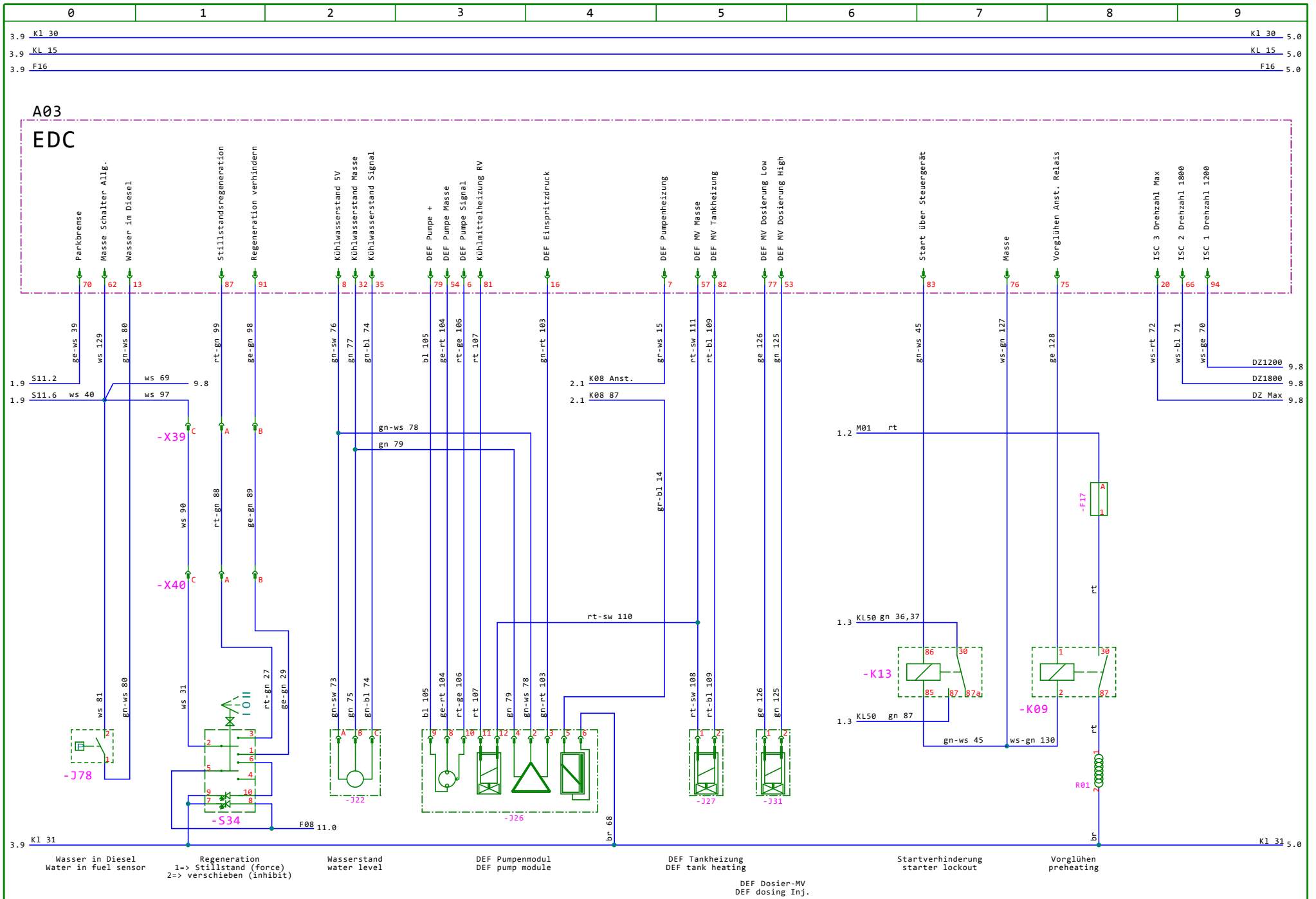
Feststellbremse
parking brake



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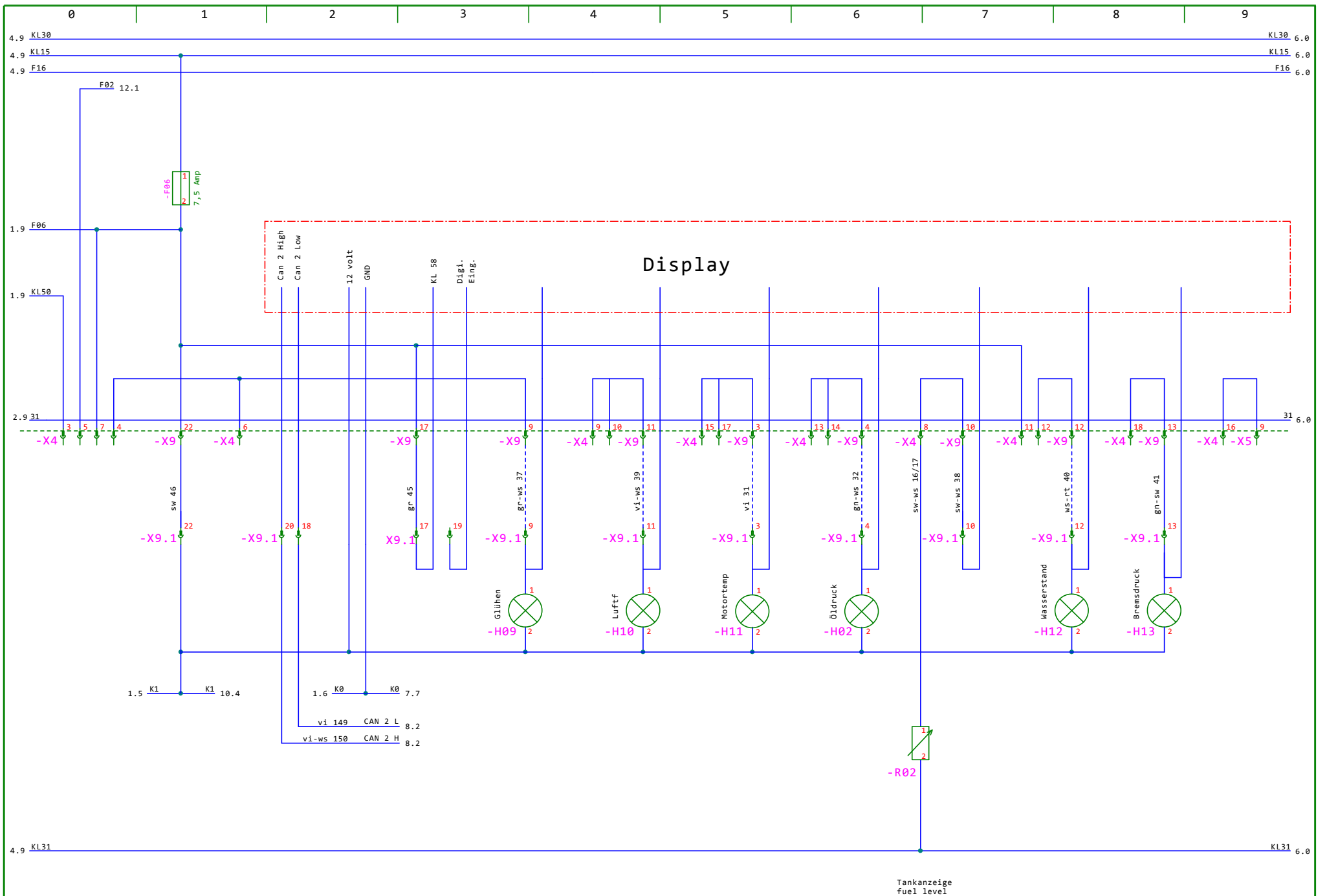
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Maschinenfabrik
27793 Wildeshausen

PFE-2611 / 1110-1140-STVZO Cum 3.8 Typ62

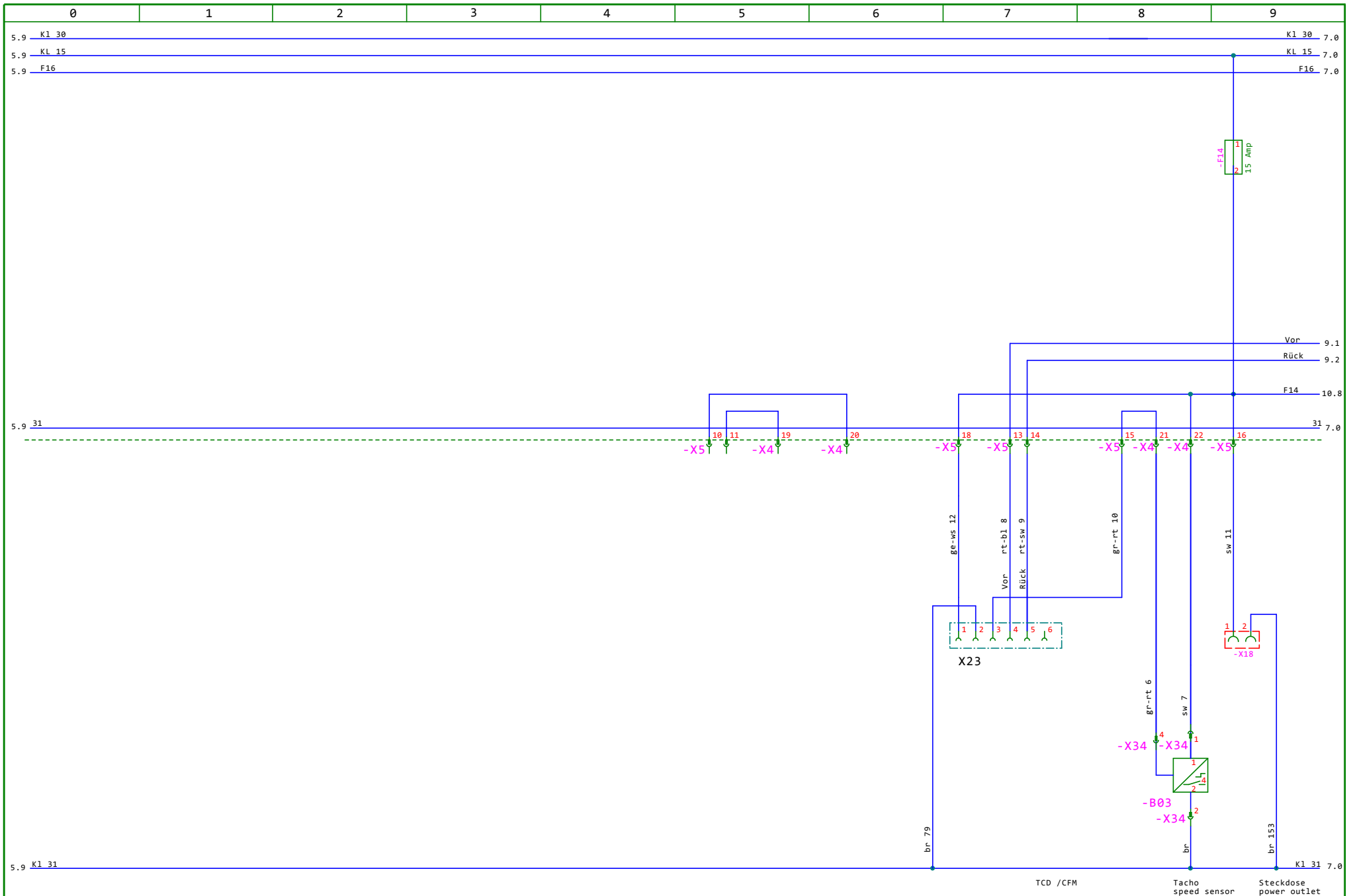
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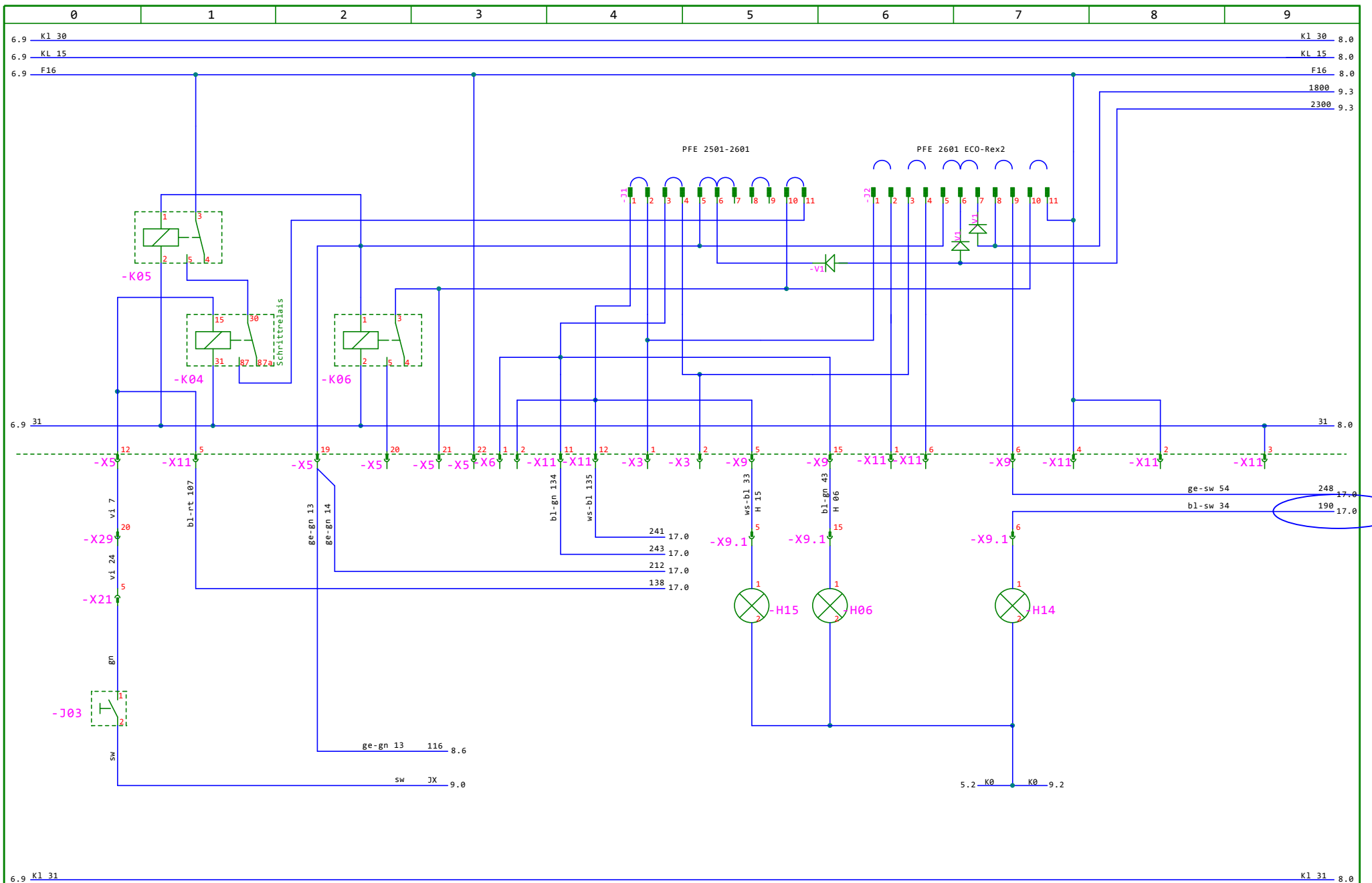
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Tankanzeige
fuel level



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6.9 K1 30
6.9 KL 15
6.9 F16

K1 30 8.0
KL 15 8.0
F16 8.0
1800 9.3
2300 9.3

PFE 2501-2601
PFE 2601 ECO-Rex2

6.9 31 8.0
31 8.0

ge-sw 54 248 17.0
bl-sw 34 190 17.0

6.9 K1 31
K1 31 8.0

Vibration Ein/Aus
vibration on /off

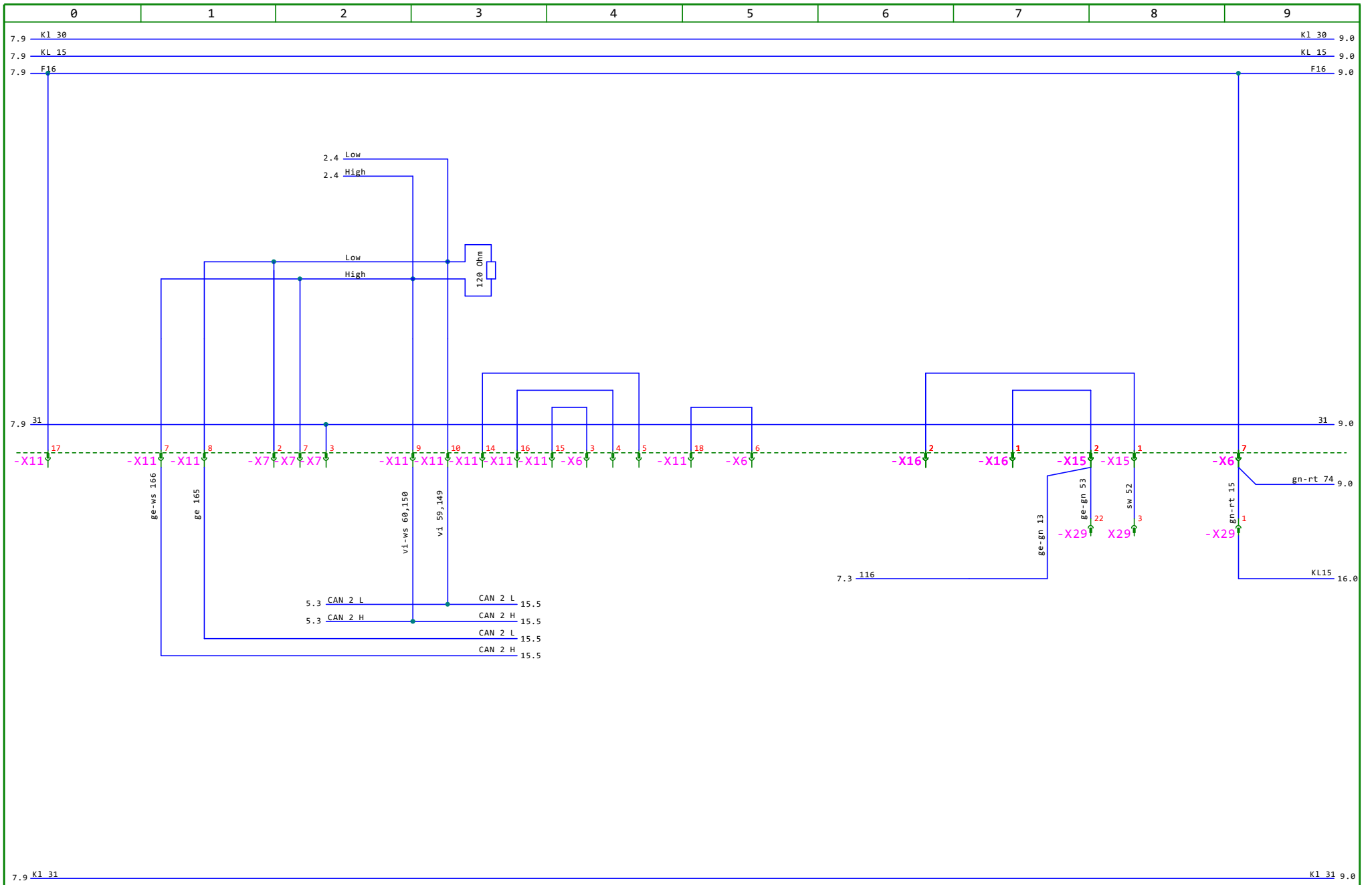
grosse Amplitude
high amplitude

kleine Amplitude
small amplitude

ECO

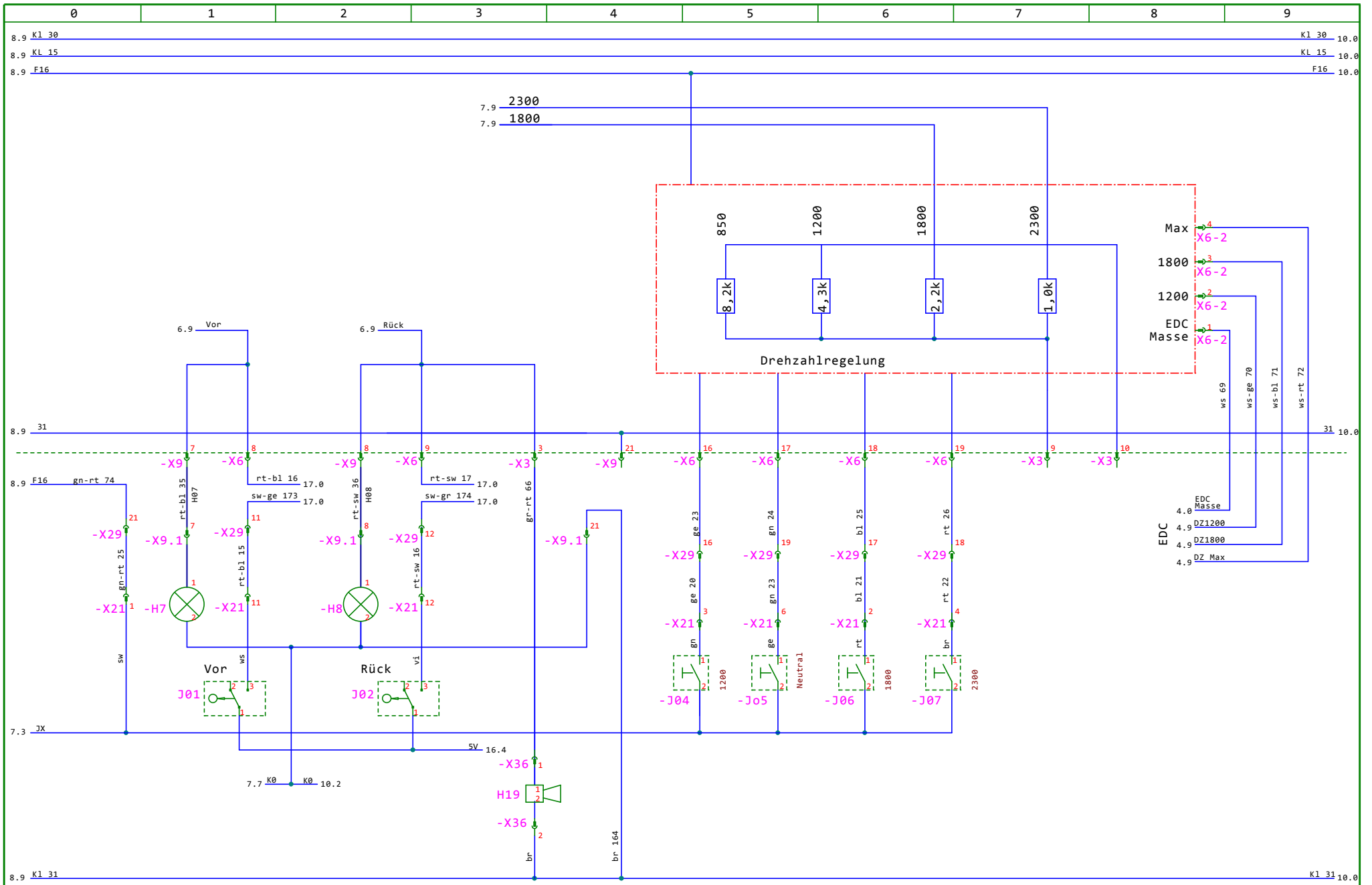
001	07.05.19	Ledoux	Datum	07.05.2019		Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiedeshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62 Stromlaufplan / circuit diagram	Blatt 7 von 55 Bl.
			Bearb.	R Ledoux				
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d	

Vers 01



7.9 K1 31
 Diagnose Stecker SPC/WEY001
 diagnosis connector SPC/WEY001

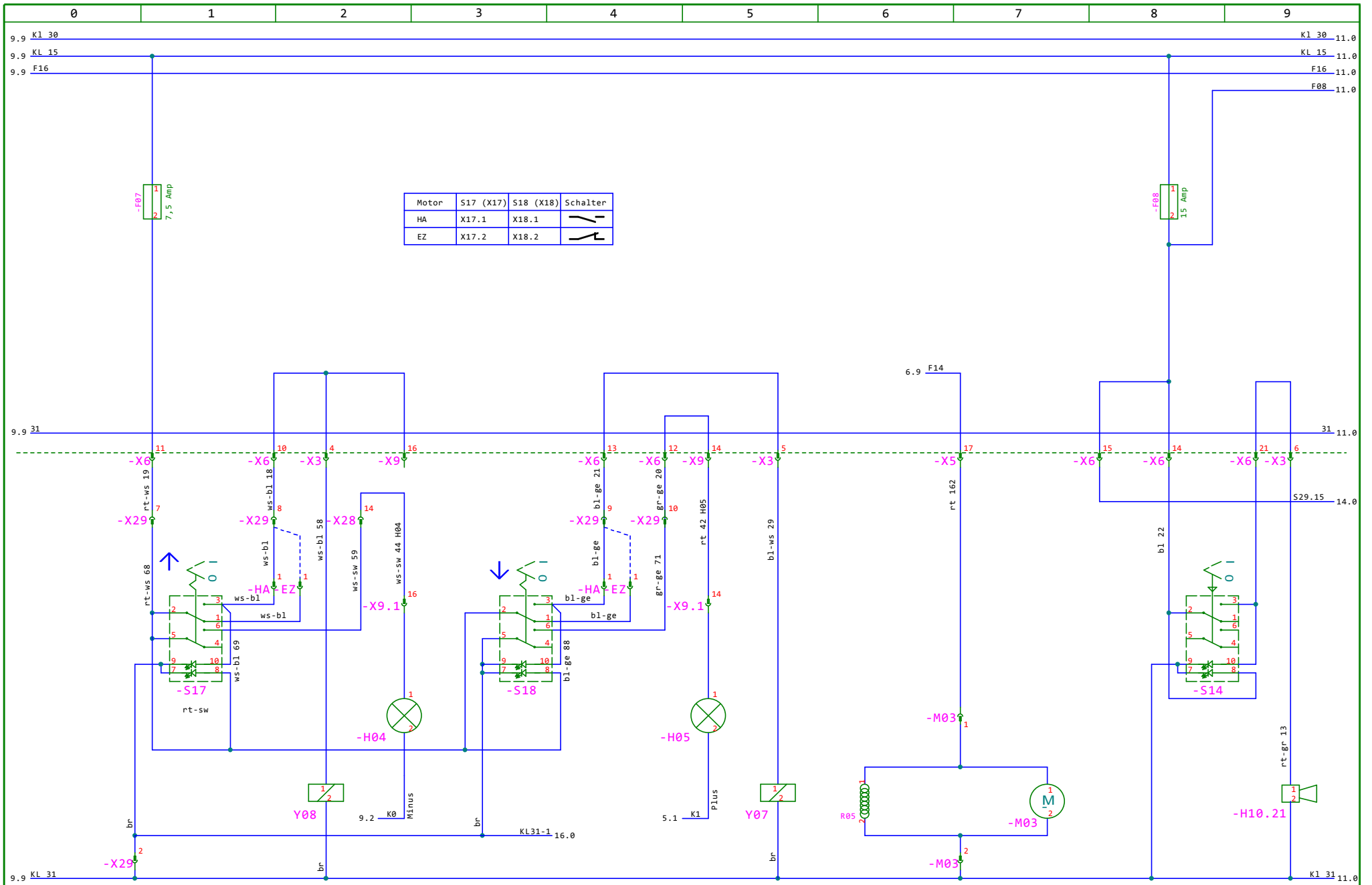
001	07.05.19	Ledoux	Datum	07.05.2019	Vers 01	Atlas Weyhausen GmbH Maschinenfabrik 27793 Wildeshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62 Stromlaufplan / circuit diagram	Blatt 8 von 55 Bl.
			Bearb.	R Ledoux				
			Gepr.					
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d	



8.9 K1 30 10.0
 8.9 K1 15 10.0
 8.9 F16 10.0
 7.9 2300
 7.9 1800
 850 1200 1800 2300
 8,2k 4,3k 2,2k 1,0k
 Drehzahlregelung
 Max 4 X6-2
 1800 3 X6-2
 1200 2 X6-2
 EDC 1
 Masse X6-2
 ws-ge 69
 ws-bl 70
 ws-bl 71
 ws-rt 72
 8.9 31 10.0
 8.9 F16 gn-rt 74
 -X29 21
 -X21 1
 gn-rt 25
 SW
 rt-bl 35 H07
 -X9 7
 -X9.1 7
 -X29 11
 -X21 11
 rt-bl 15
 ws
 Vor
 J01
 7.3 JX
 7.7 K0 K0 10.2
 5V 16.4
 -X36 1
 H19 1
 -X36 2
 br 164
 8.9 K1 31 10.0
 vorwärts forward
 rückwärts reverse
 Rückfahrsummer backup alarm

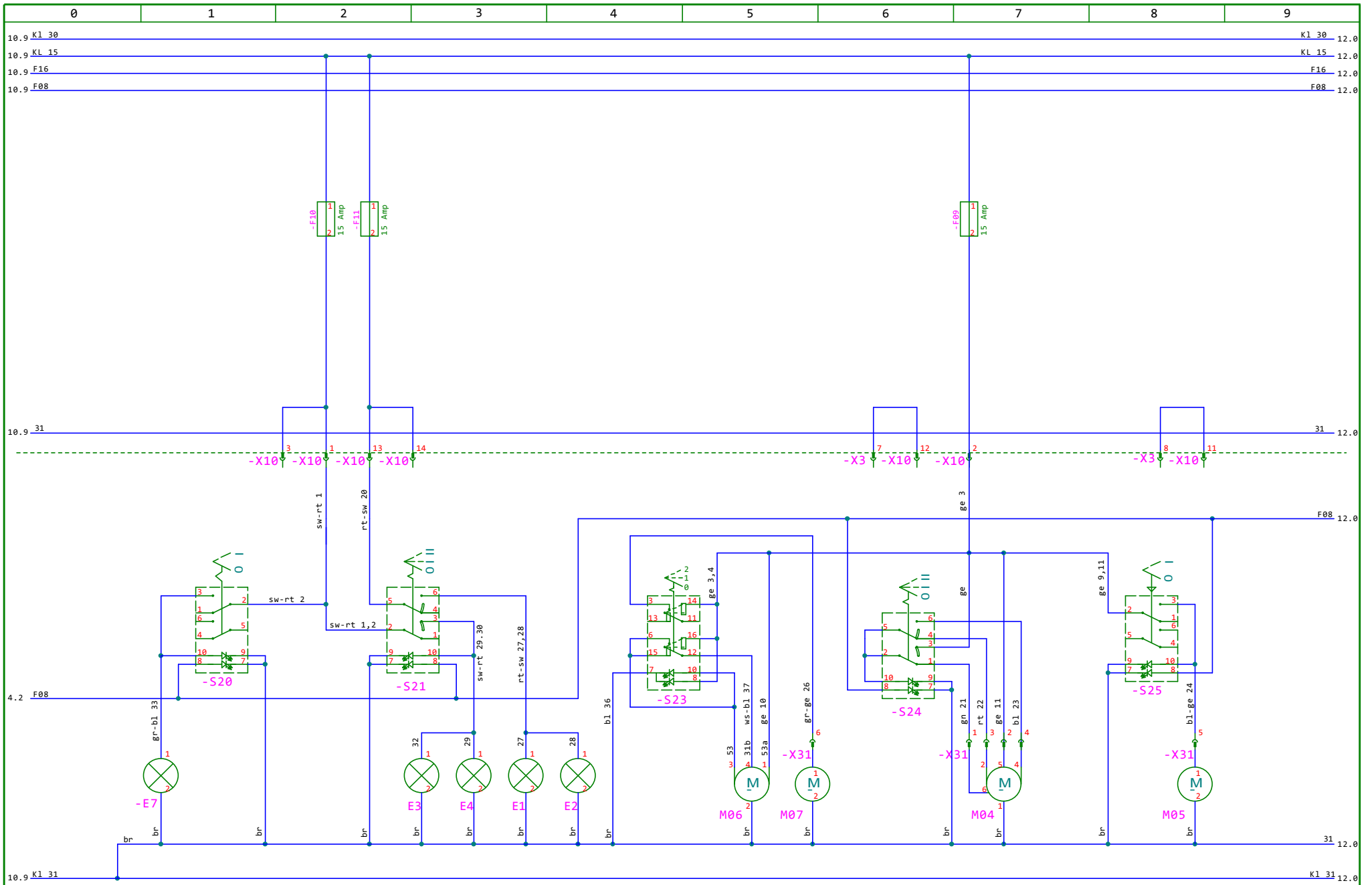
001	07.05.19	Ledoux	Datum	07.05.2019		Atlas Weyhausen GmbH Maschinenfabrik 27793 Wildeshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62	Blatt 9 von 55 Bl.
			Bearb.	R Ledoux			Stromlaufplan / circuit diagram	
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d	

Vers 01



001	07.05.19	Ledoux	Datum	07.05.2019		Atlas Weyhausen GmbH Maschinenfabrik 27793 Wildeshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62
			Bearb.	R Ledoux			Stromlaufplan / circuit diagram
			Gepr.				Blatt 10 von 55 Bl.
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d

Vers 01



Rundumleuchte
rotating light

Arbeitscheinwerfer
work lights
vorne front hinten rear

Waschpumpe hinten
rear washpump

Wischer vorn
front wiper

Waschpumpe vorn
front washpump

001	07.05.19	Ledoux	Datum	07.05.2019
			Bearb.	R Ledoux
			Gepr.	
Zust.	Änderung	Datum	Name	Norm
			Urspr.	Ers.f
				Ers.d

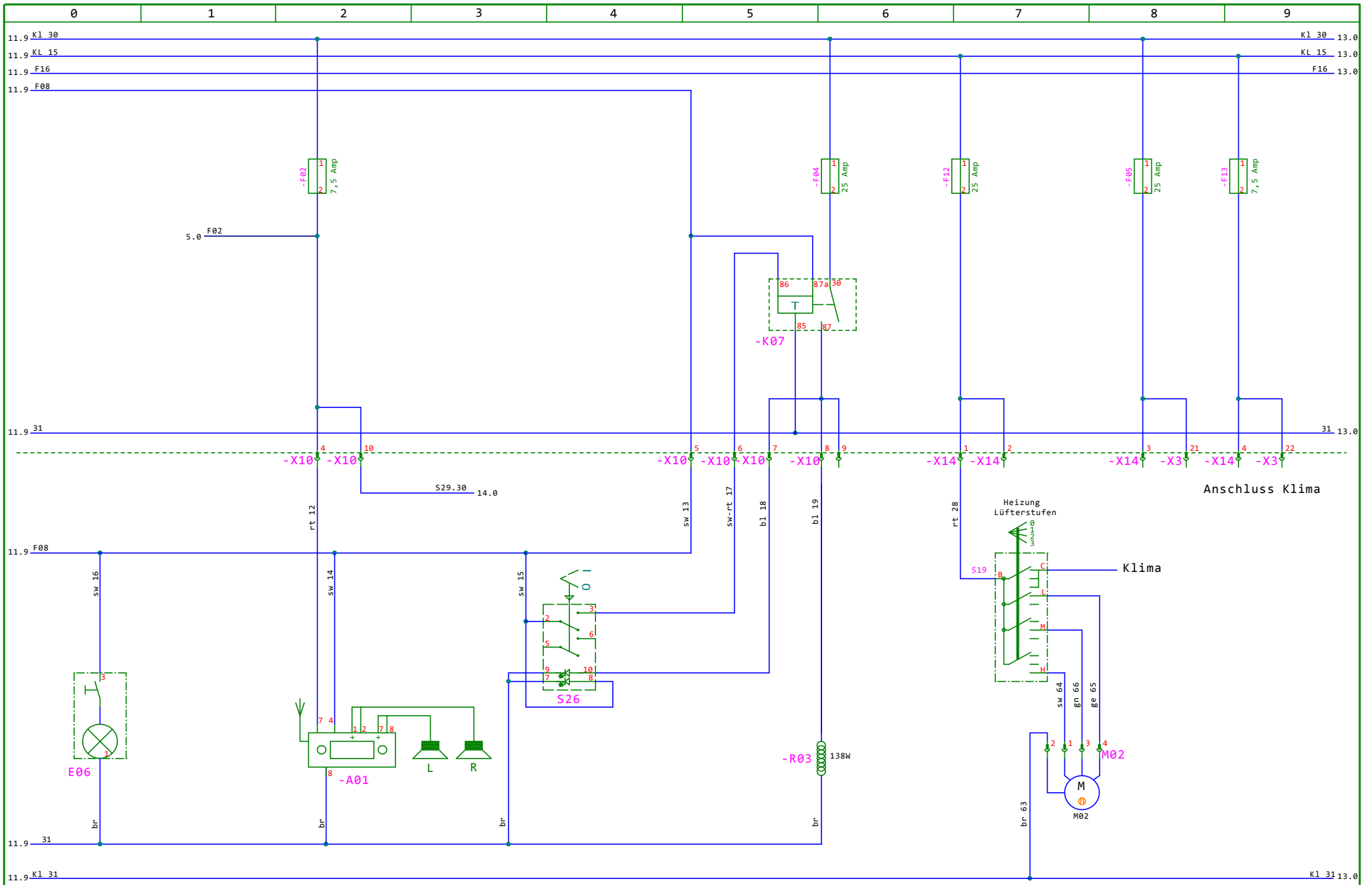
Vers 01

Atlas Weyhausen GmbH
Maschinenfabrik
27793 Wildeshausen

PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62

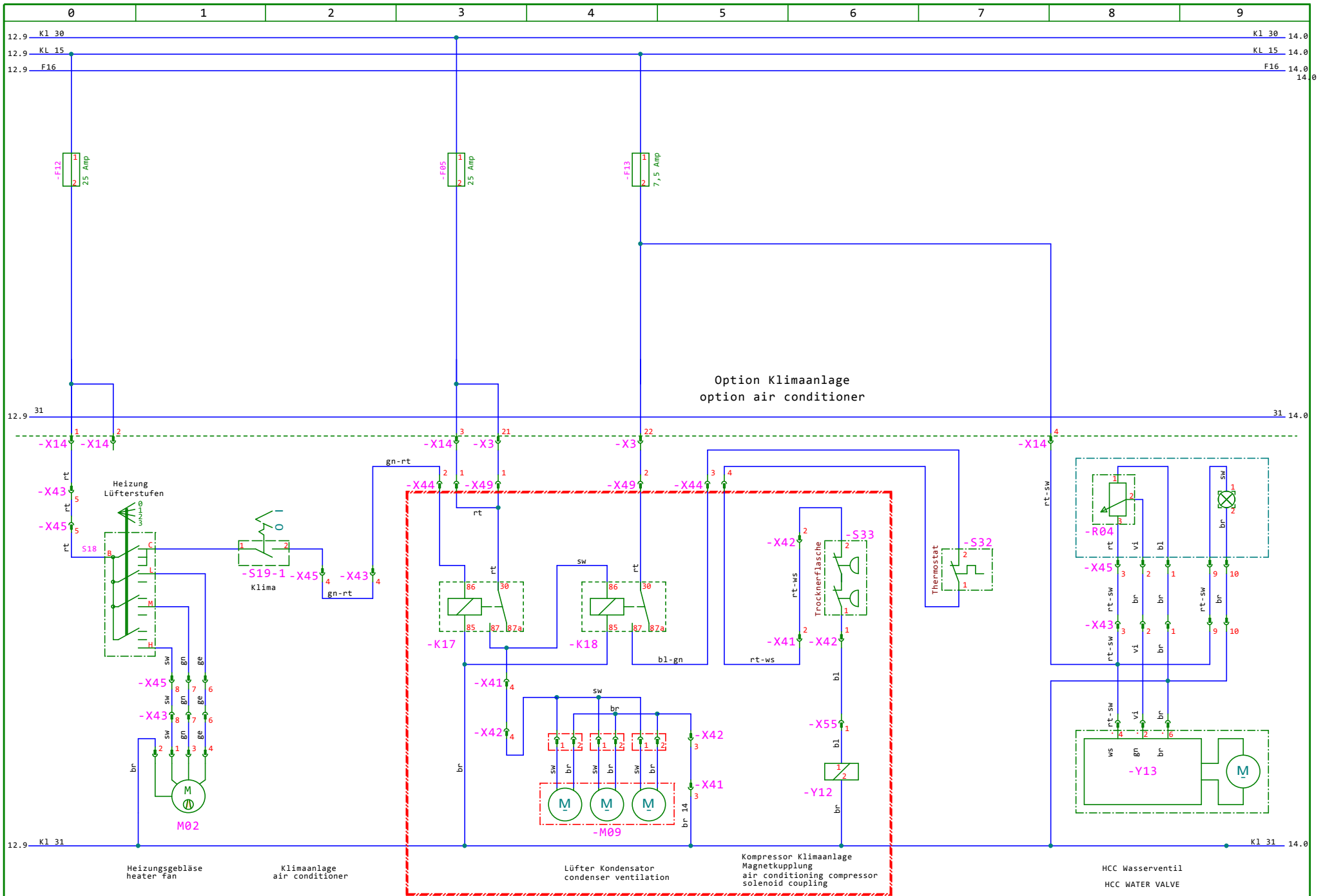
Stromlaufplan / circuit diagram

Blatt 11
von 55 Bl.



001	07.05.19	Redoux	Datum	07.05.2019			Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiideshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62	Blatt 12 von 55 Bl.
			Bearb.	R Redoux				Stromlaufplan / circuit diagram	
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d		

Vers 01

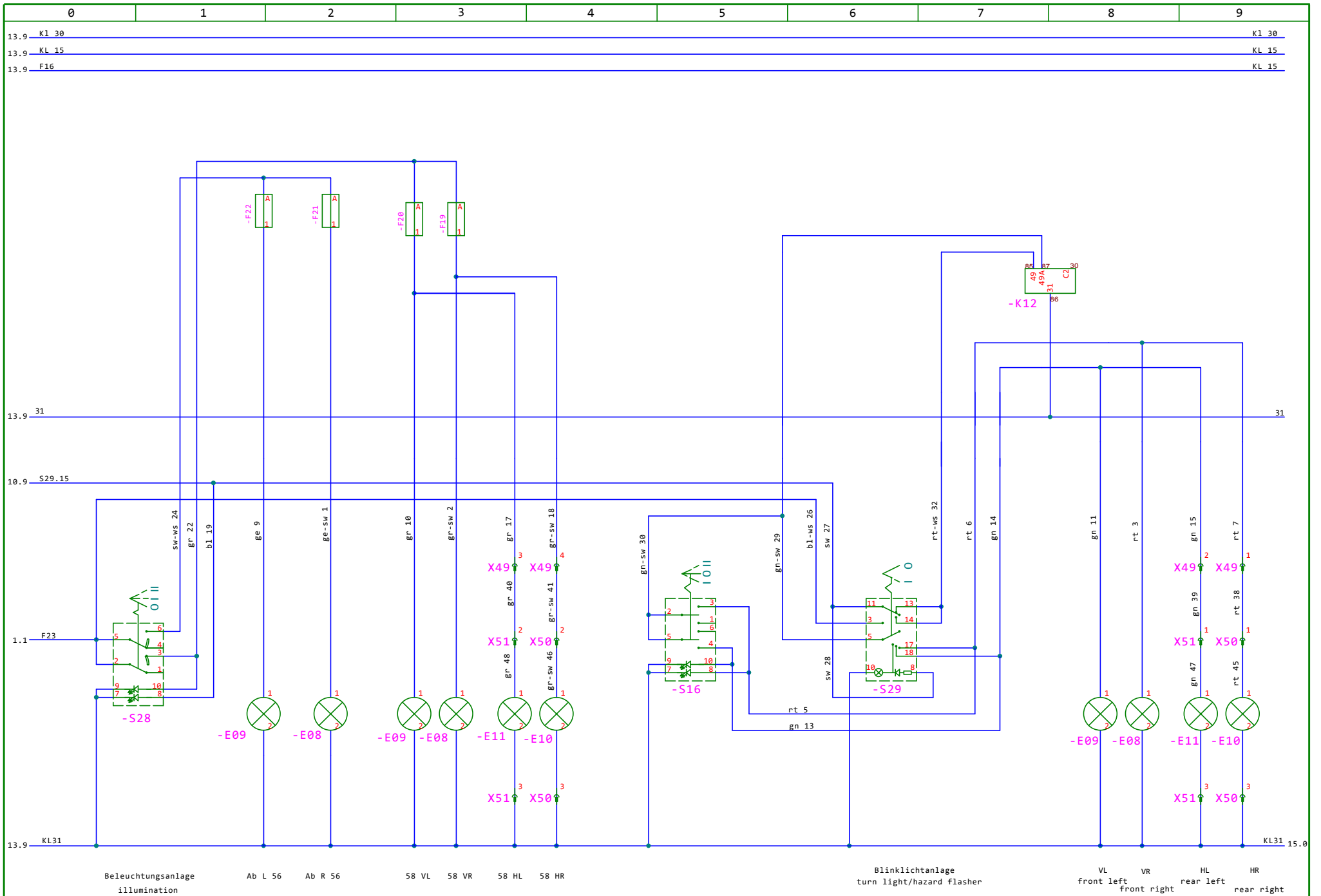


001	07.05.19	Ledoux	Datum	07.05.2019
			Bearb.	R Ledoux
			Gepr.	
Zust.	Änderung	Datum	Name	Norm
			Urspr.	

Vers 01

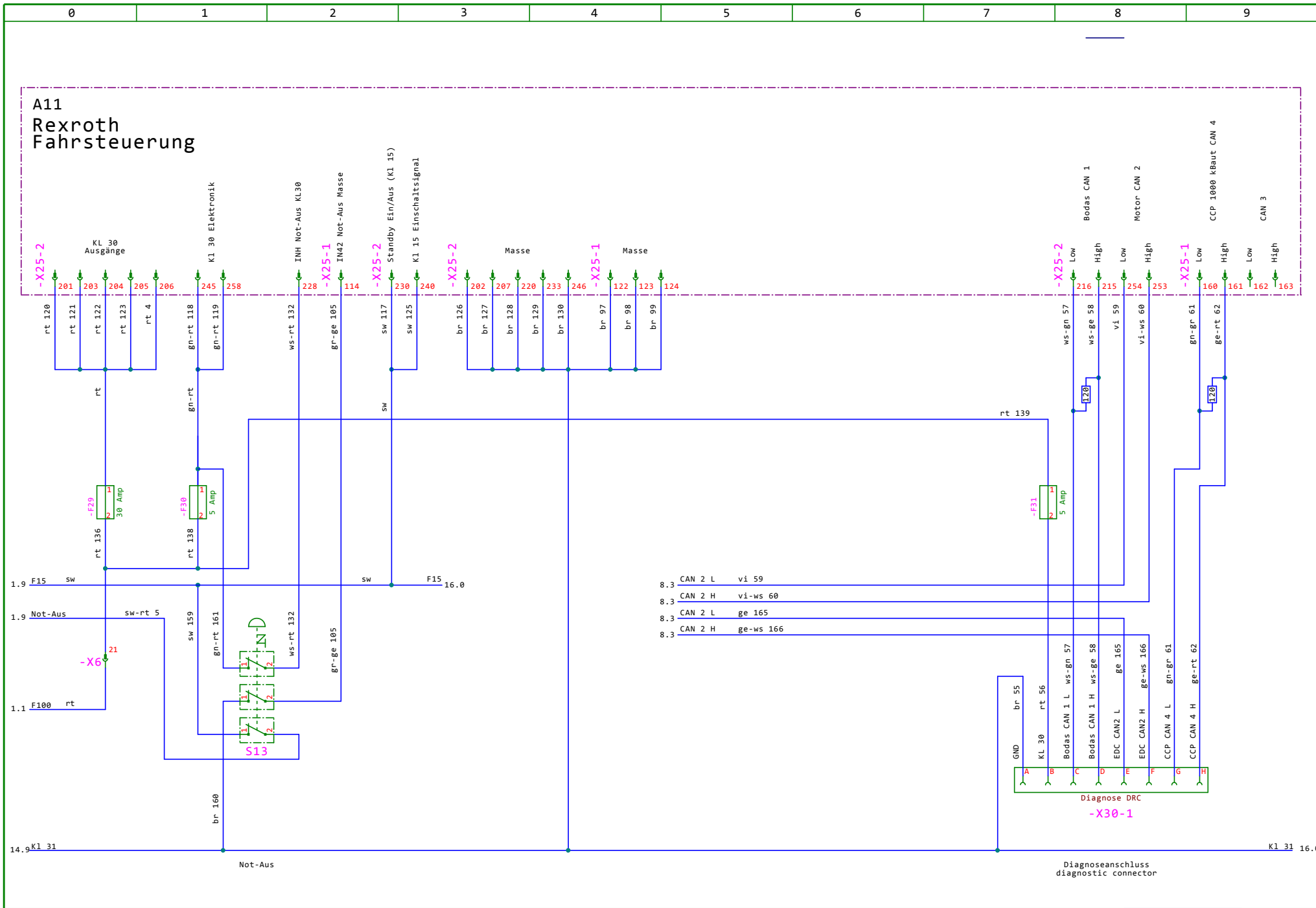
Atlas Weyhausen GmbH
 Maschinenfabrik
 27793 Wildeshausen

PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62
 Stromlaufplan / circuit diagram



001	07.05.19	Ledoux	Datum	07.05.2019		Atlas Weyhausen GmbH	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62
			Bearb.	R Ledoux		Maschinenfabrik	Stromlaufplan / circuit diagram
			Gepr.			27793 Wildeshausen	Blatt 14
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d
							von 55 Bl.

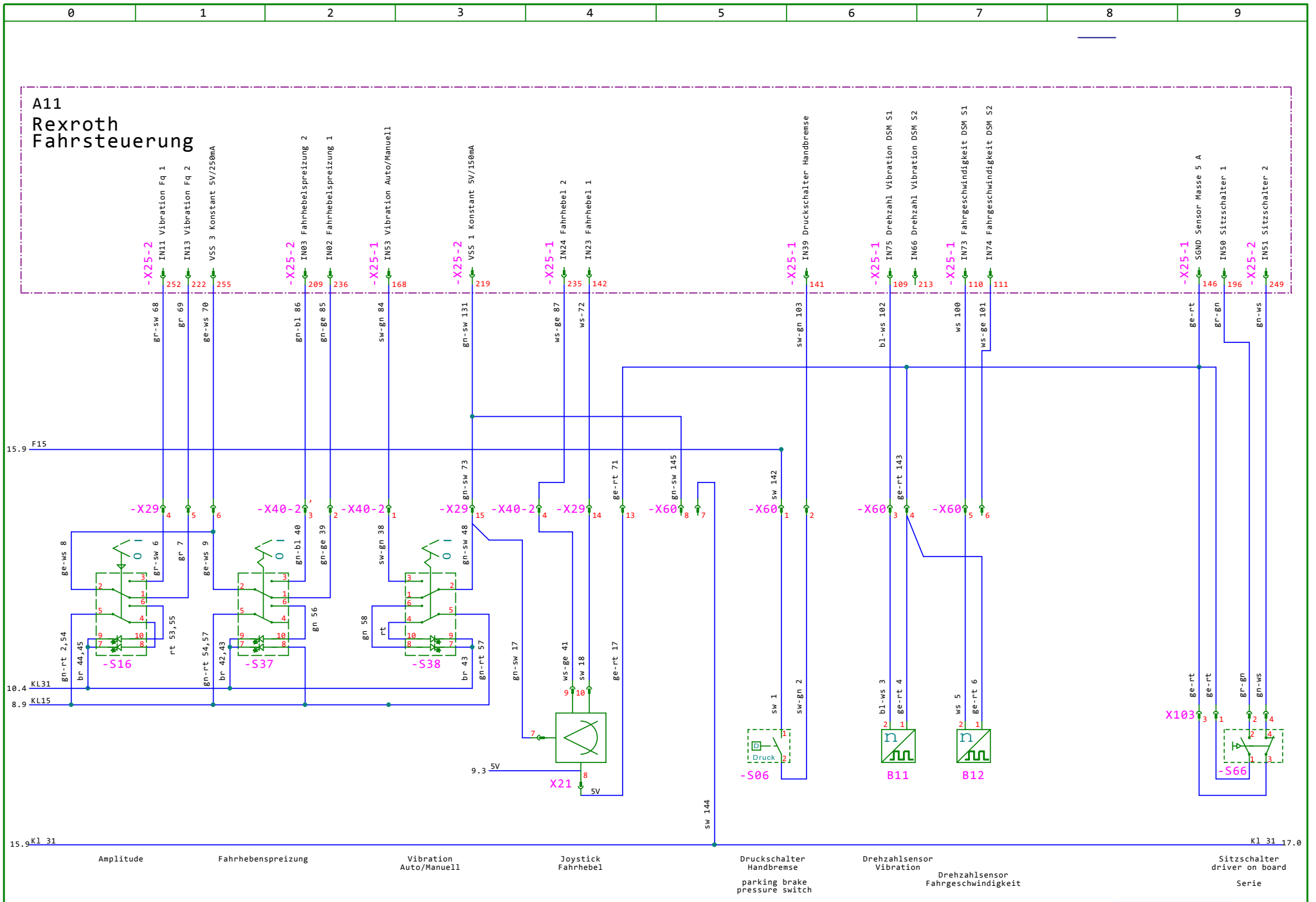
Vers 01



001	07.05.19	Ledoux	Datum	07.05.2019			Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiideshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62	Blatt 15 von 55 Bl.
			Bearb.	R Ledoux				Stromlaufplan / circuit diagram	
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d		

Vers 01

Stromlaufplan / circuit diagram

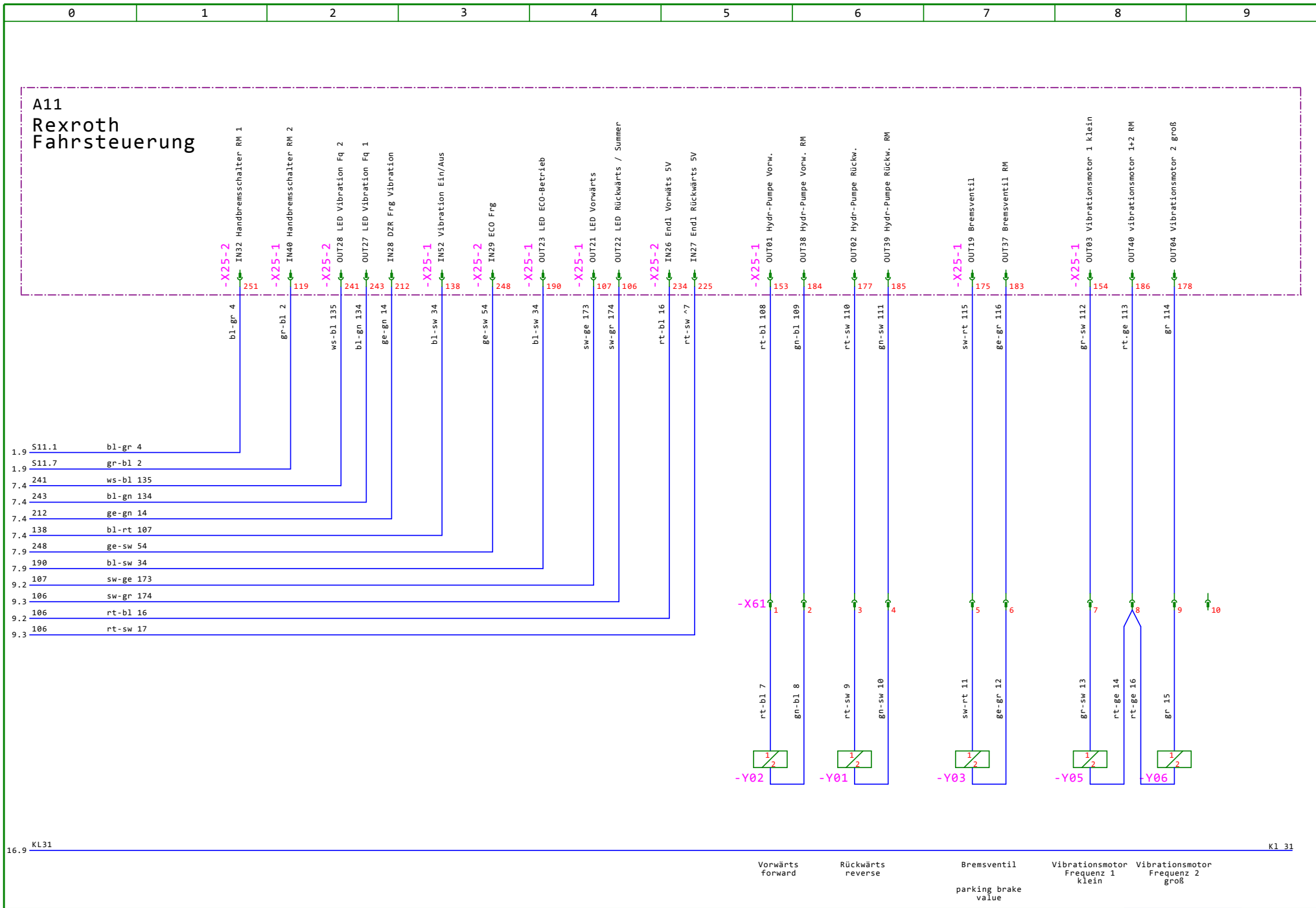


001	07.05.19	Ledoux	Datum	07.05.2019
			Bearb.	R Ledoux
			Gepr.	
Zust.	Änderung	Datum	Name	Norm
			Urspr.	Ers.f
				Ers.d

Vers 01

Atlas Weyhausen GmbH
Maschinenfabrik
27793 Wiideshausen

PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62
Stromlaufplan / circuit diagram
Blatt 16 von 55 Bl.

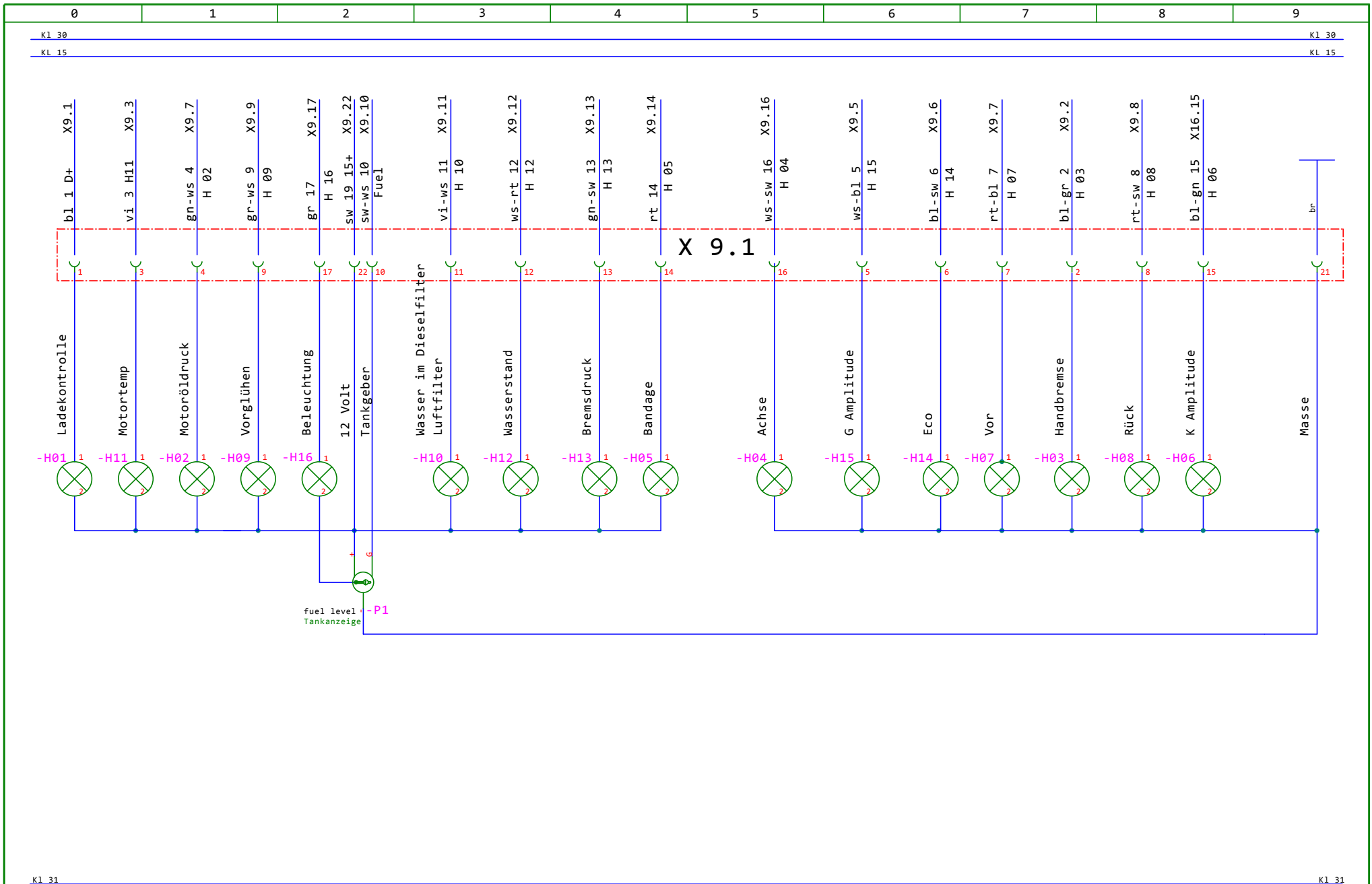


16.9 KL31 K1 31

001	07.05.19	Ledoux	Datum	07.05.2019		Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiideshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62
			Bearb.	R Ledoux			Stromlaufplan / circuit diagram
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d
							Blatt 17 von 55 Bl.

Vers 01

weiss	ws	white	wh
grau	gr	grey	gy
gelb	ge	yellow	ye
rosa	rs	pink	pk
rot	rt	red	rd
grün	gn	green	gn
blau	bl	blue	bl
braun	br	brown	bn
orange	or	orange	og
violett	vi	violet	vt
schwarz	sw	black	bk
türkis	tk	turquoise	tq



K1 31

K1 31

INTERN!

001	07.05.19	Ledoux	Datum	07.05.2019	Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiideshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62 Stromlaufplan / circuit diagram	Blatt 19 von 55 Bl.
			Bearb.	R Ledoux			
			Gepr.				
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d

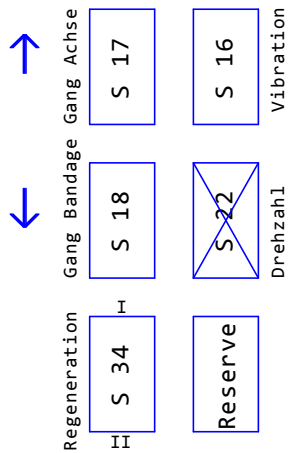
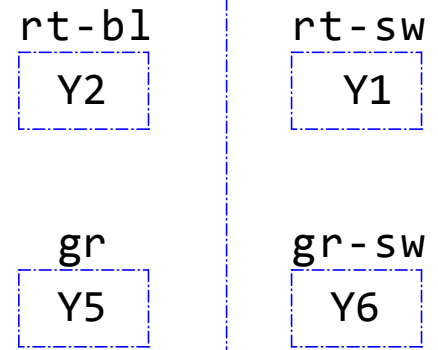
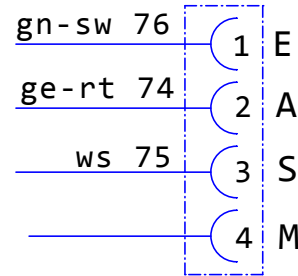
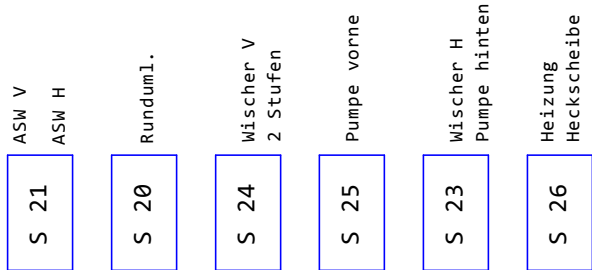
Vers 01

Atlas Weyhausen GmbH
Maschinenfabrik
27793 Wiideshausen

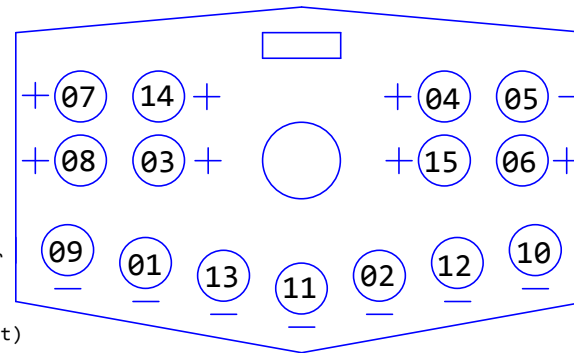
PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62

Stromlaufplan / circuit diagram

Blatt 19
von 55 Bl.



- 01 Lima
- 02 Öldruck
- 03 Handbremse
- 04 Achse
- 05 Bandage
- 06 K Amplitude
- 07 Vor
- 08 Rück
- 09 Vorglühen
- 10 Luftfilter +
Wasser Dieselfilter
- 11 Motortemp
- 12 Wasserstand
- 13 Bremsdruck (entfällt)
- 14 ECO
- 15 G Amplitude
- 16 Beleuchtung



Summer 01,02,11

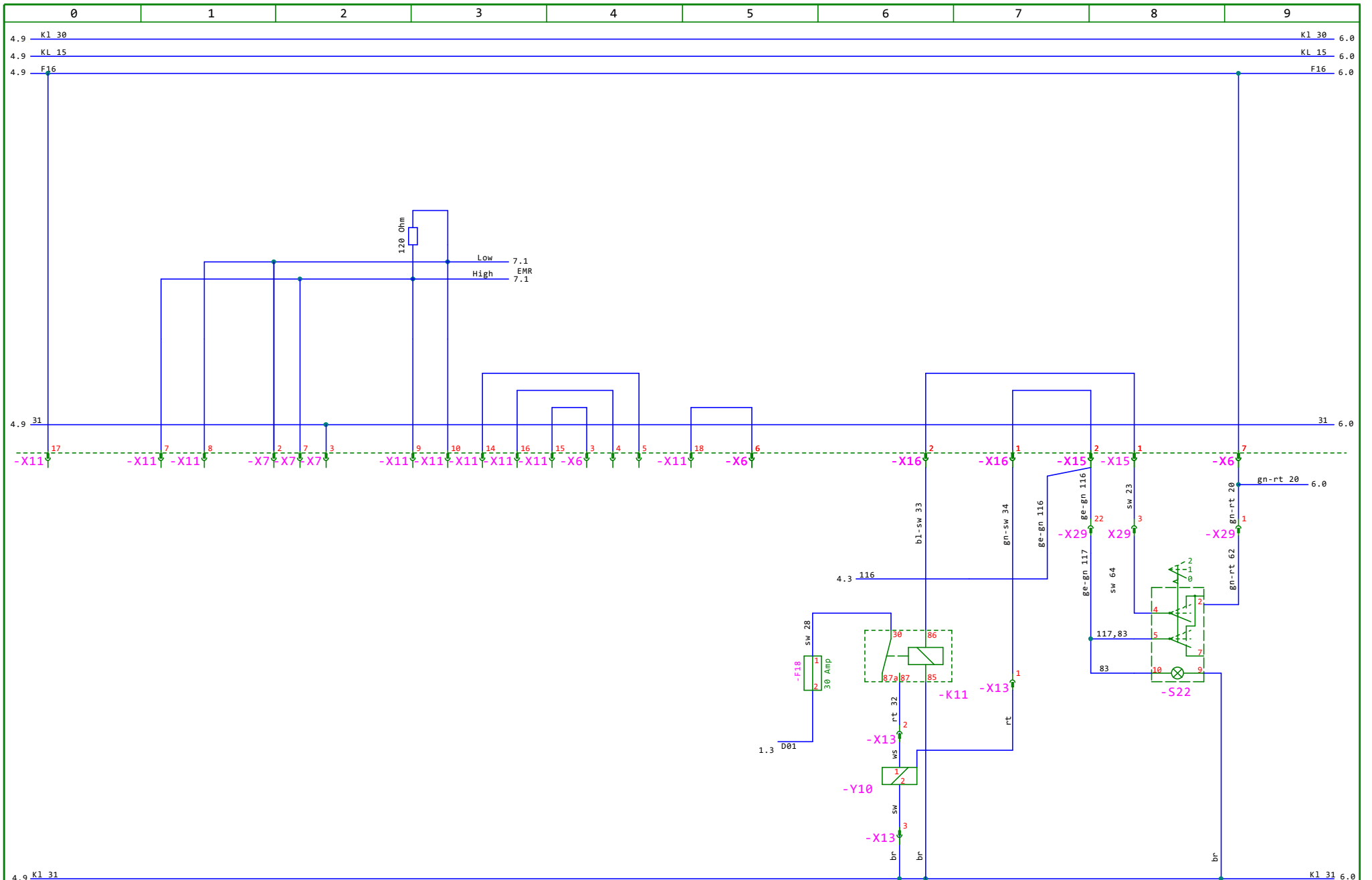
Regeneration : (I) oben = Stillstandsregeneration
(II) unten = Regeneration. verschieben

INTERN!

XX-XX 00
 XX-XX 00
 XX-XX 00
 XX-XX 00
 1.9 KL50 KL30 17.7
 XX-XX 00

Vorsteuerung
 SERVO CONTROL
 Schwimmstellung
 FLOATING POSITION

001	07.05.19	Ledoux	Datum	07.05.2019								
			Bearb.	R Ledoux								
			Gepr.									
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d	Vers 01	Atlas Weyhausen GmbH Maschinenfabrik 27793 Wiideshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62	Stromlaufplan / circuit diagram	Blatt 22 von 55 Bl.



Drehzahlregelung
speed control

001	07.05.19	Heuer	Datum	07.05.2019			Atlas Weyhausen GmbH Maschinenfabrik 27793 Wildeshausen	PFE-2611 /1110-1140-STVZO Cum 3.8 Typ62	Blatt 55 von 55 Bl.
			Bearb.	W.Heuer				Stromlaufplan / circuit diagram	
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d		

Vers 01