

SERVICE MANUAL



HR25/30T-9

Overview: Chapters

- **Chapter 1: Machine designation, manufacturer, serial number and measuring units**
- **Chapter 2: Technical specifications**
- **Chapter 3: Operating elements & displays**
- **Chapter 4: Options**
- **Chapter 5: Maintenance**
- **Chapter 6: Diesel engine and hydraulic system**
- **Chapter 7: Drum drive**
- **Chapter 8: Vibration drive**
- **Chapter 9: Electrical system**
- **Chapter 10: Steering system & Articulated pendulum joint**

Table of contents

- **Chapter 1: Machine designation, manufacturer, serial number and measuring units**
 - 1.1 Machine designation, intended use and manufacturer 1-2**
 - 1.1.1 Manufacturer 1-2
 - 1.1.1A Distributor 1-2
 - 1.1.2 After-Sales service team of the manufacturer 1-3
 - 1.1.3 Legal measuring units 1-4
 - 1.1.4 Tightening torques (in Nm) for screws and bolts 1-5
- **Chapter 2: Technical specifications**
 - 2.1 Technical specifications 2-2**
 - 2.1.1 Operating data 2-2
 - 2.1.2 Dimensions 2-3
 - 2.1.3 Roll-over protection system 2-4
- **Chapter 3: Operating elements & displays**
 - 3.1 Overview: Driver`s compartment 3-2**
 - 3.1.1 Displays on the dashboard 3-3
 - 3.1.2 Dashboard switches 3-4



- 3.1.3 Steering column switches..... 3-5
- 3.1.4 Control lever (joystick) & vibration frequency lever on the right side, next to the driver`s seat 3-6
- 3.1.5 Roller operation without auto stop function 3-7
- 3.1.6 Roller operation with auto stop..... 3-8

• **Chapter 4: Options**

- 4.1 Edge cutting and pad roller..... 4-2**

• **Chapter 5: Maintenance**

- 5.1 Maintenance measures..... 5-2**
 - 5.1.1 Safety instructions referring to maintenance work..... 5-2
 - 5.1.2 Safety precautions to be taken prior to maintenance work 5-3
 - 5.1.3 Overview: Maintenance..... 5-4
 - 5.1.4 Maintenance instructions referring to the initial operation 5-5
 - 5.1.5 Instruction and demonstration at the machine 5-6
 - 5.1.6 Check list: First inspection after the initial 50 operating hours 5-8
 - 5.1.7 Check list Inspection Maintenance certificate A 5-9
 - 5.1.8 Check list Inspection Maintenance certificate C 5-10
 - 5.1.9 Table of lubricants..... 5-11
- 5.2 Maintenance work 5-12**
 - 5.2.1 Sprinkler system 5-12



- 5.2.2 Diesel engine..... 5-13
- 5.2.3 Hydraulic system 5-16
- 5.2.4 Deutz Maintenance Schedule 5-18

• **Chapter 6: Diesel engine and hydraulic system**

- 6.1 Diesel engine 6-2**
 - 6.1.1 Technical specifications Diesel engine 6-2
 - 6.1.2 Setting the min. and max. Diesel engine idle speed 6-3
- 6.2 Hydraulic system..... 6-6**
 - 6.2.1 Technical specifications hydraulic system 6-6
 - 6.2.2 Maintenance work hydraulic system..... 6-6

• **Chapter 7: Drum drive**

- 7.1 Drum drive..... 7-2**
 - 7.1.1 Technical specifications 7-2
 - 7.1.2 Overview: Drums 7-3
 - 7.1.3 Overview: Drum drive hydraulics..... 7-4
 - 7.1.4 Sequence of functions 7-5
 - 7.1.5 Problems and trouble-shooting..... 7-6
 - 7.1.6 Engine speeds, hydraulic measuring & adjusting values, overview of the measuring points..... 7-7
 - 7.1.7 Overview: Settings at the oil pressure pump of the drive system..... 7-8

- **Chapter 8: Vibration system drive unit**

8.1 Vibration system	8-2
8.1.1 Technical specifications	8-2
8.1.2 Overview: Vibration system	8-3
8.1.3 Overview: Vibration hydraulics	8-4
8.1.4 Sequence of functions: Vibration.....	8-5
8.1.5 Overview: Control block vibration.....	8-6
8.2 Vibration system: Adjusting instructions	8-7
8.2.1 Frequencies, run-up time and amplitude	8-7
8.2.2 Checking the low vibration frequency.....	8-7
8.2.3 Setting the low vibration frequency	8-8
8.3 Using a sirometer	8-9

- **Chapter 9: Electrical system**

9.1 Electrical system	9-2
9.1.1 Maintenance work related to the electrical system.....	9-3
9.1.2 Overview: Electrical system.....	9-4
9.1.3 Printed circuit board, fuses and relays	9-5
9.1.4 Overview: Switches (for information on functions see circuit diagrams on the following pages)	9-8

• **Chapter 10: Steering & Articulated pendulum joint**

10.1 Steering system and articulated pendulum joint	10-2
10.1.1 Steering system.....	10-2
10.1.2 Technical specifications.....	10-2
10.1.3 Overview: Steering hydraulics and components	10-3
10.2 Articulated pendulum joint	10-4
10.2.1 Installing and dismantling the articulated pendulum joint.....	10-5
10.2.2 Dismantling the steering cylinder of the articulated pendulum joint	10-6




Chapter 1

Machine designation, manufacturer, serial number and measuring units

Contents

This chapter provides you with information about:

- the machine type, the manufacturer
 - the serial number & the type plate
 - measuring units and conversion tables
- 

1.1 Machine designation, intended use and manufacturer

Designation:	Type:
HYUNDAI tandem roller	HR25T-9 / HR30T-9
Purpose of use:	
The HYUNDAI tandem rollers serve to compact soil.	
Intended use:	
The HYUNDAI tandem roller may only be used for the purposes and work mentioned in the operating manual. Any other use of the machine for further purposes is considered as misuse and is not permitted.	

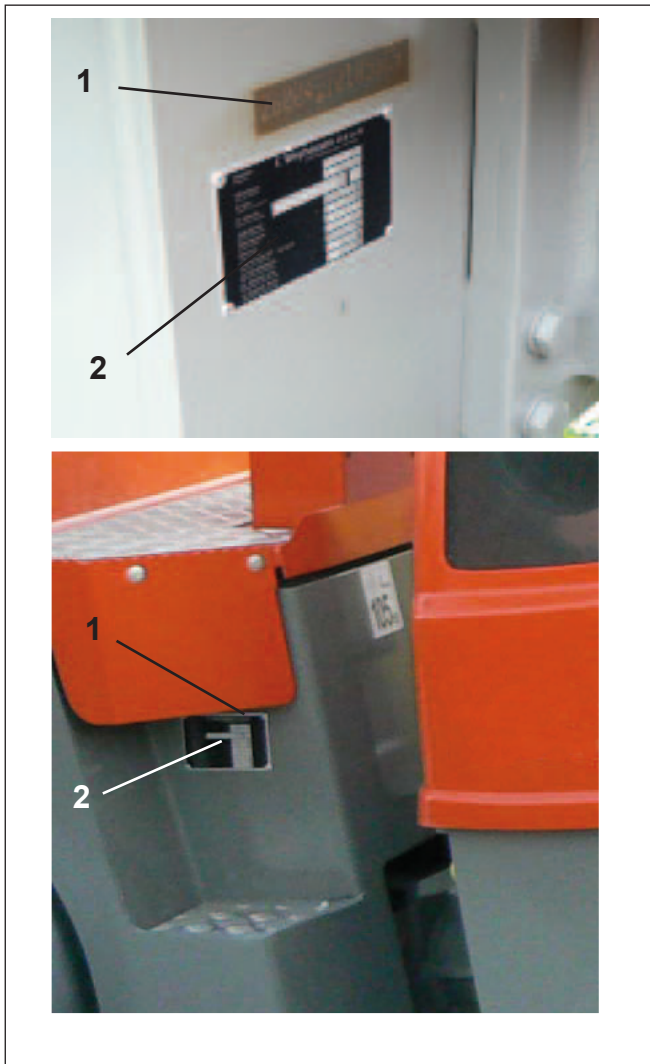
1.1.1 Manufacturer

Name of manufacturer:
ATLAS WEYHAUSEN F. Weyhausen GmbH & Co. KG Maschinenfabrik
Address:
27793 Wildeshausen, Visbeker Straße 35 (Germany)
Contact:
Phone: +49 (0) 4431 981 - 0 Fax: +49 (0) 4431 981 - 139 E-Mail: info@f-veyhausen.de Web: www.atlaswalzen.com

1.1.1A Distributor

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

1.1.3 Type plate and serial number



Type plate labeling

3 6 0 0 X X X X 1 2 3 4 5 6

The serial number (1) features reference numbers **X** in order to identify specific equipment. The serial number (1) can be found on the type plate (2) on the left side below the driver's compartment. In addition, it has been punched into the basic frame.

Serial number key:

3 6 0 0 X 1 1 0 1 2 3 4 5 6

Types:

HR25T-9

HR30T-9

Engine output:

22.5 kW

33.6 HP

Transmission/Drive

Standard

Driver's compartment

Standard

current serial number

1.1.4 Legal measuring units

Measuring system:	Matric	Inch
	25.40 mm	1 in (inch)
	1 kg	2.205 lbs
	9.81 Nm (1 kpm)	7.233 lbf x ft (pound-force foot)
	1.356 Nm (0.138 kpm)	1 lbf x ft (pound-force foot)
	1 kg / cm	5.560 lbs
	1 bar (1.02 kp/cm²)	14.233 psi (pound-force per square inch lb/in²)
	0.070 bar (0.071 kp/cm²)	1 psi (lb/in²)
	1 liter	0.264 Gallon (Imp.) / 0.220 Gallon (US)
	3.785 liters	1 Gallon (US)
	4.456 liters	1 Gallon (Imp.)
	1609.344 m	1 mile
	0° C (Celsius)	+ 32° F (Fahrenheit) / 273.15 Kelvin

1.1.5 Tightening torques (in Nm) for screws & bolts

Standard metric ISO thread DIN 13, sheet 13			
Dimensions	8.8	10.9	12.9
M4	2.8	4.1	4.8
M5	5.5	8.1	9.5
M6	9.5	14	16.5
M7	15	23	28
M8	23	34	40
M10	46	68	79
M12	79	115	135
M14	125	185	215
M16	195	280	330
M18	280	390	460
M20	390	560	650
M22	530	750	880
M24	670	960	1100
M27	1000	1400	1650
M30	1350	1900	2250
M33	1850	2600	3000
M36	2350	3300	3900
M39	3000	4300	5100

Standard metric ISO thread DIN 13, sheet 13

Dimensions	8.8	10.9	12.9
M 8 x 1	24	36	43
M 9 x 1	36	53	62
M10 x 1	52	76	89
M10 x 1.25	49	72	84
M12 x 1.25	87	125	150
M12 x 1.5	83	120	145
M12 x 1.5	135	200	235
M14 x 1.5	205	300	360
M16 x 1.5	310	440	520
M18 x 1.5	290	420	490
M20 x 1.5	430	620	720
M22 x 1.5	580	820	960
M24 x 1.5	760	1100	1250
M24 x 2	730	1050	1200
M27 x 1.5	1100	1600	1850
M27 x 2	1050	1500	1800
M30 x 1.5	1550	2200	2550
M30 x 2	1500	2100	2500
M33 x 1.5	2050	2900	3400
M33 x 2	2000	2800	3300
M36 x 1.5	2700	3800	4450
M36 x 3	2500	3500	4100
M39 x 1.5	3450	4900	5700
M39 x 3	3200	4600	5300



NOTE!

Friction coefficient: μ total = 0.12 for screws and nuts without post-treatment as well as phosphated nuts. **Tighten by hand!**




Chapter 2

Technical specifications

Contents

This chapter provides you with information about:

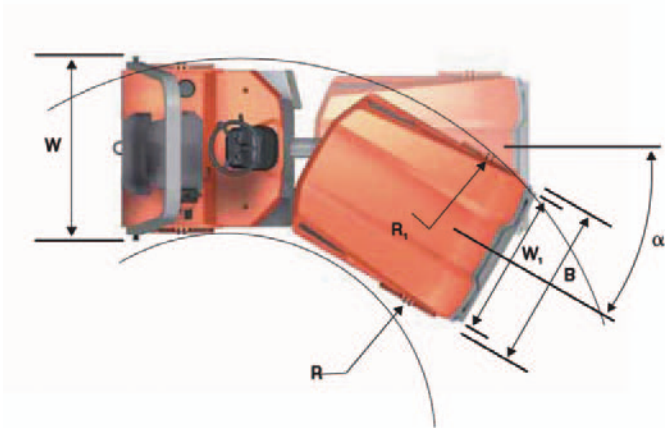
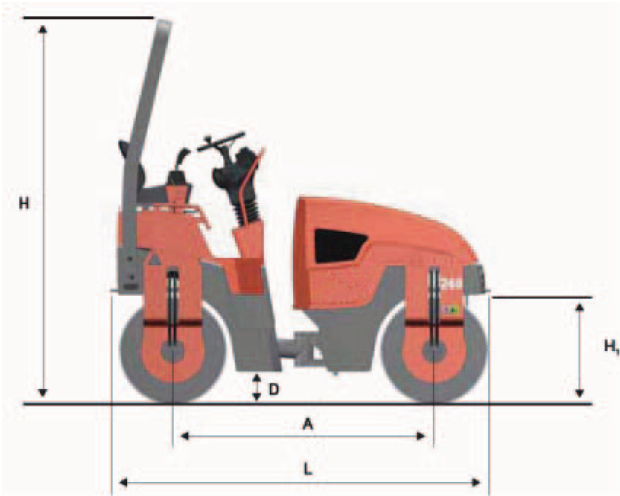
- the technical specifications of the tandem rollers and the Diesel engine
 - the dimensions of the tandem roller
 - the fill levels of the fluids and lubricants
- 

2.1 Technical specifications

2.1.1 Operating data

Tandem roller type	HR25T-9	HR30T-9
General data:		
Service weight	2450 kg	3000 kg
Average axle load	1225 kg	1500 kg
Compaction performance:		
Average linear drum load	12.25 kg/cm	12.00 kg/cm
Amplitude	0.5 mm	0.5 mm
Frequency I/II	53 / 61 Hz	52 / 58 Hz
Centrifugal force I/II	21.5 / 28 kN	29 / 37 kN
Drum:		
Drum width	1000 mm	1250 mm
Drum diameter	750 mm	750 mm
Drum thickness	12 mm	12 mm
Lateral drum offset	50 mm	50 mm
Drive/Transmission:		
Speed	0-9 km/h	0-9 km/h
Angular movement	+/- 12°	+/- 12°
Gradeability with/without vibration	30% / 35%	30% / 35%
Noise level:		
Sound power level L_{WA}	105 dB	105 dB

2.1.2 Dimensions



Tandem roller	HR25T-9	HR30T-9
A	1830 mm	1830 mm
B	1180 mm	1414 mm
D	166 mm	166 mm
H	2720 mm	2720 mm
H ₁	750 mm	750 mm
L	2670 mm	2670 mm
R	2865 mm	2740 mm
R ₁	3865 mm	3990 mm
W	1050 mm	1300 mm
W ₁	1000 mm	1000 mm
α	+ / - 30°	+ / - 30°

Fill levels

HR25T-9 / HR30T-9	in liters
Fuel tank	50
Hydraulic tank	40
Water tank	210

Diesel engine

HR25T-9 / HR30T-9	
Make	Deutz 2011 L2 i
Nominal output in kW / HP	22.5 / 33.6

Speed

HR25T-9 / HR30T-9	in km/h
Speed	0 - 9

2.1.3 Roll-over protection system

- The tandem roller is equipped with a roll-over bar.




Chapter 3

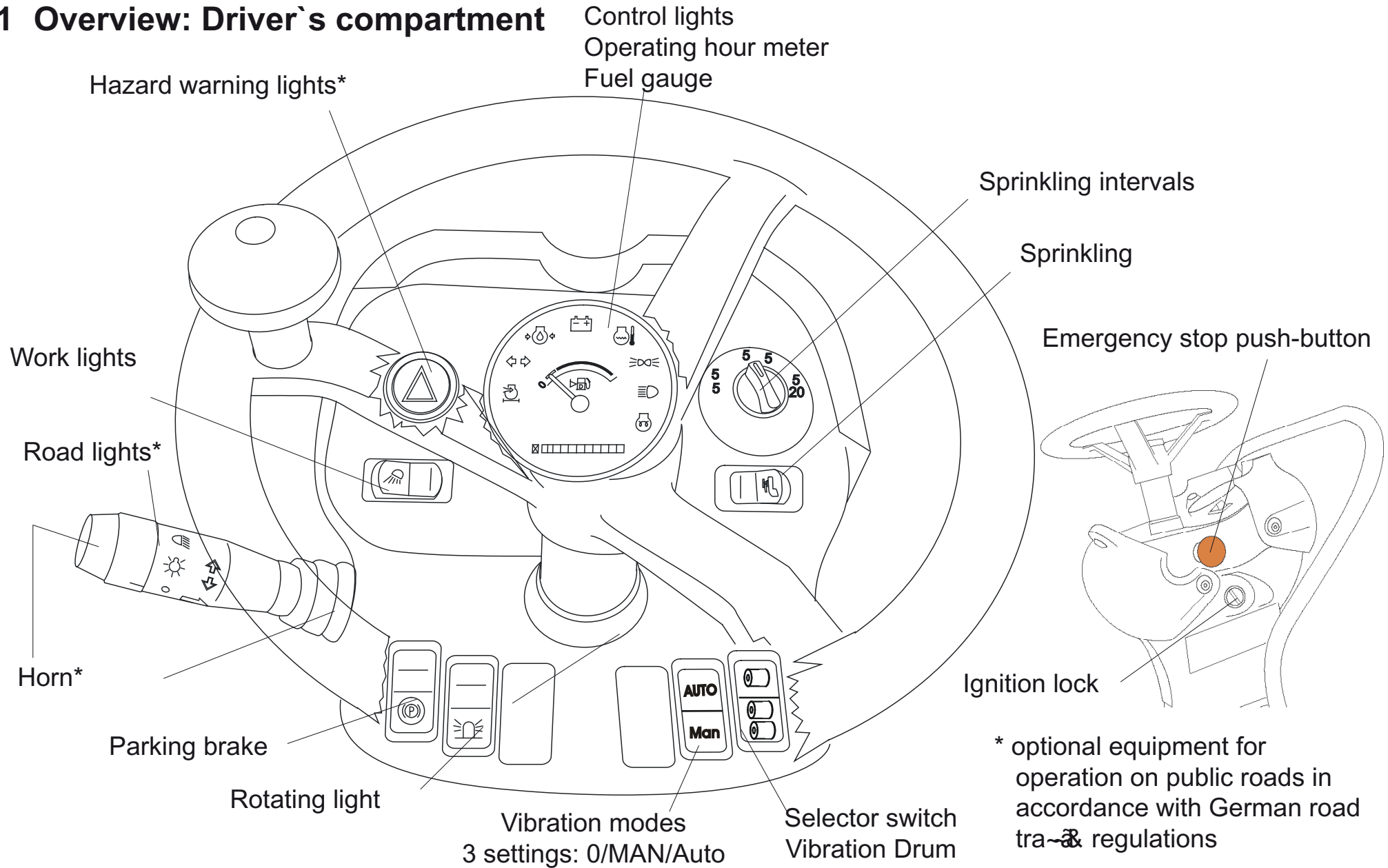
Operating elements & displays

Contents

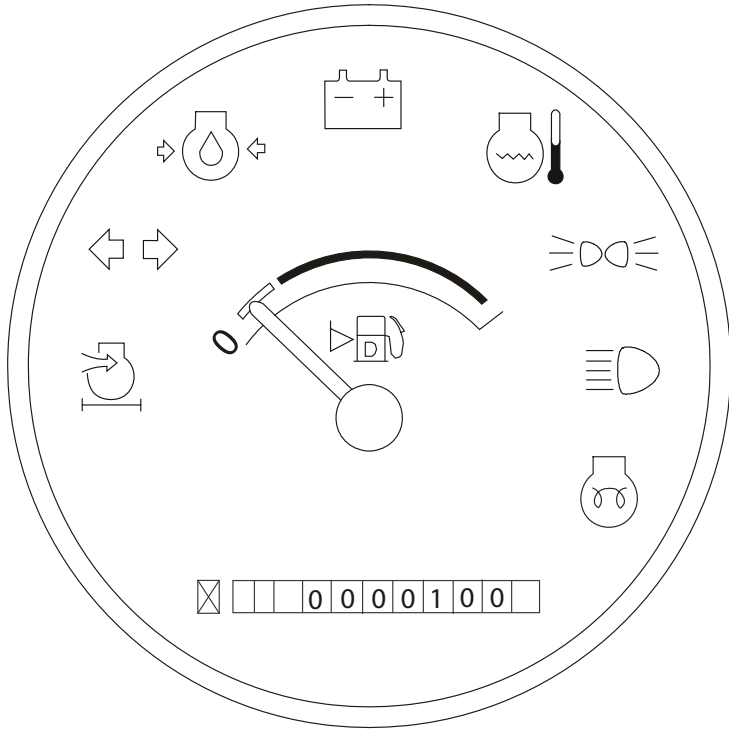
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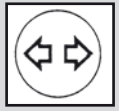
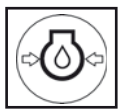
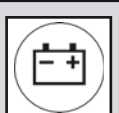

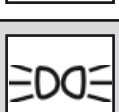


- the layout of the control elements & displays
 - the functions of the control levers
 - switches and circuitries referring to roller operation
- 

3.1 Overview: Driver`s compartment

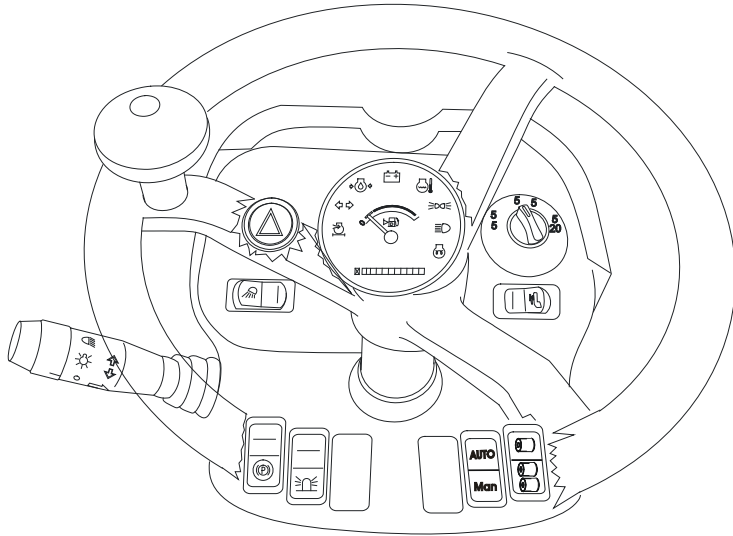









3.1.1 Displays on the dashboard



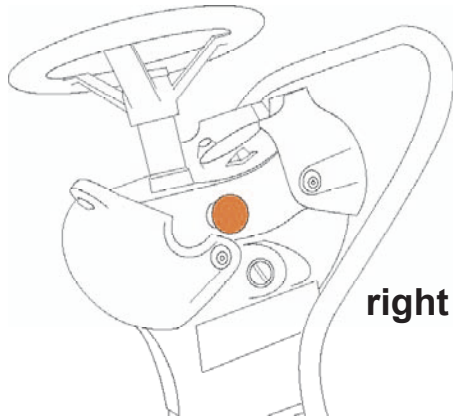
Symbol	Function	Description
	Warning light: soiled Diesel engine air filter (yellow)	If this light is activated, clean or replace the filter, see maintenance instructions in the operating manual.
	Control light turn signals (green)	Flashes when the turn signals have been activated. For vehicles with StVZO equipment/MOT approval only.
	Warning light Diesel engine oil pressure (red)	Immediately turn off the Diesel engine if this display is activated during operation.
	Warning light charge control (red)	Lights up on activation of the ignition. Goes out as soon as the Diesel engine and the generator have started.
	Warning light engine oil temperature (red)	Indicates that the engine oil temperature is too high. See maintenance instructions in the operating manual.
	Control light low beam lights (green)	For vehicles with StVZO equipment/MOT approval only
	Control light brights (blue)	- w/o function -
	Display preheat (yellow)	- w/o function -

3.1.2 Dashboard switches


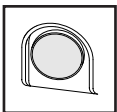


Symbol	Function	Description
	Switch hazard warning lights	Activates the hazard warning lights
	Switch work lights	Activates the front/rear work lights
	Switch parking brake	Activates the parking brake
	Selector switch Sprinkling intervals	Selector switch for sprinkling intervals: The following settings are available: <ul style="list-style-type: none"> • 5/5 = sprinkling time: 5 secs, pause time: 5 secs • 5/10 = sprinkling time: 5 secs, pause time: 10 secs
	Switch water pump Sprinkling on/off	Activates the water pump of the sprinkler system
	Selector switch Drum vibration	Selector switch for drum vibration: forward = front drum vibration backwards = front & rear drum vibration
	Selector switch Vibration modes	Selector switch for the following vibration modes: <ul style="list-style-type: none"> • 0 = off • MAN = on • Auto = Auto stop

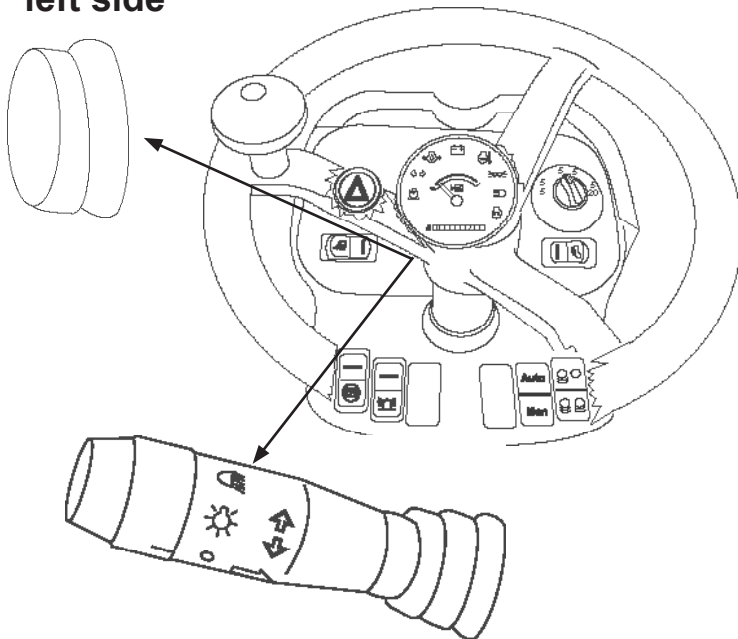
3.1.3 Steering column switches

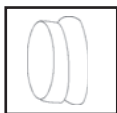



right side

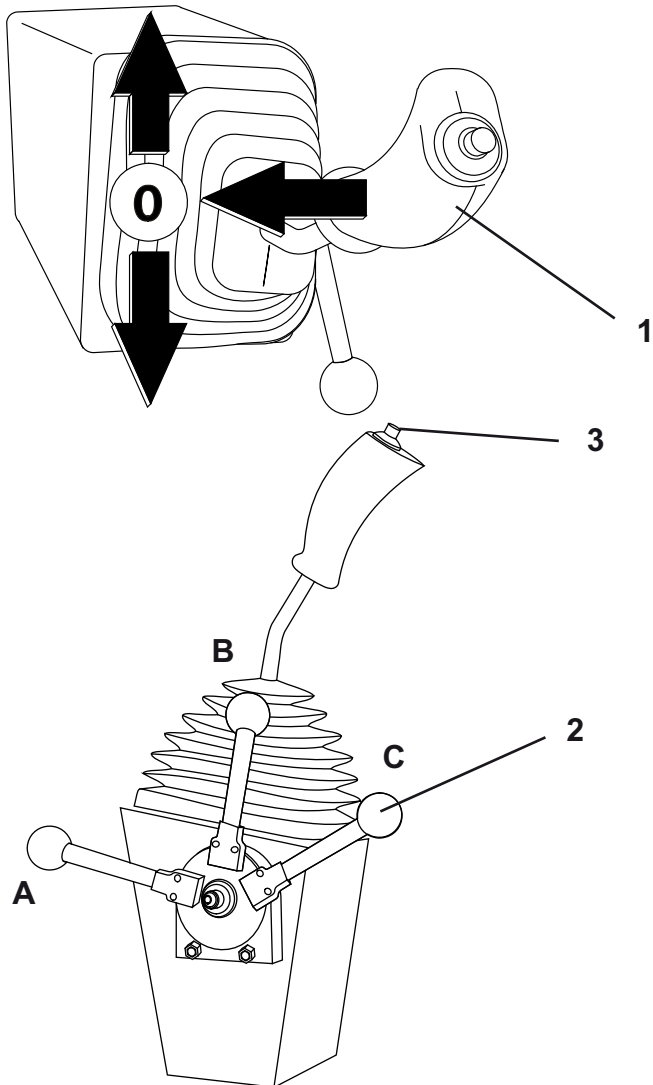
Switch	Function	Description
	Ignition lock	<ul style="list-style-type: none"> • Ignition off • Ignition on • Engine start
	Emergency stop push-button	In an emergency which calls for an immediate stop of the tandem roller, push the emergency stop push-button.

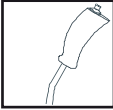
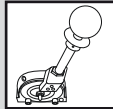
left side



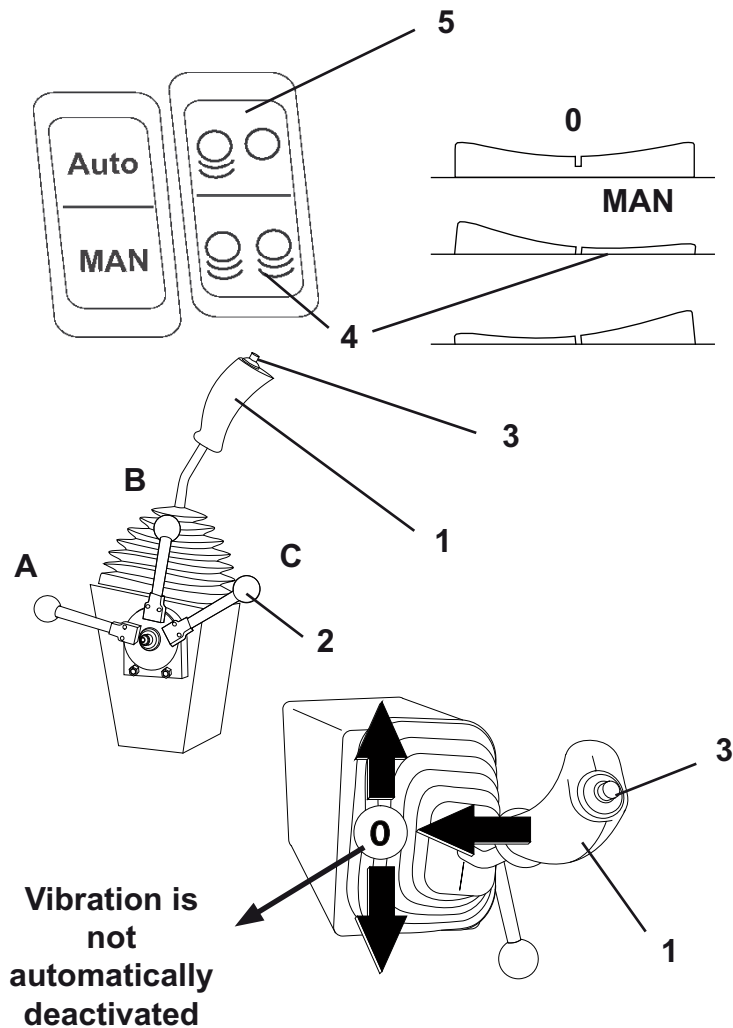
Switch	Function	Description
	Push-button horn (Standard equipment)	serves to activate the horn
	Steering column lever (Optional equipment)	<p>for vehicles with StVZO equipment/MOT approval only! Functions integrated in the steering column lever:</p> <ul style="list-style-type: none"> • Push-button horn • Rotary switch for road lights • Steering column switch (up/down) for turn signals

3.1.4 Control lever (joystick) & vibration frequency lever on the right side, next to the driver`s seat



	Function	Description
	Control lever (Joystick)	<ul style="list-style-type: none"> The joystick (1) controls the functions related to driving. Move the joystick forward: forward travel Move the joystick backwards: reverse travel <p>Button Vibration on/off (3): Activates or deactivates vibration (with or w/o auto stop)</p>
	Vibration frequency (or: Diesel engine speed gearshift) lever	<p>The frequency lever (2) serves two purposes:</p> <p>a) adjusting the Diesel engine speed for driving and roller operation</p> <p>b) setting a high/low vibration frequency</p> <p>Settings of the lever:</p> <ul style="list-style-type: none"> Position A: Lever moved backwards, Diesel engine Idle speed Position B: Lever moved upwards, Diesel engine set to driving speed & a low frequency in the vibration mode Position C: Lever moved forward, Diesel engine speed set to roller operation & a high frequency in the vibration mode

3.1.5 Roller operation without auto stop function



Operation without auto stop: low or high vibration frequency

Settings:

- Selector switch Vibration mode (4) in position **MAN**: manual vibration control is activated
- Selector switch Drum Vibration (5):
 - forward: Vibration at the front drum only
 - backward: Vibration at the front and rear drum
- Setting the frequency lever (2) to the desired Diesel engine speed & vibration frequency:
 - Frequency lever set to Position **B**:
low frequency 52/53 Hz
 - Frequency lever set to Position **C**:
high frequency 58/61 Hz
- Push the button vibration on/off (3) in order to activate the vibration.

Implications:

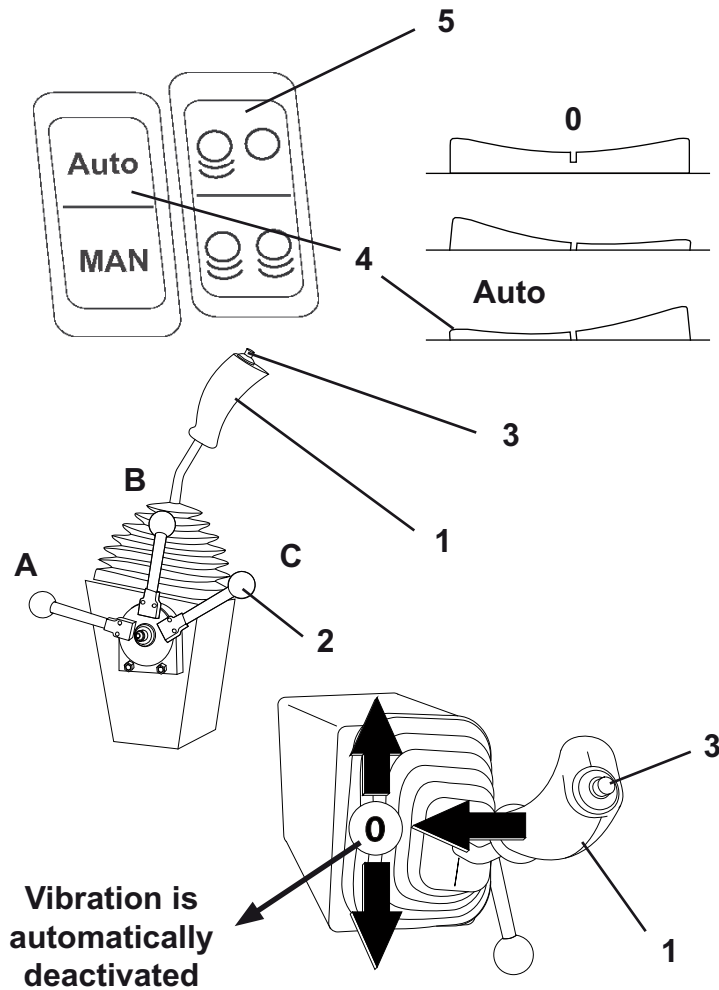
The manual vibration mode **MAN** w/o auto stop has been set:

- Vibration at a low/high frequency is possible, depending on the position of the lever
- Vibration at the front drum or the front and rear drum

If the vibration mode has been activated by means of button 3:

- Setting the control lever (1) to position **0** does **not** automatically deactivate the vibration mode. Button 3 needs to be pushed in order to deactivate the vibration.

3.1.6 Roller operation with auto stop



Operation with auto stop: low or high vibration frequency

Settings:

- Selector switch vibration mode (4) in position **Auto**: vibration control with **auto stop** is activated
- Selector switch drum vibration (5):
 - forward: Vibration at the front drum only
 - backward: Vibration at the front and rear drum
- Setting the frequency lever (2) to the desired Diesel engine speed & vibration frequency:
 - Frequency lever set to Position **B**:
low frequency 52/53 Hz
 - Frequency lever set to Position **C**:
high frequency 58/61 Hz
- Push the button Vibration on/off (3) in order to activate the vibration.

Implications:

The **auto stop** vibration mode has been set:

- Vibration at a low/high frequency is possible, depending on the position of the lever
- Vibration at the front drum or the front and rear drum

If the vibration mode has been activated by means of button 3:

- Setting the control lever (1) to position **0** automatically deactivates the vibration mode. Button 3 does not need to be pushed in order to deactivate the vibration.



Chapter 4

Options

Contents

This chapter provides you with information about:

- the functions of the edge cutting and pad roller



4.1 Edge cutting and pad roller

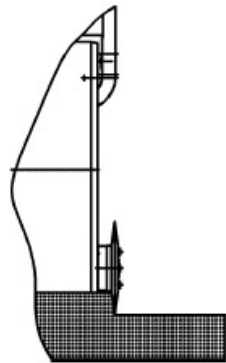
Overview: Edge cutting and pad roller



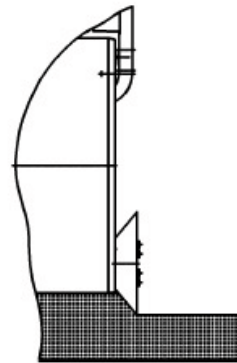
Operating unit



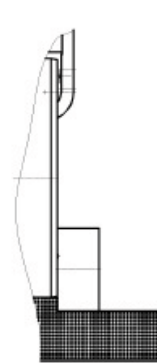
Pump unit



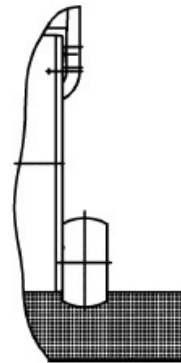
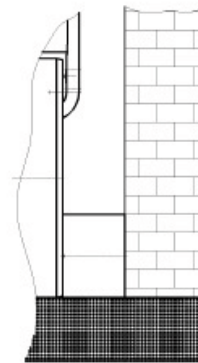
Cutting disk



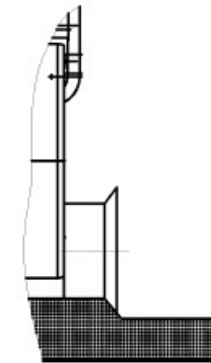
Pressure roll



Cylindrical roll

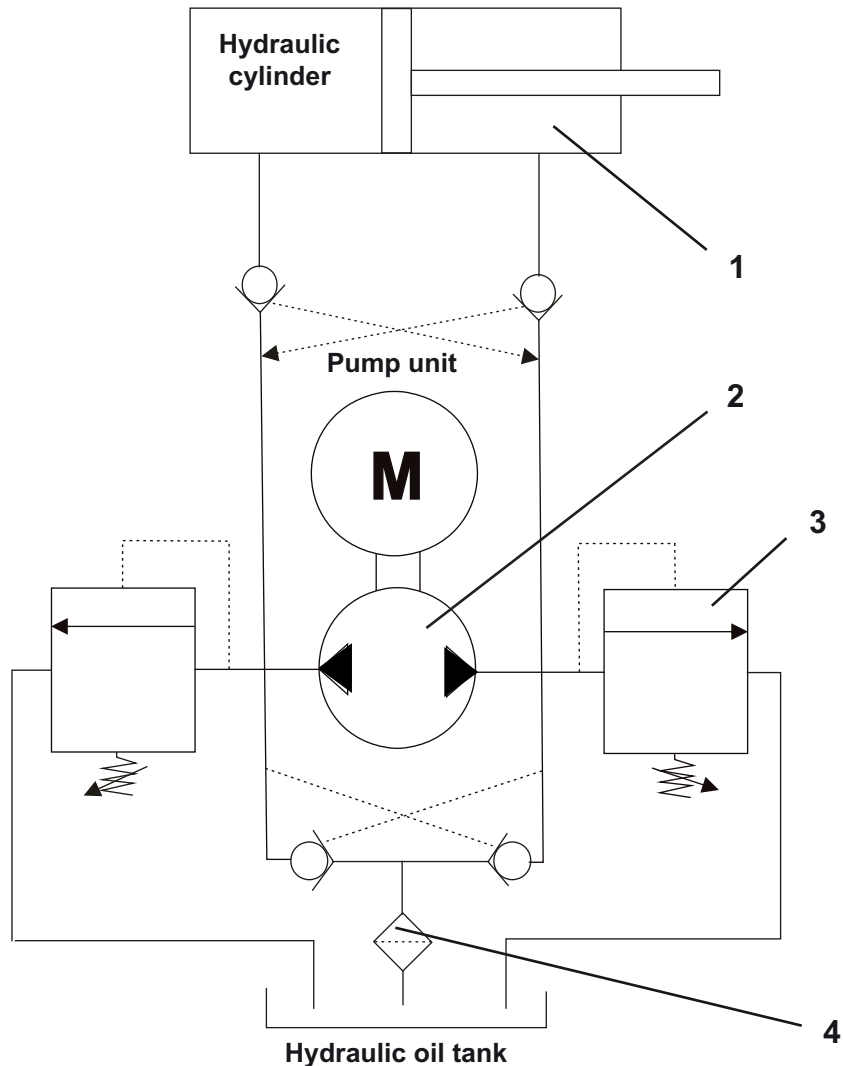


Trench roll



T cap

Edge cutting and pad roller: Hydraulic system



Description:

- The contact pressure of the device is generated by a hydraulic cylinder (1), whose lifting motion causes the cutting arm with the tool to be pressed onto the surface.
- The device is activated by means of a toggle switch on the control panel.
- When the device is not in use, the cutting arm is moved to the top (i.e. rest) position. Thus, damage to the device and the asphalt is prevented.



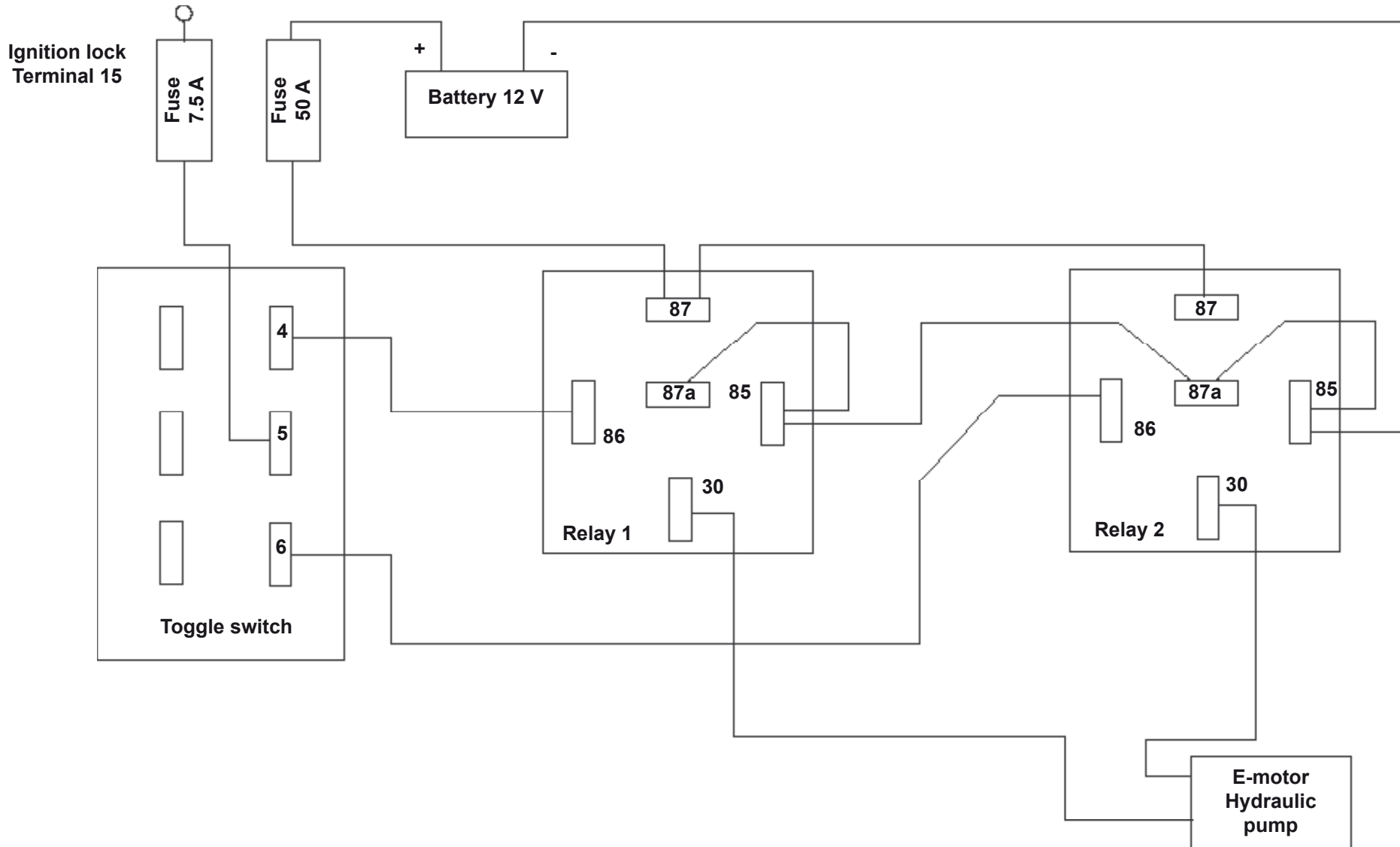
NOTE!

Please note that cutting or (com)pressing asphalt is possible only as long as the asphalt layer is warm!

- The edge cutting and pad roller has been specifically designed for straightening sidewalks and cycle paths; it has proven to be the ideal tool for this type of work. In addition, the device is highly suitable for pressing and compressing farm tracks and cycle paths.

- 1 Hydraulic cylinder
- 2 Hydraulic pump
- 3 Pressure control valves
- 4 Hydraulic oil filter

Edge cutting and pad roller: Electrical system






Chapter 5

Maintenance

Contents

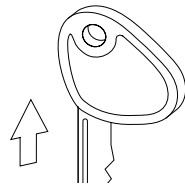
- This chapter provides you with information about:
- the required service and maintenance work
- 

5.1 Maintenance measures

5.1.1 Safety instructions referring to maintenance work



**Do not activate!
Maintenance work
in progress!**



WARNING!

Obligation to inform yourself!

Before taking any maintenance measures, be sure to consult the chapters on safety instructions and safety precautions for maintenance work in the operating manual!



WARNING!

Obligation to inform yourself

Reading and observing the safety instructions and warnings stated in this training manual is of vital importance before and while carrying out any work related to maintenance and servicing.



WARNING!

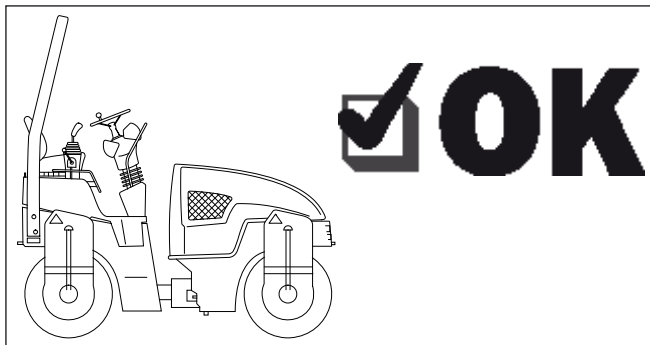
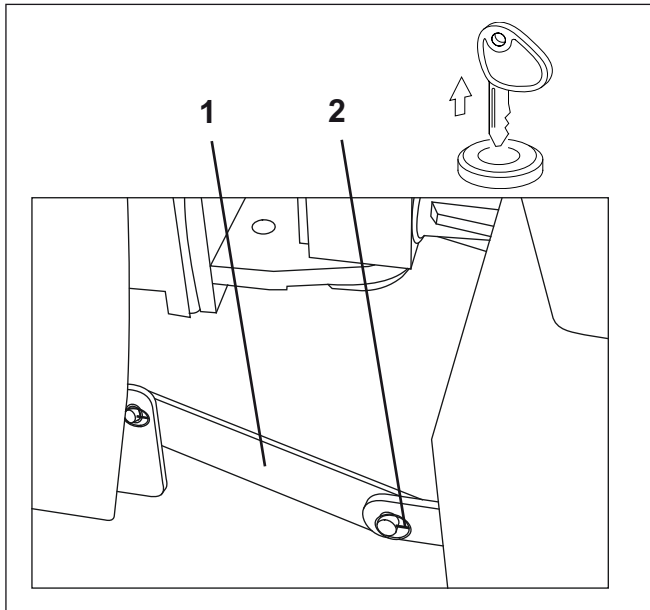
Prior to conducting any maintenance measures, put up warning signs indicating the execution of maintenance work on the site.



WARNING!

In order to prevent the tandem roller from unintentionally starting, remove and store the ignition key.

5.1.2 Safety precautions to be taken prior to maintenance work



Securing the tandem roller before taking any maintenance measures:

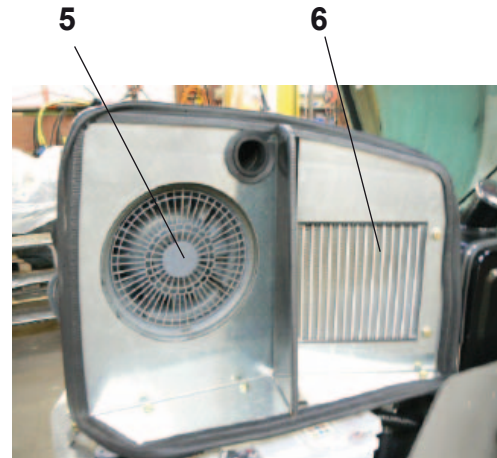
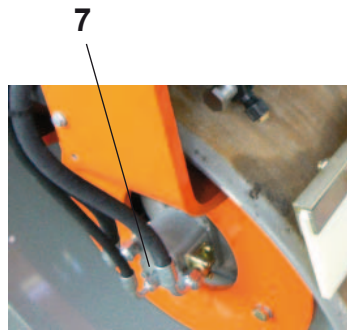
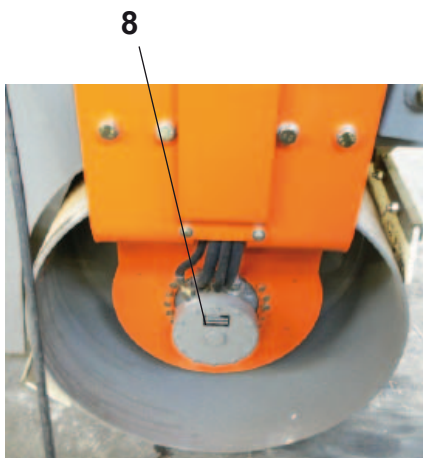
Stop the Diesel engine and secure it against unintentional activation by pulling out the ignition key.

- Apply (activate) the parking brake.
- Secure the drums 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 tandem roller's stability.
- Protect the work area against moisture and dirt.
- Check whether the hydraulic system is depressurized.
- For work at the front end or the steering system, always insert and fasten the anti-buckling device (1) between the front and the rear end (2).
- Use only tools that are mentioned and recommended in the operating and maintenance manual.

After completing the maintenance work:

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

5.1.3 Overview: Maintenance



- 1 Diesel engine
- 2 Hydraulic tank
- 3 Fuel tank
- 4 Hydraulic pump assembly
- 5 Diesel engine cooler
- 6 Hydraulic oil cooler
- 7 Vibration drive
- 8 Drum drive

5.1.4 Maintenance instructions referring to the initial operation

Delivery receipt:



NOTE!

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

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

Testing the operating state of the tandem roller



NOTE

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

Checking the fill levels:

Check whether the following fill levels correspond to the required levels as stated in the maintenance manual:

- Engine oil level
- Hydraulic oil level

Screw connections:

- Check all screw connections

Hydraulic system:

- Check the hydraulic hoses and screw connections for leaks

5.1.5 Instruction and demonstration at the machine



NOTE!

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

Vehicle documents and operating manual:

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



NOTE!

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

Operating elements and displays (driver`s compartment):

When giving the operating staff instructions related to the driver`s compartment, 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 - and engine oil types.

Working with the machine:

Soil compaction options

Vibration modes

Operation on slopes

Driving the machine:

Transporting the tandem roller

Refer to the corresponding instructions in the operating and maintenance manual when explaining the towing process.

Maintenance work:

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 immediate expiry of the warranty.

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

Diesel engine:



NOTE!

In addition to the measures stated here, refer to the operating manual of the Diesel engine manufacturer and observe the instructions.

Checking the fill levels:

Check the engine oil level.

Check the hydraulic oil level.

Screw connections:

Check the screw connections of the engine mounting at the Diesel engine.



NOTE!

For the required tightening torques, refer to the instructions provided by the Diesel engine manufacturer.

Hydraulic system:

Tighten the screw connections at the articulated pendulum joint.

Tighten all other screw connections.

Check the hydraulic oil cooler (clean it, if necessary).

Replace the filter cartridge at the hydraulic tank.

Check the ventilation filter of the hydraulic tank.

Check the hydraulic hoses and screw connections for leaks.

Diesel engine:

Tighten the fastening screws of the exhaust system.

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

At operating temperature, check the air filter system for leaks.

Check the fastening screws of the air intake system (tighten them, if necessary).

Engine oil change with filter.

Replace the Diesel filter.

Clean the sieve in the Diesel supply pump.

5.1.7 Check list Inspection Maintenance certificate A



NOTE!

The lubrication and maintenance work related to maintenance certificate A needs to be carried out at intervals of 10 operating hours or on a daily basis. Be sure to observe the corresponding instructions in the operating manual.

- Lubrication:**
- Check the fill level of the Diesel engine and clean the engine oil cooler.
 - Check the hydraulic oil cooler (clean it, if necessary).
 - Check the hydraulic oil level.
 - Clean the water filter of the sprinkler system.
 - Check and, if necessary, clean the air filter.
 - Check the electrical system



NOTE!

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

5.1.8 Check list Inspection Maintenance certificate C



NOTE!

In addition to the maintenance measures stated here, be sure to carry out the work related to **Maintenance certificate A!**

- Screw connections:** Tighten the screw connections of the engine mounting at the Diesel engine.
 Tighten the fastening screws of the exhaust system.
 Tighten the screw connections at the articulated pendulum joint.
 Check all other screw connections.

- Hydraulic oil cooler:** Clean.

- Checking and changing the filters:** Replace the Diesel filter.
 Clean the sieve in the Diesel supply pump.
 Replace the ventilation filter (hydraulic tank).
 Change the engine oil with the filter.

- Air filter system of the Diesel engine:** At operating temperature, check the air filter system for leakage; tighten the fastening screws of the air intake system, if necessary.

- Checking the fill levels:** Check the oil level at the aggregates (add oil, if necessary)
 Hydraulic system
 Diesel engine

- Adjustments:** Check & adjust the operating pressures of the driving, steering & vibration hydraulics.



NOTE!


Carry out all maintenance work related to the Diesel engine and other parts produced by third-party manufacturers in accordance with their maintenance instructions.

5.1.9 Table of lubricants

Greasing point	Lubricant	Viscosity	Equivalent standard
Diesel engine	API classification	SAE 10 W	
Arctic climate	CG 4/CH 4	SAE 20 W - 20	
Temperate climate		SAE 30	
Tropical climate		SAE 40	
All climates		SAE 15 W - 40	New machine
Hydraulic oil	ATLAS Spezial 46	ISO VG 32 ISO VG 46 ISO VG 68	New machine Pay particular attention to the specifications referring to operation with temperatures below 0° C. Be sure to preheat the hydraulic oil sufficiently.

5.2 Maintenance work

5.2.1 Sprinkler system

Illustration	Maintenance work: Sprinkler system
 A photograph showing a close-up of a sprinkler system's water filter. The filter is a cylindrical component with a metal mesh, mounted on a grey plastic base. A yellow hose is connected to the side of the filter. A black drip pan is positioned directly below the filter's outlet to catch any leaks. A black water droplet is shown falling from the filter into the pan. The background shows other parts of the machine's internal structure.	<ul style="list-style-type: none">• Prior to activating the sprinkler system, clean the water filter (1).• Remove and rinse the filter cartridge.• If the water filter repeatedly shows an increased accumulation of dirt, rinse the sprinkler system.

5.2.2 Diesel engine

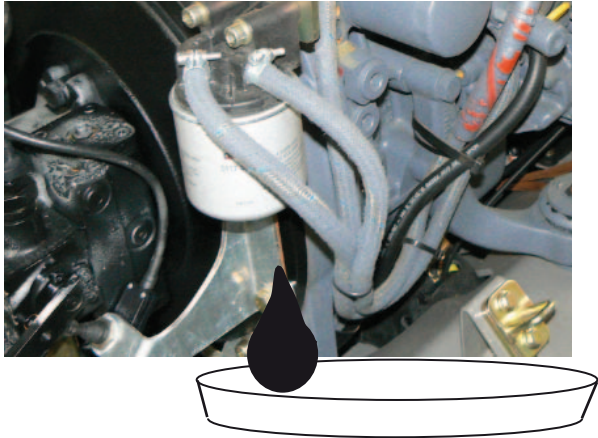
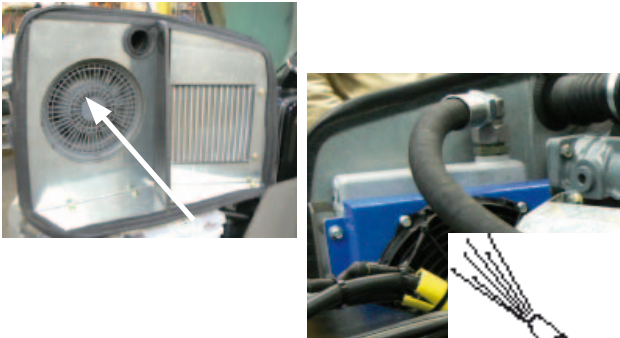
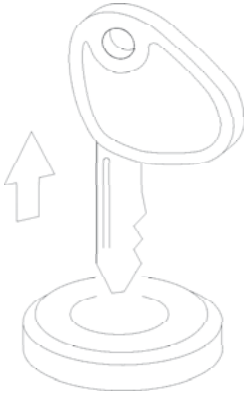
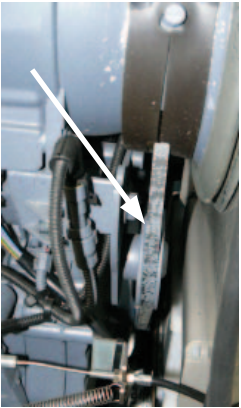
Illustration	Maintenance work: Fuel system
50 operating hours after the initial operation and subsequently, at intervals of 500 operating hours	
 <p>The illustration shows a close-up of a diesel engine's fuel system. A white cylindrical fuel filter is mounted on a console. A black oil drop is shown falling from the filter into a white drip pan positioned below it. Various hoses and engine components are visible in the background.</p>	<p>Replace the preliminary fuel filter (1):</p> <ul style="list-style-type: none"> • Use a tensioning belt to open the filter cartridge. • Immediately remove any leaking fuel. • EU waste disposal key for the filter cartridge: 150299 (EU). • Attach the new filter cartridge (1) to the filter console by manually screwing it on. • Start the Diesel engine. • Ventilate the fuel system, if required, see Deutz Diesel engine operating manual.
Maintenance work: Cooling system	
50 operating hours after the initial operation and subsequently, at intervals of 500 operating hours	
 <p>The illustration consists of three parts: a photograph of a diesel engine's cooling system with a white arrow pointing to a fan; a photograph of a hydraulic oil cooler; and a small diagram of a fan blade.</p>	<p>Diesel engine cooler:</p> <ul style="list-style-type: none"> • For instructions related to cleaning the cooling system of the Diesel engine, see Deutz operating manual. • Make sure that the grill for the cooling air intake is not dirty. Clean it, if necessary. <p>Hydraulic oil cooler:</p> <ul style="list-style-type: none"> • Disassemble the electric fan and protect it against moisture. • Use a high-pressure washer to clean the hydraulic oil cooler from the interior to the exterior.



Illustration **Maintenance work: Checking the V-belt**
50 operating hours after the initial operation and subsequently, at intervals of 500 operating hours



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



WARNING!

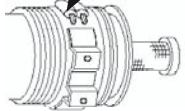
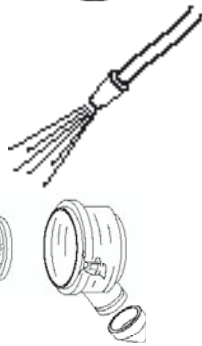
Never check the V-belt tension with the Diesel engine running!
Turn off the Diesel engine and pull out the ignition key.



NOTE!

Refer to the Deutz operating and maintenance manual for instructions related to tensioning and replacing the V-belt.

Maintenance work: Replacing the combustion air filter
50 operating hours after the initial operation and subsequently, at intervals of 500 operating hours



NOTE!

- 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 and dry the interior of the air filter housing and clean it; if necessary, vacuum it.



WARNING!

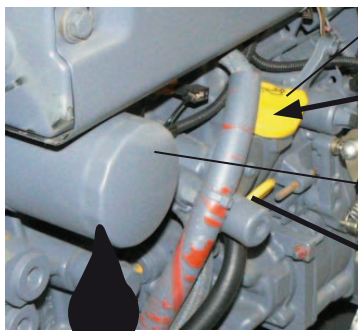
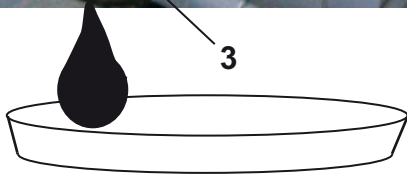
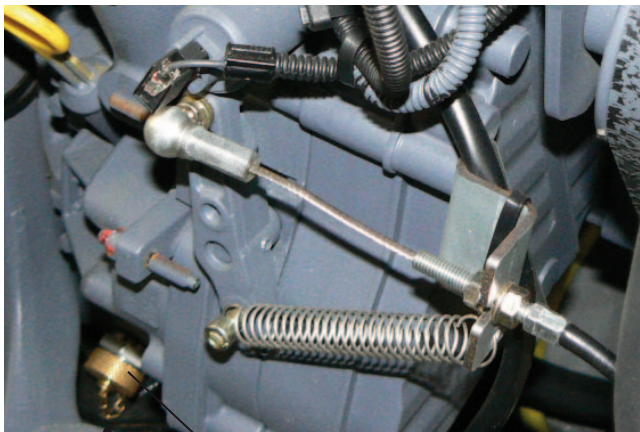
Damage to the Diesel engine!

Never attempt to clean the air filter by blowing air into it!

Illustration

Maintenance work: Engine oil system

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



1. Oil change at the Diesel engine



NOTE!

Take the tandem roller to a workshop in order to carry out the oil change.



WARNING!

Environmental protection!

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 accordance with the EU waste disposal key: 130202.

- Start the Diesel engine and let it run until it has reached operating temperature.
- Stop the Diesel engine and remove the ignition key.



WARNING!

Risk of burns!

The leaking oil, the engine and its environment are extremely hot. Be sure to wear protective clothing!

- Unscrew the oil drain plug (3), pull out the oil dipstick (1) and drain the hydraulic oil.
- Screw in the oil drain plug (3), fitted with a new O-ring.

2. Replacing the oil filter

- Place an oilpan under the oil filter (4) to collect the leaking oil.
- Unscrew the filter housing (cartridge) and dispose of it in accordance with EU waste disposal key 150299.
- Lubricate the surface of the new cartridge. Attach the cartridge and screw it on manually.

3. Adding oil

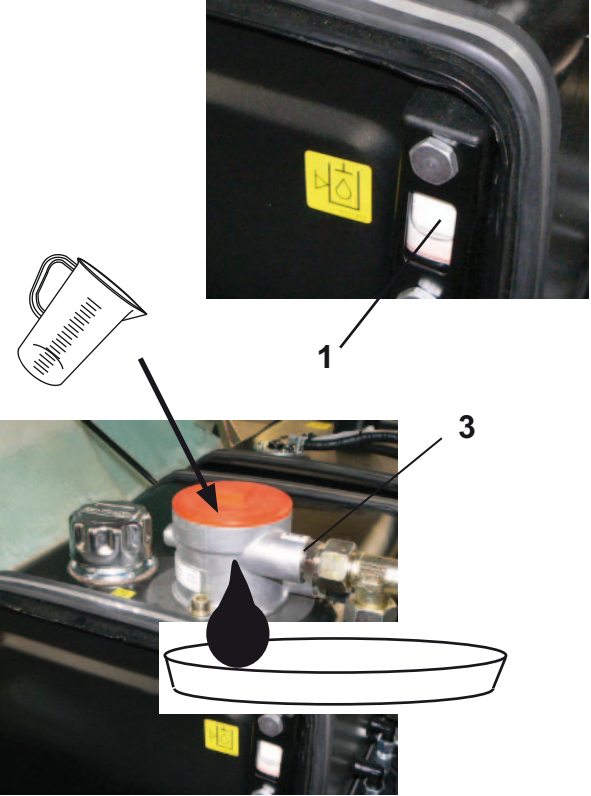


NOTE!

For information on the required specifications of the engine oil, refer to the table of lubricants.

- Fill a sufficient amount of new engine oil into the Diesel engine via the filler neck (2).
- After adding oil, attach the closing cap and start the Diesel engine.
- Check the oil level at the oil dipstick (1). Add oil, if necessary.
- Start the Diesel engine and let it idle until it has warmed up.

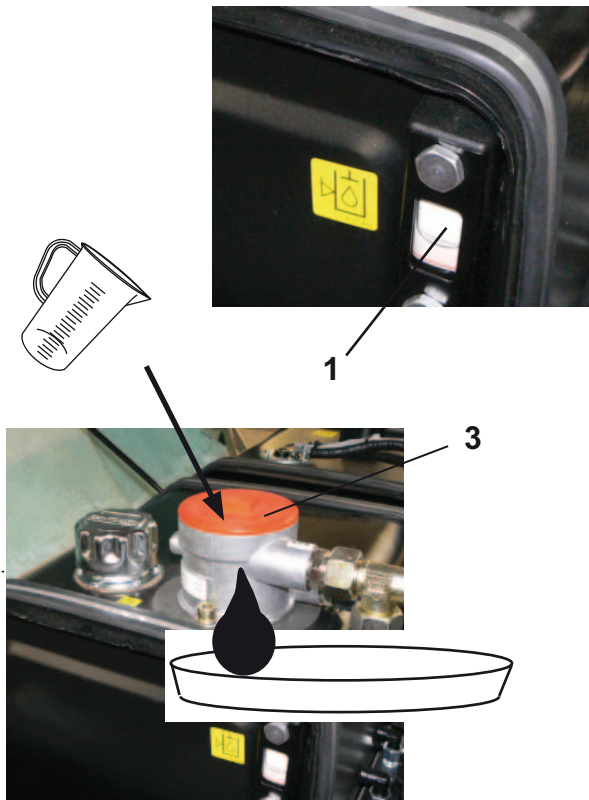
5.2.3 Hydraulic system

Illustration	Maintenance work: Changing the hydraulic oil and the oil filter
50 operating hours after the initial operation and subsequently, at intervals of 500 operating hours	
	<p data-bbox="779 432 2130 544">i NOTE! Before carrying out any maintenance work related to the hydraulic system, be sure to consult the Table of lubricants for information on the specifications of the required hydraulic oils.</p> <p data-bbox="779 592 2130 671">i NOTE! Before replacing the oil filter (3), place a sufficiently dimensioned oil receptacle under the hydraulic tank.</p> <ul data-bbox="763 751 1771 911" style="list-style-type: none">• Unscrew the closing cap of the oil filter (3).• Take out the oil filter cartridge and dispose of it in an environmentally friendly way.• EU waste disposal key: 150299 (EU)• Insert a new oil filter cartridge and attach the cap.• If necessary, add hydraulic oil via the hydraulic oil filter. <p data-bbox="779 943 2130 1078">! CAUTION! 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.</p> <p data-bbox="779 1118 2130 1222">! CAUTION! Damage to the hydraulic system! Never mix different types of hydraulic oil!</p>

Illustration

Maintenance work: Replacing the hydraulic oil and the oil filter cartridges

at intervals of 2000 operating hours (i.e. you need to change the type of oil)



NOTE!

Take the tandem roller to a workshop in order to carry out the oil change.



WARNING!

Environmental protection!

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 accordance with the EU waste disposal key: 130202.

- Start the Diesel engine and let it run until the hydraulic oil has warmed up.
- Stop the Diesel engine and remove the ignition key.
- Place an oilpan under the hydraulic tank.
- Unscrew the ventilation filter.



NOTE!

Be sure to take the amount of hydraulic oil to be drained into account and to use a sufficiently dimensioned oilpan to collect the leaking oil.

- Unscrew the oil drain plug.
- Dispose of the waste oil in an environmentally friendly way (EU waste disposal key 130202).
- Replace the oil filter cartridge (3), see instructions above.
- Screw in the oil drain plug, fitted with a new O-ring.
- Add hydraulic oil via the oil filter.



CAUTION!

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.

- Fill in hydraulic oil via the oil filter.
- 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 at the inspection glass (1).

5.2.4 Deutz Maintenance Schedule

prior to the operation of new/renewed engines	in operating hours (max. permissible time)						once a year	every other year	check	clean	replace	actions to be taken	to be carried out by service staff only
	10 or daily	250	500	1000	6000	12000							
X	X							X			Lubricant fill level: add, if necessary		
			X							X	Lubricant (Intervals dependent on field of application)		
			X							X	Oil filter cartridge (at each change of lubricants)		
				X						X	Fuel filter cartridge		
				X				X			Flexible fuel overflow conduits		
							X			X	Flexible fuel overflow conduits (replace completely)		
							X			X	Injection valve	X	
X								X			Preliminary fuel cleaner		
				X					X		Preliminary fuel cleaner		
X			X					X			Coolant (additive concentrate)		
							X			X	Coolant (additive concentrate)		
						X				X	Coolant pump	X	
X	X							X			Coolant pump		
X	X							X			Air intake filter (according to maintenance display)		
				X						X	Air intake filter (according to maintenance display)		
X				X				X			Charge air cooler (drain lubricant/condensed water)		
							X		X		Charge air cooler (drain lubricant/condensed water)		
				X				X			Battery and cable connections		
X				X				X			Engine supervision, warning system	X	
				X					X		Valve play (adjust, if necessary)	X	
				X				X			V-belt (tension or replace, if necessary)		
							X			X	V-belt (tension or replace, if necessary)		
						X				X	Pressure retention valve at the injection pump	X	
				X				X			Crank case pressure ventilation valve	X	
						X				X	Crank case pressure ventilation valve	X	




Chapter 6

Diesel engine and hydraulic system

Contents

This chapter provides you with information about:

- the specifications of the Diesel engine
 - setting the Diesel engine speed
 - the entire hydraulic system
- 

6.1 Diesel engine



NOTE!

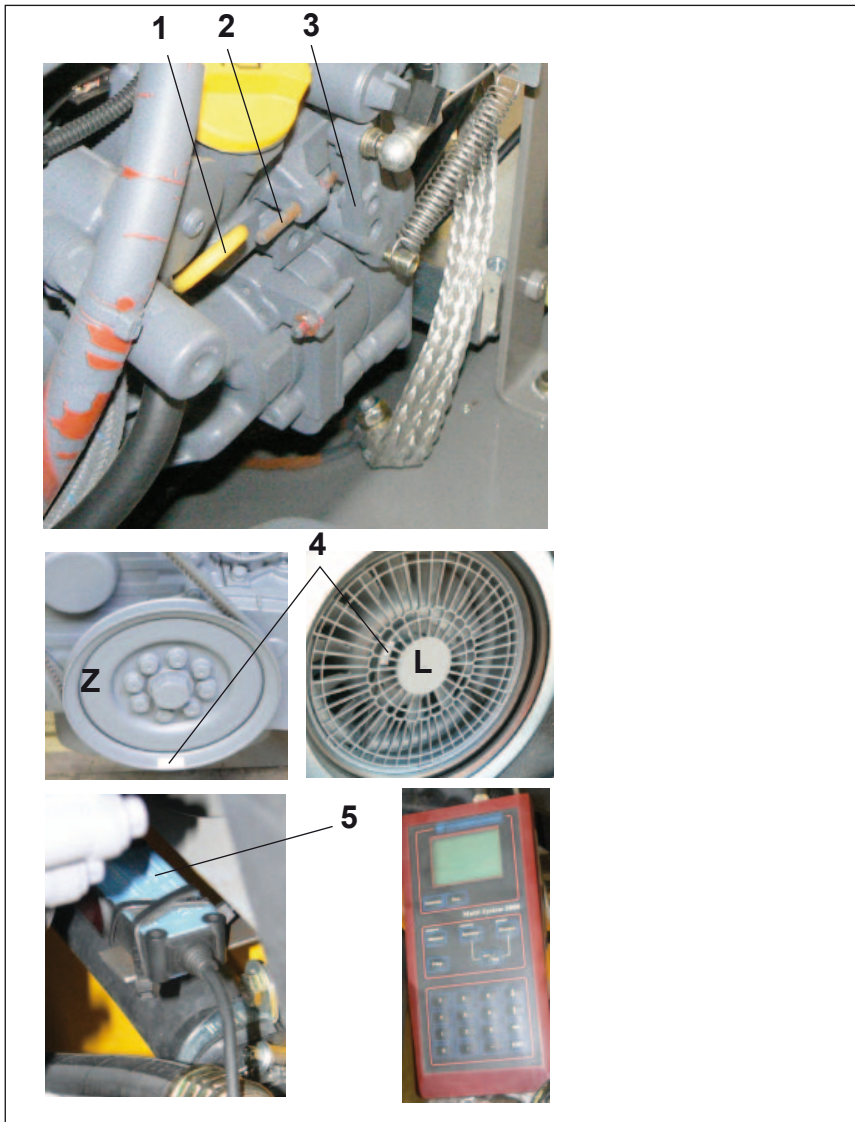
Obligation to inform yourself!

Please refer to the Deutz operating manual for information related to the Diesel engine 2011. The manual is part of the vehicle documentation.

6.1.1 Technical specifications Diesel engine

Tandem roller type	HR25T-9	HR30T-9
Make Diesel engine	Deutz D 2011 L2 I	Deutz D 2011 L2 I
Type	four-stroke Diesel with charging and direct injection	four-stroke Diesel with charging and direct injection
Nominal output	22.5 kW (33.6 HP)	22.5 kW (33.6 HP)
Max. engine speed (min ⁻¹)	2800	2800
Engine oil (with filter, in liters)	5.5	5.5
Cooling	liquid-cooled/cooling protection	liquid-cooled/cooling protection
Diesel tank capacity (in liters)	50	50

6.1.2 Setting the min. and max. Diesel engine idle speed



Setting the Diesel engine to min. idle speed

The upper adjusting screw (2) of the adjustment lever (3) serves to set the min. idle speed. The adjusting screw can be found right next to the oil dipstick (1).



NOTE!

Make sure the Diesel engine has reached operating temperature when carrying out measurements and adjustments.

Speed sensor Diesel engine speed

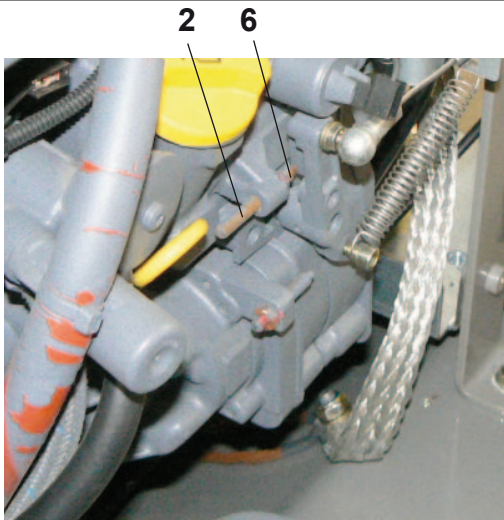
In order to establish the Diesel engine speed, refer to the engine speed value (4) that is indicated on the crank shaft disk of the toothed belt **Z** or on the drive disk of the fan wheel **L**.

Connecting an external engine speed sensor

Install a speed sensor (5) in the area of the crank shaft disk **Z** or the drive disk of the fan wheel **L** in a way that the light sensor of the speed sensor (5) can detect the reflection.

When connecting the speed sensor (5) to the drive disk of the fan wheel **L** to establish the engine speed, you need to consider a transmission ratio of **2.1**.

Example: established engine speed 1250 min^{-1} = actual engine speed 595 min^{-1} .



Establishing the min. engine idle speed

- Start the Diesel engine until it has reached operating temperature.
- Inform yourself of the min. idle speed which is displayed at the external speed sensor.
- Min. engine idle speed = **900 min⁻¹ + 50 min⁻¹**.
- If the min. engine idle speed is not reached, it needs to be adjusted.

Setting the engine idle speed

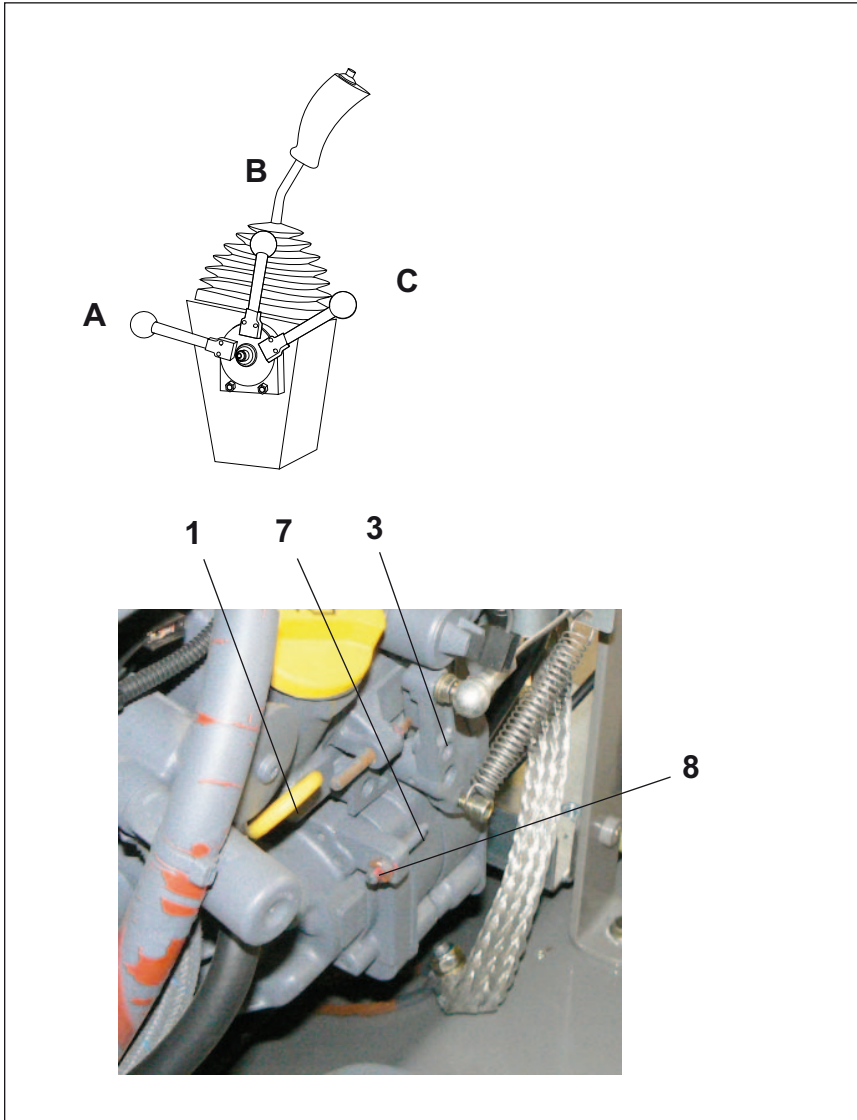
- Loosen the counter nut (**6**) of the upper adjusting screw (**2**).
- Adjust the min. engine idle speed by turning the adjusting screw (**2**):
- Screwing it in **increases** the engine idle speed.
- Unscrewing it **reduces** the engine idle speed.



NOTE!

After each adjustment, check the engine idle speed again.

- After completing the adjustment, tighten the counter nut (**6**) again.



Setting the Diesel engine to max. idle speed

The lower adjusting screw (7) of the adjustment lever (3) serves to set the max. idle speed. The adjusting screw (7) can be found right next to the oil dipstick (1).



NOTE!

Make sure the Diesel engine has reached operating temperature when carrying out measurements and adjustments.

Connecting an external engine speed sensor

Install a speed sensor in the area of the crank shaft disk **Z** or the drive disk of the fan wheel **L** in a way that the light sensor of the speed sensor can detect the reflection.

When connecting the speed sensor to the drive disk of the fan wheel **L** to establish the engine speed, you need to consider a transmission ratio of **2:1**.

Example: established engine speed 1250 min^{-1} = actual engine speed 595 min^{-1} .

Establishing the max. engine idle speed

- Start the Diesel engine until it has reached operating temperature.
- Move the frequency lever to position **C**.
- Inform yourself of the max. idle speed which is displayed at the external speed sensor.
- Max. engine idle speed **2800-2940 min^{-1}** .
- If the maximum engine idle speed is not reached, you need to adjust it.

Setting the engine idle speed

- Loosen the counter nut (**8**) of the lower adjusting screw (7).
- Adjust the max. engine idle speed by turning the adjusting screw (7):
- Screwing it in **reduces** the engine idle speed.
- Unscrewing it **increases** the engine idle speed.



NOTE!

After each adjustment, check the engine idle speed again.

- After completing the adjustment, tighten the counter nut (**8**) again.

6.2 Hydraulic system



NOTE!

Obligation to inform yourself!

For information on the hydraulic system, the drum drive and the rear wheels as well as the vibration and steering system, see the corresponding chapters in the operating manual and this training manual.

6.2.1 Technical specifications hydraulic system

Tandem roller type	HR25T-9/HR30T-9
Capacity of the hydraulic oil tank (in liters)	40
Hydraulic oil filter	Return filter, integrated in the hydraulic tank
Required specifications of the hydraulic oil	ATLAS spezial 46 / ISO VG32 / ISO VG46 / ISO VG68, see maintenance instructions

6.2.2 Maintenance work hydraulic system



NOTE!

Obligation to inform yourself!

Please refer to the chapter **Maintenance** for information on maintenance work related to the hydraulic system.




Chapter 7

Drum drive

Contents

This chapter provides you with information about:

- the drum drive
 - the drum functions
 - trouble shooting
 - the default values
 - an overview of the measuring points
 - an overview of the options for adjustments
- 

7.1 Drum drive

7.1.1 Technical specifications

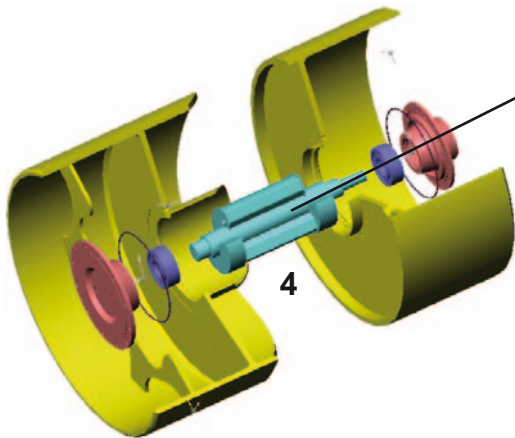
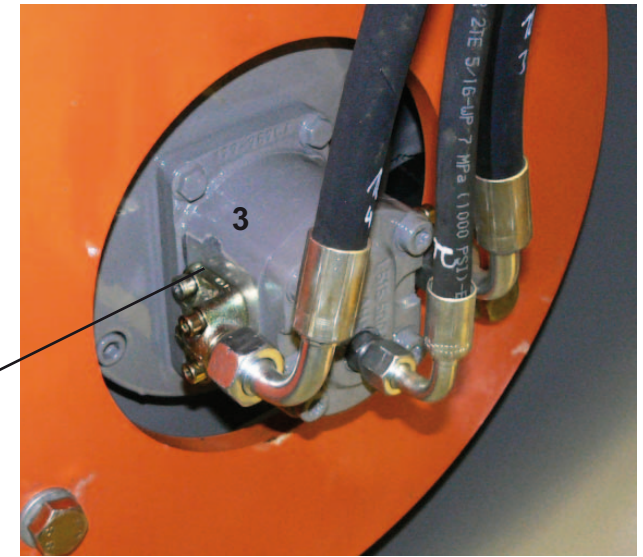
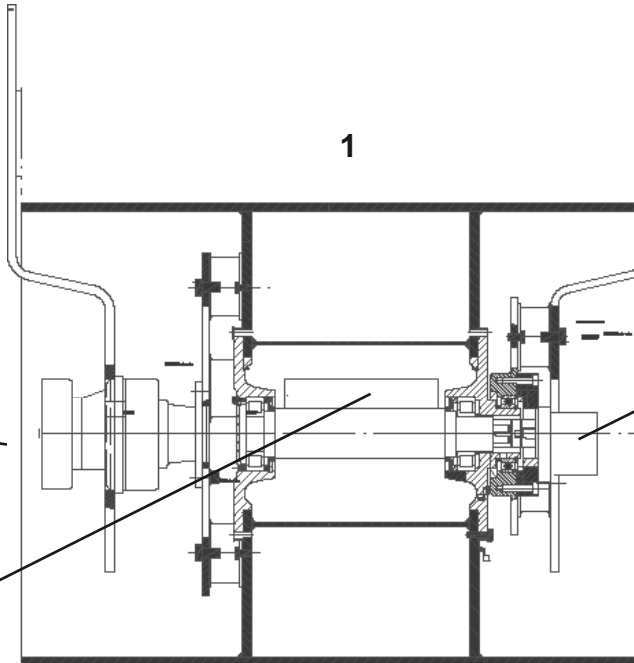
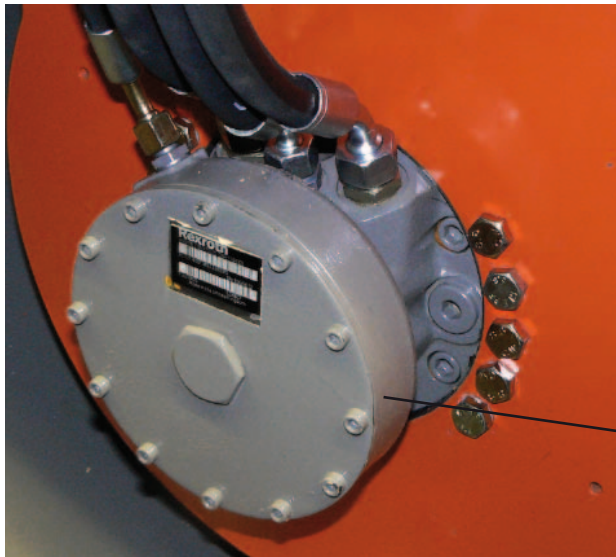
Tandem roller type	HR25T-9	HR30T-9
Drum width	1000 mm	1250 mm
Drum diameter	750 mm	750 mm
Drum thickness	12 mm	12 mm
Lateral drum offset	50 mm	50 mm



1 Drum drive, front

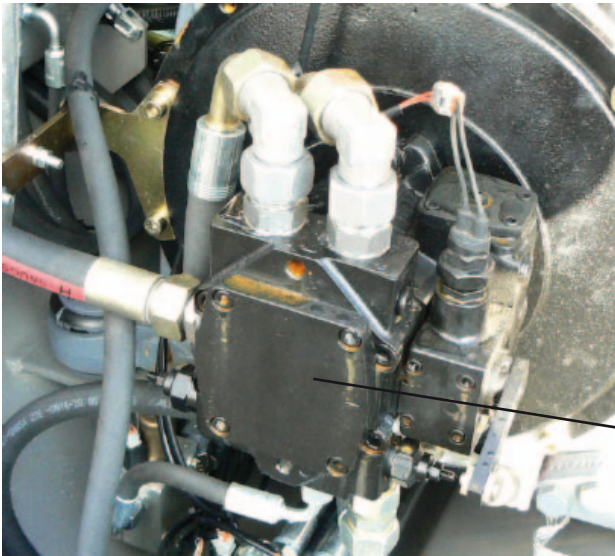
2 Drum drive, rear

7.1.2 Overview: Drums



- 1 Drum, front and rear
- 2 Drum drive
- 3 Vibration drive
- 4 Vibration system

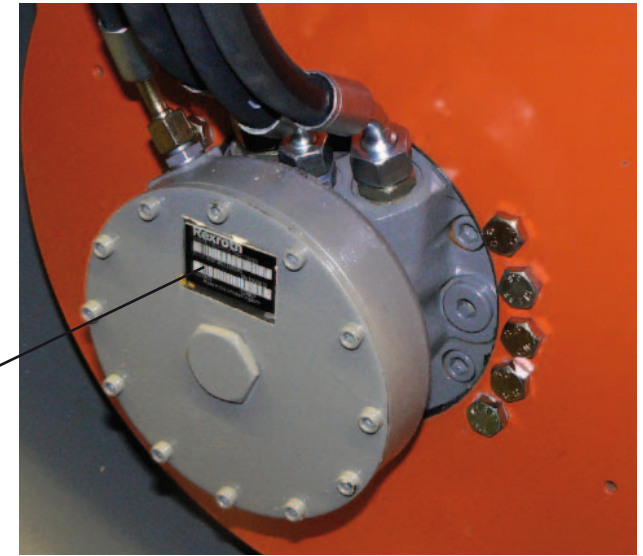
7.1.3 Overview: Drum drive hydraulics



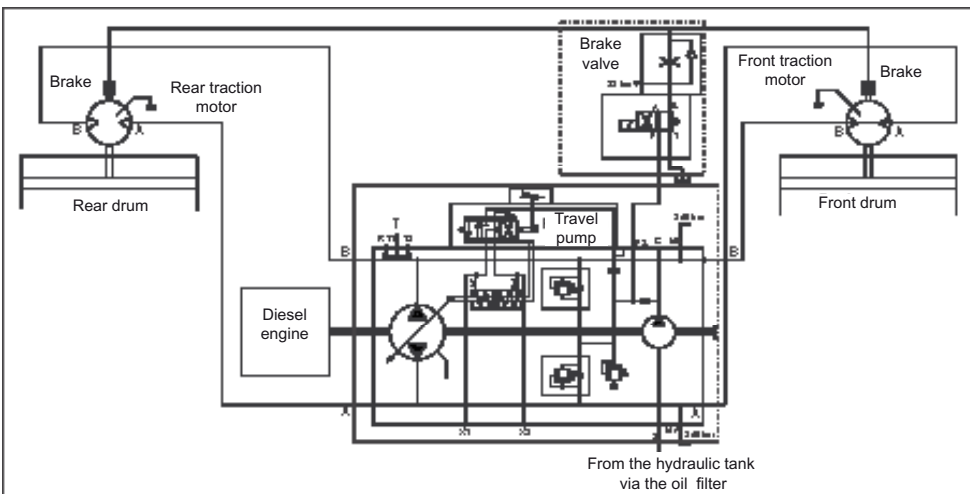
1



2



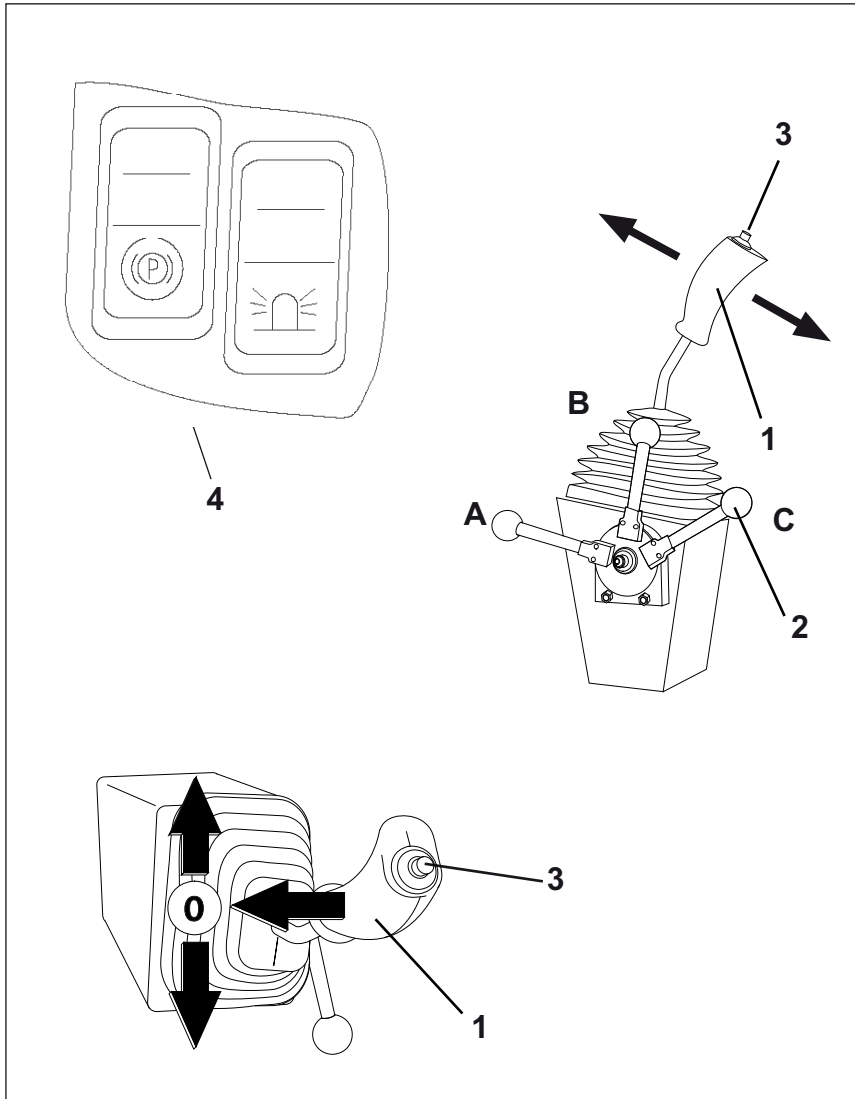
3



- 1 Oil pressure pump drive
- 2 Control lever
- 3 Drum drive motor

- = HP oil system A & B
- = Control oil system/Brake system
- = Fuel line

7.1.4 Sequence of functions

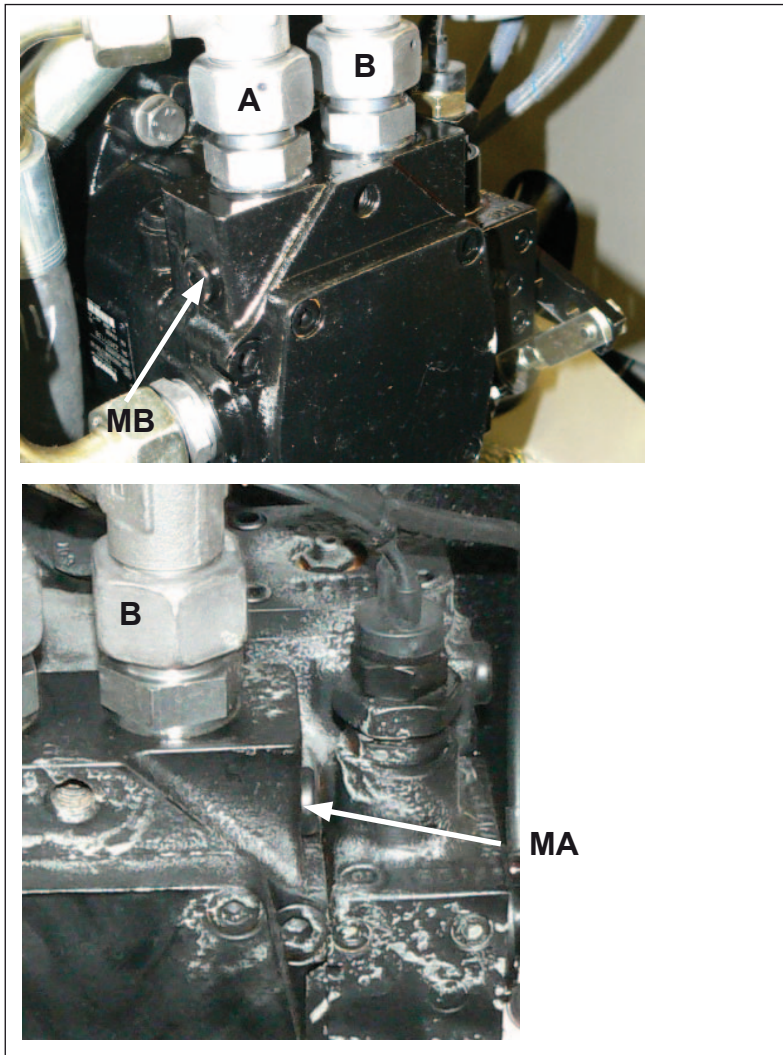


- After turning on the Diesel engine and running it until the hydraulic oil has reached operating temperature (i.e. approx. 50 degrees Celsius), roller operation can be started.
- Deactivate the parking brake (4). Make sure the corresponding light in the switch goes out.
- Move the frequency lever (2) into position B or C (roller operation). The Diesel engine reaches the engine speed required for roller operation or vibration.
- A Bowden cable connects the joystick (1) to the travel pump.
- Depending on the direction of motion, the Bowden cable adjusts the control valve for the control oil pressure.
- The control oil pressure sets the adjusting disk of the travel pump to the direction of motion (forward/reverse travel).
- The further the joystick (1) is moved, the more the control oil pressure to the adjusting disk is boosted. The travel pump swivels out further, which leads to an increase in the flow rate and the roller speed.

7.1.5 Problems and trouble-shooting

Failure / Problem	Causes and actions to be taken
The Diesel engine does not start.	<ul style="list-style-type: none"> • The parking brake has not been applied. → Activate the parking brake. • The joystick is not in the neutral position. → Move the joystick into the neutral position. Move the frequency lever to position A. • The 0-position switch (S02) on the travel pump is defective. → Conduct an electrical measurement of the 0-position switch or replace it.
The tandem roller does not move in the desired direction of motion.	<ul style="list-style-type: none"> • No or insufficient control oil pressure. The control oil pump is defective. → Establish the control oil pressure at measuring point PS. • The Bowden cable is defective. The transmission between the joystick and the travel pump adjustment is not correctly set or torn.
The tandem roller does not start.	<ul style="list-style-type: none"> • The parking brake has not been deactivated, which is indicated by a warning sound. → Deactivate the parking brake and actuate the joystick. • An electrical fault has occurred while deactivating the parking brake, see chapter Electrical system.
The tandem roller speed is too low.	<ul style="list-style-type: none"> • The Diesel engine speed is too low. → Set the frequency lever to position C. Make sure the Diesel engine speed is increased. • Insufficient drive pressure. → Establish the drive pressure (forward/reverse travel) at one of the measuring points MA or MB.

7.1.6 Engine speeds, hydraulic measuring & adjusting values, overview of the measuring points



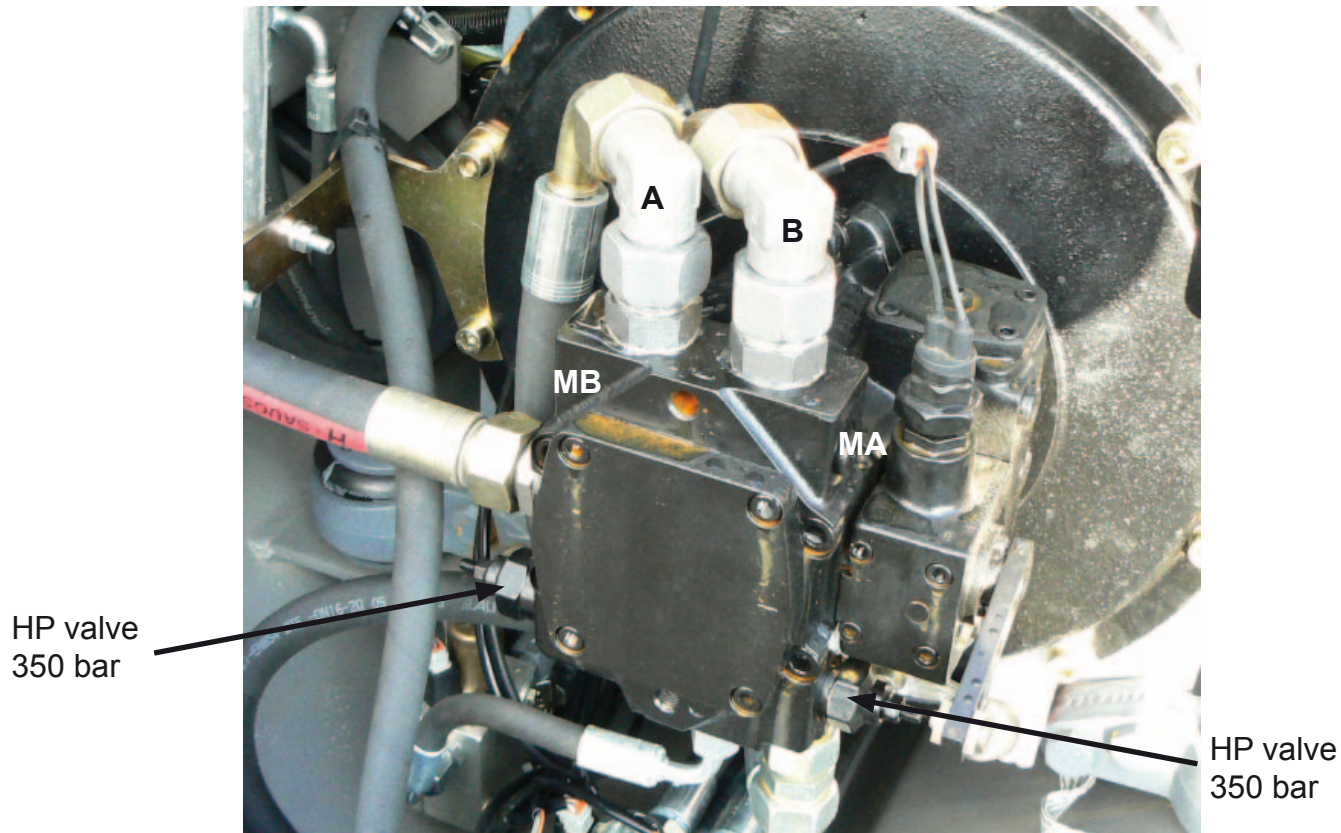
Measurement / Adjustment	Default values	Measuring point /method
Diesel engine: min. idle speed	850-950 min ⁻¹	Diesel engine
corresponding charge pressure	20 bar	PS
Diesel engine: max. idle speed	2800-2940 min ⁻¹	Diesel engine
corresponding charge pressure	22 bar	PS
Max. Diesel engine speed	2800 min ⁻¹	Diesel engine
Forward motion	330-350 bar	MA
Max. Diesel engine speed	2800 min ⁻¹	Diesel engine
Reverse motion	330-350 bar	MB
Brake function of the tandem roller	Max. braking distance 2.4 m	Max. speed of the roller, Joystick: neutral
Function seat switch	5 seconds	Diesel engine: Stop & Off
Roller speed	9 km/h	Cover a distance of 50 meters at maximum speed. Max. permissible duration: 20 seconds



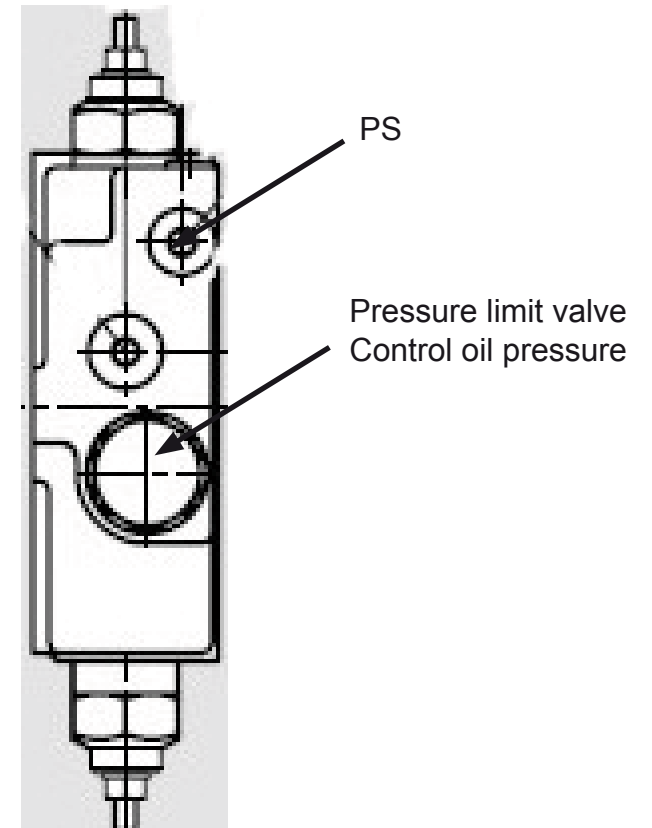
NOTE!

In order to measure the engine speeds and the hydraulic pressures, the Diesel engine needs to have reached operating temperature and the hydraulic oil needs to have reached a temperature of 50° C.

7.1.7 Overview: Settings at the oil pressure pump of the drive system



View of the travel pump from below






Chapter 8

Vibration system drive unit

Contents

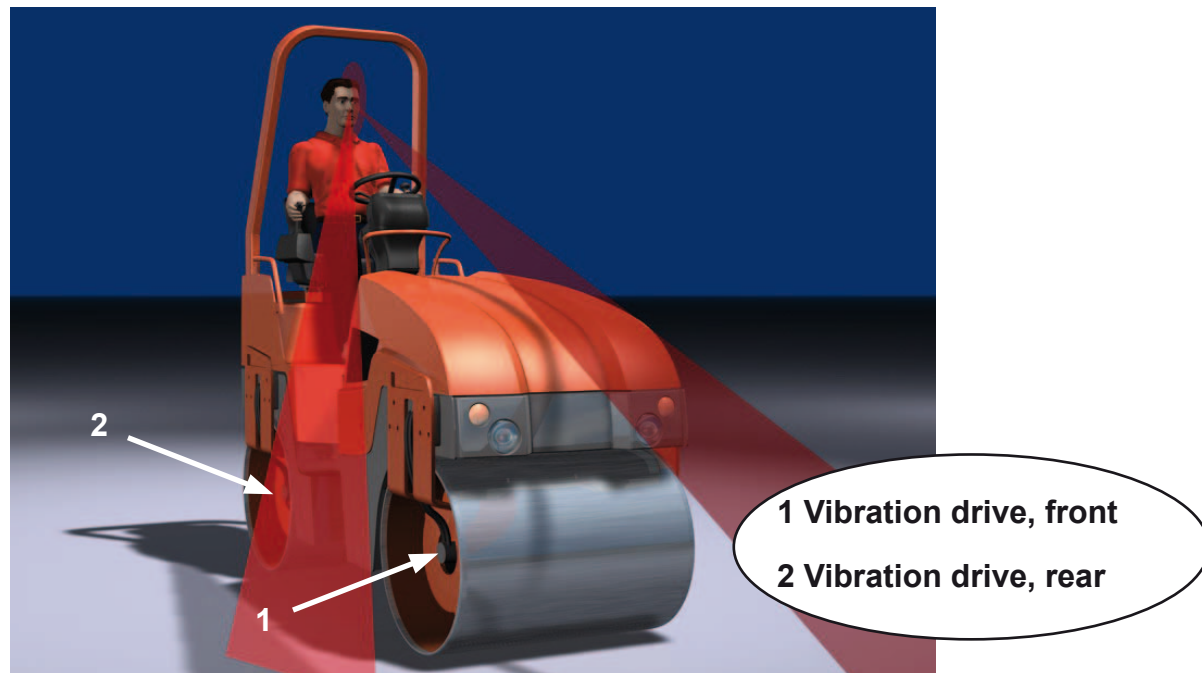
This chapter provides you with information about:

- the vibration system and its drive unit
 - the sequence of functions
 - trouble-shooting
 - the default values
 - the layout of the measuring points
 - possible adjustments
- 

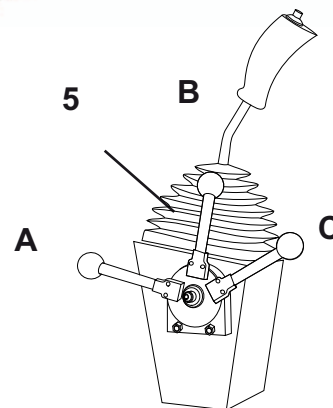
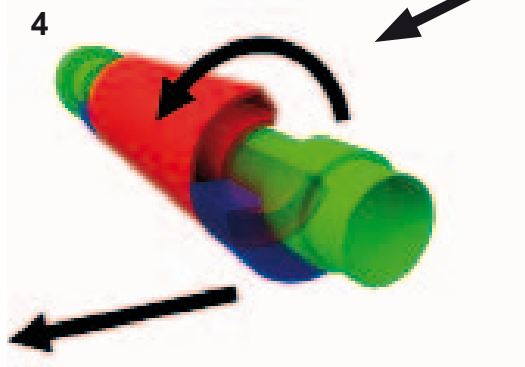
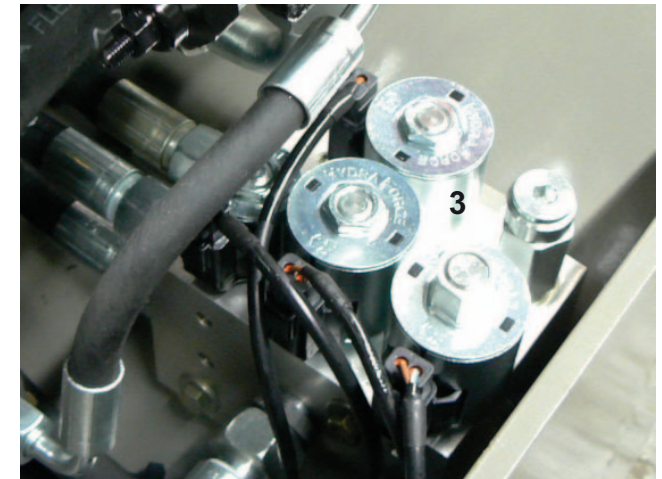
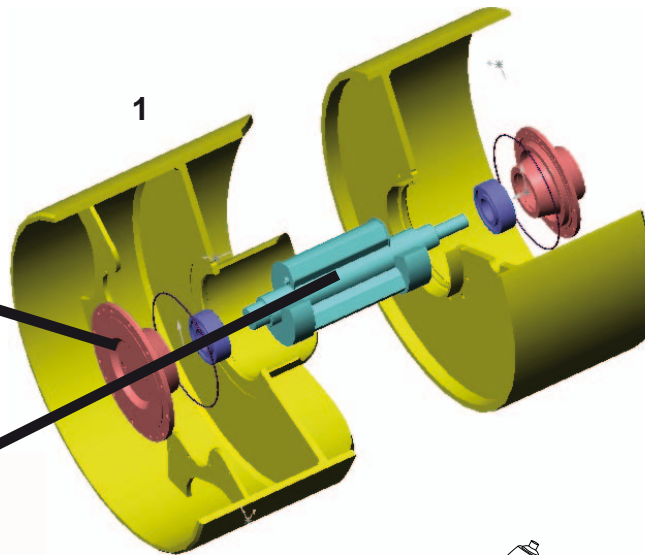
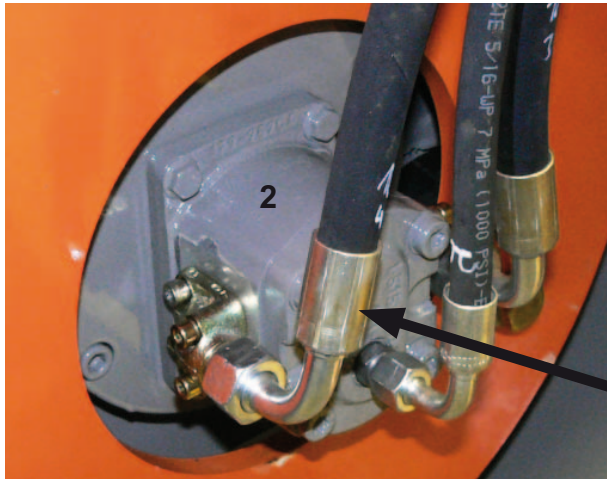
8.1 Vibration system

8.1.1 Technical specifications

Tandem roller type	HR25T-9	HR30T-9
Compaction capacity:		
Average static linear load	12.25 kg/cm	12.00 kg/cm
Amplitude	0.5 mm	0.5 mm
Frequency I / II	53 / 61 Hz	52 / 58 Hz
Centrifugal force I / II	21.5 / 28 kN	29 / 37 kN

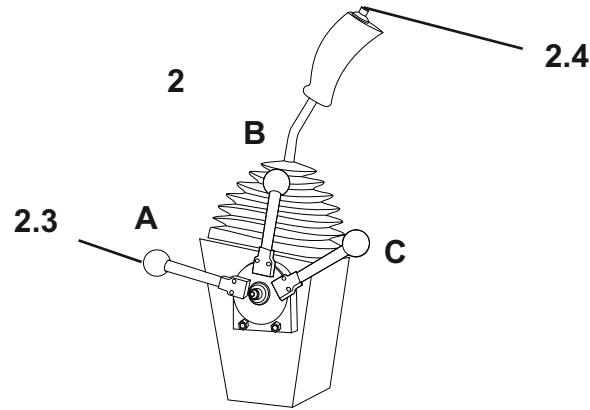
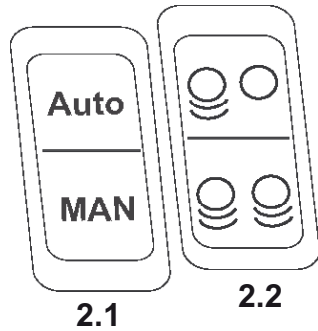


8.1.2 Overview: Vibration system

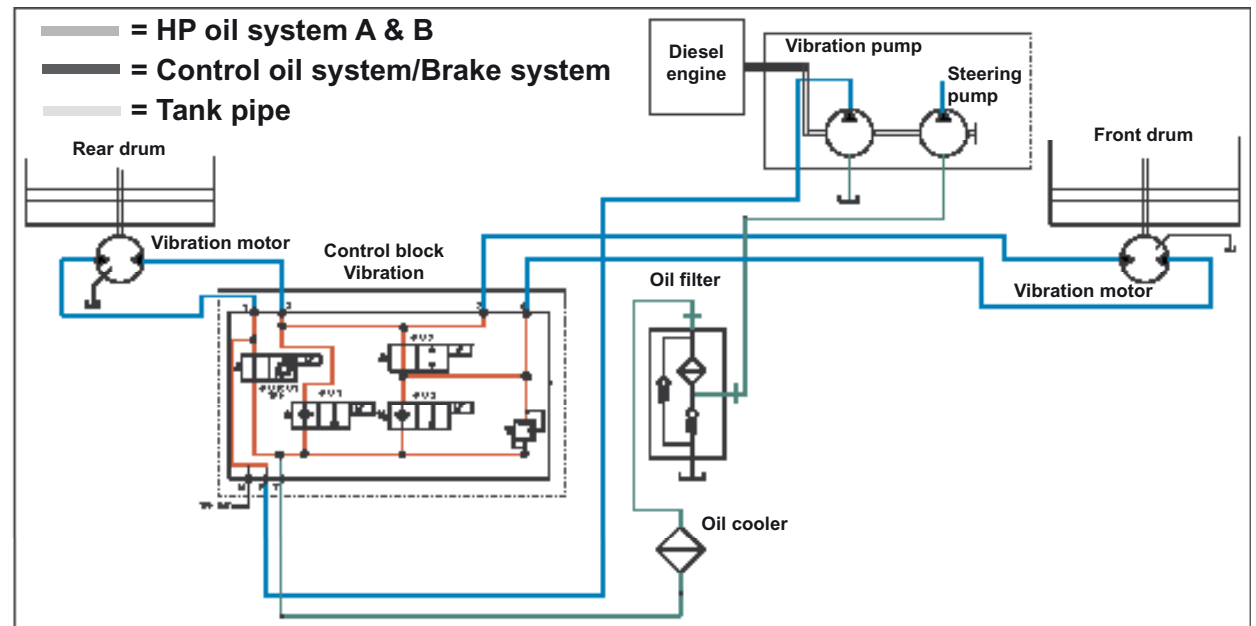
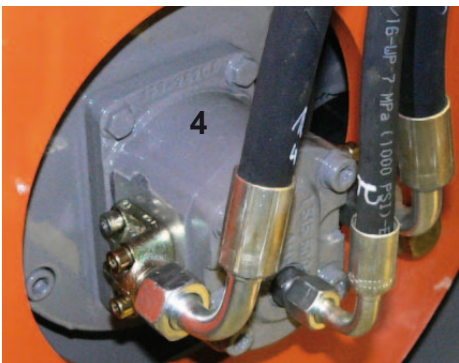
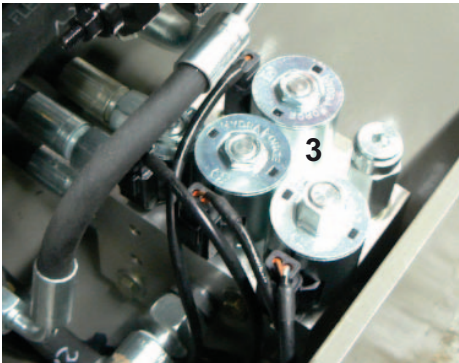


- 1 Front/rear drum
- 2 Vibration drive
- 3 Control block Vibration
- 4 Vibration system
- 5 Frequency lever and control lever

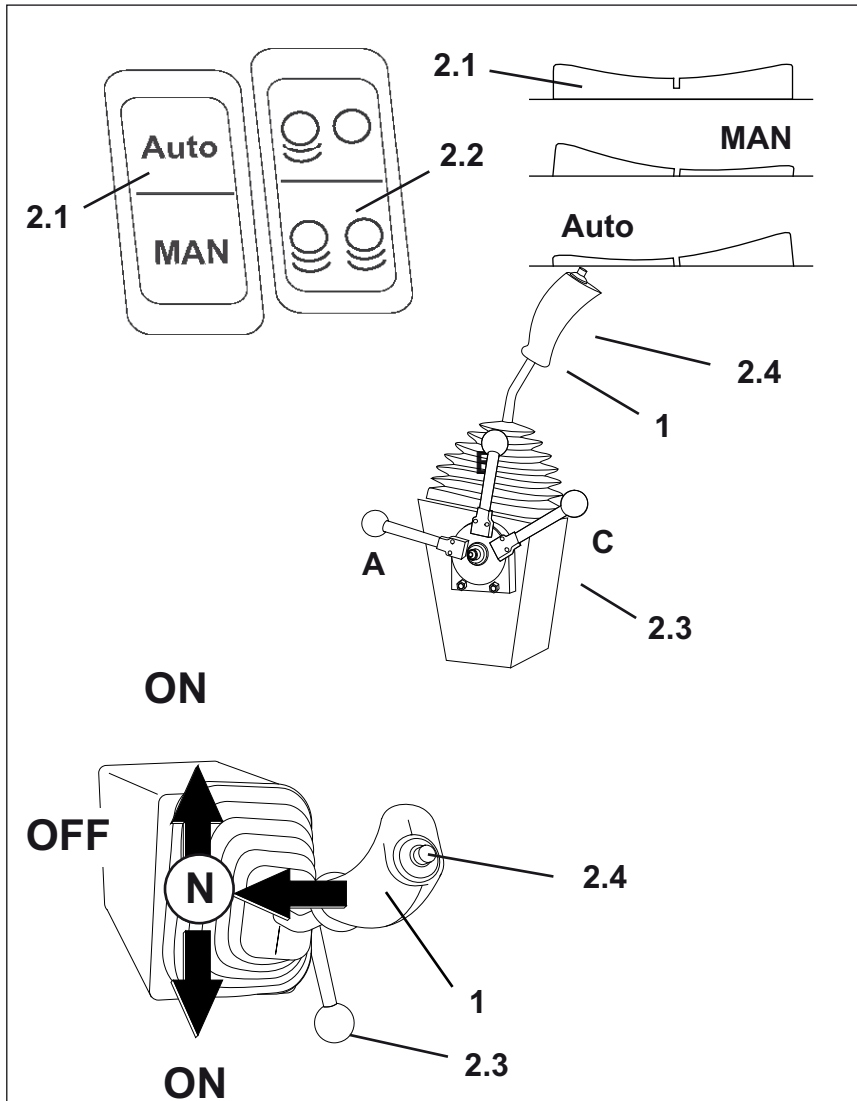
8.1.3 Overview: Vibration hydraulics



- 1 Continuous vibration pump
- 2 Vibration control
 - 2.1 Switch vibration mode
 - 2.2 Selector switch front drum/front & rear drum
 - 2.3 Frequency lever
 - 2.4 Button Vibration on/off
- 3 Control block vibration
- 4 Vibration drive unit

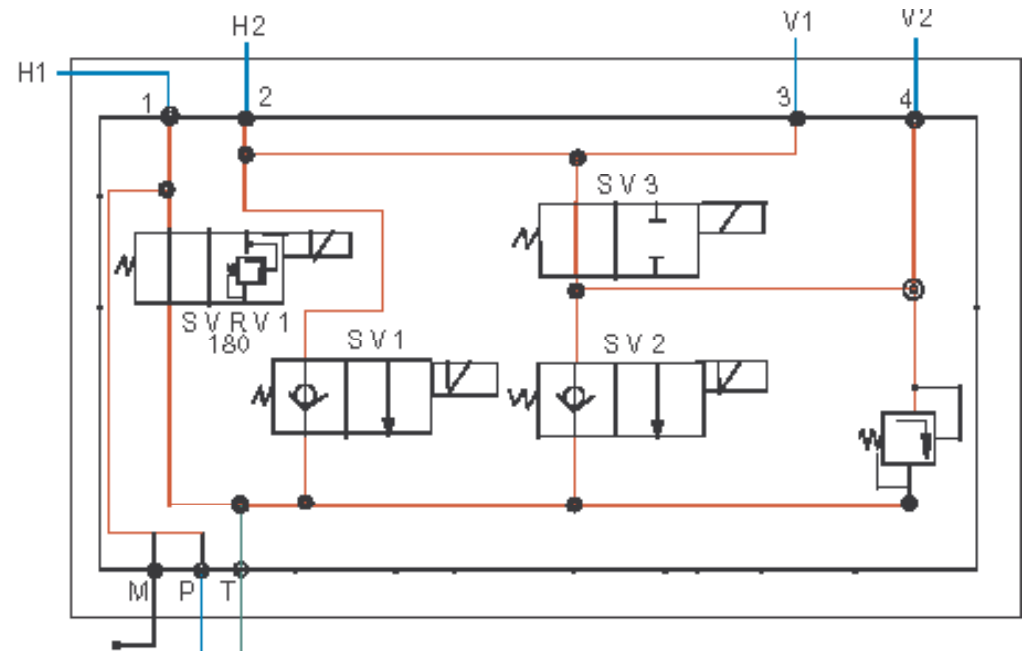
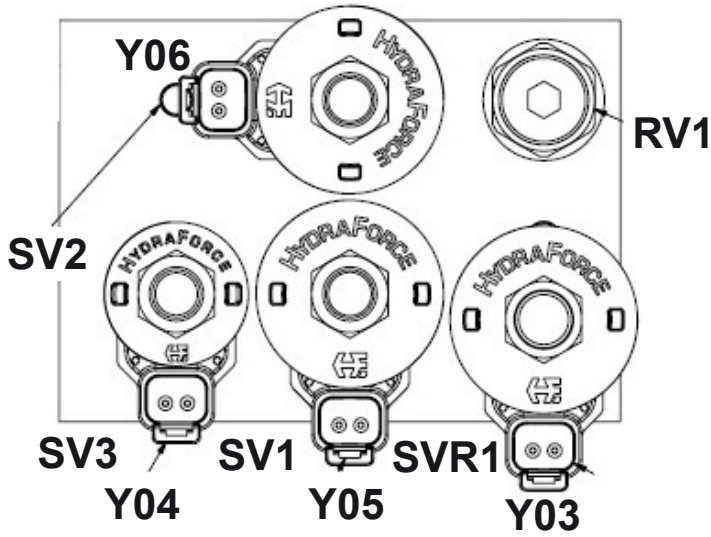
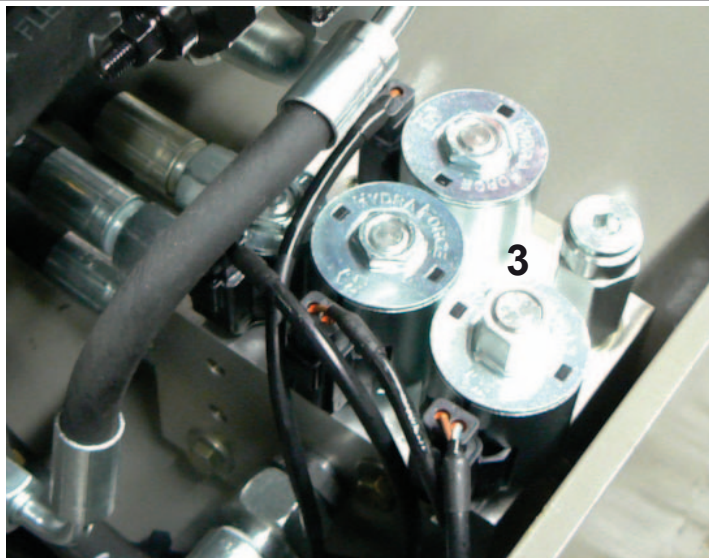


8.1.4 Sequence of functions: Vibration



- After starting the roller operation (i.e. the tandem roller moves forward or backward), you may activate the vibration according to your specific requirements.
- By means of the selector switch vibration mode (2.1), set the vibration to **MAN** = manual or **Auto** = Auto stop.
- Move the frequency lever (2.3) from position **A** to position **B** or **C** to establish the required vibration frequency.
- In order to start the vibration, push the red button **Vibration on/off** (2.4) on the joystick (1).
- Pull the joystick (1) in your direction and move it forward in order to drive forward or backward for reverse travel.
- Select either front drum vibration or combined front & rear drum vibration by actuating the drum selector switch (2.2).

8.1.5 Overview: Control block vibration



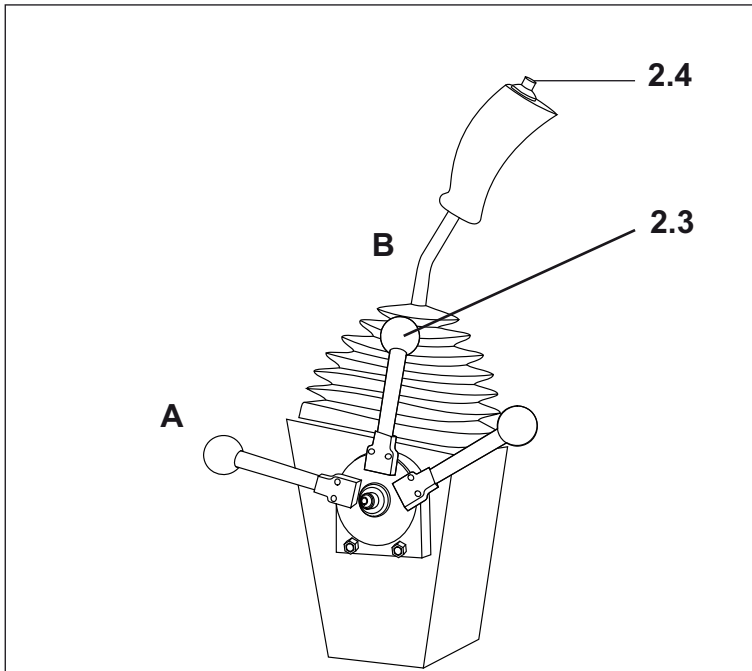
- With the vibration set to both drums, valves **SVR1**, **SV3** and **SV2** need to be electrically controlled.
- Valve **SVR1** disposes of a pressure relief protection function which opens at a pressure of 180 bar and releases the oil flow to the tank.
- If the vibration is set to the front drum only, valve **SV1** is electrically activated and valve **SV2** is deactivated.
- The vibration drive unit at the rear drum is decelerated by the shutoff valve **RV1**.
- If the vibration at the front or the combined front/rear vibration is turned off, all valves are electrically deactivated and the vibration drives are decelerated by the shutoff valve **V1**.

8.2 Vibration system: Adjusting instructions

8.2.1 Frequencies, run-up time and amplitude

Measurement / adjustment	Default values	Measuring point /method
Vibration - high frequency	58-63 Hz	Drum / Sirometer
Vibration - low frequency	52-55 Hz	Drum / Sirometer
Amplitude	0.5 mm fixed value	Diesel engine
Run-up time vibration	1-2 seconds	Stopwatch

8.2.2 Checking the low vibration frequency

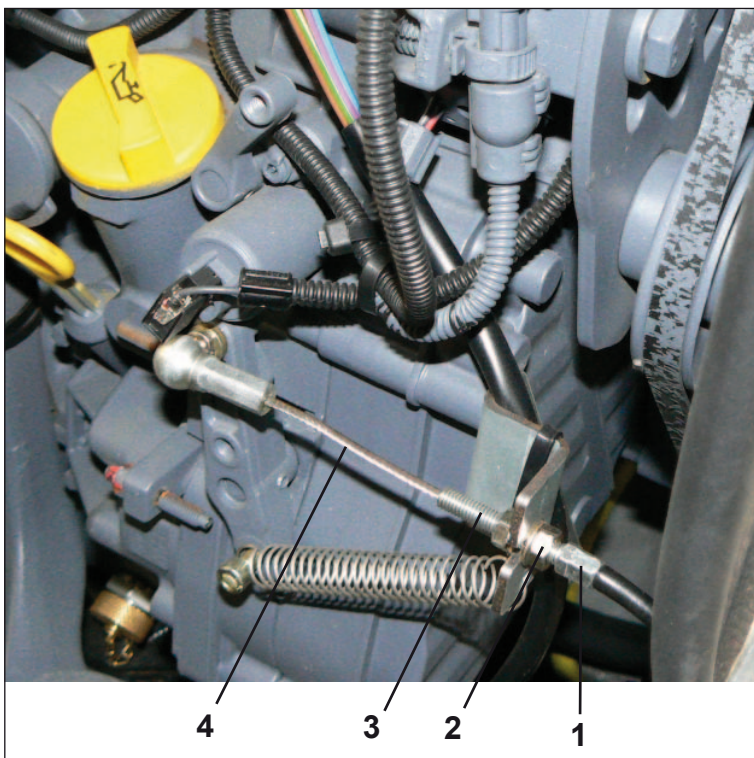


Checking (and, as the case may be, adjusting) the low vibration frequency is necessary if the default frequency value (see table) is not reached. A sirometer enables you to measure the engine speed and the frequency at any running engine or vibration unit with great accuracy (see section **8.3 Using a sirometer**).

Checking the frequency:

- Start the Diesel engine and let it run until a hydraulic oil temperature of approx. **50° C** is established.
- Move the frequency lever (**2.3**) from position **A** to position **B** to a frequency of **52-55 Hz**.
- Activate the vibration by means of the button vibration on/off (**2.4**).
- Use a sirometer to check the vibration at the front drum.
- If the frequency is not reached or too high, it needs to be adjusted.

8.2.3 Setting the low vibration frequency



NOTE!

Make sure that the hydraulic oil temperature has reached a temperature of approx. 50° C before checking and adjusting the vibration frequency.

Setting the vibration frequency

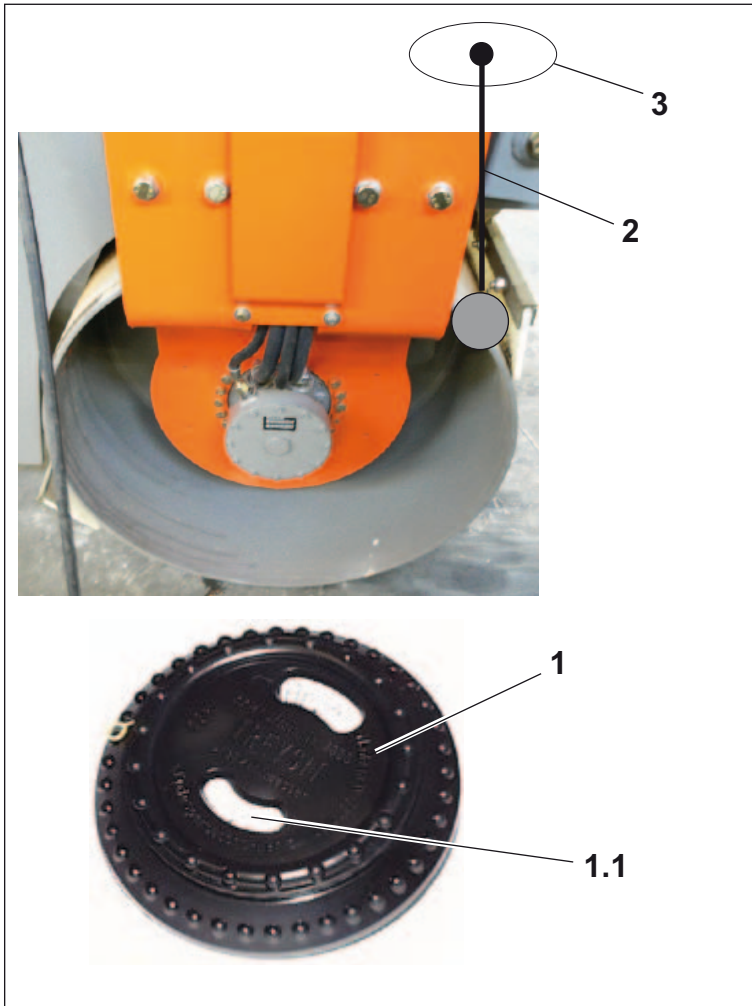
- Make the required settings at the Bowden cable (4) of the Diesel engine by adjusting the shroud (1) of the Bowden cable (4).
- Deactivate the vibration by actuating the vibration on/off button on the joystick.
- Stop and secure the Diesel engine.
- Loosen the counter nut (3) at the shroud of the Bowden cable (1).
- Adjust the shroud (1) by turning the adjusting nut (2) to establish the correct vibration frequency.
 - **Increase** the vibration frequency by turning the adjusting nut (2) clockwise.
 - **Reduce** the vibration frequency by turning the adjusting nut counterclockwise (2) .
- After completing the required adjustments, tighten the counter nut (3) again.



NOTE!

After each adjustment at the Bowden cable shroud (1), check the vibration frequency again, see **Checking the low vibration frequency**.

8.3 Using a sirometer



- A sirometer enables you to measure the engine speed and the frequency at any running engine or vibration unit with great accuracy.
- The TREYSIT sirometer (1) analyses the vibrancy at the drum.
- The engine speed or frequency (lower scale, 1.1) to be measured is displayed on both scales.
- The TREYSIT sirometer has been tested and approved by the "Physikalisch-Technische Bundesanstalt" (national metrology institute providing scientific and technical services) in Braunschweig. With a tolerance of 1-2%, its accuracy is appropriate for the measurements in question.



DANGER!

Risk of injuries!

The vibration measurement by means of a sirometer may only be carried out with the roller **stopped!**

- In order to conduct the measurement, position the sirometer (1) on the edge of the drum.
- Turn the top part of the sirometer to the left so the measuring wire (2) is extended.
- With the vibration activated, the end of the measuring wire (2) starts to deflect (3).
- After recording the furthest deflection (3) of the measuring wire (2), the amount of vibrations per second (in Hz) is displayed on the lower scale (1.1).




Chapter 9

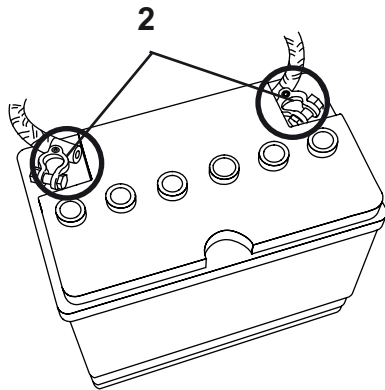
Electrical system

Contents

This chapter provides you with information about:

- the electrical system
 - maintenance work related to the electrical system
 - fuses, relays & installation points of the components
 - the electrical circuits
- 

9.1 Electrical system



CAUTION!

HYUNDAI tandem rollers dispose of an operating voltage of **12 V**. Be sure to take this into account when jump-starting the vehicle or replacing components!



WARNING!

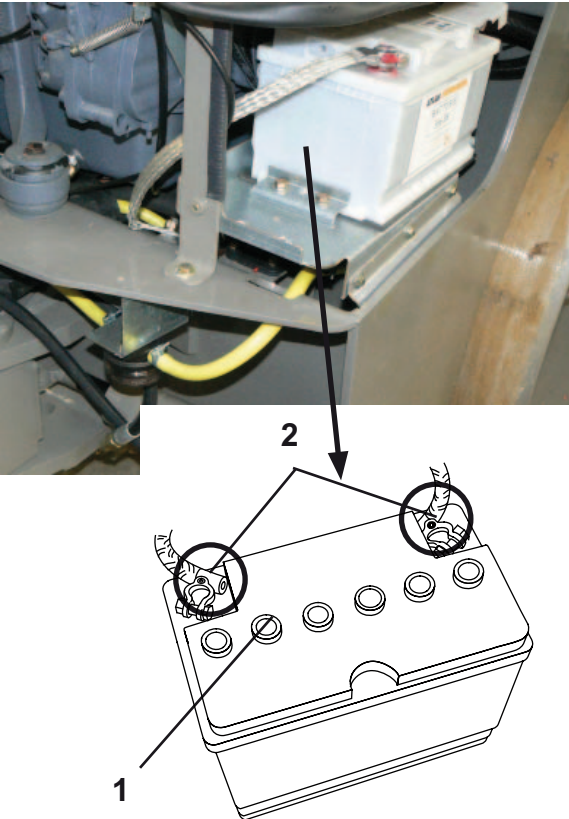
Any repair work referring to the electrical system may be carried out by trained professional service staff only.



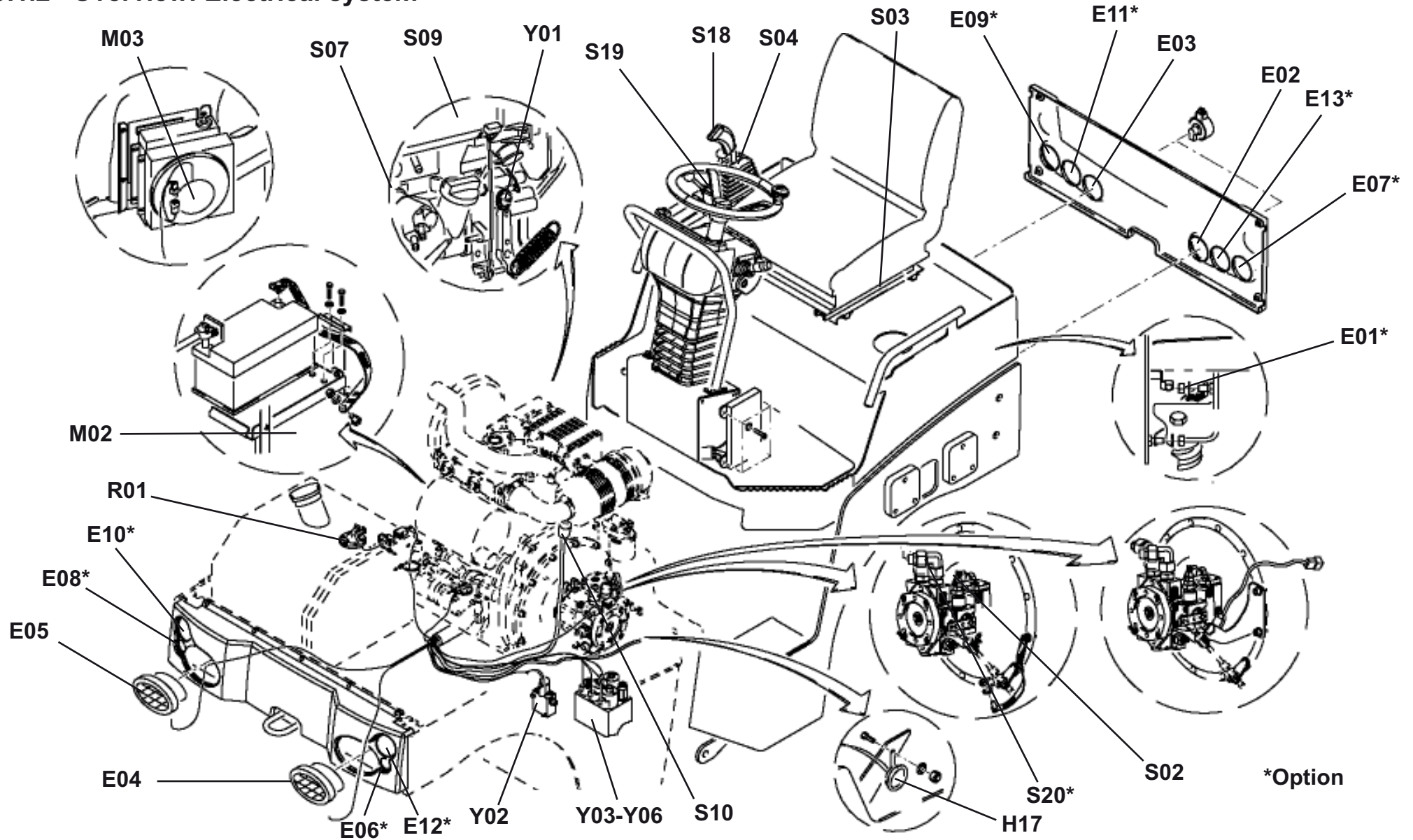
WARNING!

Prior to work related to the electrical components of the wiring, disconnect the plus terminal (2) of the battery (1).

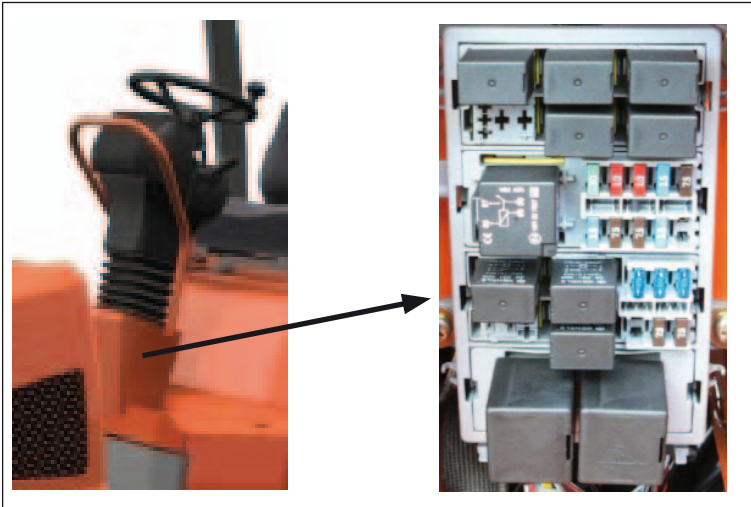
9.1.1 Maintenance work related to the electrical system

Illustration	Battery
Maintenance work to be carried out on a monthly basis:	
	<p data-bbox="772 486 1668 598">CAUTION! <i>Risk of explosions!</i> Keep away sparks and open fire from the battery! Do not smoke!</p> <ul data-bbox="772 654 1736 837" style="list-style-type: none">• Check the battery terminals (2) for signs of corrosion and dirt.• Lubricate the poles and terminals. Required grease: order no. 0830684.• Open the cover caps (1) of the battery and check the fill level above the cells.• Make sure the fill level is sufficient, i.e. above the cells. <p data-bbox="772 893 1176 981">CAUTION! Add distilled water only!</p>

9.1.2 Overview: Electrical system



9.1.3 Printed circuit board, fuses and relays



Printed circuit board

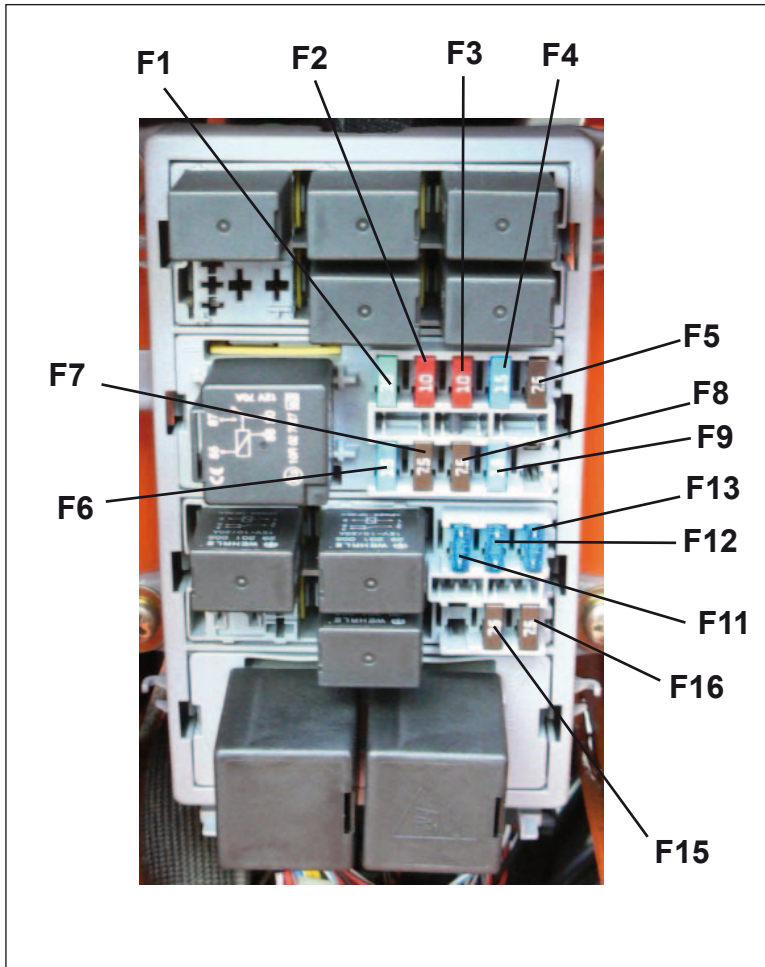
- The printed circuit board is integrated in the left side of the bottom part of the steering column.
- Check the printed circuit board, the fuses and relays on the printed circuit board.
- Check the fuses and relays for the accumulation of dirt and damage.



NOTE!

Always replace defective fuses, see chapter **Maintenance instructions for the service staff** in the operating and maintenance manual.

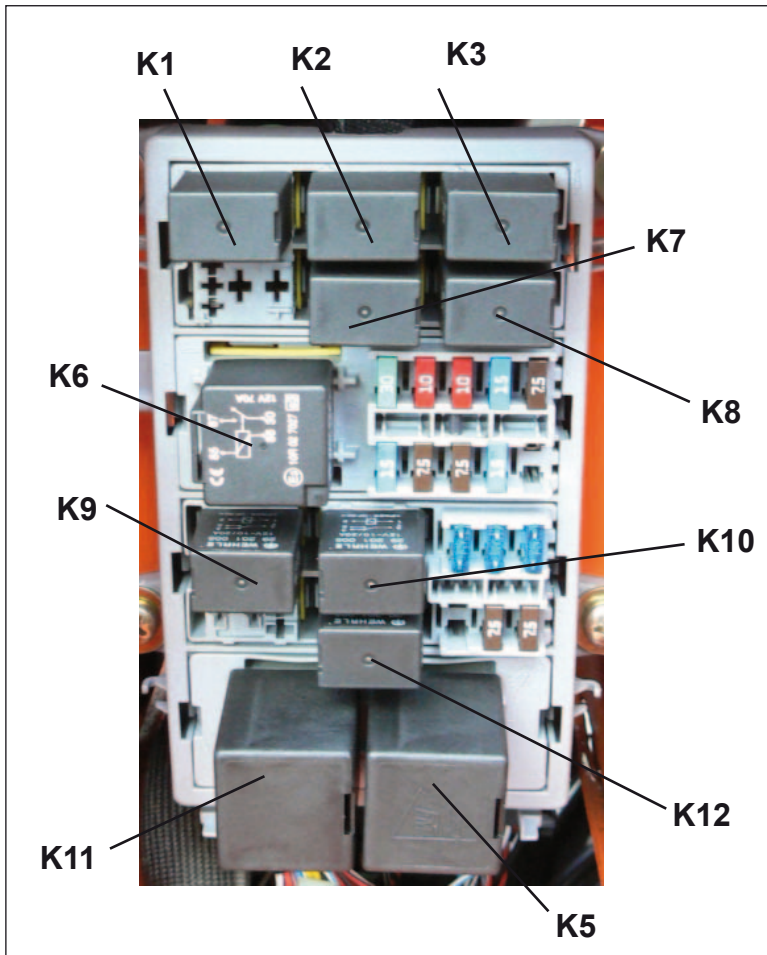
Layout of the fuses on the printed circuit board



No.	Ampere	Function	No.	Ampere	Function
F1	30 A	Ignition lock, Steering column switch (Optional feature*)	F10	-	-
F2	10 A	Terminal 30: Hazard warning lights (Optional feature*)	F11	15 A	Backup warner, rear work lights L/R (Optional feature*)
F3	10 A	Terminal 15: Steering column switch, turn signals L/R (Optional feature*)	F12	15 A	Front work lights or low beam lights L/ R (Optional feature*)
F4	15 A	Terminal 15: Emergency stop switch, parking brake, Diesel valve, seat switch, instrument panel	F13	15 A	Horn
F5	7.5 A	Sprinkler system	F14	-	-
F6	15 A	Rotating light	F15	7.5 A	Front and rear parking light L, (Optional feature*)
F7	7.5 A	Edge cutting & pad roller control (Optional feature)	F16	7.5 A	Front & rear parking light R, (Optional feature*)
F8	7.5 A	Joystick/Control lever (button vibration on/off)			
F9	15 A	Fan hydraulic oil cooler			

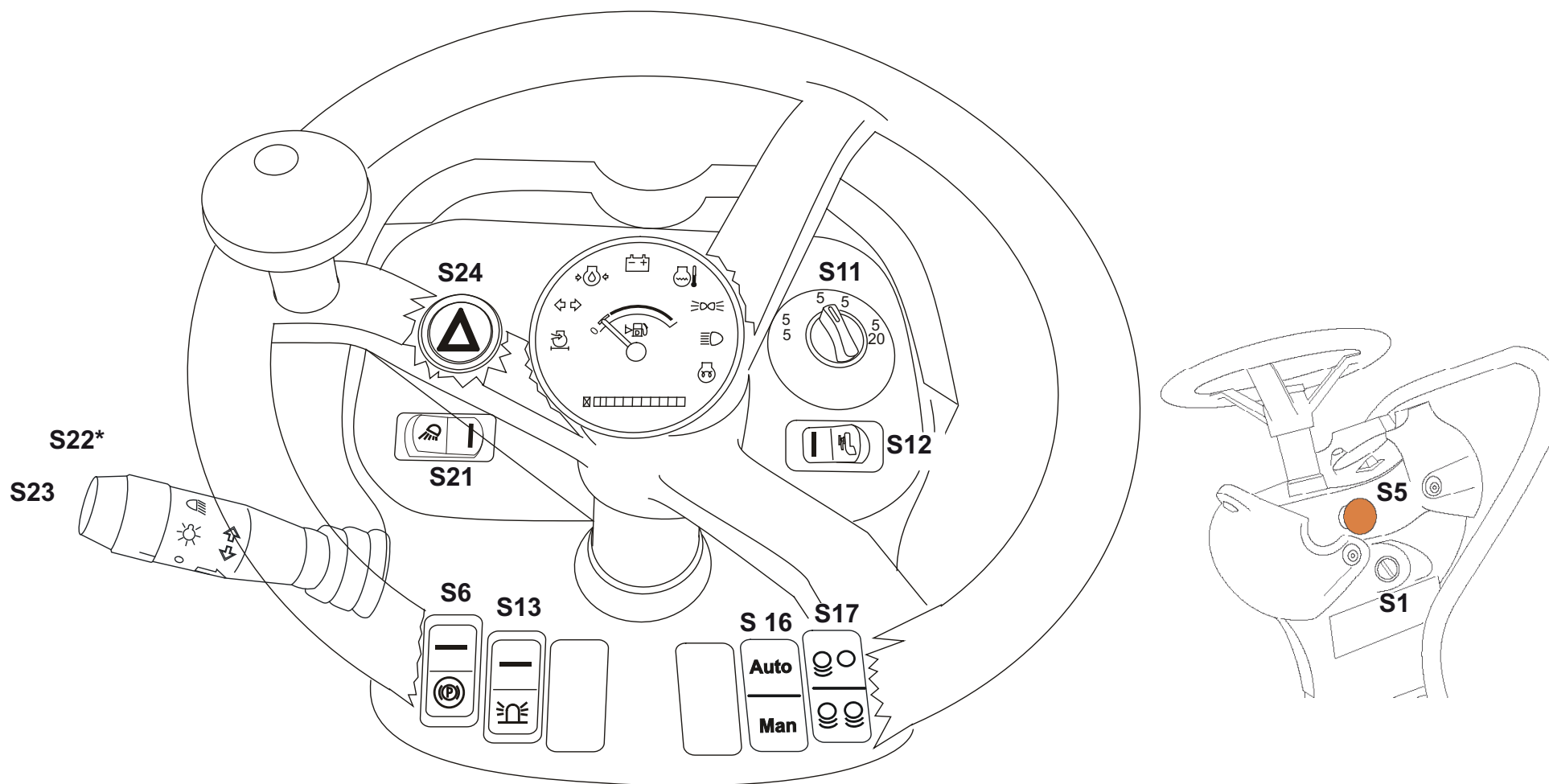
* applies to tandem rollers with StVZO equipment/MOT approval only

Functions of the relays on the printed circuit board

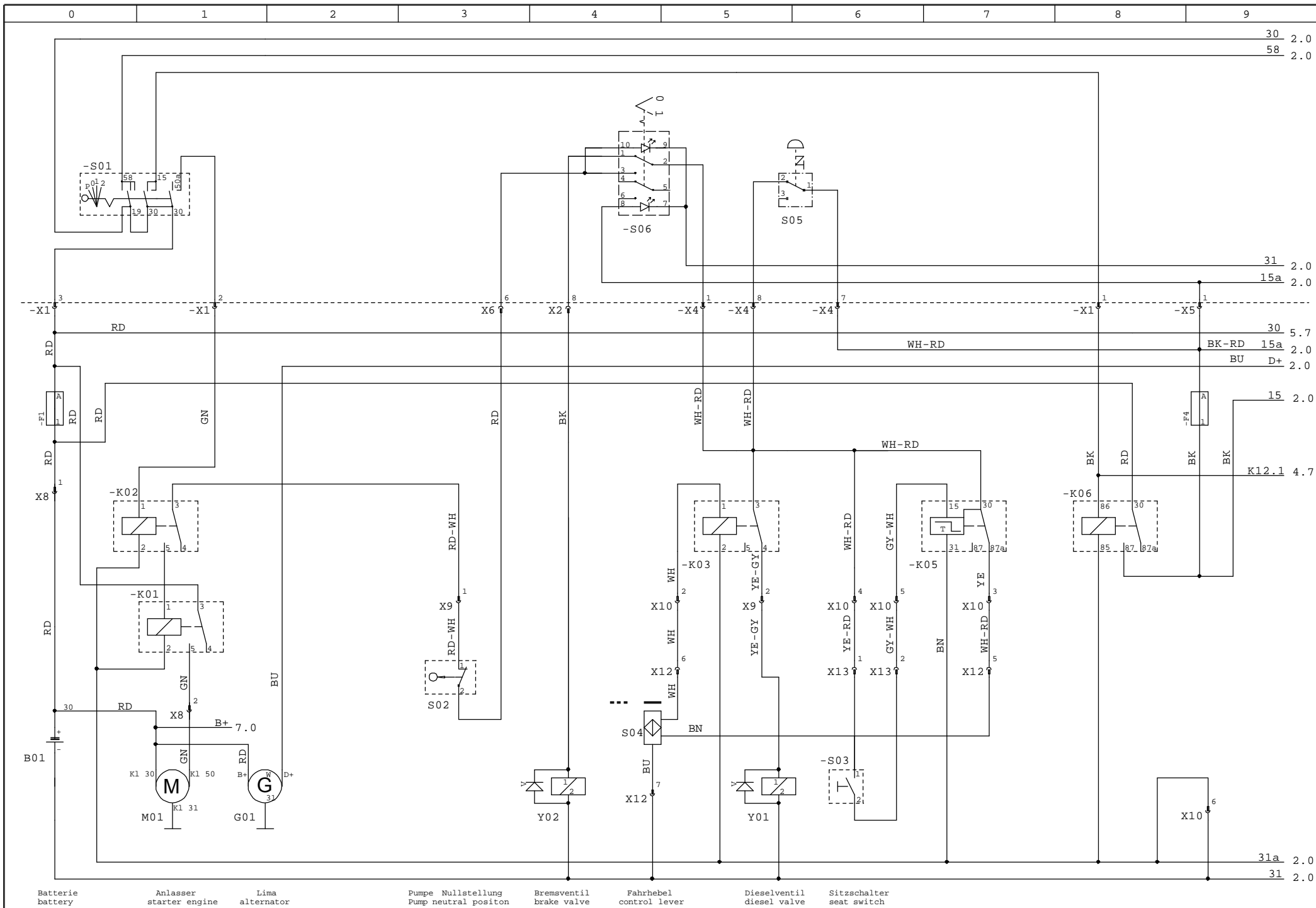


No.	Function
K01	Starter
K02	Starter (Neutral position of the joystick)
K03	Diesel valve
K04	-
K05	Seat switch
K06	Terminal 15 resp.15A
K07	Sprinkler system
K08	Vibration
K09	Work lights, rear L/R, backup lights L/R
K10	Work lights, front L/R, low beam lights L/R
K11	Relay
K12	Ventilation hydraulic oil cooler

9.1.4 Overview: Switches (for information on functions see circuit diagrams on the following pages)

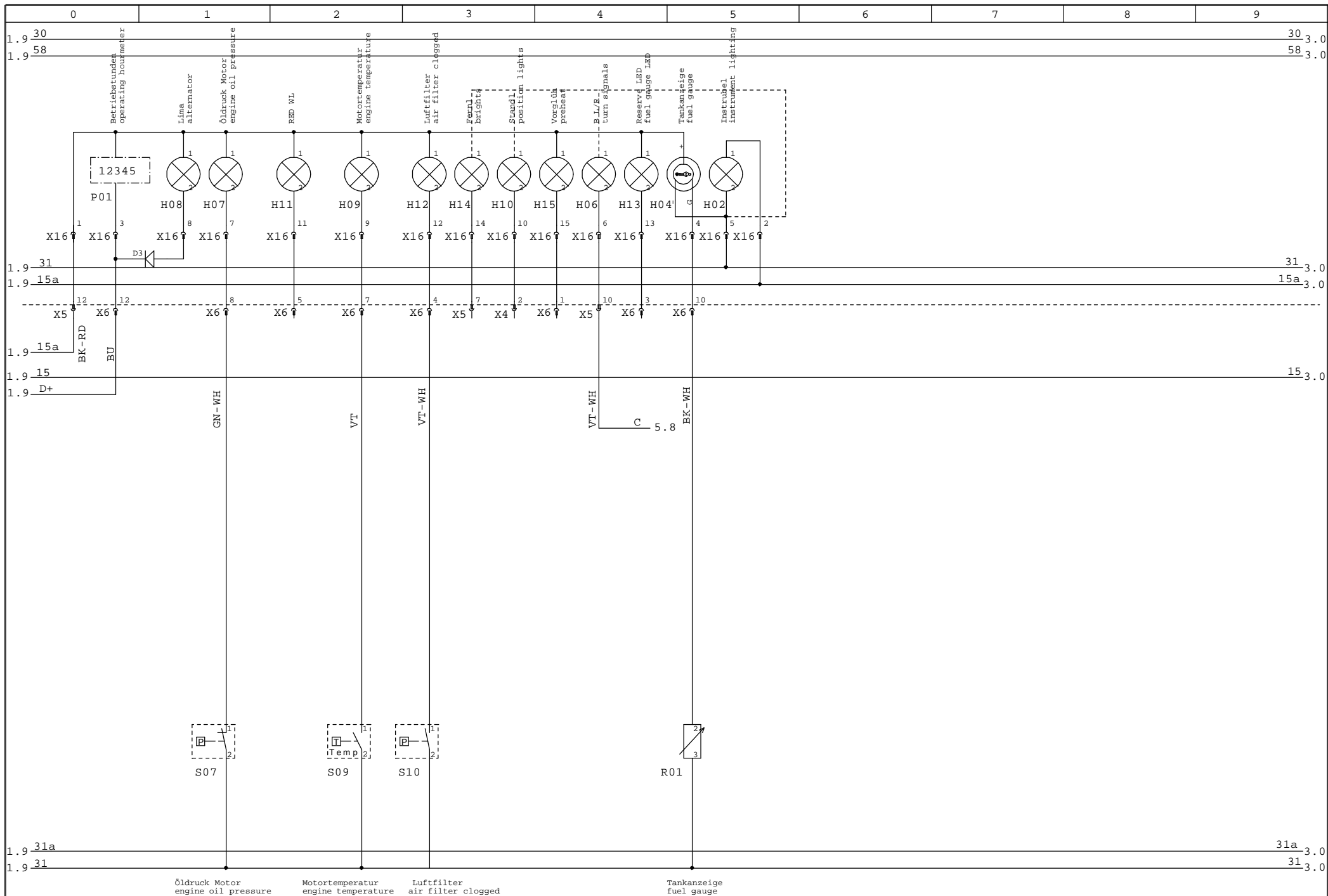


* optional features, applies to tandem rollers with StVZO equipment/MOT approval only



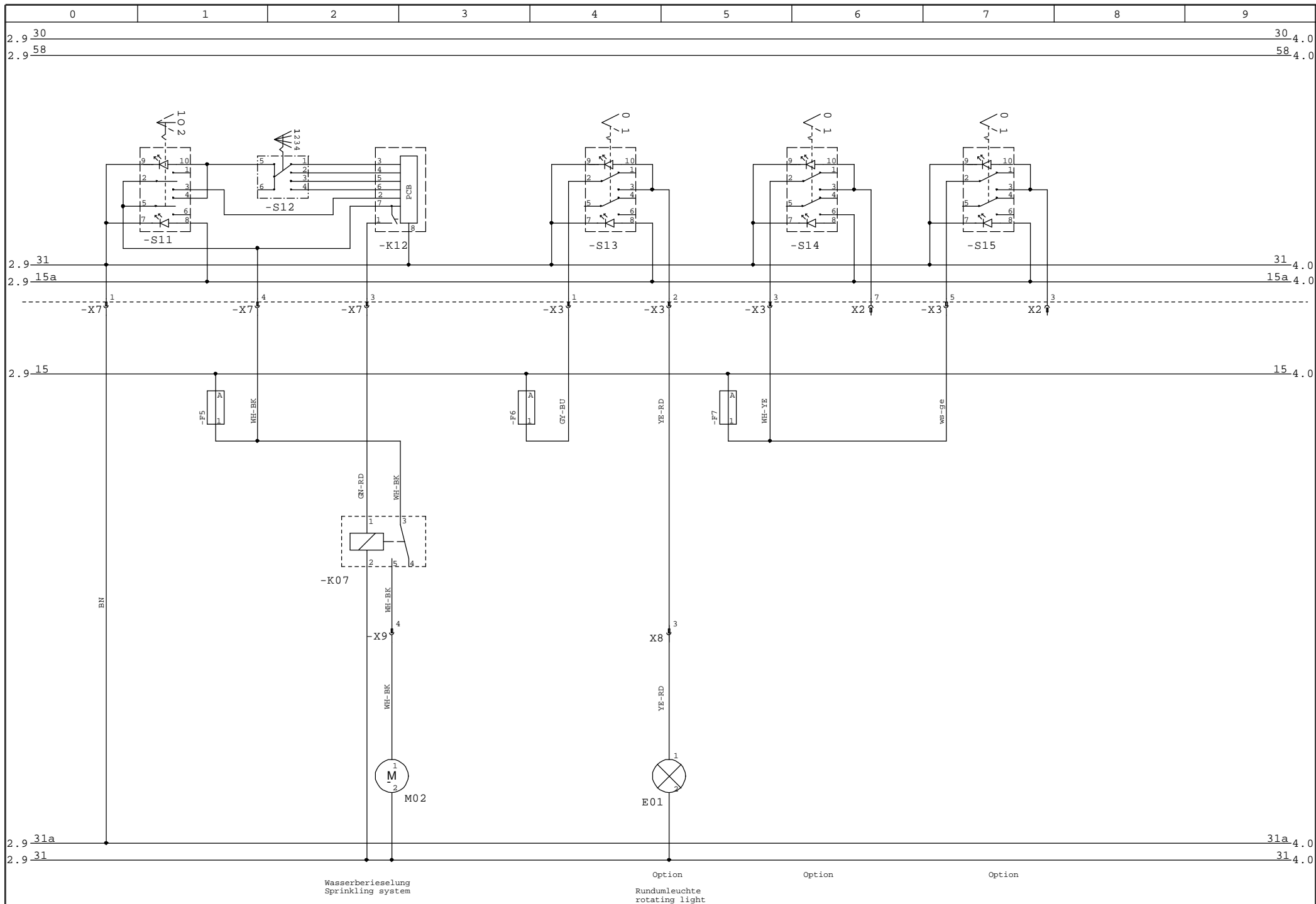
30	2.0
58	2.0
31	2.0
15a	2.0
30	5.7
BK-RD	15a
BU	D+
15	2.0
K12.1	4.7
31a	2.0
31	2.0

003	29.04.09	Heuer	Datum	05.06.2007	Vers.03	Atlas Weyhausen GmbH & CO KG Maschinenfabrik 27793 Wildeshausen	AW 3600 / 224-226-230	
			Bearb.	W.Heuer				
			Gepr.					
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d	
							Stromlaufplan / circuit diagram	Blatt 1 von 9 Bl.

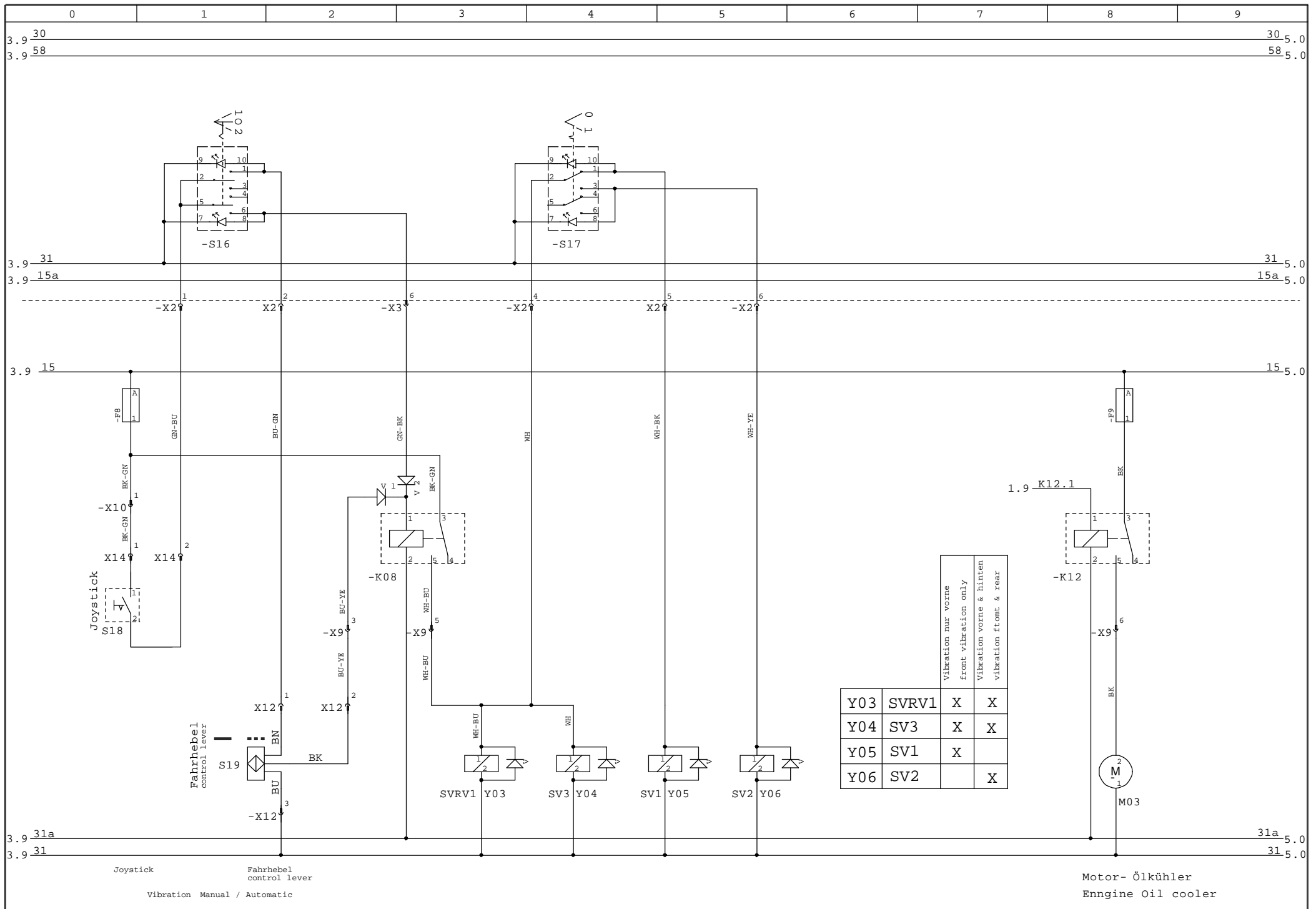


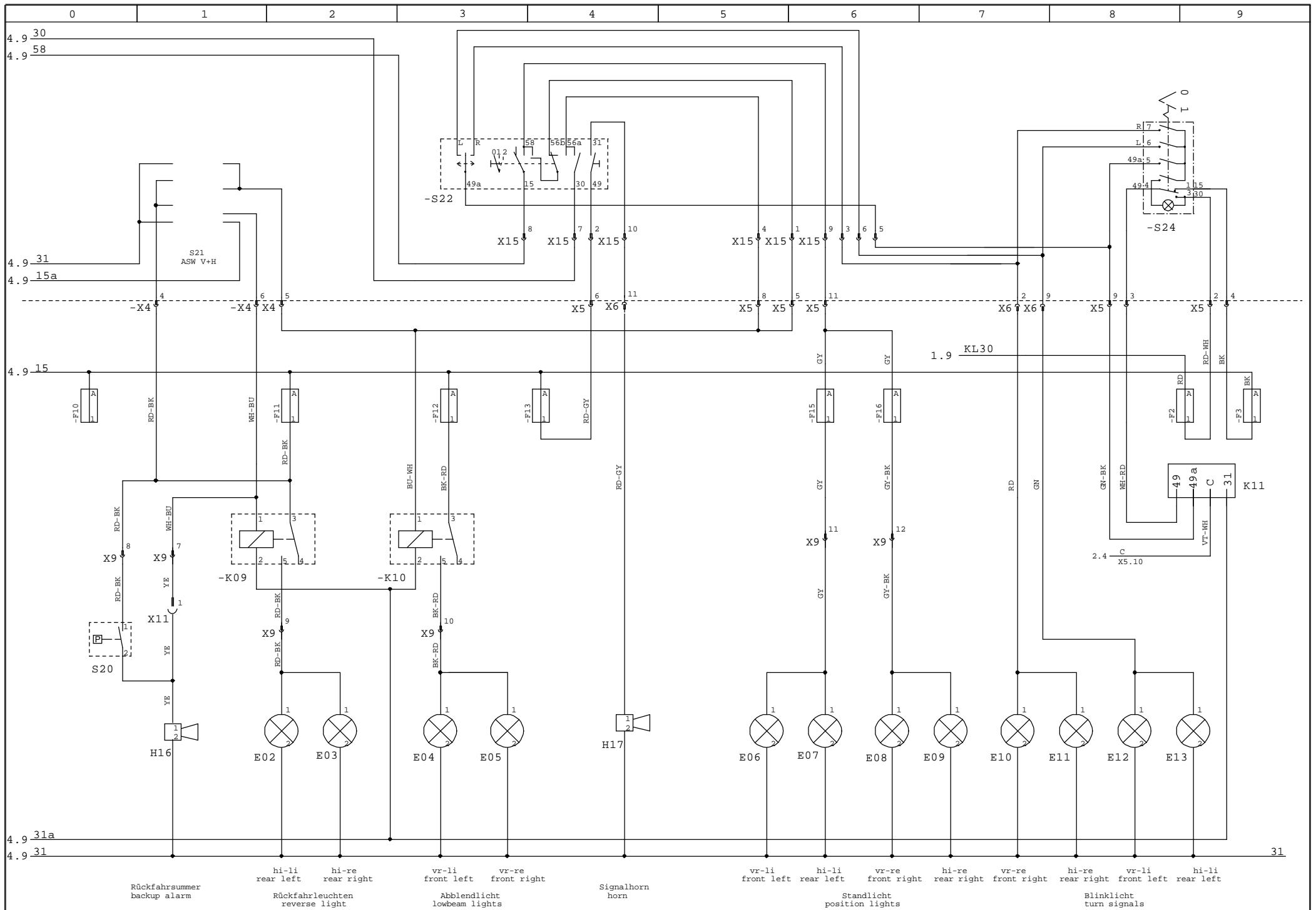
1.9 31a		31a 3.0
1.9 31	<div style="display: flex; justify-content: space-around; text-align: center;"> <div>Öldruck Motor engine oil pressure</div> <div>Motortemperatur engine temperature</div> <div>Luftfilter air filter clogged</div> <div>Tankanzeige fuel gauge</div> </div>	31 3.0

003		29.04.09	Heuer	Datum 05.06.2007			Vers.03	Atlas Weyhausen GmbH & CO KG Maschinenfabrik 27793 Wildeshausen	AW 3600 / 224-226-230
Zust.	Änderung	Datum	Name	Norm	Urspr.	Ers.f	Ers.d		Stromlaufplan / circuit diagram
									Blatt 2 von 9 Bl.

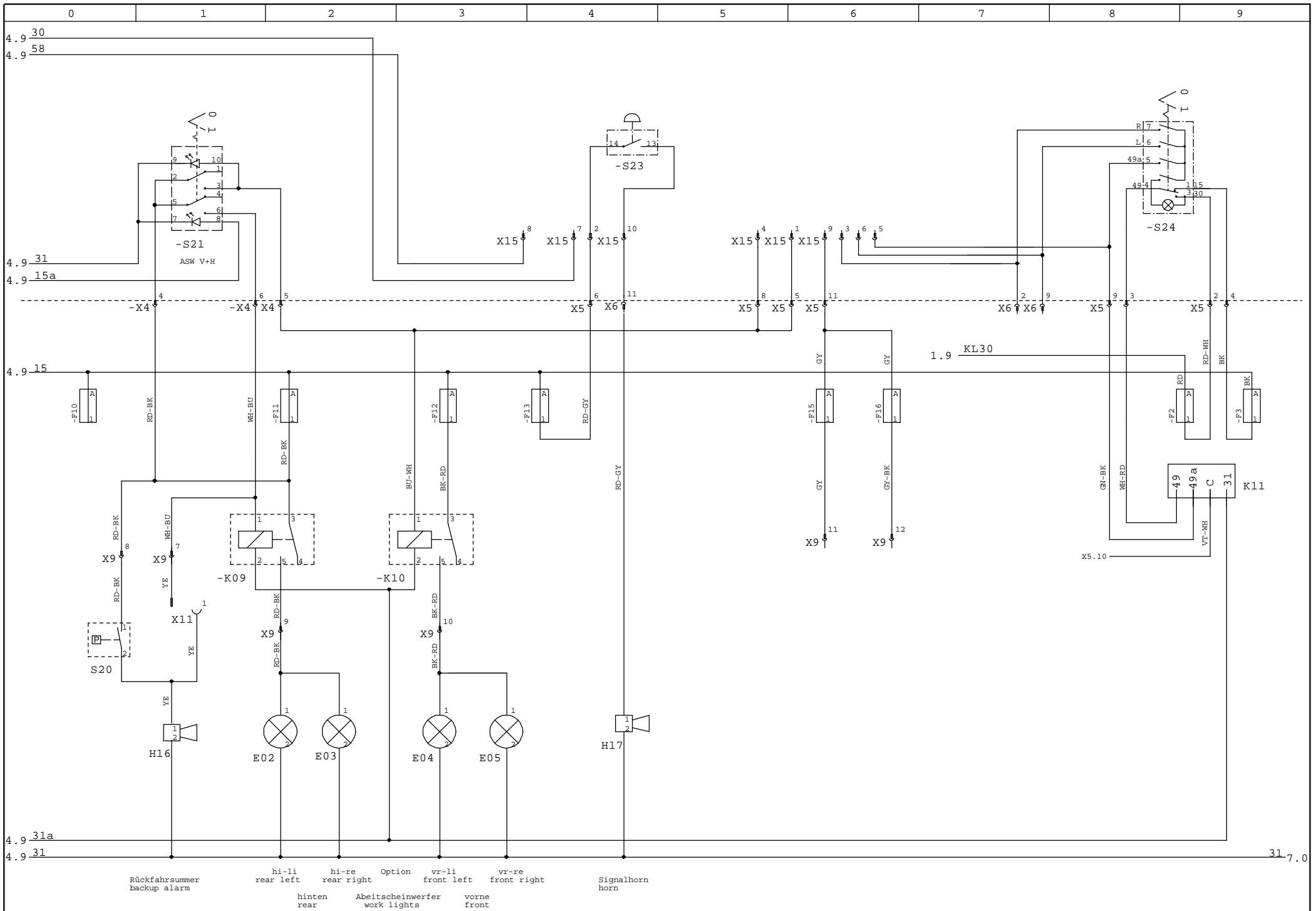


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			Bearb.	W.Heuer			Stromlaufplan / circuit diagram		Blatt 3
Zust.	Änderung	Datum	Name	Norm			Urspr.	Ers.f	Ers.d



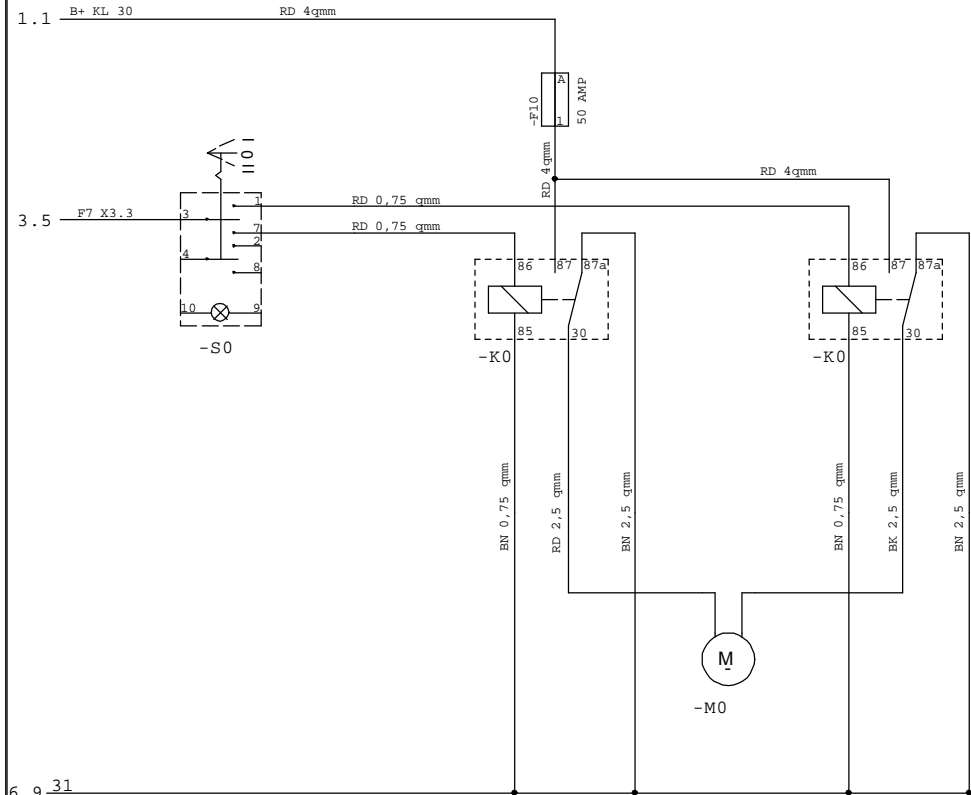


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				Bearb.	W.Heuer			Stromlaufplan / circuit diagram		Blatt 5
Zust.	Änderung	Datum	Name	Norm				Urspr.	Ers.f	Ers.d



Rückfahrsummer
 backup alarm
 hi-li rear left
 hi-re rear right
 hinten rear
 Arbeitsscheinwerfer
 work lights
 Option
 vr-li front left
 vr-re front right
 vorne front
 Signalhorn
 horn

003		29.04.09	Heuer	Datum	05.06.2007	Vers.03	Atlas Weyhausen GmbH & CO KG Maschinenfabrik 27793 Wildeshausen	AW 3600 / 224-226-230		
				Bearb.	W.Heuer			Stromlaufplan / circuit diagram		Blatt 6
Zust.	Änderung	Datum	Name	Norm	Urspr.			Ers.f	Ers.d	von 9 Bl.



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

6.9_31
 KSG Kantenschneider Typ 360-B
 edge cutter type 360-B




Chapter 10

Steering system & Articulated pendulum joint

Contents

This chapter provides you with information about:

- the steering and the steering hydraulics
 - the design of the articulated pendulum joint
 - dismantling/installing the articulated pendulum joint
- 

10.1 Steering system and articulated pendulum joint



CAUTION!

The articulated pendulum joint and the steering system constitute a unit. If the front drum is bent, this enables you to turn corners and take curves.

10.1.1 Steering system

- Steering of the tandem roller is effected by a hydraulic cylinder.
- The hydraulic steering system is powered by a hydraulic pump at the Diesel engine.
- The steering orbitrol (control block) can be found under the steering column.
- The oil flow in the control block is controlled by the steering motions of the steering wheel, which causes the hydraulic cylinder at the articulated pendulum joint to extend or retract.
- The steering motion/angle determines the turning radius (maximum radius: +/- 30°).

10.1.2 Technical specifications

Measurement / setting	Default value
Operating pressure steering system	180 bar

10.1.3 Overview: Steering hydraulics and components



1



5

4

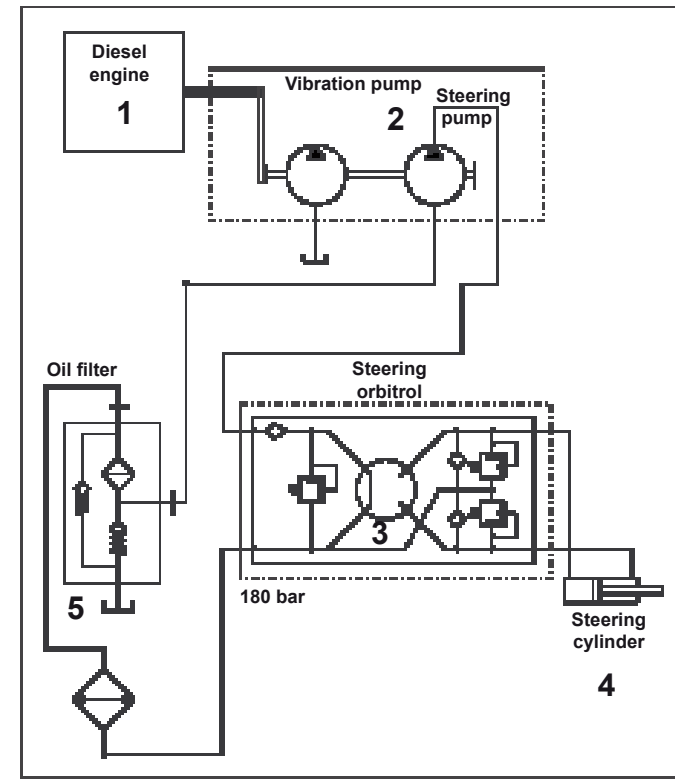


2



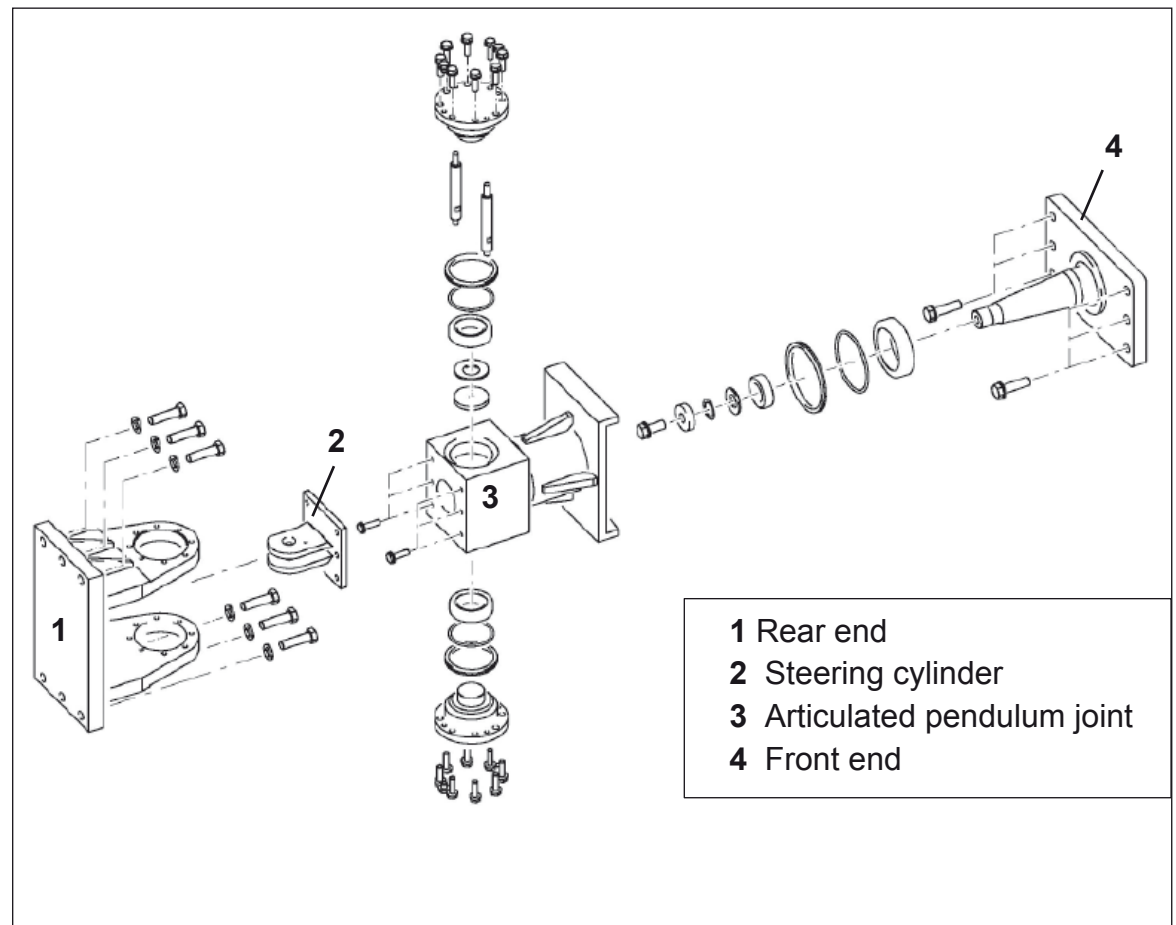
4

- 1 Diesel engine
- 2 Hydraulic steering pump
- 3 Steering orbitrol
- 4 Steering cylinder
- 5 Hydraulic oil tank

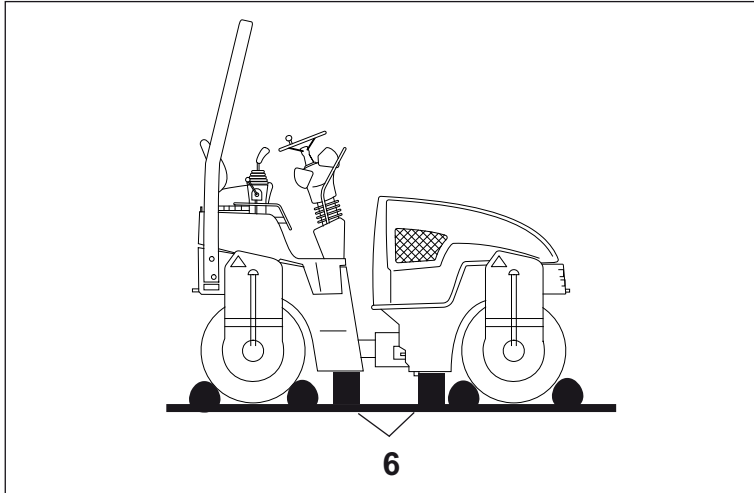
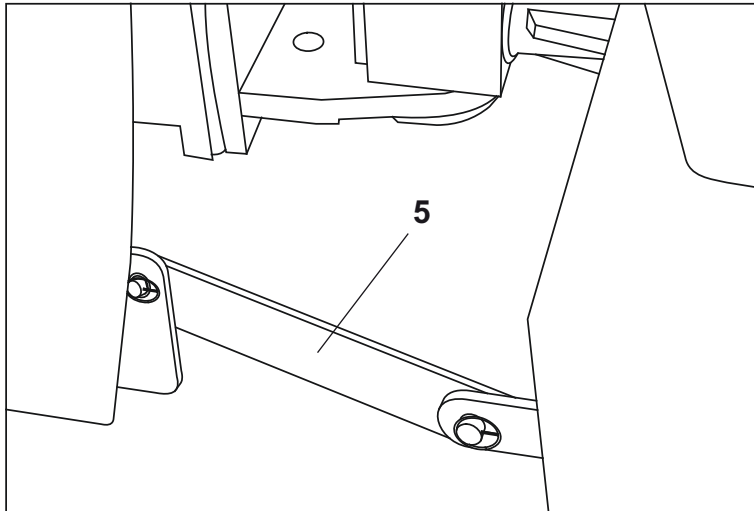


10.2 Articulated pendulum joint

- The articulated pendulum joint serves as the link between the front and the rear end of the tandem roller.
- Bending of the tandem roller is effected at the articulated pendulum joint.



10.2.1 Installing and dismantling the articulated pendulum joint



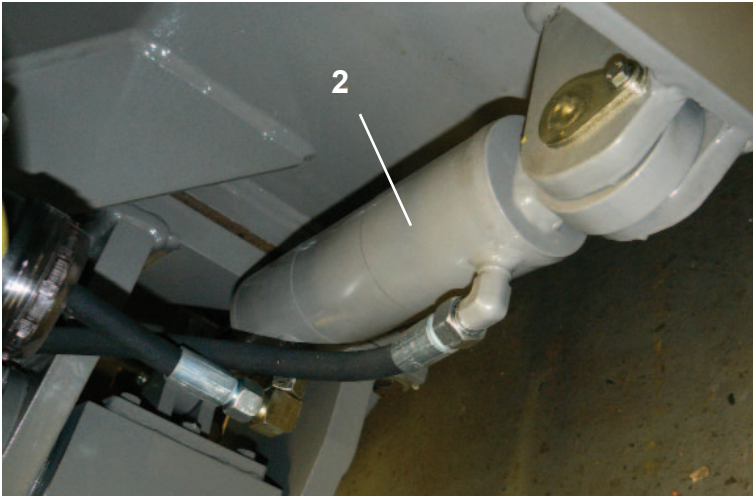
WARNING!

The articulated pendulum joint may only be replaced in an authorized workshop. In order to lift the components, an adequate crane capacity needs to be ensured.

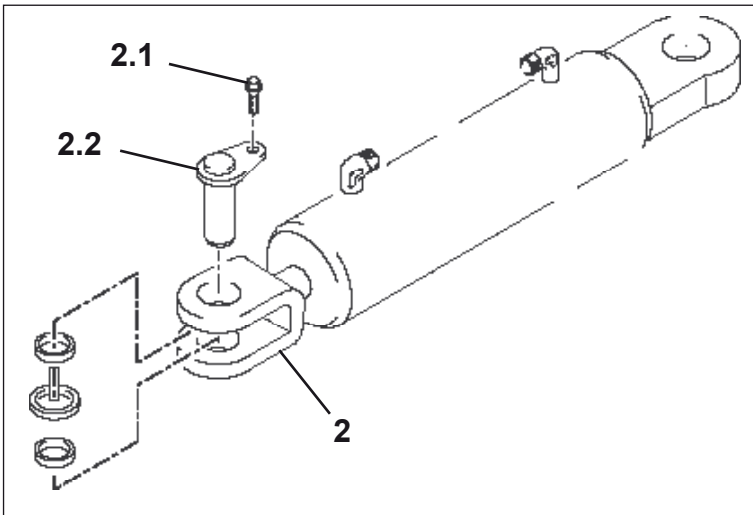
Preliminary work for installing and dismantling the tandem roller

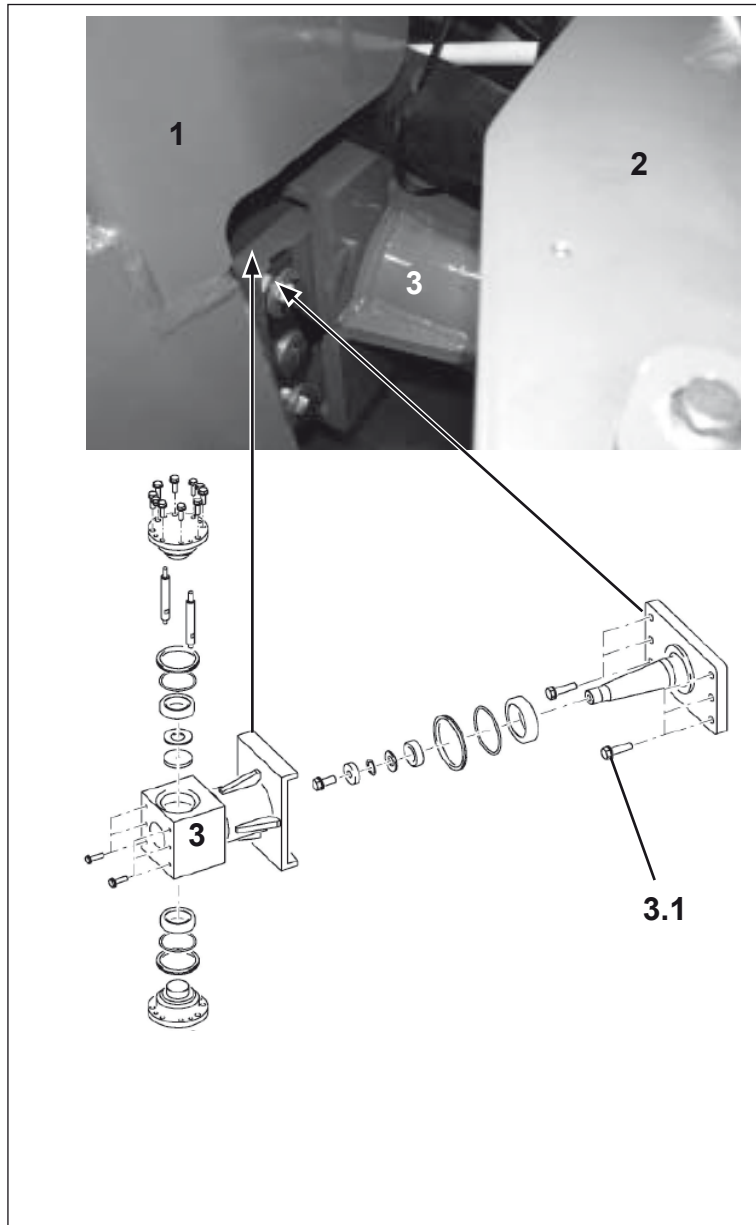
- Prior to any work related to the articulated pendulum joint, secure the tandem roller to prevent unintentional movement (rolling).
- Remove the ignition key.
- Activate the parking brake.
- Insert the anti-buckling device (5) between the front and the rear end.
- Secure the drums by means of wheel chocks,
- Slightly lift the tandem roller with a hydraulic jack.
- Place supports (6) both under the front and the rear end.

10.2.2 Dismantling the steering cylinder of the articulated pendulum joint



- Prior to dismantling the articulated pendulum joint, detach the steering cylinder (2).
- Unscrew the safety screws (2.1) from the steering bolts (2.2) and press the bolt upwards, out of the cylinder fork and the articulated pendulum joint.





Dismantling the articulated pendulum joint

- Use an elevating truck to place a carrying board under the articulated pendulum joint.
- Lift the board until it is right below the articulated pendulum joint.
- Unscrew the bolts (3.1) connecting the front end with the articulated pendulum joint (1/3).
- Unscrew the bolts (3.2) connecting the rear end with the articulated pendulum joint (2/3).
- By means of the elevating truck, lower the detached articulated pendulum joint (3) to the ground.

Replacing and installing the articulated pendulum joint



CAUTION!

Any repair work related to the articulated pendulum joint may exclusively be carried out by the manufacturer with the appropriate tools! Always replace the **entire** articulated pendulum joint.

- Put the new articulated pendulum joint (3) onto the carrying board of the elevating truck and position it under the tandem roller.
- Lift the articulated pendulum joint so you can screw on the bolts (3.2) between the articulated pendulum joint (3) and the rear end (2).
- Re-establish the connection (3.1) between the articulated pendulum joint (3) and the front end (1).
- Tighten all bolts crosswise, in accordance with the table of tightening torques (see **Chapter 1**).

