E.2 Technical data

Chassis

	Sturdy torsion-resistant frame, rubber-mounted diesel engine

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1.2 Maintenance overview

Daily/weekly maintenance

Work to be performed by the operator	Daily	Every week
Clean the machine	•	
Clean the air filter	•	
Check the machine for general damage	•	
Check the coolant level	•	
Checking the engine-oil level	•	
Check the engine for leaks		•
Check the hydraulic oil level	•	
Check the tire condition and pressure		•
Check all bolts for tightness		•
Check the wheel bolts		•
Check the braking system for correct function	•	
Check the brake fluid		•
Check the washer system and wiper water level	•	
Check the seat belt	•	
Check the instruments and indicator lights, and the acoustic warning devices for correct function	•	
Check the electrical system and lights for correct function	•	
Check the brake/inching pedal for correct function	•	
Check the steering system	•	
Check control levers and switches for correct function	•	
Check the attachments	•	
Check the exhaust for malfunctions and excessive smoke		•
Perform grease lubrication according to the lubrication plan, including of the attachments		•
Check the protective ROPS/FOPS structure		•
Clean the preliminary separator of the fuel filter		•
Check the machine axles for leaks		•
Check the hydraulic oil and water radiator for leaks and dirt, clean it if necessary		•
Check the attachments for safety and correct function		•
Check the routing of the hoses, pipe lines and electric lines		•
Check the air filter and intake hose		•
Check the engine mounting and axle mounting		•
Perform a general safety check, *General safety check on page 1-21*		•

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1.8 Engine lubrication system

Replace the engine oil and engine oil filter

CAUTION

Risk of injury due to hot and moving engine parts!

Hot and moving engine parts can cause injury.

- ► No smoking, no open flames!
- ► Caution when handling hot lube oil. Burn hazard!
- ► Ensure utmost cleanliness when working on the lube oil system. Carefully clean the area around the components affected!
- ► Follow the safety instructions and country-specific regulations when handling lube oil!
- ► Dispose of drained lube oil correctly. Do not allow used lube oil to seep into the ground!
- ► Perform a test run every time work has been performed!
- ► Check for leaks and correct lube oil pressure, and then check the engine oil level!

Checking the engine oil level daily

NOTICE

If the engine oil level is too low or if an oil change is overdue (black engine oil), this can cause diesel engine damage or loss of output!

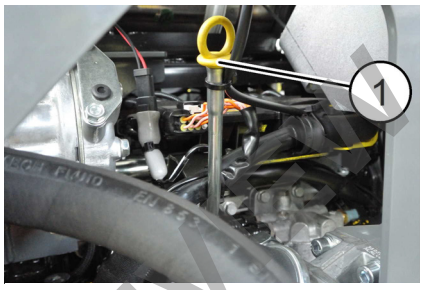


Fig. 21

Check the engine oil level as follows:

1. Park the wheel loader on level ground
2. Lower the telescopic boom to the ground
3. Stop the diesel engine and remove the key
4. Apply the parking brake
5. Opening the engine cover
6. Pull out the oil dipstick (1) and wipe it with a lint-free cloth
7. Push in the oil dipstick as far as possible, pull it back out and read off the oil level
8. However if necessary, add oil at the latest when the oil reaches the MIN mark on the oil dipstick (1)

Adding engine oil

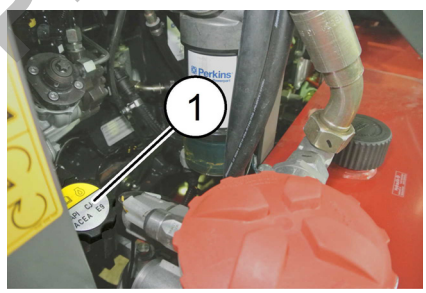


Fig. 22

Too much or incorrect engine oil can result in engine damage!

Do not add engine oil above the MAX mark of the oil dipstick – *see "Oil dipstick marking" on page 1-40*

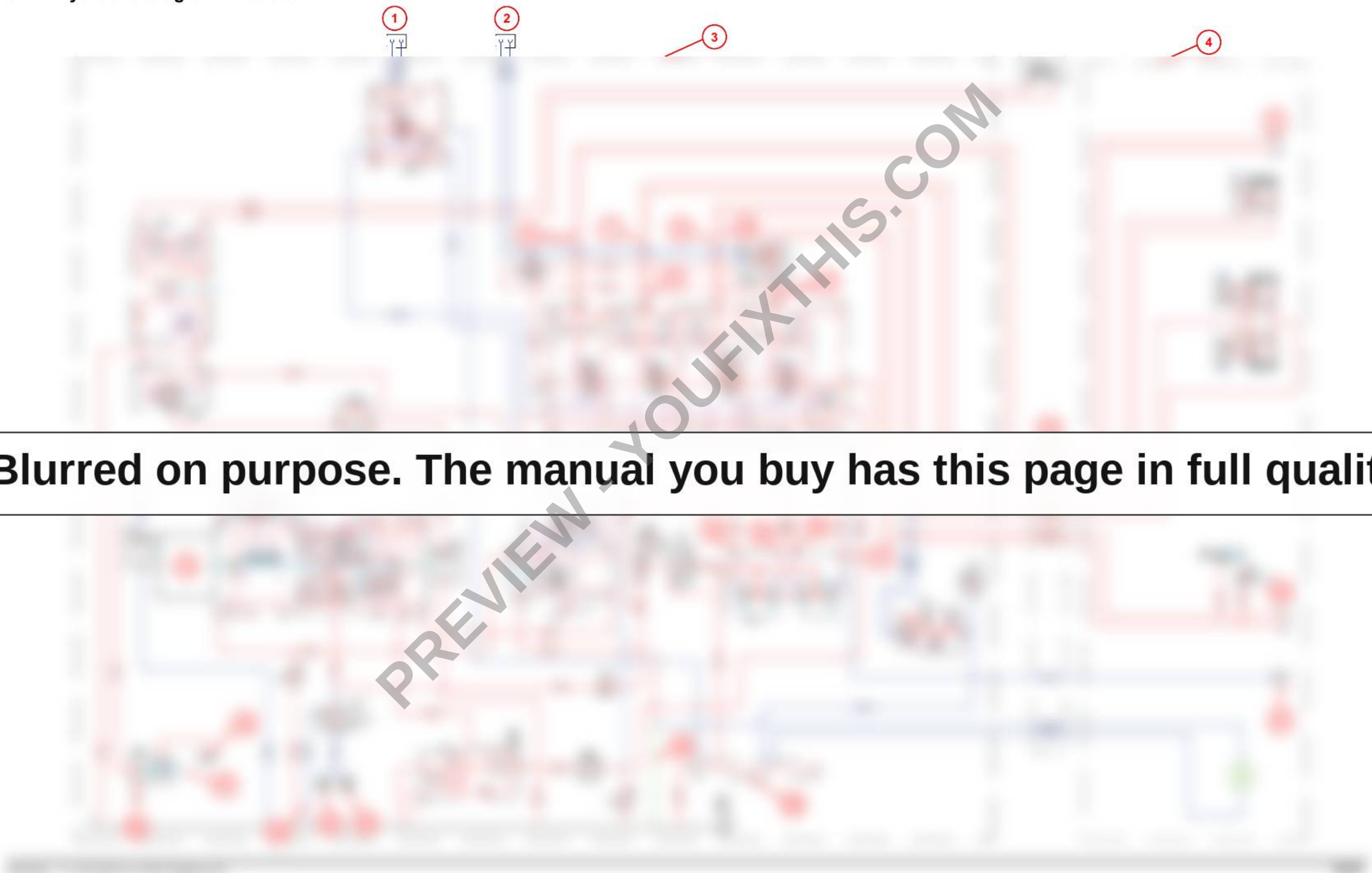
Use only the specified engine oil

Use a suitable container to collect the engine oil as it drains and dispose of it in an environmentally friendly manner!

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8.4 Hydraulic diagram – Version 1



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Electrical diagram – power supply

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Error code				Error setting condition (detection threshold)
SPN (component)		FMI (error type)		
SPN	SPN text	FMI	FMI text	
27	Exhaust gas recirculation valve	3	Voltage too high	The engine control unit recognizes that the signal voltage of the position sensor on the valve of the nitrogen reducing system (NRS) is more than 4.8 V DC for at least 0.5 seconds. The battery voltage is at least 10 V DC. While this code is active, the ECM puts the valve in the default position. The default position is 0%. If present, the warning light illuminates. The engine speed is reduced.
27	Exhaust gas recirculation valve	4	Voltage too low	The ECM detects that the signal voltage of the position sensor is below 0.2 V DC for at least 0.5 seconds. The battery voltage is at least 10 V DC. While this code is active, the ECM puts the valve in the default position. The default position is 0%. If present, the warning light illuminates. The engine speed is reduced.
29	Accelerator pedal 2	3	Voltage too high	The engine control unit (ECM) detects that the signal from the throttle valve position sensor is above the upper diagnostic limit for at least 0.2 seconds. If present, the warning light illuminates.
29	Accelerator pedal 2	4	Voltage too low	The engine control unit (ECM) detects that the signal from the throttle valve position sensor is below the upper diagnostic limit for at least 0.2 seconds. If present, the warning light illuminates.
51	Position sensor Throttle valve	3	Voltage too high	The ECM detects the following states: The signal voltage of the position sensor for the engine throttle valve inlet valve is over 4.75 V DC for at least 0.5 s. The battery voltage is at least 10 V DC. While the diagnostic code is active, the throttle valves inlet valve moves into the default position. The default position is 0%. If present, the warning light illuminates.
51	Position sensor Throttle valve	4	Voltage too low	The ECM detects the following states: The signal voltage of the position sensor on the throttle valve inlet valve is under 0.25 V DC for at least 0.5 s. While the diagnostic code is active, the throttle valves inlet valve moves into the default position. The default position is 0%. If present, the warning light illuminates.

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E.4 Safety instructions

Pay particular attention to the following

To eliminate risks, the instructions in this service manual must be read and observed by every person using, servicing, repairing, maintaining or inspecting this machine.

In particular, read this section on safety.

Safety symbols and signal words

Explanation

The following symbol identifies safety instructions. It is used for warning against potential personal risk or danger.

DANGER

DANGER identifies a situation causing death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

WARNING

WARNING identifies a situation that can cause death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

CAUTION

CAUTION identifies a situation that can cause injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury.

NOTICE

NOTICE identifies a situation that causes damage to the machine if it is not observed.

► Avoidance of damage to property.

The warning and safety signs attached to the machine provide important information for safe operation. Compliance is for your safety.

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Safety instructions for work on the frame

Welding work

- Welding work may only be performed by persons who are trained for this task!
- Welding work on receptacles which contain or contained substances that are flammable, combustible, explosive, or can produce harmful vapors, gasses, mist or dust during welding work may only be performed by persons designated for such work and supervised by a competent person. If you have any problems or questions, be sure to contact the manufacturer's service personnel!
- Park the machine on level and firm ground and prevent it from rolling away.
- Stop the engine, operate and remove the battery master switch.
- If welding work is to be performed at the bottom of the machine, lift the machine with suitable lifting gear and support it safely.
- Disconnect the battery before performing welding work (see Operator's Manual, "Removing the battery").
- Disconnect the plug-and-socket connections on the diesel engine control unit.
- Disconnect plug-and-socket connection on chassis control unit.
- Protect bare clamps and connections from short circuits!
- Attach the welding current terminal directly next to the weld! Only the chassis and the frame are suitable as ground connections. The ground connection on the machine must be free from paint, grease and oil. The following components must not be used as ground connections:
  - Diesel engine, variable displacement motor
  - Radiator
  - Variable displacement pump, hydraulic pump
  - Steering orbitrol
  - Valves
  - Hydraulic cylinders, lines and hoses
  - Axles
  - Pins
  - Bearings
  - Exhaust System
  - Ground cable, cables in general
- No welding work must be performed on the following components:
  - Diesel engine
  - Radiator
  - Variable displacement pump and motor
  - Hydraulic pump, cylinders, lines, hoses
  - Steering orbitrol
  - Valves
  - Any part of the axles
  - Pins
  - Bearings
  - Exhaust system.
- Reconnect the battery after welding (see Operator's Manual, "Removing the battery").

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Information on cleaning

Information

Clean a new machine only with a sponge (for the first three months). As the bottom layers of the paintwork are not fully hardened yet, the paintwork can be damaged if cleaned with a high-pressure cleaner.

Observe the following when cleaning the machine with a high-pressure cleaner:

► Max. water pressure 130 bar.

► Max. water temperature 80 °C

In order to avoid damage to labels and other sensitive parts, do not hold the nozzle of the high-pressure cleaner too close to the machine.

General safety check

Check the following points:

- Check all steel parts for damage and loose threaded fittings, in particular the protective ROPS/FOPS structure.
- Check the condition of the seat belt.
- Check the quickhitch for the attachments.
- Check whether all pivot pins are in their correct positions and secured with their locks.
- Check the climbing aids and handholds for correct position.
- Check the cabin windows for damage, cracks and stone impacts.
- Check the condition of the lights and working lights.
- Check the tires for damage and penetration of sharp-edged objects.
- Check the condition of all warning and information labels.

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Replace the hydraulic oil

DANGER

Caution when draining hot hydraulic oil and removing the filter element – burn hazard!

- Wear safety gloves
- Use an oil drain coupling with a sufficiently long hose

Proceed as follows:

- Park the vehicle on level ground
- Lower the telescopic boom completely. To do this: push the lever forward
- Dump in the bucket completely. To do this: push the lever to the left
- Stop the engine and prevent the machine from rolling away
- Opening the engine cover
- Open the closure (1) of the hydraulic oil tank
- Place a suitable container under the hydraulic oil tank
- (Loading capacity min. 55 liters)

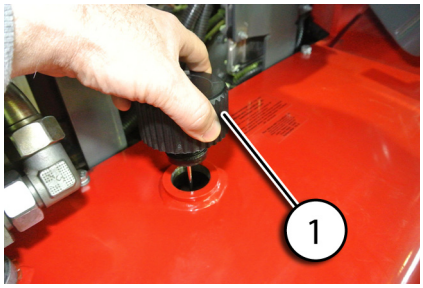


Fig. 56 Open the hydraulic oil filter

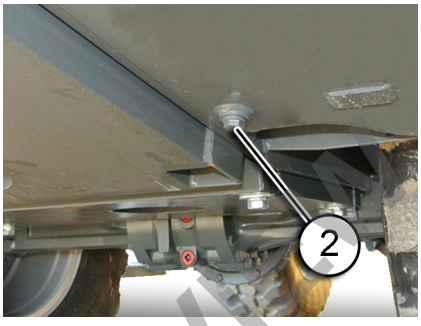


Fig. 57 Open the oil drain plug

- Unscrew the oil drain plug (2) and allow the oil to flow into the collection container
- Rinse the hydraulic oil tank with a little hydraulic oil
- Renew the hydraulic oil return filter – *see chapter 1 " Changing the filter insert" on page 1-60*

CAUTION

Contaminated hydraulic oil carries a danger of severe damage to the hydraulic system!

Always add hydraulic oil using the filling screen!

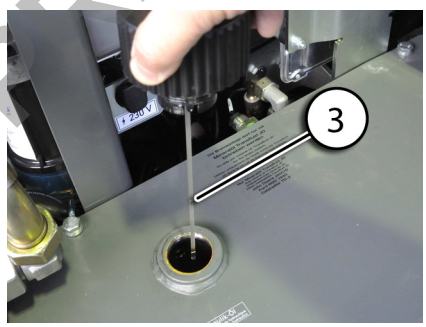


Fig. 58 Oil dipstick marking

- Screw in and tighten the drain plug of the hydraulic oil tank
- Fill new hydraulic oil up to the max mark (3) of the hydraulic oil dipstick
- Close the hydraulic oil tank
- Start the engine and at low engine speed, fully extend and retract the lift and tilt rams
- Turn the steering wheel to the left and right several times, from lock to lock
- Retract all the hydraulic cylinders again
- Stop the engine
- Check the hydraulic oil level again and fill up if necessary

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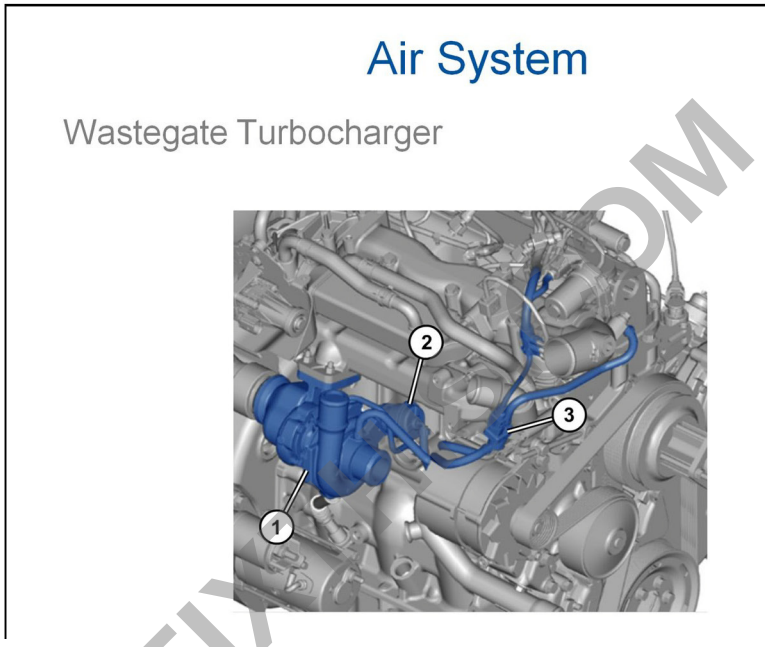


Fig. 102 Boost pressure control

Legend

1. Turbocharger
2. Waste gate actuator
3. Control valve

The 854-series turbocharger (1) is equipped with a boost pressure control. The engine control unit uses the sensor measured values to control the so-called waste gate in order to control the amount of exhaust gas that drives the exhaust gas turbine. This allows the control unit to optimally adjust the boost pressure to the engine demand throughout the entire load range. The charge air control element (2) mechanically controls the opening of the waste gate. The control element is controlled via the boost pressure fluctuations from the intake manifold via a control valve (3), which is monitored by the engine control unit. A precise control of boost pressure and volume flow is achieved in this way.

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Checking, cleaning and replacing the engine air filter element

NOTICE

Never let the engine run without an installed air cleaner element. Never let the engine run if the air cleaner element is damaged. Do not use any air cleaner elements with damaged folds or seals.

Dirt that makes its way into the engine causes premature wear and damages the engine parts. Air cleaner elements prevent dirt particles from the air from making their way into the air inlet.

NOTICE

Never maintain the air cleaner element with the engine running, as dirt can enter into the engine in this way.

Maintain the air filter elements

If the air filter element begins to clog, the material of the air filter element can be slit open by the air. Unfiltered air accelerates the inner engine wear drastically.

- Check the dust cover (1) daily for dirt accumulation and foreign bodies. Remove any impurities and foreign bodies if necessary.

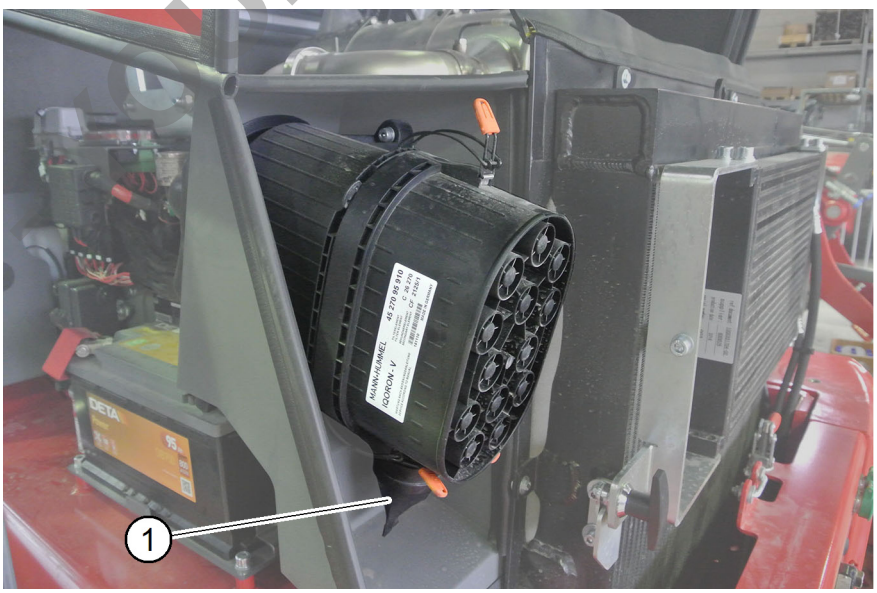


Fig. 164 Air filter element of engine 854F

- In dusty application conditions, the air filter element may need to be maintained more frequently.
- The air filter element must be replaced at least once annually. This replacement must occur regardless of the number of times it has already been cleaned.

Replace contaminated air filter elements with clean air filter elements. Before assembly, the air filters must be carefully checked for cracks and/or holes in the filter material. Check the seal of the air filter element for damage. Keep appropriate air filter elements in stock as replacements.

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6.4 Brake pad change (drum brake)

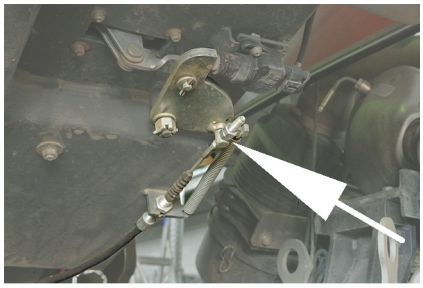


Fig. 207 Reset the Bowden cable

Tilt the cab and reset the brake cable of the parking brake (arrow)

Remove the cardan shaft.

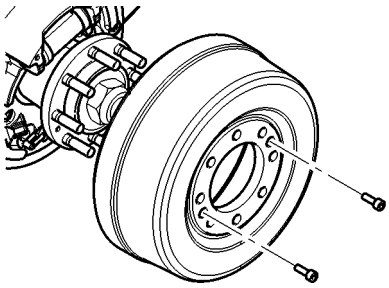


Fig. 208 Retaining screws of the brake drum

Unscrew 2 retaining screws and remove the drum.

NOTICE

Do not use any force!

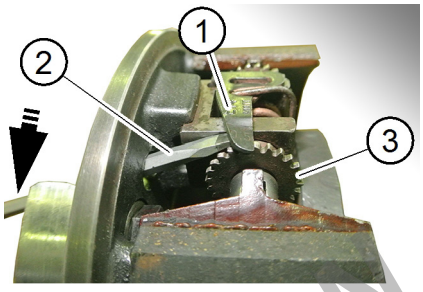


Fig. 209 Unlock the adjusting lever

In the event that the brake drum is run in and therefore cannot be removed, the adjuster must be unlocked and reset. To do this, remove the plugs from the inspection holes. Carefully raise the adjusting lever (1) by leveraging it with a screwdriver (2) so that the adjuster wheel (3) can turn back freely (representation here without brake drum).

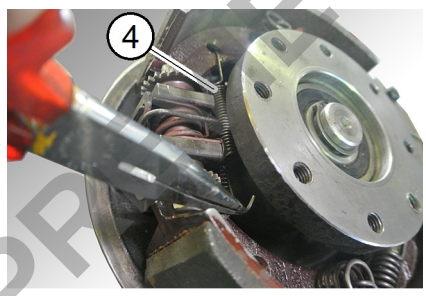


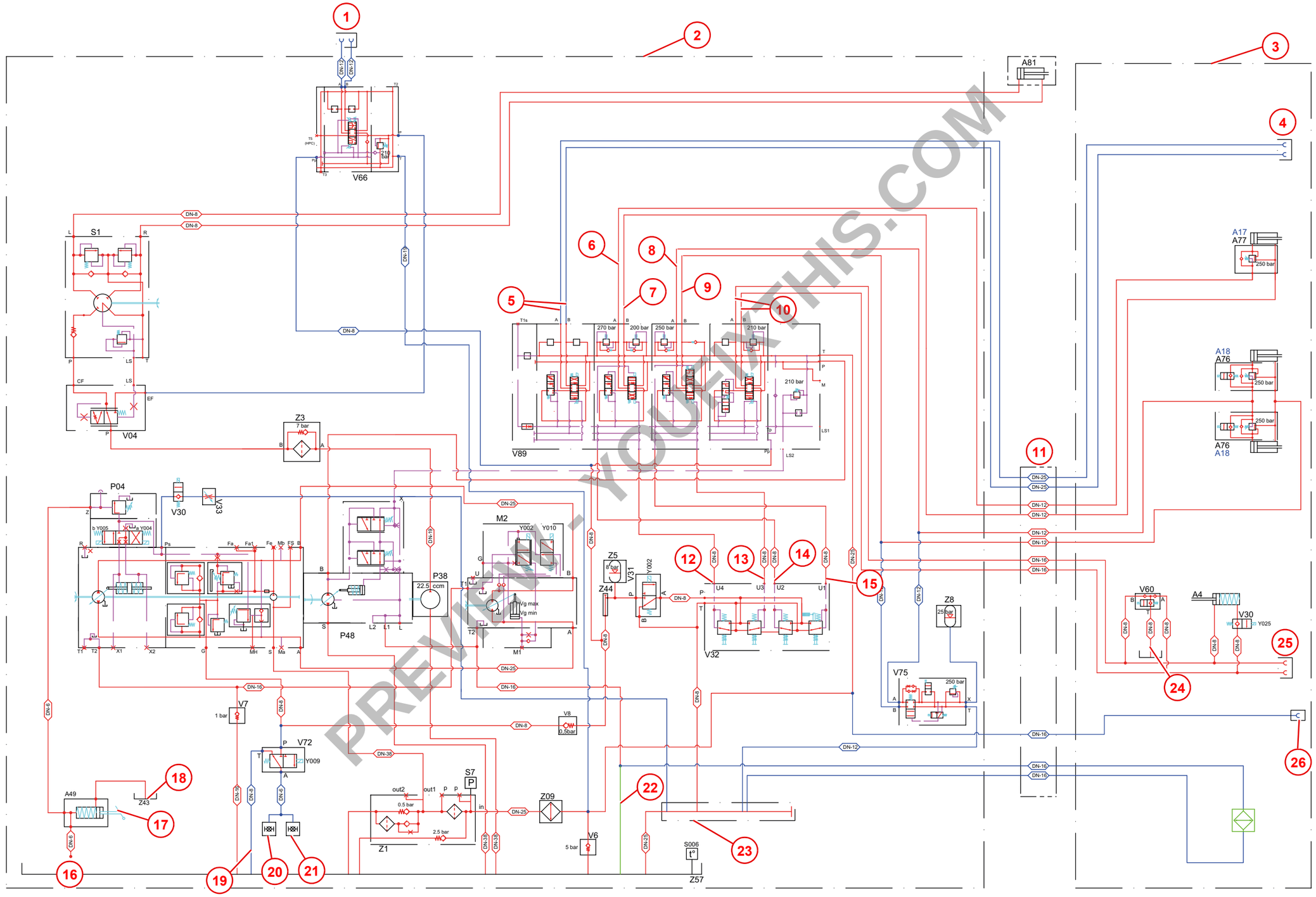
Fig. 210 Unhitch the spring

Unhitch spring (4)

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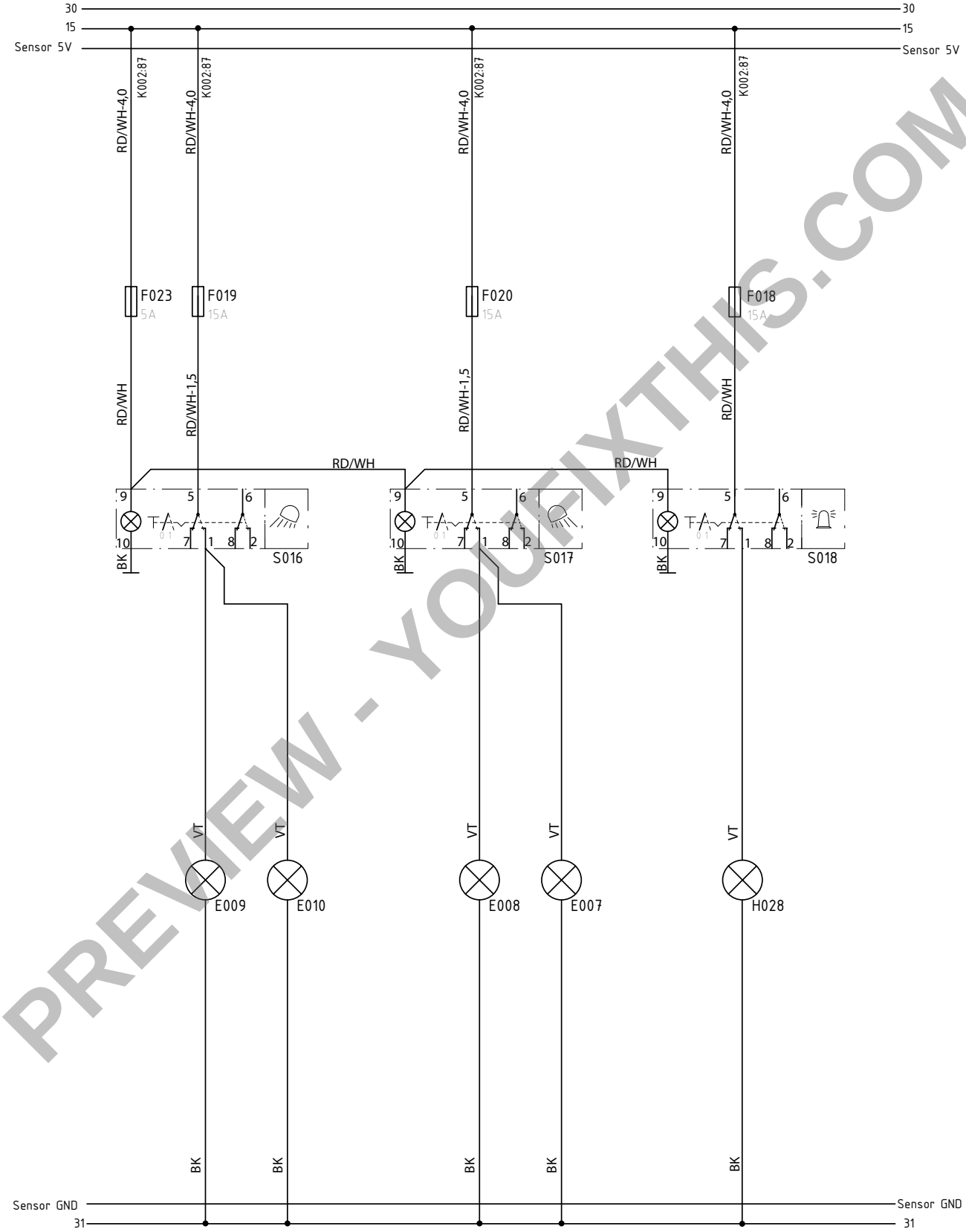
8.8 Hydraulic diagram – Version 5



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9.8 Working light, rotating beacon

FG08-01

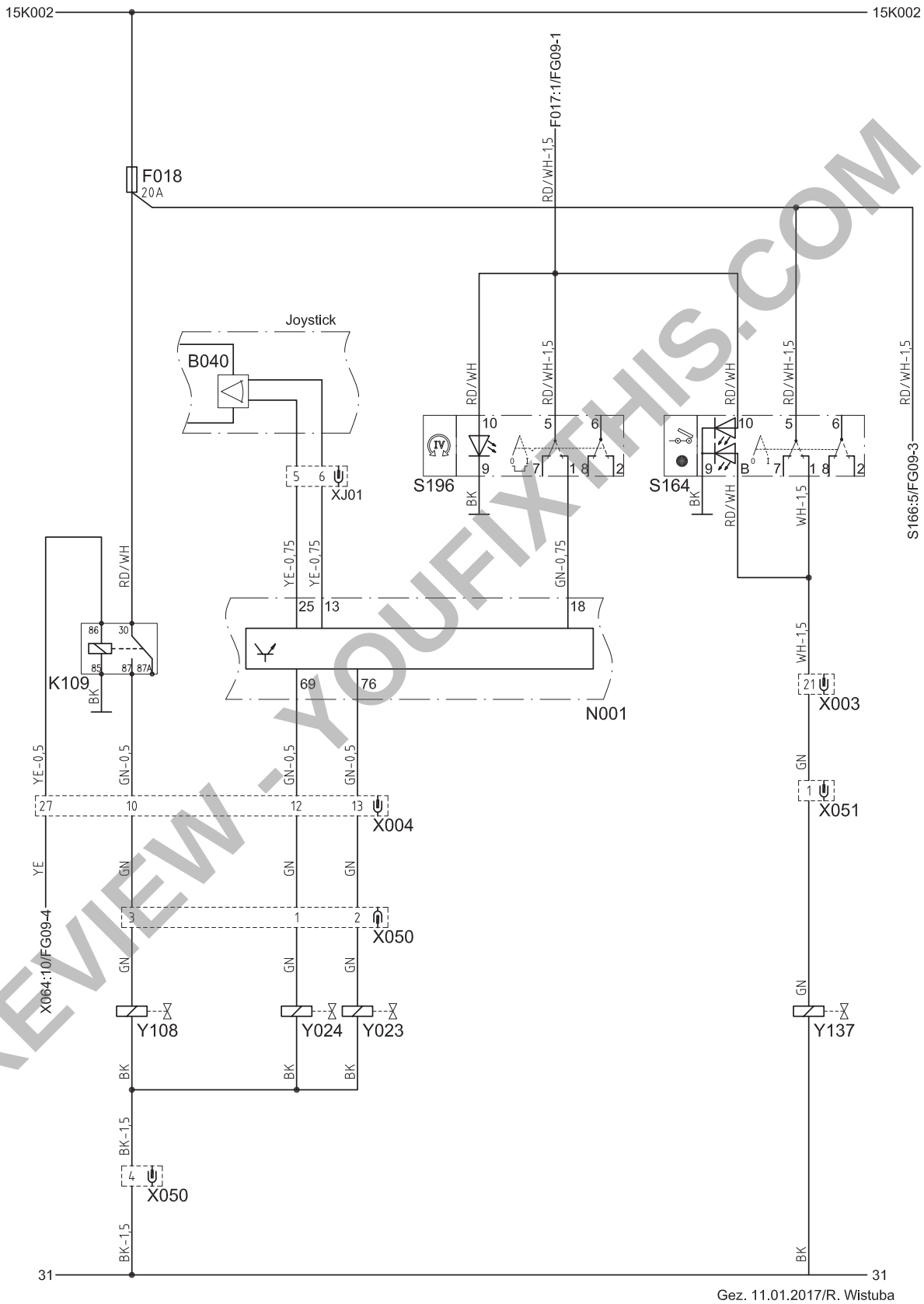


Naming of components see chapter *Equipment identifiers* on page -5

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Naming of components see chapter *Equipment identifiers* on page -29

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