2 Technical data

2.1 Models and trade names

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3.5 Maintenance plan

Daily maintenance (user)	
Inspection work (Check the following fluids and lubricants, check the oil levels after a test run and add oil if necessary)	Page
Check the fluids and lubricants (engine oil, engine coolant, hydraulic oil)	*3-23*, *3-27*, *3-49*
Check the radiator and hydraulic oil cooler for dirt, clean them if necessary	*3-31*
Lubricate the machine according to the lubrication schedule	*3-60*
Check the dirt indicator on the air filter [1]	*3-33*
Check the water separator and fuel filter: drain water if necessary (see sight glass)	*3-17*, *3-19*, *3-18*
Check the track tension and retension the tracks if necessary	*3-56*
Check the engine air intake	*3-34*
Check pin lock	--
Check line fixtures	--
Check indicator lights for correct function	*1-18*
Check the hydraulic couplings for dirt	--
Check the threaded fittings of the protective structures (for example the cabin) for tightness[2]	--
Option	
Adjust the mirrors correctly, clean them and check them for damage, check the fastening screws and tighten them if necessary	--
Leakage check	
Check for tightness, leaks, and chafing: pipes, flexible lines and threaded fittings of the following assemblies and components. Repair if necessary	Page
Engine and hydraulic system	--
Traveling drive	--
Cooling systems, heating, and hoses (visual check)	--
Option	
Hydraulic quickhitch system and Powertilt (hoses, valve)	--
Visual check	
Correct function, deformation, damage, superficial cracks, wear and corrosion	Page
Check the exhaust system for damage	--
Check the insulating mats in the engine compartment for damage	--
Check the cabin and protective structures for damage (for example the Front Guard, FOPS)	--
Check tracks for cracks and cuts	--
Check the travel gear for damage (for example the track roller, insert rolling bearings)	--
Check the piston rods of the cylinders for damage	--
Check the seat belt for damage	--
Option	
Check the load hook, joint rod and lifting eye	*3-59*
Check the hydraulic quickhitch for damage	--
Check the Powertilt for damage	--

1. Air filter replacement according to the dirt indicator, every 1000 o/h or once a year at the latest. (Replace after 50 o/h when in extensive use in environments with acidic air, such as acid production facilities, steel and aluminum mills, chemical plants and other nonferrous-metal plants, independently of the dirt indicator)
2. Check the screw connections and corresponding components/assemblies visually or manually (without using tools) for tightness (operator).
   If in case of irregularities a tool still has to be used for checking, have the screw connection re-established by an authorized service center with new material (screws, nuts).

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Environment!

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Changing engine oil

Danger!

Hot engine oil –

Burn hazard!

☞ *Always use appropriate protective equipment, protective gloves, for example!*

☞ *No smoking, no fire!*

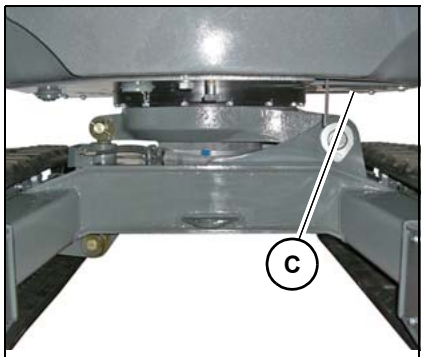


Fig. 52: Changing engine oil

- Let the engine run until it reaches its operating temperature (oil temperature about 80 °C/176 °F).

☞ *Stop and park the machine. Stop the engine. – see Preparing lubrication on page 3-59.*

☞ *Place a suitable container under oil drain plug **C**.*

☞ *Unscrew oil drain plug **C**.*

- Service valve option

  ☞ Install the drain hose (supplied with the machine).

☞ *Completely drain the oil.*

☞ *Screw oil drain plug **C** back on again.*

☞ *Add fresh engine oil.*

☞ *Start the engine and let it run briefly at low speed.*

☞ *Stop the engine.*

☞ *Wait until all the oil has run into the oil sump.*

☞ *Check the oil level again.*

☞ *Add if necessary and check again.*

☞ *Completely remove all oil spills from the engine.*

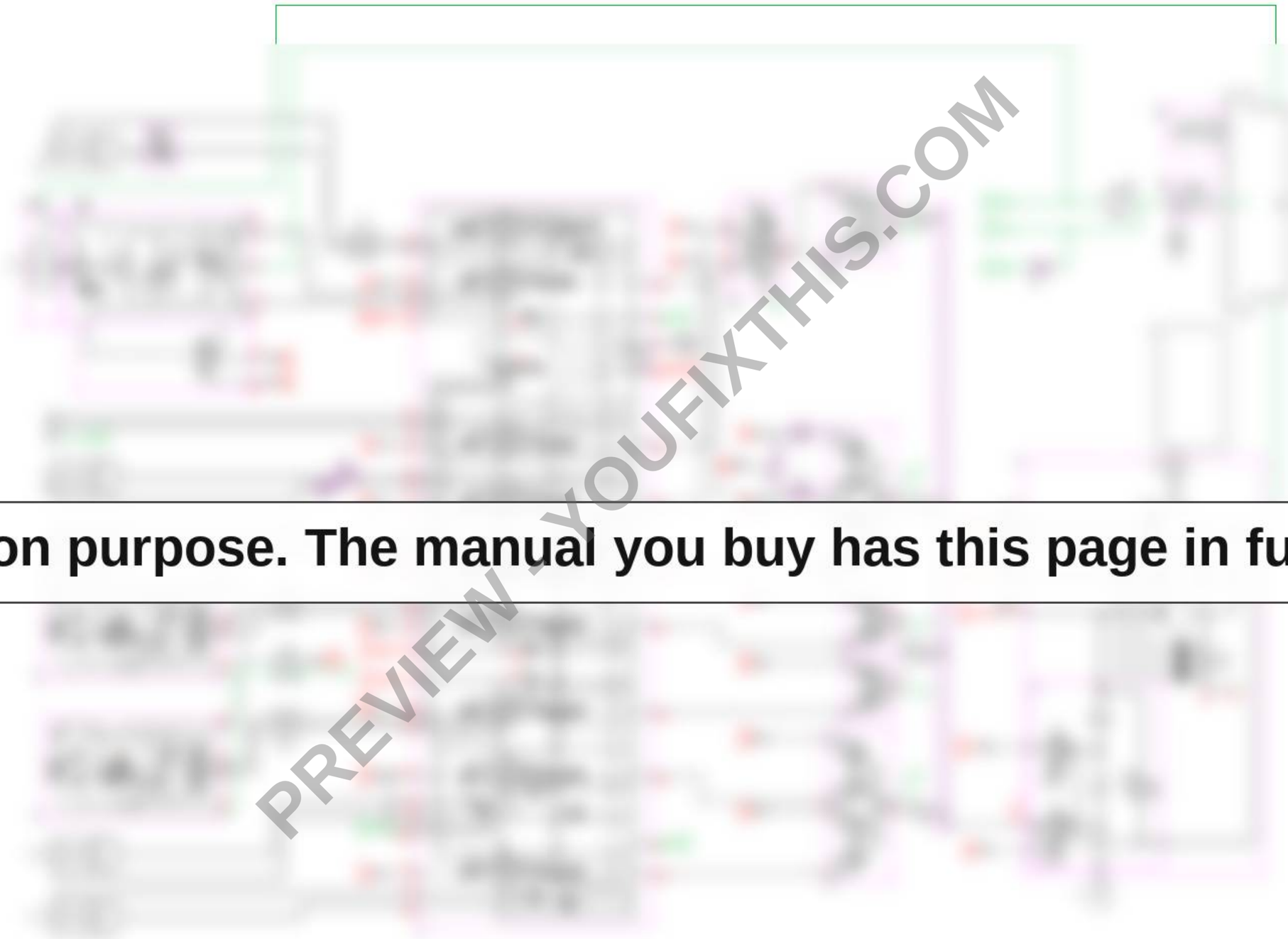
Environment!

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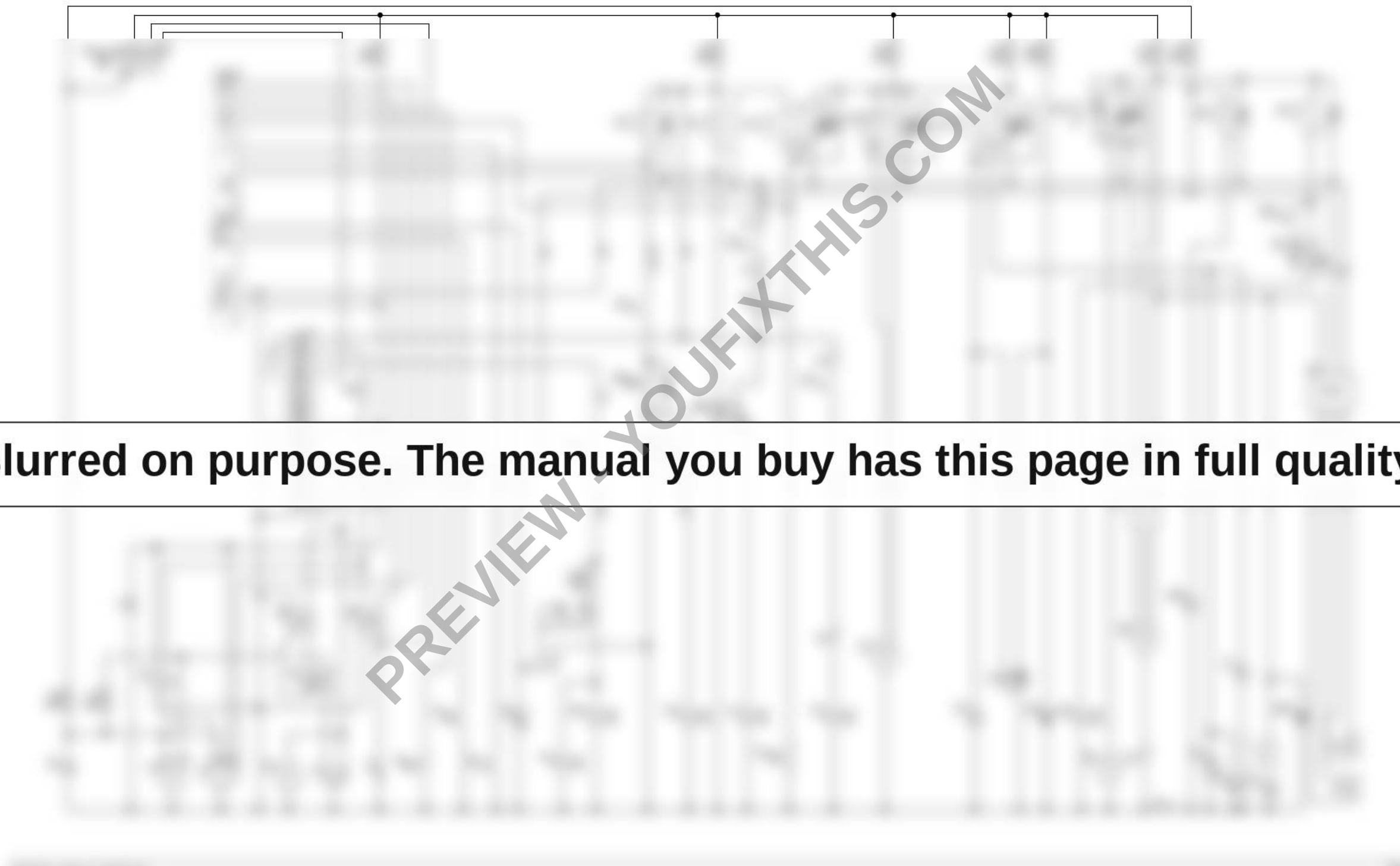
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7.2 Hydraulics diagram (up to serial no. WNCE1002LPAL00499)



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7.33 Wiring diagram (up to serial no. WNCE1002PPAL00526)



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Technical data

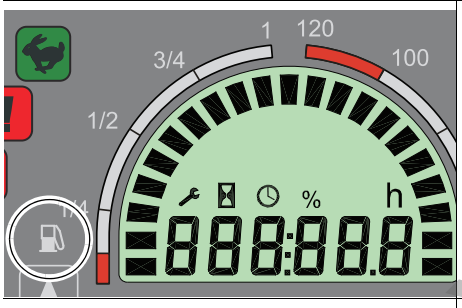
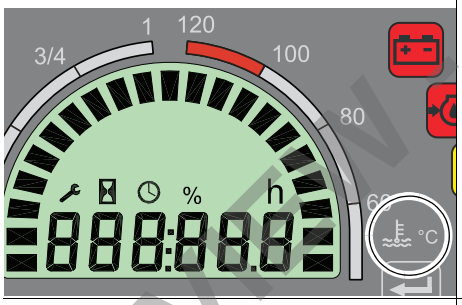
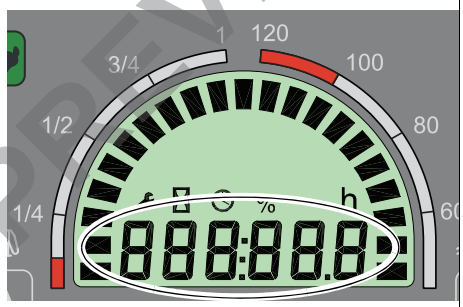
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Symbol	Designation
	**Safe load indicator light** The safe load indicator gives the operator optical and acoustic warnings when the authorized lift load or load torque is reached or exceeded according to the stability table. ☞ *Reduce reach or the lift load until both the acoustic signal and the indicator light in the display element go out.*
	**Coolant temperature** If the coolant temperature segment reaches the red range, the indicator light for the coolant temperature illuminates and the buzzer sounds. • Stop and let the engine cool down before starting it again.
	**Monitoring the hydraulic oil return filter** The indicator light illuminates if the hydraulic oil filter has to be replaced. In cold weather the indicator light can illuminate immediately when the engine is started. Warm up the machine at low engine speed and little load. Rectify the error if the indicator light continues to illuminate. – *see chapter Monitoring the hydraulic oil return filter* on page 3-51
	**Fuel level indicator** Indicates the remaining amount of fuel in the tank. Refuel immediately if the segments reach the red range.
	**Coolant temperature** Indicates the current coolant temperature of the engine. The indicator light illuminates if the segments reach the red range. ☞ *Stop the engine immediately.* • Let the engine cool down and check the coolant level.
	**Hour meter/maintenance meter** Counts the engine operating hours with the engine running. **Hour meter** The counter runs as soon as the charge indicator light goes out. The hour meter is used for specifying the maintenance intervals. **Maintenance meter** The maintenance meter starts at 500.0 hours. It counts down to 0.0 hours. A wrench symbol flashes as soon as the maintenance meter reaches this value. The meter keeps on counting down (−0.1 hours, −0.2 hours, etc.).

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	EZ28	
A	Height	2405 mm (95 in)
B1	Cabin width	980 mm (39 in)
B2	Upper carriage width	1340 mm (53 in)
B3	Travel gear width	1570 mm (62 in)
C1	Transport length (short stick)	4270 mm (14')
C2	Transport length (long stick)	4290 mm (14'-1")
D1	Max. digging depth (short stick)	2540 mm (100 in)
D2	Max. digging depth (long stick)	2740 mm (8'-12")
E1	Max. vertical digging depth (short stick)	1960 mm (77 in)
E2	Max. vertical digging depth (long stick)	2150 mm (85 in)
F1	Max. digging height (short stick)	4180 mm (13'-9")
F2	Max. digging height (long stick)	4310 mm (14'-2")
G1	Max. tilt-out height (short stick)	2850 mm (9'-4")
G2	Max. tilt-out height (long stick)	2980 mm (9'-9")
H1	Max. reach at ground level (short stick)	4490 mm (14'-9")
H2	Max. reach at ground level (long stick)	4690 mm (15'-5")
K1	Max. digging radius (short stick)	4630 mm (15'-2")
K2	Max. digging radius (long stick)	4820 mm (15'-10")
M	Max. boom displacement to bucket center (right side)	765 mm (30 in)
N	Max. boom displacement to bucket center (left side)	535 mm (21 in)
O	Max. lift height of stabilizer blade over ground	390 mm (15 in)
P	Max. scraping depth of stabilizer blade below ground surface	410 mm (16 in)
Q1	Distance between bucket and stabilizer blade (short stick)	360 mm (14 in)
Q2	Distance between bucket and stabilizer blade (long stick)	265 mm (10 in)
R1	Min. tail end swiveling radius	760 mm (30 in)
R2	Boom swivel radius (center)	2080 mm (82 in)
R3	Boom swivel radius (right)	1960 mm (77 in)
R4	Boom swivel radius (left)	1660 mm (65 in)
S	Total running gear length	2020 mm (80 in)
T	Running gear length (Turas front idler)	1550 mm (61 in)
W1	Max. tilting angle of boom to the right	50°
W2	Max. tilting angle of boom to the left	75°
X	Track width	300 mm (12 in)
Y1	Stabilizer blade width	1570 mm (62 in)
Z	Stabilizer blade height	300 mm (12 in)

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Replacing the fuel filter

Caution!

All work involving fuel carries an increased

Explosion and fire hazard when handling fuel!

- ☞ *Bleed the fuel system only if the engine is cold.*
- ☞ *Wear protective equipment.*
- ☞ *Never perform work on the fuel system near open flames or sparks.*
- ☞ *Do not smoke.*
- ☞ *Keep the maintenance area clean.*

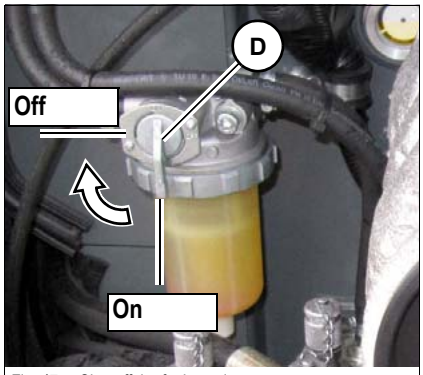


Fig. 47: Shut off the fuel supply

- ☞ *Stop and park the machine. Stop the engine – see Preparing lubrication on page 3-59.*
- ☞ *Open the engine cover.*
- ☞ *Turn ball-type cock **D** on the water separator to the **OFF** mark.*
  - ➥ Fuel supply is closed.

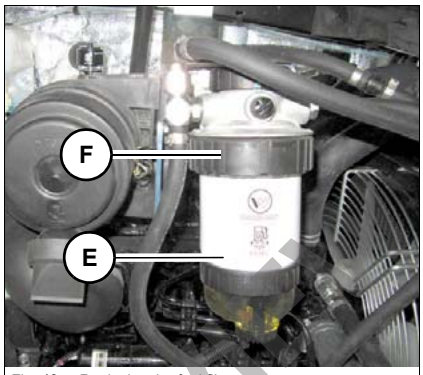


Fig. 48: Replacing the fuel filter

- ☞ *Empty fuel filter **E** – see Emptying the water separator on the fuel filter on page 3-20.*
- ☞ *Unscrew union nut **F**.*
- ☞ *Remove the housing.*
- ☞ *Remove the old filter insert.*
- ☞ *Put the new filter insert in place.*
- ☞ *Fit the housing back on again (apply a thin coat of oil or diesel fuel to the sealing surface).*
- ☞ *Turn ball-type cock **D** on the water separator to the **ON** mark (vertical).*
- ☞ *Bleed the fuel system*
  – see Bleeding the fuel system on page 3-17
- ☞ *Check the filter for tightness after a short test run.*
- ☞ *Dispose of the old filter insert in an environmentally friendly manner*

Environment!

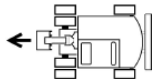
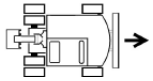
Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

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3.16 Test report

Pump 1

Function	Movement	Symbol	Measurement connection	Pressure limiting valve	Specified values		1st measurement	2nd measurement
					Engine speed	Pressure in bar (psi)		
Boom	UP		Measurement connection MC 1 (pump)	Primary pressure limiting valve PPLV 1 (main valve block)	max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
	DOWN				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
Bucket	Tilt out				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
	Tilt in				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
Machine travel (left)	Forward				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
	Reverse				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
VDS	UP				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		
	DOWN				max.	$225^{\pm 3}(3263^{\pm 43.5})$		
					min.	$202^{\pm 3}(2930^{\pm 43.5})$		

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Engine

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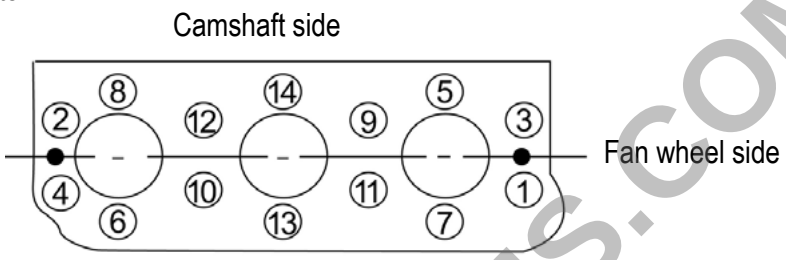
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4.26 Tightening order for cylinder head bolts

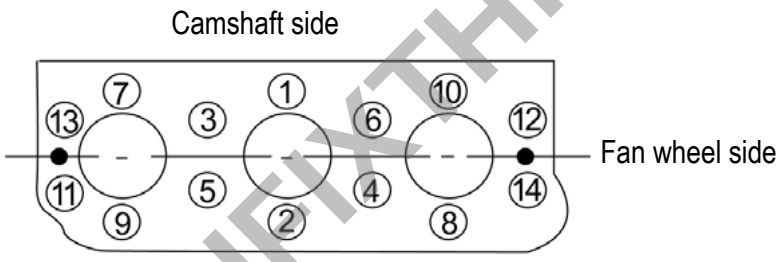
Notice!

Always perform work on the cylinder head on a cold engine!

Order for removing the cylinder-head bolts:



Order for installing the cylinder-head bolts:



Tightening torques for cylinder-head bolts (M9x1.25)		
1st pass	29.5 – 31.5 Nm	21.5 – 23 ft.lbs.
2nd pass	59 – 63 Nm	43.5 – 46.5 ft.lbs.

Notice!

Apply a thin coat of oil to the threads and contact surfaces before installing.

Caution!

Bear in the mind the order for tightening the cylinder-head bolts!

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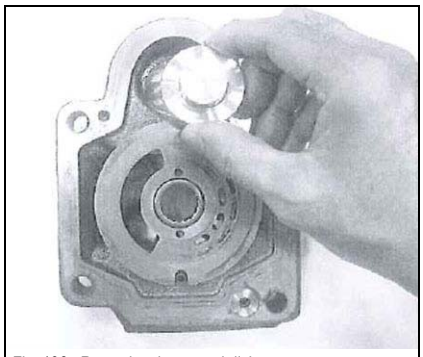


Fig. 196: Removing the control disk

☞ *Remove the guide of the spring and the control disk from the housing*



Fig. 197: Dismantling the drive unit

☞ *Pull the mounting plate with the piston shoes and cylinders out of the cylinder housing*



Fig. 198: Dismantling the drive unit

☞ *Remove the centring mechanism and pins one after another*

☞ *Remove the circlip, thrust washers and spring from the cylinder housing*

Assembling the hydraulic pump

Before assembly thoroughly clean the parts with clean oil to prevent dirt and water from accumulating in the parts and to provide lubrication during assembly.

Apply a thin layer of grease to the O-ring surface to secure it in the grooves provided.

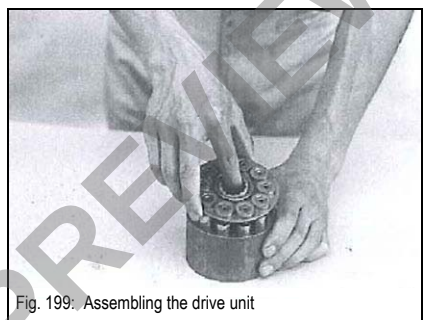


Fig. 199: Assembling the drive unit

☞ *Assemble the pump in the reverse order of dismantling*

☞ *Insert the thrust washers and spring into the cylinder housing and secure in place in the housing with the circlip*

☞ *Insert the pins into the cylinder housing on the opposite side, see Fig. 198 and place the centring mechanism on it*

☞ *Insert the mounting plate with the piston shoes and cylinders into the cylinder housing*

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5.12 Breather filter



Fig. 220: Breather filter

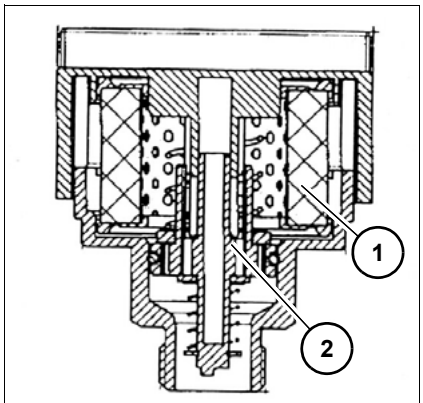


Fig. 221: Breather filter

The breather filter is in charge of:

- Air intake and outlet for pressure compensation in the hydraulic oil reservoir (varying oil level) – prevents the oil reservoir from inflating.
- Pre-tension of the oil reservoir to the specified overpressure -> supports the variable displacement pump's suction.
- Filtering the intake air
- Opens at 0.4 bar (5.8 psi)
- The breather filter is located in the machine at the rear right.
- Replace the filter as indicated in the maintenance plan! – *see chapter 3.5 Maintenance plan* on page 3-8.

Pos.	Designation
1	Filter fabric
2	Bleeder valve

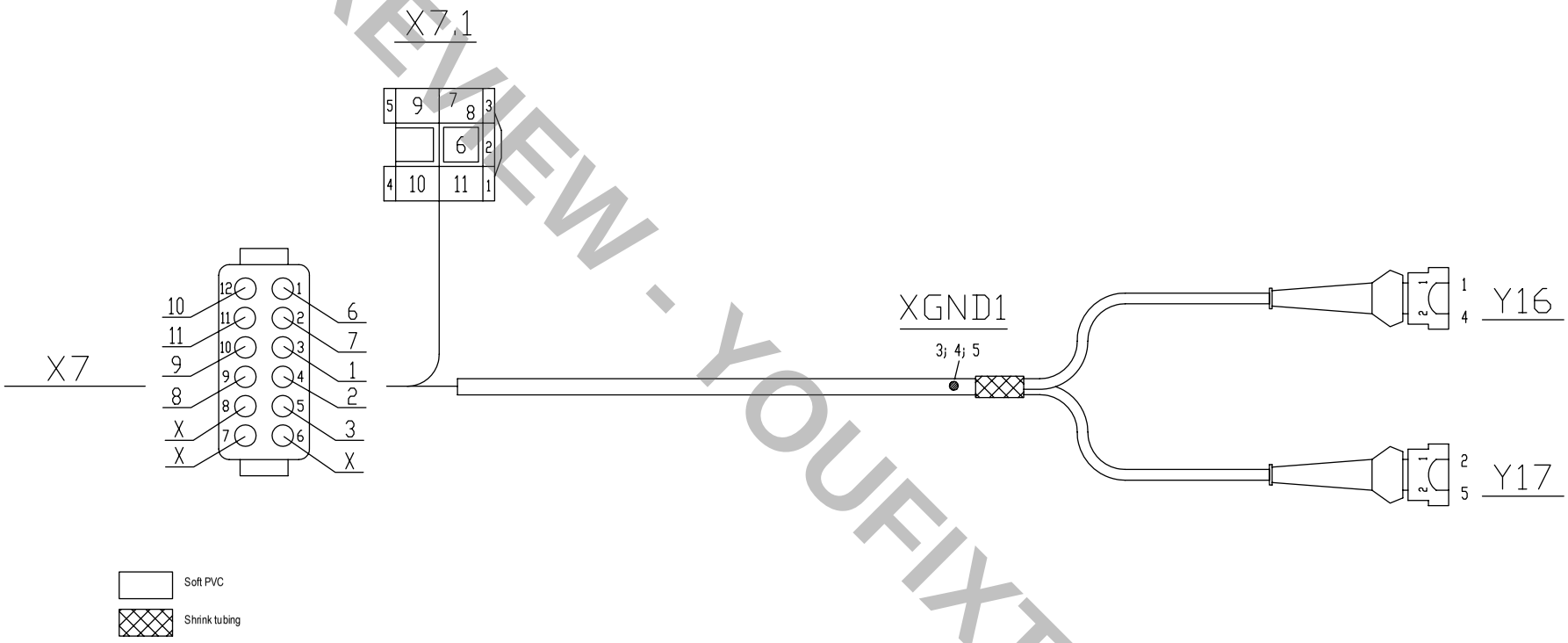
5.13 Malfunctions of the hydraulic system

Problem	Possible causes
Hydraulic system without function	Malfunctioning safety switch on control lever base
	Wrong setting of safety switch on control lever base
	Malfunctioning solenoid valve on pilot oil supply unit
	Contaminated solenoid valve on pilot oil supply unit
	Hydraulic oil level too low
	Malfunctioning valve fuses
	Malfunctioning/interrupted plug-and-socket connection toward solenoid valve
Hydraulic hammer does not work correctly	Quickhitch couplings not connected correctly
	Hydraulic oil quantity too high/too low
	Hydraulic oil pressure too high/too low
	Check the nitrogen fill
Machine runs in 1st speed only	Malfunctioning switch for 2nd travel speed
	Malfunctioning solenoid valve on pilot oil supply unit
	Contaminated solenoid valve on pilot oil supply unit
	Malfunctioning valve fuses
	Malfunctioning/interrupted plug-and-socket connection toward solenoid valve
	Counterpressure in traveling drive does not drop below control pressure

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6.23 Proportional controls wiring harness (option)



No.	From	To	Color	mm²
1	X7/3	Y16/1	yel	1
2	X7/4	Y17/1	grn	1
3	X7/5	XGND1	blk	1
4	XGND1	Y16/2	blk	1
5	XGND1	Y17/2	blk	1
6	X7/1	X7.1/2	blu	1
7	X7/2	X7.1/3	blk	1
8	X7/9	X7.1/3	blk	1
9	X7/10	X.1/5	org	1
10	X7/12	X7.1/4	blu/yel	1
11	X7/11	X7.1/1	gry	1

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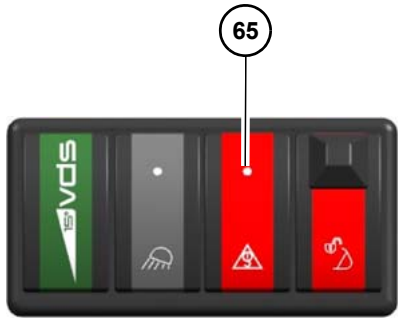


Fig. 233: Safe load indicator

Switching on the safe load indicator

☞ *Press switch **65** on the instrument panel down.*

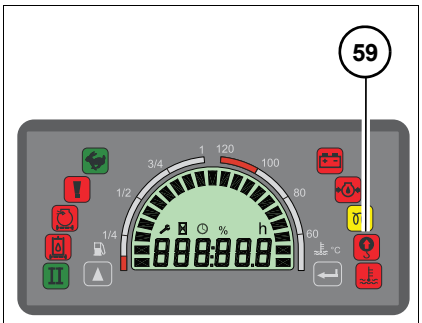


Fig. 234: Indicator light

- Indicator light **59** in the display element is used for monitoring and flashes when the authorized load is exceeded.

Switching off the safe load indicator

☞ *Press switch **65** on the instrument panel forward.*

➥ Indicator light **59** in the display element goes out.



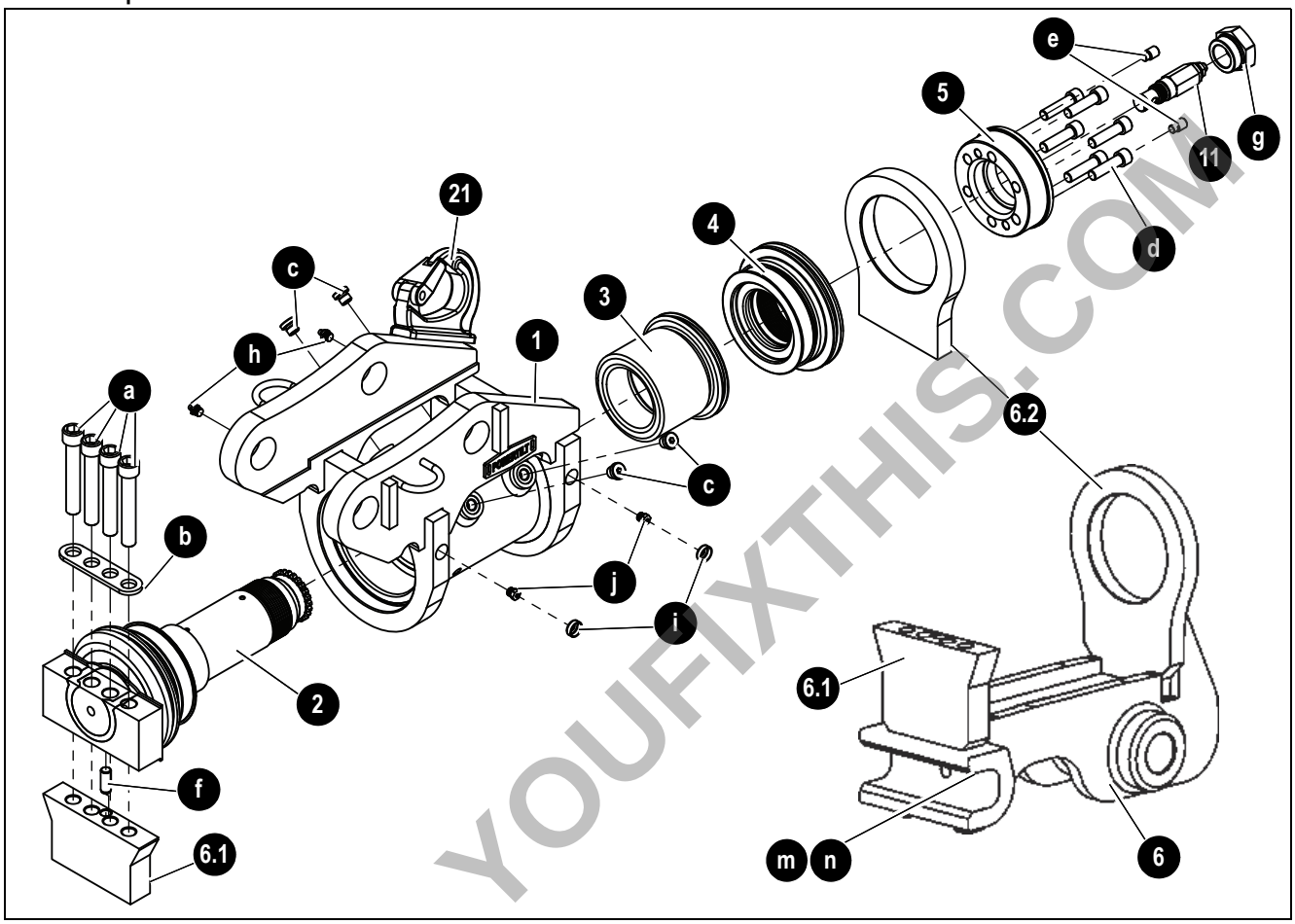
Fig. 235: Safe load indicator

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9.5 Exploded views PTS06

PTS06 components



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List of components

No.	Designation	Qty	No.	Designation	Qty
1	Housing with integrated ring gear (1.1)	1	a	Shaft fastening screw	4
2	Shaft	1	b	Plate washer	1
3	Piston tube body	1	c	Connecting plug	4
4	End cap	1	d	Screw for circlip	6
5	Circlip	1	e	Adjusting screw for circlip	2
6	Standard journal coupling	1	f	Shaft parallel pin	1
6.1	Base block on drive shaft side	Integrated	g	Connecting plug (shaft)	1
6.2	Base block on end cap side	Integrated	h	Grease zerks	2
11	Internal decompression valve	1	i	Cover of grease decompression valve	2
21	Load hook (option)	1	j	Lubrication system decompression valve	2
P1	Hydraulic connection P1	2			
P2	Hydraulic connection P2	2			
			m	Pressure screw (coupling)	1
			n	Lock nut (coupling)	1

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