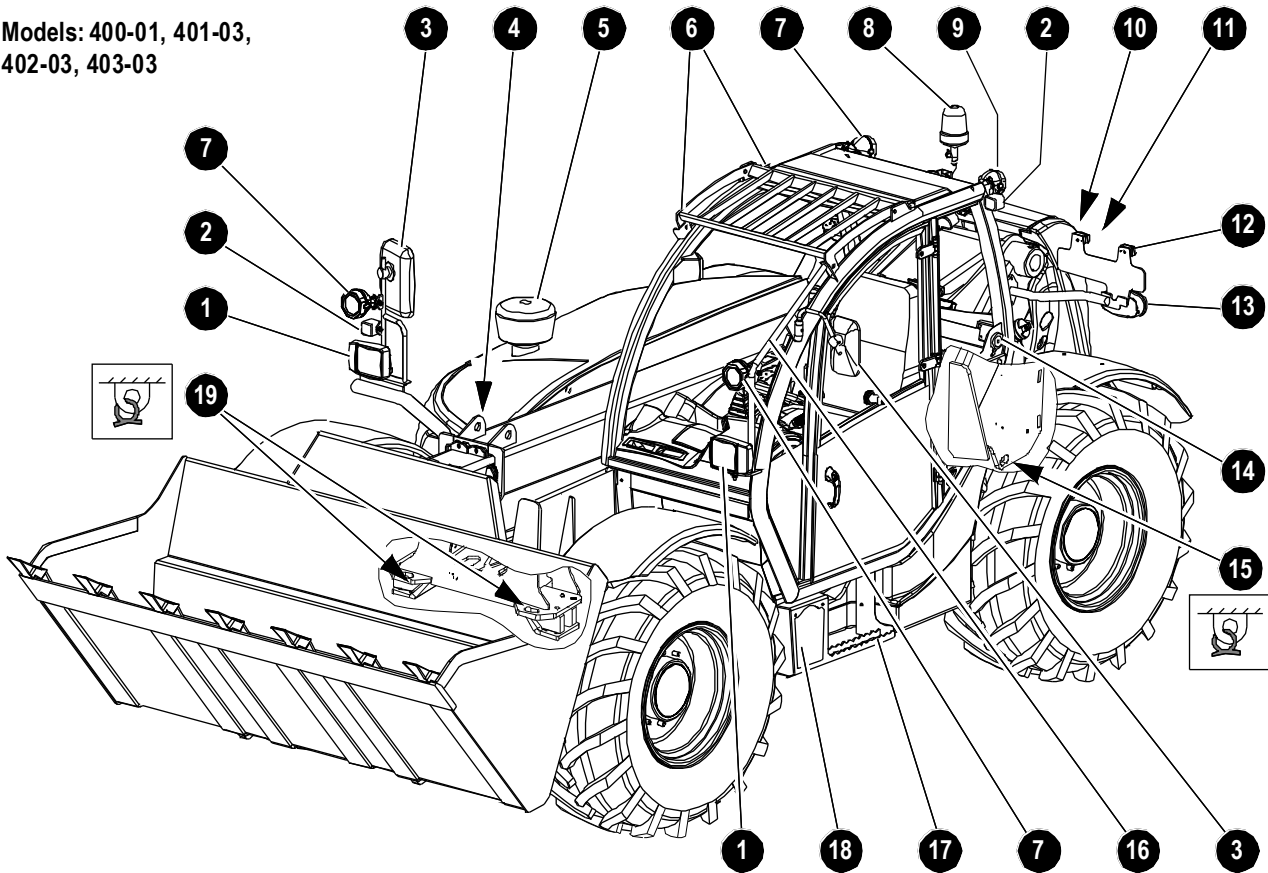
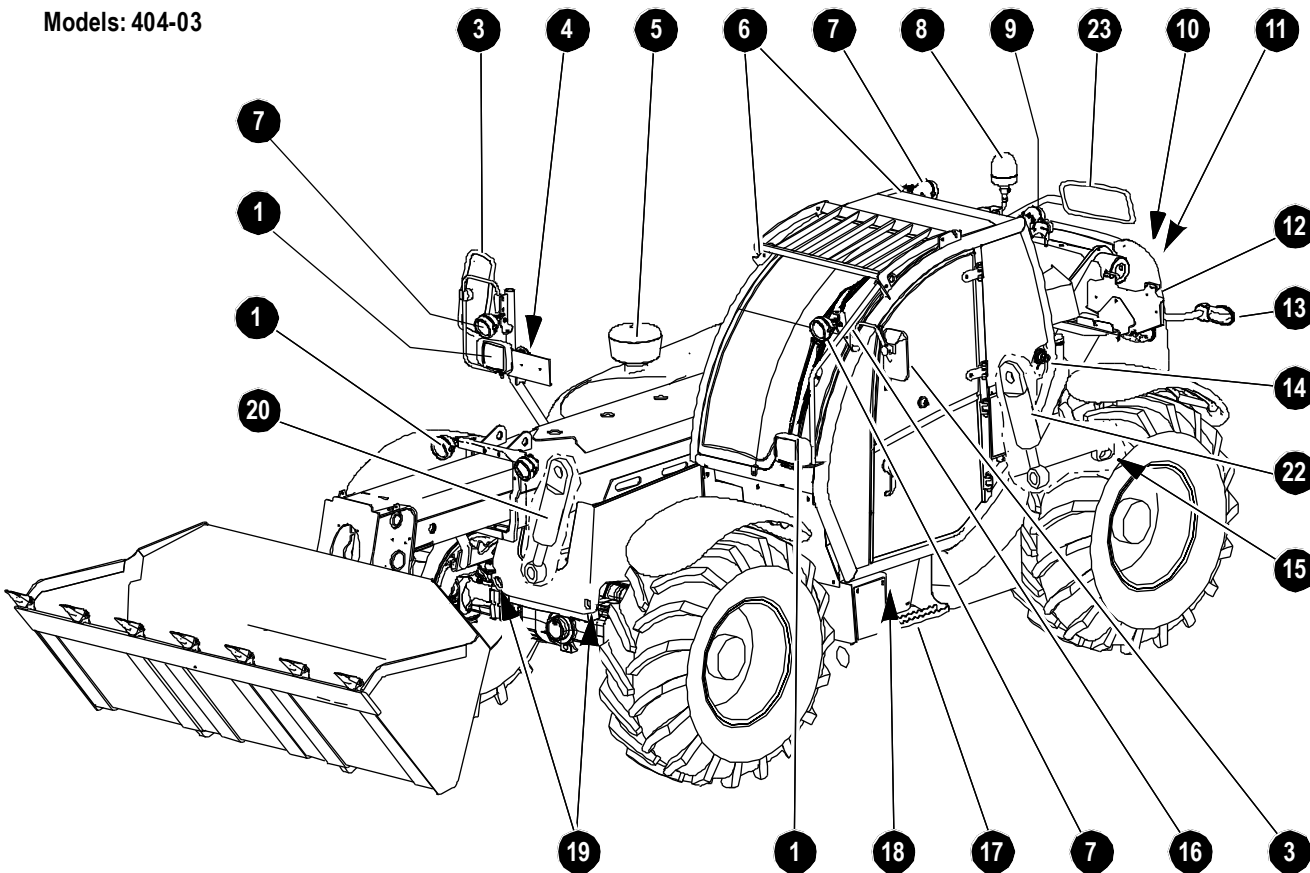


Models: 400-01, 401-03,
402-03, 403-03



Models: 404-03



1.1 Machine outside view

Telehandler outside views 400-01, 401-03, 402-03, 403-03, 404-03

Pos.	Description
1	Lights with turn indicators
2	Rear clearance light
3	Rearview mirrors
4	Boom working light (option)
5	Air filter (preliminary separator option)
6	Eye hook ¹ for installing/removing the cab
7	Working light (standard)
8	Rotating beacon (option)
9	Working light (front/rear option)
10	Hydraulic connections (quick couplers, option)
11	Trailer coupling (option)
12	Numberplate fixture (option)
13	Brake, rear and turn indicator lights
14	Door arrester
15	Rear eye hook for strapping down the machine
16	Handle
17	Cab access
18	Battery (battery master switch option)
19	Front eye hook for towing/strapping down the machine
20	Right-hand side frame levelling ram on front axle (option) 404-03
21	Boom working light (option) 404-03
22	Mechanical oscillating axle interlock with pin (standard) Hydraulic oscillating axle interlock (option) 404-03
23	Rearview mirror (rear, option) 404-03

1. Eye hooks are for removing the cab only, and may not be used for crane-lifting the machine

Hydraulic pump number

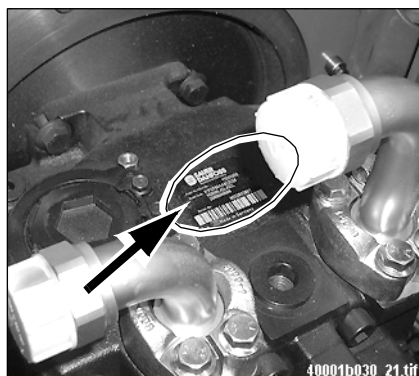


Fig. 4: Hydraulic pump type label

The type label (arrow) is located on the hydraulic pump housing (next to where the pump is installed on the diesel engine)

Variable displacement motor number

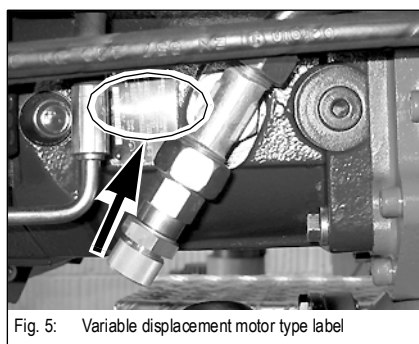


Fig. 5: Variable displacement motor type label

The type label (arrow) is located on the housing of the variable displacement motor.

Variable displacement motor number (high speed option)



Fig. 6: Variable displacement motor type label (option)

The type label (arrow) is located on the housing of the variable displacement motor.

Front and rear axle numbers

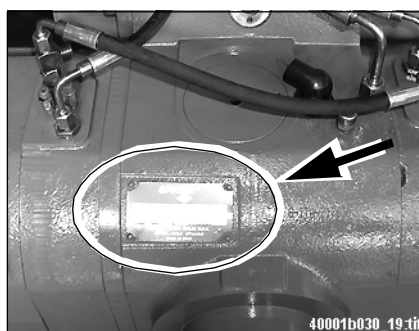
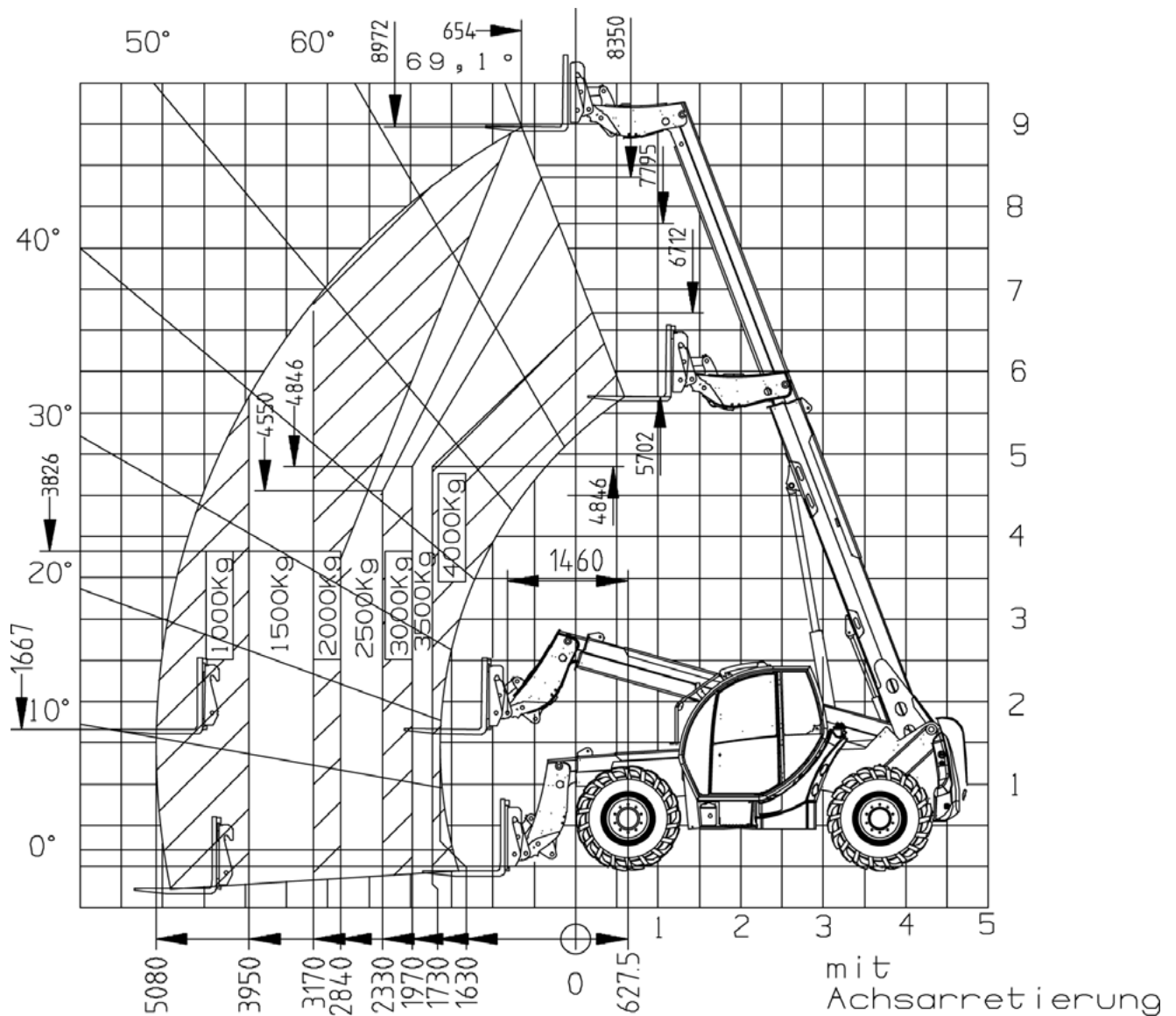


Fig. 7: Rear axle and gearbox type label

The type label is located on the differential housing next to the steering ram (arrow).

Rigid front axle with mechanical or hydraulic oscillating axle interlock (rear axle)



Important!

Payload indications with authorised tyres

3.20 Replacing hydraulic oil



Danger!

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

Danger of burns!

☞ *Wear protective gloves*

☞ *Use an oil drain coupling with a sufficiently long hose*



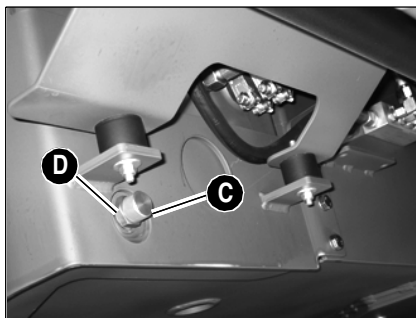
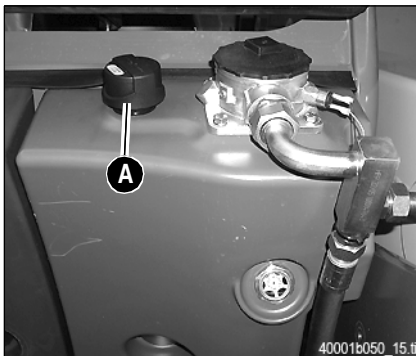
Environment!

Collect drained hydraulic oil and biodegradable oil in a suitable container! Dispose of drained hydraulic oil by an ecologically safe method!

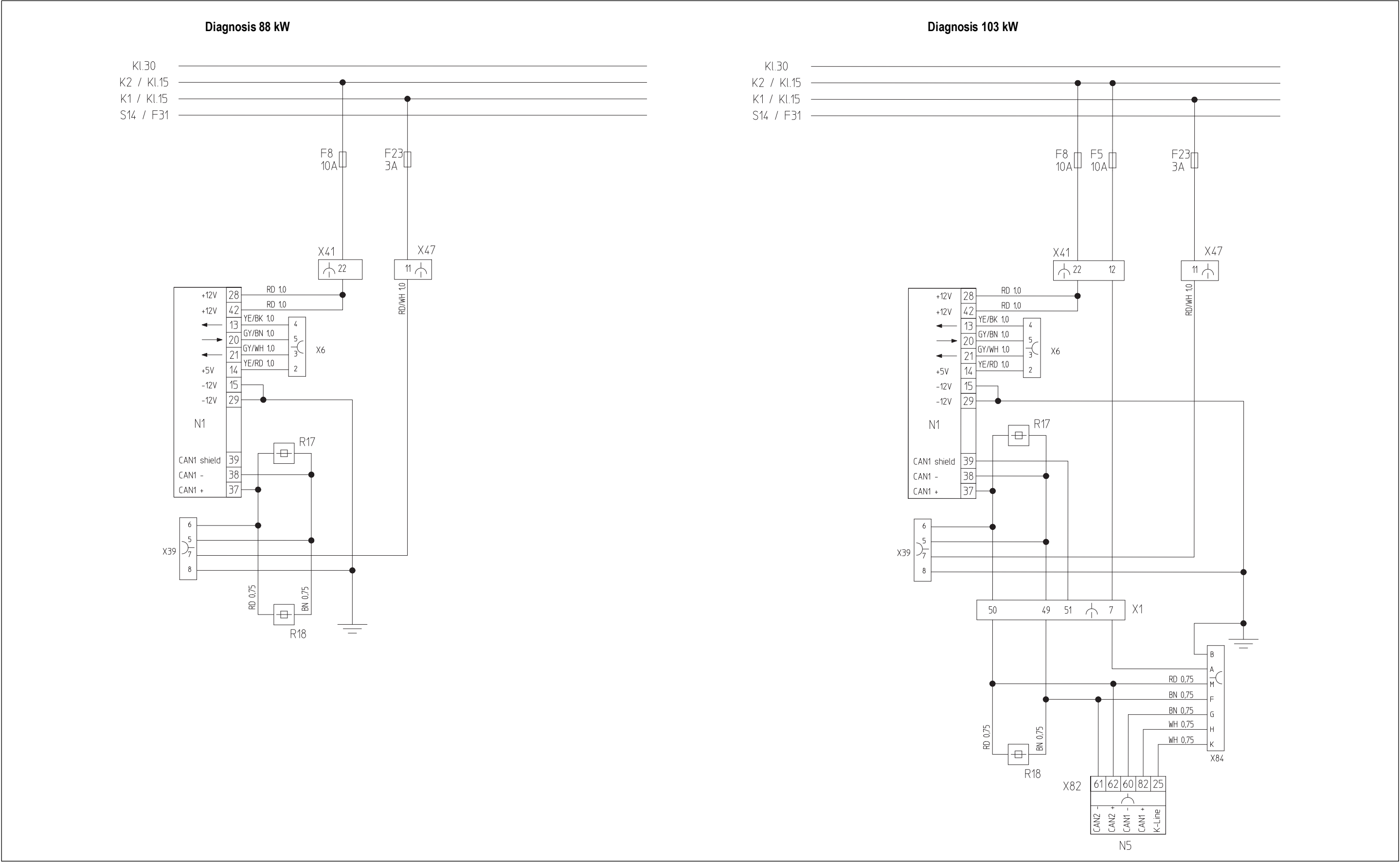
Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

☞ *Proceed as follows:*

- Park the machine on level ground
- Retract all hydraulic rams. To do this:
- Lower the telescopic boom completely
- Tilt in the tilt ram fully
- Switch off the engine and prevent the machine from rolling away
- Unscrew breather filter **A** to release the pressure in the hydraulic oil tank – there must be no pressure in the system!
- Place a suitable container under the machine at the rear to collect the oil as it drains (minimum capacity 110 l)
- Remove filler cap **C** of oil drain valve **D**
- Place the end of the hose connected with the oil drain coupling in the container
- Screw the oil drain coupling onto the oil drain valve **D**
- ➡ The oil drain valve opens and the oil flows into the container
- Fill up the hydraulic oil
- See “Checking the hydraulic oil”
- Unscrew the oil drain coupling from oil drain valve **D**. Screw on filler cap **C** of oil drain valve **D**
- Screw on breather filter **A**. Use a new breather filter depending on the maintenance interval if necessary
- Bear in mind the maintenance interval for the hydraulic oil filter insert **H**. Replace the filter insert if necessary



4.5 Diagnosis wiring diagram



Ausgleichscheibendicke für Förderbeginn ermitteln.

Tabelle 1

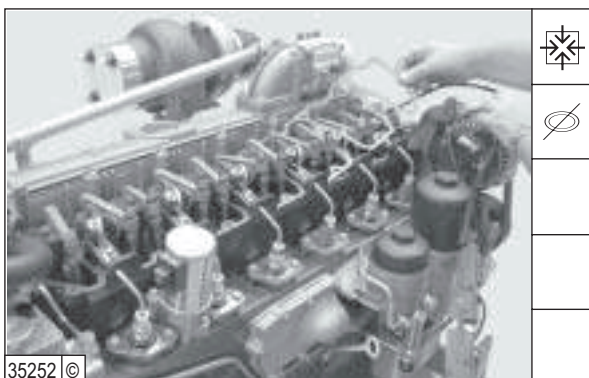
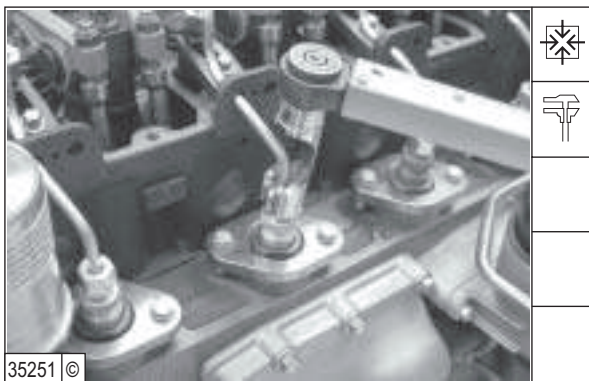
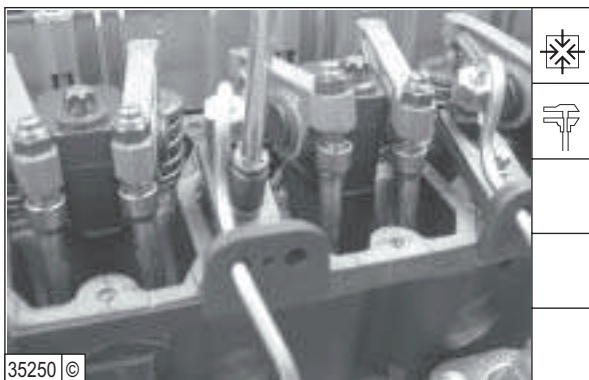
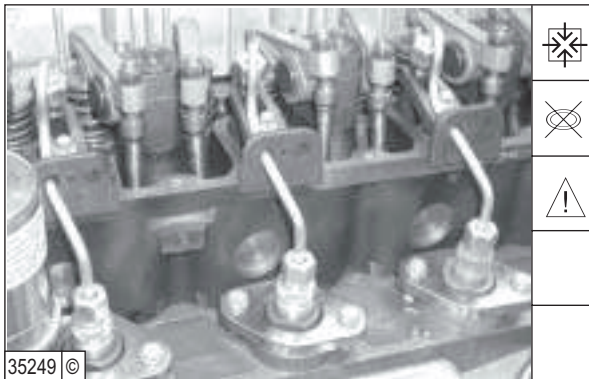
Motortyp	Förderbeginn (FB) Nenn./Tol. (° kW v. OT)	Nockenwelle Typ	Vorhub (Vh) Nennwert (mm)	Vorhub Korrektur- faktor (mm/° kW)	Grundmaß E-Pumpe (Lo) (mm)
BFM 2012	0,0	K	4,80	0,14	117,5
BFM 2012	1,0	K	4,62	0,14	117,5
BFM 2012	2,0	K	4,44	0,14	117,5
BFM 2012	3,0	K	4,27	0,14	117,5
BFM 2012	4,0	K	4,11	0,14	117,5
BFM 2012	5,0	K	3,95	0,14	117,5
BFM 2012	2,0	L	5,14	0,14	117,5
BFM 2012	3,0	L	4,97	0,14	117,5
BFM 2012	4,0	L	4,80	0,14	117,5
BFM 2012	5,0	L	4,62	0,14	117,5
BFM 2012	6,0	L	4,44	0,14	117,5
BFM 2012	7,0	L	4,26	0,14	117,5
BFM 2012	8,0	L	4,11	0,14	117,5
BFM 2012	9,0	L	3,95	0,14	117,5
BFM 2012	1,0	H	5,52	0,14	117,5
BFM 2012	2,0	H	5,36	0,14	117,5
BFM 2012	3,0	H	5,20	0,14	117,5
BFM 2012	4,0	H	5,05	0,14	117,5
BFM 2012	5,0	H	4,89	0,14	117,5
BFM 2012	6,0	H	4,73	0,14	117,5
BFM 2012	7,0	H	4,58	0,14	117,5
BFM 2012	8,0	H	4,43	0,14	117,5
BFM 2012	2,0	Q	5,31	0,14	117,5
BFM 2012	3,0	Q	5,14	0,14	117,5
BFM 2012	4,0	Q	4,97	0,14	117,5
BFM 2012	5,0	Q	4,80	0,14	117,5
BFM 2012	6,0	Q	4,62	0,14	117,5
BFM 2012	7,0	Q	4,44	0,14	117,5
BFM 2012	8,0	Q	4,26	0,14	117,5
BFM 2012	9,0	Q	4,11	0,14	117,5
BFM 2012	10,0	Q	3,95	0,14	117,5
BFM 2012	2,0	P	5,23	0,14	117,5
BFM 2012	3,0	P	5,08	0,14	117,5
BFM 2012	4,0	P	4,92	0,14	117,5
BFM 2012	5,0	P	4,76	0,14	117,5
BFM 2012	6,0	P	4,61	0,14	117,5
BFM 2012	7,0	P	4,46	0,14	117,5
BFM 2012	8,0	P	4,31	0,14	117,5
BFM 2012	9,0	P	4,16	0,14	117,5
BFM 2012	10,0	P	4,01	0,14	117,5

Tabelle 2

Theor. Dicke „T _s “ (mm)	Ausgleich- scheiben- dicke „S _s “ (mm)	Theor. Dicke „T _s “ (mm)	Ausgleich- scheiben- dicke „S _s “ (mm)
0,95 - 1,049	1,0	2,45 - 2,549	2,5
1,05 - 1,149	1,1	2,55 - 2,649	2,6
1,15 - 1,249	1,2	2,65 - 2,749	2,7
1,25 - 1,349	1,3	2,75 - 2,849	2,8
1,35 - 1,449	1,4	2,85 - 2,949	2,9
1,45 - 1,549	1,5	2,95 - 3,049	3,0
1,55 - 1,649	1,6	3,05 - 3,149	3,1
1,65 - 1,749	1,7	3,15 - 3,249	3,2
1,75 - 1,849	1,8	3,25 - 3,349	3,3
1,85 - 1,949	1,9	3,35 - 3,449	3,4
1,95 - 2,049	2,0	3,45 - 3,549	3,5
2,05 - 2,149	2,1	3,55 - 3,649	3,6
2,15 - 2,249	2,2	3,65 - 3,749	3,7
2,25 - 2,349	2,3		
2,35 - 2,449	2,4		

Werkstatthandbuch BFM 2012

Deutsch



6.3 Neue Einspritzleitungen mit Dichtgummis anbauen. Überwurfmuttern fingerfest aufschrauben.

Hinweis: Bei Montage der Einspritzleitungen müssen die Dichtkonen exakt aufeinander sitzen.

**Ein Nachbiegen ist nicht zulässig.
Die Einspritzleitungen dürfen nicht 2x verwendet werden.**

6.4 Schrauben der Pratzen festdrehen.

Anziehvorschrift: **16 + 5 Nm**

6.5 Überwurfmutter der Einspritzleitungen an den Einspritzpumpen und Einspritzventilen mit einem Drehmoment von **ca. 5 Nm** vorspannen. Danach Überwurfmutter festdrehen.

Anziehvorschrift: **25 + 3,5 Nm**

Hinweis: Klauenschlüssel **8018** verwenden.

7. Zylinderkopfhaube aufbauen.

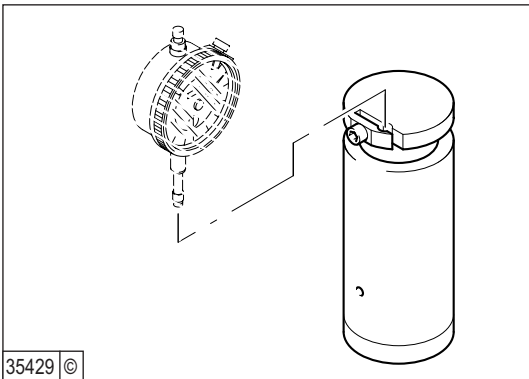
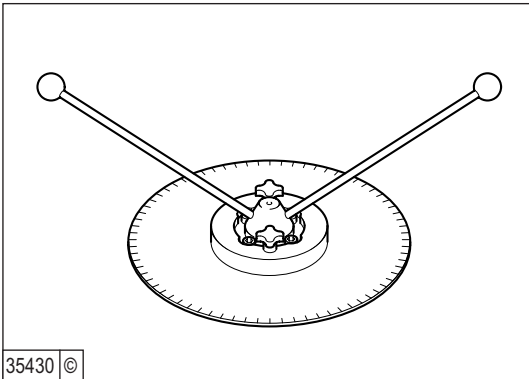
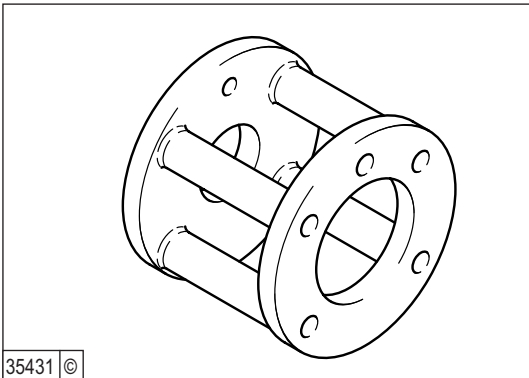
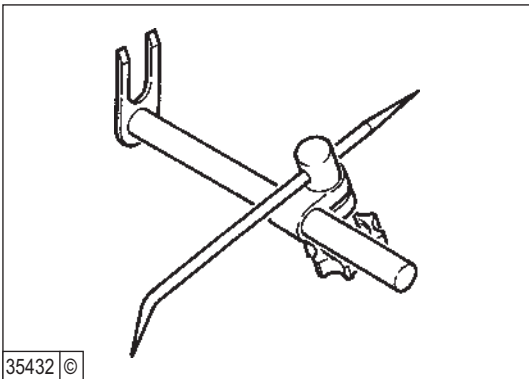
7.1 Dichtung auflegen.

Demontage und Montage, Motor komplett
Disassembly and re-assembly of complete engine
Démontage et remontage, moteur complet
Desarmado y ensamblado, motor completo

English	Français	Español
43. Remove drive gears for compensation shafts, if any.	43. Le cas échéant, démonter les pignons d'entraînement des arbres à masses d'équilibrage.	43. Si existen, desmontar las ruedas de accionamiento de los ejes equilibradores.
44. Remove thrust covers for compensation shafts, if any.	44. Le cas échéant, démonter les bagues de butée des arbres à masses d'équilibrage.	44. Si existen, desmontar las arandelas de tope de los ejes equilibradores.
45. Remove compensation shafts, if any.	45. Le cas échéant, sortir les arbres à masses d'équilibrage.	45. Si existen, sacar los ejes equilibradores.
46. Press down all tappets. Remove camshaft.	46. Enfoncer tous les poussoirs . Démonter l'arbre à cames.	46. Presionar hacia abajo todos los empujadores (taqués). Desmontar el árbol de levas.
Note: Hook up engine on one side in assembly stand for this purpose.	Nota: Pour cette opération, décrocher le moteur d'un côté dans le chevalet de montage.	Nota: Para esta operación, descolgar el motor en un lado del caballete de montaje.

Demontage und Montage, Motor komplett
Disassembly and re-assembly of complete engine
Démontage et remontage, moteur complet
Desarmado y ensamblado, motor completo

English	Français	Español
Control line 120. Fit control line. Specified tightening torque: Hollow screw: _____ 18 Nm Pipe collar _____ 13 Nm	Conduite pilote 120. Monter la conduite pilote. Prescription de serrage : vis creuse _____ 18 Nm collier de serrage _____ 13 Nm	Conducto de mando 120. Montar el conducto de mando Prescripción de apriete: Tornillo racor _____ 18 Nm Abrazadera de tubo _____ 13 Nm
Pressure control valve 121. Fit pressure control valve with a new O-ring. Specified tightening torque: 8.5 Nm	Soupape régulatrice de pression 121. Monter la soupape régulatrice de pression avec une bague d'étanchéité neuve . Prescription de serrage: 8,5 Nm	Válvula reguladora de presión 121. Montar la válvula reguladora de presión con un anillo de junta nuevo . Prescripción de apriete: 8,5 Nm
122. Fit bleeder hose. Note: Use spring clamp pliers 9090	122. Monter le tube évent. Nota: Utiliser la pince à ressort pour tuyaux 9090 .	122. Montar el tubo flexible de ventilación. Nota: Utilizar los alicates 9090 para abrazaderas elásticas.
123. Mount bleeder tube. Specified tightening torque: 8.5 Nm	123. Fixer le tube évent. Prescription de serrage: 8,5 Nm	123. Fijar el tubo de ventilación. Prescripción de apriete: 8,5 Nm

Deutsch	English	Français	Español	No.	Werkstatthandbuch BFM 2012
Messvorrichtung für Grundkreismessung „Einspritzpumpe und Förderbeginn“.				100 890	
Measuring device for base circle measurement					
Dispositif de mesure du cercle de base					
Dispositivo de medición del círculo base “bomba de inyección y comienzo de alimentación”					
Gradscheibe 360° mit Befestigung an der Schwungscheibe für OT und FB Einstellung.				101 020	
Graduated disc 360° with device for fastening to flywheel for TDC and COD setting					
Disque gradué 360° avec fixation sur volant moteur pour réglage du PMH et point de calage du début d'injection					
Disco graduado 360° con fijación en el volante, para ajuste del PMS y comienzo de alimentación					
Adapter für Gradscheibe.				101 030	
Adapter for graduated disc					
Adaptateur pour disque gradué					
Adaptador para el disco graduado					
Zeiger für Gradscheibe.				101 300	
Pointer for graduated disc					
Index pour disque gradué					
Indicador para el disco graduado					

5.22 Test report for models 403/404 (30 kph)

Rated oil temperature: 50 – 60 °C

Page:	Test features:	Notes:	Nominal value	Nominal value: (rpm)	✓
-------	----------------	--------	---------------	-------------------------	---

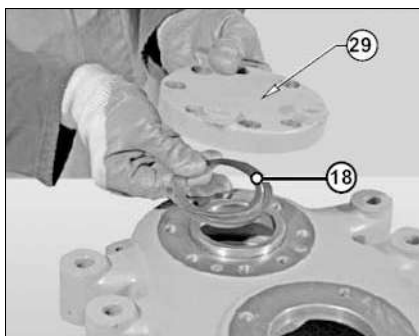
Measurement on variable displacement pump

	Min. idling speed (diesel engine)	Measured at the crankshaft (diesel engine)/laptop	870 – 900 rpm		
	Max. idling speed (diesel engine)		2520 – 2570 rpm		
– see page 5-32	Boost pressure	Max. engine revs (diesel engine)	30 – 35 bar		
– see page 5-33	High pressure	Against hydraulic resistance at max. revs (diesel engine)	460 – 490 bar		
– see page 5-34	Engine droop Variable displacement pump	Measured at the crankshaft (diesel engine)	2050 – 2100 rpm		

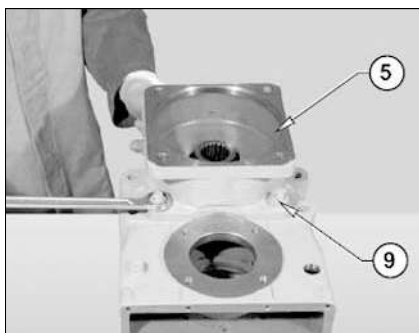
Hydraulic motor measurement

– see page 5-35	Driving direction identification	Y10 energised direct by the drive lever	Reverse driving energised		
– see page 5-37	Engine droop (hydraulic motor)	Full throttle, then brake to 15 ⁺² kph	2100 ^{+ 50} rpm		
– see page 5-39	Cardan shaft speed 40 kph	Full diesel engine revs Front axle steering and harc speed range switched	2950 – 3050 rpm		
	Speed measured with laptop (40 kph)	Full diesel engine revs Front axle steering and harc speed range switched	29 – 30 kph		

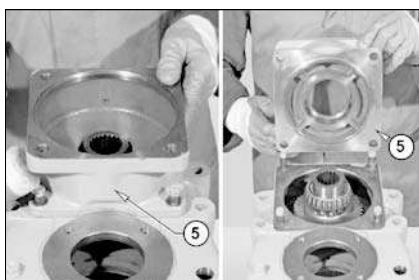
Serial no.	
Serial no. variable displacement pump	
Serial no. hydraulic motor	
Service hours	



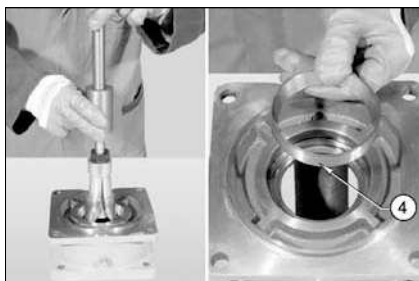
➤ Remove cover **29** and washers **18**



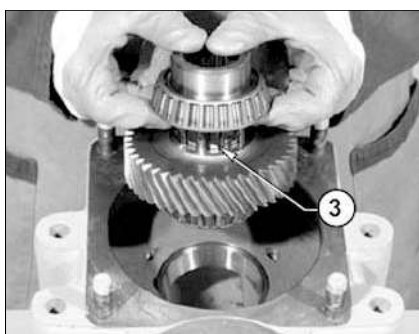
➤ Unscrew fastening screws **9** from connection housing **5**



➤ Remove connection housing **5**

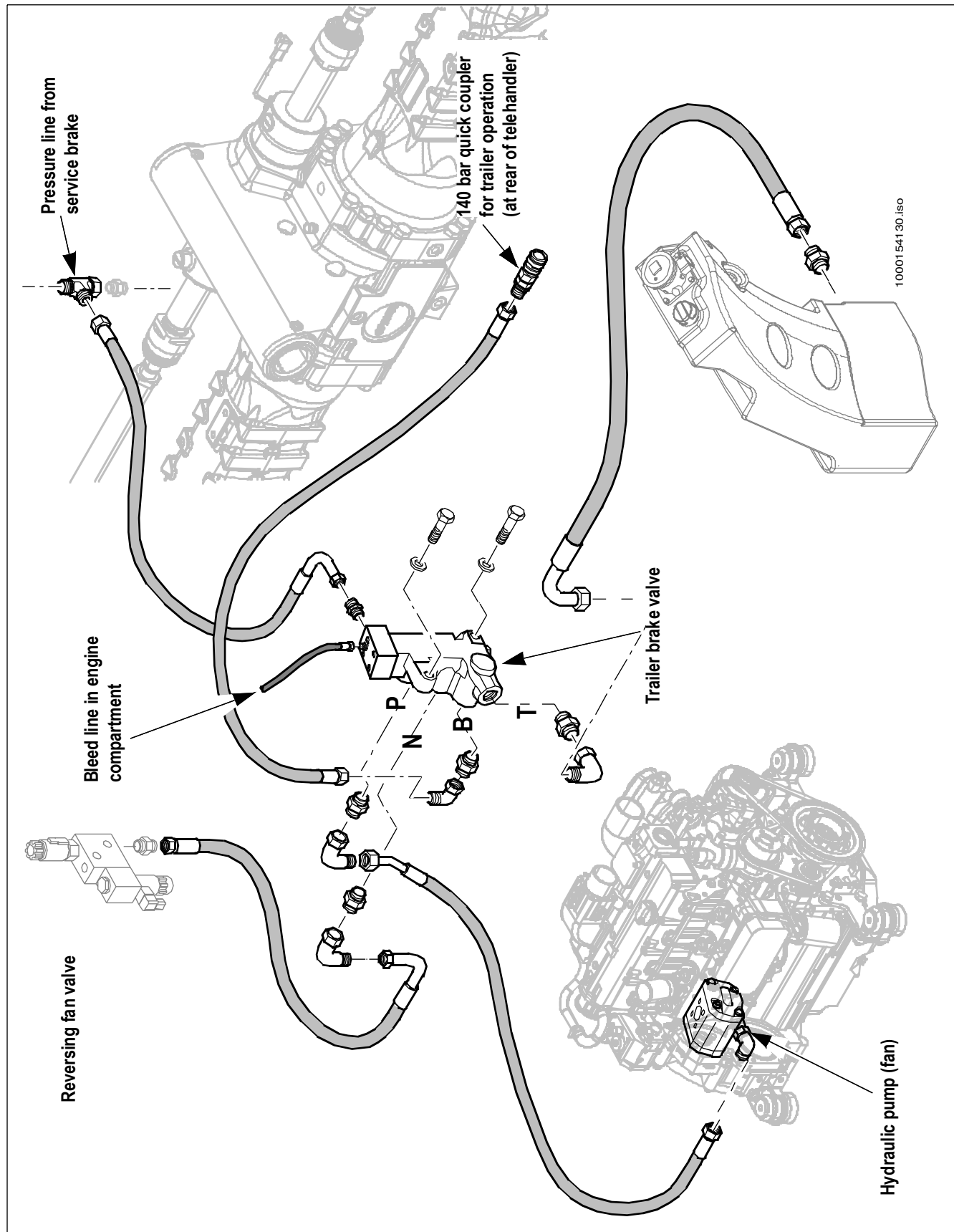


➤ Remove bearing **4** from the housing with an extractor

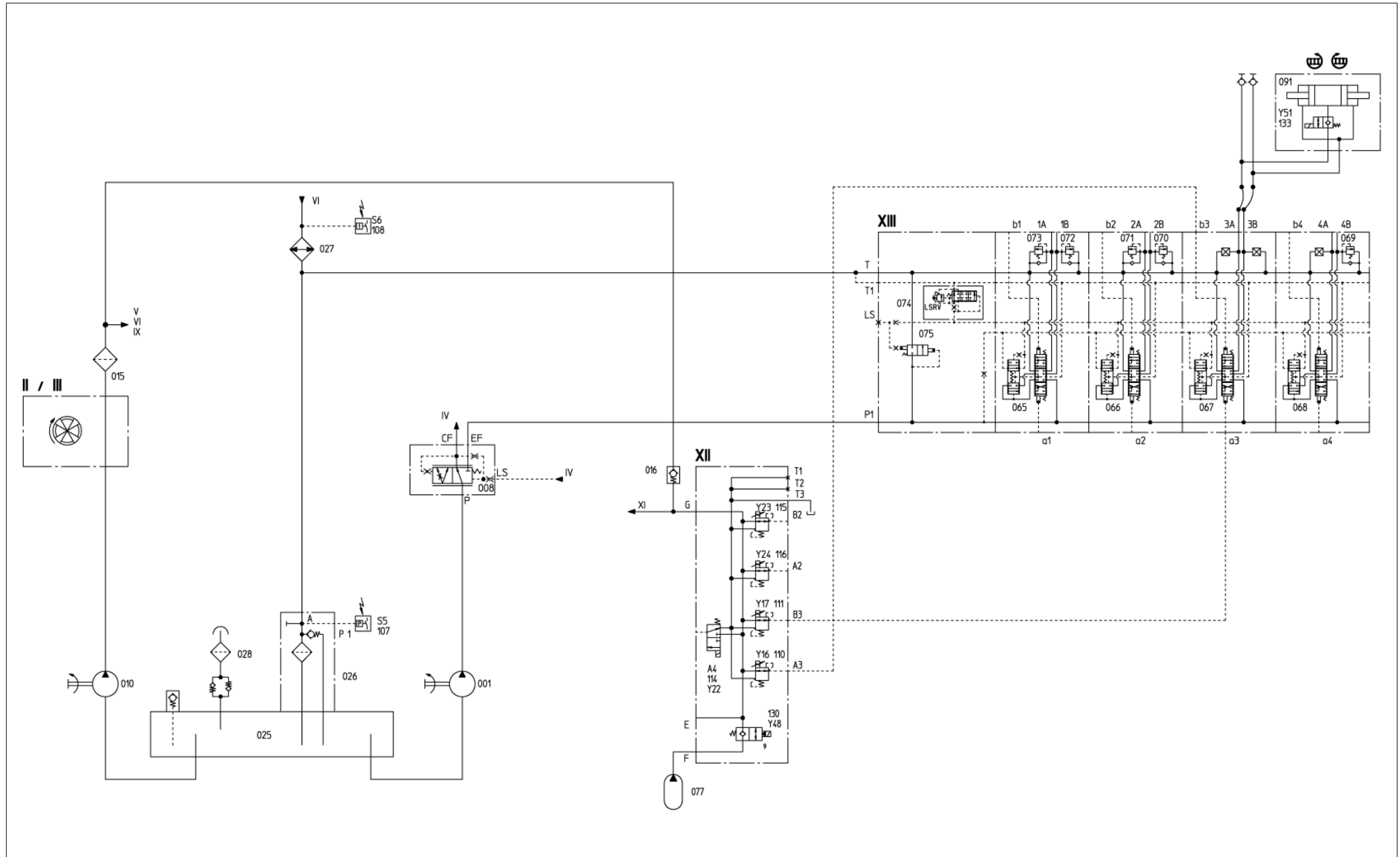


➤ Remove upper shaft **3**

7.19 Hydraulic trailer brake circuit (option)



9.10 Diagram: work hydraulics fixed displacement pump – locking/unlocking



9.39 Test report: models 402-01/403-01

See page:	Test features:	Notes:		Nominal value: (rpm)	✓
	Min. idling speed	Measured on crankshaft	870 – 900 rpm		
	Max. idling speed	Measured on crankshaft	2520 – 2570 rpm		
9-85	Work hydraulics	Max. engine revs	300 bar		
	Push-out ram rod side	Minimum idling speed	300 bar		
	Push-out ram base side	Minimum idling speed	200 bar		
	Lift ram (secondary pressure)	Minimum idling speed	300 bar		
	Tilt ram (dump out, secondary pressure)	Minimum idling speed	300 bar		
	Tilt ram (dump in, secondary pressure)	Minimum idling speed	300 bar		
	Gear pump standby pressure	At the measuring point of the pump	15 bar		
	Control pump standby pressure	At the measuring point of the pump	39 bar		
	Hydraulic tipping trailer connection	At full throttle	220 – 240 bar		
	Hydraulic trailer brake	At idling speed	140 bar		
	Additional rear circuit	At 220 – 240	Q~ 46 – 50 l/min		
	Steering pressure	Max. engine revs	200 – 235 bar		
	Load stabiliser	Minimum idling speed	240 bar		