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Pos.	Benennung		Description
01	Verbrennungsmotor	n=2300 1/min	Engine
02	Ölkühler		Oil cooler
03	Öltemperaturregler		Oiltemperature regulator
04	Anschlußblock		Connecting block
05	Lenkzylinder		Steering cylinder
06	Lenkeinheit		Steering unit
07	Filter		Filter
08	Bremsventil		Brake valve
09	Lenk-Speisepumpe	Vg = 16 ccm	Steering-Charge pump
10	Fahrpumpe	Vg = 71 ccm	Travel pump
11	Vibrationspumpe	Vg = 45 ccm	Vibration pump
12	Fahrmotor vorne	Vg = 2808 ccm	Travel motor front
14	Fahrmotor hinten	Vg = 107 ccm	Travel motor rear
15	Achse		Axle
16	Vibrationsmotor	Vg = 45 ccm	Vibration motor
17	Handpumpe		Handlever pump
18	Zylinder		Cylinder

alle Drücke gemessen bei einer Öltemperatur von ca.50°C
Verbrennungsmotor im hohen Leerlauf n=2400 1/min
all pressures measured by an oiltemperature of ca.50°C
Engine at high idling speed n=2400 1/min

Pos.	Bezeichnung	Description
MA	Speisepumpe 25±1 bar	Charge pump 25±1 bar
MB	Lenkdruck bei Vollenschlag 225±5 bar	Steering pressure at max. steering angle225±5 bar
MC	Fahrdruck auf Block rückwärts 425±5 bar	Travel pressure blocked backward 425±5 bar
MD	Fahrdruck auf Block vorwärts 425±5 bar	Travel pressure blocked forward 425±5 bar
ME	Vibrationsmitteldruck hohe Amplitude 365±35 bar	Vibration pressure high amplitude 365±35 bar
MF	Vibrationsmitteldruck niedrige Amplitude 365±35 bar	Vibration pressure low amplitude 365±35 bar

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Trouble shooting

Fault	Cause	Remedy
The differential lock does not engage (mechanical engagement)	• External connection damaged or broken. • Internal connection (transverse shaft rod, fork or spin axis damaged or broken. • Damaged or broken off teeth on adapter or sleeve of differential lock.	• Repair or replace as required. • Remove the HPL-top cover and examine. • Disassemble the differential and examine the differential lock assembly.
The differential lock does not disengage (mechanical engagement)	• Spring between adapter and sleeve broken. • Teeth on adapter or sleeve damaged or excessively worn.	• Disassemble the differential and replace the spring. • Disassemble the differential and replace damaged parts.

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Maintenance table

Maintenance work	Comment	Running-in inspect. (50 op. hours)	10 oper. hours	50 oper. hours	250 op. hours	500 op. hours	1000 op. hours	2000 op. hours	as required
Change the engine oil filter		X							
Change the engine oil		X							
Check, adjust the valve clearance		X							
Tighten all screw connections on intake and exhaust manifold, oil sump and engine mounts		X							
Tighten the screw connections on the machine		X							
Tighten the fastening screws for the wheels		X							
Change the oil in the drive axle		X							
Change the oil in the planetary drives		X							
Change the oil in the axle reduction gear		X							
Change the oil in the vibration housings	see note	X				X	X		
Check the engine oil level	Dipstick mark		X	X	X	X	X	X	
Check the water separator			X	X	X	X	X	X	
Check the fuel level	approx. 340 l		X	X	X	X	X	X	
Check the hydraulic oil level	Inspection glass		X	X	X	X	X	X	
Check the coolant level			X	X	X	X	X	X	
Check the V-belts			X	X	X	X	X	X	
Check the tire pressure	1.1 bar			X	X	X	X	X	
Adjust the scrapers				X	X	X	X	X	
Change engine oil and oil filter cartridge	min. 1 x per year				X	X	X	X	
Clean the cooling fins on radiator and hydraulic oil cooler					X	X	X	X	

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BOMAG GMBH BOPPARD

Gez.: 29.05.2000
Name: Wemer
Gepr.: 29.05.2000
Name: Seis

Bauteilliste
component listing

Name	Bl.	Pf.	Benennung	title	TYP
A01	012	6	Intervallschalter Berieselungssystem	Interval switch, sprinkler system	
A02	013	17	Blinkrelais	Indicator relay	
A05	005	9	Elektronik Geschwindigkeitsanzeige	Electronic system, speedometer	MODUL
A06	005	4	Elektronik Frequenzanzeige vorne	Electronic system, frequency meter, fr.	MODUL
A08	010	18	Elektronik Omegameter	Electronic system, Omegameter	
A12	014	17	Radio	Radio	
A15	004	13	Platine Ueberwachungsmodul	Printed circuit board, monitoring module	
A16	005	14	Elektronik Tachograph	Electronic system, tachograph	
A17	007	11	Elektronik Geschwindigkeitskontrolle	Electronic, speed control	
A23	002	8	Platine Generator	Printed circuit,generator	
A33	010	7	Zentralplatine Kopplung Verdichtungskomponenten	Connection dircuit board, compac. components	
A35	010	14	Versorgungsplatine	Suppling circuit board	
A36	008	2	Elektronik Antischlupfregelung	Elektronic antispin control	
A37	009	11	Elektronik Variomatic	Elektronic variomatic	
A44	010	5	Zusatzelektronik	Additional control unit	
A46	009	2	Modul Variomatik	Modul, variomatik	
A51	005	17	Platine Frequenzanzeige	Circuit board,frequenzy meter	
A54	015	6	Modul Pumpenansteuerung	Modul pump control	
B03	004	19	Unterdruckschalter Luftfilter	Vacuum switch, air cleaner	
B06	004	15	Druckschalter Motoroel	Pressure switch, engine oil	
B11	004	1	Signalhorn	Warning horn	MAX. 5A
B11	004	3	Signalhorn	Warning horn	MAX. 5A
B13	006	2	Naeherungsinitiator Fahrhebel links	Proximity switch, travel lever, lh.	
B14	006	4	Naeherungsinitiator Fahrhebel rechts	Proximity switch, travel lever, rh.	
B16	005	3	Aufnehmer Vibrationsfrequenz vorne	Transducer, vibration frequency, front	
B21	004	18	Differenzdruckschalter Hydr.−Oelfilter	Pressure diff. switch, hydr. oil filter	
B29	014	5	Raumthermostat	Room thermostat	
B51	014	17	Lautsprecher Radio	Speaker radio	
B51	014	18	Lautsprecher Radio	Speaker radio	
B53	004	16	Temperaturgeber Kuehlmittel	Temperature switch, collant	
B54	003	5	Temperaturgeber Starthilfe	Temperature switch, starting assistance	
B55	004	19	Kuehlmittelstand Ausgleichsbehaelter	Coolant charge expansion tank	
B57	008	9	Neigungssensor Stufenumschaltung	Slope sensor, speed range selection	
B59	008	11	Aufnehmer Bandagengeschwindigkeit	Sensor, drum speed	
B60	007	15	Aufnehmer Achsgeschwindigkeit	Sensor, axle speed	
B60	008	12	Aufnehmer Achsgeschwindigkeit	Sensor, axle speed	
B60	010	3	Aufnehmer Achsgeschwindigkeit	Sensor, axle speed	
B61	009	7	Aufnehmer Verstellzylinder	Sensor, ajustable zylinder	
B62	009	9	Beschleunigungsaufnehmer	Acceleration sensor	
B62	009	10	Beschleunigungsaufnehmer	Acceleration sensor	
B62	010	9	Beschleunigungsaufnehmer	Acceleration sensor	
B62	010	9	Beschleunigungsaufnehmer	Acceleration sensor	
B62	010	18	Beschleunigungsaufnehmer	Acceleration sensor	
B75	014	5	Kuehlmitteldruck	coolant pressure	
E01	013	12	Beleuchtung Tankanzeige	Illumination, level gauge	
E02	013	14	Beleuchtung Temperaturanzeige	Illumination, temperature gauge	
E03	013	14	Beleuchtung Drehzahlmesser	Illumination, rpm meter	
E04	011	13	Beleuchtung Geschwindigkeitsanzeige	Illumination, speedometer	
E05	011	12	Beleuchtung Frequenzanzeige vorne	Illumination, frequency gauge, front	
E05	013	16	Beleuchtung Frequenzanzeige vorne	Illumination, frequency gauge, front	
E07	010	17	Beleuchtung Omegameter	Illumination, Omegameter	
E07	011	12	Beleuchtung Omegameter	Illumination, Omegameter	
E08	013	18	Blinkleuchte vorne links	Indicator, front, lh.	MAX. 1,75A
E09	013	18	Blinkleuchte hinten links	Indicator, rear, lh.	MAX. 1,75A
E10	013	19	Blinkleuchte vorne rechts	Indicator, front, rh.	MAX. 1,75A
E11	013	19	Blinkleuchte hinten rechts	Indicator, rear, rh.	MAX. 1,75A
E12	013	6	Parkleuchte links	Parking light, lh.	MAX. 0,42A
E13	013	5	Schlussleuchte links	Tail light, lh.	MAX. 0,42A
E14	013	6	Parkleuchte rechts	Parking light, rh.	MAX. 0,42A
E15	013	7	Schlussleuchte rechts	Tail light, rh.	MAX. 0,42A
E16	013	2	Scheinwerfer links	Head light, lh.	MAX. 4,6A
E17	013	2	Scheinwerfer rechts	Head light, rh.	MAX. 4,6A
E22	013	13	Beleuchtung Temperaturanzeige Hydr.−oel	Illumination, temp. gauge, hydraulic oil	
E23	013	11	Arbeitsscheinwerfer vorne links	Working head light, front, lh.	MAX. 4,6A
E23	014	16	Arbeitsscheinwerfer vorne links	Working head light, front, lh.	4,6A
E25	013	12	Arbeitsscheinwerfer vorne rechts	Working head light, front, rh.	MAX. 4,6A
E25	014	17	Arbeitsscheinwerfer vorne rechts	Working head light, front, rh.	4,6A
E27	013	10	Arbeitsscheinwerfer hinten links	Working head light, rear, lh.	MAX. 4,6A
E27	014	15	Arbeitsscheinwerfer hinten links	Working head light, rear, lh.	4,6A
E28	013	10	Arbeitsscheinwerfer hinten rechts	Working head light, rear, rh.	MAX. 4,6A
E28	014	16	Arbeitsscheinwerfer hinten rechts	Working head light, rear, rh.	4,6A
E29	014	7	Innenleuchte Kabine	Inside light, cabin	1,3A
E30	002	12	Heizgeraet	Heating unit	MAX.20A/NENN2A
E32	013	9	Kennleuchte	Warning light	
E32	014	20	Kennleuchte	Warning light	5A
E41	013	4	Umrissleuchte vorne links	Contour illumination front, lh.	MAX. 0,42A
E42	013	4	Umrissleuchte hinten links	Contour illumination rear, lh.	MAX. 0,42A
E43	013	7	Umrissleuchte vorne rechts	Contour illumination front, rh.	MAX. 0,42A
E44	013	8	Umrissleuchte hinten rechts	Contour illumination rear, rh.	MAX. 0,42A
E45	013	13	Beleuchtung Oeldruckanzeige	Illumination oil pressure indicator	
E46	013	15	Beleuchtung Voltmeter	Illumination volt meter	
E54	013	16	Beleuchtung Vektoranzeige	Illumination vector indicator	
F00	002	3	Hauptsicherung Batterie	Fuse, main, battery	125A
F02	014	19	Ersatzsicherung	Fuse, spare	
F03	007	2	Sicherung Vibration	Fuse, vibration	30A
F05	002	19	Sicherung Steckdose	Fuse, socket	30A
F06	012	6	Sicherung Berieselung	Fuse, sprinkler system	30A
F07	013	12	Sicherung Warnblinker	Fuse, hazard light	15A
F08	013	13	Sicherung Blinker u. Arbeitsscheinw.	Fuse, indicators a. work. head light	15A
F09	013	5	Sicherung Park− u. Schlussl. links	Fuse, parking and tail light, lh.	15A
F10	013	7	Sicherung Park− u. Schlussl. rechts	Fuse, parking and tail light, rh.	15A
F11	013	2	Sicherung Scheinwerfer links	Fuse, head light, lh.	15A
F13	003	5	Sicherung Startschalter	Fuse, starter switch	30A
F14	003	14	Sicherung Hubmagnet Motor	Fuse, shut off solenoid, engine	30A
F17	014	17	Sicherung Radio	Fuse, radio	
F18	013	4	Vorsicherung Arbeitsscheinw. vorne	Primary fuse, work. head light, fr.	30A

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Checking and adjusting the valve clearance

Too big or too small valve clearance can cause failure of the engine as a result of mechanical and thermal overloads. The valve clearance must therefore be checked and, if necessary, adjusted at the intervals specified in the operating and maintenance instructions.

Note:

The valve clearance must be checked and adjusted when the engine is cold.

Inlet valve = 0.3 mm

Exhaust valve = 0.5 mm

- Loosen the ventilation valve and swing it to the side.
- Remove the valve cover.
- Turn the crankshaft until both valves on cylinder 1 are overlapping (exhaust valve not yet closed, inlet valve starts to open).

Check and adjust the valve clearance by following the adjustment schematic, black marking. For control purposes mark the respective rocker arm with chalk.

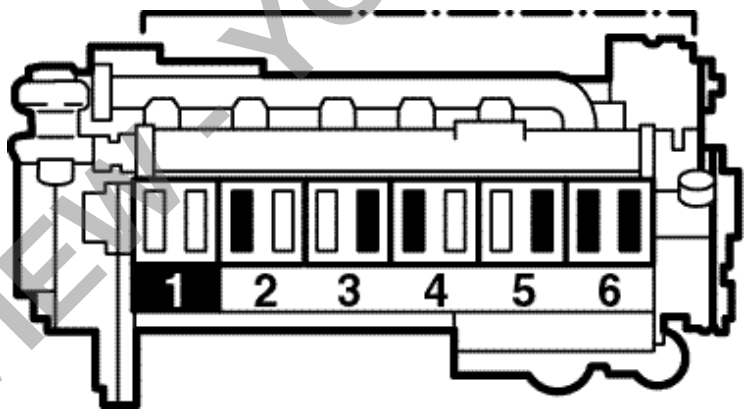


Fig. 5: Crankshaft position 1

Note:

A feeler gauge (1) of appropriate thickness must fit with only little resistance through the gap between valve (3) and rocker arm (2).

If the gap is too close or too wide for the feeler gauge the valve must be adjusted.

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Engine

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Foreword

Reliable construction equipment is beneficial for all parties involved:

- for the customer/user it allows accurate calculation of utilization periods and the completion of projects according to schedule.
- for the rental business it means that the equipment can be reliably used and planned without having to stock a large quantity of spare machines.
- for the manufacturer it means satisfied customers, a good image and a feeling of confidence.

It is BOMAG's philosophy to produce all machines as reliably as possible, but it is still the responsibility of the customer to have the daily routine maintenance work performed by his own personnel. This aspect of simple and easy maintenance was one of the main points in the design of the machine:

- the arrangement of components allows easy maintenance work
- the high quality standards of BOMAG allow a considerable extension of the care and maintenance intervals.
- the After Sales Service of BOMAG, including excellent operating and maintenance instruction manuals, high quality training courses and on-site machine demonstrations helps the customers to keep their machines in good condition over a long period of time.

Permanent training of BOMAG's own service personnel as well as the service personnel of BOMAG Profit Centers and dealers is therefore a prerequisite for BOMAG's excellent worldwide service.

This permanent training is only possible with appropriate and up-to-date training material for the trainer and the persons participating on these training courses.

This training manual has been written as a support for the professional work of the trainer, but also for the people participating on this training course.

The various levels of the product training demand, that the training performed by BOMAG, its Profit Centres or its dealers reflects the high quality of the training conducted at the BOMAG training centre in Boppard. For this reason we have invested a lot of time for the preparation of these materials.

The structure of this training manual enables us to change or up-date individual chapters in case of major alterations to the machine.

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Pilot pressure is used to control the pump out of neutral position to the required pumping direction (direction of oil flow).

A manually operated 4/3-way valve guids the pilot oil (from the charge circuit) to the respective control piston side in the servo control. The 4/3 way valve is controlled by the travel lever and the travel control cable.

In neutral position both control chambers are loaded with case pressure. When operating the 4/3 way valve, pilot oil (from the charge circuit) will flow to one of the control piston sides and move the control piston to the respective direction.

The swashing lever between the control piston and the swash plate transmits the movement of the control piston to the swash plate. The swash plate, which rests in needle bearings, swashes to the required direction. This generates the axial movement inside the rotating cylinder block. This axial movement draws oil into the pump and presses it out again to the travel motors.

All of the working pistons have bores through the entire length. Through these bores pressure fluid flows to the areas between the slipper pads and the swash plate surface. This generates a hydrostatically balanced field, on which all slipper pads can slide without metal to metal contact between the surface of the swash plate and the slipper pads. The feedback lever on the control piston senses when the swash plate has reached a position, which is in accordance with the travel lever position. This feedback lever controls a pilot oil portioning valve, which interrupts the pilot oil flow to the control chambers, once the swash plate angle is in accordance with the travel lever position. The angle of the swash plate and the displacement of the working pistons (oil flow rate) will remain constant, until a new control command demands an alteration of the angle.

Moving the swash plate of the pump through the neutral position reverses the flow direction of the oil and thereby the sense of rotation of the travel motors.

When actuating the travel pump pressure will build up in the line between the pump outlet and the motor inlet. This pressure depends on the load acting on the travel motors. This pressure keeps the boost check valve in the high pressure relief valve for this particular side of the closed circuit closed.

Charging of cool and filtered oil is now only possible on the other side (low pressure side). The high pressure relief valves limit possibly occuring high pressure values to the adjusted value. If these valves react, hydraulic oil will flow out of the high pressure side and will enter the low pressure side through the respective boost check valve.

Since the cross-sections of these valves are very small and the hydraulic oil enters the low pressure side again directly inside the pump, the system will overheat very quickly, if the pressure is relieved via the high pressure relief valves. For this reason the pump is equipped with an additional pressure override valve. The pressure override valve interrupts the pilot oil flow to the control piston, whereby the system pressure is kept at the level of the pressure override setting. If the pressure drops, the pressure override valve will open again and the pump will swash to the previously selected position. This installation avoids overheating of the hydraulic system and overloading of the diesel engine.

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- To adjust the travel cable loosen the counter nut on the bracket for the travel cable.
- Turn the adjustment nut to the respective direction until the correct neutral position is reached.

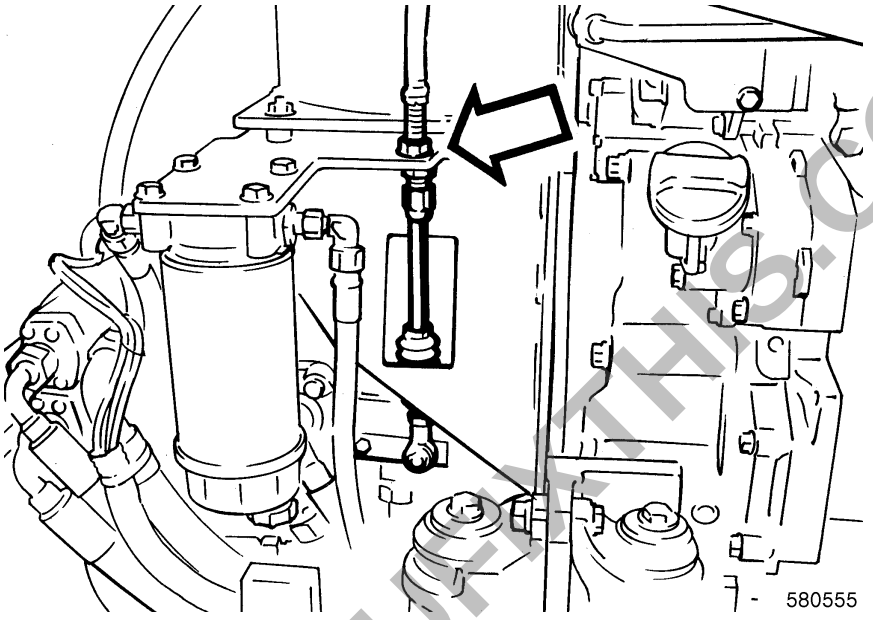


Fig. 2

- Retighten the counter nut.

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No steering, steering sticky, end stops are not reached

Note: For trouble shooting it is important to know, that the steering pump works also as charge pump.

With any problem in the steering system you should always check the steering pressure first.

- Connect a 600 bar pressure gauge to the steering pressure test port.
- Pull the plug off the starter solenoid and crank the engine with the starter.
- Turn the steering wheel against one end stop and read the pressure gauge.

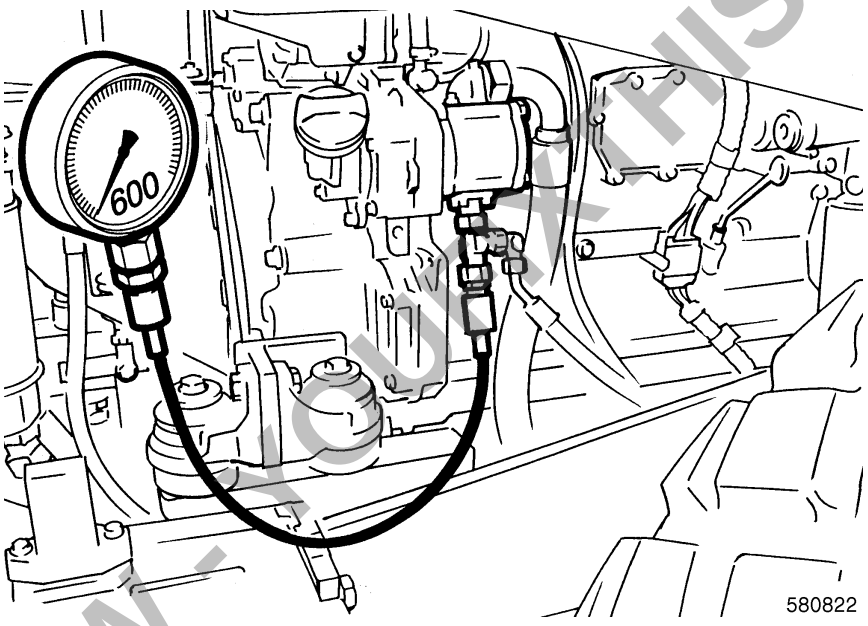


Fig. 1

Nominal value:

Approx. 200 bar

If the steering pressure is correct, the problem may be caused by mechanical defects on steering cylinders or articulated joint.

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