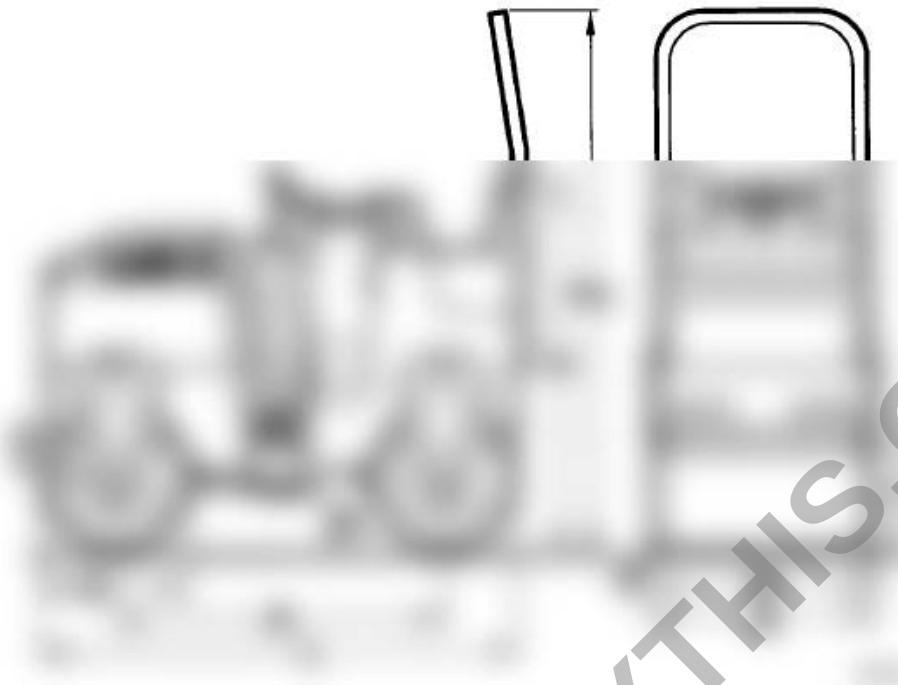


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3.5 Maintenance chart

No.	Maintenance work	Remark	every 10 operating hours, daily	every 50 operating hours	every 250 operating hours	every 500 operating hours	every 1000 operating hours	every 2000 operating hours	as required
5.6	Check the engine oil level	Dipstick mark	X						
5.7	Check the fuel level		X						
5.8	Check the hydraulic oil level	Dipstick mark	X						
5.9	Check the hydraulic oil filter element	contamination indicator	X						
5.10	Check the coolant level		X						
5.11	Check the water level		X						
5.12	Check the emulsion level	only AC-machines	X						
5.13	Clean the scrapers		X						
5.14	Grease the articulated joint			X					
5.15	Check, clean, replace the dry air filter			X					
5.16	Change the engine oil[1]	min. 1 x per year, see foot note			X				
5.17	Change the engine oil filter				X				
5.18	Check condition and tension of V-belt, replacing the V-belt				X				
5.19	Check condition and tension of pump drive toothed belt				X				
5.20	Change the fuel pre-cleaner, bleed the fuel system				X				
5.21	Clean the cooling fins on engine and hydraulic oil cooler				X				
5.22	Clean the water sprinkler system				X				
5.23	Change the main fuel filter					X			
5.24	Drain the sludge from the fuel tank					X			
5.25	Check the condition of the battery	Pole grease				X			
5.26	Check, adjust the valve clearance	Intake and exhaust: 0,14 - 0,18 mm on cold engine					X		

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4.2 Checking the rotation speeds

Special tools:

Vibration reed frequency meter

⚠ Caution

Perform measurements at operating temperature of the hydraulic oil (approx. 40 °C).

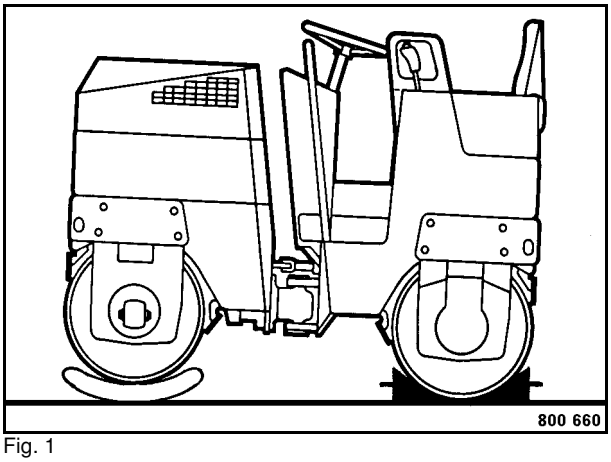


Fig. 1

1. Drive the machine with both drums on an elastic base (rubber buffers) (Fig. 1).
2. Apply the parking brake and block the rear drum additionally with wheel chocks (Fig. 1).
3. Start the diesel engine and shift the throttle lever to max. speed position.

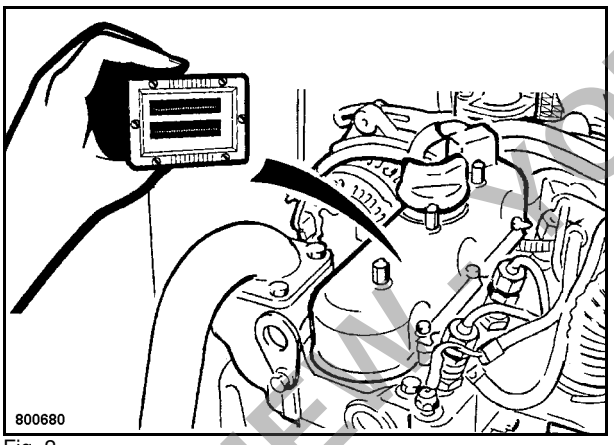


Fig. 2

Check the engine speed

4. Measure the speed, rest the tester on your thumb (Fig. 2).

Nominal value high idle speed:

See technical data.

5. Switch the vibration on .

Nominal value nominal speed:

See technical data.

Evaluation of test:

If the nominal value is not reached, perform trouble shooting on the engine or in the vibration system.

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5.2 Trouble shooting chart, diesel engine

Faults	Causes	Action
Engine does not start or starts poorly	No fuel	Fill in fuel
	Air in the fuel system	Bleeding
	Water in the fuel system	Replace the fuel, repair or replace the fuel system
	Fuel line clogged	Clean
	Fuel filter clogged	Replace
	Too high viscosity of fuel or engine oil at low temperatures	Use specified fuel
	Fuel with low Cetan-number	Use specified fuel
	Loss of fuel due to loosened locking nut on injection line	Tighten the nut
	Incorrect injection timing	Adjust
	Fuel camshaft worn	Replace
	Injection nozzle clogged	Clean
	Missing function of fuel lift pump	Repair or replace
	Crankshaft, camshaft, piston or bearings seized	Repair or replace
	Loss of compression on the cylinder	Replace the head gasket, tighten cylinder head screws, glow plug and nozzle holder
	Incorrect valve seat alignment, valve spring broken, valve jammed	Repair or replace
	Incorrect valve control	Adjust
	Piston ring worn	Replace
	Excessive valve clearance	Adjust
	Discharged battery	Recharge
Starter does not work	Faulty starter function	Repair or replace
	Faulty ignition switch function	Repair or replace
	Wiring came loose	Connect
Engine does not run evenly	Fuel filter clogged or soiled	Replace
	Air filter clogged	Clean or replace
	Fuel loss caused by loosened locking nut on injection line	Tighten the nut
	Faulty function of injection pump	Repair or replace
	Incorrect injection nozzle opening pressure	Adjust
	Injection nozzle jammed or clogged	Repair or replace
	Fuel overflow line clogged	Clean
	Faulty governor function	Repair
White or blue exhaust fumes	Too much engine oil	Correct filling level
	Piston ring worn	Replace
	Incorrect injection timing	Adjust
	Insufficient compression	Check the compression pressure
	Cylinder head gasket defective	Replace
Black or dark grey exhaust fumes	Overload	Reduce the load
	Poor quality fuel	Use specified fuel
	Fuel pre-filter clogged	Replace
	Air filter clogged	Clean or replace
Insufficient power	Incorrect injection timing	Adjust
	Moving engine parts have probably seized	Repair or replace
	Uneven fuel injection	Repair or replace the injection pump
	Insufficient nozzle injection	Repair or replace the nozzle
	Loss of compression	Replace the head gasket, tighten cylinder head screws, glow plug and nozzle holder

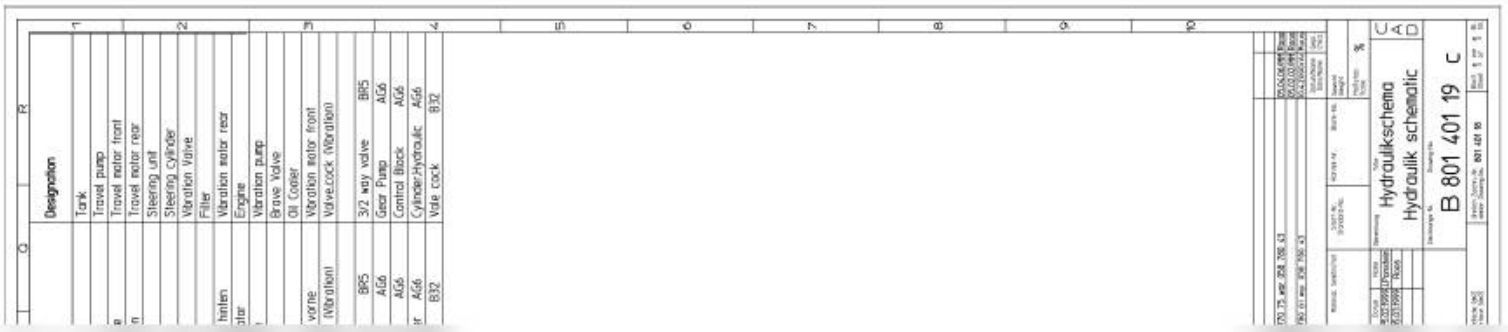
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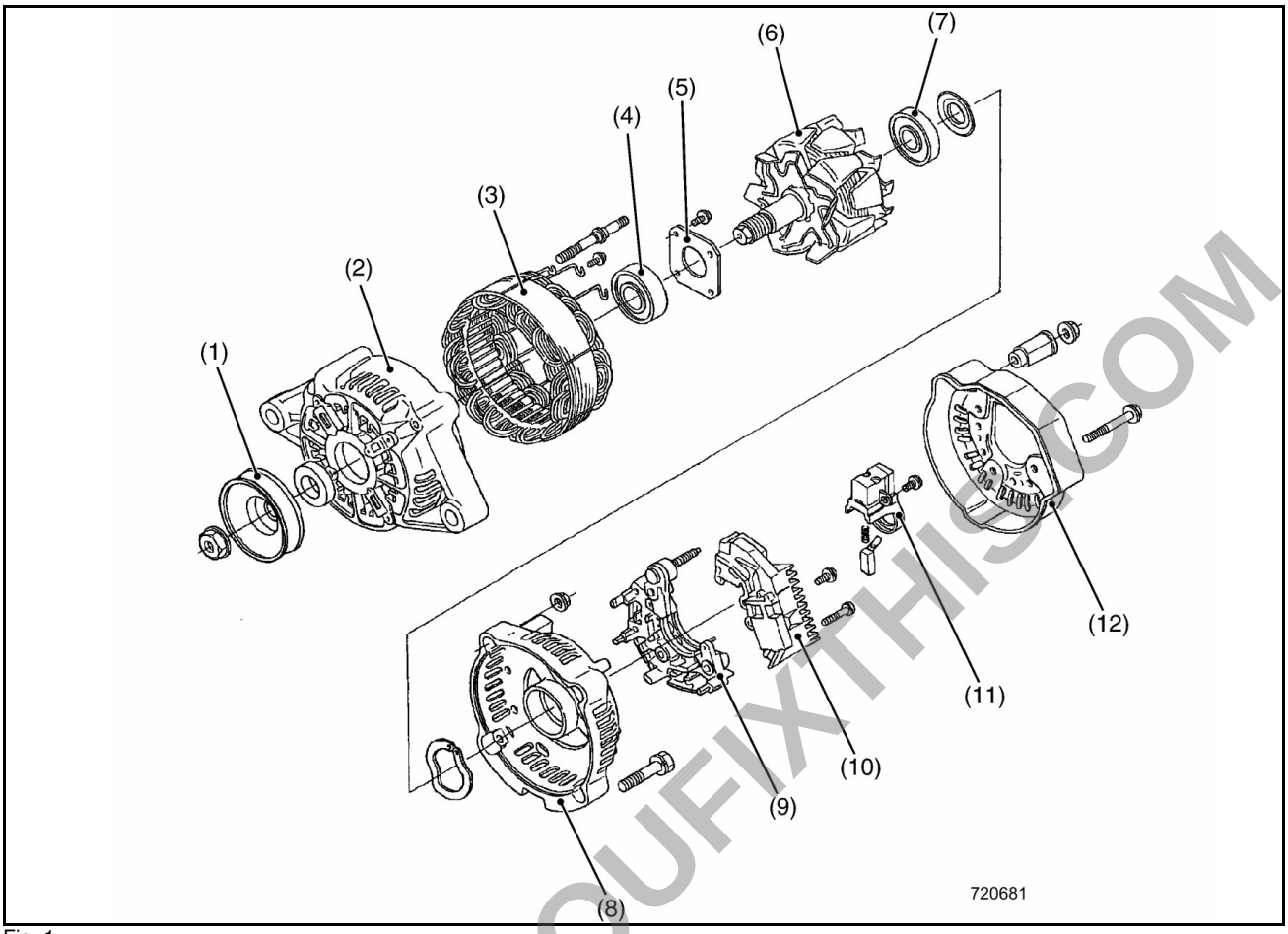


Fig. 1

1 V-belt pulley
2 Drive bearing plate
3 Stator
4 Bearing
5 Holding plate
6 Rotor
7 Bearing
8 Rear bearing plate
9 Rectifier
10 IC-regulator
11 Brush holder
12 Rear covering

Dismantling

- Remove the V-belt pulley (1).
- Remove the rear covering (12).
- Disassemble the brush holder (11).
- Disassemble the IC-regulator (10).
- Unscrew the four stator cable fastening screws.
- Take off the rectifier (9).
- Take off the rear bearing plate (8).
- Press the rotor (6) out of the drive bearing plate (2).
- Disassemble the holding plate (5).
- Use a press and a suitable device to press the bearing (4) out of the drive bearing plate (2).
- To protect the rotor against damage clamp it lightly in vice and extract the bearing (7) with a puller.

Assembly

i Note

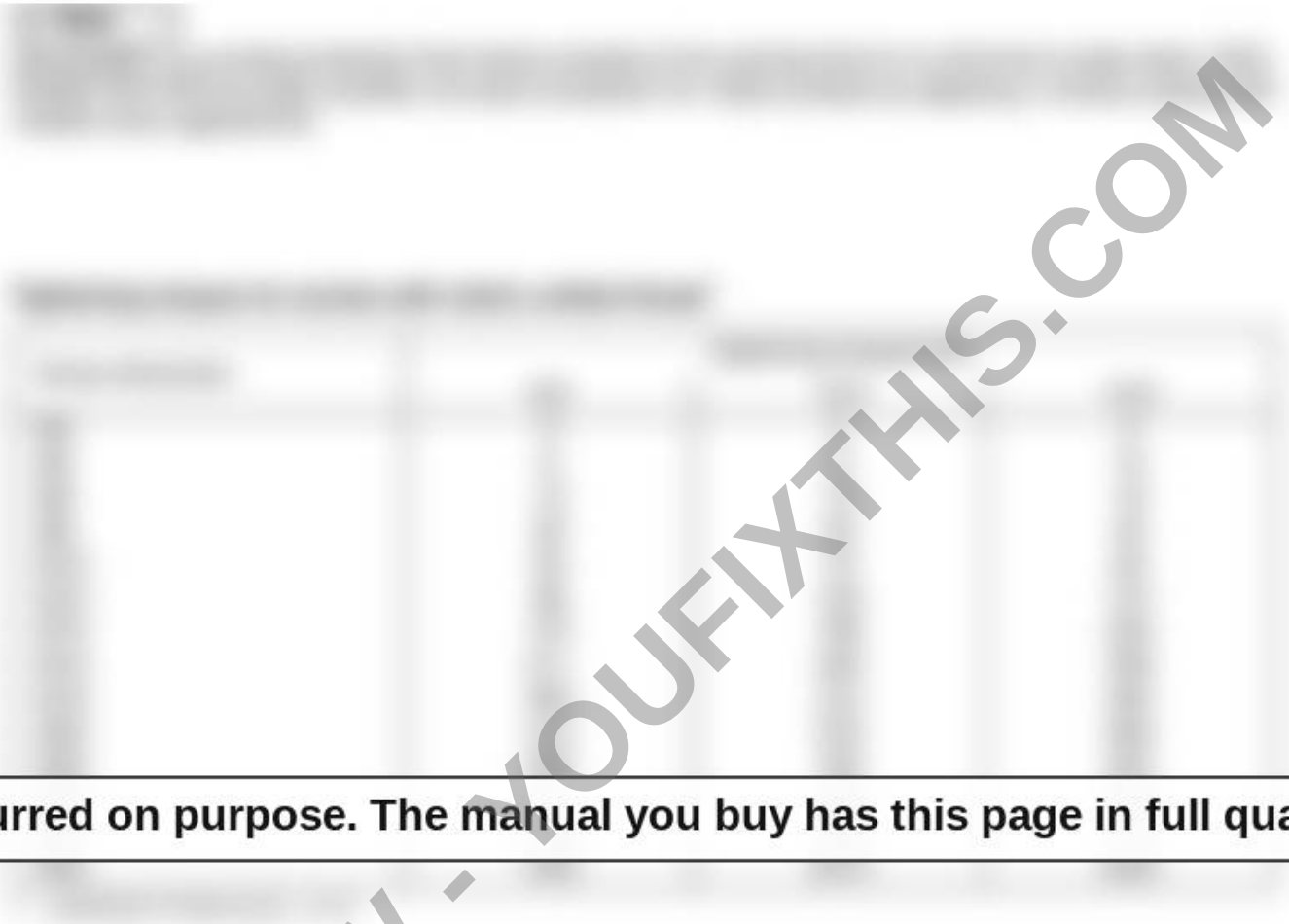
V-belt pulley tightening torque 58.4 to 78.9 Nm.

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The values specified in the table apply for screws:

- black oiled
- with surface protection A4C
- with surface protection DACROMET





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Important notes

These safety regulations must be read and applied by every person involved in the repair /maintenance of this machine. The applicable accident prevention instructions and the safety regulations in the operating and maintenance instructions must be additionally observed.

Repair work shall only performed by appropriately trained personnel or by the after sales service of BOMAG.

Workshop equipment and facilities as well as the use and waste disposal of fuels and lubricants, cleaning agents and solvent as well as gases and chemicals are subject to legal regulations, which are intended to provide a minimum on safety. It is obviously your own responsibility to know and adhere to these regulations.

This manual contains headers like "Note", "Attention", "Danger" and "Environment", which must be strictly complied with in order to inform about and avoid dangers to persons, property and the environment.

i Note

Paragraphs marked like this contain technical information for the optimal economical use of the machine.

⚠ Caution

Paragraphs marked like this highlight possible dangers for machines or parts of the machine.

⚠ Danger

Paragraphs marked like this highlight possible dangers for persons.

Environment

Paragraphs marked like this point out practices for safe and environmental disposal of fuels and lubricants as well as replacement parts.

Observe the regulations for the protection of the environment.

General

- For repair and maintenance work move the machine on a firm base and shut it down.
- Always secure the machine against unintended rolling.
- Secure the engine reliably against unintentional starting.
- Mark a defective machine and a machine under repair by attaching a clearly visible warning label to the dashboard.
- Block the articulated joint with the articulation lock.
- Use protective clothes like hard hat, safety boots and gloves.
- Keep unauthorized persons away from the machine during repair work.
- Tools, lifting gear, lifting tackle, supports and other auxiliary equipment must be fully functional and in safe condition.
- Use only safe and approved lifting gear of sufficient load bearing capacity to remove and install parts or components from and to the machine.
- Do not use easily inflammable or harmful substances, such as gasoline or paint thinners for cleaning.
- Do not smoke or use open fire and avoid sparks when cleaning or repairing a tank.
- When performing welding work strictly comply with the respective welding instructions.

Transport work with cranes and lifting tackle

i Note

Cranes must only be operated by instructed persons who had been trained in handling cranes.

- Follow the operating instructions of the manufacturer when working with cranes.
- Follow the operating instructions of the operator when working with cranes.
- Always comply with the applicable accident prevention instructions when working with cranes and lifting tackle.

Precautions and codes of conduct for welding work

Welding work must only be carried out by properly trained personnel.

⚠ Danger

Electric shock!

Sparks, fire hazard, burning of skin!

Infrared or ultraviolet radiation (arc), flashing of eyes!

Health hazard caused by welding work on highly alloyed work pieces, metal coatings, paint coatings, plastic coatings, oil containing dirt deposits, grease or solvent residues, etc.!

- Check welding equipment and cables for damage before use (also the validity of inspection stickers).
- Ensure good conductivity between ground cable and workpiece, avoid joints and bearings.

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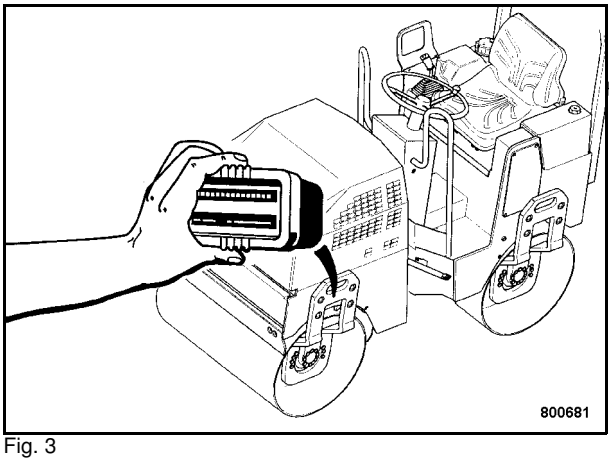


Fig. 3

Checking the exciter shaft speed

1. Switch the vibration on .
2. Measure the speed, rest the tester on your thumb (Fig. 3).

Nominal value:

See technical data.

Evaluation of test:

If the nominal value is not reached, perform trouble shooting on the engine or in the vibration system.

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Light emitting diodes

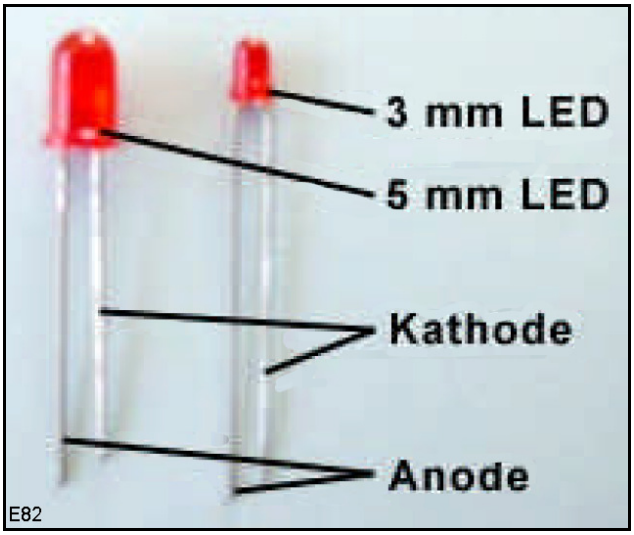


Fig. 4 LED

The light emitting diode, also referred to as LED, is a semi-conductor diode, which generates (emits) light during operation in forward direction. A semi-conductor crystal thereby emits a light signal, which is converged or scattered by the lenticular shape of the head. Light emitting diodes are available in various colours, sizes and shapes. They are for this reason used as signal lamps. This component is constructed of different semi-conductor crystals, depending on its colour. It works like any other semi-conductor diode.

Relays

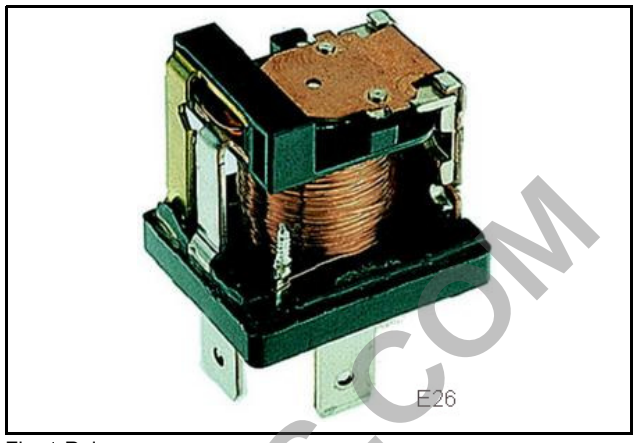


Fig. 1 Relays

Relays are commonly used to realize switching processes.

A free-wheeling diode prevents induction voltage from flowing back from the coil into the vehicle wiring system, which would cause interference with electronic components (control units).

With the possibility of using breaker - maker contacts the effect of an information can be reversed.

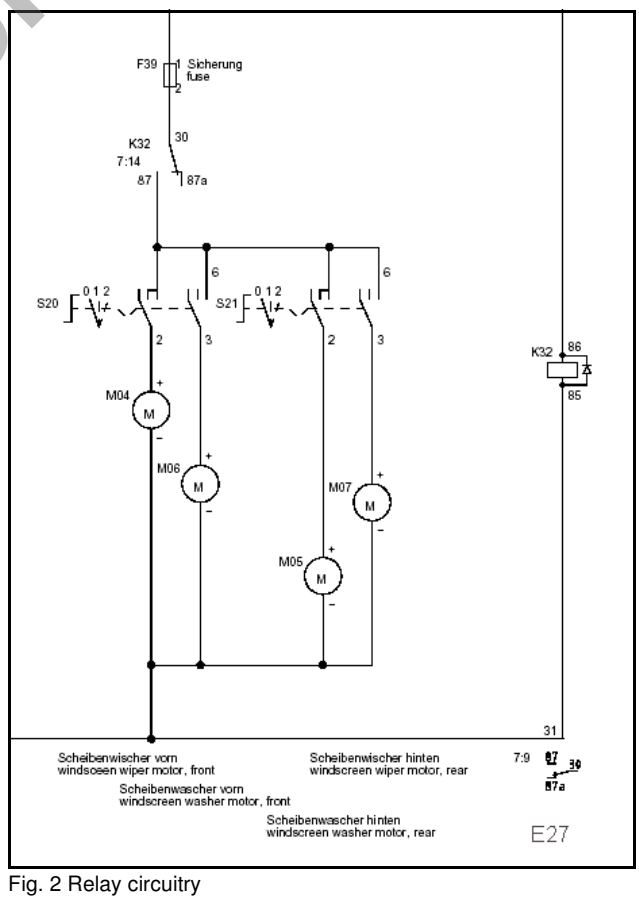


Fig. 2 Relay circuitry

The windscreen wiper and washer motors can only be operated via switches S20 and S21, when relay K32 is supplied with electric current (Fig. 2).

86 = Positive supply for coil

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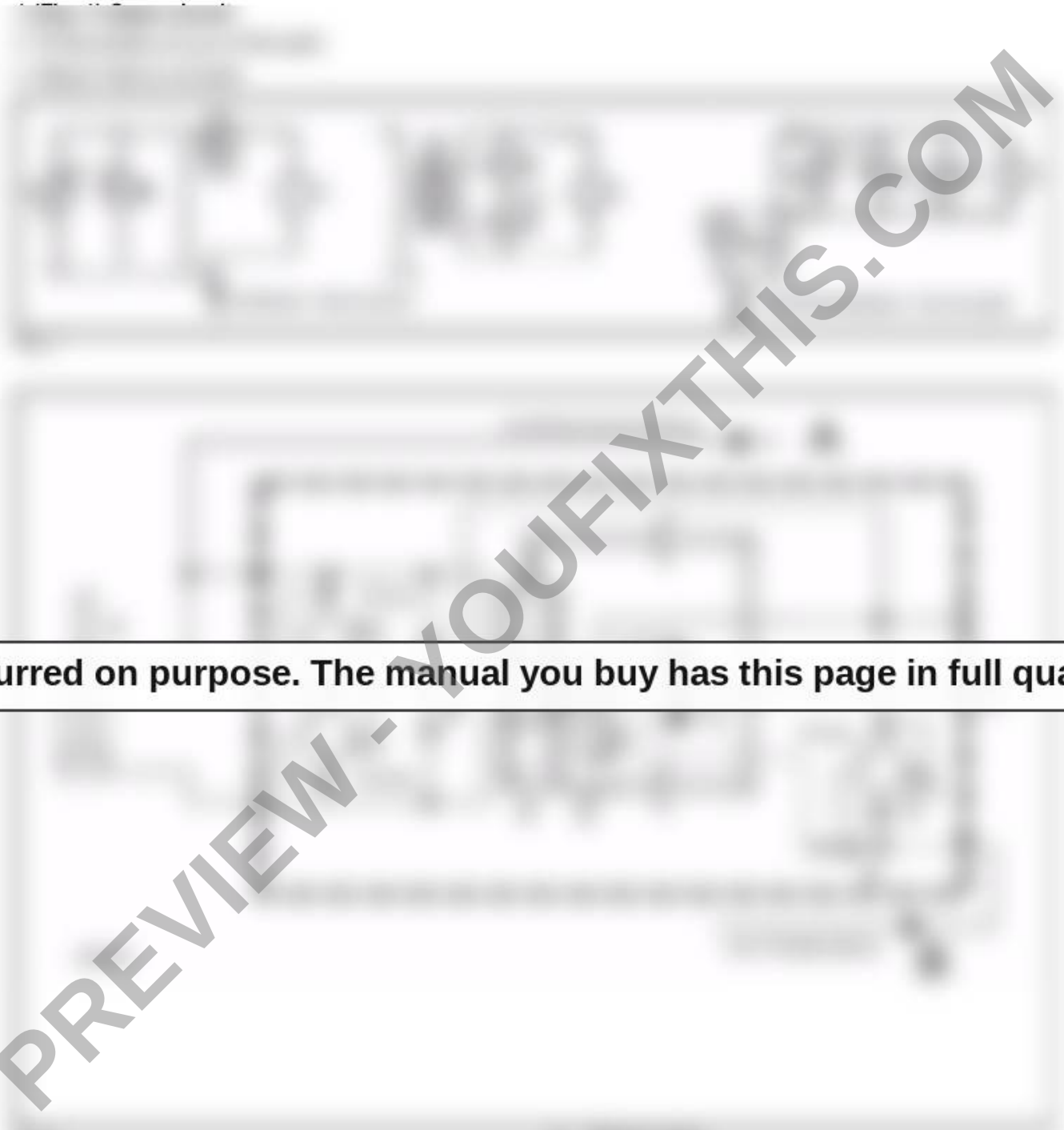
10.3 Steering hydraulics

Steering system

The steering system is an open hydraulic circuit.

2 (Fig. 1) Closed circuit

- Leak oil losses are compensated by the charge pump
- Return flow from consumers directly to pump



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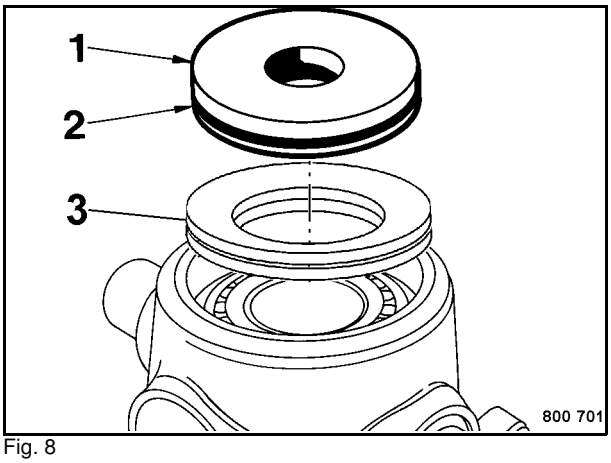


Fig. 8

9. Take disc 1 (Fig. 8) out of the bearing housing and remove O-ring (2).
10. Remove the Belleville springs (3).

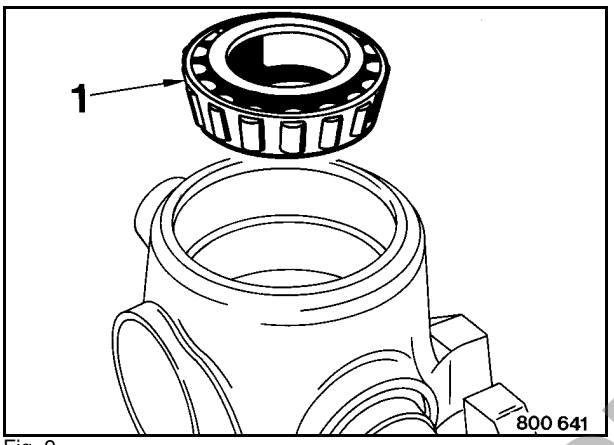


Fig. 9

11. Remove taper roller bearing 1 (Fig. 9).

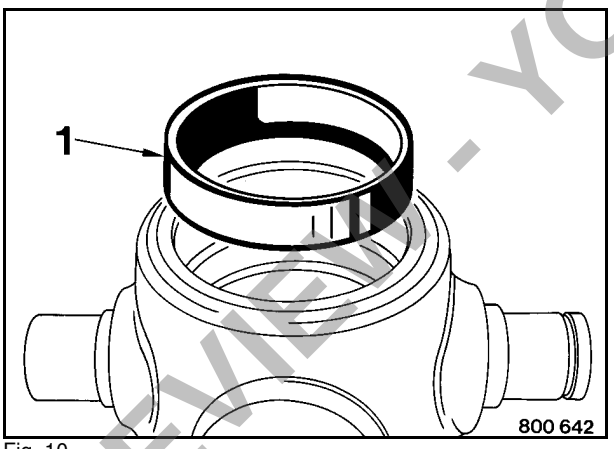


Fig. 10

12. Disassemble outer bearing race 1 (Fig. 10).

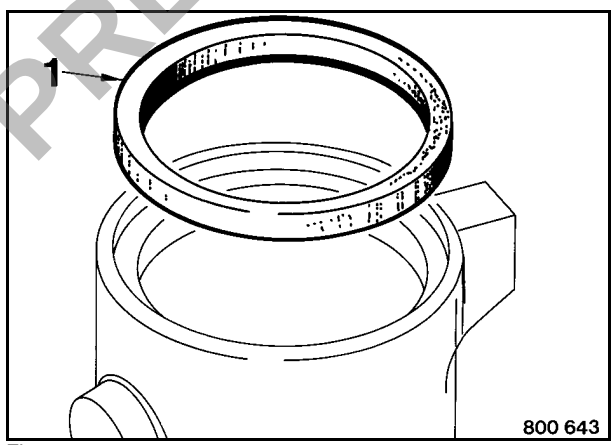


Fig. 11

13. Turn the bearing housing upside down and take out seal ring 1 (Fig. 11).

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Safety Instructions

Warning: Damage or injury may result if any of the instructions in this manual are not followed. If in doubt contact an authorised Rexroth agent.

a. All shipping plugs shall be removed prior to connection of hydraulic lines to motor.

b. Prior to attempting any maintenance work on motor ensure all pressure sources have been disconnected.

c. Motors contain stored energy in the form of compressed springs and this must be released using the method specified in the disassembly instructions.

d. Motor output shaft rotates on supply of pressure to the motor.

e. Motors shall be fully supported as specified in installation instructions prior to application of pressure.

f. Maximum pressures, speeds, and shaft loads applied to motor shall not exceed relevant data sheet limits. If in doubt consult authorised Rexroth agent.

g. When lifting motors use slings/shackles rated for motor weight.

General

The following repair instructions are intended to assist in inspections and repairs to be carried out. It is prerequisite that work is carried out only by qualified personnel. These units are manufactured with great care and with adherence to defined tolerances to the highest manufacturing accuracy.

Installation

a. Ensure all packing/shipping plugs are removed prior to use.

b. Hydraulic fluid used is mineral oil (HL, HLP) to DIN 51524. Environmentally acceptable hydraulic fluid. (HTG, HPG, HE to RE90221) are acceptable subject to reduced guarantee.

Note : Motors are tested with mineral oil and system must be fully flushed prior to use of any alternative fluid type.

For acceptability of other fluids please refer to authorized Rexroth agent.

Viscosity should be greater than 10mm²/s and less than 2000mm²/s under all conditions. Operational limits for full functionality are 16mm²/s < a < 100mm²/s with optimum results obtained at 16mm²/s < a < 36mm²/s.

c. Oil cleanliness is vital to obtaining long service life, therefore well maintained filtration is essential.

Oil contamination must not exceed NAS 1638 class 9 (or SAE class 6, ISO / DIN 4406 class 18/15). The maximum permissible interval between system oil changes is every 2,000 hours running time or yearly, whichever is the shortest.

The required level of cleanliness may normally be achieved by filters with a minimum retention rate of b_{10} ³75.
i.e. Typically a 10 micron filter.

Care should be taken in placement of filters in the system and consequent pressure drops across filters.

d. Motor connections should be accordance with relevant international standards and rated for maximum system pressure. Connection lines are to be designed such as to impose minimum loading on motor due to vibration, movement, temperature changes of system, etc.

All connections must be completed prior to motor operation.

Connections shall be sized to minimise pressure losses. Recommended minimum bore of hydraulic lines is 8mm.

Pressure at leakage port must not exceed 10 bar. Hydraulic line should be sized accordingly, using the maximum motor leakage flow in the relevant data sheet.

e. Prior to operation the motor will be securely mounted using all the motor mounting holes with an arrangement capable of with standing maximum torque and all external loads placed on motor shaft.

Ensure mounting face is flat and perpendicular to motor axis, allowing no distortion of motor mounting flange.

Leakage port should be mounted near the top to ensure motor is permanently oil filled. Alternatively a check valve may be placed in drain line to ensure motor is permanently oil filled. Ensure leakage port pressure does not exceed 10 bar.

f. Shaft connection to mechanical drive must use all mounting holes specified on output shaft. Care must be taken to ensure no loading is generated by eccentric mounting of motor to a load. A suitable flexible coupling should be used if this loading cannot be avoided.

g. Brake shoes on new drum brake assemblies should be run in by driving with the brakes partially on for a period of 2 minutes.

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Standardverkabelung: dicke Linien
standard wireing: thick lines

Platinenverdrahtung: dünne Linien
connection on printed circuit board: thin lines

Name	Bl.	Pf.	Benennung	title	TYP
F68	002	2	Sicherung Potential 30	Fuse, potential 30	30A
G01	002	2	Batterie	Battery	55AH
G02	002	4	Generator	Generator	40A
H01	004	10	Meldeleuchte Bremse	Indicator light, brake	2 Watt
H05	014	2	Meldeleuchte Blinker	Indicator light, indicators	2 Watt
H06	014	3	Meldeleuchte Warnblinker	Indicator light, hazard light	2 Watt
H07	008	6	Warnsummer Betriebsstoerung	Warning buzzer, breakdown	
H08	004	1	Meldeleuchte Ladekontrolle	Indicator light, charge control	2 Watt
H09	004	8	Meldeleuchte Oeldruck Motor	Indicator light, engine oil pressure	2 Watt
H20	004	9	Meldeleuchte Sitzkontaktschalter	Indicator light, drivers seat contact	2 Watt
H28	004	5	Meldeleuchte Kuehlmitteltemperatur	Indicator light, engine coolant temp.	2 Watt
H34	004	4	Meldeleuchte Vorgluehen	Indicator light, glowing	2 Watt
K04	007	6	Schrittrelais Vibration	Toggle relay, vibration	
K05	006	2	Relais Startstrom	Relay, starting current	BOSCHW
K23	010	5	Relais Berieselungssystem	Relay, sprinkler system	BOSCHW
K29	007	8	Relais Vibrationsschalter	Relay, switch, vibration	BOSCHW
K33	006	6	Relais Warnsummer Betriebsstoerung	Relay, warning buzzer, failure indication	BOSCHW
K34	006	7	Relais Sitzkontaktschalter	Relay, switch, drivers seat	BOSCHW
K37	004	3	Zeitrelais	Timing relay	13sec.
K48	006	3	Relais Fahrhebel 0-Stellung	Relay, travel lever 0-position	BOSCHW
K96	003	9	Relais Motoroeldruck	Relay, engine oil	BOSCHW
M01	003	4	Starter	Starter	0,8 KW
M02	010	3	Berieselungspumpe	Sprinkler pump	7,2A
M03	010	9	Emulsionsberieselungspumpe	Emulsion sprinkler pump	7,2A
P00	004	1	Betriebsstundenzaehler	Operating hour meter	
R02	003	1	Gluehkerze	Glow plug	8A
R02	003	1	Gluehkerze	Glow plug	8A
R02	003	2	Gluehkerze	Glow plug	8A
S00	003	3	Startschalter	Starter switch	

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

BOMAG
BOMAG GMBH BOPPARD

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Name: Kneip
Gepr.: 11.3.1998
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