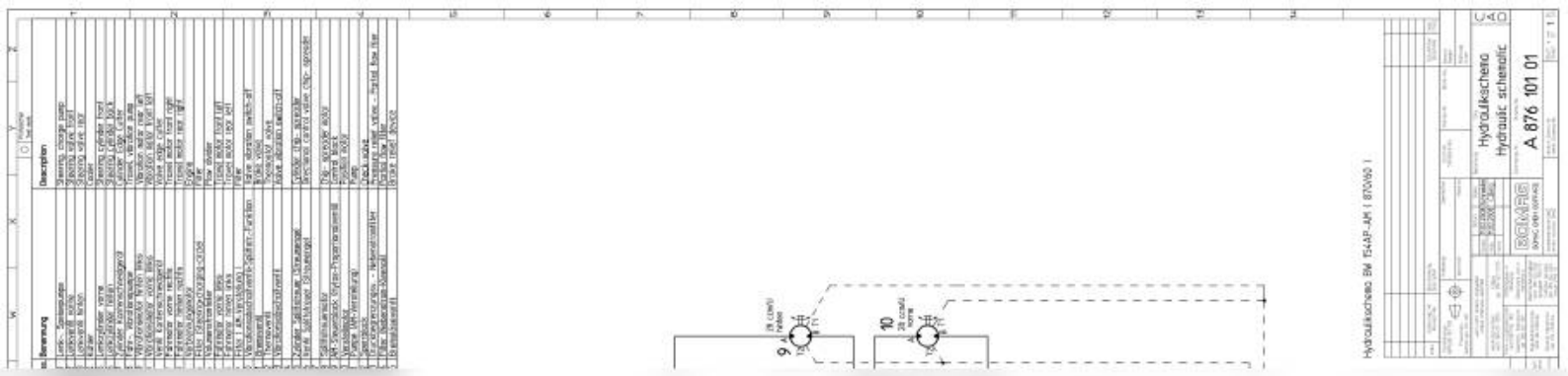


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13.3 Removing the AP-AM drum

i Note

The following text describes the disassembly of the support on the displacement motor side. The disassembly of the support on the vibration motor side must be performed accordingly.

1. Block rear and front drums with wedges against rolling.
2. Tilt the scrapers away from the drum.
3. Mark hydraulic/other hoses and cable for easier identification.
4. Fasten suitable lifting tackle on the frame and hook it into the lifting gear.
5. Raise the frame to unload the rubber buffers on the drive discs.
6. Support the frame safely.

i Note

Perform the work steps to (Fig. 1) on the clamp (cross-member) and on clamp (support).

7. Unscrew fastening nuts with washers (3) from the clamp half.
8. Pull the flat steel bar (2) with the upper clamp half (1 (Fig. 1)) off the lower clamp half.



Fig. 1

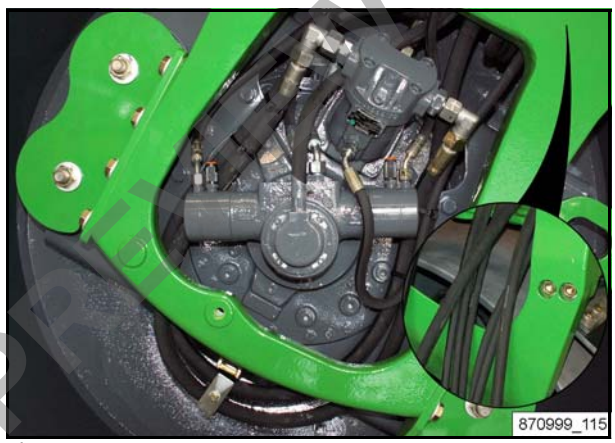


Fig. 2

i Note

(Fig. 3) shows the vibration motor side.

9. Disconnect hydraulic lines/hoses and cables from connections and fastening points on the displacement motor side (Fig. 2).

Environment

Catch any hydraulic oil that may run out with a suitable vessel and dispose of environmentally.

10. Close the hydraulic connections with plugs.
11. Pull hydraulic lines/hoses and cables out of space between and route these over the support (Fig. 2).

⚠ Caution

Mind hydraulic lines/ hoses and cables. Danger of squashing!

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9 Description of fault codes on the ESX control

9.1 Overview

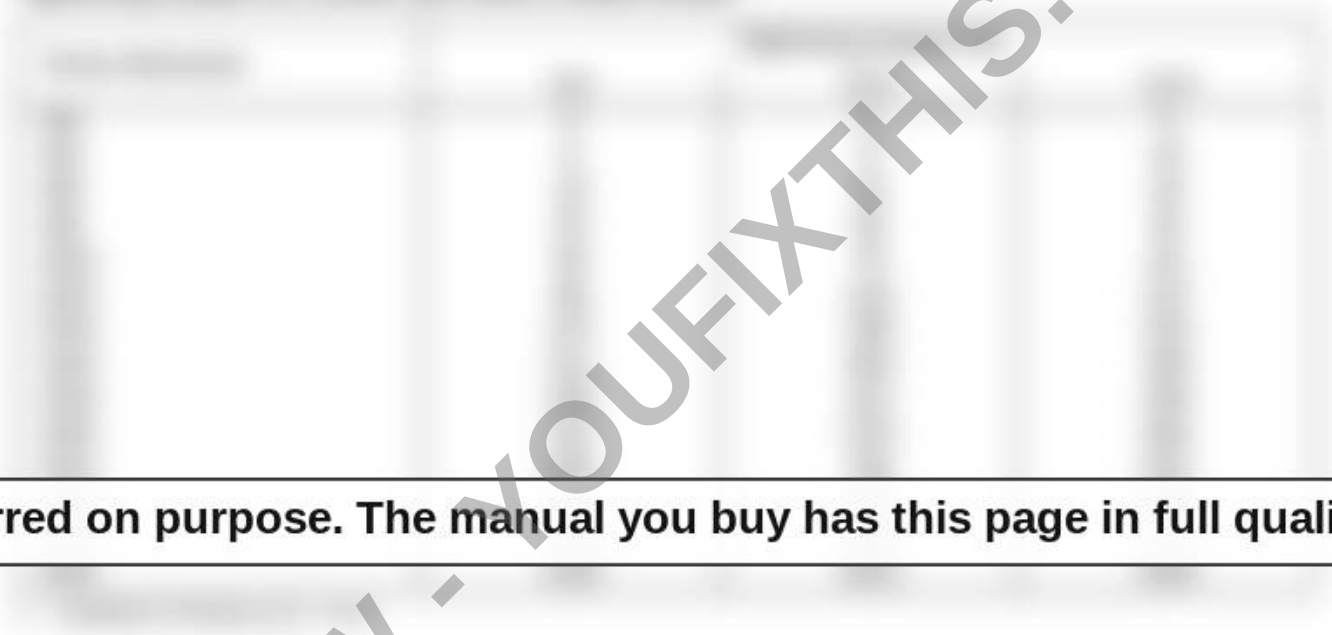
Fault code	Fault description
0000 – 0999	General faults / warnings / machine tests
1000 – 1999	Fault in travel system
2000 – 2499	Fault in steering system
2500 – 2999	Fault in remote control
3000 – 4499	Faults in work functions (vibration, attachment plates, rotor, chip spreader, edge cutter or sprinkling system)
4500 – 4999	Fault in measuring systems
5000 – 5499	Fault diesel engine
5500 – 5999	Fault hydraulic system
6000 – 6999	Fault anti-theft warning system, localization system, access system, time account, etc.
7000 – 7499	Input of machine codes/
7500 – 7899	Input of codes for measuring technology
7900 – 7999	Operating hours, load spectrum, etc.
8000 – 8999	Severe software error [1]
9000 – 9999	Errors of external IO-nodes on one of the CAN-busses (joystick, data collector, Dios module, LC-display, BLM Module, engine control units, etc.) [1]

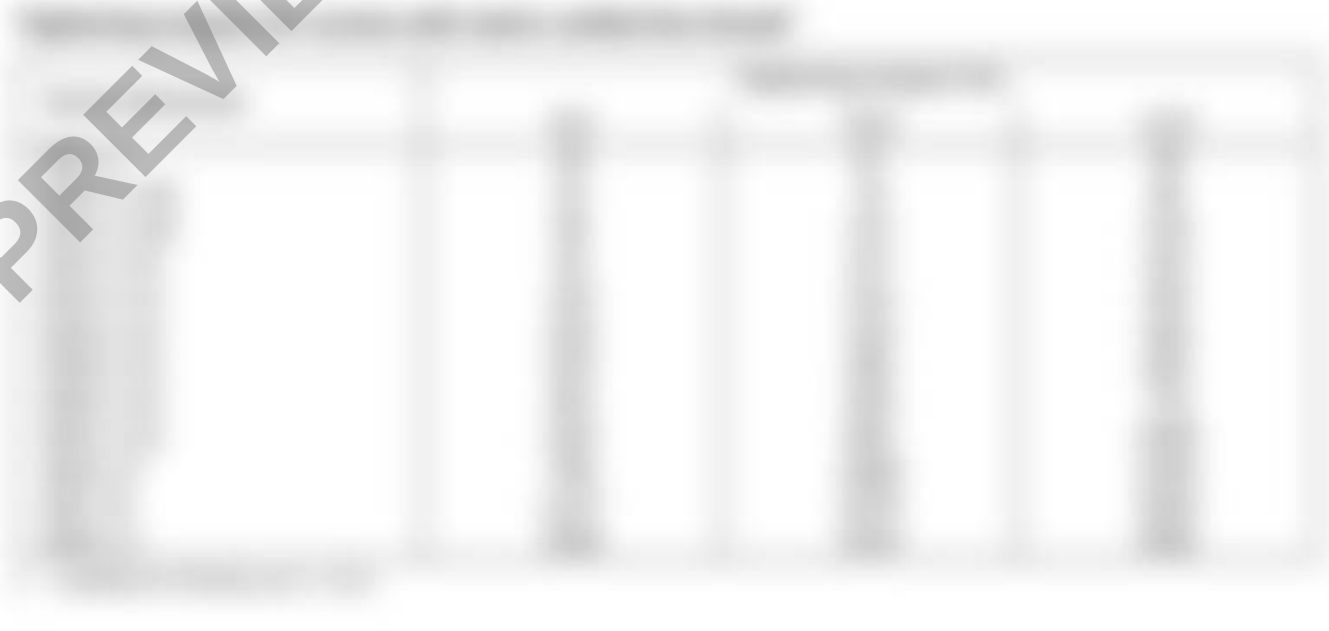
[1] These faults are only broken down partly hereunder!

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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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No.	Maintenance work	Remark	every 10 operating hours, daily	every 50 operating hours, daily	every 250 operating hours	every 500 operating hours	every 1000 operating hours	every 2000 operating hours	every 3000 operating hours	as required
5.27	Change the oil in the vibrator housing[3]	see footnote, drain and refill the oil on both sides at least every 2 years					X			
5.28	Grease the vibration motor stub shaft, Asphalt Manager						X			
5.29	Generator belt, check tension, replace						X			
5.30	Change hydraulic oil and breather filter[4]	see footnote, at least every 2 years						X		
5.31	Change the hydraulic oil filter****	at least every 2 years						X		
5.32	Change the coolant	at least every 2 years						X		
5.33	Check the fuel injection pump								X	
5.34	Check the fuel injection pump								X	
5.35	Check the turbo charger								X	
5.36	Check, clean, change the combustion air filter	min. 1x every year, safety cartridge at least every 2 years								X
5.37	Clean water tank and water filter									X
5.38	Water sprinkler system, maintenance in the event of frost									X
5.39	Adjust the scrapers									X
5.40	Windscreen washer system									X
5.41	Engine conservation									X
5.42	Tightening torques									X

1 Running-in instructions, check/adjust after 1000 operating hours
2 Running-in instructions, change oil after 250 and 500 operating hours
3 Running-in instructions for rear drum, change oil after 250 and 500 operating hours; running-in instructions front drum, change oil after 250 operating hours
4 Also after repairs in the hydraulic system.

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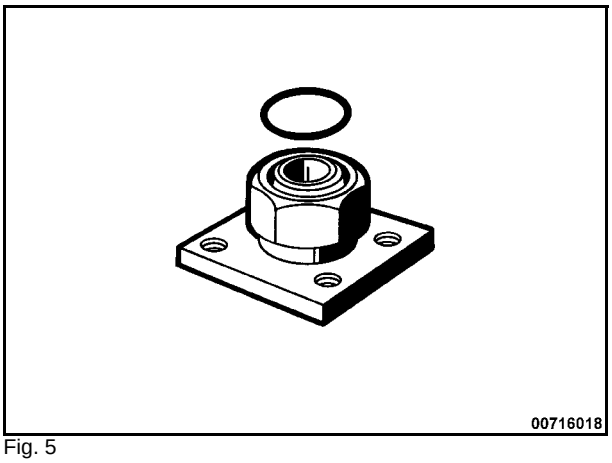


Fig. 5

12. Flanged plate 1“ - 25S

    BOMAG part-no.: 007 160 18

13. O-ring

    BOMAG part-no. 062 202 22

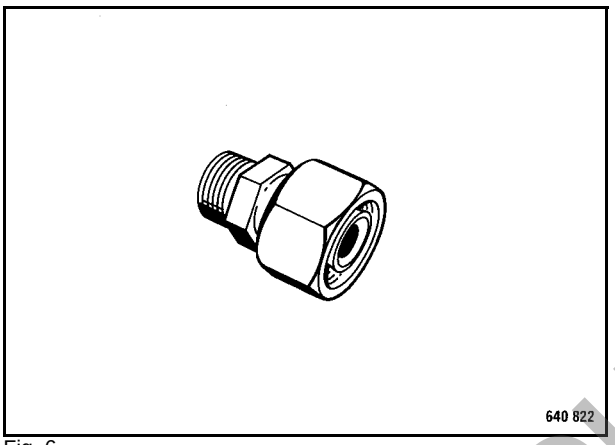


Fig. 6

14. Reducing fitting 18L - 15L

    BOMAG part-no.: 055 422 92

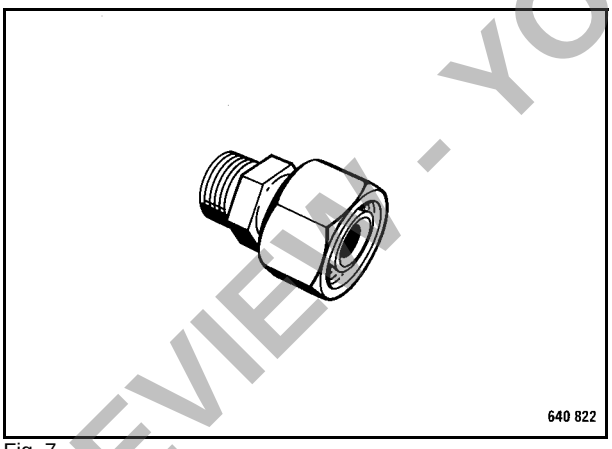


Fig. 7

15. Reducing fitting 25S - 20S

    BOMAG part-no.: 055 422 98

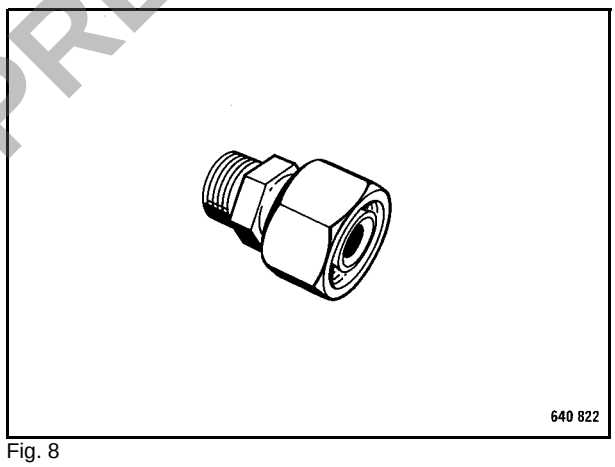


Fig. 8

16. Reducing fitting 20S - 16S

    BOMAG part-no.: 055 423 26

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7.3 Circuit symbols in the circuit diagram

Circuit symbols

Circuit symbols are standardized representations for electrical appliances. They serve the purpose of a simplified representation of complete systems, from which, however, the function can be clearly identified. This standardization is in compliance with the globally valid regulations of the IEC (International Electrical Commission). The standardization serves the purpose of global understanding and fault free connection of appliances, especially in automobile repairs. Since the wiring diagram is intended to show only the most essential aspects, the circuit symbol only shows as much of the function, as is needed for easy recognition and for the avoidance of mistakes.

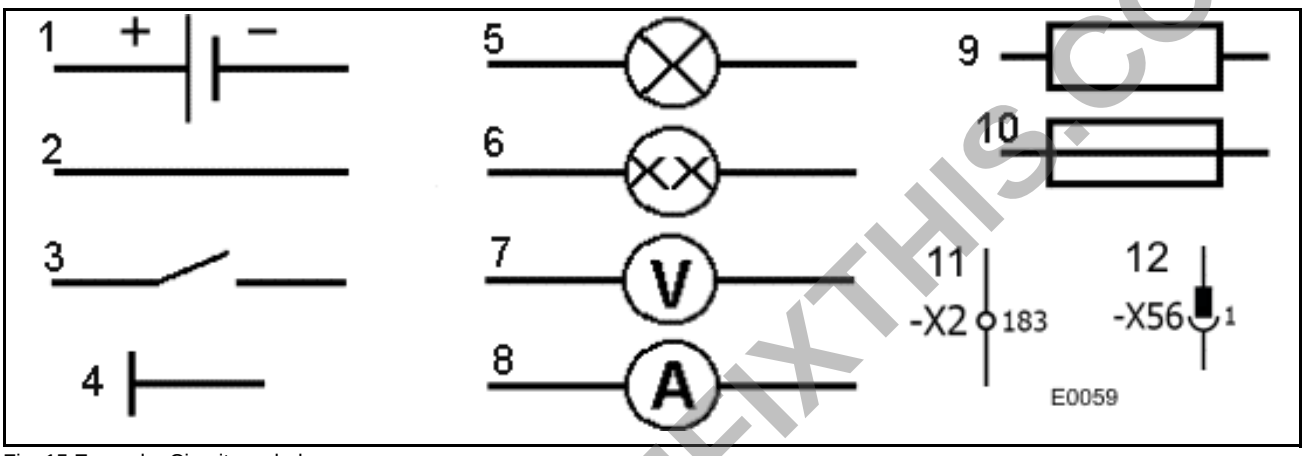


Fig. 15 Example: Circuit symbol

1 Current source
2 Conductor
3 Switch
4 Ground
5 Filament lamp
6 Filament lamp with two luminous elements
7 Voltmeter
8 Amperemeter
9 Resistance
10 Fuse
11 Terminal strip
12 Plug

Different symbols are used to simplify the differentiation of terminal strips 11 (Fig. 15) and plugs (12) in a wiring diagram.

i Note

Plugs are mainly used to connect two wiring looms or to connect a wiring loom with a component with cable connection and mating plug.

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Trouble shooting "Starter"

⚠ Caution

So-called jump starting (using an additional external battery) without the battery connected is dangerous. When disconnecting the cables from the poles high inductivities (arcs, voltage peaks) may occur and destroy the electrical installation.

For purposes like e.g. purging the fuel systems, starters may be operated for maximum 1 minute without interruption. Then you should wait for at least 30 minutes (cooling down) until trying again. During the 1 minute starting period this process should not be interrupted.

Starter motors must not be cleaned with high pressure steam cleaning equipment.

The contacts on starter terminals 30, 45, 50 must be protected against unintended shorting (jump protection).

When replacing the starter the ring gear on the engine flywheel must be checked for damage and its number of teeth - if necessary replace the ring gear.

Always disconnect the battery before starting assembly work in the starter area of the engine or on the starter itself.

i Note

The most frequent fault is definitely a fully discharged battery.

If the starter rotates too slowly, either the brushes are partly worn off, or parts of the exciter or armature winding is shorted. In some cases oxidized electric contacts or a soiled ground connection causing extremely high voltage losses in the overall starter system are the cause of problems.

If the starter only emits a clicking sound,- either the magnetic switch is defect / soiled (dismantle and clean))- the main contacts on the magnetic switch are worn off / soiled (scrape off carefully with a file and clean)- the starter motor is defective / soiled (remove armature and clean), cover cleaned, moveable parts with grease.

Frequently a jammed return mechanism is the reason for a starter failure.

Occasionally worn contacts are found on the magnetic return switch

Defects on the actual starter motor including pinion and carbon brushes are very rare.

With a trouble shooting chart the faults in the starter system can be narrowed down. The starter system can only work when many conditions are fulfilled at the same time.

- Immobilizer deactivated?
- Ignition switch OK?
- Travel lever in correct position?
- Emergency stop not actuated?
- Battery sufficiently charged?
- Battery poles OK?
- Main battery fuse OK?
- Main battery switch closed?
- Main starter cable (terminal 30) OK?
- Starter control cable (terminal 50) OK, voltage drop?
- Ground cable OK?
- Switching of magnetic switches OK?

The sequence of these tests is generally of no significance. It mainly depends on:

- the experience of the specialist
- the failure probability of the component to be tested and the testing effort for the respective part.

Only if all criteria mentioned above are OK, the fault must be in the starter itself. In this case it can be repaired or replaced.

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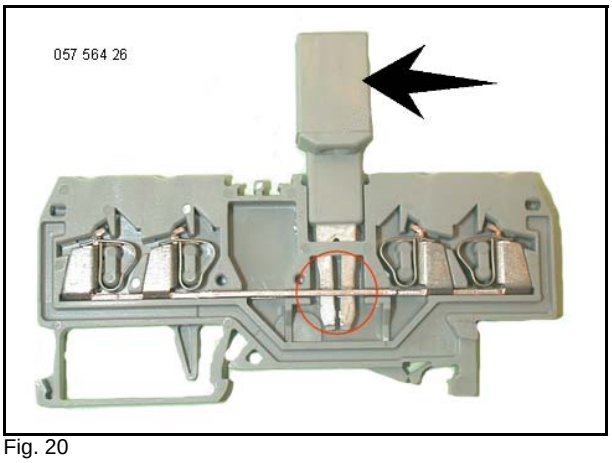


Fig. 20

36. Testing adapter to measure the signals from the series spring clamps (Wago).

BOMAG part-no.: 057 564 26

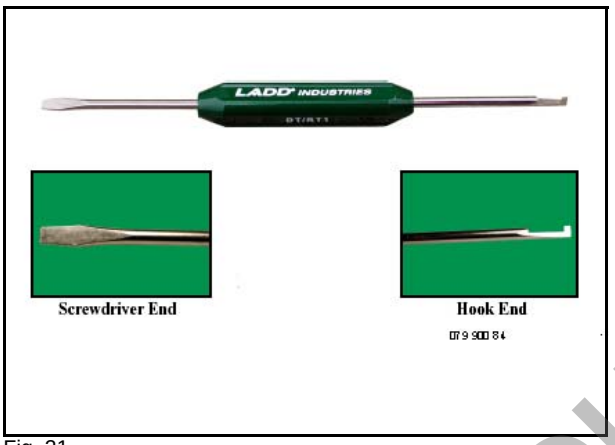


Fig. 21

Deutsch contacts

37. Tool to disassemble the interlocking on Deutsch plugs (series DT and DTM).

BOMAG part-no.: 079 900 84

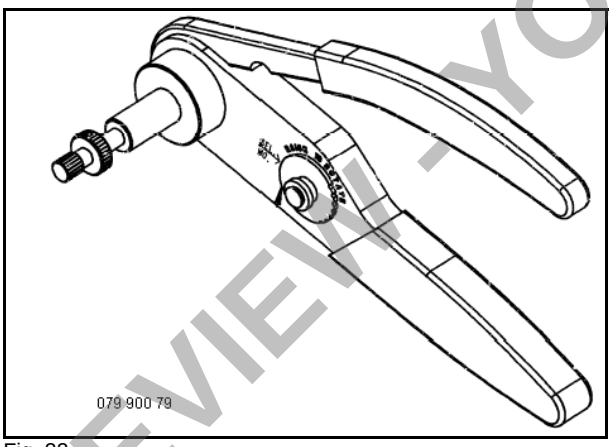


Fig. 22

38. Crimping pliers for Deutsch contacts of series DT and DTM, size AWG 20,16 and 12.

AWG 20 = 0.5 mm^2 cable cross-section

AWG 16 = 1,5 mm^2 cable cross-section

AWG 12 = 4,0 mm^2 cable cross-section

BOMAG part-no.: 079 900 79

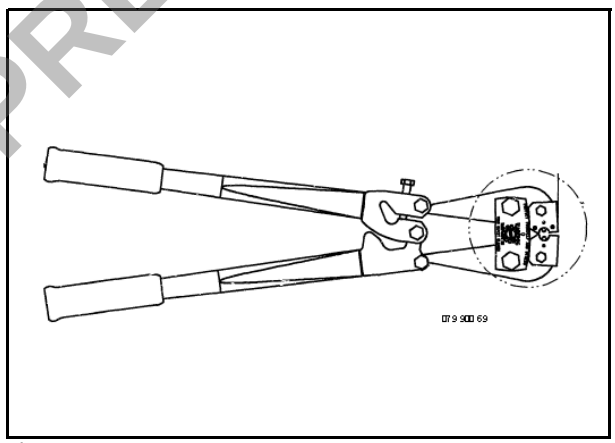


Fig. 23

39. Crimping pliers for Deutsch contacts of series HDT, size AWG 6 and 8.

AWG 8 = 10,0 mm^2 cable cross-section

AWG 6 = 16,0 mm^2 cable cross-section

AWG 6 = 16,0 mm2 cable cross-section

BOMAG part-no.: 079 900 69

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PIN data collector	Signal description	Nominal values (voltage / current)
X27:11 black	Input **water level** (only BW 174) Analog input (resistance) This input is switched between R 14 (left tank) and R 15 (right tank) via relay K 23.	
X27:12 black	Not used	---

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241
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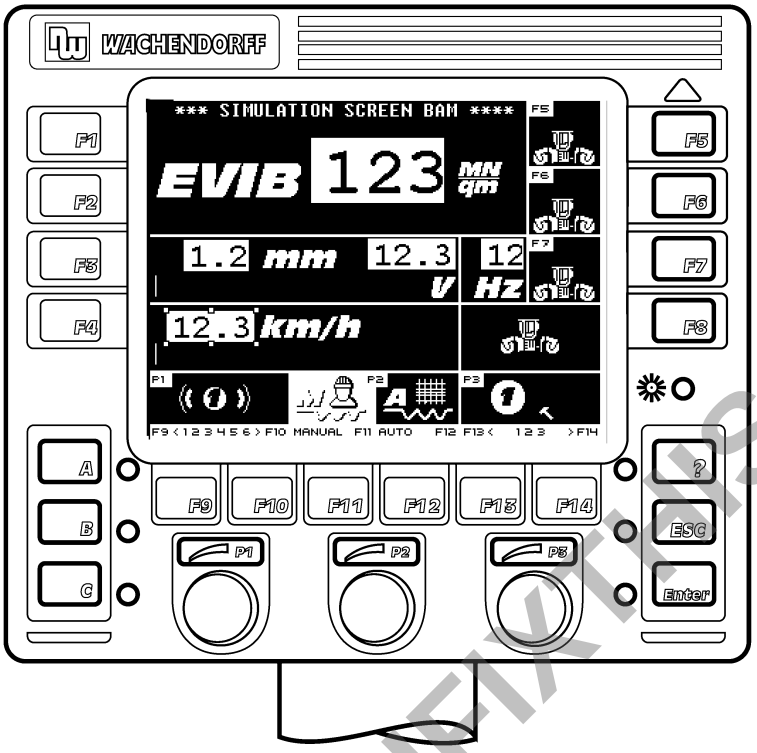
9.5.16 Vibration states

Input code	Description of display function	Display values
3 0 0 0	Show status of vibration button	0 = Vibration off 1 = Vibration on
3 0 0 2	Show preselected amplitude	0 = Vibration off 1 = low amplitude 2 = high amplitude
3 0 0 3	Show drum pre-selection	1 = front only 2 = rear only 3 = both drums
3 0 0 4	Show pre-selected vibration mode	0 = Vibration off 1 = Manual 2 = Automatic 3 = Chip spreader

9.5.17 Vibration outputs

Input code	Description of display function	Display values
3 0 2 0	Show status of vibration pump control	0 = the vibration pump is not triggered 1 = the vibration pump is triggered
3 0 2 1	Actual current value on output vibration pump	mA / Digit
3 0 2 2	Actual voltage value on output vibration pump	mV/ Digit
3 0 4 0	Show status of vibration shut-down valve front	0 = front vibration shut-down valve not switched 1 = front vibration shut-down valve switched (no front vibration)
3 0 4 1	Show status of vibration shut-down valve rear	0 = rear vibration shut-down valve not switched 1 = rear vibration shut-down valve switched (no rear vibration)

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The control is in simulation mode.

- The simulated travel direction can be selected with keys "F5", "F6", "F7". The detected travel direction is displayed in the roller symbol underneath.
- The assignment of keys "F9" to "F14" is identical with their assignment in standard operation.

The voltage of the "exciter position" potentiometer is displayed in addition to the detected Evib value and the vibration frequency. This view does not show the asphalt temperature.

Exiting this page via "ESC" aborts the simulation mode. The adjusted manual and automatic stages as well as the operating mode remain active.

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11.8 Checking the magnetic clutch

- Measure the voltage.

i Note

Nominal value = vehicle voltage

- Check the magnetic coil locking ring for secure fit.
- Check the current consumption.

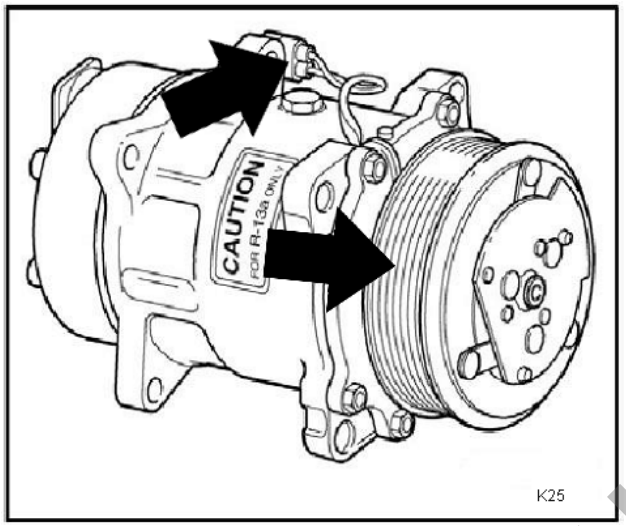


Fig. 1

i Note

at 12 Volt vehicle voltage approx. 3.5 Amp.

at 24 Volt vehicle voltage approx. 1.75 Amp.

Overcurrent indicates a short circuit inside the magnetic coil.

No current indicates an interrupted electric circuit.

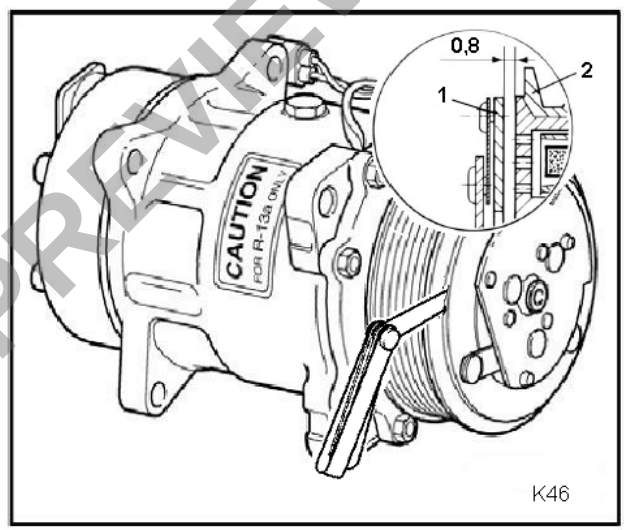


Fig. 2 Measuring the air gap

- Measure the air gap on the magnetic clutch between V-belt pulley (2) and thrust plate (1).

i Note

The gap should be 0.4 to 0.8 mm.

- Take off the drive V-belt and rotate the V-belt pulley by hand while the magnetic clutch is disengaged.

i Note

In case of excessive flatness faults or deviations the magnetic clutch needs to be replaced.

Cross-section of magnetic clutch

Fig. 3 shows a cross-section of the magnetic clutch. If the coil (7) is not supplied with operating voltage, there is no contact between the front plate of the clutch (1) and the V-belt pulley (2). A spring presses the front plate away from the belt pulley. The V-belt pulley rotates with the bearing (3) in idle speed, the compressor does not work. When the coil is supplied with operating voltage (12 or 24 V), a magnetic field is generated and pulls the front plate of the clutch. Both front plate and compressor shaft (8) are then driven by the V-belt pulley, the compressor works.

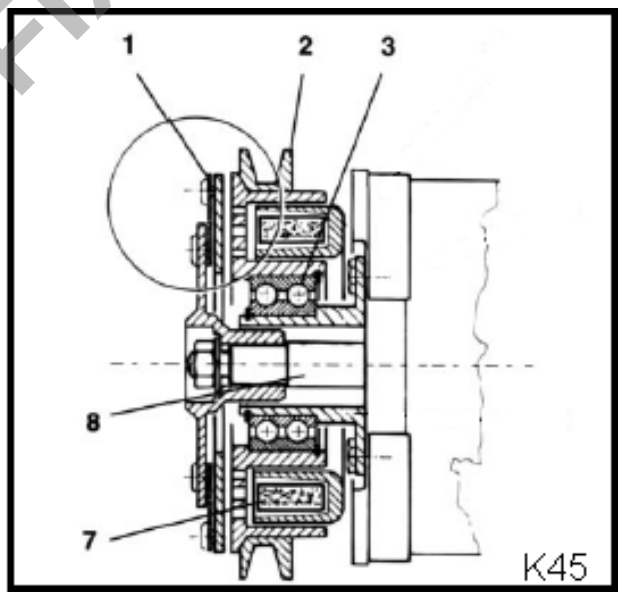


Fig. 3 Cross-section of magnetic clutch

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Fig. 4

4. Screw-in bolt for flange M 12 x 470 mm

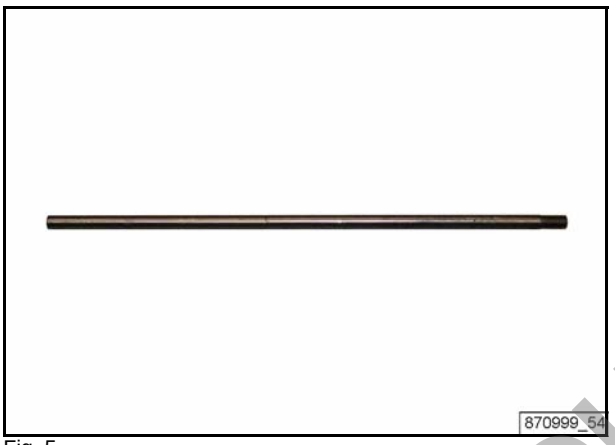


Fig. 5

5. Screw-in bolt for drive disc M 16 x 460



Fig. 6

6. Lifting device for travel gear/drive disc

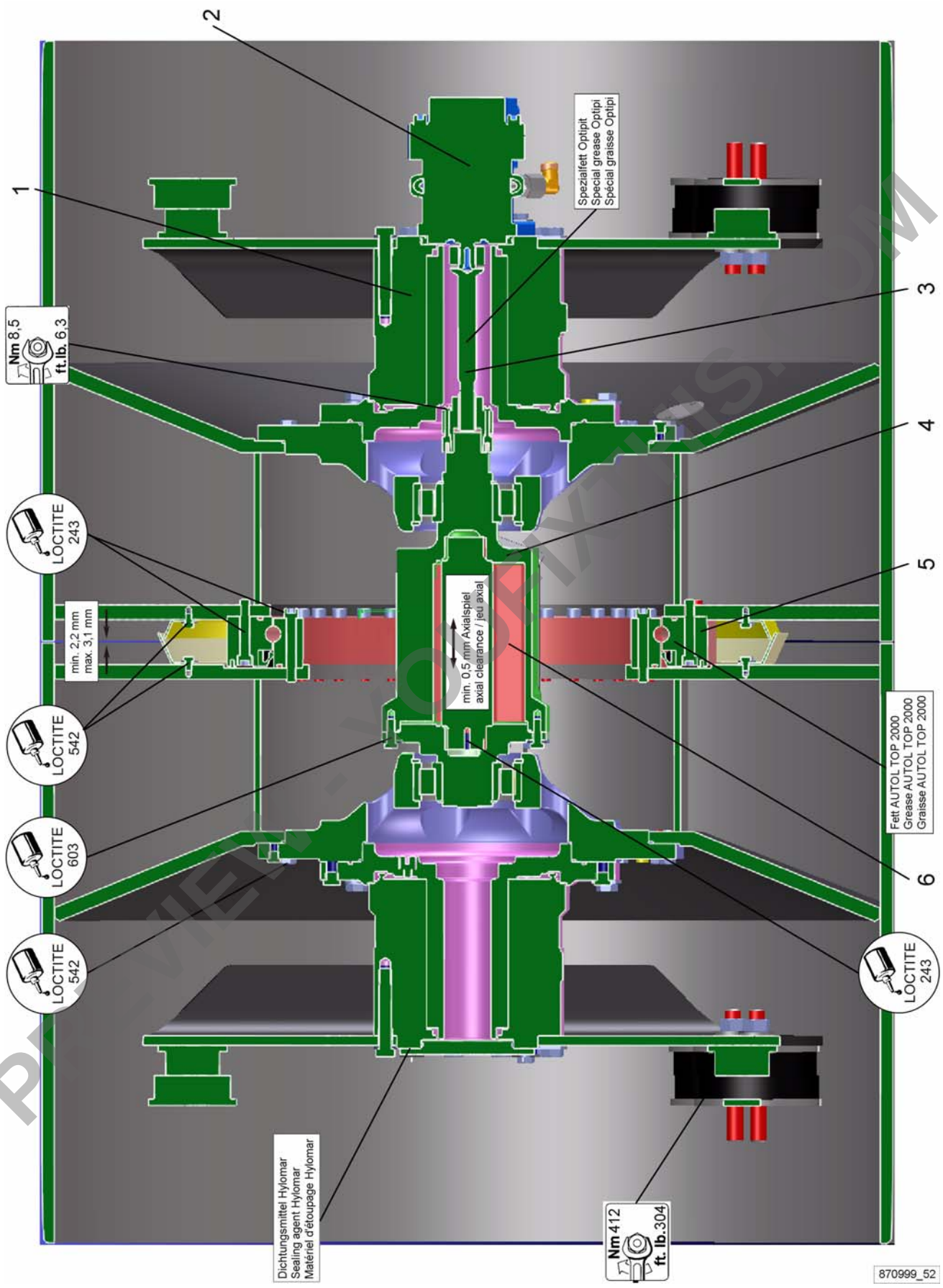


Fig. 7

7. Adapter piece for lifting device for AP drum exciter unit

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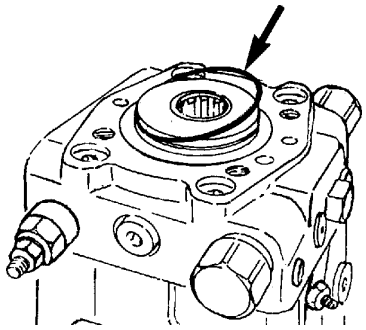
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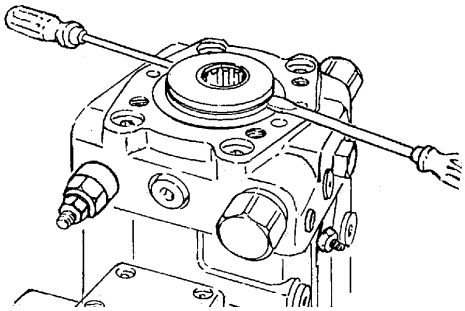
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Hilfspumpe abdichten
Sealing of the boost pump



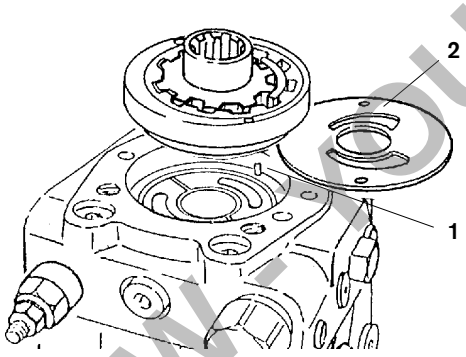
O-Ring ausbauen.

Remove O-ring.



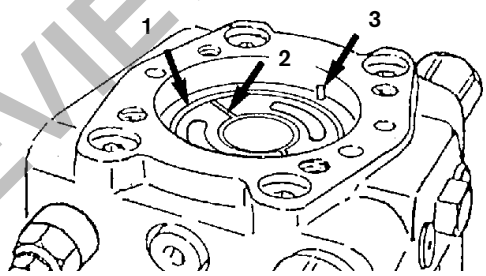
Hilfspumpe abdrücken.

Pry off the boost pump.



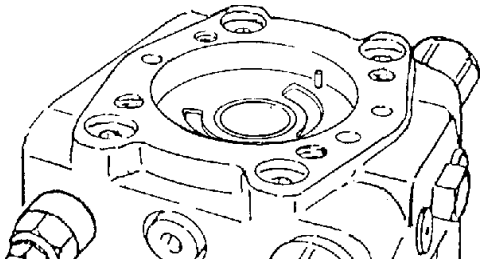
1. Verschleißplatte
2. Fixierstift

1. Wear plate
2. Locating pin



1. Kantsil-Ring
2. Entlastungsnut
3. Fixierstift

1. Kantsil-ring
2. Unloading channel
3. Locating pin



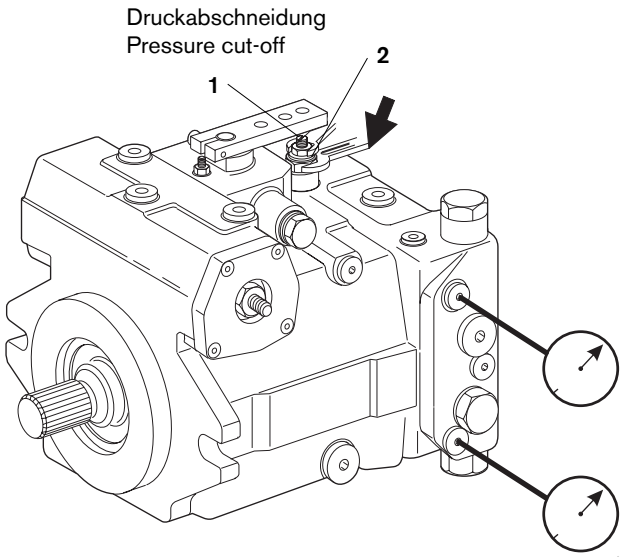
Verschleißplatte einsetzen.
Drehrichtung beachten!

Fit wear plate taking the direction of rotation account.

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Einstellhinweise - HD- Ventile (Hochdruck) und Druckabschneidung
Adjustment instructions - HP- valves (High pressure) and pressure cut-off



Achtung!
Sicherheitsbestimmungen beachten!

HD-Ventil ohne Bypass

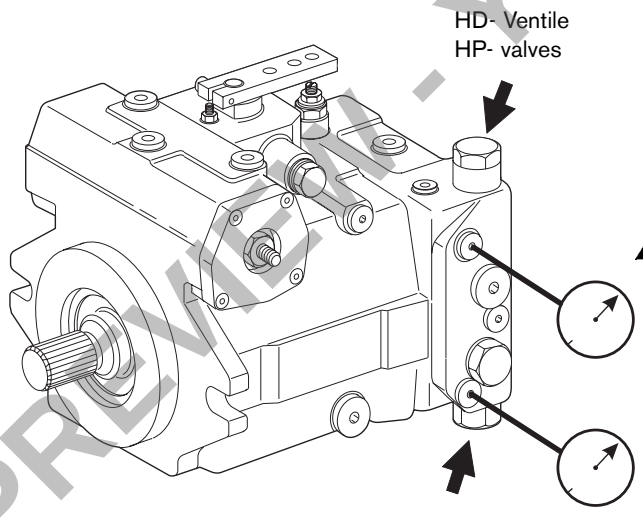
1. HD-Ventile sind immer 10% höher eingestellt als die Druckabschneidung.
2. Nachjustierung nur bei Betriebstemperatur

   Manometer (600 bar) an M_A und M_B anschließen.

⚠ Druckabschneidung:
Zum Blockieren der Druckabschneidung beim Überprüfen der Hochdruckventile die Einstellschraube Pos. 1 mit gelöster Kontermutter Pos. 2 bis zum Anschlag mit **max. 2 Nm im drucklosen Zustand eindrehen!**

HD-Ventile: Mit geringer Pumpenmenge über Ventile fahren.
Einstellwert kontrollieren.
(Nur kurzzeitig "Temperatur“.)
Einstellwert verändern - siehe Serviceinfo

Druckabschneidung:
Einstellschraube auf Maß (*) zurückdrehen.
Druckwert kontrollieren bzw. nachjustieren.
Achtung! Differenz von 10% HD-Ventile und Druckabschneidung beachten!
Hinweis: Einstelldaten nach Werksauftrag.



Attention!
Observe safety regulations.

HP valve without bypass-function

1. HP valves are always adjusted 10% higher than the pressure cut-off.
2. Readjusting only at operating temperature.

   Connect pressure gauge (600 bar) to M_A and M_B.

⚠ Pressure cut-off:
To block the pressure cut-off when testing the high pressure valves, the adjustment screw (item 1), with the lock-nut (item 2) loosened, has to be screwed in **with a max. torque of 2 Nm in the depressurised condition** until the end stop is reached.

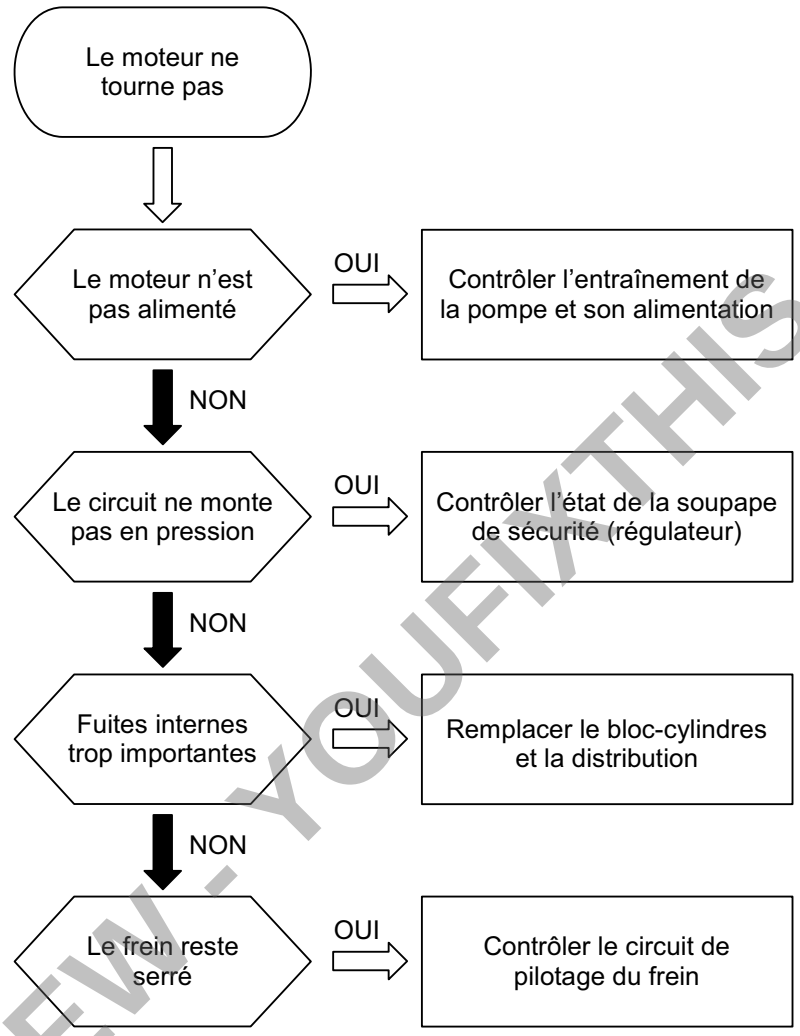
HP valves: Operate the valves with small pump flow over the valves.
Check setting value. (only for a short time "temperature“).
Change setting value - see service information.

Pressure cut-off:
Turn back setting screw to measurement (*).
Check pressure value and readjust if necessary.
Attention! Observe the 10% pressure difference between the HP valves and the pressure cut-off!
Note: Setting data is in accordance with the works order.

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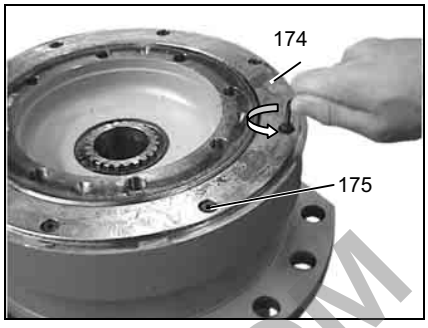
Le moteur ne tourne pas



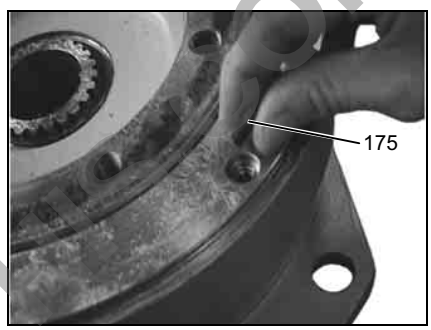
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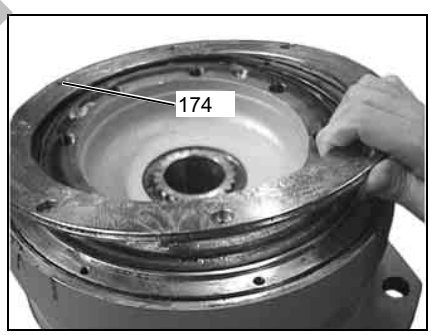
- Desserrer les vis de fixation (175) du porte-joint (174).
- *Unscrew the mounting screws (175) of the seal support (174).*



- Démonter et éliminer les vis (175).
- *Disassemble and discard the screws (175).*



- Démonter le porte joint (174).
- *Remove the seal support (174).*



- Démonter et éliminer le joint torique (173).
- *Remove and discard the O-ring (173).*



- Extraire et éliminer la bague d'étanchéité (027 pour MK11) ou (078 pour MK18 MKE18).
- *Extract and discard the sealing ring (027 for MK11) or (078 for MK18 MKE18).*



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REPÈRE	DESIGNATION
● 170	Protection équipée
027	Bague étanche (MK09)
078	Bague d'étanchéité (MK18, MKE18)
171	Plaque de protection
171	Plaque de fixation (MK09)
172	Joint
172	Joint Radial (MK09)
173	Joint (MK09, MK11, MK18, MKE18)
174	Anneau d'arrêt (MK09)
174	Porte joint (MK11, MK18, MKE18)
175	Vis (MK09, MK11, MK18, MKE18)
176	Bouchon Obturateur

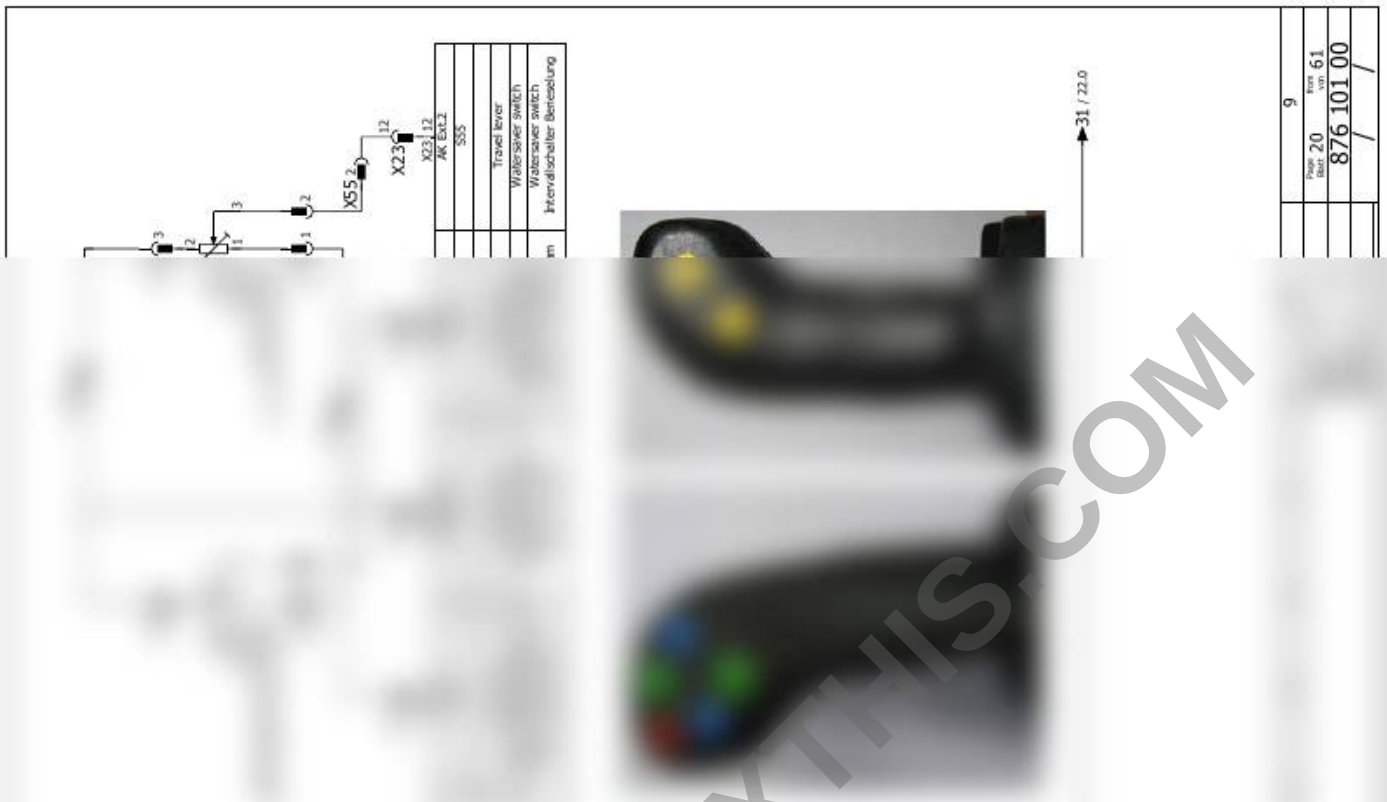
● Sous-ensemble fourni en kit
○ Pièce fournie séparément

ITEM	*DESCRIPTION*
● *170*	*Protector assembly*
027	*Shaft seal (MK09)*
078	*Sealing ring (MK18, MKE18)*
171	*Protector plate*
171	*Front plate (MK09)*
172	*Lip seal*
172	*Radial lip seal (MK09)*
173	*O-ring (MK09, MK11, MK18, MKE18)*
174	*Snap ring (MK09)*
174	*Seal support (MK11, MK18, MKE18)*
175	*Screw (MK09, MK11, MK18,*
176	*Plug*

● *Sub-assembly sold in kit*
○ *Parts sold single*

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