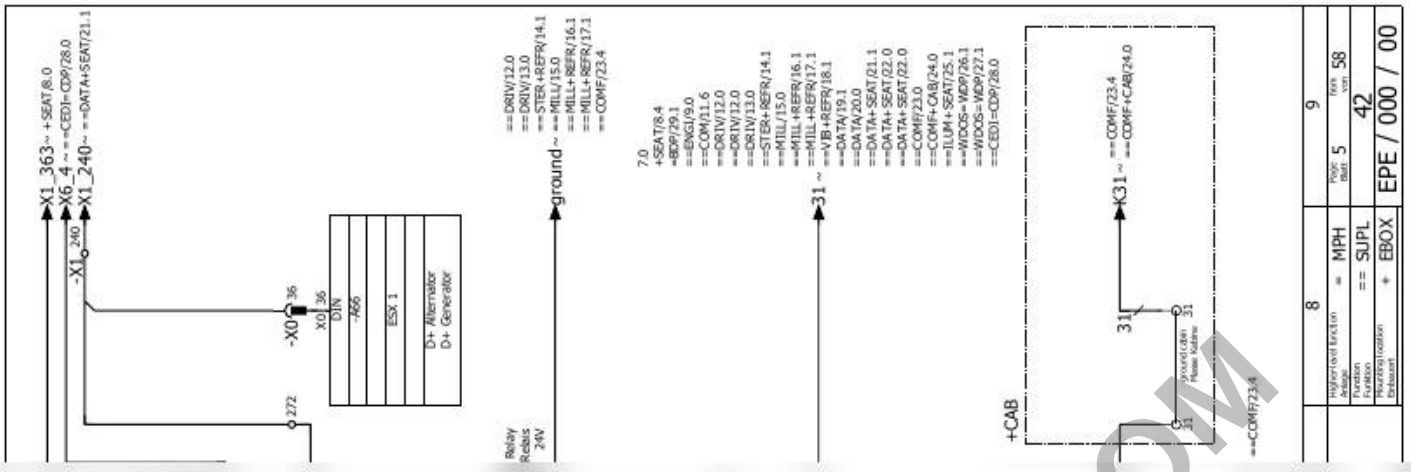
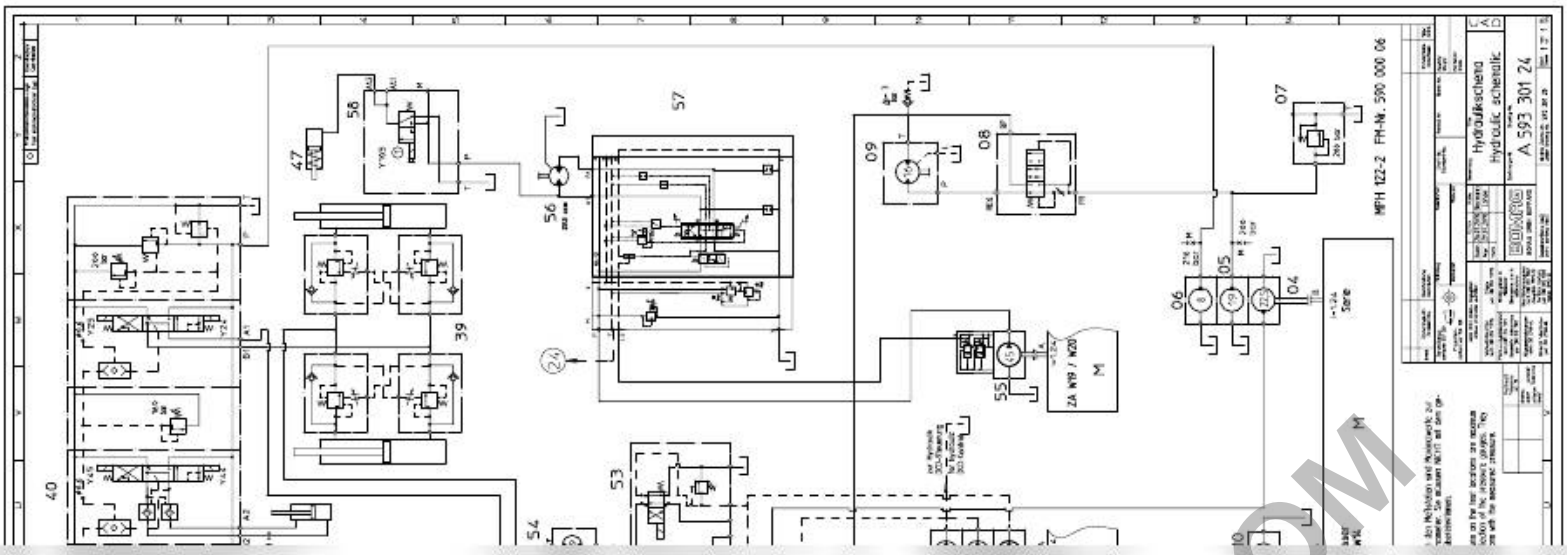



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| Error code SERDIA | Component / Location | Description (Error location) | Defined for DCR | Defined for DMV | ID | Blink code | SPN | FMI | Self-curing[1] |
|---|---|---|---|---|---|---|---|---|---|
| 11 | Air filter condition | Pressure loss above target range with system reaction | ● | ● | AirFltSysReac | 1-3-6 | 107 | 0, 11 | ● |
| 12 | Accelerator pedal | Cable break or short circuit, signal implausible compared to signal of idle sensor (analog pedal) | ● | ● | APP1 | 2-2-6 | 91 | 2, 3, 4, 11 | |
| 14 | Accelerator pedal | Cable break or short circuit, bad PWM signal range or frequency (digital pedal) | ● | ● | APPPwm | 2-2-2 | 91 | 2, 8 | ● |
| 15 | Accelerator pedal | Bad PWM pulse-width repetition rate (digital pedal) | ● | ● | APPPwmPer | 2-2-2 | 91 | 8, 11 | ● |
| 16 | ECU internal error | Ambient pressure sensor defective | ● | ● | APSCD | 2-9-2 | 108 | 2, 3, 4, 11 | ● |
| 17 | Air heater relay | Cable break or short circuit | ● | ● | ArHt1 | 2-6-3 | 729 | 3, 4, 5, 11 | ● |
| 18 | Air heater magnetic valve | Cable break or short circuit | ● | ● | ArHt2 | 2-6-3 | 730 | 3, 4, 5, 11 | ● |
| 19 | Air heater relay | Cable break or wrong connection | ● | ● | ArHtCD_NoLd | 2-6-3 | 676 | 4, 11 | |
| 20 | Air heater relay | Inoperable during shut-off | ● | ● | ArHtCD_RlyErr | 2-6-3 | 676 | 2, 5, 11 | |
| 22 | Battery | Voltage below target range | ● | ● | BattCD | 3-1-8 | 168 | 0, 1, 11 | ● |
| 23 | Battery voltage | Above target range with system reaction | ● | ● | BattCDSysReac | 3-1-8 | 168 | 2, 11 | ● |
| 24 | Begin of injection period | Outside target range or missing (cylinder 1) | | ● | BIPCyl1 | 5-3-1 | 523561 | 2 | ● |
| 25 | Begin of injection period | Outside target range or missing (cylinder 2) | | ● | BIPCyl2 | 5-3-2 | 523562 | 2 | ● |
| 26 | Begin of injection period | Outside target range or missing (cylinder 3) | | ● | BIPCyl3 | 5-3-3 | 523563 | 2 | ● |
| 27 | Begin of injection period | Outside target range or missing (cylinder 4) | | ● | BIPCyl4 | 5-3-4 | 523564 | 2 | ● |
| 28 | Begin of injection period | Outside target range or missing (cylinder 5) | | ● | BIPCyl5 | 5-3-5 | 523565 | 2 | ● |
| 29 | Begin of injection period | Outside target range or missing (cylinder 6) | | ● | BIPCyl6 | 5-3-6 | 523566 | 2 | ● |
| 30 | Begin of injection period | Outside target range or missing (cylinder 7) | | ● | BIPCyl7 | 5-3-7 | 523567 | 2 | ● |
| 31 | Begin of injection period | Outside target range or missing (cylinder 8) | | ● | BIPCyl8 | 5-3-8 | 523568 | 2 | ● |
| 32 | Charge air pressure sensor | Cable break or short circuit | ● | ● | BPSCD | 2-2-3 | 102 | 2, 3, 4 | ● |
| 33 | Charge air pressure | Outside target range with system reaction | ● | ● | BPSCDSysReac | 2-2-3 | 102 | 2, 11 | ● |
| 37 | Coolant level | Outside target range with system reaction | ● | ● | CLSCDSysReac | 2-3-5 | 111 | 1, 11 | |
| 38 | Single cylinder | Misfire detected (cylinder 1) | ● | ● | CmbChbMisfire1 | 2-4-1 | 1323 | 11, 12 | |
| 39 | Single cylinder | Misfire detected (cylinder 2) | ● | ● | CmbChbMisfire2 | 2-4-1 | 1324 | 11, 12 | |
| 40 | Single cylinder | Misfire detected (cylinder 3) | ● | ● | CmbChbMisfire3 | 2-4-1 | 1325 | 11, 12 | |
| 41 | Single cylinder | Misfire detected (cylinder 4) | ● | ● | CmbChbMisfire4 | 2-4-1 | 1326 | 11, 12 | |
| 42 | Single cylinder | Misfire detected (cylinder 5) | ● | ● | CmbChbMisfire5 | 2-4-1 | 1327 | 11, 12 | |
| 43 | Single cylinder | Misfire detected (cylinder 6) | ● | ● | CmbChbMisfire6 | 2-4-1 | 1328 | 11, 12 | |
| 44 | Single cylinder | Misfire detected (cylinder 7) | | ● | CmbChbMisfire7 | 2-4-1 | 1450 | 11, 12 | |
| 45 | Single cylinder | Misfire detected (cylinder 8) | | ● | CmbChbMisfire8 | 2-4-1 | 1451 | 11, 12 | |
| 46 | Multiple cylinders | Misfire detected | ● | ● | CmbChbMisfireMul | 2-4-1 | 1322 | 11, 12 | |
| 47 | Misfire | Misfire detected with system reaction | ● | | CmbChbSysReac | 2-4-1 | 1346 | 0, 11 | |

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## 9.9 Check, adjust the valve clearance

**⚠ Caution**

**We recommend to have this work carried out by trained personnel or our after sales service.**

**Before checking the valve clearance let the engine cool down for at least 30 minutes. The engine oil temperature must be less than 80 °C.**

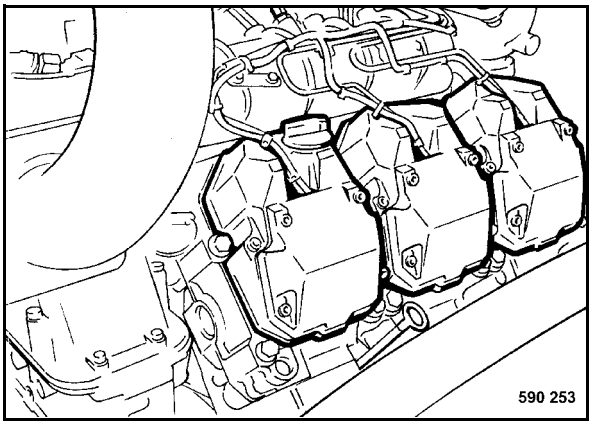



Fig. 3

- Remove all valve covers (Fig. 3).

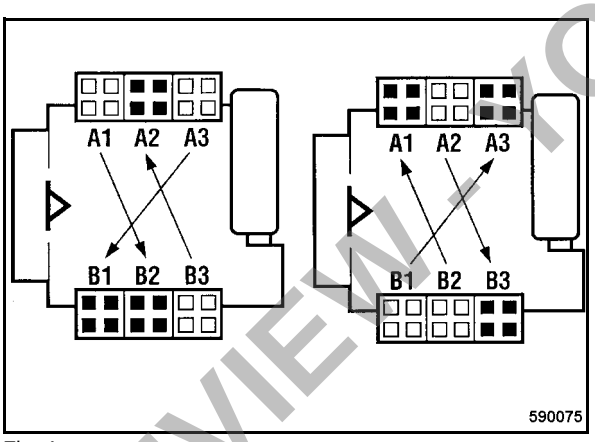



Fig. 4

**Adjustment diagram (Fig. 4)**

| Valves | Cylinder | | | | | |
|---|---|---|---|---|---|---|
| overlapping | A1 | B3 | A3 | B2 | A2 | B1 |
| adjustment | B2 | A2 | B1 | A1 | B3 | A3 |

- Turn the crankshaft until the valves are overlapping.

**⚠ Caution**

**This engine is equipped with an internal exhaust recirculation system. During the intake cycle the exhaust valve opens for a short moment.**

**This must not be mistaken as overlapping of valves!**

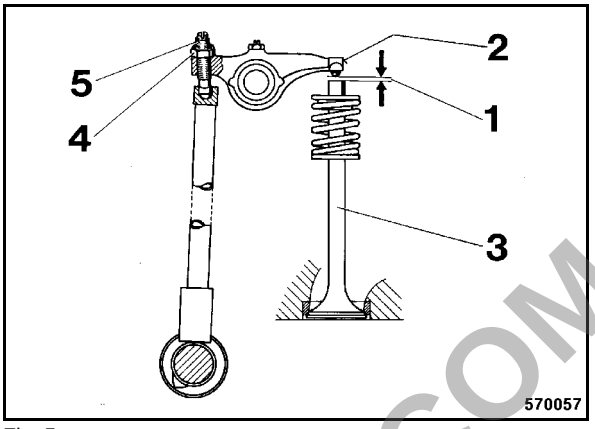



Fig. 5

### Check the valve clearance

- Intake valves 0,25 mm
- Exhaust valves 0,30 mm
- A feeler gauge of appropriate thickness (1) must fit with little resistance between rocker arm (2) (Fig. 5) and valve (3).
- If the gap is too narrow or too wide for the feeler gauge, the valve must be adjusted.

### Adjusting the valve clearance

- Loosen counter nut (4) (Fig. 5) for 2 to 3 turns.
- Adjust the setscrew (5) with a screwdriver, until the feeler gauge can be inserted and pulled out with little resistance after retightening the counter nut.
- Repeat the adjustment procedure on each cylinder.

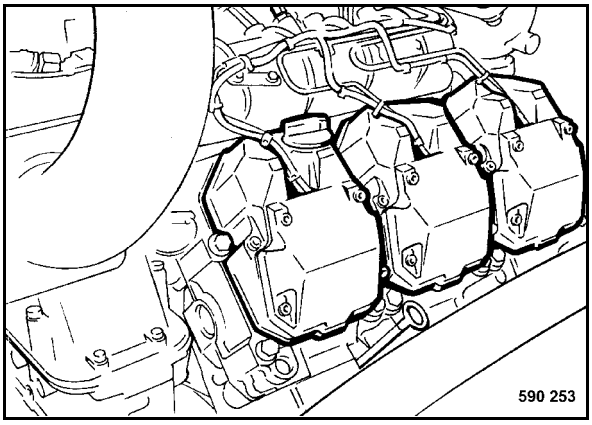



Fig. 6

- Assemble all cylinder nead covers with new gaskets (Fig. 6), tightening torque: 22 Nm.

**⚠ Caution**

**After a short test run check the engine for leaks.**

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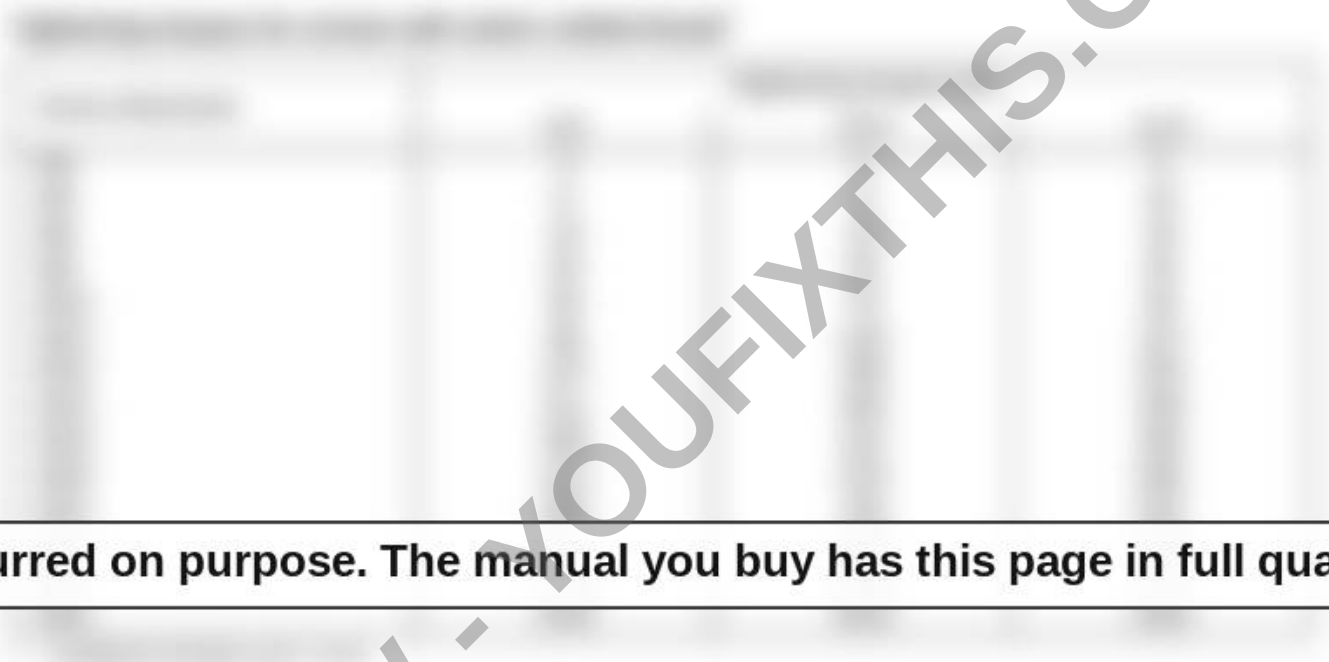
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The values specified in the table apply for screws:

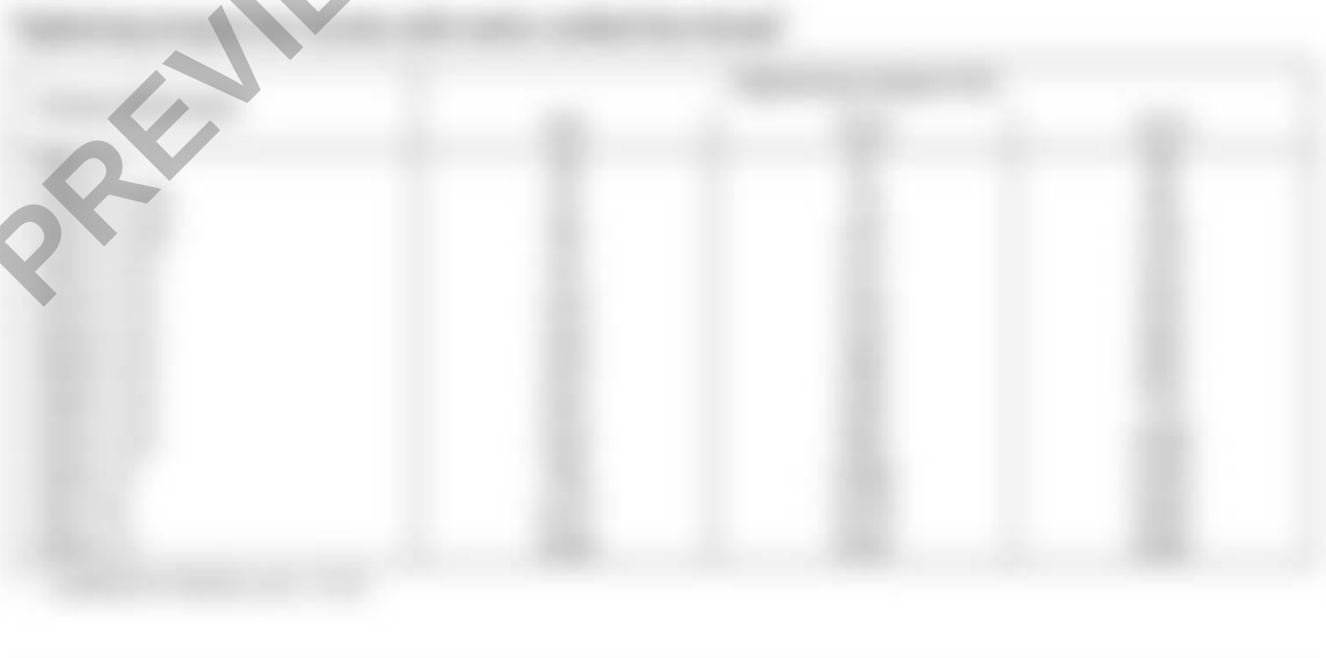
- black oiled
- with surface protection A4C
- with surface protection DACROMET

**i Note**

*DACROMET is a surface protection that mainly consists of zinc and aluminium in a chromium oxide matrix. DACROMETIZATION provides excellent corrosion protection for metal surfaces by applying a mineral coating with metallic-silver appearance.*



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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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| | | |
|---|---|---|
| Type | | A6VE 107 EP2 |
| Quantity | | 1 |
| System | | Axial piston – bent axle |
| Max. displacement (stage 1) | $cm^3/U$ | 107 |
| Min. displacement (stage 2) | $cm^3/U$ | 0 |
| Perm. leak oil rate | l/min | 2 |
| Flushing rate | l/min | 10 |
| Control start, electrical | mA | 200 |
| Control end, electrical | mA | 400 |

**Wheel drive**

| | | |
|---|---|---|
| Manufacturer | | Bosch-Rexroth |
| Type | | GFT 50 T3 |
| Reduction ratio | | 84.2 |

**Rotor pumps** Bosch-Rexroth

| | | |
|---|---|---|
| Type front | | A4 VG 180 EP |
| Type rear | | A4 VG 180 EP |
| System | | Axial piston/swash plate |
| Max. displacement | $cm^3/rev$ | 180 |
| Max. flow capacity | l/min | 378 |
| High pressure limitation | bar | 470 ± 15 |
| Pressure override | bar | 420 ± 15 |
| Charge pressure, high idle | bar | 21 ± 1 |
| Control start, electrical | mA | 200 |
| Control end, electrical | mA | 600 |

**Rotor drive gear**

| | | |
|---|---|---|
| Manufacturer | | Bosch-Rexroth |
| Type | | GFT 50 L2 |
| Transmission ratio | | 22 |

**Rotor motor**

| | | |
|---|---|---|
| Manufacturer | | Bosch-Rexroth |
| Type | | A2FE 107/61W |

**Hydraulic pump for water spray system**

| | | |
|---|---|---|
| Type | | HYZ |
| System | | Gear pump |
| Displacement | $cm^3/rev$ | 16 |

**Hydraulic pump for water spray system**

| | | |
|---|---|---|
| Type | | A10VO45DFR1/52L |
| System | | Axial piston unit |
| Flow control valve | bar | set to 20 bar |
| Pressure regulator | bar | set to 210 bar |

**Pump for intercooler**

| | | |
|---|---|---|
| Type | | HYZ |
| System | | Gear pump |
| Displacement | $cm^3/rev$ | 19 |
| High pressure limitation | bar | 200 ± 10 |

**Steering/charge pump**

| | | |
|---|---|---|
| Type | | HY/ZFFS11/22,5 |

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| Terminal designation | Meaning |
|---|---|
| 87a | Relay contact on breaker and two-way contact, output 1 (breaker side) |
| 87b | Relay contact on breaker and two-way contact, output 2 |
| 87c | Relay contact on breaker and two-way contact, output 3 |
| 87z | Relay contact on breaker and two-way contact, input 1 |
| 87y | Relay contact on breaker and two-way contact, input 2 |
| 87x | Relay contact on breaker and two-way contact, input 3 |
| | |
| 88 | Relay contact for maker |
| 88a | Relay contact on maker and two-way contact, (maker side) output 1 |
| 88b | Relay contact on maker and two-way contact, (maker side) output 2 |
| 88c | Relay contact on maker and two-way contact, (maker side) output 3 |
| 88z | Relay contact on maker, input 1 |
| 88y | Relay contact on maker, input 2 |
| 88x | Relay contact on maker, input 3 |
| | |
| B+ | Battery positive |
| B- | Battery minus |
| D+ | Dynamo Plus |
| D- | Dynamo Minus |
| DF | Dynamo field (generator excitation current) |
| DF1 | Dynamo field 1 (generator excitation current) |
| DF2 | Dynamo field 2 (generator excitation current) |

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**General measuring setup to check a supply line (plus side)**

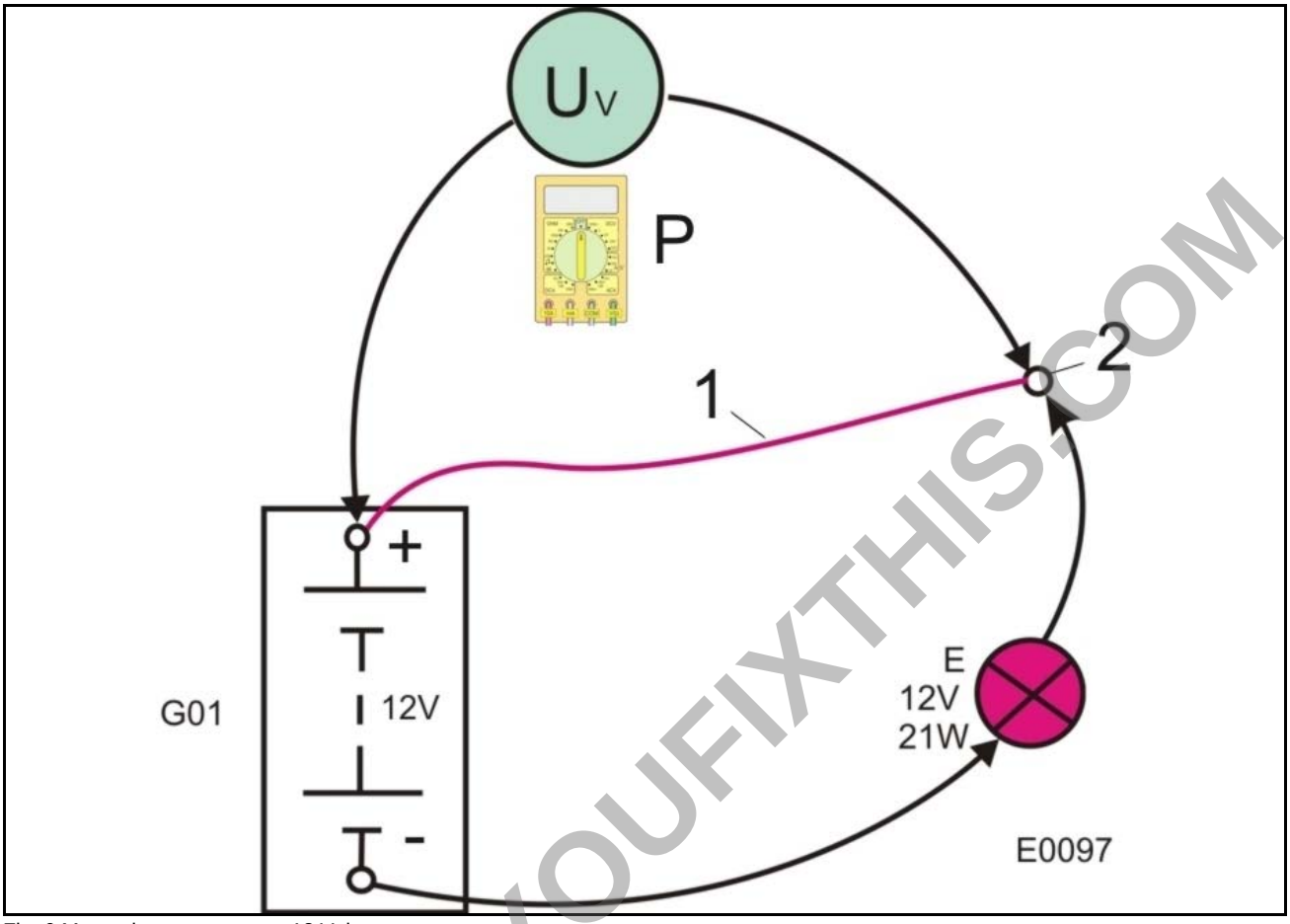



Fig. 6 Measuring arrangement 12 Volt

1 = Supply line, plus side

2 = Plug contact in wiring loom plug on control or Pinbox (Fig. 5)

E = Lamp, 12V / 21 Watt

P = Multimeter

G01 = Battery as voltage source, 12V

$U_V$ = Voltage drop caused by the lamp current

**Setpoint**

The voltage drop $U_V$ should not exceed 0.5 V => $U_{Setpoint} \leq$ 0.5 V.

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| ESX terminal | Signal description | Nominal values (voltage / current) |
|---|---|---|
| X0:42 | Output **proportional valve rotor pump 1**<br>PWM-output (approx. 200 mA..600 mA) to contact 30 from relay K53<br>[310.311](310) | Current measuring range: approx. 0.2 A .. 0.6 A |
| X0:43 | Not used | - |
| X0:44 | Output **warning buzzer**<br>Digital output via diode V44 to terminal X1:302 | *Function* — *Voltage measured against ground*<br>Warning buzzer off ☞ approx. 0 V<br>Warning buzzer on ☞ approx. 24 V |
| X0:45 | Input **charge pressure rotor circuit**<br>Digital input (Lo-active) from pressure switches.<br>[320] | *Status* *Voltage measured against ground*<br>Charge pressure available ☞ approx. 5.5 V<br>No charge pressure ☞ approx. 0 V |
| X0:46 | Output **proportional valve wheel motor** front left<br>PWM-output to terminal X1:159<br>[100.101](100) | Current range: approx. 200 mA .. 600 mA |
| X0:47 | Output **proportional valve wheel motor** front right<br>PWM-output to terminal X1:160<br>[110.111](110) | Current range: approx. 200 mA .. 600 mA |
| X0:48 | Output **proportional valve rear axle motor**<br>PWM-output to terminal X1:118<br>[120.121](120) | Current range: approx. 200 mA .. 600 mA |
| X0:49 | Output **travel pump forward**<br>PWM-output to terminal X1:183<br>[070.071](070.071) | Current range: approx. 200 mA .. 600 mA |
| X0:50 | Input **excessive hydraulic oil temperature**<br>Digital input (Lo-active) from temperature switch B20.<br>[574](574.575) | *Status* — *Voltage measured against ground*<br>Overtemperature ☞ approx. V<br>Temperature normal ☞ approx. 5.5V |
| X0:51 | Input **hydraulic oil contamination sensor**<br>Digital input (Lo-active) from pressure differential switch B19.<br>[570](570.571) | *Status* — *Voltage measured against ground*<br>Soiled ☞ approx. 0V<br>Uncritical contamination ☞ approx. 5.5V |
| X0:52 | Input **engine oil pressure**<br>Digital input (Lo-active) from pressure switch B06.<br>[520](520.521) | *Status* — *Voltage measured against ground*<br>No pressure ☞ approx. 0V<br>Sufficient pressure ☞ approx. 5.5V |
| X0:53 | Not used | - |
| X0:54 | **Voltage supply** for electronics (permanent voltage) | *Status* *Voltage measured against ground*<br>Control running ☞ approx. 24 V<br>Control not running ☞ approx. 0 V |
| X0:55 | **Ground connection** electronics | 0V measured against ground |
| X0:56 | **Voltage supply** for outputs (permanent voltage) | approx. 24V measured against ground. |





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| Input code | Description of display function | Display values | |
|---|---|---|---|
| 304 | **Nominal rotor speed value**<br>Standardized value (0..1000) | Displayed value | 000..---  (1000) |
| 305 | **Rotor**<br>Mode | *Status Displayed value [V/100]*<br>Undefined<br>Off<br>Rotary switch Work mode<br>Milling tooth change<br>Milling tooth change; rotate rotor<br>After a milling tooth change<br>Fault | <br>000 ±10<br>001 ±10<br>002 ±10<br>003 ±10<br>004 ±10<br>005 ±10<br>006 ±10 |

### 8.1.18 Rotor pumps

| Input code | Description of display function | Display values | |
|---|---|---|---|
| 310 | **Rotor pump 1**<br>Actual current value in mA<br>Left button = Nominal current value | Displayed value<br>Displayed value | 000..620 ±20<br>000..620 |
| 311 | **Rotor pump 1**<br>Nominal current value in mA | Displayed value | 000..620 |
| 315 | **Rotor pump 2**<br>Actual current value in mA<br>Left button = Nominal current value | Displayed value<br>Displayed value | 000..620 ±20<br>000..620 |
| 316 | **Rotor pump 2**<br>Nominal current value in mA | Displayed value | 000..620 |

### 8.1.19 Rotor pump control chamber

| Input code | Description of display function | Display values | |
|---|---|---|---|
| 318 | **Output control chamber rotor pump 1 + 2**<br>Voltage in V/100 | Displayed value | 000 ±4..230 ±20 |





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| Error code SERDIA | Component / Location | Description (Error location) | Defined for DCR | Defined for DMV | ID | Blink code | SPN | FMI | Self-curing[1] |
|---|---|---|---|---|---|---|---|---|---|
| 48 | Shut-off request | Shut-off request ignored by operator | ● | ● | CoEngShOffDemIgr | 3-4-1 | 1109 | 2, 11 | |
| 52 | Engine brake (internal) | Internal engine brake: cable break or short circuit | ● | ● | CRERCD | 5-2-8 | 1072 | 3, 4, 5, 11 | |
| 53 | Preheating signal lamp | Cable break or short circuit | ● | ● | CSLpCD | 3-2-8 | 1081 | 2, 3, 4, 5 | |
| 54 | Coolant temperature warning lamp | Cable break or short circuit | ● | ● | CTLpCD | 1-2-3 | 704 | 11 | |
| 55 | Coolant temperature sensor | Cable break or short circuit | ● | ● | CTSCD | 2-2-5 | 110 | 2, 3, 4 | ● |
| 56 | Coolant temperature | Outside target range with system reaction | ● | ● | CTSCDSysReac | 2-3-2 | 110 | 0, 11 | ● |
| 57 | Reserve output | Short circuit to Ubatt (output 1) | ● | ● | Dummy1CD_Max | - | 701 | 11 | |
| 58 | Reserve output | Short circuit to ground (output 1) | ● | ● | Dummy1CD_Min | - | 701 | 11 | |
| 59 | Reserve output | Cable break or ECU internal error (output 1) | ● | ● | Dummy1CD_SigNpl | - | 701 | 11 | |
| 60 | Reserve output | Short circuit to Ubatt (output 2) | ● | ● | Dummy2CD_Max | - | 702 | 11 | |
| 61 | Reserve output | Short circuit to ground (output 2) | ● | ● | Dummy2CD_Min | - | 702 | 11 | |
| 62 | Reserve output | Cable break or ECU internal error (output 2) | ● | ● | Dummy2CD_SigNpl | - | 702 | 11 | |
| 69 | EGR actuator (external) | Short circuit to Ubatt | ● | ● | EGRCD_Max | 4-1-4 | 2791 | 3, 11 | |
| 70 | EGR actuator (external) | Short circuit to ground | ● | ● | EGRCD_Min | 4-1-4 | 2791 | 4, 11 | |
| 71 | EGR actuator (external) | Cable break or ECU internal error | ● | ● | EGRCD_SigNpl | 4-1-5 | 2791 | 2, 5, 11 | |
| 72 | EGR actuator (external) | Cable break or short circuit | ● | ● | EGRCDIntEGR | 4-1-6 | 2791 | 2, 3, 4, 5 | |
| 74 | Engine power output | Engine Power output: cable break or short circuit | ● | ● | EngCDTrqCalcOut | 5-5-5 | 923 | 2, 3, 4, 5 | |
| 75 | Engine speed sensor | Engine running with cam-shaft speed signal only | ● | ● | EngMBackUp | 2-1-2 | 190 | 11, 12 | ● |
| 76 | Engine speed sensor | Speed signal from cam-shaft bad or missing | ● | ● | EngMCaS1 | 2-1-2 | 190 | 8, 11, 12 | ● |
| 77 | Engine speed sensor | Speed signal from crank-shaft bad or missing | ● | ● | EngMCrS1 | 2-1-2 | 190 | 8, 11, 12 | ● |
| 78 | Engine speed sensor | Speed signals of crank-shaft and cam-shaft are phase-shifted | ● | ● | EngMOfsCaSCrS | 2-1-3 | 190 | 2, 11 | |
| 79 | Overspeed | Engine overspeed with system reaction | ● | ● | EngPrtSysReacFOC | 2-1-4 | 190 | 0, 11 | |
| 80 | Overrun conditions | Overrun conditions with system reaction | ● | ● | EngPrtSysReacORC | 2-1-4 | 190 | 11, 14 | ● |
| 81 | Engine operating signal lamp | Cable break or ECU internal error | ● | ● | ESLpCD | 1-4-2 | 703 | 2, 3, 4, 5 | |
| 82 | Engine brake flap actuator | Engine brake flap actuator: cable break or short circuit | ● | ● | ExFlCD | 2-1-9 | 1074 | 3, 4, 5, 11 | |
| 83 | Fan actuator | Fan actuator: cable break or short circuit | ● | ● | FanCD | 2-3-8 | 975 | 2, 3, 4, 5 | |
| 86 | Fan speed | Above target range with system reaction | ● | ● | FanCDSysReac | 2-3-8 | 523602 | 2, 11 | ● |
| 87 | Fuel filter water level sensor | Cable break or short circuit | ● | ● | FlFCD | 2-2-8 | 97 | 3, 4, 11 | ● |
| 89 | Water level in fuel filter | Above target range | ● | ● | FlFCD_WtLvl | 2-2-8 | 97 | 11, 12 | |
| 90 | Fuel low pressure sensor | Cable break or short circuit | ● | ● | FlPSCD | 2-1-6 | 94 | 3, 4, 11 | ● |
| 91 | Fuel low pressure | Below target range with system reaction | ● | ● | FlPSCDSysReac | 2-1-6 | 94 | 2, 11 | ● |
| 94 | CAN message | Missing or value above target range (message "DecV1" = pseudo pedal) | ● | ● | FrmMngDecV1 | 5-2-6 | 523239 | 2, 12 | ● |
| 95 | CAN message | Missing (message "FunModCtl" = function mode control) | ● | ● | FrmMngFunModCtl | 5-2-7 | 523240 | 11, 12 | ● |
| 106 | CAN message | Missing (message "EngPrt" = engine protection) | ● | ● | FrmMngTOEngPrt | 3-3-3 | 523212 | 11, 12 | ● |

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# DTC-List
## Diagnosis- and Errorcodes

referrenced ECU-Software
P490_: 220, 310, 501
P491_: 220, 310, 400, 501
P492_: 213
P513_: 214, 300

### 142 / 630 / HWEMonEEPROM

**Error description EEPROM MEM. ACCESS**
Internal hardware monitoring: the ECU finds an error during the access to ist EEPROM memory or works with an alternative value

**Error codes**
**DEUTZ-Errorcode:** 142
**BlinkCode** (short-long-short): 2 - 8 - 1
**SPN:** 630
**possible FMI:**
12. Errormode not identifiable
12: Defective component
12: Defective component
12: Defective component

**Errordetection**
Errorlamp shows permanent light. Entry in errormemory.

**Possible reason for error**
Error during EEPROM memory access or EEPROM works with substitute value, programming error, ECU defective

**Take actions for error repair**
If not programmed, EEPROM is defect --> ECU is defect, reprogram ECU and if necessary replace it

**other error properties**
System reaction: Warning
Behaviour error lamp: permanent light
Selfhealing: no
Signal Priority: 4
Measurement @ errortime: -

### 143 / 523612 / HWEMonRcyLocked

**Error description INT. RECOVERY**
Internal hardware monitoring: the CPU of the ECU is reset and the cause is logged internally; no item will be created in error memory

**Error codes**
**DEUTZ-Errorcode:** 143
**BlinkCode** (short-long-short): 5 - 5 - 5
**SPN:** 523612
**possible FMI:**
12. Errormode not identifiable
12. Errormode not identifiable
12. Errormode not identifiable
14: Special Instructions

**Errordetection**
Errorlamp shows blinking. Entry in errormemory.

**Possible reason for error**
A recovery occurred which is stored as protected

**Take actions for error repair**
Recoverey occured which is stored as protected
With parameter HWEMon_numRexxxxxxx the recovery nummer and the subsequent position can be identified. See especially SW-Doku _rcy_auto.pdf

**other error properties**
System reaction: Recovery of ECU
Behaviour error lamp: blinking
Selfhealing: no
Signal Priority: 5
Measurement @ errortime: -

### 144 / 523612 / HWEMonRcySuppressed

**Error description INT. RECOVERY**
Internal hardware monitoring: the CPU of the ECU is reset and the cause is logged internally; no item will be created in error memory

**Error codes**
**DEUTZ-Errorcode:** 144
**BlinkCode** (short-long-short): 5 - 5 - 5
**SPN:** 523612
**possible FMI:**
12. Errormode not identifiable
12. Errormode not identifiable
12. Errormode not identifiable
14: Special Instructions

**Errordetection**
Errorlamp shows blinking. Entry in errormemory.

**Possible reason for error**
A recovery occurred which is not stored

**Take actions for error repair**
Recoverey occured which is stored as protected
With parameter HWEMon_numRexxxxxxx the recovery nummer and the subsequent position can be identified. See especially SW-Doku _rcy_auto.pdf

**other error properties**
System reaction: Warning, shown at error path
Behaviour error lamp: blinking
Selfhealing: no
Signal Priority: 5
Measurement @ errortime: -



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## 8.10 Oil pressure sensor

### Pressure sensor, B88

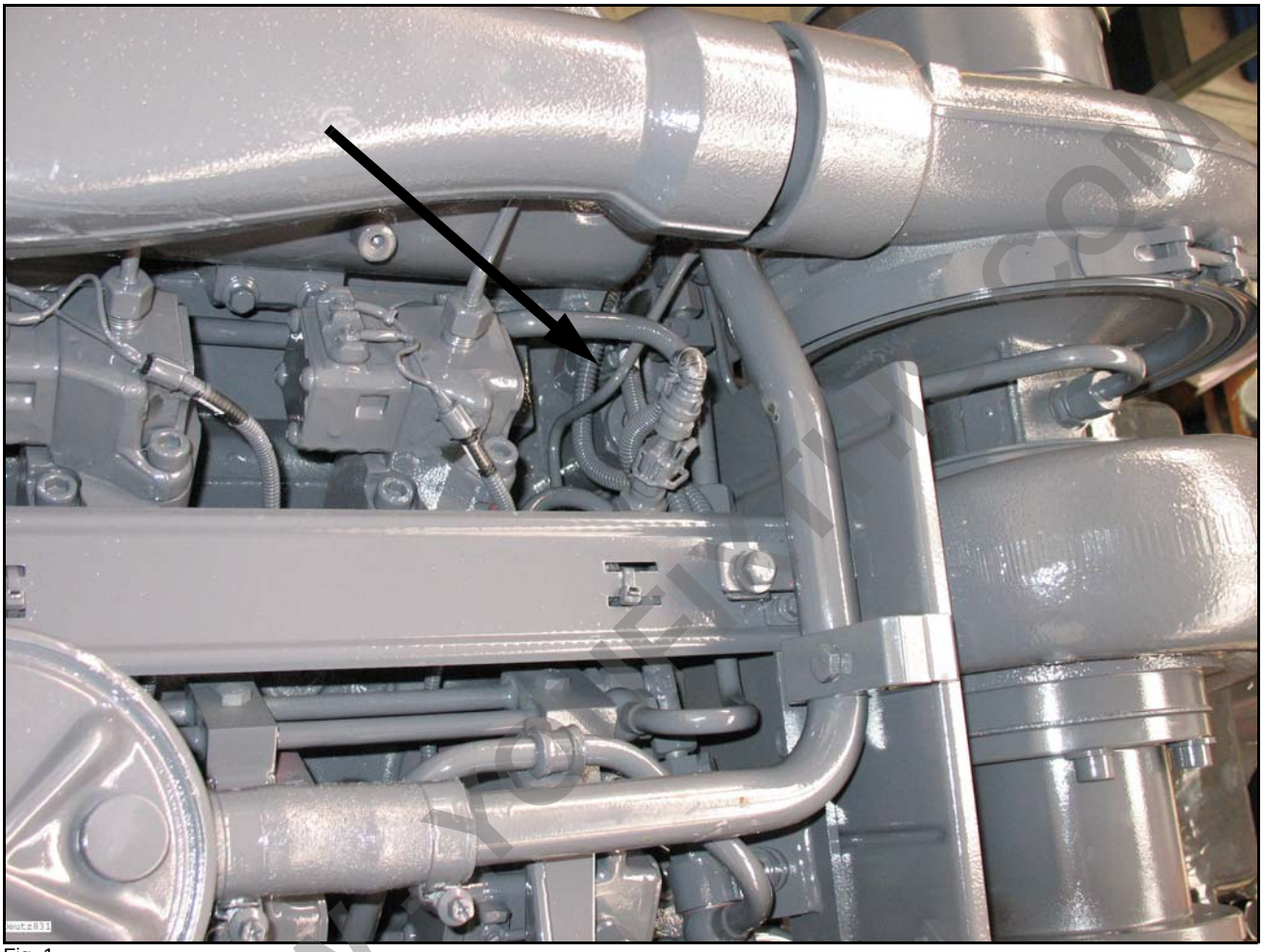


Fig. 1

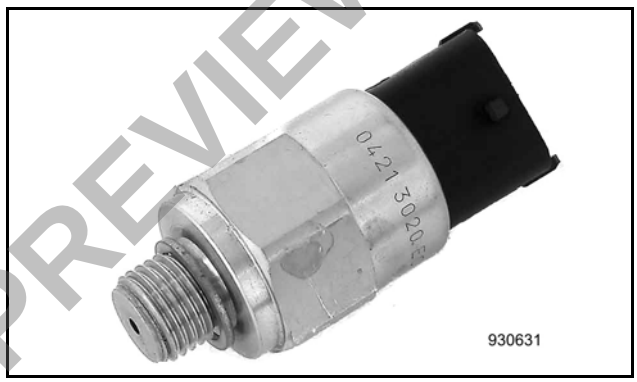



Fig. 2 Oil pressure sensor

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## 9.2 Engine description TCD 2015 V 6 cylinder

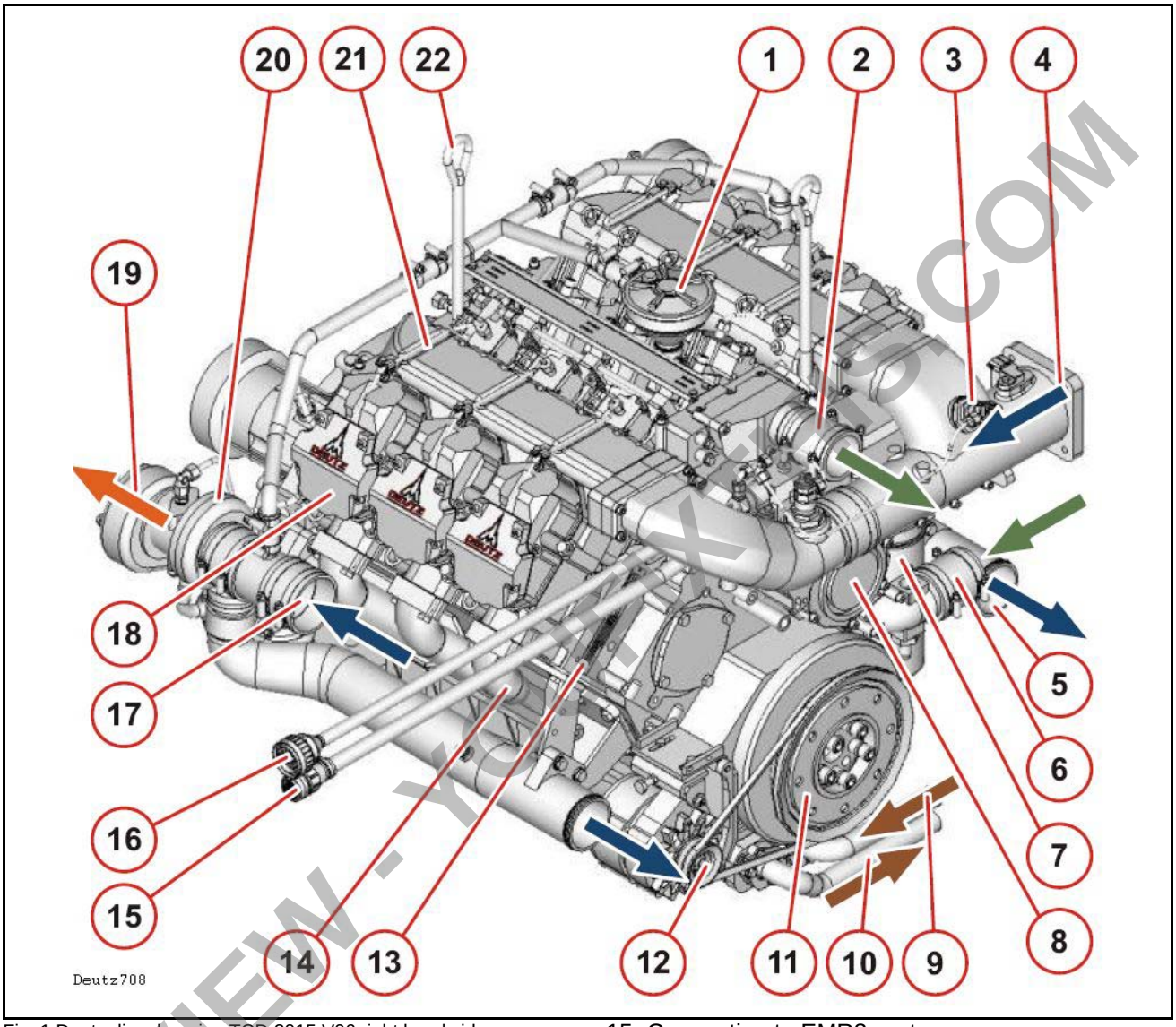



Fig. 1 Deutz diesel engine TCD 2015 V06 right hand side

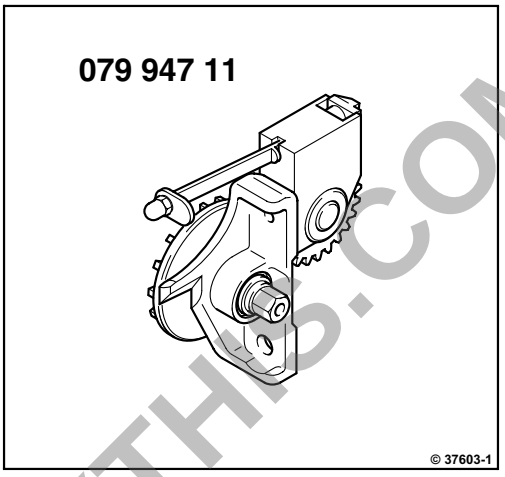
1 Crankcase ventilation
2 Connection to coolant heat exchanger
3 Pre-heating plug
4 Connection from intercooler
5 Connection to intercooler
6 Connection from coolant heat exchanger
7 Lubrication oil filter cartridge
8 Coolant pump
9 Connection from separate lubrication oil tank
10 Connection to separate lubrication oil tank
11 Vibration damper / V-belt pulley
12 Generator
13 Engine type plate (company plate)
14 Exhaust manifold
15 Connection to EMR3 system
16 Connection to MVS system
17 Connection from air filter
18 Cylinder head cover
19 Connection to exhaust silencer
20 Exhaust turbo charger
21 Charge air suction line
22 Transport device

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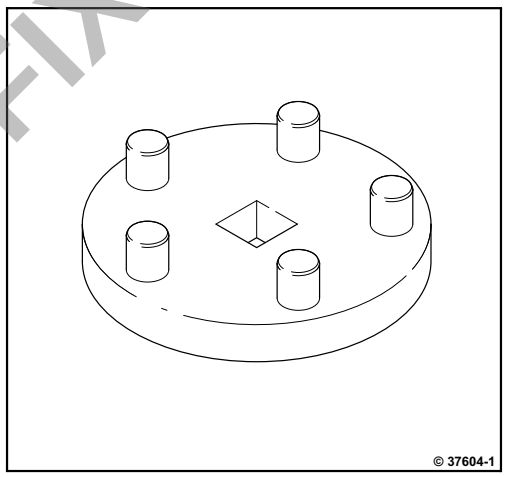

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## Special tools TCD 2015

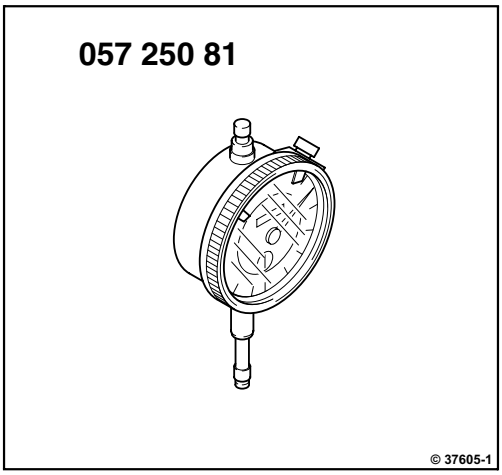
**100300**
**Turning gear**
with mechanical TDC transmitter and degree scale for start of pumping check
Turn crankshaft,
block engine




**100350**
**Turning gear**
Turn crankshaft on the V-belt pulley.




**100400**
**Dial gauge with fixing wheel**
Measuring range 0 - 10 mm / 0.01 mm




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19 Pressure reducing valve
20 Vacuum pump
21 Nitrogen bottle
22 Refrigerant bottle
23 Pressure gauge bar

## Filling instructions

1 Connect the service adapter with the blue hand wheel in the suction side.
2 Connect the service adapter with the red hand wheel in the pressure side (the hand wheels on the service adapters must be fully backed out - left hand stop)
3 Connect the blue suction hose below the blue hand wheel on the pressure gauge bar to the blue service adapter.
4 Connect the red pressure hose below the red hand wheel on the pressure gauge bar to the red service adapter.
5 Connect the yellow hose below the yellow hand wheel on the manometer bar to the 2-stage vacuum pump.
6 Connect the last hose below the black hand wheel on the nitrogen bottle via the pressure reducing valve.
7 Check on the pressure gauge bar that all hand wheels are closed.
8 Turn the hand wheels on both service adapter clockwise. This opens the valves (right hand stop).
9 Open the valve on the nitrogen bottle (only via pressure reducer); pressure approx. 20 bar.
10 Open the black and red hand wheels on the pressure gauge bar and fill nitrogen into the system, until a pressure of approx. 3.5 to 5.0 bar is indicated on the suction side.
11 Then open the blue hand wheel and raise the pressure in the suction side (max. 10 bar). Check for leaks with a leak detection fluid or soapsuds.
12 If the system is leak tight, release the nitrogen from the system. For this purpose disconnect the hose from the nitrogen bottle and open the red, blue and black hand wheels on the pressure gauge bar.
13 Then connect the hose to the refrigerant bottle.
14 Switch on the vacuum pump and open all hand wheels on the pressure gauge bar. In case of a leak no or only an insufficient vacuum will be reached. In this case proceed as described under point 9-12. Once the leak is sealed continue with point 14.
15 Once a sufficient vacuum is reached, both pressure gauges show -1, close all hand wheels on the pressure gauge bar.
16 Switch off the vacuum pump, watch the pressure gauges to see whether the vacuum is maintained.
17 Open the valve on the refrigerant bottle and open the black and red hand wheels on the pressure gauge bar. Fill refrigerant into the system, until a pressure equilibrium between suction and pressure side is reached (reading of pressure gauges).
18 Close the red hand wheel.
19 Perform a leak test with the electronic leak detector.
20 Start the engine and switch on the system.
21 Open the blue hand wheel and continue filling in refrigerant until the inspection glass is free or air bubbles (in fluid container/dryer combinations the white pearl should float in the upper third of the inspection glass). Then close the refrigerant bottle.
22 Close the blue hand wheel on the pressure gauge bar.
23 Preparing the test run: -Close windows and doors -Fan on full speed stage -Mount measuring feelers to air discharge and air intake.
24 Run the system for approx. 20 minutes with medium engine speed.
25 The temperature difference between air discharge and air intake should be (depending on type of air condition) 8-10°C. The ambient temperature thereby is approx. 20°C. (These data are only reference values, which may be influenced by possible insolation)
26 Switch off system and engine and check for leaks again.
27 Turn out (left hand stop) and remove the hand wheels on both service adapters.
28 Fit all valves with dust caps.
29 Perform a leak test.
30 Mark the system with the corresponding type plates and information decals, such as type of oil and refrigerant.

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**Connection overview**

**A4VG28**

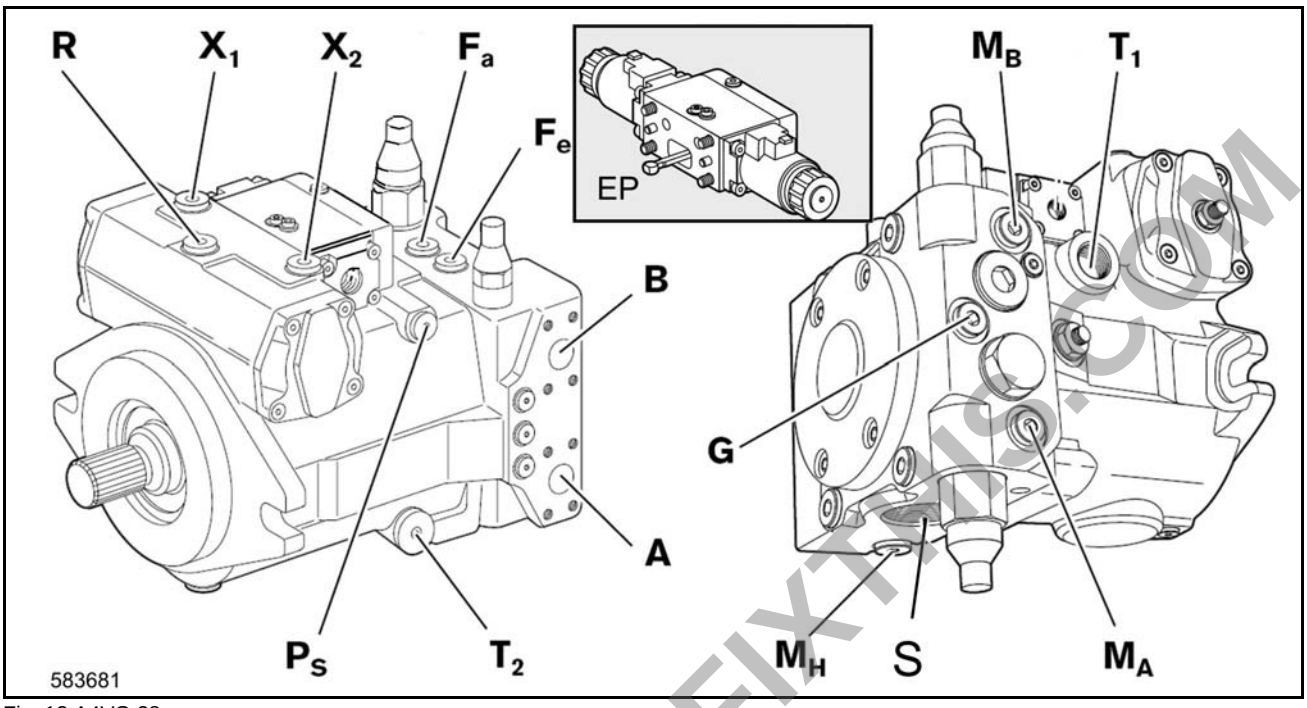



Fig. 13 A4VG 28

**A4VG 40 to 56**

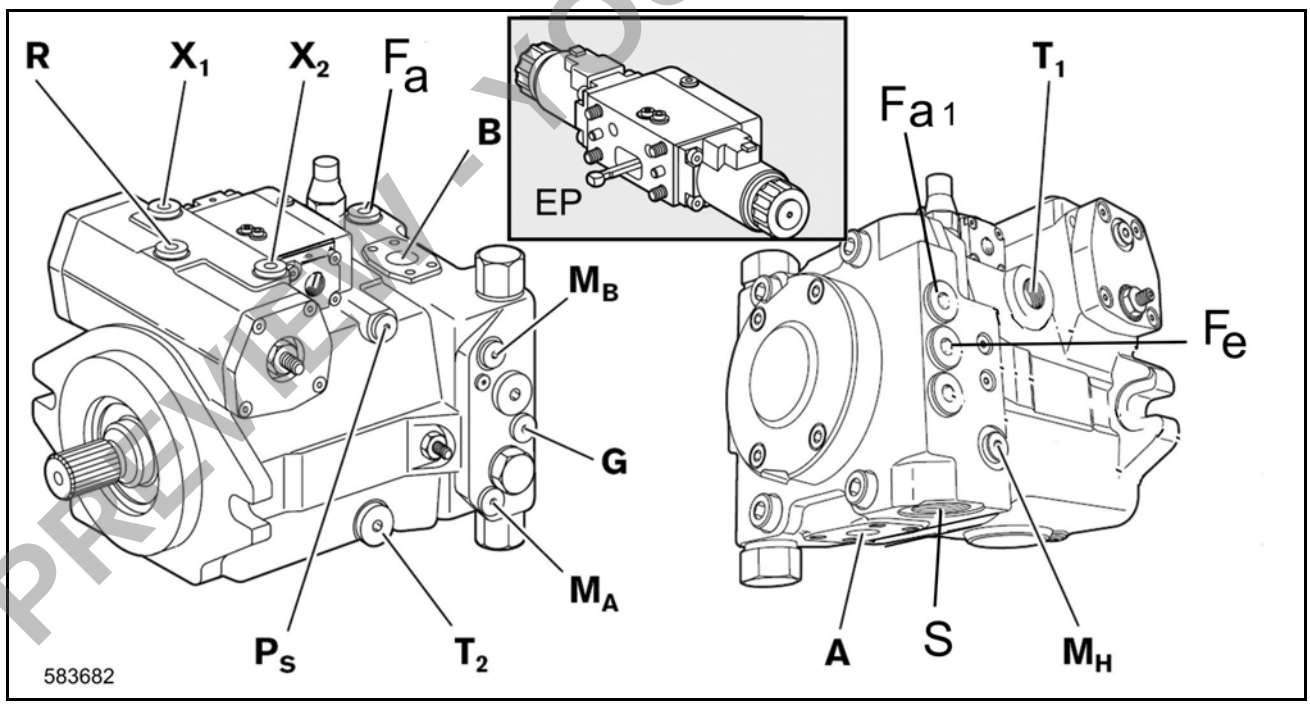



Fig. 14 A4VG 40 to 56

**A4VG 71 to 180**

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## 11.13Trouble shooting, variable displacement axial piston motor

The following table should be of help when performing troubleshooting This table is by no means complete.

In practice you may encounter problems that have not been listed here.

### Procedure

- Always proceed systematically, even under time pressure. Indiscriminate, ill-considered disassembly and changing of settings can lead to a situation in which the original cause of a fault can no longer be detected.
- Get an overview over the function of the product in connection with the overall system.
- Try to clarify whether the product was able to deliver the required function within the overall system before the fault occurred.
- Develop a clear understanding of the troubleshooting process. If necessary ask the direct operator or machine driver.

Try to detect changes to the overall system, the product is installed in:

- Have conditions or area of application of the product been changed?
- Were changes (e.g. changeovers) or repairs made to the overall system (machine/plant, electrics, control) or to the product? If yes: What kind?
- Has the product or the machine been operated as intended?
- How does the fault occur?

| Fault | Possible cause | Remedy |
|---|---|---|
| Unusual noises | | |
| | Inappropriate fastening of the axial piston unit | Check the fastening of the axial piston unit as specified by the machine or plant manufacturer. Observe the tightening torques! |
| | Inappropriate fastening of attachment parts, e.g. coupling and hydraulic lines. | Fasten attachment parts as specified by the coupling or fittings manufacturer. |
| | Mechanical damage to the axial piston unit. | Replace the axial piston unit |
| Fluctuations in pressure/volumetric flow | Axial piston unit not or insufficiently purged. | Completely purge the axial piston unit. |

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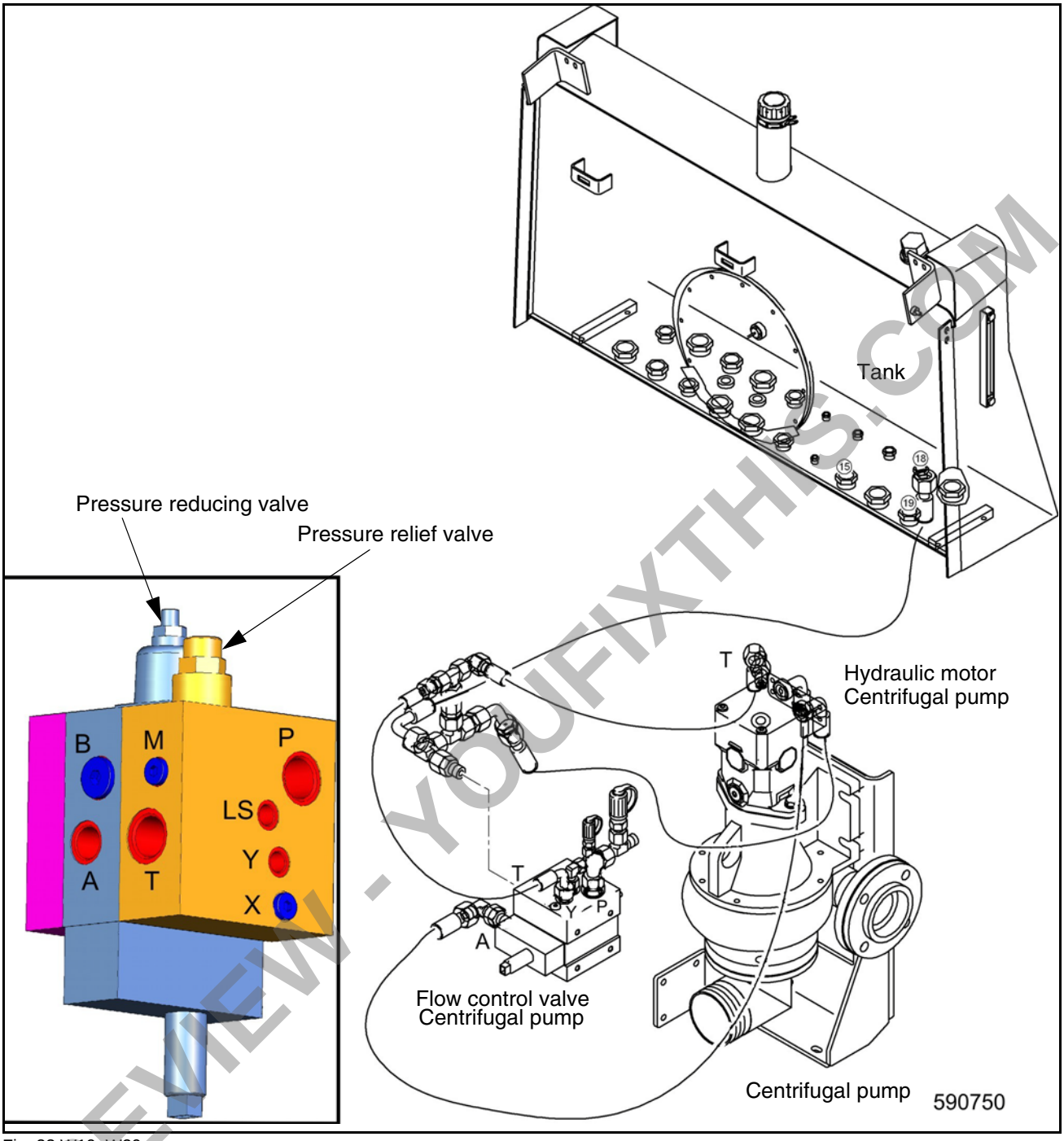



Fig. 23 W19, W20

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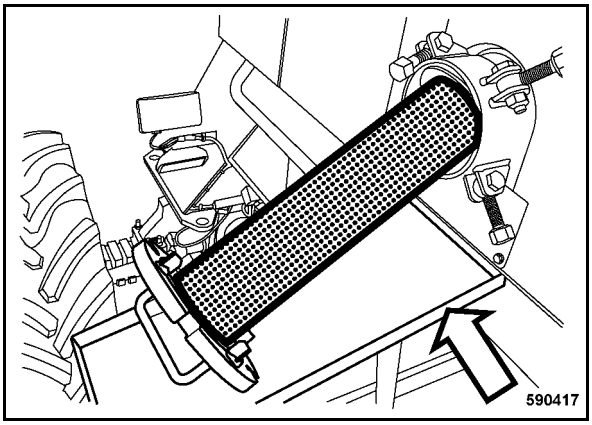
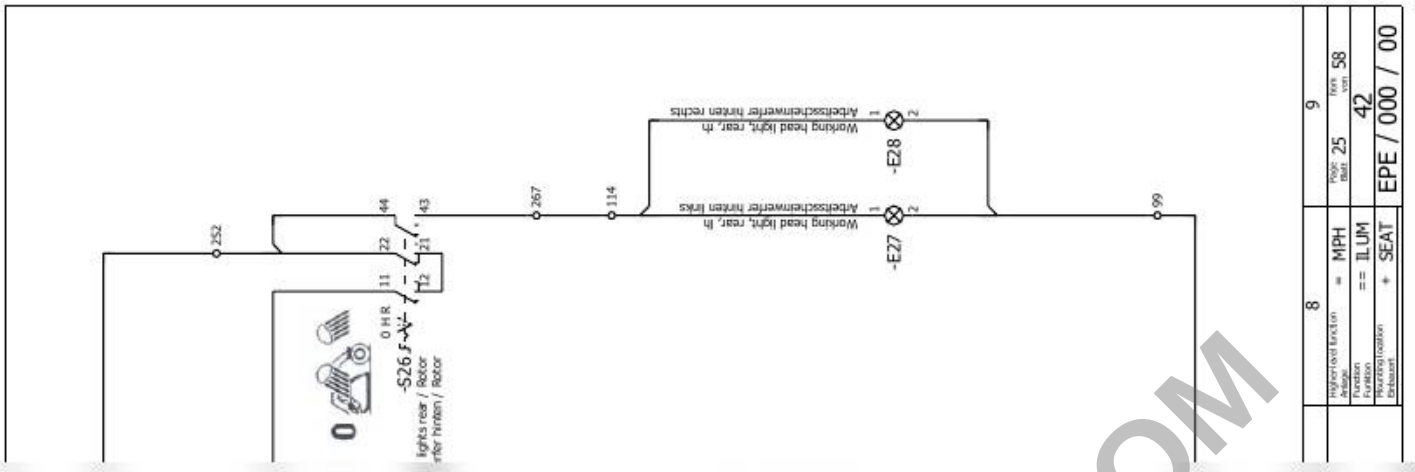



Fig. 24

- Assemble the plate (Fig. 24).
- Remove the filter element.
- Wash out with suitable cleaning agent and burn out after.
- Check the cover seal, renew if necessary.
- Assemble the bitumen filter and retighten the nuts.

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| | N1 | 2 | Table of content | | 02.Mär.2010 | FOJ | |
| | N1 | 4 | Power + burner | | 02.Mär.2010 | FOJ | |
| | N1 | 5 | Bitumen | | 02.Mär.2010 | FOJ | |
| | N1 | 6 | Water | | 02.Mär.2010 | FOJ | |
| | N1 | 7 | Analog values | | 02.Mär.2010 | FOJ | |
| | N1 | 8 | +N1 | | 02.Mär.2010 | FOJ | |
| | N1 | 9 | +N2 | | 02.Mär.2010 | FOJ | |
| | N1 | 10 | Plate | | 02.Mär.2010 | FOJ | |
| | N1 | 11 | part list | | 02.Mär.2010 | FOJ | X |
| | N1 | 12 | part list | | 02.Mär.2010 | FOJ | X |
| | N1 | 13 | part list | | 02.Mär.2010 | FOJ | X |
| | N1 | 14 | part list | | 02.Mär.2010 | FOJ | X |
| | N1 | 15 | part list | | 02.Mär.2010 | FOJ | X |
| | N1 | 16 | part list | | 02.Mär.2010 | FOJ | X |
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