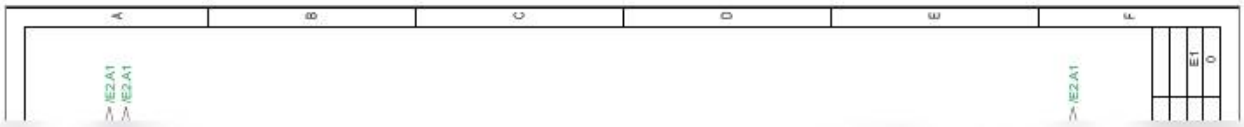
BMF 2500 CS
- Machine Failure-Codes chart

Error Message	Number	Save	Possible Cause	Effect	Quit	Remedy
Steer Lever	0x8002	yes	steering signal redundancy error (direction: direction: left about 0,5V..right about 4,5V) pin141 does not fit with opposite signal at pin redundancy input pin231	stering set to middle, limp home 4m/min	no	make a new joystick calibration with BODAS-service
Volt.after P central switch off	0x8003	yes	voltage after proportional central switch >4V when central switch is off	no driving possible	no	backward feeding of proportional central switch due to a wiring harness failure
Volt.after D central switch off	0x8004	yes	voltage after digital central switch >4V when central switch is off	no driving possible	no	backward feeding of digital central switch due to a wiring harness failure
Volt.Sensor 5V low	0x8005	yes	5V sensor voltage <4,5V	no driving possible	active error will be deleted if error condition is not true	check sensor voltage pin 219 and cables, sensors, potentiometers
Volt.Sensor 5V high	0x8006	yes	5V sensor voltage >5,5V	no driving possible	active error will be deleted if error condition is not true	check sensor voltage pin 219 and cables, sensors, potentiometers
SYS check	0x8007	yes	internal fault of RC36-20/30	no driving possible	no	turn ignition key off, wait 2s and then turn on again
Brake release	0x8008	yes	solenoid brake faulty short circuit / broken solenoid or cable	manually pumping of brake pressure necessary, then driving with limp home 4m/min possible	active error will be deleted if error condition is not true and joystick neutral	check cable, pin131
Pump left forwd.	0x8009	yes	solenoid pump left forward faulty short circuit / broken solenoid or cable	no forward driving possible after 0,8s	active error will be deleted if error condition is not true and joystick neutral	check cable, pin156

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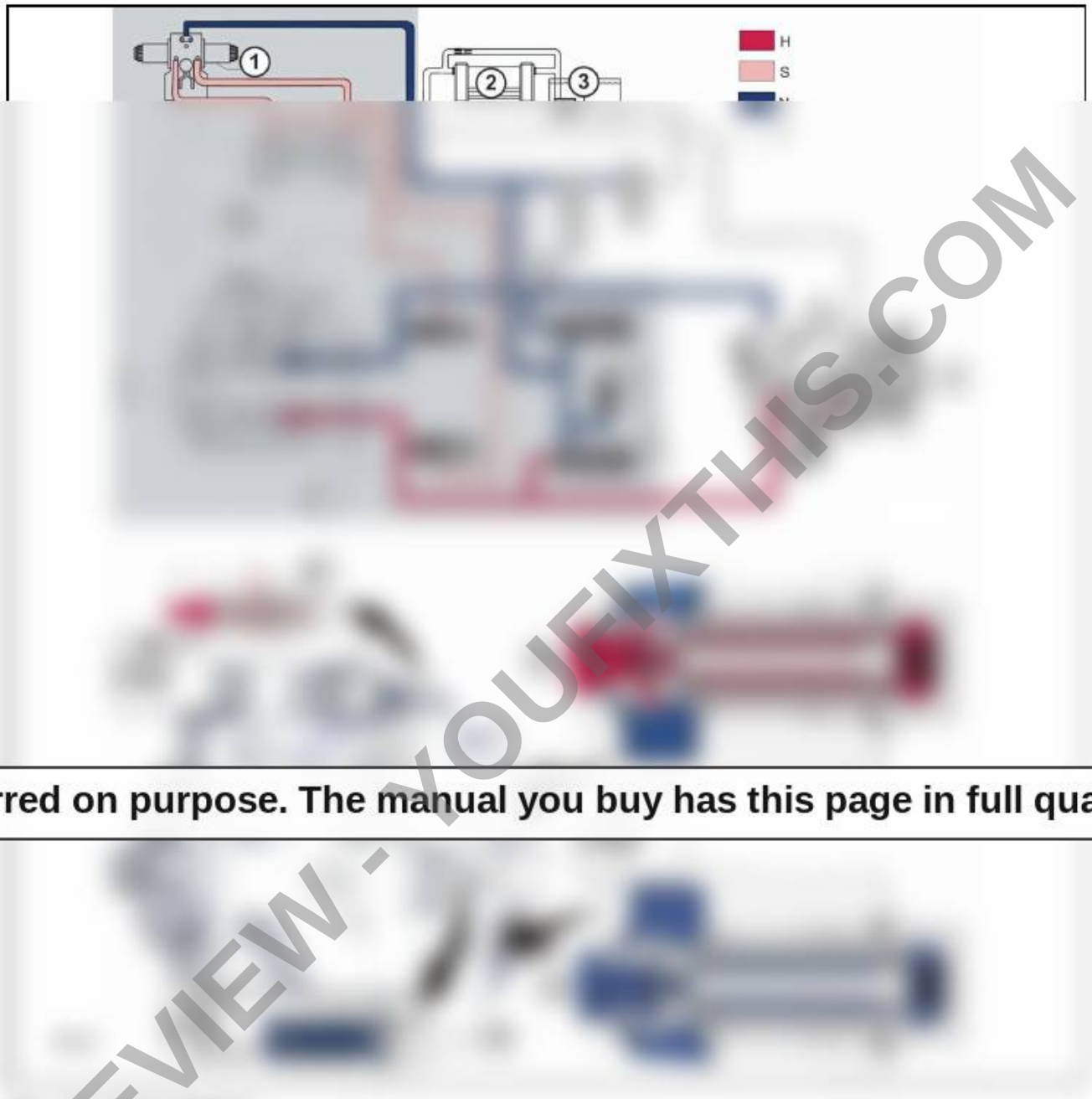
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ENVIRONMENT!

Diesel fuel is an environmentally hazardous substance!

- Always keep diesel fuel in proper containers.
- Immediately bind spilled diesel fuel with an oil-binding agent and dispose of properly.
- Dispose of diesel fuel and fuel filters according to regulations.

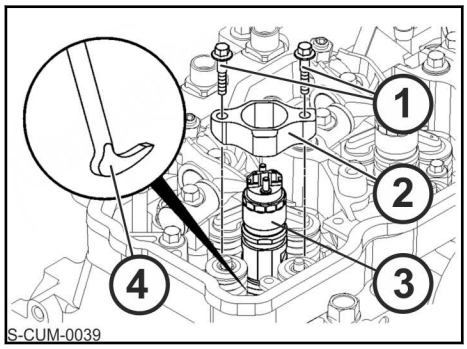


Fig. 134

1. Remove the screws (1) ↳ Fig. 134 and bracket (2).
2. Use the pry bar (4) to remove the injector (3).
3. Once the injector has been removed, make sure that the sealing ring has also been removed.

   ⇨ If the sealing ring is not on the injector, remove the sealing ring from the injector bore.

NOTICE!

If the injector has two sealing rings, this may cause fuel losses and a drop in engine power.

Cleaning and checking for reusability

1. Check the injector ↳ *Chapter 4.2.6 „Checking the injector“ on page 275*.

Installing the injector

Special tool:

- Oil spray can
- Press fitting sleeve
- Torque wrench 1-12 Nm
- Torque wrench 10-50 Nm
- Torque wrench 20-200 Nm
- Vernier calliper (972 029 78)

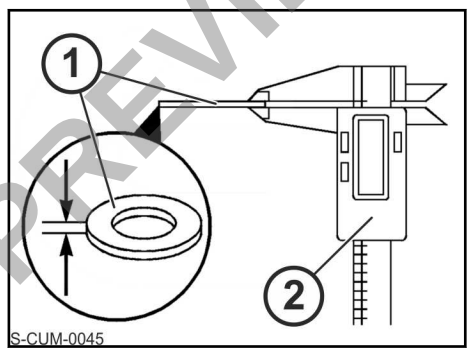


Fig. 135

1. Measure the removed sealing ring (1) ↳ Fig. 135. Make sure that the thickness of the sealing ring is the correct size.

   ⇨ **Nominal value: 1.5 mm!**
2. If it is not up to the nominal value, replace the sealing ring.

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1.4 Notes on repair

1.4.1 General repair instructions

NOTICE!

Ensure strict cleanliness when performing repair work!

- No foreign objects should enter into open systems.
- Thoroughly clean the area around the affected components.
- Dry off wet locations with compressed air.

Before removing or disassembling parts, assembly groups, components or hoses mark these parts for easier assembly.

1.4.1.1 Repair notes for electrics

Electrics and welding

NOTICE!

Electrical components may get damaged by welding work!

- Always remove the main battery switch.
- Disconnect the batteries and connect negative and positive cables.
- Pull the plugs off the control units.

Always fasten the earth clamp of the welding unit in the immediate vicinity of the welding location.

When choosing the location for the earth clamp make sure that the welding current will not pass through joints or bearings.

Battery

Maintenance free batteries also need care. Maintenance free only means that the fluid level does not need to be checked.

Every battery has a self-discharge, which may, if not checked occasionally, even cause damage to the battery as a result of exhaustive discharge.

Exhausted batteries (batteries with formation of sulphate on the plates) are not covered under warranty!

- When removing a battery always disconnect the minus pole before the plus pole. When installing the battery connect the minus pole after the plus pole to avoid short circuits.
- Assemble the battery terminal clamps without force.

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Designation	Description	Technical data
K2	Relay	
K20	Micro relay 4RD	
K21	Micro relay 4RD	
K22	Micro relay 4RD	
K23	Micro relay 4RD	
K24	Comfort light	
K3	Relay	
K30	Power relay	24V, 200A
K31	Power relay	24V, 150A
K33	Micro relay 4RD	
K34	Micro relay 4RD	
K35	Micro relay 4RD	
K4	Relay	
K5	Relay	
K6	Micro relay 4RD	
K7	Micro relay 4RD	
K8	Micro relay 4RD	
K9	Micro relay 4RD	
M2	Central lubrication pump	
M3	Wiper motor	
N1	Voltage converter	
Q1	Main battery switch	
R1	Pre-selection controller travel system	
R10	Resistance	270 Ohm
R11	Resistance	270 Ohm
R12	Resistance	270 Ohm
R13	Resistance	330 Ohm
R17	Resistance	680 Ohm
R18	Resistance	680 Ohm
R2	Tank sensor	
R21	Resistance	3.9 kOhm
R22	Resistance	1.5 kOhm
R23	Resistance	120 Ohm
R26	Resistance	120 Ohm

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BMF 2500 CS
- Machine Failure-Codes chart

Error Message	Number	Save	Possible Cause	Effect	Quit	Remedy
stop-error_reserved_44	0x802B					
stop-error_reserved_45	0x802C					
stop-error_reserved_46	0x802D					
stop-error_reserved_47	0x802E					
stop-error_reserved_48	0x802F					
stop-error_reserved_49	0x8030					
stop-error_reserved_50	0x8031					
stop-error_reserved_51	0x8032					
stop-error_reserved_52	0x8033					
stop-error_reserved_53	0x8034					
stop-error_reserved_54	0x8035					
stop-error_reserved_55	0x8036					
stop-error_reserved_56	0x8037					
stop-error_reserved_57	0x8038					
stop-error_reserved_58	0x8039					
stop-error_reserved_59	0x803A					
stop-error_reserved_60	0x803B					
stop-error_reserved_61	0x803C					
stop-error_reserved_62	0x803D					
stop-error_reserved_63	0x803E					

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BMF 2500 CS - Internal Machine Failure-Codes chart RC36		
Fault Code	**API function**	**Description**
0X0A80	-	UDS protocol timeout Bs during waiting for flow control within uds instance = <error parameter>, communication reset.This error may occur if the PC tool (e.g. BODAS-service or BODAS-design) was closed without terminating the UDS communication previously.
0X0A81	-	UDS protocol timeout Cr during waiting for consecutive frame within uds instance = <error parameter>, communication reset.This error may occur if the PC tool (e.g. BODAS-service or BODAS-design) was closed without terminating the UDS communication previously.
0X0A82	-	UDS flow control with overflow received within uds instance = <error parameter>, communication reset
0X0A83	-	UDS flow control with undefined flow status received within uds instance = <error parameter>, communication reset
0X0A84	-	UDS consecutive frame with unexpected sequence nbr received within uds instance = <error parameter>, communication reset
0X0A85	-	UDS can message with an unexpected PCI type was received in the actual state within uds instance = <error parameter>. Beginning of already received multi frame message was skipped and reception of new message was started.
0X0A90	-	UDS can RX buffer overflow within uds instance = <error parameter>, RX message lost
0X0A91	-	Can TX buffer overflow within uds instance = <error parameter>, TX message lost. The CAN TX buffer for this CAN channel is to small and has to be increased.
0X0A92	-	UDS single frame msg with an invalid data length received within uds instance = <error parameter>, RX message ignored
0X0A93	-	UDS first frame msg with a to small data length received within uds instance = <error parameter>, RX message ignored
0X0A94	-	UDS first frame msg with a to great data length received within uds instance = <error parameter>, RX message ignored
0X0B01	outext_setProp	Parameter out of range, <error parameter> = parameter number
0X0B02	outext_getProp	Parameter out of range, <error parameter> = parameter number
0X0B03	outext_getPropSet	Parameter out of range, <error parameter> = parameter number
0X0B04	outext_getPropSet	PWM channel is not in closed loop mode, <error parameter> = LSB of channel number
0X0C01	emcy_cfg	Parameter out of range, <error parameter> = parameter number
0X0C03	emcy_disableInput	Parameter out of range, <error parameter> = parameter number

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BMF 2500 CS
- Diesel Engine Failure-Codes chart

Fault Code	SPN	FMI	Lamp	SPN Description	Cumins Description	QSB 6.7	QSL 9	QSX 15
2357	2791	7	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment	x	x	x
2363	1073	4	Amber	Engine (Compression) Brake Output #2	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source		x	x
2365	1112	4	Amber	Engine (Compression) Brake Output #3	Engine Brake Actuator Driver Output 3 Circuit - Voltage below normal, or shorted to low source			
2367	1073	3	Amber	Engine (Compression) Brake Output #2	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source		x	x
2368	1112	3	Amber	Engine (Compression) Brake Output #3	Engine Brake Actuator Driver 3 Circuit - Voltage above normal, or shorted to high source			
2372	95	16	Amber	Engine Fuel Filter Differential Pressure	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe	x	x	x
2373	1209	3	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure Sensor 1 Circuit - Voltage above normal, or shorted to high source	x	x	x
2374	1209	4	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure Sensor 1 Circuit - Voltage below normal, or shorted to low source	x	x	x
2375	412	3	Amber	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage above normal, or shorted to high source	x	x	x

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BMF 2500 CS
- Diesel Engine Failure-Codes chart

Fault Code	SPN	FMI	Lamp	SPN Description	Cumins Description	QSB 6.7	QSL 9	QSX 15
4568	3482	16	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve - Data Valid But Above Normal Operating Range - Moderately Severe			
4572	3031	9	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate	X	X	X
4573	3826	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range			
4584	3936	14	Red		Aftertreatment Diesel Particulate Filter System - Special Instructions			X
4585	4792	14	Red		Aftertreatment 1 SCR Catalyst System - Special Instructions	X	X	X
4586	4339	31	Amber	Aftertreatment 1 SCR Feedback Control Status	Aftertreatment 1 SCR Feedback Control Status - Condition Exists			
4615	94	0	Red	Engine Fuel Delivery Pressure	Engine Fuel Delivery Pressure - Data Valid but Above Normal Operational Range - Most Severe Level	X	X	
4658	4331	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity	Aftertreatment SCR Actual Dosing Reagent Quantity - Data Valid But Below Normal Operating Range - Mo	X		X
4679	1761	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current below normal or open circuit	X	X	X

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4.1.7 Engine electrics

4.1.7.1 Intake air pressure and temperature sensor

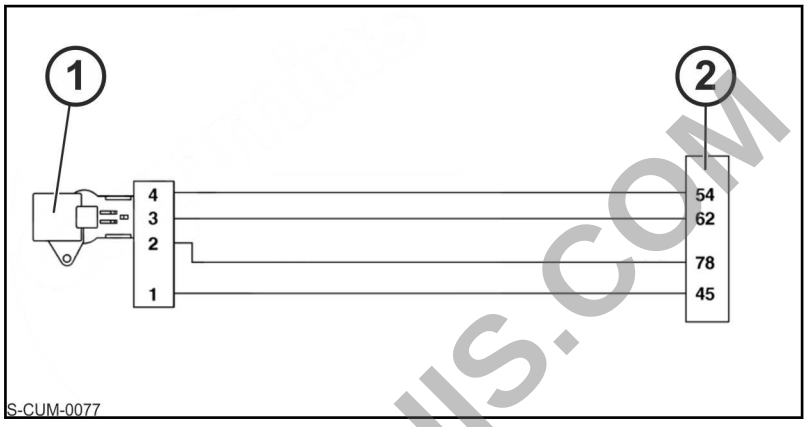


Fig. 106

1 Intake air pressure and temperature sensor
2 Plug “J1” engine control unit

Cable assignment

4 ⇨ 54 - Ground

3 ⇨ 62 - Temperature signal

2 ⇨ 78 - Supply 5 V

1 ⇨ 45 - Pressure signal

Description

This intake air pressure sensor (1) ↳ Fig. 106 measures the pressure and temperature in the intake manifold. Pressure and temperature change the resistance in the sensor and changed signals are transmitted to the engine control unit.

The engine control unit supplies the sensor (1) with a voltage of 5 V. Ground is also provided by the engine control unit.

The sensor starts monitoring as soon as the ignition is switched on.

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Concluding work

1. To connect the battery to the vehicle power supply insert the main battery switch and turn it clockwise. Or mount the battery terminal clamp on the battery.
2. Start up the diesel engine. Check for leaks.

4.2.8 Checking the injector supply line

1. Disassemble the injector supply line ↳ *Chapter 4.2.7 „Injector supply line removal/installation“ on page 277*.
2. Check the injector supply line for the following damages ↳ Fig. 153:
   - Check the fastening clamps of the injector supply line for burrs, cracks, foreign objects and damage.
   - Check the injector supply lines for damage, formation of cracks, worn or clamped parts.

   ⇨ Replace defective components.
3. Assemble the injector supply lines ↳ *Chapter 4.2.7 „Injector supply line removal/installation“ on page 277*.

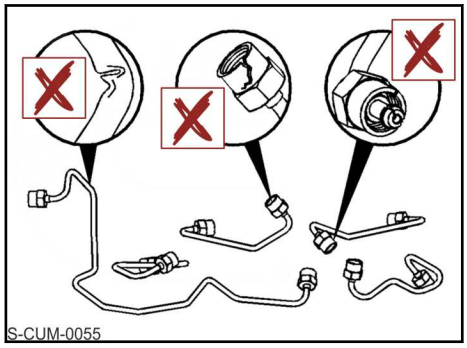


Fig. 153

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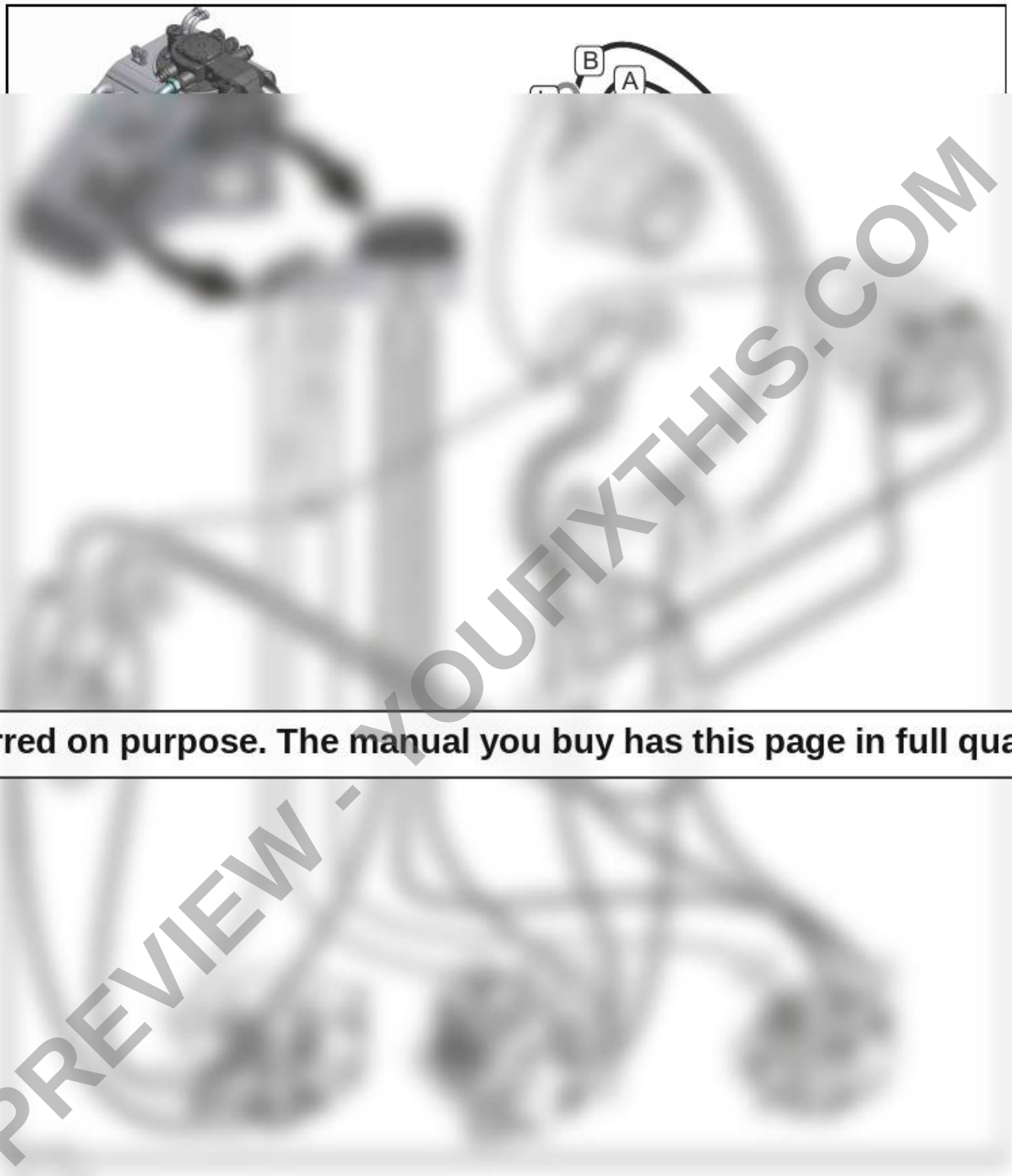
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4.3.24 The diesel engine emits secondary noises

Fault description	Cause	Remedy
The diesel engine emits secondary noises	The fan belt is too loose, to tight or not aligned	■ Check the tension of the fan belt – See operating and maintenance instructions
	The condition of the fan belt is not correct	■ Check the fan belt for crossing cracks – Transverse cracks (across the width of the belt) are permissible – Cracks (along the length of the belt), which cross with transverse cracks, are **not** permitted – Frayed belts with holes faults is not permitted and **must** be replaced ■ See operating and maintenance instructions
	The fan is loose, damaged or not correctly balanced	■ Check the fan for cracks, loose rivets and bent or loose wings ■ Check whether the fan has seized. If necessary, tighten the corresponding screws
	Fan coupling and hydraulic pump emit extreme noises	■ Isolate the individual components and check for noise
	Excessive noise of the generator	■ Check component
	Leaks in the air intake or exhaust gas system	■ Check for loose or damaged pipe connections and missing tube plugs ■ Check the fastening of turbocharger and exhaust manifold
	Air intake or exhaust lines touch the operator's platform	■ Check air lines and operator's platform for contacting points – If necessary separate the contact points
	The engine oil level is lower than the nominal value	■ Check the oil level ■ Check the dipstick and the capacity of the oil pan ■ Fill the system right up to the specified level ■ See operating and maintenance instructions
	Engine oil is thin bodied or diluted	■ Observe the engine oil specification – See operating and maintenance instructions ■ See *Chapter 4.3.4 „Engine oil pressure too low“ on page 295*
	The vibration damper is damaged or loose	■ Check the vibration damper
	The coolant temperature is higher than the nominal value	■ See *Chapter 4.3.9 „Coolant temperature too high (suddenly)“ on page 299*
	Engine suspensions are worn, damaged or wrong	■ Check the engine suspensions ■ See operating and maintenance instructions
	The air compressor (if installed) emits excessive noises	■ Check the compressor

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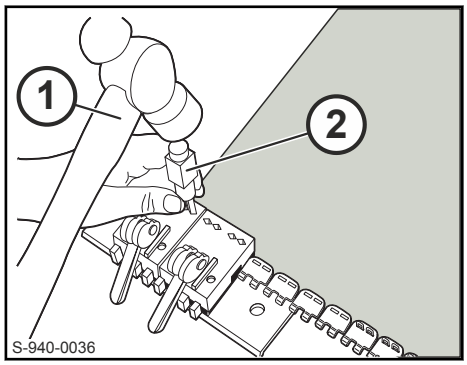


Fig. 219

10. Loosen the cam lever on the assembly device and position the device on the outer connectors ↳ Fig. 219.

11. Switch the cam lever over again.

12. Use the clamp driver (2) to drive the clamps on the outer connectors through.

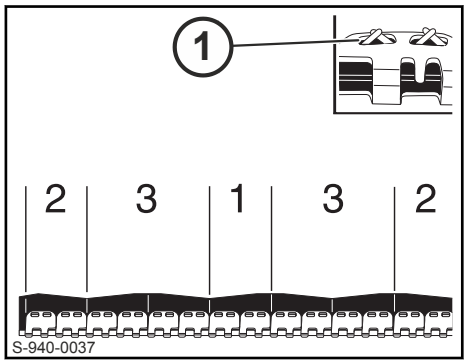


Fig. 220

13. Follow the specified order to drive all other clamps through.

⇨ Detail (1) ↳ Fig. 220 shows the clamps pre-assembled and partly bent.

14. Loosen the cam lever and remove the assembly device from the connecting strips.

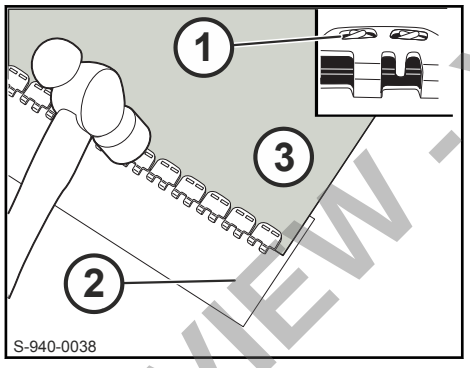


Fig. 221

15. Turn the conveyor belt (3) ↳ Fig. 221 around and position it on a stable base (2).

16.

NOTICE!

Do not damage the connectors with the hammer.

Treat the upper side of the connectors and the clamps with solid hammer blows. Treat the complete connecting strip, until all clamps are correctly bent.

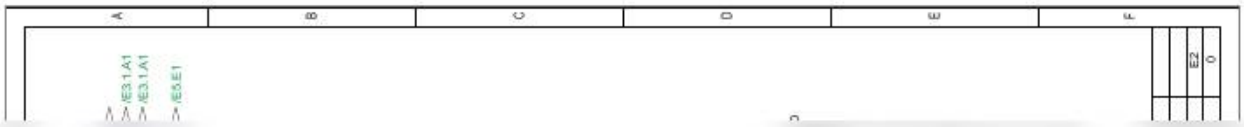
⇨ Detail (1) shows the clamps correctly bent.

17. Now repeat the previously described steps at the other end of the conveyor belt.

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Circuit diagrams



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