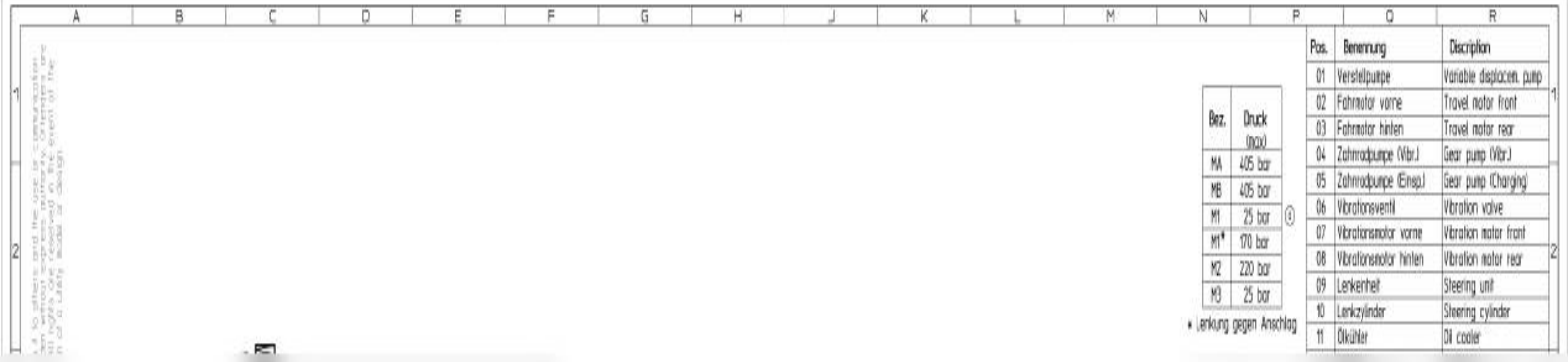


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Bez.	Druck (max)
MA	405 bar
MB	405 bar
M1	25 bar
M1*	170 bar
M2	220 bar
M3	25 bar

* Lenkung gegen Anschlag

Pos.	Benennung	Description
01	Verstellpumpe	Variable displacem. pump
02	Fahrmotor vorne	Travel motor front
03	Fahrmotor hinten	Travel motor rear
04	Zahnradpumpe (Vibr.)	Gear pump (Vibr.)
05	Zahnradpumpe (Einsp.)	Gear pump (Charging)
06	Vibrationsventil	Vibration valve
07	Vibrationsmotor vorne	Vibration motor front
08	Vibrationsmotor hinten	Vibration motor rear
09	Lenkeinheit	Steering unit
10	Lenkzylinder	Steering cylinder
11	Ölkühler	Oil cooler

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Troble Shooting

Fault	Possible cause	Remedy
Engine does not start	• No fuel	Fill in fuel
	• Air in the fuel system	Bleed
	• Water in the fuel system	Replace fuel and clean 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 Ceten-number	Use specified fuel
	• Fuel loss caused by loose locking but on injection line	Tighten nuts
	• Incorrect adjustment of injection	Adjust
	• Fuel camshaft worn	Replace
	• Injection nozzle clogged	Clean
	• Malfunction of fuel lift pump	Repair or replace
	• Crankshaft, camshaft, piston or bearings seized	Repair or replace
	• Loss of compression on a cylinder	Replace cylinder head gasket, tighten cylinder head screws, glow plug and nozzle holder
	• Incorrect valve seat alignment, valve spring broken, valve seized	Repair or replace
	• Insufficient valve control	Adjust
	• Piston rings worn	Replace
	• Excessive valve clearance	Adjust
	• Battery discharged	Charge
Starter does not work	• Malfunction of starter	Repair or replace
	• Malfunction of ignition switch	Repair or replace
	• Wiring has come loose	Connect

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BOMAG GMBH BOPPARD

Gez.: 4.2.4
Name: Knelp

Gepr.:
Name:

Bauteilliste
component listing

Name	Bl.	Pf.	Benennung	title	TYP
A01	003	6	Intervallschalter	interval switch	
A02	006	6	Blinkrelais	indicator relay	4X21WATT
A03	003	10	Modul Vibration	modul, vibration	
A15	002	17	Platine Ueberwachungsmodul	Printed circuit board, monitoring module	MAX1,5A
A15	003	7	Platine Ueberwachungsmodul	Printed circuit board, monitoring module	MAX1,5A
A15	006	11	Platine Ueberwachungsmodul	Printed circuit board, monitoring module	
A15	009	4	Platine Ueberwachungsmodul	Printed circuit board, monitoring module	
A66	008	9	Elektronik Steuereinheit	Electronic control unit	
A67	008	15	Eingabeeinheit	Keyboard	
A68	005	13	Modul Sitzkontakt	Modul seat contact	
B06	002	6	Druckschalter Motoroel	Pressure switch, engine oil	
B08	003	2	Naeherungsinitiator Fahrhebel '0'−Stell.	Proximity switch, travel lever '0' pos.	MAX 300MA
B11	004	7	Signalhorn	Warning horn	
B39	003	10	Aufnehmer Fahrhebel	Transducer, travel lever	4−20 mA
B53	002	5	Temperaturgeber Kuehlmittel	Temperature switch, collant	
E08	006	5	Blinkleuchte vorne links	Indicator, front, lh.	21W
E09	006	6	Blinkleuchte hinten links	Indicator, rear, lh.	21W
E10	006	7	Blinkleuchte vorne rechts	Indicator, front, rh.	21W
E11	006	8	Blinkleuchte hinten rechts	Indicator, rear, rh.	21W
E12	006	11	Parkleuchte links	Parking light, lh.	10W
E13	006	10	Schlussleuchte links	Tail light, lh.	10W
E14	006	12	Parkleuchte rechts	Parking light, rh.	10W
E15	006	13	Schlussleuchte rechts	Tail light, rh.	10W
E23	006	14	Arbeitsscheinwerfer vorne links	Working head light, front, lh.	55W
E25	006	15	Arbeitsscheinwerfer vorne rechts	Working head light, front, rh.	55W
E27	006	17	Arbeitsscheinwerfer hinten links	Working head light, rear, lh.	55W
E28	006	18	Arbeitsscheinwerfer hinten rechts	Working head light, rear, rh.	55W
E32	004	10	Kennleuchte	Warning light	5,5A
F00	002	1	Hauptsicherung Batterie	Fuse, main, battery	80A
F03	003	11	Sicherung Vibration	Fuse, vibration	10A
F04	002	10	Sicherung Instrumente	Fuse, gauges	10A
F07	006	3	Sicherung Warnblinker	Fuse, hazard light	15A
F08	006	6	Sicherung Blinker u. Arbeitsscheinw.	Fuse, indicators a. work. head light	15A
F09	006	11	Sicherung Park− u. Schlussl. links	Fuse, parking and tail light, lh.	15A
F10	006	13	Sicherung Park− u. Schlussl. rechts	Fuse, parking and tail light, rh.	15A
F11	006	14	Sicherung Scheinwerfer links	Fuse, head light, lh.	15A
F12	006	17	Sicherung Scheinwerfer rechts	Fuse, head light, rh.	15A
F23	004	7	Sicherung Signalhorn	Fuse, warning horn	10A
F39	007	9	Hauptsicherung Kabine	Main fuse, cab	15A
F45	004	17	Sicherung Kantenschneidgeraet	Fuse, edgecutter	10A
F48	002	19	Sicherung Gluehanlage	Fuse, glow plug system	10A
F68	003	17	Sicherung Potential 30	Fuse, potential 30	20A
F119	002	16	Sicherung Motor	Fuse, motor	10A
F139	002	14	Sicherung Hubmagnet Motor	Fuse, shut off solenoid, engine	30A
F141	002	2	Sicherung Hydraulikölkühler	Fuse , cooling air blower	50A
G01	002	1	Batterie	Battery	88 AH
G02	002	2	Generator	Generator	50A
H01	004	4	Meldeleuchte Bremse	Indicator light, brake	
H05	006	9	Meldeleuchte Blinker	Indicator light, indicators	
H06	006	3	Meldeleuchte Warnblinker	Indicator light, hazard light	
H06	006	4	Meldeleuchte Warnblinker	Indicator light, hazard light	
H08	002	4	Meldeleuchte Ladekontrolle	Indicator light, charge control	
H09	002	6	Meldeleuchte Oeldruck Motor	Indicator light, engine oil pressure	
H14	003	7	Warnsummer Rueckwaertsfahrt	Back−up alarm buzzer	
H15	002	7	Meldeleuchte Motorluftfilter	Indicator light, engine air filter	
H20	005	7	Meldeleuchte Sitzkontaktschalter	Indicator light, drivers seat contact	
H23	002	8	Meldeleuchte Hydraulikoelfilter	Indicator light, hydr.oil filter	
H49	002	5	Meldeleuchte Motorueberhitzung	Indicator light, engine overheating	
H52	002	12	Anzeige Gluehueberwachung	Glow plug indicator	
H70	002	9	Anzeige Wasser im Diesel	Indicator water in fuel	
H82	005	10	Warnsummer Sitzkontakt	Warning buzzer, seat contact	
K05	003	2	Relais Startstrom	Relay, starting current	BOSCHW
K11	004	9	Relais Klemme 30 auf 15	Relay, terminal 30 to 15	BOSCHW
K22	005	19	Relais Hubmagnet Motor	Relay, shut off solenoid, engine	BOSCHW
K32	007	14	Relais Kabine	Relay, cabin	BOSCHW
K37	002	12	Zeitrelais	Timing relay	5 SEC.
K37	009	18	Zeitrelais	Timing relay	
K78	003	16	Relais Emulsionsberieselung	Relay, emulsion sprinkler sys.	BOSCHW
K79	003	11	Relais Berieselungspumpe	Relay, sprinkler pump	BOSCHW
K96	002	13	Relais Motoroeldruck	Relay, engine oil	BOSCHW
K117	003	13	Relais Kantenschneidgeraet	Relay, edge cutter	BOSCHW
K137	005	3	Relais Sitzkontaktschalter	Relay, switch, drivers seat	BOSCHW
M01	002	19	Starter	Starter	1,4KW
M02	003	19	Berieselungspumpe	Sprinkler pump	6,4A
M03	003	17	Emulsionsberieselungspumpe	Emulsion sprinkler pump	6,4A
M04	007	9	Scheibenwischermotor vorne	Windscreen wiper motor, front	7,5A
M05	007	11	Scheibenwischermotor hinten	Windscreen wiper motor, rear	2,5A
M06	007	10	Scheibenwaschermotor vorne	Windscreen washer motor, front	2,5A
M07	007	12	Scheibenwaschermotor hinten	Windscreen washer motor, rear	7,5A
P00	002	4	Betriebsstundenzaehler	Operating hour meter	
P01	002	10	Tankanzeige	Level gauge	
R02	002	18	Gluehkerze	Glow plug	8A
R02	002	18	Gluehkerze	Glow plug	8A
R02	002	19	Gluehkerze	Glow plug	8A
R03	002	10	Geber Tankanzeige	Sender, level gauge	
R09	002	3	Vorwiderstand	Dropping resistor	82 OHM
R20	002	9	Widerstand	Resistor	
R21	002	3	Widerstand	Resistor	82 OHM
R21	002	8	Widerstand	Resistor	
R22	002	8	Widerstand	Resistor	

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Tests and adjustments

Measuring the compression

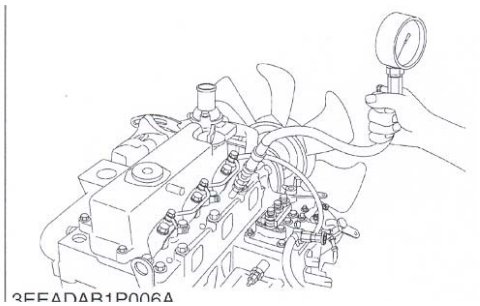


Fig. 5:

Compression pressure:

1. Run the engine warm and shut it down. Disassemble the nozzle holders.
2. Install the diesel engine compression tester to the nozzle holder opening.
3. Make sure that the throttle lever is in top position (no injection) and start the engine with the starter motor.
4. Read the max. pressure. Repeat the measurement at least two times.
5. If the measurement is below the permissible limit value check cylinder, piston, valve and cylinder head.

Adjustment values:

Compression pressure	Factory settings	29.4 -32.4 bar
	Permissible limit value min.	23.5 bar

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General

Machines of product range BW 100/120 AD/AC-4 are tandem vibratory rollers or combination rollers for compaction work in road construction. They are most suitable for the compaction of bituminous materials as well as light compaction tasks in earthwork. Compaction is achieved by the vibration of both drums or the vibration of the drum and the static load of the rubber tires. The power output from the water cooled Kubota diesel engine is transferred to drums or wheels (travel and vibration systems) and to the steering via the hydrostatic drive systems of the machine. This type of power transmission ensures lowest possible efficiency losses.

Both drums of the BW 100/120 AD-4 are fitted with both travel motors as well as vibration motors. The motors for the respective drive systems are always arranged on one side of the machine. Since it is beneficial for many applications (e.g. when laying asphalt layers) to work with one vibrating and one static drum, the machine is equipped with a vibration shut-off valve for the rear drum.

On machines of type BW 100/120 AC-4 the wheel set is driven by two travel motors. This roller combines the high compaction power of a vibration drum with the excellent surface sealing effect of rubber tires in one machine. This machine obviously achieves considerable savings in costs when compared with a pure vibratory or pneumatic tired roller.

The standard equipment of the machine includes a gravity sprinkler system. A pressure sprinkler system is optionally available on request. In connection with the scrapers the water sprinkler system avoids picking up of material by the drums.

On the AC-machines a pressure sprinkler system prevents sticking of dirt and bitumen to the rubber tires. For this purpose the tires are sprayed with emulsion.

Front and rear frames of the machine are joined by an oscillating articulated joint. The amply dimensioned oscillation angle makes sure that the drums always have ground contact over the entire width.

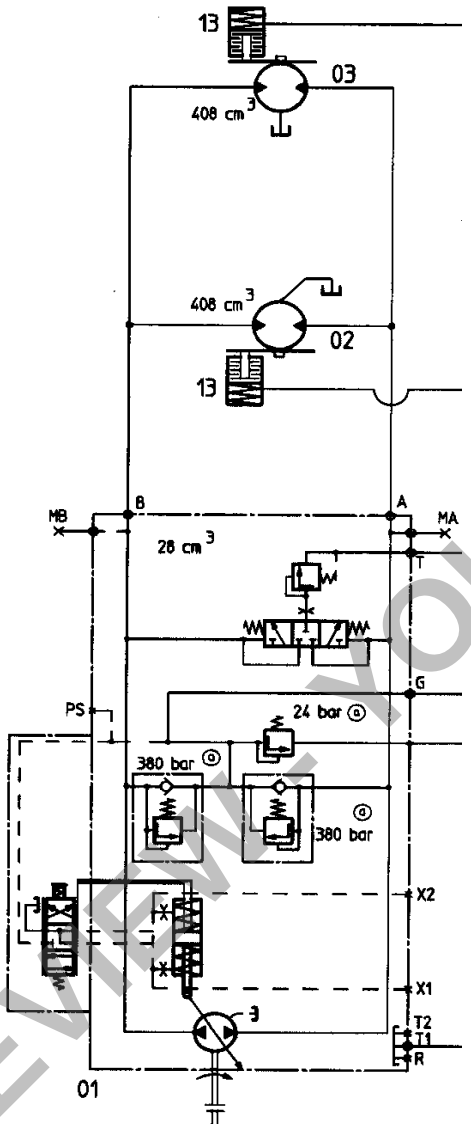
Both travel motors are fitted with integrated brakes working as parking brakes. Depending on the position of the brake solenoid valve these brakes are released by charge pressure when starting the engine and applied when shutting the engine down.

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Travel system:

On the machines described in this training manual the travel system consists of a closed hydraulic circuit. It mainly consists of the travel pump with the integrated safety elements, two travel motors, the hydraulic oil filter and the hydraulic oil cooler.



Charge pressure from brake valve

Charge pressure from brake valve

High pressure test ports MA and MB

Charge pressure after hydraulic filter

Leak oil port to tank

The installation of a hydraulic pump with variable displacement into a closed hydraulic circuit is a perfect solution for a hydrostatic travel system, because with this design the travel direction can be reversed without any problems.

The travel pump is flanged to the flywheel side of the diesel engine. It is directly driven by the engine with constant speed.

The tandem gear pump driven by the auxiliary output of the diesel engine consists of a steering/charge pump and a vibration pump. The return flow from the steering valve is fed through the charge oil port into the travel pump.

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If the solenoid coil is o.k., check the solenoid valve.

> Connect a 60 bar pressure gauge to the pressure test port

> Start the engine and move the travel lever out of neutral.

> Read the pressure gauges.

Nominal value: approx. charge pressure 24 bar

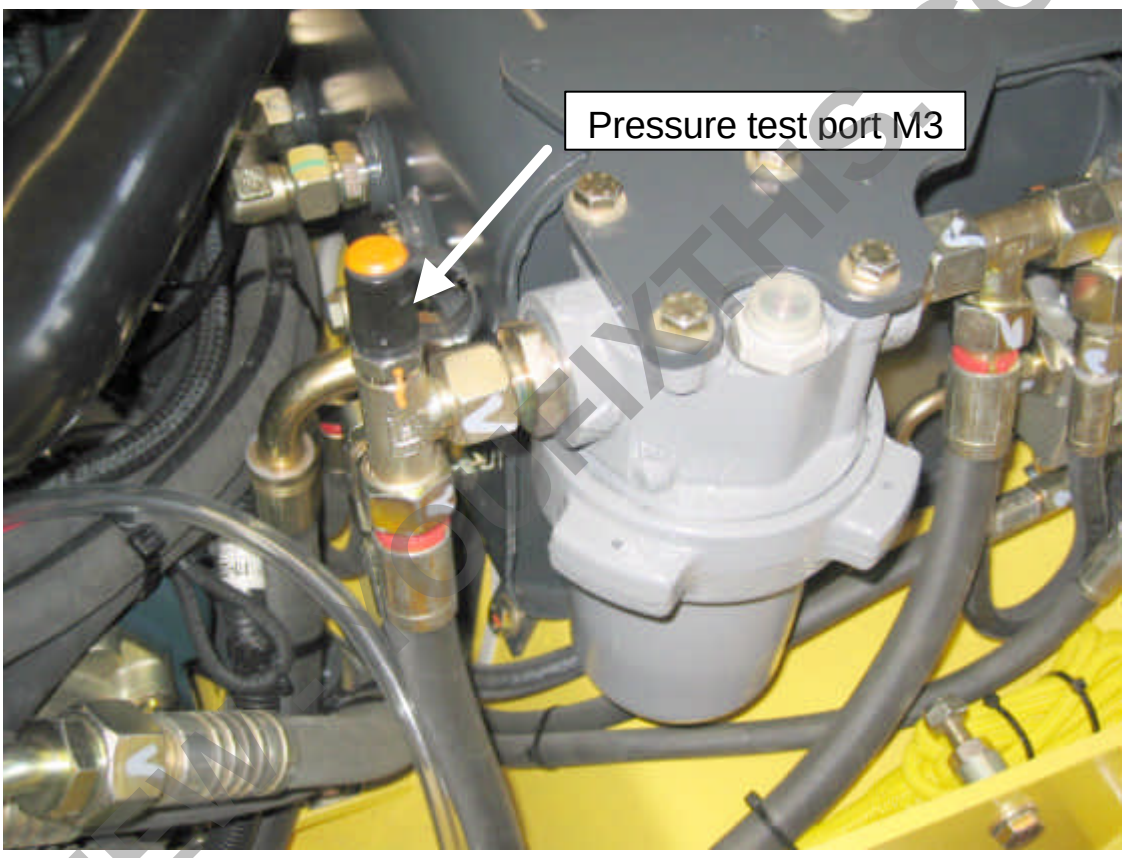


Fig. 2

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The vibration pump is directly driven by the timing gear side of the diesel engine.
Vibration pump and steering/charge pump are joined together to a tandem pump unit.
The gear pump delivers the hydraulic oil out of the hydraulic oil tank to the vibration control valve.

If the vibration is switched off the hydraulic oil flows directly back to the tank.

When the vibration is switched on, the control valve directs the oil flow to the in line connected vibration motors (BW 100/120 AD-4), or to the vibration motor on the drum (BW 100/120 AC-4).

The vibration motors (gear motors) drive the vibrator shafts in the drums with constant speed via Bowex couplings.
The rotation of the exciter shafts with the attached eccentric masses generates the vibration of the drums, which are suspended in rubber elements. From the second vibration motor the oil flows back through the control valve block to the tank (open circuit).

The standard equipment of the AD-machine includes a shut-off valve for the rear drum vibration. When operating a ball valve the oil flow is directly returned to the tank after the first motor (front drum) via the control valve block

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If the nominal value is not reached check the steering cylinder.

➢ Disconnect the hydraulic hoses from ports L and R on the **steering orbitrol** and close the orbitol with plugs. Due to the installation position the test is conducted on the orbitrol valve and not directly on the steering cylinder.

> Run the engine and turn the steering wheel.

Nominal value: approx. 160 to 190 bar

If the nominal value is reached replace the steering cylinder.

If the nominal value is not reached check the steering/charge pump.

> Close the pump outlet with a 200 bar pressure relief valve.

> Repeat the pressure test.

Nominal value: approx. 200 bar

If the nominal value is not reached replace the steering/charge pump.

If the nominal value is reached replace the steering valve (Orbitrol).

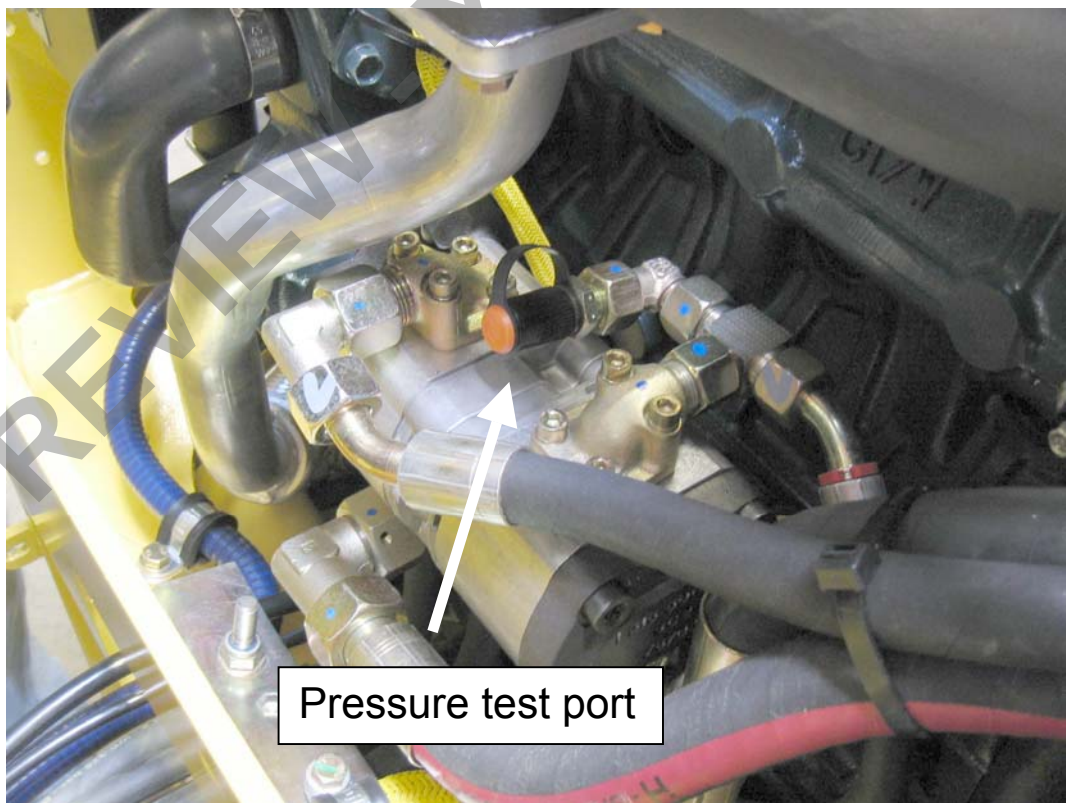
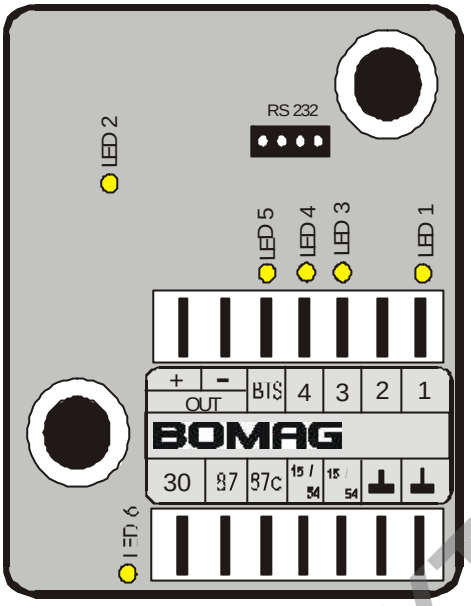


Fig. 6:

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Description of the seat contact module (part-no.: 88003042)



Pin assignment:

PIN	Signal	Description
1	IN (Active LOW)	Seat contact switch
2	IN (Active LOW)	Seat contact switch
3	IN (Active HIGH)	Travel lever sensor 0-position
4	IN (Active HIGH)	Oil pressure
BTS	OUT (BTS)	Engine solenoid pickup winding
OUT -	PWM -	Not used
OUT +	PWM +	Not used
30	Relay – Contact	Ground
87	Relay – Contact	Engine solenoid holding winding
87a	Relay – Contact	Normally closed
15/54	Supply voltage	10-39 V
-	Ground	

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