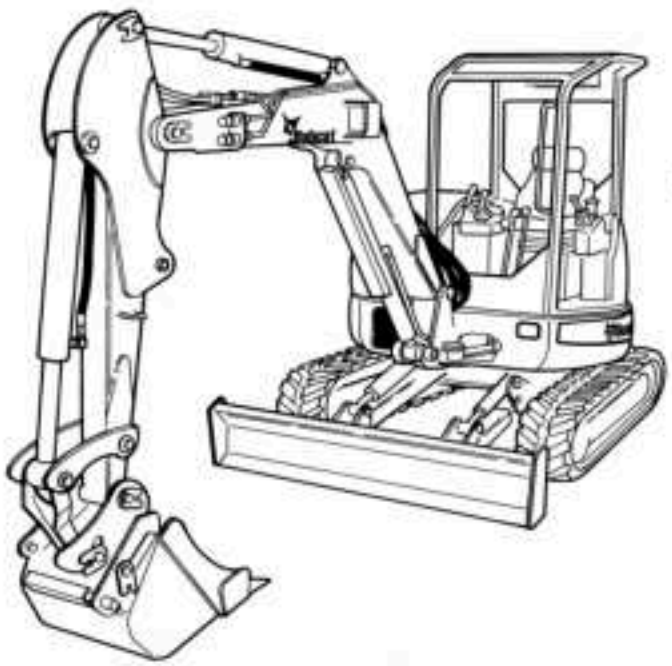
435

Bobcat®

Service Manual

S/N 562611001 & Above
S/N 562811001 & Above
S/N 563111001 & Above
S/N 563211001 & Above



6902331 (4-08)

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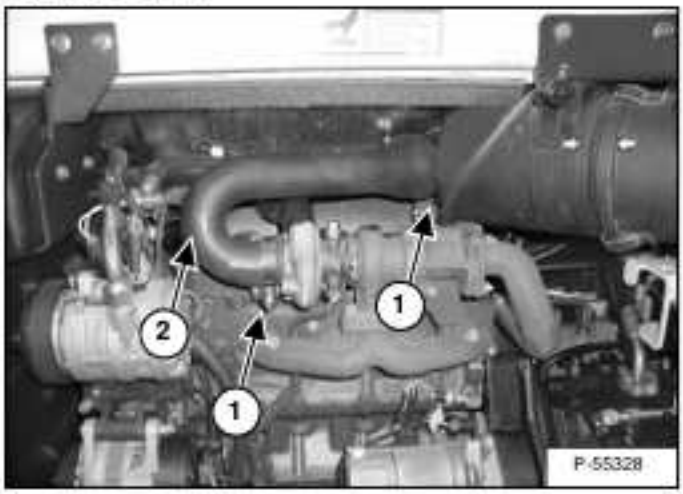
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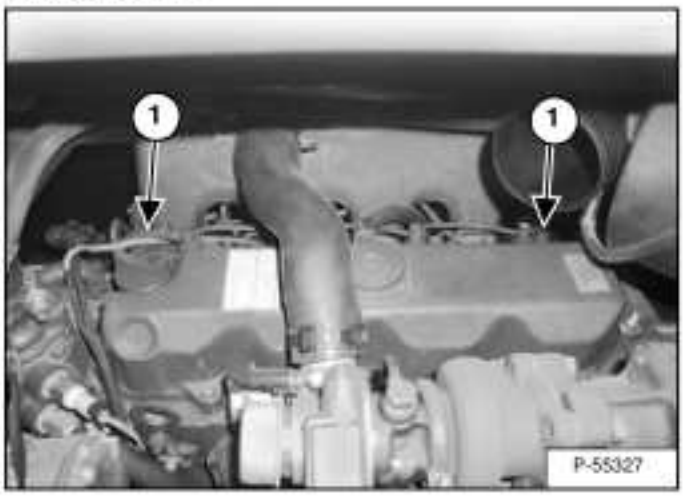
Fuel Injection Pump Removal And Installation (Cont'd)

Figure 70-51-21



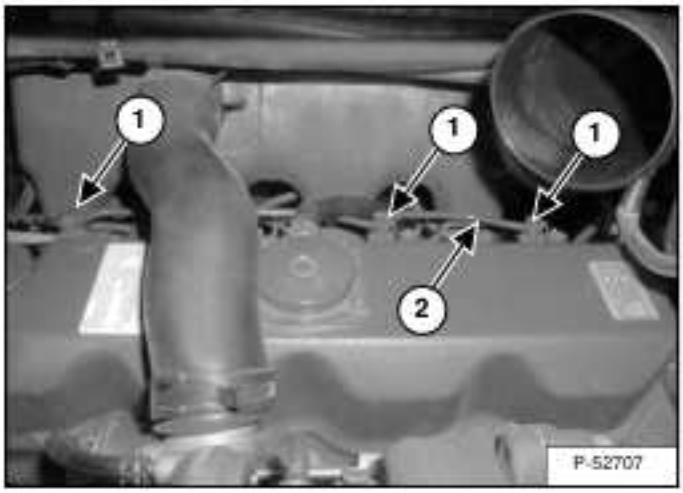
Loosen the clamps (Item 1). Remove the hose (Item 2) **[Figure 70-51-21]**.

Figure 70-51-22



Remove the hoses (Item 1) **[Figure 70-51-22]**.

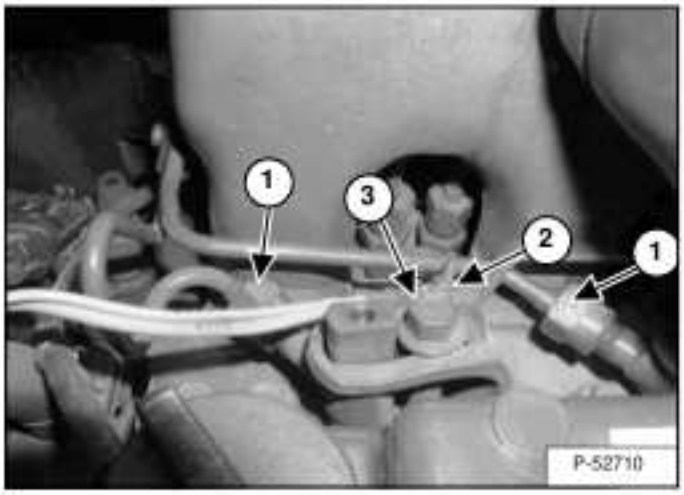
Figure 70-51-23



Remove the bolt (Item 1) **[Figure 70-51-23]** from the 4 fuel injectors.

Remove the fuel line (Item 2) **[Figure 70-51-23]**.

Figure 70-51-24



Remove the fuel line fittings (Item 1). Remove the nut (Item 2). Remove the wire harness (Item 3) **[Figure 70-51-24]**.

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Checking The Electrical System

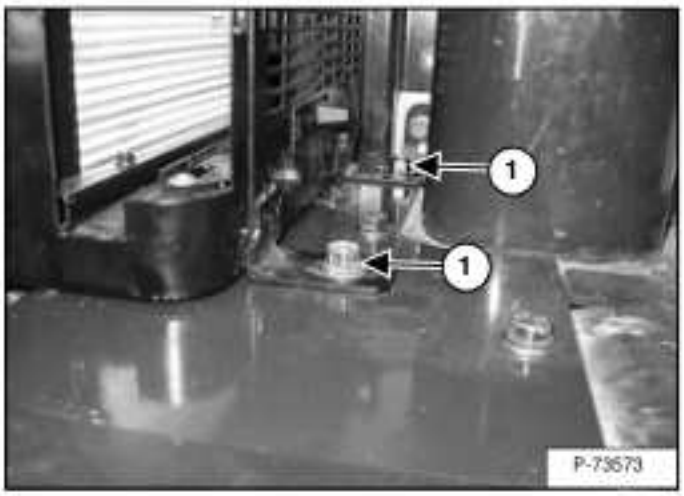
If the excavator A/C system shows no blower motor function, no A/C switch light, and no A/C compressor function, do the following checks at the A/C relay.

Remove the floormat and floor plate. (See Removal And Installation on Page 50-120-1)

Figure 80-81-8

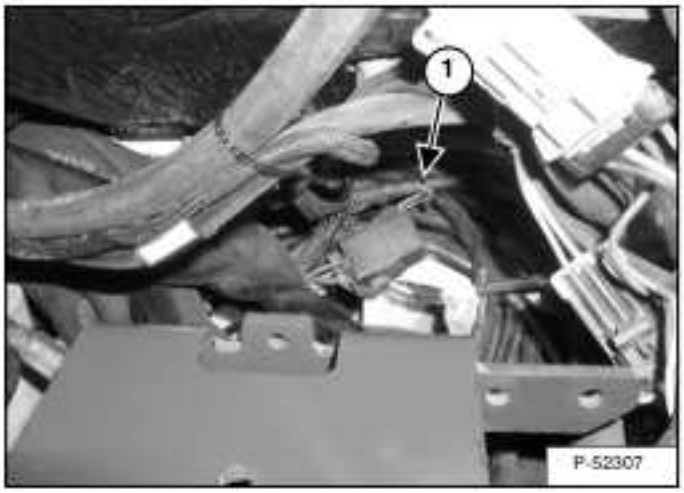


Figure 80-81-9



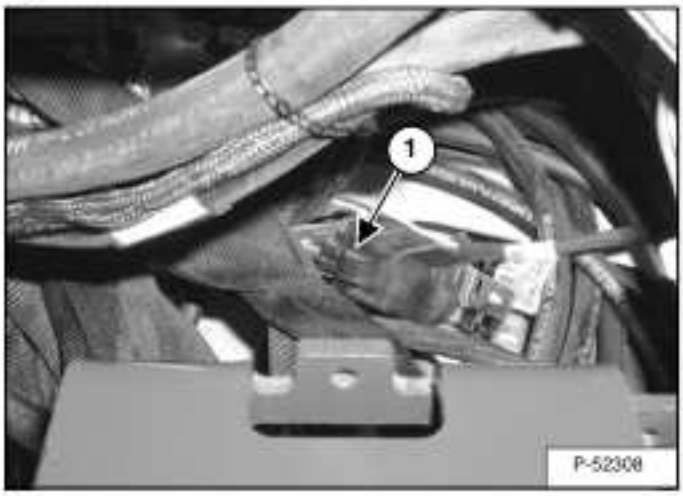
Remove the three bolts (Item 1) **[Figure 80-81-8]** & **[Figure 80-81-9]**. Tip the A/C unit back to provide access to the A/C relay.

Figure 80-81-10



Remove the cable tie (Item 1) **[Figure 80-81-10]** from the relay mount, as it is attached to the excavator wiring harness.

Figure 80-81-11



Depress the tab (Item 1) **[Figure 80-81-11]** on the relay.

Disconnect the relay from the wiring harness.

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All dimensions are given in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.

Cylinders

Cylinder Liner Bore I.D.	3.2677 to 3.2686 (83,0 to 83,022)
Allowable Limit	+0.0059 (+0,15)

Piston Rings

Ring Gap (Top & 2nd Ring)	0.0118 to 0.017 (0,3 to 0,45)
Limit Permitted	0.0492 (1,25)
Ring Gap (Oil Ring)	0.0098 to 0.0177 (0,25 to 0,45)
Limit Permitted	0.0492 (1,25)
Side Clearance of Ring Groove:	
Top Ring	Zero Clearance
Second Ring	0.0037 to 0.0047 (0,093 to 0,12)
Allowable Limit	0.0079 (0,20)
Oil RIng	0.0008 to 0.002 (0,02 to 0,052)
Allowable Limit	0.0059 (0,15)

Pistons

Piston Pin Bore	0.9843 to 0.9848 (25,0 to 25,013)
Limit Permitted	0.9862 (25,05)

Connecting Rods

Piston Pin O.D.	0.9843 to 0.9847 (25,002 to 25,011)
Small End Bushing I.D.	0.9852 to 0.9858 (25,025 to 25,04)
Clearance Between Piston Pin & Small End Bushing	0.0006 to 0.0015 (0,014 to 0,038)
Allowable Limit	0.0059 (0,015)
Connecting Rod Alignment Limit Permitted	0.002 (0,05)

Oil Pump

Oil Pressure at Rated RPM	43 to 64 PSI (2,97 to 4,41 bar)
Limited Permitted	36 PSI (2,48 bar)
Idle Speed	14 PSI (0,96 bar)
Limit Permitted	7 PSI (0,49 bar)
Clearance Between Inner Rotor & Outer Rotor	0.0039 to 0.0063 (0,1 to 0,16)
Outer Rotor & Pump Body	0.0043 to 0.0075 (0,11 to 0,19)
End Clearance Between Inner Rotor & Cover	0.0041 to 0.0059 (0,105 to 0,15)

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435 HYDRAULIC/HYDROSTATIC SCHEMATIC
S/N 562611001 AND ABOVE
S/N 562811001 AND ABOVE

(PRINTED NOVEMBER 2006)
V-0380legend

LEGEND

(1) HYDRAULIC RESERVOIR: Pressurized with Fill Strainer
Reservoir Capacity . .38.8 qt. (29.9 L)

(2) PRESSURIZED BREATHER/FILL CAP with FILTER:
5 PSI (3.4 bar) - Outlet
0.435 PSI (0.3 bar) - Inlet

(3) HYDRAULIC FILTER ELEMENT
15 Micron

(4) FILTER BY-PASS 50 PSI (3.44 bar)

(5) HYDRAULIC FILTER - with By-Pass
Element - 40 Micron
By-Pass - 50 PSI (3.44 bar)

(6) SHUTTLE VALVE - 2 Speed (2)

(7) VALVE - 2 -Speed (2)

(8) SHUTTLE VALVE - 2 Speed (2)

(9) BRAKE - Travel Motor (2)

(10) RELIEF VALVE - FAN MOTOR:
160 degrees F. (71 degrees C.) Fluid
2050 PSI (141 bar)

(11) CHECK VALVE - ANTI CAVITATION

(12) FAN PUMP / CHARGE PUMP
8.70 GPM (32,9 L/min.) at High Engine RPM

(13) RELIEF VALVE - CHARGE:
160 degrees F. (71 degrees C.) Fluid
220 PSI (15.2 bar) at 2500 Engine RPM

(14) RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 4640 PSI (320 bar)

(15) RESTRICTOR - N/A inch (N/A mm)

(16) DISPLACEMENT CONTROL SPOOL

(17) VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP

(18) RESTRICTOR - N/A inch (N/A mm)

(19) HYDRAULIC PISTON PUMP . . . . . .
Maximum Displacement:
29.7 GPM (112.4 L/min.) at 2500 Engine RPM
Minimum Displacement:
5.0 GPM (19 L/min.) at 2500 Engine RPM

(20) SHUTTLE VALVE (3)

(21) VALVE - Travel Motor Brake Release

(22) PRESSURE REDUCING VALVE
435 PSI (30 bar)

(23) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Work group Lockout

(24) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Travel Pilot Pressure

(25) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Two Speed

(26) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Male Coupler

(27) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Female Coupler

(28) ACCUMULATOR

(29) TEST PORT - "G1" PORT - Pressure Reducing Valve

(30) TEST PORT - "C1" PORT - Travel Pilot Pressure

(31) SWITCH - Travel Pilot Pressure

(32) TEST PORT - "G" PORT - Fan Pump Output

(33) LOAD SENSE RELIEF VALVE (Main Relief): 3750 PSI (259 bar) when tested at port M (51) at high engine idle

(34) LOAD SENSE BLEED CARTRIDGE:
0.185 GPM (0,70 L/min)

(35) FLUSHING VALVE: 360 PSI (24,8 bar) when tested at port M (51) at low engine idle

(36) COMPENSATOR - Standard (Blade, Bucket, Arm, Boom, Offset & Auxiliary)

(37) COMPENSATOR - With Priority Slots (Slew)

(38) PORT RELIEF VALVE - (Auxiliary Pressure Port: 3000 PSI (207 bar)

(39) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (Auxiliary Return Port: 3000 PSI (207 bar)

(40) LOAD CHECK - (Two per Section - 14 Total - Only 7 Shown)

(41) CROSS PORT RELIEF VALVES - 2 STAGE (2): 2800 PSI (193 bar) at 2500 Engine RPM

(42) RELIEF VALVE - SECOND AUXILIARY (2) - (Optional): 1500 PSI (103 bar)

(43) LOAD CHECK VALVE

(44) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - Second Auxiliary

(45) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Second Auxiliary

(46) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - Second Auxiliary

(47) RESTRICTOR - 0.012 inch (0,3 mm)

(48) FLUSHING ORIFICE - 0.055 inch (1,4 mm)

(49) RESTRICTOR - Brake Activation:
0.029 inch (0,74 mm)

(50) DIAGNOSTIC PORT - Build-Up Valve

(51) DIAGNOSTIC PORT

(52) DIAGNOSTIC PORT - Load Sense

(53) RETURN PORT - Capped

(54) DIAGNOSTIC PORT - Travel Control Servo Pressure

(55) DRIVE MOTOR SHUTTLE - With N/A inch (N/A mm) restrictors (2)

(56) SHUTTLE RELIEF:
N/A PSI (N/A bar) With
N/A inch (N/A mm) restrictors

(57) RESTRICTOR - 0.108 inch (2,7 mm)

(58) RESTRICTOR - 0.083 inch (2,1 mm)

(59) BUILD-UP VALVE: 105 PSI (7,2 bar)

(60) TORQUE LIMITER SUPPLY SPOOL - 290 PSI (20 bar)

(61) PUMP MARGIN SPOOL - 220 PSI (15,2 bar)

(62) TORQUE LIMITER

(63) DESTROKE PISTON

(64) ANTI-CAVITATION VALVE (2)

(65) TWO STAGE PILOT SPOOL:
250 PSI (17,2 bar)

(66) SHUTTLE - Dual Sequence Valve

(67) ORIFICE, Brake - 0.030 inch (0,76 mm)

(68) BRAKE RELEASE SPOOL: 80 PSI (5,5 bar)

(69) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (Boom Cylinder) 4200 PSI (290 bar)

(70) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (Boom Cylinder) 4200 PSI (290 bar)

(71) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (ARM Cylinder) 4200 PSI (290 bar)

(72) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (ARM Cylinder) 4200 PSI (290 bar)

(73) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (BUCKET Cylinder) 4200 PSI (290 bar)

(74) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (BUCKET Cylinder) 4200 PSI (290 bar)

(75) PORT RELIEF VALVE (With Anti-Cavitation Valve) - (BLADE Cylinder) 3770 PSI (260 bar)

(76) MINIMUM PUMP DISPLACEMENT ADJUSTMENT - 5.0 GPM (19 L/min)

(77) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO Coil)

(78) CHECK VALVE 80 PSI (5,5 bar)

(79) CHECK VALVE- Load Sense

(80) ORIFICE 0.025 in. (0,64 mm)

(81) FILTER – Hydraulic X-Change Valve

NOTE: Unless otherwise specified springs have NO significant pressure value.

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