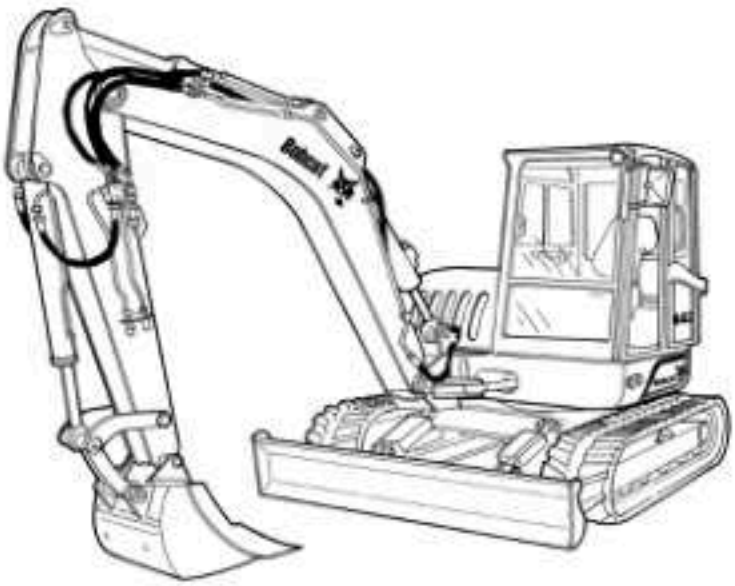
442

Bobcat®

Service Manual

S/N 522311001 & Above
S/N 528911001 & Above
S/N 528611001 & Above



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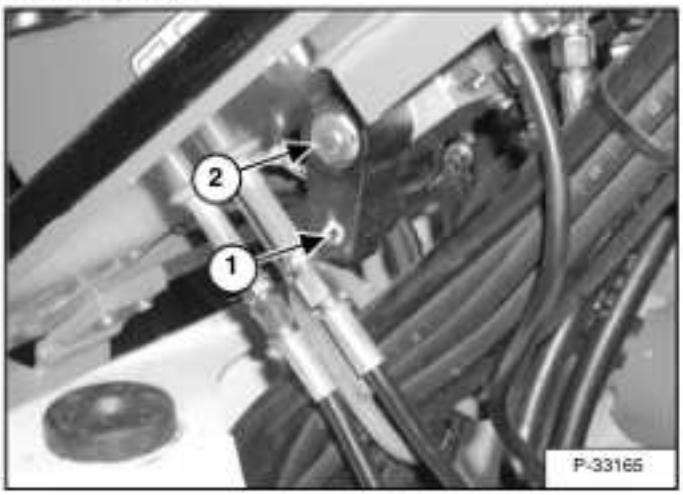
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HYDRAULIC BREAKER APPLICATION VALVE (S/N 522311001 & ABOVE)

Removal And Installation

Tilt the cab. (See Tilting The Cab on Page 10-160-2.)

Figure 20-160-1



Remove the wire harness (Item 1) **[Figure 20-160-1]** from the solenoid.

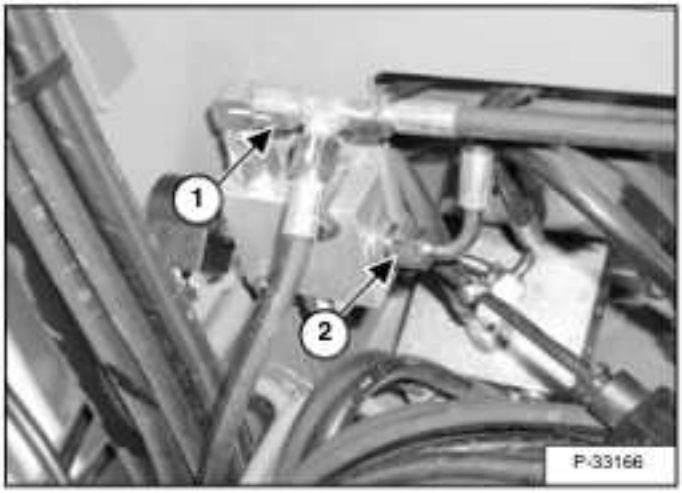
NOTE: The solenoid nut (Item 2) [Figure 20-160-1] may have to be loosened and the solenoid turned to access the screw to remove the wire harness.

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

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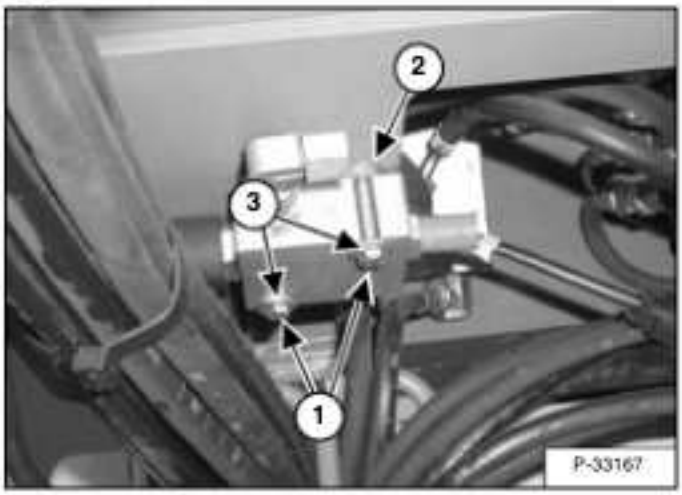
Figure 20-160-2



Remove the tee fitting (Item 1) **[Figure 20-160-2]**.

Remove the hose (Item 2) **[Figure 20-160-2]**.

Figure 20-160-3



Remove the bolts (Item 1) **[Figure 20-160-3]** and washers.

Installation: Install 2 washers (Item 2) between the cab and valve. Install 1 washer (Item 3) **[Figure 20-160-3]** on the bolts. Tighten the bolts to 6 - 7 ft.-lb. (8 - 10 N•m) torque.

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Chart (Cont'd)

KEY TO CORRECT THE CAUSE	
1. Battery capacity low.	26. Incorrect high pressure fuel lines.
2. Bad electrical connections.	27. Worn cylinder bores.
3. Faulty starter motor.	28. Worn valves and seat.
4. Incorrect grade of oil.	29. Broken, worn or sticking piston rings.
5. Low cranking speed.	30. Worn valve stems or guides.
6. Fuel tank empty.	31. Worn or damaged bearings.
7. Faulty stop control operation.	32. Not enough oil in the oil pan.
8. Plugged fuel line.	33. Switch/sensor is defective.
9. Plugged fuel filter.	34. Oil pump worn.
10. Restriction in the air cleaner.	35. Pressure relief valve is sticking open.
11. Air in the fuel system.	36. Pressure relief valve is sticking closed.
12. Faulty fuel injection pump.	37. Broken relief valve spring.
13. Faulty fuel injectors.	38. Faulty suction pipe.
14. Broken injection pump drive.	39. Plugged oil filter.
15. Incorrect injection pump timing.	40. Piston seizure.
16. Incorrect valve timing.	41. Incorrect piston height.
17. Poor compression.	42. Faulty engine mounting.
18. Plugged fuel tank vent.	43. Incorrect alignment of flywheel.
19. Incorrect grade of fuel.	44. Faulty thermostat.
20. Exhaust pipe restriction.	45. Plugged oil cooler
21. Cylinder head gasket leaking.	46. Plugged PCV system
22. Overheating.	47. Damaged valve stem oil deflectors.
23. Cold running.	48. Plugged oil pump pipe strainer.
24. Incorrect tappet adjustment.	49. Broken valve spring.
25. Sticking valves.	

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ENGINE SPECIFICATIONS (S/N 522311001 & ABOVE)

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

General

Displacement	195 cu. in. (3192 cu.cm.)
Bore	3.70 (94)
Stroke	4.53 (115)
Crankshaft Rotation (Facing Flywheel)	Counterclockwise
Ignition	4 Stroke Diesel-Compression
Combustion System	Direct Injection
Compression Ratio	17.5-1
Compression	406-479 PSI (28-33 Bar)
Firing Order	1-3-4-2
Weight	728 lb. (330 kg)

Fuel System

Fuel Injection Pump Pressure (5 Revolutions)	NA
Injection Pump Testing Tightness (10 Seconds)	3335 - 3451 PSI (230 - 238 bar)
Injection Nozzle Opening Pressure	3625 - 3741 PSI (250 - 258 bar)

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HYDRAULIC/HYDROSTATIC SCHEMATIC
442 EXCAVATOR
(S/N 528611001 AND ABOVE)
(S/N 528911001 AND ABOVE)

(PRINTED MAY 2010)
V-0621legend

LEGEND

1. BACK-UP RELIEF VALVE
   4350 PSI (300 bar)
2. LOAD SENSE RELIEF VALVE
   4060 PSI (280 bar)
3. PORT RELIEF VALVE - Boom Cyl.
   (Rod End) 4350 PSI (300 bar)
4. PORT RELIEF VALVE - Boom Cyl.
   (Base End) 2610 PSI (180 bar)
5. PORT RELIEF VALVE - Arm Cyl.
   (Rod End) 4350 PSI (300 bar)
6. PORT RELIEF VALVE - Arm Cyl.
   (Base End) 4350 PSI (300 bar)
7. PORT RELIEF VALVE - Bucket Cyl.
   (Rod End) 4350 PSI (300 bar)
8. PORT RELIEF VALVE - Bucket Cyl.
   (Base End) 4350 PSI (300 bar)
9. PORT RELIEF VALVE - Auxiliary
   4350 PSI (300 bar)
   NOTE: With clamp installed - Reset port relief valve to 3625 PSI (250 bar)
10. PORT RELIEF VALVE - Auxiliary
    4350 PSI (300 bar)
11. LOAD SENSE BLEED CARTRIDGE
12. MAIN RELIEF VALVE (Gear Pump)
    3335 PSI (230 bar)
13. PILOTED OPERATED TWO POSITION VALVE (2)
14. CHECK VALVE (2)
15. ORIFICE (2)
16. PORT RELIEF VALVE (2):
    5075 PSI (350 bar)
17. CROSS PORT RELIEF VALVE - 2 STAGE
    1450 PSI (100 bar) / 3625 PSI (250 bar)
18. ANTI-CAVITATION VALVE
19. ORIFICE 0.003 inch (0,8 mm)
20. ORIFICE - One Way Restrictor
    0.0023 inch (0,6 mm)
21. PRESSURE REDUCING VALVE
    508 PSI (35 bar)
22. ACCUMULATOR 145 PSI (10 bar)
23. CHECK VALVE
24. HYDRAULIC PISTON PUMP
    Minimum Displacement
    0.0 GPM (0.0 L/min) @ 2200 RPM
    Maximum Displacement
    41.2 GPM (156 L/min) @ 2200 RPM
25. TORQUE LIMITOR
26. PUMP MARGIN SPOOL
    365 PSI (25 bar)
27. TORQUE LIMITER SUPPLY SPOOL
    290 PSI (20 bar)
28. OIL COOLER BY-PASS VALVE
    43.5 PSI (3 bar)
29. OIL COOLER
30. HYDRAULIC PUMP Gear Type
    17.9 GPM (68 L/min.) at 2200 Engine RPM
31. CONSOLE/JOYSTICK SHUT-OFF SOLENOID VALVE
32. TWO SPEED SOLENOID VALVE
33. MAIN FILTER
    With 43.5 PSI (3 bar) Filter By-Pass Valve
34. PRESSURIZED BREATHER / FILL CAP
    5 PSI (0,34 bar)
35. HYDRAULIC RESERVOIR - PRESSURIZED
    Reservoir Volume 29 gal (110 L)
    System Volume 37 gal (140 L)
36. COMPENSATOR - Standard
    (Boom, Arm, Bucket, Auxiliary, Left Travel and Right Travel)
37. CROSS PORT RELIEF VALVE -
    Travel Motor 4060 PSI (280 bar)
38. COUNTERBALANCE SPOOL (Travel Motor)
39. TWO SPEED SHIFT SPOOL
40. SHUTTLE VALVE - DRIVE PRESSURE
41. BRAKE CONTROL SPOOL
42. SELECTOR VALVE - MANUAL
    (Bucket Cylinder or Secondary Auxiliaries)
43. CHECK VALVE (8)
44. LOAD CHECK VALVE - Boom Swing
    334 PSI (23 bar)
45. ISO/STANDARD VALVE
46. SLEW BRAKE SOLENOID VALVE
47. CHECK VALVE
    43.5 PSI (3 bar)

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

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