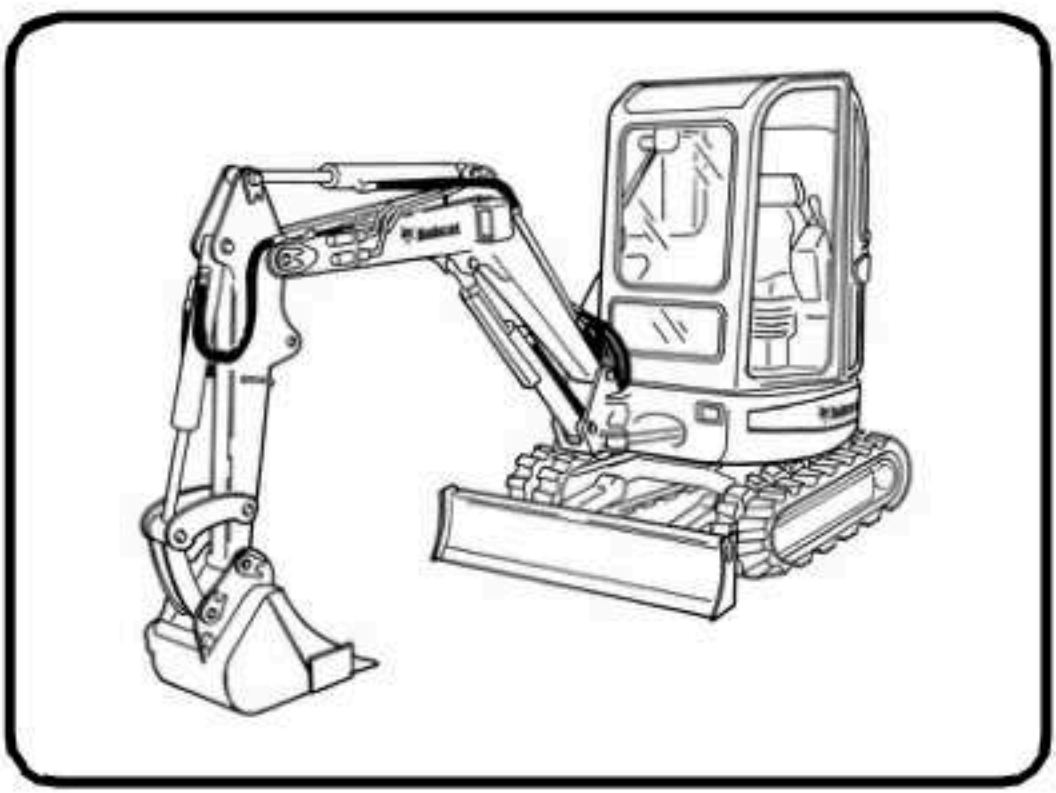
Bobcat®

Service Manual
425 Compact Excavator

S/N A1HW11001 & Above



Ingersoll Rand
Compact Vehicle Technologies

6904866 (7-07)

Printed in U.S.A.

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PRESSURE REDUCING VALVE

Testing And Adjusting The Pressure Reducing Valve

The pressure reducing valve supplies lower hydraulic pressure to joysticks.

The following tools will be needed for testing the pressure reducing valve:

MEL 1355 - Test Kit includes the following
MEL 1355-2 - 1000 PSI Gauge
MEL 1355-9 - Thermometer

Figure 20-33-1



The G diagnostic port (Item 1) **[Figure 20-33-1]** located on the end of the manifold block will be used to check the pressure reducing valve.

With the engine off and the key in the run position, lower the left console and move both joysticks to relieve hydraulic pressure.

Open the right side cover.

Install a 1000 PSI (69 bar) gauge on the P1 diagnostic port **[Figure 20-33-1]**.

Lower the control console and fasten the seat belt.

Start the engine and warm the hydraulic fluid to a minimum operating temperature of 150° F (66° C).

With the hydraulic fluid at operating temperature, run the engine at full RPM.

Engage the bucket curl circuit and fully curl the bucket.

The pressure reducing valve pressure should be as follows:

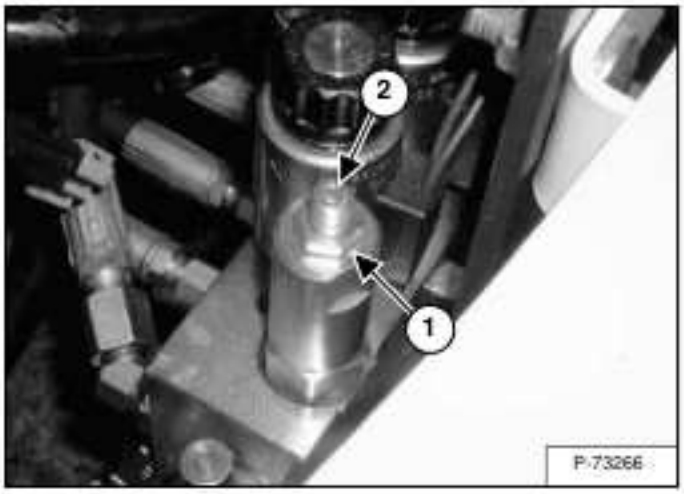
A target pressure of 435 PSI (30 bar) with an acceptable range of 406-450 PSI (28-31 bar).

Move the engine speed control to low idle speed.

Stop the engine.

With the engine off, and the key in the run position, lower the left console and move both joysticks to relieve hydraulic pressure.

Figure 20-33-2



Loosen the nut (Item 1) **[Figure 20-33-2]**.

Turn the adjustment screw (Item 2) **[Figure 20-33-2]** clockwise to increase the pressure or counterclockwise to decrease the pressure.

NOTE: 1/2 turn is approximately 30 PSI (2,1 bar).

Tighten the nut (Item 1) **[Figure 20-33-2]**.

Retest the pressure reducing valve after adjustment.

If the pressure is still incorrect, relieve hydraulic pressure and remove the pressure reducing valve from the manifold assembly for inspection or repair.

If the amount of oil pressure is at or over the service limits, it is an indication of worn O-rings and back-up rings on the pressure reducing valve or a stuck pressure reducing valve.

Inspect the port of the pressure reducing valve (Item 1) **[Figure 20-33-2]** on the manifold assembly to verify no damage. If damaged replace the manifold assembly.

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Troubleshooting

The following troubleshooting chart is provided for assistance in locating and correcting problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service personnel only.

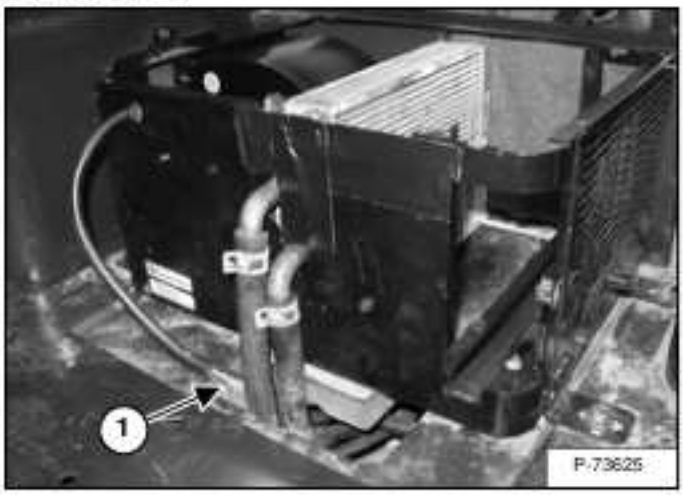
PROBLEM	CAUSE
Slow cranking speed	1, 2, 3, 4
Engine will not start	2, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 19, 27, 28, 29
Difficult to start	5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 25, 27, 28, 29
No power from engine	8, 9, 10, 11, 12, 13, 15, 16, 17, 21, 22, 24, 25, 26, 28, 29
Engine is mis-firing	8, 9, 11, 12, 13, 15, 16, 17, 21, 22, 24, 25, 26, 28
Too much fuel consumption	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Black exhaust	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Blue/white exhaust	4, 10, 15, 16, 17, 21, 23, 27, 29, 30, 50
Low oil pressure	4, 31, 32, 33, 34, 35, 37, 38, 39, 52
Engine knocking	13, 15, 16, 19, 22, 24, 25, 27, 29, 31, 40, 41, 53
Engine running rough	7, 8, 9, 10, 11, 12, 13, 17, 18, 22, 24, 25, 26, 29, 40, 53
Vibration	12, 13, 17, 21, 22, 25, 26, 29, 40, 42, 43
High oil pressure	4, 33, 36
Overheating	10, 12, 13, 15, 16, 20, 21, 40, 44, 45, 46, 47, 48, 51
Too much crankcase pressure	22, 27, 29, 30, 40, 49
Poor compression	10, 16, 21, 24, 25, 27, 28, 29, 30, 41, 53
Start and stop	9, 10, 11

KEY TO CORRECT THE CAUSE	
1. Battery capacity low	28. Worn valves and seat
2. Bad electrical connections	29. Broken or worn piston rings
3. Faulty starter motor	30. Worn valve stems or guides
4. Incorrect grade of oil	31. Worn or damaged bearings
5. Low cranking speed	32. Not enough oil in the oil pan
6. Fuel tank empty	33. Switch is defective
7. Faulty stop control operation	34. Oil pump worn
8. Plugged fuel line	35. Relief valve is stuck open
9. Plugged fuel filter	36. Relief valve is stuck closed
10. Restriction in the air cleaner	37. Broken relief valve spring
11. Air in the fuel system	38. Faulty suction pipe
12. Faulty fuel injection pump	39. Plugged oil filter
13. Faulty fuel injectors	40. Piston seizure
14. Broken injection pump drive	41. Incorrect piston height
15. Incorrect injection pump timing	42. Faulty engine mounting
16. Incorrect valve timing	43. Incorrect alignment of flywheel
17. Poor compression	44. Faulty thermostat
18. Plugged fuel tank vent	45. Restriction in water jacket
19. Incorrect grade of fuel	46. Loose alternator belt
20. Exhaust pipe restriction	47. Plugged radiator
21. Cylinder head gasket leaking	48. Plugged breather pipe
22. Over heating	49. Plugged breather pipe
23. Cold running	50. Damaged valve stem oil deflectors
24. Incorrect tappet adjustment	51. Coolant level too low
25. Sticking valves	52. Plugged oil pump pipe strainer
26. Incorrect high pressure fuel lines	53. Broken valve spring
27. Worn cylinder bores	

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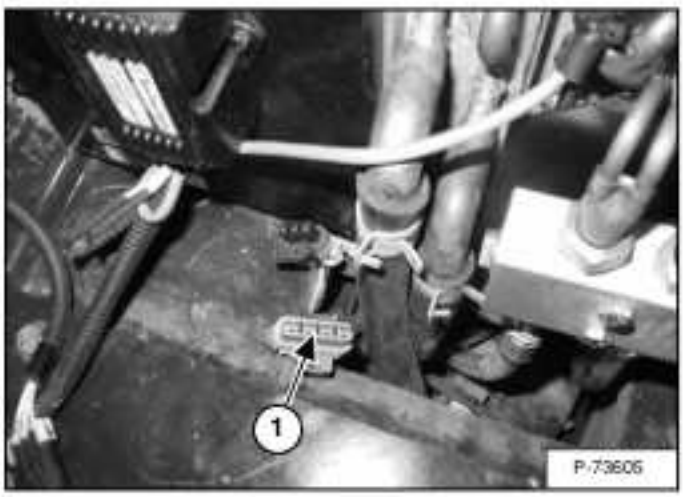
Electrical System

Figure 70-10-1



Disconnect the wire harness (Item 1) **[Figure 70-10-1]**.

Figure 70-30-2



Check the wire harness (Item 1) **[Figure 70-30-2]** for voltage to the blower fan.

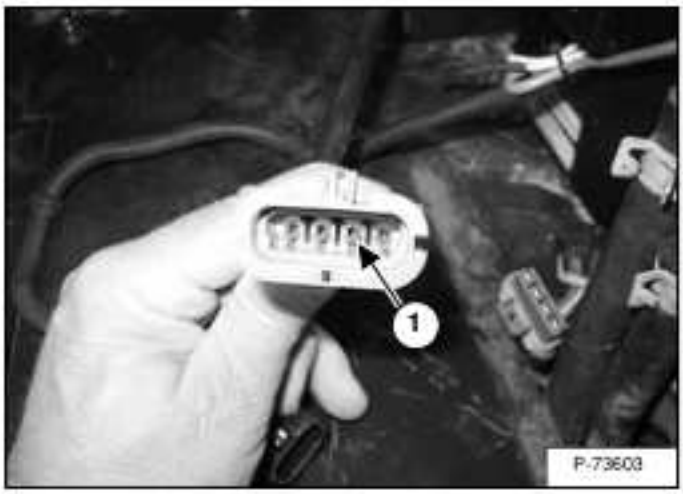
In the cab, place the blower switch in position 1. Check for voltage at the harness connector (Item 1) **[Figure 70-30-2]**, Pin 3. (YELLOW wire # 5000). The voltage should be 12 volts.

In the cab, place the blower switch in position 2. Check for voltage at the harness connector (Item 1) **[Figure 70-30-2]**, Pin 2. (RED wire # 1200). The voltage should be 12 volts.

In the cab, place the blower switch in position 3. Check for voltage at the harness connector (Item 1) **[Figure 70-30-2]**, Pin 1. (ORANGE wire # 1010). The voltage should be 12 volts.

If there is no voltage at the wiring harness, check the harness for broken wires.

Figure 70-30-3



If there is voltage at the wiring harness, check the resistance to the blower fan at the thermostat/blower fan wiring connector (Item 1) **[Figure 70-30-3]**.

Check the resistance between Pin 4 (BLACK wire # 2200) and Pin 3 (YELLOW wire # 5000).

Check the resistance between Pin 4 (BLACK wire # 2200) and Pin 2 (RED wire # 1200).

Check the resistance between Pin 4 (BLACK wire # 2200) and Pin 1 (ORANGE wire # 1010).

If there is no resistance value at any of these pins, replace the blower fan. (See BLOWER FAN on Page 70-60-1.)

If there is resistance value at any of the pins, check the climate controls at the control panel inside the Excavator cab.

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WIRING SCHEMATIC
425 (S/N A1HW11001 AND ABOVE)

(PRINTED NOVEMBER 2006)
V-0853

CONTROL MODULE CONNECTORS J1-J5

RIGHT HAND CONSOLE
HARNESS 7130798

LH CONSOLE
HARNESS
7130797

CAB HARNESS
7102833
(IF EQUIPPED)

ENGINE HARNESS
7130796

(EARLY MODEL FUEL SHUTOFF ONLY)

(LATER MODEL
FUEL SHUTOFF)

BATTERY

V-0853 (10-23-06)

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