320
322

Bobcat®

Service Manual

320 - S/N 223911001 & Above
322 - S/N 224011001 & Above
(G Series)



Ingersoll Rand
Compact Vehicle Technologies

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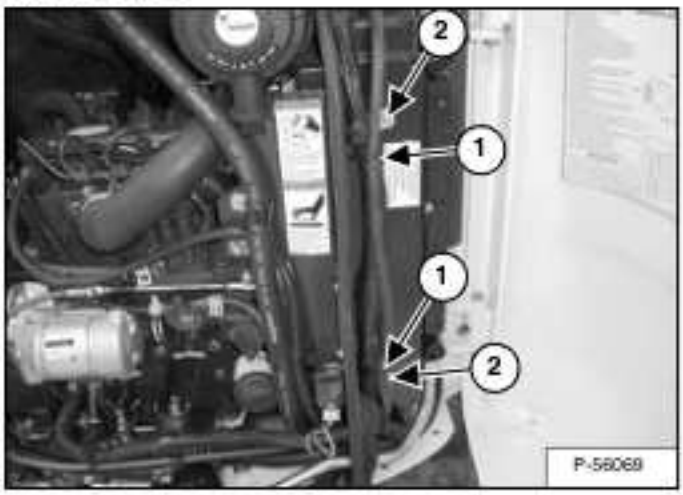
Troubleshooting The Cylinder Circuit

TROUBLESHOOTING THE CYLINDER CIRCUIT		
PROBLEM	**CAUSE**	**CORRECTION**
Cylinder inoperable.	Control console(s) raised.	Lower control console.
	Loose fittings or broken hoses.	Repair or replace.
	Lever linkage misadjusted.	Readjust.
	Control console lockout switch.	Readjust or replace.
	Cylinder internal leakage excessive.	Repair or replace.
	Control lever (joystick) manifold solenoid coil defective.	Test, repair or replace.
	Control lever (joystick) manifold solenoid valve defective.	Test, repair or replace.
	Control lever (joystick) manifold pressure reducing valve defective.	Test, repair or replace.
	Control lever (joystick) internal leakage excessive.	Repair or replace.
Cylinder force insufficient.	Main relief valve pressure too low.	Readjust or replace.
	Work port relief pressure too low.	Readjust or replace.
Cylinder speed too slow.	Lever linkage misadjusted.	Readjust.
	Cylinder internal leakage excessive.	Repair or replace.
	Control lever (joystick) manifold solenoid valve defective.	Repair or replace.
	Control lever (joystick) manifold pressure reducing valve defective.	Repair or replace.
	Control valve internal leakage excessive.	Repair or replace.
	Control lever (joystick) internal leakage excessive.	Repair or replace.
Cylinder drift excessive.	Cylinder internal leakage excessive.	Repair or replace.
	Work port relief valve seals leaking.	Test, repair or replace.
	Control valve internal leakage excessive.	Repair or replace.

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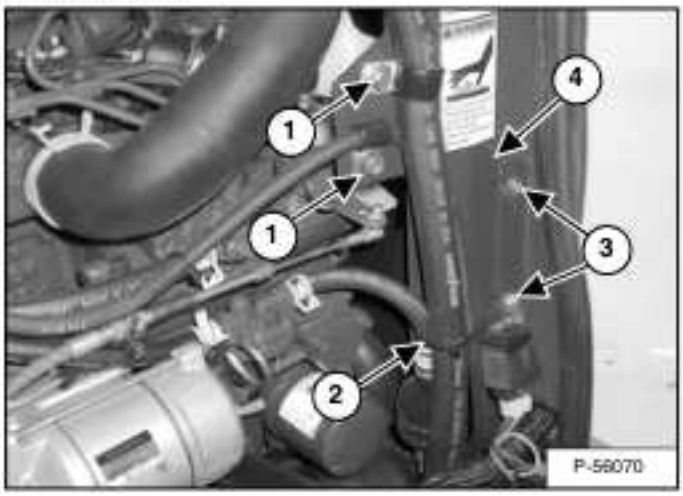
Removal And Installation (Cont'd)

Figure 60-40-4



Remove the tie straps (Item 1) and bolts (Item 2) **[Figure 60-40-4]** fastening the wire harness to the radiator.

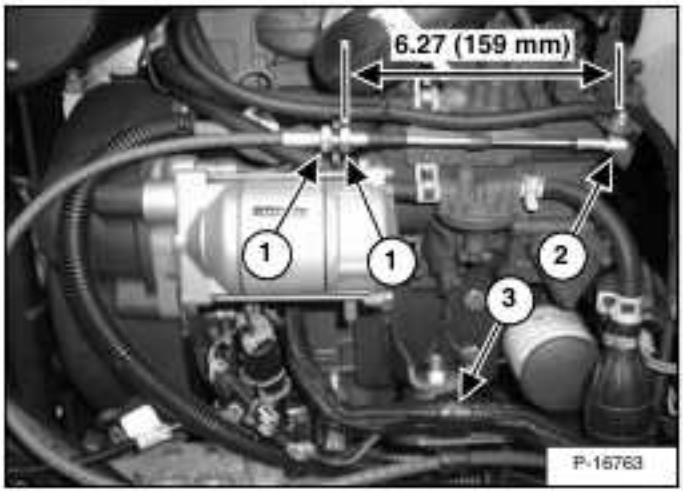
Figure 60-40-5



Remove the bolts (Item 1) and tie strap (Item 2) **[Figure 60-40-5]** on the fan guard.

Remove the nuts (Item 3) and remove the fan guard (Item 4) **[Figure 60-40-5]**.

Figure 60-40-6



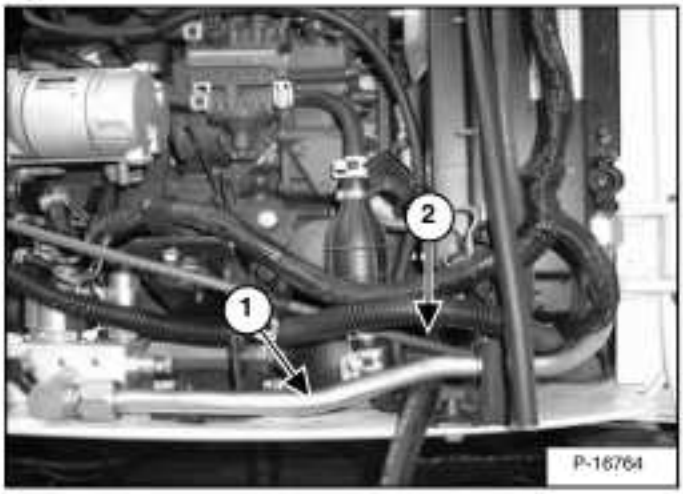
Loosen the nuts (Item 1) **[Figure 60-40-6]** fastening the cable to the bracket.

Disconnect the linkage (Item 2) **[Figure 60-40-6]** from the bracket.

Remove the nut and cable clamp (Item 3) **[Figure 60-40-6]** from the engine mount.

Installation: The linkage measurement from bracket to the center of the ball joint is 6.27 inches (159 mm).

Figure 60-40-7



Remove the tubeline (Item 1) **[Figure 60-40-7]** from the manifold assembly to the oil cooler. Remove the tubeline by pulling the tubeline through the radiator bracket from the engine side of the radiator.

Push the engine speed control cable (Item 2) **[Figure 60-40-7]** through the radiator bracket towards the tailgate. Move the cable to the side.

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

Valve Springs

Free Length	1.244 (31,6)
Allowable Limit	1.118 (28,4)
Fitted Length	1.063 (27)
Compress to Fitted Length	14.6 lb. (65 N)
Allowable Limit	12.3 lb. (55 N)
Inclination Allowable Limit	0.047 (1,2)

Rocker Arms

O.D. of Rocker Arm Shaft	0.4123 - 0.4128 (10,47 - 10,48)
I.D. of Rocker Arm	0.4134 - 0.4141 (10,5 - 10,52)
Clearance Between Rocker Arm & Shaft	0.0006 - 0.0018 (0,016 - 0,045)
Allowable Limit	0.006 (0,15)

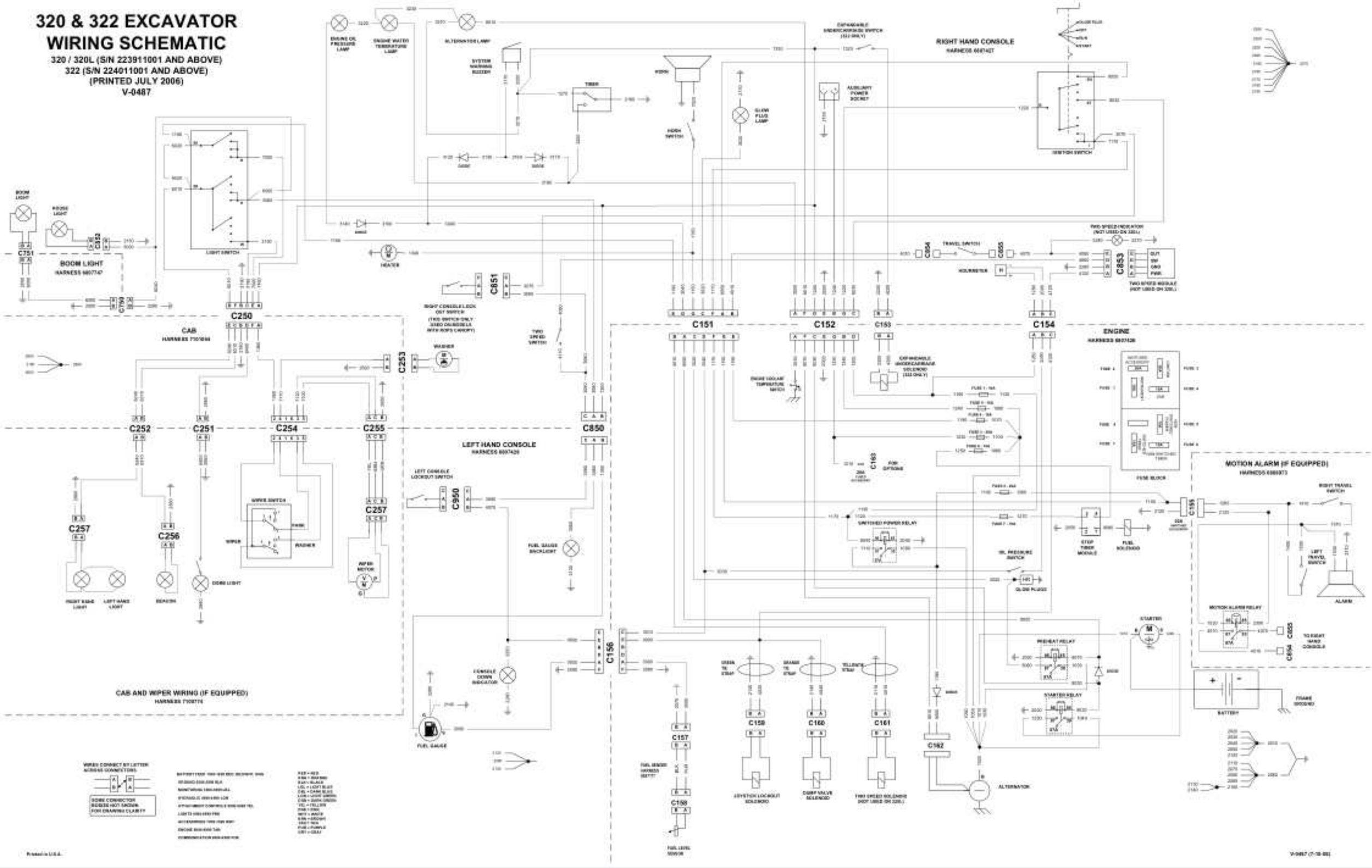
Camshaft

Journal O.D.	1.2966 - 1.2972 (32,93 - 32,95)
Bearing I.D.	1.2992 - 1.3002 (32,99 - 33,025)
Oil Clearance	0.002 - 0.004 (0,05 - 0,91)
Allowable Limit	0.006 (0,15)
Alignment Allowable Limit	0.0004 (0,01)
Cam Lobe Height	1.0583 (26,88)
Allowable Limit	1.056 (26,83)
End Clearance	0.002 - 0.005 (0,047 - 0,123)
Allowable Limit	0.006 (0,15)

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320 & 322 EXCAVATOR WIRING SCHEMATIC

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