688
Crawler

Service Manual

7-32651

CASE CONSTRUCTION

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688 EXCAVATOR QUICK HYDRAULIC TEST SHEET

START HERE

1 PREPARATION

Tools Required: Multi-Tester or two pressure gauges, one 600 bar (10000 PSI) and one 40 bar (600 PSI), one tachometer and one stop watch. (Refer to Special Tools Page 4).
Check the hydraulic oil level with the cylinders rods half-way out.
Oil temperature for checks 50°C (120° F).
To heat the oil: Engage the upperstructure locking lever. Run the engine at full speed and operate the swing control lever. Use an 8 mm Allen key and turn (H) counter clockwise until an audible squeal can be heard. Keep the control levers in this position until the oil reaches a temperature of 50°C (120°F).

YES

2 ENGINE R.P.M.

Hydraulic hand control in NEUTRAL: the rpm must be 2130 to 2270.

NO

Check the engine.

3 CHECK PILOT PRESSURE

Connect a Multi-Tester or a 40 bar (600 PSI) pressure gauge to M4 (refer to page 6). Hydraulic hand control in NEUTRAL: check the pilot pressure. It must be between 33 and 36 bar (478 and 522 PSI).

NO

Adjust the P35, see drawing.

YES

4 LOAD SENSING

Connect a Multi-Tester or a 40 bar (600 PSI) pressure gauge at M3. Refer to Page 6.
Note the pressure.
Connect Multi-Tester or a pressure gauge at M1. Refer to Page 6
Note the pressure.
The difference between M3 and M1 must be 18 to 20 bars (260 to 290 PSI).





NO

Adjust the load sensing valve (L.S.) .refer to Page 10

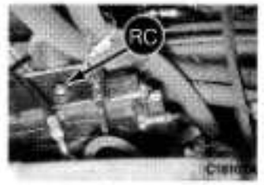
YES

5 TORQUE REGULATOR VALVE

Connect a Multi-Tester or a 600 bar (10000 PSI) pressure gauge to M1. Refer to Page 6. Operate the dipper retract control until the cylinder rod moves to stop position. Set the pressure of the circuit relief valve J (refer to Page 6) to 275 bar (3988 PSI) and check the running speed of the engine. It must not be lower than 2020 rpm.

NO

Adjust the torque regulator valve (RC).



YES

6 MAIN RELIEF VALVE

Connect a Multi-Tester or a 600 bar (10000 PSI) pressure gauge to M1. Turn LS1 one turn clockwise.
Turn the circuit relief valve K (Refer to Page 6) fully in.
Extend the dipper until the cylinder reaches stop position.
Pressure must be 435 to 455 bar (6309 to 6454 PSI).

NO

Adjust the main relief valve D.



YES

7 ATTACH. CIR. REL. VALVES

Connect a Multi-Tester or a 600 bar (10000 PSI) pressure gauge to M1. Check the relief valves of boom(s) E and F, bucket(s) G and H, dipper J and K. Set the pressure of 400 and 435 bar (5801 and 6309 PSI) for boom lowering and between 380 and 450 (5511 and 5874 PSI) for the other circuit relief valves.

NO

Adjust the circuit relief valves E, F, G, H, J and K. Refer to Page 16.

YES

8 CIRCUIT REL. VALVE (Travel)

Connect a Multi-Tester or a 600 bar (10000 PSI) pressure gauge to M1. Install blocks between the sprocket and frame. Refer to Tools To Be Made Page 5. Check circuit relief valves right travel (U and X) then left travel (V and W).

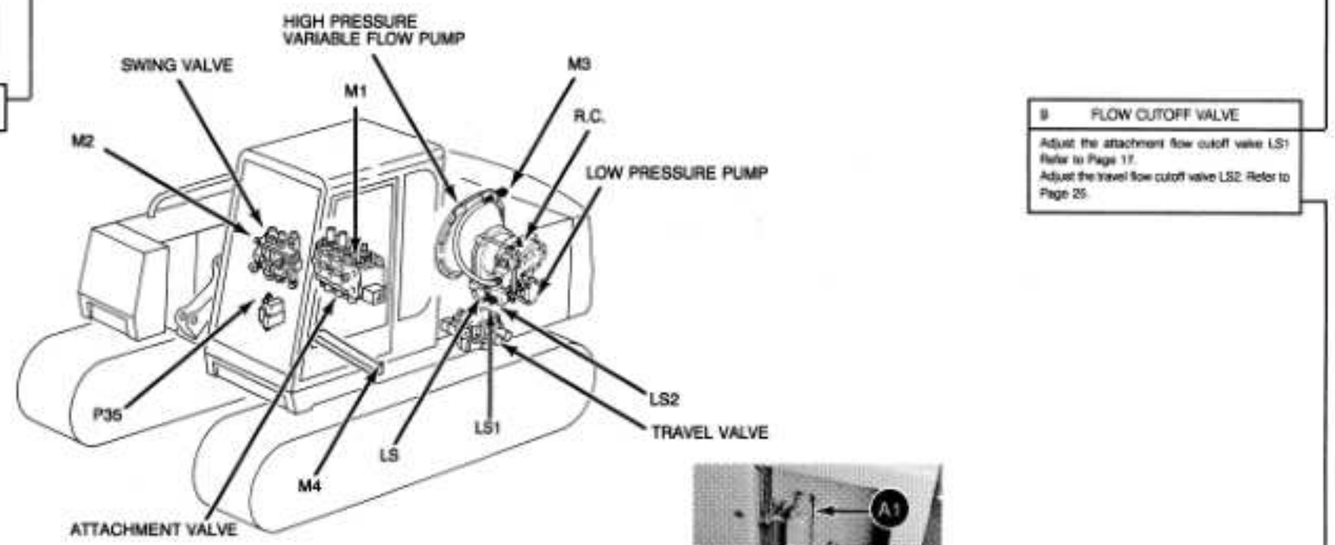
NO

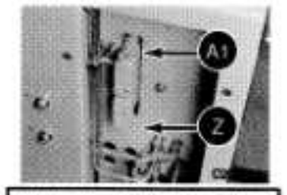
Adjust the circuit relief valves U, V, W and X. Refer to Page 22.

YES

9 FLOW CUTOFF VALVE

Adjust the attachment flow cutoff valve LS1 Refer to Page 17.
Adjust the travel flow cutoff valve LS2. Refer to Page 25.





Circuit Relief Valves:
E : Boom Up
F : Boom Down
G : Bucket Close
H : Bucket Open
J : Dipper In
K : Dipper Out
U : Right Travel Reverse
V : Left Travel Reverse
W : Left Travel Forward
X : Right Travel Forward
A1 : Right Swing
Z : Left Swing

Flow Adjustment
A : Boom
B : Bucket
C : Dipper
S : Right Travel
T : Left Travel

10. SWING CIRCUIT RELIEF VALVE

Connect a Multi-Tester or a 600 bar (10000 PSI) pressure gauge to M2. Engage swing lock. Feed the swing. Check the pressure for the swing circuit relief valves A1 and Z. Pressure must be 320 to 330 bar (4641 to 4786 PSI).

NO

Adjust the swing relief valves A1 and Z. Refer to Page 28.

YES

11. BOOM FLOW CONTROL VALVE

Close the bucket and extend the dipper. Put the bucket on the ground. Use a stop watch and measure the time to raise the boom to the end of its stroke.
Time to raise the boom = 3.3 to 3.5 seconds.

NO

Adjust the flow control valve A. Refer to Page 12.

YES

12. DIPPER & BUCKET FLOW CONTROL VALVE

Use a stop watch and measure the time to close the bucket. Measure the time to move the dipper in.
Time to close the bucket = 3.3 to 3.5 seconds.
Time to move the dipper in = 4.7 to 4.9 seconds.

NO

Adjust the flow control valves B and C. Refer to Page 12.

YES

13. FLOW CONTROL VALVE TRAVEL

Remove the blocks. Using the attachment, raise a track clear of the ground. Press down the forward drive pedal of the track concerned. Mark the track and count the number of revolutions in a minute. The number of revolutions must be 7. Do the same operation for the other track.

NO

Adjust the flow control valves S and T. Refer to Page 18.

Don 8-89092

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