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Service Bulletin

Filing Instructions	
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Binder Section: AGRICULTURAL TRACTORS	Document No.: EBT SB 053 91
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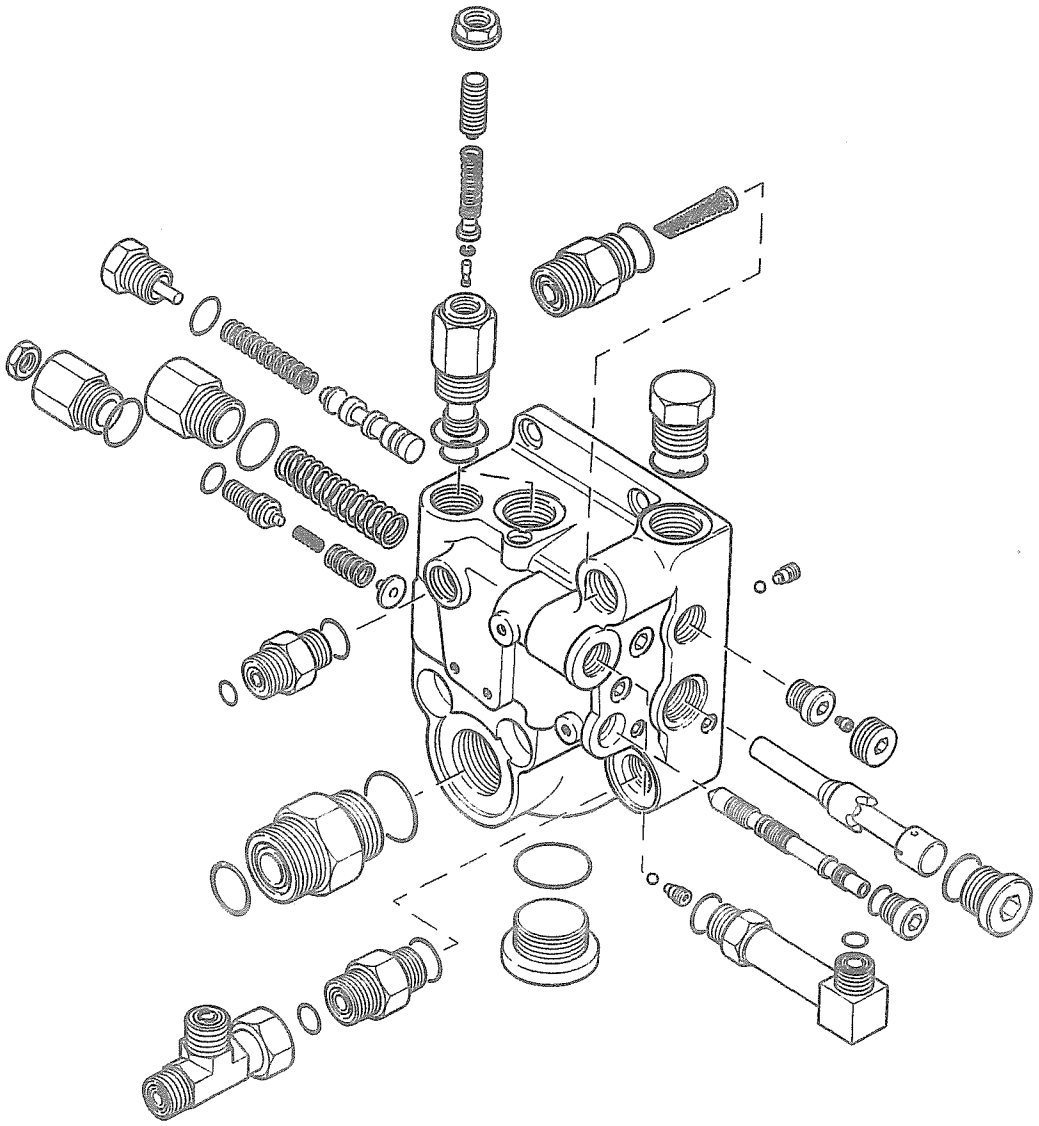
MODEL/SERIES: 5100 SERIES TRACTORS

SUBJECT: MAXXUM COMPENSATOR



The majority of all compensators have been returned for the following reasons:

- Unstable pressure limit valves, problem corrected with Modification Program A0191, problem corrected in production at tractor PIN number JJF10004100.
- Plugged high pressure limit valve orifice.
- Plugged steering dampening orifice.
- Broken spring in steering priority spool.
- Flow compensator spool misadjusted.
- Incorrect diagnosis (compensators test good).

In most cases, the problem can be corrected without replacing the compensator valve/pump.

The following things may affect compensator/pump performance:

1. Charge pump pressure or flow.

   - Low flow may cause main hydraulic pump to cavitate.
   - Low charge pressure will be read if lube relief valve is not closing properly.

2. Contamination in the steering signal (.047 inch orifice) line may cause the following problems.

   - If orifice/line is restricted, low pressure standby pressure will be high.
   - If orifice is plugged, main pump will go to steering relief pressure 2,500 PSI.
   - If line has floating debris in it, the steering may be jerky.

Note: Steering signal oil flows from main pump to hand pump, if line is removed at main pump, pump pressure should return to stand-by pressure. (400 - 600 PSI)

Note: Signal orifice was located in the hydraulic fittings on early tractors, it is now located in the line at the steering hand pump.

3. Contamination on the steering supply line (118" orifice located at hand pump fitting).

   - If plugged, no steering.
   - If orifice is missing, the powershift may default at low engine rpm. (Drop in regulated pressure) when rapidly steering.

4. Regulated leaks will effect compensator performance.

   - Measure flow out of the remotes at low engine RPM.
   - Cap off regulated supply lines and recheck flows.

5. X_4 check on position sensor housing.

   - If X_4 check is stuck in (open to tank) hitch will have limited lift capacity.
   - If X_4 check is closed (position sensor linkage broken) pump will go to high pressure when hitch is raised completely. See bulletin NTR SB 094 90.

THREE THINGS TO REMEMBER WHEN WORKING ON HYDRAULIC SYSTEMS:

1. KEEP IT CLEAN!
2. KEEP IT CLEAN!
3. KEEP IT CLEAN!

COMPENSATOR COMPONENT LOCATIONS

1. Steering priority spool, .031 inch dynamic sense orifice.

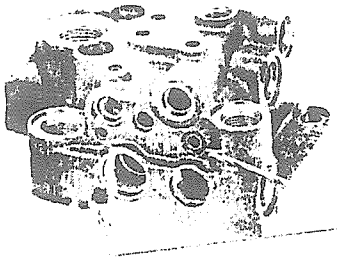
This orifice is needed for rapid steering. If plugged, steering will be sluggish.

2. Small spring, ball and check found on the non-spring end of steering priority spool.

Provides stability of steering spool during rapid steering.

- If spring breaks, steering will be jerky when turned.
- If spring breaks, it may bias spool inward, hitch may have priority over steering.

3. Steering priority spool dampening orifice.



- If plugged tractor may lose regulated pressure, remote pressure, and hitch pressure.
- Tractor may also have erratic steering.

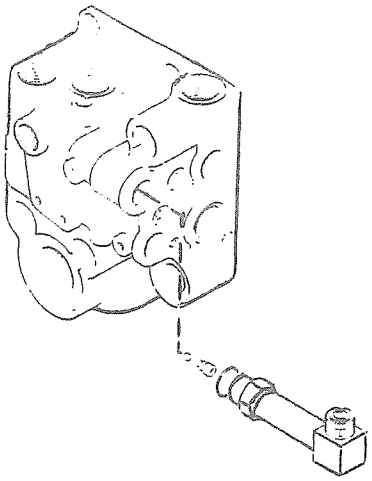
4. Hitch isolation check.

Isolates hitch from steering and remotes.

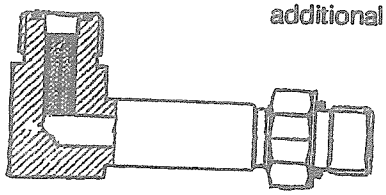
- If X4 check is misadjusted or stuck open, hitch will not lift unless remote valve is stroked on demand.
- If plugged (stuck closed), tractor will have limited hitch lift capacity.
- If stuck open, tractor will have good hitch performance but limited remote pressure & flow.
- Low steering pressure will be read when wheels are turned and held against stops.
- Steering will be sluggish.

5. Remote isolation check.

ABOVE 10,000 PSI RANGE



Note: Screen fitting part number 1534508C1 can be ordered and installed to provide additional orifice protection.



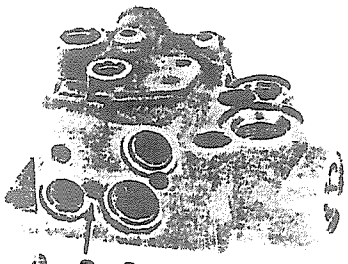
Note: A magnet must be attached to Hex wrench when removing check to prevent ball from dropping into compensator valve.

Isolates steering signal pressure from remote signal pressure.

- If check/ball leaks, the pump will respond to lowest signal pressure.
- If stuck open (biased toward steering), steering will be good, but remote pressure and flow may be low. Remote pressure will be higher than stand-by.
- If stuck close (biased toward remote), remote pressure and flow will be good, but steering will perform poorly. (Steer pressure should equal stand-by pressure with remotes in neutral).

6. High pressure limit valve supply orifice.

Orifice Located
Behind Center Plug



CAUTION:
REMOVE ORIFICE TO CLEAN DIRT CAN SIT BEHIND ORIFICE

Orifice allows flow to the compensator spool and high pressure limit valve.

<u>If plugged</u>:

A. Compensator will not produce high pressure and/or flow when remote valve is turned on or dead headed.

B. Compensator will not produce pressure when steering is turned to lock.

<u>If partially plugged</u>:

A. Pump may be slow to react.

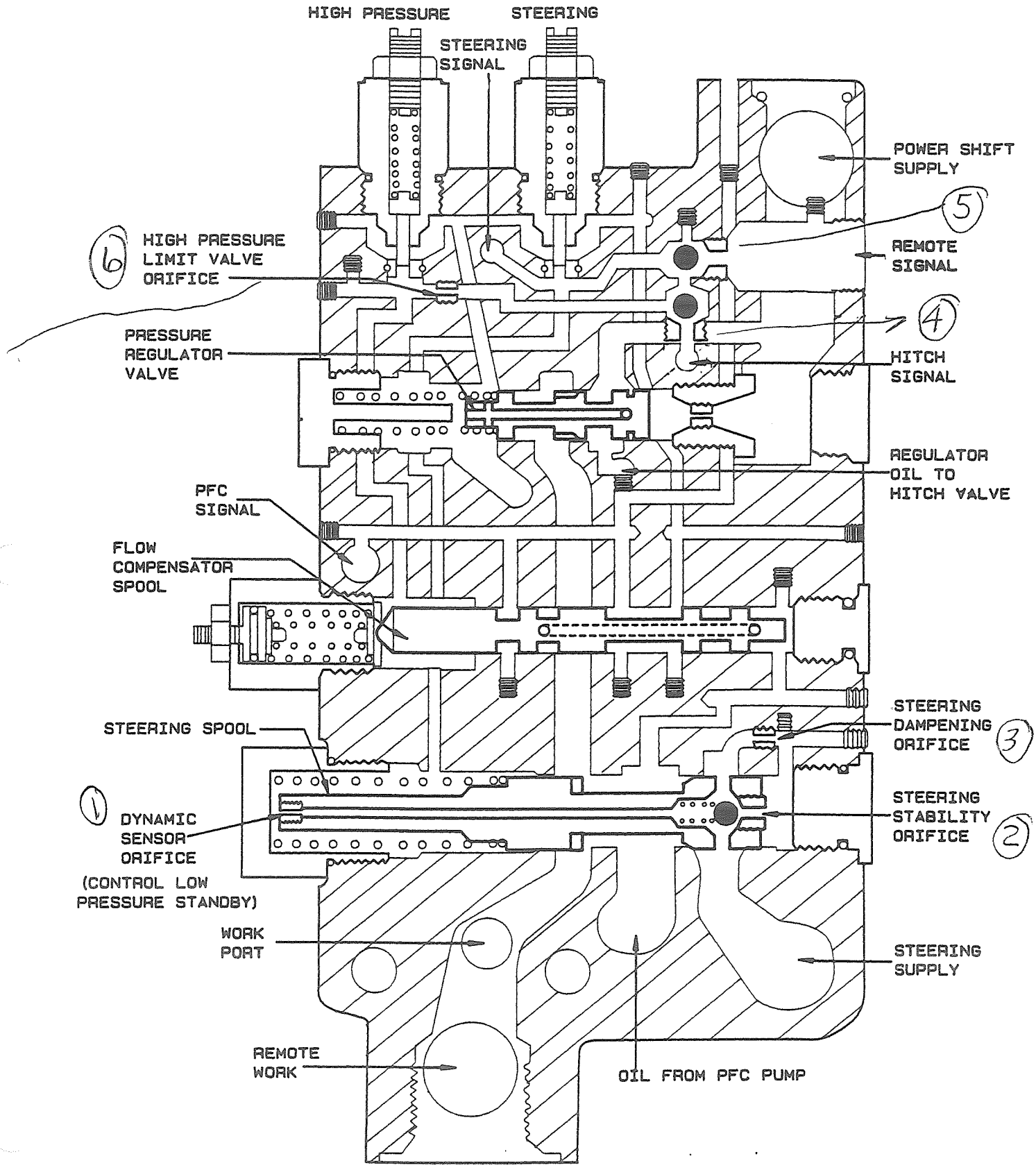
B. Pump may not reach high every time remote valve is dead headed.

C. Regulated pressure may drop to -0- PSI when steering to stop.

D. Remote valve pressure may drop off when remote valve is dead headed.

Note:
- Problem may be noticed when adjusting pressure limit valves.
- Problem may be noticed when adjusting compensator spool.

COMPENSATOR CROSS SECTION



Compensator Pressure Limit Valve Adjustment

STEP 1

Determine if the compensator is in need of repair.

STEP 2

Clean and remove all exterior dirt from compensator.

STEP 3

Mark high pressure limit valve and steering relief to avoid mix-up.

STEP 4

Make necessary repairs and install compensator valve on tractor.

STEP 5

Apply the parking brake and remove F/R relay to prevent accidental movement.

STEP 6

Disconnect the remote valve signal line at the elbow in the compensator valve. Turn the elbow 90° counter clockwise.

STEP 7

Install the Tee fitting (CAS 2009-5) onto the elbow and connect the remote valve signal line to the Tee fitting.

STEP 8

Remove the plug from the bottom of the compensator and install a quick coupler (CAS 2009-2).

STEP 9

Remove the plug from the steering supply line tee and install a quick coupler (215048).

STEP 10

Rework a 4mm Allen wrench by cutting or grounding off approximately 1/2 the length of the short leg of the Allen wrench. The length reduction will allow the wrench to fit between the transmission case and the valve.

STEP 11

Install flow meter in number one remote valve and turn remote valve flow control spool to the Maxxum flow setting.

NOTE: **Make sure the hoses on the flow meter are long enough so that the flow meter can be read from under the tractor while you are making compensator valve adjustments.**

Compensator Pressure Limit Valve Adjustment - Cont'd

STEP 12

Heat oil up to 129°F, 49°C

While warming the oil temperature to 129°F (49°C) at high idle, observe the gpm on the flow meter. Turn flow compensator spool adjustment screw out until the flow drops, then screw in until the flow is in the 15 to 19 gpm range, or, until the flow stabilizes. Do not continue to screw in after the gauge needle stops moving. If necessary, back the screw out and start again.

STEP 13

Install a 3000 PSI pressure gauge into the quick coupler (CAS 2009-2) in the bottom of the compensator valve. run the engine at 2200 rpm, with No. 1 remote valve in Neutral position and No. 2 remote valve in the Work position. Record the pressure. Adjust the pressure on the main pressure limit valve until the gauge reads between 2750 and 2800 PSI (190-193 bar).

STEP 14

Remove the pressure gauge from the compensator and install to the quick coupler (215048) in the steering supply line. Run the engine at 2200 rpm, with the remote valves in the Neutral position, turn the steering to full lock and hold against the stops. Adjust the pressure on the steering pressure limit valve until the gauge reads between 2450 and 2500 PSI (169 - 172 bar).

NOTE: The difference between the main system and steering system pressure must be 250 PSI (17 bar) minimum, 300 PSI (21 bar) maximum.

STEP 15

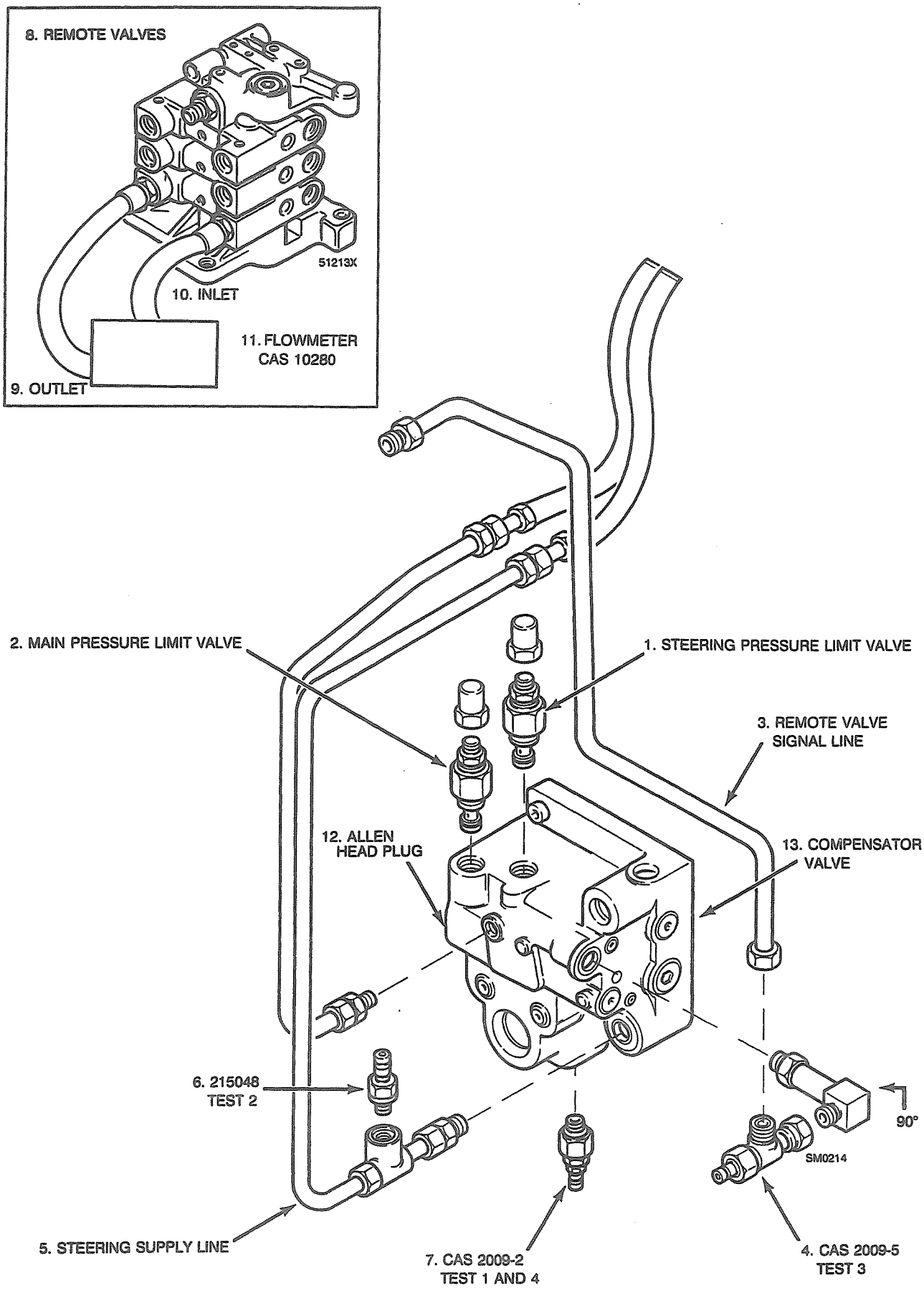
You will need two (2) matched 3000 PSI gauges for the following adjustment.

Remove the pressure gauge from the steering supply line and install to the quick coupler (CAS 2009-5) in the remote valve signal line.

Install 2nd matched gauge onto the quick coupler (CAS 2009-2) in the bottom of the compensator valve. Run the engine at 2200 rpm, with No. 1 remote valve in the Work position, adjust the #1 remote valve flow control knob to read 8 to 9 gpm through the flow meter at 0 PSI (0 bar) then restrict the flow meter until a reading of 1000 PSI (69 bar) is read on the pressure gauge in the remote valve signal line.

STEP 16

Read the gauge installed in the bottom of the compensator, adjust compensator spool using 4mm Allen wrench until 1300 PSI (90 bar) is read on the gauge. (300 PSI above signal line pressure recorded in Step 15).


8. REMOTE VALVES
51213X
10. INLET
11. FLOWMETER
CAS 10280
9. OUTLET
2. MAIN PRESSURE LIMIT VALVE
1. STEERING PRESSURE LIMIT VALVE
3. REMOTE VALVE
SIGNAL LINE
12. ALLEN
HEAD PLUG
13. COMPENSATOR
VALVE
6. 215048
TEST 2
90°
SM0214
5. STEERING SUPPLY LINE
7. CAS 2009-2
TEST 1 AND 4
4. CAS 2009-5
TEST 3

510 LOADER: MAXXUM POWER BEYOND END COVER CHANGE

There are three (3) versions of the power beyond end cover for the Maxxum:

Version 1 - P/N 1346019C1, Rev. A
Version 2 - P/N 1346019C1, Rev. B
Version 3 - P/N 1346336C1, Rev. C

Versions 1 and 2 are depicted in Figure 1, on page 2. Version 3 is illustrated in Figure 2.

Please refer to the chart below for an explanation of the differences between versions.

				Recommended Parts:	
Version	Port Location	Size	Function	Fitting	O-Ring
1	A	9/16-18	Signal	218-5105	237-6006
1	B	1-1/16-12	Supply	218-5119	237-6012
1	C	1-3/16-12	Return	218-5065	237-6014
2	A	9/16-18	Signal .	218-5105	237-6006
2	B	1-1/16-12	Supply	218-5119	237-6012
2	C	1-1/16-12	Return	218-5063	237-6012
3	D	9/16-18	Signal	218-5057	237-6006
3	E	1-1/16-12	Supply	218-5063	237-6012
3	F	1-1/16-12	Return	218-5063	237-6012

The current 510 Loader valve kits contain parts for version 1 end cover. These fittings will be replaced by those recommended for version 3.

Part number threaded studs needed for stacking four remote valves plus the power beyond end cap.

P/N 1986938C1 (12mm) - two needed
P/N 1334613C2 (10mm) - one needed

SPACER WASHERS NO LONGER USED

FIG. 1

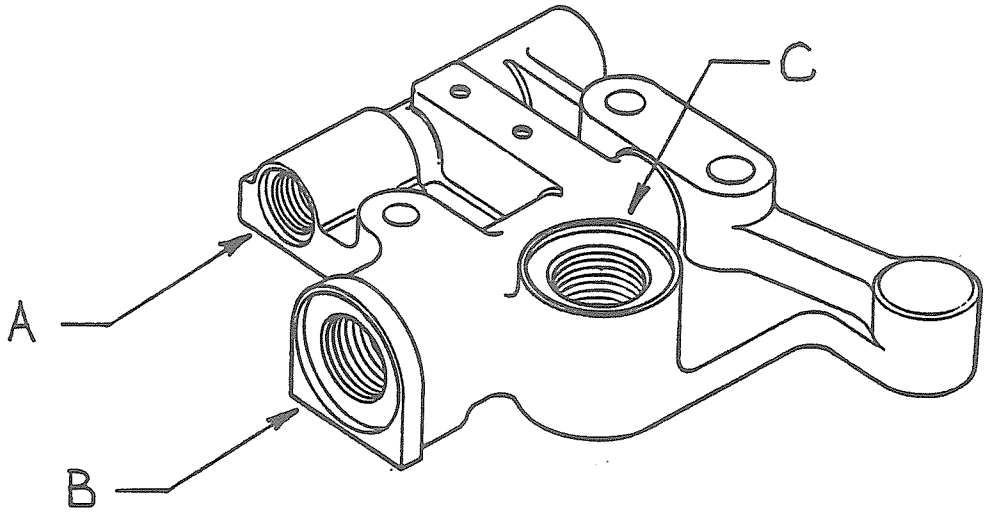


FIG 2