Magnum 235
Magnum 260
Magnum 290
Magnum 315
Magnum 340
Powershift Transmission (PST)
Tractor

PIN ZCRD02585 and above

SERVICE MANUAL

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CASE IH AGRICULTURE

MidWestTech | Case Magnum 235, 260, 290, 315, 340 PST Tractor Service Manual | Publication 47533563
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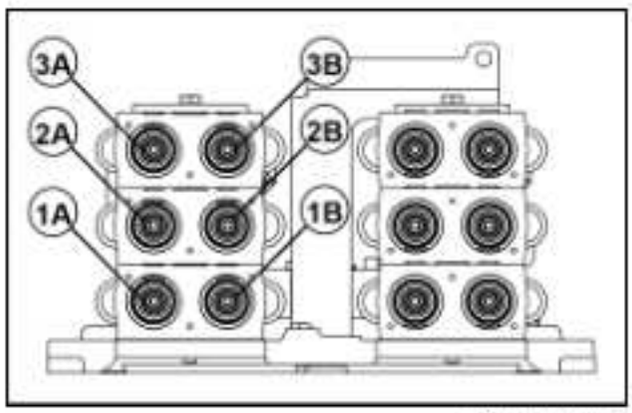
Pump Standard pressure/flow compensating pump - Flow test - At the remote couplers

Magnum 235 [ZCRD02585 -] Full Powershift Transmission, Magnum 260 [ZCRD02585 -] Full Powershift Transmission, Magnum 290 [ZCRD02585 -] Full Powershift Transmission, Magnum 315 [ZCRD02585 -] Full Powershift Transmission, Magnum 340 [ZCRD02585 -] Full Powershift Transmission

DATAR flow meter, DATAR scope, DATAR pressure sensor, electronic service tool (EST) and two **25 mm** (**1.0 in**) hoses with a minimum working pressure of **206 bar** (**3000 psi**) are required for this test. If DATAR equipment is not available use flowmeter **380001806**.

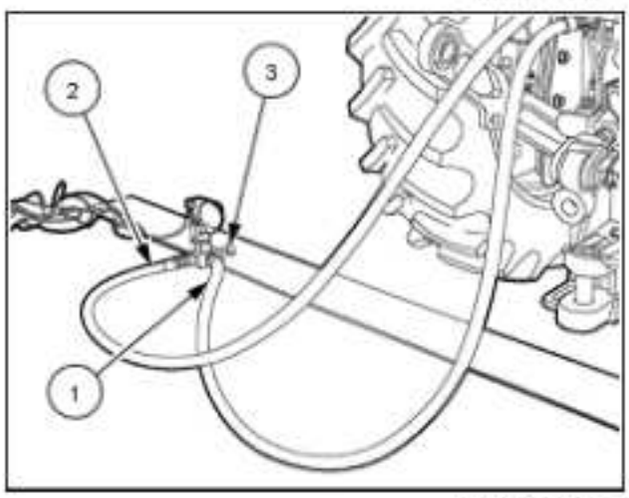
NOTE: *Perform this test when all remote circuits and/or the hitch system are not operating at full flow, as indicated by slower operation of remote system or a slower hitch raise time. This is a quick test to determine the general condition of the pump.*

1. Set variable flow controls to the maximum flow position for the remote valves.
2. Set the valve timer control to the maximum position.
3. Pushing the number 1 control lever forward directs pump flow to the left port of the hydraulic coupler (1A). Pulling the control rearward directs pump flow to the right port of the hydraulic coupler (1B).



RCELI1CCH003AAA 1

4. Connect the DATAR flow meter inlet hose **(1)** to coupler 1A for the first remote section. Connect the DATAR outlet hose **(2)** to coupler 1B for the first remote section.



RCPH11CCH009AAE 2

5. Turn the load control **(3)** on the DATAR flow meter to the no load position, fully counter clockwise.
6. Start and run the engine at **1500 RPM**.
7. Move the first remote lever forward to the detent position.
8. Set the load control **(3)** on the DATAR flow meter to approximately **103 bar** (**1500 psi**) and heat the transmission oil to a minimum of **49 °C** (**120 °F**).
9. Increase engine speed to **2000 RPM**. Individually flow rate each remote valve section. Adjust the load control on the flowmeter to **69 bar** (**1000 psi**).

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Wire harnesses - Electrical schematic frame 89 - Secondary steering system -

Magnum 235 [ZCRD02585 -] Full Powershift Transmission, Magnum 260 [ZCRD02585 -] Full Powershift Transmission, Magnum 290 [ZCRD02585 -] Full Powershift Transmission, Magnum 315 [ZCRD02585 -] Full Powershift Transmission, Magnum 340 [ZCRD02585 -] Full Powershift Transmission

Connector **X-369**	To chassis harness
Connector **X-924**	Secondary steering bypass
Connector **X-926**	Secondary steering pump contactor
Connector **X-927**	Secondary steering pump contactor
Connector **X-928**	Secondary steering pump contactor
Connector **X-929**	Secondary steering pump motor
Connector **X-930**	Secondary steering pump contactor
Connector **X-930A**	Secondary steering pump contactor
Connector **X-932**	Secondary steering pump motor
Connector **X-990**	Auxiliary steering motor relay
Connector **X-992**	In-line secondary steering fuse F-075 **10 A**
Connector **X-993**	Diode pack
1	Secondary Steering Pump Assembly

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4169-Rear remote no. 5 - spool not in neutral at key on

Magnum 235 [ZCRD02585 -] Full Powershift Transmission, Magnum 260 [ZCRD02585 -] Full Powershift Transmission, Magnum 290 [ZCRD02585 -] Full Powershift Transmission, Magnum 315 [ZCRD02585 -] Full Powershift Transmission, Magnum 340 [ZCRD02585 -] Full Powershift Transmission

NOTE: *Follow the maintenance schedules in operator manual for hydraulic fluid and filter change intervals. Improper maintenance can lead to sticking valve spools.*

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:
See above.

Possible failure modes:

1. Ignition switched off during EHR valve operation
2. Stuck spool due to contamination
3. Faulty EHR valve

Solution:

1. Check for other active EHR error code(s).

   Make a note of the error code(s), clear the error code(s) and test the system for normal operation.

   A. Fault code does not re-display. Return unit to field operation and monitor.

   B. Fault codes re-displays. Continue to step **2**.
2. Check the system oil for contamination.

   A. Oil is not contaminated. Continue with step **4**.

   B. Oil is contaminated. Continue to step **3**.
3. Replace oil. Attempt to operate the remote section repeatedly, checking if normal operation returns.

   A. If normal operation returns, return unit to field operation.

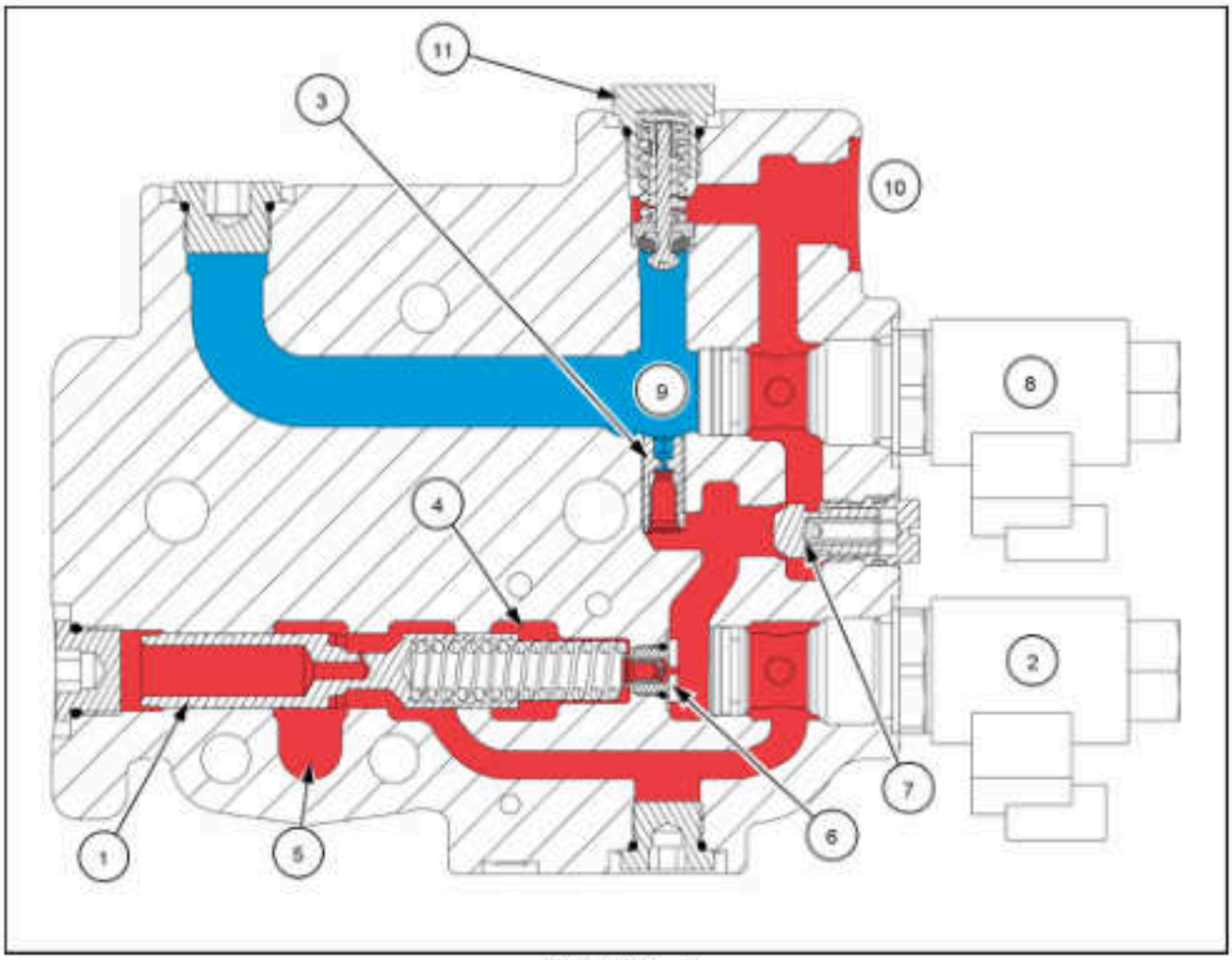
   B. If normal operation does not return,continue with step **4**.
4. Download the correct level of software into the EHR valve and configure the EHR valve.

   Test valve operation.

   A. Fault code does not re-display. Return unit to field operation.

   B. Fault code re-displays. Install and configure a new EHR valve section.

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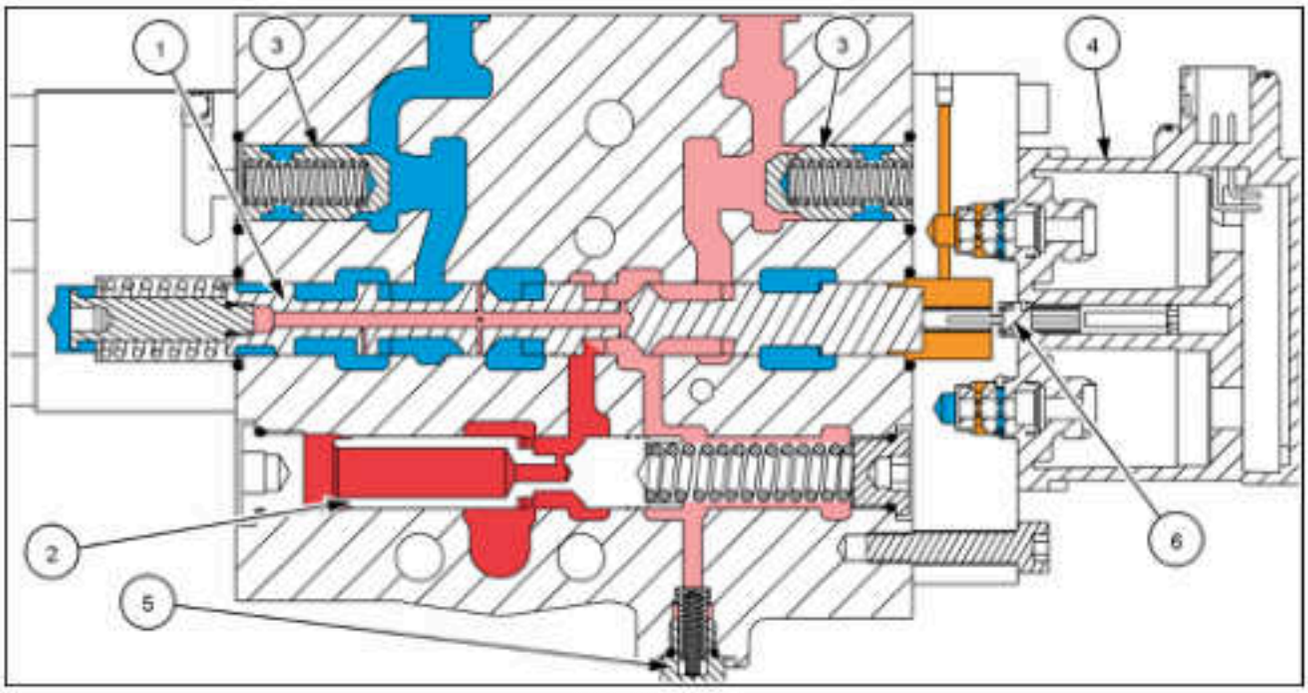
Raise position

PFC pump pressure	Return to tank pressure
Trapped oil	
1. Flow control spool	7. Load check
2. Raise solenoid	8. Lower solenoid
3. Screened orifice plug	9. Return to tank
4. Pilot signal to compensator	10. Hitch cylinders
5. PFC pump supply	11. Relief valve
6. Check/orifice plug	

Lowering function

To lower the hitch, the lower proportional solenoid valve must be energized by the tractor control unit (TCU). The amount of spool movement depends on the amount of current supplied by the controller to the proportional solenoid. Once the lower solenoid is energized, the solenoid valve shifts, opening a flow path directly back to tank.

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PFC pump pressure	Return to tank pressure
Remote valve operating pressure	Trapped oil
Pilot pressure	
1. Main valve spool	4. Extend/retract solenoid valve assembly with micro processor
2. Flow control spool	5. Signal check
3. Lock check	6. Spool position sensor

Retract position

When the remote control lever is moved to the retract position, the main valve spool shifts to the right a fixed distance by supply pressure from the retract solenoid valve. The main spool position is based on input from armrest controller, spool position sensor and the extend/retract valve solenoid assembly with micro processor. The position of the main valve spool determines the flow rate to the retract port.

At the same time, work pressure is communicated to the signal check through the center drilled passage in the main valve spool. The signal check is forced off the seat and signal pressure is directed to the pump compensator to increase pump flow.

Also as the main spool begins to shift, any pressure trapped on the spring end of both lock checks is drained to tank. The flow exiting the retract port is now in a free flow condition shifting the lock check and out the retract port: Return oil from the extend coupler is directed into the extend port, shifting lock check to right, continuing past the spool and returning to tank.

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Hydraulic schematic 47513531 — Sheet 2— Power shift Transmission.

	PFC PISTON PUMP
	REGULATED CIRCUIT PUMP
	CHARGE /LUBE PUMP FLOW
	RETURN TO TANK/SUMP
	OIL COOLER / FILTRATION AUX. CHARGE PUMP FLOW
	TWIN FLOW PUMP MEGA FLOW PUMP
1. REMOTE SECTION	32. PARK CLUTCH
2. LOAD SENSE DIAGNOSTIC	33. INLET BRAKE VALVE
3. PILOT / HITCH DRAIN	34. PRIORITY REGULATOR VALVE
4. PILOT SUPPLY	35. THERMAL BYPASS VALVE
5. RETURN	36. OIL COOLER
6. SUPPLY	37. LUBE REGULATOR
7. HITCH VALVE	38. PRESSURE AND FLOW COMPENSATED (PFC) PISTON PUMP
8. NOT USED	39. FILTER
9. HITCH CYLINDERS	40. PTO CLUTCH LUBE
10. RETURN	41. ODD / EVEN LUBE
11. SUPPLY	42. DROP BOX LUBE
12. SIGNAL	43. CREEP DRIVE LUBE
13. CASE DRAIN	44. MASTER CLUTCH LUBE
14. POWER BEYOND MANIFOLD (OPTIONAL)	45. RIGHT BRAKE / DIFFERENTIAL LUBE
15. PTO / DIFFERENTIAL LOCK VALVE	46. MFD / RANGE LUBE
16. PTO CLUTCH / BRAKE	47. LEFT BRAKE / DIFFERENTIAL LUBE
17. DIFFERENTIAL LOCK CLUTCH	48. TO PARK BRAKE VALVE SOLENOID
18. BEVEL PINION LUBE	49. SERVICE BRAKE
19. LUBE SUPPLY	50. MASTER CLUTCH
20. MFD CLUTCH	51. INLET
21. LOW CLUTCH	52. MASTER CLUTCH INCHING VALVE
22. MEDIUM CLUTCH	53. PARK / EMERGENCY BRAKE
23. HIGH CLUTCH	54. BRAKE RELEASE PUMP
24. REVERSE CLUTCH	55. STEERING HAND PUMP
25. FIFTH CLUTCH	56. STEERING CYLINDERS
26. THIRD CLUTCH	57. BYPASS VALVE
27. FIRST CLUTCH	58. BRAKE VALVE
28. EVEN CLUTCH	59. NOTE: SWITCH IS OPENED WHEN PEDAL REACHES FULL STROKE WHEN HYDRAULIC POWER IS LOST
29. ODD CLUTCH	60. ACCUMULATOR
30. CREEPER CLUTCH	61. TWIN FLOW PUMP MEGA FLOW PUMP
31. TRANSMISSION CONTROL VALVES	62. TWIN FLOW MANIFOLD PLUGS MEGA FLOW MANIFOLD PLUGS

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