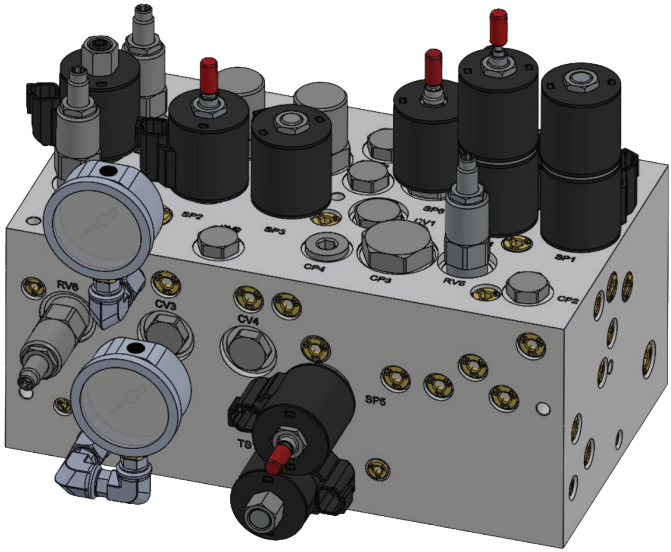
Muncie® Power Products

KEEP IN VEHICLE
READ OPERATING INSTRUCTIONS
INSIDE BEFORE OPERATING PTO

HP022451-21

INSTALLATION AND OPERATOR'S MANUAL

FEATURES • INSTALLATION • SERVICE



Muncie Power Products, Inc.

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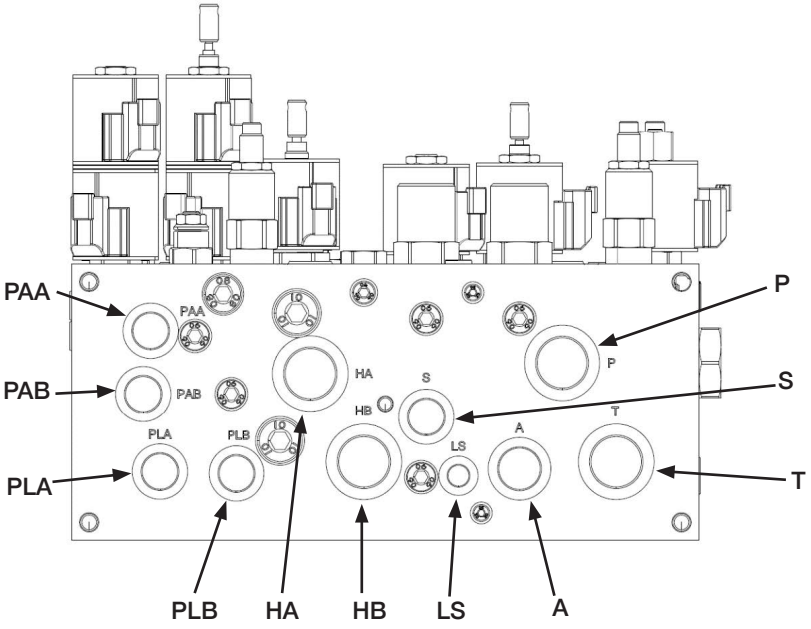
FEATURES

- **Cartridge valve manifold assembly configurable for open or closed center operation.**
- **Compensated load sense design provides stable flow control during pressure fluctuations.**
- **Pressure relief redundancy for maximum system protection.**
- **All valve coils are configured for 12 VDC continuous duty operation. Valve coils are of proportional design.**
- **Manual override functionality embedded on flow controls.**
- **Max Inlet Flow 40 GPM/Max System Pressure = 3,000 PSI**

FUNCTION	MAX FLOW	DEFAULT RELIEF SETTING	MAX RELIEF SETTING
PLOW RAISE	6 GPM	2,500 PSI *	3,000 PSI
PLOW LOWER	6 GPM	750 PSI	1,300 PSI
PLOW ANGLE	6 GPM	2,500 PSI *	3,000 PSI
HOIST RAISE	18 GPM	2,500 PSI	3,000 PSI
HOIST LOWER	18 GPM	1,000 PSI	1,000 PSI
AUGER	10 GPM	2,000 PSI	3,000 PSI
SPINNER	10 GPM	2,000 PSI	3,000 PSI

*Plow Raise and Plow Angle functions are related to the electrical relief setting – Assume controller TS2 setting is preset at 2500 PSI.

HYDRAULIC WORKPORTS



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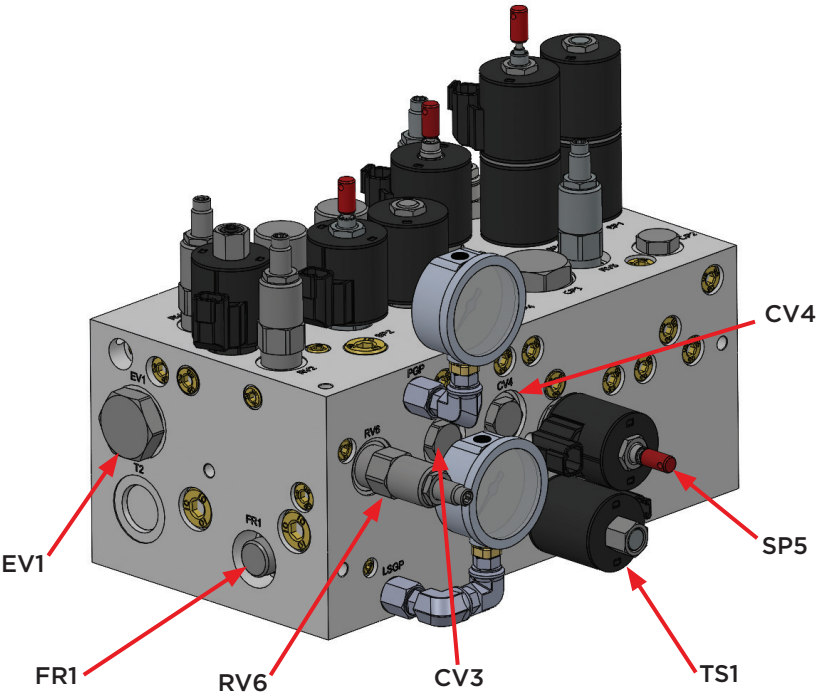
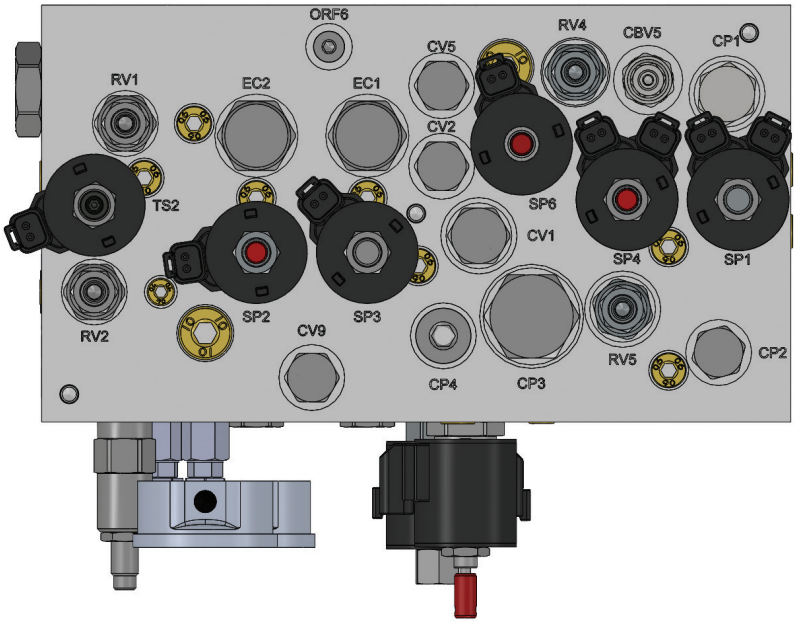
DESIGNATION	DESCRIPTION	SIZE (SAE)
PAA	PLOW LEFT	08
PAB	PLOW RIGHT	08
PLA	PLOW UP	08
PLB	PLOW DOWN	08
HA	HOIST UP	12
HB	HOIST DOWN	12
LS	LOAD SENSE	04
A	AUGER	10
T	TANK	12
S	SPINNER	08
P	PUMP	12

CARTRIDGE, DESIGNATIONS, PART NUMBERS



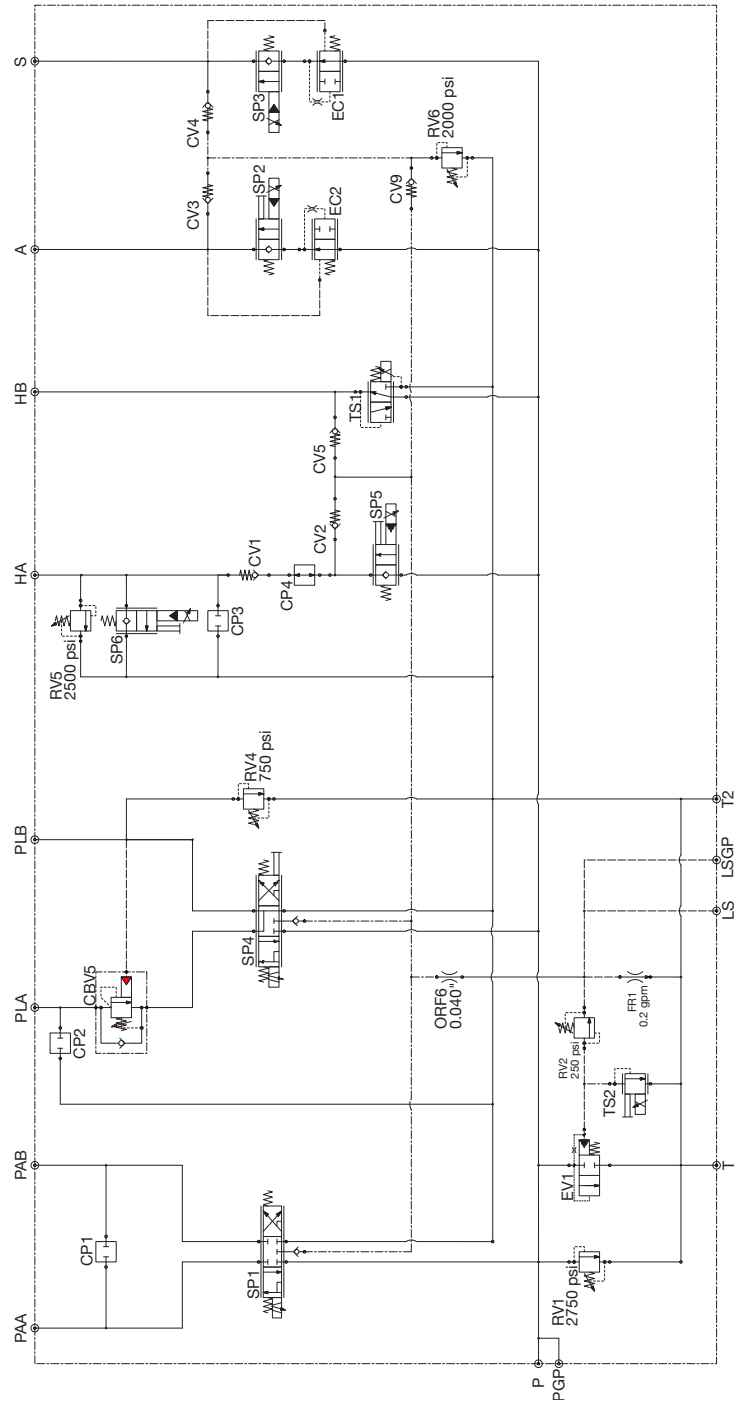
DESIGNATION	FUNCTION	PART NUMBER
CV3, CV4	SPREADER LS CHECKS	NXCV08-20-0-N-04
EV1	UNLOADING COMPENSATOR	NXEV16-S34-0-N-10
FR1	LOAD SENSE DRAIN	NXFR08-20F-0-N/0.2
RV6	SPREADER RELIEF	NXRV10-22A-0-N-35/20
SP5	HOIST RAISE FLOW CONTROL	NXSP12-20-M-0-N-12ER
TS1	DOWNSIDE PRESSURE CONTROL	NXTS10-36C-0-N-12ER

CARTRIDGE, DESIGNATIONS, PART NUMBERS

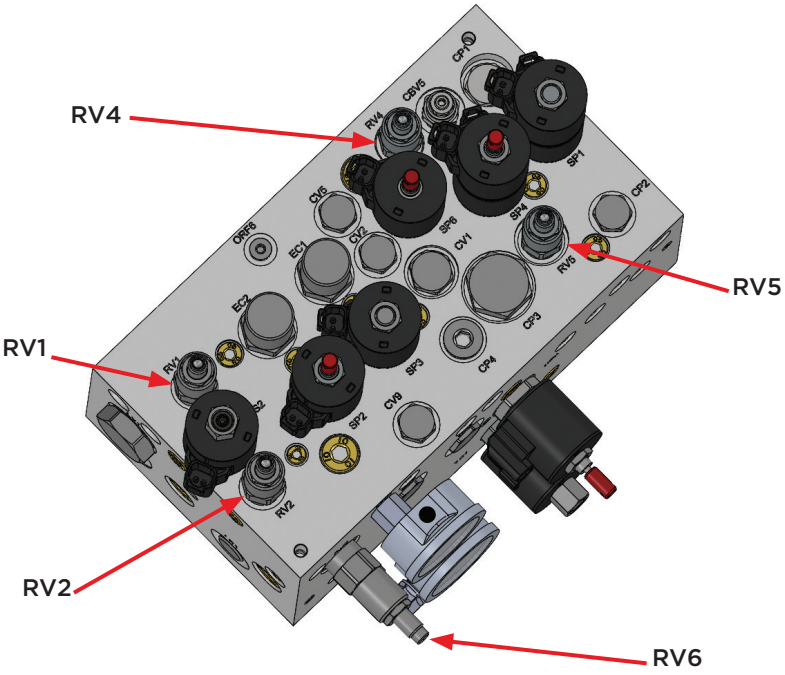


DESIGNATION	FUNCTION	PART NUMBER
CBV5	PLOW COUNTERBALANCE	NXCBCALHN
CP1	PROV CROSS RELIEF CAVITY	NXCP10-20-N
CP2	PROV SA PLOW CAVITY	NXCP08-20-N
CV1	HOIST LOAD HOLD CHECK	NXCV10-20-0-N-05
CV9	SPREADER LS CHECK	NXCV08-20-0-N-04
CV2, CV5	HOIST LS CHECK	NXCV08-20-0-N-04
EC1	SPINNER COMPENSATOR	NXEC12-32-0-N-80
EC2	AUGER COMPENSATOR	NXEC12-32-0-N-80
RV1	CLIPPER RELIEF	NXRV10-22A-0-N-35/27.5
RV2	BOOST RELIEF	NXRV08-20A-0-N-09/2.5
RV4	PLOW DOWNSIDE RELIEF	NXRV08-22A-0-N-13/7.5
RV5	HOIST UPSIDE RELIEF	NXRV08-22A-0-N-26/25
SP1	PLOW ANGLE DIR CONTROL	NXSP-10-57C-0-N-12ER
SP2	AUGER FLOW CONTROL	NXSP10-20M-0-N-12ER
SP3	SPINNER FLOW CONTROL	NXSP10-20-0-N-12ER
SP4	PLOW LIFT DIR CONTROL	NXSP10-57DM-0-N-12ER
SP6	HOIST LOWER FLOW CONTROL	NXSP12-20-M-0-N-12ER
TS2	LOAD SENSE RELIEF	NXTS38-20AM-0-N-12ER

HYDRAULIC SCHEMATIC



RELIEF VALVE ADJUSTMENT



RV1 Clipper Relief Adjustment (Factory Setting 2750 PSI)

1. View the pump gauge while making this pressure relief adjustment.
2. Loosen the lock nut on the relief cartridge while holding the Allen screw stationary.
3. Start the truck and deadhead flow for the plow raise to generate full system pressure.

   (electronic LS relief must be turned higher than the main setting to view relief setting of RV1 cartridge).

4. Turn the Allen screw CCW to decrease pressure, and CW to increase pressure.
5. Once the desired pressure has been established, hold the Allen screw stationary and tighten the lock nut.

DO NOT EXCEED 3,000 PSI OR MAX PRESSURE RATING OF ACTUATORS / MOTORS

RELIEF VALVE ADJUSTMENT

RV2 – Boost Relief Adjustment (Factory Setting 250 PSI)

1. While adjusting, monitor the pump pressure gauge.
2. To view boost pressure setting - manually engage the TS2 valve by turning the small hex adjustment on the valve stem CW. Once adjusted, the pump gauge should display the current boost pressure setting.
3. While observing the pump gauge, turn the Allen screw CCW to decrease pressure, and CW to increase pressure. The boost pressure should be set around 300 PSI.
4. Once the pressure setting has been established, hold the Allen screw stationary and tighten the lock nut.

RV4 – Plow Down Adjustment (Factory Setting 750 PSI)

1. To view current plow downside relief setting – deadhead the plow down and view the load sense gauge.
2. Turn the Allen screw CCW to decrease pressure, and CW to increase pressure.
3. Once the desired pressure has been established, hold the Allen screw stationary and tighten the lock nut.

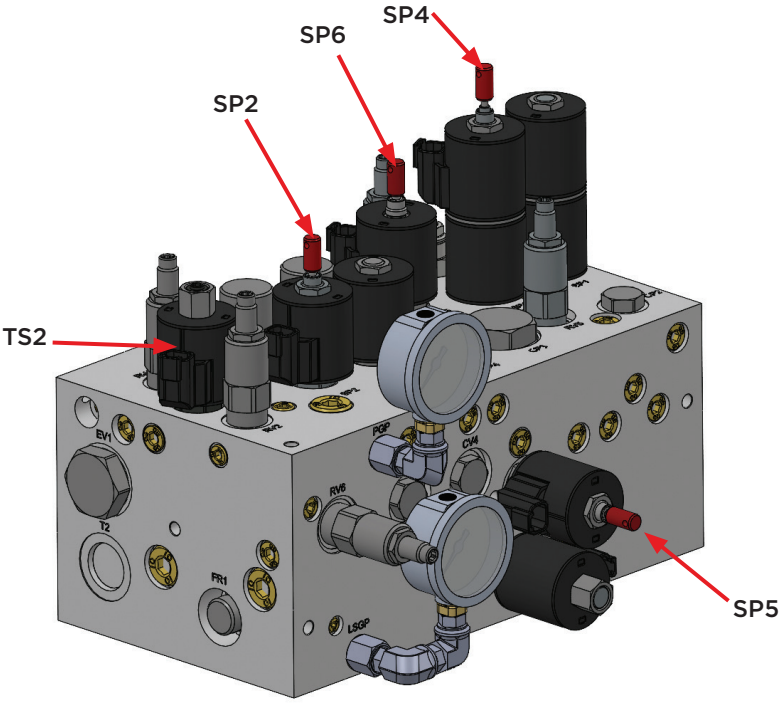
RV5 – Hoist upside relief (Factory Setting 2500 PSI)

1. To view current hoist upside relief setting – deadhead the hoist up and view the load sense gauge.
2. Turn the Allen screw CCW to decrease pressure, and CW to increase pressure.
3. Once the desired pressure has been established, hold the Allen screw stationary and tighten the lock nut.

RV6 – Spreader Relief Adjustment (Factory Setting 2000 PSI)

1. To view current spreader relief setting – deadhead flow to the spreader motors (i.e. disconnect QD or block flow to spreader motors).
2. While observing the load sense gauge, turn the Allen screw CCW to decrease pressure, and CW to increase pressure.
3. Once the desired pressure has been established, hold the Allen screw stationary and tighten the lock nut.

MANUAL OVERRIDE



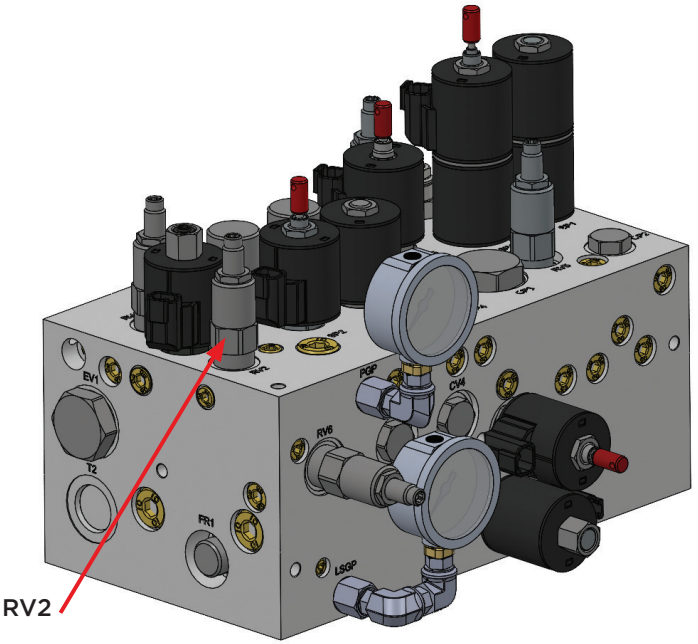
FUNCTION	VALVE SEQUENCE	MANUAL OVERRIDE INSTRUCTION
PLOW RAISE/LOWER	TS2 + SP4	TS2 – Turn hex adjustment CW SP4 - Push pink override DN to raise plow Pull pink override UP to lower plow
HOIST RAISE	TS2 + SP5	TS2 – Turn hex adjustment CW SP5 – Turn pink override down and CCW
HOIST LOWER	TS2 + SP6	TS2 – Turn hex adjustment CW TS6 – Turn pink override down and CCW
AUGER	TS2 + SP2	TS2 – Turn hex adjustment CW SP2 – Turn pink override down and CCW

CONVERTING MANIFOLD TO CLOSED CENTER

Step 1 - Locate the (RV2) boost pressure relief cartridge

Step 2 - Remove the cartridge and replace with blocking cavity plug (CP08-20-N)

Step 3 – Reference controller calibration manual to place controls in “piston pump” mode



TROUBLESHOOTING

CAUTION- ONLY REMOVE COMPONENTS WHEN PUMP IS OFF AND SYSTEM IS NOT UNDER PRESSURE

SYMPTOMS	POSSIBLE CAUSE & SOLUTION
No Hydraulic Operation	• Remove cartridges from unloading circuit (EV1, RV2, and TS2) and check for debris/contamination. • Remove the (RV1) clipper main relief for contamination. • Verify boost pressure relief (RV2) is set at 300 PSI. • Verify pump is operational using flow meter.
Auger and/or Spinner are inoperative	• If system is building to main relief when actuating auger or spinner, check plumbing and quick disconnects impeding flow. • Remove (SP2) Auger or (SP3) Spinner cartridges and check for blockage. • Inspect wiring and check continuity from control module to solenoid.
Auger/Spinner operates wide open	• Check Manual overrides – disengage if necessary • Remove SP2 (Auger) or SP3 (Spinner) and check for contamination.
The Hoist is inoperative	• Inspect plumbing to verify ports are correctly plumbed to cylinder. • Check the (SP6) hoist lower manual override. If M.O. engaged, cylinder will be unable to pressurize. • Check RV5 upside relief for contamination. If stuck in the open position, cylinder will be unable to pressurize. • Depending upon cylinder and mounting angle, system pressure relief settings may need to be increased. • Inspect wiring and check continuity from control module to solenoid.
The plow will not raise.	• Make sure that manual override is set for middle/ normal operating position. • Try removing SP4 cartridge and inspect for contamination. • Inspect plumbing to verify ports are correctly plumbed to cylinder. • Verify that flow is not bypassing around cylinder's internal seals. • Inspect wiring and check continuity from control module to solenoid.

TROUBLESHOOTING

CAUTION- ONLY REMOVE COMPONENTS WHEN PUMP IS OFF AND SYSTEM IS NOT UNDER PRESSURE

SYMPTOMS	POSSIBLE CAUSE & SOLUTION
The plow will not lower	• Reduce (CBV5) counterbalance setting. • Check RV4 downside pressure setting. If too low, pilot pressure will be unable to unlock CBV5 counterbalance load holding valve. • Try removing SP4 cartridge and inspect for contamination. • Inspect wiring and check continuity from control module to solenoid.
The plow drifts down	• Increase the (CBV5) counterbalance setting. • Remove and check the CBV5 for contamination. • Inspect plumbing to verify ports are correctly plumbed to cylinder.
The plow will not angle	• If plow is equipped with cross-over relief, ensure that oil is not unintentionally bypassing preventing cylinder movement. • Check quick disconnects to verify flow is not being impeded. • Inspect wiring and check continuity from control module to solenoid.
System running at main relief, getting excessively hot	• Inspect plumbing – If applicable, verify spreader motors are not deadheading at quick couplers. • Remove the FR1 from the manifold and inspect for contamination. • Check (RV2) boost pressure relief cartridge. Make sure there is no contamination present, make sure cartridge not set beyond 300 PSI. • Check displacement of pump / PTO Ratio – If gear pump is sized to supply more pump flow than being consumed by the spreader motors, unused oil will return to the tank in the form of heat. • If applicable, verify gear box is not seized or creating unintentional load upon the hydraulic system.

NOTES

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