



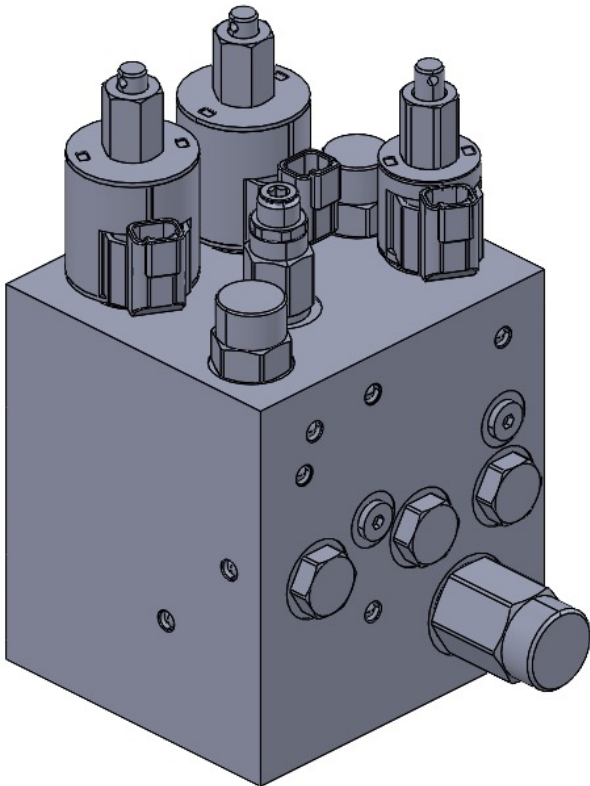
# HF172326-23

## INSTALLATION INSTRUCTIONS AND OPERATOR'S MANUAL

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FEATURES • VALVE FUNCTIONS • ADJUSTMENTS • SCHEMATICS

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# FEATURES

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## **DIRECT ACTING – PROPORTIONAL SOLENOID VALVES**

For consistent and predictable flow control.

## **ADJUSTABLE MAIL RELIEF PRESSURE**

## **PRESSURE COMPENSATED**

## **CONFIGURABLE FOR EITHER GEAR OR PISTON PUMPS**

## **MANUAL OVERRIDES**

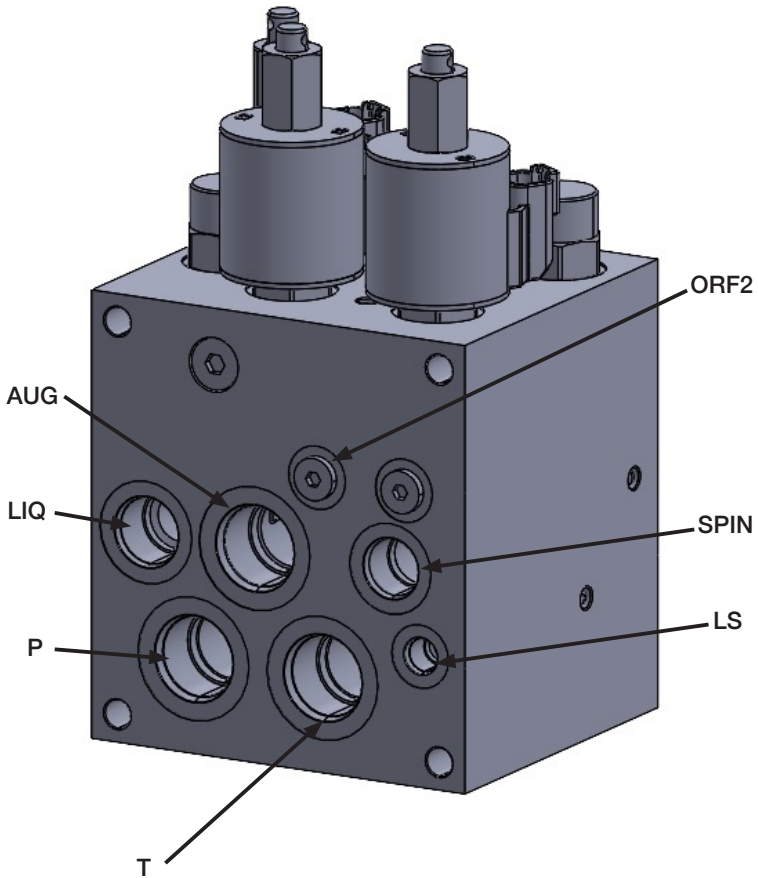
# SPECIFICATIONS

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Maximum Inlet Flow .....	40 GPM
Maximum System Pressure .....	3,000 PSI
	<i>Factory Setting (1,800)</i>
Auger Flow (Proportional) .....	0-10 GPM
Spinner Flow (Proportional) .....	0-8 GPM
Liquid Flow (Proportional) .....	0-6 GPM

# WORKPORTS

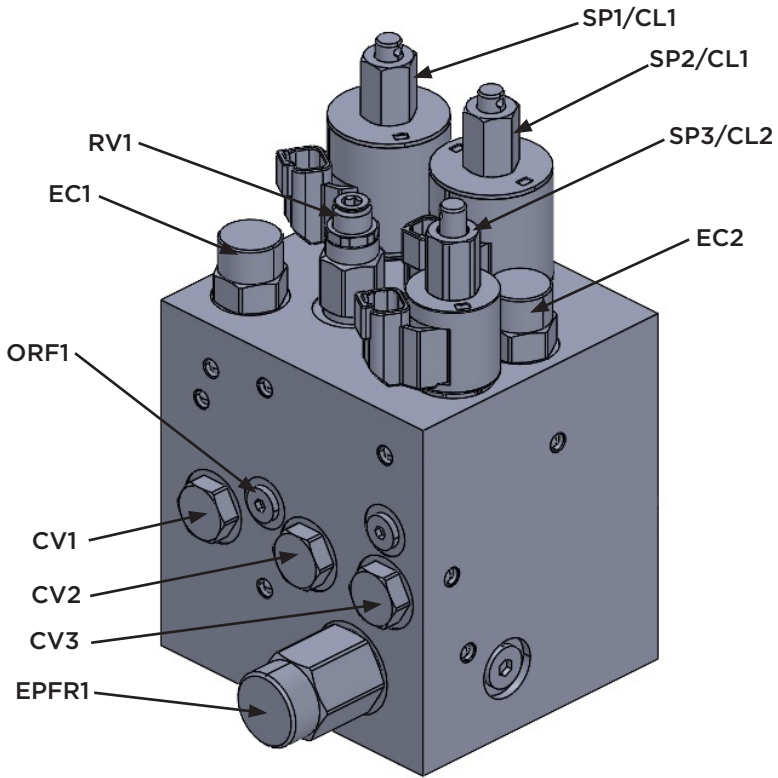
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## HF172326-23

DESIGNATION	DESCRIPTION	SIZE (SAE)
AUG	AUGER	12
LIQ	LIQUID	10
P	PUMP	12
T	TANK	12
LS	LOAD SENSE	04
SPIN	SPINNER	08

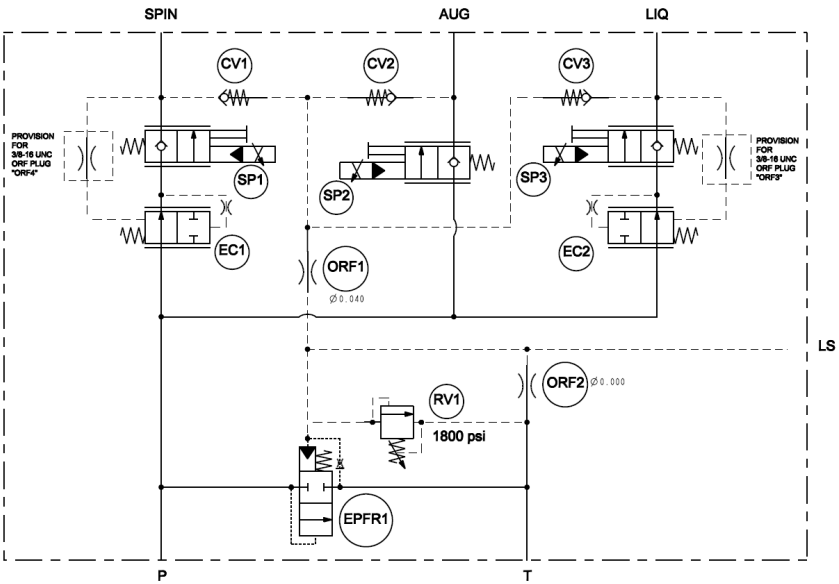
# CARTRIDGE DESIGNATIONS AND PART NUMBERS



## HF172326-23

DESIGNATION	P/N	FUNCTION
CV1	NXC08200N04	SPINNER CHECK VALVE
CV2	NXC08200N04	AUGER CHECK VALVE
CV3	NXC08200N04	LIQUID CHECK VALVE
EC1	NXEC10320N80	SPINNER PRESSURE COMPENSATOR
EC2	NXEC10320N80	LIQUID PRESSURE COMPENSATOR
EPFR1	NXEPFR52S35T160	PUMP UNLOADER
RV1	NXRVD5820AN3018	MAIN RELIEF
SP1	NXSP1020AM0N00	SPINNER FLOW CONTROL
SP2	NXSP1020AM0N00	AUGER FLOW CONTROL
SP3	NXSP0820AM0N00	LIQUID FLOW CONTROL
CL1	NX4303712	SPINNER/AUGER SOLENOID COIL
CL2	NX4303612	LIQUID SOLENOID COIL
ORF1	NX6101040	ORIFICE
ORF2	NX6101000	PROVISIONAL 'LS' DRAIN ORIFICE

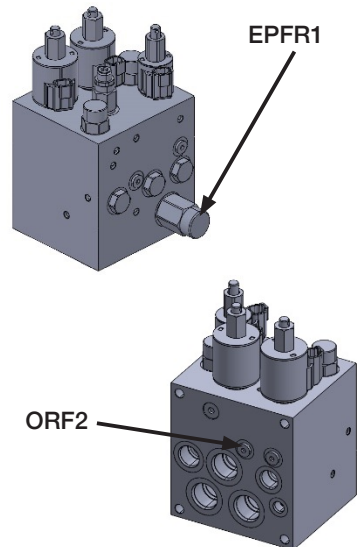
# SCHEMATIC



## CONVERTING MANIFOLD FROM OPEN-CENTER TO LOAD SENSE

### INSTRUCTIONS:

1. Remove EPFR1 and replace with NXCP12-S30-N.
2. Remove the ORF2 SAE plug.
3. Remove the set-screw that is sitting inside of the ORF2 cavity.
4. Replace the setscrew with P/N: NX6112025.
5. Reinstall the ORF2 SAE plug.
6. Locate the LS port on the manifold and route back to the variable displacement pump.



# RELIEF VALVE ADJUSTMENT

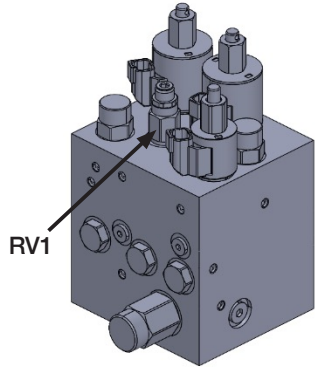
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## MAIN SYSTEM RELIEF (Factory Setting 1,800 PSI)

1. The tools required for adjusting the main relief setting includes:  
3/4" wrench and a 1/4" Allen drive.
2. Tee a pressure gauge into the pump port  
(gauge greater than 3,000 PSI).
3. Loosen the lock nut while holding the Allen  
screw stationary.
4. Start the truck and deadhead flow at either  
the auger or spinner. (pressure will increase  
to the main relief setting).
5. While observing the pressure gauge, turn  
the Allen screw CCW to decrease pressure,  
and CW to increase pressure.

**\*\*DO NOT EXCEED 3,000 PSI OR  
MAX PRESSURE OF MOTORS.**

6. Once the desired pressure has been established,  
hold the Allen screw stationary and tighten the lock-nut.

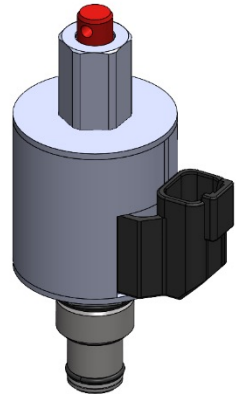


## MANUAL OVERRIDE INSTRUCTIONS

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1. To manually override SP1, SP2, or SP3:  
Push the red override down and turn CCW.  
(Up Position)
2. To disengage SP1, SP2, or SP3:  
Push the red override down and turn CW.  
(Down Position)

**Normal Operation: Push down and turn CW**



# TROUBLESHOOTING

SYMPTOM	SOLUTION
Either the auger, spinner, or liquid operate wide open.	<ul style="list-style-type: none"> <li>• Check manual overrides of SP1, SP2, or SP3 (Reference page 7 for manual override instructions).</li> <li>• Remove SP1, SP2, or SP3 from manifold and inspect cavity and cartridge for contamination.**</li> </ul> <p><b>NOTE: ** DO NOT OVER-TORQUE COIL NUT 6.8 to 9.5 Nm (5 to 7 ft.lb.) This will stretch the stem.</b></p>
Either the auger, spinner, or liquid are inoperative.	<ul style="list-style-type: none"> <li>• Inspect wiring and check continuity of Deutsch connector into solenoid receptacle.</li> <li>• Verify that the flow is not bypassing motor (loss of efficiency).</li> <li>• Verify that the SP1, SP2, or SP3 are magnetizing when energized.</li> </ul>
Neither auger, spinner, or liquid do not operate.	<ul style="list-style-type: none"> <li>• Remove EPFR1 from manifold and inspect cavity and cartridge for contamination.</li> <li>• Check RV1 for contamination.</li> <li>• Verify that pump is producing flow when pressurized.</li> </ul>
Manifold operates continuously at main relief pressure (1,800 PSI).	<ul style="list-style-type: none"> <li>• Inspect plumbing – if applicable, check quick disconnects.</li> <li>• Remove EPFR1 from manifold and inspect cavity and cartridge for contamination.</li> <li>• For Closed Center set-ups, also check the LS drain (ORF2). Remove and inspect orifice for debris.</li> </ul>
Oscillating noise/compensator instability coming from manifold bypassing through EPFR1.	<ul style="list-style-type: none"> <li>• Downsize inlet hose diameter to increase flow velocity. Verify smaller hose size will handle input pressure before replacing.</li> <li>• Add a check valve (10-15 PSI) at outlet (T) to create back pressure and stabilize.</li> </ul> <p>(Contact Muncie for assistance).</p>



# DETAILED DESCRIPTION OF HF172326-23

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## REFERENCE SCHEMATIC ON PAGE 6

**EPFR1 – Pump bypass, pre-pressure compensation.** EPFR1 is a normally closed – two position – two way – pilot operated cartridge. It can provide a low-pressure path for pump flow to escape to tank. This is its primary function when no functions are operating.

The EPFR1 cartridge also establishes the differential or boost pressure of the system. The differential or boost pressure is a function of the spring tension of the EPFR1. The purpose of the differential or boost pressure is to increase the pump pressure over the load sense pressure.

When the EPFR1 has a load sense pressure applied, which is communicated from the LS (load sense shuttle) this will add to the pressure required for the EPFR1 to allow flow to drain back to tank. For example, if the load sense pressure for a spreader motor is 1,000 PSI, this will be added to the (160 PSI +) spring bias pressure of EPFR1. Now EPFR1 cannot begin to open its path to tank until the pump pressure has achieved something slightly higher than 1,160 PSI. Pump pressure would equal 1160 PSI or more, and the L.S. pressure would equal 1,000 PSI. In this way the system will always attempt to sustain a differential or boost pressure.

**RV1 – Main system relief valve.** RV1 is an adjustable relief cartridge that is used in conjunction with EPFR1 to limit the maximum pump pressure. RV1 is located in the pilot path (Spring Side) of EPFR1. It is preset from the factory at 1,800 PSI. This can be adjusted to a maximum setting of 0 - 3,300 PSI. Do Not Exceed 3,000 PSI. When RV1 opens, it drains the pilot (Spring Side) of EPFR1 at whatever pressure RV1 has been set. The pressure of the pump (bottom pilot) of EPFR1 will build slightly higher and force EPFR1 to begin opening, which provides a tank path for the pump.

**ORF1 – Flow limiting orifice.** ORF1 limits the amount of LS flow to a fraction of a gallon per minute back to the EPFR1 valve.

**SP1 – Spinner flow control valve.** SP1 is a proportional solenoid flow control valve. In the non-energized state, it provides a blocked path between the pump flow and the spinner work port. When it is energized it provides an adjustable orifice opening to flow as a function of electric current to its solenoid coil. The range of flow control is 0-8 Gallons-per-minute.

**SP2 – Auger/conveyor flow control valve.** SP2 is a proportional solenoid flow control valve. In the non-energized state, it provides a blocked path

between the pump flow and the auger/conveyor work port. When it is energized it provides an adjustable orifice opening to flow as a function of electric current to its solenoid coil. The range of flow control is 0 – 17 gallons-per-minute.

**SP3 – Liquid flow control valve.** SP3 is a proportional solenoid flow control valve. In the non-energized state, it provides a blocked path between the pump flow and the liquid work port. When it is energized it provides an adjustable orifice opening to flow as a function of electric current to its solenoid coil. The range of flow control is 0 – 6 gallons-per-minute.

**CV1, CV2, CV3 – Check valves.** Set in each function's LS (load sense) line. Its purpose is to communicate the load pressure of the highest spreader motor pressure back to the EPFR1.

**EC1 – Spinner pressure compensator.** EC1 limits flow and provides pressure compensation for the spinner flow control valve (SP1). The purpose is to create a constant pressure drop across the valve. The pressure compensator ensures consistent flow despite fluctuating pressures.

**EC2 – Liquid pressure compensator.** EC2 limits flow and provides pressure compensation for the liquid flow control valve (SP3). The purpose is to create a constant pressure drop across the valve. The pressure compensator ensures consistent flow despite fluctuating pressures.

**ORF2 – Provisional internal LS drain.**





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