



MESP-202J

INSTALLATION INSTRUCTIONS AND OPERATOR'S MANUAL

FEATURES • VALVE FUNCTIONS • ADJUSTMENTS • SCHEMATICS

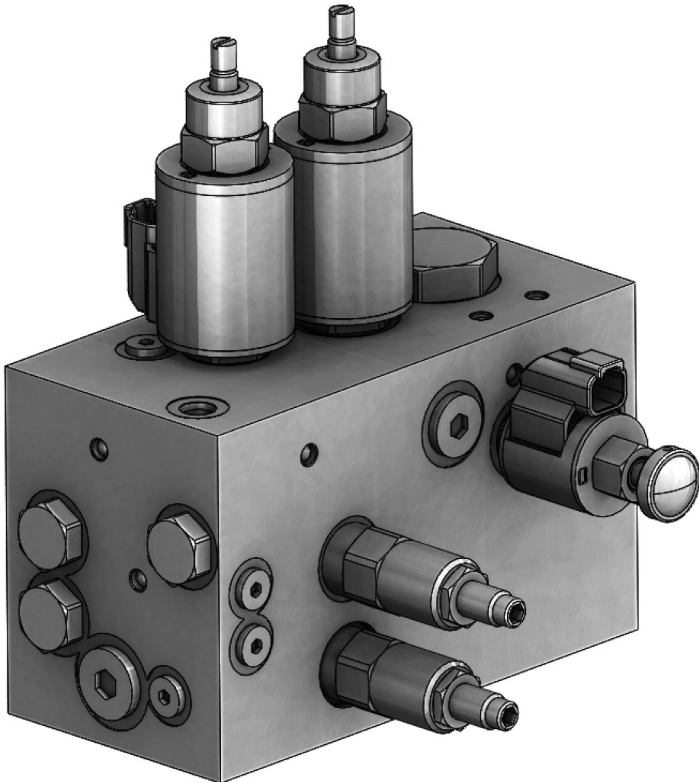


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FEATURES

FOR GEAR PUMP APPLICATIONS

Unloader for low pressure loads when not operating, equals low heat and low energy consumption

DIRECT ACTING - PROPORTIONAL SOLENOID VALVES

For consistent and predictable flow control

POST PRESSURE COMPENSATION

Flow stability under varying load

VERSATILE 2 DESIGN OPTIONS

Load Sense (variable displacement pumps) or Open Center (fixed displacement pumps).

2 ADJUSTABLE RELIEF VALVES

Main Relief and Spreader Relief

SPECIFICATIONS

Maximum Inlet Flow 30 GPM

Maximum System Pressure 3,000 PSI

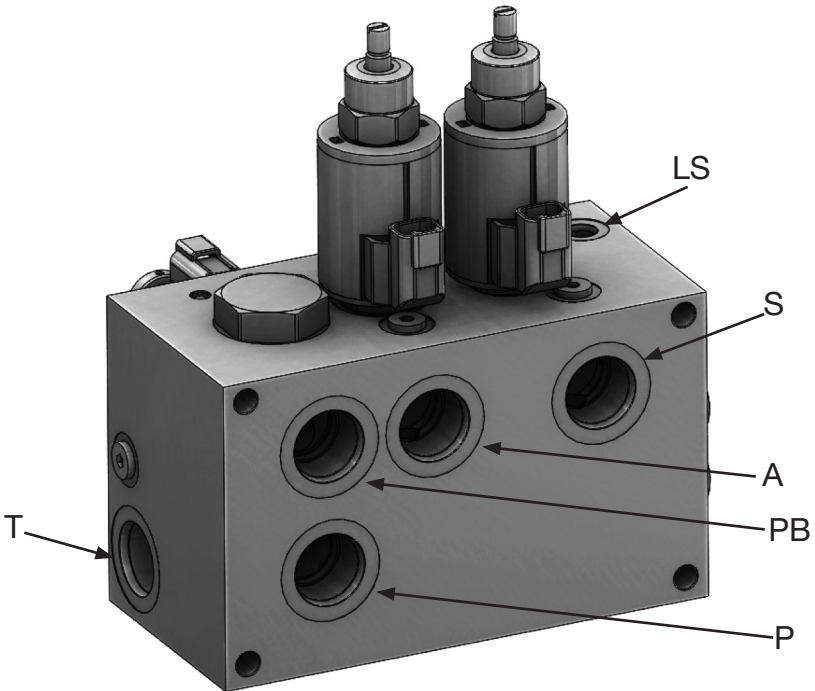
Auger Flow (Proportional) 15 GPM
(Pressure Compensated)

Spinner Flow (Proportional) 7 GPM
(Pressure Compensated)

Main Pressure Relief Factory Setting – 3,000 PSI
(PSI Adjustable)

Spreader Pressure Relief Factory Setting – 2,000 PSI
(PSI Adjustable)

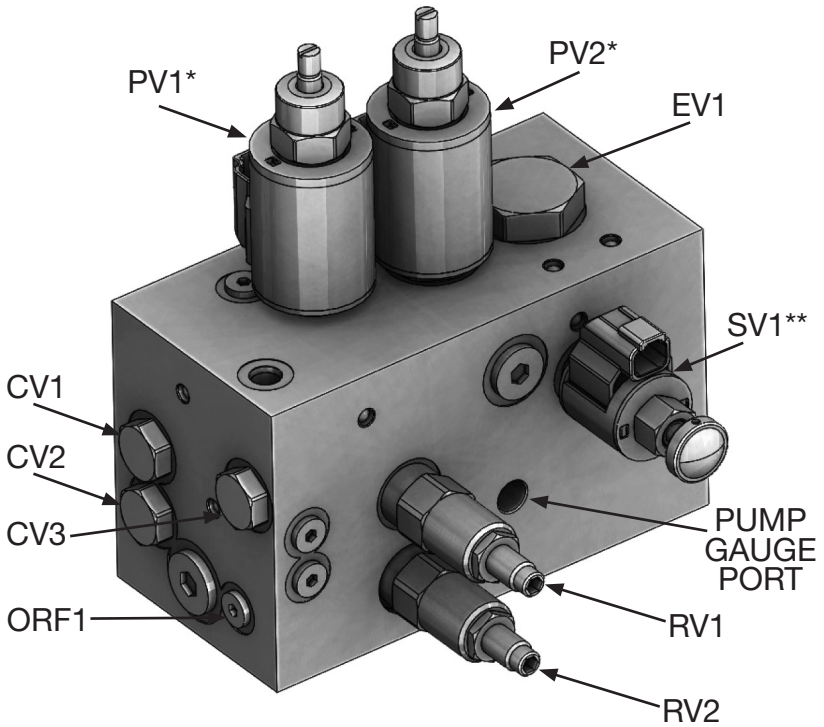
WORK PORTS



MESP-202J

DESIGNATION	DESCRIPTION	SIZE (SAE)
T	TANK	12
P	PUMP	12
PB	POWER BEYOND	12
A	AUGER	12
S	SPINNER	12
LS	LOAD SENSE	04

CARTRIDGE DESIGNATIONS AND PART NUMBERS



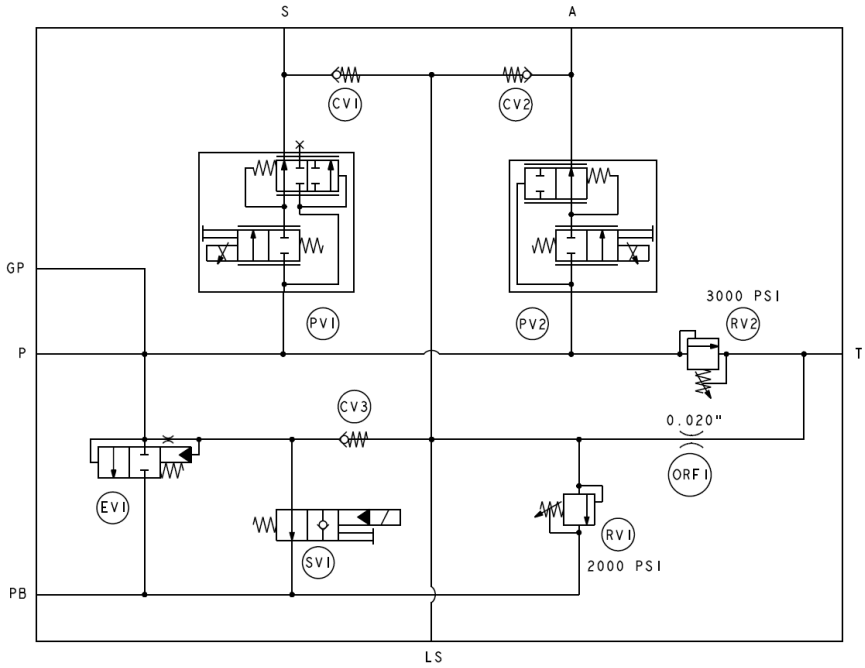
* COIL P/N: NX4303212

**COIL P/N: NX4303612

DESIGNATION	P/N	FUNCTION
CV1, CV2	CV08-20-0-N-04	LS CHECK VALVES
CV3	CV08-20-0-N-270	BOOST CHECK
EV1	EV16-S34-0-N-10	UNLOADING COMPENSATOR
ORF1	6112020	LS DRAIN ORIFICE
PV1	NXPV7030AM-0-N-00	SPINNER
PV2	NXPV72-20M-0-N-20	AUGER
RV1	NXRV08-20A-0-NC-33/20	SPREADER RELIEF
RV2	NXRV10-26A-0-N-30/30	MAIN RELIEF
SV1	NXRV10-26A-0-N-30/30	UNLOADER

SCHEMATIC

OPEN CENTER

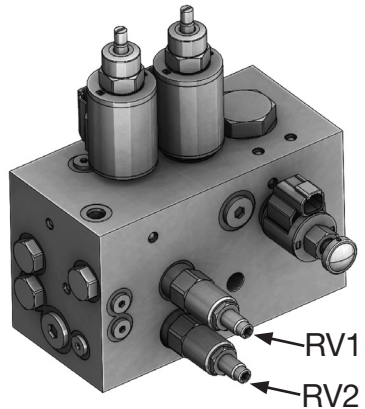


RELIEF VALVE ADJUSTMENT

Spreader Relief (Factory Setting 2,000 PSI) – RV1

*This relief setting is additive to the PB pressure. Therefore, if the stack valve downstream requires 1,000 PSI, this relief will not open until 3,000 PSI at its 2,000 PSI setting).

1. The tools required for adjusting the power beyond relief setting includes:
¾" wrench and a ¼" Allen drive.
2. Loosen the lock nut while holding the Allen screw stationary.
3. Start the truck and deadhead flow at either the auger or spinner. (Pressure will increase to the PB relief setting + the additive pressure downstream of the manifold).
4. While observing the pressure gauge, 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.



Main System Relief (Factory Setting 3,000 PSI) – RV2

**This relief will open at its setting regardless of the downstream pressures

1. Plug the PB port
2. The tools required for adjusting the spreader relief setting includes:
¾" wrench and a ¼" Allen drive.
3. Loosen the lock nut while holding the Allen screw stationary.
4. Start the truck, the pressure should automatically jump up to the main relief setting.
5. While observing the pressure gauge, turn the Allen screw CCW to decrease pressure, and CW to increase pressure.
6. Once the desired pressure has been established, hold the Allen screw stationary and tighten the lock-nut.
7. Make sure to reconnect the PB port.

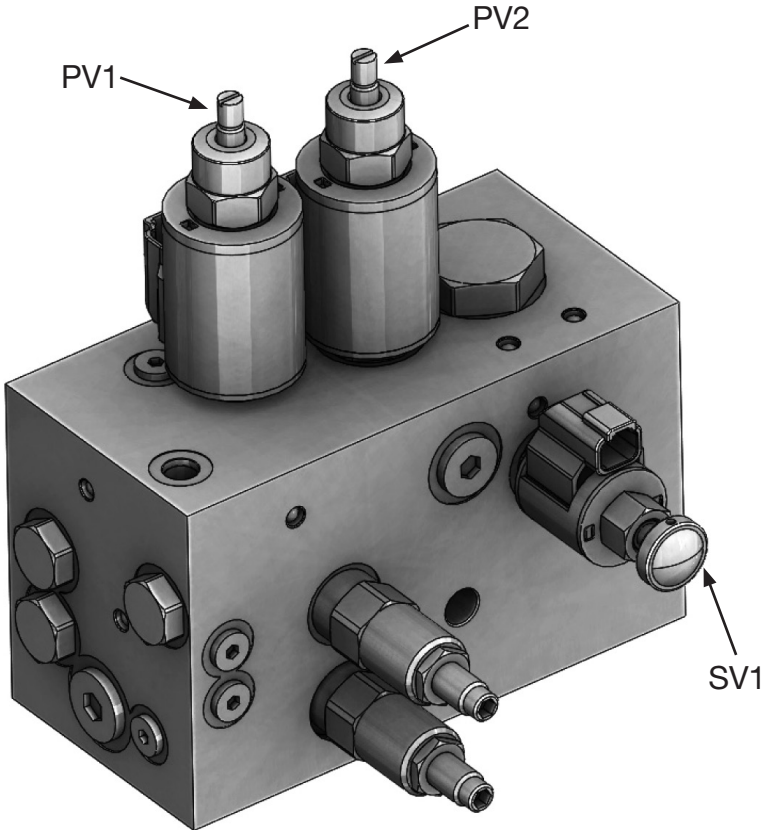
MANUAL OVERRIDE INSTRUCTIONS

PV1- Spinner

1. To manually engage the spinner, locate the PV1 cartridge.
2. Screw the PV1 override CW.
3. Press the SV1 knob "in" to override function.
4. Screw the PV1 override CCW to return to normal operation

PV2- Auger

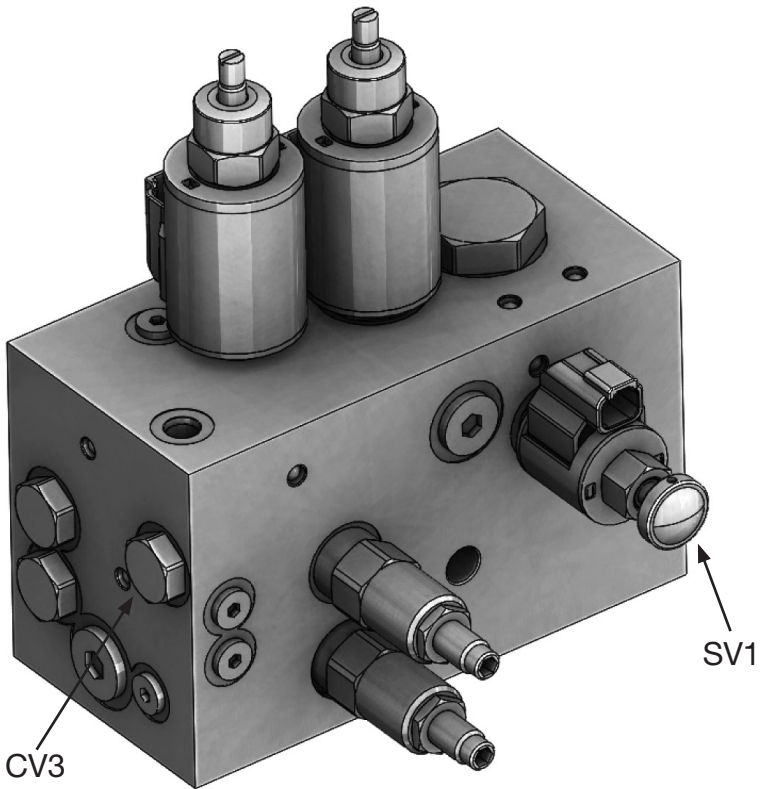
1. To manually engage the auger, locate the PV2 cartridge.
2. Screw the PV2 override CW.
3. Press the SV1 knob "in" to override function.
4. Screw the PV2 override CCW to return to normal operation



CONVERTING MANIFOLD FROM OPEN-CENTER TO LOAD SENSE

Instructions:

1. Remove CV3 and replace with NXCP0820N
2. Remove SV1 and replace with NXCP0820N



DETAILED DESCRIPTION

REFERENCE CIRCUIT SCHEMATIC FOR MESP- 202J

Pump Gage Port (GP) – Indicates the inlet pressure from the pump. This pressure will be approximately 300 PSI higher than the actual pressure at the motors due to the load-sensing operation of the valve network.

Load Sense (LS) – Indicates the pressure of the load (motor). If more than one function is operating, the higher load pressure will be observed. There will only be a pressure from the LS port if a function is operating. The LS port can be used to adjust the spinner/auger relief. Remember, the GP will display a pressure approximately 300 PSI higher than the pressure in the LS port while a function is operating.

EV1 – Pump bypass and pre-pressure compensation cartridge. EV1 is a normally closed -two position - two way -pilot cartridge. It can provide a very low pressure path for pump flow to escape to tank. This is its primary function when the motors are not in operation. The bypass pressure of the pump in this state will vary from about 20-60 PSI depending upon the pump flow. This pressure will show at GP. The path to tank is opened by pump pressure being applied to the left side pilot of EV1 which forces the valve open. The right side pilot line of EV1 is drained to tank through SV1 (Unloader Solenoid Valve) to allow the valve to open.

SV1 – Unloader solenoid valve. SV1 is a normally open two position - two way solenoid operated cartridge. When its solenoid is not energized it provides a drain path for the pilot pressure on the right side of EV1. This allows for pilot pressure on the left side of EV1 to push it open and expose a low pressure path for the pump flow to escape to tank.

SV1 will energize whenever any function of the MESP 202J is operating. This closes the pilot drain on the right side of EV1 and that in-turn cause EV1 to begin shutting off the pump flow escape to tank. Pump flow is now forced to move toward motor valves as required. If SV1 was energized or manually overridden (if equipped) without any other system valves functioning, the pressure at GP would be approximately 300 PSI. The L.S. port would not have pressure.

Check Valve (CV3) – Boost pressure check valve. CV3 is a simple spring biased ball check cartridge. Its purpose is to raise the differential or boost pressure between GP and LS by a margin of approximately 300 PSI. It comes into play when SV1 is energized. At that point the pilot pressure on the right side of EV1 can only drain through CV3. CV3's internal bias spring is set for 270 PSI. That means the pressure of EV1's pilots (both sides) must build to at least 270 PSI before the right side pilot can drain through CV3 and allow EV1 to begin to open. This boost pressure is required to allow flow to get through other cartridge valves in the system to operate functions.

When CV1 has a load-sense pressure applied to its right side which is communicated from CV1 and CV2 (Load Sense Checks) this will add to the

pressure required for EV1 to drain its right side pilot and open. For example, if the load-sense pressure for a spreader motor is 1,000 PSI, this will be added to the (270 PSI) spring bias pressure of CV1. Now EV1 cannot begin to open its path to tank until the pump pressure has achieved something slightly higher than 1270 PSI. GP would display 1,270 + PSI and L.S. port would display 1,000 PSI. In this way the system will always attempt to sustain a differential or boost pressure of approximately 300 PSI.

RV2 – Main System Relief. RV2 is an adjustable relief cartridge that is referenced to the T port. Therefore, it will open at its designated pressure setting no matter the pressure downstream of the PB port. It is preset from the factory at 3000 PSI. This can be adjusted to a maximum of 3,000 PSI.

Proportional Valve (PV1) – Spinner flow control valve. PV1 is a proportional solenoid flow control valve that also incorporates pressure compensation. In its un-energized state it provides a blocked path between the pump flow and the spinner work port. When it is energized it provides an increasing orifice opening to flow as a result of increasing electric current to its solenoid coil. Its range of flow control is 0-7 gallons-per minute.

A second internal stage of PV1 provides pressure compensation of the flow control. This stage will react to changes of pump pressure conditions relative to the spinner load pressure demands. If the pressure difference goes too high the compensator stage will “squeeze down” to prevent extra flow from “shooting” through the proportional valve orifice setting. The basis of stable flow control requires this feature.

Proportional Valve (PV2) – Auger/Conveyor flow control valve. PV2 is a proportional solenoid flow control valve that also incorporates pressure compensation. In its 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 increasing orifice opening to flow as a result of increasing electric current to its solenoid coil. Its range of flow control is 0-15 gallons-per-minute.

A second internal stage of PV2 provides pressure compensation of the flow control. This stage will react to changes of pump pressure conditions relative to the auger/conveyor load pressure demands. If the pressure difference goes too high the compensator stage will “squeeze down” to prevent extra flow from “shooting” through the proportional valve orifice setting. The basis of stable flow control requires this feature.

Relief Valve (RV 1) – Spreader Pressure Relief. RV1 limits the pressure of the spreader motor circuit. This valve is preset to 2,000 PSI from the factory. However, this pressure setting is additive to the downstream pressure from the PB port. Therefore, when the PB port sees 500 PSI, the RV1 will not open until 2,500 PSI.

CV1 & CV2 – Load shuttle cartridge. CV1 and CV2 are back-to-back check valves. Their purpose is to communicate the highest spreader motor pressure back to CV1.

TROUBLESHOOTING

SYMPTOM	SOLUTION
<ul style="list-style-type: none"> • Either the auger or spinner operate wide open. 	<ul style="list-style-type: none"> • Check manual overrides of PV1 or PV2 (Reference pg. 7 for manual override instructions) – disengage if necessary. • Remove PV1 or PV2 from manifold and inspect cavity and cartridge for contamination.
<ul style="list-style-type: none"> • Either the auger or spinner are inoperative. 	<ul style="list-style-type: none"> • Inspect wiring and check continuity of Deutsch connector into solenoid receptacle. • Verify that the flow is not bypassing motor (loss of efficiency). • Verify that the PV1 or PV2 are magnetizing when energized.
<ul style="list-style-type: none"> • No function operates, System doesn't build pressure. 	<ul style="list-style-type: none"> • Remove EV1 from manifold and inspect cavity and cartridge for contamination. • Check Reliefs (RV1/RV2) for contamination. • Verify that pump is producing flow.
<ul style="list-style-type: none"> • Manifold operates continuously at main relief pressure (2,000-3,000 PSI). 	<ul style="list-style-type: none"> • Inspect plumbing – If applicable, check quick disconnects. • Remove OR1 from manifold and inspect orifice for contamination.

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