



**Tools/Equipment Required:**

- 0-500 psi pressure gauge or transducer
- 0-500 psi  $\Delta p$ -gauge
- 13mm wrench
- 6mm wrench (optional: small adjustable wrench)

**Load Sense "Margin Pressure" Adjustment Procedure:**

1. Install the  $\Delta p$ -gauge as illustrated in the schematic above. Make sure that the "HI" side of the gauge is connected to "P" and the "LO" side is connected to "LS".



## VD3 Control Adjustment for HPR-02 Pump

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Service Bulletin

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### **WARNING:**

**If performing this procedure on a vehicle, care must be taken. The pump will be put on stroke during this procedure, hence all personnel should be removed from the area of the machine. If using the pump for a propelling function, then the vehicle must be safely elevated to allow the propel motor to free-wheel.**

There are two methods which can be used to set the "margin pressure" on an HPR-02 pump. The method illustrated in "Step #2" is recommended to accurately set the "margin pressure". However, the method illustrated in "Step #3" is sufficient for field adjustments or if the parameters in "Step #2" cannot be met.

***The recommended pressure range for the "margin pressure" setting is 290 to 305 psi. Margin pressure set greater than 305 psi may lead to erratic and unstable performance from the pump. Margin pressure set less than 290 psi may lead to smoother or sluggish performance from the pump.***

2. This is the recommended procedure to use:
  - a. Set the pump input speed to 2300 RPM.
  - b. Use a loading valve or relief valve to limit the pump output pressure (at port "P") to 1450±73 psi.
  - c. Set the pump output flow to 18.5±1.3 GPM.
  - d. Use the  $\Delta p$ -gauge to determine the "margin pressure" setting.
  - e. To Adjust the "Margin Pressure":
    - Use the 13mm wrench to loosen the locking nut on the "Load Sense Adjustment".
    - Use the 6mm wrench to turn the "Load Sense Adjustment" stud. Turn it IN to increase the "margin pressure" setting or turn it OUT to decrease it.
    - When the desired "margin pressure" is acquired, hold the adjustment stud stationary with the 6mm wrench and tighten the locking nut with the 13mm wrench.
3. The following procedure is optional for field adjustment:
  - a. Set the pump input speed to 2300 RPM. If this is not possible, set it to high idle.
  - b. Actuate a function so that the pump supplies flow. If possible, limit the pump flow to 18 to 20 GPM. Also, if possible, actuate a function which only requires around 1500 psi to move.

- c. Use the  $\Delta p$ -gauge to determine the "margin pressure" setting.
- d. To Adjust the "Margin Pressure":
  - Use the 13mm wrench to loosen the locking nut on the "Load Sense Adjustment".
  - Use the 6mm wrench to turn the "Load Sense Adjustment" stud. Turn it IN to increase the "margin pressure" setting or turn it OUT to decrease it.
  - When the desired "margin pressure" is acquired, hold the adjustment stud stationary with the 6mm wrench and tighten the locking nut with the 13mm wrench.

**VD3 Performance Valve Adjustment:**

1. Install the 0-500 psi pressure gauge into port "A".
2. For a 12 VDC solenoid **ONLY**:
  - a. Supply a  $600\pm 5$  mA current signal to the solenoid. It is recommended that a dither signal be used with a 150 Hz frequency, but it is not mandatory.
  - b. The pressure at port "A" must be  $123\pm 3$  psi plus case pressure.

Note: This control references case pressure, so the pressure at port "A" must account for case pressure. If, for example, the case pressure was 5 psi, then the pressure at port "A" must be  $123 \text{ psi} + 5 \text{ psi} = 128\pm 3$  psi.

3. For a 24 VDC solenoid **ONLY**:
  - a. Supply a  $300\pm 5$  mA current signal to the solenoid. It is recommended that a dither signal be used with a 150 Hz frequency, but it is not mandatory.
  - b. The pressure at port "A" must be  $123\pm 3$  psi plus case pressure.
4. To Adjust the VD3 Performance Valve:
  - a. Use the 13mm wrench to loosen the locking nut on the "VD3 Adjustment".
  - b. Use the 6mm wrench to turn the "VD3 Adjustment" stud. Turn it IN to increase the pressure setting or turn it OUT to decrease it.
  - c. When the desired pressure setting is acquired, hold the adjustment stud stationary with the 6mm wrench and tighten the locking nut with the 13mm wrench.



**\*\*\*\*\*ATTENTION\*\*\*\*\***

You have been provided information on conversion, repair and/or service of Linde components. Proper application of the information requires specific training and may require use of specialized tooling and equipment. If you choose to proceed with the conversion, repair and/or service of the Linde component(s) absent the necessary training and/or these specialized tools, you do so at your risk.

Linde Hydraulics Corporation will accept no claim for warranty or other consideration resulting from deficiencies in the conversion, repair and/or service done in accordance with the guidance offered herein when the necessary training has not been conducted and/or required specialized tooling and equipment has not been utilized.

All requests for training must be coordinated through your Linde Account Manager. He can also provide you price and availability of any specialized tooling.

Questions regarding the information provided or this disclaimer should be addressed to the Warranty & Service Department, Linde Hydraulics Corporation.

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