



## **TECHNICAL SERVICE BULLETIN**

**Bulletin Number: DC-2224**

**Date: 3/28/2008**

**Affected Model(s):** Centro-Matic® FlowMaster® Hydraulic Pumps

**Subject: Flow Control Valve Adjustment Recommendations**

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Inline with our goal of continuous improvement to our product line, many hours of engineering research and lab time have been dedicated to the subject products. This research was done as a result of sporadic reports of ongoing failure modes and shorter than expected pump service life.

From our research, we found that the Flow Control Valve adjustment on the manifold was routinely being set at "1 full turn open" during the manufacturing process. At a recommended Pressure Control Valve setting of 350 PSI, the hydraulic oil flow was approaching levels of over 6 GPM. With these settings, we found that the pump was running much faster than required and therefore reducing the service life of the pump.

As of February 1, 2008 (pump date code XE/XT) manufacturing procedures were updated and the Flow Control Valve is being set at "¼ turn open". We recommend that any pump placed in service prior to this date be adjusted to "¼-1/3 turn open". **PLEASE NOTE: The Flow Valve should never be adjusted to more than "½ turn open" for normal operating conditions.** This simple adjustment has proven that it will prevent early failures previously associated with operating the pumps at excessive speeds.

Extenuating circumstances may dictate a faster speed, but overall performance of the pumps might be affected. Careful consideration should be given prior to adjusting to faster than recommended pump speeds.

The changes noted above will be made to the "Setting the Pump Manifold Pressure and Flow Controls" section of the owner/operators manual. To expedite getting these details to you, I have attached a copy of the changes:

## Setting the Pump Manifold Pressure and Flow Controls

The pressure must first be adjusted to insure the desired flow setting is achieved.

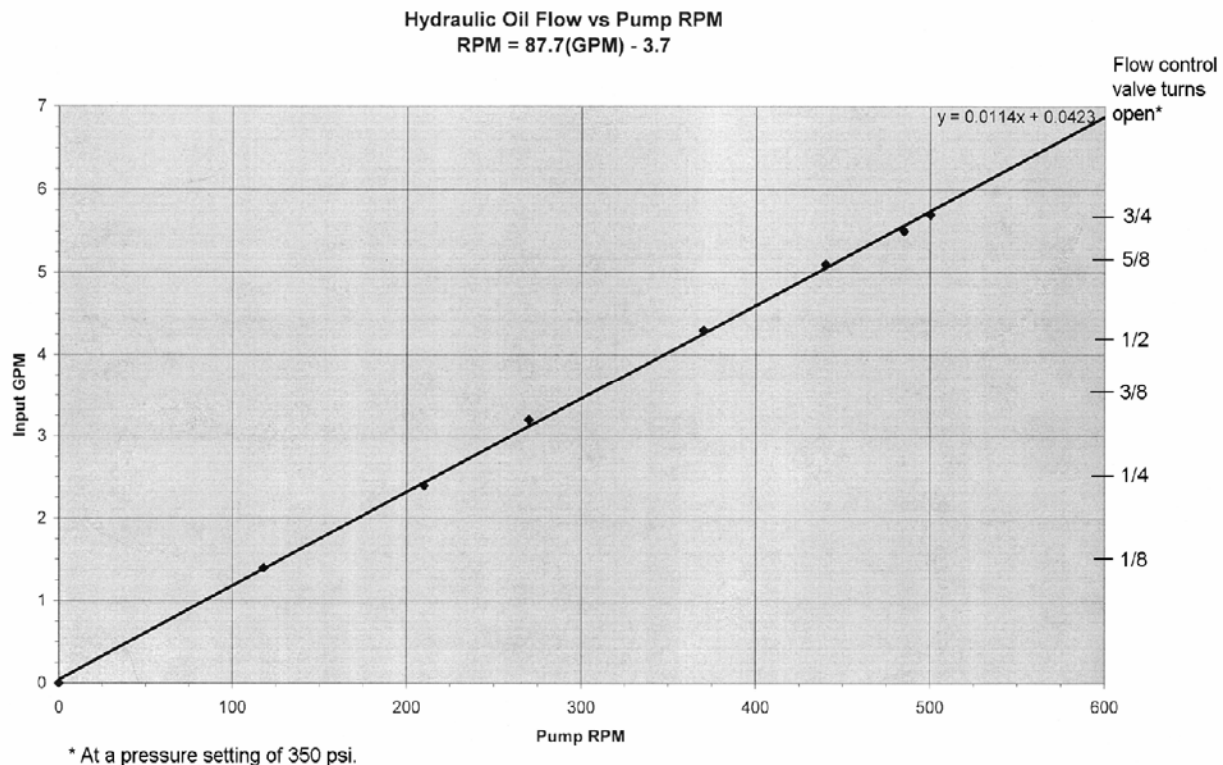
### Pressure Control Valve Adjustment

- With hydraulic pressure applied, stop the pump by turning the flow control clockwise until completely closed.
- Loosen the lock nut on the Pressure control by turning the nut COUNTERCLOCKWISE.
- Turn the valve stem COUNTERCLOCKWISE until it no longer turns. The valve stem will unscrew until it reaches the stop. It will not come off. This is the minimum pressure setting, which is about 170 psi (12 bar).
- With the pump stalled against pressure, turn the Pressure Control Valve stem CLOCKWISE until the desired pressure is attained on the manifold Pressure Gage. (Do not exceed 450 PSI (31 bar)). A pressure of 350 PSI (24 bar) is recommended.
- Tighten the lock nut by turning CLOCKWISE.

### Flow Control Valve Adjustment

- Loosen the lock nut on the Flow Control Valve by turning the nut COUNTERCLOCKWISE.
- Adjust the flow by turning the valve stem CLOCKWISE to reduce the flow and COUNTERCLOCKWISE to increase it. The Flow Control Valve can be turned in until the valve is completely closed, and out to adjust pump speed.  
RECOMMENDED SETTING - 1/4 to 1/3 (no more than 1/2 open)
- After adjusting the flow to the desired setting, tighten the lock nut by turning it CLOCKWISE.

For your information, I have also attached a performance chart that will be included in the new owner/operator manual. It details "Hydraulic Oil Flow vs. Pump RPM". It illustrates hydraulic oil flow at various settings of the Flow Control Valve. At "1/4 turn open" the hydraulic oil flow is over 2 GPM and the pump RPM is approximately 210. At "1/2 turn open" the hydraulic oil flow is over 4 GPM, and the pump RPM is approximately 370. Our extensive research has shown us that the oil flow at 1/4 turn open is more than enough for normal applications. Any speed higher than this should be carefully considered with the understanding that the increased grease output gained will be offset by possible earlier failures and shorter than expected service life of the pump.



For system design reference, each RPM of the FlowMaster pump will give a grease output of .07 cubic inches/minute. Therefore, with the Flow Control Valve set at “¼ turn open”, the grease output will be approximately 14.7 cubic inches/minute. A “1/3 open” setting will yield approximately 17.5 cubic inches/minute, and a “½ open” setting will yield approximately 26 cubic inches/minute.

A common misconception by operators is that in colder temperatures, increasing the pump speed (i.e., opening the Flow Control Valve more) will increase the grease flow in the supply line to the injectors. In fact, the opposite is true and will only increase the supply line pressure near the pump. By using the correct grease viscosity in cold climates, the Flow Control Valve should not need adjustment.

For applications where the ability to adjust the pump’s hydraulic inlet pressure and flow is not desired, Lincoln offers non-adjustable control valves. The fixed Pressure Control Valve is Part Number 273444 and is preset at 350 PSI. The fixed Flow Control Valve is Part Number 273443 and is preset to 2.0 GPM.

As always, if you have any questions or concerns regarding this bulletin, please do not hesitate to call Lincoln Technical Services at 314/679-4200, ext. 4782, or fax us at 314/679-HELP (4357).

Regards,

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