



TECH NOTE:	11-003
TITLE:	Hydraulic Open Loop Pre-Wet Liquid System Trimming
DATE:	02-7-11
REVISION:	1.0

Description: this procedure describes the process used to properly trim the hydraulic valve control for an open loop pre-wet pump system (PPM-HO) and then to validate that calibration to achieve consistent results.

Background: hydraulic motors and liquid pumps must not be operated above their rated maximum continuous duty RPM. In an open loop system, there is no flow meter to control the trimming process, so a tachometer must be used to determine maximum trim so as not to exceed the motor rpm rating.

WARNING		<p>Potential for injury due to unexpected startup or movement of mechanical equipment.</p> <p>Unexpected startup or movement of mechanical equipment may cause injury to eyes and extremities.</p> <p>During initial startup and testing, the spreader components may start without warning. Stay clear of the auger, spinner, and liquid nozzles until initial power up and programming are complete.</p>
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VERIFY THAT FLUID IS PRESENT IN TANKS B/4 BEGINNING OPERATION

Enter the configuration menu by pressing Menu and hold auger & pre-wet paddles down together. Enter 9000 for the password. Using the spinner switch, select trim/cal and select pre-wet, use anti-ice toggle to change settings.

<pre> Menu v4.15 Rx Automatic Mode Help → Manual Mode Test Mode No Speedo Mode Material Change Unload Mode Fill Tanks Storm/Season Tot. Diagnostics <SPINNER +/->=select <PASS>=accept </pre>	<pre> Configuration Enter Password: [*000] <SPINNER +/-> to change <BLAST>=back <PASS>=next/done </pre>	<pre> Configuration Setup Wizard Advanced System Setup Set Clock → Trim/Cal Reset All Materials Save and Exit <BLAST>=done <SPIN+/->=sel <PASS>=next </pre>
<pre> Trims/Calibration Auger Speedo Spinner MDM Module → Prewet Anti-Ice <BLAST>=done <SPIN+/->=sel <PASS>=next </pre>	<pre> Prewet Setup page 1/2 Prewet Present: Yes Sensor Present: No → Minimum Trim: 64000 Maximum Trim: 64000 <SPIN+/->=sel <ICE+/->=adj <BLAST>=done </pre>	<pre> Prewet Setup page 2/2 Pulses Per GAL: 585 PUMP max. GAL/min: 300.0 → Prewet Units: GAL/TON <SPIN+/->=sel <ICE+/->=adj <BLAST>=done </pre>

- a. Prewet Present: default is yes;
- b. Sensor Present: choose No for this open loop system.
- c. Minimum Trim: do not adjust yet;
- d. Maximum Trim: do not adjust yet;
- e. Pulses per Gallon: do not enter data here – no flow meter;
- f. Pump max. Gal/minute: **enter value determined below**
- g. Prewet Units: choose between gallons/ton (default setting) and gallons/mile

- 1) Press the spinner + control until the minimum trim setting is selected.
- 2) Press pass to enter trim calibration. **Choose manual calibration.**
- 3) Set up a second person with the hand held tachometer capable of reading at least 2000 rpm and have him monitor the shaft speed of the hydraulic motor.

Manual Pre-Wet Pump Trimming and Max Flow Setting

In manual trimming, you must manually raise the hydraulic level using the pre-wet switch and visually observe fluid being dispensed and measure the motor RPM with the tachometer.

- 1) Raise the hydraulic level (pre-wet toggle) until the pre-wet pump is **barely** pumping.
- 2) Press pass to accept minimum trim level.
- 3) Increase the hydraulic level until 1550 Motor RPMs are achieved.**
- 4) Press pass again to accept the maximum trim levels.
- 5) Once the maximum trim level is accepted, the user is asked to “accept calibration”. Select “Y” using the spinner control, and then press pass.

Confirm your Calibration: to validate the maximum amount of fluid from your liquid system, use the following method:

- a) Plumb your liquid system to allow you to catch and measure an amount of fluid from a single port (10-15 gallons or 25+ liters). Add enough fluid to do the calibration;
- b) From the menu screen, select Test mode, enter the password;

Menu	v4.15 Rx
Automatic Mode	Help
Manual Mode	→ Test Mode
No Speedo Mode	Material Change
Unload Mode	Fill Tanks
Storm/Season Tot.	Diagnostics
<SPINNER +/->=select	<PASS>=accept

Test Mode	
Enter Password:	
[*000]	
<SPINNER +/-> to change	
<BLAST>=back	<PASS>=next/done

- c) Ramp up the output on liquid slowly up to 100%: Liquid will be flowing

Granular - SALT Auger 0% 0 PPM	BRINE Prewet 25% 0 PPM
Speedo: 0 PPM NO GPS	
TEST	<BLAST>=done <PASS>=zero

- d) Collect fluid for exactly one minute. The volume of fluid collected is equal to the volume flowing in one minute. The amount of fluid you collect will tell you the maximum gallons per minute the system can supply at the new maximum trim setting.
- e) Test is complete. Press Blast to return to menu.
- f) Return to the Trim/Cal – Pre-Wet menu and enter the value for Pump max. Gal/minute (that you just determined) into that line on the menu and blast back out till you get confirmation that value is saved.
 - a. Entering the field determined value, allows the SpreadSmart to deliver consistent fluid volumes within the capacity of the system.

For identical trucks, these two new values (maximum trim for pre-wet and pump max gal/minute) can be entered manually without re-running field calibration procedure above. Small differences in accuracy will occur between trucks using this method, but those variations will be within normal expectations for an open loop system.