

PUMP CALIBRATION PROCEDURE

TO ENSURE AN ACCURATE CALIBRATION PLEASE FOLLOW THE PROCEDURE EXACTLY!

The following field procedure is recommended to check or calibrate the injection pumps. This procedure requires a catch basin or container of at least 60 Oz. with graduation marks. In this example, a 56 Oz. test is described. There is nothing magic about the 56 Oz. number, in fact, collecting more material leads to smaller measurement errors. However, it is important to get a very accurate measurement of the volume of fluid (Fl. oz.) collected. In this example we will be calibrating Pump #1, the procedure is the same for all pumps.

NOTE: MID-TECH suggests doing all calibrations using water to keep the procedure as simple and safe as possible; however, it may be necessary to calibrate with the actual chemical if it is an extremely thick, heavy or viscous fluid.

Check the current Pump Calibration Number and Application Rate (pump to be calibrated) and Test Speed values. These should be typical for your sprayer operations. If not, reset them to a typical value, (Refer to Sections 2.3.2. & 2.5 in the MID-TECH user guide to view and enter these values).

The calibration is conducted with the vehicle **STOPPED** and the main carrier pump **NOT** running. To safeguard against back flushing and siphoning, **SHUT OFF** the feed line valves at the water tank.

NOTE: Thoroughly flush all injection lines and fill with clean water before performing calibration procedure.

- A. Make sure all chemical containers are **filled** with fresh, clean water, and they are connected to the proper injection pumps. Turn all booms **OFF**.
- B. Set the RS 6000 control console switches as follows:

Master Switch	OFF
Rotary Selector	AUTO
- C. Set the TASC control console switches as follows:

Power	ON
Mode Selector	OPERATE
Display Selector	CHEMICALS,CHEM, APPLIED
Pump Switch #1	CENTER, ON POSITION

The accumulated volume for pump #1 will be displayed.

- D. Use the **INC/DEC** switch to reset the display to zero. Select **SET-UP** with the Mode Selector switch. The current pump calibration number is displayed. Now go back to the pump and perform the flush operation.
- E. Install calibration hose on the quick disconnect on the calibration valve. Turn the handle on the calibration valve so the arrow on the handle points towards the quick disconnect.
- F. Open the cover on pump #1 and press and hold the Calibrate Button, (The top button on upper left corner of chemical pump), (or install magnet). Allow the pump to run until satisfied the lines are flushed and filled with liquid. Release the button.
- G. Return to the control console and select **OPERATE** with the Mode Selector switch. Use the **INC/DEC** switch to zero the accumulated volume for pump #1 and again select **SET- UP** with the Mode Selector switch. Now go back to the pump and perform the test.

Note: Finish with the same amount of water in the calibration tube as you started with.

- H. Be sure the supply tank for the pump being calibrated contains more than enough material to conduct the test. Direct the discharge line from the injection pump into the graduated container.
- I. Press and hold the Calibrate Button, (or install magnet), and allow the pump to discharge into the calibration container. When enough material has been pumped, release the button. Verify the amount of liquid in the calibration container as observed on the marks on the side of the container (ie. 56 oz)
- J. Return to the console. Select the **OPERATE** Mode. The number displayed will be the "Indicated" Ounces from Pump # 1. If the console reading agrees with the calibration container the pump is calibrated. If the console reading is incorrect, calculate the new calibration number. For instance, if the Indicated Ounces reads 53 instead of the actual 56 (which we collected), then we would divide the Actual Ounces by the Indicated Ounces and multiply the Actual Ounces collected by the old PC# to determine the new PC#.

$$\text{Actual Oz./Indicated Oz.} \times \text{Old PC\#} = \text{New PC\#}$$

If the Indicated Ounces is less than the Actual Ounces collected, the Cal# will increase.

$$\text{Example: } 56/53 \times 145.0 = 153.2, \text{ the New PC\#}$$

- K. To change the Pump Calibration Number, return to the **SET - UP** Mode and view the old Pump Calibration Number (145.0 for example).
- L. Use the **INC/DEC** switch to increase the PC# from 145.0 to 153.2.
- M. Set the Mode Select switch back to **OPERATE** and the accumulated ounces will again be displayed. The console recalculates the ounces accumulated and should now show the amount actually collected (56 in our example). If the displayed value of accumulated ounces is off by a significant amount, recheck the calculations making sure the math is correct.
- N. Turn **OFF** pump #1. Turn the handle on the calibration valve so the arrow on the handle points to the rear of the calibration valve.

CALIBRATION TIPS

Calibration should be done with Test Speed set at 10 mph, Calibration "C" width set at 120" (factory default), and the highest application rate to be used. Once this is complete then check at the low end by reducing test speed or width. If there is a difference between the two tests then one of the following could be the cause:

- The chemical is too thick to completely fill the pump tube at the higher rates.
- The pump tube is damaged and needs replacement.
- There is an air leak on the suction side of the chemical pump.

Note: Each of the tests should be run more than once for accuracy.

Use only the clear calibration hoses supplied with the machine, they allow you to see any air bubbles that could cause inaccurate results.