

VLF Trendsetter AL

Calibrating Pressure Sensors

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Revision History

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1. TOOLS

- Omega calibrated pressure transducer, part number 90-1189A

  OR

- Fluke digital pressure meter (for old method of calibration), part number 901188A
- Fluke digital multimeter

2. CALIBRATING THE PRESSURE SENSORS

You will need to calibrate the sensors when:

- upgrading to firmware version 1.10
- replacing a picker genine board (unless a version C or D is being replaced with the same version)

Basically there are two methods of calibrating the pressure sensors: The preferred new method that required a pressure transducer, and the old method that requires a Fluke digital pressure meter.

Note: Before calibrating the pressure transducers, close Print Console or Allegro.

2.1 New Calibration Method

Requires firmware version 1.10 -Beta build 8 or 1.10 release or higher.

1. Remove the connector from J3 of the picker genine board
   J3 is normally for the wedgemaster vacuum sensor.
2. Connect the Omega calibrated pressure transducer to J3 on the picker genine.
3. Connect the pressure port into the main system pressure on the picker with a T or Y connector so that the picker pressure sensor is still connected.

Tip: Set verbose level to 0 or 1. If it is higher then it gets confusing.

2.1.1 Calibrating Genine version B boards

Calibrating version B using the transducer without a current reference:

1. Connect the banana plugs from the pressure transducer to a Fluke milliamp meter.
   If the pressure is too far off, adjust the pressure regulator until the current is 17.70 mA +/- 0.2 mA.
2. Type <<`cal pressure sensor J3 <mA> >>`, where mA is the reading on the milliamp meter (for example: cal pressure sensor J3 17.694).
3. Type <<`cal pressure sensor ref <cal number> >>`. The cal number is the 8-digit number written on the sensor – for example: cal pressure sensor ref 86775576.

4. Follow the instructions on the display; it will prompt you to turn off the air at the filter inlet relief valve and to turn on the air when the null reading has been taken, (machines with beepers will beep).

5. Type <<`cal pressure>>.`
   Tip: It is easier to monitor the readings while you are adjusting the regulator if you have a laptop connected to the output device.

6. Follow the instructions on the display; it will prompt you when to turn off the air and when to turn on the air.

7. When the table vacuum starts to turn on and off, adjust the regulator down until the puffing stops; now adjust it up slowly while **Adjust Up** is displayed. If your machine is fitted with a beeper, adjust even slower when it beeps (it will beep faster when you get closer). Stop when **Hold** is displayed. If you go too far, then adjust all the way down and back up again.

Calibrating version B using the transducer with a current reference:

1. Connect the banana plugs from the pressure transducer to a Fluke milliamp meter. The pressure should be 84 psi.
   If the pressure is too far off, adjust the pressure regulator until the current is 17.70 mA +/- 0.5 mA.

2. Type <<`cal pressure sensor J3>>`

3. Answer **Yes** to the question: "Do you have a Precision Current Reference Module connected to J3".Type <<`cal pressure sensor ref <cal number> >>`. The cal number is the 8-digit number written on the sensor – for example: cal pressure sensor ref 86775576.

4. Type <<`cal pressure>>.`
   Tip: It is easier to monitor the readings while you are adjusting the regulator if you have a laptop connected to the output device.

5. Follow the instructions on the display; when prompted, turn off the air at the filter inlet relief valve. When the null reading has been taken, (machines with beepers will beep), turn the air on.

6. When the table vacuum starts to turn on and off, adjust the regulator down until the puffing stops; now adjust it up slowly while **Adjust Up** is displayed. When the beeper sounds, adjust more slowly (it will beep faster when you get closer). Stop when **Hold** is displayed. If you go too far, then adjust all the way down and back up again.

2.1.2 Calibrating Genine versions C or D boards

1. Type <<`cal pressure sensor ref <cal number> >>.` The cal number is the 8-digit number written on the sensor – for example: cal pressure sensor ref 86775576.

2. Follow the instructions on the display; when prompted, turn off the air at the filter inlet relief valve. When the null reading has been taken, (machines with beepers will beep), turn the air on. Wait for the command to complete successfully.

3. Type <<`cal pressure>>.`
   Tip: It is easier to monitor the readings while you are adjusting the regulator if you have a laptop connected to the output device.

4. Follow the instructions on the display; when prompted, turn off the air at the filter inlet relief valve. When the null reading has been taken, (machines with beepers will beep), turn the air on.

5. When the table vacuum starts to turn on and off, adjust the regulator down until the puffing stops; now adjust it up slowly while **Adjust Up** is displayed. When the beeper sounds, adjust more slowly (it will beep faster when you get closer). Stop when **Hold** is displayed. If you go too far, then adjust all the way down and back up again.

2.2 Old Method of Calibration (all board versions)

Requires firmware version 1.10 only.

To use this method, you must have a Fluke digital pressure meter. Turn on the pressure meter and press the **Zero** button. Press the **Unit** button until it reads in units of PSI.

1. Connect the pressure meter in to the center tap of the picker manifold using a ¼" T or Y connector.
2. Adjust the machine system pressure regulator to 84.0 +/- 0.2 psi.
3. Turn off the air pressure at the filter inlet relief valve.
4. Turn on the air pressure and check that it is stable at 84 +/- 0.2 psi for at least 20 seconds.
5. Type <<`cal pressure sensor 84 creo`>> in the Procom diagnostic monitor. Answer the question: "Do you have a precision pressure meter connected?".
   When prompted, turn off the air at the filter regulator assembly. When prompted, turn it on again. After 20 seconds, the pressure should have stabilized to 84 +/- 0.2 psi. If not, then adjust it slightly before answering Yes to the question "Is the pressure stable?".
   Note: It is better to turn it up than down. If you turn it down, you must perform a <<cal pressure>> again.
   When it has completed, make sure that is says calibration successful.
6. Type `<<picker>>.` The pressure should read 84.0 +/- 0.3 psi and be within 0.2 psi of what is currently on the pressure meter.
7. Type `<<ale>>`. Again, the pressure should read 84.0 +/- 0.3 psi and be within 0.2 psi of what is currently on the pressure meter.
8. Turn off the air and disconnect the pressure meter.

3. APPENDIX A – SUCCESSFUL CALIBRATION LOG FILE

>>

set verbose monitor 0

>> set verbose monitor 0

NVS verbose (Debug verbose info) subsystem:

monitor = 0 Saved = 5 Default = 0

cal pressure sensor j3 17.452

>> cal pressure sensor j3 17.452

Restarting

ADC cal factor 1.002 for analog0 J3

Command Complete

cal pressure sensor ref 83956640

>> cal pressure sensor ref 83956640

GENINE 32 (hex) hardware version 01.01 firmware version 01.15

Using ADC cal factor 1.002 for analog0 J3

This command requires a precission reference sensor connected to J3 of picker Genine.

Do you have the precission reference sensor connected (Y/N)

y

Yes

Genine correction factor 1.002

*** Turn OFF the system air pressure at filter assy

waiting for system pressure to settle

Saving al (Autoloader global parameters) configuration

Saving al (Autoloader global parameters) calibration

System Pressure adc successfully calibrated (offset = 40)

Picker Pressure adc successfully calibrated (offset = 210)

*** Turn the system air supply back on.

please wait 20 seconds for sensors to stabilize

please wait 19 seconds for sensors to stabilize

please wait 18 seconds for sensors to stabilize

please wait 17 seconds for sensors to stabilize

please wait 16 seconds for sensors to stabilize

please wait 15 seconds for sensors to stabilize

please wait 14 seconds for sensors to stabilize

please wait 13 seconds for sensors to stabilize

please wait 12 seconds for sensors to stabilize

please wait 11 seconds for sensors to stabilize

please wait 10 seconds for sensors to stabilize

please wait 9 seconds for sensors to stabilize

please wait 8 seconds for sensors to stabilize

please wait 7 seconds for sensors to stabilize

please wait 6 seconds for sensors to stabilize

please wait 5 seconds for sensors to stabilize

please wait 4 seconds for sensors to stabilize

please wait 3 seconds for sensors to stabilize

please wait 2 seconds for sensors to stabilize

please wait 1 seconds for sensors to stabilize

please wait 0 seconds for sensors to stabilize

Calibrating sensors, please wait....

Saving al (Autoloader global parameters) configuration

System pressure calibration successful

>>

cal pressure

>> cal pressure

*** Turn OFF the system air pressure at filter assy

waiting for system pressure to settle

Saving al (Autoloader global parameters) configuration

Saving al (Autoloader global parameters) calibration

System Pressure adc successfully calibrated (offset = 40)

Picker Pressure adc successfully calibrated (offset = 210)

*** Turn the system air supply back on.

*** Adjust the system pressure to below 81 PSI

Pressure is 84, Adjust Down

Pressure is 84, Adjust Down

Pressure is 83, Adjust Down

Pressure is 82, Adjust Down

Pressure is 80, Adjust Down

*** Adjust the system pressure SLOWLY to 84 PSI

Press: 78.2 psi. |-------> | | *** HOLD ***

Press: 78.0 psi. |-------> | | adjust UP

Press: 77.8 psi. |------> | | adjust UP

Press: 77.7 psi. |------> | | adjust UP

Press: 77.7 psi. |------> | | adjust UP

Press: 77.6 psi. |------> | | adjust UP

Press: 77.6 psi. |------> | | adjust UP

Press: 77.5 psi. |------> | | adjust UP

Press: 77.5 psi. |------> | | adjust UP

Press: 77.6 psi. |------> | | adjust UP

Press: 77.5 psi. |------> | | adjust UP

Press: 78.1 psi. |-------> | | adjust UP

Press: 78.3 psi. |-------> | | adjust UP

Press: 78.3 psi. |-------> | | adjust UP

Press: 78.5 psi. |-------->| | adjust UP

Press: 78.5 psi. |-------->| | adjust UP

Press: 78.5 psi. |-------->| | adjust UP

Press: 78.6 psi. |-------->| | adjust UP

Press: 78.7 psi. |-------->| | adjust UP

Press: 78.8 psi. |-------->| | adjust UP

Press: 78.8 psi. |-------->| | adjust UP

Press: 79.0 psi. |---------> | adjust UP

Press: 79.1 psi. |---------> | adjust UP

Press: 79.5 psi. |---------|> | adjust UP

Press: 79.6 psi. |---------|> | adjust UP

Press: 79.7 psi. |---------|> | adjust UP

Press: 80.0 psi. |---------|-> | adjust UP

Press: 80.2 psi. |---------|-> | adjust UP

Press: 80.6 psi. |---------|--> | adjust UP

Press: 81.0 psi. |---------|---> | adjust UP

Press: 81.3 psi. |---------|---> | adjust UP

Press: 81.6 psi. |---------|----> | adjust UP SLOWLY

Press: 82.0 psi. |---------|-----> | adjust UP SLOWLY

Press: 82.3 psi. |---------|-----> | adjust UP SLOWLY

Press: 82.3 psi. |---------|-----> | adjust UP SLOWLY

Press: 82.6 psi. |---------|------> | adjust UP SLOWLY

Press: 82.6 psi. |---------|------> | adjust UP SLOWLY

Press: 82.7 psi. |---------|------> | adjust UP SLOWLY

Press: 82.8 psi. |---------|------> | adjust UP SLOWLY

Press: 82.8 psi. |---------|------> | adjust UP SLOWLY

Press: 82.9 psi. |---------|------> | adjust UP SLOWLY

Press: 82.9 psi. |---------|------> | adjust UP SLOWLY

Press: 83.2 psi. |---------|-------> | adjust UP SLOWLY

Press: 83.4 psi. |---------|-------> | adjust UP SLOWLY

Press: 83.7 psi. |---------|-------->| adjust UP SLOWLY

Press: 83.7 psi. |---------|-------->| adjust UP SLOWLY

Press: 83.8 psi. |---------|--------->| adjust UP SLOWLY

Press: 83.9 psi. |---------|--------->| adjust UP SLOWLY

Press: 83.9 psi. |---------|--------->| adjust UP SLOWLY

Press: 83.9 psi. |---------|--------->| adjust UP SLOWLY

Press: 83.9 psi. |---------|--------->| adjust UP SLOWLY

Press: 84.1 psi. |---------|---------| adjust UP SLOWLY

Press: 84.1 psi. |---------|---------| adjust UP SLOWLY

Press: 84.2 psi. |---------|---------| *** HOLD ***

Press: 84.2 psi. |---------|---------| *** HOLD ***

Press: 84.2 psi. |---------|---------| *** HOLD ***

Press: 84.2 psi. |---------|---------| *** HOLD ***

Press: 84.3 psi. |---------|---------| *** HOLD ***

Press: 84.2 psi. |---------|---------| *** HOLD ***

Press: 84.3 psi. |---------|---------| *** HOLD ***

Press: 84.3 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Press: 84.4 psi. |---------|---------| *** HOLD ***

Saving al (Autoloader global parameters) configuration

System pressure calibration successful

>>

ale

>> ale

Autoloader System Status:

Not initialized

Not suspended

Commamd code x0

No active command

System pressure = 84.4 psi

Engine pulley-end temp = 21.6 ?C

Carriage nut temperature = 23.6 ?C

VAL 48V OK

VAL 24V OK

Cassette Not suspended

Conveyor Not suspended

ALE (state al sus) Not suspended

Yaxis Genine 48V Ok, 24V Ok

Picker Genine 48V Ok, 24V Ok

MCU/SCU Genine 48V Ok, 24V Ok

Conveyor Genine 48V Ok, 24V Ok

>>

picker

>> picker

Picker Status:

Not initialized

Free

Picker Sensors (enabled):

Picker Slipsheet Vacuum Sensor cable (GEN2-J3) disconnected

Plate cup is up

Eject pusher fingers are both up

Slipsheet picker is up

Plate sensor is not detecting plate

Picker vacuum level is 0

Picker slipsheet sensor power is off

Picker slipsheet vacuum level is 612

System Pressure at Picker is 84.5 raw 543

Picker X-axis Status:

Position : 0 mm (0 microsteps)

Enabled : yes

Running : stopped

Direction : CW

Command completed : yes

Holding current : full

Error status : no errors

Home sensor : not at home

Away sensor : not at away

Safe-Home sensor : at safe home: not active

Safe-Away sensor : not at safe away: not active

Command Complete