

**Version**

**1.9**

# **LDAR**tools

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## Cal5.0 Manual

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To confirm this is the most current version, please see the LDARtools Knowledge Base via [help.ldartools.com](http://help.ldartools.com)  
→ SpanBox5 & Cal5.0 → Setup and Maintenance

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# Daily Calibration

1. Confirm you have been certified according to the Cal5.0 Skills Documentation.
2. After attaching probes, ignite the **phx** units - if applicable (triple-tap the power button on all phx42s to ignite; phx21s DO NOT have to be ignited).
3. Prior to connecting the **phx** units to the **SpanBox**, check the probe flow of all units and record the results for later entry into Cal5.0.
4. Avoid kinking, bending, or blocking probes.
5. Assign a **phx42** to a specific port for all calibration and drift activities. **DO NOT** attempt to perform a drift on a port different from the one the **phx42** was calibrated on. A list of **phx**/port pairings will be displayed prior to drift.
6. Tap **Daily Calibration**.
7. Tap checkboxes for each **phx** on the Connection screen, then tap **Next**.
8. If a connection or firmware error appears, tap **Yes** to **Retry Connection**.
9. After a successful Connection, self-check will begin.
10. If there are any self-check issues, acknowledge them, then tap **OK**.
11. Follow on-screen prompts to block probes.
12. Select Probe Type from dropdown. Enter Probe flow. Tap **Next**.
13. Tap **Next** after self-check.
14. Verify that the cylinder information is correct, then tap **Next** on the Cylinders screen. Otherwise, tap **Manage Cylinder** to remove or add cylinders.
15. At the four-minute mark of the warm-up, ports are automatically assigned to the units. (Gas is distributed to one port at a time and Cal5.0 records which analyzer responds to which port (this is called “hunting”). This process only occurs before Daily Calibration, and once completed, this is the port assigned to that analyzer the rest of the day.)
16. Once the warm-up period is over, the unit will start calibrating using the assigned cylinders.
17. Afterwards, the calibration confirmation process will verify if the unit is calibrated to each gas correctly.
18. Once the units pass or fail confirmation, the Maintenance Report screen will appear.

**Note:** If the Maintenance Report is blank, this means all checks passed.

19. Select your name from the Technician dropdown and sign and tap **Next**.
20. Check the box next to any non-critical self-check issues that may have occurred to acknowledge them.
  - See pg. 14, 15 for more information on critical and non-critical self-check issues.
21. Select your name from the Technician dropdown list, sign, then tap **Next**.
22. Tap **OK**.

## Drift

1. Make sure the **phx42** is ignited and warmed up before attaching it to the **SpanBox5**.
2. Tap the **Drift** box on the Home Screen.
3. Follow the on-screen prompt to confirm the **phx42** is attached to **THE SAME PORT** it was calibrated on earlier in the day.
  - Analyzers that have a Daily Calibration from today will appear.
  - On the right of each analyzer, the latest EOD and Noon drift results will be shown.
4. Check the boxes next to the analyzers to be drifted:

If the analyzer can't be discovered, it will be grayed out.

If the analyzer is in range, wait a minute for the **SpanBox5** to discover and connect.
5. Tap either **Noon** or **End of Day** radio button at the bottom of the screen.
6. Tap **Next**.

**Note:** If a drift of the same type (Noon or EOD) has already been performed on a unit, it will prompt you to confirm that you want the previous drift overwritten.
7. If the cylinder information is correct, tap **Next**. This will auto-advance after 10 seconds. Otherwise, tap **Manage Cylinders** (you must use the same cylinders used for calibration).
  - The Drift process will begin.
  - Units will be drifted to the selected cylinders.

- If you are running a standard drift, each gas will be applied once.
  - If you are running a VVa drift, each gas will be applied 3 times.
  - If a unit fails a gas, it will continue testing the unit while continuing the drift process for the other units.
8. Select your name from the Technician dropdown and sign, then tap **OK**.

## Precision Calibration (PreCal)

1. Tap the **Precision Calibration** box on the Home screen. Analyzers that have a Daily Calibration from today will show. On the right of each analyzer, the latest PreCal result will be shown.
2. Check the boxes next to the analyzers to receive PreCal. If the analyzer cannot be discovered, it will be grayed out.
3. Tap **Next**.

**REMINDER:** If you run an additional PreCal on the same day, you will be warned of overwriting the previous record for that day. If performing an additional PreCal on the same day, you must manually sync the existing records to Chateau or LTI Desktop Manager prior to proceeding with the additional PreCal, if you wish to keep the existing records.

4. Confirm each **phx42** is connected to the same port on which it was calibrated that day.

The Calibration Precision process will automatically begin with each gas response time being tested 3 times. If a unit fails at any time, it will be skipped for the remainder of the tests, but remain on-screen. The other units will continue.

A notice at the end of the PreCal will display the **phx42** number and what gas it failed at on the Cal Precision Report screen.

5. Select your name from the Technician dropdown and sign, then tap **OK**.

# Records Management

## Export Records via USB

1. Insert a USB into **SpanBox5**.
2. On the Home Screen, tap **Export Records**.
3. Select the desired date range.
4. Tap **OK**.
5. Wait until the “Successfully exported records to USB” prompt appears.
6. Tap **OK**.
7. Remove the USB from **SpanBox5** and connect it to a computer.

The Record files can be found in the Cal5.0 Records folder with either of these filename formats:

- Cal5 Record DD.MM.YYYY-DD.MM.YYYY
- Cal5 Record DD.MM.YYYY

## Auto-Export Records via Wireless Network

Cal5.0 can be enabled to wirelessly transmit your calibration records to your LTI Desktop Manager or Chateau database. Please contact [support@ldartools.com](mailto:support@ldartools.com) to get your sync credentials and setup instructions.

## Manual Export Records via Wireless Network

This process is only required if exporting records during the same calendar day OR if the auto export failed. Otherwise, auto export will transfer records based on your customized schedule.

Check with your Site Supervisor if your site’s LTI Desktop Manager or Chateau has been enabled or inquire at [support@ldartools.com](mailto:support@ldartools.com) if you are interested in enabling this feature.

1. On the Home screen, tap **Results**.
2. Tap **Manual Sync**.
3. Select the desired date range.
4. Tap **OK**.
5. Once upload process is complete, tap **OK**.

# Set-up and Maintenance

## Manage Cylinders

**Note:** You must calibrate and drift with the same cylinder. Do NOT replace cylinders between calibration and drift.

1. Add a Cylinder:
  - a. Tap the **Menu** button.
  - b. Tap **Manage Cylinders**.
  - c. Tap **Add Cylinder** and a new cylinder record will be added.
  - d. Fill in the fields:
    - i. **Expiration date** – The day the certification on the cylinder will expire.
    - ii. **Certification day** – The day your cylinder was certified.
    - iii. **Actual PPM** – The actual PPM of the cylinder.
    - iv. **Target PPM** – The target PPM or the Leak Definition associated with this cylinder.
    - v. **Cylinder S/N** – The ID you want to use to refer to this cylinder.
  - e. Check the boxes that apply:
    - i. **Calibration** - this cylinder will be used for Daily and Precision Calibration.
    - ii. **Drift** - this cylinder will be used for all drifts.
  - f. Continue adding cylinders until finished.

Cal5.0 will automatically assign the ports from least to greatest based on Target Concentrations. Verify that each cylinder's port number corresponds to the port number its gas line is connected to in the back.

The Assigned Port number is in the top-left corner of every cylinder record.
  - g. Tap **Done** when you are finished.

2. Deleting a Cylinder
  - a. Tap the **Delete** button next to cylinder.
3. Temporarily Removing a Cylinder
  - a. Uncheck the **Calibration** and **Drift** checkboxes.
  - b. Tap **Done**.

**Note:** If you use a cylinder intermittently, the ports will be re-assigned each time you check/un-check the cal/drift boxes for that cylinder. If you unselect a gas from this screen, it must **ALSO** be disconnected from the **SpanBox** and all gasses moved up a port. Selected cylinders will be automatically assigned a port from lowest to highest concentration (no gaps).

### Manual Box Control (Purge)

Manual box control allows you to turn gasses on and off (thus purging gasses). This is used prior to calibration, if the line has not been under pressure since last calibration (e.g. gasses were turned off or a cylinder was changed) or to perform a function check on the **SpanBox**.

1. To purge the **SpanBox**:
  - a. Tap the **Menu** button.
  - b. Tap **Manual Box Control**.
  - c. Tap the **checkbox** for the **highest input port** (gas) and **output port 6**.
  - d. Count to 10 with gas flowing.
  - e. Repeat for all **input ports** (high to low) on **output port 6**.
  - f. Tap **Done**.

### Managing Technicians

2. Adding Technicians:
  - a. Tap the **Menu** button.
  - b. Tap **Manage Technicians**.
  - c. Tap the textbox and enter the Technician's name.
  - d. Tap **Add**.



- e. Tap **Done**.
3. Removing Technicians:
    - a. Tap the **Menu** button.
    - b. Tap **Manage Technicians**.
    - c. Tap the **delete** button next to a Technician's name.
    - d. Tap **Done**.

## Extension Probes

Update your settings for calibration with extension probes. See *Update Device Settings* (pg. 8).

## Update Cal5.0

1. Tap the menu button in the top left of the screen.
2. Tap **Update Cal5.0**.
3. Tap **Update Online**
  - Once the download completes, it will automatically update and restart Cal5.0.

## Manually Update Cal5.0 via USB

1. Select and download all the installation files from this ShareFile link:  
<https://ldartools.sharefile.com/d-s3fec45b1797423aa>
2. Extract the files from the Cal5.zip file.
3. Remove any file not in a folder from the **USB**.
4. Copy and paste the new installer files onto the **USB**.
5. Insert the **USB** into the **SpanBox**.
6. Tap **Menu**.
7. Tap **Update Cal5.0**.
8. After it finishes downloading the installers, tap **Update from USB**.
9. Once complete, verify that the application has been updated by checking that the version number matches the version of the installer at the bottom-right of the Home Screen.

## Update Device Settings

Do not use the code of the day to make any changes to the device settings through the Cal5.0 software on the **SpanBox**. All settings will revert to saved settings on the Customer Portal next time the box connects to the network.

1. Log in to the Customer Support portal.
2. Click **Unit Settings**.
3. Find the applicable **SpanBox** number.
4. Click **Edit**. (**Note:** If you do not have access to edit, contact your supervisor with your desired setting changes.)
5. Update the settings to the desired value.
6. Click **Save**.
7. Go to your **SpanBox**.
8. Tap **Menu**.
9. Tap **Settings**.
10. Wait, then once the updated prompt appears, tap **OK**.
11. Tap **Menu**.
12. Tap **Home**.
13. Tap **OK** to close the prompt.
14. Email [support@ldartools.com](mailto:support@ldartools.com).

## Update License

This is only required when license renewals are processed. Otherwise, there is no need to update the license.

1. Tap **Menu**.
2. Tap **License**.
3. Tap **Update Online**.
4. Once the Success prompt appears, tap **OK**.
5. Tap **Done**.

## Managing Wireless Network

1. Tap **Menu**.
2. Tap **Manage Networks**.
3. Tap **OK**.
4. Tap **Search**.
5. Select the Wi-Fi name.
6. Enter the password, then tap **Connect**.
7. Tap **Test Connection**.
8. Once successful, tap **Done**.

## Restart / Shut Down

Typically, boxes are left on at all times.

To restart:

1. Tap **Menu**.
2. Tap **Restart**.

To shut down:

1. Tap **Menu**.
2. Tap **Shutdown**.

**Note:** If you have an auto-sync scheduled and the **SpanBox** is shut down, the auto-sync will **NOT** be successful.

# Hardware Maintenance

## Daily Hardware Checks

1. Verify the output of the regulator hooked up to each gas cylinder is set to 30 psi, if adjustable, and turned on.
2. Make sure that each output port is using a calibration Tee.

## Verify SpanBox Flow (Weekly)

1. Attach the **SpanBox** flow meter (LDAR# 1645) to the calibration Tee.
2. Verify that the output of each port of the **SpanBox** is set to at least 0.5 L/min if using only **phx42**, and 2.0 L/min if using **phx21** or a mixture of both.
3. Make sure the flow meter is in an upright position.
4. In Cal5.0, select "Manual Box Control." Check the box for the input port and the output port you are testing first.
5. Block the open leg of the Calibration Tee and read the flowmeter to verify it is set to the correct value.
6. Repeat the process for each input and output combination until all ports have been checked for all of the available gases.
7. If the flow is incorrect, adjust the flow regulator.

## Adjusting the Flow Regulator

1. Use the nut driver to loosen the flow regulator nut. With gas flowing, turn left to allow more flow and turn right to allow less flow.
2. Use the nut driver to lock the flow regulator once the flow meter reads 0.5L/min or 2L/min as determined above.
3. Check the flow again after tightening the lock nut.

### Note:

- This is a one-time adjustment. Once the flow has been adjusted properly, all ports should maintain the proper flow. Report an issue if adjusting the flow.
- When performing manual calibrations using a regulator with a calibration tee, the pressure will need to be adjusted once the regulator is installed on the cylinder to set the flow for the analyzer type being calibrated—0.5 L/min or greater for phx42s and 2 L/min or greater for phx21s. This should be verified each time calibrations are being performed.

## Support and Troubleshooting

For all information pertaining to support and troubleshooting issues with Cal5.0, please refer to the [Cal5.0 module of the LDARtools Knowledge Base](#).

- Hard copy users, navigate to the following web address:

<https://help.ldartools.com/index/cal50-help/>