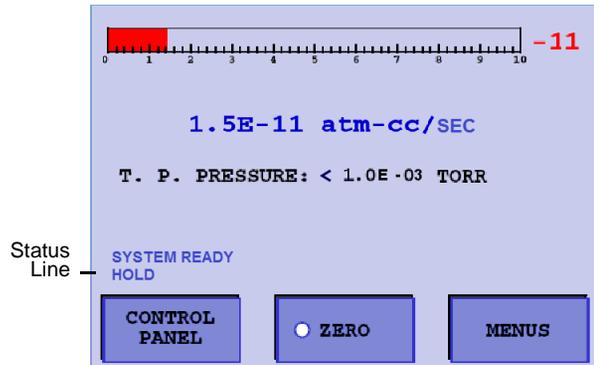


Start Up - VS Manual Section 2.1.1

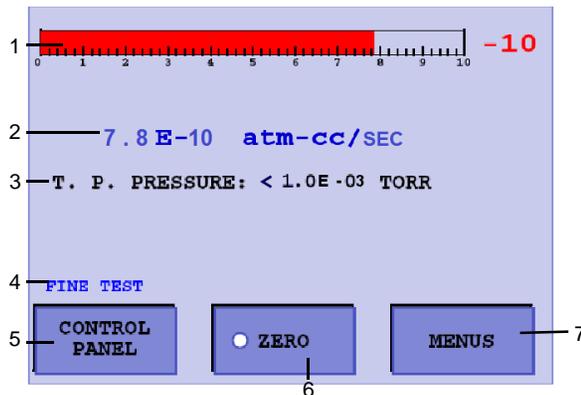
1. Plug the leak detector power cord into a power outlet.
2. Move the rear power switch **I** position.
The *SYSTEM READY* indication appears on the lower left of the *Home* screen after about 3.5 minutes.



See the *VS Series Helium Mass Spectrometer Leak Detector Operation Manual* for further instructions (699-09-943).

Home Screen - VS Manual Section 2.2.2

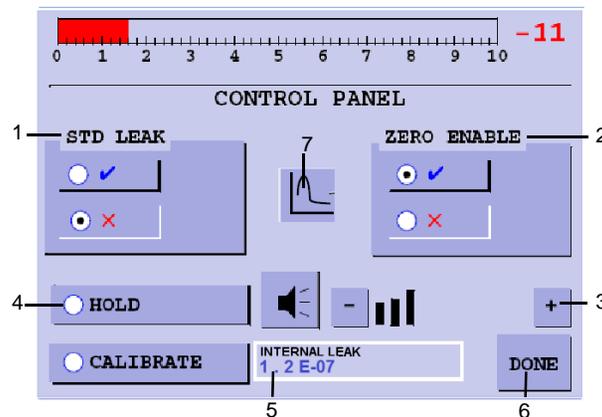
This the primary screen used during leak detection containing information for everyday use.



- (1) Log Leak Rate Bar Graph - Displays real-time helium leak value; exponent on the right.
- (2) Digital Leak Rate - Displays the digital leak value shown in the bar graph leak value.
- (3) Test Port Pressure - Shows the test port vacuum pressure. With the probe attached, this is the vacuum pressure inside the probe. Test pressure is in black text if OK and red when it exceeds maximum pressure.
- (4) Status - Displays current VS operating state, example-Fine Test, System Ready, STD Leak.
- (5) Control Panel - Gives access to most frequently used functions.
- (6) Zero - Negates the presence of background helium. Only visible on *Home* and *Graph* screens when the *Control Panel* screen *Zero Enable* is on.
- (7) Menu button - Gives access to the full range of setup functions. See section 2.2.4 of the VS Manual.

Control Panel - VS Manual Section 2.2.3

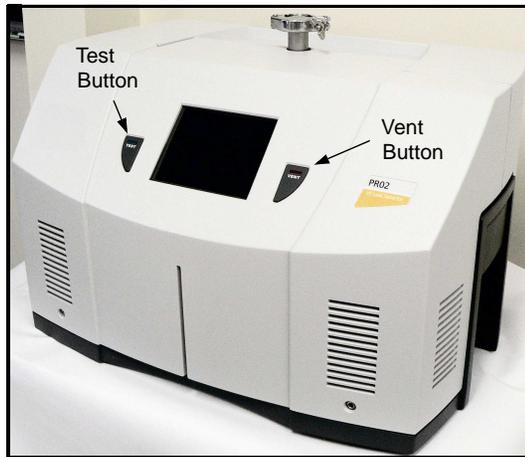
- Press **Control Panel** on the *Home* screen and the screen appears for the most frequently used functions.



- (1) *STD LEAK* - Introduces helium from the internal standard leak into the system to verify sensitivity and for calibration. When active, *STD LEAK* appears on the *Home* screen status line.
- (2) *ZERO ENABLE* - Activates the *Zero* function on the *Home* screen, allowing you to exclude the background helium signal from the leak rate display. *Zero* button not visible if disabled.
- (3) Audio Controls - The audio signal is a unique pitch/frequency signature at each leak range relative to leak size.
 - Volume Adjust - Press  or  to decrease/increase audio signal volume.
 - Volume On/Off- Press  to toggle audio on/off.
- (4) *HOLD* - Press **Hold** to isolate the leak detector from the test probe; does not vent the test probe. Lets VS recover after a large helium dose. Only functions in Test/Fine Test.
- (5) *CALIBRATE* - Press to start an automated calibration. *Internal* and the calibrated leak value appear next to the *Calibrate* button.
- (6) *DONE*- Returns the VS system to *Home* screen.
- (7) *Graphic Leak Display Button*.

Test/Vent Controls - VS Manual Section 2.2.1

1. *Test* - When in Vent, press **TEST** to advance the leak detector through roughing, and into test.
2. When in Test, press **TEST** to cycle Test-Hold-Test with each button push.
3. *Vent* - Advances the unit to the vented state; press and hold **VENT** for one second.



Verify Sensitivity - VS Manual Section 2.2.3

1. Press the **TEST** button.
2. Press **CONTROL PANEL** on the *Home* screen.
3. Press **STD LEAK** to open internal calibrated leak.
4. Wait 10 seconds and verify that the bar graph reading equals calibrated leak value on *Control Panel* screen.

If the cal leak value does not equal the STD LEAK value (+/- 2 small tick marks on the Leak rate bar graph), calibrate the unit.

5. Press the **X** button to close the internal leak and begin leak testing.

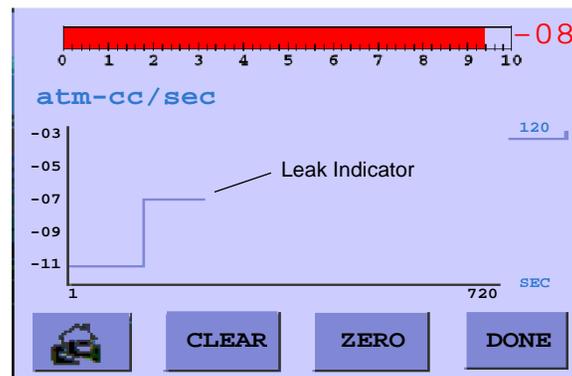
Execute Calibration (Only if required)

1. Verify the system is in test mode.
2. Press **CONTROL PANEL** on the *Home* screen and the *Control Panel* appears.
3. Press **CALIBRATE**. The system performs an automated calibration to the internal standard leak in approximately three minutes. After calibration, the unit returns to *Test* mode.

Graphic Leak Display - VS Manual Section 2.2.3.1

To activate Graph Mode:

1. Press **CONTROL PANEL**; then press the **GRAPH** button.
2. Set the time axis to 720 seconds (12 minutes).



- *Home* button - returns system to *Home* screen.
- *Clear* button - clears the graph and restarts timer
- *Zero* button - negates the presence of background helium. Only visible on *Home* and *Graph* screens with *Zero Enable* on in the *Control Panel*.
- *Done* button - returns to *Control Panel*.

Leak Test with HE Probe

For information, see HE Probe Users Guide.

1. Vent the test port and connect HE probe hose to VS inlet flange.



2. Install probe assembly in condenser system piping or pump exhaust.
 3. Press the **TEST** button to begin leak test.
 4. The leak rate decreases to baseline depending on condenser helium background.
 5. The test port vacuum pressure should be **approximately** 5E-03 mbar/Torr (5E-01 Pa) after several minutes.
 6. Spray helium around condenser system joints and monitor graphic leak rate display.
- *Fine Test* has the best leak test sensitivity; less helium is required, minimizing recovery time from a large leak. VS pumps only the probe hose volume and recovers rapidly.
 - If the condenser helium background is > 1E-07 atm-cc/sec, VS remains in *Test* mode while leak testing.
 - During leak test, residual helium can build up at the condenser causing the VS helium reading to increase by several decades. If this occurs, press the **Zero** button to suppress background; the displayed leak rate decreases to baseline. *Zero only up to 2 decades maximum.*
 - Leak response time varies from seconds to minutes depending on distance from VS to leak location.
7. Wipe the membrane surface after use to remove water deposits and rust.

Shutdown

- Move the power switch on the rear power control panel to the **0** position. The system can be in any mode when shut down. When the system is shut down, all valves in the system close. If the system is not in *Vent* mode, the test port remains under vacuum and may be difficult to open.