

SSI Technologies - Application Note DT-AN4

Digital Fluid-Trac™ (DFT-105) Ultrasonic Drum Level Gauge Troubleshooting



Measurement Technology

The Digital Fluid-Trac™ Model DFT-105 drum level gauge uses ultrasonic technology to generate a high-frequency sound wave and measures the time for the echo to reflect off the target fluid's surface and return. The distance from the Digital Fluid-Trac's sensor to the liquid is calculated based on the speed of sound.

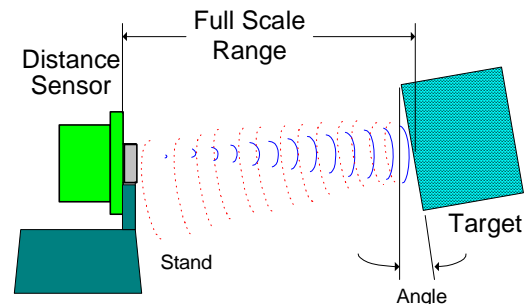
The Digital Fluid-Trac™ Model DFT-105 is factory programmed to work on ANSI MH2 standard 55 gallon or 208 liter drums (height of 32").

For correct operation, the Digital Fluid-Trac™ DFT-105 must be mounted properly with no obstructions between the sensor and media being monitored.

1) If using the 3/4" adapter, verify the yellow acoustic absorber disc (see photo below) is properly installed inside the adapter.



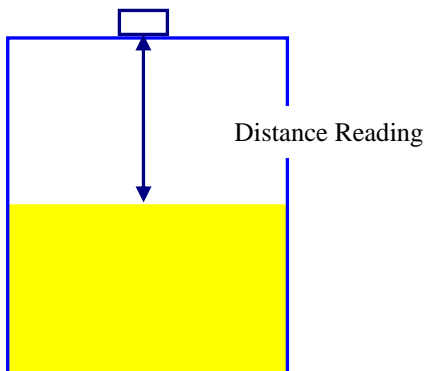
Level sensor mounting that is not perpendicular to the fluid causes a reduction in level sensor performance. As shown in the figure below, the amount of returned sound energy is dependent on mounting cone angle.



SSI Technologies - Application Note DT-AN4

Digital Fluid-Trac™ (DFT-105) Ultrasonic Drum Level Gauge Troubleshooting

2) Verify the Digital Fluid-Trac™ DFT-105 mounting is perpendicular to the liquid. The drum must be stored in an upright position.



3) Verify there are no obstructions between the sensor head and the media being measured. If something is between the sensor and the media being tested, the sound wave will be reflected off the object and not the media resulting in incorrect level readings.

4) If Model DFT-105 is to be used in the 208 liter mode skip to step 7. Use steps 5 – 7, for the 55 gallon drum mode.

5) Verify the unit is set to measure **55 gallon drums**.

- Place the Digital Fluid-Trac™ flat on a table top.
- Press the Refresh/Select button.

c. The display should read 55 gallons ($\pm 2\%$)

If the display doesn't show 55 gallon, you will have to place the unit into the 55 gallon drum setting with the following procedure:

- Enter the Select Mode: Press and hold the Refresh/Select button down for 5 seconds. The display will show gAL and flash.
- Release the Refresh/Select button and then press and hold for 5 seconds to select the gallon units. The gAL will stop flashing.
- Press and release the button 3 times to scroll through the other settings until 55 is flashing.
- Press and hold the Refresh/Select button for 5 seconds to select the 55 gallon volume setting.
- After 55 stops flashing, release the button. Press and release the button 2 more times to place the unit back into the Point Level Monitoring mode.
- The level reading can be refreshed by pressing once the Refresh/Select button. The back light will light up and the display will flash for 15 seconds. When the back

SSI Technologies - Application Note DT-AN4

Digital Fluid-Trac™ (DFT-105) Ultrasonic Drum Level Gauge Troubleshooting

light shut off, the level reading will be displayed.

6) If the previous four conditions are met, perform the following bench test.

Simulate a Full (55 gallons) Reading

1. Place the Digital Fluid-Trac™ flat on a table top.
2. Press the Refresh/Select button.
3. The display should read 55 gallons (± 2 gallons)

Simulate a 35 Gallon Reading

1. Place the Digital Fluid-Trac™ 12 inches above the table top. Make sure the bottom of the sensor is perpendicular to the table top.
2. Press the Refresh/Select button.
3. The display should read 35 gallons

Simulate an Empty (0 Gallon) Reading

1. Place the Digital Fluid-Trac™ 32 inches above the table top. Make sure the bottom of the sensor is perpendicular to the table top.
2. Press the Refresh/Select button.
3. The display should read 0 gallons

7) Verify the unit is set to measure **208 liter drums.**

- a) Place the Digital Fluid-Trac™ flat on a table top.
- b) Press the Refresh/Select button.
- c) The display should read 208 liters ($\pm 2\%$)

If the display doesn't show 208 liter, you will have to place the unit into the 208 liters drum setting with the following procedure:

- g) Enter the Select Mode: Press and hold the Refresh/Select button down for 5 seconds. The display will show gAL and flash.
- h) Press and Release the Refresh/Select button once. The display will show Lit and flash. Then press and hold for 5 seconds to select the gallon units. The Lit will stop flashing.
- i) Press and release the button 2 times to scroll through the other settings until 208 is flashing.
- j) Press and hold the Refresh/Select button for 5 seconds to select the 208 liter volume setting.
- k) After 208 stops flashing, release the button. Press and release the button 2



SSI Technologies - Application Note DT-AN4

Digital Fluid-Trac™ (DFT-105) Ultrasonic Drum Level Gauge Troubleshooting

more times to place the unit back into the Point Level Monitoring mode.

- 1) The level reading can be refreshed by pressing once the Refresh/Select button. The back light will light up and the display will flash for 15 seconds. When the back light shut off, the level reading will be displayed.
- 6) If the previous four conditions are met, perform the following bench test.

Simulate a Full (208 liter) Reading

4. Place the Digital Fluid-Trac™ flat on a table top.
5. Press the Refresh/Select button.
6. The display should read 208 liters ($\pm 2\%$)

Simulate a 132 Gallon Reading

4. Place the Digital Fluid-Trac™ 12 inches above the table top. Make sure the bottom of the sensor is perpendicular to the table top.
5. Press the Refresh/Select button.
6. The display should read 132 liters

Simulate an Empty (0 Gallon) Reading

4. Place the Digital Fluid-Trac™ 32 inches above the table top. Make sure the bottom of the sensor is perpendicular to the table top.
5. Press the Refresh/Select button.
6. The display should read 0 liters

