	TF-0001	004	11/17	CWH
CHART	LNG Fuel Gauge Troubleshooting Flowchart USDOT			

Gauge displays incorrect level

Compare mileage driven to fuel log

Is gauge display correct?

No

Yes

Check tank capacitance with a Capacitance Meter.

Is capacitance correct?

No

Yes

Verify condition of feed through cable, and wiring harness for open or short circuit.

If issue cannot be found or is found to be a tank internal issue contact Chart LNG Technical Service

Make repairs as needed.

Check cable connectors for fit, test for vapor leaks at cable connectors, check heat shrinks for fit, look for damaged wires, and wiggle test connectors.

Make repairs as needed.
(See Capacitance Chart on Next Page)

Capacitance readings correct?

No

Yes

Gauge always displays full

Compare mileage driven to fuel log

Should there be a full tank?

No

Yes

Check supply voltage and ground at tank weather pack connector with a volt meter.

Is supply voltage and ground correct?

No

Yes

Check cable connectors for fit, perform wiggle test on connectors, look for damaged wires, and check supply voltage/ ground from truck.

Do not back probe connectors, use a breakout harness

Make repairs as needed.
(See Supply Voltage Chart on Next Page)

Supply Voltage at connector correct?

No

Yes

Gauge always displays empty

Compare mileage driven to fuel log

Should there still be fuel in the tank?

Yes

No

Check signal voltage and ground at tank weather pack connector with a volt meter.

Is signal voltage and ground correct?

No

Yes

Check cable connectors for fit, perform wiggle test on connectors, look for damaged wires, and check supply voltage/ ground from truck.

Do not back probe connectors, use a breakout harness

Make repairs as needed.
(See Signal Voltage Chart on Next Page)

Signal Voltage at connector correct?

No

Yes

Replace Sending Unit

Signal voltage correct?

Yes

No

Check signal voltage and ground at VDO fuel gauge (if equipped) connector with a volt meter.

Is signal voltage and ground correct?

No

Yes

Check cable connectors for fit, perform wiggle test on connectors, look for damaged wires, and check supply voltage/ ground from truck.

Make repairs as needed.
(See Signal Voltage Chart on Next Page)

Signal Voltage at gauge correct?

No

Yes

Finished or Continue Testing

Refuel Tank(s)

Gauge display correctly?

No

Yes

Gauge display correctly?

No

Check resistance of gauge & replace gauge as needed

Gauge display correctly?

No

Yes

Verify condition of feed through cable and wiring harness for open or short circuit.

If issue cannot be found or is found to be a tank internal issue contact Chart Technical Service

Make repairs as needed.

Finished

	TF-0001	004	11/17	CWH
CHART®	LNG Fuel Gauge Troubleshooting Flowchart USDOT			

Capacitance & Voltage Specifications USDOT

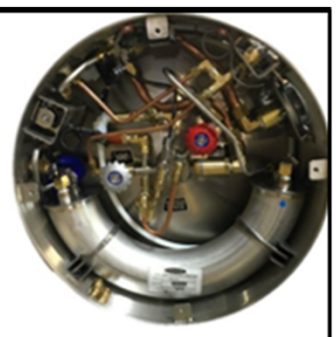
Capacitance

Compare readings from all capacitance tests to the following graphs according to the tank size being tested and feed through cable (+/- 10 pf).
11ft crossover cable = 195pf

Note: If tank contains LNG, capacitance readings will reflect that level as a reading within the range between “Empty” & “Full” capacitances listed.

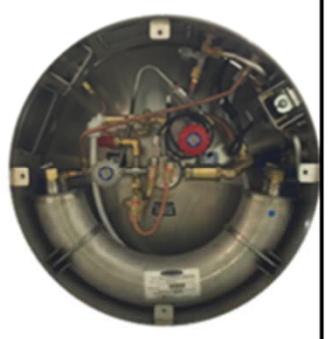
Tank Outside Diameter	Empty Capacitance	Full Capacitance
20"	287	397
22"	314	437
24"	342	477
26"	370	516
26" Bonus	380	531

15” Feed Through



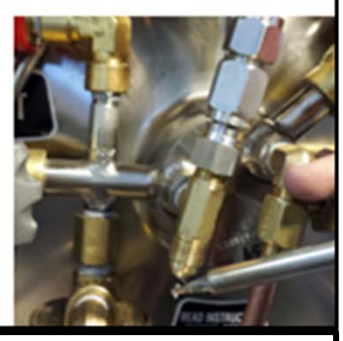
Tank Outside Diameter	Empty Capacitance	Full Capacitance
20"	322	432
22"	349	472
24"	377	512
26"	405	551
26" Bonus	415	566

27” Feed Through

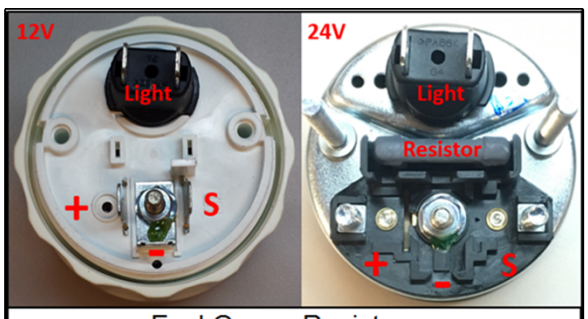


Tank Outside Diameter	Empty Capacitance	Full Capacitance
20"	262	372
22"	289	412
24"	317	452
26"	345	491
26" Bonus	355	506

Bare Wire



Contact Chart LNG Technical Service for proper tank size identification if needed



Fuel Gauge Resistance

12V		24V	
Contact	Ohms	Contact	Ohms
Light Terminals	5	Light Terminals	22
(S) and (-)	250	(S) and (-)	251
(+) and (S)	170	(+) and (S)	393
(+) and (-)	278	(+) and (-)	500
		Resistor	221

Supply Voltage

Supply voltage will be measured on the “**RED**” wire. Supply voltage will be 12 to 14 VDC depending if the engine is operating, and the functional state of the batteries & charging system. Ground issues can cause irregular voltages. Low/High supply voltages can cause incorrect signal voltages

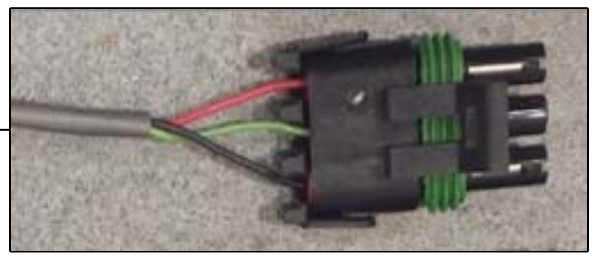
Signal Voltage

Signal voltage will be measured on the “**Green or White**” wire. Signal voltage is driven by capacitance and will vary depending on the amount of LNG in the tank, and supply voltage. Supply voltage and/or ground issues can cause irregular voltages.

Ground

Ground resistance will be measured on the “**Black**” wire. Connect one test lead to the black wire from the sending unit and the other to the tank for ground. Reading should be less than one ohm. Ground issues can cause irregular voltages.

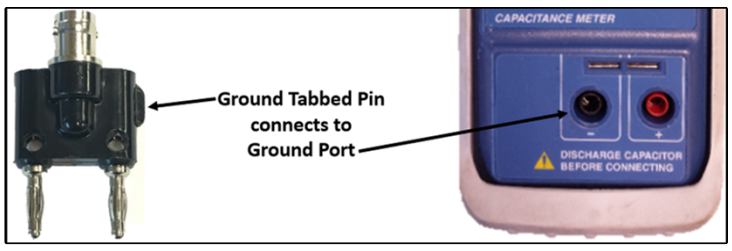
Red Wire = **Supply Voltage**
Green/White* Wire = **Signal Voltage**
Black Wire = **Ground**
*** Signal wire may be green or white**



VDO Type

Non-VDO Type

	Input Voltage with engine operating, and charging system & batteries operating normally	
		~14VDC
VDO Type (Uses separate VDO gauge)	Empty	5.5
	1/2 Tank	3.5
	Full	1.5
Non-VDO Type (Uses OEM gauge)	Empty	0.5
	1/2 Tank	2.5
	Full	4.5



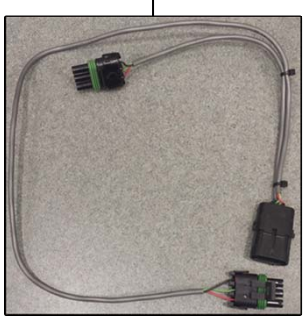
Capacitance Meter with Test Leads & separate BNC Test Lead

Meter ports are polarity sensitive

Capacitance Meter	11633137
Capacitance Test Lead	11385436

Breakout Harness

Breakout Harness 10989182



Volt Meter with Test Leads

NOTE: *General voltages & capacitances are provided in this document. Large deviations from provided numbers may indicate an issue. Supply voltage of ~12-14 VDC may vary depending on the engine operating rpm, grounding, and the functional state of the batteries & charging system. Low/High supply voltages can cause incorrect signal voltages*