VT-0054	000	10-17	CWH

Chart LNG
Feed Through Cable Replacement

OVERVIEW

Liquid level in a Chart LNG tank is measured with a capacitance tube which is located inside the tank. The capacitance signal travels through a wire to the outside of the tank where it connects to a feed through cable that carries the signal to a sending unit. The feed through is a seal that the wire runs though, the seal is a hardened compound that is designed to keep the methane (LNG) from leaking out of the tank. While the feed through seal is a dynamic sealing solution, occasional leaks may be found requiring the feed through cable assembly to be replaced.

This bulletin provides trained technicians with the necessary instructions to replace a feed through cable that is mounted to the top of the feed through tee. If working with a feed through cable that is mounted to the bottom of the tee refer to VT-0041 & VT-0042 for inverting instructions and replacement part numbers.

Feed Through Cable Replacement

PARTS

Feed Through Cable:	
15” Primary Tank	PN: 20977526
27” Secondary Tank	PN: 21017010
Flaretite Seals x2/tank	PN: 11751555
BNC Heat Shrink	PN: 11502575
Solder Joint Heat Shrink	PN: 10576775
Red feed through cap	PN: 21147928
Cable Ties	

TOOLS

Assorted Wrenches	
Leak Detector	
Capacitance Meter	PN: 11633137
Capacitance Test Lead	PN: 11385436
Heat Gun	
Soldering Iron/Gun	

SAFETY

Proper PPE – gloves, safety goggles, long sleeves, long pants, closed toe shoes, etc.
Defuel and depressurize Chart LNG tanks before performing repairs to any parts that cannot be isolated off using the liquid or vent shut-off valves. Feed through cable replacement will require defueling of the LNG tank prior to repairs.

This procedure is intended for use by trained technicians with experience on systems using LNG. Review all applicable safety documents before beginning this procedure.

REMOVAL

Defuel per VT-0017. Remove dust cap from the tank vent connector (some tanks may have a remotely located vent connector). Wipe off the connector and the receiving end of vent tool. Align the slots of the vent tool to the tank vent connector locking tabs. Rotate clockwise into place until locking tabs are fully engaged. Open the gray vent valve on the tank being repaired and reduce tank pressure to zero. Close gray valve to prevent outside air from entering the tank.

NOTE: Before replacing a feed through cable it is recommended to purge the tank after depressurizing it. Fill tank with 30 PSI of nitrogen gas, then open vent valve to exhaust nitrogen gas pressure to 0 PSI. Repeat nitrogen purge again.

1. Loosen and remove the bottom flare nut and cap from feed through tee exposing the heat shrink covered solder joint as seen below. **DO NOT CUT SOLDER JOINT!**

2. Remove the heat-shrink cover that protects the soldered joint of the capacitance wire and the feed through cable. Use a razor knife to score into the entire length of the heat shrink. Do not press so hard with the razor knife as to cut completely through the heat shrink, as this could damage the underlying components. Use a heat gun to heat the heat shrink equally on both sides of the incision at 90 degrees either side of the incision. The heat shrink will start to split at the incision and peel away. Use a shop towel to remove the heat shrink and discard, and remove excess glue residue. Use caution, the heat shrink and its glue will be hot.

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3. Heat the soldered joint to a point where the cables can be separated and no damage occurs to them (it is extremely important not to cut the wires when dismounting the original cable, or else there will be no wire length to properly re-make the connection)



4. Loosen the feed through cable stainless steel fitting at the top of the feed through tee and pull out the cable from the tee as shown above. Discard old Flaretite seals. The tee **does not** need to be removed from the knuckle for cable replacement.

INSTALL

5. Install new Flaretite seals on the top of the feed through tee.
6. Feed-in the new feed through cable through the new Flaretite seal [P/N 11751555] and the top of the tee until the cable comes through the bottom of the tee.
7. Tighten the stainless steel fitting on top of the tee.
8. If the new feed through wire is longer than the capacitance wire, cut the feed through wire so that its length exactly matches that of the capacitance wire.

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9. Measure the length of wire protruding from the tee. The overall wire length, including the portion to be soldered, should be ½''. If the wiring is longer than ½'', trim the soldering end as needed.
10. Strip the end of the fuel sender wire if necessary, being careful to not score the wire, and twist it together with the capacitance wire end.
11. Solder both ends together ensuring the solder joint is tight and no wire strands protrude from the solder. A 50-50 (50% Tin, 50% Lead) solder wire is recommended.
12. Heat-shrink the joint and allow the heat shrink to cool completely before proceeding to the next step.

Note: The heat shrink has to come past the end of the soldered joint so that it does not leave an open end (to eliminate potential for a short in the wiring).

13. Install new Flaretite seals on the bottom of the feed through tee.
14. Install a red feed through cap (21147928) over the heat shrink as seen below.

15. Reinstall the bottom flare nut and cap onto the feed through tee and tighten.
16. Use the capacitance meter and test lead to verify proper capacitance readings (refer to VT-0016).
17. Remove vent tool and return valves to normal operating positions.
18. After refueling, check all repaired connections for leaks before returning tank to service.

This procedure is intended for use by trained technicians with experience on systems using LNG. Review all applicable safety documents before beginning this procedure.