



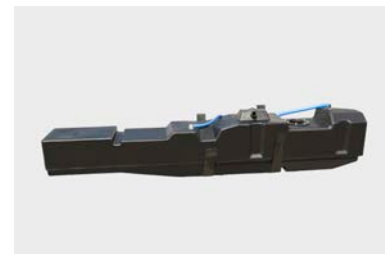
## TITAN™ Fuel Tanks

# INSTALLATION TROUBLESHOOTING SUPPLEMENT

## For Midship Replacement Fuel Tanks AND Utility Tanks

This supplement is intended to provide additional information for installers to aid in simple installation trouble shooting.

### I. XXL Extra-Large Midship, Under-Body, Replacement Tanks, for Diesel Trucks with Pickup Beds



## Leaking Problems

Leaking problems are rare. However, if you are experiencing a leak, the first thing to do is *accurately and positively determine the source and location of the leak*. One possible source is the sending unit seal area so we'll cover it first.

### *Sealing Problem at Sending Unit*

The Sending Unit Mounting Assembly is made up of the following components:

- 2 ea. Half flanges with 5/16" welded studs (mounted inside tank)
- 1 ea. Flat flange gasket (mounted inside tank between the half flanges and the inside of the polyethylene tank).
- 8 ea. 5/16" flat retainers—clips mounted on the flange studs atop the outside surface of the tank. The sole purpose of the retainers is to hold the studs and the half flanges in place so technician may install sending unit, top flange and nylon locking nuts.
- 1 ea. "O" Ring sending unit gasket
- 1 ea. Top sending unit flange.
- 8 ea. 5/16" nylon locking nuts.

With all of these components in place, this assembly provides a super-strong "sandwich" of steel and rubber to seal the sending unit interface with the poly tank. The two critical sealing points are **a)** the "O" ring sending unit gasket and **b)** the flat flange gasket. Of course the "O" ring gasket seals at the sending unit, and the sole purpose of the flat flange gasket is to seal around the studs to prevent fuel from seeping around the threads. If there is not enough torque pressure at either of these critical points a seal will not be properly accomplished.

#### **Steps:**

- 1) The most common cause of a leak at the sending unit mounting area is insufficient tightening of the 5/16" nylon locking nuts. Be sure that you have followed the instructions and check to see if the nuts are tightened to **20 foot pounds of torque** (using torque wrench). Be sure to tighten in a "star" pattern and make a final double check to be sure they are tight. Many times you will be able to accomplish this without dropping the tank out of the vehicle. It is also recommended to tighten the 5/16" nylon locking nuts to 20 foot pounds of torque and then to wait 30 minutes or so and tighten again. If the additional tightening isn't successful, proceed on to the next step.
- 2) Make sure the "O" ring gasket is installed correctly and not "rolled" or misplaced from the sealing groove. This can be prevented with careful installation and by

using a “star” pattern to evenly tighten the studs. *Inspect the sealing groove and make sure it is not damaged, broken, or scarred.*

- 3) Be sure the half flanges inside the tank are not installed so they somehow overlap at the mating edges creating an uneven surface for the flat gasket.
- 4) Be sure the flat gasket is not damaged or torn and is installed on every stud.
- 5) On tanks shipped before January 1, 2009, the sending unit assembly included an 8mm plated flat washer located under the 5/16” flat retainers. Check to see if this tank has them. If it does, REMOVE them.
- 6) *Be sure the “O” ring gasket is being contacted and compressed all the way around the circumference of the sending unit.*

### *Leaks at Other Sites*

#### **Steps:**

- 1) If you detect a leak associated with the fuel tank, carefully assess its location. At this point we will make the assumption the leak is not at the sending unit. If the sending unit has been inspected and it has been determined it is not the leak source, then check the following:
  - a) **Fill Cap:** On many trucks there is a drain inside the fuel door, below the fuel fill cap. If the tank is overfilled so that it overflows, the fuel will drain through this hole into the inside of the fender. Sometimes it will cling to the fill spout and follow it down to the tank. This can appear to be a tank leak or a fill spout hose leak, but is not. Check this carefully.
  - b) **Fill Spout:** If the hose between the tank and the fill spout tube is loose or the clamps are not tight it can leak. Make sure the clamps are tight and make sure there are no wires or other foreign objects caught in the hose when it was slid onto the tank or the fill spout.
  - c) **Vent Hose Connections:** Be sure to check the vent hoses to be sure they are slid all the way on their connections and all their hose clamps are tight. If a leak appears to be on a vent hose, near a rollover valve, be sure to check the ½” nylon rollover hose barb adapter to make sure it was not cracked during installation.

## Filling and Venting Problems

### *Slow Filling and/or "Spitting Back"*

If problems are experienced when filling, such as slow filling or "spitting" of fuel back out of the fill spout, it is most likely a venting problem. A blocked vent hose line may also allow an air "bubble" to be trapped at places inside the tank which may reduce the capacity of the tank.

#### **Steps:**

- 1) Check the venting directions in the "Installation Instructions" for the proper model vehicle and corresponding tank to be sure the vent hose lines are installed as recommended.
- 2) Check all vent hose lines carefully for kinks or the possibility of crushing against any structural member or surface of the vehicle. *If any vent hose line is blocked for ANY reason the tank will not fill properly.*
- 3) It is **vitaly important** that the vent hose lines do NOT have any sags, loops or "traps" where fuel can be caught. They must drain every time the tank is filled to capacity. *If there is a sag, the trapped fuel will not allow air to move through the line, effectively plugging the vent.* Tie up the vent lines if need be to keep any sags from occurring. If needed, shorten the hoses so that excessive hose length does not cause a sag.
- 4) If all the venting checks out and you still have slow filling, check the rubber fill hose which attaches to the king nipple on the TITAN tank to be sure it is not kinked or collapsed.

#### *Special Consideration for GM Vehicles with LB7 Engines*

- 5) On GM vehicles with LB7 Engines, if you have performed all of the above steps and the tank is still not venting properly, check to be sure the 2" x 2" x 1/2" Fill Line Adapting Tee is installed in the fill hose correctly. Make sure the adapting tee is installed so the 1/2" barb is pointing upward. If the barb is not pointed up, when filling, fuel will run into the vent hose line blocking its ability to vent properly. Also, check the "Installation Instructions" and be sure the Fill Line Adapting Tee is placed in the proper location in the fill hose.

LB7 equipped trucks have an interior fill tube inside the fill line. Be sure it is not removed and the 2" x 2" x ½" Fill Line Adapting Tee is threaded over it. Cut 12" of length from the interior fill tube from the tank end before mating it with the tank.

### *Tank Walls are Becoming Concave*

If after the vehicle has been operated, the sides of the tank appear to be becoming concave, collapsing or "sucking in", this is a vacuum venting problem.

#### **Step:**

- 1) Check to be sure that the ¼" vacuum vent kit has been installed. On all Ford and Dodge Mega Cab Short-Bed products an additional ¼" vacuum vent kit is required. These vent kits are shipped with the respective tanks. Omitting these from installation voids the warranty, and may cause the tank to collapse. If the vacuum vent kit is not installed, install it immediately. *Do not run the vehicle without the vacuum vent kit as damage to the vehicle may occur.* Consult the tank's installation instructions for directions on installing the vent kit.

For 1999-2010 Fords the assembly is: "02 0106 0000 ¼" Vent Kit Assembly---Complete". For 2011+ Fords the assembly is: "02 0119 0000 FORD, Vacuum Vent Assembly-complete". For Dodge Mega Cabs the assembly is: "03 0102 0000 ¼" Vent Kit Assembly for 2003+ vehicles—Complete".

### Other Installation Problems

#### *Straps Do Not Fit Properly*

#### **Steps:**

- 1) Check to be sure you have the proper strap set for the vehicle and tank you are installing. The bottoms of the straps have an alpha code or a numeric part number cut into them.
- 2) Check the location of the tank. If an attempt is made to install the tank too far forward or rearward the straps will not fit properly. Be sure the tank's king nipple lines up with the vehicle's fill spout hose.
- 3) If a TITAN™ Shield is not installed, be sure the Rubber Strap Bushings are installed. On Ford and Dodge vehicles the bushings are installed on both the front and rear straps. See "Installation Instructions" for details. On General

Motors vehicles from 2001 to 2010, the bushings are installed in the bottom of the front cradle strap and on the cradle of the GM Cross Bar. Even if the TITAN Shield is installed on the GM tank, it is recommended that the bushing be installed on the cradle of the Cross Bar.

- 4) On Ford F450 models, be sure the special adaption kit is installed or the tank will not fit properly. The kit is: **FORD, F450, Long Bed Tank Adaption Kit. Part Number: 02 0112 000.** The kit can be ordered from TITAN Customer Service.
- 5) On FORD Crew Cab Long-Bed trucks, when installing 67 gallon TITAN Tanks, stock numbers 7020399 and 7020308 be sure to install the heavy-gauge steel nose skid plate **last** (as shown in the instructions). If installed first, there is a possibility it may be placed in the wrong holes on the frame, and may be too far rearward possibly preventing the tank from fitting properly.
- 6) In 2010, zinc plated shims were integrated into the strap design. If applicable, be sure to thread the shims onto the strap bolt before starting. The shims, if included, make it easier for the installer to adjust the straps so they are good and tight. This is to compensate for slight differences from vehicle to vehicle and year to year. With two shims in place on each strap, tighten the mounting bolts. If the straps are not sufficiently tight, remove one shim at a time until the straps hold the tank tightly.

## Midship Replacement Tanks: Miscellaneous Questions

- Q. The sending unit is too long to go into the new TITAN tank. What do I do?
- A. *First gently try compressing the sending unit into the new TITAN. In most cases where the sending unit seems too long for the TITAN it is a matter of "telescoping" the sending unit into the tank as the sending unit is designed to do. For only some FORD vehicles the sending unit may need to be shortened slightly. Before doing so, be sure the sending unit will not compress into the tank.*

**Procedure for shortening FORD sending unit:** Place the sending unit upright on a flat surface with the suction funnel flat on the surface. With the sending unit held perfectly straight upright, take a measurement and note the distance from the bottom of the fuel level float to the top of the surface. Slide the suction funnel off the stainless steel suction tube and shorten the tube by cutting no more than ½" off the end using a saw, cutting tool, or grinder. After cutting, be sure to dress the end of the tube and make sure the inside of the tube is absolutely clean of any dirt or debris. Slide the suction funnel all the way back onto the tube. Place the sending unit on the flat surface again and carefully bend the float arm until the bottom of the fuel level float is at the same level from the surface as your first measurement.

Before installing the sending unit into the TITAN Tank, BE SURE THE INSIDE OF THE TANK IS FREE OF DIRT OR DEBRIS OF ANY KIND. Install the sending unit into the tank as per instructions.

Q. The fuel lines on my Ford vehicle will not hook up to the sending unit after I installed it in the TITAN tank. What do I do?

A. *On some Ford vehicles you may find the angle of the fuel lines will not allow them to connect to the male couplings on the top of the sending unit when it is installed in the new TITAN tank. Carefully, insert a round steel rod or a Phillips head screw driver into the couplings and very gently and carefully bend them up so the ends are about ¼" higher than before. This should allow the fuel lines to attach more easily.*

*On some 2008 to 2010 Ford vehicles the fuel lines may actually be too short by as much as six inches. In those cases it is recommended that you use TITAN's "029902 FORD, Fuel Line Extension Kit". This quick connect kit includes everything you need to extend the suction and return lines of the truck to the new tank. You can order this kit from Customer Service.*

Q. The sending unit fuel level sensor and float arm, when installed, face forward (towards the front of the vehicle) and are interfered with by the short baffle of the Low Fuel Trap. What do I do?

A. *On a few Ford vehicles the fuel level sensor and float arm when installed will face forward. In these cases, the fuel level sensor, with the attached float arm, will need to be reversed. A Hardware Kit for reversing fuel level sensor (pn: 02 0111 0000) is included with each Ford tank. Follow the directions in the "Installation Instructions" for reversing the sensor.*

*In a very few cases, the fuel level sensor is spot welded together and cannot be reversed. In these cases, either a new Ford sending unit which is bolted together and/or has a rear facing float arm will need to be ordered, or TITAN's "029902 FORD, Fuel Line Extension Kit" can be used to reach the couplings after the original sending unit has been turned 180°. Call TITAN™ Customer Service for technical assistance.*

Q. Why does my fuel gauge not read accurately?

A. *There could be a couple of explanations for this condition. First, on a few Ford vehicles the fuel level sensor and float arm face forward and are interfered with by the short baffle of the Low Fuel Trap. This can cause the gauge to read "1/4 full" when the tank is actually empty. See the answer immediately above for this problem.*

*Second, if the sending unit is not installed in exactly the same “clocked” position as it is in the factory tank the float arm may come into contact with the side of the tank. This can cause the gauge to stick showing an inaccurate level reading. The solution is to remove the sending unit and reinstall in the correct position.*

Q. The fuel lines on my DODGE vehicle will not hook up to the sending unit after I installed it in the TITAN tank. What do I do?

A. *On some Dodge Mega Cab vehicles the fuel lines may be too short. In those cases it is recommended that you use TITAN’s “029907 DODGE, Fuel Line Extension Kit”. This quick connect kit includes everything you need to extend the suction and return lines of the truck to the new tank. You can order this kit from Customer Service.*

## II. Utility Tanks for Cab and Chassis Vehicles: Ford, After-Axle, Multi-Model, Utility Diesel Tank



### Leaking Problems

Leaking problems are rare. However, if you are experiencing a leak, the first thing to do is *accurately and positively determine the source and location of the leak*. One possible source is the sending unit seal area, so we'll cover it first.

#### *Sealing Problem at Sending Unit*

The Sending Unit Mounting Assembly is made up of the following components:

2 ea. Half flanges with 7/16” welded studs (mounted inside tank)



- 1 ea. Flat gasket (mounted inside tank between the half flanges and the inside of the polyethylene tank).
- 8 ea. 7/16" flat retainers—clips mounted on the flange studs atop the outside surface of the tank. The sole purpose of the retainers is to hold the studs and the half flanges in place during shipping and so installer may install sending unit, top flange(s) and nylon locking nuts.
- 1 ea.\* "O" Ring sending unit gasket
- 1 ea.\* Top sending unit flange
- 8 ea. 7/16" nylon locking nuts.

**\*Note:** 8020099-191 Tanks (tanks which include adaption for 191 sending units) include another, smaller "O" ring. The 191 variant also features 2 ea. Top sending unit flanges, instead of only one listed above.

With all of these components in place, this assembly provides a super-strong "sandwich" of steel and rubber to seal the sending unit interface with the poly tank. The two critical sealing points are **a)** the "O" ring sending unit gasket(s) and **b)** the flat flange gasket. Of course the "O" ring gasket seals at the sending unit, and the sole purpose of the flat flange gasket is to seal around the studs to prevent fuel from seeping around the threads. If there is not enough torque pressure at either of these critical points a seal will not be properly accomplished.

**Steps:**

- 1) The most common cause of a leak at the sending unit mounting area is insufficient tightening of the 7/16" nylon locking nuts. Be sure that you have followed the instructions and check to see if the nuts are tightened to **25 foot pounds of torque** (using torque wrench). Be sure to tighten in a "star" pattern and make a final double check to be sure they are tight. Sometimes you will be able to accomplish this without dropping the tank completely out of the vehicle. It is also recommended to tighten the 7/16" nylon locking nuts to 25 foot pounds of torque and then to wait 30 minutes or so and tighten again. If the additional tightening isn't successful, proceed on to the next step.
- 2) Make sure the "O" ring gasket is installed correctly and not "rolled" or misplaced from the sealing groove. This can be prevented with careful installation and by using a "star" pattern to evenly tighten the studs. *Inspect the sealing groove and make sure it is not damaged, broken, or scarred.*
- 3) Be sure the half flanges inside the tank are not installed so they somehow overlap at the mating edges creating an uneven surface for the flat gasket.
- 4) Be sure the flat gasket is not damaged or torn and is installed on every stud.

- 5) *Be sure the “O” ring gasket is being contacted and compressed all the way around the circumference of the sending unit.*

### *Leaks at Other Sites*

#### **Steps:**

- 1) If you detect a leak associated with the fuel tank, carefully assess its location. At this point we will make the assumption the leak is not at the sending unit. If the sending unit has been inspected and it has been determined it is not the leak source, then check the following:
  - a) **Fill Spout:** If the hose between the tank and the fill spout tube is loose or the clamps are not tight it can leak. Make sure the clamps are tight and make sure there are no wires or other foreign objects caught in the hose when it was slid onto the tank or the fill spout.
  - b) **Drain Plug:** A ¼” Kynar NPT Male Plug comes with the tank. Be sure it is tightly installed in the tank drain on the outboard passenger side of the tank.
  - c) **Rollover Valve:** The only other possible source of leakage on this tank is the rollover vent valve located adjacent to the sending unit. If it is leaking around the threads of the valve, use a high quality Teflon thread tape or thread compound and reinstall tightly.

### *Sending Unit is Too Long To Fit Into Tank*

On installations involving 191 sending units it may be sometimes found the sending unit is too long to go into the TITAN tank.

#### **Steps:**

- 1) First gently try compressing the sending unit into the new TITAN. In most cases where the sending unit seems too long, it is a matter of “telescoping” the sending unit into the tank as the sending unit is designed to do. If this does not work, the unit may need to be shortened slightly. Follow the procedure below to accomplish this.

**Procedure for shortening FORD sending unit:** Place the sending unit upright on a flat surface with the suction funnel flat on the surface. With the sending unit held perfectly straight upright, take a measurement and note the distance from the bottom of the fuel level float to the top of the surface. Slide the suction funnel off the stainless steel suction tube and shorten the tube by cutting no more than ½” off the end using a saw, cutting tool, or grinder. After cutting, be sure to dress the end of the tube and make sure the inside of the tube is absolutely clean of any dirt or debris. Slide the suction funnel all the way back onto the tube. Place the sending unit on the flat surface again and carefully bend the float arm until the bottom of the fuel level float is at the same level from the surface as your first measurement.

Before installing the sending unit into the TITAN Tank, BE SURE THE INSIDE OF THE TANK IS FREE OF DIRT OR DEBRIS OF ANY KIND. Install the sending unit into the tank as per instructions.