Keep this User's Guide in vehicle's glove box

IMPORTANT
If you are experiencing any problems with the computer controlled fuel system, please call 1-800-442-0056 prior to any repairs being done

TRAX UFS™

User's Guide and Reference

For auxiliary fuel tank systems manufactured by Transfer Flow, Inc.

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TRANSFER FLOW, INC.
Fuel Tank Systems

TRAX UFS™

Welcome to Transfer Flow and Trax-UFS

Either the vehicle you purchased has a Transfer Flow auxiliary fuel tank system installed on it or you purchased one yourself. In either case, we'd like to introduce you to Trax-UFS, Transfer Flow's auxiliary universal fuel system. Trax-UFS is a sophisticated computer controlled auxiliary fuel tank system that functions similarly to a computer controlled balance line.

How does it work? Although it may sound difficult, it's rather simple! The Trax-UFS computer determines the fuel level of the main tank, the level of the auxiliary tank, and the status of the vehicle's fuel system once every few seconds. When necessary, the Trax-UFS module will turn on the auxiliary fuel pump and transfer fuel to the main tank. The message, "PMP ON" (pump on), will be displayed on the dash mounted LCD when this is occurring. The fuel level in the main tank and auxiliary tank will decrease at the same rate. The LCD display will indicate the gallons in the main tank, the auxiliary tank, the combined gallonage, and the operational status of the fuel system. The Trax-UFS computer will also adjust the OEM fuel gauge accordingly based on the combined total.

With the addition of Trax-UFS, there's no need for a toggle switch to flip back and forth between the main and auxiliary tanks. The Trax-UFS module does the transferring of fuel for you. As an added safety feature, an anti-siphoning device is part of the system so there can never be an overflow of fuel! While a problem is unlikely to occur, a diagnostic switch is built in so the vehicle's operator can view previously stored diagnostic trouble codes in the Trax-UFS module.

On vehicles equipped with OBD-II with leak detection operational, the LCD may indicate "MLKT" or "ALKT" for a short period of time. This means that the OEM computer is conducting a leak detection test on either the main tank (MLKT) or on the auxiliary tank (ALKT). This is a normal operation of the fuel system and is not an error message.

Please read this user's guide to better understand Trax-UFS and to use it for troubleshooting purposes. We hope you enjoy your Transfer Flow auxiliary fuel tank system!

Chapter 1

Understanding the Operation of the Trax-UFS Fuel Tank System

Q — What is included in the Transfer Flow auxiliary fuel system kit?
A — The Transfer Flow system includes an auxiliary fuel tank, an auxiliary fuel pump, all mounting hardware, and all necessary fuel lines for a complete installation. The Transfer Flow system also includes a computer control module and a Liquid Crystal Display (LCD).

Q — How does the auxiliary system operate?
A — The operation of the Transfer Flow fuel system is actually quite simple. For example, say you have two tanks on your vehicle (the OEM tank and the Transfer Flow auxiliary tank). The Transfer Flow system essentially feeds fuel into the vent tube of the OEM tank by way of the Transfer Flow fuel pump. As the vehicle uses fuel from the OEM tank, the Transfer Flow system pumps fuel into the OEM tank to keep both tanks at the same level.

Q — How often does the Transfer Flow tank fill the OEM tank?
A — The Transfer Flow computer module monitors the fuel level in both fuel tanks. The control module basically keeps the tanks at the same level by transferring several gallons at a time. Typically, the transfer occurs after 3 to 5 gallons have been used out of the main tank. For more detailed transfer information for your specific vehicle, call Transfer Flow at 1-800-442-0056 or (530) 893-5209.

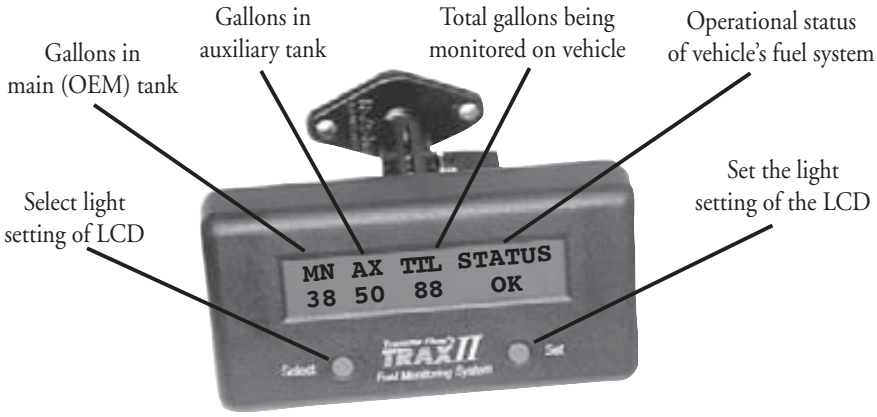
Q — I typically keep trucks for one or two years and then get a new one. Do I need to buy a new Transfer Flow auxiliary fuel system each time?
A — It depends on the truck you are buying. If you had a diesel pickup and bought a new diesel pickup (or from a gas pickup to another gas pickup), we would just reprogram your module for a small fee. If you change from a diesel to a gas or a gas to a diesel, there may be other components, plus reprogramming the module, that would be required.

Q — What if the Transfer Flow system develops a problem? Does that mean my vehicle cannot be driven until it is fixed?
A — No! If a problem develops with the Transfer Flow auxiliary fuel system, simply locate the fuse holder on the Transfer Flow computer module (this black box should be located against the cowling or firewall). Remove the fuse from the module. The system will now operate from the OEM tank only, just as though the Transfer Flow system was never installed. The OEM fuel gauge will read only the OEM tank. Fuel will not transfer from the auxiliary tank to the OEM tank if the fuse is removed.

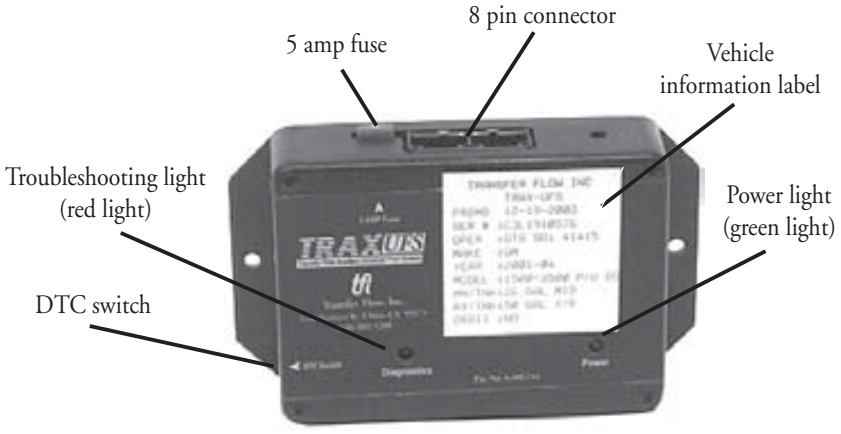
LCD Adjustment Directions

The two buttons on the front of TRAX LCD modules can be used to adjust the contrast and backlight of the LCD display. Follow these steps to adjust the contrast or backlight setting:

1. When your vehicle and the TRAX module are running, press both buttons at the same time on the front of the display to enter the "LCD Adjust" screen.
2. Press the Left or Right button to adjust the Contrast or Backlight respectively.
3. Press the + and - buttons until the desired Contrast or Backlight setting is achieved.
4. Press both buttons at the same time to exit the "LCD Adjust" mode and save your settings.



Dash Mounted LCD
FIGURE 1



Trax-UFS Computer Module
FIGURE 2

Chapter 2

Monitoring Your Vehicle's Fuel System

Q — What does the Trax-UFS LCD show me?

A — The LCD displays the gallons currently in your OEM tank, the gallons in the Transfer Flow auxiliary tank, the total gallons of both tanks, and the operating status of the vehicle's fuel system (see Figure 1).

Q — What is the "Status" of the fuel system?

A — The "Status" section of the LCD display lets you know what the condition is of the vehicle's fuel system. In normal operation, the LCD will read "OK". When the system is transferring fuel to the OEM tank, the LCD will read "PMP ON" (pump on). Seven other codes can also be displayed under the "Status" section on the LCD. For these additional codes, see Introduction or Figure 3.

Q — How accurate are the values on the Transfer Flow Trax-UFS LCD?

A — Typically, the numbers on the LCD should not vary more than a gallon or two from what is actually in each tank and, in most cases, are exact. Because the Transfer Flow system reads the in-tank sending units directly, the system itself is very accurate. However, the sending units in both the OEM tank and the Transfer Flow tank might have slight inaccuracies throughout the range, especially near Full or Empty conditions.

Q — What about my OEM fuel gauge?

A — The OEM fuel gauge on your dash will now read the vehicle's total fuel capacity (OEM tank plus auxiliary tank). For example, your vehicle has a total of 70 gallons. With both tanks full, your OEM fuel gauge should read full. Likewise, when the vehicle's total fuel capacity is half, with the total fuel in the vehicle equal to 35 gallons, the OEM fuel gauge should read 1/2. Also, the OEM fuel gauge reads the level of fuel in the main tank as soon as the ignition is turned on. After about 15 seconds, the Trax-UFS computer takes control of the fuel gauge and adjusts it to the combined total. For example, if the main tank is full and the auxiliary tank is empty, then the fuel gauge would go to full then slowly come down to about 1/2 tank.

Q — What if I have dual tanks on my vehicle and I install a Transfer Flow fuel tank system. I now have a total of three fuel tanks. How does the Transfer Flow fuel system work now?

A — The Transfer Flow auxiliary tank only transfers fuel to one of the OEM tanks. Typically, on Ford vehicles, the front OEM tank is the one that is refueled by the Transfer Flow tank. Whatever the case may be, the dash mounted LCD will ALWAYS display the values from the Transfer Flow auxiliary tank and the OEM tank that is being refueled by the Transfer Flow tank. When your OEM fuel selecting switch is on the OEM tank to

which the Transfer Flow tank is connected, the OEM fuel gauge will display the combined total of the OEM tank and the Transfer Flow tank. When you switch the OEM fuel selecting switch to the other OEM tank, the OEM fuel gauge will read that tank only. The LCD will still read the gallons in the main tank and the auxiliary tank.

Q — I would rather not mount the LCD to my dash. What are my options?
A — It is advisable to make every effort to utilize the LCD, however, the LCD does not need to be connected to the Transfer Flow system if not desired. In fact, the removal of the LCD does not affect the Transfer Flow system in the least. However, two things need to be kept in mind. First of all, you will not be able to see the individual gallons in each fuel tank. Second, in the unlikely event you experience a malfunction, it will be difficult to track down the source of the problem. If you do decide to remove the LCD, keep it handy.

Trax-UFS Code Descriptions

Problem	Code	Number of blinks
Main sender ground	MSG	One
Main sender open	MSO	Two
Auxiliary sender ground	ASG	Three
Auxiliary sender open	ASO	Four
No flow problem	NO FLOW	Five

If there is a problem with either the OEM tank or the auxiliary tank, a red light will blink on the computer control module. A message will also appear on the LCD.

MSG (one blink) — *The Main Sender Ground DTC is set when the resistance from the main sender drops below a predetermined set point, approaching ground. This condition could be caused by the sending unit going bad or a wire rubbing against ground.*
MSO (two blinks) — *The Main Sender Open DTC is set when the main sender resistance rises above a predetermined set point, toward open. This condition could be caused by the resistance wire eroding or a wire getting broken.*
ASG (three blinks) and **ASO** (four blinks) — *The Auxiliary Sender Ground and Auxiliary Sender Open DTCs are set the same way as the OEM, but can have different predetermined set points.*
NO FLOW (five blinks) — *The No Flow DTC is set when the auxiliary pump is on, and after a set amount of time, the fuel level in the auxiliary tank does not drop by a set amount of gallons. A kinked line, a bad pump, or a broken connection could cause this condition.*

FIGURE 3

Chapter 3
Troubleshooting Guide

Q — The system does not work. The display does not light up.
A — It sounds like the Transfer Flow system is not getting power. Find the Transfer Flow control module under the dash. Is the green light illuminated? If not, check the fuse located in the wire harness about six inches from the module.

Q — The fuel levels displayed on the LCD change when cornering hard or during other rapid motions. Is this normal?
A — Yes and no. No matter what, fuel will slosh around in fuel tanks when the vehicle is in motion. Your Transfer Flow fuel tank and system has been optimally designed to keep fuel sloshing to a minimum. However, it is not possible to completely eliminate all fuel sloshing. Many times, you will find that fuel sloshing will be greater in the OEM tank than the Transfer Flow tank. This is because the Transfer Flow tank is fully baffled while some OEM tanks are not. In either case, you should not see the fuel level change more than four or five gallons, except under periods of high cornering, braking, or acceleration loads.

Q — My OEM fuel gauge is on empty and the Transfer Flow dash mounted LCD shows that the OEM and auxiliary tanks are empty. The "Status" also shows a code other than "OK". What is happening?
A — The Transfer Flow system is telling you that there is a problem. The "Status" heading should have a trouble code displayed. See Figure 3 to further troubleshoot the system.

Q — My OEM fuel gauge is on empty and I know I have fuel in the system. I didn't have the dash mounted LCD installed. What should I do?
A — You need to connect the LCD into the system so you can diagnose the problem. You should find the Transfer Flow control module under the dash. Locate the wiring harness that connects to the module. The harness from the computer module branches to an LCD harness with a 3-pin connector. Attach the LCD to this connector and the LCD display should light up. See Figure 3 for information on the diagnostic trouble codes. If you do not have the LCD display with you, locate the computer control module. Two LED lights are on it. The green light tells you the system has power. The red light is used for troubleshooting and can be used to diagnose problems by noting the number of times the red light blinks. Refer to Figure 3 to find out what the number of blinks mean and what each trouble code stands for.

Q — I have filled both tanks to the top, but one of the tanks does not display the correct gallonage at full (i.e. the vehicle has a 35 gallon fuel tank but the LCD reads only 21). What is the problem?

A — Locate the sending unit on the tank that does not read correctly. Is the sending unit installed correctly? If it is the Transfer Flow tank, check the orientation of the arrow that is stamped in the top plate of the sending unit. The Transfer Flow instruction sheet will tell you how to correctly install the sending unit. Locate the computer module under the dash, and verify the year make, model, main tank and auxiliary tank size printed on the label matches the vehicle. If not, call Transfer Flow at (530) 893-5209.

Q — I just had a Transfer Flow auxiliary fuel tank system installed on my 1999 - 2002 Ford diesel vehicle. I notice that when I turn the key to the "ON" position (with the engine off) the Trax-UFS dash mounted LCD turns on for a few seconds and then loses power. Is this normal?

A — Not to worry. The Transfer Flow auxiliary fuel system gets its power from the OEM fuel pump. On 1999 - 2002 Fords, the fuel pump only receives continuous power when the engine is running. If the key is on the "ON" position, the pump will receive power for a short time and then it will turn off. When the fuel pump loses power, the Transfer Flow system loses power. If you are unable to start the vehicle but want to make sure that the Transfer Flow system is operating correctly, continue to turn the key to the "OFF" position and then back to "ON".

Notice For Early 2000 Model Year F350-550 Ford Cab Chassis Owners With 40 Gallon Aft Axle Tank

The Trax-UFS computer system utilizes the OEM sending unit to determine the level of fuel in the OEM tank. Due to the design of the OEM fuel sender, the LCD and fuel gauge will not seem to function after a fill up for as long as 200 miles. After using six to eight gallons of fuel, the LCD and gauge should become accurate again.

Important Safety Information

Filling Your Fuel Tank and Safety Procedures

Filling the Fuel Tank

- Never fill a fuel tank near a flame or ignition source which might ignite the fuel vapors.
- Avoid breathing fuel vapors or allowing the fuel vapors or liquid to contact the skin.
- Always fill the fuel tanks while the vehicle is on a flat level surface with the engine **OFF**.
- Open the fuel cap slowly to allow any pressure to escape.
- Never overfill or "top-off" any fuel tank. Overfilling the fuel tank may cause damage to the emissions system, cause dangerous spills and possibly result in a fire. The Transfer Flow Trax-UFS system may also shut down in the event of an over-full condition.
- Never siphon fuel using the mouth. This practice is dangerous and potentially fatal. Use an appropriate pump.
- Do not allow fuel to contaminate soil or waterways. Properly contain and dispose of spilled fuels and cleanup materials.

Other Important Safety Information

- Use only Transfer Flow Inc. replacement parts. Many parts of our fuel system appear common, but are actually special parts which are critical for safe operation. Contact Transfer Flow for more information.
- Disconnect the battery before working on the Transfer Flow fuel system.
- Never place any fluid other than motor fuel in the fuel tanks.
- Never modify or over pressurize a fuel tank.
- Do not grind, torch, weld, cut, or modify a fuel tank.
- Do not sleep in a pickup with a camper shell that contains one of our in-bed fuel tank systems.
- NEVER connect a Transfer Flow Inc. fuel system to a previously modified fuel system without contacting Transfer Flow Inc.
- Do not smoke near a fuel tank.
- This fuel tank is not to be used in any manner not intended or in connection with aircraft.

Important Notice

Only Use Transfer Flow Replacement Parts

Transfer Flow, Inc. fuel systems are designed to work only with specific components which have been selected for their unique properties. Years of design work have produced the finest auxiliary fuel system available that relies on relatively few but critical parts. The components used in Transfer Flow fuel systems are not generic or "off-the-shelf" parts and cannot be replaced with parts that appear to be similar.

For example, the in-line fuel pump used with our Trax-UFS system appears to be a normal fuel pump, but it is actually a high quality solenoid pump with a critical forward and reverse check feature. **Under no condition should any other pump be substituted for this pump**.

Contact Transfer Flow immediately at (530) 893-5209 or 1-800-442-0056 if your Transfer Flow auxiliary fuel system fails to operate properly, or if you have any questions regarding part replacement.

TRANSFER FLOW, INC.

Fuel Tank Systems

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