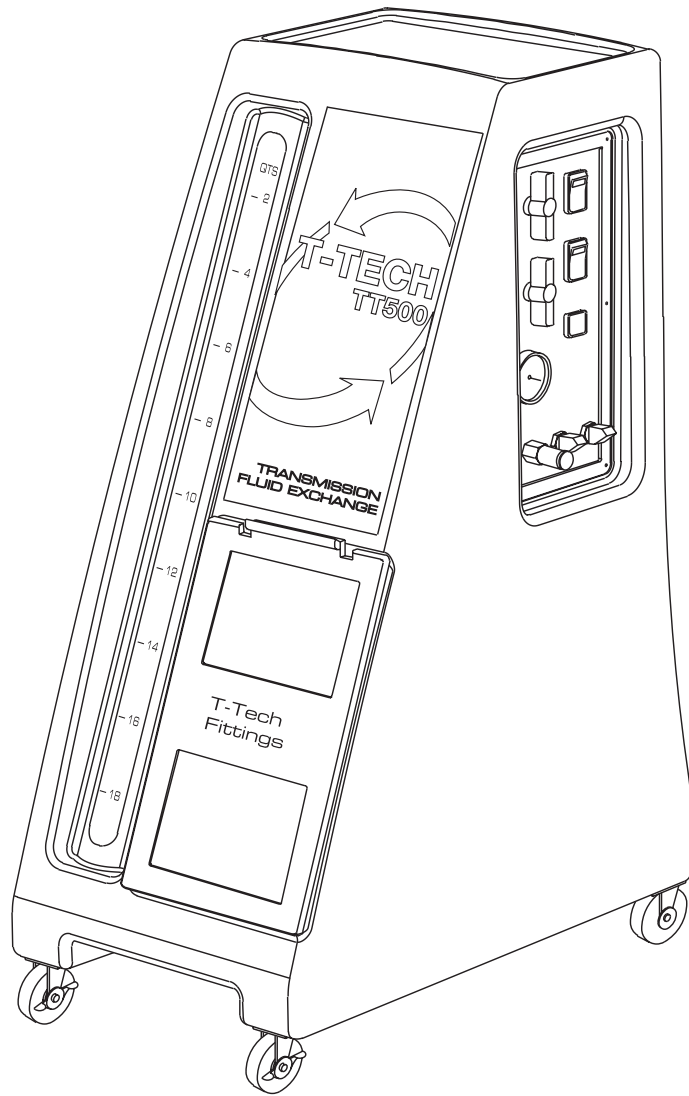




**TRANSMISSION  
SERVICE TECHNOLOGY**

# TT400 AND TT500 User's Guide



Made  
in  
U.S.A. 



Form No. 842-400-000  
© Clore Automotive March 2003

Covered by U.S. Patents: 5,318,080; Re. 36,650; 6,082,416; 6,267,160 and 6,330,934

# MANUFACTURER DECLARATION

## EC Declaration Of Conformity According to EC Machinery Directive 89/392/EEC, Annex II A

We herewith declare, Clore Automotive, LLC  
8600 NE Underground Drive  
Pillar 248  
Kansas City, KS 64161  
USA

That the following machine complies with the appropriate basic safety and health requirements of the EC Directive based on its design and type, as brought into circulation by us. In case of alteration of the machine, not agreed to by us, this declaration will lose its validity.


Machine description: Automatic Transmission Recovery Unit

Machine Type: T-TECH

Serial Number: \_\_\_\_\_  
(Located on Machine)

Applicable EC Directives: EC Machinery Directive (89/392/EEC)  
EC Low Voltage Directive (73/23/EEC)  
EC Directive of Electromagnetic Compatibility (89/336/EEC)

Applicable Harmonized Standards Particularly: EN 60 204-1, EN 292 Part 1, EN 292 Part 2, EN 294,  
EN 349, EN 418, EN 563, EN 1050, EN 55014,  
EN 61000-3-2, EN 61000-3-3, and EN 55014-2

Date/ Authorized Signature:  \_\_\_\_\_ **MARCH 28, 2003**

Title of Signatory: Engineering Manager



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## LIMITED WARRANTY

# SAFETY SUMMARY

Congratulations on the purchase of your new T-TECH transmission fluid exchange system. The following safety information is provided as guidelines to help you operate your new transmission fluid exchange system under the safest possible conditions. Any equipment that uses chemicals can be potentially dangerous to use when safety or safe handling instructions are not known or not followed. The following safety instructions are to provide the user with the information necessary for safe use and operation. Please read and retain these instructions for the continued safe use of your transmission fluid exchange system.

A procedure step preceded by *WARNING* is an indication that the step contains a procedure that might be injurious to a person if proper safety precautions are not heeded.

A procedure step preceded by *CAUTION* is an indication that the step contains a procedure that might damage the equipment being used.

A *Note* may be used before or after a paragraph or procedure step to highlight or explain something in that paragraph or step.

## Safety Instructions

Every craftsman respects the tools with which they work. They know that the tools represent years of constantly improved designs and developments. The true craftsman also knows that tools are dangerous if misused or abused. To reduce risk of discomfort, illness, or even death, read, understand, and follow the following safety instructions. In addition, make certain that anyone else that uses this equipment, understands and follows these safety instructions as well.

**Read all safety instructions carefully** before attempting to install, operate or service this equipment. Failure to comply with these instructions could result in personal injury and/or property damage.

**Retain these instructions for future reference.**

Published standards on safety are available. They are listed in *Additional Safety Information* at the end of this *Safety Summary*.

The following safety alert symbols identify important safety messages in this manual. When you see one of the symbols shown here, be alert to the possibility of personal injury and carefully read the message that follows.

### Motion Hazards



#### WARNING

- Engine parts that are in motion can cause serious injury or death. When working near moving engine parts, wear snug fit clothing and keep hands and fingers away from moving parts. Keep hoses and tools clear of moving parts. Hoses and tools can be thrown through the air if not kept clear of moving engine parts.
- The unexpected movement of a vehicle can cause serious injury or death. When working on a vehicle, always set the parking brake or block the wheels of the vehicle being serviced.

## Shock Hazards



### WARNING

- Do not set the ac power cord plug in water or on wet surfaces. This unit is intended for internal use only.
- Never attempt to plug in or operate this equipment with defective or damaged wires, power cord, or power cord plug. Have any defective or damaged parts replaced immediately by qualified personnel.
- Do not attempt to plug in this unit or operate its controls with wet hands or while standing in water.
- Never alter the ac power cord or power cord plug provided with this unit.
- Remove the ac power cord from the wall socket **ONLY** by grasping the power cord plug. Never remove the ac power cord from the wall socket by pulling on the power cord itself.
- Always unplug this unit from the ac outlet when not in use or before removing any part of the enclosure. Turning the control(s) OFF, will not remove all electrical power from the unit.
- Do not use an extension cord. Use of an improper extension cord could result in a risk of fire and electric shock.

## Heat Hazards



### WARNING

- Vehicle transmissions can be very hot and the fluid is under pressure when the vehicle is running. Opening a hot, pressurized transmission line can cause hot transmission fluid to be forcibly sprayed in all directions. Wait until the engine has cooled in the vehicle being serviced before removing a system line or in any way opening the vehicle transmission system when the system is hot and under pressure.
- Many component parts, in a vehicle that has been run for a time, are hot and can cause serious skin burns. Take care to not touch hot components. Wait until the vehicle has cooled before attempting to service.

## Poisonous Fluid Hazards



### WARNING

- Transmission fluid is poisonous if ingested. Ingesting transmission fluid can cause serious illness.
- This fluid exchanger is intended for transmission fluid only.
- Keep transmission fluid where children and pets cannot get to it.

- If some transmission fluid should be accidentally swallowed, take the person or pet in for medical assistance immediately. Be sure to identify to the doctor, specifically what it was that was ingested.
- If medical assistance is not immediately available, call the local poison center.

## Fume Hazards



### WARNING

FUMES, GASSES, AND VAPORS CAN CAUSE DISCOMFORT, ILLNESS, AND DEATH! Breathing vehicle exhaust emissions can cause sickness, injury, or death. Always work in a properly ventilated area when servicing a vehicle with the engine running.

- Always perform vehicle service in a properly ventilated area. Never run an engine without proper ventilation for its exhaust.
- Stop the exchange process if you develop momentary eye, nose, or throat irritation. Eye, nose, or throat irritation indicates inadequate ventilation. Stop work and take necessary steps to improve ventilation in the work area.

## Fluids Under Pressure



### WARNING

- Hot transmission fluid, under pressure, can injure the eyes. Always wear eye protection (safety glasses) when opening transmission lines to protect the eyes against hot fluids being forcefully sprayed into them. Everyday glasses do not have impact resistant lenses, they are NOT safety glasses.
- Always clean up transmission fluid spills immediately, transmission fluid is very slippery when spilled.

## Explosion Hazards



### WARNING

A BATTERY EXPLOSION CAN INJURE, AND CAUSE PROPERTY DAMAGE! A spark near a battery can cause an explosion.

- To reduce the risk of a spark near a battery, make the positive connection to the battery first then the negative connection to the vehicle chassis, at a point away from the battery.

## Additional Safety Information

For additional information concerning safety, refer to the following standards and comply with them, as applicable.

ANSI Standard Z87.1 — SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION — obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018

# INTRODUCTION

## The T-Tech Process

Heat is the enemy of transmission fluid. The fluid is a combination of several light base oils with an extensive additive package to control foaming, slip, lubrication, etc. Heat attacks the additive package and oxidizes or burns it away, leaving you with only the base oils.

In order to slow the oxidation of the additive package, the vehicle manufacturers have designed an oil cooler, usually in the radiator, that passes all of the fluid through it about every four to five minutes.

T-TECH takes advantage of the pump in the transmission. As the fluid is being pumped to the cooler, we place a tube (cylinder and piston) with 18 quarts (17.034 liters) of new fluid in series between the vehicle pump and the vehicle cooler. The fluid destined to be pushed through the vehicle cooler is now diverted into the T-TECH tube or cylinder. The transmission pump pushes the old fluid into one end of the cylinder. This action causes the new fluid (separated from the old fluid by a piston) to be forced out the other end of the cylinder and into the vehicle cooler, thus replacing the old fluid in the vehicle, quart for quart.

The beauty of the T-TECH system is that it is IMPOSSIBLE TO HARM THE CUSTOMER'S TRANSMISSION. The T-TECH does not use pumps or any other outside source of power to service the transmission. The T-TECH system essentially represents only an enlargement in the vehicle transmission cooler line. It operates exclusively on the transmission pump pressure and flow which essentially eliminates the possibility of overpressure, under-pressure, overflow, or under fill.

T-TECH fluid exchange is now the preferred transmission service because it is able to safely and completely change virtually all of the fluid in the transmission system, and the torque converter.

The need for total fluid service has come to the forefront in recent years because of the price increases for new vehicles. We no longer junk our vehicles at 100,000 miles, and it is not unusual to see vehicles with over 200,000 miles.

The old method of changing only 25 to 30% of the transmission fluid will not allow this extended vehicle service life without transmission problems or total failure.

## T-Tech Specifications

### Electrical Input:

TT500	115 V, 60 Hz, 1.4 A
TT400	12Vdc

**Noise Emissions:** A-weighted sound <70dB

**Max Pressure:** 5.83 bar (85 psi, 583 kPa)

**Weight (approx.):** 170 lbs. (77 kg)

**Depth:** 32.5 in. (0.83 m)

**Width:** 21.5 in. (0.55 m)

**Height:** 51.5 in. (1.31 m)

This machine is capable of operation in ambient air temperature between 5° and 40° Celsius, (41° and 104° Fahrenheit) within a relative humidity range of 30% to 90% (non-condensing) and up to 6500 feet (1980 m) above sea level.

## About This Manual

This manual includes a Safety Summary, Operating Procedures, Machine Preparation, Maintenance Instructions, and Troubleshooting Procedures for transmission fluid exchanging. Anyone intending to use this machine should become familiar with all the information included in this manual (especially the Safety Summary) before attempting to use the Transmission Fluid Exchanger. In order to properly perform a complete transmission fluid exchange, follow all procedures in the order presented. Please take the time to study this manual before operating the machine. Then keep this manual close at hand for future reference.

# PREPARATION FOR USE

The manufacturer has a T-TECH AUTOMATIC TRANSMISSION FLUID AND FILTER SERVICE GUIDE available (form #804-875-000) that has vehicle transmission fluid capacities listed by vehicle make and year.

Although minimal, the transmission fluid exchanger requires some assembly before use. The following instructions describe the necessary steps to prepare your new transmission fluid exchanger for use.

## Assembly

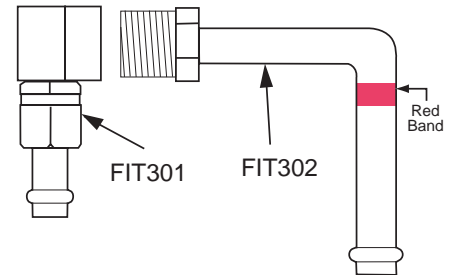
The only assembly required for this machine is to locate the blister pack that contains the fittings inside the machine and to set each fitting in the T-TECH FITTINGS Cabinet storage position identified by the picture mounted on the backside of the cabinet cover. You should also find a small parts bag containing the hose clamps needed to service vehicles. The contents of the blister pack have a specific storage location inside the T-TECH FITTINGS cabinet that is identified pictorially on the blister pack. Most of the fittings are numerically referenced and have a color code band for easy identification. A few are easily identified by shape.

Throughout each of the operating functions performed using the T-TECH, various adapters, fittings, or attachments will require installation in order to service a specific vehicle. This is not considered part of initial preparation for use. In each case, the setup and connection requirements for a specific task will be added, where necessary, as part of the procedure for that task.

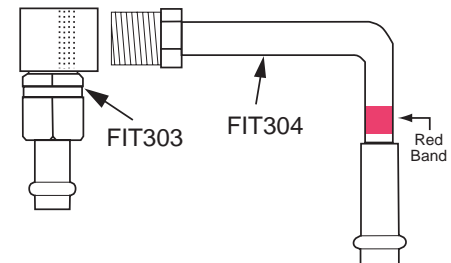
## Blister Pack Fittings Descriptions

Figure 1 through Figure 15 identify the fittings/components in the blister pack.

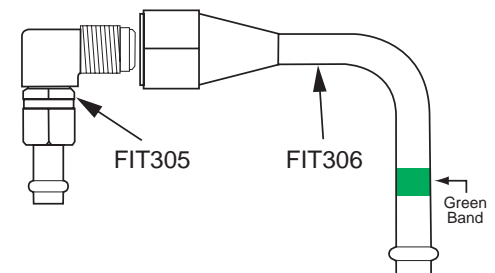
Note: Be aware that any of these fittings along with any of the fittings in the special fittings kits can be used to service any vehicle as needed.



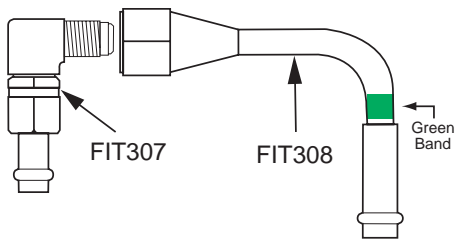
**Figure 1.** Fitting #1 and Fitting #2  
General Motors – Large and heavy duty GM cars, trucks and vans



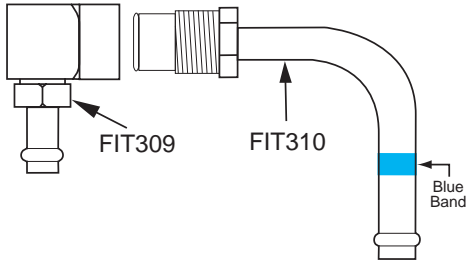
**Figure 2.** Fitting #3 and Fitting #4  
General Motors – Passenger cars, light duty trucks and vans



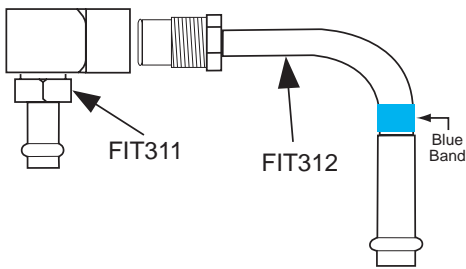
**Figure 3.** Fitting #5 and Fitting #6  
Chrysler/Jeep/Eagle – Jeep Cherokee and some heavy-duty passenger cars



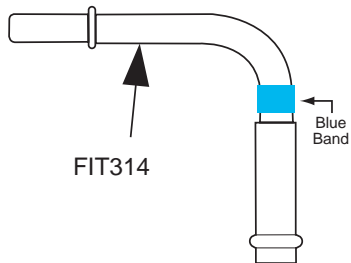
**Figure 4.** Fitting #7 and Fitting #8  
Chrysler/Dodge/Eagle – Chrysler Corp. passenger car Fitting #8  
also fits Volvo 720/740



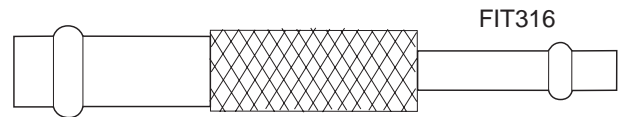
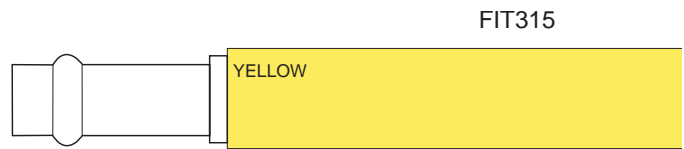
**Figure 5.** Fitting #9 and Fitting #10  
Ford – Fits most large trucks and vans



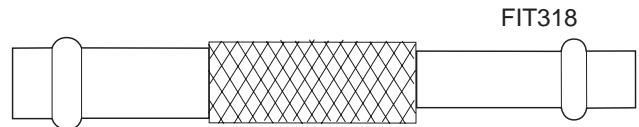
**Figure 6.** Fitting #11 and Fitting #12  
Ford – Most small passenger cars and  
light duty trucks



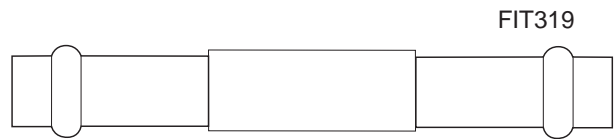
**Figure 7.** Fitting #14  
Ford/Lincoln/Mercury – Fits earlier Ford, Lincoln, and Mercury  
small and large passenger vehicles



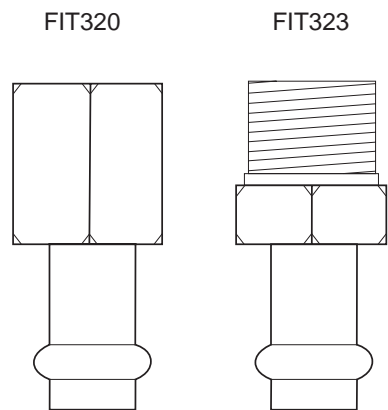
**Figure 8.** Fitting #15 and Fitting #16  
Any vehicle with 1/4 inch hose connections



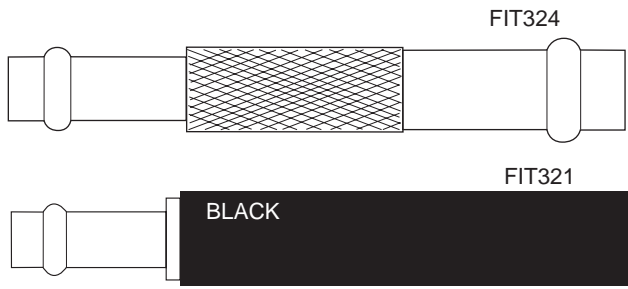
**Figure 9.** Fitting #17 and Fitting #18  
Any vehicle with 5/16 inch hose connections



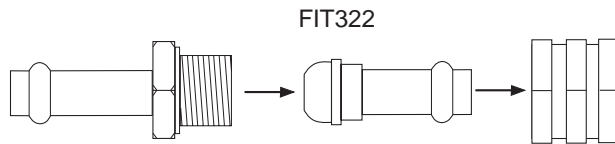
**Figure 10.** Fitting #19  
Any vehicle with 3/8 inch hose connections



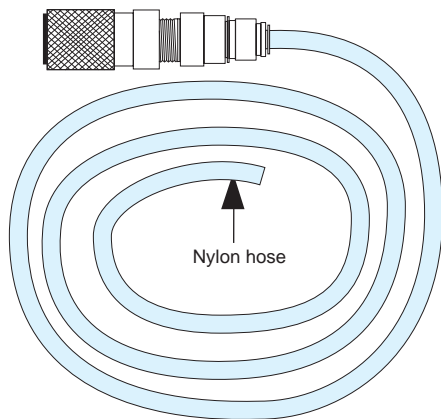
**Figure 11.** Fitting #20 and Fitting #23  
Any vehicle with 1/4 inch pipe fittings. Sometimes used to  
bypass quick connect receptacles



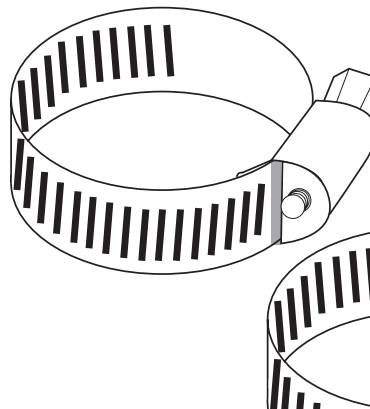
**Figure 12.** Fitting #21 and #24  
Any vehicle with 1/2 inch hose connections



**Figure 13.** Fitting #22  
Mercedes Benz and some BMW



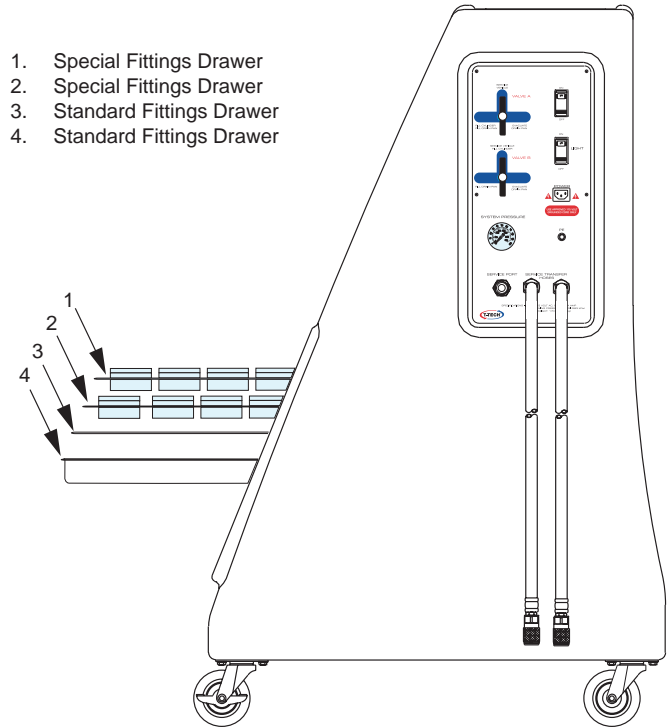
**Figure 14.** Drain Pan Adapter



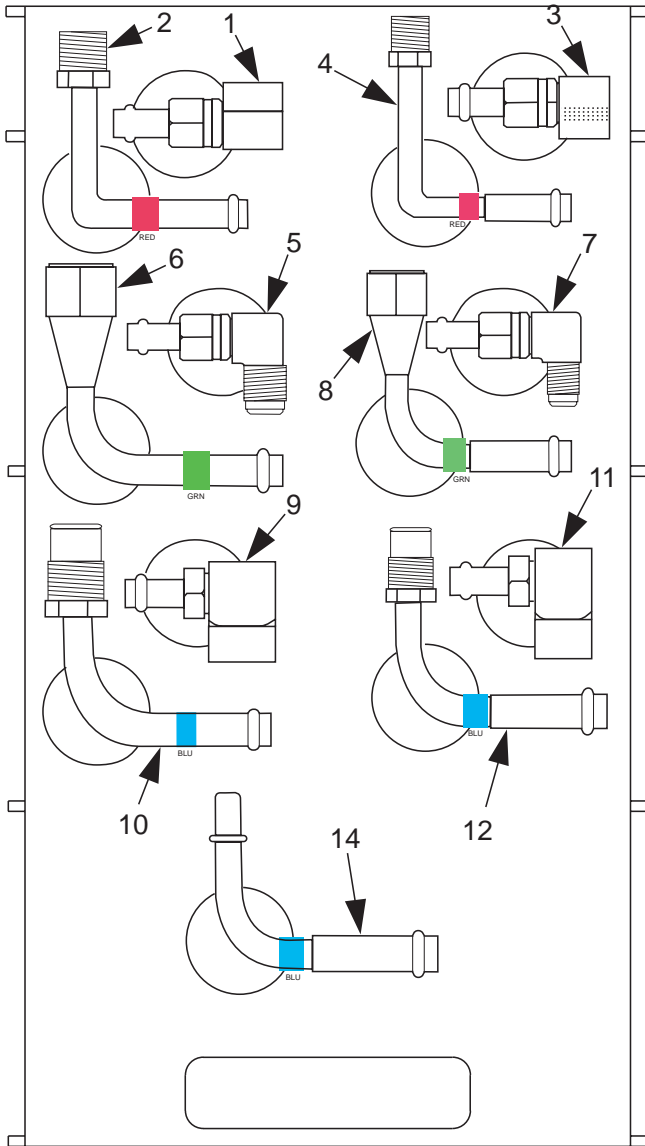
**Figure 15.** Hose Clamps in two sizes, three each

## Cabinet Drawer Storage Layouts

The storage drawers in the T-TECH FITTINGS cabinet are defined in Figure 16. Figure 17 and Figure 18 show the drawer layout for storage of the standard fittings in drawers 3 and 4 respectively. The numbers shown in the illustration are the specific fitting number for the standard fittings and will be referred to throughout this manual.

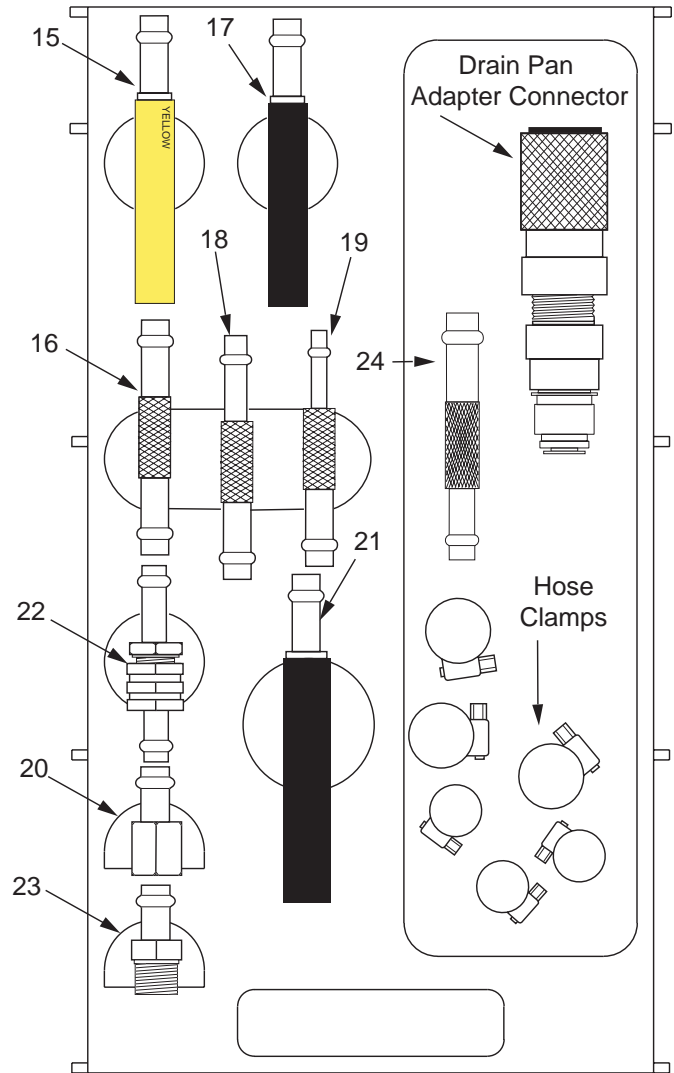


**Figure 16.** Define The T-TECH Fittings



**Figure 17.** Standard Fittings Storage Drawer #3

Note: The numbers in Figures 17 and 18 correspond to standard fittings 1-23.



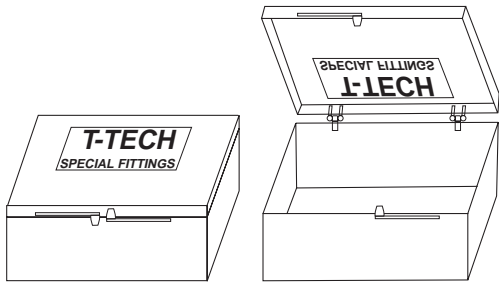
**Figure 18.** Standard Fittings Storage Drawer #4

## Special Fittings Kits

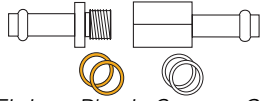
Optional accessories on TT400 must be ordered separately. The special fittings shown in Figure 19 through Figure 31 (optional on TT400 model) are stored in small plastic cases (Figure 19) on drawers 2 and 3, inside the T-TECH FITTINGS cabinet (Figure 16).

Note: FIT413, the Allison Transmission Fitting (Figure 32) is available as an optional accessory and is not included with the TT400 or the TT500.

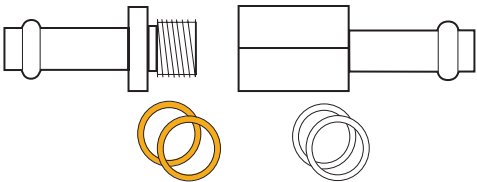
**CAUTION** – Each of the special fittings kits displayed here is a unique matched set of fittings intended for special use. Always keep the fittings in each kit together. When the fittings in these kits become mismatched, it is possible to damage the fittings or the vehicle.



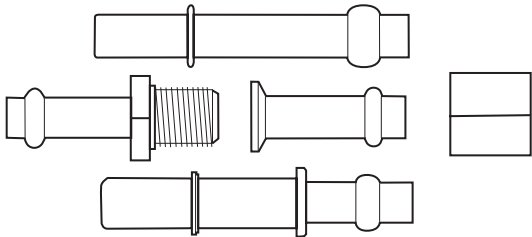
**Figure 19.** Special Fittings Plastic Storage Cases



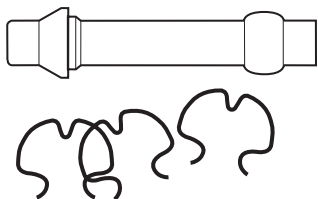
**Figure 20.** Special Fitting Kit #1  
Ford Escort/Nissan/Mazda (FIT401)



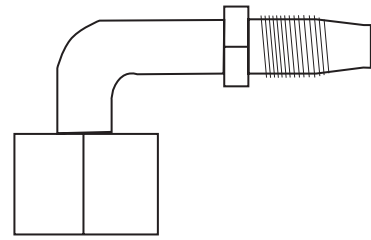
**Figure 21.** Special Fitting Kit #2  
BMW (FIT402)



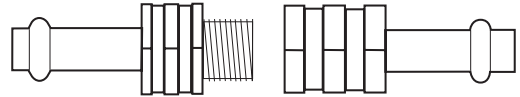
**Figure 22.** Special Fitting Kit #3  
Dodge Ram/OEM Ford/Dodge (FIT403)



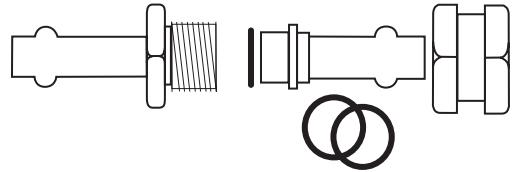
**Figure 23.** Special Fitting Kit #4  
OEM GM/Chevrolet (FIT404)



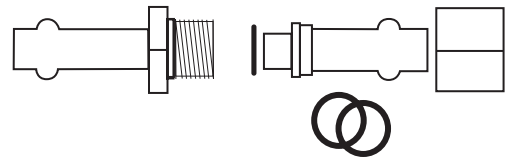
**Figure 24.** Special Fitting Kit #5  
Jeep/Some Chrysler (FIT405)



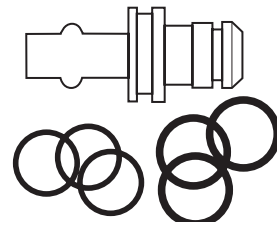
**Figure 25.** Special Fitting Kit #6  
Ford/Dodge (FIT406)



**Figure 26.** Special Fitting Kit #7  
BMW 5 Series and 3 Series (FIT407)



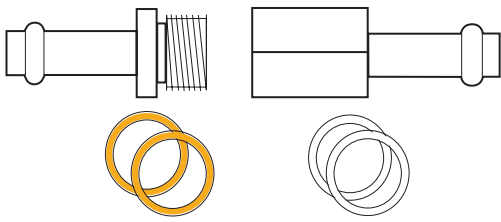
**Figure 27.** Special Fitting Kit #8  
Ford Contour/Mercury Mystique (FIT408)



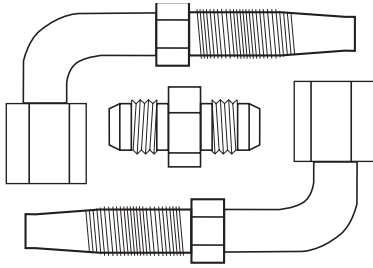
**Figure 28.** Special Fitting Kit #9  
Volvo (FIT409)



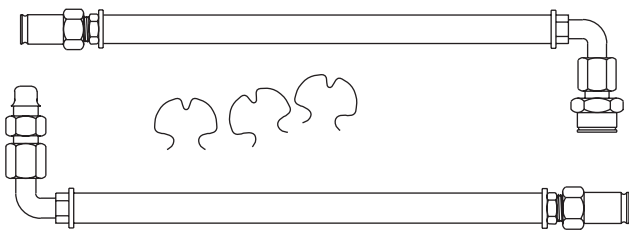
**Figure 29.** Special Fitting Kit #10  
Saab (FIT410)



**Figure 30.** Special Fitting Kit #11  
Mazda/Ford Banjo Fittings (FIT411)



**Figure 31.** Special Fitting Kit #12  
Dodge Durango/Dakota (FIT412)



**Figure 32.** Optional Kit #13  
Allison 1000 Series (FIT413)

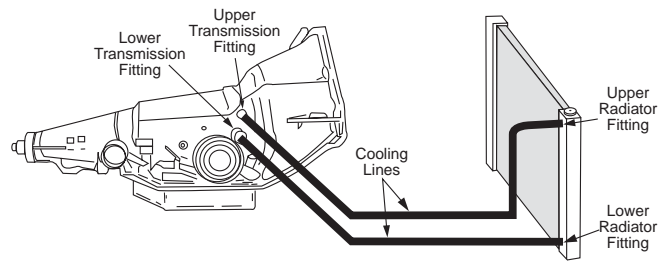
## Preparing Vehicle for Service

Preparing the vehicle for service requires identifying the automatic transmission cooling lines and making the necessary connections to exchange ATF.

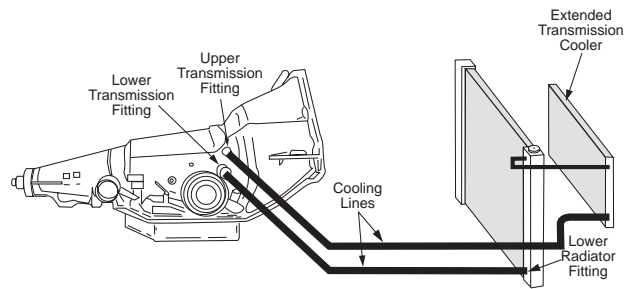
### Identifying Cooling Lines

Figure 33 is a diagram of an automobile transmission cooling system. The cooling systems are essentially the same from one vehicle to another though they may be routed a bit differently or the fittings might be in slightly different locations. In some systems, both lines will run to the bottom of the radiator. This is found on radiators that have top and bottom tanks. But this is basically what you will see in most vehicles.

A few cooling systems will have extended air coolers in addition to the cooler in the radiator (see Figure 34).



**Figure 33.** Typical Automobile Cooling System



**Figure 34.** Automobile Cooling System With Extended  
Transmission Cooler

## Making Vehicle Service Connections

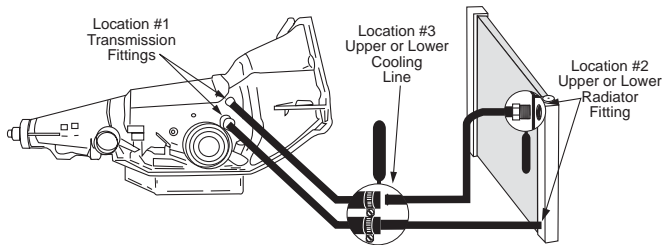


**WARNING**  
HEAT HAZARDS



**WARNING**  
FLUIDS UNDER PRESSURE

The fittings required to service ATF vary within vehicle brands, and sometimes from model to model. Make sure the vehicle is shut off and cool. Do not open a transmission system that is hot and under pressure. Check the fluid level and make sure the level is normal before you begin. Wait for the vehicle to cool down. Figure 35 shows some typical hookup locations. Location #1 is the fittings at the transmission. Location #2 is the fittings at the radiator. Location #3 shows a location (typical to most foreign vehicles) where a rubber hose changes to a steel tubing line. There must be a removable hose clamp at this location in order to make a connection. Only a few vehicles will be serviced at this location.



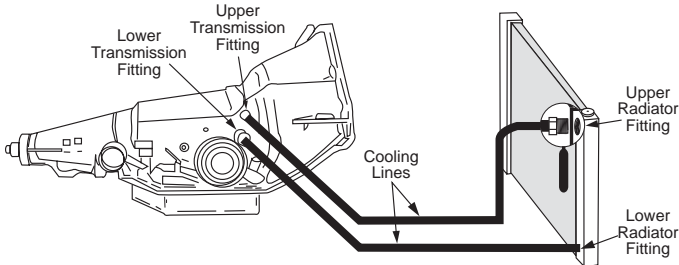
**Figure 35.** Typical Cooling Hookup Locations

For the hookup procedure we will use, as an example, an illustration that represents a 1992 Chevrolet 4-door Blazer, Figure 36.

1. Look for the easiest spot to break into the transmission system (any existing connection along the entire system can be used, see Figure 35).
2. Determine the fittings needed to service the specific vehicle.
3. Always verify that the transmission fluid level is normal before you begin.

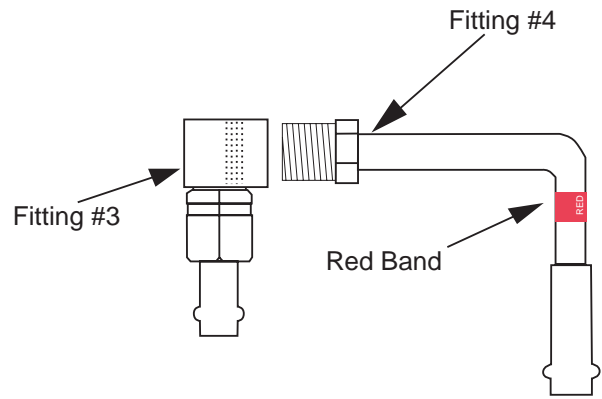
Note: In this vehicle (Chevy Blazer) the top radiator line is determined (for this example) to be the easiest location to make the T-TECH connection.

4. If available, use a transmission cooling line wrench (an open end wrench, flare nut wrench, or adjustable wrench will also do) to remove the cooling line from the radiator (see Figure 36).



**Figure 36.** Hookup Top Radiator Line

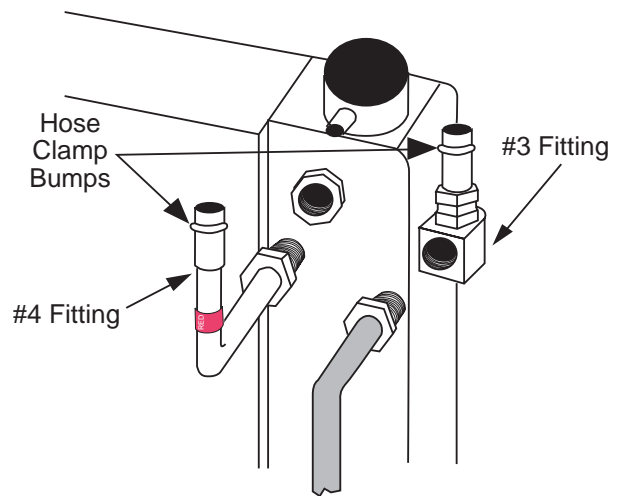
5. Examine the vehicle fittings and compare them to the fitting chart on the back of the T-TECH FITTINGS cabinet door. In this case, a Chevrolet fitting is required and a look at the fitting chart indicates that fittings #3 and #4 are the correct choices (see Figure 37).



**Figure 37.** The Correct Fittings Selection

6. Connect the male #4 fitting into the radiator, as shown in Figure 38.
7. Connect the female #3 fitting onto the vehicle transmission cooling line as shown in Figure 38.

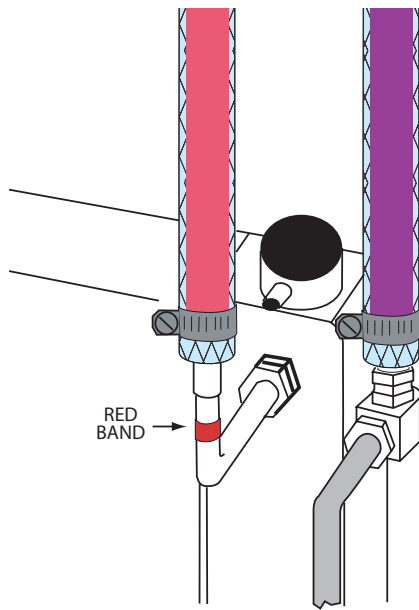
Note: The connections only need to be snug fit. Torquing down hard is not required, but they should still be tight enough to keep the connections from separating. If they begin to leak when service starts, see TROUBLESHOOTING.



**Figure 38.** Insert Fittings

8. Attach service adapter hoses to each fitting as shown in Figure 39.

Note: There are four service adapter hoses hanging on the rear of unit.

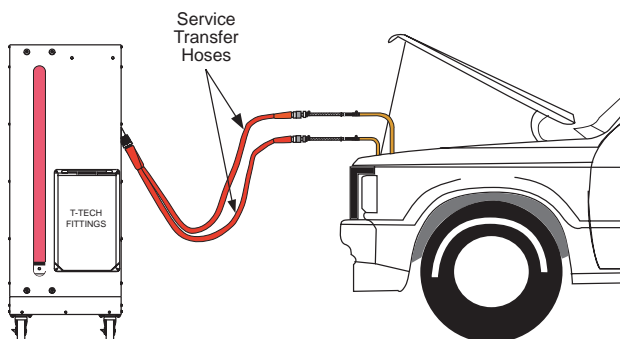


**Figure 39.** Attach Service Adapter Hoses

9. Make certain the hose clamp is tightened on the inside of the hose clamp bump on each fitting (see Figure 38) to keep the hose from coming off.

**CAUTION** – Over tightening the adapter hose clamps will destroy the hose ends over a period of time. Clamp the hoses down with a snug fit only. If they still leak, see TROUBLESHOOTING.

10. Connect a service hose adapter to each service transfer hose (see Figure 40 and Figure 41). The T-TECH machine will sense the fluid direction and adjust so that the used ATF from the vehicle is always coming into the bottom of the cylinder and the new ATF is moved out of the top of the cylinder and into the vehicle transmission. When the transfer hoses have been connected, the system should look like the illustration in Figure 40.

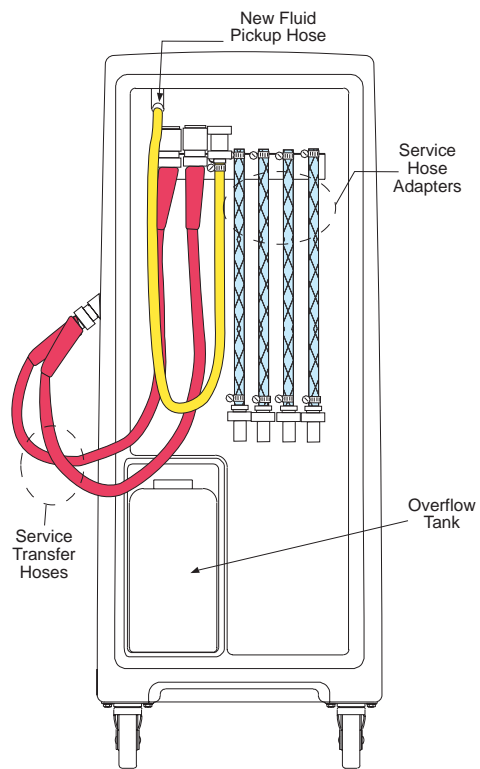


**Figure 40.** Connection Complete

## Removing Air From the Cylinder

When using the T-TECH for the first time, there may be space at the top of the cylinder (air in the cylinder). This condition may short the exchange by a quart or two of fluid. Make sure to check the fluid level in the vehicle transmission after the service is completed. If for some reason the piston is at the bottom of the cylinder, or there is large air space above the piston, the piston can be moved to the top of the cylinder by the following method.

1. Set VALVE A to EVACUATE DRAIN PAN.
2. Set VALVE B to EVACUATE DRAIN PAN.
3. Attach a service hose adapter to one of the service transfer hoses.
4. Insert an air nozzle into the end of the service hose adapter.
5. Control the air line at 10 psi (138 kPa) or less and begin filling the bottom of the cylinder with air.



**Figure 41.** Hoses and Hose Adapters

# OPERATION INSTRUCTIONS

For first time use, do not perform any of the following procedures until you have completed the procedures in PREPARATION FOR USE (page 9). All procedures must be performed in the order presented.

The following procedure provides the operating instructions for the various features of your T-TECH unit (both TT400 and TT500 models). The procedures provided here are written specifically for the TT500 model. Some procedures may vary slightly for the TT400. Where these instances occur, the procedure for the TT400 will be included and identified, as an exception.

When starting a new service, make certain the cylinder is filled with the type of ATF required by the vehicle to be serviced. Once PREPARATION FOR USE and PRIME THE ON-BOARD PUMP has been completed, a typical service consists of the following procedures in the order presented.

1. Fill Cylinder Function – Using the On-board Pump or Using Bulk Dispenser Gun
2. Fluid Exchange Function
3. Drain Transmission Pan Function
  - a. Empty the Overflow Tank
  - b. Draining the Transmission Pan
  - c. Filling the Transmission Pan

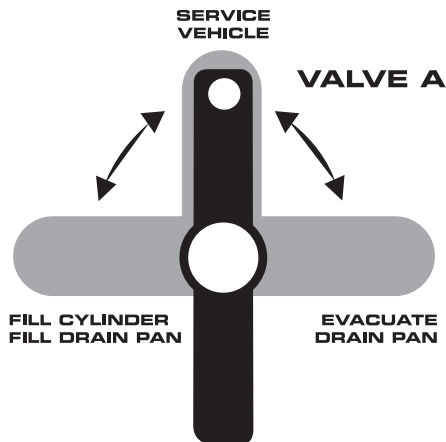


Figure 42. Valve A Control Positions

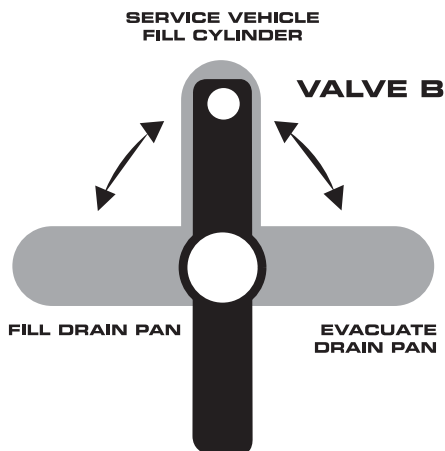


Figure 43. Valve B Control Positions

## Prime the ON-BOARD Pump

The ON-BOARD pump is a three chamber diaphragm pump. Typically, this is a self priming pump but it will not prime when under pressure. Filling the T-TECH machine requires pumping under pressure. The Drain Pan Adapter (Figure 44) can be used to allow the T-TECH to prime itself. Prime the ON-BOARD pump according to the following procedure steps.

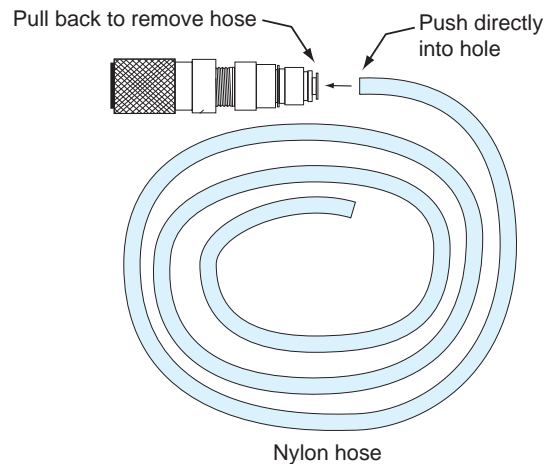


Figure 44. Drain Pan Adapter/Pump Primer

1. Set VALVE A to FILL CYLINDER/FILL DRAIN PAN and VALVE B to SERVICE VEHICLE/FILL CYLINDER.
2. Insert the New Fluid Pickup Hose (Figure 41) into a container of new ATF.
3. Attach the Drain Pan Adapter/Pump Primer (Figure 44) to the SERVICE PORT on the control panel.
4. Place an empty container under the Drain Pan Adapter to catch the fluid that will be pumped out (see Figure 45).
5. TT500 model only. Plug the line cord into a wall outlet.



### WARNING

THE PUMP SWITCH MUST BE OFF PRIOR TO ATTACHING THE PRO MODEL DC CLAMPS TO A POWER SOURCE.



### WARNING

A BATTERY EXPLOSION CAN INJURE, AND CAUSE PROPERTY DAMAGE!

6. TT400 only. Connect the 12 Vdc clamps to a 12 Vdc power source (a 12 Vdc automobile battery works well).
7. Set the pump switch to PUMP ON.
8. Run the pump until a solid stream of ATF comes out through the pump primer.
9. Set the pump switch to PUMP OFF.
10. Remove the pump primer from the SERVICE PORT. The ON-BOARD pump is primed.

## Fill Cylinder Function

The FILL CYLINDER FUNCTION is used to fill the T-TECH cylinder with new ATF and empty the cylinder of old ATF. Fill the cylinder with new ATF and remove the old ATF according to the following procedure steps.

**CAUTION – Fill cylinder completely.** Air below the piston will result in an incomplete one to one exchange as this air will compress and not move the piston at beginning of the exchange process.

## Using the On-Board Pump

Note: When filling the cylinder for the first time, verify that the piston is at the top of the cylinder. There should be no air space at the top of the cylinder.

1. Determine the type of ATF needed for the next service.
2. Set VALVE A (on the side of the unit, see Figure 42) to FILL CYLINDER, FILL DRAIN PAN
3. Set VALVE B (on the side of the unit, see Figure 43) to SERVICE VEHICLE, FILL CYLINDER.
4. Attach a service hose adapter (see Figure 41) to the end of each service transfer hose (see Figure 45).

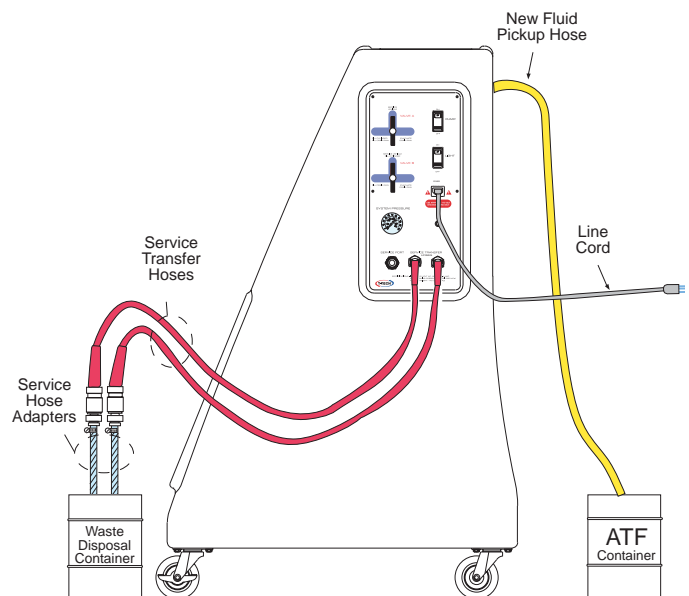



Figure 45. Fill The T-TECH Cylinder

5. Insert both hoses into a container suitable for collecting and disposing of old ATF (Figure 45). The container must be capable of holding a minimum of 18 quarts (17.034 liters, the full capacity of the T-TECH cylinder). The flow direction for filling the cylinder with the ON-BOARD pump is shown in Figure 46.

Note: Ask your local environmental protection agency about the proper disposal of ATF fluids.

6. Insert the yellow, new fluid pickup hose (located at the rear if the unit see Figure 41) into a container of new ATF (cylinder has 18 quart capacity).

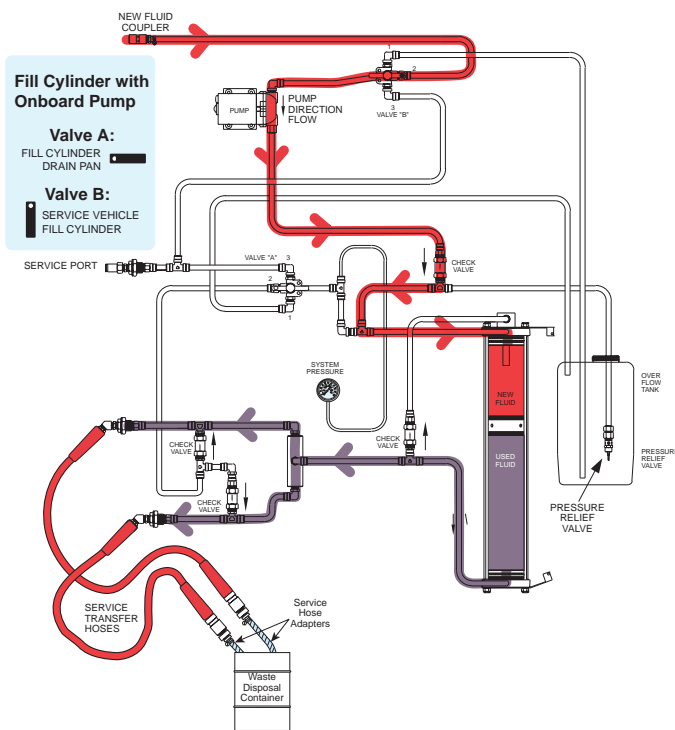
- TT500 only.** If you are using the on board pump, connect the electrical service cord (from the ac connector on the right side of the unit, see Figure 45) to a 110 Vac wall outlet.

**WARNING**  
 THE PUMP SWITCH MUST BE OFF PRIOR TO ATTACHING THE PRO MODEL DC CLAMPS TO A POWER SOURCE.

**WARNING**  
 A BATTERY EXPLOSION CAN INJURE, AND CAUSE PROPERTY DAMAGE!

Note: The TT400 has 12 volt dc clamps, instead of an electrical service cord, on the right side of the unit.

- TT400 only.** If you are using the on board pump, connect the 12 VOLT DC CLAMPS (see Figure 54) to a 12 Vdc source, red to positive, black to negative. A 12 volt automotive type battery will work well.
- Set the PUMP ON/PUMP OFF switch (located on right side of unit, Figure 53 or Figure 54) to PUMP ON.



**Figure 46.** Flow Direction For Filling The Cylinder With The ON-BOARD Pump

- Fluid should begin flowing through the yellow, new fluid pickup hose and into the top of the cylinder. An equal amount of old ATF is being displaced and forced out the bottom of the cylinder and into the old ATF disposal container. If the flow of old fluid out of the bottom of the cylinder is slow, the auto flow alignment valve is stuck. Perform the following steps.

Note: When filling the T-TECH with new ATF, the used ATF is displaced through the SERVICE TRANSFER HOSES. Occasionally, the auto flow alignment valve may rest in a position where it will block the flow of used ATF. The machine will not be damaged but the flow of used ATF will drop off to just a trickle and cause the time to fill with new ATF to become extensive. During normal operation, the flow of used ATF should be strong and steady. If a strong, steady flow of used ATF is not coming out of the service transfer hoses, perform the following steps or see TROUBLESHOOTING.

- Turn the pump off.
- Disconnect a service hose adapter from one of the service transfer hoses.
- Turn the pump on and wait 4 to 5 seconds.
- Turn the pump off again.
- Reconnect the service hose adapter to the service transfer hose (over a used ATF CONTAINER)
- Turn the pump on again and continue the filling operation, the auto flow alignment valve is corrected.

Note: If this is the first time the T-TECH machine has been filled, there will be air under the piston instead of old ATF. The air must be allowed to exit just as if it were old fluid.

- Continue the process until the cylinder is filled completely with new ATF. If there is air below the piston, it will result in an incomplete one to one exchange as this air will compress and not move the piston at the beginning of the exchange process.

## Using a Bulk Dispenser Gun

To use this method, a bulk dispenser gun (see Figure 47) accessory kit must be used. The accessory kit is an optional kit not supplied with the T-TECH. The bulk dispenser gun accessory kit must be ordered separately (see *Replacement Parts List*).

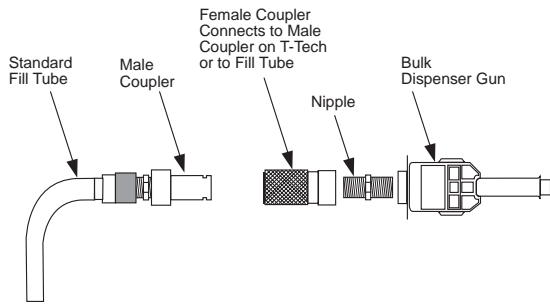


Figure 47. Use A Bulk Dispenser Gun

**CAUTION – Fill cylinder completely.** Air below the piston will result in an incomplete one to one exchange as this air will compress and not move the piston at beginning of the exchange process.

1. Determine the type of ATF needed for the next service.
2. Set VALVE A (on the side of the unit, see Figure 42) to FILL CYLINDER/FILL DRAIN PAN.
3. Set VALVE B (on the side of the unit, see Figure 43) to SERVICE VEHICLE/FILL CYLINDER.
4. Attach a service hose adapter (see Figure 41) to the end of each service transfer hose (see Figure 45 or 46).
5. Insert both hoses into a container suitable for collecting and disposing of old ATF (see Figure 45 or 46). The container must be capable of holding a minimum of 18 quarts (17.034 liters, the full capacity of the T-TECH cylinder).

Note: See your local environmental protection agency for proper disposal of ATF fluids.

6. Attach the proper fittings to the bulk dispenser gun (Figure 47) and connect the bulk dispenser gun to the CYLINDER FILLING port on the T-TECH.
7. Press the trigger on the bulk dispenser gun.

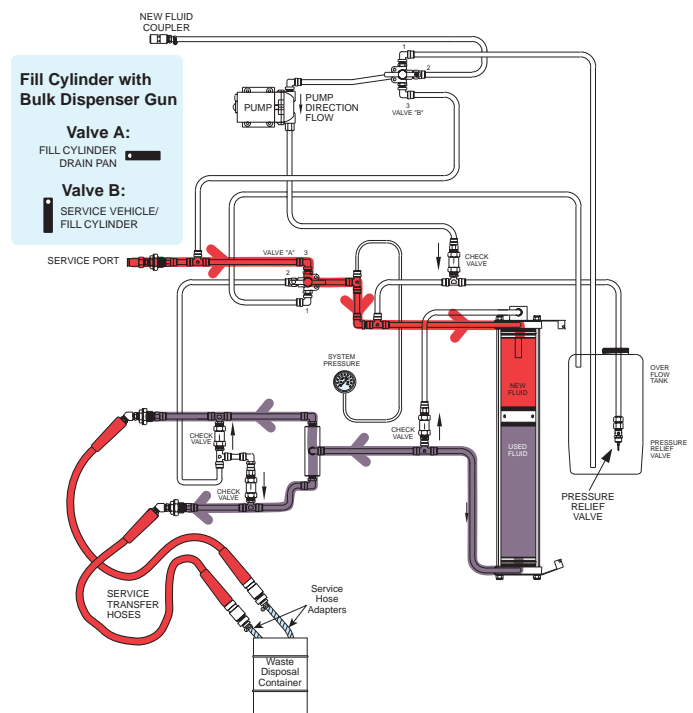
The flow direction for filling new fluid from a bulk dispenser gun is shown in Figure 48.

8. Verify that the pressure gauge reading does not exceed the 50 lbs. (345 kPa).
9. Fluid should begin flowing into the top of the cylinder. An equal amount of old ATF is being displaced and forced out the bottom of the cylinder and into the old ATF disposal container.

Note: If this is the first time the T-TECH machine has been filled, there will be air under the piston instead of old ATF. The air must be allowed to exit just as if it were old fluid.

10. Continue the process until the cylinder is filled completely with new ATF. If there is air below the piston, it will result in an incomplete one to one exchange as this air will compress and not move the piston at beginning of the exchange process.

Figure 48. Flow Direction From A



Bulk Dispenser Gun

# Fluid Exchange Function

Use this function to exchange old automatic transmission fluid (ATF) with new ATF. When exchanging fluids with the TT500, the exchange process is very visible (see Figure 49 for vehicle service flow direction).

Neither T-TECH machine requires external power to operate since the vehicle provides the pressure to displace the new ATF with old. However, the TT500 has ON-BOARD backlighting available during service. The power cord must be connected to a 110 volt ac circuit and the Light switch must be set to LIGHT ON.

1. The SERVICE TRANSFER HOSES (see Figure 41) are plumbed to the selected service hose fittings. With the T-TECH auto align feature, you need not be concerned about which Service Transfer Hose is connected to the transmission cooling line or to the radiator because flow direction is now controlled through the T-TECH unit.

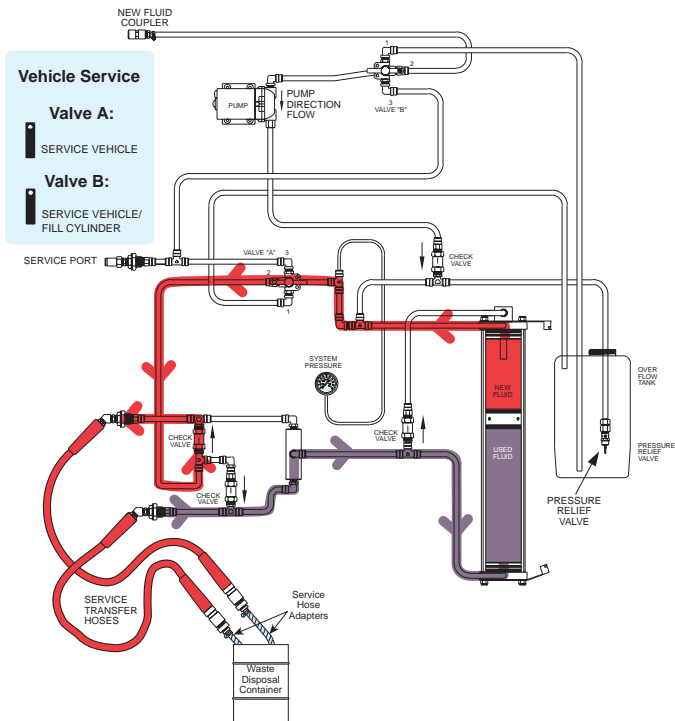


Figure 49. Vehicle Service Flow Direction

2. Set both valves A and B (on the side of the unit) to SERVICE VEHICLE (pointing straight up).

3. Start the vehicle. The pressure gauge (on the side of the unit, see Figure 50 or Figure 51) should read between 10 and 50 lbs. (69 and 345 kPa) depending on the vehicle being serviced. If the pressure is below 10 lbs. (69 kPa) and the piston is not moving in an upward direction, see TROUBLESHOOTING.

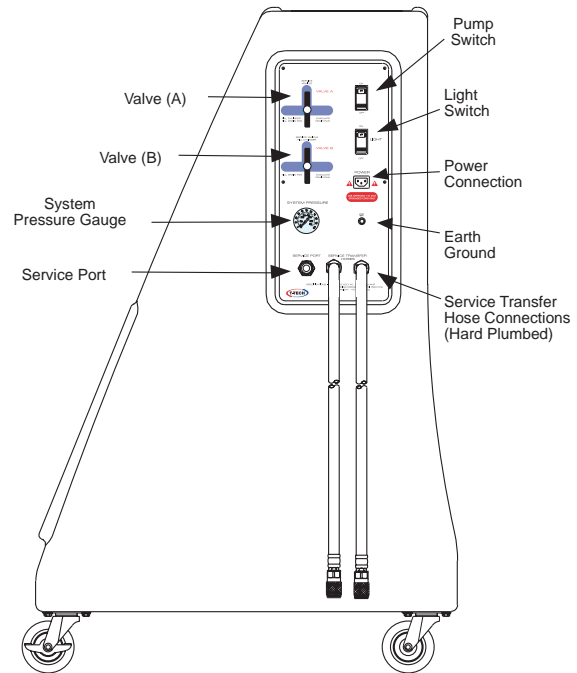


Figure 50. TT500 Side View

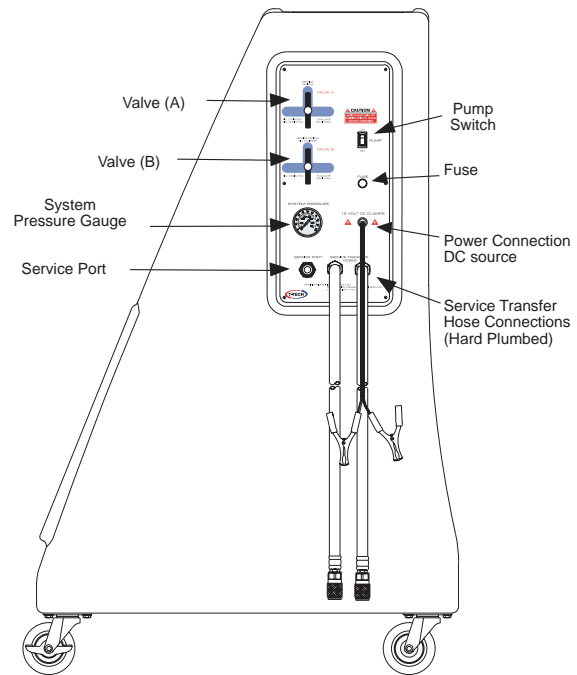
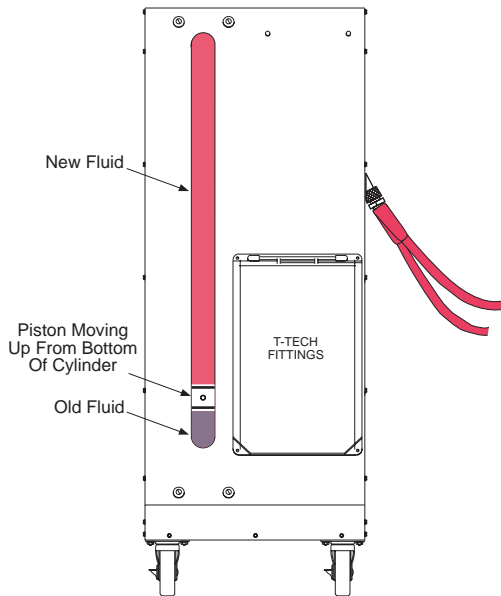
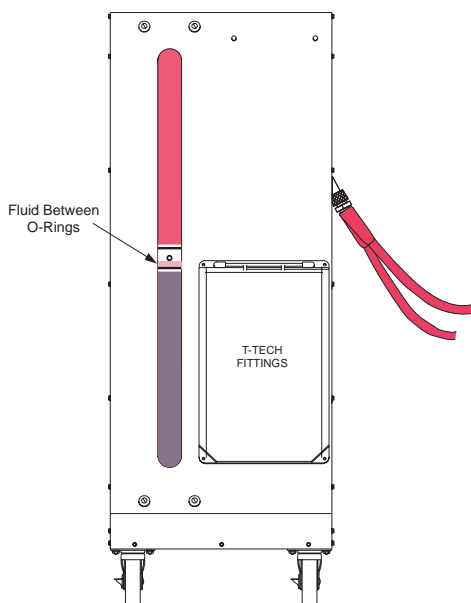


Figure 51. TT400 Side View

4. The piston in the cylinder should begin to move upward in the cylinder (see Figure 52). Notice that the old fluid enters the cylinder from under the piston. The fluid pumped in by the vehicle transmission pushes up on the piston which in turn pushes an equal amount of new fluid out the top of the cylinder and into the vehicle.
5. You may notice some fluid between the O-rings on the piston (see Figure 53).



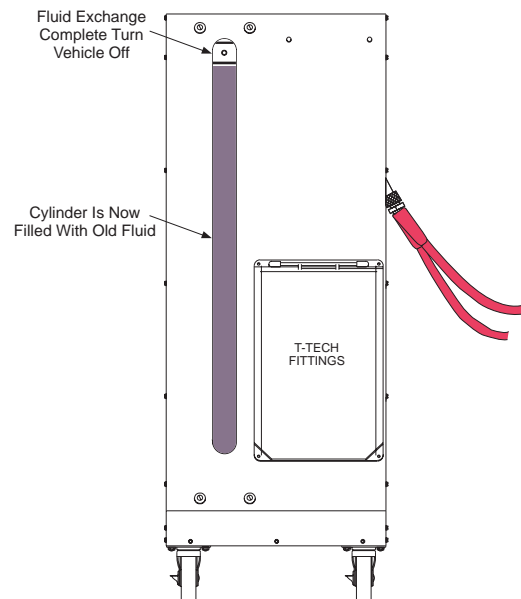
**Figure 52.** Piston Movement



**Figure 53.** Fluid Between O-Rings

6. New ATF is normal between the O-rings for lubrication of the piston and O-rings. However, if old ATF passes by the O-rings and into the new ATF, O-ring replacement is needed.
7. When the desired amount (vehicle system capacity) of ATF has been exchanged, or the fluid in the service hose coming from the vehicle runs clear, turn off the vehicle, remove all hoses and hose connections and reconnect the vehicle transmission cooling lines.

Note: It is advisable to have enough fluid in the machine to stop the exchange process when the bottom of the piston reaches the 2 quart mark. This will avoid opening of the bypass valve, and keep the new ATF side of the cylinder as clean as possible.



**Figure 54.** Exchange Of Fluids Complete

8. Restart the vehicle.
9. Check the ATF level in the vehicle. (Check the vehicle dipstick for proper procedure. Some vehicles require the transmission be in PARK and some in NEUTRAL.)
10. Inspect the vehicle fittings for leaks.
11. Fluid exchange is complete.

## Drain the Transmission Pan Function

This feature allows the transmission pan to be drained into the T-TECH unit and refilled. To avoid possible contamination of used transmission fluid, only perform this step after completing the Fluid Exchange Function.

Note: The overflow tank (see Figure 41) must be empty before this function can be performed.

### Empty the Overflow Tank

This step is required to remove any ATF left in the overflow tank from a previous service.

1. Attach the drain pan adapter (see Figure 55) to the SERVICE PORT on the control panel.
2. Insert the end of the drain pan adapter hose into a container suitable for collecting and disposing of old ATF.
3. Set VALVE A (on the side of the unit, see Figure 42) to FILL CYLINDER/FILL DRAIN PAN.
4. Set VALVE B (on the side of the unit, see Figure 43) to FILL DRAIN PAN.
5. Set the PUMP ON/PUMP OFF switch to PUMP ON.
6. Continue pumping until all the fluid has been removed from the overflow tank.

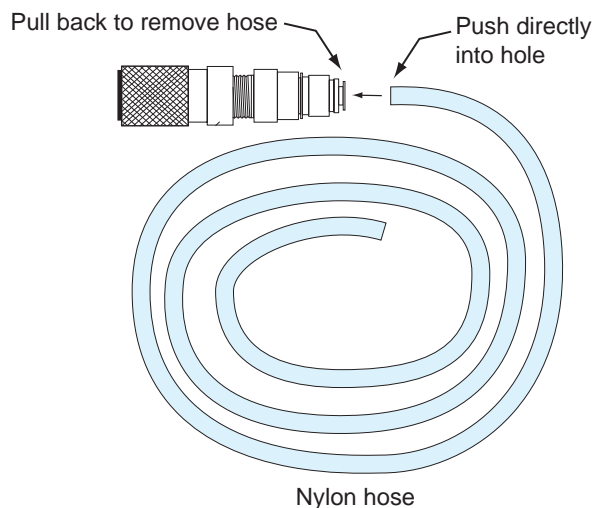


Figure 55. Drain Pan Adapter/Pump Primer

## Draining the Transmission Pan

This feature allows you to service the transmission pan or replace the filter and gasket.

1. Attach the Drain Pan Adapter/Pump Primer (see Figure 55) to the SERVICE PORT on the control panel.
2. Insert the end of the Drain Pan Adapter hose into the vehicle transmission dipstick so that the hose extends all the way to the transmission drain pan. Figure 56 shows the direction of flow when draining the transmission drain pan.
3. Set VALVE A to EVACUATE DRAIN PAN.
4. Set VALVE B to EVACUATE DRAIN PAN.
5. Set the PUMP ON/PUMP OFF switch to PUMP ON.
6. After transmission service (see vehicle manufacturer's recommendations) has been completed, the new ATF that went into the overflow tank can now be put back into the vehicle (see FILLING THE TRANSMISSION DRAIN PAN).

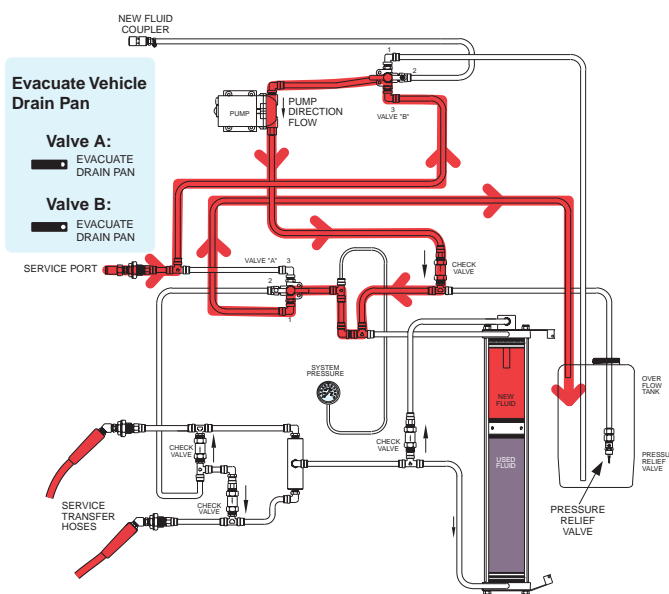
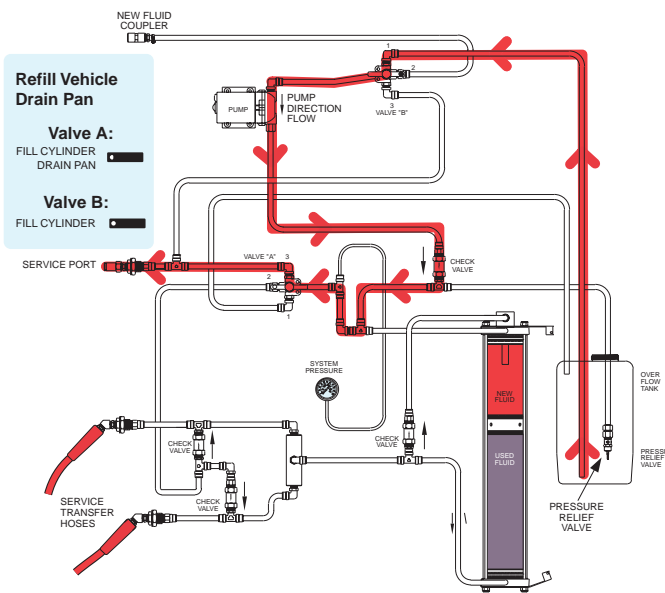


Figure 56. Flow Direction When Evacuating The Vehicle Transmission Drain Pan

## Filling the Transmission Drain Pan

Figure 57 shows the flow direction when refilling the vehicle transmission drain pan.

1. Verify the hose from the Drain Pan Adapter is still extended into the transmission drain pan.
2. Set VALVE A to FILL CYLINDER/FILL DRAIN PAN.
3. Set VALVE B to FILL DRAIN PAN.
4. Set the PUMP ON/PUMP OFF switch to PUMP ON.
5. Continue pumping until all the fluid has been removed from the overflow tank.
6. Disconnect all hoses and return them to their appropriate positions.



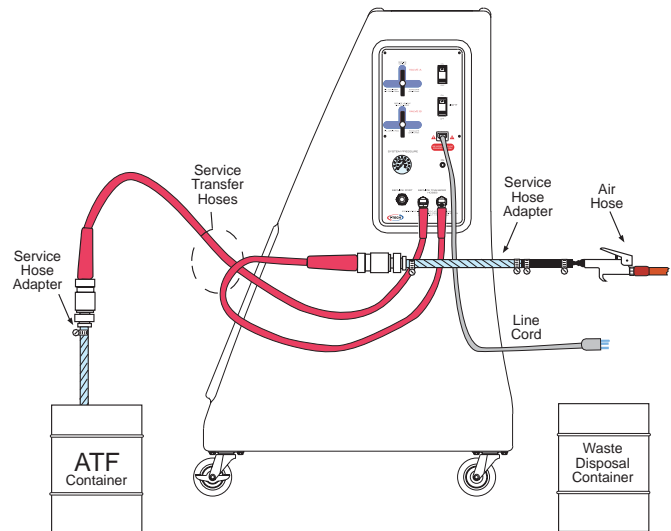
**Figure 57.** Flow Direction When Refilling the Vehicle Transmission Drain Pan

## Replace Existing New ATF with Different New ATF

Use this procedure to replace a new fluid type that is already in the cylinder with another type of new fluid needed to perform a current service (e.g. the cylinder is currently filled with DEXRON III but you need to service a Chrysler that uses MOPAR+ fluid).

The piston must be pushed to the top of the cylinder to force any existing ATF into a clean storage container so the fluid can be reused. See Figure 58.

1. Set VALVE A to SERVICE VEHICLE.
2. Set VALVE B to SERVICE VEHICLE/FILL CYLINDER.
3. Attach a service adapter to each service transfer hose.
4. Insert one service adapter into a clean container to save the fluid that is to be removed from the cylinder.



**Figure 58.** Exchange New Fluids

5. Insert your house air nozzle into the open end of the other service adapter.
6. Apply air pressure (air pressure should be above 10 psi but should not exceed 20 psi on the system pressure gauge).
7. The machine will sense the pressure and the piston should begin to rise. As the piston nears the top of the cylinder, gradually ease back on the air pressure.

### **WARNING**

Air under pressure can cause serious pain and damage to eyes and soft tissue! Always wear eye protection when using compressed air.

8. When the piston reaches the top of the cylinder, hold the air nozzle and service adapter in a waste container with the service adapter pointing away from any personnel. Pressurized air and possibly some ATF will be expelled out of the end of the service adapter when the air is released and the line hose is removed.
9. Release the air pressure and remove the nozzle from the service adapter.
10. Refill the cylinder with new ATF fluid of the type required to perform the service according to FILL CYLINDER FUNCTION, using either the on-board pump method or the bulk dispenser gun method.

## **Bypass Function**

The *Bypass Function* simply allows the machine to loop within the system when all the new ATF has exited the cylinder. This function allows the operator to walk away (work on something else, etc.) when the machine is running, without being concerned about service completion. When the piston reaches the top of the cylinder (old ATF has displaced all of the new ATF), the Bypass Function is automatically engaged. This causes the fluid now in the system to be forced into a loop through the vehicle and the T-TECH unit. At this time there is no longer an exchange of fluid and the loop will continue until stopped by the operator by turning off the vehicle.

The Bypass Function is disengaged (within the T-TECH unit) when the T-TECH cylinder is filled with new ATF.

# MAINTENANCE

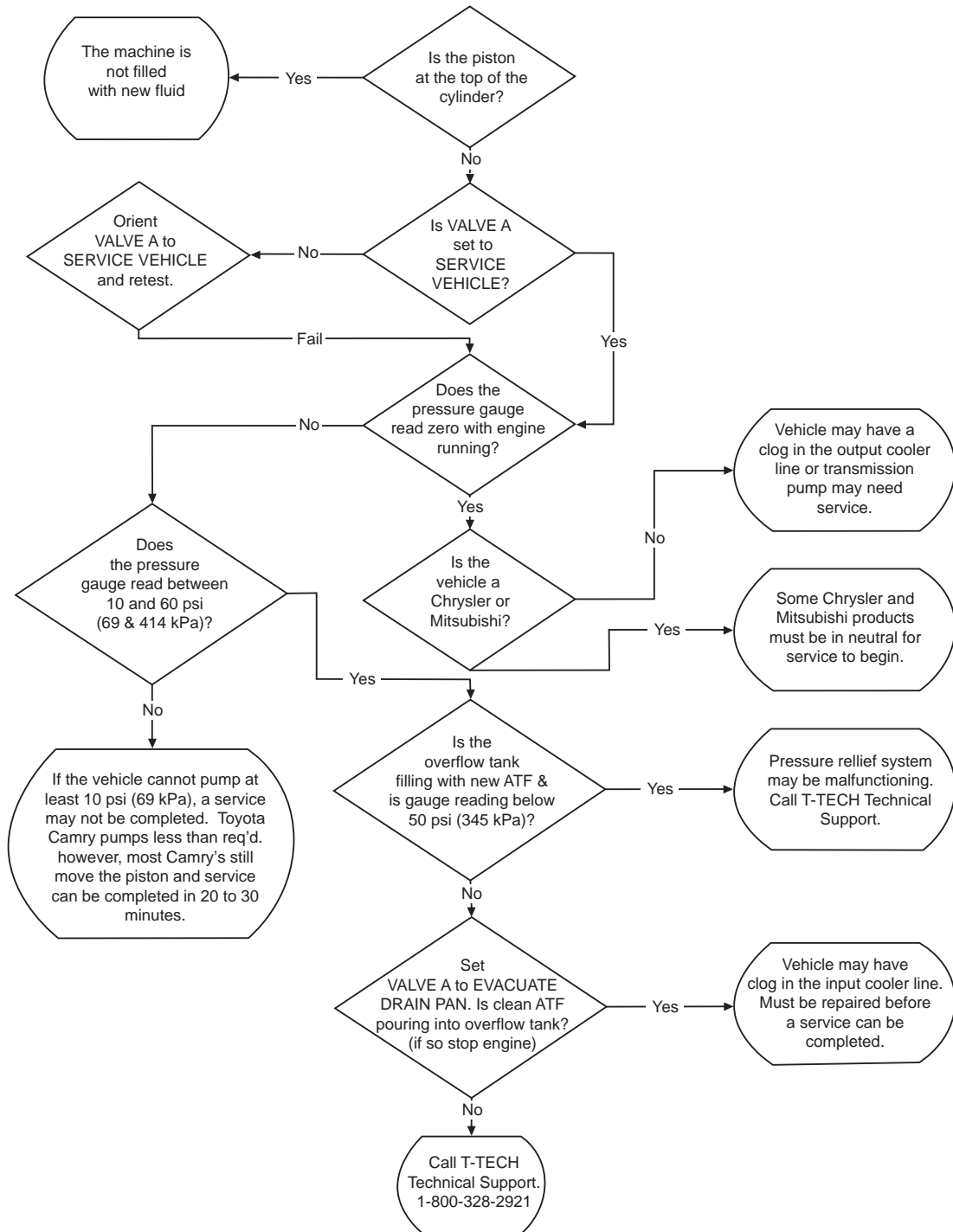
## General

There is no periodic maintenance necessary on the T-TECH unit.

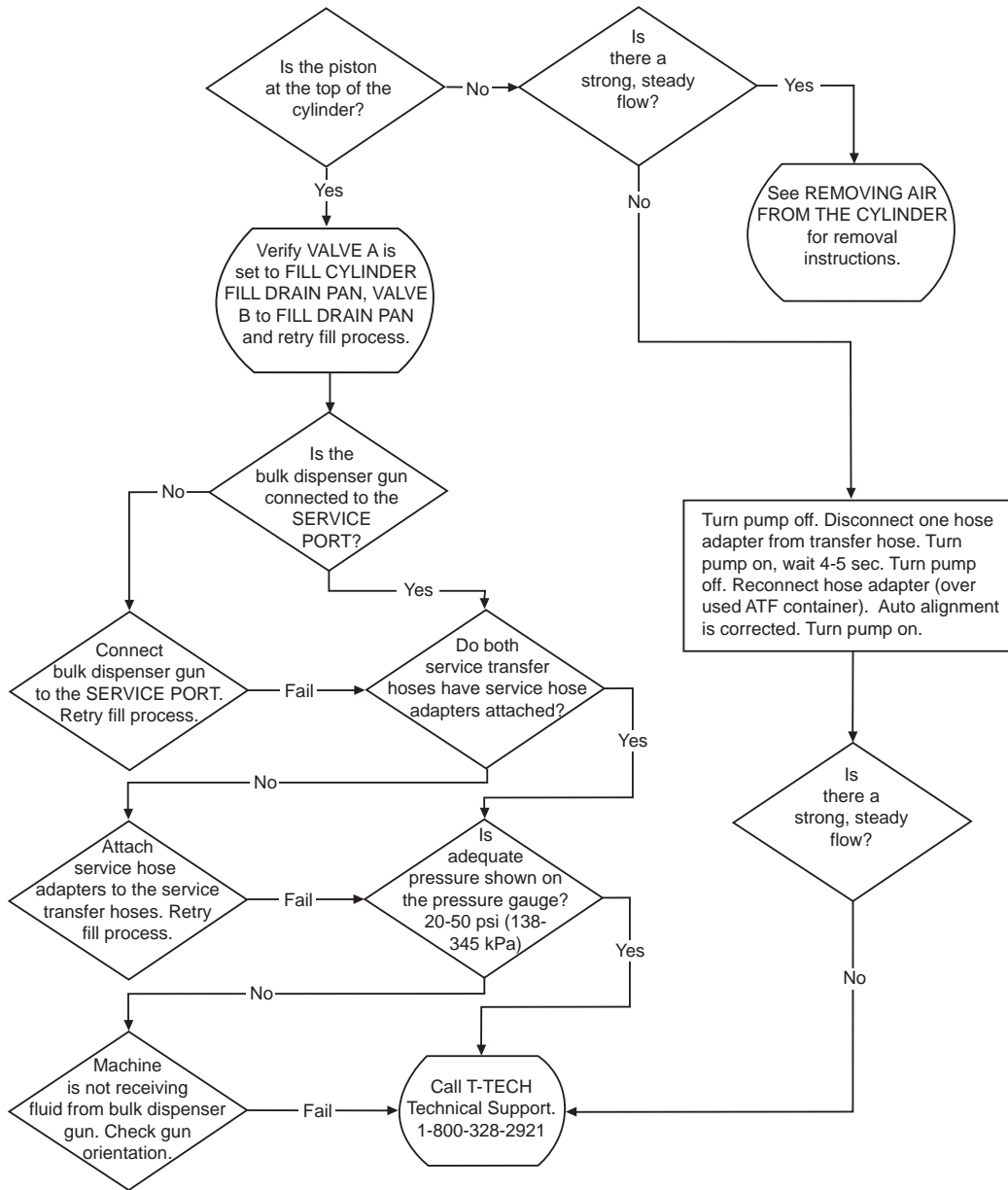
## Troubleshooting

The following troubleshooting flow charts are provided for solutions to problems that may occur during various operating processes.

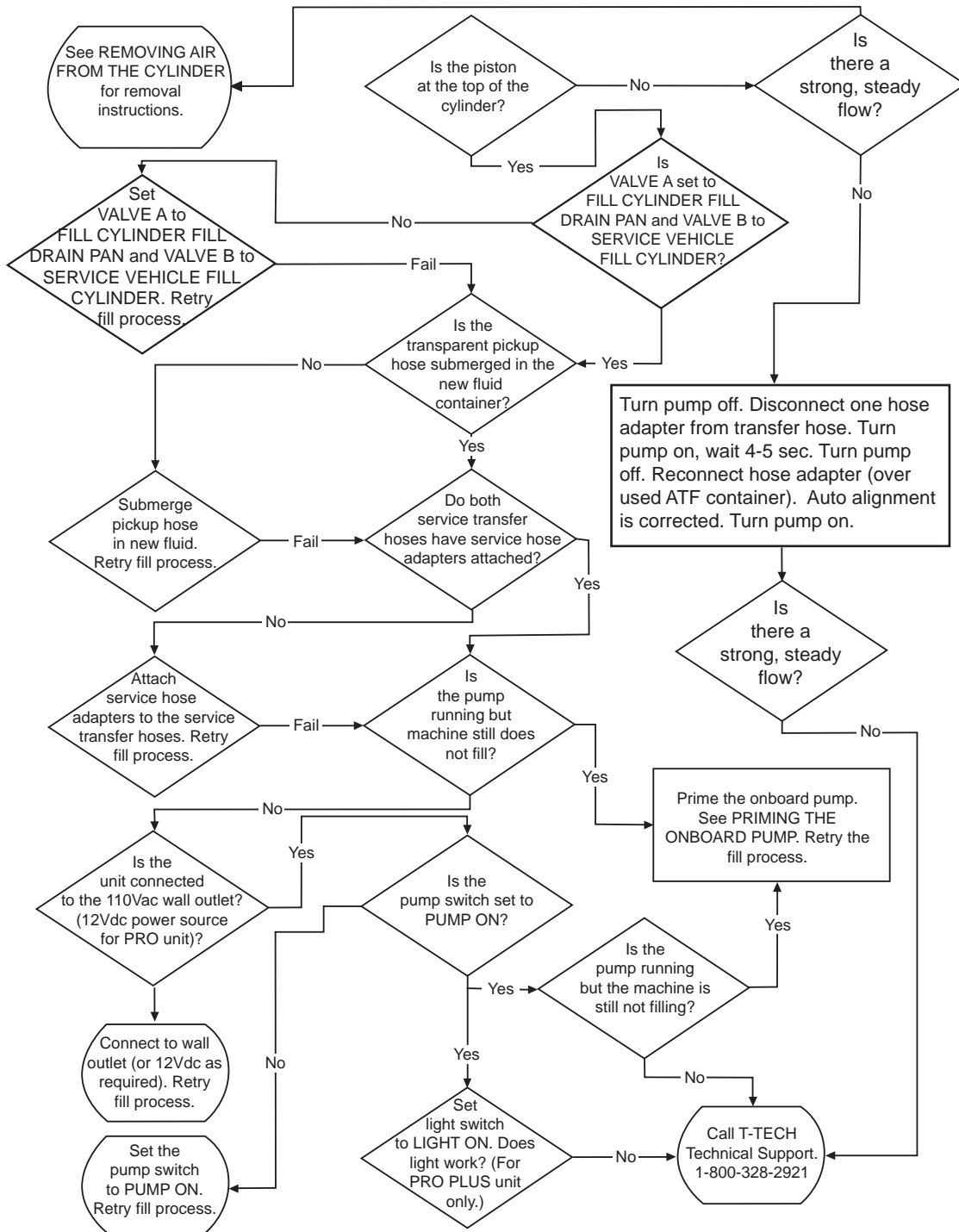
## Vehicle Service



# Fill Cylinder Using Bulk Dispenser



# Fill Cylinder Using ON-BOARD Pump



# T-TECH FACTS

## General

The information in the following paragraphs provides hookup information using combinations of universal fittings 1 through 23 and the special fittings kits on specific vehicles that was not previously provided. The information provided here is listed alphabetically by vehicle manufacturer and vehicle type.

**CAUTION** – Some automobile manufacturers use snap-in fittings on the transmission cooling lines. To avoid breaking the plastic clips in these fittings, it is best to unscrew the fitting (letting it spin on the transmission cooling line) and use the appropriate fittings, such as kit #6 or a combination of fitting #23 and fitting #20 to adapt to T-TECH.

Windstar van, Taurus, some Dodge Dakota, some Ford 1981 and up and many GM and Chrysler models use various snap-in connectors for the cooling lines.

## BMW

### BMW General – Kit #2

BMW kit #2 looks like the MERCEDES-BENZ kit #22 but is somewhat larger.

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #2.

#### INSTRUCTIONS:

Kit #2 is installed on the BMW as illustrated in Figure 59.

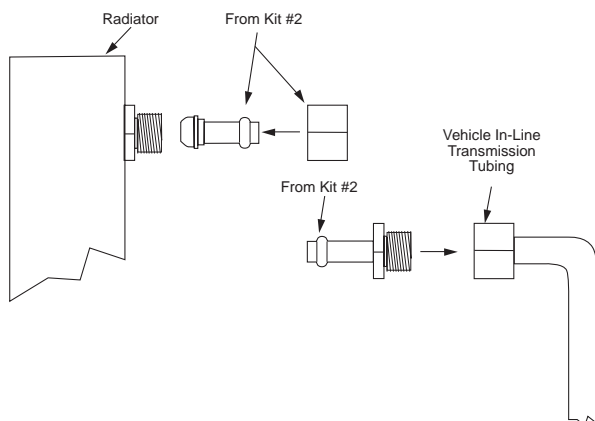


Figure 59. Kit #2 Installation on the BMW

## BMW 500 Series – Kit #7

**CAUTION** – Some of these fittings are a matched set and must be kept together in the small plastic box marked KIT #7.

#### INSTRUCTIONS:

1. The BMW 500 Series KIT #7 utilizes an O-ring to seal the line instead of the bullet style fitting used on smaller BMW models.
2. Use the fittings in kit #7 the same way as the fittings in kit #2 (see KIT #2 INSTRUCTIONS and Figure 59). Extra o-rings have been included in the case for kit #7.

## Chrysler

**CAUTION** – Many Chrysler products use rubber hose to connect to the transmission cooler. The hose usually has one or more plastic clips along the length to keep the hose away from pulleys, belts, etc. While doing a T-TECH service, it is possible to dislodge the hose from the clips. Closely monitor the security of the clips and hoses during T-TECH service to assure that the hose is not cut off by a belt or pulley after the vehicle is returned to customer.

Note: A number of Chrysler vehicles, including some Jeeps, require the vehicle to be in neutral while the engine is running to develop vehicle transmission pressure. The T-TECH exchanger process simply will not work unless vehicle transmission pressure is developed.

## Dodge Dakota (to 1997) and Ram – Kit #3

Note: Whenever using special fittings from kit #3 start them by hand and slowly tighten enough to prevent leaks.

Use kit #3 on the 1995 to 1997 Dakota (see Kit #12 for post 1997) and Ram.

The quick connect fitting in the Dodge Dakota transmission cooling line (at the radiator) requires a removal tool that is not supplied. See SNAP IN STYLE FITTINGS for tool information. Kit #3 is installed on the Dakota as illustrated in Figure 60.

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #3.

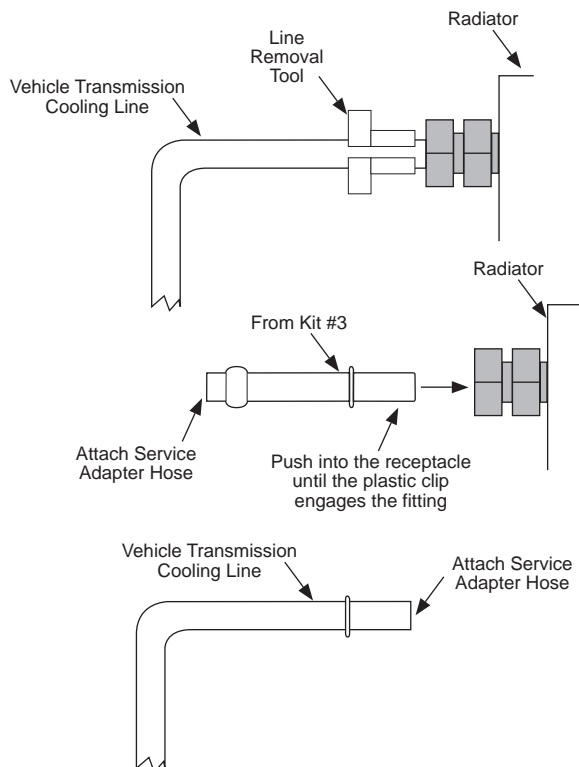


Figure 60. Kit #3 Installation on Dodge Dakota

#### INSTRUCTIONS:

1. Remove the transmission cooling line with the line removal tool.
2. Insert the small kit #3 fitting into the receptacle and continue pushing until the plastic clip in the receptacle engages the fitting.
3. Install a service adapter hose on the kit #3 fitting and another on the vehicle transmission cooling line. Clamp both in place and start service.

#### Dodge Ram (Gasoline engines only)

**CAUTION** – It is VERY easy to damage the radiator threads on these vehicles. The radiator fittings on the 1995 and newer DODGE RAM TRUCK are brass and the threads are 9/16-24 ultra fine cut. The threads are being stripped as the technician is removing the line. We recommend that you access the line either at the transmission or at the hose clamp connection (if available). If you decide to remove the radiator fitting, use the

following steps to help eliminate damaging the fitting. Careful handling of the vehicle is the responsibility of the technician. T-TECH will not accept any liability for vehicle damage.

1. Spray the fitting with penetrating oil.
2. Break the nut loose with a wrench.
3. Finish removing by hand only.
4. Replace the nut by hand only.

Note: Whenever using special fittings from kit #3 start them by hand and only tighten enough to prevent leaks.

The quick connect fitting in the Dodge Ram transmission cooling line (at the radiator) requires a removal tool that is not supplied. See SNAP IN STYLE FITTINGS for tool information. The #3 kit male fitting goes on the end of the steel line and the female fitting goes on the radiator (see Figure 61).

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #3.

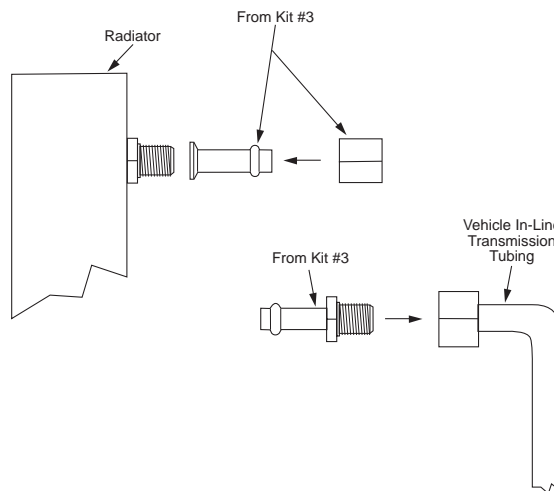


Figure 61. Kit #3 Installation on Dodge Ram

#### INSTRUCTIONS:

1. Remove the transmission cooling line with the line removal tool.
2. Insert the small kit #3 fitting into the receptacle and continue pushing until the plastic clip in the receptacle engages the fitting (see Figure 61).

3. Install a service adapter hose on the kit #3 fitting and another on the vehicle transmission cooling line. Clamp both in place and start service.

## Dodge Ram (Turbo Diesel)

### INSTRUCTIONS:

1. The Dodge Turbo Diesel uses the large quick connect fitting in Kit #3, but is easier to locate the 1/2 inch hose connection near the bottom of the radiator and use 1/2 inch fittings #21 and #24 with hose clamps.

## Dodge Durango and Dakota 1997 and Later - Kit # 12

Kit #12 is a three part fitting (see Figure 62).

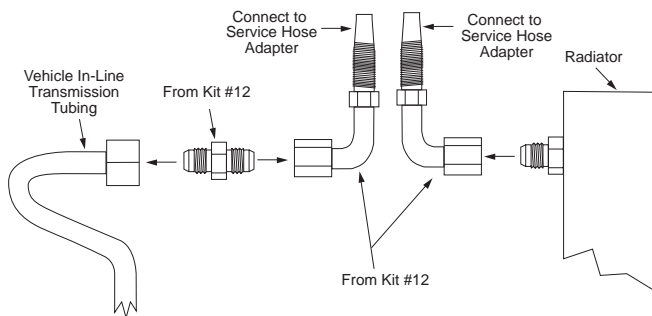


Figure 62. Kit #12 Installation On Dodge Durango

### INSTRUCTIONS:

1. Remove the transmission cooling line from the radiator connection.
2. Connect one of the elbow fittings to the fitting attached to the radiator.
3. Install one the service hose adapters to the other end of the elbow fitting and secure in place with one of the hose clamps.
4. Insert the small double ended fitting into the vehicle in line transmission tubing connector.
5. Connect the second elbow fitting to the other end of the small double ended fitting.
6. Install a second service hose adapter to the other end of the elbow fitting and secure in place with one of the hose clamps. Start service.

## Jeep Grand Cherokee - Kit # 5

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #5.

Kit #5 contains a special close radius fitting to make connection to Grand Cherokee and some other models of Jeep easier. This fitting will fit behind the battery box for the radiator connection (see Figure 63).

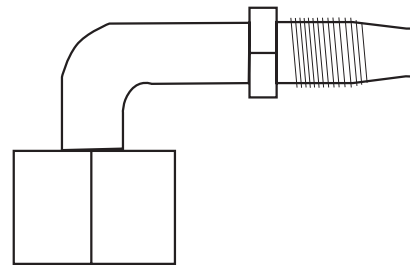


Figure 63. Kit #5 For Installation On Jeep Grand Cherokee

## Ford

**CAUTION** – Be very careful when servicing Ford products. It has come to our attention that some Taurus use a very large snap-in fitting that actually holds the transmission cooler in the radiator. DO NOT REMOVE this fitting. Remove, instead, the transmission cooling line from the fitting. The following method can be wherever snap-in style fittings are encountered.

1. Removing the transmission cooling line from this fitting requires the use of a tool such as the LISLE #37000 A/C AND FUEL LINE DISCONNECT SET, available at most automotive parts stores, or a SERVICE CHAMP #30293.

**CAUTION** – The snap-in fittings contain O-rings that seal the transmission cooling line to the receptacle. If the O-ring is broken, the fitting will leak. The only way to fix this problem is to replace the entire receptacle (Ford part #F3D3-7D273-A) along with a metal safety clip (Ford part #F3D2-73465-A) that must also be reinstalled.

Note: Whenever using special fittings from kit #3 start them by hand and only tighten enough to prevent leaks.

2. After the transmission cooling line has been released, insert the special fitting from kit #3 into the radiator fitting.
3. Attach one of the standard fittings (such as fitting #21) or a service adapter hose to the transmission cooling line for service.

**CAUTION** – Low or no pressure in the transmission cooler line on 1995 and up Ford Explorer.

About halfway through the 1995 model year, Ford installed a sensor to cut off the transmission fluid cooler in order to regulate the temperature of the transmission.

When the Explorer is hot, the fluid flows at normal pressure but as the new, cool fluid enters and circulates in the transmission, the line pressure suddenly drops. Service is continuing but there is a delay as the new fluid heats up. Some technicians have found that a high idle helps.

When this occurs, the T-TECH service replaces all of the fluid in the transmission but the delay may cause the old fluid and new fluid to mix for a longer time so you may not have a 100% change when you are done. You may want to consider recharging the T-TECH with an additional amount of fluid and continue service.

**CAUTION** – Do not remove the quick connect receptacle located on the radiator of the Ford Windstar, Taurus, and Mercury Sable. On some of those vehicles, the receptacle fitting holds the cooler inside the radiator tank. Removing the receptacle will allow radiator coolant to leak out.

The quick connect may be released. The transmission cooler line can be removed and fitted with the smaller fitting from kit #3. However, most of the vehicles leave very little room to work so the recommended fitting hookup is at the transmission itself. The quick connect receptacle at the transmission can be removed and fitted with special fitting kit #6 or with the smaller fitting in kit #3.

## Ford Contour – Kit #8

Kit #8 is a two part fitting that requires an O-ring seal to the transmission line.

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #8.

### INSTRUCTIONS:

1. Remove the transmission cooling line from the radiator.
2. Attach the female portion of the fitting in kit #8 to the transmission cooling line.
3. Attach the male portion of the fitting in kit #8 to the radiator (see Figure 64).

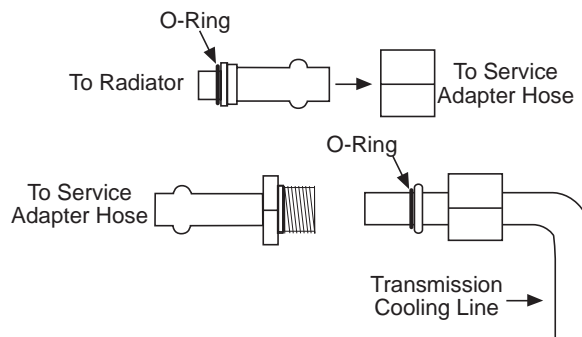


Figure 64. Kit #8 Installation on Ford Contour

## Escort – Kit #1

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #1.

### INSTRUCTIONS:

1. Remove the vehicle bolt, fitting and crush washers from the radiator.
2. Install the T-TECH female half to the stock bolt and washers.
3. Install the T-TECH male half into the radiator using the white nylon gasket (supplied) (see Figure 65).
4. After T-TECH service is complete, remove the fittings and store in case #1, reinstall factory parts and start the engine. Check for leaks and fluid quantity.

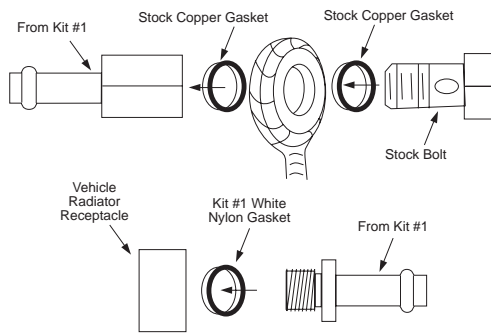


Figure 65. Kit #1 Installation on Ford Escort

## Ford Taurus and Windstar - Kit #3

Kit #3 must be installed at the transmission in Ford Taurus and Windstar and in the Mercury Sable. For some 1993 and newer vehicles, use the larger diameter fitting in Kit #3 (see Figure 66) with fitting #21 used as the female side. For some 1993 and older use the smaller diameter fitting in kit #3.

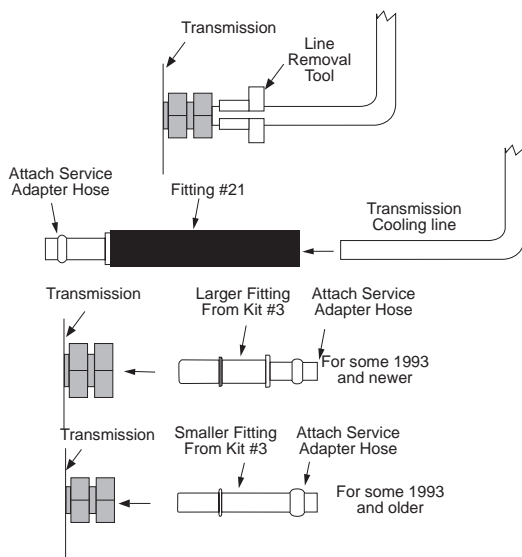


Figure 66. Kit #3 Installation on Ford Taurus, Ford Windstar & Mercury Sable

**CAUTION** – Some of these fittings are a matched set and must be kept together in the small plastic box marked KIT #3.

### INSTRUCTIONS:

1. Remove the transmission cooling line.
2. Insert the large kit #3 fitting (see Figure 64) into the receptacle and continue pushing until the plastic clip in the receptacle engages the fitting.

3. Install a service adapter hose on the kit #3 fitting and another on the vehicle transmission cooling line. Clamp both in place and start service.

## Ford Windstar - Kit #6

Kit #6 fittings (Figure 67) have two thin grooves cut into the flats to identify them.

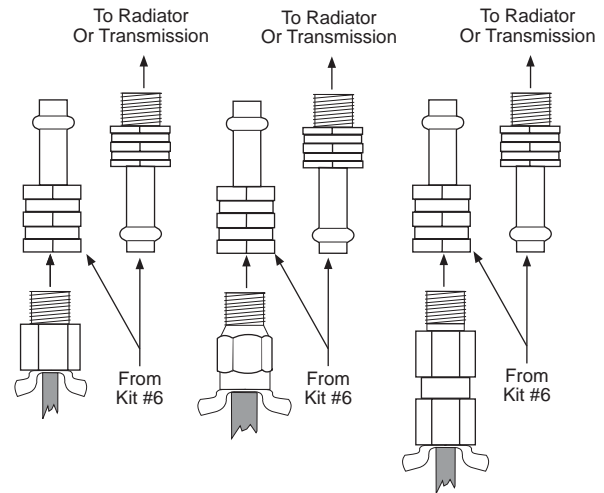


Figure 67. Kit #6 Installation on Ford Windstar

Windstar van, Taurus, Dodge Dakota, some Ford 1981 and up and many GM and Chrysler models use various snap-in connectors for the cooling lines. Field experience has found the most effective way to remove these fittings is the following:

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #6.

### INSTRUCTIONS:

1. Spray WD-40 or similar oil into and around the fitting. This lubricates the captive o-ring.
2. Unscrew the entire fitting from the radiator or transmission, letting the fitting spin on the line.
3. Attach Kit #6 Female to the back of the fitting.
4. Attach Kit #6 Male to the radiator or transmission.

## Mercury Mystique - Kit #1

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #1.

## INSTRUCTIONS:

1. Remove the stock bolt, the fitting and the crush washers from the radiator.
2. Install the T-TECH female half to the stock bolt and washers:
3. Install the T-TECH male half into the radiator using the white nylon gasket (supplied).
4. After T-TECH service is complete, remove the fittings and store in case #1, reinstall factory parts and start the engine. Check for leaks and fluid quantity.

### Mercury Sable - Kit #3

Note: Whenever using special fittings from kit #3 start them by hand and only tighten enough to prevent leaks.

Kit #3 must be installed at the transmission in the Mercury Sable. Use the larger fitting in Kit #3 (see Figure 60) along with fitting #21.

See Kit #3 Installation on Ford Taurus, Ford Windstar & Mercury Sable

### General Motors Chevrolet Blazer - Kit #4

Kit #4 is installed on the 1996 and up Blazer and other GM vehicles.

Note: On many GM rear wheel drive vehicles (including Astro & Safari), there are two cores where the T-TECH could be connected. GM fittings #3 & #4 fit the right (passenger) side only. T-TECH does not offer a fitting for the left (driver's) side.

In late 1996, GM started using a special snap-in fitting with retainer ring on blazers and small vans. The transmission cooling line must be removed to attach the service transfer hoses according to Figure 68 and the following steps.

**CAUTION** – *These fittings are a matched set and must be kept together in the small plastic box marked KIT #4.*

Note: Proper technique is required to assure locking clip is not damaged during removal and installation.

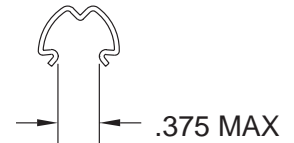
If the clip is over-stretched, it will not secure the line reliably and could allow

the transmission line to come loose. Make certain that when removing and installing the clip, it is not stretched beyond its ability to spring back, and secure the transmission line.

**To remove the clip:** Use a hooked pick, small screw driver, or your fingernail, to catch one end of the clip and **rotate** it out of the fitting groove. Do not pull the clip straight off, as this will over-stretch the clip.

**To install the clip:** Install the clip into the fitting **before** inserting the transmission line or service fitting. Insert one end of the clip in the fitting groove, and then **rotate** the clip around the fitting until it latches fully into the fitting. Do not install the clip straight on, as this will over-stretch the clip.

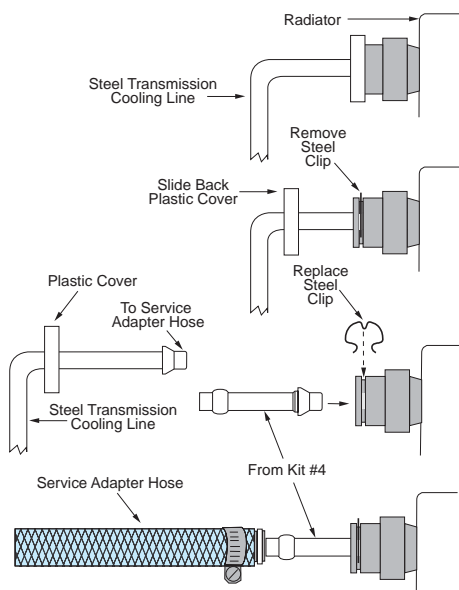
Note: The spring clip should have no more than a 3/8" opening



## INSTRUCTIONS:

1. Remove the plastic ring cover and slide it back onto the line to expose the steel clip.
2. Pry the clip out of the receptacle with a small screwdriver and set the clip aside in a safe place to be used again. If you should lose the clip, there are extra clips available in the kit #4 case.
3. The transmission cooling line is bound in the receptacle because it is pulled downward by a retainer clamp on the bottom of the radiator. Pull up and out on the line to remove the line from the receptacle. If it does not work, the clamp will have to be loosened before the transmission cooling line can be pulled out of the radiator.
4. When the transmission cooling line has been removed from the receptacle, reinstall the clip and push the kit #4 fitting into the receptacle. The ramped shoulders on the fitting will automatically expand the clip. Continue pushing on the fitting until the clip snaps closed behind the ramped shoulders on the fitting.
5. Install a service adapter hose on the kit #4 fitting.

6. Install a service adapter hose over the line and clamp it in place.
7. When service is complete, return the fittings to kit #4 and reinstall the transmission cooling line in the receptacle.

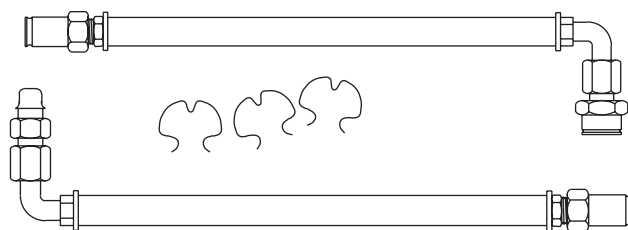


**Figure 68.** Kit #4 Installation Chevy Blazer And Other GM Vehicles

## Allison Series 1000 - Special Fitting Kit FIT413 (Optional)

**CAUTION** – When cold, the transmission line pressure will be quite high, around 75psi, so it is recommended that the vehicle be warm. This will produce line pressure in the 40psi range. Most vehicles have a dash mounted transmission oil temperature gauge, and this should show a temperature above 100 degrees. The pressure will also rise as the engine rpm increases, so exchange should be done only at an idle condition.

The TT400/TT500 has an internal pressure relief valve that relieves to the ON-BOARD storage tank. If the pressure is above 85psi, the machine will relieve pressure into this tank, and fluid will not be returned to the vehicle. It is important then, to warm the vehicle, and not run the engines rpm too high to cause this to happen.



**Figure 69.** Optional Kit #13 Allison 1000 Series (FIT413)

### INSTRUCTIONS:

1. Remove the plastic ring cover and slide it back onto the line to expose the steel clip.
2. Using a hooked pick, small screwdriver, or your fingernail, catch one end of the clip, and pull it out of the receptacle. Set the clip aside in a safe place to be used again. If you lose the clip, there are extra clips in the kit, and they are also available separately.
3. Pull the line out from the radiator fitting and connect it to the kit FIT413 female service hose assembly. Make sure it engages fully, and the clip snaps into place, behind the shoulder of the transmission line.
4. Install the removed clip into the radiator fitting groove, then install the kit FIT413 male service hose assembly, making sure it engages as well.
5. Fitting clips can be installed after the lines or service hoses are connected, and you may find it easier, but make sure that clips are not stretched beyond normal, as this may deform the clip so that it will not lock properly.
6. When service is complete, reinstall the cooling line, making sure clip is installed and plastic collar is put back in position.

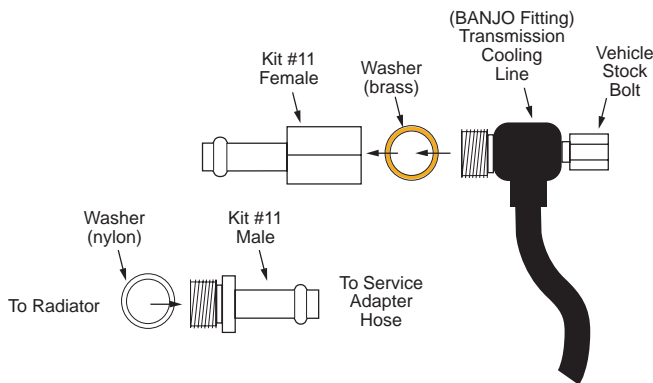
### Mazda - Kit # 11

Mazda uses a BANJO fitting similar the Ford Escort and Saab 900-9000 except that it is larger, see Figure 70.

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #11.

## INSTRUCTIONS:

1. Remove the vehicle stock bolt, donut fitting, and washer from the radiator.
2. Install the female half of special fitting kit #11 on the vehicle stock bolt (through the donut fitting) with the removed washer added.
3. Install the male half of the special fitting in kit #11 into the radiator with a supplied nylon gasket.
4. When service is completed, return the fittings to special fittings kit #11.
5. Reinstall factory parts.
6. Start the engine.
7. Check for leaks and fluid quantity.



**Figure 70.** Kit #11 Installation On Mazda Vehicles

## Mercedes Benz Standard Fitting #22

The MERCEDES-BENZ standard fitting #22 looks similar to the BMW special fittings kit #2 but is somewhat smaller.

### INSTRUCTIONS:

Use the instructions and picture for BMW kit #2.

## Nissan - Kit #11

Some Nissan use a BANJO fitting similar to the Ford Escort and Saab 900-9000 except that it is larger. See the figure for Mazda kit #11.

**CAUTION** – *These fittings are a matched set and must be kept together in the small plastic box marked KIT #11.*

### INSTRUCTIONS:

1. Remove the vehicle stock bolt, the donut fitting, and washers from the radiator.
2. Install the female half of special fitting kit #11 on the vehicle stock bolt (through the donut fitting) with the removed washers added.
3. Install the male of the kit #11 fitting into the radiator with a supplied nylon gasket.
4. When service is completed, return the special fittings to kit #11.
5. Reinstall factory parts.
6. Start the engine and check for leaks and the quantity of fluid.

## SAAB - Kit # 10

### SAAB 900 and 9000

**CAUTION** – These fittings are a matched set and must be kept together in the small plastic box marked KIT #10.

#### INSTRUCTIONS:

1. Remove the vehicle hollow bolt along with the washers from the radiator.
2. Install the female half of the special fittings kit #10 (see Figure 71) onto the hollow bolt along with the washers.
3. Install the male half of kit #10 into the radiator with a supplied white nylon gasket.
4. When T-TECH service is complete, remove the fittings and return them to kit #10.
5. Reinstall factory parts.
6. Start the engine.
7. Check for leaks and verify fluid quantity.

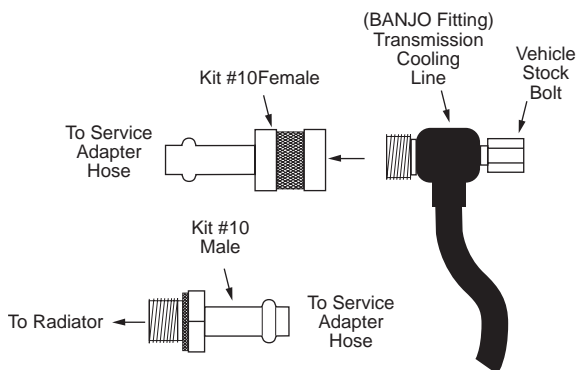


Figure 71. Kit #10 Installation On Saab Vehicles

## Volkswagen

A fluid exchange service cannot be performed on most Volkswagen automobiles, including Jetta, Golf, Passat, and Audi.

**CAUTION** – These vehicles do not have automatic transmission fluid cooler lines. In some cases, Volkswagen product transmission lines may have radiator coolant in them. This is because the heat exchanger is located inside the transaxle.

## Volvo - Kit # 9

### VOLVO 850

The Volvo 850 uses a fitting that requires special parts to complete a T-TECH service.

**CAUTION** – Some of these fittings are a matched set and must be kept together in the small plastic box marked KIT #9.

#### INSTRUCTIONS:

1. With an expansion pliers (a common screwdriver, 1/2 inch wide will also work), expand the clip and remove the line and clip from the radiator.
2. Remove the clip from the line.
3. Install a lathe cut ring and an O-ring on the fitting.
4. Install the clip on the fitting.
5. Push the fitting and clip into the radiator. The ramps will automatically expand the receptacle on the radiator.
6. Push a service adapter hose over the fitting and clamp down.
7. Push fitting #21 over the transmission cooling line and clamp it in place.
8. Attach a service adapter hose to fitting #21.
9. When service is complete, return the special fittings to kit #9 (Figure 72) case and fitting #21 to the assigned location in the fittings drawer.

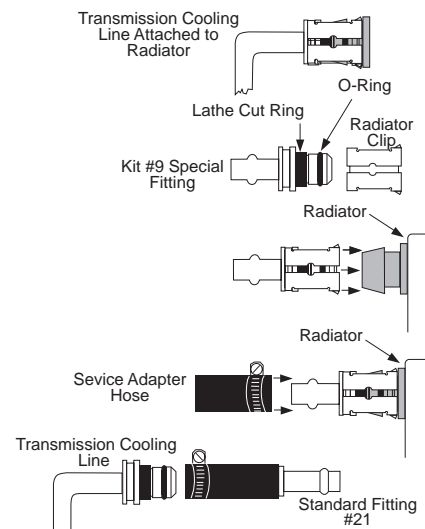
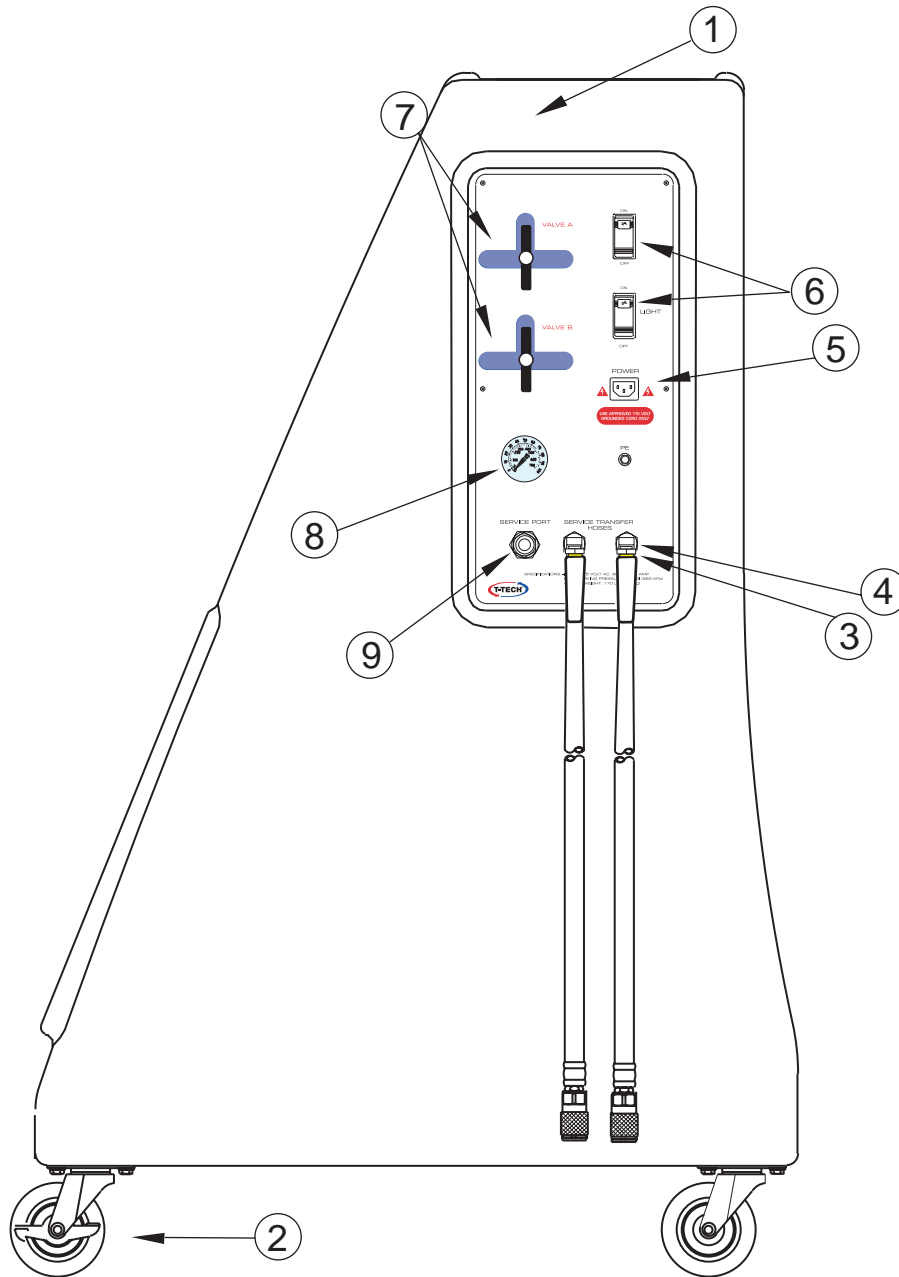


Figure 72. Kit #9 Installation On Volvo 850

# Replacement Parts List

## External Parts List



<b>Item</b>	<b>Description</b>	<b>Part Number</b>
	Transmission Fluid Exchanger, TT500, 115Vac Model	150-008-000
	Transmission Fluid Exchanger, TT400, 12Vdc Model	150-007-000
1	TT500 Case	312-496-000
	TT400 Case	312-491-000
2	Casters (without brake)	413-041-666
	Casters (with brake)	413-079-666
3	Fitting, Elbow, 45 degree	253-377-001
4	Fitting, Brass	253-376-001
5	Connector, Power (TT500)	239-234-000
6	Switch (TT500)	246-437-000
	Switch (TT400)	246-176-666
7	Valve Knob (2 each)	246-433-000
8	Gauge	251-003-000
9	Quick Connect, Male	253-360-000
†	Blister packet, Fittings Kit	134-301-000
†	Parts Bag (contains hose clamps)	930-438-000
†	Red Hose Assembly	870-675-000
†	Tubing, Nylon 1/2 Diameter, Internal 40 inch	059-212-040
†	Tubing, Nylon 1/4 Diameter, Internal 40 inch	059-214-040
†	Fuse (for TT400)	245-144-000
†	Lead, dc Assembly	865-716-666
†	dc Lead Bushing	541-052-000
†	Fitting, Pressure Gauge	253-075-000
†	Service Hoses, 36 inch	870-865-000
†	Female coupler	253-361-000
†‡	Drain Pan Adapter Kit	930-436-000
†‡	Bulk Dispenser Gun Accessory Kit (ATF Adapter)	134-264-666
†‡	Pick up Tube Assembly (for 55 gallon drum)	134-281-000

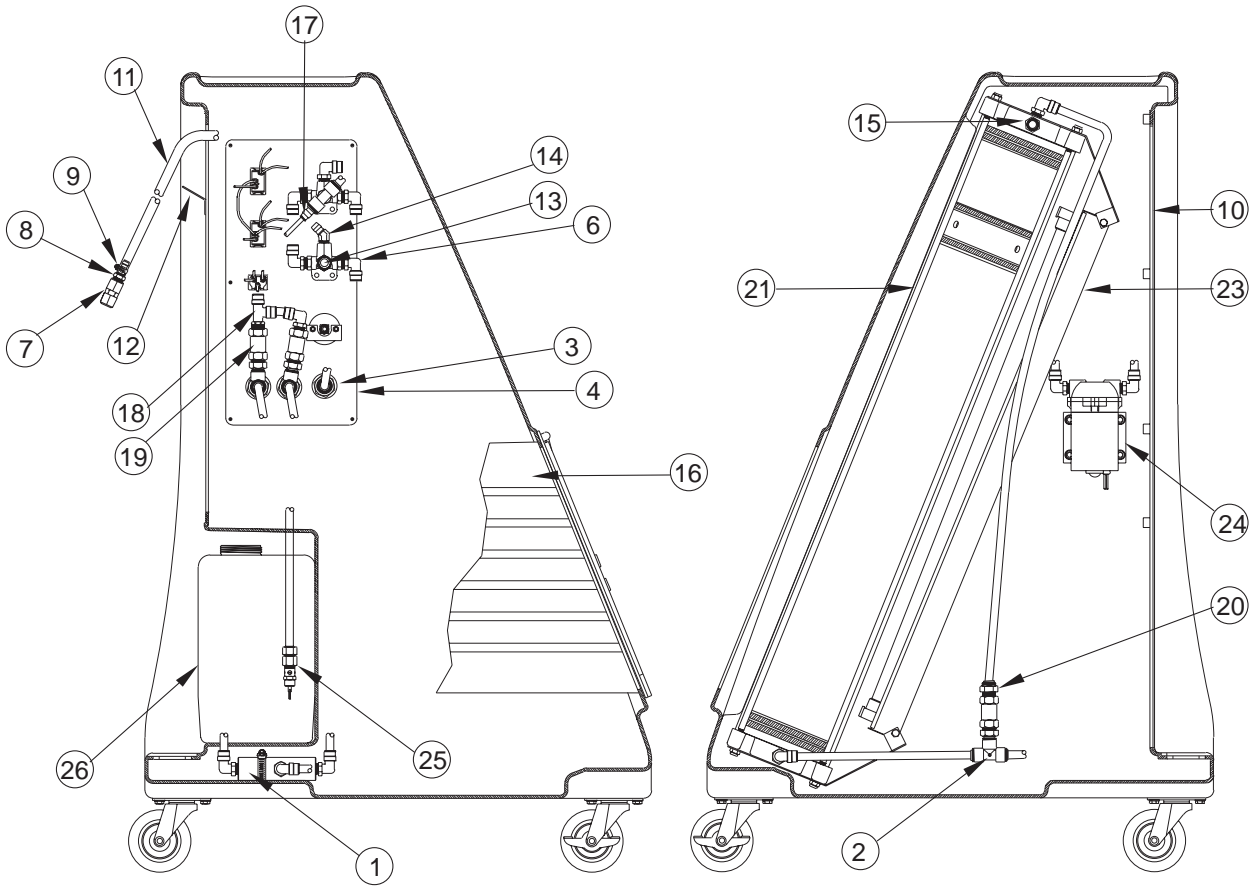
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† Items not shown

‡ Optional accessory – must be ordered separately

# Replacement Parts List Continued

## Internal Parts List



<b>Item</b>	<b>Description</b>	<b>Part Number</b>
1	Shuttle Valve – Alignment	870-665-000
2	Fitting – Tee 1/2 tube	253-304-000
3	Fitting Bulkhead	253-393-000
4	Control Panel – TT500	440-662-100
†5	Control Panel – TT400	440-661-100
6	Fitting – Elbow 90 Degree 3/8 MPT x 1/2 Tube	253-307-001
7	Check Valve 3/8 MPT	252-059-000
8	Fitting – 3/8 MPT x 1/2 Hose Barb	253-397-001
9	Hose Clamp	414-029-000
10	Panel – Back	440-660-100
11	Hose – Pick up New Fluid (with Fitting and Valve)	134-282-000
†12	Hanger Bracket	412-683-010
13	Valve 4-Way	252-069-000
14	Fitting – Elbow 45 Degree 3/8 MPT x 1/2 Hose Barb	253-427-000
15	Fitting – 3/8 MPT x 1/2 Tube	253-412-000
16	Kit Box	134-316-000
17	Fitting – Reducer 1/2 stem x 1/4 Tube	253-301-000
18	Fitting – Tee 1/2 MPT x 1/2 Tube	253-415-000
19	Check Valve 1/2 MPT	253-095-666
20	Fitting – 1/2 MPT x 1/2 Tube	253-090-001
21	Cylinder Assembly	870-681-666
†22	Fitting – Elbow 90 degree 1/2 Tube	253-102-000
23	Light Assembly for TT500 Light bulb for TT500	870-585-001 245-155-000
24	Pump Assembly, 115Vac for TT500 Pump Assembly, 12Vdc for TT400	250-032-100 250-039-100
25	Relief Valve	870-864-000
26	Container – Tank	314-027-000
†27	Locking C-clip	253-434-000

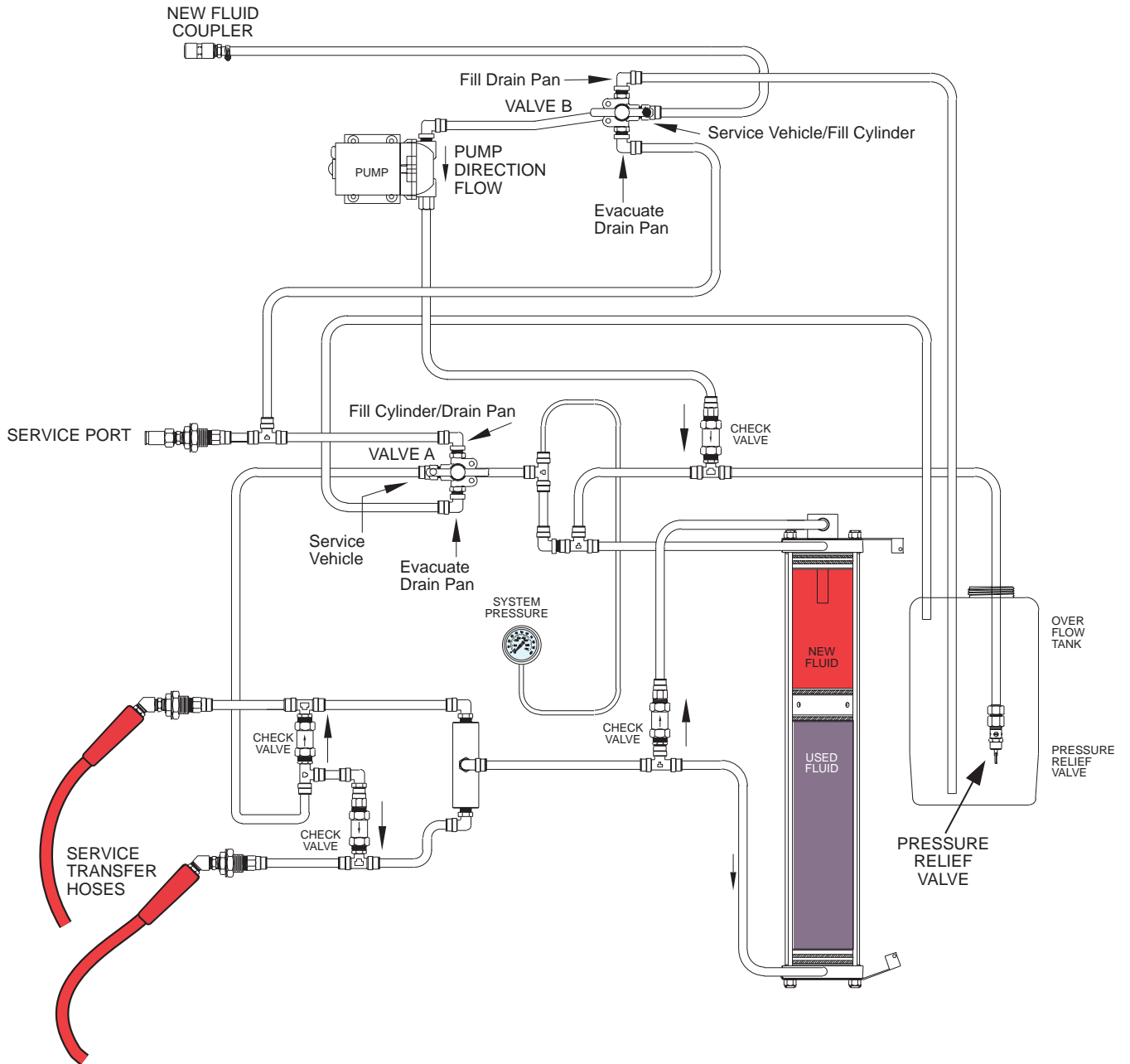
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† Items not shown

<b>Item</b>	<b>Description</b>	<b>Part Number</b>
†#1	Blister Packet, Fittings Kit	134-301-000
†#2	#1 GM Large Female	FIT301
†#3	#2 GM Large Male	FIT302
†#4	#3 GM Small Female	FIT303
†#5	#4 GM Small Male	FIT304
†#6	#5 Chrysler Large Male	FIT305
†#7	#6 Chrysler Large Female	FIT306
†#8	#7 Chrysler Small Male	FIT307
†#9	#8 Chrysler Small Female	FIT308
†#10	#9 Ford Large Female	FIT309
†#11	#10 Ford Large Male	FIT310
†#12	#11 Ford Small Female	FIT311
†#13	#12 Ford Small Male	FIT312
†#14	#14 Ford Quick Coupler Male	FIT314
†#15	#15 1/4 x 3/8 Female Adapter	FIT315
†#16	#16 1/4 x 3/8 Male Adapter	FIT316
†#17	#17 5/16 x 3/8 Female Adapter	FIT317
†#18	#18 5/16 x 3/8 Male Adapter	FIT318
†#19	#19 3/8 x 3/8 Male Adapter	FIT319
†#20	#20 1/4 Female Pipe Thread x 3/8 Barb	FIT320
†#21	#21 1/2 x 3/8 Female Adapter	FIT321
†#22	#22 Mercedes	FIT322
†#23	#23 1/4 Male Pipe Thread x 3/8 Barb	FIT323
†#24	#24 1/2 x 3/8 Male Adapter	FIT324
†#25	Complete Special Fittings Assortment (Kits 1 – 12)	FIT110
†#26	Kit #1 - Ford Escort	FIT401
†#27	Kit #2 - BMW	FIT402
†#28	Kit #3 - Dodge/Ford (3 part)	FIT403
†#29	Kit #4 - Chevrolet QC with clips	FIT404
†#30	Kit #5 - Jeep/Chrysler	FIT405
†#31	Kit #6 - Dakota/Windstar/Taurus	FIT406
†#32	Kit #7 - BMW 500	FIT407
†#33	Kit #8 - Contour/Mystique	FIT408
†#34	Kit #9 - Volvo	FIT409
†#35	Kit #10 - Saab	FIT410
†#36	Kit #11 - Large Mazda	FIT411
†#37	Kit #12 - Durango/Dakota	FIT412
†#38	Allison Service Hoses	FIT413
†#39	Allison Clips (20) for FIT413	FIT511
†#40	Chevrolet Clips (20) for FIT404	FIT510

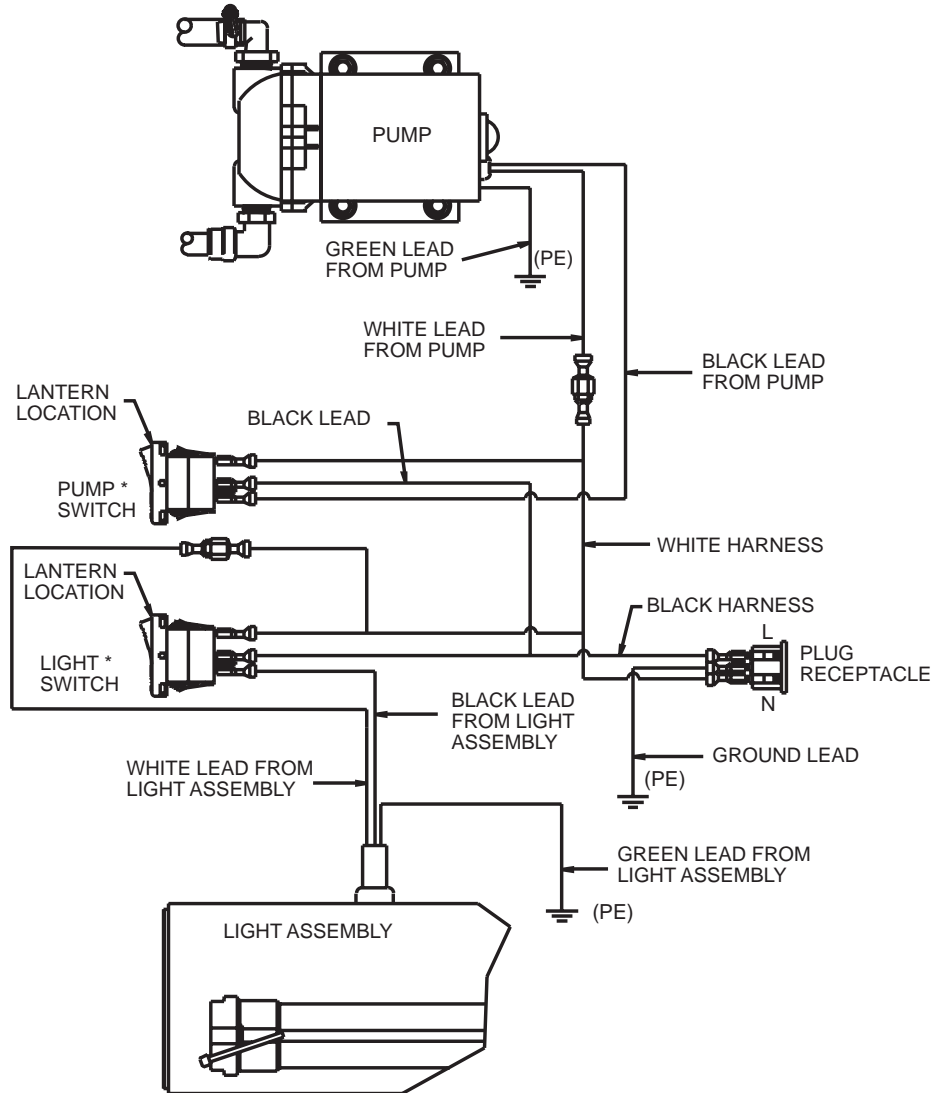
# Diagrams

## Plumbing Diagram



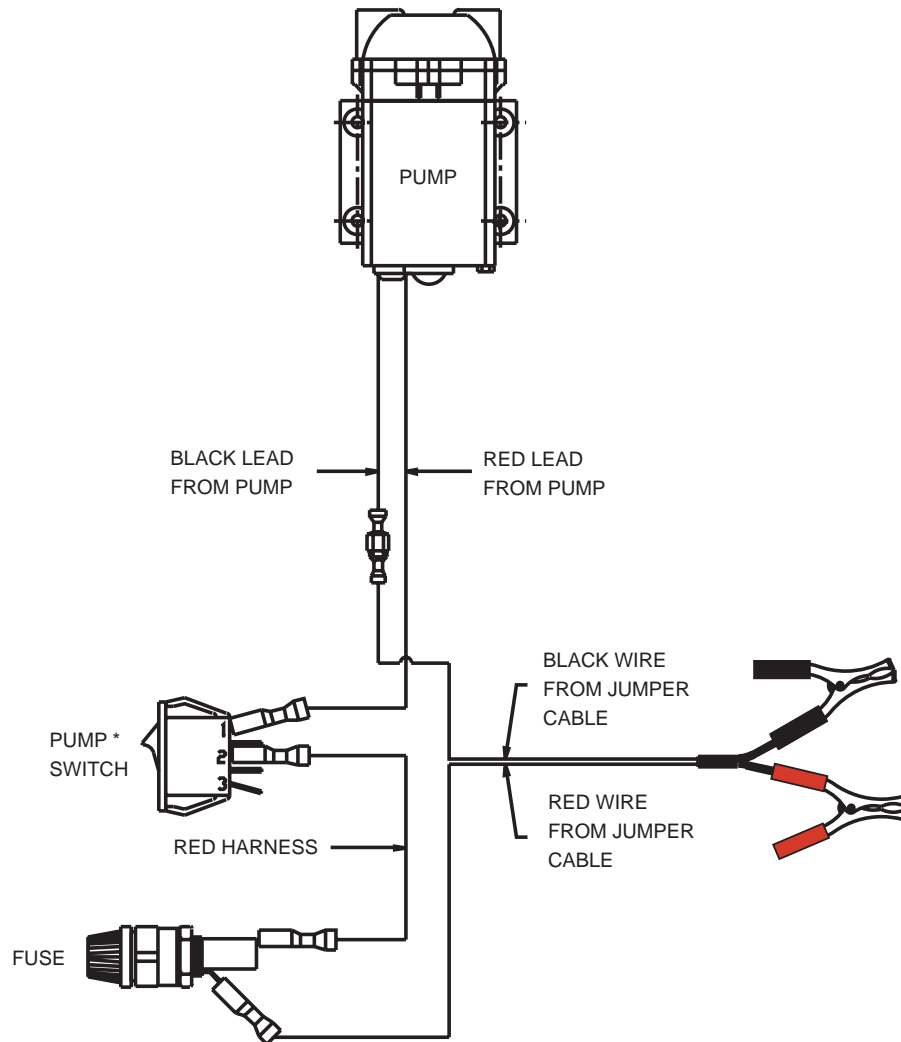
# TT500 Wiring Diagram

NOTE:  
\*SWITCHES SHOWN IN OFF POSITION



# TT400 Wiring Diagram

NOTE:  
\* SWITCH SHOWN IN OFF POSITION



# LIMITED WARRANTY

**Clore Automotive, LLC**, having its principal place of business in Lenexa, Kansas, (“Manufacturer”) warrants its T-Tech product (the “Product”) as follows:

## **1. Limited Warranty.**

Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of **One (1) year** from the date of purchase. If the products do not conform to this Limited Warranty during the warranty period (as herein above specified), Buyer shall notify Manufacturer in writing of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty. Manufacturer shall, at its own expense, furnish replacement Products or, at Manufacturer’s option, replacement parts for the defective Products. Shipping of the replacement Products or replacement parts shall be at Manufacturer’s expense.

## **2. Other Limits.**

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use or handling of the Products; against defects or damages arising from improper installation. Manufacturer passes on to Buyer the warranty it received (if any) from the maker thereof of non-Manufacturer made products or components for periods in excess of one year from the date of purchase. This warranty also does not apply to Products upon which repairs have been effected or attempted by persons other than pursuant to written authorization by Manufacturer.

## **3. Exclusive Obligation.**

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of the Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages.

## **4. Other Statements.**

Manufacturer’s employees or representatives ORAL OR OTHERWISE WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

## **5. Entire Obligation.**

This limited warranty states the **entire** obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.



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