EBS PRODUCTS TRANSMISSION SERVICE OPERATION MANUAL



EBS ET-1 #1000-0080

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Introduction

Thank you for purchasing the EBS ET-1 Automatic Transmission Fluid Service Equipment. This unit uses the latest techniques to quickly perform all required periodic maintenance services for automatic transmissions. It is extremely easy to learn and operate, environmentally safe, and efficient

The Operations Manual must be read and completely understood in order to properly operate the unit and receive the best return on your investment. Regularly refer to the manual for continued safe operation.

Please record the purchase date and the serial number below for future reference.

DATE: SERIAL NUMBER:

SAFETY PRECAUTIONS

WARNING: FAILURE TO FOLLOW PRECAUTIONS CAN RESULT IN INJURY OR DEATH

- > Always use extreme caution and forethought when servicing automotive systems. Automotive systems can be extremely hot and contain high pressure gases and fluids.
- > Always read and understand the entire Operations Manual before operating.
- > Always wear proper eye and skin protection when operating equipment.
- > Always keep a fire extinguisher nearby for flammable conditions.
- > Always keep hair, loose clothing, hoses, etc. secured and away from moving parts.
- > Always keep work area well ventilated to prevent carbon monoxide or chemical fume build up.
- > Always comply with local, state, and federal regulations concerning all chemicals and automotive fluids.
- > Always clean up and properly dispose waste fluids and clean-up materials. Always properly report spills, and cleanup in a proper and safe manner.
- > Always read and understand the Material Safety Data Sheets (MSDS) for particular fluids.
- > Always seek emergency medical attention for ingestion of, or eye contact with fluids.

Before Starting

Adjust the transmission fluid level according to the manufacturer's instructions. Be aware that some vehicles require the fluid level to be checked in "PARK" and some in "NEUTRAL."

WARNING: TAKE NECESSARY PRECAUTIONS TO SECURE THE VEHICLE WHEN CHECKING TRANSMISSION FLUID LEVELS OR PERFORMING SERVICES!!

- NEVER put anything but fresh automatic transmission fluid in the NEW tank of the EBS ET-1. Transmission fluid should be added and circulated in the transmission prior to ET-1 service.
- Always use the proper type of automatic transmission fluid for the vehicle being serviced. Refer to the vehicle's Service Manual or dipstick for information on the type of fluid to be used. Refer to the EMPTY NEW tank procedures on page 11 for information on how to change fluid types in the unit.
- ➤ The EBS ET-1 is only designed to operate on 110VAC power from an approved electrical outlet. If necessary only use heavy duty extension cords.
- Confirm all of the connections after being made to verify that the connections are complete and secure.
- Only use fingertips to depress control panel buttons. Sharp, or metal objects will destroy the control panel.
- Always keep the ET-1 unit in the upright position and as level as possible during operation. Inverting or lying the unit down will allow fluids to escape the internal plumbing. Operating the unit on a level surface will insure more precise operation.
- Some transmission pumps do not create enough flow or pressure at idle to show pressure on the gauge to show proper connection. Be careful to observe correct pressure readings. The EBS ET-1 uses equipment vacuum to insure a speedy, efficient and superior service.
- > Turn the EBS ET-1 Main Power switch off when not in use to conserve power.



Control Panel Descriptions and Functions

The following information is only intended to familiarize the EBS ET-1 operator with the control panel and its functions. It is <u>not</u> designed to replace the guidelines and safety warnings found in the remainder of this document. The complete Operations Manual must be read and understood, and the warnings heeded, before operating the equipment.

Failure to follow these instructions will endanger the operator and risk damage to the vehicle or equipment.

The control panel is arranged in a very coherent and intuitive manner that provides the required modes and functions needed to perform successful preventative maintenance on automatic transmissions.

The NEW tank values and functions are displayed and performed on the top left of the panel, while the USED tank values and functions are displayed and performed on the top right of the panel.

There are two modes of service provided, the COOLER LINE mode on the left side of the control panel and the DIPSTICK mode on the right side. The exclusive EXCHANGE START function is also on the left, while the shared functions between both modes of operation are located down the middle of the control panel.

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	On Board Battery
Decide mode o decide various	The TJ2 on board battery is very similar to any other cordless tool with a battery. The more it is slowly charged at a low rate the better the charge and longer the battery life. Charging the on board battery quickly and at a high rate will shorten the life of the battery and lessen the amount of services using the on board battery. The main power switch must be in the
	on position while charging the on board battery.

The operator starts at the top and works down the control panel. Look at the display upon power up to view tank levels (both NEW and USED), to select mode of operation (COOLER LINE or DIPSTICK), to adjust amounts as required, to start functions to be performed, to verify function completed, and to continue to the next function if needed.

NEW Fluid digital display – Displays the amount of NEW transmission fluid in the NEW tank when first turned on prior to a mode of service being selected.
After a service mode has been selected – it will display the amount of fluid selected to be exchanged, added, removed, or the decrementing (decreasing) amount of NEW fluid being pumped from the unit. Amounts are displayed to the nearest tenth in quarts or liters dependent upon unit of measure selected.

The display decreases in value for the NEW fluid being pumped out of the unit and increases in value as the desired fluid amounts are keyed in or set for the various functions.

Control Panel Descriptions and Functions (cont.)

2) USED Fluid digital display – Displays the amount of USED transmission fluid in the USED tank when first turned on prior to a mode of service being selected. In all modes and functions, the USED fluid display indicates increasing amounts of fluid being extracted from the vehicle during the process selected. Amounts are displayed to the nearest tenth in quarts or liters dependent upon unit of measure selected.

The display decreases in value for the USED fluid being pumped out of the unit and ncreases in value as waste fluid from the vehicle's transmission are received in the waste tank.

- 3) "+" **Increment Button** Adjustment button used to increase the amount of fluid, in tenths, to be transferred in each applicable mode and function.
- 4) **"-"Decrement Button** Adjustment button used to decrease the amount of fluid, in tenths, to be transferred in each applicable mode and function.
- 5) **POWER** Indicates that 110VAC power has been supplied to the unit through the Main Power switch.
- 6) **STOP** Button used to stop all modes and functions at any time and reset the unit.
- 7) **QUARTS/LITERS** Selection button and indication LED's used to select and depict the required unit of measure for volume measurements. Can only be utilized before mode selection.
- COOLER LINE Mode selection button and indicator LED used to select and depict the COOLER LINE mode of operation. This is selected when intercepting transmission cooler lines to exchange, extract, and replenish fluid through the vehicle's transmission cooler lines.

- 9) **EXCHANGE START** Function selection button and indicator LED used only in the COOLER LINE mode in order to start the exchange of new transmission fluid for old transmission fluid through the vehicle's transmission cooler lines.
- 10) **READY** Illumination of the READY light indicates that the unit has completed the selected function and will require attention or input from the operator in order to continue.
- 11) **DIPSTICK** Mode selection button and indicator LED used to select and depict the DIPSTICK mode of operation. This is selected when using the vehicle's fluid fill tube to exchange, extract, and replenish transmission fluid with the unit.
- 12) **EMPTY NEW** Function selection button and indicator LED used to start and depict when NEW transmission fluid is being pumped from the unit. Selection of this function empties the new fluid out through the Clear hose, and stops when the tank level nears zero. See page 11 for complete instructions.
- 13) LOW TANK LEVEL LED that indicates when the NEW tank fluid quantity is inadequate to perform the selected function, or that the NEW tank level is below one quart. The appropriate amount of new fluid must be added to the NEW tank when this LED is lit.
- 14) DRAIN PAN Function selection button and indicator LED used to start and depict when draining the vehicle's transmission sump via the COOLER LINE or the DIPSTICK mode. The LED light flashes to prompt operator and remains lit until the process is complete in DIPSTICK mode. The LED lights and remains lit in COOLER LINE mode until function is complete or until the USED fluid tank is filled to capacity.
- 15) **RESUME REFILL** Function selection button and indicator LED used to start and depict the refilling of the vehicle's transmission sump after a DRAIN PAN procedure has been performed in either mode. The LED light flashes to prompt operator and remains lit until the process is complete in DIPSTICK mode. The LED lights and remains lit in COOLER LINE mode until the function is complete.
- 16) REMOVE FLUID Function selection button and indicator LED used to select the function and to start the removal of used fluid process after data input via the COOLER LINE or DIPSTICK mode.
- 17) ADD FLUID Function selection button and indicator LED used to select the function and to start the addition of new fluid process after data input via the COOLER LINE or DIPSTICK mode.
- 18) EMPTY USED Function selection button and indicator LED used to start and depict USED transmission fluid being pumped from the unit. Selection of this function empties the old fluid out through the large blue hose with the ball valve. This process stops when the tank level indicates zero or when the ball valve is in the closed position. See page 11 for complete instructions.

Control Panel Descriptions and Functions (cont.)

19) **HIGH TANK LEVEL** - LED that indicates when the USED tank fluid level is inadequate to perform the selected function, or that the USED tank level is above 31 quarts. The USED fluid tank level must be lowered or the tank emptied when this LED is lit.

Cooler Line Exchange

- 1) Identify the correct cooler line adapters from the vehicle application chart located on the machine. Properly connect the adapters to the most convenient and accessible cooler line on the vehicle. The unit only needs to utilize one line to perform the exchange so it does not matter which line is selected.
- 2) Connect the adapters to the most convenient intermediate hose. Included are one straight and one ninety-degree intermediate hose. Connect the **clear new fluid** line from the unit to one of the transmission intermediate hoses. Connect the **blue used fluid** line from the unit to the remaining intermediate hose of the transmission. Again, it does not matter at this time if the new or used line is connected to the wrong transmission coolant line because it will be corrected in step #4.
- 3) Plug the power cord into an 110VAC outlet. Turn the power switch ON. The Tank Level amounts will show on the top of the control panel. If the fluid in the NEW tank is low or the fluid in the USED tank is high, take the appropriate steps at this time to add NEW or empty USED fluid(s). See page 11 for instructions.

Note: The unit defaults to QUARTS measurement upon start up. LITERS may be selected by depressing the "Q/L" button. The LED indicates which unit of measure is being utilized.

4) Start the vehicle. Fluid pressure should now increase on the pressure gauge located on the front panel of the unit, the READY light will remain on. If zero pressure is displayed on the pressure gauge upon vehicle start up, then **IMMEDIATELY** turn the vehicle off and switch the new and used hose connections. Check readings carefully as some vehicles only provide as little as 3psi.

Once the hoses have been switched, repeat the above procedure and verify that the READY light comes on. This indicates that the proper connections have been made and the fluid is flowing in the right direction. The unit is now in bypass mode with the fluid simply flowing through the ET-1 and the vehicles transmission. The alert buzzer indication will continuously sound until the COOLER LINE mode is selected. This let's the operator know there is pressure in the lines and forces a mode to be selected.

- 5) Select the COOLER LINE mode. The LED will turn on and remain lit throughout the entire service, the NEW tank readout defaults to 0 quarts, and the USED tank readout displays the amount of used fluid in the used tank.
- 6) Set the amount of fluid to be exchanged in one-tenth quart or one-tenth liter increments, increasing or decreasing the volume by depressing "+" or "-" buttons until the desired

<u>Cooler Line Exchange (cont.)</u>

quantity to be exchanged is reached. This amount will be displayed in the NEW fluid readout on the top left of the control panel.

7) Press EXCHANGE START. The READY light will go out and the value on the NEW fluid readout will begin to decrease as new fluid is being pumped into the vehicle. The amount shown in the NEW fluid readout also represents the remaining amount of new fluid left to exchange.

The USED fluid readout will begin to increase from zero as the USED fluid from the vehicle enters the USED fluid tank of the unit. The USED fluid readout depicts amount of USED fluid removed from the vehicle during and after the process.

Note: If the NEW fluid tank does not have enough fluid to perform the exchange or the USED fluid tank does not have enough capacity to perform the exchange, the appropriate LED will flash and beep indicating LOW TANK LEVEL in the NEW tank and/or HIGH TANK LEVEL in the USED tank. Take the appropriate actions to correct the fluid levels and repeat Steps 3-7. See page 11 for instructions.

- 8) Upon completion of the fluid exchange, the READY light will turn on, and the unit will automatically go into bypass mode. The amount shown in the NEW fluid level will be at Zero and the Waste level at the amount originally selected for service
- 9) Check the vehicle's transmission fluid level. Add or extract fluid to acquire the proper fluid level by selecting the appropriate ADD FLUID or REMOVE FLUID button on the control panel. The READY light will turn on when either function is selected while awaiting an amount to be entered on the corresponding display using the "+" or "- buttons of the control panel.

The READY light will turn off and the proper amount of fluid will be added or removed upon depressing the ADD FLUID or REMOVE FLUID button **the second time.** The unit resetting signals the completion of fluid additions and removals and the continuous alert will sound until vehicle is turned off or COOLER LINE mode is selected.

Repeat this procedure if necessary by selecting the COOLER LINE function again and performing this step as required in order to obtain proper fluid level.

Note: If the NEW fluid tank does not have enough fluid to perform the ADD FLUID function or the USED fluid tank does not have enough capacity to perform the REMOVE FLUID function, the appropriate LED will flash and beep indicating LOW TANK LEVEL in the NEW tank and/or HIGH TANK LEVEL in the USED tank. Take the appropriate actions to correct the fluid levels and then repeat step 9. See page 11 for instructions.

10) Shut off the vehicle. Disconnect the hoses and the adapters, reattach the transmission cooler lines to original connections, start the car to check for leaks, and recheck the transmission fluid level. The COOLER LINE exchange is now complete.

Dipstick Exchange

- 1) Connect the clear and blue hoses from the unit to the male connectors on the three-way dipstick flow control valve. Connect the dipstick extraction/addition wand attachment to the female coupler on the dipstick flow control valve. Insert the dipstick wand into the transmission fluid fill tube as far as it will reach without excessively forcing the wand. This is typically 1 to 2in. further into the dip stick tube than the vehicle's dipstick.
- 2) Plug the power cord into a 110VAC outlet. NEW and USED readouts on the top of the control panel will display quantities of corresponding fluid in each tank. If the fluid in the NEW tank is low or the fluid in the USED tank is high, take the appropriate steps at this time to add NEW or empty USED fluid(s). See page 11 for instructions.
- 3) Select the DIPSTICK mode. The LED light will remain on during the entire process until it is complete. The displays default to 0.
- 4) Enter the total amount of fluid to be exchanged using the incrementing (+), or decrementing (-) buttons until the desired amount of fluid to be exchanged is displayed in the NEW fluid display.

5) Select The DRAIN PAN function. USED fluid will now be removed from the vehicle. The USED fluid display will increase as the USED fluid is removed from the vehicle. The unit will sense when all of the USED fluid has been removed from the vehicle when the USED fluid levels cease to change for a period of twenty seconds. This step is complete when the DRAIN PAN LED turns off, and the READY light turns on.

Note: This step will be stopped if the HIGH TANK LEVEL light turns on indicating there is inadequate capacity in the used tank to drain pan. The USED fluid tank level must be lowered or the tank emptied in order to properly perform the service.

- 6) The RESUME REFILL LED will begin to flash, At this time step a or b listed below, can be performed:
 - a) The exchange process is momentarily stopped here and the transmission pan is removed to change the transmission filter/screen or perform other transmission services. Upon completion of the filter change or other services, continue with step b) below.

Or,

b) The exchange can continue by depressing the RESUME REFILL button and NEW fluid, equal to the amount extracted, is pumped into the vehicle. The NEW fluid display will decrement from the amount extracted down to the amount of the USED fluid extracted This step is complete when the RESUME REFILL LED turns off, the READY light turns on, and the alarm sounds.

Note: The LOW TANK LEVEL light will flash if the amount in the NEW fluid tank is inadequate to perform the RESUME REFILL procedure. New fluid will need to be added and the RESUME REFILL function re-selected in order to continue.

Dipstick Exchange (cont.)

7) Start the vehicle and run the vehicle at idle for one minute and shifting through the gears at least for ten seconds of this minute.

FOR A BETTER EXCHANGE RATIO:

Limited data accumulated at this time has indicated that using the following formula results in the highest percentage of NEW fluid compared to USED fluid using this exchange method based on average flow rates of vehicles tested.

AMOUNT EXTRACTED FROM VEHICLE / 3.25 = VEHICLE RUN TIME

Example: If the amount of USED fluid removed from the drain pan function is 5 quarts, divide the 5 quarts by 3.25 which results in running the vehicle 1.5 minutes at idle and shifting through the gears at least ten seconds.

This will provide the best ratio of new versus used fluid using this exchange method based on data gathered to date.

8) Should the amount of USED fluid drained or NEW fluid refilled be less than the total amount to be exchanged entered in Step 4, the DRAIN PAN LED will flash and the NEW fluid display will indicate the remaining amount of the total to exchange. Select the DRAIN PAN function and the USED fluid will now be removed from the vehicle. The NEW fluid display will indicate the remaining amount to be exchanged and the USED fluid display will increase as USED fluid is removed from the vehicle.

The unit will sense when all of the USED fluid has been removed from the vehicle when the fluid levels cease to change for a period of twenty seconds, or if the remaining amount to be exchanged is obtained, whichever occurs first. This step is complete when the DRAIN PAN LED turns off and the READY light turns on.

Note: The HIGH TANK LEVEL light will turn on if there is inadequate capacity in the USED tank to drain the pan. The USED fluid tank level must be lowered or the tank emptied in order to properly perform the service.

9) The RESUME REFILL LED will begin to flash. The exchange continues by depressing the RESUME REFILL button and NEW fluid, equal to the amount extracted in step #8, is pumped into the vehicle. The NEW fluid display will decrement from the amount extracted down to 0 and the USED fluid display is blanked. This step is complete when the RESUME REFILL LED turns off, the READY light turns on.

Note: The LOW TANK LEVEL light will flash if the amount in the NEW fluid tank is inadequate to perform the RESUME REFILL procedure. New fluid will need to be added and the RESUME REFILL function re-selected in order to continue.

10) Start the vehicle and run the vehicle at idle for one minute and shifting through the gears at least for ten seconds of this minute.

Dipstick Exchange (cont.)

- 11) Steps 7 and 8 will keep repeating and need to be performed until the total amount to be exchanged, entered in step 4, is obtained. Once the total amount to be exchanged is completed from the last REFILL RESUME sequence, the unit will reset to the original power up mode.
- 12) Check the vehicle's transmission fluid level. Add or extract fluid to achieve the proper fluid level by selecting the DIPSTICK mode then depressing the appropriate ADD FLUID or REMOVE FLUID buttons on the control panel. Additions are displayed in the NEW fluid display while removals are displayed in the USED fluid display. This amount can be incremented or decremented using the "+" or "-"buttons on the control panel.
- 13) The desired amount will be extracted or added upon depressing the ADD FLUID or REMOVE FLUID button the second time. Repeat this procedure until the proper level is maintained.

Note: If the NEW fluid tank does not have enough fluid to perform the ADD FLUID function or the USED fluid tank does not have enough capacity to perform the REMOVE FLUID function, the appropriate LED will flash and beep indicating LOW TANK LEVEL in the NEW tank and/or HIGH TANK LEVEL in the USED tank. Take the appropriate action to correct and then repeat Step 12.

Empty Used Tank

The EMPTY USED function is used to empty the used transmission fluid into a bulk waste fluid storage tank for proper disposal. Depressing the EMPTY USED button on the control panel starts the process and the flow can be controlled with the manual ball valve at the end of the yellow hose.

The internal pump is equipped with a valve that bypasses fluid should blockage or "dead-heading" occur.

The USED TANK level sensor will end the process automatically when the tank level nears zero in the tank. Also, depressing the STOP button on the control panel will stop the process.

Empty New Tank

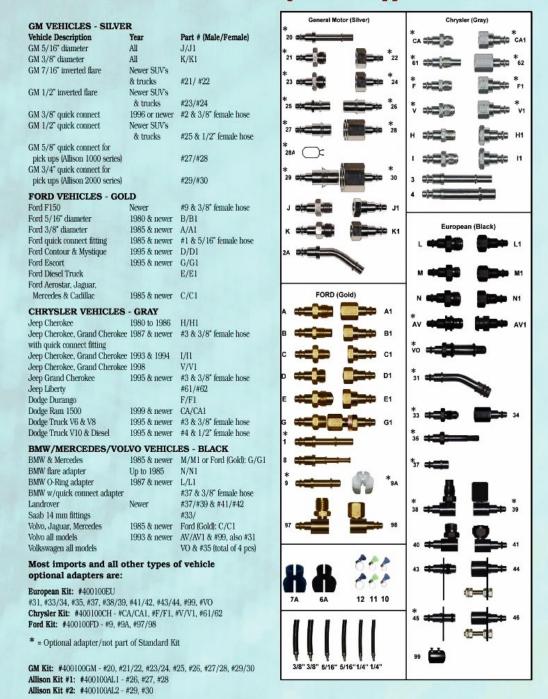
The EMPTY NEW function is used to empty the new transmission fluid contained in the NEW TANK into an appropriate storage container. This allows the use of other types of transmission fluid in the unit while minimizing cross contamination of fluid types.

Connect any adapter to the intermediate adapter hose assembly. Connect the intermediate adapter hose assembly to the CLEAR new fluid line. Insert and secure the open adapter end into the storage container. Do not leave the hose assembly unattended. Depress the EMPTY NEW button on the control panel and the new fluid will begin to pump out of the unit into storage container. The fluid will continue to flow until the level sensor in the NEW TANK nears zero quarts in the tank. Also, depressing the STOP button on the control panel will stop this procedure.

Upon completion of this process, disassemble the adapter and the intermediate hose assembly and return them to their storage positions on the unit. Now add the desired new fluid type to the NEW TANK via the fill cap located on the front panel of the unit. The unit is now ready to perform services again.

Empty Hose and Wand Dripage

The NEW and USED coupler and the DIPSTICK extraction wand drippings are collected in a small reservoir inside the unit. To periodically empty the waste fluid (check for high fluid level on dipstick wand), connect black USED fluid hose to dipstick control valve. Connect dipstick wand to dipstick control valve. Insert DIPSTICK extraction wand all the way into the storage hole, select DIPSTICK mode, press DRAIN PAN and the unit will empty the reservoir. After twenty seconds of no fluid level change the unit will stop automatically. Press STOP button to reset unit.



Transmission Cooler Line Adapter Hose Application Guide

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EBS Products

Warranty Information

Limited Two (2) Year Warranty

EBS warrants only to the original Purchaser that under normal use, care and service, the Transmission Fluid Service Equipment shall be free from defects in material and workmanship for two year from the date of original purchase. External hoses, remote control modules, adapters and all other attachments, supplies and consumables are warranted for 90 calendar days from the date of original invoice. Filter elements are not warranted.

PURCHASER'S TECHNICIAN MUST HAVE TELEPHONE COMMUNICATIONS WITH EBS TECHNICAL SUPPORT TO DIAGNOSE THE PROBLEM AND DETERMINE IF THE PROBLEM IS A WARRANTY ISSUE BEFORE ANY REPAIRS OR REPLACEMENT CAN BE MADE.

This warranty does not cover (and separate charges for parts, labor and related expenses shall apply to) any damage to, malfunctioning, inoperability or improper operation of the equipment caused by, resulting from or attributable to (A) abuse, misuse or tampering-the use of the equipment with non-approved fluids is misuse; (B) alteration, modification or adjustment of the equipment, improper or negligent use, application, operation, care, cleaning, storage or handling; attachments, supplies or consumables not manufactured or supplied by Seller.