

Smart Tech™

Deluxe Multi-Fluid Exchanger



Operation Manual

95750

Part# 95708 rev
08/05

INDEX



Read all operation and safety instructions before operating this machine.

Deluxe Differential Machine

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Deluxe Multi-Unit Power Steering

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ADVISORIES

Safety Requirements-

Service Technicians are advised to wear proper eye protection during the entire vehicle service.

Never raise a vehicle while it is occupied.

When raising a vehicle, make sure all safety-locks and precautions are followed, as outlined by the lift manufacturer's specifications.

Before raising the vehicle, be sure that it is properly positioned on the lift, that the parking brake is set and its transmission is in the "Park" position.

Inspect the vehicle for fluid-leaks, damage to Drain & Fill Plugs, damage to the "Differential Housing," or any other abnormal conditions. You must make all necessary repairs prior to starting a service.

Also, be sure to review current "Maintenance Procedures" before starting the service.

Precautions

Before starting a service, inspect the "Deluxe Multi-Fluid Exchanger" for damage to Hoses, Adapters or the "Tank-System." Repairs to the unit must be completed before the equipment can be used.

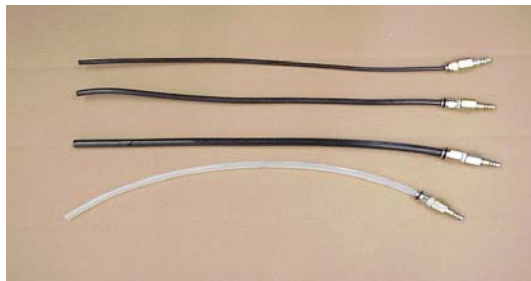
Have a Waste-Oil Drop Pan or similar Waste-Drain Tank under the vehicle to collect any spillage.

Work in a well-ventilated area. If possible, vent the vehicle's exhaust to an external area.

Use extreme caution when working around the vehicle's exhaust system. Allow ample time for the exhaust pipes to cool down to avoid damage to the equipment and reduce the chances of possible injury.

Accessories (Attachments)

The "Deluxe Multi-Fluid Exchanger" is equipped with a set of four (4) assorted width, 18 inch "Flexible-Tube Adapters," with "Quick-Disconnect" plugs. (Includes: one clear and three Black adapters).



MACHINE SPECIFICATIONS

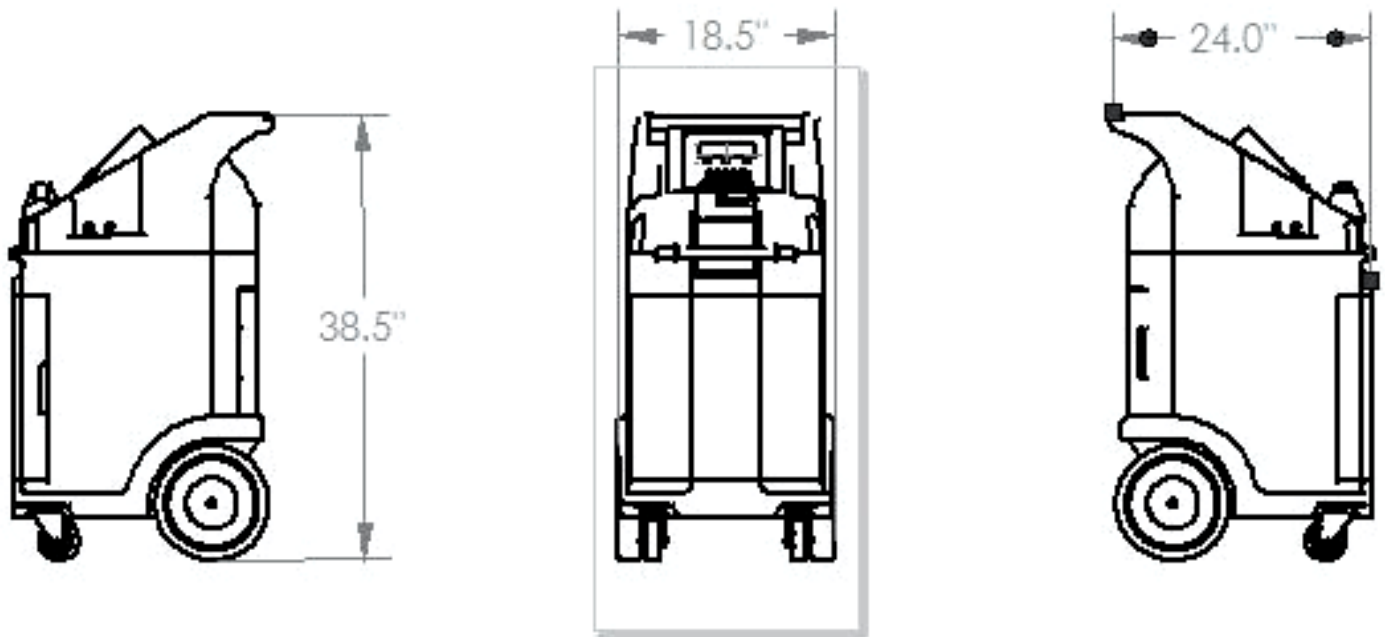
Machine Specifications:

Size: 24" x 18.5" x 38.5"

Weight: 80 lbs. w/ Adapters

Power: 12VDC

Chassis: Linear Low Density Poly Ethylene (LLDPE)



MACHINE OPERATION

Tools Needed

The following items will be needed in order to perform a service. NOTE: Some tools may depend on the make, and model of the vehicle.

- 3/8" Socket Set with 3/8" Drive-Ratchet
Or (depending on vehicle **make & model**)
- 1/2" Socket Set with 1/2" Drive-Ratchet
- 12" "Adjustable-Wrench"
- 7mm to 21mm Metric "Open-Ended Wrench(es)"
- A "waste oil drop-pan" or comparable "waste-drain-pan,"
- Safety Glasses must be worn at all times.

Preparing for the "Flush-Service"

CAUTION: The *Exhaust-System* may retain heat and can cause severe burns. Extreme care should be taken, and proper protection must be worn when working around the Exhaust-Pipes.

Step 1- Checking the "Deluxe Multi-Fluid" Exchanger

Make sure the equipment is in good, working condition.

There should be no visible signs of damage, and all of the adapters should be in their storage location on the side of the machine.

Check the Service Hoses for leaks, blockage or improper fittings.

Check the fluid-level in the "Used Fluid" tank (Fig. 1). If it appears full or nearly full, empty the fluid into an approved waste container.

Make certain that both the "New" and "Used" fluid tanks are firmly connected to their hoses and that their restraint strap and screws are securely in place. Check for any leaks or damage.

Step 2 - Adding Fresh Fluid to the "New-Fluid" tank.

Check the "Manufacturer's Service-Guide" or the "Owner's Manual" to determine the proper specific fluid(s) and amount(s). Add the fresh fluid to the "New-Fluid" tank located at the rear of the unit (Fig.2). If "Special Differential Additives" are required, you may also add them to the "New-Fluid" tank at this time. Or, you can add them directly to the "Differential Housing" during the "ADD-NEWFLUID" procedure.



Fig. 1



Fig. 2

MACHINE OPERATION

Step 3- Attach an “Air-Supply Hose” to the Machine.

Confirm that both “Toggle Switches” on the Instrument Panel are in the **OFF** position (Fig. 3), and the “Flow Control Valves” at the end of the Service Hose are **CLOSED** (Valve pointing away from the hose) (Fig. 4).



Fig. 3

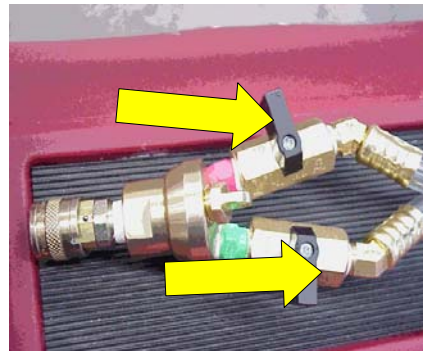


Fig. 4

Connect the shop’s “Compressed-Air” hose to the “Air-Inlet Fitting,” located on the rear, upper chassis of the unit (**Fig. 5, Fig. 6**). The sound of hissing air should stop when it is securely connected.

NOTE: the “**Deluxe Multi-Fluid Exchanger**” requires a minimum 75 PSI of constant air pressure to operate.



Fig. 5



Fig. 6

Step 4- Prepare the vehicle to be lifted on a “Lift-Rack.”

NOTE: It is also possible to perform the service with the vehicle on the ground, if you can reach the vehicle’s “differential-fill-plug” properly.

Properly position the vehicle on the “lift-rack,” as indicated by the manufacturer’s requirements. Before raising or beginning service to the vehicle, be **sure** that:

The vehicle’s Engine is OFF

The Parking Brake is SET

The Transmission is in PARK

All “safety locks” and all “precautions” are followed, according to the lift -manufacturer’s specifications.

Raise the vehicle to the proper level.

For your added safety, conduct a thorough inspection of the vehicle's undercarriage to ensure there are no leaks and no damage or other abnormalities to the "Differential Housing" or Drain & Fill Plugs. Make all necessary repairs prior to starting the Flush Service.

MACHINE OPERATION

Step 5- Prepare the vehicle for the "Flush-Service."

Position the "Deluxe Multi-Fluid Exchanger" as close as possible to the vehicle being serviced. (This reduces stretching of the service hoses and makes its instrument panel easy to reach.)

Position a "waste-oil drop-pan," or comparable "waste-drain-pan," under the vehicle's "Differential-Housing" to collect any spillage (**Fig. 7**).



Fig. 7

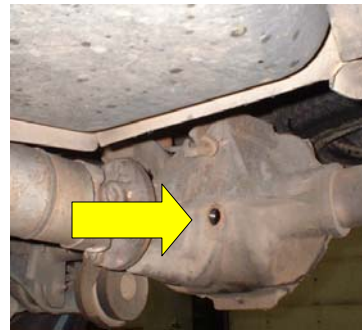


Fig. 8

Locate the vehicle's "differential-fill-plug" and remove it.

This "fill-plug" is the highest "Fluid-Fill Point" located on the differential (Fig. 8). If you have trouble locating it, refer to the "Manufacturer's Service Guide" or "Owner's Manual."

Inspect the "fill-plug" for metal debris or thick, gray "sludge" inside the plug. Its presence may indicate potential internal damage, and may require further inspection before starting service.

Note: for GMC Trucks: some trucks may have a "fill-plug" located on the "Pinion-Gear Housing" and a

Last printed 2/21/2011 2:34:00 PM "drain-plug" at the bottom of the "Differential-Housing." If so:

Place a waste container under the "Differential-Housing."

Remove the "Lower-Drain Plug" to drain the "Used Oil" directly into the waste container.

When the differential is fully drained, re-install the drain-plug.

Remove the "differential's fill-plug."

Use the "Deluxe Multi-Fluid" Exchanger; re-fill the "Differential-Housing" with "New Fluid."

Verify that the fluid is at the proper level as indicated by the manufacture's specifications.

MACHINE OPERATION

Performing the “Flush-Service”

Step 1- Selecting the appropriate “Flexible-Tube Adapter”

Select a “Flexible-Tube Adapter” of a type that will fit into the vehicle’s “Differential Fill-Plug Hole” and with a tube that will reach as close to the bottom of the “differential-housing” as possible. (Some Slight bending may be required.) **(Fig. 9)**



Fig. 9

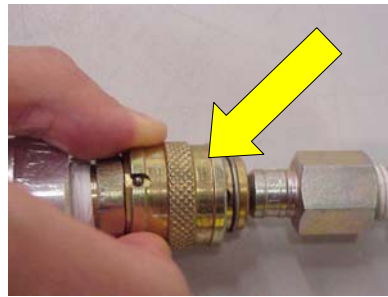


Fig. 10

Attach the “Flexible-Tube Adapter” into the “Female Coupler” located on the “Deluxe Multi-Fluid Exchanger’s” “Flow-Control Fixture,” as follows:

Rotate the coupling’s slotted “Safety-Lock Ring” to align its slot with the “Lock/Release Ball.” Pull the “Safety-Lock Ring” back so the slot fits around the ball, and hold it in place while pressing

the “Flexible-Tube Adapter” firmly into the “Coupler.” **(Fig. 10)**

Release the “Safety-Lock Ring,” locking the adaptor into place. Rotate the ring (so that the slot cannot be pressed back onto the ball again by accident, which would disconnect the hose).

Insert the “Flexible-Tube Adapter” into the vehicle’s “Differential Fill-Plug Hole.” Push it down deep to reach the lowest point within the “Differential Housing,” angling or bending the Tube as needed.

Attach the Hook & Chain on the “Flow Control Fixture” to the vehicle’s undercarriage near the “Differential Housing” to support the weight of the Service Hose. **(Fig. 11)** (This chain is provided to ease the strain of holding the hose during the “flush-service.”)

Use caution when attaching the Hook & Chain to, or near, the vehicle’s *exhaust system*. Allow ample time for the exhaust pipes to cool down, to avoid possible injury or damage to the equipment.

Step 2- Removing the “Used-Fluid”

Flip the “REMOVE-USED-FLUID” toggle switch to the **ON** position to start the vacuum pump. (Fig.12)



Fig. 11



Fig. 12

MACHINE OPERATION

Turn the “flow-control-valve handle” (marked with red tape) counterclockwise so that it is pointing in-line with the service hose (**Fig. 13**).

Within 30 seconds, “Used Fluid” should begin flowing through the clear “service hose” into the

machine (**Fig. 14**). If you do not see “Used Fluid” flowing through the hose, check it for blockage or kinks.

Move the “Flexible-Tube Adaptor” to different positions inside the differential, to extract “Used Fluid” from as many points as possible.

Listen for when the “vacuum pump” begins cycling more rapidly, indicating there is no further “Used Fluid” to be extracted.

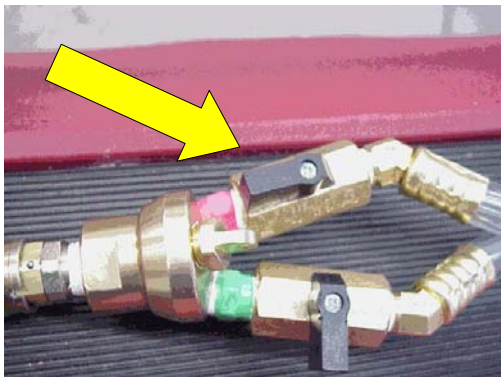


Fig. 13



Fig. 14

Once all the fluid is extracted, flip the “REMOVE-USED-FLUID” toggle switch to the **OFF** position to shut off the “vacuum pump” (**Fig. 15**).

Turn the “flow-control-valve handle” (marked with Red tape) Clockwise; so that it is pointing outward from the service hoses (**Fig. 16**).



Fig. 15

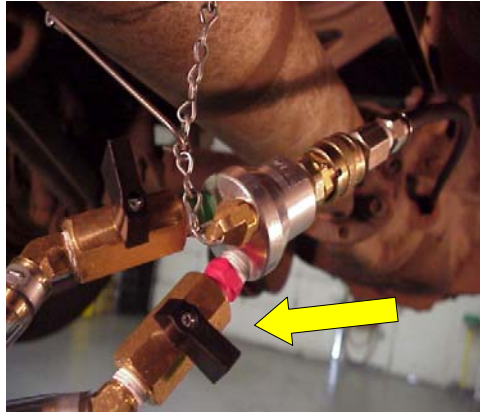


Fig. 16

MACHINE OPERATION

Step 3- Adding “New Fluid”

If any **additive(s)** are required, the “Flexible-Tube Adapter” may now be withdrawn from the Fill- Plug Hole, so that additive(s) may be injected directly into the “Differential Housing” before re-inserting the Tube.

OR, instead of removing the Tube to inject the additives separately, any additive(s) may be poured into the “New Fluid Bottle” to be dispensed along with the New Fluid.

Flip the “ADD-NEW-FLUID” toggle switch to the **ON** position to start the New-Fluid pump (Fig. 17)

Turn the “flow-control-valve handle” (marked with Green tape) Counterclockwise so that it is “in-line” with the service hose (Fig. 18) Within 10 seconds, “New Fluid” should begin flowing from the Deluxe Exchanger, through the “Service Hose,” into the vehicle’s differential (Fig. 19).



Fig. 17

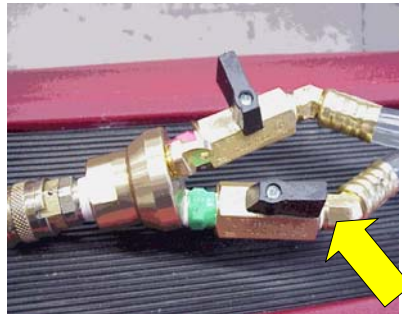


Fig. 18



Fig. 19

While the “New Fluid” is filling, pull the “Flexible-Tube Adaptor” almost out until the nozzle is just within the Fill Plug Hole. (Fig. 20) (If you do not, excess fluid may not drip into the “Waste Oil-Drop-Pan” or may splash out when you remove the nozzle.)



Fig. 20



Fig. 21

Watch for a trickle of fluid to begin overflowing from the “Differential Fill Plug Hole.” (Fig. 21) This

will indicate that the fluid has reached the proper “Fill Level” in the differential.



Fig. 22



Fig. 23

MACHINE OPERATION

When the proper “Fill Level” is reached, flip the “ADD-NEW-FLUID” toggle switch to the **OFF** position (**Fig. 22**). This will shut off the “New Fluid” pump. Turn the “flow- control- valve handle” (marked with green tape) Clockwise so that it points outward away from the hoses (**Fig. 23**).

Detach the Hook & Chain from the vehicle’s undercarriage. Completely withdraw the “Flexible-Tube Adapter” from the “Differential-Fill-Plug Hole.” Rotate the “Lock Ring” on the coupler so that the slot and ball are once again aligned, then pull the “Lock Ring” back and detach the “Flexible-Tube Adapter.” Place adapters back in their storage location as shown (**Fig. 24**).

Return the Service Hoses to the “Multi-Fluid Exchanger’s” service hose hanger.



Fig. 24



Fig. 25

Reinstall the vehicle’s “Differential-Fill-Plug” and secure it to the proper “torque specification” (**Fig. 25**). Make sure to clean any residual fluid off of the “Differential Housing.”

Remove all equipment and materials from beneath the vehicle; then lower the vehicle to the ground safely. Remove the vehicle from the lift, and road-test the vehicle. Ensure there are no *leaks* and pay close attention for any *unusual noises* coming from the vehicle. If any of this occurs, repair as needed.

Draining the “Used Fluid” Tank

Remove the “Restraint Strap” (**Fig. 26**) by lifting it up and out.

Pull the tank out far enough to unscrew the “tank cap” to the left.

Lift the cap up, and slide the tank out of the machine.

Transfer the tank’s contents to an approved “waste-oil” container for disposal, in accordance with all Local, State, and Federal regulations.

Once emptied, you may reinstall the “Used-Fluid Tank” by following the instructions in reverse order. The tank should fit into the unit with its cap toward the front so the hose is not kinked.



Fig.26

DELUXE MULTI-UNIT **POWER STEERING**

SAFETY FIRST:

Follow these safety instructions every time you perform a Power Steering - Exchange.

Wear safety goggles and gloves for eye, and hand protection.

Cover painted surfaces with fender covers.

Work in a well-ventilated area; pipe exhaust to outside area.

Keep tools and hoses clear from all moving parts.

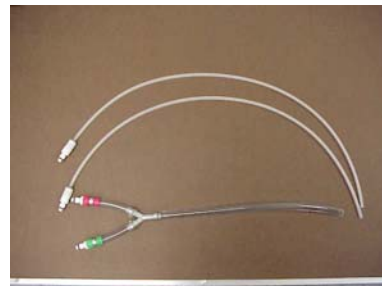
Inspect vehicle for fluid leaks, damaged hoses or belts, engine noise or any unsafe conditions.

Inspect the equipment for damage or missing components.

ATTACHMENTS



Remote Control



Reservoir Adaptors

PRE-FLUSHING PROCEDURES

Pre-Cleaning the Power Steering System:

Remove power-steering reservoir cap (and screen if applicable). If using a pre-cleaner, add to reservoir. Set parking brake and with foot on brake pedal, turn on engine. Turn steering wheel from side to side several times, turn off engine.

Preparing the Deluxe Power Steering Machine:

Attach Power Steering New-Fluid Service hose & Cap to a New Power Steering Fluid bottle and place onto the exchanger. (Fig.1) Make sure that the Used-Fluid-Tank is not full and properly attached to the machine's waste hose. The Used-Fluid Tank (Fig.2) is located in the lower front of the Chassis.



Fig.1



Fig.2

Verify that both New- and Used-Fluid Switches are in the “OFF” position. (Fig.3)



Fig. 3



Fig. 4

Attach the Deluxe Power Steering exchanger's battery clips to vehicle's 12 volt battery terminals (black clip to negative (-) terminal, and red clip to positive (+) terminal). (Fig.4)

Insert the drain/fill hose adaptor into the power steering reservoir (Fig.5). Use the extension tubes adaptors if needed, i.e. GM models. Attach the Service Hoses from the machine to the drain/fill hose adaptor at the vehicle. (Fig.6)



Fig.5



Fig.6

FLUSHING PROCEDURE

The Optional Remote-Control Adaptor may be installed at this time. (Fig.7) Note: Align the Remote Control's Male cable-pin connector with the Female plug -connector on the front panel. (Fig.9) Turn the lock ring to the right to secure the male connector (Fig. 8). Do not bend the pins.



Fig.7



Fig 8



Fig. 9

With parking brake set, start engine:

Press the "Used-Fluid" Drain-Switch (Fig. 10a, 10b, 10c) to the "ON" position. When the old fluid has been evacuated, immediately press the "Used -Fluid" Drain-Switch "OFF" to stop the process. Note: do not run the reservoir completely dry, this could damage the Power-Steering pump.



Fig. 10a

Fig.10b Remote

Fig.10c

Immediately press the “New –Fluid” Fill-Switch (Fig. 11a & 11b) to the “ON” position, to add new fluid to the reservoir until the correct fluid level is reached. Then press the “New –Fluid” Fill-Switch to the “OFF” position to stop the fluid flow.

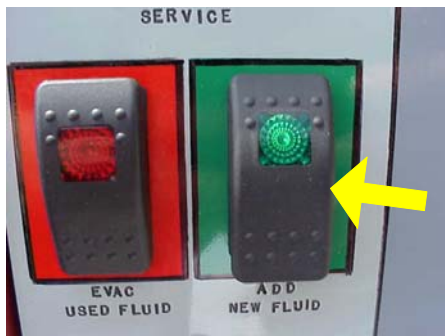


Fig.11a



Fig. 11b

FLUSHING PROCEDURE

Repeat the above procedure with the Remote Control:

Press the “Used-Fluid” Drain-Button “ON” to evacuate the old fluid and release to stop the process. Press the “New-Fluid” Fill-Button “ON” to add new Powering-Steering fluid and release the “New-Fluid Fill-Button to stop the process.



Evacuate Old Fluid

Turn the steering wheel from side to side (Fig. 12) several times between each removal and adding new fluid, this will ensure that all the old fluid has been replaced with new fluid. (NOTE: If adding Power Steering Fluid Conditioner, leave the necessary space in the reservoir at the end of the flushing service).



Fig. 12



Fig. 13

Check the Power Steering Fluid level as per the Manufacture's specifications. (Fig. 13)
Turn the engine off, disconnect battery clips (Fig.14), replace reservoir cap and screen (Fig.15).



Fig. 14



Fig. 15

Draining the "Used Fluid" Tank

Remove the "Restraint Strap" (Fig. 16) by lifting it up and out.
Pull the tank out far enough to unscrew the "tank cap" to the left.
Lift the cap up, and slide the tank out of the machine.
Transfer the tank's contents to an approved "waste-oil" container for disposal, in accordance with all Local, State, and Federal regulations.
Once emptied, you may reinstall the "Used-Fluid Tank" by following the instructions in reverse order. The tank should fit into the unit with its cap toward the front so the hose is not kinked.



Fig.16