

Service Procedures for School Buses Submerged in Water

If any equipment is suspected of partial to full submersion in water it should have the following procedures performed prior to being operated. This applies to all makes of engines (gasoline or diesel) and to all chassis related items. If water exists in any of the below mentioned areas, it should settle to the lowest point and show up when you remove the drain plugs.

- Engines – Drain and refill the crankcase with new oil prior to performing the following procedure. This will possibly prevent water from being introduced into the filter. It is possible that water has seeped into the engine cylinders resulting in a hydraulic lock condition. If this is determined to exist, **do not** continue to try and start the vehicle. The possibility exists that the connecting rods could be bent if the starter has enough torque to spin it. If this condition exists, remove all injectors and spin engine with starter to remove water from the cylinders. Replace the injectors but do not start the vehicle until other areas listed in this document are checked.
- Air Intake System – Remove the air intake system from the vehicle and insure that no water is in the tubing or the intake. Clean and dry all parts of the intake system and replace the paper filter with a new one.
- Air Compressor – Full submersion in water could also create a hydraulic lock condition in the air compressor. If this condition exists you will need to remove the compressor head and remove all water from the cylinder. Make sure and clean all air intake passages.
- Fuel System - If you have not started the vehicle you should be able to remove the drain plug in the fuel tank and remove the water from the system. If vehicle has been started; remove all fuel from the tank; remove filter; remove line to filter assembly; and take compressed air and blow out line to tank with drain plug still removed. This should remove all water. You will then need to refill the system and purge all air.
- Power Steering – Remove the reservoir filter if applicable; loosen all lines; flush the system and use compressed air to purge lines. Replace the filter and fill with new fluid.
- Automatic Transmission – If vehicle has not been started you should drain all fluid from the transmission and replace with new fluid. If the vehicle has been started you will need to remove the pan, filter, cooler lines, and auxiliary filter. The cooler lines and cooler should be flushed with compressed air. Install new filters and fill with new fluid.
- Differential – If vehicle experienced submersion deep enough to cover the differential, water could enter through the differential vent. If vehicle has not been driven you should drain all contaminated gear oil from differential and fill with proper lubricant. If vehicle has been driven you will need to remove hub assemblies, inspect and clean and reassemble.
- Steering Axle – Remove all bearings, clean hub assembly, inspect all parts and install with appropriate lubricant.
- Batteries – Remove water from cells until it is at the proper level.
- Brake Valves – Check and drive vehicle prior to placing in service to insure that brakes are operating properly and use a Tapley Brake Meter to certify the braking efficiency.
- Electrical Components – Clean and dry all areas as best you can with compressed air.
- Seating – Dry as best you can

It will probably take some time for all areas to dry if the vehicle was completely submerged. If DPI Transportation Services can be of assistance in obtaining parts or service, please contact your Field Representative.