
EXPLORING EQUIPMENT

Clean and Cool: The Keys to Keeping Hydraulic Systems Operating

By Don Garner

The requirements for maintaining and servicing dual pump/motor systems have not become widely known or accepted, even though these systems have been around for years.

The first dual pump/motor systems were introduced on riding mowers 18 years ago. Today, many manufacturers are using variations on the technology to provide both walk-behind and riding mowers with smooth-operating drive systems.

A dual pump/motor drive system uses a hydraulic pump and a motor to control each drive wheel. This design provides independent positive power to each wheel, giving the mower zero-turn capabilities, positive reverse and added control.

The two greatest enemies to your dual pump/motor mower are heat and dirt. With proper maintenance and servicing, you can keep your dual hydraulic drive system running cool and clean.

The Maintenance Routine

To keep the system running at the correct temperature, you must maintain the proper fluid levels. Check the hydraulic fluid level every week. Fluid levels should not drop below 85- to 90-percent capacity, otherwise cooling capabilities will be affected.

Daily cleaning of the exterior of the cooling tank daily is also critical. The tank is a heat exchanger. A coating of dust or debris on the tank can reduce its ability to cool the fluid.

Contamination is a major cause of pump and motor failure in hydraulic systems. When you add hydraulic fluid, carefully clean the cap and the surrounding area of the fluid tank *before* you take off the cap.

Be sure your hands are clean and the work area is free of dust and debris. The fluid container and its opening also must be free of dirt. New fluid will pass

through the fluid filter before entering the system, removing contamination, but don't trust the life of your components to your fluid filter.

Dirt specks invisible to the human eye can do irreparable damage to a pump or motor due to the tight clearances within components. A grain of sand would be considered a huge piece of contaminant in a dual hydraulic system. You can imagine the debris you could be introducing into the system if you add fluid at a windy job site or leave the cap off the fluid tank for any length of time.

Contamination also can occur when you change the fluid filter. When you remove the old filter, be sure to clean the surrounding area before you put in a new filter. The replacement filter should be a factory-authorized filter. Store new filters in clean, dust-free locations. Be especially careful with filters because debris on a filter will go directly into the pump and motor.

Use only the recommended cooling fluid. Using substitutes can reduce lubricating and cooling performance, resulting in accelerated hydraulic component wear. Cheap or lower grade fluids may not have the proper additives to ensure that the fluid will not degrade and cause damage to the pump and motor.

A thorough check of the hoses also is recommended on a monthly basis. Don't use your hands to look for leaks because pinhole leaks can eject fluid under high pressure, penetrating your skin with toxic fluid. Instead, use a piece of paper or cardboard to run across hoses.

Pay special attention to the hose that leads from the filter to the pumps. If there is a tiny crack or nick in the hose, it will suck air and debris into the system. This certainly will cause poor performance. Any break in the system is an opportunity for dirt to invade.

If you plan to change hydraulic hoses in your own shop, pay careful attention to cleanliness. Clean dirt and grass from

the old hose before you remove it to help keep debris from getting into the system when you remove the hose. Make sure the new hose is absolutely clean and dust free. As a general recommendation, let a trained dealer perform service on the hydraulic system unless you are confident of your abilities.

Performance Expectations

Many of the service problems related to the engine on a dual pump/motor mower come from unrealistic performance expectations. Remember, a dual pump/motor drive system on a walk-behind mower can require up to 45 percent of its available power to drive the pumps and motors at maximum ground speed.

Overtaxing the engine can cause a wide variety of problems resulting from the high levels of heat generated. These problems include increased fuel consumption, failure of electronic components, and considerably more engine wear.

If your engine lugs excessively in certain cutting conditions, this is a sign of insufficient engine horsepower or mowing too fast for existing turf conditions. The rpm will drop, decreasing the mower blades' tip speed. This, in turn, diminishes the quality of cut. The only solution to this problem is to decrease the demands on the engine by cutting slower, or repower the unit with a higher horsepower engine. You can prevent some engine problems on a dual hydraulic motor by choosing the correct engine for the job when you purchase the machine.

With proper preventative maintenance, a dual pump/motor mower will provide commercial cutters with productivity and profitability. You will find following these clean, cool rules brings in cold, hard cash. □

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