



Gearin' Up!

The Newsletter of Toro Commercial Service Training

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The Value of Service Training

A recent e-mail from the Technical Services Group concerning issues or perceived issues with the New Reelmaster 5010 Series prompted me to write a short note about the value of Factory Service training.

One of the issues reported concerns the cutting units chattering, while lowering, with the engine at low idle. The chattering of the cutting units is a normal operating characteristic of a lift and lower system which uses pilot operated check valves. The July 2006 Reelmaster Factory Service School included an explanation of the lift and lower system and identified why chattering while lowering might occur. The FSS program provided a demonstration to show how raising the engine RPM eliminated the chattering.

This is a prime example of why service training is so important. By having a thorough understanding of the machine and its systems, service issues often can be addressed more efficiently.

So why does the system operate as it does? The RM5010 series machines use pilot operated check valves in the lift and lower circuit. A pilot operated check valve is a one way check valve, but where these valves differ is that they can be opened by oil pressure in the other side of the circuit allowing oil to flow back through the check valve.

So how do these valves work in the 5010 series and why can they chatter?

When the cutting units are in the raised position, the weight of the cutting unit tries to force the oil out of the rod end of the cylinder. This oil is stopped by the pilot operated check valve and the cutting unit stays in the raised position. When the cutting units are lowered, pressure is sent to the base end of the cylinders, but the check valves are still closed and the cutting units do not move. This causes the pressure to build in the base end of the cylinder. As the pressure builds, it also applies pressure to the pilot of the pilot operated check valve. This pressure unseats the check valve and allows the cutting units to lower.

At low idle, when the pilot operated check valves open, the cutting units drop. As the cutting units drop, the pressure in the base end of the cylinder also drops and the pilot operated check valves close. This stops the cutting unit movement. Once the cutting units stop, the pressure again builds in the base end of the cylinders and the check valves are again unseated and the process starts all over again. This results in the cutting units chattering while lowering. This would be a normal situation all of the time, except that in the raise and lower circuit there are also flow control orifices to control both the raise and lower rate. These orifices also maintain pressure while the cutting units are lowering to keep the pilot operated check valves open. At low idle the oil flow through these orifices is not great enough to cause the necessary pressure to keep the pilot operated check valves open.

I experienced this type of check valve and a chattering hydraulic system for the first time back in 1980 on a piece of Ag equipment. The issue was exactly the same, the implement that would chatter, while lowering, with the machine at low idle. This is a normal operational characteristic of pilot operated check valves. It does not adversely affect the operation or the reliability of the machine. It is only a perceived issue if it is not fully understood or explained to the customer or operator. That is why these types of things are discussed, demonstrated and covered during these factory schools. I know that there are 22 Distributor technicians who understand that this is a normal operational characteristic and not a product issue.

If you were unable to attend the training session in July 2006, be aware that we will be offering the Reelmaster FSS again, Feb 20-22 2007.

Biodiesel Update

With the high cost of fuel and the current uncertainty in the petroleum industry, there have been more and more discussions about Biodiesel, its performance, advantages, disadvantages and concerns in relation to the equipment in which it is used.

Biodiesel is typically made from vegetable based oils or animal fats. Some of the most common formulations are Biodiesel made from Soybeans or other oil seeds. Biodiesel is commonly offered in blends ranging from "B5" (5 percent Biodiesel and 95 percent petroleum diesel fuel), to "B20". (20 percent Biodiesel and 80 percent petroleum diesel fuel). While research is currently being conducted on the effect of this fuel on the various engines and engine components and systems, you may be faced with customers who have chosen to make the switch. If customers in your area have begun to utilize Biodiesel in their equipment, here are a few items that they should take into consideration and incorporate into their maintenance and fuel storage practices.

1. As with any fuel that they use, but especially for Biodiesel, they need to purchase their Biodiesel from a trusted supplier who understands and maintains the quality of the fuel.
2. Avoid storing biodiesel longer than three months. This includes storage in the main fuel storage tanks and the machine fuel tanks. There may be issues with fuel stability; storing biodiesel longer than the three month period may aggravate the situation. If a machine that was being run on biodiesel needs to be stored longer than three months, it is recommended that the engine be run on pure petroleum diesel for at least 30 minutes to flush the fuel system.
3. Make sure that the proper fuel handling procedures are followed. Water in the fuel system of any machine should be prevented. However, this is especially important in biodiesel machines. Do not allow water to get into the fuel supply. Keep fuel tanks full to minimize water condensation in the tank, and drain the water separator weekly. Any steps that the customer can take to prevent water contamination in the fuel system should be taken.
4. Check the level of the engine oil daily to check for oil dilution. In certain applications and Biodiesel blend ratios, there have been some reports of injection pump seal deterioration and fuel leaking into the crankcase. Operators should always watch for any signs of oil contamination and possible seal leakage.
5. It has been reported that Biodiesel can loosen rust and other particles that may be in the machine or fuel storage tanks. When first switching to a Biodiesel fuel blend, be prepared to change fuel filters once or twice between normal intervals until this contamination is removed from the system.
6. Machine paint may be damaged by Biodiesel fuel spills. Be sure to clean up any machine that has had a Biodiesel fuel blend spilled on it to prevent damage to the paint.
7. It is also highly recommended that an algacide is used in the storage tanks during the spring and summer months to prevent algae growth.

I'm a great believer in luck and I find the harder I work, the more I have of it.

Thomas Jefferson

Systems Certificate of Achievement Update

Activity continues in the Systems Certificate of Achievement program involving the OPEESA exams. In the last issue of Gearin' Up I was pleased to announce the names of the 25 new individuals who have completed the four required exams and have received their Systems Certificate of Achievement. I now have the privilege to recognize the next group of individuals to achieve this milestone.

The individuals receiving the Certificate of Achievement in Toro Systems are:

Jerry Pate Turf & Irrigation; Keith Milstead, Matt Roe.

L.L. Johnson; Kurt Rye.

MTI Distributing; Nick Raschke.

Simpson-Norton Corporation; Alan Heinen, Roy Pharr, David Conrad.

Smith Turf & Irrigation; Larry Coleman, Randy Gilchrist, Richard Waters, John Herrera, Jose Rodriguez, Keith Whitmore.

Storr Tractor; Joseph Ciecierski.

Turf Equipment and Supply; Brian Brummet.

Turf Star, Inc.; Eli Espino, Don Ingalls, Ricky Irvin, Art Recalde, Cornelius Sturtevant, Michael Barker, Fred Espino, Donald Podesta.

Wesco Turf; Steve Gunter.

Western Equipment; David Kellis, Benjamin Hall.

The number of Certified Distributor Technicians now totals 87.

I am also pleased to announce that the winner of the first Disney vacation package is: **Mark (Joe) Fossen** from "**Simpson-Norton Corporation**". Joe has worked for Simpson-Norton Corporation at their Goodyear AZ. location for the last four years. Congratulations Joe.

Also be reminded that the drawing for the two remaining Disney vacation packages will be held on October 31st 2006. So if you haven't completed all four OPEESA exams you still have time to get them done and reported so you qualify for the October Drawing

Product Specific Certificate Update

Also I have had the privilege to recognize the following individuals for completing the class work and the exam requirements to receive Toro Certificates of Achievement. This brings the total number of Achievement Certificates awarded to 25.

Century Equipment; Stacy Payne, Al Kaserman (Reelmaster)

MTI Distributing; Joshua Jacobson (Reelmaster), Nick Raschke (Greensmowers)

L.L. Johnson; Kurt Rye (Spray Systems)

Simpson-Norton Corporation; Curt Close, George Stange (Reelmaster), Roy Pharr (Spray Systems)

Smith Turf & Irrigation; William Anders, Jose Rodriguez (Reelmaster)

Turf Equipment and Supply; Brian Brummet (Reelmaster)

Turf Products Corp; David Labrecque (Reelmaster)

Wesco Turf; Rodney Bombardier, Darrin Ellis (Reelmaster)

Turf Star, Inc; Eli Espino (Spray Systems)