By Jeff Murphy

WHEN IT COMES TO HYDRAULICS ON TRAILERS THERE ARE TWO MAIN FACTORS THAT CAN CAUSE PROBLEMS. 1) EITHER A LOW BATTERY OR 2) CONTAMINATED HYDRAULIC FLUID.

Battery maintenance on a trailer it is all about manually keeping the battery charged. People are used to seeing batteries on their cars and trucks. But those batteries are all seeing alternators on a regular basis. Meaning they are receiving a charge regularly. Every time the vehicle is running the battery is having the amps topped off. Now, take that same battery and put it on a trailer. The battery now very seldom sees an alternator. And when it does it is seeing a much less effective charge signal. The alternator is now several feet from the battery, and the gauge of wire is much smaller. Not to mention the 7 way plug must be wired properly. So, if a battery is similar to a gas tank, “storing energy”, trying to charge a battery on a trailer is like trying to fill your gas tank through a straw (several feet long) with kinks in it. So the owner of the trailer now has to be much more pro-active in charging the battery. There are many ways to accomplish this but most of them require manually hooking up a charger. Which most people forget.

All trailers with hydraulic circuits have different live cycles. Most do not get used very often but some get used regularly. Some haul light loads and some haul heavy loads. So the amps being pulled out of the battery (or emptying of the gas tank) happens at variable rates. So with that in mind there are many products on the market that can help. For low usage, solar panels can be a good option. One solar panel we recommend is made by a company called PulseTech. They make a very rugged unit that also introduces a pulse to the battery preventing it from sulfation buildup. Sulfation is the number one reason lead acid batteries fail prematurely. You can learn more about sulfation at our website at www.premium-supply.com.

Quick Note on sulfation. Once again a battery is like a gas tank. If you start out with a 5 gallon gas tank sulfation will overtime reduce its capacity. So in time the gas tank gets reduced down to 4 gallons then 3 gallons etc…

And then there are variety of AC powered battery chargers on the market that can charge a battery more quickly. If the
trailer is only used once a month “or so” then a solar panel is a great option because not many amps are being pulled from the battery so not many amps need to be replaced. With proper sizing a solar panel can offset the amps used and the parasitic draw. Parasitic draw is a constant drain on the battery. I will use the gas tank comparison once again. A battery is similar to a gas tank that has a tiny pin hole in it. So basically a battery is always losing a little bit of its stored energy. Even when it is sitting in storage not hooked up to anything. As you hook up any electrical device to the battery the parasitic draw increases. Even if it is just a battery cable or a wire of any size, and then whatever the wire or cable is hooked up to. Like the electric motor of a hydraulic power unit. Similar to a gas tank and the pin hole is getting bigger and bigger. Causing the battery to loose stored amps faster and faster. With a properly sized solar panel on a low usage battery the user will have a fully charged (and desulfated with PulseTech) battery, every time he goes to use it. But even the high usage user can benefit from desulfation. And the high usage user will get longer life out a battery with a solar panel. It just may not keep up with the amp draw but it is still getting amps that otherwise it would not be getting.

Battery related potential problems
- 1) System does nothing Possible Reasons... - Battery is dead - Start Solenoid failure due to low voltage
Reasons start solenoids fail...
The 12 volt DC motor on your hydraulic power unit is very much like a starter motor on a vehicle. So being, “similar to a starter motor”, it has a starter solenoid on the side of the motor. When the starter solenoid sees low voltage the magnetic force in the solenoid has less strength. Therefore the pull down force is not as strong. This can cause a bad connection causing a spark. The longer the connection sparks the less conductive the switch can be. This causes a powdery build up on the connection point which can cause the solenoid to quit working. Or it can even cause the connection point to weld together causing the motor to run all of the time. In either of these failure modes the solenoid needs to be replaced. You can jump the solenoid briefly if needed to get a dump bed to the down position so you can take it to be repaired.

- 2) Oil leaking from power unit Possible Reason...
When the battery is fully charged (with a power up/power down pump) the unit is pumping an average of 2 gallons per minute out. So the reservoir is seeing approximately 2 gallons out and receiving approximately 2 gallons back from the hydraulic cylinder, “at the same time”. But when the battery is low the pump is pumping out less than 2 gallons but 2 gallons is still coming into the reservoir. When this happens the reservoir can overfill and the filler/breather cap (which has a filter/felt) can get saturated (filled with hydraulic oil). Then the reservoir can no longer breathe and becomes a pressure vessel. Then problems can occur like the reservoir o-ring pushing out the side causing a leak point or the reservoir will crack, also causing a leak point. If you have a reservoir overfill once you can temporarily remove the filler/breather cap felt so that the reservoir can continue to breath. This may help prevent the reservoir from becoming a pressure vessel. But once the battery is fully charged or replaced the felt or filler breather cap needs to be replaced. This helps keep airborne contamination from getting into the reservoir and into the hydraulic fluid.

- 2) The dump bed went up but does not come down Possible Reason...
When a battery is getting low and the user is dumping a heavy load the amount of amps needed to get the dump in the up position may have run the battery out of gas (amps). When this happens the battery does not have enough amps left to shift the down valve. And the bed stays up. You can attempt to jump the battery with a running vehicle to get the bed down.

Non-battery related electrical potential problems
- 1) Poor ground. It is best to ground directly to motor. Not to the frame. 
- 2) Dirty Contacts in hand control. 
- 3) Corrosion on Battery Terminals.
TROUBLESHOOTING YOUR TRAILER HYDRAULIC CIRCUIT

-4) Rust in motor. These motors are not rated to be outside of a toolbox. And sometimes people clean the inside of the toolbox with a high pressure water sprayer. Not recommended.
-5) Bent valve stem. Usually due to tools being thrown in toolbox.
-6) Valve coils are not energizing. You can put a screw driver to the top of the coil, push the button on the controller to see if either valve is magnetizing. If either coil is not magnetizing, the wires going to that coil may have a bad connection.

Contaminated hydraulic fluid potential problems
Hydraulic fluid cleanliness. The tolerances within a hydraulic power unit are very tight. Therefore the cleaner the hydraulic fluid the less chances for problems like sticking valves. Also, temperature can play a factor. In colder temperatures the fluid can thicken causing the battery to pull more amps causing more premature battery related issues. We recommend transmission fluid for most applications but especially cooler climates (ATF or Dextron III). But it is also recommended that you filter the fluid before putting it into your pump. But field application of this may be challenging. Fluid contamination can happen a variety of ways.

When building the trailer and the hydraulics are first being installed. Filtering the fluid is more practical. When making the hydraulic hoses be sure to clean the hoses out after they have been cut and crimped. If you are going to store the hoses before installing them be sure to cap them off after you clean them. Just sitting on the shelf waiting to be installed can potentially introduce dirt. Then when installing the hoses, the installer needs to pay careful attention that they do not accidently introduce contamination. Such as dropping the end of the hose onto the ground before attaching it to the pump or cylinder. Even if all of these precautions have been done then there is still the potential for internal contamination. For example: all of the pumps and cylinders have been tested on a test bench at their respective factory. Is the fluid on the test bench clean? On a rare occasion a gear pump may pass all of its test but may still have a sliver of aluminum that fails to break off after machining. Then it makes its way into the field and breaks off after it is installed on the complete circuit, and then into the fluid. All of these are potential contamination points. If contamination makes its way into a valve on the pump it can cause sticking and premature failure. And there are several valves on the circuit. So if any of the valves stick it can fail in a variety of ways.

Here are some of the more common ways valves stick...
-1) relief valve is relieving at too low of a pressure and the unit is lifting less weight.
-2) the dump seems to be working fine but it will only go up. Or only go down. This can also be an electrical issue.
-3) the system will not hold in its last position

Most of the valves can be removed pretty easily. Like always make sure the bed of the dump trailer is down before removing any valves. And if it is a tilt bed or any other hydraulic circuit make sure the hydraulics are not under load while removing any valves. There will usually be a little bit of a hydraulic mess when doing these types of procedures. It is a good idea to put a shop rag around the valve you are removing so if the fluid does come squirting out it hits the rag instead of you or your clothes. Once you have a valve removed you can give it visual inspection. Sometimes the obstruction is obvious like a piece of dirt or a piece of cloth. Remove the contaminate and clean the valve the best you can. Like with some shop cleaner or shop air gun. Be careful not to damage the valve.

Warning: Do not perform any of these troubleshooting procedures while the dump bed is in the up position. If the dump bed is stuck in the up position, then attempt to jump the battery with a running vehicle, or replace the battery. If this does not work then contact Premium Supply for other options to consider.

There are many other ways to put your hydraulic system in the best possible position to have the fewest possible problems. Contact Premium Supply for more recommendations that can decrease down time. Which in turns increases production and bottom line money.

These troubleshooting recommendations are simply ideas that can be considered for someone who is in the field and may have minor; “common issues”, that can be resolved easily. If these recommendations do not work then take the trailer to a qualified hydraulic repair company near you. Premium Supply does not assume any responsibility or liability for the implementation of any of these troubleshooting ideas.

www.premium-supply.com • 1-866-934-0777
Keep your trailer Batteries optimally charged

20 AMP LGBC Series
LIFT GATE BATTERY CHARGER

SPECS
- Input Voltage Range: +9.5 to +16V dc
- Max Output Current: 20A
- Storage Temperature Range: -55 °C to +125 °C
- Ambient Air Operating Temperature: -40 °C to +85 °C
- Dimensions: 143x92x60mm
- Weight: 8.8 lbs (4kg)
- Compliance: FMVSS 121; SAE J227; TMC RP141
- Ingress (IP) Rating: IP 67 and IP69K

SR SERIES MASTER DISCONNECT SWITCH
Isolates high-current DC circuits from battery sources

WWW.PREMIUM-SUPPLY.COM
866.934.0777
2038 W. Interstate 30
Greenville, TX 75402