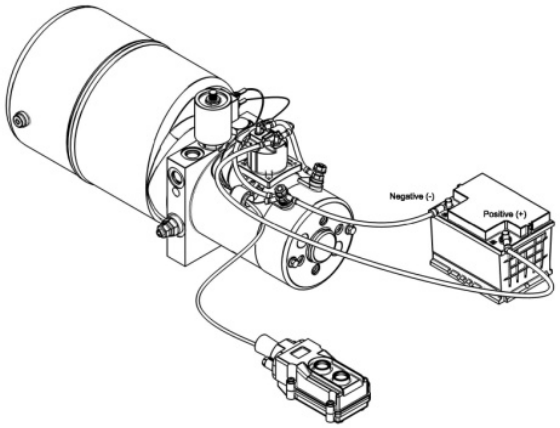
OPERATION AND TROUBLESHOOTING GUIDE

12 & 24 volt DC Power Units



Revision 2.0-2018

IMPORTANT

Thank you for purchasing one of our Eagle Hydraulic® power unit.

Before you start using your new power unit, please make sure that you read and understand the owner's instructions and that you always operate this equipment in a safe manner. For any technical problems or questions, please consult a qualified hydraulic technician or call your nearest Eagle Hydraulic distributor.

WARRANTY

All power units from Eagle Hydraulic are warranted free from defective parts, workmanship and/or assembly errors for a period of one (1) year from the date of manufacturing.

Power units are supplied with a model number and a serial number. Please make sure you have those information on hand when calling. Power units without the model number and/or serial number will **NOT** be covered under warranty. Any disassembly or modification made on a power unit that is still under warranty will automatically **VOID** that warranty.

Eagle Hydraulic stands behind their products. All our power units are tested and verified prior to shipping. Therefore, any signs of improper application will void the warranty.

Examples of improper applications are:

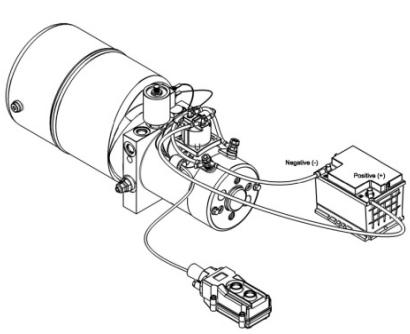
- Low voltage: inadequate power source can damage electrical components
- High amperage draw: bad grounds or excessive amperage can burn the electrical components such as the starter, coils, motor and/or hand control
- Oil quality: contaminated oil or incompatible oil can damage pumping system, valves and the actuator. The type of oil used, and the verification of oil quality is the responsibility of the end user. Eagle Hydraulic recommends:

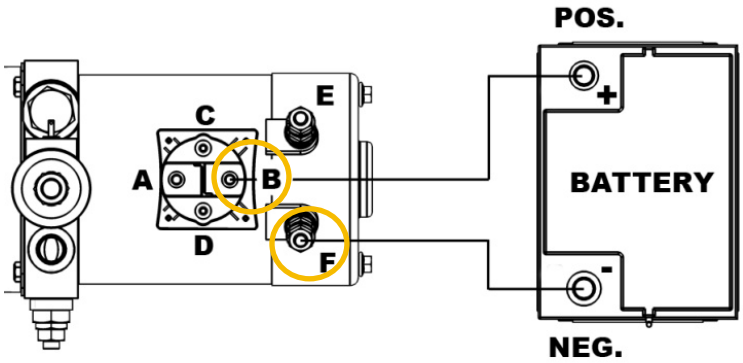
  ISO 32, filtered to 20 microns or better
- Environment: the performance of your power unit can be affected by the environment. For example, if the power unit is not carefully protected or if the environment is salty, acidic, very cold, very hot, etc.

OPERATION AND MAINTENANCE

ELECTRICAL WIRING

Every DC power unit from Eagle Hydraulic is assembled with a solenoid starter assembly that is mounted on the motor. Independent battery leads must be connected to the terminals of the DC motor and solenoid starter. See the drawing below:





Connect the positive side of the battery to the positive side of the solenoid starter (B), mounted on the electrical motor. Then, connect the negative side of the battery to the ground terminal (F) on the motor.

Select the proper cable size to connect the battery to your Eagle Hydraulic power unit from the chart below. Improper cable sizing may create problems if it is too small for the load of the power unit or if the cables are too long. Selecting the proper cable size is especially important if the unit is further than 25 feet from the battery. Eagle Hydraulic recommends that the ground cable size be equivalent or larger than the battery "hotside" cable.

60-70 ft	#1	#00			
50-60 ft	#2	#0	#0		
40-50 ft	#2	#1	#0	#00	
30-40 ft	#4	#1	#0	#00	#00
20-30 ft	#4	#2	#1	#0	#00
10-20 ft	#4	#2	#1	#0	#00
0-10 ft	#4	#2	#1	#0	#00
	0-100 amp	**100-150 amp**	**150-200 amp**	**200-250 amp**	**250-300 amp**

N.B. If in doubt, always consult with a qualified automotive electrician for correct connection of DC electrical devices. Low voltage could cause damage to the DC motor. DC motors should not be run for extended periods (Consult technical data for duty cycles).

HYDRAULIC CONNECTION

After you have correctly connected your power unit to an appropriate power supply, you must fill the tank with a suitable hydraulic oil.

Eagle Hydraulic recommends: **ISO 32, filtered to 20 microns or better**

After the tank is filled, you must start the pumping system and bleed out all the air for a smooth system operation. Bleeding of the system must be made by cracking the line to the highest point up from ground. Briefly operate the power unit until all air is expelled from the supply line and a clear stream of oil flows out.

Once a continuous stream of fluid is visible, without evidence of air, the supply line should be tightened, and the power unit should be switched off.

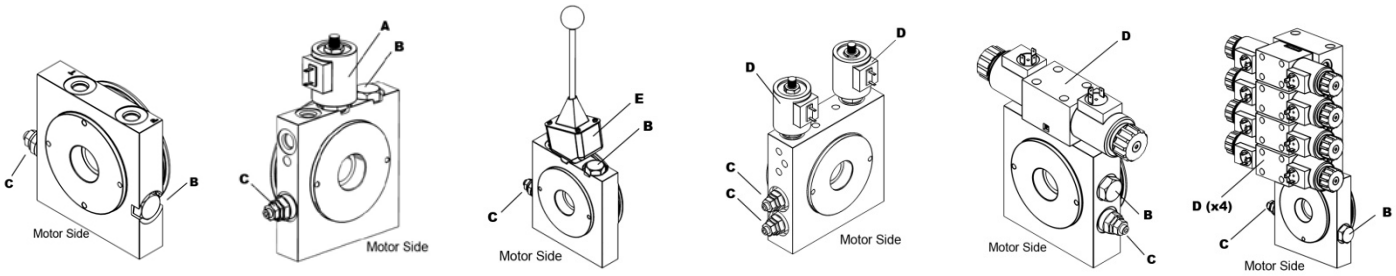
If you have multiple actuators, it is recommended to bleed each one of them. Once they all have been bled of air, they should be fully retracted and the level of oil in the reservoir should be checked and adjusted if necessary.

MAINTENANCE

All Eagle Hydraulic power units are designed to give a long, trouble free service life with just a few maintenance checks at regular intervals.

- **Oil Level: t**he level of oil inside the tank should be verified every day and topped up if necessary. If you see a change in the need of oil, there might be a leakage in the hydraulic system. Check each adaptor, seal and hose to identify the source of the leak and rectify.
- **Filtration of the system:** Each system comes equipped with a filtered filler breather to help prevent all contaminants from the outside to be brought inside the hydraulic oil tank. Since the breather can get clogged over time, it should be replaced regularly. A suction strainer is also mounted on the intake side of the hydraulic pump located inside the tank. The suction filter should be replaced as part of a regular maintenance routine.

WE OFFER UP TO 20 DIFFERENT OPTIONS, BELOW ARE OUR MOST POPULAR VERSIONS



OPTION 1	OPTION 2	OPTION 3	OPTION 11	OPTION 12	OPTION 24+
Pressure and Tank ports, relief and check valve only	Single acting with 2way/2position cartridge valve	Single acting with Manual directional valve	Double acting with cartridge directional valve, load holding valve and B port relief	Double acting, with external D03 modular valve	Double acting, with multiple external D03 modular valves (Shown here w/4)

SYMPTOMS AND SOLUTIONS - EASY TROUBLESHOOTING GUIDE

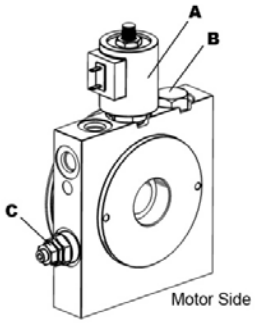
Please use this guide to easily troubleshoot your Eagle Hydraulic power unit. It is recommended to go through each step, as this guide has been created in a logical sequence. If followed from top to bottom, you should go through all possible symptoms and should be able to find the problem.

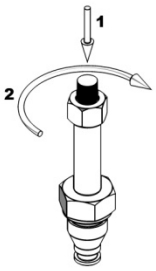
The most common situation you can easily fix:

Problem: If you have an option 2 and you are not able to build pressure

Cause: The manual override of the 2-way poppet valve has probably been left open

How to fix it: Push down on the poppet valve and turn clockwise until it locks. The manual override is now closed, and it should operate properly.





The following table lists the most common problem you can encounter and what you should verify in each case.

SYMPTOM OR PROBLEM	VERIFICATION TO DO
The motor is not running	• Check the connection from your power supply to the DC motor. • Check the power to the solenoid starter.
Solenoid starter clicks but the motor does not start	• Check for loose wire from solenoid starter to DC motor. • Make sure you have the right gauge of wire from your battery to the unit. • Check for cracked terminal on solenoid starter, if so, replace start solenoid. • If it's an older unit, check for rust buildup inside DC motor.
Motor runs, but unit will not build hydraulic pressure	• **Solenoid valve manual override is open** Some of our units (Option 2) are equipped with a two-position valve with a mechanical manual override. With stem of valve pointing up, push down and turn clockwise until stem won't turn. The manual override is now closed. Retry unit. • **Gear pump might not be priming**. Loosen the relief valve, replace relief valve (torque to 22Nm) and retry unit.

Power unit won't lift load	• **Check fluid level** If there is not enough oil in the unit, you will not be able to operate the actuator. • **Gear pump might not be priming**. Loosen the relief valve, replace relief valve (torque to 22Nm) and retry unit. • **Air being introduced in system** If air is being introduced in the system, the gear pump might have some difficulty priming. Listen for distinctive cavitation sounds from pump and verify all hydraulic hoses and fittings for proper sealing.
Cylinder won't hold in place (drift down)	• **Check valve on unit might leak** Remove check valve, wash with brake cleaner or varsol, air blow to clean out any debris, reinstall check valve (torque to 22Nm) and retry unit
Cylinder won't retract	• **If unit is an Option 2** The poppet on the two-way solenoid valve might have jammed in place. Replace valve (torque to 22Nm) and retry unit. • **If unit is an Option 3** If your unit has a manual activation valve, on the return port there is an orifice to prevent cylinder to come down too quickly. Orifice might have some debris. • **If unit is an Option 12 or 24** Verify that the solenoid starter operates the directional valve. Operate actuator back and forth, and make sure it works in both directions. If only one direction is working, replace directional valve.
The motor will not stop running	• **Solenoid starter stays on** Low battery or poor ground connection has caused the solenoid starter to weld on. Replace solenoid starter and check battery and ground.
Excessive heat from unit	• **Low battery or poor ground** A bad electrical ground or poor battery performance will cause the motor to generate more heat. Verify battery and ground for good performance. • **Relief valve remains open** If the relief valve has been misadjusted or a debris has stuck in it, this will generate a lot of heat in the oil. Remove relief valve, wash with brake cleaner or varsol, air blow to clean out any debris, reinstall (torque to 22Nm). • **Excessive heat from electrical motor** A bad electrical ground or poor battery performance will cause motor to generate more heat. Verify battery and ground for good performance. If these two points have been verified and motor still generates heat, do not overrun the motor. Consult Eagle Hydraulic

If you have verified all the above information in the symptoms and solutions troubleshooting guide, and still have a problem with your power unit, please consult with Eagle Hydraulic technical department for advice and support.

All unit returns must be authorized by Eagle Hydraulic and must be accompanied by a **RGA** number.

In the invent that you need to send you power unit back, please make sure that there is no oil left both in the tank and in the block. Also, if you use ATF oil, please make sure you flush out all the oil from the block before returning your power unit.

Please contact our customer service at 1-877-382-2850 for additional information.

EAGLE

HYDRAULIC

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