EOH Brake Actuator Product Manual

Applies to all DeeMaxx Components Brake Actuators

For any assistance, please contact us at:
Email: contact@deemaxx.com
Phone: (682)-200-6003

Rev. 3-3-25

IMPORTANT (PLEASE READ)

To provide the best braking experience and not void the warranty, your tow vehicle must have a factory or after-market brake controller set to EOH (Electric-Over-Hydraulic). Please confirm with your tow vehicle manufacturer that your factory controller can support EOH (Electric-Over-Hydraulic) towing, especially if it is a 2016 model or older. Failure to do so can damage the unit and cause unreliable braking.

All our Generation 2 & 3 brake actuators have a built-in compatibility adapter.

According to industry standards and best practices, utilizing a fuse rated at 30-40 amps in the towing vehicle is advisable. Interested parties are urged to verify the compatibility of such a fuse with the specific wiring gauge of the towing vehicle by consulting with the manufacturer or authorized dealer of said vehicle. This confirmation is essential to ensure compliance with applicable specifications and mitigate the risk of electrical discrepancies.

Please note this summary of important information before the installation of a DeeMaxx Components brake actuator:

CORRECT INSTALLATION

A qualified individual must install the DeeMaxx Components brake actuator. Failure to install and maintain this unit correctly will cause it to malfunction, which could result in severe or fatal injuries and property damage.

BRAKE ACTUATOR MODELS

It is the installer's responsibility to ensure that the DeeMaxx Components brake actuator's output pressure is correct and that the selected model is suitable for the trailer it will be installed on. If the trailer braking system is over-pressurized, it can malfunction.

PARKING BRAKE

The DeeMaxx Components brake actuator does not provide a parking brake function. This brake actuator is designed as a secondary source of braking only, which supports the primary brake system of the tow vehicle. The DeeMaxx Components brake actuator is not intended to be the primary braking system for the towing vehicle.

EMERGENCY BREAKAWAY SYSTEM

An emergency breakaway system with battery backup must be used with the DeeMaxx Components braking actuator. The breakaway system must be functional, and the battery backup must be fully charged before the trailer can be towed.

WATER IMMERSION

The DeeMaxx Components third-generation system meets all IP67 water intrusion standards, meaning it can endure brief water exposure and submersion without damage. However, please remember not to power wash your unit or submerge it in water for extended periods. Doing so may lead to actuator

malfunction and could void your warranty. When washing your trailer, avoid spraying water directly onto the unit. For optimal performance and to maintain warranty coverage, keep the system protected from excessive water exposure. If you have any questions about proper care and maintenance, please don't hesitate to contact us.

Introduction

DeeMaxx Component developed their Electric Over Hydraulic (EOH) Brake Actuator with a global European hydraulic pump manufacturer with over 90 years of experience providing innovative hydraulic drive and control technologies.

The DeeMaxx Components braking unit has been designed with high quality in mind for various road conditions. We proudly introduced the DeeMaxx Components braking system to the North American market in 2021.

Specific Information on the EOH Braking System

The DeeMaxx Components EOH brake actuator's quality and simplicity give you the necessary reliability for a trailer braking system. In addition, it has a superior response time that delivers shorter stopping distances, which gives the driver confidence while towing.

Some of the DeeMaxx Components Actuator features include

- Compact design.
- High-powered DC Motor and quality pump with minimal moving parts for reliability.
- Large independently sealed fluid tank.
- Weatherproof, anodized alloy case protects components from external elements and corrosion.
- Robust electronics board that has a protective coating for corrosion resistance.

The DeeMaxx braking unit's features combine to make it less susceptible to saltwater, extreme temperatures, and poor road conditions, and it still delivers superior braking power in harsh and corrosive environments.

The DeeMaxx Components unit is a wise choice for an electric-over-hydraulic braking system. It suits all trailers, including single, tandem, triple, and quad (Alpha G-1600X) axle utility trailers, boat trailers, livestock trailers, and 5th-Wheel RVs. For more information, please email us: contact@deemaxx.com

SERVICE MANUAL AND SPECIFICATIONS FOR THE DEEMAXX COMPONENTS:
ALPHA G1000, G1600, G1600X

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ACTUATOR INSTALLATION INSTRUCTIONS

This manual has been provided to guide you through installing, operating, and maintaining your Electric Over Hydraulic (EOH) brake system actuator (Alpha G1600 and G1000) used for hydraulic brakes. This electrically powered unit has been designed and manufactured to give safe, reliable power to your hydraulic brakes.

Before proceeding, please refer to your brake manufacturer for proper operating pressures.

The DeeMaxx Components actuator is compatible with many electric brake controllers, but it performs best with a proportional, inertia-type In-Cab controller. Non-proportional brake controllers are unsuitable and may damage the brake actuator unit. (It is crucial that when the tow vehicle is stationary, the brake actuator is not continuously operating at full pressure.)

Wiring Colors and Function

Black – 25-40 amp 12 volt supply from the tow vehicle

Blue – Output from in-cab electronic brake controller

White – Ground must be directly connected to tow vehicle ground

Yellow – Cold side of the breakaway switch

*Cold temperature (below 0 degrees F/ -18 C) applications require 40 amp.

GETTING STARTED

The following materials are required to install the DeeMaxx Components unit properly. If your trailer is not equipped with brake lines, you will need enough 3/16" diameter automotive brake lines to connect the trailer brakes to the unit.

- One liter of new DOT 3 & DOT 4 Brake Fluid Compatible (Do not use Super DOT 4 or DOT 4+).
- One emergency breakaway system - must include a 12-volt, five amp-hour (minimum) battery.
- Wire (see Electrical Installation Requirements for correct wire size).

The DeeMaxx Components actuator's location is at the vehicle owner's discretion. When selecting the location, the following items should be considered:

ATTENTION

- The DeeMaxx Components third-generation system meets all IP67 water intrusion standards, meaning it can endure brief water exposure and submersion without damage. However, please remember not to power wash your unit or submerge it in water for extended periods. Doing so may lead to actuator malfunction and could void your warranty. When washing your trailer, avoid spraying water directly onto the unit. For optimal performance and to maintain warranty coverage, keep the system protected from excessive water exposure. If you have any questions about proper care and maintenance, please don't hesitate to contact us.
- Keep the wiring between the DeeMaxx Components unit as short as possible to avoid voltage drop. The shorter the wiring between the unit, the lower the voltage drop.
- An emergency breakaway system must be located on the trailer so that the trailer breakaway cable can be easily attached to the towing vehicle.

The tow vehicle's electrical system powers the DeeMaxx Components actuator. For the unit to function correctly, it must have adequate electrical power (see Electrical Installation Requirements).

The DeeMaxx Components actuator contains electronics that need to be protected. Drilling holes in the housing welding on or near the unit may damage the actuator and render it unserviceable. This will void the manufacturer's warranty. Always remove the actuator unit from the trailer or caravan before welding, repairs, or modifications.

Connect the trailer brake lines to the actuator unit as follows:

- Connect the brake line to the (3/16" inverted flare) adjustable hydraulic fitting, which screws into the actuator outlet port.
- The brake line must be compatible with DOT 3 or DOT 4 brake fluid.
- Fill the DeeMaxx Components unit with DOT 3 or DOT 4 brake fluid to the level with the bottom alloy filler neck.

Always use new DOT 3 or DOT 4 brake fluid from a sealed container. Do not attempt to reuse old or dirty fluid. Refrain from overfilling the unit; this can damage the surface finish. If brake fluid spills, wash it off immediately to prevent damage to surfaces. Avoid any physical contact with the brake fluid.

Please note that the breather cap MUST BE REMOVED when bleeding the brakes. After completing the bleeding process, you can securely fit the breather cap back into the unit.

ELECTRICAL INSTALLATION REQUIREMENTS

Mount the emergency breakaway switch and battery backup on the trailer, as detailed in the instruction sheets provided with the emergency breakaway system.

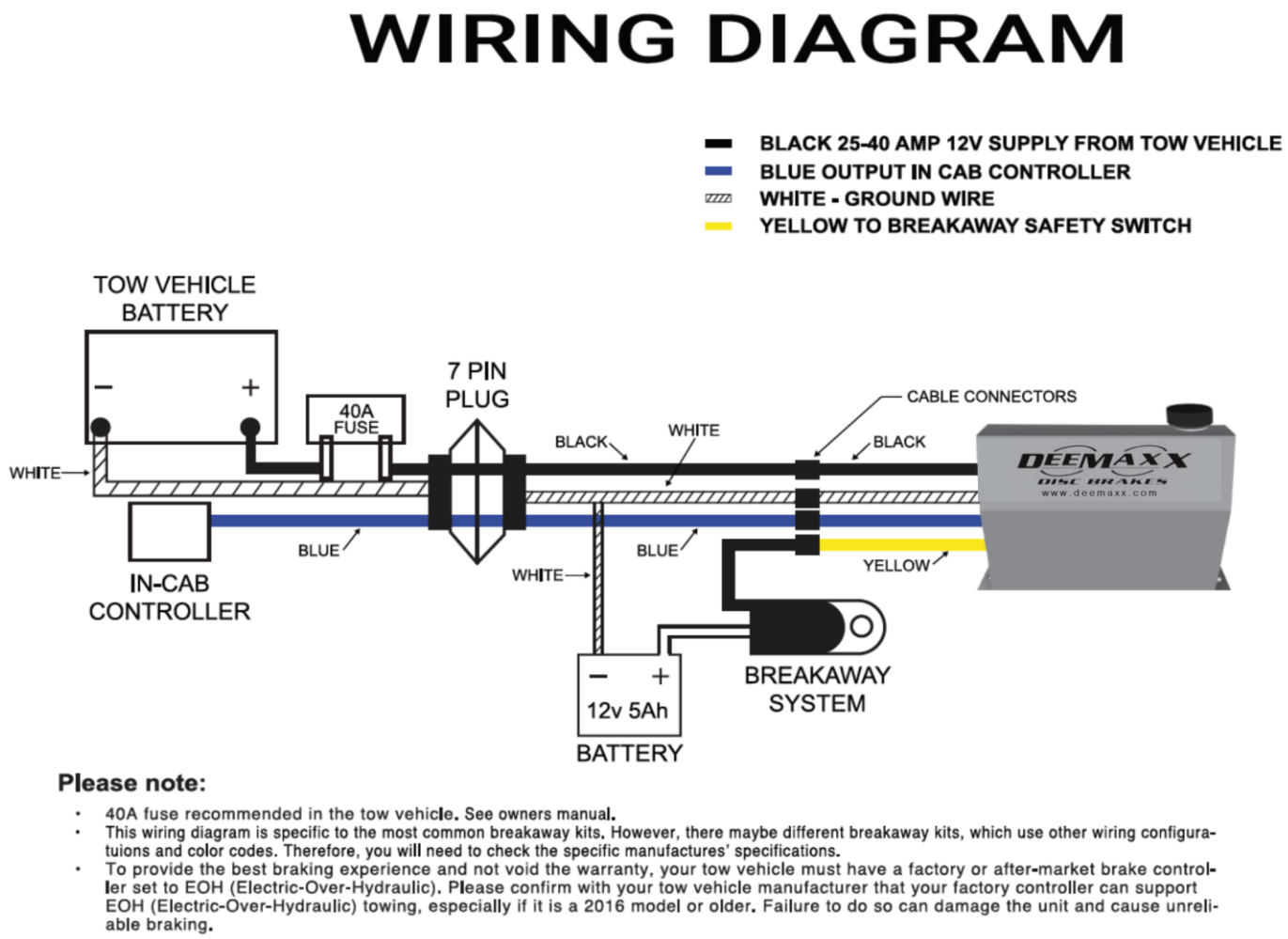
ATTENTION

An undersized electrical cable will increase electrical resistance and prevent this unit from operating correctly.

ACTUATOR COLOR CODE AND DIAGRAM

- BLACK - 25-40 amp 12 volt Supply from Tow Vehicle
- BLUE - Output from in-Cab Electronic Brake Controller
- WHITE - Trailer and Tow Vehicle Ground
- YELLOW - Cold side of the breakaway switch

WIRING DIAGRAM



It is vital that the Black Power and the White Ground wires from the tow vehicle to the actuator unit are the correct size (12-gauge wire minimum) and properly terminated to a 25–40-amp circuit on the vehicle. For best performance on an EOH system, use a minimum of 10 gauge wire.

Temperatures below 0 degrees F (-18 degrees C) require a 40-amp circuit.

The Blue wire from the In-Cab electronic brake controller is connected to the Blue wire on the actuator unit. The Yellow wire from the actuator unit is connected to the cold side of the trailer emergency breakaway switch.

To avoid damage to the electronics, the actuator unit's Blue and Yellow wires should never be connected. Similarly, the Blue wire or the Yellow wire should never be grounded.

The DeeMaxx Components actuator must be used with an In-Cab Electronic brake controller. The unit will operate with various In-Cab controllers, but optimum performance is achieved using proportional, inertia-type electronic brake controllers.

The in-cab controller must have an output capacity of at least five amps to properly operate the DeeMaxx Components actuator unit.

ATTENTION

An emergency breakaway system with battery backup must be fitted to the trailer to comply with standard requirements. In addition, the breakaway system's battery backup must have a minimum capacity of 5-amp hours and be fully charged at all times.

The breakaway system's battery must be kept fully charged to function correctly. Therefore, charging the battery directly from the tow vehicle must be done using the correct charging device included with the breakaway system.

TEST THE ELECTRIC HYDRAULIC OPERATION

- Attach the trailer to the towing vehicle. However, wait to connect the trailer plug to the tow vehicle.
- Pull the breakaway switch. The DeeMaxx Components unit should run. If it does not run, check the breakaway battery and wiring system. Then, reset the breakaway switch to switch the brake actuator unit off. When the DeeMaxx Components unit runs, the motor will generate a "hum" that changes pitch as the unit is pressurized.
- Now connect the trailer plug to the tow vehicle.
- Apply the In-Cab controller emergency manual activation button. The DeeMaxx Components unit should now run and pressurize.

ATTENTION

This test of the DeeMaxx Components actuator unit confirms that it is operating. However, it may not be functioning correctly. Therefore, regular inspection, adjustment, and maintenance of the brakes are necessary to ensure proper operation.

BLEEDING THE BRAKES AND ADJUSTMENT

Please Note Before Starting:

- It is more efficient to bleed the brakes with two people working together to control the brake pressure and release the brake bleeder valve.
- If your trailer is fitted with drum brakes, the brake shoes must have the correct clearances specified by the manufacturer. Failure to properly adjust drum brakes on trailers will result in a slower braking response time.
- Ensure that the DeeMaxx Components unit does not run out of brake fluid. You should frequently check the level and top up the brake fluid throughout the bleeding procedure.
- The breather cap MUST BE REMOVED when bleeding the brakes and only replaced when the bleeding process is completed.

Follow Steps 1 to 8

1. Install plastic tubing onto the bleeding nipple of the brake cylinder or caliper at each wheel hub.
2. Immerse the free end of the plastic tube into a clean container partially filled with brake fluid.
3. Open the bleeding nipple on the wheel cylinder or caliper furthest from the DeeMaxx Components unit. If the tow vehicle has multiple axles, always start bleeding the wheel furthest from the DeeMaxx Components unit first.
4. To activate the DeeMaxx Components unit, turn the ignition switch on and use the emergency braking switch on the In-Cab controller or the breakaway switch fitting to the trailer to make it run. (Using the brake pedal in the tow vehicle will not work with most In-Car controllers when stationary).
5. Watch the free end of the bleeder hose for air bubbles escaping into the clear container. As soon as the bubbles stop, lock the bleeding nipple.
6. Turn off the DeeMaxx Components unit and remove the plastic tubing from the bleeding nipple. The bleeding of the brake caliper or cylinder is now complete.
7. Refill the DeeMaxx Components unit with brake fluid.
8. Repeat this process with all the brakes at each wheel, always starting on the next furthest one from the DeeMaxx Components unit.

ATTENTION

It is recommended that the brake bleeding procedure be performed twice for new trailers fitted with disc brakes.

Please note that air trapped in the trailer brake line system will cause delayed braking performance.

TESTING AND ADJUSTMENT: ELECTRONIC CONTROLLER

- Adjust the gain setting on the In-Cab controller to a mid-range setting
- Drive the tow vehicle with the trailer at 15 to 20 kph
- Apply the brakes. If braking is too hard, adjust the gain setting on the In-Cab controller down to decrease the braking pressure, then retest. If braking is too soft, increase the gain setting on the In-Cab controller and retest.

Repeat this process until the braking pressure is set to the correct level.

ATTENTION

The correct pressure setting will vary depending on the weight of the load, weather, and road conditions. Therefore, retest the braking performance each time the trailer is used. Failure to properly adjust the DeeMaxx Components actuator may result in poor braking performance and could result in severe or fatal injuries or property damage.

When using an In-Cab controller other than an inertia type, reduce the gain setting on the In-Cab controller when stopped in traffic for long periods. This will prevent the actuator from overheating and avoid possible damage to the electronics and or the electric motor in the actuator.

TROUBLESHOOTING GUIDE

The brake unit will not run, or the brakes are slow to respond. To determine if the brake unit is functioning correctly, perform the following checks:

Step 1

- Ensure the wiring is connected by conferring with the wiring diagram in the "Electrical Installation Requirements" section.
- Re-bleed the trailer brakes. If there is air in the trailer brake lines, it can cause braking delay.
- If the trailer is equipped with drum brakes, re-adjust the drum brakes to the trailer manufacturer's recommended tolerances.
- If trailer wiring is too small, it can cause a slow response. (See the section on Electrical Installation Requirements).
- Undersized brake lines can cause delayed braking response. The trailer brake lines must be at least 3/16" in diameter.
- Ensure the white ground wire is connected directly to the tow vehicle ground. Please note that the ground wire must be connected directly to the tow vehicle battery ground.

Step 2

- Now, disconnect all the wires from the DeeMaxx Components unit to the tow vehicle leaving just the blue, black, white, and yellow wires. All other wires must be disconnected from the tow vehicle to test the brake unit successfully.
- Using a 12-volt battery, connect the white wire to the battery's negative (-) terminal.
- Then, connect the black wire to the battery's positive (+) terminal.
- The motor should not run. If it runs, the unit could be faulty.

Step 3

- Leave the white wire connected to the battery's negative (-) terminal.
- Connect the blue and black wires to the battery's positive (+) terminal.
- The motor should run, and the unit should pressurize.
- If this does not occur, the unit may be faulty.

Step 4

- Leave the white wire connected to the battery's negative (-) terminal.
- Connect only the yellow wire to the battery's positive (+) terminal.
- The motor should run, and the unit should pressurize.
- If this does not occur, the unit could be faulty.

If the unit checks out okay, reconnect the wires leading to the trailer plug and repeat steps 1 through 4 at the trailer plug. If you do not get the same results as before, the trailer wiring or the electronic in-cab brake controller is the problem.

Using the breakaway system to check a brake unit that is not operating correctly:

1. With a fully charged breakaway battery and trailer plug disconnected, pull the breakaway switch on the trailer.
    a. If the unit runs and builds pressure, the breakaway system is functioning correctly.
    b. If the unit runs and builds pressure when the breakaway switch is pulled but will not function under normal operating conditions, the problem most likely is a faulty in-cab controller or defective wiring between the tow vehicle and the DeeMaxx Components unit.
    c. If the unit runs but will not build pressure when the breakaway switch is pulled, the DeeMaxx Components unit may be faulty.
    d. If the unit does not run, measure the DC voltage between the white wire and the yellow wire. If the voltage is less than 12 volts, either the battery hasn't enough charge, the breakaway switch, or the breakaway wiring is at fault.
2. After completing the above steps, reset the breakaway switch and reconnect the trailer plug. If the trailer brakes are too aggressive:
    a. Reduce the gain setting on the in-cab brake controller.
    b. Check brake adjustment.

DEEMAXX COMPONENTS LIMITED WARRANTY

DeeMaxx Components warrants to the original purchaser that the DeeMaxx Components brake actuator (the unit) shall be free from defects in material and workmanship for two (2) years from the date of the first sale to the first purchaser of a trailer or other towed device to which the unit is fitted or the first sale to the first retail purchaser of a unit that has not been fitted to a trailer or other towed device (i.e. is sold as an individual unit directly to a consumer by DeeMaxx Components or one of its authorized distributors).

Any receipts, proof of purchase, or other documents obtained at the time of purchase from a distributor, trailer or towed device dealer, or DeeMaxx Components should be retained by the original purchaser until the expiration of the warranty period. This warranty is not transferable to a subsequent owner of the unit or the trailer or other towed device to which the unit is attached.

Any implied warranties, including the implied warranties of merchantability and fitness for a particular purpose, are limited to the duration of the express warranties herein. DeeMaxx Components excludes, and shall not be liable for, any incidental and consequential damages, including, without limitation, loss of time, inconvenience, use, towing fees, telephone calls, cost of meals, or rental fees for any breach of any express or implied warranties, including the implied warranties of merchantability and fitness for a particular purpose and this express warranty.

This warranty shall not extend to any unit, or parts thereof, that have been installed contrary to the provided instructions or otherwise were improperly installed, altered, tampered with, or for which the engineering or design have been changed or altered in any way; nor will this warranty extend to any defects arising from abuse, misuse, accident, improper wiring, or negligence of an installer, the consumer, or any third party, or to any claims caused by the failure to properly select the brake controller type (i.e. EOH) or have a proper brake controller equipped (i.e., for EOH brakes) on a tow vehicle (which failure will cause a short in the power relay system). Any disassembly of the unit by anyone other than an authorized DeeMaxx Components technician shall void the warranty. Please refer to the instruction manual for the DeeMaxx Components unit for information regarding installation and proper use.

No warranty claim will be accepted by DeeMaxx Components without its Troubleshooting Guide steps having been performed, such performance of which shall be represented as having occurred if the warranty claim is submitted. If, during a warranty inspection of the unit, the issue is resolved by DeeMaxx Component's warranty technician utilizing the Troubleshooting Guide steps, claimant shall be responsible to DeeMaxx Components for the costs of shipping both from Claimant to perform the test and back to Claimant, and for the time spend to remedy the issue as the claim would not be covered under warranty in those circumstances; time for the technician is billed at $85 per unit tested. A warranty claimant must attest to having performed the Troubleshooting Guide steps prior to making a warranty claim and provide DeeMaxx Components with the step at which the unit failed (which will be claimant's attestation).

If a warranty claim is valid, as determined by DeeMaxx Components in its sole discretion, the unit will be repaired or replaced (with a new or refurbished unit of the same type) as determined by DeeMaxx Components, or a credit will be issued, in the sole discretion of DeeMaxx Components. If a product has been discontinued and no new or refurbished units exist, DeeMaxx Components will provide a replacement unit of equal or greater operational capacity or issue a credit, at the exclusive option DeeMaxx Components. If a claim is deemed invalid and the unit is found to work properly, it will be returned to the submitter, freight collected, unless otherwise instructed. In the event DeeMaxx Components has agreed, in its discretion, to provide a replacement unit prior to inspection of the allegedly defective unit, and the allegedly defective unit is determined for any reason(s) to not be covered under this warranty, claimant shall be responsible to DeeMaxx Components for the retail cost of the replacement unit provided plus the cost incurred to ship the replacement unit to claimant.

This Warranty is not transferable from the original owner/retail purchaser as applicable pursuant to the terms herein. All inquiries regarding this warranty and warranty claims, should be addressed to the original place of purchase. All warranty claims must go through and be approved by, and all replacement units must come from, DeeMaxx Components directly, unless after the claim is made DeeMaxx Components authorizes and provides a different procedure to the claimant in writing. DeeMaxx Components will not reimburse a claimant, repair shop, or any other third party for any expenses incurred for a warranty claim for a DeeMaxx Components unit including, without limitation, labor costs, replacement part costs, shipping, or any other costs or expenses for a warranty replacement that has not been previously inspected and approved by DeeMaxx Components, and DeeMaxx Components will only pay those amounts it has authorized in writing to be incurred for a warranty claim, if any and at its sole discretion. DeeMaxx Components has a maximum limit of 2.0 hours for labor to replace any one (1) unit that it will consider paying and it will not pay labor costs at a rate not to exceed $125.00 per hour.

TRAILER REPAIR SHOPS, DEALERSHIPS, DISTRIBUTORS, MANUFACTURERS:

Contact DeeMaxx Components and DO NOT replace a DeeMaxx Components unit without warranty approval and confirmation of warranty coverage from DeeMaxx Components. Failure to obtain warranty coverage confirmation and approval to perform repair from DeeMaxx Components before performing the same will VOID the warranty. Additionally, do not ship replacement units to any claimant; if a replacement unit is needed, DeeMaxx Components will ship the unit directly to the claimant, unless claimant directs DeeMaxx Components to ship the unit to a repair shop, distributor, manufacturer, dealership, or other address. If, with DeeMaxx Components's written authorization, a unit in your inventory is used for a warranty replacement, DeeMaxx Components will provide a replacement unit directly to you from its inventory.

For further information, please email contact@deemaxx.com or call us at (682)-200-6003