

Installation Instructions

ActuLink ABS Module - ABS-MOD-400



For more information on the installation and operation of Tuson's towable ABS system, consult the installation and operations manuals for the ActuLink ABS Actuator and the DirecLink NE ABS model.



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Mounting the ActuLink ABS Module

The mounting guidelines listed below should be followed:

- Ensure the selected location is accessible for service and for brake line and wiring installation.
- The ActuLink ABS Module must be mounted in a location where it will be protected from damage from trailer load and road debris.
- The ActuLink ABS Module is weather sealed and water resistant, but should not be mounted in a location that will be submerged in water.
- The ActuLink ABS Module should be mounted in proximity to the towable axles.



Warning!

DO NOT SPRAY HIGH PRESSURE WATER ON THE ActuLink ABS Module. The ActuLink ABS Module is a weather sealed, water resistant unit. But, it is not designed to withstand direct, high pressure spray from a power washer.

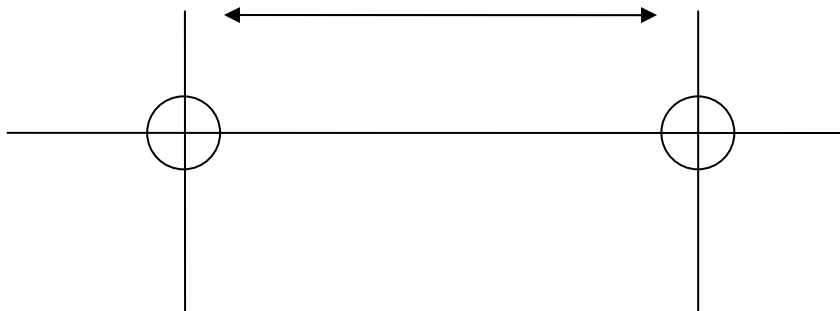
The ActuLink ABS Module should be mounted using the two existing mounting holes with two 3/8" bolts. The mounting holes in the ActuLink ABS Module are 1" deep and the template below can be used to properly position and drill the holes in the surface to be used for mounting. It is recommended that lock washers be used and you must securely tighten the mounting bolts to prevent damage to the module or to the attached brake lines from excessive vibration.

You can **NOT** drill holes in the ActuLink ABS Module for any reason. Drilling holes or puncturing the unit VOIDS YOUR WARRANTY.

ABS Module Bottom Mounting Holes Drill Template

(screws: 3/8" - 24 x 1")

2 holes, 3/8" dia, 68mm (2.677") apart



Installation of Hydraulic Lines

The ActuLink ABS Module has 6 brass 1/8" NPTF male fittings with #3 (3/16") female inverted flare tube seat adapters (for 1/8" brake line). These fittings are all clearly labeled and it is critical that the proper hydraulic line is connected to the proper location on the ActuLink ABS Module.

On one side of the ActuLink ABS Module, there are two fittings: one is labeled PIN (pressure input) and the other is labeled RET (return line). This side of the ActuLink ABS Module should be positioned to face toward the ActuLink ABS actuator and it is critical that the pressure output of the ActuLink ABS actuator is connected to the pressure input of the ActuLink ABS Module. It is equally critical that the return line of the ActuLink ABS actuator is connected to the return line of the ActuLink ABS Module.

On the opposite side the ActuLink ABS Module, there are four fittings: Each is labeled with a number (1,2,3,4). These numbers correspond with a specific brake caliper with which it must be connected. These connections are as follows:

Fitting 1: Driver's side front brake caliper	Fitting 3: Passenger's side rear brake caliper
Fitting 2: Driver's side rear brake caliper	Fitting 4: Passenger's side front brake caliper

It is critical that each of these lines be properly connected as outlined above. If any line is improperly connected, the ABS system will not work properly.

DO NOT use Teflon pipe tape or other type of thread dope when connecting brake tubing or hose. **You must hold the ActuLink brass fitting securely in place with the appropriate size wrench when tightening the brake line fitting to the ActuLink ABS Module. Failure to secure the brass fitting may cause damage to the brake line fitting.** When installing steel tubing, use care to avoid sharp kinks or bends, which can restrict brake fluid flow causing poor brake response. Double flare the ends of the steel tubing to ensure tight leak proof connections. All steel hydraulic lines should be anchored at two foot intervals to prevent vibration and chafing. Rubber hydraulic hose should be used at points where flexing may occur. Be sure hydraulic hose is positioned so it does not rub against any surface during trailering. Anchor ends of tubing to minimize stress. Follow the instructions of your brake manufacturer when connecting the brake lines to the brake caliper.

Connecting ABS Module to Wheel Speed Sensors

The ActuLink ABS Module wire harness has four (4) connectors for ABS Wheel Speed Sensors. These connectors are color coded and the proper color must be attached to the proper wheel speed sensor as outlined below:

Cable #1	Purple: Driver Side Front Wheel
Cable #2	Gray: Driver Side Rear Wheel
Cable #3	Tan: Passenger Side Rear Wheel
Cable #4	Pink: Passenger Side Front Wheel

It is critical that the wheel speed sensor cables are connected as outlined above or the entire towable ABS system will not function properly.

Note: For triple axle trailers, the center wheels do not have wheel speed sensors and the center wheel brakes are connected with a tee to the front wheel hydraulic lines for spring suspension trailers or to the rear wheel hydraulic lines for torsion suspension trailers.



Warning!

Prior to welding or electrostatic painting on the trailer, disconnect the wiring harness and hydraulic lines from the ActuLink actuator and ABS Module. Failure to do so may cause damage to the actuator and/or the ABS Module's electronics which will void the warranty.

Installing Wheel Speed Sensors

It is critical that the gap between the end of the wheel speed sensor and the teeth of the tone ring are in very close proximity (no greater than 0.040" / 1mm). There are two types of mounting hardware available for mounting wheel speed sensors: 1) Tuson's spring loaded bracket, 2) hollow bolt (which may be an integral part of the brake caliper mounting bracket or may be a separate bolt that is installed in an opening in the brake caliper mounting bracket) with a spring clip. Tuson's spring loaded mount comes with shims that are 0.040" / 1mm thick. Without the shims, the sensor will come into contact with the teeth of the tone ring. Therefore, the shims should be added, one at a time, until the sensor is no longer in contact with the teeth on the tone ring when the rotor is fully installed (with the spindle nut properly installed and pinned with a cotter pin) At that point, rotate the rotor completely to ensure the sensor does not come into contact with the tone ring and that the gap is no greater than 0.040" / 1 mm. With non-spring loaded mounts, a 0.040" / 1mm feeler gauge should be used to obtain the proper gap. Place the feeler gauge between the teeth of the tone ring and the sensor and slide the sensor toward the teeth until it makes contact with the feeler gauge. When the feeler gauge is removed, the barrel spring clip in the sensor mount will hold the sensor in place.

Note: When using the hollow bolt with spring clip to mount the wheel speed sensors, the sensors should not slide easily within the hollow bolt as the spring clip must hold it very firmly in place. It should take significant force to move the sensor inward toward the teeth. If the sensor moves easily, that is an indication to replace the spring clip with a new one. If this is not done, the sensor will eventually move from the tone ring teeth and will stop capturing data which will diminish the performance or disable the ABS system.

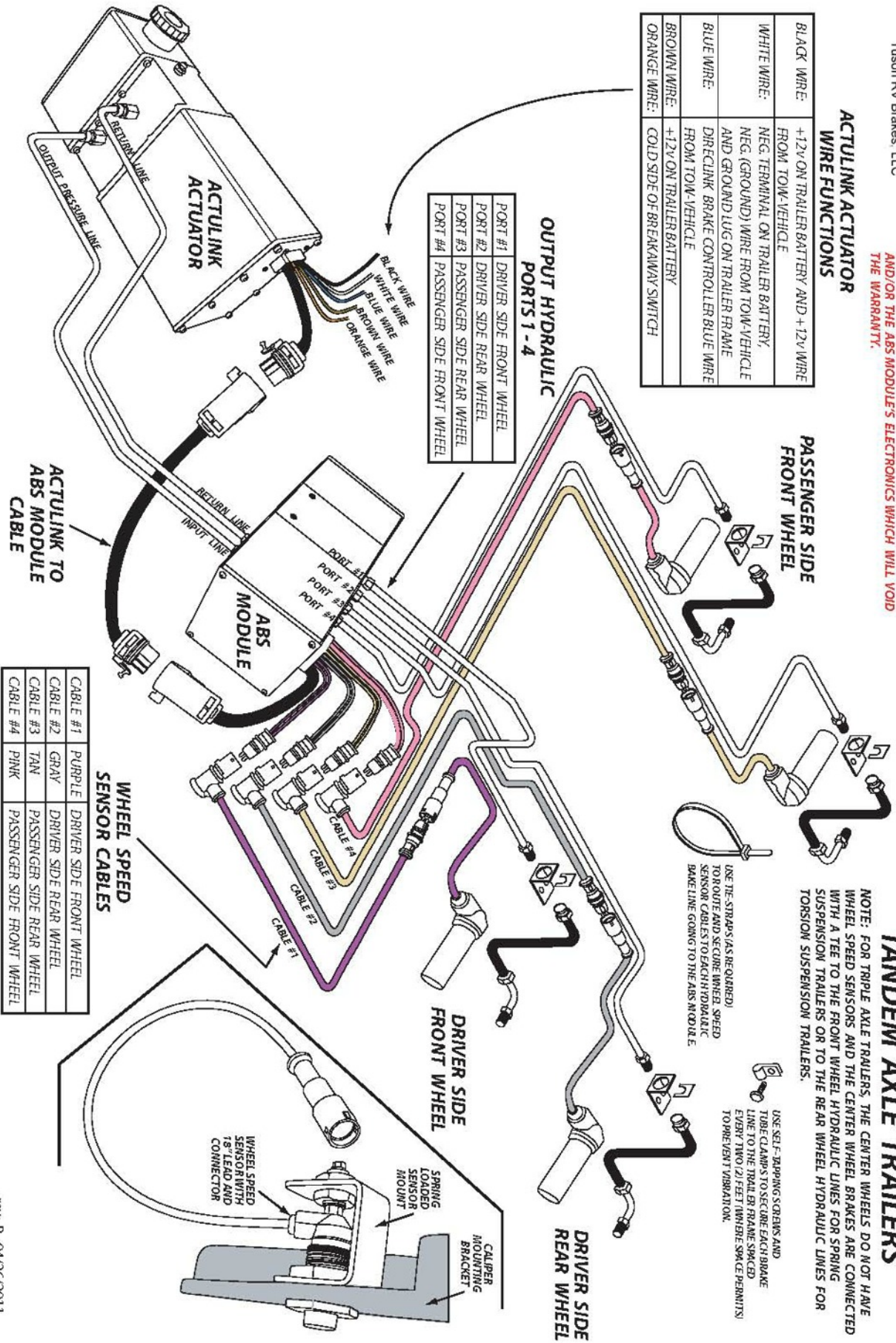
WARNING: PRIOR TO WELDING OR ELECTROSTATIC PAINTING ON THE TRAILER, DISCONNECT THE WIRING HARNESS AND HYDRAULIC LINES FROM THE ACTUATOR AND ABS MODULE. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE ACTUATOR AND/OR THE ABS MODULE'S ELECTRONICS WHICH WILL VOID THE WARRANTY.

ACTU LINK ACTUATOR WIRE FUNCTIONS

BLACK WIRE:	+12V ON TRAILER BATTERY AND +12V WIRE FROM TOW-VEHICLE
WHITE WIRE:	NEG. TERMINAL ON TRAILER BATTERY, NEG. (GROUND) WIRE FROM TOW-VEHICLE AND GROUND LUG ON TRAILER FRAME
BLUE WIRE:	DIRECT LINK BRAKE CONTROLLER BLUE WIRE FROM TOW-VEHICLE
BROWN WIRE:	+12V ON TRAILER BATTERY
ORANGE WIRE:	COLD SIDE OF BREAKAWAY SWITCH

OUTPUT HYDRAULIC PORTS 1-4

PORT #1	DRIVER SIDE FRONT WHEEL
PORT #2	DRIVER SIDE REAR WHEEL
PORT #3	PASSENGER SIDE REAR WHEEL
PORT #4	PASSENGER SIDE FRONT WHEEL



WHEEL SPEED SENSOR CABLES

CABLE #1	PURPLE	DRIVER SIDE FRONT WHEEL
CABLE #2	GRAY	DRIVER SIDE REAR WHEEL
CABLE #3	TAN	PASSENGER SIDE REAR WHEEL
CABLE #4	PINK	PASSENGER SIDE FRONT WHEEL

TRAILER ABS INSTALLATION DIAGRAM FOR TANDEM AXLE TRAILERS

NOTE: FOR TRIPLE AXLE TRAILERS, THE CENTER WHEELS DO NOT HAVE WHEEL SPEED SENSORS AND THE CENTER WHEEL BRAKES ARE CONNECTED WITH A TEE TO THE FRONT WHEEL HYDRAULIC LINES FOR SPRING SUSPENSION TRAILERS OR TO THE REAR WHEEL HYDRAULIC LINES FOR TORSION SUSPENSION TRAILERS.

USE THE STRAPS (AS REQUIRED) TO ROUTE AND SECURE WHEEL SPEED SENSOR CABLES TO EACH HYDRAULIC BRAKE LINE GOING TO THE ABS MODULE.

USE SELF-TAPPING SCREWS AND TUBE CLAMPS TO SECURE EACH BRAKE LINE TO THE TRAILER FRAME SPACED EVERY TWO (2) FEET (WHERE SPACE PERMITS) TO PREVENT VIBRATION.

Limited Warranty

Tuson RV Brakes, LLC (Tuson) warrants the ActuLink ABS module to be free of defects in material and workmanship for a period not to exceed TWO (2) years from the date of sale to the original consumer, or to the first retail purchaser of a trailer on which the ActuLink is installed. Original receipt(s) or other acceptable proof of purchase should be retained by the customer for verification of warranty date. THIS WARRANTY IS NOT TRANSFERABLE.

Tuson's obligations under this warranty shall be limited to crediting the account of a direct buying distributor or OEM trailer manufacturer, replacing or repairing ActuLink products which are determined by Tuson to be defective in material or workmanship, within 60 days of receipt of such product by Tuson. Tuson reserves the right to request the product be returned intact, freight prepaid, PRIOR to processing any claim for warranty. Warranty claim must be received by Tuson within 30 days of the discovery of the alleged defect, or within 30 days of the expiration of the warranty, whichever is earlier. Covered repairs or replacements will be made at Tuson's expense. Shipment of replacement product or repaired product by Tuson will be via best available ground shipment carrier. Shipments other than by best available ground shipment carrier, must be requested in writing and must be paid for in advance by the customer. Returned product that is found not to be defective, will be returned at senders expense.

This Warranty shall not include any products which have been improperly installed, installed contrary to installation instructions provided with the product, altered, tampered with or changed in any way, or utilized in a manner not approved by Tuson. This Warranty shall not extend to any defects arising from abuse, misuse, accident, improper wiring, or negligence of the installer or the consumer. Refer to the ActuLink ABS "Owner's Manual and Installation Instructions" that was shipped with the ActuLink ABS.

EXCEPT AS EXPRESSLY SET FORTH ABOVE, NO OTHER WARRANTY, EXPRESS OR IMPLIED, AT LAW OR IN EQUITY, IS MADE BY TUSON IN RESPECT OF THE PRODUCT, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, AND ANY SUCH WARRANTIES ARE EXPRESSLY DISCLAIMED.

IN NO EVENT SHALL TUSON BE LIABLE TO PURCHASER OR ANY THIRD PARTY FOR ANY LOST PROFITS, CONSEQUENTIAL, EXEMPLARY, INDIRECT, PUNITIVE, INCIDENTAL, OR SPECIAL DAMAGES OR COSTS (INCLUDING ATTORNEY FEES), OR LOSS OF GOOD WILL RESULTING FROM ANY CLAIM (INCLUDING BUT NOT LIMITED TO ANY CAUSE OF ACTION SOUNDING IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY OR PRODUCT LIABILITY) REGARDING THIS AGREEMENT, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the exclusion or limitation of implied warranties, incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Warranty gives you specific rights. You may have other rights, which vary from state to state.

If you have a problem with your ActuLink ABS module, take the following steps:

1. Trouble shoot the unit as described in this owner's manual. If a copy of the manual is not readable or is lost, contact your dealer/distributor for a copy. Additional copies of the manual can be ordered from Tuson Corporation for \$10.00 plus shipping. Call 1-800-968-8766 or copies are available for free online at www.tusonrvbrakes.com or www.direclink.com.
2. If you are still having problems after trouble shooting and you believe you have a valid warranty claim, contact the dealer or distributor where you purchased the product.

3. If it is deemed the ActuLink ABS should be returned to Tuson for inspection and warranty consideration, the dealer or distributor will make the claim through the ActuLink supplier. If you purchased the ActuLink directly from Tuson's online store, contact customer service at 1-800-968-8766 to make a claim.

To Make A Claim

1. All claims must include proof of purchase information. The required information is: copy of receipt or itemized bill showing name and address of the purchaser, and date of purchase, product number, serial number.
2. All returns require a Returns Merchandise Authorization (RMA). An RMA number can be obtained by contacting Tuson customer service at 1-800-968-8766 or inforvbrakes@tuson.com. You will be asked to provide proof of purchase information per item #1 of this section.
3. The customer, direct account OEM or distributor will return the ActuLink prepaid, securely packed in appropriate packaging. The product must be free of mud, dirt, sand, grease, or other debris, with the brake fluid completely drained from the reservoir. The shipping box must be clearly marked with the RMA number when the unit is returned to Tuson for inspection.
4. If Tuson determines the claim is valid, the ActuLink will be repaired or replaced, or credit will be issued to a direct OEM account or direct distributor. If a labor claim is made, Tuson will issue credit to reimburse for up to one hour of labor, not to exceed \$70 to replace the defective unit.
5. If a claim is deemed invalid (See previous page) or the ActuLink is found to work properly, the direct account OEM or direct distributor will be notified and no credit will be issued for the returned ActuLink or for labor. An ActuLink with an invalid warranty claim will be returned to the sender, freight collect, unless otherwise instructed in writing.