Customer supplied tools & supplies

INSTALLATION INSTRUCTIONS

1. TOAD VEHICLE INSTALLATION

MECHANICAL INSTALLATION OF COMPONENTS: See Fig. 1
a. Remove rubber pedal cover and drill 1/8" hole in the face of brake pedal frame at its lowest point. If there is too much pulling pressure at this point, use brake pedal assembly (item 24) above brake pedal pad.
Note: For vehicles with continuous power assist brakes, do NOT drill into brake pedal frame. Use brake pedal assembly (item 24) above the brake pedal frame. The lower the assembly is placed on the pedal frame, the more force that is applied.
b. Decide where to locate the blue box. The cable assembly is 15 ft. long so the box can be mounted in the trunk. The box can also be mounted behind the driver's seat. If this location is preferred, the cable assembly will need to be cut and modified. Set the box where you would like it when towing. Lay the cable assembly on the floor, placing the pulley end straight behind the brake pedal as shown in Fig. 1. Measure the distance the cable housing extends past the box. This is how much will need to be cut off of cable housing. Take the cable stop off of cable. Pull the cable housing off of the knurled fitting that is mounted to the pulley. Slide the 1" adapter tube and 1/4" long tube off of cable housing. Pull the cable out of the cable housing and mark out the previously measured distance on the housing and cut. The metal winding in the housing may have to be sanded down. Mount the cable housing back onto the knurled fitting on the pulley. Route the cable through the housing and replace the cable stop. Cut the cable, making sure the cable is about 12" longer than the housing. Locate a mounting point for the pulley behind the brake pedal on firewall. (Align the pulley trailing side straight behind pedal arc for a good straight pull of the pedal) Fig.1
c. Using two self-tapping screws, mount the pulley to the firewall. Run the cable housing under the floor mat or customize routing under carpet and dock plastic end to box. (Fig.4, Fig.1)
d. Connect cable ball in the center position on the pull arm in the box. Fig. 4
e. Attach the cable at the brake pedal with cable stop, making sure there is no play in the cable, then make adjustments testing.

TOAD VACUUM HOSE INSTALLATION: See Fig. 3 - Note: Do not perform these steps for vehicles with continuous power assist brakes. Simply connect ToadStop II to kit reservoir via hose (see Fig.3).
a. Remove the original vacuum line from the booster check valve and install the “check valve/T” assembly to the booster check valve as shown in Fig. 3 (install original vacuum line to “black side” of kit check valve assembly)
b. Find an existing hole in the firewall, or if there isn't one, drill a 5/8" hole and mount bulkhead. Tighten the 3/8" hose barbs on each side. Use hose clamps that are provided on all hose connections. Route the vacuum tube to the firewall bulkhead connection and into drivers compartment to mate with box at vacuum quick connect.
c. If your vehicle has ½" ID hose, adapt to 3/8" or use clamps to “squeeze” the ½” down securely to 3/8” fittings. Use the clear vinyl spacer hose to adapt up to ½” OEM size if
TOAD VACUUM HOSE INSTALLATION (continued)

d. Cut the vacuum line installed in the previous step, insert “T” and connect reservoir to the system between our new check valve and the booster check valve.

TOAD WIRING INSTALLATION: See Fig. 2

a. The box is equipped with a four wire flat connector that uses the following connection sources.
   1. White connects to GROUND.
   2. Brown connects to BATTERY 20amp fused source.
   3. Yellow is NOT USED.
   4. Green connects to RV COLD SIDE BRAKE LIGHT SWITCH.

NOTE: There are two diodes supplied in case there is "electrical feedback". Most of electrical feedback problems are "bad grounds". Be sure to check all grounds, before installing diodes. Check original car wiring & wiring kit wiring for bad grounds.

b. The orange and blue wires feed between both vehicles at the trailer wiring connector, using two spare pins in the wiring plug connector (if spare pins are not available, upgrade the customer to a higher capacity connector).

c. Install the breakaway switch, centered, on the front of the toad vehicle, with an attachment point on the RV for the lanyard.

d. Connect one wire from the breakaway switch to the positive terminal of the battery.

e. Connect the other wire from the breakaway switch to the Green wire feed to activate braking during breakaway.

EMERGENCY/ANTI-THEFT SWITCH OPERATION (See Figure 2 for wire hook-up.)

a. The unlighted dash switch for the operation of the box while driving is an accessory that can provide emergency braking while driving with the simple flip of a switch, if something happens to the driver. It will also provide anti-theft protection while towing or parked during solo driving.

b. To test emergency stopping while driving, apply braking by flipping the dash switch to activate brakes and stop the vehicle (on some vehicles, it may be necessary to shift to neutral to stop, if a high idle condition is present).

c. To test the anti-theft mode, turn off the engine. Flip the toggle to the “ON” position (off center, and will stay when you remove your finger). Fig. 2 Start the engine, and the brake system should apply itself.

Automotive Relay Note: If the towed vehicle's brake lights will work with the key off, there is a possibility that the towed vehicle's battery may be drained after towing as the brake lights will be activated each time the brake pedal is depressed by the ToadStop. To keep this from happening we have included electrical parts (relay) with the kit to automatically disconnect the vehicle's brake lights when the key is off. The only change you will notice to the towed vehicle is that the brake lights on the car will only be activated by the brake pedal when the ignition is in the "on" position.

FINISHING ELECTRIC CONNECTIONS TO THE TOAD VEHICLE (Fig. 2)

a. (RECOMMENDED) When using the relay, cut the brake wire that is HOT when the brake pedal is applied. Connect a wire from the end of the wire that is closest to the brake switch to tab 87 on the relay, making sure to connect with a wire that goes to the wiring connector on the front of the vehicle. Then connect a wire from the other end of the cut wire to tab 30 on the relay. Connect a wire from the car’s fuse panel (12V IGNITION)
to tab 86 on the relay. Tab 85 needs to go to a good solid ground connection.

When NOT using the relay, connect a wire from the wiring connector to the "cold" side of the brake switch.

The ProPort™ switch assembly mounts to the tow bar receiver. The ProPort™ switch will let braking occur on the towed vehicle only when braking is needed. This is done by using the play in-between the tow bar and the receiver hitch.

**MOUNTING THE PROPORT™ SWITCH TO THE TOWED VEHICLE RECEIVER**

See Fig. A

1. Attach tow bar to the tow vehicle's receiver. Make sure to pull outward on tow bar so it is against receiver pin.
2. Position the ProPort™ switch so that the lever will touch the receiver of the towing vehicle.
3. After positioning the assembly so that the lever will trip the contact switch with slight movement towards the towing receiver, mark the mount holes for drilling. Note: Mark the holes at the center of the slots for adjustment purposes.
4. Using a 3/32" drill bit, drill the mount holes and attach the switch assembly to the tow bar receiver.
5. Mount the switch to the tow bar with #6 x 1/2" screws provided. Adjust the switch so that the switch contact will push in when the receiver is pushed toward the front of the RV. NOTE: You will here a "click" when you push the receiver "in" and a click when you pull the receiver "out" if the switch is working properly.

**ELECTRICAL CONNECTIONS**

1. Disconnect the BRAKE signal wire from the back of the RV receiver electrical receptacle pin and connect it to the BLUE wire on the ProPort™ switch.
2. Connect the black wire from the ProPort™ switch to the pin on the electrical receptacle pin that was removed in the previous step.

**TESTING THE PROPORT™**

1. Push the towed vehicle receiver into the towing vehicle receiver, the switch should "click".
2. Pull the tow bar from the towing vehicle receiver, the switch should "click". If this does NOT occur, the switch will need to be adjusted accordingly.
TESTING AND TUNING THE SYSTEM

CAUTION: ALWAYS PERFORM THIS TEST IN A SAFE CLEAR AREA. ALWAYS BE PREPARED TO USE YOUR FOOT TO STOP THE TOAD VEHICLE DURING TESTING.

a. Start the engine of the toad vehicle, making sure that the Vac Brake™ does not apply. If the Vac Brake™ applies, verify the breakaway pin is inserted in the breakaway switch.

b. Push the box test BUTTON to the momentary position and this should apply the Vac Brake™. Releasing the BUTTON should release the Vac Brake™. With the vehicle in drive, and moving at idle speed, apply the Vac Brake™ with the test BUTTON held "ON". When the vehicle comes to a stop give it a little throttle and let off. The vehicle should move forward as you give it throttle, and stop when you let up (you will have to hold the test BUTTON during testing of brake strength) Fig. 4

c. To balance and adjust Vac Brake™ braking strength, repeat the test in step b. moving the cable ball connection along the box arm bracket “in towards the pivot point for stronger braking” or “out from the pivot point for less braking” this compensates for too much throttle or to little throttle, respectively, needed to move the vehicle. THIS “IN AND OUT” LEVERAGING FROM THE PIVOT POINT ON THE BOX ARM IS THE STRENGTH ADJUSTMENT Fig. 4

d. Vac Brake™ application speed is adjusted with two needle valves built into the Vac Brake™ solenoid. The “AE” needle valve controls the speed of Vac Brake™ release; “BE” needle valve controls the speed of Vac Brake™ engagement. We recommend the release be slower than the engagement. THIS VACUUM FLOW ADJUSTMENT CONTROLS BRAKE APPLICATION SPEED AND RELEASE SPEED. SPEED IS FACTORY SET WITH MINOR ADJUSTMENTS DONE BY THE INSTALLER AS NEEDED. RELEASE SHOULD BE SLOWER THAN PULL DOWN SPEED. Fig. 5

2. RV INSTALLATION - RV WIRING: Fig. 2

a. Locate an easy to reach place for the remote control RV dash switch to be installed.

b. Looking at the back of the switch, with the row of three terminals oriented towards the top, connect the monitor signal wire (from the TOAD’S brake light switch) to the lower right terminal. The lower left terminal is to be connected to a suitable grounding point.

c. Connect a wire from the cold side of the RV’s brake light switch to upper left terminal of the switch.

d. Connect a wire from a 12 VDC power source (generally from the fuse panel) to the upper right terminal of the switch.

e. Connect the center terminal of the switch to the “GREEN” wire that runs to the activation signal wire of the solenoid on the Vac Brake™.

TESTING THE VAC BRAKE™ WITH THE RV

a. The lighted toggle switch is to be flipped ON during this test (flipped off center, and remains in place when you remove your finger). With the RV running, depress the brake pedal, noticing that the switch should light up as the brake is applied, and go off slightly after releasing the pedal.

b. Repeat the test above with the switch flipped OFF (flipped center, and remains in center place when you remove your finger). It should not light up, nor should the Vac Brake™ apply.

c. The third test is to press the paddle of the switch to the momentary position. The switch should light up, as well as the brakes of the toad apply. The light should go out and the Vac Brake™ should disengage after releasing the switch.

WARNING: The feedback light must operate as described above or warranty is void!
If the Vac Brake™ worked properly during the tests of the TOAD and not with the RV, recheck your electrical connections making sure the harness terminals used align properly between vehicles.

SIZING THE ELECTRICAL CONNECTIONS ACROSS TOW BAR

a. With the toad vehicle connected to the tow bar, find the minimum length of the breakaway lanyard by measuring from the anchor point on the RV (as close to center as possible) to the breakaway switch. Record this measurement as X=

b. Find the maximum length of the breakaway lanyard by disconnecting the tow bar and leaving the tow cables connected. Slowly back up the toad until the cables capture it. Apply the parking brake, and turn off the engine. Make the same measurement as in step a. Record this measurement as Y=

c. To find the length of the lanyard to be used take the measurements (X) and (Y), add them together, and divide by 2, (X+Y)/2=Lanyard Length

d. Electrical harnesses across tow bar must be 12” longer than the (Y) measurement. No electrical connection should be lost during a safety cable capture breakaway.

NOTE: THE BREAKAWAY LANYARD LENGTH MUST BE LONG ENOUGH TO PERMIT TURNING WITHOUT PULLING THE PIN WHEN TOWING. THE ABOVE SIZING PROCEDURE ALLOWS THE BREAK AWAY PIN TO PULL AND APPLY Vac Brake™ TO HELP CONTROL THE TOAD VEHICLE WHEN IT FALLS BACK ON THE SAFETY CABLES OR CHAINS.

THIS SYSTEM PROVIDES FULL DRIVER FEEDBACK AND CONTROL

WARNING: You are responsible for monitoring the “FEEDBACK LIGHT” on the RV dash switch. If the switch light does not “LIGHT” during normal application of the brake in the RV, there is a problem that you MUST investigate! If the switch light does not “GO OFF” during release of the RV brake, there is a problem that you MUST investigate! (a slight delay as the pedal releases is normal for the operation of this system, this is just the regulated release speed as the pedal returns to full released position)

If the light comes “ON” by itself you must “STOP” and investigate the cause, it may be that the “BREAKAWAY PIN” HAS PULLED DUE TO A TOW COMPONENT FAILURE.

If the Vac Brake™ worked properly during the tests of the TOAD and not with the RV, double-check your vacuum source and electrical connections making sure the harness terminals align properly between vehicles. Make sure vacuum check valves are allowing the vacuum to flow in the correct direction.

NOTE: MAKE SURE THE SYSTEM OWNER RECEIVES THE INSTALLATION INSTRUCTIONS!!

OPERATION OF BRAKE SYSTEM

RV DASH SWITCH
A. Toggle switch is lighted to indicate brake activation in Toad vehicle.
B. Toggle switch light will activate during NORMAL braking in Toad vehicle.
   1. Toggle switch light should never be ON unless brake is applied in RV.
2. If toggle switch light is ON the brakes on the Toad are ON.
3. If toggle switch light is ON and you have not applied the brake in the RV, you must take corrective action and STOP the RV to investigate.
   a. You may have a tow component failure that has triggered the breakaway to apply the Toad brake.
   b. You may be experiencing a malfunction of the system, which would require you to disable it.
C. Normal braking in the RV will result in the RV feedback toggle switch LIGHTING to indicate braking on the Toad. It is normal for the release of the brake in the RV to be followed by the release of the brake in the Toad and the toggle switch light shutting off.

THE RV DASH SWITCH ALLOWS THE DRIVER TO COMPLETELY CONTROL THE BRAKING ON THE TOAD. THERE ARE THREE MODES TO THE RV DASH SWITCH.

1. CENTER POSITION: THE SYSTEM IS "OFF", THE ONLY THING THAT CAN ACTIVATE THE BRAKE IS THE BREAKAWAY SWITCH.
   A. USE THIS IN A CITY WHERE YOU MOVING SLOWLY AND DO NOT NEED BRAKING.
   B. USE THIS GOING DOWN A HILL AND WANT TO APPLY BRAKING WITH MOMENTARY MODE.
2. UP OR LOCKED "ON" POSITION: THE SYSTEM WILL ONLY APPLY BRAKING IN THE TOAD WHEN THE RV BRAKE IS APPLIED.
3. MOMENTARY POSITION: BRAKING IS APPLIED IN THE TOAD WITHOUT THE NEED TO APPLY THE RV BRAKE.

TROUBLE SHOOTING

System will not activate from RV. Check the “ground” between vehicles, (system uses only ½ amp to activate) and the lighting ground between the vehicles may not be good enough for the Vac Brake™ system to get ground. A better ground from the Vac Brake™ solenoid may be needed (closer to the lighting ground wire between vehicles).

System will not release from RV. Check for a “12VDC backfeed” to the activation wire on the solenoid. Isolate and add diode or change wiring to eliminate the “12vdc backfeed” condition. Pulling apart the wire harness between the vehicles should release the Vac Brake™. Also check to sure the “breakaway” switch is not triggering the system.

Feedback light on RV dash does not light. Make sure all connections between vehicles are correctly made between corresponding terminals at the wiring plugs on both vehicles. Test for power feed along all wiring between vehicles.

System will not pull pedal and stop satisfactorily. Check vacuum level in system during operation with a vacuum gage (18”-20” vacuum needed to work). Check for vacuum leaks by shutting down engine with gage on and see if vacuum holds. Levering down the pedal can compensate for lower vacuum level and make stopping force “STRONGER”. Check to be sure there are no "SHARP" turns on the cable housing between the pedal and device. NOTE: this system can only deliver braking as good as is provided by the vehicle, if fluids in brake system have not been serviced every two years as recommended, it may effect final performance.

Brake system adjustments after brake service. None should be required unless the driver wants to change performance from the original installation. You can install new brakes on your vehicle immediately after this system is installed, and the performance will not be effected.
FIG. 1

- FIREWALL
- BRAKE PEDAL (use brake pedal assembly here if needed)
- PULLEY
- SELF TAP SCREWS
- CABLE
- CABLE STOP
- CABLE HOUSING
- REMOVABLE RUBBER PEDAL COVER

FIG. 2

RV SIDE

- RV FUSE PANEL, CONSTANT
- RV BRAKE SWITCH
- LIGHTED SWITCH RV DASH
- GROUND
- CAR FUSE PANEL (IGNITION)
- RELAY
- CONNECTION ACROSS TOWBAR

TOAD SIDE

- BREAK AWAY SWITCH
- TOAD BATTERY
- 12 VOLT FUSE PANEL, CONSTANT
- ANTI-THEFT "ON"
- MOM TEST
- 12 VOLT FROM IGNITION
- GREEN
- YELLOW
- BROWN
- WHITE
- GROUND
- 20 AMP POWER FUSED
- VEHICLE BRAKE LIGHTS
- CUT BRAKE WIRE THAT IS HOT WHEN BRAKE IS APPLIED

SYSTEM WIRING DIAGRAM
Attach bulkhead through firewall, connect vacuum hose to the female quick connect. NOTE: Leave the original vacuum line AS-IS for vehicles with continuous power assist brakes, do not install "T". Directly connect hose from ToadStop II to kit reservoir.

- Move cable ball away from pivot point to decrease braking strength.
- Move cable ball toward pivot point to increase braking strength.
- Always insert cable keeper plug after moving to new attachment hole.
VALVE PORT LOCATION & ADJUSTMENT

"AE" PORT
RELEASE BRAKE PEDAL

"BE" PORT
BRAKING PULL DOWN

"AE"/"BE" port adjustments regulate pedal movement speed only.
NOTE: Do NOT force needle valves counter clockwise or unwarranted damage can break the stems.

Turn "clockwise" for less pedal speed. Open "BE" all the way (counter clockwise). Open "AE" 1/2 turn from closed to start. Make adjustments as needed to have pedal move down "faster" and release "slower".

FIG. 5
### Parts List

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Qty.</th>
<th>Part No.</th>
<th>Description</th>
<th>Ref. No.</th>
<th>Qty.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>62-3461</td>
<td>Assy, Box</td>
<td>*14</td>
<td>6</td>
<td>293-1388</td>
<td>Hose Clamp</td>
</tr>
<tr>
<td>*2</td>
<td>1</td>
<td>62-3463</td>
<td>Assy, Tube</td>
<td>15</td>
<td>2</td>
<td>153-0095</td>
<td>Hose, 3/8 ID x 5/8 OD x 2 1/2</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>62-3466</td>
<td>Assy, 15' Cable</td>
<td>16</td>
<td>1</td>
<td>293-1384</td>
<td>Plastic Tee</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>293-1370</td>
<td>Vacuum Reservoir</td>
<td>17</td>
<td>1</td>
<td>293-1367</td>
<td>Check Valve</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>293-1339</td>
<td>Breakaway Switch</td>
<td>18</td>
<td>1</td>
<td>294-0829</td>
<td>Fuse, Spade, 20 amp</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>153-0094</td>
<td>Tube, 3/8 ID x 5/8 OD x 20 Ft.</td>
<td>19</td>
<td>1</td>
<td>293-1368</td>
<td>Bulkhead, 1/8 FNPT</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>194-0148</td>
<td>4 Wire Conn., Female, 65&quot;</td>
<td>20</td>
<td>2</td>
<td>201-0705</td>
<td>1/4-20 x 1 Carriage Bolt, Grd.5, ZP</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>293-1382</td>
<td>Fuse Link</td>
<td>21</td>
<td>1</td>
<td>293-1426</td>
<td>Bracket, Mount</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>62-3477</td>
<td>Assy, Female Quick Connect</td>
<td>22</td>
<td>1</td>
<td>293-1425</td>
<td>L-Bracket, Cable</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>293-1417</td>
<td>Hose Barb, 3/8</td>
<td>23</td>
<td>2</td>
<td>202-0001</td>
<td>1/4-20 Hex Nut, ZP</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>293-1375</td>
<td>Lighted Toggle Switch</td>
<td>24</td>
<td>1</td>
<td>62-3472</td>
<td>Assy, Brake Pedal, TSII</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>293-1406</td>
<td>Plastic Plug, Box Side</td>
<td>25</td>
<td>1</td>
<td>293-1376</td>
<td>Unlighted Toggle Switch</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>293-1418</td>
<td>Plug, Brass</td>
<td>26</td>
<td>1</td>
<td>294-0729</td>
<td>Automotive Relay</td>
</tr>
</tbody>
</table>

*These parts are not used on vehicles with continuous power assist brakes.*