



by ROADMASTER  
**BRAKEMASTER™**

PROPORTIONATE TOWED CAR BRAKING SYSTEM

U.S. patent number 5,915,798

# Owner's Manual

for models 9060, 9100 and 9160

Entire contents of manual must be read by owner



Towing and Suspension Solutions

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# Welcome to the ROADMASTER family!

This manual has been prepared to acquaint you with the operation of your BrakeMaster, and to provide you with important safety information. Read your owner's manual, as well as all accompanying literature, completely. Carefully follow the instructions and safety precautions.

Your BrakeMaster has a one-year limited warranty. To qualify for your warranty, fill out and return the enclosed product registration card within 30 days of purchase.

We thank you for your patronage and greatly appreciate your discerning taste.

## The BrakeMaster serial number...

...is on a label on the air cylinder (below). You will need this number when you fill out your product registration card.

Write down the serial number in the space below, so that it will be available for future reference...



Serial number: \_\_\_\_\_

## IMPORTANT NOTICE – Safety Definitions

Statements in this manual identified as follows are of special significance:



### WARNING

**WARNING indicates a potentially hazardous situation which, if not avoided, could result in property damage, serious personal injury, or even death.**



### CAUTION

**CAUTION indicates a potentially hazardous situation which, if not avoided, may result in property damage, or minor or moderate personal injury.**

### CAUTION

**CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.**

### NOTE

*Refers to important information and is placed in italic type. It is recommended that you take special notice of these items.*

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## **WARNING**

**This manual contains operating instructions only. Installation instructions are in a separate document.**

**Read all instructions before installing or operating the BrakeMaster system. Failure to understand how to install or operate BrakeMaster could result in property damage, personal injury or even death.**

## **CAUTION**

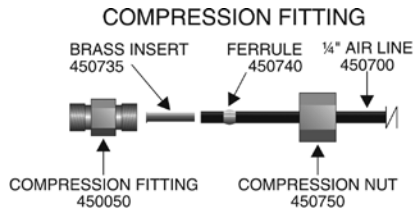
The Brake Pressure Reducer (part number 900002) is required for: 1) all towed vehicles with ‘active’ (or, ‘continuous power assist’) braking systems; and 2) all towed vehicles without power brakes –

1) Vehicles with ‘active’ brake systems include several hybrid vehicles, such as some models of the Ford Escape hybrid and the Mercury Mariner hybrid, as

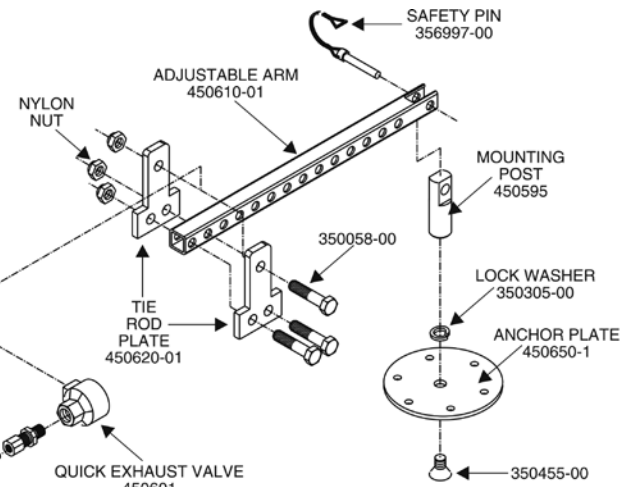
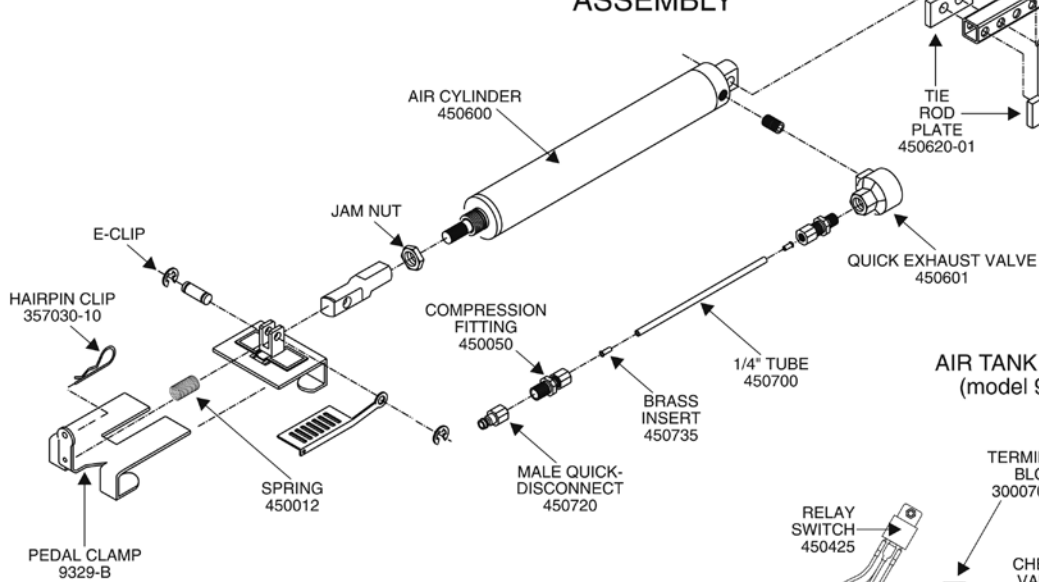
well as the H3 Hummer. These vehicles, and others with these systems, are designed so that even when the vehicle is set to ‘tow’ mode, the braking system is still active, thus requiring minimal pressure to engage the brakes.

2) BrakeMaster is designed to work with vehicles that have a power brake system (even though the power brakes are not activated while towing).

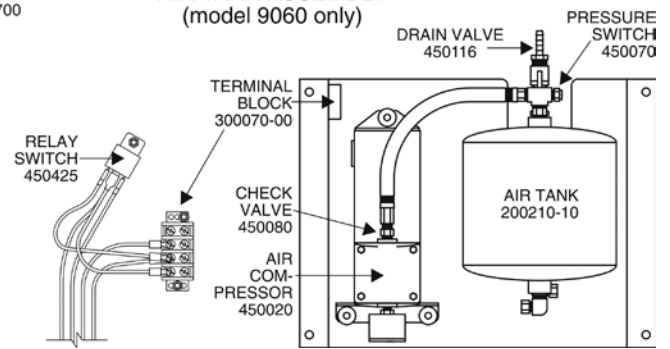
If the Brake Pressure Reducer is not installed in vehicles with ‘active’ braking systems, or in vehicles that do not have power brakes, BrakeMaster will apply excessive force to the towed vehicle’s brake pedal, causing severe tire and/or brake system damage, and/or other consequential, non-warranty damage.



## AIR CYLINDER ASSEMBLY



## AIR TANK ASSEMBLY (model 9060 only)



# Day-to-day operation

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This section contains detailed operating instructions. Refer to this section until you become familiar with each step.

## Step A Prepare the vehicles for towing

1. First, connect the tow bar to the motorhome and the towed vehicle.

Then, according to the manufacturer, make all adjustments necessary to prepare the vehicle for towing.

These adjustments may include: turning the ignition key to the 'tow' position; pulling fuses; disconnecting the battery; and setting the transmission to a particular gear or in a particular sequence.

Refer to the owner's manual, or call the dealership or the manufacturer for vehicle-specific information.

### CAUTION

To prevent the towed vehicle from rolling, connect the tow bar to both vehicles before shifting the towed vehicle's transmission into the proper gear for towing.

2. Make certain that the towed vehicle's emergency brake is released.



### WARNING

Failure to release the towed vehicle's emergency

brake before towing will result in severe brake damage, or a brake system fire. Damage caused by neglecting to release the emergency brake before towing is not covered under warranty.

Failure to follow these instructions may cause property damage, personal injury or even death.

3. Pump the towed vehicle's brake pedal several times, to release the stored vacuum in the power brake system.

### CAUTION

Always release the stored vacuum in the towed vehicle's power brake system before towing – pump the brake pedal several times.

Depending on the make and model of the towed vehicle, it may be necessary to pump the brake pedal repeatedly to release the vacuum.

If the vacuum is not released, the supplemental braking system will apply excessive braking force when it is activated, which will cause severe tire and/or brake system damage to the towed vehicle.

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## Day-to-day operation

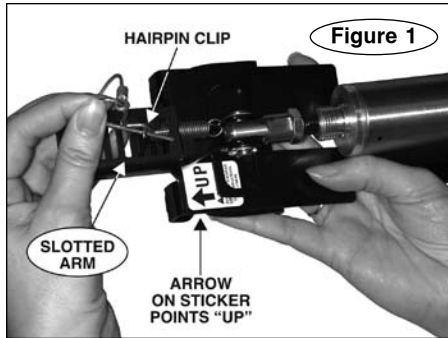
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### Step B

#### Attach the pedal clamp and air cylinder

1. Slide the driver's seat back, as far as it will go.

2. Verify that the pedal clamp is right side up, as shown in Figure 1 – the arrow on the sticker will point “Up” when the pedal clamp is properly positioned.



3. Pull the hairpin clip (Figure 1) out, then lift the slotted arm (Figure 1) up and out of the way.

4. Move the pedal clamp over the brake pedal. Then, hold the clevis (Figure 2) and pull back on the spring post (Figure 2), until the tabs under the pedal clamp are wide enough to clear the brake pedal.

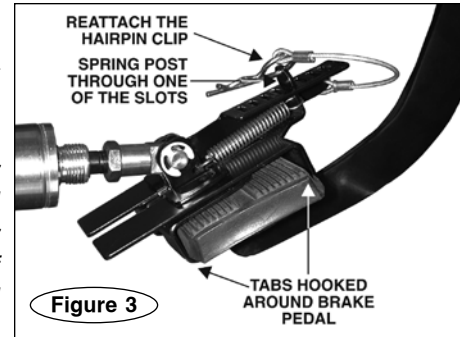
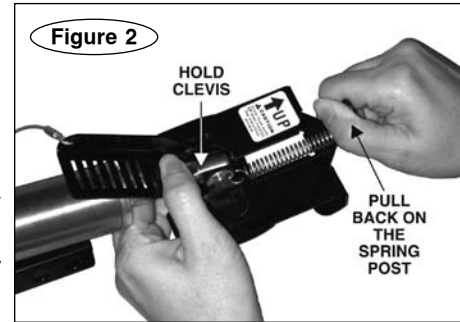
5. Fit the pedal clamp onto the brake pedal, so that all four tabs are hooked around it (Figure 3). Then, release the spring post.

*Note: on the initial fitting, it may be necessary to ad-*

*just the tabs on the pedal clamp – use pliers to bend any or all of the tabs so that they hook around and under the towed vehicle's brake pedal.*

*Once the tabs have been adjusted to a specific brake pedal, no further adjustment to the pedal clamp is necessary for that vehicle.*

*If BrakeMaster is switched between towed vehicles, always check the pedal clamp on the initial fitting. Verify that all four tabs are hooked around and under the brake pedal. If necessary, bend the tabs to fit, as described above.*



### CAUTION

**Make certain that all four tabs on the pedal clamp**

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## Attach the pedal clamp and air cylinder

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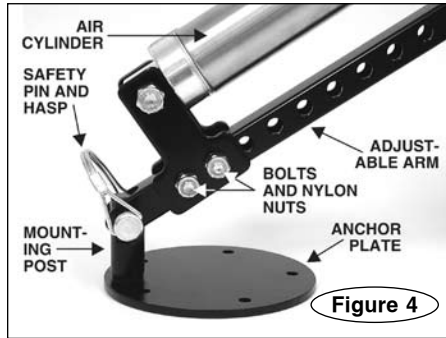
**are securely hooked around the brake pedal.**

**If the tabs are loose when the vehicle is towed, the pedal clamp can rotate out of position and hold the brake pedal down, even when BrakeMaster is not activated, which will cause tire and/or brake damage, or other consequential, non-warranty damage.**

6. Swing the slotted arm back over the spring post, fit the spring post through one of the slots (Figure 3), and reattach the hair-pin clip (Figure 3).

7. Now that the pedal clamp is in place, attach the adjustable arm to the mounting post – insert the safety pin through the mounting post and adjustable arm, as shown in Figure 4. Then, fit the loop at the end of the hasp (Figure 5) over the end of the safety pin.

*Note: the mounting post may be attached to an anchor plate (Figure 4) under the driver's seat; or, it may be attached to a seat adaptor bracket, near the front of the driver's seat.*



8. When it is connected, the air cylinder must be pulled back toward the anchor plate, in order to keep the weight of the cylinder off the brake pedal.

If necessary, shorten the reach of the air cylinder – remove the two bolts and nylon nuts (Figure 4) attaching the cylinder to the adjustable arm (Figure 4). Slide the air cylinder down the adjustable arm until the end of the adjustable arm must be pulled back to attach it to the mounting post. Then, replace the bolts and nylon nuts.

### CAUTION

**The air cylinder must be pulled back when it is connected, in order to create sufficient spring tension to keep the weight of the cylinder off the brake pedal.**

**If the cylinder is not pulled back when it is connected, the weight of the cylinder may cause the pedal clamp to depress the towed vehicle's brake pedal continuously, which will cause excessive brake wear, brake system damage, and/or other consequential, non-warranty damage.**

**If necessary, shorten the reach of the air cylinder, as described above, until it must be pulled back to connect it to the mounting post.**



**If the vehicle is equipped with pedal presets, note**

*continued on next page*

## Attach the pedal clamp and air cylinder

*continued from preceding page*

**the original position of the brake pedal when the BrakeMaster air cylinder and pedal clamp were installed, and return to that position before towing the vehicle.**

**If the brake pedal is not at the original installed position when the vehicle is towed, the air cylinder may be activated constantly, which will damage the brake system and/or electrical system, and may cause brake or electrical system failure, as well as other non-warranty damage.**

**Failure to follow these instructions may cause property damage, personal injury or even death.**

### Step C Connect the air line, extension cord and break away system

1. Connect the male quick coupler at the end of the air line (Figure 5) on the air cylinder to the female quick coupler (Figure 8) mounted inside the towed vehicle, on the driver's side. (See "Using the quick couplers" for instructions on how to connect the couplers.)

2. Connect the extension cord (the six-foot length of air line and wiring covered in blue plastic) between the two vehicles – both the air line quick couplers and the motor-home monitor bullet connectors.

To connect or disconnect the bullet connectors, push or pull them together or apart; see "Using the quick couplers" for instructions on how to connect the couplers.

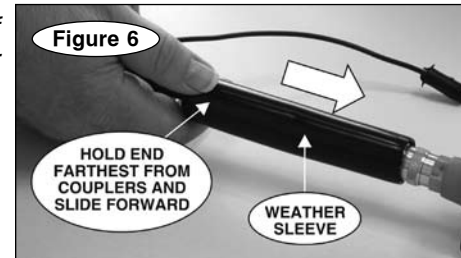
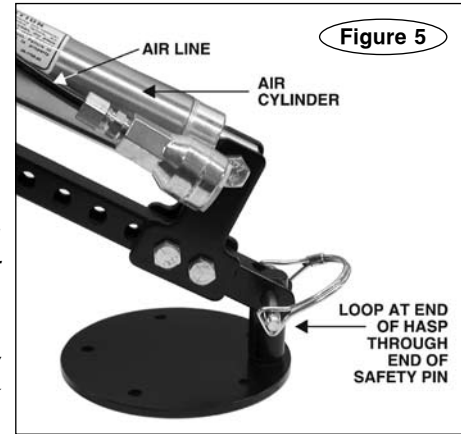
3. To protect the couplers during towing, slide the weather sleeves (Figure 6) forward and over the couplers.

*Note: when you slide the weather sleeves forward, hold them at the end farthest away from the quick couplers. The couplers could be disconnected if you hold the other end.*

4. Connect the break away cable – clip the steel cable included with the BrakeAway™

system to the break away pin (Figure 7) on the break away switch. Clip the other end of the steel cable to

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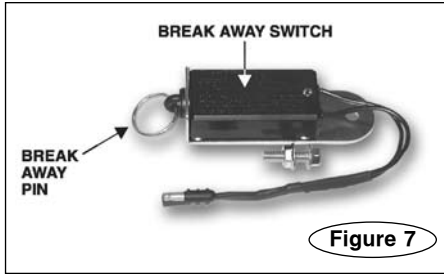


## Connect the air line, extension cord and break away system

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the rear of the motorhome, close to the center.

*Note: the Brake-Away system is included with the BrakeMaster 9060 and 9160; it is optional for the 9100.*



### **WARNING**

When connecting the break away system, always make certain that the following conditions are met:

- Connect the cable at the rear of the motorhome, close to the center. Connecting the cable toward either side of the motorhome may cause the break away pin to be pulled when the motorhome turns, activating the break away system.
- Be sure there are no obstructions which would prevent the cable from pulling freely away from the break away switch. Do not wrap the cable around anything – doing so could keep the cable from pulling the break away pin, preventing the system from activating in a break away.
- Make certain the cable is the correct length...

- The cable must be long enough to prevent the break away pin from being pulled out during normal towing – make certain there is enough slack to allow for sharp turns. If the cable is not long enough, the break away system will activate even though the towed vehicle has not detached.
- The break away cable must be longer than the safety cables. This will prevent the break away system from activating if a component of the towing system has separated, but the towed vehicle is still held by the safety cables.
- Make certain that the cable is not too long – it should not hang down to the extent it may catch on obstructions, or drag on the ground. This much slack could allow the cable to be pulled inadvertently, activating the break away system.
- If you have a telescoping tow bar, allow enough slack for the tow bar arms to be fully extended.
- Leave the break away pin in place, even when the vehicle is not being towed. The break away system will be activated if the pin is removed, which will drain the towed vehicle's battery.

Failure to follow these instructions may cause property damage, personal injury or even death.

*continued on next page*

## Connect the air line, extension cord and break away system

*continued from preceding page*

5. Charge the break away air reservoir –

*Note: the BrakeAway system is included with the BrakeMaster 9060 and 9160; it is optional for the 9100.*

**For motorhomes with air or air over hydraulic brakes** (BrakeMaster 9100 and 9160) – with the motorhome engine on, the air compressor completely charged and the parking brake released, depress the brake pedal for 15 seconds – apply firm pressure.

**For motorhomes with hydraulic brakes** (BrakeMaster 9060) – Start the motorhome and allow the air compressor to run until it shuts off. Then, apply the motorhome brakes and hold the brake pedal down.



### **WARNING**

**The break away air reservoir must be charged, as described above, every time the motorhome and towed vehicle are connected.**

**If the air reservoir is not charged, the break away system will not apply braking pressure if the towed vehicle separates from the motorhome, which may cause property damage, personal injury or even death.**

## Disconnecting the air cylinder

1. Slide the driver's seat back, as far as it will go.
2. Detach the adjustable arm from the mounting post (Figure 4) by removing the safety pin (Figure 4).
3. Remove the pedal clamp from the brake pedal – pull the hairpin clip (Figure 3) from the spring post (Figure 3).
4. Swing the slotted arm (Figure 1) up and out of the way.
5. Hold the clevis (Figure 2) and pull back on the spring post until the tabs under the pedal clamp are wide enough to clear the brake pedal, then lift the pedal clamp up.



### **WARNING**

**The air cylinder will obstruct the towed vehicle's pedal controls. After towing, and before driving the vehicle, remove the air cylinder.**

**Failure to follow these instructions may cause property damage, personal injury or even death.**

## Test the system

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**T**est the BrakeMaster system, as described below, **each time** before towing.

Since this section is also a list of each connection step in sequence, you can use it as a quick reference checklist, once you understand how to connect and operate your BrakeMaster. (For more detailed connection information, refer to the appropriate step under “Day-to-day operation.”)

### CAUTION

**Always release the stored vacuum in the towed vehicle’s power brake system before towing – pump the brake pedal several times.**

**Depending on the make and model of the towed vehicle, it may be necessary to pump the brake pedal repeatedly to release the vacuum.**

**If the vacuum is not released, the supplemental braking system will apply excessive braking force when it is activated, which will cause severe tire and/or brake system damage to the towed vehicle.**

1. First, connect the tow bar to the motorhome and the towed vehicle.
2. Then, according to the manufacturer, make all adjustments necessary to prepare the vehicle for towing.

These adjustments may include: turning the ignition

key to the ‘tow’ position; pulling fuses; disconnecting the battery; and setting the transmission to a particular gear or in a particular sequence.

Refer to the owner’s manual, or call the dealership or the manufacturer for vehicle-specific information.

### CAUTION

**To prevent the towed vehicle from rolling, connect the tow bar to both vehicles before shifting the towed vehicle’s transmission into the proper gear for towing.**

3. Release the towed vehicle’s emergency brake.
4. Next, connect all components of the braking system –
  - Attach the air cylinder to the brake pedal and mounting post (or seat adaptor bracket).
  - Connect the male quick coupler from the air cylinder to the female quick coupler mounted in the driver’s side of the passenger compartment.
  - Connect the extension cord between the two vehicles – both the air line quick couplers and the motorhome monitor bullet connectors.
  - Clip one end of the steel break away cable to the break away pin; clip the other end of the cable to the rear of the motorhome, close to the center.

*continued on next page*

## Test the system

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**5. For motorhomes with hydraulic brakes** (BrakeMaster 9060) – turn the motorhome engine on, and leave it running.

**For motorhomes with air or air over hydraulic brakes** (BrakeMaster 9100 and 9160) – block the motorhome wheels, and turn the motorhome engine on. After the air compressor is completely charged, release the parking brake.

**6.** Confirm the proper operation of the braking system: depress and hold the motorhome brake pedal down.

At the towed vehicle, the air cylinder shaft and pedal clamp will extend.

Then, release the brake pedal. The air cylinder shaft and pedal clamp will retract.

**7.** Confirm that the motorhome monitor LED is functioning properly: the LED will turn on as the motorhome brake pedal is depressed, and turn off when the brake pedal is released.

### CAUTION

If the LED does not turn on and off as described above, identify the cause and correct it before using the supplemental braking system. Refer to the Troubleshooting section for possible causes.

The LED is the only indication of braking activ-

ity at the motorhome. Severe damage to the towed vehicle can occur if the driver of the motorhome is unaware that the supplemental braking system is not functioning properly.

**8.** Charge the break away air reservoir –

*Note: the BrakeAway system is included with the BrakeMaster 9060 and 9160; it is optional for the 9100.*

**For motorhomes with air or air over hydraulic brakes** (BrakeMaster 9100 and 9160) – with the motorhome engine on, the air compressor completely charged and the parking brake released, depress the brake pedal for 15 seconds – apply firm pressure.

**For motorhomes with hydraulic brakes** (BrakeMaster 9060) – Start the motorhome and allow the air compressor to run until it shuts off. Then, apply the motorhome brakes and hold the brake pedal down.



### WARNING

The break away air reservoir must be charged, as described above, every time the motorhome and towed vehicle are connected. If the air reservoir is not charged, the break away system will not apply braking pressure if the towed vehicle separates from the motorhome, which may cause property damage, personal injury or even death.

**9.** Periodically, confirm the proper operation of the break

*continued on next page*

## Test the system

*continued from preceding page*

away system –

Remove the break away pin at the front of the break away switch. The air cylinder and pedal clamp will extend.

To retract the air cylinder and pedal clamp, reconnect the break away pin.

Before towing, charge the break away air reservoir, as described in step 8 above.

**10.** Confirm the proper operation of the towed vehicle's brake lights and turn signals –

- Depress the motorhome brake pedal; confirm that the towed vehicle's brake lights illuminate. Activate both motorhome turn signals; confirm that the towed vehicle's turn signals activate.

- With one of the motorhome turn signals activated, depress the motorhome brake pedal. Confirm that the towed vehicle's brake lights and turn signal both illuminate. Repeat for the other turn signal.



### **WARNING**

**By law, a towed vehicle's turn signals and brake lights must operate in tandem with the motorhome's, as described above. If they do not, drivers behind the**

**towed vehicle will not be alerted when the motorhome stops or turns, which may cause an accident.**

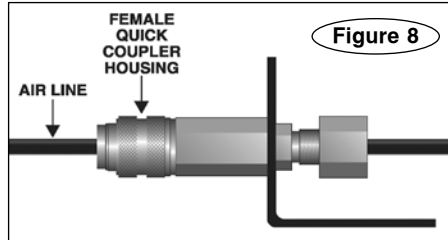
**If the towed vehicle's brake lights and turn signals do not operate in tandem with the motorhome, either install a non-intrusive lighting system or re-wire the towed vehicle, according to the installation instructions.\***

**Failure to follow these instructions may cause property damage, personal injury or even death.**

\* For the most current version of the installation instructions, visit [www.roadmasterinc.com](http://www.roadmasterinc.com). Select 'Support,' 'Installation Instructions and Miscellaneous Documents,' and the appropriate BrakeMaster system, under 'Braking Systems.'

## Using the quick couplers

You will use six 'quick couplers' to connect and disconnect the BrakeMaster air lines. They are in pairs, one male and one female. A pair of the couplers are at each end of the extension cord (the six-foot length of air line and wiring covered in blue plastic, which is connected between the motorhome and the towed vehicle). The other pair is used to connect the BrakeMaster air cylinder to the air line inside the towed vehicle.



**To connect the male and female quick couplers** – push the couplers together, until the housing on the female quick coupler (Figure 8) slides forward and 'clicks,' locking the couplers together.

After connecting the male and female quick couplers, gently tug on the air line (Figure 8) to make certain the fittings are engaged.

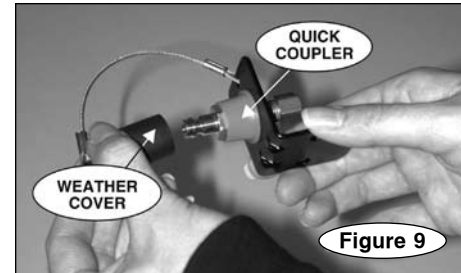
**To disconnect the couplers** – pull back on the housing on the female coupler until they release.

### CAUTION

**Never pull back on the housing to connect the couplers – this will prevent the couplers from locking. If the couplers are not locked, the supplemental braking system will not function.**

To keep the couplers in good working order...

- Always attach the weather covers (Figure 9) to the couplers when they are not connected.
- Remove any dirt, debris or road film from the quick couplers before they are connected for towing.



## The motorhome monitor LED

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The motorhome monitor LED is a tool designed to notify you of any malfunction with the supplemental braking system –

**If the light is on** – the supplemental braking system is applying the brakes in the towed vehicle.

**If the light is off** – the supplemental braking system has not been activated.

If the monitor light is on when the motorhome brakes are not being applied, stop immediately. Identify and correct the cause of the malfunction before using the supplemental braking system.

If you cannot identify the cause, do not tow with the supplemental braking system. Disconnect the extension cord between the towed vehicle and the motorhome, and remove the air cylinder from the towed vehicle, before towing.

Towing with the monitor light illuminated while the motorhome brakes are not being applied voids the ROADMASTER warranty – ROADMASTER will disallow warranty claims on any brake damage or brake failure.



### **WARNING**

**If the motorhome monitor LED is illuminated while the motorhome brakes are not being applied, stop immediately. The light indicates that the towed vehicle's brakes are being applied independently – significant brake system damage or failure, a brake system fire**

**or other consequential, non-warranty damage can occur.**

**Failure to follow these instructions may cause property damage, personal injury or even death.**

### **Warranty disclaimer**

It is the responsibility of the owner to ensure that the motorhome monitor LED is functioning each time before towing (see page 10). If the monitor light does not turn on and off as the supplemental brakes are applied and released, the owner must discontinue using the supplemental braking system immediately, and identify and correct the cause of the malfunction before using the supplemental braking system.

The purpose of the motorhome monitor light is to notify you of any malfunction long before damage can occur to the towed vehicle or its braking system. Accordingly, ROADMASTER expressly disallows any warranty claims on any brake damage.

## If the towed vehicle's engine must be started periodically...

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The engines of certain vehicles, such as the Saturn Vue and others, must be started periodically during towing.

If the towed vehicle's engine must be started, be certain to release the vacuum in the power brake system **BEFORE YOU RESUME TOWING**. If the vacuum is not released, BrakeMaster will apply excessive force when it is activated.



### **WARNING**

**Starting the towed vehicle's engine will create a vacuum in the power brake system. The vacuum must be released before towing. If the vacuum is not released, BrakeMaster will apply excessive braking force when it is activated, which will cause severe tire and/or brake system damage to the towed vehicle.**

**After the towed vehicle's engine has been started and then turned off, disconnect the BrakeMaster air cylinder and pump the towed vehicle's brake pedal several times, to release the stored vacuum in the towed vehicle's power brake system.**

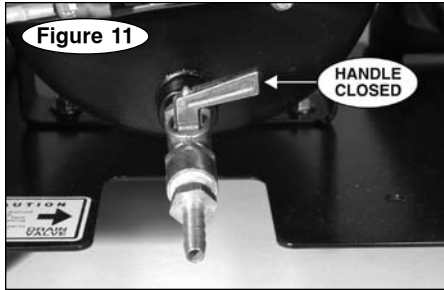
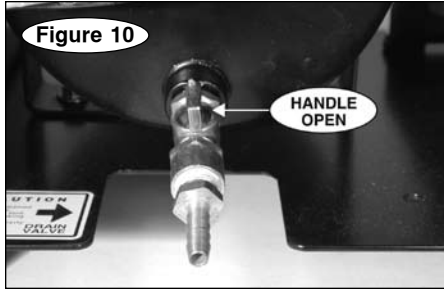
**Depending on the make and model of the towed vehicle, it may be necessary to pump the brake pedal repeatedly to release the vacuum.**

# Periodic maintenance

- Clean the entire system frequently. Remove any dust, dirt and road debris.
- For motorhomes with hydraulic brakes (BrakeMaster model 9060), drain the air tank periodically, to remove condensed water vapor.

The relative humidity will affect how fast water will condense in the tank – in an area of high humidity, it may be necessary to drain the tank every few days; in a drier climate, there will be much less water.

To drain the tank, open the han-



dle on the drain valve (Figure 10).

Close the handle after draining the tank, as shown in Figure 11.

- If your BrakeMaster has a BrakeAway (models 9060 and 9160), drain the air reservoir (Figure 12) periodically – unscrew the drain valve (Figure 12) and remove it, allow any accumulated water to drain completely, and replace the drain valve.

## CAUTION

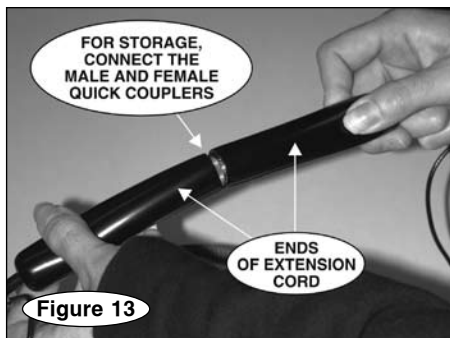
If the air tank and break away air reservoir are not drained periodically, as described above, water vapor will be forced through the air lines, which may corrode the metal components of the supplemental braking system, as well as cause other consequential, non-warranty damage.

## CAUTION

The handle on the air tank drain valve should only be opened to drain the air tank. After draining the tank, close the handle, as shown in Figure 11. If the handle is open during towing, the air compressor will run constantly, which may damage the compressor.

## Storing your BrakeMaster

- To avoid damage to the quick couplers and other system components, store the BrakeMaster air cylinder and the extension cord in a clean, dry place when not in use. (An air cylinder storage bag, part number 104, is available from ROADMASTER.)



Always connect the male and female quick couplers on the extension cord (Figure 13) before storing the extension cord.

- Always drain the air tank (BrakeMaster 9060 only) and the break away air reservoir (BrakeMaster 9060 and 9160) just before winter storage, or whenever the supplemental braking system will not be used for an extended period.

For instructions on how to drain the air tank and air reservoir, see “Periodic maintenance.”

freezing temperatures are likely, drain the air tank (model 9060 only) and the break away air reservoir (models 9060 and 9160). If the air tank and air reservoir are not drained, accumulated water may freeze and crack the tank or the reservoir.

### CAUTION

If the motorhome will be stored in an area where

# Troubleshooting – BrakeMaster 9100 and 9160

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## **Symptom**

The motorhome monitor LED does not illuminate, even though the brakes in the towed vehicle are being applied.

## **Solution**

1. The LED will not illuminate during very light braking.
2. Make certain that the monitor patch cord is securely connected between the two vehicles.
3. The towed vehicle-to-motorhome electrical cord must also be connected – the monitor system uses it for the ground wire.
4. The monitor LED is connected to the towed vehicle's brake light circuit. If the fuse in the circuit is blown, the LED will not illuminate. Check the towed vehicle's brake lights – if they illuminate when the brake pedal is depressed, the fuse is good.
5. Did you install the optional Brake-Lite Relay? If so, make certain that the monitor wire is connected to the towed vehicle's brake light wire **after** the brake light switch, but **before** the Brake-Lite Relay – connecting the wire anywhere else will prevent the monitor LED from functioning.

## **Symptom**

Nothing happens after proper installation.

## **Solution**

1. The motorhome engine must be running, and the parking brake must be released. If the engine is off, there may be insufficient air pressure to activate BrakeMaster. If the park-

ing brake is on, pressurized air is prevented from entering the BrakeMaster air lines.

2. Check the air line connections. Remove the weather covers from the quick couplers at both vehicles, and gently tug on the air line to verify that the quick couplers are connected.

Check to make certain that the air cylinder quick coupler is connected to the air line in the passenger compartment.

3. Follow the air lines from the motorhome back to the air cylinder in the towed vehicle. Inspect the entire line for deformities caused by excessive heat, and/or kinks in the line, which would restrict the air flow – replace the entire section of air line if any are found.

Disconnect the quick couplers to confirm that they are allowing air to flow through them.

## **Symptom**

The BrakeMaster air cylinder will extend and depress the towed vehicle's brake pedal. However, it will not retract when the motorhome brake pedal is released.

## **Solution**

1. One of the air lines may be damaged or kinked. Follow the air lines from the motorhome back to the air cylinder in the towed vehicle. Inspect the entire line for deformities caused by

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## Troubleshooting – BrakeMaster 9100 series

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excessive heat, and/or kinks in the line, which would restrict the air flow – replace the entire section if any are found.

2. Make certain that the air cylinder has been installed directly in line with the brake pedal. If it is mounted at an angle to the brake pedal (to one side or the other), the air cylinder may jam in the extended position.

3. Dirt or debris can enter the air lines if the weather covers are not used over the quick couplers. It may accumulate at the quick exhaust valve on the air cylinder, preventing the valve from venting air out of the air cylinder. Disassemble the quick exhaust valve and make certain it is not jammed.

### Symptom

The towed vehicle brakes abruptly the first time BrakeMaster is activated, ‘flat-spotting’ the tires. Also, after towing, there may be excessive brake dust on the wheels of the towed vehicle, and/or an unusual odor near the towed vehicle’s brakes.

### Solution

1. The stored vacuum in the towed vehicle’s power brake system **must** be depleted before towing – pump the brake pedal several times. Depending on the make and model of the towed vehicle, it may be necessary to pump the brake pedal repeatedly.

Deplete the vacuum in the power brakes every time the

towed vehicle’s engine has been started – typically, when the vehicle is connected for towing.

The engines in some vehicles, such as the Saturn Vue, must be started periodically during towing. If the towed vehicle’s engine must be started periodically, always deplete the vacuum in the vehicle’s power brake system **before** you resume towing.

2. If the towed vehicle has an ‘active’ (or, ‘continuous power assist’) braking system, order the optional Brake Pressure Reducer (part number 900002) to adapt the vehicle to the BrakeMaster system.

Vehicles with ‘active’ brake systems include several hybrid vehicles, such as some models of the Ford Escape hybrid and the Mercury Mariner hybrid, as well as the H3 Hummer. These vehicles, and others with ‘active’ braking systems, are designed so that even when the ignition is turned to the ‘tow’ position, the braking system is still active.

If the Brake Pressure Reducer is not installed, BrakeMaster will apply excessive force to the towed vehicle’s brake pedal.

3. If the towed vehicle does not have power brakes, order the optional Brake Pressure Reducer (part number 900002) to adapt the vehicle to the BrakeMaster system.

BrakeMaster is designed to work with vehicles that have a power brake system (even though the power brakes are not activated while towing).

If the reducer is not installed, BrakeMaster will apply excessive force to the towed vehicle’s brake pedal.

## Troubleshooting – BrakeMaster 9060

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(The installation instructions contain illustrations and instructions to accompany this section. To download or print a copy of the most recent version of the instructions, visit [www.roadmasterinc.com](http://www.roadmasterinc.com). Select ‘Support,’ ‘Installation Instructions and Miscellaneous Documents,’ and ‘BrakeMaster 9060,’ under ‘Braking Systems.’)

### Symptom

The motorhome monitor LED does not illuminate, even though the brakes in the towed vehicle are being applied.

### Solution

1. The LED will not illuminate during very light braking.
2. Make certain that the monitor patch cord is securely connected between the two vehicles.
3. The towed vehicle-to-motorhome electrical cord must also be connected – the monitor system uses it for the ground wire.
4. The monitor LED is connected to the towed vehicle’s brake light circuit. If the fuse in the circuit is blown, the LED will not illuminate. Check the towed vehicle’s brake lights – if they illuminate when the brake pedal is depressed, the fuse is good.
5. Did you install the optional Brake-Lite Relay? If so, make certain that the monitor wire is connected to the towed vehicle’s brake light wire **after** the brake light switch, but **before** the Brake-Lite Relay – connecting the wire anywhere else will prevent the monitor LED from functioning.

### Symptom

Nothing happens after proper installation.

### Solution

1. The motorhome engine must be running – if the engine is off, there may be insufficient hydraulic pressure to activate BrakeMaster.
2. Check the air line connections. Remove the weather covers from the quick couplers at both vehicles, and gently tug on the air line to verify that the quick couplers are connected.

Check to make certain that the air cylinder quick coupler is connected to the air line in the passenger compartment.

3. Check the wiring at the solenoid valve (on the proportioning valve). One of the black wires must be connected to a good chassis ground. The other black wire must be connected to the motorhome brake wire downstream from the brake light switch. Use a test light to confirm that the solenoid valve is receiving power when the motorhome brake pedal is depressed.

If the connections are good, test for proper function – with the motorhome engine running, have an assistant depress the motorhome brake pedal while you listen for a “click” at the solenoid valve. The solenoid valve should “click” every time the brake pedal is depressed.

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## Troubleshooting – BrakeMaster 9060

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4. Disconnect the air line from the “out” compression fitting on the solenoid valve. Have an assistant depress the motorhome brake pedal – the proportioning valve should release air each time the pedal is depressed.

**A.** If there is air at the proportioning valve – follow the air line back to the air cylinder in the towed vehicle. Inspect the entire line for deformities caused by excessive heat, and/or kinks in the line, which would restrict the air flow – replace the entire section of air line if any are found.

Disconnect the quick couplers to confirm that they are allowing air to flow through them.

**B.** If there is no air at the proportioning valve – check to confirm that the air line between the air compressor and the proportioning valve is connected to the correct fitting. It should run from the “in” fitting on the air compressor to the “in” fitting on the proportioning valve.

If the air line is connected to the “out” fitting on the proportioning valve, no air can pass through the valve, and the BrakeMaster system will not function.

If this is the case, reconnect the line from the air compressor to the “in” fitting on the proportioning valve.

### Symptom

The compressor runs constantly, or runs much more frequently than I think it should.

### Solution

1. Check for leaks in the air system.
2. Make certain that the drain valve on the air compressor air tank is closed.
3. Make certain that the drain valve on the BreakAway air reservoir is closed.
4. Make certain that a female quick coupler has been installed at the rear of the motorhome – a male quick coupler does not have a check valve to prevent air from escaping.

### Symptom

It seems to require a significant amount of brake pressure in the motorhome before the BrakeMaster air cylinder activates in the towed vehicle.

### Solution

1. The motorhome engine must be running – if the engine is off, there may be insufficient hydraulic pressure to activate BrakeMaster.
2. Inspect the air lines for deformities caused by excessive heat, and/or kinks in the line, which would restrict the air flow – replace the entire section of air line if any are found.
3. Check for leaks in the air system: after starting the motorhome, allow the air system to fully charge. Depress and hold the motorhome brake pedal down.  
Cover each joint, fitting and connection in the air system with a leak check solution.  
Tighten any fittings, if necessary, and repeat until all connections are airtight.

## Troubleshooting – BrakeMaster 9060

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4. If the towing vehicle is a Ford Class C motorhome, the proportioning valve must be teed into the front hydraulic brake line – the rear brake line does not supply sufficient hydraulic pressure.

5. Not all of the air was bled from the brakes after installing the proportioning valve. Re-bleed the proportioning valve, as well as all brakes (and any components connected to the braking system) downstream from the brake tee.

### Symptom

The BrakeMaster air cylinder will extend and depress the towed vehicle's brake pedal. However, it will not retract when the motorhome brake pedal is released.

### Solution

1. One of the air lines may be damaged or kinked. Follow the air lines from the motorhome back to the air cylinder in the towed vehicle. Inspect the entire line for deformities caused by excessive heat, and/or kinks in the line, which would restrict the air flow – replace the entire section if any are found.

2. Make certain that the air cylinder has been installed directly in line with the brake pedal. If it is mounted at an angle to the brake pedal (to one side or the other), the air cylinder may jam in the extended position.

3. Dirt or debris can enter the air lines if the weather covers are not used over the quick couplers. It may accumulate at the quick exhaust valve on the air cylinder, preventing the

valve from venting air out of the air cylinder. Disassemble the quick exhaust valve and make certain it is not jammed.

4. If a system of diodes was used to wire the towed vehicle's lights for towing, make certain that a diode is installed at every point where the motorhome brake light wire connects to the towed vehicle's brake light wire.

When the air cylinder extends and depresses the towed vehicle's brake pedal, it energizes the towed vehicle's brake light wire. If diodes are not installed in the circuit, current will travel back to the motorhome and activate the BrakeMaster solenoid.

As long as the solenoid is activated, it will not allow air to vent from the air cylinder – the air cylinder will remain extended.

### Symptom

The towed vehicle brakes abruptly the first time BrakeMaster is activated, 'flat-spotting' the tires. Also, after towing, there may be excessive brake dust on the wheels of the towed vehicle, and/or an unusual odor near the towed vehicle's brakes.

### Solution

1. The stored vacuum in the towed vehicle's power brake system **must** be depleted before towing – pump the brake pedal several times. Depending on the make and model of the towed vehicle, it may be necessary to pump the brake

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## Troubleshooting – BrakeMaster 9060

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pedal repeatedly.

Deplete the vacuum in the power brakes every time the towed vehicle's engine has been started – typically, when the vehicle is connected for towing.

The engines in some vehicles, such as the Saturn Vue, must be started periodically during towing. If the towed vehicle's engine must be started periodically, always deplete the vacuum in the vehicle's power brake system **before** you resume towing.

**2.** If the towed vehicle has an 'active' (or, 'continuous power assist') braking system, order the optional Brake Pressure Reducer (part number 900002) to adapt the vehicle to the BrakeMaster system.

Vehicles with 'active' brake systems include several hybrid vehicles, such as some models of the Ford Escape hybrid and the Mercury Mariner hybrid, as well as the H3 Hummer. These vehicles, and others with 'active' braking systems, are designed so that even when the ignition is turned to the 'tow' position, the braking system is still active.

If the Brake Pressure Reducer is not installed, BrakeMaster will apply excessive force to the towed vehicle's brake pedal.

**3.** If the towed vehicle does not have power brakes, order the optional Brake Pressure Reducer (part number

900002) to adapt the vehicle to the BrakeMaster system.

BrakeMaster is designed to work with vehicles that have a power brake system (even though the power brakes are not activated while towing).

If the reducer is not installed, BrakeMaster will apply excessive force to the towed vehicle's brake pedal.

# Limited Warranty

## 1. WARRANTY

### 1a. WARRANTY OF CONFORMITY AT TIME OF SALE

ROADMASTER, Inc. warrants that at the time of sale of this product it will be free from defects in material and manufacture and will conform to ROADMASTER'S specifications for the product.

### 1b. CONDITIONAL ONE-YEAR WARRANTY

In addition to the preceding time-of-sale warranty, if the product registration card is completely and accurately filled out and mailed to ROADMASTER within thirty (30) days of purchase, ROADMASTER will provide an additional warranty that for a period of one year after sale the product will remain in good working order, PROVIDED THAT the product is installed and maintained in accordance with ROADMASTER'S instructions and is not subjected to: (a) alteration or unauthorized repairs or repairs by anyone other than ROADMASTER or a ROADMASTER-authorized service center, (b) misuse, abuse, commercial use, or improper maintenance, (c) Acts of God (including without limitation hurricanes, tornadoes, floods, or other severe weather or natural phenomena), (d) failures due to products not supplied by ROADMASTER, or (e) other treatments, uses, or installations for which the product was not intended. This warranty extends only to the first retail purchaser-consumer of the product and is not transferable.

## 2. DISCLAIMER OF OTHER WARRANTIES

The preceding warranties are the exclusive and sole express warranties given by ROADMASTER. They supersede any prior, contrary or additional representations, whether oral or written. No agent, representative, dealer or employee has the authority to alter or increase the obligations or limitations of this warranty. Any implied warranties, including the WARRANTY OF MERCHANTABILITY and any WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, are limited in duration to thirty days or the term of the applicable express warranty provided above, whichever is longer.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

## 3. EXCLUSIVE REMEDY FOR ANY NONCONFORMITIES

If during the applicable Warranty Period, the product does not conform to the preceding Warranties, notify ROADMASTER as provided below, and within a reasonable time ROADMASTER will provide, at its option, one of the following: (1) replacement components for any nonconforming or defective product or components or (2) the percentage of the purchase price for the nonconforming product equal to the percentage of the Warranty Period remaining when ROADMASTER is notified of the nonconformity. ROADMASTER will, at its option, (a) use new and/or reconditioned parts in performing warranty repairs and making replacement products, (b) use parts or products of original or improved design in the repair or replacement. If ROADMASTER repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 60 days from the date of the return shipment to the customer, whichever is greater. All replaced products and all parts removed

from repaired products become the property of ROADMASTER. ROADMASTER will not provide, and will not be liable for, labor, costs of removal or reinstallation of components, disposal, shipping, freight, taxes, or other incidental charges.

## THESE REMEDIES ARE THE EXCLUSIVE AND SOLE REMEDIES FOR ANY BREACH OF WARRANTY.

For any breach of warranty, the Owner must telephone ROADMASTER at 1-800-669-9690 within thirty (30) days after discovering the nonconformity. Do not return any product without first calling ROADMASTER and getting a return authorization number. Returned products must include the return authorization number and a copy of the original invoice, bill or other proof of the date of purchase. The date of purchase must coincide with the original warranty registration card on file. ROADMASTER will authorize (a) shipment of the product to ROADMASTER or (b) repair or replacement at the nearest warranty service center—in both cases with shipping at your expense. Do not purchase replacement parts or pay for repair labor—you will not be reimbursed. Compliance with the requirements of this paragraph is a condition to coverage under the Warranty: if these requirements are not complied with, ROADMASTER will have no obligation to provide any remedy for any breach of warranty.

## 4. DISCLAIMER OF INCIDENTAL AND CONSEQUENTIAL DAMAGES

IN NO EVENT SHALL ROADMASTER BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM NONDELIVERY OR FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

## 5. APPLICABLE LAW

This Warranty will be interpreted, construed, and enforced in all respects in accordance with the laws of the State of Washington, without reference to its choice of law rules. The U.N. Convention on Contracts for the International Sale of Goods will not apply to this Warranty.

## 6. SEVERABILITY

If any provision of this warranty is found to be invalid or unenforceable, then the remainder shall have full force and effect, and the invalid provision shall be partially enforced to the maximum extent permitted by law to effectuate the purpose of the agreement.

## 7. ADDRESS FOR NOTICES TO ROADMASTER

ROADMASTER, Inc., 6110 NE 127th Ave., Vancouver, WA 98682

This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

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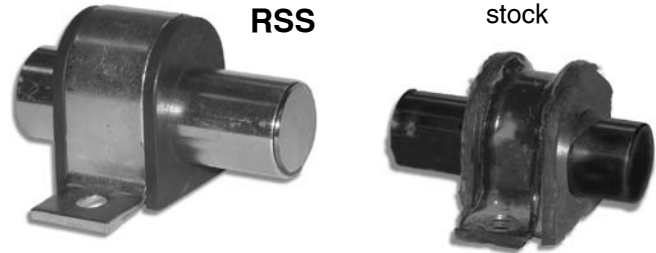
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