

BRAKEMASTERTM by ROADMASTER

PROPORTIONATE TOWED CAR BRAKING SYSTEM

roadmasterinc.com/patents for patent info

Owner's Manual

for models 9060, 9100 and 9160

*Entire contents of manual
must be read by owner*



Time Tested • Time Proven

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Welcome to the ROADMASTER family!

This manual has been prepared to acquaint you with the installation, operation, care and maintenance of your BrakeMaster, and to provide you with important safety information.

Read your owner's manual cover to cover. Understand how to install and operate your BrakeMaster, and carefully follow the instructions and safety precautions.

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

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All illustrations and specifications contained herein are based on the latest information available at the time of publication. ROADMASTER, Inc. reserves the right to make changes, at any time, without notice, in material, specifications and models, or to discontinue models.

Save this manual

Save this manual for future reference. It contains important sections relative to safety, use, maintenance, parts replacement and other information. Therefore, make sure this manual is always with you when you're towing. You may download or print a copy of the most current manual at www.roadmasterinc.com (under 'Support').

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.



The BrakeMaster serial number...

...is on a label on the air cylinder (right). 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

This manual contains information that is very important to know and understand. This information is provided for **safety** and to **prevent equipment problems**. To help recognize this information, observe the following symbols:

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

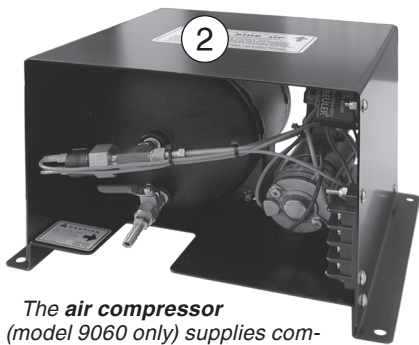
Refers to important information and is placed in italic type. It is recommended that you take special notice of these items.

Components

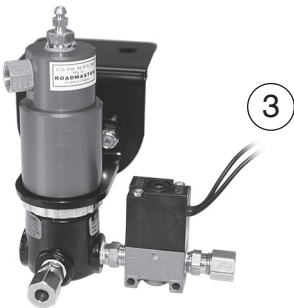
This overview is intended to introduce you to the major components in the BrakeMaster system and to briefly explain their functions. While some of these components will be “out of sight and out of mind,” you will connect and disconnect others every time you tow. Subsequent sections will explain how to operate and maintain your BrakeMaster system in full detail; a complete parts list is also included.



The **motorhome monitor light** will illuminate every time BrakeMaster applies the towed vehicle's brakes.



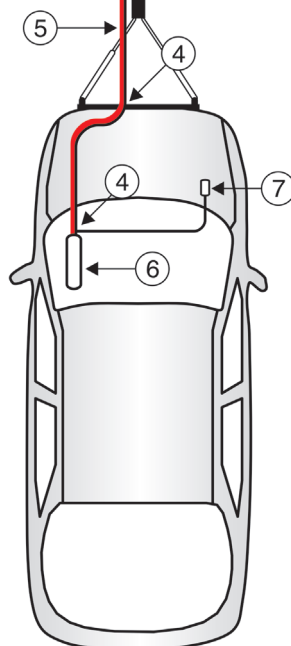
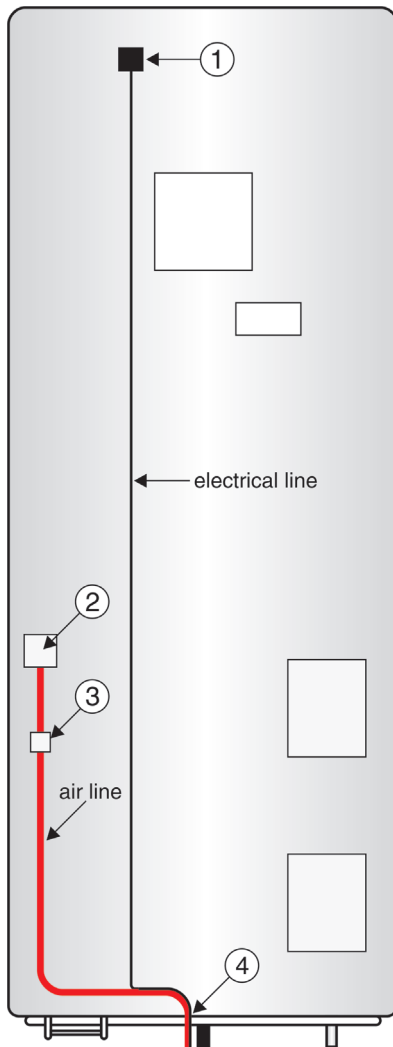
The **air compressor** (model 9060 only) supplies compressed air to the proportioning valve.



When the motorhome brakes are applied, the **proportioning valve** (model 9060 only) measures the hydraulic brake pressure and delivers a proportional amount of compressed air to the air cylinder.



Quick connects allow you to easily connect and disconnect the supply of compressed air from the two vehicles and from the air cylinder.

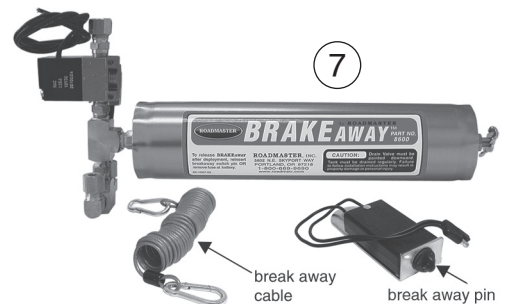


The **patch cord** connects the motorhome monitor system, as well as the supply of compressed air, between the two vehicles.



The **air cylinder** uses air pressure from the motorhome to depress the towed vehicle's brake pedal.

You will connect the air cylinder before towing and disconnect it when you reach your destination.



The **BrakeAway™ system** will bring your towed vehicle to a controlled stop in the unlikely event of a break away.

You will connect the break away cable between the two vehicles before towing and disconnect it when you reach your destination.

Operation

CAUTION

The Brake Pressure Reducer (part number 900002) is required for: 1) all towed vehicles with full-time ('active') power 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.

Step A

Prepare the vehicles for towing

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

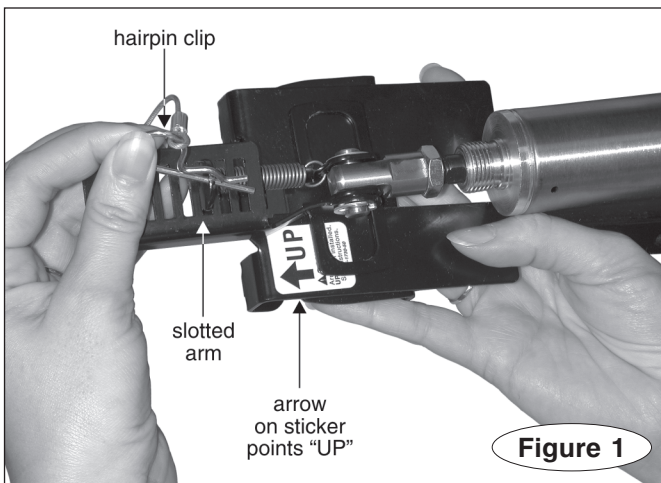
Then, according to the manufacturer, make all adjustments necessary to prepare the vehicle for towing.

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 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.

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.

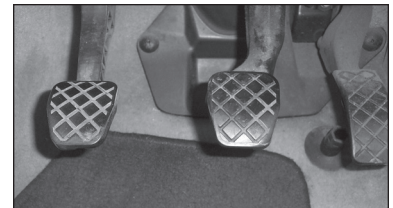
Depending on the make and model of the towed vehicle, it may be necessary to pump the brake pedal repeatedly to release the vacuum.

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.

Step B

Attach the pedal clamp and air cylinder

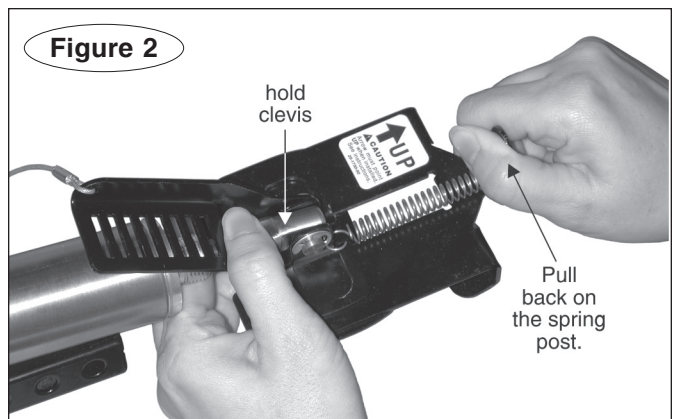
Note: the pedal clamp will not fit the brake pedals of a small number of late-model Volkswagen vehicles, such as the 2007 Volkswagen Golf. A photo of the 2007 Golf brake pedal is shown to the right.



Use the optional 9329-VW replacement pedal clamp for these vehicles.

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.

continued on next page



Operation

Attach the pedal clamp and air cylinder

continued from preceding page

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 adjust 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 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 hairpin 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 a seat adapter, near the front of the driver's seat, or it may be attached to an anchor plate under the driver's seat.

Whether it is attached to an adapter or a plate, the following instructions are identical.

8. When it is connected, the air cylinder must be pulled back toward the mounting post, 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.

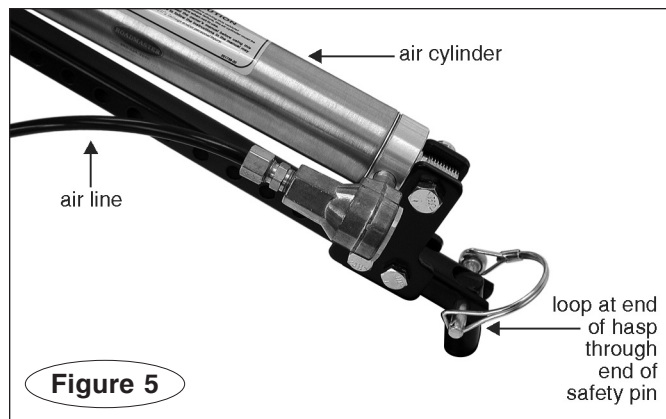
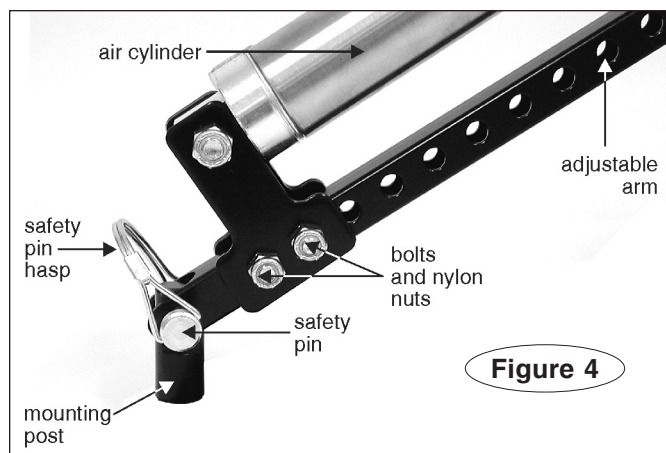
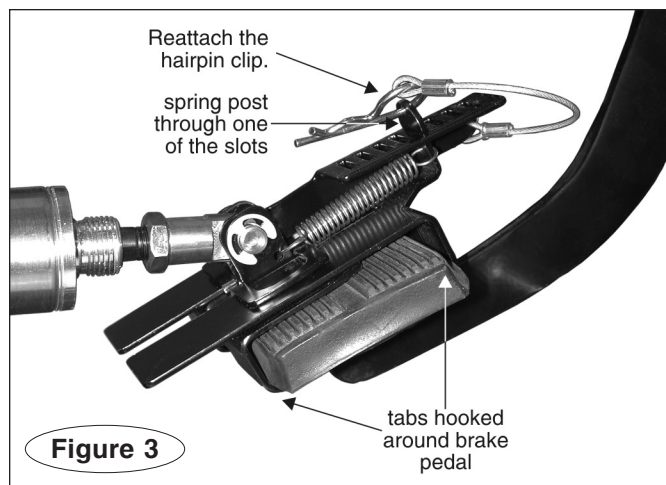
CAUTION

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

continued on next page



Operation

Attach the pedal clamp and air cylinder

continued from preceding page

connect it to the mounting post.

WARNING

If the vehicle is equipped with pedal presets, note 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.

Step C

Connect the air line, patch cord and break away system

1. Connect the male quick coupler at the end of the air line on the air cylinder (Figure 5) to the female quick coupler (Figure 6) 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 patch cord (the six-foot length of air line and wiring covered in blue plastic – see page 1) between the two vehicles – both the air line quick couplers and the motorhome monitor bullet connectors.

To connect or disconnect the bullet connectors, push or pull them together or apart.

3. To protect the couplers during towing, slide the weather sleeves (Figure 7) 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 switch (Figure 8). Clip the other end of the steel cable to the rear of the motorhome, close to the center.

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

WARNING

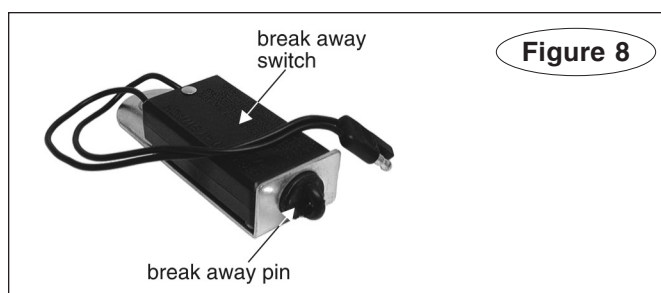
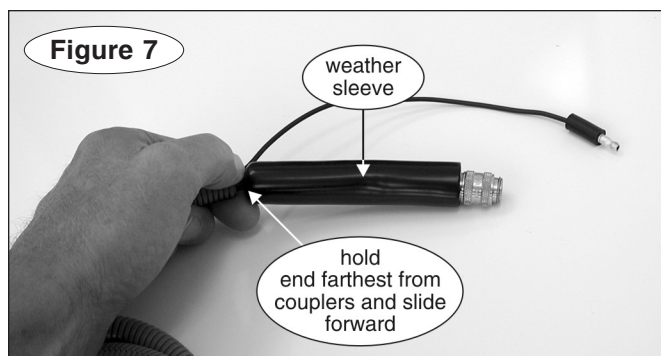
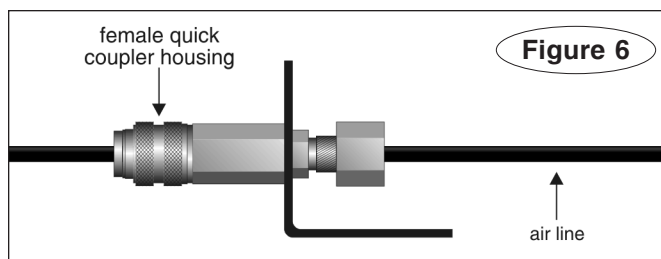
make certain that the following conditions are met:

- 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.
- Except to test the system, leave the break away pin in place, even when the vehicle is not being towed. As soon as the pin is pulled, the break away system

continued on next page



Operation

Connect the air line, patch cord and break away system

continued from preceding page

will be activated. Until the pin is replaced, the break away system will run constantly, which will drain the vehicle's battery.

Removing the pin will also expose the interior of the break away switch to damage from the elements. If the components of the switch are corroded, the switch may only function intermittently or not at all.

5. Charge the break away air reservoir –

Note: the BrakeAway system is included with the BrakeMaster 9060 and 9160; it is an optional accessory 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 (Brake Master 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.

Test the system

Test 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 “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 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 adapter).

- 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 patch 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.

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 activity 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 an optional accessory 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 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

continued on next page

Test the system

continued from preceding page

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.*

* The most current version of the installation instructions is at the ROADMASTER web site – www.roadmasterinc.com – under 'Support.'

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 patch 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 6) slides forward and 'clicks,' locking the couplers together.

After connecting the male and female quick couplers, gently tug on the air line (Figure 6) to make certain the fittings are engaged.

To disconnect the couplers – pull back on the

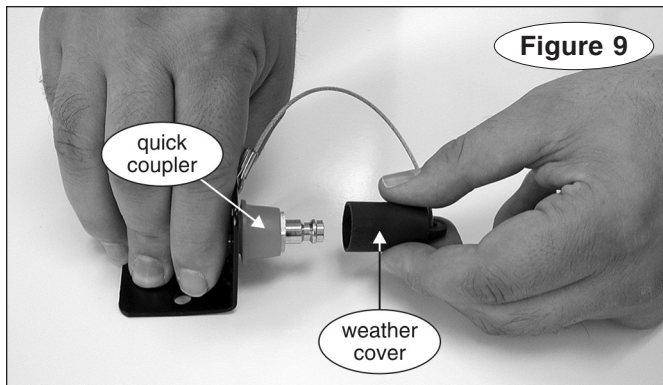
housing on the female coupler until they release.

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

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 patch 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.

Warranty disclaimer

It is the responsibility of the owner to ensure that the motorhome monitor LED is functioning each time before towing (see page 6). 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 engine must be started periodically...

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.

CAUTION

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.

Maintenance

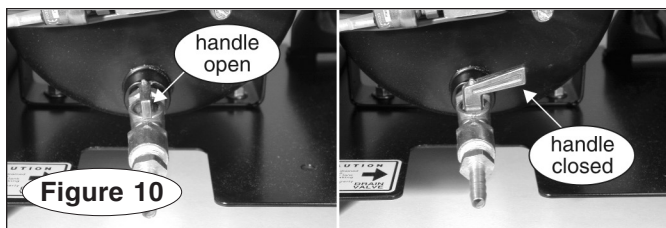
- Clean the entire system frequently. Remove any dust, dirt and road debris.
- For motorhomes with hydraulic brakes (BrakeMaster model 9060), drain the air tank periodically, to remove condensed water vapor.

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 handle on the drain valve (Figure 10).

Close the handle after draining the tank, as shown in Figure 10.

- If your BrakeMaster has a BrakeAway (models 9060 and 9160), drain the air reservoir (Figure 11) periodically – unscrew the drain valve (Figure 11) and remove it, allow any accumulated water to drain completely, and replace the drain valve.



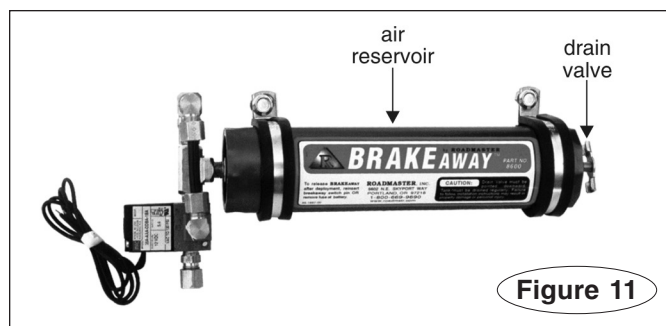
CAUTION

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 patch 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 patch cord (Figure 12) before storing the patch cord.

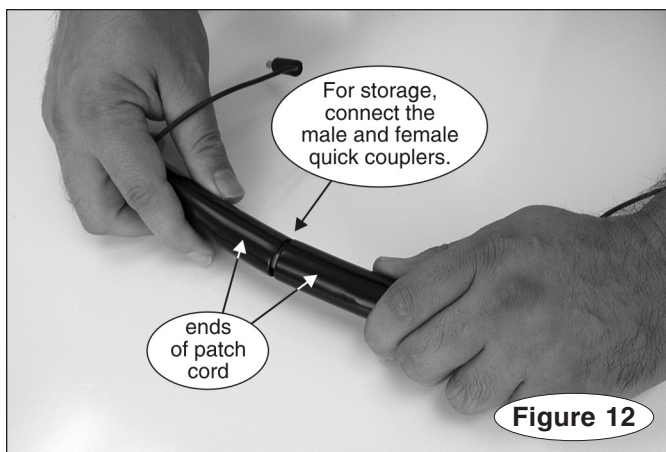
- Always drain the air tank (BrakeMaster 9060 only) and the break away air reservoir (BrakeMaster 9060 and 9160) just before winter storage or whenever the supplemental braking system will not be used for an extended period.

For instructions on how to drain the air tank and air

reservoir, see “Maintenance” (above).

CAUTION

If the motorhome will be stored in an area where 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.



Troubleshooting — BrakeMaster 9100 and 9160

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 parking 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 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 placed 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 a full-time ('active') power braking system, install 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, install 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

(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. The instructions are under the 'Support' tab.

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.

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.

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 in-

continued on next page

Troubleshooting — BrakeMaster 9060

continued from preceding page

stalling 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 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 de-

plete the vacuum in the vehicle's power brake system **before** you resume towing.

2. If the towed vehicle has a full-time ('active') power braking system, install 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.

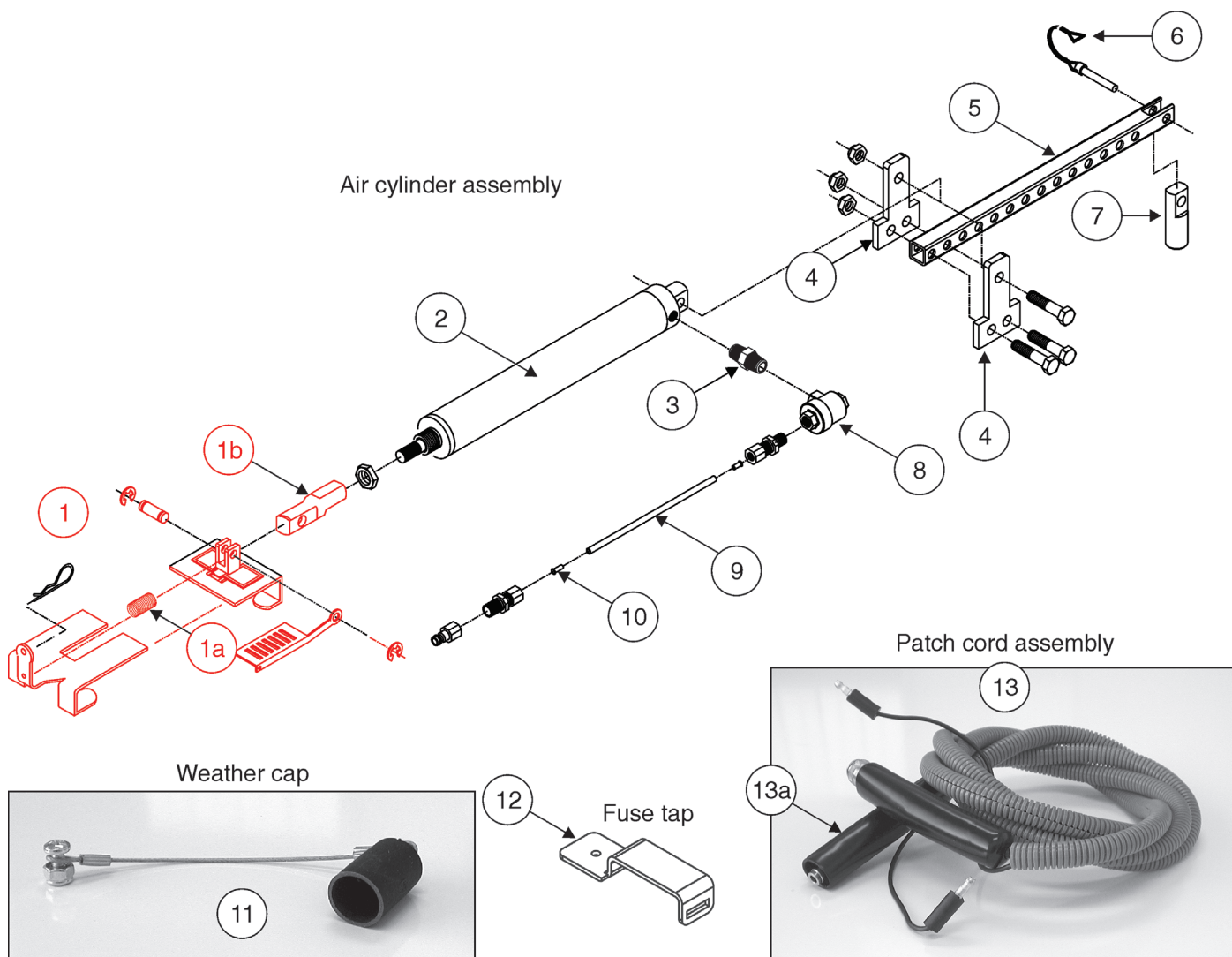
3. If the towed vehicle does not have power brakes, install the optional Brake Pressure Reducer (part number 900002) to adapt the vehicle to the BrakeMaster system.

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.

Parts

for all BrakeMaster systems – 9060, 9100 and 9160



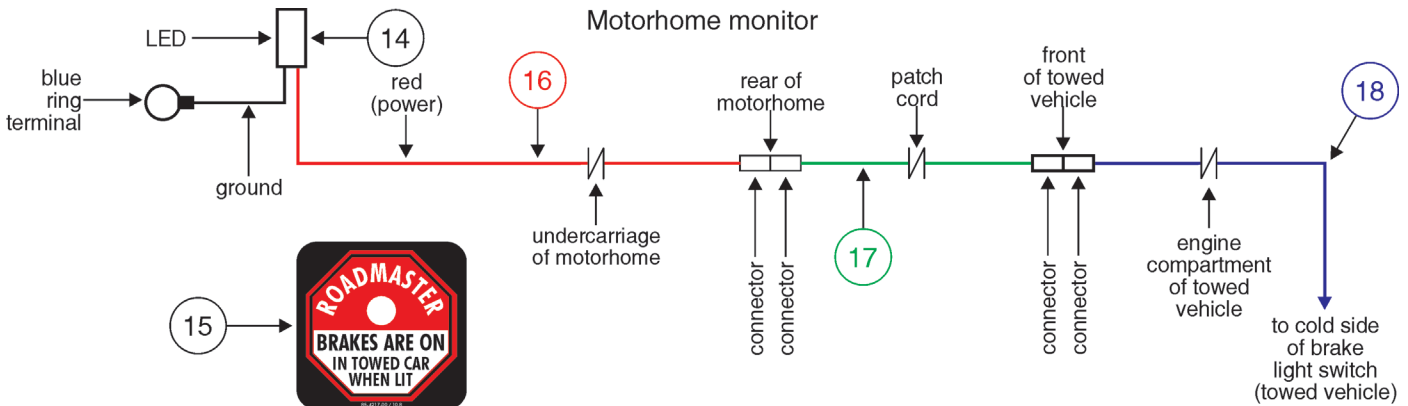
Item	Qty.	Description	Part Number	Item	Qty.	Description	Part Number
1	1	pedal clamp assembly, complete (color-coded red)	9329-B	13	1	air and monitor wire patch cord assembly	921004
1a	1	spring	450012			optional patch cord assembly, 88" long – for use with drop hitches, receiver extensions or any accessory which extends the length of the towing system	921004-88
1b	1	piston rod clevis	450595	13a	1	replacement weather boot for patch cord.....	450761
2	1	air cylinder	450600-10				
3	1	1/8 x 1/8 MPT close nipple	450045				
4	1	T-bracket.....	450620-01				
5	1	adjustable arm	450610-01				
6	1	safety pin	356997-00				
7	1	mounting post	450596				
8	1	quick exhaust valve	450601-50				
9	1	1/4" tube (sold by the foot).....	450700				
10	1	brass insert	450735				
11	1	black weather cap with lanyard	450760-50				
12	1	fuse tap	450782				

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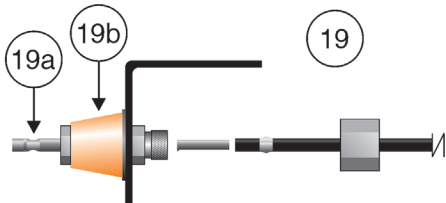
Parts

for all BrakeMaster systems – 9060, 9100 and 9160

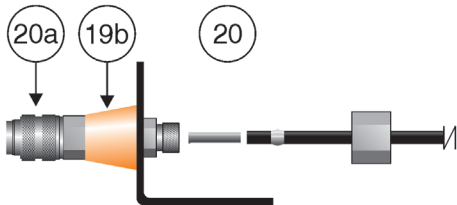
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Male quick coupler assembly, complete
(excluding air line and orange shield base)



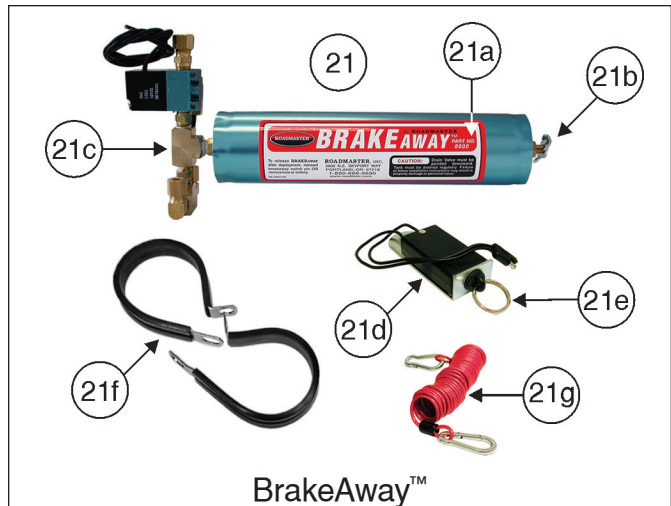
Female quick coupler assembly, complete
(excluding air line)



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Item	Qty.	Description	Part Number
14	1	LED monitor light assembly.....	300065-00
15	1	LED monitor light decal	854217-00
16	1	50-foot section of monitor wire (color-coded red)	450008-50
17	1	patch cord monitor wire (color-coded green)	450008
18	1	15-foot section of monitor wire (color-coded blue).....	450008-15
19	1	male quick coupler assembly, complete (excluding air line and orange shield base)	921004-50
19a	1	male quick coupler housing	450720
19b	1	orange shield base	450762
20	1	female quick coupler assembly, complete (excluding air line).....	921004-60
20a	1	female quick coupler housing	450710

for specific BrakeMaster systems



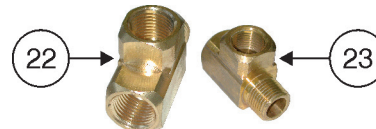
BrakeAway™

included with models 9160 and 9060; optional with model 9100

Item	Qty.	Description	Part Number
21	1	BrakeAway assembly, complete	8600
21a	1	air cylinder (does not include drain valve).....	450022
21b	1	drain valve	450115
21c	1	1/8" female pipe thread tee....	200290-00
21d	1	break away switch and pin	200200-00
21e	1	break away pin only.....	200200-20
21f	2	2" rubber clamps.....	450092
21g	1	coiled break away cable	8602

Air line tees

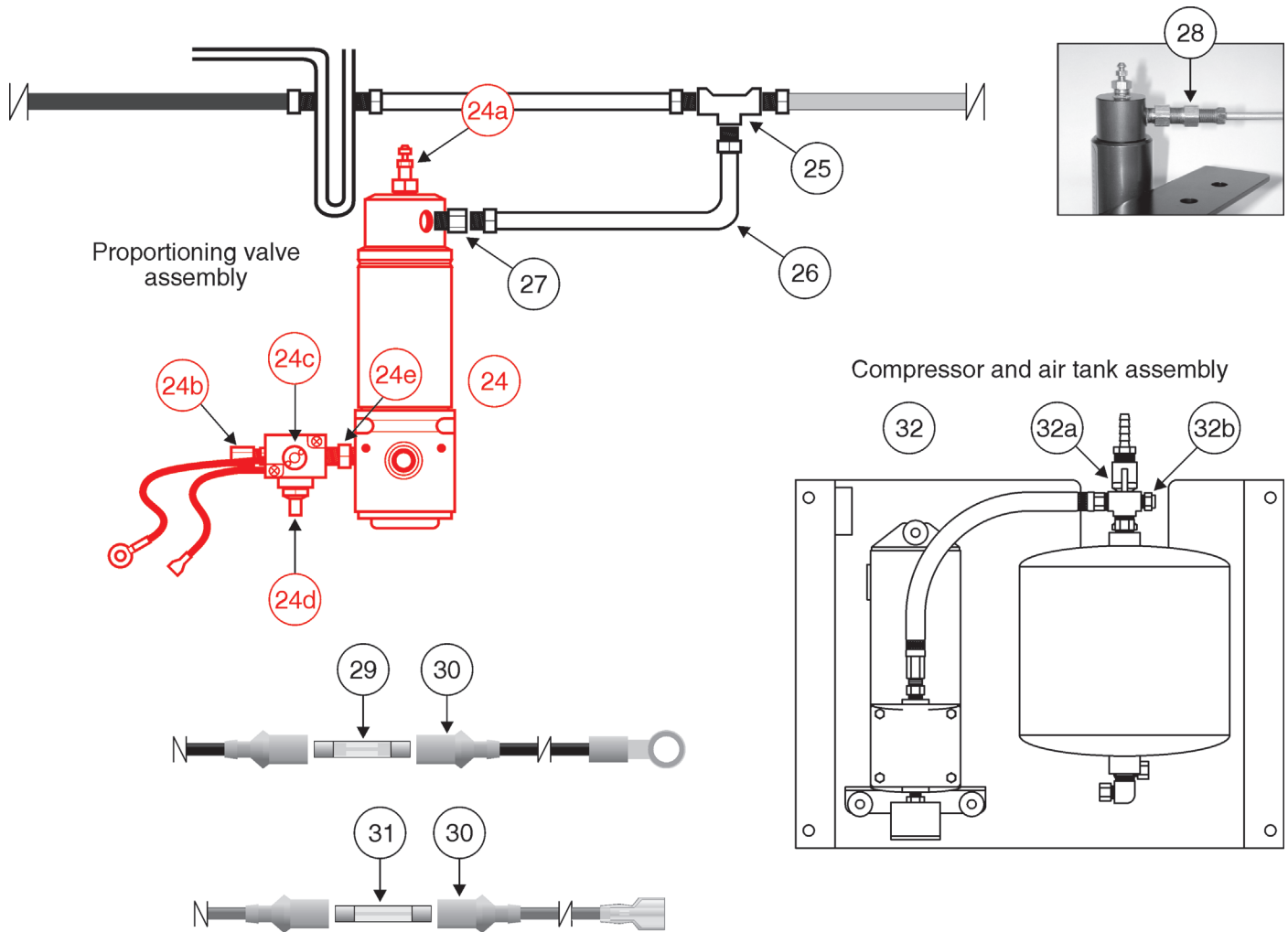
for models 9100 and 9160 only



Item	Qty.	Description	Part Number
22	1	1/2" air line tee (optional).....	450076
23	1	3/8" air line tee.....	450077

Parts

for BrakeMaster model 9060 only



Item	Qty.	Description	Part Number
24	1	regulator assembly, complete (color-coded red)	900001
24a	1	bleeder valve (includes brake bleed screw)	450088
24b	1	1/8" to 1/4" tube	450050
24c	1	mac valve/solenoid (muffler sold separately) (identical to valve on BrakeAway assembly)	450420
24d	1	muffler	450145
24e	1	1/8" hex nipple	450120
25	1	brake tee – 1/4" brake tee	450062
		3/16" brake tee	450063
26	1	brake line – 1/4" brake line	450053
		3/16" brake line	450052
27	1	1/8" male pipe thread x 1/4" inverted flair	450047
28	1	1/8" to 3/16" inverted flair adaptor	450061
29	1	25-amp fuse	300105-00
30	1	fuse holder	300102-00
31	1	10-amp fuse	300104-10

Item	Qty.	Description	Part Number
32	1	compressor and air tank assembly, complete	8315
32a	1	drain valve bleeder valve	450116-10
32b	1	pressure switch	450070-10
		compressor and air tank components not shown – 1/4" hose clamp	450095
		6" drain hose	450655

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