

# Multi-Mode Manual Air Recovery System

## Installation Instructions

Range Rover 4.0 / 4.6

**Please read these installation instructions before installing this product**



**DO NOT CUT THE M.A.R.S. AIR LINES** – Make sure there is plenty of slack in the M.A.R.S. lines when you connect the lines to the manual fill valve assembly. If there is too much slack, form a loop at the fill valve assembly and push the lines in front of the headlight. The EAS system and M.A.R.S. use a type of connector that forms a seal around the *outside* diameter of the air line. It is extremely important to make sure both the factory air lines and the M.A.R.S. air lines are not pinched or deformed at their ends. Since the connectors seal around the outside of the air lines, any imperfection at the seal presents a perfect opportunity for a leak. If trimming is done to *any* air line, be sure to use a razor or other suitable cutting tool. Cut the line at a 90° angle and free of any burrs.

**The supplied air hose fittings in M.A.R.S. do not require special tools to install. Connections are made by pushing the air line into the connector until it stops. Once the air line has been pushed into place, it is automatically locked in place by small teeth. To release a hose from a connector you must push the collar of the connector in and hold it while you pull the hose out. DO NOT PRY THE COLLAR. Connecting and disconnecting the air line does not require a lot of force. The same procedure applies to the connectors on the valve block.**

The Manual Air Recovery System uses a connector on the fill valve assembly that converts the tube diameter from 6mm to ¼ inch. The M.A.R.S. air lines are 6mm and the fill valve connection is ¼ inch. The converting connector is labeled appropriately on each end of the release collar. Leaks will develop if the M.A.R.S. air line is not connected to the 6mm side of the converting connector.

Another situation to avoid is an extreme angle at the point of connection. If an air line is not at a 90° angle at the connector, there is a greater chance for a leak. Stress at the point of connection will cause the air lines to deform and not seal properly. Make sure the air lines are secured and located away from hot and moving parts. The air lines should be immobilized as much as possible to prevent any unwanted movement or stress.

### Multi-Mode M.A.R.S. Configuration Options

There are two ways in which M.A.R.S. can be configured. The “piggyback” configuration runs inline with the factory EAS system, and the “bypass” configuration routes completely around the EAS system. Each configuration has its own advantages and applications.

**Piggyback:** The M.A.R.S. air lines are plumbed into the factory EAS system and allow the EAS to function as designed without any hindrances. This configuration uses the check valves located inside of the EAS valve block to stop air from leaking out of the system. If a fault occurs, air can be manually pumped in the system using the M.A.R.S. fill valves and ride height will be restored. Restarting the vehicle may result in the EAS lowering the car back to the bump stops because the valve block and computers are still being utilized. If a fault has already occurred, you may disconnect the large wiring harness connector at the valve block to stop the lowering of the vehicle after a restart. Be sure to reconnect the valve block once the fault is fixed and the computer is reset. The piggyback configuration works well when a compressor, air spring, ride height sensor, or computer develops a problem. If the valve block develops an internal leak, the “bypass” configuration should be used.

**Bypass:** The bypass configuration routes air around the EAS valve block. This configuration eliminates intervention from the electronic components of the EAS system. It utilizes the air springs, factory air lines, and M.A.R.S. to restore ride height. The bypass configuration is installed in the same location as the piggyback configuration, but uses small plugs in the T-fittings in place of the short M.A.R.S. air lines. This configuration should be used when the EAS system is to be bypassed.

### Setting the Ride Height

Once M.A.R.S. has been installed you can manually adjust the height of each air spring. The best way to adjust ride height is to measure from the ground to the center of the wheel arch. Keep this measurement between 34” – 35” for standard ride height. Once you have leveled your vehicle at the desired height, you can take a pressure reading at each of the manual fill valves. Pressure will be between 50 – 60 psi, and will vary with temperature and cargo load.

## Connect T-Fittings at the Valve Block

*\*\* The black corrugated wire loom near the firewall can be cut for clearance. This may help if there are extreme angles on the T fittings.*

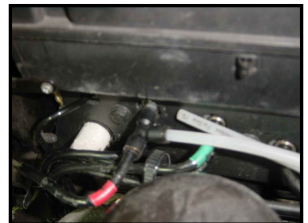
*\*\* Air spring lines are labeled 1-4 on the side of the valve block*



1. Release the air lines at the Valve Block. Use a flat-blade screwdriver to push the collar that surrounds the air line **toward** the valve block. **DO NOT PRY THE COLLAR.**
2. While pushing the collar in, pull the air line out. Once the line is free, gently move it aside.
3. Clean the area surrounding the collar making sure to keep dirt and debris away from the air line and air spring connector.
4. **Piggyback Configuration:** Make sure the T of the connector points to the front of the car. Push a short M.A.R.S. air line (part #7) firmly into the valve block. Push one of the "Tube to Tube Connectors" (part #3) onto the short M.A.R.S. air line until it stops. Next, push the factory air line into the "Tube to Tube Connector"

Rear Driver	Front Passenger
Rear Passenger	Front Driver

- Bypass Configuration:** Make sure the Tee of the connector points to the front of the car. Firmly push the factory air line into the "Tube to Tube Connector". Then firmly push a M.A.R.S. plug (part# 5) into the valve block side of the "Tube to Tube" connector.
5. Repeat steps 1-5 for each of the four air springs.



## Connect and Route M.A.R.S. Air Lines

1. Firmly push a long M.A.R.S. air line into each of the T-fittings at the valve block.
2. Route the M.A.R.S. air line to the front of the vehicle between the core support and air cleaner box. \* Keep the line away from hot parts and moving parts. It is best to keep the lines next to the existing lines. Secure the line to protect from abrasion and movement.








## Locate and Mount Fill Valve

1. Firmly push each of the four M.A.R.S. air lines into their corresponding fill valve (Part #6).
2. Push any excess M.A.R.S. air line in front of the air cleaner assembly. This places minimal stress on the connections.
3. Push the expanding nut into the large hole on the core support; in front of the air cleaner box.
4. Adjust the bracket so the vertical wings on the bracket are touching the core support.
5. Tighten the bolt to secure the mounting bracket.



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## Parts Description

<p><b>Air Lines (Part #1)</b></p> 	<p>The air lines are fitted between the manual fill valves and the valve block. The lines are of equal length. Qty: 4</p>
<p><b>Tube to Tube Connectors (Part #3)</b></p> 	<p>The tube to tube connectors are placed between the valve block and the factory air lines Qty: 4</p>
<p><b>Male Plug (Part #5)</b></p> 	<p>The male plug is only used in a 'Bypass' configuration. This plug replaces the short M.A.R.S. air line. Qty: 4</p>
<p><b>Fill Valve Assembly (Part #6)</b></p> 	<p>The fill valve assembly is mounted to the front core support of the vehicle. The M.A.R.S. air lines are plugged into their corresponding fill valve. <b>Caution:</b> <i>The fill valve assembly uses both metric and SAE tubing.</i></p>
<p><b>Short Air Lines (Part #7)</b></p> 	<p>The short air lines are located between the valve block and the Tube to Tube Tee Connector. They are used in a 'Piggyback' configuration. Color may be clear or black. Qty: 4</p>