

Diagnosing a Low Brake Pedal with an Isolation Test

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Vehicles Involved: All

Condition: Low Brake Pedal

Correctly diagnosing a low brake pedal can be one of the most challenging issues in the brake repair business. There are three main causes of a low brake pedal:

- Out of adjustment components
- Internal/external leak
- Trapped air

External leaks and out of adjustment components are not difficult to find. A visual inspection of the system will expose the location and condition of the component that is causing the pedal to fail.

Internal leaks and trapped air are the more difficult to locate. By performing what we call an **isolation test** (also known as a line lock test) you can quickly and accurately determine where the internal leak/trapped air is located in the brake system.

Repair Procedure:

To do an isolation test on a vehicle, you will need four pairs of brake hose pliers. Make sure you use pliers that won't damage the brake hose. Do not use locking pliers (See Image 1).

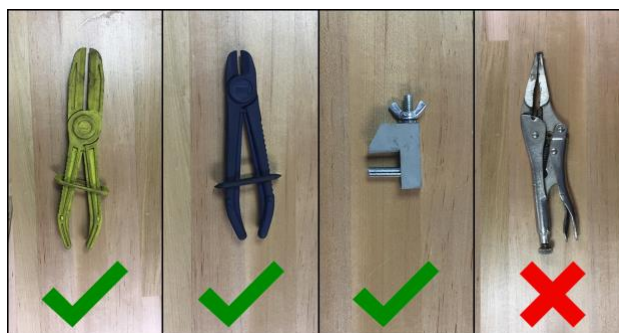


Image 1

Isolation Test Steps:

1.) Clamp off the brake hoses on all four wheels (See Image 2).



Image 2

2.) Start the vehicle and evaluate the pedal. If the pedal is hard, that means the problem lies below the clamps (skip to step 5). If the pedal is soft, that means the problem is above the clamps (proceed to step 3).

3.) Remove the brake lines from the master cylinder and plug the ports. If you still have a spongy pedal, the master cylinder must be replaced. If the pedal is hard, this means that the problem lies between the master cylinder and the clamped off hose.

4.) Inspect the brake lines and hoses between the master cylinder and where the hose is clamped off. If there are no leaks, the problem is probably air trapped in the ABS module. You may need to use a scan tool to cycle the ABS unit to remove the trapped air. If there is a leak in the brake lines, you will need to replace them.

5.) If the pedal is hard with the clamps attached, start by removing one of the clamps. Start the engine and evaluate the pedal. If the pedal is soft, that means there is a problem at that wheel. If the pedal is hard, reattach the clamp and repeat the process at each wheel until a soft pedal is identified.

6.) A problem below the clamps could be any number of issues, including air trapped in the caliper, a leak, excessive movement of the caliper pistons or wheel cylinders, etc. Do a proper brake inspection to determine the problem.

7.) Make sure to road test the vehicle once the problem is identified and fixed.