

build system pressure if excessively low, but it should build pressure in about 45 seconds max. The max pump run time could be 45 or even as low as 20 seconds on newer models.

Also on most of the newer models the pump will run regardless of vehicle speed to build system pressure and the ECU will pulse the solenoid valves one time, each time the car is started. If it runs longer than 2 minutes (or it's max run time) the ABS will shut down and turn on the ABS light, code the ECU, indicating a problem of the pump running too long.

Always listen for the pump running too long if the light comes on after driving for 2 minutes. (this could be 45 or even 20 seconds max pump run time on newer models). The longer the pump run time/cycles on any model usually indicates the system is developing a pressure storing problem. Check the service manual for the maximum pump run time on the model you are working on.

Now, If everything is Ok up to this point, the light stays off.

If the system senses the wheels beginning to lock when the brakes are applied and the vehicle is in motion, the system goes into operation, a pulsation is felt, and the offending wheel is released.

### **Common Problems and Troubleshooting**

#### **DTC 1**

The ABS ECU will usually store a code #1 if system pressure is the problem. Code #1 indicates pump is going over it's run time, and is somewhat common in a lot of the Honda and Acura models. The most common problems are leaks, either internally in the modulator solenoids or externally in the hoses and "O" rings.

We have come up with some additional steps to determine whether you need to follow the troubleshooting tree in the service manual for code #1. This test is only good for the systems with the separate modulator/reservoir assembly.

- If the car is equipped with a service check connector; connect it to read the code from the check engine light. If it is not equipped with a service check connector locate the ABS ECU to read the code from it's single LED.
- Turn on the key, the code should start to flash after 10 seconds or so. If code 1 is present continue with this procedure.
- Code #1 is usually caused by leaks, or material lodged in the ABS system solenoids, which causes stored high accumulator pressure to leak off. Lack of periodically using the ABS system can cause the solenoids to become stuck open with contamination, which will allow the pressure in the accumulator to be lost and the modulator reservoir to overflow. This can be corrected most of the time by exercising the system or making it operate 6-10 times on a loose gravel road or soft shoulder. Remember that all three solenoids must be operated for this to be effective. (both front wheel sensors and at least 1 rear sensing wheel lock) Also remember the reservoir must be full before performing this procedure.
- If the ABS pump runs for more than 2 minutes (45 or even 20 seconds on some models) the system will turn off, ABS light will come on & code #1 will be indicated from the ABS ECU. Stop the car turn off the key, and then restart. This will reset the indicator light. The code will stored in the ECU. Quickly accelerate and then lock the brakes to make the system operate 3-4 times before the pump goes over it's maximum run time. Make sure you have plenty of open area (and no traffic or other obstacles) on an icy or gravel road and you don't need to go too fast to make it work. You will also need to bleed the ABS system 3-4 times to thoroughly flush the system to finish the job. Remember that the ABS fluid is separate from the regular brake system fluid but, still needs flushing every 30k mi.
- If the pump still goes over it's run time, bleed the accumulator to see if it has any fluid at all. If no fluid comes from accumulator, locate the pump relay (usually in the under hood fuse box). Connect a momentary contact (or starter switch) to pump relay terminals to operate the pump manually.