

## FACTORY SOLUTIONS

### Putting the Brakes on Elusive Brake Symptoms

A customer complains about a brake performance condition involving a shudder, vibration, or squeal during brake application. The technician's focus is on the normal conditions and procedures that are necessary to alleviate the symptoms. Several labor hours and parts are invested and the condition remains. There is a good possibility that the technician was doomed from the beginning. We are encountering many situations where brake performance conditions require a system modification to eliminate a specific symptom. Unless you are privileged to this information, your ability to satisfy the customer's complaint is very unlikely. Being aware of a factory modification may prevent you from reintroducing a problem back into a vehicle during a routine service, such as performing a brake job.

#### FORD FOCUS...REAR BRAKE SQUEAL

This is a good example of a vehicle with an inherent condition that makes it impossible to solve a rear brake squeal symptom without some assistance from the vehicle manufacturer. Ford acknowledges that a rear brake squeal condition on the 2000–2005 Focus, equipped with rear drum brakes, may require a backing plate modification to eliminate brake squeal. Replacing the shoes and machining the drums will not resolve the symptom.

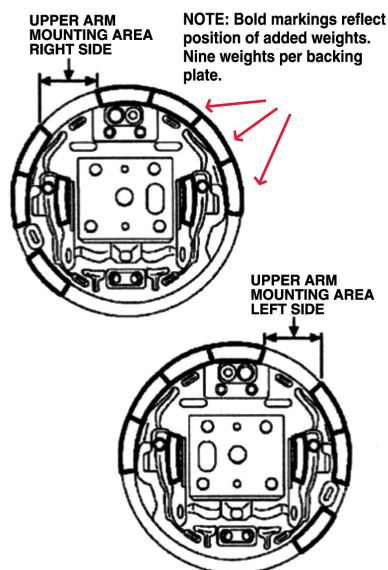


Fig. 1

The noise condition is caused by a resonance traveling through the rear backing plates. To reduce the noise to an inaudible level, Ford recommends installing damping weights to the back side of the backing plates. This will be the opposite side of the backing plate from the brake shoes. Nine weights (P/N 5S4Z-1040-B) per backing plate (see Fig. 1) will be necessary to quiet

the resonance. A special adhesive (P/N 4U7Z-19B508-A) will be required to attach the weights.

The installation requires that the backing plates are thoroughly cleaned with brake cleaner in the area where the weights will be attached. Scuff the adhesion area with a scotch-brite pad and wipe the area with isopropyl alcohol. Once the weights have been placed into position with the adhesive, they should be secured with duct tape for a minimum of 15 minutes before reassembly. The adhesive starts to cure immediately; therefore the weights must be secured within one minute following the application of the adhesive. Allow a minimum of one hour cure time for the adhesive before driving the vehicle.

#### FRONT BRAKE ROUGHNESS/SHUDDER

*Expedition/Navigator...* If you are troubleshooting a front brake roughness or shudder condition on a 2004–2006 Ford Expedition or Lincoln Navigator, be advised that traditional procedures such as machining the rotors will not likely resolve the complaint. Ford advises that some 2004–2006 Expedition and Navigator vehicles built on or after 12/18/2003 may encounter a recurring brake roughness or shudder symptom during brake application. The date code on the rotor should be checked to determine if the vehicle has the new or old style rotors. The date code can be found on the edge of the rotor between the cooling fins, as illustrated (see Fig. 2).

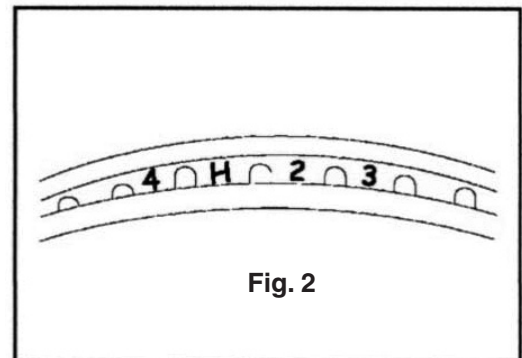


Fig. 2

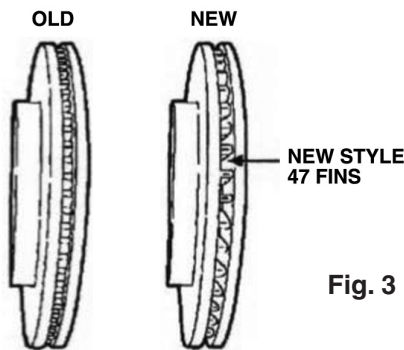
- a) If the date code is prior to 4H23 (4=2004, H=August, 23=23<sup>rd</sup>) and the front friction is the low dust type, replace the front rotors (P/N 6L1Z-1125-A).

- b) New style caliper assemblies are also required (P/N 6L1Z-2B120-D, 6L1Z-2B121-D).
- c) If the date code on the rotor is 4H23 or higher, replace only the two front calipers. The revised calipers are pre-assembled and include anchor, springs and friction. The rotors should be machined with an on-car lathe, assuming they are within the minimum thickness specification.

Ford says to caution the vehicle owner that due to the piston seal rollback design change in the new calipers, an increase in pedal travel can be expected. The pedal travel may increase by approximately 9/32 inch. The increased travel will not affect the stopping distance or effectiveness. Technicians need to be aware of this change in pedal travel, to prevent misdiagnosing the brake system as containing aerated fluid.

**Ford F150...** Ford states that some 2004–2005 F150 trucks built prior to 11/29/2004 may experience front brake roughness or shudder during braking. The following action will be necessary:

- 1) Trucks built prior to 8/20/2003 will require a new rack and pinion (steering gear) assembly.
- 2) Check the rotors to determine if the truck is fitted with new or old style rotors. The new style rotors contain 47 cooling fins (see Fig. 3).
- 3) If the old style rotors are present, replace both front rotors. A new spindle nut is required on 4x2 units.
- 4) If the new style rotors are present, machine the rotors with an on-car lathe.
- 5) Install Ford's revised pre-assembled/loaded caliper assemblies (see Fig. 3 for part numbers).



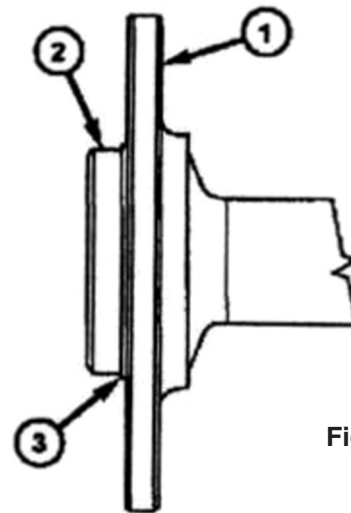
**Fig. 3**

PART NUMBER	PART NAME
6L3Z-2B120-A	Caliper Assembly (Right Side)
6L3Z-2B121-A	Caliper Assembly (Left Side)
5L3Z-1102-AB	Rotor (4x2, 6 Lug)
5L3Z-1102-BA	Rotor (4x2, 7 Lug)
5L3Z-1125-AA	Rotor (4x4, 6 Lug)
5L3Z-1125-BA	Rotor (4x4, 7 Lug)
6L3Z-3504-AA	Steering Gear (Super Cab/Crew 4x2)
6L3Z-3504-BA	Steering Gear (Super Cab/Crew 4x4)
6L3Z-3504-CA	Steering Gear (Regular Cab 4x2)
6L3Z-3504-DA	Steering Gear (Regular Cab 4x4)
6L3Z-3C294-AA	Retainer Spindle Nut (4x2 units)

## JEEP CHEROKEE...REAR BRAKE CLUNK

If the owner of a Jeep Cherokee complains of a clunking condition from the rear brakes during brake application, the problem may be due to an improperly machined axle shaft. Vehicle year models include 1997–1999 Jeep Cherokees equipped with an 8¼ inch rear differential. The clunking condition is due to an improper size brake drum pilot flange, which is machined on the axle shaft.

If the customer encounters the mentioned clunking condition during braking, remove the rear wheels and inspect the rear axle shafts. Attention should be given to the center pilot, which aligns the wheel and brake drum. Two separate pilot flanges are machined on the end of the axle shaft (see Fig. 4).



**Fig. 4**

1. AXLE FLANGE
2. WHEEL PILOT
3. DRUM PILOT

The outboard flange supports the wheel and the inner flange supports the brake drum. The outer flange measures 2.812-2.808 inches and the inner flange measures 2.832-2.826 inches. The inner brake drum pilot may be missing or not deep enough to support the brake drum. Without proper support, the brake drum may move during brake application, promoting the clunking condition. Jeep has a replacement axle (P/N 05018393AA) to eliminate the condition.

The technician must be aware of factory modifications that circumvent conditions that are inherent in the vehicle by design. Without up-to-date information, it is very easy for the technician to reintroduce a problem back into the vehicle by installing a part that meets the original equipment specification, instead of the modified version or latest spec.

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