Brake Servicing

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Service

- Measuring
- Machining
- Pad inspection
- Adjustments

Disc Brake Measurements

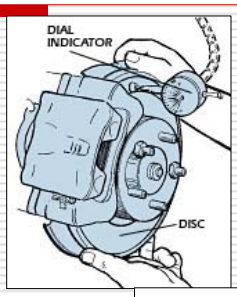
- Rotor Thickness
- Thickness Variation
- Lateral Run-out
- Hub Face Run-out

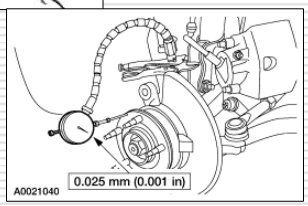
Rotor Thickness

- Original Thickness:
  - Before machining brake rotor measure the rotor in it's deepest groove.
- Minimum Thickness:
  - Located in service information and on the rotor.
- Machine-To Thickness:
  - Some rotors have a Machine-to thickness which is greater than the min. value.

Lateral Run-Out
Hub Face Run-Out
Thickness Variation

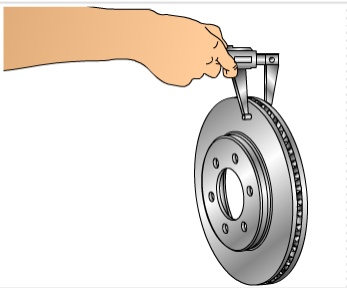
- Rotor Lateral Run-Out:
  - Measures the friction surfaces movement while spinning (T.I.R.)
- Hub Face Run-Out:
  - For Composite rotors
  - Excessive rotor lateral run-out may be caused by an excessive hub face run-out.
  - Measured without the rotor in place and only on the hub face.
- Thickness Variation:
  - Measured at 4-8 equidistant positions around brake surface.





Specifications

- Lateral Run-out
  - 0.5mm (0.002”)
- Hub Face Run-out
  - 0.03mm (0.001”)
- Thickness Variation
  - 0.009mm (0.00035”)

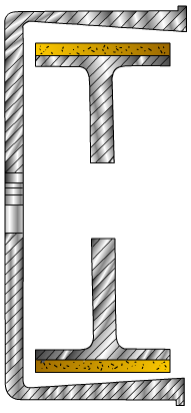


Drum Brakes

- Inside Diameter:
  - Measured with Drum Micrometer
  - Also measure at every 1/8th turn to check for other drum conditions:
    - Eccentricity
    - Out-of-round
  - Measure at different depths for:
    - Bell-mouthed
    - Taper
    - Barrel
  - Perform a visual inspection for:
    - Scoring
    - Cracking
    - Heat checking/Hot spots

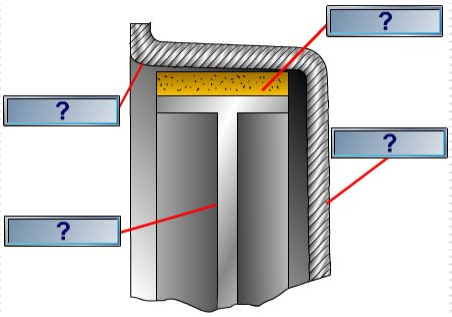
Tapered

- Caused by high brake force/temp.
- Quickly identified by visual inspection of brake shoes.
- Creates difficulty in removing brake drum.



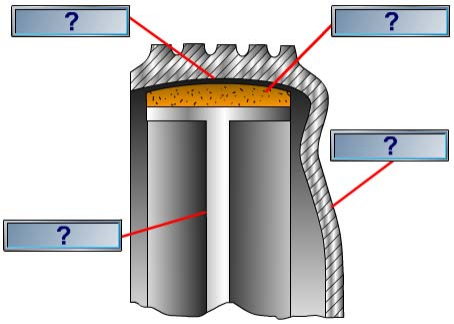
Bell-Mouthed

- Caused by high brake force/temp.
- Quickly identified by visual inspection of brake shoes.
- Measurement at different depths will also identify condition.



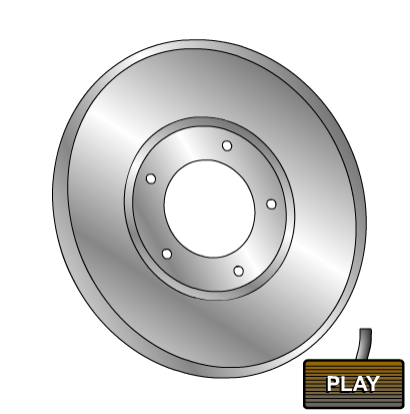
Barrel

- Excessive wear at center of drum friction surface that is caused by extreme braking force/temp.
- Found by measuring at different depths in drum or with a straight edge.



Eccentric/Out of Round

- A condition that can cause a pulsating brake pedal.
- Found by measuring at four different points on drum.
- Pulsation can be isolated by applying the parking brake and feeling vehicle for pulsations.



Machining

- Bench Mounted Brake Lathe
  - Rotor
  - Drum
- On-Car Brake Lathe
  - Rotor

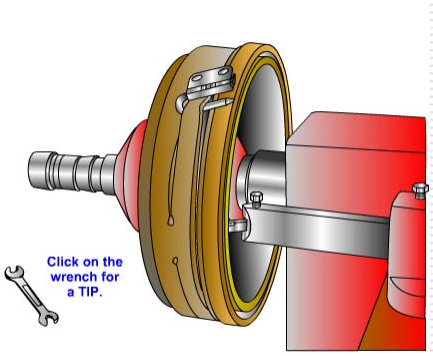
Bench Lathe Machining Rotors

- Ford indicates that no new vehicles should have brake rotors bench machined. Especially under warranty.
- Machining brake rotors on bench lathe may induce lateral run-out. This run-out may cause brake harshness.

Bench Lathe Machining Drums

- Mount drum in same fashion as composite rotor.
  1. Turn bit adjustment until contacts surface.
  2. Rough cut: 0.003”-0.006” cut depth.
  3. Finish cut: 0.002” on slow feed rate.

Note: 0.030” max. side to side difference in drum diameter.



What should be done if a rotor within specifications needs to be cut but will be below specifications after the cut?

Press to verify your answer.

Press to clear and try again.

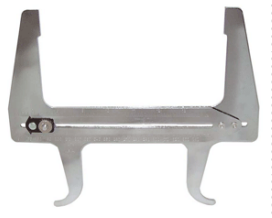
- You should perform the cut.
- You should not make the cut and just replace the pads.
- You should not make the cut and discard the rotor.
- None of the above.

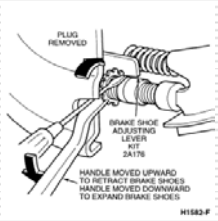
Pad Inspection

- Disc Pads:
  - Taper (end to end):
    - Multi-piston caliper one piston is seized
    - Slide pin fault
  - Taper (side to side):
    - Slide pin fault.
  - Thickness difference:
    - If difference exists from driver to passenger side, the side with thinner pads may have seized caliper piston.
- Drums:
  - Drum shoe inspection is directly tied to the condition of the drum assembly.

Brake Drum Assembly Adjustment

1. Using tool measure inside diameter of drum.
2. Adjust shoes until they contact the tool.
3. Apply parking brake to center shoes and continue adjustment through backing plate.
4. Adjust slight drag on both side of vehicle.



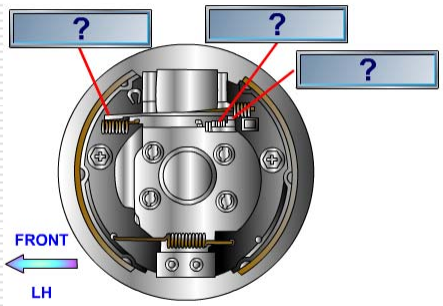


Self Adjusting Mechanism

- One Shot
- Leading-Trailing Incremental
- Duo-Servo Incremental

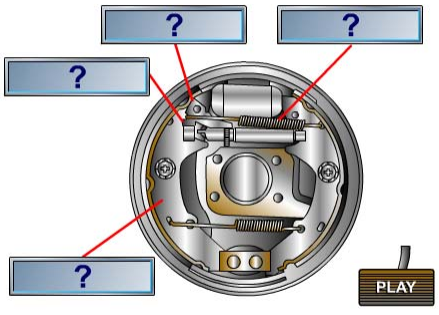
Leading-Trailing One-Shot

- Initial Brake application engages the one-shot adjuster.
- After the initial adjustment the mechanism is essentially a solid strut.
- Focus



Leading-Trailing Incremental

- This type of self-adjuster is actuated when the driver moves the vehicle forward about ten feet, then in reverse, and applies the brake until the vehicle is completely stopped.
- This action causes the adjuster screw retracting spring to pull the adjusting lever up over the end of the tooth of the star wheel.



Duo Servo Incremental

- The adjustment occurs when the vehicle is moving backward and the brakes are applied.
- This causes the upper end of the primary shoe to be forced against the anchor pin by frictional drag.
- Simultaneously, the secondary shoe and cable guide are forced away from the anchor pin by the wheel cylinder.
- This causes the cable to pull the adjuster lever upward.