

Application UB1: Automotive Brake Assembly Verification

Problem: A manufacturer of automotive brakes needed an automatic method of inspecting for the following:

- Wheel Cylinder Plug (Correct Color)
- Covers (Presence)
- Flange Plate Axle Hole Diameter (Within tolerance +/- 0.1inch).
- Primary Shoe & Lining Assembly (Correct Position & Thickness).
- Secondary Shoe & Lining Assembly (Correct Position & Thickness).
- Guide Plate (Presence & Correct Orientation).
- Link-Heavy Wire (Presence & Correct Attachment).
- Wheel Cylinder (Correct Casting Mark).
- Wheel Cylinder Push Rods (Presence & Correct Position).
- Strut (Presence & Not Bent) Note: Bent strut to be determined
- Strut Spring (Presence & Positioned Correctly).
- Adjuster Assembly (Presence & Ends Assembled to Shoes).
- Adjuster Spring Blue (Presence, Color, & Correct Orientation).
- Primary Cap & Spring Assembly (Presence & Assembled 90° To Cap).
- Secondary Cap & Spring Assembly (Presence & Assembled 90° To Cap).
- Primary Return Spring Brown (Presence).
- Secondary Return Spring Dark Blue (Presence).
- Actuator Assembly (Presence & Correct Stamping).
- Actuator Spring Black (Presence)

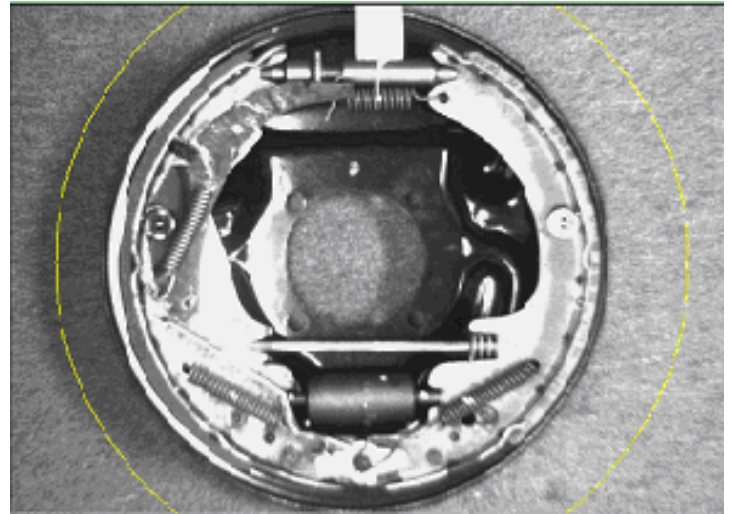


Figure 1: Automotive Brake

- Actuator Spring Silver (Presence).
- Lever Assembly (Presence).

Solution: Stand-alone inspection system retrofitted to existing part handling system. Diffuse fluorescent illumination lighting the part from the top. FOV approximately 10" to accommodate all part sizes.

Part number of the inspected part is selected from a Windows recipe menu. Parts are manually inserted into an inspection fixture by an operator. A manual push button triggers the camera to acquire an image. Software tools detect the various attributes. After all attributes are verified, the results are available for assessment. If the part passes, a green light is illuminated and the part can be removed from the fixture; if the part fails, a red light is illuminated and the part is locked in the fixture for evaluation by supervisory personnel