



Ultrasonic Testing of the Adhesive Joint in Brake Linings

Ultrasonic Application Solutions

Application

The transfer of external deceleration forces during braking is made from the brake linings onto the lining anchor plate. Therefore, on the brake caliper, the critical point is the adhesive joint consisting of lining and shoe. Due to this, it is essential that this joint is subjected to NDT before release of the complete brake unit in the production process. This ensures that parts with defective joints are able to be eliminated.

Solution

Ultrasonic testing makes it possible to see whether the brake lining is joined to the shoe over its whole area. In this report two methods are suggested and explained in the following. In figure 1 and 2 these two methods are illustrated.

These methods deal with through-transmission by dry coupling and pulse echo signals with wet coupling.



Figure 1: Inspection with roller probes



Figure 2: Inspection with squirter probes



Two methods are suggested

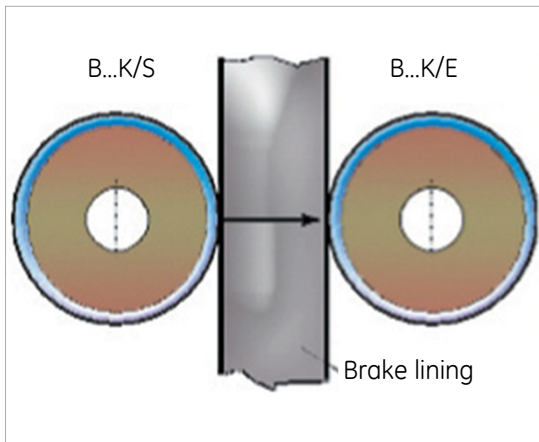


Figure 3: The 1st method

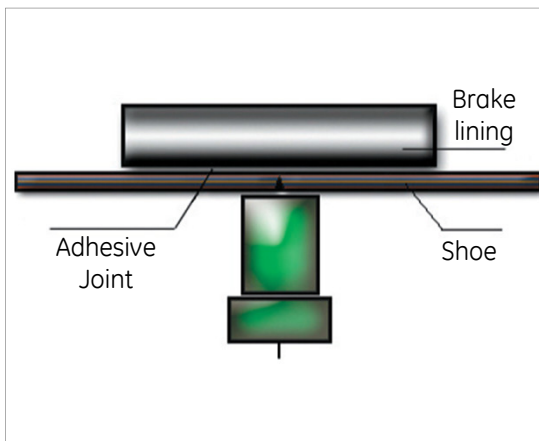


Figure 4: The 2nd method

1. Through-transmission with “dry coupling” using the roller probes B...K/ S-E. This method is preferably used for testing drum brakes. The test frequency is dependent on the sound attenuation (thickness) of the lining material. Basically with this method, changes in the lining are simultaneously detected (delaminations, separations).
2. Using the pulse echo method with “wet coupling” on the shoe surface meets demands with regard to the detection of small plane differences, for example very small areas of non-existent bonding will be detected. This is best used for testing flat brakes (disk brakes). The backwall echo or interface echo sequence from the lining/ shoe interface is evaluated. Extra acoustic damping from a good joint (energy loss at shoe rear) drops the amplitude and shortens the echo sequence.

General solution information

Probes

- B 0,5 K/S
- B 0,5 K/E
- H 5 KF

Flaw detector: USM 36

Your benefit

- Ensure high quality
- Reduce field failures and potential liability
- Save money by eliminating destructive testing and by improving your process

Part numbers

USM 36	0037400	B 0,5 K/S	0065612
H 5 KF	0066702	B 0,5 K/E	0065611

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