

Basic Fundamentals of Brake Service (Continued)

comes with each TAILORED Set. These clearances assure correct operation and full energizing of the brake without causing grab or uneven wear.

Centralizing of Brakes

To secure the full effectiveness of a brake and to obtain maximum lining life or wear, the brake shoe mechanism must be concentric (the entire surface of lining touching the drum) when the brakes are fully applied. This does not necessarily mean that lining to drum clearances are uniform at all points when mechanism is fully released. It is the location of the anchor that determines these clearances. On internal brakes, such as hydraulic and double anchor Bendix, where the toe of the brake shoe travels about twice as fast as the anchor end, the clearance at the anchor end is approximately one-half the toe clearance, to give complete lining surface contact on brake application.

On internal brakes such as Bendix single anchor or Huck where heel and toe of brake shoe approach the drum at approximately the same rate the same clearance is used at each end of the brake shoe.

Incorrect toe or heel contact of fully applied brakes results in chatter, squeals, spongy pedal, locking, and uneven wear.

What is a Brake?

Any brake system consists of a machine for dissipating energy in the form of heat plus some type of actuating control system. The two are tied together, operating as a unit, and therefore must be considered together. Before attempting to adjust any brake it is essential to check the brake control system to see that it is functioning correctly. Hydraulic brakes naturally have no linkage system, but the lines should be checked for air in lines and leakage. A detailed explanation of mechanical leverage and equalizers is given on Pages 49-54 of this Hand Book. Hydraulic systems are discussed in detail on Pages 44-46.

Lubrication

All parts of the control system should be lubricated to insure free operation, the cross shaft bearings, roller cross shaft supports, clevis connection at the levers and the cable controls. Where rusty or frozen parts are found use penetrating oil to free. Conduit cable controls should be lubricated by unfastening the conduit at the support brackets on the frame and backing plate. Clean the exposed part of the cable nearest the cross shaft lever with penetrating oil and then slip the conduit toward cross shaft so the part of the cable ordinarily covered by the conduit is exposed. Apply ample graphite grease and work through conduit. (A mixture of heavy cylinder oil and powdered graphite can be used.) Remember that rusty bearings and parts absorb much of the force exerted on the brake pedal, resulting in a hard pedal. Lubrication, not adjustment, cures this evil. The best relining job may be a failure if the operating mechanism is defective. Replace frayed cables, worn or rusty clevis pins, swollen or clogged hydraulic lines, etc.

Brake Cables

In replacing brake cables be sure to use cables of CORRECT length to get proper operation of brake. Cables too long or too short are apt to give trouble in getting a good brake.

Return Springs

All brake shoe return springs should be checked, and those found weak or broken should be replaced. With a well lubricated control system additional return springs are unnecessary and only increase pedal pressure.

The Complete Control System

A completely freed control system should allow rods or cables to return to their released position whether on toe board, set screw stop, or lever return rest. All slack should be removed.

Brake Drums

Brake drums should be examined for scoring, wear, rust, and distortion. New linings in a scored drum result in further rapid scoring, fast wear of the lining, frequent adjustment, and, oftentimes, noisy brakes. Of the three general types of brake drum material, steel, centrifuse, and cast iron, the steel are subject to many variations, especially in hardness. This may be due to carbon content or to alloying of the steel. And the degree of hardness influences the effectiveness of the brake linings used. On certain cars the brake drums were changed during the year, so that different performance is experienced on different cars of the same model.

Drums that are only slightly roughed up or showing a tendency to score should be POLISHED before relinings. In many cases this is superior to machining the drums. Similarly all machined brake drums, although they may seem smooth, should be polished. We recommend the following procedure before removing drums from lathe:

First, wipe machined surface with kerosene-soaked rag and then dry with clean cloth. Second, polish drum in lathe with sandpaper and machine oil (do not use emery cloth). Wipe clean and dry. This procedure removes all minute rough and jagged surfaces and will result in better lining and drum life.

Drum Thickness

New brake drums should be installed when a micrometer measurement gives a thickness of less than minimum shown below:

MINIMUM THICKNESS TO TURN DRUMS			
Drum Diam.	Thickness		
	Steel	Centrifuse	Cast
9	110	140	...
10	115	145	...
11	115	145	...
12	130	170	225
13	140	170	230
14	140	175	235
15	170	200	270
16	190	220	285
17 (3" lining)	...	...	285
17 (4" lining)	...	...	330
17 1/4 (3 & 4" lining)	...	...	330