Abex CORPORATION

HEAVY DUTY SERVICE BULLETIN

AMERICAN BRAKEBLOK DIVISION

BULLETIN NO. 10

THOSE ANNOYING BRAKE NOISES!
WHERE DO THEY COME FROM?

There are times when squealing brakes not only disturb the driver of the vehicle but also prove distracting to other motorists and pedestrians. What is misleading is that the average person associates the squealing brake with an unsafe stopping vehicle. Of course this is not necessarily true in every instance, for a brake to squeal there must of necessity be action within the drum. It is the undampened vibration that can be the cause for brake noise. The correction rests with arresting the vibration. When the resultant frequency is changed, the noise is muted and removed from the audible range of the human ear. It is known that when two surfaces rub against each other there is inherent vibration. We never actually fully eliminate the vibration but change its frequency to make it acceptable.

When the brake reline is thorough and done in text book fashion the possibility of brake noise is then scant. It is when things are left undone in the reline procedure that brake noise may present itself. A poor lining to drum fit, not properly centering the brake shoe assembly within the drum circle and the lack of lubrication of the brake shoe mechanisms are some of the most common areas of neglect.

With the advent of the bonded linings some years back, we recall some instances of brake noise at times. This was because the lining and shoe now being integral was more critical and meriting of a more exacting reline. The fact that a riveted set seemed to correct the noise problem in some of these cases did not reflect on the lining per se. Rather the flex, give or motion between the lining and shoe table in the riveted application was sufficient to interrupt and change the frequency of the possible vibration. So that we are fully understood, we do not at any time condone or encourage any laxity in the thoroughness of the reline whether the application is bonded or riveted.

Brake noise in the heavy truck field has never been a serious problem per se and this is especially true in fleets that are well maintained. Objectionable brake noise may be heard periodically which could result from too effective a brake when running with a light load or with no cargo. On the horizon now are valves and controls that meter and modulate the pressures to brakes commensurate with the demands of the vehicle load. These will relieve wheel hop and the brake chatter frequently heard particularly on trailers running light. Of course, the brake noise could also be the result of deferred or poor brake maintenance. The brakes on light trucks occasionally emit squeals and their causes could be many, especially the degree of the maintenance in the smaller fleets and in those of individual owners.

Brake lining in itself emits no noise since there is nothing in its composition to introduce it. It is when linings meet the revolving brake drum that things begin to happen inside the drum. We stress the need to properly service the foundation

brake as this is where the action takes place. A vibration emanating from one or many sources can be responsible for brake noise.

Brake lining manufacturers in general are constantly developing and improving their compositions to provide better stopping ability under today's higher speeds. These increased speeds result in higher brake temperatures requiring brake linings to be more heat resistant to minimize possible brake fade and also to afford performance stability with improved lining life. Brake lining manufacturers have always been conscious of brake noise. However, experience has proven most often that the causes for noise are found in the foundation brake, drum, suspension and where marginal maintenance was the rule.

Frequently the uninitiated when troubled with brake noise has been heard to blame the lining as being "too hard." What is he implying? Is he referring to the density of the lining? All quality lining manufacturers are continually striving for a more dense product, realizing it is more than ever a requisite for today's highway speeds with their high energy stops. The denser lining like the bonded lining does not of themselves cause brake noise. The problem stems rather from some area or areas of neglect in the reline operation. Just as there can be no compromising with safety, neither can there be any as regards the thoroughness of the reline.

Contributors of brake noise can be many and to isolate the cause will require going through a process of elimination. Here are but some of the areas to check for brake squeal: Inherent weakness in the shoe support members; weak, distorted and out-of-round drums; lack of lubrication; weak hold down and shoe return springs; loose linings; poor lining to drum contact and improper adjustment. An unbalanced brake where one or more brakes are doing more than their share of the braking could be cause for brake noise. The accumulation of dust and dirt in the drums that makes for sensitive brakes could be the means of brake noise developing. The use of drum dampeners such as springs around the drum exterior are often a help in reducing and even sometimes silencing brake noise.

When confronted with brake noise, first establish the nature of repairs that had been done to the brake system. Next, establish to what degree the brakes are in balance. An evidence of substantially more brake lining wear on one axle over another could provide a clue and give direction.

Brake drums cannot be overlooked in any instance. They must be mated on their common axle as to diameter, manufacturer and design. Emphasis must be given to their diameters to be sure they are within the safe limits. The friction surface and degree of concentricity are important areas of inspection. Too thin a drum distorts readily on application and is unsafe. All too often in screening for the source of brake noise we tend to absorb ourselves in the brake shoe mechanism at the exclusion of the brake drum. It can be that the brake drum in some instances is the vessel and receptacle for the brake noise.

In some cases, the problem of brake noise can stem from a deferred brake adjustment or delayed replacement of some worn brake components. In other cases excessively worn linings that allow the rivet, bolt or the shoe table to contact the drum can be a contributor. Extensive shoe travel that allows for

a delayed engagement as well as a slow release of the brakes can be sufficient cause to set up the harmonics.

Do not fall prey to the oft expressed notion of many that the brake linings are always responsible for all brake noises. True, should a brake lining become glazed this condition at times can be cause for brake noise. The glazed condition can be brought about by dragging brakes, marginal brake effectiveness (too much load for the brake), poor brake balance, lack of lubrication, too low a friction level of the brake lining and many other causes. Should too high a friction lining be used that would make for too effective a brake, this could possibly tax the stability of the foundation shoe rigging and actuate the harmonics. The real reason for the brake noise in such cases is the lack of rigidity in the foundation brake even though the improper lining application was an indirect contributor.

While basic corrections can be made to relieve all evidences of any irregularities in the brake assembly and this to include the brake drum, the permanency of the corrections will depend solely on sustained thorough repairs. It is the quality and extent of the brake maintenance throughout the life of the lining that makes the difference in the final analysis.

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