

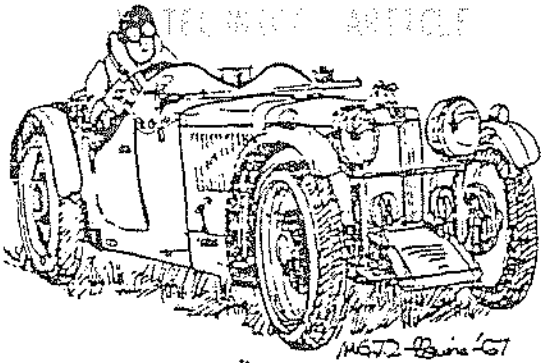
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BRAKE ADJUSTMENT FOR SAFE BRAKES

STOP your old M.G.

IN these days of hydraulic disc brakes one tends to become quite biased about stopping from high speed, and to forget that quite impressive retardation was achieved in pre-war times using mechanical drum brakes. With the passage of time, lack of maintenance has allowed even the best systems to become badly worn, or simply out of adjustment, and therefore non-functioning. The result of all this is that mechanical brakes have become 'taboo', and owners of old cars either accept their mediocre performance, or convert to an hydraulic system. Now I am not going to say that hydraulic brakes have no advantages, but what this article is going to attempt is to show that with patience, and an outlay comparable with that for parts for carrying out a conversion, one can achieve excellent results with none of the modifications to backplates or chassis which would be necessary in converting to hydraulics.

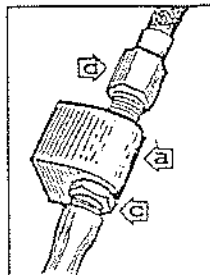
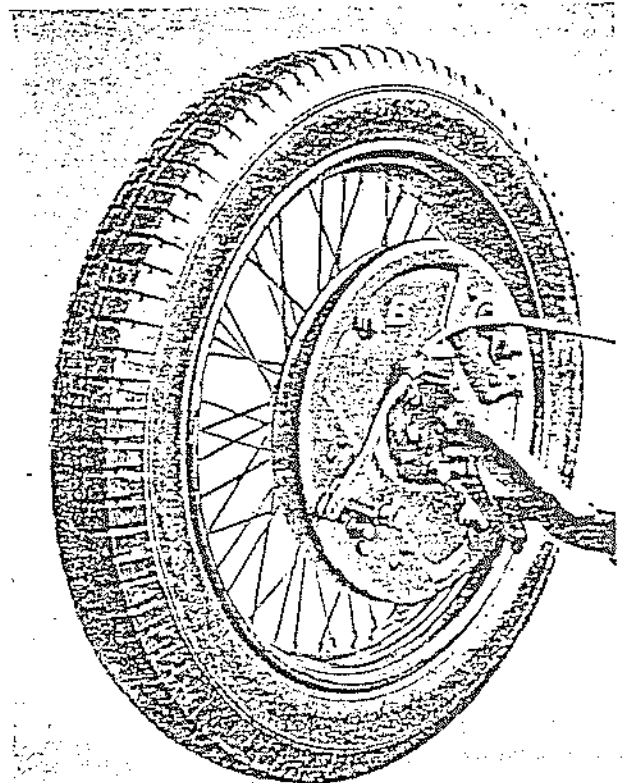
Firstly, let us examine the standards to which we must aim. Unfortunately, road tests of the day were not too technical, and seldom, if ever, are actual figures for stopping distances recorded. However, reports always spoke of the M.G.'s powerful brakes needing light pedal pressures. The following figures have been found for some models:

The *Autocar* (22 January 1932) testing the M.G. 'F1' four-seater showed 30 feet stopping distance from 30 m.p.h. —equivalent to 'lg'.

Motor Sport testing an 'L2' in November 1933 showed lg from 40 m.p.h., while the same magazine testing an 'NA' Magnette in February 1935 says of the

brakes 'as befits a car of high maximum speed, the brakes of the Magnette are extremely powerful. Although no servo mechanism is fitted they are

Brake backplate showing early-type cable assembly. On later cars the adjuster bracket (A) is mounted at point (B). The nut (C) is the locknut, and (D) is the adjuster (see inset below)



and make sure this is dead round, using a vernier gauge, and that the actual braking surface is exactly perpendicular to the drum face, using a square. Now if things are not right here, you can either try to obtain another set of drums, or you can get the old ones built up by metal-spray, and machined to the correct size. This will be expensive, but will be money well spent. Certainly, drums of M.G.s should not be skimmed, as this will almost certainly result in subsequent distortion on heavy braking. Having spent money on the drums, you may as well spend a few more shillings and get them balanced.

Now attention is turned to the back-plates. Firstly, the pivot bushes and camshafts. These will almost certainly be worn, but if you are lucky the camshafts will be quite passable after a light dressing with a 'smooth' stone. If they are badly ridged, it should be easy to find second-hand ones which are in good enough condition, but the old ones can be built up by welding, and ground to the correct size. New bushes can be bought easily, and should be reamed, before fitting to the backplate, to give an easy fit on the camshaft, but with no side movement. When this is obtained slide the bush over the camshaft and gently press the whole into the backplate.

Now refit the operating levers, using new Woodruff keys.

Brake linings are the next problem but these can be bought from the usual suppliers, already drilled. Make sure they are of the correct material, details of which are given in the table above. Use of a harder material is of no advantage at all; it merely increases the pedal pressure

Date	Model	Length per shoe	Width	Thickness	Grade of Lining	Remarks
1924-29	14/28, 14/40, & Mk. IV	12 1/4"	1 1/4"	1/4"	BA, DP BA, DP	Rear only, 3 off Front only, 4 off
1930-31	Mk. I*	12 1/4"	1 1/4"	1/4"	MR	Front & rear, 3 off
1930-32	Mk. II & Mk. III	13"	2"	1/4"	MR	Front & rear, 3 off
1929-30	M	7 1/2" 3 1/4"	1"	1/4"	MR BA, DP	Front & rear, 3 off Hand brake only, 2 off
1931-32	M, C	7 1/2"	1"	1/4"	MR	Front & rear, 3 off
1932	D					
1932-33 1932-34	F1, J1, J3 J2					
1933 1933-34 1934-35 1934 1935-36 1935	F2, F3, L2, J4 L1 PA, NA QA, NE PB, NB RA	10 1/2"	1 1/4"	1/4"	MR	Front & rear, 3 off
1932-33 1933 1934-35	K1, K2 K3 KN	12 1/4"	1 1/4"	1/4"	MR	Front & rear, 3 off
1934	K3**	13 1/4"	1 1/4"	1/4"	MR	Front & rear, 3 off

Notes
 * Early 18/80 cars were fitted with brake gear identical with that on the 14-h.p. cars, and linings should therefore be chosen accordingly.
 ** These figures are applicable only to cars fitted with the 'double lever' brakes.

required. With exposed brake-drums such as fitted to these early cars, brake fade is not really a problem even under quite severe conditions, since the drums have cooling air passing over them all the time, and construction of the drums allows good conduction of heat from the linings. The linings should be riveted in place, using the correct rivet snap. Now replace all the brake-shoes. A light smear of a molybdenum disulphide paste on the pivot pins is a good idea, and on the camshaft and

'flat' ends of the shoe. This helps reduce friction losses. Next, the drums are replaced, and attention is paid to the cross-shaft, and operating details.

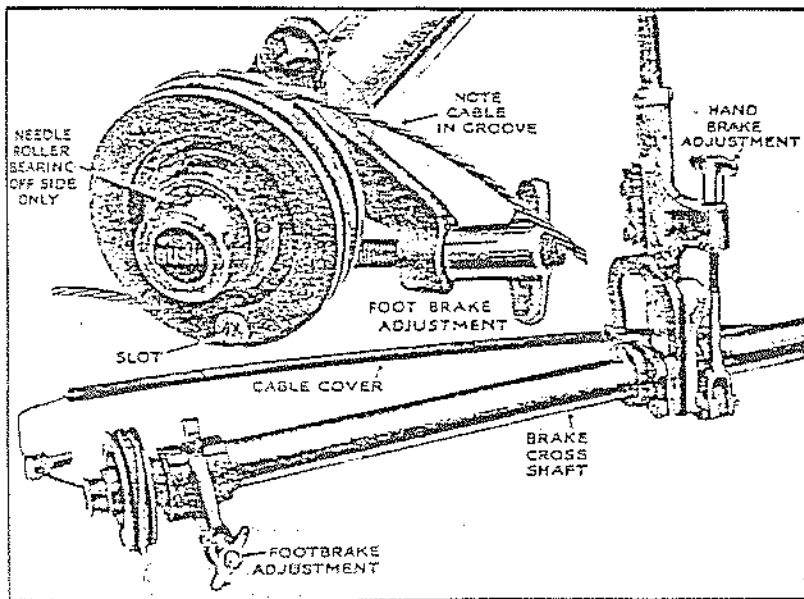
Brake cross-shaft

The pedal and cross-shaft and any intermediate levers should be removed from the frame, and given a thorough wash with petrol. Be careful with the needle-roller bearings, not losing any of the needles. Pack these with grease and reassemble, making sure that any clevis pins are not worn—these are very cheap, and this is not worth skimping. If the yoke ends are worn, they should be drilled out to the next larger size of clevis pin, and this should be fitted in place of the original.

Slacken off the master-adjuster screws for hand and foot brakes, and refit the cables, threading them through the chassis before attaching, first to the cross-shaft end, then to the brake lever. You are now ready to commence the adjustment.

Preliminary adjustment

Leaving the car jacked off the ground, without wheels fitted, tighten each ad-



Brake cross-shaft showing the main adjusters which act on all four wheels. The arrangement on 'N'-types is slightly different

juster in turn until the drum no longer revolves freely, then slacken off one whole turn of the nut. Do up the locknut. Remove the drum, and smear the inside of the rubbing surface with engineers' blue. Now carefully replace the drum, taking care not to touch the shoes at all, and tighten up on the hub. Now undo the adjuster locknut, and turn the adjuster until you can hear rubbing on rotating the drum, then slacken off, one whole turn—no more. Repeat for each drum, then remove them, again taking care not to touch the linings, and examine these. If there is an even blue film over the linings, you will be lucky! If not, file the blue parts off the lining with a coarse file, and repeat the 'blueing'. When you can achieve a nice even blue all over the linings you have got exactly the right adjustment. It only remains now to check this for the small variations you will get owing to unequal pull in the brake cables. Replace the drums, after clearing out all traces of blue.

Final adjustment

Replace the road wheels, and screw down the main adjusters on the cross-shaft to the stops, then turn back a fraction, say one-eighth of a turn. The foot pedal should have about $\frac{1}{2}$ in. of free travel, but if not, the length of the coupling rod can be adjusted to give this. Take the car off its jacks, and take it out to a quiet road, preferably on private ground, and with a loose surface. Drive up to 15-20 m.p.h. and apply the brakes hard. Get out and examine the skid marks. From the direction the car tried to turn, and from the lengths of the skid marks you can deduce which brake is not doing enough work, and adjust this one up a little. When you have dead-four-square braking your job is over. Take the car to the testing station, if you wish, when 1g or 100% retardation on the hand brake should be recorded.

Routine adjustment for wear

Having got the brakes in good order, it is easy to keep them so. Lubricate the

camshafts with a high-melting-point grease once a week (one turn of the greaser is enough, refilling this when it is hard down), and the cables at the same time with S.A.E. 140 gear oil. Grease is *not* to be used in brake cables—please!

When the pedal eventually has a long travel, adjust the main screw on the cross-shaft to restore normal travel for the pedal, and bring the hand brake adjuster up to meet this. This will probably be necessary roughly every 1,500 miles, but will depend upon how you drive. When there is no more adjustment left here, slacken right off again, and readjust the brakes at each wheel independently, as above, although there is no need to go through the blueing routine again, until the linings require replacing.

Given normal maintenance, carefully carried out, they should last another 30 years or so before requiring another complete overhaul. They have already survived that long with very casual attention!