The Talbot Manual

Technical Resource

Braking System

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6 Talbot Braking System

The Talbot Braking System

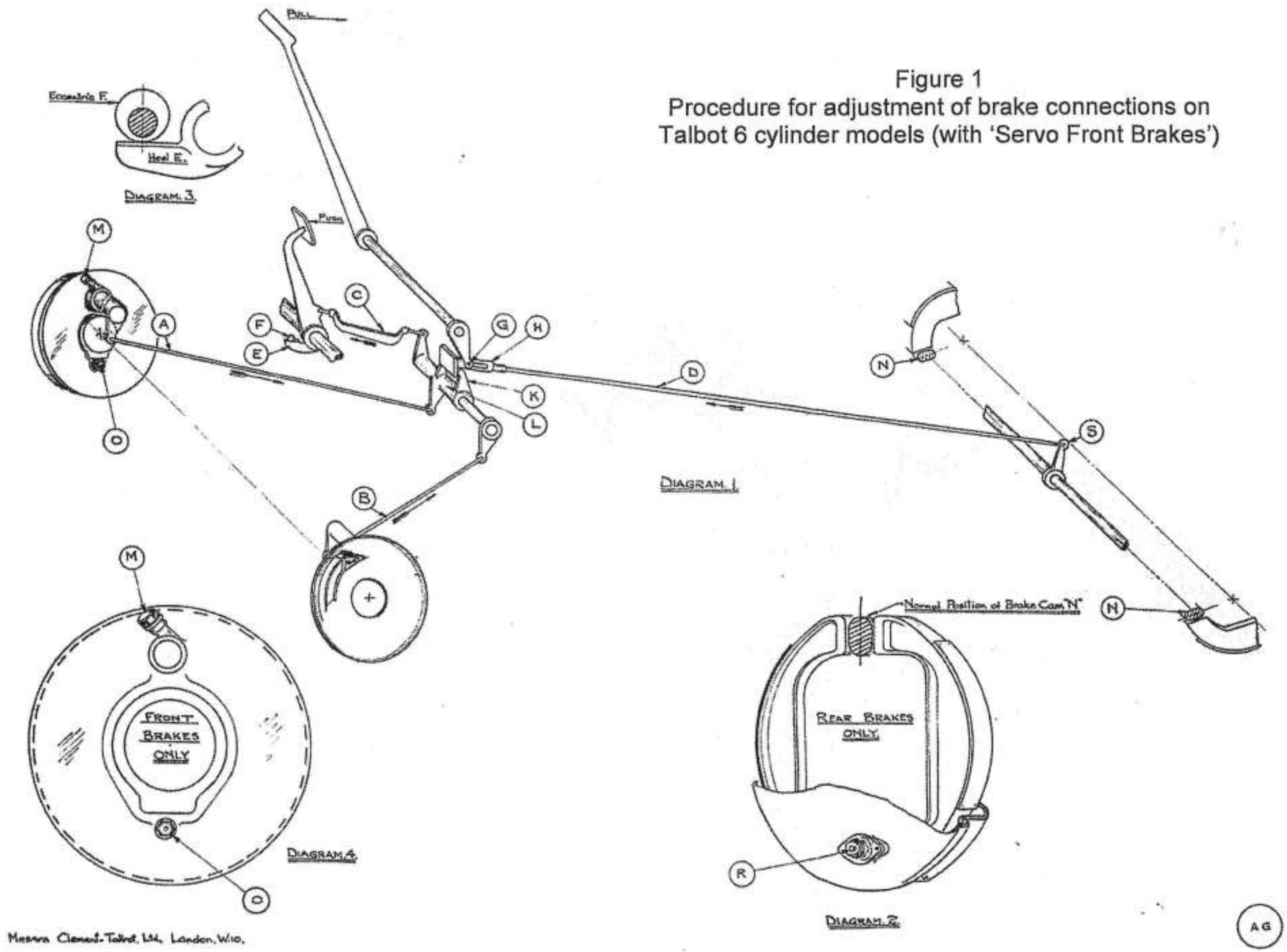
General Description

The Talbot braking system is renowned as being amongst the best in the pre war car world. A combination of large drums, excellent leverage and self wrapping, servo action front shoes make for rapid and reliable retardation.

But being a Talbot it has idiosyncrasies of its own. The most notable of these is the complete absence of any compensation. No whiffle trees, no pulleys. How you set each brake will determine how it will operate. Thus the balancing side to side and back to front is critical in achieving optimum performance.

Fortunately Talbot brakes have attracted much high class writing. So in the spirit of not trying to invent an already round wheel we reproduce articles by the pre-eminent experts Arthur Archer and Anthony Blight. Follow their advice and you will enjoy trouble free retardation.

Figure 1
Procedure for adjustment of brake connections on Talbot 6 cylinder models (with 'Servo Front Brakes')

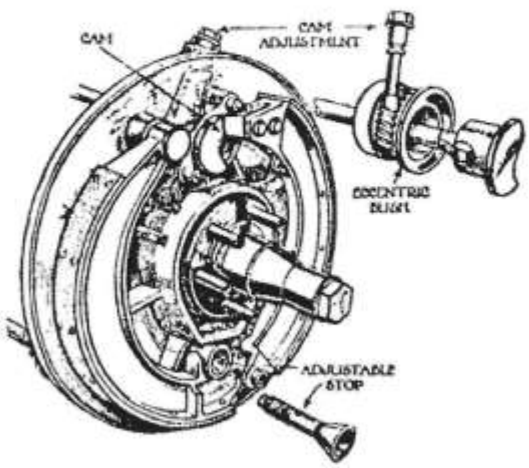


AA5 NOTES ON THE ADJUSTMENT OF ROESCH TALBOT BRAKES

Notes:

1. These notes cover all models from the AG of 1929 onwards On the earlier models AD and AF the front brakes are not of the servo type described below, but have two standard cam operated brake shoes similar to the rear brakes.
2. There are two distinct methods of front brake actuation:
   a) By Perrot Shafts (up to about 1931)
   b) By enclosed cables thereafter

Whichever system the car has, the basic principles are the same. At the rear, the cars are fitted with standard two shoe cam operated brakes. At the front, the two shoes are coupled giving a powerful servo action and the effect of two leading shoes. Once the brakes have been set up initially, adjustment for wear should be taken up where it occurs, at the shoes. On each rear back plate there is a large nut diametrically opposite the brake camshaft. Through the agency of a 'T' bolt and a pair of tapered wedges, tightening this nut expands the rear shoes. The rear brake cams are not, strictly speaking, adjustable one against the other but at the centre the camshafts are fed into a common lever, each shaft of which has its own pinch bolt. The bolts are fitted to grooves. Nevertheless, it is possible to slacken the bolts and adjust one cam against the other. I have sometimes found this to be advantageous if the parts in question come from disparate vehicles.



Once the optimum position is found, tighten the pinch bolts securely. It is as well however to check that both brake cams lie on a diameter line when the lever is in the rearmost position. On each front brake there are two adjusters. One, which is often overlooked, is located just under the steering arm. Its purpose is to adjust the anchored shoe alone with relation to the brake drum. The other adjuster takes the form of a larger hexagonal nut on the outside of the brake drum, easily visible from the front of the car. This nut rotates the whole brake cam bush which is made eccentric for the purpose. This forces the (leading) shoes outwards when turned in the direction of the arrow. Lengths of the actuating rods are individually adjustable, but they should not need altering after an initial setting up.

To adjust the brakes proceed as follows:-

Jack up the car so that all four wheels are clear of the ground and there is room for you to get underneath it to make adjustments. Never get under a car which is supported with just a jack; always use axle stands. Make sure the weight is supported on the axles in the normal manner i.e. the road springs are in their normal operating condition. At this stage, if dealing with an 'unknown' car, it is worthwhile to remove all the drums, clean and lubricate all the adjusters; make sure they are running easily. The shoe ends and fulcrums should also be greased along with the rubbing pads on the front back plates. Whilst the shoes are off, make sure that the rear camshaft operates absolutely freely. Originally it was intended that this should be oiled through the hollow camshafts by taking a little oil from the differential.

A cork washer should be fitted between the ends of the two brake camshafts in the lever to guard against leaks at this point. The tubes are loaded with either a felt or wooden 'wick' to limit the passage of oil to the outer bearings. If you do not want to go to the trouble of restoring all this to working order at least pack the cam bearings with grease. The 'T' bolts and threads etc. on the rear adjusters should be smeared with grease. The conical front brake shoe adjusters should be screwed in and out to their full extent. They are fitted with spring loaded ball detents to prevent them moving under vibration. If these are working you will hear a 'click' every half turn of adjustment. If a click is not heard and the adjuster turns easily it is best to take them right out to free off the detent. Smear grease on the assembly. The large front brake camshaft nuts have a similar click system which should be quite audible and detectable when turning the nut. It is worth while making sure these clickers do work because they stop the adjustment inadvertently moving.

Initial Adjustment

Disconnect all rods; the two front rods at the cross shaft under the gearbox and the rear rod at the axle end. Bring up the adjusters on both back wheels until the shoes are just felt to rub, then back off the adjusters until the shoes are just clear again. Do this on both sides. Make sure that the brake cross shaft in the gearbox is free and that the pedal spring is powerful enough to turn it off. Both shaft and pedal are lubricated from the gearbox and should need little attention. Replace the rear rod temporarily. (Make sure that the rear brake rod is free where it runs through the bracket on the torque tube. It is worthwhile to loosen the 'U' bolt securing the steady bracket and allowing the bracket itself to float in correct alignment with the brake rod when the pressure is on. Retighten the 'U' bolt. It should be well lubricated at this point). Apply the handbrake a few notches and check resistance at the back wheels. You will probably find one side is tighter than the other.

Slack off the tight side, adjust until the resistance on either wheel is as near as you can judge identical. The resistance should be tested by trying to twist with the hand at the twelve o'clock position, pushing on a tangent parallel to the ground. Always test in a forwards running direction. Leave the brake temporarily connected up and proceed to the front. First, screw out the anchor shoe adjuster under the steering arm until the anchor shoe is heard to be rubbing on the drum when the wheel is rotated. Having reached this point, back off the adjuster again until the drum is completely free. Then making sure that the rods are pushed forwards, rotate the main adjusters in the directions of the arrows until resistence is felt, then back off until the drum just goes free. Adjust the rods so that you can just insert the clevis pins without pulling the rods backwards. At this stage it is as well to enlist the help of an assistant. Have the assistant apply the brakes until he feels some resistance to the pedal. Then test the resistance of all four wheels. You want to arrive at a situation where the resistance on the two rear wheels is slightly greater than that at the front. This may seem odd, but under running conditions the servo action of the front shoes renders the front brakes much more powerful than the rear. You will almost certainly find a discrepancy between the front brakes and this should be adjusted by shortening or lengthening the front rods as appropriate.

When they are properly adjusted, these brakes are very powerful and you can afford to back off the rod on a brake which is too tight. Almost alone amongst old car brakes, you have plenty of pedal travel at your disposal and more than enough adjustment. When you have achieved a situation of slightly more resistance on the rear brakes than the front, get the assistant to apply the brakes, first a little harder (note the effect), then a little less hard.

For all positions of the pedal, the resistance of the two front wheels should be equal to that of the back's, just a little less in each case. The adjustment should be such that the handbrake should fully lock the back wheels at about half travel with the lever vertical. Make sure that all rods enter the clevis by at least 3/8", preferably more. To adjust this in the case of the front rods; they may be screwed in or out of the cable ends, provided that there is at least 3/8" thread engaging in the cable end. To prevent the cable ends turning, it may be held with a 9/16" AF open ended spanner. You will find a single flat on the cable end (originally intended for a tab washer to lock the adjusting nut). Make sure all the lock nuts are tight, and that all split pins are in place. Oil all the clevis joints etc.

Road test the car at low speeds. Any tendency to pull one way or the other should be corrected by letting off the front brake on the side to which the car pulls. Try the brakes from progressively higher speeds until you are satisfied that all is well. Notice however, if the front brakes tend to grab or be unpredictable, then it is probably due to the anchor shoe spring (the bottom one) being too slack. The correct operation of this spring is vital. Also try the handbrake on its own at low speeds, to make sure that neither back wheel locks up before the other. Again, you can afford to let off the tight one rather than bring up the less effective one.

The foregoing procedure applies only to brake adjustment after a complete overhaul. For ordinary running adjustments, it should be possible to restore performance by the rear-of-the brake adjusters only. There is one other point to consider in connection with Perrot brake cars, that is the correct adjustment of the Perrot shafts to avoid interference with the front steering.

When setting up the front rods on Perrot brake cars, therefore, proceed as follows:

Disconnect the rod at the gearbox end as before. Remove the large rubber boot from the back plate and slip it along the shaft so that you can see into the outer universal joint. The Talbot Perrot shaft joints are particularly neat when compared to those of other makes, the shaft ends terminating in round, flat tongues. These tongues engage with the trunnion blocks housed within the brake cams to achieve universal action. You will observe the tongue on the outer joint with the rubber boot removed. This tongue should be at right angles to the king pin with the vehicle at rest. The rod should be adjusted to hold it in this position and the adjusting cam rotated in the direction of the arrow to bring the shoes into the operating position. The brake is usually in the working condition when the brake cam is at approximately 12 o'clock in the eccentric bush.

The brake must always be brought up by turning the adjusters in the direction of the arrow. The bush will rotate the full 360 degrees and you can sometimes find an operating position by turning the bush backwards. This does not, however, give correct braking. Whilst the rubber boot is removed, make sure that the Perrot shaft universal joint is well lubricated. It is also worthwhile to check the lubrication of the inner joint. In a car which has seen much service, there will almost inevitably be play in these joints. This should be allowed for when making adjustments. The rubber boots intended for the universal joints of the front drive shafts on early Minis make good replacement covers for the Perrot shaft joints.

With all beam axled cars, whatever the method of braking, you will find there is some vagueness about the steering on heavy braking. This is because the wind up of the springs alters the castor angle of the front wheels. Later Talbots, which had steady bars on the axle, should be more stable under conditions of heavy braking, but the effect can still be felt. I am afraid it is just in the nature of the beast and there is not much you can do about it.

TALBOT BRAKES

or

DON'T EVEN START IT IF YOU CAN'T STOP IT

I suppose the feature of pre-war cars which makes them less familiar than their modern counterparts is their non-hydraulic brakes. However, no Talbot owner need fear that his will be less efficient because when properly set up he will have brakes as good as any. On the other hand, a fair proportion of all the Talbots I have driven have frightened me out of my wits, with front brakes pulling or grabbing the car all over the road. Being an extremely nervous chap I have worked hard to ensure that none of my cars behave in this way. Orson Welles once said that there is no technique devised by man which cannot be mastered by someone with average commonsense in an afternoon. Good on yer, Orson, but after struggling with eight sets of brakes for fifteen years, I am only now beginning to see the light. All the same, he is right, because the principle of the things is really amazingly simple.

Talbots are funny beasts, and perhaps more than any other car are designed in such a way that every part relates to and depends on every other. From this it follows that everything, but everything, has to be working correctly, leading to the conclusion that once the cars have used up their initial factory-given life – which seems to be about 250,000 miles – there is no alternative to taking them entirely to bits and starting again. One seems to be able to keep some cars on the road for ever by repairing a little bit here and another there. Not so Talbots: if anything is worn out or broken you can bet that the whole car is in a like condition.

They also give the impression, far more than Sunbeams for instance, of being built as a production series from interchangeable parts. Fatal delusion! In fact every car was assembled individually, and hardly any parts can be exchanged without hours of hand fitting. Woe betide the hapless owner who replaces one gearbox with another. How sweetly it bolts to the old crankcase – but the consequences of the resulting misalignment between crankshaft and gearbox mainshaft will probably sour the poor chap against Talbots for life.

I have thrown in that particular pearl of Talbot table-talk because it crops up with alarming frequency. However, it serves to illustrate the point that if one wants decent brakes, the only thing to do is to start from the beginning. Not being entirely clear where this is, I start by taking a look at the brake drums themselves. The first principle with these – and, I believe, every other brake drum as well – is never to get them skimmed, however scored or ridged the braking surface may be. They simply won't stand the loss of any metal; it weakens them, and they go out of shape when the brakes are applied. If the ridges are really mountainous, then find some more drums – but in practice I have rarely seen any too bad to use. Even new linings soon bed themselves into the contours, which incidentally have the advantage of increasing the braking area.

The second point to watch – and I am now talking about the 95/105/110 drums – is the dust seal, effected by a lip on the back plate registering with annular groove on the inside face of the finned aluminium shroud cast around the circumference of the drum. Because the front

wheel bearings are of the taper roller type which must have a little free play, there is quite a bit of lateral movement at the outer edge of the brake drum which means that the back-plate lip needs more clearance in its groove than one might think, and further that each drum and back plate tend to run themselves in. Swapping brake drums is a pastime leading to much hard work before the two halves of the dust seal will mate properly. And on the same point – never drop a brake drum, or even leave it standing, on its rim. If you do you are quite likely to close up the groove, leading to more fouling when the brake is assembled. When this happens – and if it does, it will be worst under heavy cornering – the circular-saw noises and spray of red-hot aluminium particles can be quite alarming. Attempts to open out the groove to give the necessary clearance often end in a section of the shroud breaking off – aluminium which has been subjected to heating and cooling processes for forty years tends to be very brittle.

Finally, there is the balance of the drums. Few Talbot owners seem to consider this point, but I have endured many frustrating years transferring beautifully balanced wheels from one car to another, only to find that they then needed balancing all over again. Alas, many hundreds of afternoons had passed me by before the penny dropped. Since then I have checked all my drums for static balance on one of the old-fashioned horizontal spirit-level wheel-balancing devices. With a bit of care, the drums will fit on the central "hub" exactly as the wheels do. The results were suprising – to me, anyway. About a quarter of the drums were in perfect balance, about one half varied between 1 to 3 ounces out – and the final 25% were miles adrift, two by over 5 ounces, which is more than can be corrected on the wheel by the standard balance weights! Both drums had found their way to the back wheels of my 3½ litre tourer, where they had given me the impression I was driving on square wheels, or on tyres with malignant warts.

I am not sure whether this imbalance arises from variations in the thickness of the steel in the drums proper, or in the aluminium shroud – probably a bit of both. If the error is less than one ounce it can be corrected by a series of drillings in the vertical ferrous flange just below the dust-excluding groove. Being on the inside face of the drum, these drillings will be invisible when the drum is on the car. They must of course be made at the heavy point of the drum. If the imbalance is more than one ounce, resist at all costs the temptation to remove any metal from anywhere else but instead make up a flat piece of iron or steel to the correct weight – a piece of 1/8" section measuring 1½" by ¾" is a typical size – and rivet it externally to the face of the drum as near to the outer edge as possible, and at a point diametrically opposite the heavy side. The rivet heads inside will be clear of the brake shoes, and the weights themselves will not interfere with the wheel spokes.

As to brake linings, there is a wide range of choice, equally good for touring or racing. Ferodo MR 41 is a good all-purpose lining, but my favourite is Duron BFL, mainly because I discovered that Arthur Fox had used it when racing my cars in the early thirties. The only positive advice I can give is to avoid Mintex "Halo". This was originally recommended to me as being suitable for all possible uses, to such an extent that when chronic brake fade set in after three laps of Oulton Park, I tried to find all sorts of other reasons for it! I cannot advise them even for touring, because I once suffered brake fade in my tourer while just tooling about on the slopes of Dartmoor.

The above remarks apply equally well to all cars, but the Talbot braking system is a bit special. The most obvious feature is a total lack of any compensating device between the individual brakes, so that each must therefore be correctly adjusted on its own.

The first step is to adjust the lengths of the brake rods so that when the footpedal is at rest all four brake operating cams are in the fully "off" position. The brake shoes will then be a long way from making contact with the drum, even with new linings fitted, and there will be considerable free play in the brake pedal. The next bit is a personal fad, because I do like a handbrake with no free play at all. The handbrake linkage operates on the "T" piece at the front end of the rear brake rod, and the foot pedal linkage connects to the brake rod just behind it. It is nearly always the latter which is actually locating the brake rod, holding the "T" piece away from the handbrake linkage and leaving the handbrake itself with an inch or two of free travel before it engages. The object of the exercise is to adjust the rear brake rod so that it is the handbrake linkage which is just in contact, after which the two front brake rods can be adjusted to bring them up behind.

After that, the play at the foot pedal (I personally leave a lot, so that I can "toe and heel") should be taken up in the master link immediately behind it, and connecting it to the cross shaft at the back of the gearbox. All four brakes will then be taken up equally, and so far we will have kept everything fair and square. It is fatal to try and take out this free play by adjusting any of the individual rod lengths.

The rear brakes themselves are no problem. Of the normal one-leading one-trailing shoe type, they are operated by a cam at one end and adjusted by a wedge (screwing in or out) at the other. It may seem obvious to warn against trying to adjust them with the handbrake on, except that top mechanics have frequently been guilty of this in motor races, with disastrous results at the next corner. Besides, it wears out the adjuster. Likewise, do not expect the braking effect to be even just because both brakes are "on the touch" with the car standing; the only way to establish this is to drive the car on the road and brake it hard on the handbrake, when it will either pull slightly one way or the other, or else one tyre will scream before the other. The procedure after that is self-evident.

There is nothing self-evident about the front brakes, however. They are a different matter altogether — a typical stroke of Roesch genius which, just as typically, causes the average chap more trouble than all his more mundane exercises put together. The system provides, through just one single operating cam, all the benefits of two leading shoes with servo back-up: two leading shoes, by pivotting the back shoe at the top and the front shoe at the bottom, and servo effect by linking the shoes so that the front one operates the back one and they both tend to pivot as a unit around the heel of the back shoe, exerting a strong self-wrapping force which increases with speed.

The penalty of managing all this with only one operating cam is that the self-wrapping effect has to be controlled by some internal device in the shoe assembly itself. It is the failure of this control which causes the

11

grabbing and pulling — and it depends entirely on tension of the two pull-off springs. Most people tend to ignore them, for the good reason that in a normal brake they are of no importance — they will work well provided that they have any tension at all; but in the Talbot front brake this tension is crucial, because the main duty of the springs is not to simply return the shoes to rest when the brake pedal is released, but to control the degree of servo effect. Any imbalance between these two springs will cause too much or too little, the result of which will be enormously aggravated by the inevitable consequence that the servo effect will be different as between the two front brakes. The remedy is simple — replace the pull-off springs at regular intervals. A brake is a mechanism for converting energy into heat, and the more powerful it is, the more heat it will produce. Some of this heat soaks from the shoes into the springs, and over a period they will gradually lose their tension.

The degree of control exercised by these springs and how to determine their correct tension, is best explained by taking two extreme cases. Suppose the top spring (controlling the front shoe) to be infinitely strong — or the bottom spring infinitely weak, (the same relative imbalance arising either way); an application of the brakes would then fail to move the front shoe into contact with the drum, but would cause it to slide across the face of the operating cam and transfer all its motion to the back shoe. The pair of shoes would then pivot as a whole around the heel of the back shoe, giving a tremendous servo effect; the back shoe would do virtually all the work and the front shoe none.

Now take the contrary case, with a top spring infinitely weaker (relatively speaking) than the bottom; the front shoe would then be forced against the drum and do all the work, while the rear shoe would not move at all, doing no work and applying no servo force either. From a fierce locking of the wheels in the first case, we would graduate to a well mannered but decidedly feeble retardation on the second.

Clearly one can arrive at any compromise one desires between these two extremes, depending on the choice of spring tensions. I have always thought it a bit naughty of Talbots to have turned out all their chassis with the two springs of equal tension, ignoring the differences in alternative body weights or the use to which the car was to be put. For example, a heavy saloon intended for mild touring can safely use a considerable servo effect, i.e., be set up with a top spring relatively stronger than the bottom. On the other hand, BGH 23 which races at 22 cwt and was expected by its sadistic driver to slow from 118 to 18mph for Mulsanne corner at the end of the Le Mans straight while racing there last year, would probably have gone end over end with that same setting. In fact the car is set up with bottom springs a lot stronger than the top ones, the back brakes more "up" than the front, and several other additional dodges designed to cut down the front brake servo effect. The result is braking which is beautifully mannered at all speeds, yet still powerful enough to propel the engine oil out through the filler cap if used too insensitively — a point for Talbot racing men to watch, by the way. (The Team cars all ended up with their fillers extended upwards to rocker box level.)

Another result is that my front shoes now wear faster than the back ones, something new to me. Every other set of Talbot front brake shoes

12

I have seen shows a back shoe worn about twice as much as the front, confirming my feeling a) that the bottom spring always weakens before the top one – it is after all connected to the hottest shoe – and b) that most Talbot owners put up with a degree or servo effect greater than I personally like. In fact for my money the front brakes would be perfect if they just acted on the two-leading-shoe principle with no servo assistance at all.

The really important thing, of course, is to ensure that whatever balance one reaches between top and bottom springs, it must be the same in both front drums. If it isn't, nothing one can do will stop the dreaded "pulling", because the servo effect varies at different speeds, so that while it is possible to adjust out the "pull" at one particular speed it simply makes matters worse at others. I have often driven Talbots with brakes which are perfect at low speeds but which hurl one into the hedge as soon as one begins to drive enthusiastically: and it seems almost a rule for cars to be set up so that a small pull one way at low speeds is combined with a small pull the other way at high speeds, as if this was the best compromise a Talbot driver could hope to attain.

Since compromise was a notion unknown to Georges Roesch, this must be wrong, and in fact none of this nonsense is necessary. To recapitulate, one must start at the beginning and get everything right. My assembly procedure for the front brakes is as follows:–

a) Check pull-off springs and renew as necessary with bottom springs approx. 25% stronger than top.

b) Chamfer off the brake linings to give generous "lead-in" on the nose of both shoes, particularly the front one, where I put a 'ramp' on right back to the second row of rivets. (Another servo reducing dodge I picked up from John Bland.)

c) Make sure the shoes are in proper alignment. Nearly always they are slightly twisted. Assemble the shoes on the backplate without their springs and check:
   i) that the inside face of the brass bush linking the two shoes is making light contact with the rubbing pad cast in the backplate
   ii) that the nose of the front shoe is in line with the operating cam and slides freely in its guides
   iii) that the rear shoe pivots freely on its brass pin. Often the shoulder of this pin is burred over (by persons fitting it with the aid of a hammer) so that the eye of the brake shoe is nipped between this shoulder and the backplate. The shoulder can easily be relieved a little if necessary. Unless the shoes both pivot easily, all one's calculations on spring strengths will be undone. If the back shoe eye is nipped, it can also result in the brass pin pivotting in the back plate, which is bad news indeed.

d) Keep off the beer for a day or two and then take a good look at the top adjuster. The cam is eccentrically mounted and its adjustment controlled by an endless worm, so that rotation of the finger adjuster moves the whole cam mounting round and round in a full circle and will continue to do so for ever if the brake linings fail to make contact with the drum at some point on the way. The idea behind this dizzy circulation of the mounting is that the cam itself contrives to remain upright at the same time, so that its angle of attack on the nose of the front shoe is always correct and never varies. There are some odd consequences of this design, however.

13

One of them is that while the finger adjuster is being dutifully rotated in the right direction, the cam is only taking up the brake adjustment on its round journey from 9 o'clock to 3 o'clock, and as it travels on from 3 back to 9 around the lower half of the clock face, it is actually letting the adjustment off. Remedy – make sure that when the adjustment is right off, with the cam at 9 o'clock, it is a little past 9 rather just before it: it's got to be later than you think. Otherwise it is very easy to go badly wrong on the initial adjustment due to another quirk of the design, namely that a lot of "clicks" in the 9 and 3 o'clock areas make very little difference to the adjustment, as the cam mounting is being moved vertically rather than horizontally at those points. Conversely, when the cam mounting is at 12 o'clock each "click" makes a lot of difference. This is one reason why the brake rods must be the correct length to start with. If they are not, the correct adjustment of the front brakes will oblige the cams to be on different parts of the clock face, and one "click" will make a lot more difference on one side than it will on the other. It also follows that the brakes are easiest to adjust when they are well worn, with the cam mountings well past the 12 o'clock position.

e) The bottom adjuster can also be a mind blower, particularly if it is left at least two "clicks" off the rubbing position – another notion of mine for reducing servo effect by delaying the contact of the back shoe. The point to grasp here is that the adjuster moves both shoes, and while it is taking the bottom of the back shoe away from the drum it is also pushing the bottom of the front shoe towards it. It is not impossible to find, therefore, that letting off the bottom adjuster to withdraw the back shoe nevertheless causes increasing contact inside the drum; if this happens it will be the bottom of the front shoe which is touching, and the adjustment must be taken back the other way.

If one gets both d) and e) wrong – which is quite easy when fitting new linings – one arrives at an impasse where letting off either adjuster gives one more and more braking, and vice versa! I write from the memory of many anguished hours spent by the roadside. Just to make life easier for everyone, I would add that it is virtually impossible to obtain balanced braking with new linings, unless one is prepared to spend hours removing and replacing the drums, applying engineer's blue to the linings and filing off the high spots until the whole lining is in contact. Until it is, there is no hope of getting the same servo effect in both front drums, and one must soldier on running them in. There is a lot of lining, and it takes a lot of miles. However, unless the car is raced those linings will last at least 50,000 hard driving miles, and if you have followed the drill you will enjoy them all.

Lest it be thought that my approach is altogether too idealistic, let me say that a small "pull" in the front brakes can often be eliminated altogether just by taking up the back brakes a bit more. Again, if there is still a "pull" in the front brakes, always let off the stronger brake rather than take up the weaker. The effect of the two adjustments is really the same, tending to make the front brakes less powerful than the backs.

It pays to keep the backs well up anyway, otherwise one has no braking when going backwards!

Anthony Blight

14

Retaining Talbot Braking Efficiency

THE arrangement of the Talbot brakes is simple. One pair of shoes is contained in each of the four brake drums, the front shoes having a servo action which tends, on pressure on the pedal, to draw all on together.

The hand brake lever is coupled to the pedal control and operates a pair of shoes in each back brake drum.

The shoes at the back have an extremely ingenious arrangement of tapers which hold them in location.

In Fig. 1 this is shown. The side of each shoe, at the anchored or pivotted end, has a wedge or inclined plane formation H, H1, and in the wedge shaped recess thus formed are fitted brass blocks, B and B1, with inclined sides to match the incline on the end of the shoes. There is one of these blocks for each shoe, and they back on to each other. Between them is a bolt, in a bush, which forms the fulcrum and the adjust-adjustment.

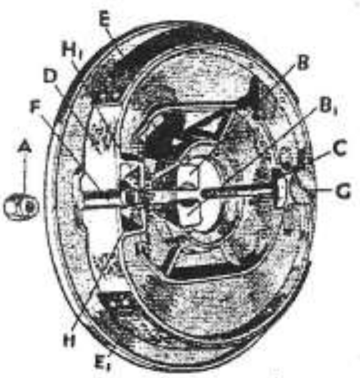


Fig. 1.
(A) Adjusting Nut, (B and B1) Wedge Shaped Blocks allowing adjustment by nut A, at end of bolt C, (C) Adjusting Nut which pulls wedge blocks B and B1, (D) Aluminium Brake Shoe, (E and E1) Fabric Friction Linings, (F) Bush for Adjustment Bolt C, (G) Operating Cam (H and H1) Taper Recesses into which wedges B and B1 fit

At the other end or shaft is the operating cam G which, on the pulling of the lever at the end of the shaft of which it forms part, forces the other ends of the shoes apart, thus applying the retarding friction.

The front brake shoes, Fig. 2, act on the self servo principle. The two shoes are coupled together and anchored on a fixed pin at one end, the cam operating on their other end.

The operating cam is mounted on an eccentric bush which can be rotated by a worm. The worm is operated by hexagon (A, Fig. 2), on which is marked an arrow, indicating the direction in which to turn the hexagon to compensate for wear. Another adjustment, B, comes underneath the steering swivel head. It is a secondary adjustment and should be left as the makers have adjusted it, and should not be touched unless the brakes have worn very considerably.

To use this adjustment at B it is necessary to slacken the main adjustment A completely, and for this operation the wheel should be jacked up. Then adjustment B should be unscrewed until it is felt that the shoe is touching the drum. It should then be screwed back slightly till the drum rotates clear of it. This adjustment having been made and verified, further brake adjustment will be made by the worm adjustment screw A, as occasion requires.

The adjustment can be made with one spanner and left as turned. They cannot slack back. A locking device gives four "clicks" at each complete rotation of the nut.

When adjusting turn the nut until, tapping the drum with a hammer, it does not ring with a clear note. This means the shoes are touching the drum. Then slack back the nut one "click" at a time, tapping the drum as before. As soon as the drum rings with a bell-like note it is indication that the shoes are clear of the drum. To make sure jack up each wheel in turn and spin it, and it is well to give the nut a tap on the end to ensure that it has moved into the proper position.

Then drive the car and test the brakes. First drive a mile or two without, if possible, applying the brakes. The drums should then be quite cold. If one is warm it should be eased off one "click." If both are warm both should be eased off one "click" and the test repeated *after they have had time to cool.*

If there is any tendency of the car to pull to the left or to the right it is an indication that one brake is holding on the side to which the car tends to pull. Ease it off a "click." This applies mostly to the front wheels. To check back wheel equal braking apply the brakes violently at ten miles an hour on an even and dry tarred road. The marks the wheels on one axle make should be the same for both wheels. The back wheel marks should be more pronounced than the front (to prevent skidding in muddy weather). Adjust whichever wheels the skid marks show are not skidding till the two wheels on the same axle make similar marks and the rear wheels more pronounced marks than the front.

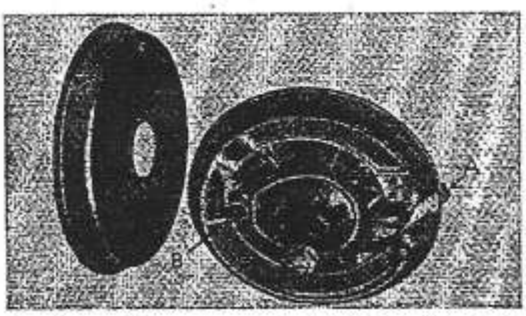


Fig. 2
(A) Main Adjustment Nut
(B) Secondary Adjustment Nut

It must be realised that it is always possible to check the braking of each axle separately. To do this the rear brakes should be slackened off so that when the foot pedal is applied only the front brake will work. It is then very easy on an even macadam road to drive the car at 10 to 20 m.p.h.; apply the foot brake and see if the marks on the road are absolutely even.

When this has been done the rear brakes can be adjusted. By applying the hand brake the rear brakes only will operate, and examination of the marks made on the road will make possible the adjustment of the brakes to a nicety.

When both front and back axles have been separately adjusted it will be found that the brakes are absolutely right.

All important bearings are automatically lubricated and there is thus no danger of getting oil on the fabric facings of the shoes, which would reduce their retarding effect.

SHORT BRAKE CHECK

By Michael Marshall

The procedures described below should not be construed as advice offered by me, or by the Club. That said, other Members may be interested in the following description of the checks and settings that I would make to get the best braking from a Talbot that is already in use, and whose system I believe to be in reasonable working order. If you are re-adjusting following remedial attention to any part of the system, or after a comprehensive overhaul, you can do no better than to read *Archer Archives No.5* in the Sept/Oct 2004 issue of the Magazine.

Unlike modern hydraulic brakes, or those of such cars as the Rileys of the late 20s and early 1930s which rely on one steel cable running round 11 bronze pulleys and have a degree of automatic compensation for wear, Talbot brakes are not self adjusting – as you set them so shall they behave. This calls for painstaking care when making adjustments, which will take a couple of hours to complete. However when once set correctly, the system should give years of good braking with only the occasional need for local adjustment to any particular brake – which can be done very easily.

Fig.1 (page 18) illustrates the overall arrangement of Roesch Talbot braking systems. It depicts that of a 14h.p. car of 1929. Earlier cars did not have self-servo front brakes and, in the case of the larger engined cars that appeared in the early 1930s, these are not actuated by rods and Perrot shafts as shown, but by rods and flexible cables. However, the procedure for setting is essentially the same. In broad terms, this involves: disconnecting the front brakes from the rear; NS from OS; getting the two rear brakes to come on together, getting the front brakes to come on together, and finally adjusting the balance of braking effort front to rear. In what follows, I simply outline the sequence of checks I would make – leaving the reader to delve into *Archer Archives No.5* for further details.

Preparation

With the front and rear axles supported securely on proper axle stands on a level base, and with the wheels clear of the ground, remove all wheels and drums to make sure that the drums are free from cracks; that all brake linings are of adequate thickness and free from oil, and that the adjusters in the back plates are free to operate, lightly oiled, and with well defined 'clicks'. If any of the return springs seem to have lost their tension they should be replaced, as the correct operation of the brakes, particularly the self-servo ones, depends on these springs being in good condition. Also, lift floorboards to see that all parts of the mechanism are free to operate without binding and adequately lubricated. Any defaulting items must be dealt with before proceeding further.

Rear brakes

1. Remove the rear floorboards as required for access to the rear brake cross shaft; remove the clevis pin from the rear of rod (D); remove one of the two pinch bolts securing the operating arm to the two cross shafts, and loosen the other. Check by hand or a mole grip that each brake shaft can turn freely, and that the return springs are strong enough to ensure that the ends of the shoes lie flat against the cam. If in doubt, withdraw the shafts, and clean and lubricate the bearings in the backplates – it is better to have a little slackness here than any binding. (If you need to replace any of the cork seals, now is the time to do it).
2. Dealing with each rear brake individually, unscrew the adjuster (R) a few turns anti-clockwise and tap the bolt inwards to ensure that the shoes are clear of the drums; easily checked by tapping the drum lightly with a small hammer, or spanner, and listening for a clear 'ping'. Then screw each nut clockwise until the 'ping' test gives a dull note indicating that the shoes have begun to touch the drum – then undo anti-clockwise for two clicks to provide a little clearance.
3. Replace the removed pinch bolt; tighten the two pinch bolts lightly; temporarily reconnect the clevis at (S); remount the rear wheels; apply the hand brake strongly to load-up the

mechanism (which should cause the rear brakes to come on hard), and firmly tighten the two pinch bolts. Then release the hand brake and re-apply it, one click at a time, adjusting for equal effect; slackening the one which comes on hardest by turning (R) anticlockwise, one click at a time and tapping the end of the bolt lightly towards the drum to allow the adjusting wedges to seat themselves. NB: Always check braking resistance by applying the hand horizontally at 12 o'clock in the forwards direction. The two rear brakes should now be 'in step' and should be on hard after 4 or 5 clicks on the hand brake ratchet.

Front brakes

4. Disconnect front brake rods (A) and (B) under the gearbox and push rods forwards. Turn each adjuster (M) in the direction indicated by the arrow on it until the tops of the front shoes are as far as possible to the rear. This should ensure that the full range of 'On' adjustment is available when (M) is turned in the direction of the arrow – otherwise the cams may go over-centre, and further rotation of (M) in the direction of the arrow will have the opposite effect of letting the brake 'Off'! (See Fig.2)

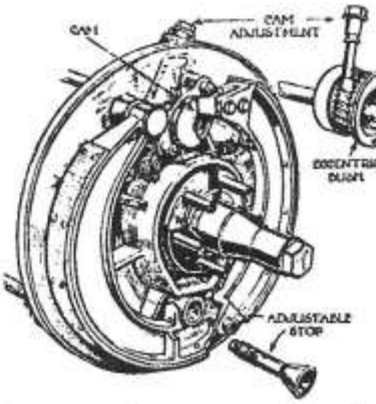


Fig. 2

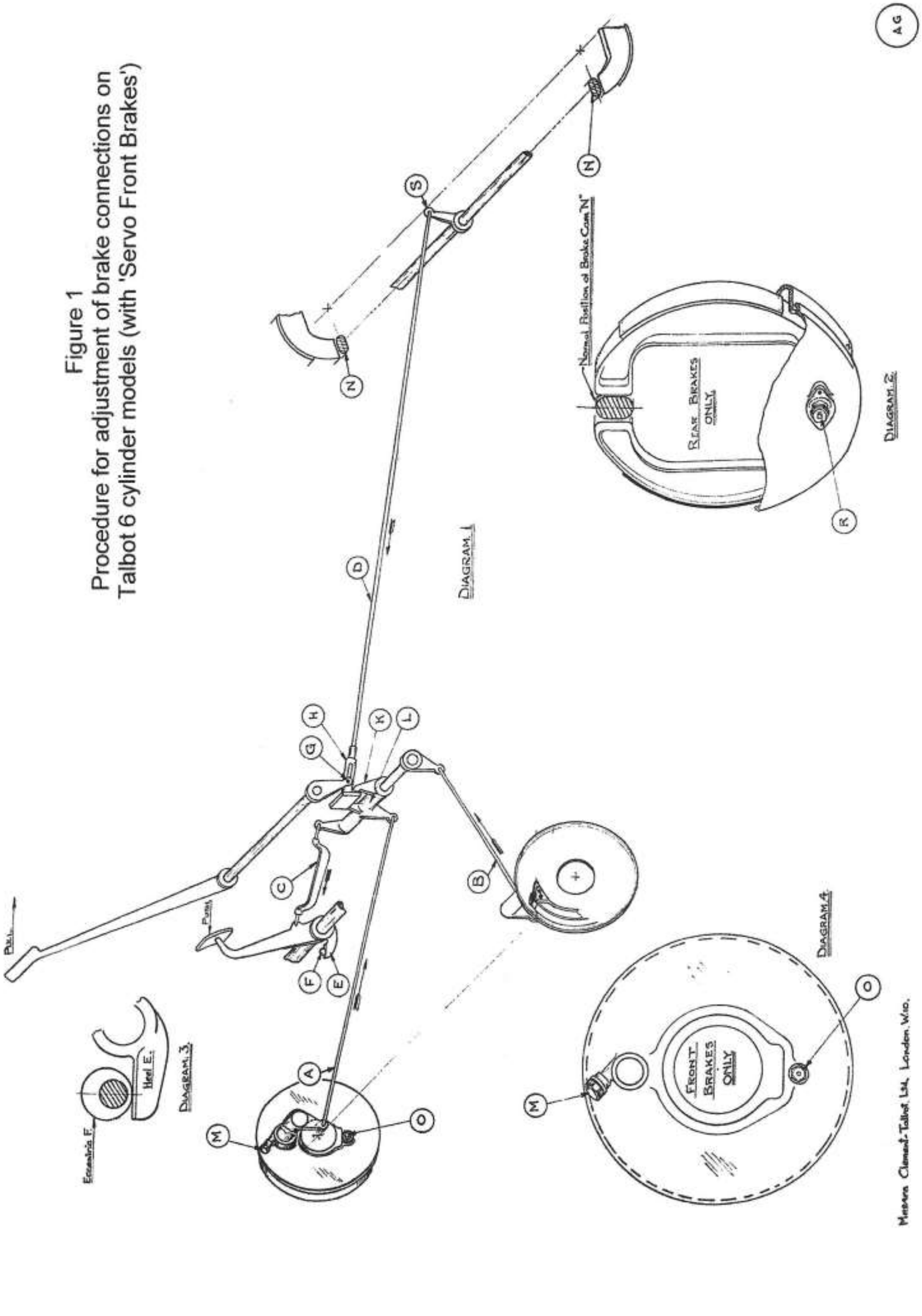
5. Refit drums and wheels, and 'ping' the drums to ensure that the rear shoes are clear (screwing in adjuster (O) if necessary). Screw this out until the 'ping' test indicates that the rear shoes have just made contact, then back it off until they are just clear.
6. Turn adjusters (M) in the 'On' direction indicated by their arrows until braking resistance is just felt at each wheel, and adjust the lengths of the rods so that you can just re-insert the clevis pins without having to pull the rods backwards.
7. Then, get an assistant to apply the foot brake in stages, and try to get equal braking effect NS and OS over a range of braking application, adjusting the lengths of rods (A) and (B) as necessary. To avoid interference with the steering on cars with Perrot shafts, slide back the outer rubber gaiter so as to check the outer tongue of the Perrot shaft is at right angles to the king pin before the brakes are applied and, if necessary, adjust as detailed in *Archer Archives No.5*.
8. With your assistant applying the footbrake progressively in stages, check the braking effect on all four wheels. The two rear brakes should be equal NS to OS, as should the two front brakes, and the rear brakes should come on fully when the handbrake is at, or near, the vertical position. If adjustment to the length of rod (D) is necessary to achieve this, remember to make the same adjustment to the front rods (A) and (B).

Setting front to rear balance

9. It is usual practice to adjust the rods (A), (B) and (D) so that the rear brakes come on slightly before the front brakes. However, this bias should not be overdone. I know of one case where initial braking was barely adequate, and further pressure on the pedal was frighteningly ineffective because the bias had been set too far in favour of the rear brakes which, when hard on, prevented the thrust of the driver's foot on the pedal from properly 'priming' the servo action of the much more powerful front brakes. Slackening the rear clevis at (S) by two turns immediately restored proper Talbot braking.
10. Finally, check that the threaded parts of all clevises are engaged by at least half an inch of good thread, that their locknuts are tight and that all pins are properly secured with new split pins.

Road testing should be carried on a quiet road at progressively increasing speeds, correcting any tendency to pull to one side or the other by slackening the adjuster (M) on the side to which the car pulls. If I can find a suitably quiet drive, lane or car park with a slightly loose surface, I also like to lock up the wheels (at low speed). If the car pulls up reasonably square, with four equal skid marks, the settings can't be far out.

Figure 1
Procedure for adjustment of brake connections on Talbot 6 cylinder models (with 'Servo Front Brakes')



TALBOT

SERVICE BULLETIN

VOLUME NO.1. APRIL 1937 NO.31.

Year 1936/7.

ALL CURRENT MODELS WITH THE EXCEPTION OF B.E.10.

Method of assembling and adjusting brakes.

We feel that the following information will greatly assist in the correct adjustments and assembling of the brakes fitted to all our current models with the exception of the B.E.10.

In the first place it is necessary for all the brake shoes to have a slight lead back to the first rivet hole, this may be made by filing or grinding the lining. On the offside front brake, the lead, however, should be contined back to the second rivet hole on the leading and trailing edge of both shoes.

REARS: Remove toggle pin from gearbox end of brake rod. Remove brake drums and examine cams, to make sure that they are in the "OFF" position. Examine cam operating lever to see that it is tight and correctly fixed to shaft. Replace drums. Adjust taper block adjusting screw until shoes just touch the drums, then adjust off one notch. Put the handbrake lever on two notches, then adjust brake rod so that when the toggle pin is in position both pairs of shoes are hard on.

This method ensures that the brake rod lever is in the best position as regards leverage.

FRONTS: Remove brake drums and adjust cams to the "OFF" position. Replace drums and adjust bottom adjusting screw until brake shoes are just touching the drums, then turn back two notches. Adjust top cam adjusting screw until shoes are hard on so that the wheels can just be pulled round, then adjust off four notches.

3-8

SETTING OF BRAKE CONNECTION ON 14/45 H.P. CARS WITH "SERVO" FRONT BRAKES.

T.603

It is to be noted the following the complete process applies only to the setting of Brake Connections.

For Brake Shoe adjustment ONLY, following instructions in paragraphs 8 & 9.

Proceed as follows :-

1. Disconnect from their respective levers, brake connections A, B, C & D, and allow rear brake cams N to relax into their normal positions as shewn in Diagram 2.

2. Ascertain that Heel E of the Foot Brake Pedal is in contact with Eccentric F when in its highest position.(See Diagram 3)

3. Put Hand Brake in its foremost position and place "Tee" piece H. so that the front of its slot is hard against pin G.

4. Replace Brake Rod D and adjust same so that the pin can be readily placed into the fork on Rod and Lever S. Remove pin and screw up the fork two complete turns, re-insert pin and finally connect. (This further adjustment is necessary to ensure absence of slackness in brake camshaft connections.)

5. Replace connection C, adjusting same until the faces of Fork K on Lever L exert a slight pressure on the rear face of "Tee" piece H, at the same time ensuring that Heel E of Foot Brake Pedal remains in contact with Eccentric F.

6. Ascertain that Front Brake Cams are in their normal position, then re-connect Rods A & B and proceed as for Rod D, and as set out in paragraph 4.

7. Check over all adjustments.

8. Adjust front Brake Shoes (See Diagram 4).

   (a) Slacken main adjustment completely by turning nut "M" in the opposite direction to that shown by arrow stamped on nut.

   (b) Unscrew secondry adjusting nut "O" until shoes touch brake drum, after which give nut one complete turn in opposite direction to ensure that the shoes are clear of drum. Test by tapping drums with hammer, when a clear ring should be heard.

contd.

8. (contd.)

(c) Turn nut "M" in direction of arrow until Brake Shoes touch Brake Drums.

(d) Slacken off nut "M" one complete turn, to give requisite clearance for operation.

Note! Both adjusting nuts "M" & "O" are self locking.

9. Adjust Rear Brake Shoes (See Diagram 2).

(a) Turn nut "R" by half turns until Brake Drums cease to ring on tapping with hammer.

(b) Release nut "R" one half turn.

(c) Test by tapping drums with hammer, when a clear ring should be heard.

10. Depress and release Foot Brake Pedal two or three times and re-check adjustments, only making further alterations should freedom be apparent at any of the following points:-

Heel E & Stud F.

Fork K & Head of "Tee" piece H.

Pin G & end of slot in "Tee" piece H.

IMPROVEMENTS TO TALBOT BRAKES

By John Dodd & Martin Cragg

Talbot brakes are rightly considered to be very good, especially when compared with many cars of the late Vintage and Post Vintage Thoroughbred era. However, there are shortcomings when compared with more modern drum brakes. This is due to the fact that the rear shoes (Fig. 19) are anchored by a fixed pivot at the adjuster end. This means that the linings will tend to wear unevenly over the length of the shoe, with most of the wear occurring towards the operating cam end. The adjuster works by moving the shoes closer to the drum at the adjuster end so, if they are not adjusted regularly (and the brakes are so generously proportioned that we probably don't feel the need to do this), then the wear becomes concentrated more and more towards the cam end so that, in the extreme, the linings can be down to the rivets at that end, yet pristine at the adjustment end.

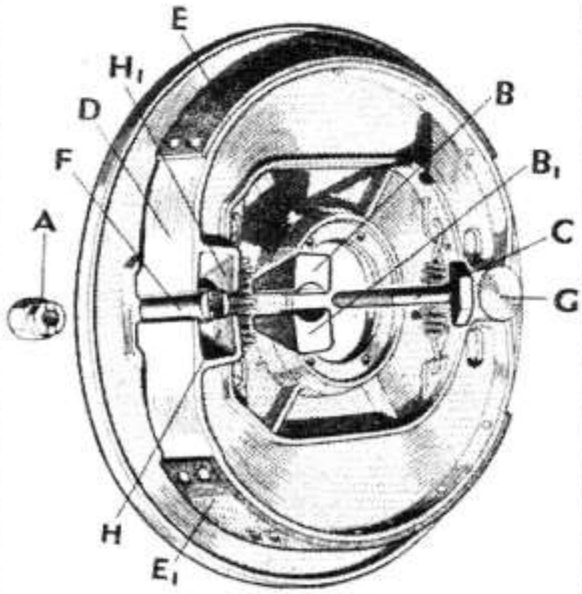


Fig. 19.

Brake Components. (A) Adjusting Nut. (B and B1) White-metal Taper Blocks. (C) Adjusting Bolt to which A is fitted. (D) Brake Shoe (aluminium). (E) Brake Lining. (F) Adjusting Bolt Bush. (G) Cam for Expanding Brake Shoes. (H and H1) Taper Recesses in Brake Shoe for B and B1.

The front brakes consist of two leading shoes, hinged together, with a fixed anchor pivot at the trailing end of the pair. Most of the adjustment is done at the cam operating end. (The lower adjuster being in the form of a 'stop', by which the front leading shoe can be kept close to the drum to minimise the snatch of the self-servo wrapping action). Clearly the other shoe can be expected to wear unevenly, anchored as it is by its fixed pivot. However, the front leading shoe should wear more evenly and the overall braking efficiency should not be too adversely affected.

The above remarks apply to cars in the 'as new' condition. When Arthur Archer wrote his definitive 'Notes on the Adjustment of Roesch Talbot Brakes'[1], he was able to remark that Talbot brake drums themselves seem to suffer little from wear. Now, with cars approaching or exceeding 80 years of age, this is less likely to be true. We have measured brake drums that have worn between 1mm and 4mm on the standard diameter of 400mm. It's not much use putting new standard linings on shoes for use in such drums and expecting them to improve the braking. If they are adjusted and used 'as is' then, due to the difference in curvature between drum and lining, the initial contact area will be very small and, by the time they are either fettled or otherwise worn to fit, they will be quite thin over the part where the initial contact was made and the adjusters will be well towards their limit.

Therefore matching linings to drum diameter is a pre-requisite for efficient brakes. This can be done by fitting a suitable packer behind a standard lining. For example: a 20 thou (0.5mm) aluminium strip behind each lining will match the curvature of 1mm oversize drums. Compensation can also be achieved by fitting thicker linings. If the drum and lining curvature are well matched by either of these means then there should not be much need for filing or machining of the linings before use. The fit can be checked by painting the contact surface of the drum with engineer's marking out fluid which is non-oily when dry and transfers readily to high spots on the shoes.

In addition to drum wear, rear brake shoes may not now be matched for length due to uneven wear at the cam end or because they have been swapped around or otherwise replaced. Rear brake cross-shafts may also not be matched or the cams may have worn unevenly.

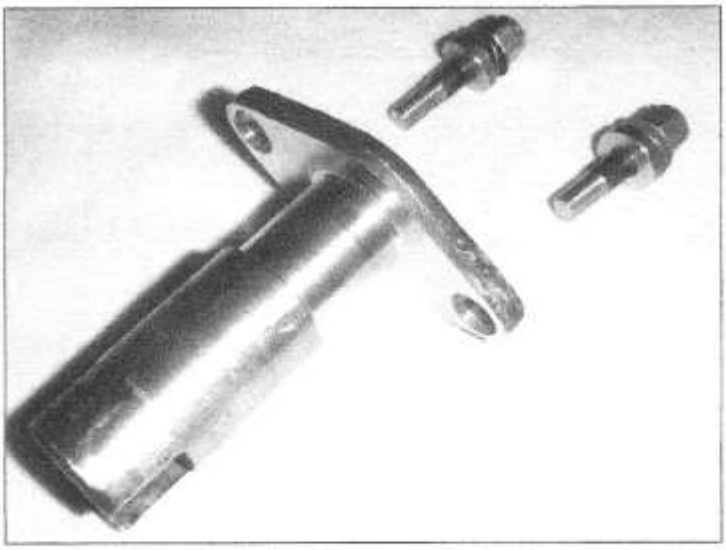
In several brainstorming sessions we have come up a couple of improvements which we have implemented on our cars. These ease the setup using Arthur's instructions and also improve braking.

The first thing we did was insert three turnbuckle adjustors of the right hand/left hand thread variety in the rear and front brake rods. This obviated the need to remove the clevis pins for adjustment of the rods and facilitated final trimming to minimise lost motion in the system.

The second thing we did was modify the rear adjusters to make them fully floating.

This has the effect of centralising the shoes in the drum to compensate for uneven wear on the shoes, cams or misaligned cross-shaft halves. This modification also allows all of the rear lining surface to contact the drum under braking conditions as well as allowing a more precise initial adjustment. (Application of the handbrake during adjustment automatically centralises the rear brakes.)

This latter modification is surprisingly easy to do. The rear brass adjuster body can be reduced in diameter by say 3mm over a little more than the length where it goes through the back-plate. The mounting holes need to be opened out to 10mm and longer 6mm studs made so that the adjuster body can be refitted with a large diameter washer, a double coil spring washer and a 'Nylock' nut with enough play for it to be able to slide +/-1.5mm in any direction in the plane of the back-plate (it being completely restrained otherwise and kept clamped to the back-plate by the combination of shoes, wedges and springs).



Above: The rear brass adjuster with new studs.

One of our cars has completed over 2,000 miles with these modifications with no ill effects, giving a noticeable improvement in braking and without having had any adjustments since the installation.

There is a caveat to this scheme: if the adjuster is allowed to slide in the way suggested, then all the braking force is transmitted to the back-plates through the operating cam bosses alone rather than being divided between adjuster and cam bosses. This asymmetrical load could cause back-plate failure (although the front brakes, as standard, similarly transmit the braking force to their respective back-plates through a single pivot. Nevertheless we document our modification without legal responsibility). The asymmetrical load at the rear can be mitigated by fastening the adjuster mounting nuts tight after the centralising and adjustments have been carried out. However, this immobilises the automatic compensation for lining wear while in use and may begin to apply a bending moment to the adjuster body if the linings wear unevenly which, with one leading and one trailing shoe, they are likely to do.

Ref [1]: T.O.C. Magazine No.11 September/October 2004.

TALBOT REAR BRAKE SHOES

By Wavell Urry

When I took the 105 for its MoT this year, the tester advised me that the rear brakes appeared weak compared with the front. He thought this was more than he would have expected even with Talbot's front servo brakes. I had set the brakes up as per the book and didn't think this was the problem.

Back at home I put the car on the lift and removed one brake drum to expose the shoes, and also to check the position of the cam. The leading shoe was more worn than the other, so I made up a tool to check the operating radius of the shoe. The tool consisting of a flat bar drilled in two places so as to bolt across the hub and extending past one shoe. At the radius of the shoe I machined an oval slot in the bar and fitted a shouldered bolt, positioned so that it just touched the trailing shoe. (See sketch of the tool - Fig 1) I found by using a feeler gauge that the leading shoe was 0.020" less than the trailing one. Assuming that there is about 0.005" clearance in the cam bush, the back plate needs to distort by 0.015" before the second shoe comes on.

To correct this I made a shim to fit under the 'T' bolt adjuster and the top *of* the aluminium wedge. (see Fig. 2) I found a 0.020" shim gives approximately 0.020" increase in radius *of* the shoe. (Had the leading shoe been markedly more worn than the other, I would have swapped them round and re-measured everything). Having done the same on the brake assembly on other side, I found a marked improvement in the braking at low speeds using the foot brake and the hand brake.

FIG 1 ALIGNMENT JIG. FIX TO HUB

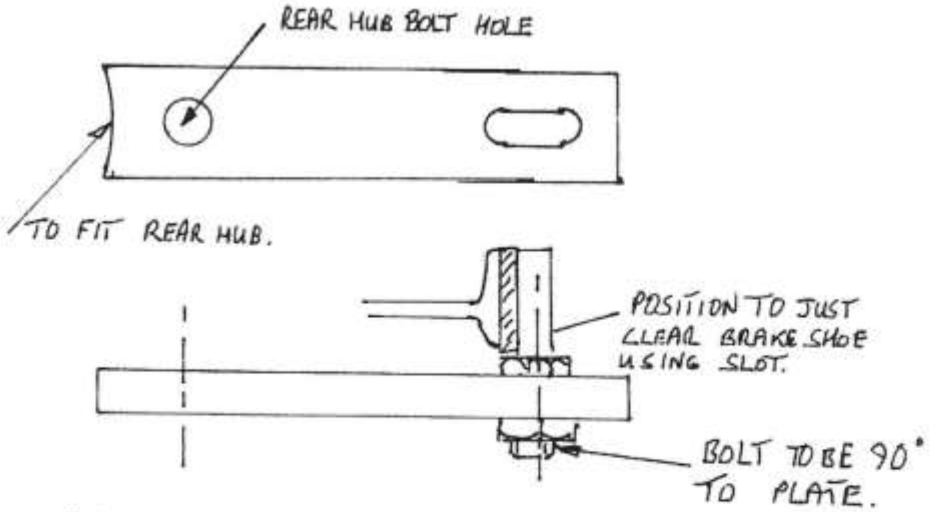
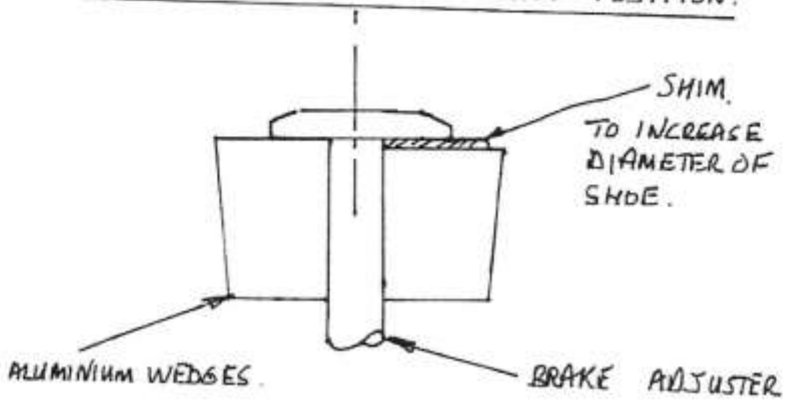


FIG 2. ADJUSTMENT SHIM POSITION.



FERODO BRAKE LININGS FO

Name and Model	H.P.	Year	Front Rear or Trans Hand or Foot	Make of Brake	FERODO LINED BENDIX, GIRLING OR LOCKHEED SHOES: Drum Dia. and Width	Part No.	No. of Shoes per Vehicle	List Price per pair	Surcharge per pair	Type of Ferodo Lining	FERODO LININGS: Dimensions of Lining L	W	T	No. per Set	Lining Ref.	List Price per Lining Undr.	List Price per Lining Dr.	Rivets per Set	Lining Set Ref.	List Price per Set
UNBEAM TALBOT					in. in.						in.	in.	in.							
)0" Mk. II (2 1/2 Litre)	16	1950/52	FF	L	10 × 1 3/4	LB65	4	24/–	6/–	MR41	9 5/8	1·7	3/16	4	WO/29/2	11/6	12/6	48/C9	BWO/29/2	54/–
			RHF	L	10 × 1 3/4	LB66	4	24/–	6/–	DM1	9 5/8	1·7	3/16	4	WO/29/2	11/6	12/6	48/C9	BWO/29/2	54/–
)0"	13·9	1948/49	FF	L	10 × 1 3/4	LB38	4	24/–	6/–	MR41	9 5/8	1·7	3/16	4	WO/29/2	11/6	12/6	48/C9	BWO/29/2	54/–
			RHF	L	10 × 1 3/4	LB39	4	24/–	6/–	MR41	9 5/8	1·7	3/16	4	WO/29/2	11/6	12/6	48/C9	BWO/29/2	54/–
30"	9·8	1948/51	FF	L	9 × 1 1/2	LB32	4	20/–	5/–	MR41	8 21/32	1 15/32	3/16	4	MO/27/3	9/7	10/7	48/C9		
			RHF	L	9 × 1 1/2	LB33	4	20/–	5/–	MR41	8 21/32	1 15/32	3/16	4	MO/27/3	9/7	10/7	48/C9		
30" first 700 cars...		1948	FF	L	9 × 1 1/2	LB32	4	20/–	5/–	MR41	8 21/32	1 15/32	3/16	4	MO/27/2	9/7	10/7	48/C6		
			RHF	L	9 × 1 1/2	LB33	4	20/–	5/–	MR41	8 21/32	1 15/32	3/16	4	MO/27/2	9/7	10/7	48/C6		
Litre	14	1940/48	FHF	L	11 × 1 3/4	LB8A	2	24/–	6/–	MR41	9 5/8	1·7	3/16	4	WO/29/1	11/6	12/10	64/C9	BWO/29/1	56/8
						LB8B	2	24/–	6/–											
			RHF	L	11 × 1 3/4	LB9A	2	24/–	6/–	MR41	9 5/8	1·7	3/16	4	WO/29/1	11/6	12/10	64/C9	BWO/29/1	56/8
						LB9B	2	24/–	6/–											
"	9·8	1945/48	FHF	B	8 × 1 3/4	GB14890	4	22/–	4/–	DM1	6 7/8	1 3/4	5/32	4	BP/37/1	8/2	8/10	32/B20	BBP/37/1	38/–
n	9·8	1939/40	RHF	B	8 × 1 3/4	GB14890	4	22/–	4/–	DM1	6 7/8	1 3/4	5/32	4	BP/37/1	8/2	8/10	32/B20	BBP/37/1	38/–
Litre	20·9	1939/40	FHF	L	11 × 1 3/4	LB10A	2	26/–	7/–	MR41	10 9/16	1·7	3/16	4	HU/23/1	12/4	13/8	64/C9	BHU/23/1	60/–
Litre	26·88					LB10B	2	26/–	7/–											
			RHF	L	11 × 1 3/4	LB11A	2	26/–	7/–	MR41	10 9/16	1·7	3/16	4	HU/23/1	12/4	13/8	64/C9	BHU/23/1	60/–
						LB11B	2	26/–	7/–											
JNBEAM Electric																				
/15 Cwt.		1938	FHF	B	10 × 1 1/2	GB15662	4	25/–	4/–	DM1	10 17/32	1 1/2	5/32	4	CS/32/1	9/10	10/6	32/B20	F21C	44/8
			RHF	B	10 × 1 1/2	GB15662	4	25/–	4/–	DM1	10 17/32	1 1/2	5/32	4	CS/32/1	9/10	10/6	32/B20	F21C	44/8
JRREY DODGE — (See DODGE (Comm.))																				
ALBOT																				
n	9·8	1936/39	FHF	B	8 × 1 3/4	GB14890	4	22/–	4/–	DM1	6 7/8	1 3/4	5/32	4	BP/37/1	8/2	8/10	32/B20	BBP/37/1	38/–
			RHF	B	8 × 1 3/4	GB14890	4	22/–	4/–	DM1	6 7/8	1 3/4	5/32	4	BP/37/1	8/2	8/10	32/B20	BBP/37/1	38/–
'21, 3 Litre ...	20·9	1938	FHF	B	11 × 1 3/4	GB19968/9	4	28/9	5/6	DM1	10 5/8	1 23/32	5/32	4	BP/87/1	10/9	11/7	40/B20	BBP/87/1	49/8
			RHF	B	11 × 1 3/4	GB19968/9	4	28/9	5/6	DM1	10 5/8	1 23/32	5/32	4	BP/87/1	10/9	11/7	40/B20	BBP/87/1	49/8
0, 3 1/2 Litre ...	23·8	1935/38	FF	O	15 3/4 × 1 9/16					MR41	20 11/16	1 9/16	1/4	2	TA/11/1	25/9		56/C14		51/6
' 105	20·9	1934/37								MR41	17 7/8	1 9/16	1/4	2	TA/10/1	22/7				45/
			RHF	O	15 3/4 × 1 9/16					MR41	17 7/8	1 9/16	1/4	4	TA/10/1	22/7		56/C14		
90 Models	17·9	1931/37	FF	O	15 3/4 × 1 1/4					MR41	20 11/16	1 1/4	7/32	2	TA/9/1	18/10		52/C14		90/
X65...	13·8	1933/35								MR41	16 3/16	1 1/4	7/32	2	TA/8/1	15/4				
			RHF	O	15 3/4 × 1 1/4					MR41	16 3/16	1 1/4	7/32	4	TA/8/1	15/4		48/C14		
ASKERS OF ANDOVER																				
ailer		1945/46	R	G	16 × 2 1/2	GA/G1701/2	4	94/–	10/–	MR41	14	2 1/2	3/8	4	GG/13/1	40/–	41/6	48/C20		
Wh. Trailer ...		1945	R	G	8 × 1 1/4	GA/G2398	4	19/9	4/6	MR41	7	1 1/4	3/16	4	GG/5/2	7/6	8/6	32/C13	BGG/5/2	38/–
Wh. Trailer ...		1945	R	G	10 × 1 1/4	GA/G2301	4	22/6	4/10	MR41	8 3/4	1 1/4	3/16	4	FD/33/1	8/8	9/11	40/B63	BFD/33/1	44/8
Ton Semi-Trailer		1938/45	R	B	14 × 2 1/2	GB18802/3	4	59/–	8/–	MR41	13 3/8	2 1/2	1/4	4	BP/71/2	27/–	28/–	48/B20	BBP/71/2	116/–
Ton Low Loader ...		1940/45	R	G	16 1/2 × 5	GB31195/6	4	252/–	18/–	MR41	15 29/32	5	1/4	4	GG/34/1	115/6	117/–	48/C20	BGG/34/1	474/–
/15 Ton Trailer ...		1939/45	R	B	16 × 2 1/2	GB28449/50	4	72/–	10/–	MR41	15 5/8	2 1/2	1/4	4	BP/109/1	30/6	31/8	56/B20		
ailer		1940/44	R	B	11 × 1 1/2	GB20607	4	30/–	5/–	MR41	10	1 1/2	5/32	4	BP/134/1	9/6				
Cwt. Trailer ...		1939/44	R	B	10 × 1 1/2	GB15235	4	25/–	4/–	DM1	10 17/32	1 1/2	5/32	4	CS/32/1	9/10	10/6	32/B20	F21C	44/8
'on Mk. III (Trailer)		1940/42	R	G	16 × 3 1/2	GB32961/2	4	138/–	12/–	MR41	15 11/16	3 1/2	3/8	4	BP/94/1	61/2	62/11	56/B45	BBP/94/1	258/8
ERRAPLANE																				
Six ...	21·6	Late 1936/40	FHF	B	10 × 1 3/4					MZ41	11 1/16	1 3/4	3/16	2	BP/66/1	14/5	15/3	20/B61		
	16·9									DM1	11 1/16	1 3/4	3/16	2	BP/66/1	13/1	13/11	20/B61		
			RHF	B	10 × 1 3/4					MZ41	11 1/16	1 3/4	3/16	2	BP/66/1	14/5	15/3	20/B61		
										DM1	11 1/16	1 3/4	3/16	2	BP/66/1	13/1	13/11	20/B61		
Six	21·6	Early 1935/36	FHF	B	9 × 2 1/4					DM1	9 19/32	2 1/4	5/32	4	BP/23/1	12/5	13/3	40/B20	U20C	56/4
			RHF	B	9 × 2 1/4					DM1	9 19/32	2 1/4	5/32	4	BP/23/1	12/5	13/3	40/B20	U20C	56/4
Six	16·9	Early 1935/36	FHF	B	9 × 1 3/4					DM1	9 19/32	1 3/4	5/32	4	BP/22/1	10/3	11/1	40/B61	V23B	47/8
			RHF	B	9 × 1 3/4					DM1	9 19/32	1 3/4	5/32	4	BP/22/1	10/3	11/1	40/B61	V23B	47/8