



# MORRIS

# G1 to G9

## SERVICE INFORMATION



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## INDEX TO GENERAL SERVICE INFORMATION

INDEX - - - - -	G/1
DIAGNOSIS - - - - -	G/2
BRAKE CHATTER - - - - -	G/3
S.U. CONTROLLABLE SINGLE-JET CARBURETTER - - - - -	G/4
HOW TO RENDER A CLAIM UNDER GUARANTEE - - - - -	G/7
THE RECTIFICATION OF WHEEL WOBBLE - - - - -	G/8
CHASSIS FRAME REPAIRS - - - - -	G/13
MORRIS SPARE PARTS SERVICE - - - - -	G/14
RE-BORING CYLINDER BLOCKS - - - - -	G/15
MORRIS RADIATOR REPAIRS - - - - -	G/16
" SPEED " WRENCHES - - - - -	G/18
SPRING DATA - - - - -	G/19
SERVICE TOOLS - - - - -	G/20
SERVICE TOOLS (USE OF) - - - - -	G/21
CRANKSHAFT RE-GRINDING SCHEME - - - - -	G/24
AXLE BEAM REPAIRS - - - - -	G/25
ENGINE AND GEARBOX OVERHAULS - - - - -	G/26
LOCKHEED BRAKES - - - - -	G/27
FRONT TYRE WEAR - - - - -	G/29
STEERING ADJUSTMENTS - - - - -	G/30
GENERAL DATA FOR 1933 MODELS - - - - -	G/31
CONNECTING ROD RE-CONDITIONING - - - - -	G/32
BRAKE-SHOE ANTI-SQUEAK WEIGHTS - - - - -	G/33
BENDIX AUTOMATIC CLUTCH CONTROL - - - - -	G/34
THE SYNCHROMESH GEARBOX - - - - -	G/35
PERFECT OIL SEALS - - - - -	G/36
MORRIS PISTONS - - - - -	G/37
CLUTCH PEDAL CLEARANCE - - - - -	G/38
MESHING REAR AXLE GEARS - - - - -	G/39





Date of issue : July, 1928

## DIAGNOSIS

### How to describe symptoms when communicating with the Works

**W**E have felt for some considerable time that we should be able to assist Dealers to a far greater extent in overcoming irregularities on Morris cars if a fuller description of the symptoms of cases is furnished in letters seeking advice. With the experience which we have at our disposal there should be very few troubles indeed incapable of diagnosis if the symptoms are carefully and accurately described in detail. During the current year we have been called upon to settle quite a large number of claims, the origin of which was incorrect diagnosis in the first instance, and it will be readily appreciated that such cases hardly tend to further the interests of car owner, Dealer or manufacturer.

We are fully aware that some of our Dealers have concentrated upon Morris Sales and Service for a long period, and have naturally acquired during this time a very useful experience. Even so, we would urge upon every Dealer to place the fullest possible information at our disposal, as two opinions are always better than one.

We give below two examples :—

- (a) The kind of letter frequently received, to which we cannot give a reply which will be of any real assistance.
- (b) A letter on the same subject, worded in such a way that we are able to offer a definite opinion as to the cause of the trouble.
- (a) The engine of car No. — is knocking after running 6000 miles. In our opinion this is due to " piston slap," and we shall be obliged if you will let us have your recommendations.
- (b) The engine of Car No. — is knocking, this knock being most noticeable immediately upon starting up from cold. As the engine heats through it becomes less noticeable. It can be cut out entirely by shorting No. 3 cylinder. It is more pronounced when the engine is pulling hard, and is non-existent when the foot is removed from the accelerator. When the engine is ticking over it is intermittent. We shall be obliged if . . . etc.

One more point. We cannot urge upon our Dealers too strongly the wisdom of taking great care in the preliminary testing of a car in cases where a client complains of a noise, or possibly some other irregularity, the cause of which is not immediately apparent. If the car owner is not a very knowledgeable person, and at the same time is unreasonable in his claims, great difficulty is likely to be experienced in giving satisfaction before the case is finally settled. We refer particularly to claims arising out of such knocks as those caused by loose gudgeon pins, slack tappets, end play on camshaft, tappets loose in guide, piston slap, etc. The symptoms shown by all of these are fairly similar, but can be traced to a definite source if a little trouble is taken. As an example we would quote the case of a client who presents his car with a complaint of a tapping noise in the engine which he desires to have eliminated. A careless tester may possibly diagnose this immediately as a tappet which has slacked back, and quote the standardised charge for readjusting tappets all round. It will be very awkward if, later on, when the client is due to collect his car it is suddenly found that the tapping is due to blow-back or some similar irregularity equally difficult to rectify in a short space of time.

We consider in cases of this kind that a very careful preliminary diagnosis is called for. The various symptoms need not necessarily be pointed out to a client unless, in the opinion of the tester, he is likely to make trouble later on, but we certainly think that the symptoms should be placed on record.



*Date of issue : July, 1928*

## Brake Chatter

**B**RAKE chatter does not usually arise in the early life of a Morris car.

Brake chatter or "brake pick up" is caused by the brake liners and shoes tending to revolve with the brake-drums until the shoe pull-off springs exert sufficient tension to release them, when the process is rapidly repeated, producing a severe chatter.

This irregularity can be overcome by chamfering down the extreme ends of the liners, using a dreadnought or other coarse file. The brake-shoes should be removed from the car, and the liners dressed in this manner for about one-and-a-half inches at either end, tapering down from full thickness to nothing. The sides of the liners should also be filed so that they are flush with the sides of the shoes, as otherwise, when overlapping takes place, there is a tendency for the shoes to pull the others into contact with the drums.

In extreme cases of brake chatter, however, there may be one or more contributory factors which produce the irregularity, but in all cases the liners should be treated on the above lines as a first measure.

Weak brake-shoe pull-off springs would allow the shoes to be picked up easily by the revolving drums. If suspicion is felt regarding their tension they should immediately be tested, and, if necessary, replaced. (Extra strong pull-off springs are available upon application to Spare Parts Department.)

Another factor to be investigated is the condition of the brake camshafts and bushes; cases have come to our notice where the camshafts were badly worn and excessively loose in their bushes, causing the shoes to fall and thus come into contact with the drums. It may not only be necessary to replace the bushes, but the shafts also, if they are found to be badly worn. Cases of this nature are generally directly traceable to inadequate lubrication. Bent camshafts could also allow the shoes to drop, but these can be straightened if care is exercised. If it is necessary to remove the shafts for any reason, care must be taken, when replacing them, to see that the shoes are left sufficient clearance for free working, quite independently of each other.

Assuming the above points are now in order, attention should be given to the condition of the drums, and if found to be dented, or perhaps eccentric, they should either be skimmed up in the lathe, or if the defect is too severe they should be replaced.

A very important point to be examined in extreme cases of brake chatter is the condition of the brake flanges on the axle. If the rivets are found to be slack, enabling the flanges to turn or rock, re-riveting is necessary. That the rear hub ball bearings are loose either in the brake-drum or on the brake flange is another possible cause of brake chatter.



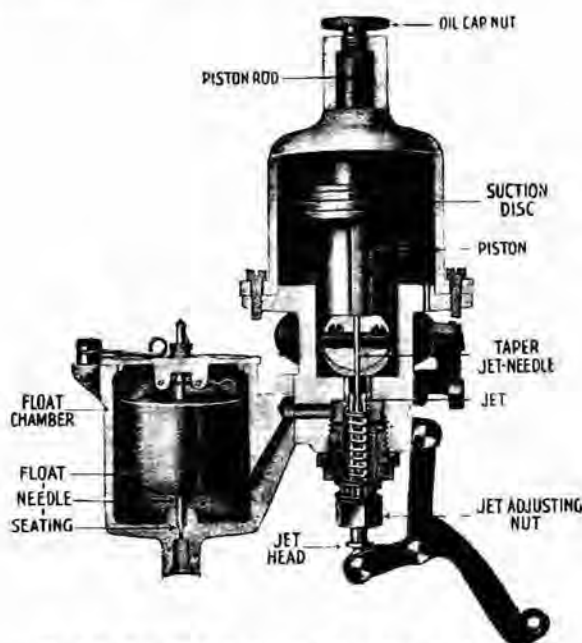
Date of issue : July, 1928

## The S.U. Controllable Single-Jet Carburetter

**E**XHAUSTIVE tests have shown that this type of carburetter combines in a unique way sweet running and flexibility, with absence of trouble from jets of small calibre. In addition, it possesses the advantage of being readily adjusted to varying conditions of altitude and temperature as well as differing qualities and grades of fuel from the driver's seat.

The accompanying illustrations and notes set out clearly the various working details of this instrument and also give instructions for its tuning and adjusting, to which Dealers are asked to give their very careful study. Interference without sufficient understanding or cause cannot be too strongly deprecated, and for this reason the carburetters will be found sealed. The seal does not prevent the removal of the jet for cleaning purposes, should the necessity arise, although paragraph "C" explains how any ordinary obstruction can be cleared without dismantling. If for any reason the jet is removed, however, the greatest possible care must be taken, when reassembling, to centre it correctly with the needle (see paragraph "D"). Unless this is done the whole working of the carburetter is likely to be seriously upset.

It is not anticipated that this carburetter will cause the slightest difficulty from a servicing point of view, but at the same time Dealers will appreciate the importance of being in a position to give immediate and satisfactory assistance should the necessity arise. It is hoped, therefore, that Dealers will show their anxiety to give ready service by keeping in their stores a reasonable stock of carburetter spares and also complete carburetters—the latter will have been specially tested before dispatch from the Works. Complete service carburetters will be useful, not only in the unlikely event of a complete breakdown, but as a check against the carburetter fitted to a car when perhaps carburetter trouble is suspected but cannot be definitely diagnosed. This aspect of the servicing side is stressed because of the very marked inadvisability of unnecessary interference.



The S.U. Type H.V. Carburetter in section clearly showing its internal construction.

The above illustrates in section the H.V. standard design, and shows its essential features with the jet down (rich position) for starting from cold. (R.H. lever on steering column right forward.) The tuning of the H.V. type S.U. Carburetter is SIMPLICITY ITSELF if it is thoroughly understood that with a standard jet the ONLY adjustment possible is fitting the right size of needle with the jet adjusting nut correctly adjusted to idle the engine (see Paragraph A).

*N.B.*—As fitted to Morris cars the carburetters are sealed; the size of the needle has been standardised and will fulfil all possible requirements.

It cannot be emphasised too strongly that it is of no use whatever trying to adjust the carburetter in any other manner. Should the engine run badly, after having previously given good results, *do not change the needle*, for this cannot be the cause of the trouble.

There are a number of faults that will cause an engine to run badly, but if the trouble is due to the carburetter only be one of the following points :

1. Piston sticking (see Paragraph B).
2. Dirt or water in the carburetter (see Paragraph C).
3. Float-chamber flooding (see Paragraph E).





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**The S.U. Carburetter—continued**

Other causes which will make an engine run badly, apart from carburation, are :—

**PLUG POINTS** too far apart, causing misfiring and popping in the carburetter when the engine is on full throttle pulling hard on hills; also difficult starting from cold.

**OILY PLUGS**, causing misfiring.

**FAULTY MAGNETO**, bad starting and misfiring.

**STICKY VALVES**, causing misfiring and popping in exhaust or through the carburetter.

**BLOCKAGE OR AIR LOCK IN PETROL PIPE**, causing carburetter to give symptoms of weak mixture, i.e. lack of power and popping back through air inlet. This can be tested by removing float-chamber top and float from carburetter to see if there is a free flow through the petrol way in the bottom of the float-chamber. If air bubbles come through, an air lock is the trouble. This trouble is generally due to shortage of petrol in the tank.

**BAD JOINT** between the carburetter and the engine or **WORN INLET VALVE GUIDES** or **BADLY SEATING VALVES** will cause bad starting and prevent the engine from idling.

**DETAILED INSTRUCTIONS FOR TUNING THE H.V. TYPE S.U. CARBURETTER****PARAGRAPH A**

All jets are of standard size, and the normal position of the taper needle is with its shoulder exactly flush with the face of the piston.

It will be seen by the diagrams that the jet has an up and down movement resulting in weakening and strengthening the mixture. The normal running position is regulated by the jet head coming into contact with the lower face of the jet adjusting nut; it is, therefore, by means of this jet adjusting nut that the correct adjustment is obtained.

**ADJUSTMENT FOR GENERAL RUNNING**

Proceed as follows :—

1. Run the engine until it attains its normal running temperature.
2. Set engine to run as slowly as possible.
3. Disconnect the mixture control mechanism from the carburetter at the extreme end of the brass arm actuating the jet.
4. Screw up the spring loaded jet adjusting nut as far as possible.
5. Move the jet lever slowly away from the carburetter, i.e. gradually weakening the mixture, until the engine idles evenly, firing on all four cylinders regularly. That is the correct normal running position for the jet.
6. Screw down jet adjusting nut very carefully until it just butts against the jet head.

The carburetter is now set to its fully weak position at normal working temperature, and the control gear should be reconnected, making sure to adjust it so that it is at the weak position on the indicator plate when the jet head is in close contact with the adjusting nut. If this adjustment has been carried out correctly the engine will always idle evenly when warm, with lever in the weak position.

**N.B.**—To allow for spring in the jet control mechanism the control lever should not actually touch the stop on the indicator plate in the full weak position. Provide at least  $\frac{1}{8}$  in. clearance here.

This is the only possible adjustment that can be made to the carburetter, and it is of no use whatever trying to adjust the carburetter in any other manner.

**PISTON STICKING****PARAGRAPH B**

The suction piston comprises the piston, forming the choke, the needle and the suction disc; into this is inserted the hardened and ground piston rod which works in the bearing of the suction chamber. The piston rod running in the bearing is the only part which is in actual contact with any other part—the suction piston and needle and suction disc having a clearance space around them, and consequently cannot cause sticking. If this does occur, the trouble must be looked for in the piston rod and its bearing. A sticking piston can be ascertained in a few seconds by inserting a finger in the air intake and lifting the piston, which should come up quite freely and fall right on to its seat with a click when released; if it does not it will probably be found that the piston rod is sticky or dry.

To free this remove the brass cap nut from the top of the suction chamber, pour in a few drops of paraffin and work the piston up and down with the finger until free. A few drops of thin oil, such as bicycle or sewing machine oil, may then be dropped in, *but under no circumstances should a heavy-bodied lubricant, such as engine oil, be used. No oil must be used on any other part of the suction chamber.*

Date of issue: July, 1928

**The S.U. Carburetter—continued****WATER OR DIRT IN CARBURETTER****PARAGRAPH C**

When this is suspected lift the piston with something small, such as a pencil. The jet can then be seen. Flood the carburetter by holding up float-chamber needle and watch the jet; if the petrol does not flow through freely there is a blockage. To remedy this start the engine, open the throttle and block up the air inlet momentarily without shutting the throttle; keep throttle open until the engine starts to race. This trouble seldom arises with the S.U. Carburetter



To observe the flow of petrol from the jet, the piston should be raised with a small implement and the float-chamber flooded by raising the protruding needle.

owing to the size of the jet and the petrol ways. When it does happen the above method will nearly always clear it. Should it not do so the only alternative is to remove the jet, but this, however, *should on no account* be done unless it is *absolutely necessary*. When refitting it has to be carefully-centred to the needle, and it is practically impossible to assemble this part correctly unless it is first thoroughly understood how this is carried out.



An obstructed jet should be cleared by opening the throttle by means of the accelerator rod while the engine is running and momentarily closing the air intake with the other hand.

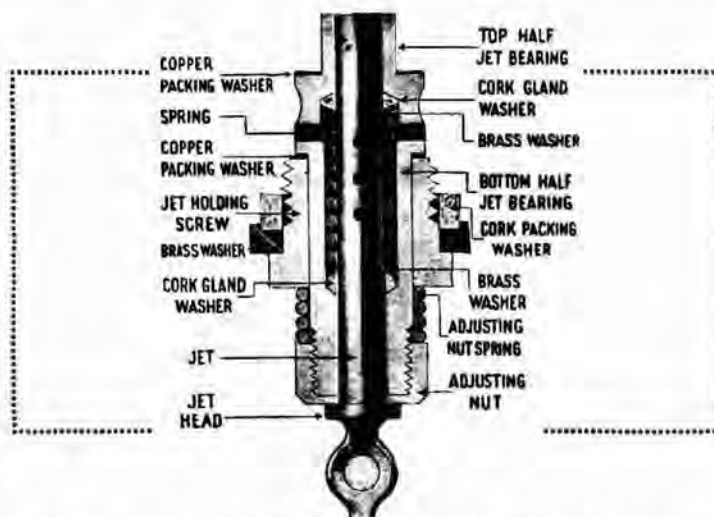
**CENTRING THE JET****PARAGRAPH D**

Should it be essential to remove the jet this can be done by unscrewing the jet holding screw (this is the long screw which fits into the body at the back of the jet—see sectional drawing). It must be understood that the jet is very nearly as large as the needle, and yet must not touch it. When assembling it is therefore necessary to centre the jet to the needle, which is done as follows:—

Date of issue: July, 1928

The S.U. Carburetter—*continued*

First note carefully the normal position of the jet adjusting nut by marking one of the flats and counting the number of turns. Then screw this adjusting nut to its top position and move the jet right up until the jet head is up against this, after which refit the jet, taking care that the jet parts are assembled in the correct position (*see diagram*). When this is done, feel if the piston is perfectly free by lifting it up with the finger. If it is not, slacken the jet holding screw slightly and try again. It may be necessary



An enlarged section of the jet assembly. It will be noticed that the junction between the jet and the casting is rendered perfectly petrol-tight by means of two cork washers which are forced against the sides of the jet by a coil spring and conical washers. If the jet is dismantled great care must be taken not to lose these washers.

to slacken the screw in this manner several times before the piston falls perfectly freely. When this has been done, bring the jet adjusting nut back to its *original* position. Experience shows that a very large percentage of carburetters that are returned for correction have had the jet removed and not centred correctly to the needle. Unless great care is taken, it is possible, when removing the piston, to bend the needle, in which case it will bind on the jet and thus cause the piston to stick. The test for a bent needle (providing the jet is not out of centre) is to remove it from the piston and refit the suction chamber into the body of the carburetter and see if the piston falls freely.

## FLOAT-CHAMBER FLOODING

## PARAGRAPH E

This can be seen by the petrol flowing over the float-chamber and dripping from the air inlet, and is generally caused by grit between the float-chamber needle and its seating; this can be removed by lifting the float needle to allow the incoming petrol to wash away the grit, then twisting the float-chamber needle on to its seating with the fingers.

If the above instructions are carefully read it will be realised that the S.U. Carburetter is very simple when thoroughly understood, but if it is not it promptly appears to become an extremely complicated piece of mechanism to which considerable damage may be done if it is not treated correctly.

It should be emphasised that the three troubles mentioned on sheet 1 are the only ones that can be caused by the carburetter, and if these three points are in order on no account take the carburetter to pieces or alter it in any way, but look for the troubles elsewhere.

There is very little that is likely to go wrong with the S.U. Carburetter, and when this does happen it is a perfectly simple matter to rectify the fault. A lot of trouble has been—and can be—caused by unnecessary interference, due to lack of knowledge. As previously pointed out, the only possible adjustment is by fitting the correct needle adjusted for idling by means of the jet adjusting nut, consequently there is no need whatever for the jet to be touched. In the past the chief trouble has been caused by the jet being removed without knowledge as to re-centring it; therefore on no account allow anyone to remove or tamper with this part unless you are personally certain that it is blocked, which, after all, is a very unlikely occurrence.





Date of issue : July, 1928

**The S.U. Carburetter—continued**

**STARTING**

**PARAGRAPH F**

The following procedure is advised :—

**To start engine from cold.** (a) Bring the jet down to its lowest position by means of the jet control. (b) Open the throttle slightly more than for normal slow running with a hot engine. As soon as the engine is running move the jet control until the engine fires evenly. The car can then be driven away, but the mixture should be weakened progressively as the engine warms up. Normally, of course, the weakest mixture possible, consistent with steady power output, will be given to the engine. A good tip in cold weather is to strengthen the mixture just before switching off if a stop of any length of time is likely to be made.

**To start engine when hot** it is unnecessary to richen the mixture, and the jet should be right up or in the position which gives the weakest or normal mixture.

*N.B.*—In cases where the carburetters are sealed under guarantee, there will be no necessity to change the needle, and the seal must not be broken.

**JET NEEDLES**

The correct needles for use in connection with the various models are :—

11.9 h.p. Morris-Cowley	-	-	-	-	M-6
11.9 h.p. Morris-Oxford	-	-	-	-	M-6
14/28 h.p. Morris-Oxford	-	-	-	-	M-6
15.9 h.p. Morris-Oxford	-	-	-	-	H.V.-2
Morris Six	-	-	-	-	E.3





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## Spitting Back from Carburetter

THE factors operating which cause spitting back or backfiring through the carburetter are many and varied; any or a combination of the following irregularities can cause trouble of this nature. An endeavour has been made to draw attention to them, as far as possible, in their order of importance, the more usual causes coming first. It must, however, be understood that each separate engine may have its own peculiarities, and it is not possible always to say definitely what will be the most likely way to obviate the trouble. A systematic examination is therefore essential.

### Weak Mixture

- (a) **Choked jet or jets.** This trouble causes a weak mixture to find its way to the combustion chambers. It is preferable to suck or blow a jet clean, as damage is likely to result from the use of a wire. Care should be taken in the case of multi-jet carburetters to see that the jets, after removal, are put back in their correct order—an obvious point so often overlooked.
- (b) **Foreign matter in petrol.** Care should be taken to see that the petrol is not polluted with water or other liquids or misfiring and spitting back is bound to ensue. In the case of solid matter being present in the petrol choked jets invariably result.
- (c) **Low petrol level.** Another cause of weak mixture is a low petrol level in the float-chamber. The correct level should be  $\frac{1}{16}$ " below the tops of the jets, and adjustment can usually be carried out by altering the position of the collar on the float needle valve.
- (d) **Air leaks.** Any air leaks in the induction should receive attention, since they have the effect of greatly weakening the mixture.

**Wide sparking plug gaps.** After a car has seen considerable service the plug points will probably be found to have become burnt away to a small degree, thus widening the gap. This gap should be closed up to  $.018$ ". This is particularly important.

**Valves not seating.** The tappets should be set to give a clearance of  $.006$ " when the engine is warm, in order to prevent any possibility of valve riding. If after setting the tappets four distinct compressions are not felt when the starting handle is turned over slowly by hand, it will be necessary to remove the head, examine the valves and grind them in.

**Magneto timing.** Before attempting to check the magneto timing the contact breaker points should be set to a gap of  $.012$ " when they are fully open. The correct magneto timing is such that the spark occurs when the piston is at its top dead centre, compression stroke, with the control lever on the magneto in the fully retarded position, making quite sure the control lever on the steering column does actually allow the maximum movement of the contact breaker ring. Whilst adjusting the magneto it is advisable to inspect the carbon distributor brush to see that it is free in its guide and that the distributor itself is clean.

*Note.*—To facilitate the work of re-timing the Morris engine a plug is fitted to the cylinder head immediately over No. 4 piston. When this plug is removed a suitable length of wire or rod can be inserted and allowed to come in contact with the piston crown, by means of which a mechanic can ascertain the exact top dead centre position without troubling about flywheel markings.

On the subject of "spitting back" generally, little notice need be taken of this irregularity if it only occurs whilst the engine is cold. If the engine is tuned to give maximum mileage per gallon of petrol a certain amount of spitting back from the carburetter is almost bound to occur until the normal working temperature is reached. Before leaving this subject it should be pointed out that a possible cause of trouble, though an infrequent one, is the "sticking up" of the dashpot (or auto-valve) on the Smith 5-jet carburetters. This can generally be overcome by polishing the dashpot with fine metal polish until it falls freely over the whole of its working stroke.

In the case of the S.U. carburetter a sticking piston can be freed by removing the brass plug at the top and injecting a little paraffin, meanwhile working the piston up and down with a finger inserted in the air intake. When thoroughly free, a few drops of *thin machine oil* will serve to keep the working parts lubricated.





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## Care and Maintenance of Hoods and Sidescreens

### Hoods

It is very essential that a purchaser should be fully instructed and advised on the correct method of folding the hood and on the general care and maintenance necessary to both this fitment and also to the sidescreens. A full knowledge on these matters will not only ensure and enhance their satisfactory service but will also prevent the dissatisfaction caused by early failure due to improper use and the consequent disappointment at our inability to accept liability.

The particular points to bear in mind are :—

- (1) The hood envelope should *always* be fitted when the hood is down, thereby excluding dirt and dust and preserving the appearance of the hood material.
- (2) When required for use the hood should be carefully erected, taking care that the front weather strip is drawn *outside* the windscreen, and the envelope placed in the compartment behind the rear seat.
- (3) It is important that the hood should be thoroughly dry before folding, as disintegration of the proofing preparation may take place if moisture is allowed to remain in the folds.
- (4) Allow the hood to fall gently and the folds to lie naturally.
- (5) When the hood is nearly closed, fold inwards the "quarters" and take care that no cloth is trapped by the hood fittings.
- (6) Turn inwards the folds which would otherwise lie over the back of rear seat, to prevent passengers bearing on the material and thus, by friction, wearing through the proofing.
- (7) Fit envelope to preserve material and exclude dirt and dust. The envelope should *first* be fastened to the studs on the rear of the bodywork of the car, allowing it to hang down until hood has been dropped and correctly arranged. If it is then drawn tightly and carefully over the hood, and fastened as intended, no folds will be left hanging underneath to come into contact with the spare wheel. Fasten hood straps securely at all times.
- (8) It is most important that a little oil should be given to all the hood iron *hinge bars* from time to time, as if rust is allowed to form here difficulty will be experienced in manipulating the hood.

### Sidescreens

Here again, reasonable care and attention will be amply repaid by long continued satisfactory service, whereas neglect and carelessness will result in unsightly and damaged screens.

- (1) On erecting, make quite sure that the correct screen is being fitted, as undue strain in attempting to force the wrong screen into position will probably result in the breakage of the pegs. (*Note.*—The ferrules are adjustable—being drilled eccentrically.)
- (2) Reasonable care should be exercised when placing the screens in the compartment provided for their storage. It is here that the majority of damage occurs. *Take care that the pegs of any one screen are not caught in the stitching of its neighbour*, otherwise this will be broken and the *talc* damaged.
- (3) On four-seater models the front screens should have the rear screen *apron* folded over and between them so that damage is not caused by the wicket panel mechanism.
- (4) The *talc* may be cleaned either with a little methylated spirit, or by the careful application of "Brasso" or some similar metal polish.



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## How to Render a Claim under Guarantee

**T**HERE are special Guarantee Claim Forms, and labels for attaching to the parts returned, which materially assist both the Dealer and ourselves in expediting the passage of a guarantee claim. If you have not a supply by you please apply at once, when the necessary quantity will be issued gratis.

Assuming a new part has already been fitted from your own stock, it will be necessary for you to complete a claim form and append a label to the alleged defective part, both duly completed in every detail, and, in the case of the claim form, not forgetting to intimate whether a replacement part is required or a credit note against an outstanding invoice on which a similar part has been supplied to you. In the case of the latter, do not forget to supply us with the invoice number; in practice it is far preferable for you to accept a replacement part for your stock. It will be usually found that the attaching of the label to the part and subsequent dispatch to the Works, and the posting of the claim form separately by the same post, is the best method of preliminary procedure at your end.

**Remember, it is not necessary to keep a car off the road pending settlement of a claim.** Obtain the part from us, or from another Dealer near by, if not in your stock. We are always willing to supply on a "charge for record" basis. If your client has been forced to obtain a part from another source, endeavour, as far as possible, to obtain from him the bill or receipt with full particulars, and send these along for our perusal, together with the claim form. Possibly he may be a valued customer, in which case you will probably not be averse to accepting a replacement part for your own stock, thereby expediting settlement and saving the possible necessity for a good deal of correspondence.

Do not send in a differential assembly if the crown wheel only is at fault; or a connecting rod assembly if the claim is in respect of the pistons.

All enquiries in connection with the claim must be supported by the claim number, and the CHASSIS and ENGINE numbers of the car concerned. *THIS IS VITAL.*

Proprietary fittings are guaranteed by their respective manufacturers and all claims should therefore be submitted to the said firms direct. (See List of Manufacturers of Proprietary Fittings.)

Careful attention in filling up the form and label correctly will often avoid the necessity for correspondence. Remember, the quick settlement of a claim mitigates any temporary inconvenience to the car owner, and that the speedy passage of a claim depends very largely upon the care with which information supplied to the Works is prepared by the Dealer.







Date of issue: July, 1928

## The Rectification of the Complaint commonly known as " Wheel Wobble "

**T**HE complaint of " Wheel Wobble " is very rarely experienced on new cars, which seems to prove that this most annoying trouble is due to wear having taken place. When called upon to rectify this trouble each of the following points should be checked and corrected by adjustment or, where necessary, replacement.

- (1) Check the front spring " U " bolts, making sure that their retaining nuts are screwed up perfectly tight.
- (2) The correct angle of inclination of the front axle is with the steering knuckle bolts lying back at an angle of  $3\frac{1}{2}$  degrees to the vertical. If the wooden wedges (plain models only) have deteriorated through exposure, new ones should be fitted. The correct dimensions of these wedges are  $3\frac{1}{16}$ " long tapering from  $\frac{3}{8}$ " off to  $\frac{3}{16}$ ".
- (3) The correct alignment of the front wheels is such that they toe in at the front  $\frac{1}{8}$ " to  $\frac{1}{4}$ ". Care must be taken to see that measurements are taken at axle height an equal distance from the ground in each case, and several readings should be made, as the wheels themselves may not run perfectly true.
- (4) An important point is to see that there is no undue slackness or side play in the shackles and shackle bolts of both the *front and rear springs*, not forgetting the eyes of the springs in the front dumb-irons.
- (5) Ascertain that there is no excessive wear in the steering cross rod and draglink connections.
- (6) The steering knuckle bolts should be examined and, if worn, replaced. It may be necessary not only to renew the bolts, but the bushes which locate them as well.
- (7) See that the backlash in the steering box itself is not excessive. If an appreciable amount is apparent it can generally be rectified by turning the worm wheel through 180 degrees, whereby the worm will work on a new section of the worm wheel.
- (8) Careful attention should be paid to the inflation pressure of the tyres, which should be in accordance with the weights normally carried and the maker's recommendation.
- (9) Check the bolts holding the steering gearbox bracket to the cylinder block, making sure that they are perfectly tight.
- (10) If wobble is still present check the wheels for balance. Balloon tyres sometimes wear unevenly and produce a wobble which can often be cured by turning the cover in the rim in order to bring the wheel into better balance. In very bad cases it may be found necessary to add balance weights to the rim in order to obtain sufficiently good balance.





Date of issue: July, 1928

### Weights of Morris Cars

#### WEIGHTS—1920-1921

	Front			Rear			Total		
	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris-Oxford Four-seater ...	8	1	0	8	2	0	16	3	0
" " Two- " ...	8	0	7	7	2	0	15	2	7
Morris-Cowley Two- " ...	7	1	7	6	2	7	13	3	14
Morris-Oxford Chassis (Bare) ...	6	0	7	4	2	7	10	2	14
Morris-Cowley " " ...	5	2	21	4	1	14	10	0	7
Morris-Oxford Coupé ...	8	2	7	8	0	7	16	2	14

#### WEIGHTS—1921-1922

	Front			Rear			Total		
	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris-Oxford Four-seater (All weather) ...	9	1	0	10	0	0	19	1	0
" " " " (Standard) ...	8	2	0	9	0	0	17	2	0
" " Coupé ...	8	2	0	8	3	0	17	1	0
" " Two-seater ...	8	3	0	8	2	0	17	0	0
Morris-Cowley Four-seater ...	7	3	0	7	2	0	15	1	0
" " Two- " ...	7	2	0	7	0	0	14	2	0
" " Sports ...	6	2	0	7	2	0	14	0	0
Two-seater Six-Cylinder ...	10	0	0	9	1	0	19	1	0

#### WEIGHTS—1922-1923

	Front			Rear			Total		
	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris-Cowley Two-seater Plain ...	8	0	0	7	0	0	15	0	0
" " Four- " ...	8	0	0	7	3	0	15	3	0
" " Two- " Short ...	8	0	0	7	3	0	15	3	0
" " Four- " " ...	8	0	0	8	1	0	16	1	0
" " Chassis " ...	6	0	0	4	2	0	10	2	0
Morris-Oxford Two-seater 11.9 ...	8	2	0	9	0	0	17	2	0
" " Four- " " ...	8	2	0	9	3	0	18	1	0
" " Cabriolet ...	8	1	0	9	1	0	17	2	0
" " Coupé 11.9 ...	9	1	0	9	0	0	18	1	0
" " Chassis " ...	6	0	0	5	1	0	11	1	0
" " Two-seater 13.9 ...	8	2	0	9	0	0	17	2	0
" " Four- " " ...	8	2	0	9	3	0	18	1	0
" " Coupé " " ...	9	1	0	8	3	0	18	0	0
Six-Cylinder Four-seater ...	10	3	0	10	3	0	21	2	0
" " Cabriolet ...	11	2	0	10	3	0	22	1	0
" " Chassis ...	8	0	0	6	0	0	14	0	0
" " Sports ...							19	1	0
Morris-Cowley Sample Commercial ...	8	0	0	7	3	0	15	3	0
" " Chummy ...	8	2	0	7	3	0	16	1	0
Commercial Van ...	8	0	0	9	0	0	17	0	0

#### WEIGHTS—1923-1924

	Front			Rear			Total		
	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris-Oxford Two-seater 13.9 ...	8	3	0	8	3	0	17	2	0
" " Four- " " ...	8	2	0	10	2	0	19	0	0
" " Coupé " " ...	9	1	0	9	1	0	18	2	0
" " Saloon " " ...	9	0	0	10	2	0	19	2	0
" " Cabriolet " " ...	9	1	0	10	2	0	19	3	0
Morris-Cowley Two-seater ...	8	2	0	7	3	0	16	1	0
" " Four- " " ...	8	0	0	8	1	0	16	1	0
" " Chassis ...	6	0	0	4	2	0	10	2	0
" " Chummy ...	7	2	0	8	0	0	15	2	0
" " Standard Van ...	8	2	0	8	1	0	16	3	
" " Van De Luxe ...	8	2	0	8	2	7	17	0	
Ton Truck ...	11	1	0	14	3	0	26	0	





Date of issue: July, 1928

Weights of Morris Cars—continued

WEIGHTS—1924-1925

			Front			Rear			Total					
			cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.			
Morris-Oxford	Two-seater	13.9	...	...	...	9	3	0	9	2	0	19	1	0
"	"	Four-	"	"	F.W.B.	10	0	0	11	2	0	21	2	0
"	"	"	"	"	Plain	8	3	0	11	1	0	20	0	0
"	"	Chassis	"	"	"	6	3	0	5	3	0	12	2	0
"	"	Coupé	"	"	F.W.B.	10	2	0	10	0	0	20	2	0
"	"	"	"	"	Plain	9	2	0	9	1	0	18	3	0
"	"	Saloon	"	"	F.W.B.	10	3	0	12	2	0	23	1	0
"	"	"	"	"	Plain	9	3	14	12	0	14	22	0	0
"	"	Cabriolet	"	"	"	10	3	0	11	3	0	22	2	0
"	"	Landaulet	"	"	"	10	2	0	12	1	0	22	3	0
Morris-Cowley	Two-seater	"	"	"	"	8	2	0	8	1	0	16	3	0
"	"	Four-	"	"	"	8	2	0	8	3	0	17	1	0
"	"	"	"	"	Chummy	8	1	0	8	1	0	16	2	0
"	"	C.T. Van	"	"	"	8	2	0	8	3	0	17	1	0
"	"	Van De Luxe	"	"	"	8	2	0	9	1	0	17	3	0

WEIGHTS—1925-1926

			Front			Rear			Total					
			cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.			
Morris-Cowley	Two-seater	Plain	...	...	...	8	3	0	8	1	0	17	0	0
"	"	"	"	"	F.W.B.	9	1	0	8	1	0	17	2	0
"	"	Four-	"	"	Plain	8	3	0	8	3	0	17	2	0
"	"	"	"	"	F.W.B.	9	1	0	9	1	0	18	2	0
"	"	Chassis	"	"	Plain	6	2	0	5	0	0	11	2	0
"	"	"	"	"	F.W.B.	7	0	0	5	0	0	12	0	0
"	"	Chummy	"	"	Plain	8	2	0	8	0	0	16	2	0
"	"	"	"	"	F.W.B.	9	0	0	8	2	0	17	2	0
"	"	Saloon	"	"	F.W.B.	9	3	0	9	3	0	19	2	0
"	"	Coupé	"	"	F.W.B.	9	2	0	8	3	0	18	1	0
"	"	Com. Trav. Car	"	"	F.W.B.	9	0	0	8	2	0	17	2	0
"	"	Van De Luxe	"	"	Plain	8	3	0	9	1	0	18	0	0
"	"	Std. Van	"	"	Plain	9	0	0	8	3	0	17	3	0
Morris-Oxford	Two-seater	"	"	"	"	10	0	0	9	3	0	19	3	0
"	"	Four-	"	"	"	10	0	0	11	0	0	21	0	0
"	"	Two-	"	"	Chassis	7	1	0	5	1	0	12	2	0
"	"	Four-	"	"	Chassis	7	1	0	5	3	0	13	0	0
"	"	Landaulet	"	"	"	10	3	0	12	2	0	23	1	0
"	"	Coupé	"	"	"	11	0	0	10	1	0	21	1	0
"	"	Cabriolet	"	"	"	10	3	0	11	1	0	22	0	0
"	"	Saloon	"	"	"	10	3	0	12	1	0	23	0	0
"	"	3/4 Coupé	"	"	"	10	3	0	10	2	0	21	1	0
"	"	Saloon Landaulet	"	"	"	11	0	0	13	0	0	24	0	0

WEIGHTS—1926-1927

			Front			Rear			Total					
			cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.			
Morris-Cowley	Two-seater	Plain	...	...	...	8	3	0	8	0	0	16	3	0
"	"	"	"	"	F.W.B.	9	1	0	8	0	0	17	1	0
"	"	Four-seater	"	"	Plain	8	3	0	8	1	0	17	0	0
"	"	"	"	"	F.W.B.	9	1	0	8	1	0	17	2	0
"	"	Coupé	"	"	F.W.B.	9	2	0	8	1	0	17	3	0
"	"	Saloon	"	"	F.W.B.	9	3	0	9	0	0	18	3	0
"	"	Van	"	"	"	8	1	0	9	2	0	17	3	0
Morris-Oxford	Two-seater	"	"	"	"	10	0	0	9	1	0	19	1	0
"	"	Four-	"	"	"	10	0	0	10	1	0	20	1	0
"	"	"	"	"	Chassis	8	2	0	6	0	0	14	2	0
"	"	Saloon	"	"	"	8	2	0	6	1	0	14	3	0
"	"	Cabriolet	"	"	"	10	3	0	11	2	0	22	1	0
"	"	Saloon Landaulet	"	"	"	11	0	0	12	2	0	23	2	0
"	"	Coupé	"	"	"	11	0	0	10	1	0	21	1	0
"	"	Saloon	"	"	"	11	0	0	10	3	0	21	3	0
3-Cowley Van	"	"	"	"	"	8	1	0	9	2	0	17	3	0
3-Oxford 56" Track Saloon	"	"	"	"	"	12	2	0	14	1	0	26	3	0
3-O. Four-seater	"	"	"	"	"	12	2	0	15	2	0	28	0	0
3-O. Saloon	"	"	"	"	"	12	2	0	15	2	0	28	0	0
3-O. Chassis (including 56 lb. oil and fuel)	"	"	"	"	"	10	2	0	9	3	0	20	1	0



MODEL: ALL MODELS

No. OF SHEETS 3

SHEET No. 3

Date of issue: July, 1928

Weights of Morris Cars—continued

WEIGHTS—1927-1928

	Front			Rear			Total		
	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
15.9 E.O. Chassis ... ..	10	2	0	9	3	0	20	1	0
15.9 E.O. Saloon ... ..	12	2	0	15	2	0	28	0	0
15.9 E.O. Tourer ... ..	12	2	0	14	1	0	26	3	0
13.9 M.O. 56" Chassis ... ..	8	1	14	5	3	14	14	1	0
13.9 M.O. 48" Closed Chassis ... ..	7	2	0	5	2	0	13	0	0
13.9 M.O. 48" Open Chassis ... ..	7	1	0	5	1	0	12	2	0
13.9 M.O. 56" Tourer ... ..	10	1	0	11	0	0	21	1	0
13.9 M.O. 48" Saloon Landaulet ... ..	10	3	0	12	3	0	23	2	0
13.9 M.O. 48" Saloon ... ..	10	1	0	11	0	0	21	1	0
13.9 M.O. 48" Coupé ... ..	10	2	0	10	1	0	20	3	0
13.9 M.O. 48" Tourer ... ..	10	3	0	10	3	0	20	3	0
13.9 M.O. 48" Two-seater ... ..	10	2	0	9	1	0	19	3	0
13.9 M.O. Traveller's Brougham ... ..	10	2	14	11	3	14	22	2	0
13.9 M.O. 48" Saloon De Luxe ... ..	10	3	0	12	3	0	23	2	0
11.9 M.C. 48" Chassis ... ..	7	3	0	5	1	0	13	0	0
11.9 M.C. 56" Chassis ... ..	7	1	14	5	2	0	12	3	14
11.9 M.C. 48" Van Chassis ... ..	6	3	14	5	1	14	12	1	0
11.9 M.C. 56" Saloon ... ..	10	2	0	10	0	0	20	2	0
11.9 M.C. 56" Coupé ... ..	10	1	0	9	1	0	19	2	0
11.9 M.C. 56" Tourer ... ..	9	3	0	9	1	0	19	0	0
11.9 M.C. 56" Two-seater ... ..	9	3	0	8	3	0	18	2	0
11.9 M.C. 48" Saloon ... ..	9	2	14	9	1	21	19	0	7
11.9 M.C. 48" Coupé ... ..	9	3	0	8	2	0	18	1	0
11.9 M.C. 48" Tourer ... ..	9	1	14	8	3	14	18	1	0
11.9 M.C. 48" Two-seater ... ..	9	1	0	8	1	0	17	2	0
11.9 M.C. 48" Commercial Traveller's Car ... ..	9	2	0	8	2	0	18	0	0
11.9 M.C. 48" Van ... ..	10	0	0	10	1	0	20	1	0
11.9 M.C. 48" Van Chassis ... ..	6	3	14	5	1	14	12	1	0
11.9 M.O. 48" Saloon ... ..	10	0	14	11	0	0	21	0	14
11.9 M.O. 48" Tourer ... ..	9	3	0	10	1	14	20	0	14
11.9 M.O. 48" Chassis ... ..	8	1	0	5	2	0	13	3	0
Morris Six 56" Saloon ... ..	13	2	0	14	3	0	28	1	0
"  "  56" Coupé ... ..	13	2	0	14	2	0	28	0	0
"  "  56" Chassis ... ..	11	0	0	8	2	0	19	2	0







Date of issue : December, 1929

Weights of Morris Cars—continued

		WEIGHTS—1928-1929						Total		
		Front Axle			Rear Axle			Total		
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Minor	Tourer	5	2	16	5	3	0	11	1	18
"	Saloon	5	2	14	5	3	25	11	2	12
Morris-Cowley	48" Two-seater	10	0	0	8	3	22	18	3	26
"	" Four-seater	10	0	6	9	1	15	19	1	23
"	" Coupé	10	0	24	9	1	18	19	2	16
"	" Saloon	10	1	0	10	0	4	20	1	8
"	" C.T.C.	9	3	2	8	2	18	18	2	0
"	" Van	9	3	4	10	0	26	20	0	4
Morris-Cowley	56" Tourer	10	0	18	10	2	6	20	2	26
"	" Saloon	10	1	0	11	1	18	21	2	10
Morris-Oxford	14/28 h.p. Two-seater	10	3	4	10	0	6	20	3	12
"	" Four-seater	10	1	12	10	3	8	21	0	20
"	" Coupé	10	3	24	10	3	2	21	3	2
"	" Saloon	10	3	0	11	3	24	22	3	0
"	" Saloon de Luxe	10	1	25	12	0	14	22	2	16
"	" Fabric Saloon	10	1	4	12	0	8	22	1	16
"	" Traveller's Brougham	10	2	18	10	3	0	21	1	20
Morris Six	Coupé	13	3	8	13	2	12	27	1	22
"	" Saloon	13	3	18	14	0	12	28	0	4
"	" Gordon England Coupé	12	3	14	12	3	8	25	3	0
Morris 16/40 h.p.	Tourer	12	3	12	14	0	24	27	0	12
"	" Saloon	13	1	8	15	2	0	28	3	9
Minor	Chassis	4	0	4	2	3	21	6	3	24
Morris-Cowley	48" Chassis	8	0	18	5	2	26	13	3	18
"	" Van	7	3	4	5	3	0	13	2	0
"	" 56" "	8	1	14	6	0	8	14	1	24
Morris-Oxford	Open	8	2	0	6	1	16	14	3	18
"	" Closed	8	2	8	6	1	6	14	3	14
Morris 16/40 h.p.	Chassis	11	0	18	10	1	18	21	2	14





Date of issue: December, 1929

Weights of Morris Cars—continued

WEIGHTS—1929-1930

		Front Axle			Rear Axle			Total		
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris Minor	Chassis	4	2	16	3	0	10	7	2	26
"	Tourer	5	2	24	5	3	4	11	2	0
"	Fabric Saloon	5	3	4	6	0	8	11	3	12
"	Coachbuilt Saloon	5	3	26	6	0	16	12	0	14
Morris-Cowley	Chassis (Standard)	7	3	18	5	2	12	13	2	8
"	" (Saloon)	8	0	8	5	3	4	13	3	12
"	" (Van)	7	3	20	5	3	4	13	2	24
"	Two-seater	10	0	4	8	3	20	18	3	24
"	Tourer	9	3	26	9	1	8	19	1	6
"	Saloon	10	1	0	9	3	16	20	0	16
"	Saloon (Folding Head)	10	1	4	10	1	0	20	2	4
"	Coupé	10	0	24	9	1	14	19	2	10
"	56" Chassis (Export)	8	1	8	6	0	7	14	1	15
"	" Saloon	10	1	14	11	0	18	21	2	4
"	" Tourer	10	0	12	10	2	4	20	2	16
Morris-Oxford Six	Chassis	9	2	10	7	0	22	16	3	4
"	Tourer	12	0	16	12	0	26	24	1	14
"	Coupé	12	0	4	13	0	12	25	0	16
"	Fabric Saloon	11	2	8	13	1	12	24	3	20
"	Coachbuilt Saloon	12	2	10	13	0	14	25	2	24
Morris Isis Six	Chassis (Home)	11	2	24	8	3	12	20	2	8
"	" (Export)	11	2	16	8	3	4	20	1	20
"	Tourer	13	1	18	13	1	14	26	3	4
"	Saloon (Home)	13	3	4	14	1	24	28	0	24
"	" (Export)	13	3	16	14	2	12	28	2	0
"	Club Coupé	13	1	18	13	0	22	26	2	12
Morris 5-cwt. Van		5	3	20	6	0	4	11	3	20
"	Light Van	9	3	0	10	0	2	19	3	2
"	Commercial Traveller's Saloon	9	3	12	9	2	12	19	1	24





Date of issue : March, 1934

Weights of Morris Cars—*continued*

		WEIGHTS—1931-32			Total.		
		Front Axle.			Rear Axle.		
		cwt.	qr.	lb.	cwt.	qr.	lb.
Morris Minor	S.V. Chassis ... ..	4	2	16	3	0	18
"	" Two-seater ... ..	5	2	0	5	1	10
"	" Tourer ... ..	5	2	14	5	3	24
"	" Saloon (Fixed Head) ... ..	5	3	8	6	2	8
"	" Saloon (Sliding Head) ... ..	5	3	10	6	3	4
"	" 5-cwt. Van ... ..	5	3	16	6	0	2
Morris Family	Eight Chassis ... ..	5	1	6	3	1	22
"	" " Saloon ... ..	7	0	18	7	3	6
"	" " Sports Coupé ... ..	7	1	10	7	2	14
Morris Cowley	Chassis ... ..	8	1	2	6	0	10
"	" 14/32 h.p. Chassis ... ..	8	1	4	6	0	8
"	" Two-seater ... ..	10	1	26	9	2	8
"	" Coupé ... ..	10	3	8	11	0	2
"	" Saloon (Fixed Head) ... ..	10	1	12	11	0	0
"	" Saloon (Sliding Head) ... ..	10	2	24	11	1	26
"	" Sports Coupé ... ..	10	3	4	11	0	20
"	" Traveller's Saloon ... ..	10	2	16	11	1	24
Morris Major	Chassis ... ..	9	0	16	6	1	26
"	" Tourer ... ..	11	2	4	11	0	2
"	" Coupé ... ..	11	2	26	11	2	24
"	" Saloon (Fixed Head) ... ..	11	1	20	11	2	24
"	" Saloon (Sliding Head) ... ..	11	2	18	12	1	4
"	" Sports Coupé ... ..	11	3	8	11	3	8
Morris Oxford	Chassis ... ..	10	1	20	7	2	8
"	" Coupé ... ..	12	3	26	13	1	12
"	" Saloon ... ..	13	0	20	14	0	0
"	" Sports Coupé ... ..	13	1	0	13	3	22
Morris Isis	Chassis ... ..	12	0	4	9	1	12
"	" Saloon ... ..	14	3	8	16	1	22
"	" Sports Coupé ... ..	14	3	0	15	2	0
Cowley Van	Chassis ... ..	8	0	24	5	3	10
"	" " ... ..	9	3	6	10	2	4
Minor S.V.	Van Chassis ... ..	4	2	20	3	0	6
"	" " ... ..	5	3	16	6	0	2





Date of issue : March, 1934

Weights of Morris Cars—continued

WEIGHTS—1932-1933

	Front Axle.	Rear Axle.	Total.
	cwt. qr. lb.	cwt. qr. lb.	cwt. qr. lb.
Morris Minor S.W.B. 3-speed Gearbox Chassis ...	4 2 16	3 0 18	7 3 6
" " " Two-seater ... ..	5 2 0	5 2 0	11 0 0
" " " Van Chassis ... ..	4 3 0	3 0 14	7 3 14
" " " Van ... ..	5 3 14	6 0 14	12 0 0
Morris Minor S.W.B. 4-speed Gearbox Chassis ...	4 3 10	3 0 26	8 0 8
" " " Two-seater ... ..	5 2 26	5 2 0	11 0 26
" " " Tourer ... ..	5 3 0	6 0 20	11 3 20
" " " Saloon (Fixed Head) ... ..	5 3 22	6 3 8	12 3 2
" " " Saloon (Sliding Head) ... ..	5 3 24	6 3 26	12 3 22
Morris Minor L.W.B. Chassis ... ..	5 0 22	3 0 26	8 1 20
" " " Saloon ... ..	6 3 22	7 2 0	14 1 22
" " " Coupé ... ..	7 0 6	7 1 16	14 1 22
Morris Ten Chassis (Standard) ... ..	7 2 20	4 3 4	12 1 24
" " Chassis (Fixed Head) ... ..	7 2 0	4 3 2	12 1 2
" " Chassis (Sliding Head) ... ..	7 2 4	5 0 8	12 2 12
" " Saloon (Fixed Head) ... ..	9 2 6	9 3 10	19 1 16
" " Saloon (Sliding Head) ... ..	9 3 0	10 0 4	19 3 4
" " Special Coupé ... ..	9 3 10	9 2 24	19 2 6
" " Tourer ... ..	9 1 0	9 1 18	18 2 18
Morris Cowley 11.9 h.p. Chassis (Standard) ... ..	8 1 22	6 0 24	14 2 18
" " " Chassis (Fixed Head) ... ..	8 1 4	6 0 14	14 1 18
" " " Chassis (Sliding Head) ... ..	8 1 16	6 1 26	14 3 14
" " " Two-seater ... ..	10 2 0	9 3 8	20 1 8
" " " Coupé ... ..	10 2 26	11 0 8	21 3 6
" " " Saloon (Fixed Head) ... ..	10 1 22	11 1 10	21 3 4
" " " Saloon (Sliding Head) ... ..	10 2 22	11 2 14	22 1 8
" " " Special Coupé ... ..	10 3 18	11 0 22	22 0 12
" " " Tourer ... ..	10 2 22	11 2 22	22 1 16
Morris Cowley 14 28 h.p. Chassis (Standard) ... ..	8 2 10	6 1 8	14 3 18
" " " Van Chassis ... ..	8 1 4	5 3 4	14 0 8
" " " Chassis (Fixed Head) ... ..	8 1 20	6 1 2	14 2 22
" " " Chassis (Sliding Head) ... ..	8 2 0	6 2 2	15 0 2
Morris Major 14 h.p. Chassis (Standard) ... ..	9 1 8	6 2 14	15 3 22
" " " Chassis (Fixed Head) ... ..	9 0 18	6 2 2	15 2 20
" " " Chassis (Sliding Head) ... ..	9 1 4	6 3 14	16 0 18
" " " Tourer ... ..	11 1 26	11 1 10	22 3 8
" " " Coupé ... ..	11 2 26	11 2 20	23 1 18
" " " Saloon (Fixed Head) ... ..	11 2 6	11 3 10	23 1 16
" " " Saloon (Sliding Head) ... ..	11 2 20	12 1 6	23 3 26
" " " Special Coupé ... ..	11 3 8	11 3 18	23 2 26
Morris Major 15 h.p. Chassis (Standard) ... ..	9 1 4	6 2 14	15 3 18
" " " Chassis (Fixed Head) ... ..	9 0 2	6 2 0	15 2 2
" " " Chassis (Sliding Head) ... ..	9 0 18	6 3 10	16 0 0
Morris Oxford Chassis (Standard) ... ..	10 2 16	7 2 6	18 0 22
" " Coupé ... ..	13 2 0	13 1 0	26 3 0
" " Saloon ... ..	13 1 2	14 1 26	27 3 0
" " Special Coupé ... ..	13 2 2	13 1 24	26 3 26
Morris Isis Chassis (with grid) ... ..	12 1 4	9 1 22	21 2 26
" " Chassis (without grid) ... ..	12 1 8	9 1 4	21 2 12
" " Saloon ... ..	15 0 14	16 1 26	31 2 12
" " Coupé ... ..	15 0 8	15 1 4	30 1
Morris "25" Saloon ... ..	17 0 14	17 2 12	34 2







Date of issue : March, 1934

Weights of Morris Cars—continued

				WEIGHTS—1933-1934								
				Front Axle			Rear Axle			Total		
				cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.
Morris Minor	S.W.B.	Chassis (Saloon)	...	4	3	26	3	1	4	8	1	2
"	"	Chassis (Two-seater)	...	5	0	2	3	1	8	8	1	10
"	"	Two-seater	...	6	0	0	6	0	4	12	0	4
"	"	Tourer	...	5	3	24	6	2	16	12	2	12
"	"	Saloon (Sliding Head)	...	6	0	20	7	1	8	13	2	0
"	"	Saloon (Fixed Head)	...	6	0	20	7	1	8	13	2	0
Morris Minor	L.W.B.	Chassis	...	5	1	0	3	0	24	8	1	24
"	"	Saloon (Sliding Head)	...	7	0	18	8	0	8	15	0	26
"	"	Special Coupé	...	7	0	24	7	2	16	14	3	12
Morris Minor	5-cwt.	Van Chassis	...	4	3	2	4	1	4	8	0	3
"	"	"	...	5	3	0	6	1	0	12	0	0
Morris Ten	Four	Chassis (Two-seater)	...	8	0	8	5	0	14	13	0	20
"	"	Chassis (Coupé)	...	8	0	16	5	0	2	13	0	16
"	"	Chassis (Saloon (Sliding Head))	...	8	0	4	5	1	8	13	1	12
"	"	Chassis (Saloon (Fixed Head))	...	8	0	2	5	0	8	13	0	9
"	"	Two-seater	...	9	3	16	8	3	22	18	3	10
"	"	Tourer	...	9	3	4	9	0	22	18	3	26
"	"	Saloon (Sliding Head)	...	10	0	20	10	1	12	20	2	4
"	"	Saloon (Fixed Head)	...	10	0	12	10	0	12	20	0	24
"	"	Special Coupé	...	10	1	4	9	3	20	20	0	24
"	"	Traveller's Saloon	...	10	0	2	10	1	22	20	1	24
Morris Ten	Six	Chassis (Special Sports)	...	8	3	0	5	1	4	14	0	4
"	"	Chassis (Two-seater)	...	8	2	18	5	1	24	14	0	12
"	"	Chassis (Coupé)	...	8	2	16	5	1	0	13	3	16
"	"	Chassis (Saloon)	...	8	2	14	5	2	6	14	0	18
"	"	Two-seater	...	10	1	18	9	1	2	19	2	20
"	"	Tourer	...	10	1	14	9	3	2	20	0	16
"	"	Saloon (Sliding Head)	...	10	2	26	10	3	12	21	2	10
"	"	Saloon (Fixed Head)	...	10	3	4	10	3	6	21	2	10
"	"	Special Coupé	...	10	3	8	10	1	20	21	1	0
"	"	Traveller's Saloon	...	10	3	0	10	3	20	21	2	20
"	"	Special Sports	...	10	1	14	9	2	6	19	3	20
Morris 8-10	cwt.	Van Chassis	...	8	0	26	6	1	0	14	1	22
"	"	"	...	9	1	24	10	2	4	19	3	26
Morris Cowley	Four	Chassis	...	8	3	10	5	2	20	14	2	0
"	"	Saloon (Sliding Head)	...	11	2	12	11	0	18	22	3	22
"	"	Saloon (Fixed Head)	...	11	2	12	11	0	8	22	2	20
Morris Cowley	Six	Chassis (Saloon)	...	9	3	14	6	0	12	15	3	26
"	"	Chassis (Coupé)	...	9	3	22	5	2	12	15	2	4
"	"	Saloon (Sliding Head)	...	12	1	12	11	3	8	24	0	20
"	"	Saloon (Fixed Head)	...	12	1	14	11	2	26	24	0	12
"	"	Special Coupé	...	12	3	26	12	0	26	25	0	24
Morris Oxford	Chassis	...	...	11	0	20	8	0	4	19	0	22
"	"	Saloon	...	14	2	22	14	2	2	29	0	24
"	"	Special Coupé	...	14	2	14	14	1	8	28	3	22
Morris Isis	Chassis	...	...	13	0	0	9	3	6	22	3	4
"	"	Saloon	...	16	0	8	17	0	2	33	0	10
"	"	Special Coupé	...	16	0	8	15	3	24	32	0	4
"	"	Tourer	...	15	3	4	15	2	2	31	1	6
Morris "25"	Chassis	...	...	14	2	22	10	1	20	25	0	
"	"	Saloon	...	18	1	16	17	3	20	36	1	
"	"	Special Coupé	...	18	1	0	26	2	10	34	3	

