

Derby Bentley Society – technical paper compilation

A
General Information
FACTORY

Sr. - F.B.A. Ltd.
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Mr. Avis.
Mr. Schmidt. - Switzerland.
Sa. - Spain.
R. P. Collyer, Ltd., - Canada.
Bentley Repair Depot, London.

3rd December 1934.

DEPOT SHEET NO. Hd.268.

STARTING UP FROM COLD.
BENTLEY AND 20/25 HP. CHASSIS.

Origin of information:-
Hs/Rm.14/KW.20.11.34.

The first 500 Bentleys that have been turned out, and also the 20/25 are likely to give trouble with starting if they are not kept in a heated garage during the night.

It is now universally appreciated that in order to get a car to start in cold weather it is necessary to use a thinner oil than that suitable for Summer use.

The matter has been taken in hand from a Design point of view, by the provision of a geared starter motor which greatly facilitates starting; in fact, with this motor we can guarantee a start at zero. There will, however, be about 500 Bentleys out with the un-geared starter motor and this state of affairs also applies to the 20/25.

We think information should be circulated to such people who have complained, to point out that by the use of a thinner oil, car starting can be greatly facilitated.

-contd-

SERVICE INSTRUCTION LEAFLET

ISSUED BY

BENTLEY MOTORS (1931) LTD.



BM.1.

SB.5/M.

Subject: Recommissioning of Cars after Period of Storage
3½ and 4½ Litre Bentley.

Date
of
Issue 24th Sept. 45.

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DOCUMENT ARE
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Conditions have arisen now where many cars are being brought into use again after a period of storage, and recognising the fact that the demand for service or assistance will, during the present phase, far exceed that which Bentley Motors Ltd. are able to offer, this leaflet has been compiled to afford guidance in preparing and recommissioning cars for the road, and to ensure that attention is directed to the essential points which affect the reliability and roadworthiness of the car. Obviously, a number of additional matters may require attention depending on the mechanical condition of the car before storage, and the work described herein represents the minimum attention necessary to ensure satisfactory operation.

It is assumed that at the time of storage, the car was treated in accordance with the recommended procedure issued by Bentley Motors Ltd., but it is recognised that the actual conditions of storage in regard to heating and ventilation etc., and the amount of attention subsequently received by the car during storage will have varied considerably with individual cars. Hence it may be useful first to indicate briefly the disabilities which may result from unsuitable conditions of storage.

(a) Cylinder Bores.

Inadequate initial protection or failure to turn the engine at intervals during storage will result in corrosion in varying degrees. A small amount of corrosion, provided the engine can be turned fairly easily by hand, is not usually serious and will probably wear off very quickly. On the other hand, if the corrosion has been allowed to proceed to the extent that the engine can be turned only with great effort, the condition is serious and a rebore is usually necessary.

(b) Carburettors and Petrol System.

Without doubt, the most likely cause of trouble and unreliability is the presence of a gummy residue resulting from evaporation of any petrol which may have been left in the system. This sets solid and prevents the working of fuel valves or other mechanism. Even if the engine has been made to run satisfactorily, there is a danger that portions of the deposit will subsequently become dislodged and cause stoppage of the car through choking of the petrol passages; therefore, very careful attention must be paid to cleaning out the entire petrol system. Failure to do so may lead to trouble later. A further difficulty arises due to the presence of water, which may have been left in with the petrol, and this causes corrosion and perforation of the petrol tank.

(c) Gearbox and Axle Gears.

If the transmission has not been turned over at intervals during storage, it is possible that those portions of the gears or ball bearings which are exposed above the oil level will have suffered some

- continued -

Continued :-

corrosion due to condensation of moisture on the polished and case-hardened steel, which is more susceptible to corrosion than unhardened materials. The extent of any such corrosion is very indeterminate and, in the event of any appreciable corrosion having taken place, it is questionable whether any corrective treatment short of dismantling the unit and replacing the parts concerned is of any value. It is probable, however, that in many cases the effects of slight corrosion will wear off, and having regard to the shortage of spares at the present time and in the immediate future, it is not recommended that any action should be taken to anticipate trouble from this source. Therefore, no instructions are included in this leaflet in respect of examination of gearbox or axle gears. If the gears or ball bearings have suffered to the extent of requiring replacement, there will be ample warning by way of noise when the car is put into commission.

(d) Clutches.

Failure to have jacked out the clutch before storage, may have resulted in the fabrics adhering to the pressure plates, and it may be found impossible to disengage the clutch. This condition, if severe may render necessary the complete dismantling of the clutch, but before this action is taken, certain procedure suggested later in this leaflet should be observed.

With the foregoing points in mind, it is probable that most cars will respond satisfactorily to the following recommended procedure and will give a reliable period of service before further attention becomes necessary.

1. Tyres.

Before taking the car off the blocks the tyres should be inflated to the correct pressures. Recommended pressures are :-

5.50 x 18 Tyres front	-	30 lb/sq.in.
rear	-	30 lb/sq.in.
6.50 x 17 Tyres front	-	23 lb/sq.in.
rear	-	26 lb/sq.in.

These pressures may differ from those quoted in the Instruction Book, but they have been found to give better results.

2. Battery.

Unless the battery has been correctly stored, and received a refreshing charge, at least every two months, it will be useless and a replacement must be obtained. If it has received the proper treatment during storage a thorough charge should be all that is necessary. The battery clamps should be cleaned with a wire brush and smeared with vaseline.

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3. Cylinder Bores.

Where any doubt exists as to the condition of the cylinder bores through lack of attention during storage, remove the sparking plugs and into each cylinder inject two eggcupfuls of a mixture comprising 5 parts engine oil and 1 part colloidal graphite. This mixture should be allowed to stand in the bores several hours, or overnight, after turning the engine by hand to distribute the mixture.

4. Valve Mechanism.

Remove rocker cover and inspect valve mechanism for sweating and rust marks. Thoroughly clean mechanism and pour a liberal quantity of fresh oil over all the parts. Remove tappet covers and see that tappets are well lubricated by oil running down push rods.

No further work on the internal parts of the engine is necessary at this stage.

5. Petrol System.

- (a) Disconnect petrol pipes at float chambers and unscrew union from each float chamber cover, A. Fig. 1. Take out the small filter gauze, B. clean and replace.
- (b) Remove float chamber covers, lift out the floats and carefully clean out the bottom of the float chambers. Note whether there is any sign of gummy deposit. If so, pay particular attention to the remainder of the petrol system.
- (c) Remove the air valve cylinder (dashpot) C., from each carburettor and lift out the piston, D., taking great care not to bend or damage the needle valve, E., attached to the bottom of the piston. Carefully clean the piston with paraffin, or, if the piston or its guide has suffered corrosion during storage, metal polish may be used to remove stains.

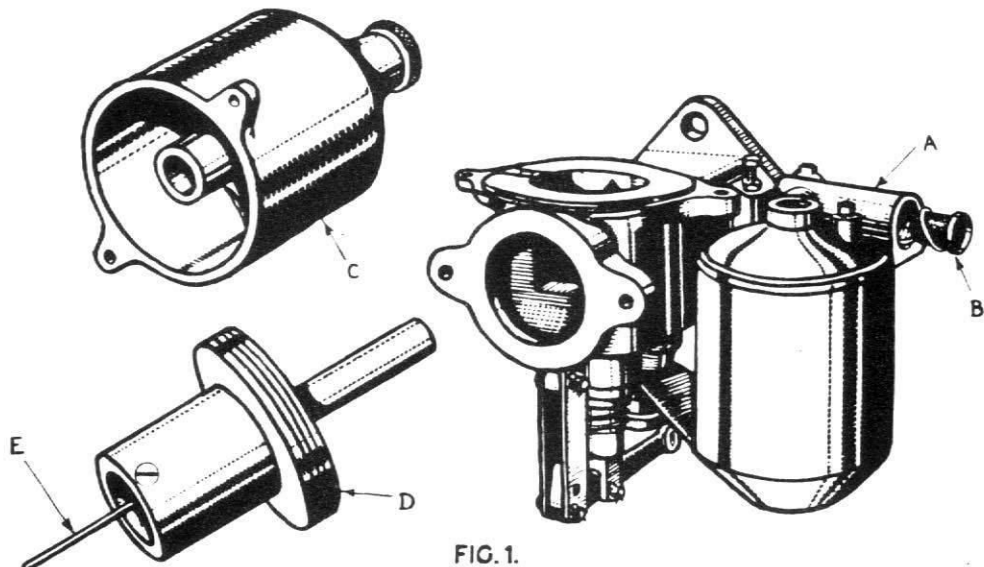
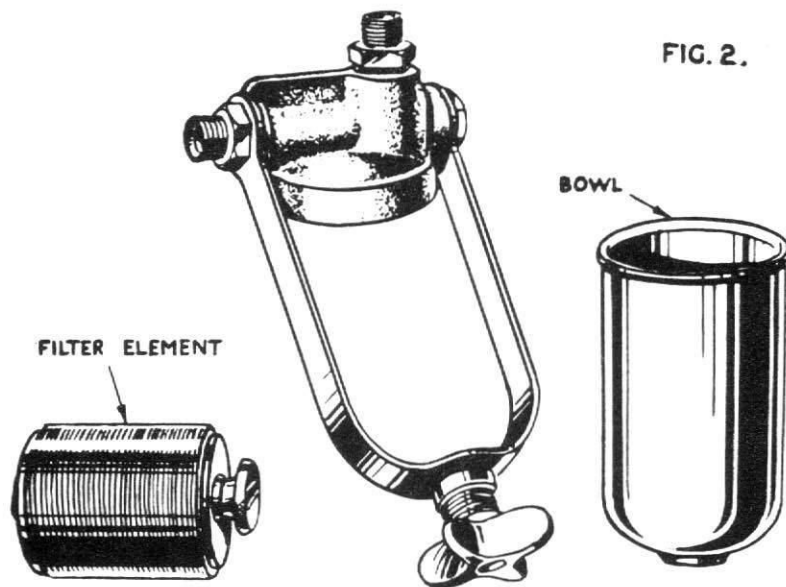


FIG. 1.

Continued :-

- (d) Remove petrol filter elements, and thoroughly clean by washing in petrol (see later note if gummed up). In the case of the $3\frac{1}{2}$ Litre Bentley, the filter is on the dashboard, and is of the type shown in Fig.2. In the case of the $4\frac{1}{2}$ Litre Bentley, dual filters of this type will be found on the rear cross member



- (e) Remove the drain plug from the petrol tank, and inspect for signs of gum deposit. Replace the plug, and make sure it is tight. In the unhappy event of petrol having been left in the tank, with the result that the system is gummed up, special care must be taken to clean out the system. Suitable solvents are :-

Methanol (Methyl Alcohol)

or

Cellulose thinners,

or

Cresylic Acid (Cresol)

Any of the above are effective in dissolving gum where this is present in accessible places, but the petrol tank will take longer and agitation is necessary to bring fresh solvent into contact with the gum. If the tank is badly gummed up, it will probably be necessary to dismantle it from the car, in which case hot caustic soda may be used more effectively than the solvents mentioned above. The tank must be thoroughly washed out afterwards to remove all traces of caustic soda and corrosion deposit. Examine carefully for signs of perforation caused by corrosion.

- (f) Switch on ignition and the petrol pumps should start to purr. If they do not, make sure current is getting to pumps by checking with 12 volt bulb connected between the brass bush inside the pump end covers (removed) and earth. The bulb should light; if not, examine small fuse F. in each cover (Fig.3).

- 5 -

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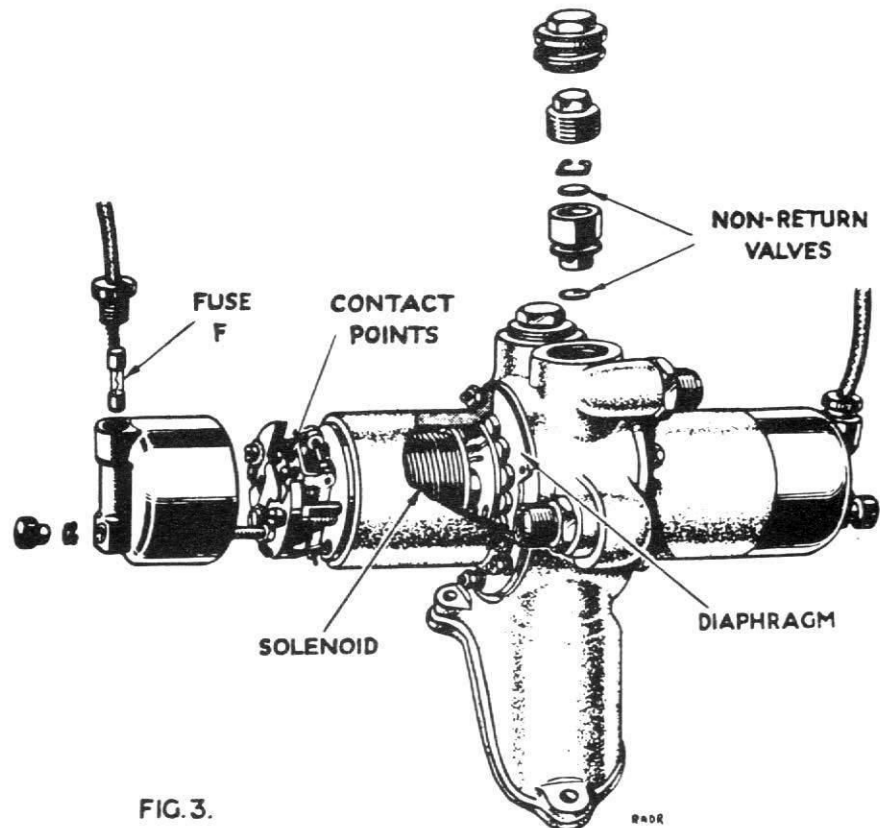


FIG. 3.

Should these be correct, then examine No.3 fuse in main fuse box on dashboard. Having ascertained that current is getting to the pumps, and they are still not working, then they are stuck up. Fit the covers on the pump upside down so as to leave the contact points exposed. With the point of a pencil (ignition still switched on) keep gently opening the points. It may take a little time to get the pumps to work again, but if there is no response it will be advisable to fit a pair of reconditioned pumps. Alternatively, new diaphragms may be fitted, but we do not advise this in the absence of expert knowledge.

6. Electrical Equipment.

(a) Dynamo.

Cleanliness of the commutator and freedom of the brushes in their holders should be checked on this unit. Remove the end cover, A. Fig.4 by releasing the pawl, Al., and rotating the cover a third of a turn away from the engine. This will expose the commutator, B. and the brushes, C. Remove the brushes from their holders after lifting the spring clips, D. Brushes, holders and commutator should then be cleaned with a petrol soaked rag and replaced.

On the 4½ Litre model the cover is removed by unscrewing the knurled screws.

Continued :-

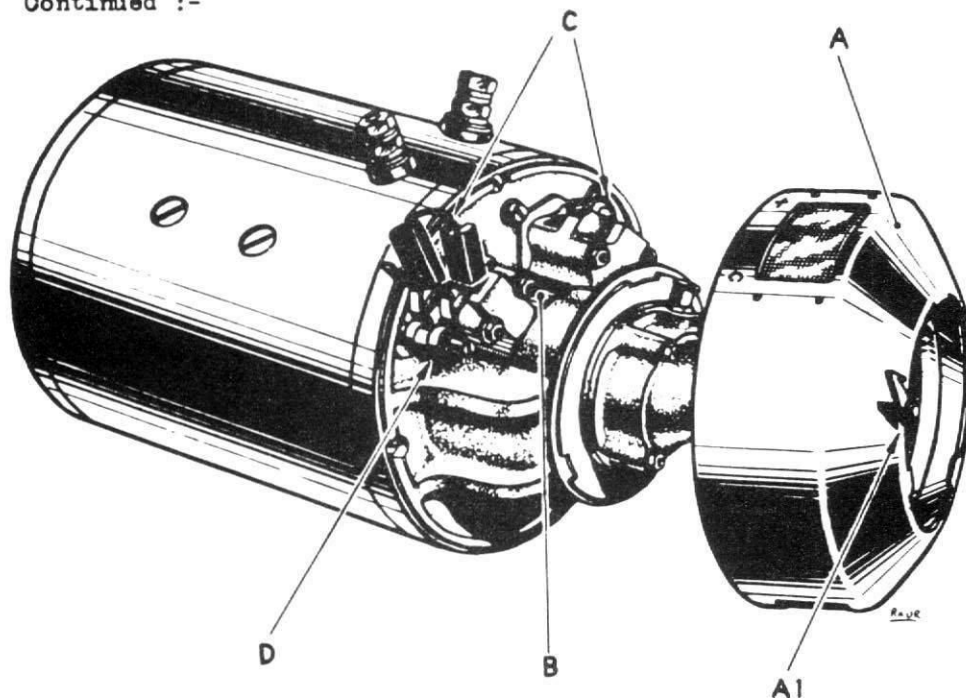


FIG. 4

(d) Distributor.

Remove the high tension distributor cover, K. Fig.5 and clean contact breaker points with a carborundum strip. Reset the gap to .015" - .018". Adjustment is effected by releasing the locknut, L., and turning the contact screw, M.

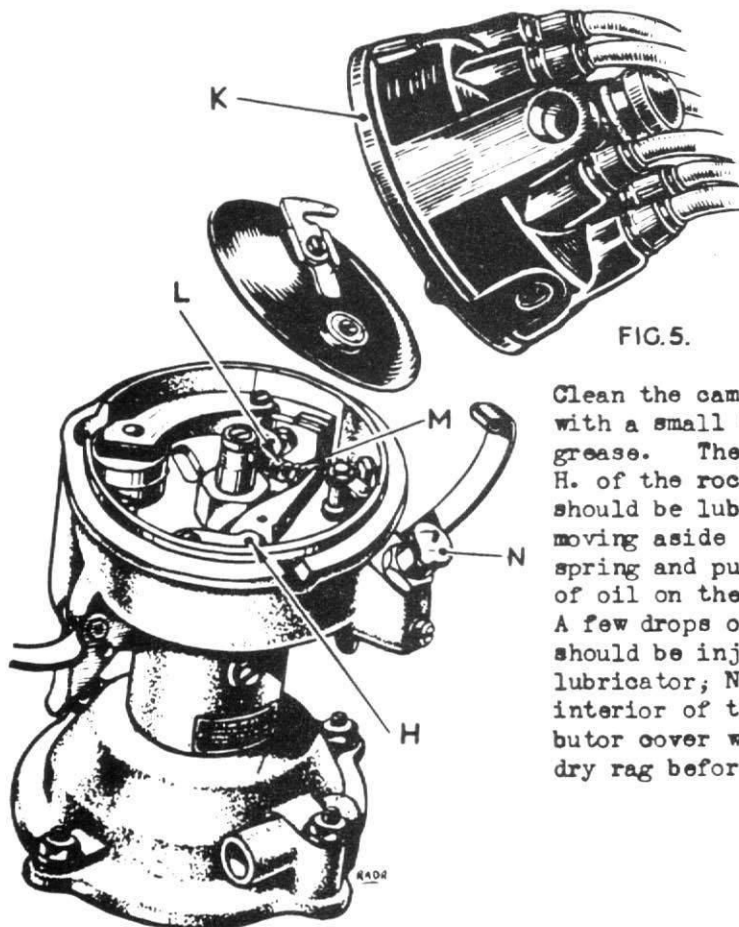


FIG. 5.

Clean the cam and smear with a small quantity of grease. The pivot pin, H. of the rocker arm should be lubricated by moving aside the retaining spring and putting a drop of oil on the exposed end. A few drops of engine oil should be injected into lubricator, N. Wipe the interior of the distributor cover with a clean, dry rag before replacing.

Continued :-

(c) Plugs.

Clean and set gaps to .018" - .022". Replace in engine and connect high tension leads.

(d) Ballast Resistance and Coils.

Remove the coil cover and clean top of coil with dry rag. Check and clean all connections to coil and ballast resistance.

(e) Starter Motor.

No attention should be necessary apart from removing the plug in the side of the reduction gear casing and filling with engine oil until the level reaches the mouth of the plug orifice. On the earlier models a small oil cup is fitted for lubrication. Two or three drops of engine oil should be injected. Should the starter motor prove sluggish in operation, the end cover should be removed and the brushes cleaned.

7. Water Cooling System.

Screw down the greaser on the water pump gland three turns and tighten the gland nut, if necessary. The radiator can now be filled with clean, preferably soft water to about 2½ inches from the top of the filler spout. Carefully examine all the rubber connections and "Jubilee" hose clips, and replace if unsound.

Adjust the fan belt by slackening off the hexagon locknut with a spanner and screwing down the knurled nut with the fingers until one side of the belt can be moved transversely with the fingers about ¼" at a point equidistant from the pulleys. Afterwards securely re-locking the hexagon locknut.

The petrol, water and electrical systems having been checked, preparations may now be made to start the engine.

8. Engine

(a) Drain the sump. Remove the oil strainer and thoroughly clean in paraffin. If a pressure filter is fitted a new element should be obtained. Refill the sump with any of the recommended oils.

(b) Remove the rocker cover. Set the tappet clearances at .004" for both inlet and exhaust valves when cold by releasing the locknut and turning the adjusting screw until the feeler gauge, provided in the tool kit, is just free to move between the rocker and valve stem. In the case of the 3½ Litre the two tappet covers beneath the exhaust manifold should be removed in order to expose the adjusting screws.

Check each compression pressure by turning the engine with the starting handle. They should be equal; if one is weaker a sticking, or burnt valve is indicated.

(c) Start the engine and note the oil pressure and charging rate. Run the engine at a fast idling speed, i.e. 1,000 - 1,500 r.p.m. until the thermometer registers 70°C. approx. when the radiator shutters should begin to open. When 90°C. is reached they should be fully open. Check the freedom of the shutters by lifting the spring-loaded pin, releasing the lever and working the shutters by hand. If stiff lubricate the joints of the mechanism with an oil can.

Having got the engine running and checked that there are no leaks in the oil and petrol systems, the following instructions should be carried out before taking the car on the road:-

Continued :-

9. Centralised Chassis Lubricating System.

Check the oil reservoir located on the front of the dash and fill with engine oil to not less than an inch from the top of the filler cover. Give the foot-operated pump a few strokes, and check that oil is reaching the various lubrication points.

Clean, and if necessary renew the felt strainers in the non-return valves on the front axle, Fig.6.

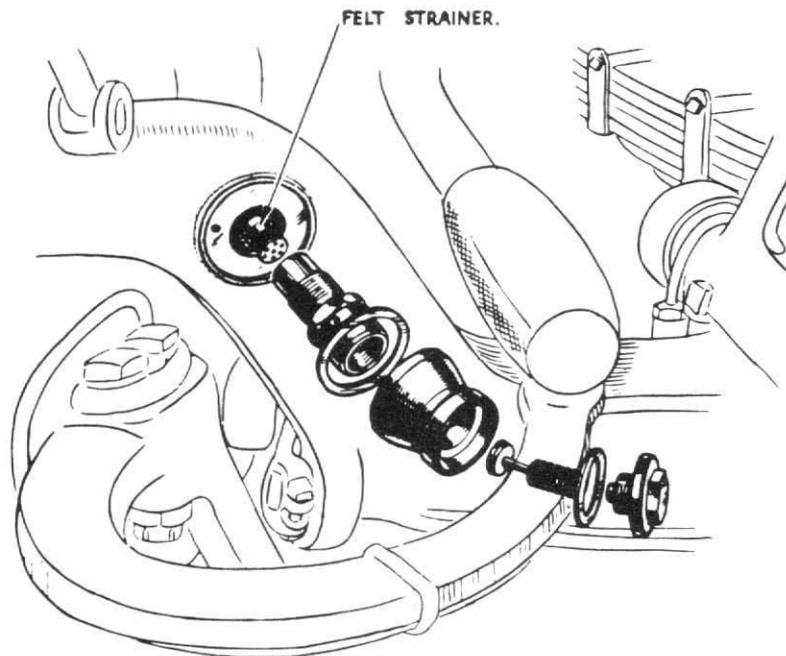


FIG. 6

10. Gearbox and Transmission.

(a) Gearbox.

Remove the two plugs and drain off the oil. Refill with engine oil to the correct level.

(b) Propellor Shaft.

Turn the shaft until the plug on the front universal joint is at the top and the lubricator at the bottom. Remove the plug and inject grease through the lubricator until it commences to flow from the plug hole. Replace the plug and repeat for rear universal.

(c) Back Axle.

Drain off oil and refill to overflow plug with Wakefield's "Hi-Press" oil.

(d) Wheel Hubs.

Jack up each wheel and remove in turn. Clean and grease the serrations and screw threads of the hub, the wheel and cap. Replace wheel and tighten cap.

Continued :-

11. Steering.

Remove plug on steering box and refill with engine oil to mouth of plug orifice. Check all bolts and nuts on the steering linkage for tightness.

12. Shock Damper System.

Remove plug on top of each damper casing and fill with either Wakefield "Castrolite", or Vacuum Mabiloil "Artic". Use the same type of oil to fill the pump and governor casing mounted on the gearbox.

13. Brakes.

(a) Lubrication.

The centralised chassis lubrication system deals with most of the brake mechanism. A spring-lid lubricator is provided for the outer bearings of the servo. Two or three drops of engine oil should be injected. In addition there is a number of joints and links of the rods and levers, which should be lubricated with engine oil.

(b) Foot Brakes. (Front and Rear).

Screw down the wing nuts with the fingers only. Each wing nut is self locking at every half turn. If the wheel is jacked up it will be easier to feel when the shoes make contact with the drum. The nut should be screwed down until the cam action of the wing nut prevents further rotation with the fingers owing to the shoes being in contact with the drum. The setting will then be correct and the adjustment locked if the nut is turned back one quarter of a turn.

(c) Hand Brake.

With the hand brake right off, the adjustment should be tested by pulling the inside brake rope situated beneath the rear axle. The travel necessary to apply the brake should not be less than $5/8$ ".

14. Clutch.

Remove the clutch housing inspection plate and lubricate the trunnion with an oil can, also the clutch pedal linkage. Test for correct freeing of the clutch by starting the engine and attempting to engage first gear.

In the unhappy event of the clutch having seized due to the pedal not having been jacked out during storage, it may require relining. Before carrying this out, however, the following method of freeing the clutch should be tried.

Remove the inspection cover. Start up the engine and run long enough to warm the clutch. Stop the engine and inject a small quantity of acetone into the clutch housing, so that it gains access to the clutch liners. Altogether as much as two eggcupfuls may be used. Allow a reasonable amount of time for it to soak in. Jack up the rear wheels, engage second gear and start the engine. Depress the clutch pedal and firmly apply the brakes keeping the engine running. If not effective repeat at intervals of a few days.

If the clutch frees by this method, the car may be road tested and all controls checked.

SERVICE INSTRUCTION LEAFLET

ISSUED BY

BENTLEY MOTORS (1931) LTD.



BM/A2

SB.1/IP.

Subject :

Chassis Series Data.
3½ and 4¼ Litre Bentley.

Date
of
Issue

1st April, 1946.

The Bentley system of numbering Chassis does not lend itself readily to recognising any particular sequence, and it may therefore be impossible to differentiate between different series, or to recognise where any important design change has taken place, without a key to the system of numbering.

In order to deal adequately and intelligently with the various problems in servicing these cars, which will crop up from time to time, it is necessary to publish this key. The sequence of Chassis numbers on both 3½ and 4¼ litre Bentley models is given below, together with details of any important design change which took place within these series.

This information is strictly confidential.

3. LITRE

Serial Letters.	Series.	New Features Incorporated.
B-AE B-AH	A	Centre Point Radiator Mounting-B-33-AE.
B-BL B-BN	B	
B-CR B-CW	C	Drilled up Con. Rods; Controlled Dampers-B-1-CW.
B-DG	D (1-100)	Concealed Front Cross-member; Clutch Spring Drive deleted; Dunlop Road Wheels.
B-DK	D (101-200)	Rear Axle Oil Seal-B-87-DK.
B-EF B-EJ	E	R.W. Road Wheels; Geared Starter Drive; Light Flywheel and Clutch.
B-FB B-FC	F	Isolated Gear Lever; W.B. Bumpers.

4. LITRE

Serial Letters.	Series.	New Features Incorporated.
B-GA B-GP	G	3.5" Bore Engine; Borg and Beck Clutch; Air Cooled Dynamo; Filters on Rear Cross-member.
B-HK B-HM	H	
B-JD B-JY	J	
B-KT B-KU	K	De-turbulated Cylinder Head-B-1-KU; Short Pendulum Lever B-175-KU.
B-LS B-LZ	L	Open Type Fuses-B-63-LZ.
B-MR B-MY	M	Over-drive Gearbox; 6.50 x 17 Tyres; 10 x 4½ Rear Axle; Marles Steering; Thermostat with Dummy Shutters.

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SERVICE INSTRUCTION LEAFLET

ISSUED BY

BENTLEY MOTORS (1931) LTD.



BM/A3

SB/GF.2/SF.

Subject : THE STORAGE OF CARS
APPLICABLE TO ALL PRE-WAR CARS.

Date
of 14th October 1947
Issue

The information contained in this leaflet is for the assistance of Retailers in dealing with the storage of Bentley cars.

The additional experience gained during the war years has been included in this leaflet, which will, therefore, if carried out fully, give a reasonable safeguard against storage deterioration. On the other hand, it is of course, obvious that much will depend upon conditions in the actual place of storage, and the regularity of inspection and attention to parts of the coachwork and chassis which may be attacked by mildew, rust and other causes of damage.

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The maintenance of a satisfactory condition of paintwork and upholstery can only be assured if immediate action is taken against incipient deterioration. Paint blisters and small rust patches, if allowed to spread, will lead to more trouble than is visibly apparent by creating a layer of corrosion between panels and primer. Similarly, mildew formation will occur under leather pleats and folds where its action may proceed unchecked until the leather and stitching rot. The chassis is also subject to the same form of gradual destruction, which can only be held in check by application of paint or lubricant.

It is, therefore, clear that it is not sufficient merely to carry out the instructions in this leaflet, and subsequently to assume that a car will retain its original condition without further attention. It is particularly emphasised that a continuous periodic inspection should be carried out throughout the period of storage.

With reference to particular items in the Storage Instruction, it will be noted that the petrol system should be completely drained and dried out. This is an important operation which will prevent the formation of the gum deposit which was the cause of so many difficulties after previous storage periods.

Under Item 3, we recommend that the cooling system should not be completely drained but should be filled with an anti-freeze solution. Provided that the solution strength is adequate to prevent freezing, the system will be protected against the corrosion which is liable to occur if it is empty. Aluminium castings are particularly susceptible, especially if the car is stored in a coastal district. On the other hand, anti-freeze solutions which contain Ethylene Glycol are more "searching" than plain water, so that the possibility of leakage is somewhat increased if corrosion has already taken place, as is likely on older cars. If therefore, the cooling system is known to be doubtful, and reconditioning is not practicable, it is preferable to leave it empty.

Item 8 - Hydraulic Jacks. This type of jack deteriorates if left inoperative for long periods. The sealing rubbers harden, causing leakage and unsatisfactory operation. The only way to keep them in good condition is by periodic operation.

Bodywork - Item 3. Calcium Chloride Crystals may be kept in a small open container on the floor of the car. They will absorb moisture fairly rapidly and will need replacement when saturation is reached. This method will only be fully effective if the body can be sealed from the

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outside air, and as this cannot be done hermetically, it follows that efficiency will only be proportional to the degree of sealing attained. A heated garage, is of course, the best protection.

DETAILED INSTRUCTIONS FOR STORAGE:

CHASSIS.

1. In order to facilitate the draining of the engine crankcase, gearbox and rear axle, the car should be run for a sufficient mileage to ensure that the oil in these units has become thoroughly warmed and fluid.

PETROL SYSTEM:

2. Completely drain the main petrol tank, and where fitted, the auto-vac of all liquid petrol. Run the engine until all the petrol in the carburetters, petrol pump, fuel strainers and feed pipes has been completely used. The use of a tyre inflating compressed air line to blow out the feed pipes will ensure that no petrol remains in these units. Remove such items as the carburetter, petrol pump, and filters, thoroughly clean and refit, thus ensuring that no chemical deposit or action will take effect in the petrol system during the storage period. The main tank petrol unit should also be withdrawn, cleaned and lubricated, and if means are available, it is advisable to spray the interior of the petrol tank with a thin film of oil to act as a deterrent against the formation of rust during the storage period. The petrol gauge unit should be refitted.

COOLING SYSTEM:

3. If plain water is being used as the cooling agent, we recommend the complete draining of the system, and the substitution of an anti-freeze mixture. If, on the other hand, the water system already has anti-freeze mixture, do not drain, but if found to be of insufficient strength owing to dilution, the percentage of anti-freeze additive should be increased to a point which will ensure protection against the lowest temperature which may be expected. All rubber joints should be carefully examined, and if doubtful, renewed, and careful examination for leaks should be made at regular intervals during the storage period.

TYRES:

4. Jack up complete vehicle, taking all weight off the tyres, and place wooden blocks under the axles (for those cars having independent front suspension, place these blocks under the stub axles). Do not deflate the tyres, but maintain a reasonable pressure throughout the storage period, and keep covered up to exclude the light, which is injurious to rubber when not in actual use.

ENGINE, GEARBOX AND REAR AXLE:

5. The engine crankcase, gearbox and rear axle should be completely drained of all old oil, and refilled to the working levels with one of the recommended mineral oils as shown on the attached chart. In this manner, the effects of corrosion within these units during the storage period will be minimised, but it is essential that prior to the recommissioning of the car, this oil is completely drained off, and the units refilled with the recommended working grade of lubricant. A label bearing the statement that these units are filled with a pure mineral oil should be prominently displayed to serve as a reminder of that fact.

6. When the engine is cold, remove the sparking plugs, and inject two tablespoonsful of pure mineral oil through the plug holes into each cylinder.

Using the starting handle, turn the crankshaft a few times to distribute the oil over the cylinder walls. Remove the valve rocker cover, and treat the rocker mechanism with the same mineral oil. Replace the sparking plugs and screw them down lightly.

7. The engine, gearbox and rear axle should be revolved by hand at least once every seven to ten days. To accomplish this, remove the sparking plugs, and either by leaving the clutch jacked out, turning the engine by means of the starting handle, and then winding round one of the rear wheels with first gear engaged, or by letting in the clutch, engaging first gear, and winding the engine gearbox and rear axle by means of the starting handle.

NOTE: Under no circumstances should the engine be permitted to run under its own power during the storage period.

JACKS:

8. The hydraulic jacks, where fitted, should be operated at least once a month to prevent deterioration of the oil seals.

CLUTCH:

9. The clutch should be jacked out by placing a length of wood between the clutch pedal and the steering column bracket. This will prevent the clutch fabrics from adhering to the face of the pressure plate.

BRAKES:

10. The handbrake lever should be left in the "OFF" position.

BODYWORK.

PAINTWORK:

1. Wash down the bodywork, using clean running water and dry thoroughly. All rust patches and blisters should receive immediate attention to prevent further deterioration to the paintwork during the storage period, and we recommend the application of a good class of polish, e.g. Belco No.7., in order to maintain the general condition of the paintwork. It is recommended that periodic applications at regular intervals of between 6/8 weeks be given, in this way the danger of the formation of "Bloom" on the paintwork during the period of storage will be minimised. All bright parts not having an untarnishable finish should, after being cleaned, be lightly smeared with vaseline. (The use of vaseline on parts having a chromiumed finish is both unnecessary and undesirable).

UPHOLSTERY:

2. All carpets, cushions and interior upholstery should be thoroughly brushed out and cleaned and liberally sprinkled with one of the anti-moth preparations available. After this treatment, all carpets, cushions and other detachable items should be stored in such a manner as to prevent further attack by moth, where they should be examined at regular intervals, and if found necessary, retreatment should be carried out. All leather upholstery should be given an application of "Connolly's Hide Food" to enable it to retain its suppleness and freshness during the storage period.

STORAGE:

3. Providing the place of storage is dry, all windows on the car, should be kept slightly open to assist in the circulation of fresh air within the body. If, however, the place of storage has a tendency towards dampness, and there is

danger of moisture collecting within the body to the detriment of the upholstery, it is suggested that some form of anti-moisture preparation e.g. Calcium Chloride Crystals, be utilised. It should, however, be noted that these preparations absorb moisture from the immediate atmosphere, and therefore, it will be necessary to keep all windows, doors and other means of ventilation on the vehicle firmly closed, to prevent rapid absorption of moisture, and subsequent saturation of these crystals. Periodical inspections of the crystals at regular intervals should, therefore, be given, and when seen to be near saturation point, a fresh supply should be furnished.

4. Where the car is an open model, the hood should be erected and extended.

5. Cover the complete vehicle with a light dust sheet.

NOTE: The place of storage should be DRY, DARK, WELL VENTILATED AND PREFERABLY HEATED.

ELECTRICAL.

BATTERY:

1. Car batteries tend to deteriorate quickly when not in use unless provision is made for their maintenance. An unattended battery may become completely ruined in a few months, and even under the best conditions of storage, a fully charged battery will deteriorate slowly. Assuming that the battery is in a sufficiently good condition to make storage an economical proposition, a choice between the two well tried methods detailed below is recommended.

PERIODICAL FRESHENING CHARGE:

2. Remove the battery from the car, clean thoroughly, top-up with distilled water and give a thorough charge at the normal rate recommended by the makers. Administer a freshening charge at the same rate at regular intervals of 4/6 weeks, continuing each of these charges until the specific gravity of the acid has remained constant for about 10/12 hours on each occasion.

WASHING OUT AND STORING FILLED WITH DISTILLED WATER:

3. Remove the battery from the car, clean thoroughly and top-up with distilled water, and give a thorough charge at the rate recommended by the makers. Empty out the free acid and refill cells with three successive changes of clean distilled water, allowing the water to remain in the cells for at least an hour before each change. Finally, fill up the cells with distilled water, replace and tighten the vent plugs ensuring that the outside of the battery is dry and clean. The battery may now be placed into storage for the whole of the storage period without further attention, but it is essential that it is not exposed to the risk of freezing during the winter months. The place of storage should be between the limits of 40°F. to 80°F.

NOTE: Continuous trickle charging is not recommended, and will, after a relatively short period, cause rapid deterioration of the battery.

RECOMMENDED STORAGE LUBRICANTS FOR ENGINE, GEARBOX AND REAR AXLE.RECOMMENDED LUBRICANTS.

UNIT	Duckham's Adcodised	Essolube	Mobiloil Vacuum	Price's Motorine	Shell	Silvertown Speedolene	Wakefields Castrol
ENGINE	NPX	Rust-Ban 603	Artic	E	RPL 2	Anti-Rust Oil	Storage Oil
GEAR- BOX	NPX	Rust-Ban 603	Artic	E	RPL 2	Anti-Rust Oil	Storage Oil
REAR- AXLE	NPX	Rust-Ban 603	Artic	E	RPL 2	Anti-Rust Oil	Storage Oil

Please note that these lubricants are not necessarily those used for running. For Recommended Running grades of Lubricants, refer to Chart BM/D2.

Derby Bentley Society – technical paper compilation

A

General Information

RREC, RROC & Misc Articles

DRIVING TIPS FOR THE DERBY BENTLEY

Noel McIntosh 2/2012 \carsrallies\DrivingTipsDB.doc

Before starting

Check tyres Front ___ psi, Rear ___ psi. See Handbook.
Oil level at 1.5 gal mark. Not less than 1 ¼
Radiator water covering tubes.
Bonnet closed
Check location of fire extinguisher and battery isolation switch
All door closed and safety loops in place.

Starting the car

Controls Ignition (RH) to 3 o'clock (¼ of the range from top).
 Mixture (top) to Start for cold start. Run for warm start.
 Throttle (LH) to 9 o'clock

Ignition Switch to I&C (1 click up). Wait 30 seconds or until petrol pumps stop ticking.

Press Starter and release immediately when fires. Don't crank for long. Investigate if won't start. Don't allow engine to race.

Re-set Controls. Throttle to slow idle, Ignition to Adv, Mixture to Run.

Pulling away

Don't push accelerator until clutch released & car moving

Level Start. Move off in 2nd gear

Hill start. Hand brake on. Move off in 1st then double-declutch into 2nd.

When engaging 1st from a start, push gearlever into 3rd for a second then into 1st to stop clashing of gears.

Test brakes at 10mph before driving off. This usually avoids brake shudder, called jagers or morning sickness.

Driving

Gears. Change 2nd to 3rd then 3rd to 4th

Syncho in 3 & 4 gears only

Change down 3 to 4 has syncho

Change 3 to 2 double de clutch

Change 2 to 1 only when stopped.

Reverse engaged by pushing lever down & forward

When you have really mastered the double clutch you may start in 1st or change down into 1st.

Depress Chassis Oil Pump every 100 miles

Do not exceed 3,500 revs. Don't run at 2500 rpm if engine roars or handbrake handle rattles. Speed up or slow down quickly.

Gauges to check

Oil pressure should not drop below 20psi when driving and 5 when idling. Stop, check. Usually 25psi

Water temp. Usually 70-75. Not above 85 when driving in hot weather. When stopped T may go up to 95 but drops back when moving again.

Petrol gauge is accurate. Reserve 2 gals is available if turn tap on firewall to Reserve. M series has warning light at 2 gals.

Ammeter. Should show few amps when driving. Maybe 10/14amps when first moving off but not more than 60 minutes

Windscreen wipers. Move to vertical by hand. Switch on.

DRIVING DANGERS

- Front Wheel shimmy, steering feels out of control. May occur after front wheels hit a bump or hole. Yank steering wheel left then right quickly 3 or 4 times and slow down.
- Wet roads are dangerous in this big old car. High risk of slipping. Go very carefully around corners and braking.
- Loud or unusual noises – switch off ignition quickly and pull over.
- Accelerator sticks or engine races – switch off ignition (no steering lock to worry you)

Braking

Has servo brake assist which is only effective above 7 mph so use foot brake AND handbrake at slow speeds.

Foot brake is VERY WEAK WHEN CAR IS MOVING BACKWARDS. When reversing keep hand on Hand Brake.

Always use Hand Brake when stopped, especially when on a hill.

Brakes may **fade if braking down a long hill or from high speeds** so alternate Foot and Hand Brakes 5 seconds each.

In **heavy rain** press the Brake periodically to dry them out and to check they are not too wet. On a long trip in heavy rain press brakes lightly for 5 secs every 10 miles or before expecting to stop.

Leaving the car

Park the car where you can see it or where it is safe.

Pull on handbrake.

Remove radiator cap or B mascot. Lock doors with key out of car.

DERBY & 20/25 MAINTENANCE - 2500 MILES/ 6 MONTHS

Noel\CarsRallies\Maintenances\SchRRB2

Car _____ Odo _____ Date _____ Location _____

Activity	Done	Notes
Engine oil Drain & replace		
Gearbox & Overdrive oil Warm		
Diff oil check Warm		
Examine, clean engine.		
Valve tappet clearances if new head gasket.		
Contact breaker check gap		
Dynamo bearings. SAE 30 oil in both oilers.		
Shocks and ride control oil levels		
Brakes. Turn wing nuts tight then back 1/4 turn.		
Starter motor. Fill reduction box. 1 drop oiler		
Chassis lubrication. Fill tank to 1" of top.		
Steering box. Fill to mouth of orifice.		
Water pump. Fill cap 1/3, screw down a flat.		
Battery ignition governor. Few drops SAE 30		
Lift distributor cap grease cam.		
Move clip, 1 drop SAE 30 on pivot.		
Fan belt. Clean, adjust tension 3/4"		
Fan bearings. 3 drops SAE 30 in lubricator.		
Carburettor air valve guides. 2 drops thin oil.		
Carburettor spindles.		
Exhaust cut out. Graphite oil on joints.		
Accelerator pedal shaft oiler. Lift floor		
Clutch pedal connection oil		
Reverse knob & catch on gear lever.		
Hand control mechanisms & rosette of wheel		
Brake controls.		
Connections & adjustments rear axle (12).		
Rope & rod jaws, equaliser to shaft (28).		
Joints of front brake adjustments (4).		
Joints of links & rods to centre shafts (8).		
Hand brake lever (4).		
Ball joints on front brake pull rods (4).		
Radiator shutters & control. Lubricate pivots.		
Wheels. Jack up and test tightness.		
Check tyre pressures.		
Check all lights and indicators		
Battery. Top up 1/2" over plates, clean, grease.		
Bonnet & Door hinges and fasteners locks. Oil.		
Semaphore indicators. Brush thin oil on pivots.		
Seat runners and adjusters. Clean and oil.		
Clean leather with hide food.		

PTO for more NOTES

DERBY & 20/25 MAINTENANCE – ANNUAL / 5,000 MILES

Noel\CarsRallies\MaintenancesSchRRB2

Car _____ Odo _____ Date _____ Location _____

Activity	Done	Notes
Engine renew oil filter. Clean sump strainer		
Valve tappet clearances Engine cold.		
Gearbox. Warm. Check for leaks, Oil		
Overdrive oil level check		
Diff oil check		
Sparking plugs. replace.		
Contact breaker. Clean points, renew if worn.		
Shock dampers. Inspect for leaks & tightness of links.		
Water system. Clean out and change coolant.		
Clutch. Check, adjust to $\frac{3}{4}$ - 1" clearance		
Clutch & levers		
Remove cover & lubricate.		
Lubricate fulcrum pins.		
Examine & clear drain holes.		
Servo bearing. Early 3½, SAE 30 in lubricator.		
Check gearbox drain holes.		
Tyres. Examine for wear and unevenness. Adjust tracking if necessary Rotate tyres Check balance and spokes		
Carburettors. Clean air'valves & float chambers.		
Main fuel filter. Remove and clean.		
Fuel tank. Unscrew plug slightly, drain off water.		
Air cleaner. Remove element, wash in petrol/paraffin.		
Wheels. Remove, clean, regrease, replace.		
Dynamo. Remove cover, inspect brushes, remove dust.		
Starter, Remove cover, inspect brushes, remove dust.		
Starter switch. Disconnect battery, clean contacts.		

DERBY & 20/25 MAINTENANCE - 10,000 MILES

Noel\CarsRallies\Maintenances\SchRRB2

Car _____ Odo _____ Date _____ Location _____

Activity	Done	Notes
Gearbox. Drain oil when warm, refill.		
Rear axle. Drain oil when warm, refill.		
Overdrive drain oil		
Shock damper control pump. Inspect, fill if necessary.		
Front axle control anchorages. Check and clean.		
Shock dampers. Inspect, clean, fill if necessary.		
Universal joints. Remove air release plugs, grease.		
Battery. Remove from car, wash clean, grease.		
Spring U bolts. Check and tighten if necessary.		
Dynamo drive brakes. Remove, clean, check.		
Steering. Remove gaiters, check joints, lubricate.		
Brakes. Remove drums, check linings and ropes.		
Brake servo. Test and re-adjust if necessary.		
Road springs. Remove gaiters, clean, oil, replace.		
Lighting. Check functioning and brightness.		
Engine mountings, Check mountings side front & rear		
Front bumper. Check rigidity & tightness of U bolts.		
Induction manifold hot spots. Check water flow.		
Carburettor fuel filters. Remove & clean.		
Fuel tank. Drain, filter petrol, drain & repeat.		
Radiator tie bar. Check adjustment & security.		
Linkages. Check for wear and security.		
Bonnet tape and rubber. Check condition.		
Water hoses. Check condition.		
Fuel lines. Check		
Wiring. Examine visible wiring, check circuits.		
Semaphore arms. Check functioning.		
Wiper blades. Examine and replace if necessary		
Sliding roof. Examine for wear, clean drains.		
Jack. Clean and grease		
Wheel arches. Thoroughly clean.		

PTO for more NOTES

DERBY & 20/25 MAINTENANCE BIENNIALY / 20,000 M.

Noel\CarsRallies\MaintenancesSchRRB2

Car _____ Odo _____ Date _____ Location _____

Activity	Done	Notes
Chassis lubrication. Replace 3 felt pads. _____		
Radiator hoses - change		
Water pump. Remove from car, dismantle, check wear		

Extracted from BDC Derby Technical Manual and modified to make easy checking. Also moved items to earlier milages as a precaution against fragment in oils and leaks. Gear/b and diff oil should be changed X10,000M, not X 20,000!

Noel McIntosh

Derby Bentleys – Project, Experiment & Production

Based upon Ian Rimmer's *Rolls-Royce and Bentley Experimental Cars* and his letter (extracts below) of May 1995

Project Name	Initial Specification	Experimental Cars	Production Cars	Designation within RR for Production Cars
Bensport	2.5 Litre engine ohc, sc Engine based on Goshawk I (1921)	No car built	None	N/A
Bensport II	Peregrine chassis 2.364 Litre engine (Peregrine) sc Central gearchange	No car built Engine on test prior to 9/32	None	N/A
Bensport III	3.67 Litre Japan I engine Peregrine chassis Central gearchange	1-B-III (built with standard side lever gearbox) on test 18 Jan. 1933	None	N/A
Bensport IV	Adopted specs. as 1-B-III 3.67 Litre Japan I engine Peregrine chassis Side gearchange	1-B-IV (renumbered from 1-B-III) on test mid-July 1933 2-B-IV on test 14 Apr. 1933 3-B-IV on test May 1933 4-B-IV on test June 1933 5-B-IV on test Nov/Dec. 1934 larger body 6-B-IV on test Feb. 1936 larger engine later, overdrive gearbox & Wraith steering	3½ Litre production begun early 1933 4¼ Litre production begun 1936 4¼ overdrive production begun late 1938	Bentley II
Bentley III (later Bentley V)	Revised 4¼ Litre engine Stiffened chassis with ind. front suspension Two versions planned: standard chassis and lightweight Corniche chassis	7-B-V to 14-B-V 1st car running early 1938	Mark V production begun summer 1939 Mark * designation used first time	Bentley V

Letter from Ian Rimmer, UK

The first Derby Bentley, known as Bensport, was conceived with a 2.5 Litre ohc supercharged engine. No car was built to this specification.

The next version, known as Bensport II, planned to utilise the Rolls-Royce Peregrine chassis with a supercharged version of the 2.36 Litre Peregrine engine (later reduced to 2.29 Litres to comply with the 3 Litre racing class when supercharged), having a central gearchange lever. No car was built to this specification.

The next evolution was to fit the 3.67 Litre Japan I engine (developed as a replacement for the 20/25 but rejected for that car) into the Peregrine chassis but still retaining the central gearchange.

This was named Bensport III. The first prototype car was built to this standard except that a standard gearbox with side levers was used to enable the build to proceed. This car was given the chassis no. 1-B-III.

The final stage, known as Bensport IV, was the adoption of the specification as built on 1-B-III and the next prototypes were appropriately numbered 2-B-IV to 6-B-IV. Even the first car, 1-B-III, was subsequently renumbered 1-B-IV, following a total rebuild.

Production Bentleys were referred to within Rolls-Royce as Bentley II cars and this description continued right through the 3½ and 4¼ Litre models, including the M series.

When the replacement car was be-

ing designed with independent front suspension, it was given the designation Bentley III. However, chassis numbers for the prototypes began at 7-B-V (following on from 6-B-IV) and continued up to 14-B-V. Gradually, the designation Bentley III became Bentley V to reflect the chassis no. suffix. Incidentally, the long wheelbase Bentley V was given the designation Bentley L but was more commonly referred to as the Bentley 50 and the four prototypes had chassis numbers 1-B-50 to 4-B-50. When the Bentley V was launched into production, it was given the name Bentley Mk V. This was the first time that the designation Bentley Mk * had been used.

Special thanks to Stan Sedgwick & Hugh Young for their assistance. ed.

M Series – Originally Bodied Cars – Advertised For Sale

The following originally bodied cars have been listed for sale in the year shown, arranged in chronological order. Where a car has been advertised more than once the year of the last entry is shown.

B19MX	Vanden Plas	allweather	FL 1957
B8MR	De Villars	fixed head coupé	FL 1961
B177MX	Vanden Plas	drophead coupé	FL 1963
B87MX	Park Ward	saloon	FL 1964
B191MX	Vanden Plas	drophead coupé	FL 1964
B12MR	Vanvooren	saloon	FL 1965
B43MX	Vanden Plas	allweather	FL 1966
B147MX	Windovers	saloon	FL 1967
B15MX	Park Ward	saloon	FL 1969
B160MR	Vanvooren	drophead coupé	FL 1969
B102MR	H.J. Mulliner	limousine	FL 1973
B58MR	Park Ward	saloon	FL 1978
B131MX	Park Ward	saloon 2 door	FL 1978
B115MX	Mann Egerton	saloon	FL 1979
B184MR	Freestone & Webb	saloon	FL 1979
B100MR	James Young	saloon 2 door	EA 1981
B14MR	Park Ward	saloon	EA 1982
B35MX	Thrupp & Maberly	sedanca coupé	EA 1986
B85MX	Park Ward	saloon	EA 1987
B22MR	Rippon	saloon	FL 1988
B41MX	Windovers	drophead coupé	EA 1988
B38MR	James Young	sedanca coupé dV	EA 1989
B185MX	Park Ward	saloon	EA 1989
B15MX	Park Ward	saloon	DA 1990
B137MX	Park Ward	saloon	EA 1990
B157MX	Park Ward	cabriolet	EA 1990

Points worth noting:

1. Over this long period just 29 entries (closed 19, partly opening 2, fully opening 8).
2. Of the 19 closed bodies 9 are Park Ward 4 door saloons.
3. Only two entries since 1990 and only three fully opening bodies since 1969.
4. Of the five fully opening bodies listed during or prior to 1969, one (B19MX) is still owned in the advertiser's family and has been ever since 1951. Two others are still owned by the then purchaser (including our erstwhile immediate past President):
 B19MX VdP allweather (1957) Martin Kay, NY
 B191MX VdP drophead coupé (1964) Everett Pauls, TX
 B43MX VdP allweather (1966) Joe Carman III, WA

The first buyer traded in B72KT, £900 allowed; sold used 6/40, £1441 (£1240 allowed for B44MR); sold used 7/40, £1639.

B43MX (1939 4¼) Vanden Plas allweather Owner: J. Carman, III



Photo © 1981 K. Karger

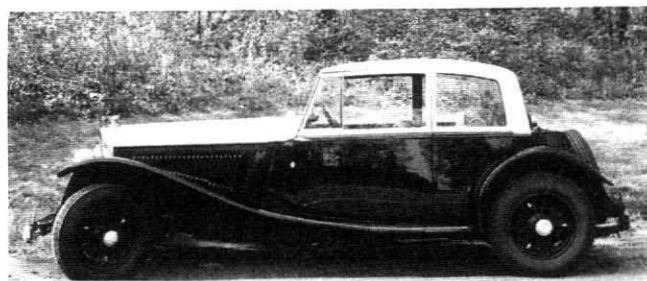


Photo © 1973 M. Karger

B142MR (1939 4¼) H.J. Mulliner 2-door saloon Owner: A. Rosner
 This very special body was transferred to this chassis from the same owner's earlier (by six months) car, B171LE. It is easy to understand the lure of the new, overdrive chassis. Note the old-fashioned rivetted bonnet.

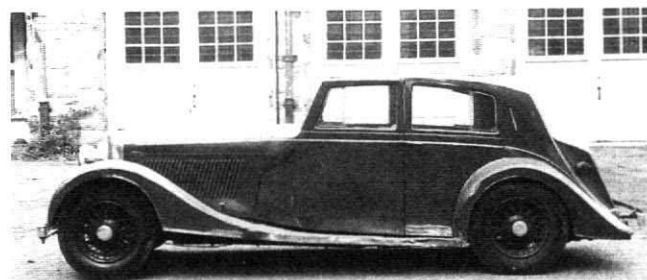


Photo © 1978 M. Karger

B120MR (1939 4¼) Park Ward pillarless saloon Owner: R. Webb
 The front doors were hinged front, the rear at the rear. When you opened them both, there was no central body pillar – hence the body epithet.

The above advertisement details are the result of a study of all issues of each of the following publications:

Flying Lady (Reference FL) Published by The Rolls-Royce Owners' Club Inc. USA since 1951

RREC Advertiser (Reference EA) Published by the Rolls-Royce Enthusiasts' Club UK since 1975

Bentley Drivers Club Advertiser (Reference DA) Published by the Bentley Drivers Club Ltd UK since 1982

Præclarum (Reference PR) Published by the Rolls-Royce Owners' Club of Australia since 1960

My James Young 2 door saloon, B139MX, is easy to start, easy to park, and comfortable to drive in any circumstances. It can happily be used for suburban commuting and does not ask to be spared on the freeways and highways. The acceleration is more than adequate, the turning circle is satisfactory and 80 mph (well under 3,500 rpm) is a comfortable cruising speed. Melbourne has at least forty golf courses in its metropolitan area, but I am pleased that I need to drive for a full hour to get to my favourite course. One encounters various traffic densities, country roads and freeways during that drive from the suburbs to the ocean, all taken by the car in full stride.

And one can, without a second thought, jump into it to drive to the corner store. Just for a carton of milk.

One of the finest pre-war body styles, this basic shape was fitted to Wraith and Phantom III chassis, but looks best on the long bonneted Bentley.

B139MX (1939 4¼) James Young 2-door saloon Owner: M. Dewar

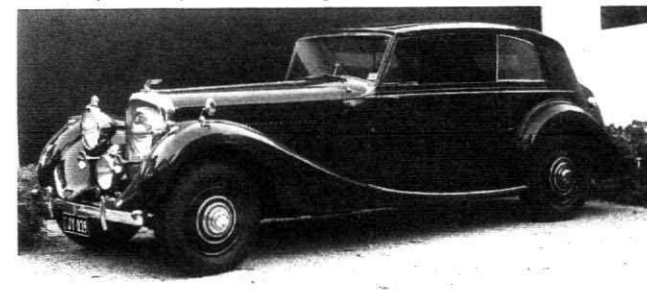


Photo courtesy M. Dewar

To Shift Or Not To Shift:

A Commentary on Non-Synchro Gear Changing

by Roger Morrison

So you occasionally crunch a gear going from first to second in your 20/25 or 4¼ litre Bentley. So you rarely shift change gears without a little noise while driving your P-I, Ghost, or Vintage Bentley. If up shifting is a problem, down shifting is even worse. Before you make too many deprecating remarks about your ability to change gears in a car that you drive infrequently, consider the common usage of the cars when they were new.

The Silver Ghost handbook of 1914 gives driving instructions which are a marked contrast to the manner we commonly drive VWs with 1.8 litre engines. "To change from the lowest gear to the next higher one, leave the control lever in its position a quarter-way up the quadrant, and as soon as the car is moving steadily, push out the clutch and move the gear lever quietly into the next gear position (this can be done quite slowly), then let in the clutch gently ... having finally got the car running on the top gear (which, being the direct drive *should be used as soon as possible*), the speed can be adjusted to suit the wish of the driver by using the foot accelerator pedal ..."

I underscored for emphasis that the handbook is saying first gear is just to get the car rolling and to shift to top gear as soon as possible. This is somewhat unnatural for a driver of the eighties, but the handbook's recommendation does work.

Consider the road tests of Vintage Bentleys. Naturally the writer extolled the speed virtues of the car; however, he may have not been much better with a gearbox than you or I. Note that an advantage of the car is the ability to skip gears as you up

shift. Quoting from *The Motor*, April 9, 1929, when testing the 6½ litre Bentley, "The acceleration on third is particularly good up to 60 mph, a speed which can be attained from 10 mph in slightly less than eighteen seconds—and on a level road the car can be started from rest in this gear very readily. Normally, however, we found it best to start away in second —6½ to 1—and then change straight into top gear when the car was underway."

Considering the importance that road testers gave to the top gear slow speed running, I assume the average

driver changed gear as seldom as possible. Below are a few quotations which illustrate the point.

In the May 17, 1922, issue of *The Motor* a 3 litre Bentley with 30,000 miles on the odometer was tested. "The gears in the 4-speed box are easy to change, and it has a very quiet and refined performance in traffic, it being possible to crawl along at 6 mph on top without slipping the clutch, while the busiest of busy London streets can be safely negotiated on top and third speeds."

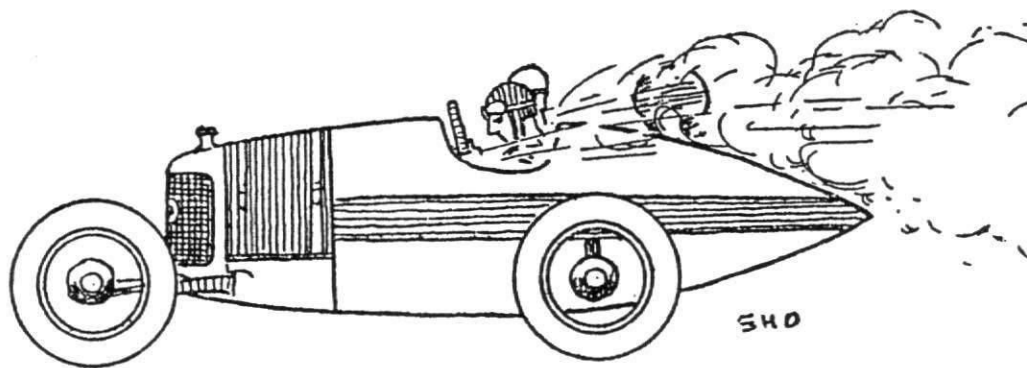
The Autocar January 16, 1925,



gives "Impressions of the latest model, which is suitable alike for the speed lover and the potterer...traveling in traffic on top gear down to a walking pace and accelerating therefrom without difficulty, yet responding instantly if an indirect gear is used, and thereby gaining immensely in acceleration."

The May 8, 1928, test of a 4½ litre Bentley calls it "A 90 mph sports car with a very attractive performance. Lightning get away and ease of control are features...easy gear changing. This is not a car of course 'everybody's money,' to use a colloquialism, the driver must be prepared for frequent gear changes, and although the process of changing gear is a pleasure in itself on the Bentley, it is admittedly not one which appeals to the majority of drivers. However, considering that the top gear ratio is 3½ to 1, and that with an open four-seater body the car weighs 32 cwt., the top gear running at low speeds is much better than might be anticipated, so that we were able without much difficulty to carry out our top gear acceleration tests from 10 mph, but to get comfortable running at this speed, it is distinctly advisable to change down to third."

In a very early Vintage Bentley road test from *The Autocar*, January 24, 1920, under the byline "S.C.H.D.," the headline says, "A car which combines docility in traffic with exceptional speed potentiality on the open road." After describing a 70 mph run during which, "The landscape leaped at us, wind shrieked passed the screen, while the flanking trees and other objects seemed, not definite and sharply contoured, but a blurred streak hurtling past as the roar of the



exhaust rose to its full song. To such an accompaniment the pulse beats quicker, there comes an almost irresistible desire to burst into some wild war song, greater even than the immortal song of Roland, in defiance of the demons that howled invisible without. Every part of one's being urges greater speed in the fierce wild intoxication of a moment supreme above all others in the life sensations

and easily."

I realize that 1980s traffic conditions may not permit such leisurely driving as the 1920s. However, pre-World War II car owners should be encouraged by realizing that when the cars were new not everyone was an S.C.H. Davis master of the gearbox. With a little more practice on your own car you will gain confidence and proficiency.



Roger Morrison is very proficient in the gentle art of gear-changing on 1830, 87EU, S128MK, and B134EF. He's good with Vintage Bentleys, too—especially brother Rich's 1218 and FA2507.

The Bentley racing sketches are by S.C.H. "Sammy" Davis and appeared in his book *Motor Racing*. "Sammy" Davis was for many years a journalist with *The Autocar*, although a lot of us will remember him more as a correspondent for *Road and Track* in the 1950s. "Sammy" was one of the "Bentley Boys," winning LeMans in 1927. The Rolls-Royce drawing, by Baskerville, was used in "The Vogue of Rolls-Royce," a Springfield factory brochure designed to encourage women to purchase a Rolls-Royce motor car.

of man." After the heady experience of speed the tester says, "...the machine can travel without protest, clatter, or difficulty on top gear at 10 mph or under, can pick up from that to high speed, or take a hill slowly



The Overdrive Derby Bentley

A model that passes the carton of milk test

by Murray Dewar, Melbourne, Australia

There seems to be a pre-war Rolls-Royce model to suit most tastes. One can delight in the long striding early 40/50 HP, in the sporty 20 HP, in the rugged and powerful Phantoms or in the quiet and dignified Wraith. Each of the dozen or so models will find fervent advocacy amongst our membership, but few can pass the carton of milk test.

The Derby Bentleys

There were 2,421 Bentley production chassis completed by Rolls-Royce at its Derby Works between 1933 and 1939, in five reasonably distinct series:

	Chassis numbers & suffix letters	
1st Series	B1AE to B200CR AE AH BL BN CR	497
2nd Series	B1CW to B219FC CW DG DK EF EJ FB FC	678
3rd Series	B2GA to B203LE GA GP HK HM JD JY KT KU LS LE	1034
4th (M) Series	B2MR to B203MX MR MX + B205MEX	201
Mark V	B2AW to B34AW AW	11
Total Built		2421

Where a chassis was renumbered, it is included under the later number. It is twenty years since Stan Sedgwick's fine reference book (*All the Pre-War Bentleys As New*) was published and a lot of contemporary records have since come to light. His production statistics can now be amended by including B205MEX and by eliminating two duplications (being the same chassis renumbered), B23AE/B5GA and B56BN/B204LS.

During the seven years of production, the Company introduced a great number of modifications and developments. The principal changes that delineated the start of a new series were -

2nd Series	Automatic ride control dampers.
3rd Series	Engine capacity increase from 3669 to 4257cc.
4th (M) Series	Overdrive gearbox. Marles steering box. 17 inch wheels with 6.50 x 17 tires. Thermostat controlled water flow.
Mark V	Independent front suspension. 4.5 x 16 inch wheels with 6.50 x 16 tires. Synchromesh on 2nd gear. Rear track increase from 56 to 58 inches.

In assessing the significance of these changes from the viewpoint of the car's drivability one must keep the following points in mind:

1. The increase in engine capacity at the 3rd Series was 16.0% and not the 21.4% indicated by the use of the colloquial terms 3½ Litre and 4¼ Litre. At the same time the

exhaust cut-out was eliminated, but I imagine that this had been only rarely used.

2. After making proper allowance for the new rear axle ratio, wheels, tires and suggested tire pressures, the overdrive gearbox had the effect of reducing engine revolutions in top gear by more than 13%. Thus at 2,600 rpm, an overdrive car is travelling at about the same speed (approx. 63 mph) as a pre-overdrive car is at 3000 rpm.

3. Whilst the Mark V changes were obviously very significant, these cars are almost in the category of experimental cars because so few were made.

It is therefore arguable that, from a drivability viewpoint, the changes made at the 4th (M) Series were the most significant during Derby Bentley production. The deturbulated cylinder head, introduced nine months earlier at B101KU, had considerably improved the engine performance by reducing turbulence in the combustion chamber and thereby improving detonation characteristics.

M Series Body Analysis - Original Bodies

Excluding experimental car 6-B-IV (later B205MEX), exactly 200 M Series cars were produced and bodies were mounted on these as follows:

	Body Style Definitions				
fixed head coupé	closed	2 door	2 light	4 seat	
f.h.c. 2 seater	closed	2 door	2 light	2 seat	
limousine	closed	4 door	6 light	4 seat	
saloon	closed	4 door	4 light	4 seat	
saloon 2 door	closed	2 door	4 light	4 seat	
sedanca coupé	partly open*	2 door	2 light	4 seat	
sedanca	partly open	2 door	4 light	4 seat	
coupé de ville					
allweather	fully open	4 door	4 light	4 seat	
cabriolet	fully open	2 door	4 light	4 seat	
drophead coupé	fully open	2 door	2 light	4 seat	
d.h.c. 2 seater	fully open	2 door	2 light	2 seat	
d.h.c. 3 seater	fully open	2 door	2 light	3 seat	
tourer	fully open	with no wind-up windows			

* Short for partly opening, fully opening.

Cars displayed at the London Motor Show offered a special sales opportunity.
B16MR (1938 4¼) Park Ward drophead coupé Owner: T. Reich

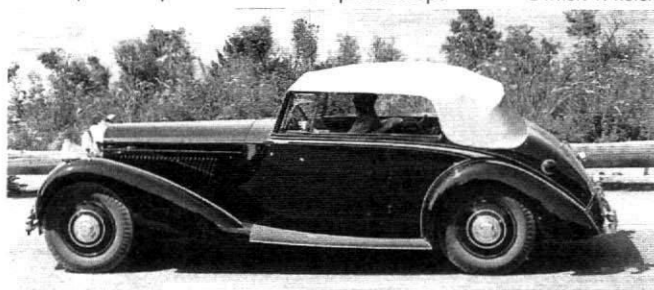
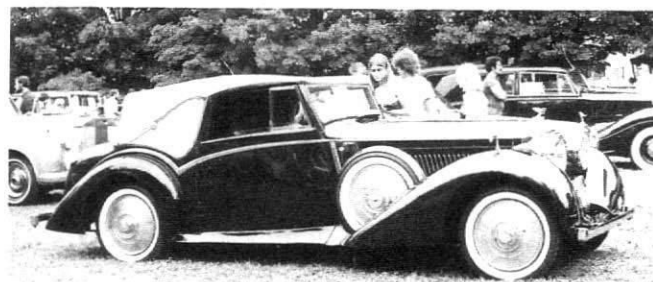


Photo © 1981 K. Karger

Analysis			
De Villars	fixed head coupé	1	
Park Ward	f.h.c. 2 seater	1	
H.J. Mulliner	limousine	6	
Rippon	limousine	2	
Windovers	limousine	1	9
Arnold	saloon	1	
Arthur Mulliner	saloon	1	
Cockshoot	saloon	1	
Freestone & Webb	saloon	5	
Gurney Nutting	saloon	2	
H.J. Mulliner	saloon	11	
Hooper	saloon	7	
James Young	saloon	2	
Mann Egerton	saloon	3	
Park Ward	saloon	71	
Thrupp & Maberly	saloon	3	
Vanden Plas	saloon	3	
Vanvooren	saloon	7	
Windovers	saloon	1	118
Barker/Hooper	saloon-2 door	1	
Freestone & Webb	saloon 2 door	1	
H.J. Mulliner	saloon 2 door	2	
James Young	saloon 2 door	5	
Park Ward	saloon 2 door	1	
Thrupp & Maberly	saloon 2 door	1	11
Total Closed Bodies			140
Gurney Nutting	sedanca coupé	4	
H.J. Mulliner	sedanca coupé	1	
Hooper	sedanca coupé	1	
James Young	sedanca coupé	3	
Thrupp & Maberly	sedanca coupé	2	11
James Young	sedanca coupé dV	1	
Total Partly Opening Bodies			12
Hooper	allweather	1	
Park Ward	allweather	1	
Vanden Plas	allweather	3	
Windovers	allweather	1	6
Park Ward	cabriolet	4	
Vanden Plas	cabriolet	3	7
Barker/Hooper	drophead coupé	1	
H.J. Mulliner	drophead coupé	6	
Hooper	drophead coupé	1	
Köng	drophead coupé	1	
Park Ward	drophead coupé	2	
Vanden Plas	drophead coupé	14	
Vanvooren	drophead coupé	2	
Windovers	drophead coupé	1	28
Carlton	d.h.c. 2 seater	1	
Vanden Plas	d.h.c. 3 seater	1	
Vanden Plas	tourer	5	
Total Fully Opening Bodies			48
Total Production			200



B41MX (1939 4¼)

Windovers drophead coupé

The strongly dropping waistline gives a rakish air to this handsome design. New the car went to George Formby, the British music hall entertainer.

My databank includes the membership and vehicle registers published by each of the following Clubs since inception:

The Rolls-Royce Owners' Club Inc. USA

Rolls-Royce Enthusiasts' Club UK

Bentley Drivers Club Ltd. UK

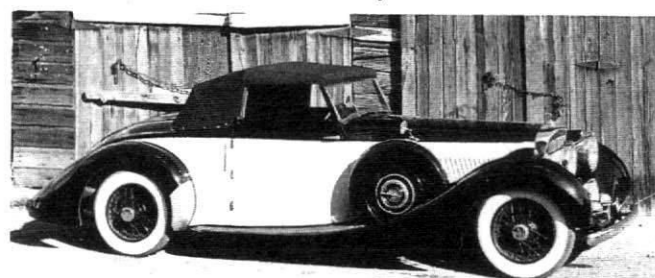
Rolls-Royce Owners' Club of Australia

It reveals that 168 of the 200 have at some point been owned by a member of one of those Clubs. It also shows that the following original bodies have been changed:

saloon	17
saloon 2 door	3
sedanca coupé	2
drophead coupé	1
tourer	1*
	24

*This car, B172MR, had travelled only 2,000 miles early in 1940 when its Vanden Plas tourer body was swapped for the H.J. Mulliner saloon then mounted on B67LE. Each of these cars, still carrying the other's original body, is owned by a current member of the Bentley Drivers Club Ltd.

One particular body, Thrupp & Maberly sedanca coupé body number 6868, was the first body on both B154MR and B35MX. With its second body, a new Vanden Plas tourer mounted in 1939, B154MR was destined to become very well known as Johnnie Green's "Honeysuckle".



B44 MR (1939 4¼)

Carlton drophead coupé

Owner: J. Barrymore

This car was sold used June, 1940, for £1,566, with the buyer allowed £250 for B15AE in trade. It was sold again in March, 1941, for £2,329.

The first owner traded in GRV63 on this car for which he was allowed £300.

B118 MR (1939 4¼)

H.J. Mulliner saloon

Owner: L. Kelly



DERBY BENTLEYS

With the approval and co-operation of Bentley Motors (1931), Limited and in collaboration with Mr. John Craig, London Service Manager of the Company, we are now able to publish a comprehensive survey of the production of 3½- and 4½-litre Bentleys at Derby between 1934 and 1939.

The tables set out below show the various series of Chassis Numbers in chronological order; the number of chassis comprising each series; the modification made during production and the chassis number at which introduced.

It will be seen that 1,191 3½-litres were built and 1,241 4½-litres—a total of 2,432.

The dates in the tables are based on the original History Cards and indicate the approximate dates of the various chassis series. It is emphasised that the dates refer to chassis delivery and not the issue of the Guarantee. It will be remembered that the Company did not make bodies for these cars, supplying completed chassis only to coachbuilders and a material discrepancy could exist between the issue and Guarantee dates due to delay at the coachbuilders and at the retailers.

(It is interesting to note that 130 3½-litres and 174 4½-litres belonged to Club Members at the end of 1962 when a census of Bentleys owned was taken for inclusion in a new edition of the Members List).

3½-LITRE					
Chassis Series	Numbering Sequence	Date of Issue	No. of Chassis	Modifications	As from Chassis No.
AE	1-203 odd numbers	Aug. 33/Mar. 34	101	Centre-point Radiator Mounting	33-AE
AH	2-198 even numbers	Mar/Jun. 34	99		
BL	1-201 odd numbers	May/Aug. 34	100	Improved Front Shock Damper Support	153-BL
BN	2-100 consecutive numbers	Jul/Sep. 34	98		
CR	2-200 even numbers	Sep/Nov. 34	101		
CW	1-203 odd numbers	Nov. 34/Jan. 35	101	Drilled-up Connecting Rods Controlled Front and Rear Shock Dampers Concealed Front Cross-member Clutch Spring Drive deleted Propeller Shaft Damper Dunlop Road Wheels Rubber Rear Engine Mounting Headlamp Stiffener	1-CW 2-DG 1-DK
DG	2-200 even numbers	Jan/Mar. 35	100	Rear Axle Oil Seal Extra Cylinder Lubrication Aerolite Pistons Rudge-Whitworth Road Wheels Geared Starter Drive Light Flywheel and Clutch Water Excluders on Front Brake Backplates Isolated Gear Lever Wilmot Breeden Bumpers	87-DK 189-DK 2-EF 153-EJ 2-FB
DK	1-199 odd numbers	Mar/Jun. 35	99		
EF	2-200 even numbers	May/Jul. 35	100		
EJ	1-203 odd numbers	Jul/Sep. 35	101		
FB	2-200 even numbers	Sep/Nov. 35	100		
FC	1-161 odd numbers 175, 185, 187, 191, 201, 205, 207, 209, 211, 215, 217, 219	Nov. 35/Mar. 36	92		
			1,191		
4½-LITRE					
Chassis Series	Numbering Sequence	Date of Issue	No. of Chassis	Modifications	As from Chassis No.
GA	2-6 consecutive numbers 8-260 even numbers	Mar/May. 36	132	3½" Bore Engine Borg and Beck Clutch Air Cooled Dynamo Petrol Filter on Rear Cross Member Bottle Type Fuses	2-GA 62-GA
GP	1-203 odd numbers	May/Jul. 36	101		
HK	2-200 even numbers	Jul/Sep. 36	100		
HM	1-203 odd numbers	Sep/Nov. 36	101	Seapak Noise Insulation on Scuttle	2-HK
JD	2-200 even numbers	Nov. 36/Jan. 37	100		
JY	1-203 odd numbers	Jan/Apr. 37	101	Propeller Shaft Damper Reinstated	53-JY
KT	2-200 even numbers	Apr/Jun. 37	100		
KU	1-203 odd numbers	Jun/Sep. 37	101	Improved Scraper Rings De-turbulated Cylinder Head Short Pendulum Lever White-metal No. 7 Bearing Thermoid Clutch Liners Open Type Fuses Over-drive Gearbox 6.50 x 17 Tyres 10 x 43 Rear Axle replaced 10 x 41 standard on earlier Series Marles Steering Improved Camshaft Thermostat with Dummy Shutters.	1-K 175-KU 112-LS 182-LS 63-LE 2-MR
LS	2-204 even numbers	Sep. 37/Jan. 38	102		
LE	1-203 odd numbers	Jan/Aug. 38	101		
MR	2-200 even numbers	Jul. 38/Mar. 39	100		
MX	1-205 odd numbers	Feb/Jun. 39	102		
			1,241		

TOTAL NUMBER OF 3½- and 4½-LITRE CHASSIS — 2,432

- Notes: 1. No. 13 was omitted in all series.
2. All Chassis Numbers of Derby Bentleys are preceded by the letter "B"; then follows the number of the individual chassis and the two letters indicating the series, thus B-123-AE.
3. When the 4½-litre was introduced, the 3½-litre engine was available at Owner's option for a limited period, but the Company has no record of any ever having been fitted.
- Bentley Drivers Club Review, April 1963.