



SECTION B.

SPECIAL PROCESSES.

AND

SPECIFICATIONS.

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INSTRUCTIONS FOR STORAGE.

BENTLEY MARK VI CAR.

The success of car storage, depends upon the correct preparation and lubrication of the vehicle, together with continuous periodic attention.

The place of storage should be Dry, Well Ventilated and preferably Heated.

ENGINE AND CHASSIS.

To facilitate the draining of the engine sump, gearbox and rear axle, the vehicle should be run for a sufficient mileage to ensure that the oil in these units has become thoroughly warmed and fluid.

(1) Completely drain the main fuel tank. Run the engine to empty the carburetters, petrol pumps and feed pipes. Remove carburetters, petrol pumps and filters, thoroughly clean out and refit.

(2) If the coolant system contains anti-freeze, DO NOT DRAIN. If the original coolant has been replaced with plain water, and there is any danger of freezing, drain the system, or more preferably, drain and refill with a recommended anti-freeze solution. In which case, the change should be made before the car is laid up, or the engine should be run until normal operating temperature is reached to ensure uniform distribution of the anti-freeze throughout the system.

The rubber connections must be carefully examined at regular intervals and replaced if unsound.

(3) Jack up the complete vehicle to take all weight off the tyres.

Suitable wooden blocks or trestles should be placed under each of the lower triangle levers in line with the coiled springs of the front suspension, and also under the centre of each of the rear springs, taking care not to damage the spring gaiters.

Do not deflate tyres, but maintain a reasonable pressure. Cover tyres to exclude light.

(4) Completely drain the engine sump, gearbox and rear axle of all oil, and refill to the correct level with one of the following recommended mineral oils:-

Recommended Storage Lubricants.

	<u>Engine</u>	<u>Gearbox</u>	<u>Rear Axle</u>
Duckham's Adcoildised	NFX	NFX	NFX
Essolube	Rust-Ban 603	Rust-Ban 603	Rust-Ban 603
Mobiloil Vacuum	Arctic	Arctic	Arctic
Price's Motorine	E	E	E
Shell	RPL 2	RPL 2	RPL 2
Silvertown Speedolene	Anti-Rust Oil	Anti-Rust Oil	Anti-Rust Oil
Wakefield's Castrol	Storage Oil	Storage Oil	Storage Oil





During the period of storage, a label bearing the statement that these units are filled with mineral oil, should be prominently displayed to serve as a reminder.

When the engine is cold, remove the sparking plugs and inject two tablespoonsful of mineral oil through the plug holes into each cylinder. Using the starting handle, turn the crankshaft a few turns to distribute the oil over the cylinder walls. The valve rocker gear should also be treated with the same mineral oil. Replace sparking plugs and screw down lightly.

The engine, gearbox and rear axle must be revolved by hand at least once every seven to ten days.

(5) The clutch should be jacked out by placing a length of wood between the clutch pedal and the steering column bracket. This will ensure that the clutch fabric will not adhere to the pressure plate during the period of storage.

(6) The centralised chassis lubrication pedal should be depressed once at the start, and once again at the completion of the storage period.

(7) Leave the handbrake lever in the "OFF" position.

(8) Remove battery from car, clean thoroughly, "top-up" and give a thorough charge at the normal rate recommended by the makers. A freshening charge should be given every 4 to 6 weeks throughout the period of storage, continuing each of these charges until the specific gravity of the acid has remained constant for about 10/12 hours on each occasion.

#### BODY.

(1) Wash down the coachwork with clean running water, and dry thoroughly. Any rust patches or paint blisters should receive immediate attention, to prevent further deterioration during the storage period. It is recommended that the paintwork is given a good polishing, using a good class of wax polish, such as "Belco No.7" and repolished at regular intervals.

Under no circumstances should any polishing compound containing ammonia be used.

(2) All carpets, cushions and upholstery should be thoroughly brushed and cleaned, and then liberally sprinkled with one of the anti-moth preparations available. After this treatment, all carpets and cushions, etc. should be stored in such a manner as to prevent further attack by moth. It is recommended that these are inspected at regular intervals, and re-treatment carried out if necessary.

Leather upholstery should be given an application of "Connolly's Hide Food", to enable it to retain its suppleness and freshness.

(3) Providing the place of storage is dry, the windows on the car should be kept slightly open. If, however, there is any tendency to dampness, it is recommended that the windows and doors are shut tight, and some form of anti-moisture preparation such as, Calcium Chloride Crystals, are utilised.





Periodical examination will be necessary, and when the crystals are seen to be near the saturation point, they should be renewed.

- (4) Cover the whole vehicle with a light dust sheet.

It is essential that the following instructions be carried out fully prior to the shipment of either a car or van.

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 PREPARATION

- (1) It is NOT necessary to drain either the coolant system, or the oil from the engine, gearbox and rear axle.
- (2) Completely drain the main tank of all liquid petrol, and run the engine until the carburettors are dry.
- (3) Remove sparking plugs, and inject a small quantity of very clean oil through the plug holes into each cylinder. Remove the carburettor, clean it and replace plugs.
- (4) Fit a fully charged battery, and see that the ignition key is locked in the "ON" position.
- (5) Cover the exhaust system and all chassis parts liable to rust with "Dural".
- (6) Cover radiator, and all other prominent parts, with weather tape as a protection against accidental damage during transit.

- (7) Drain the coolant system.
- (8) Drain the engine, gearbox and gearbox, and re-tighten approximately one pint of pure mineral oil (see Sub-section 10-1) to each of these units.
- (9) Remove sparking plugs and inject 10 cc's of heavy industrial oil through the plug holes into each cylinder. Remove carburettor, clean it and replace plugs.
- (10) Fit an empty battery in the dry condition.
- (11) Cover exhaust system, and all chassis parts liable to rust, with "Dural".
- (12) Cover radiator and all other prominent parts with weather tape.
- (13) A large warning label should be fixed to the radiator, and a copy of the following note should be placed, either in the supply hole in the case of a complete car, or in a chassis, fixed to the engine.





PREPARATION OF THE BENTLEY MK.VI. CAR OR CHASSIS FOR EXPORT.

It is essential that the following instructions be carried out fully, prior to the shipment of either a car or chassis.

INSTRUCTIONS.

A. UNCRATED.

It is NOT necessary to drain either the coolant system, or the oil from the engine, gearbox and rear axle.

- (1) Completely drain the main tank of all liquid petrol, and run the engine until the carburetters are dry.
- (2) Remove sparking plugs, and inject a small quantity of pure mineral oil through the plug holes into each cylinder. Revolve the crankshaft a few times by hand, and replace plugs.
- (3) Fit a fully charged Exide battery, and see that the ignition key is locked in the "OFF" position.
- (4) Smear the exhaust system and all chassis parts liable to rust with "Sozol".
- (5) Cover radiator, and all other chromium parts, with masking tape as a protection against accidental damage during transit.

B. CRATED.

- (1) Completely drain main tank of all liquid petrol, and see that the carburetters, petrol pumps and filters are dry and cleaned.
- (2) Drain the coolant system.
- (3) Drain the engine crankcase and gearbox, and re-introduce approximately one pint of pure mineral oil (See Sub-Section BB.1) to each of these units.
- (4) Remove sparking plugs and inject 10 cc's of Intava Inhibiting oil through the plug holes into each cylinder. Revolve crankshaft a few times by hand and replace plugs.
- (5) Fit an Exide battery in the dry condition.
- (6) Smear exhaust system, and all chassis parts liable to rust, with "Sozol".
- (7) Cover radiator and all other chromium parts with masking tape.
- (8) A large warning label should be tied to the radiator, and a copy of the following page should be placed, either in the cubby hole in the case of a complete car, or if a chassis, tied to the engine.





ALL BENTLEY MARK VI. CARS

ARE SPECIALLY PREPARED FOR SHIPMENT PRIOR TO DESPATCH.

The oils have been drained from the engine and gearbox of this chassis for transport purposes and a small quantity of mineral oil has been run into the working parts for protective purposes only. This is not sufficient to allow for the running of the engine.

It will, therefore, be necessary before running the engine to refill the crankcase and gearbox with the correct oil.

The rear axle is filled to the correct level with Wakefield's Special Hi-Press S/C oil and does not need any alteration.

The cylinder bores have been treated with an Inhibitor, and there is no need to prime the cylinders before starting up the engine as this is a complete protection from any corrosion etc.

1. Before starting the engine:

Fill engine and gearbox with one of the recommended oils which are as follows:-

	<u>A. Engine</u>	<u>B. Gearbox</u>
Prices Motorine	E	M
Wakefield's Castrol	Castrolite	XL
Vacuum Mabiloil	Arctic	A
Shell	Single	Double
Duckham's Adcooidised	N. P. X.	NP. XX
Essolube	20	30
Silvertown Speedoline	20	T

The capacity of the engine is 16 pints (9.1 litres) and the gearbox 6 pints (3.4 litres).

2. Starting up Engine:

Run engine slowly until maximum oil pressure is being recorded on the gauge. Open throttle (using throttle lever on quadrant) until the engine is running at approximately 800 revs. per minute. This speed is obtained by placing the throttle lever approximately one-third up the quadrant from the closed position.

3. Driving:

Take the car on the road and work up the engine very slowly from slow running throttled conditions to full power. The longer the time taken and the greater the care taken for this operation, the better it will be for the future good running of the car.

Lack of proper attention when first putting the car into commission, e.g. immediately starting up and driving away from the docks, may cause considerable trouble at a later date. With such treatment the lubrication is bad, working parts distort, piston knocks develop, with generally unsatisfactory running and possibly over-heating and over-oiling.





### RECOMMISSIONING AFTER STORAGE.

Before recommissioning the car after a lengthy storage, it is advisable to give it a thorough check over, and the following procedure is recommended.

It is assumed that at the time of storage, the car was treated in accordance with the recommended procedure, but it is recognised that the actual conditions of storage, and the amount of attention subsequently received by the car during storage, will have varied considerably.

It may be useful, therefore, to indicate briefly the faults which may result from unsuitable conditions or lack of periodical attention during 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) FUEL SYSTEM.

The most likely cause of trouble 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 and other mechanism. Even if the engine has been made to run satisfactorily, there is 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 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 REAR AXLE.

If the transmission has not been turned over at regular 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 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 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) CLUTCH.

Failure to have jacked out the clutch before storage, may have resulted in the linings 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 as suggested later, should be observed.

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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:-

Front - 25 lbs./sq.in.  
Rear - 30 lbs./sq.in.

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 connections should be cleaned with a wire brush and smeared with vaseline.

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 inlet valve mechanism for sweating and rust marks. Thoroughly clean mechanism and pour a liberal quantity of fresh oil over all the parts.

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





## 5. PETROL SYSTEM.

- (a) Disconnect petrol pipes at carburetter float chambers and unscrew the union from each float chamber cover. Take out the small filter gauze, 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 assembly from each carburetter; first unscrew the oil cap nut and carefully remove the hydraulic piston damper, next remove the three retaining screws and lift off the cylinder, then lift out the piston taking great care not to bend or damage the needle. 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 the stains.

On replacement, refill the oil damper reservoir with a recommended oil.

- (d) Remove element from rear filter and thoroughly clean by washing in petrol.
- (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 a 12 volt bulb connected between the pump supply lead and the pump body.





The bulb should light; if not, examine ignition fuse in fuse box. Having ascertained that current is getting to the pumps, and they are still not working, then they are stuck up. Remove the covers on the pump so as to expose the contact points, and 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.

## 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, this will expose the commutator and the brushes, then remove the brushes from their holders after lifting the spring clips. Brushes, holders and commutator should then be cleaned with a petrol soaked rag and replaced.

### (b) Distributor.

Remove the high tension distributor cover, and clean contact breaker points with a carborundum strip. Reset the gaps to .019" - .021". Clean the cam and smear with a small quantity of grease. The pivot pins should be lubricated by putting a drop of oil on the exposed end. The grease lubricator should be recharged with the recommended grease and screwed down a turn or two. Wipe the interior of the distributor cover with a clean, dry rag before replacing.

### (c) Plugs.

Clean and set gaps to .025". Replace in engine and connect high tension leads.

### (d) H.T. Coils.

Clean tops of coils with dry rag. Check and clean all connections to coils.

### (e) Starter Motor.

No attention should be necessary apart from removing the plug in the side of the reduction gear casing and filling with recommended oil until the level reaches the mouth of the plug orifice. Should the starter motor prove sluggish in operation, the end cover should be removed and the brushes cleaned.

## 7. COOLING SYSTEM.

If the cooling system has, for certain reasons, been drained, it should be refilled to its correct level with a 25% mixture of Inhibited Ethylene Glycol or Bluecol and water. This solution should be prepared





prior to introduction to the cooling system, hot water being recommended for this purpose.

Capacity of cooling system - 30 pints.

Check adjustment of fan belt, the tension should be such that the fan belt can be moved transversely with the fingers, at a point equidistant from the crankshaft pulley and the fan pulley, through a total distance of one inch.

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

#### 8. ENGINE.

- (a) Drain the sump and refill with any of the recommended oils.
- (b) Remove the rocker cover and check the inlet valve tappet clearances, these should be .006" cold.

Check each cylinder for compression, 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.

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:-

#### 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.

#### 10. GEARBOX AND TRANSMISSION.

- (a) Gearbox.

Remove the plug and drain off the oil. Refill with recommended oil to the correct level.

- (b) Propeller Shaft.

The propeller shaft universal joints are provided with grease gun lubricators located on the centres of the cross-pieces. The sliding joint is also provided with a similar lubricator and the correct grease should be injected by means of a grease gun into all four lubricators.

- (c) Back Axle.

Drain off oil and refill to correct level with the recommended oil.





#### 11. STEERING.

Remove plug on steering box and refill with recommended 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 recommended oil.

#### 13. BRAKES.

##### (a) Lubrication.

The need for hand lubrication of various parts of the mechanism has been reduced to a minimum, by the use of self-lubricating bearing bushes at the fulcrum of practically all levers.

The only points that require attention are the jaws and pins of the pull rods and intermediate levers, and oil should be applied to these points.

##### (b) Adjustment.

Check the adjustment of the brakes, a separate adjustment is provided on each brake carrier plate to compensate for wear of the brake shoe linings.

To adjust the brakes, rotate the adjusters in a clockwise direction until considerable resistance is felt. This resistance must be equal for all four brakes, and should the last "click" on any one adjuster require noticeably greater force to obtain, the adjuster should be turned back to the previous "click". This will give the correct brake adjustment.

#### 14. CLUTCH.

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 lower cover. Start up the engine and run long enough to warm the clutch. Stop the engine and inject a small quantity of acetone, so that it gains access to the clutch liners. Altogether as much as two eggcupsful 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.