

Bulletin

MODEL BENTLEY MARK VI

CLUTCH PEDAL.

Some slight difficulty may be experienced by certain Owners in changing gear on the Standard Saloon due to the fact that the clutch may not be completely dis-engaged when the pedal is depressed.

The clutch pedal has three notches in the stem, and most pedals have been set in the centre notch. As it is necessary to have a minimum of $1\frac{3}{8}$ " free clutch pedal travel, it has been found that in order to allow for the thickness of the carpet, it is better to fit the pedal in the first notch, and all future clutch pedals will be set in this position.

It is recommended that this alteration should be carried out on existing cars when convenient at Service Stations.

CLUTCH SLIP.For Information:

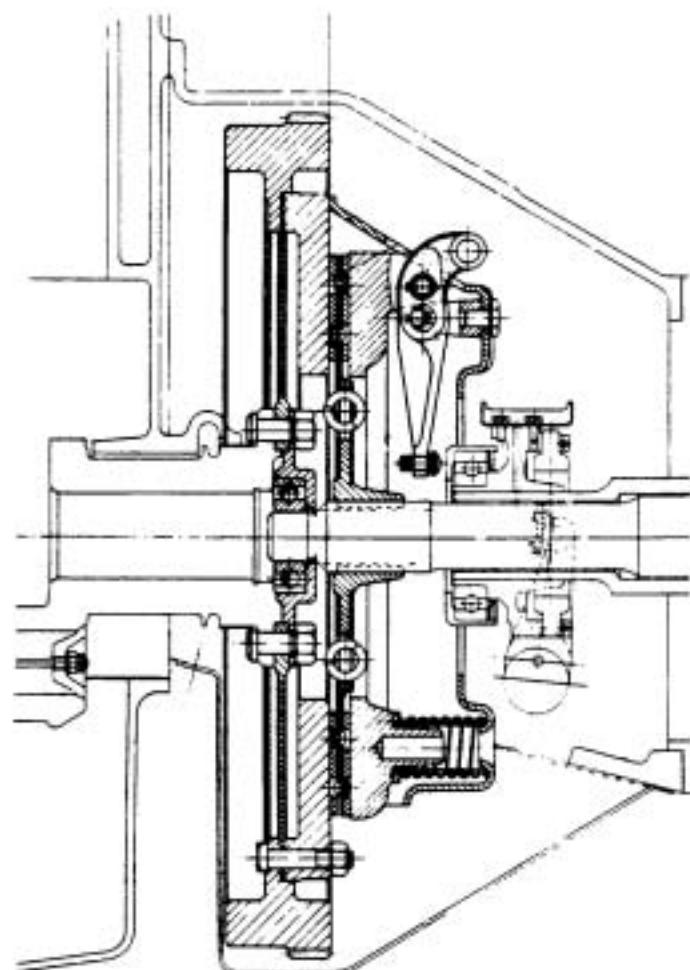
The information contained in this Bulletin is issued for guidance in the event of complaint being received of a slipping clutch, the principal causes of which are:-

- A. Insufficient free travel of the clutch pedal preventing full engagement of the clutch.
- B. Oil or grease on the friction surfaces of the driven plate assembly.

The correct procedure for treatment is as follows:-

A. ADJUSTMENT:

Before resorting to any dismantling for slip, the free travel of the clutch pedal should be measured and adjusted if necessary as follows:-



With the clutch pedal lever against its up-stop under the pedal gap plate, place the edge of a rule against the centre of the side of the pedal and the end of it against the dash, depress the pedal by hand until the clutch release bearing just touches the three release levers of the clutch. Measure the free travel which should be $1\frac{1}{2}$ " (38 mm). A turnbuckle adjuster with a central spanning point is provided. Insufficient free travel of the clutch pedal can be one of the causes of clutch slip. If clutch slip is experienced at high engine R.P.M., it indicates that there is insufficient pedal clearance.

B. OIL OR GREASE ON FRICTION SURFACES.

The probable causes of oil or grease reaching and contaminating the Thermoid friction facings of the clutch driven plate assembly are:-

Fig.1. Section through flywheel and clutch.

1. Oil leakage past the sealing washer 'A' Fig.2 at the rear end of the crankshaft.
2. Excessive initial loading of grease into the clutch spigot ball bearing (26 Fig.2) of the flywheel, distinguished by radial grease marks on the friction plate (24).
3. Over zealous application of the foot-operated chassis oil pump or a faulty oil restrictor (Type ZEO), allowing too much oil to reach the clutch release bearing (32 Fig.5) eventually working its way along the splines on to the driven plate.

The remedies for the above conditions, i.e. 1, 2 and 3, are dealt within the subsequent context.

NOTE: Should it be found necessary to remove the clutch, then if the Thermoid facings of the driven plate assembly are found to be contaminated with oil or grease, a new driven plate assembly should be fitted.

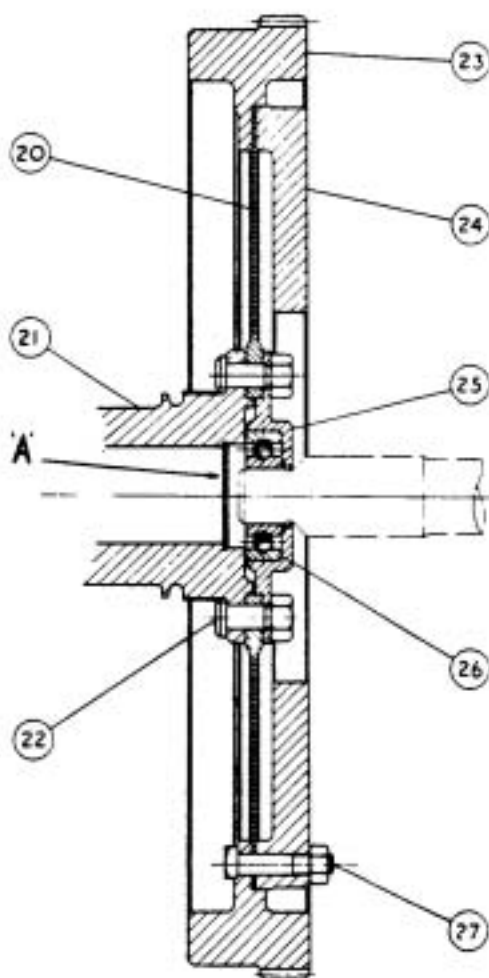


Fig.2. Section through flywheel.

1. Oil Leakage past Sealing Washer:

It has been found on investigation, that under certain conditions there is a possibility of an oil leakage past the sealing washer ('A' Fig.2) at the rear end of the crankshaft. If the leakage is sufficient, oil may reach the front facing of the driven plate. In practice, it is likely that the first indication will be a clutch shudder and then a slipping clutch. If after removal of the clutch, oil, apart from grease, is found to be present in the spigot bearing (26 Fig.2), it can be assumed that it is leaking past the sealing washer.

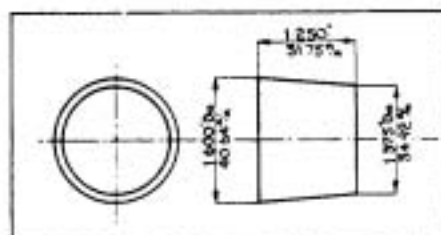
As a service rectification, a conical synthetic rubber oil sealing plug (Fig.3) has been introduced and is shown in position in the bore of No.7 crankshaft journal in Fig.4. Arrangements are being made for supplies of these plugs to be sent to all Overseas Retailers. Will Retailers in the U.K. kindly note that supplies are available from the London Service Depot.

Whenever there is evidence of oil leakage past the sealing washer, a rubber plug should be fitted as described herein. If however, a rubber plug is not immediately available, then it will be necessary to solder the sealing washer ('A' Fig.2) to the crankshaft as described in Paragraph 1b.

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1a. To fit the Rubber Plug:

**MATERIAL: OIL & HEAT RESISTING
SYNTHETIC RUBBER.**

Fig. 3. Details of oil sealing plug.

With the clutch removed from the flywheel, remove the crankcase lower half, taking care to try and avoid damaging the Vellumoid joint fitted between the face of the crankcase and the wheelcase. Before fitting the rubber plug, it will be necessary to drill a $\frac{1}{16}$ " dia. (1.6 mm) air escape hole in the centre of the existing sealing washer. Prior to drilling, and to prevent any drilling swarf from dropping into the spigot bearing (26 Fig. 2), cut a piece of paper about $1\frac{1}{2}$ " (38 mm) wide, grease it on one side and then fold it in cylindrical form so that the greased side is on the interior, pass it through the spigot bearing and up to the face of the sealing washer. After drilling the washer, remove burrs from hole and then carefully remove the paper tube, together with all traces of swarf which will be found to be trapped on the greased side of the paper.

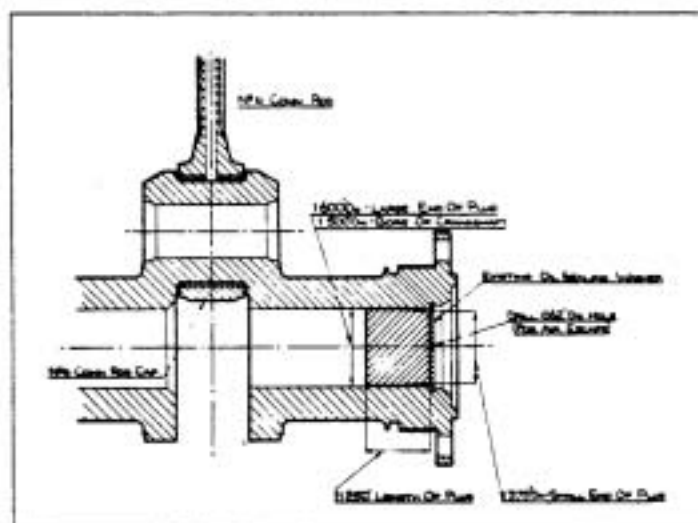


Fig. 4. View of synthetic rubber oil sealing plug in position in crankshaft.

Thoroughly clean the bore of No. 7 crankshaft journal by syringing it out with petrol. With the small end of the rubber plug pointing towards the existing sealing washer as shown in Fig. 4, carefully and squarely insert it into position and push it as far as it can be pushed by hand, then, with the aid of a suitable lever, curved and rounded at one end, (so as not to damage the rubber plug), push the plug still further into position. For the final operation, and in order that the plug can be squarely pushed fully home, a circular distance piece or distance pieces will be required, preferably made from aluminium and which should be a slack fit in the bore of the crankshaft.

After fitting the plug, stamp the letter 'B' with a $\frac{1}{4}$ " or $\frac{5}{16}$ " (6 to 8 mm) stamp, on the near-side of the clutch casing between the two uppermost starter motor retaining bolts, and as near as possible to the front face of the clutch casing.

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1b. To solder the Sealing Washer to the Crankshaft:
(Not Recommended but Permissible in Emergency.)

With the clutch removed from the flywheel, remove the crankcase lower half. Remove the nuts from the twelve bolts (22 Fig.2). Providing the nuts have not been over centre punched, it should be possible to use them again. Leaving the flywheel assembly in position on the crankshaft, remove the bearing housing (25) complete with the spigot bearing (26). Remove any surplus oil or grease from the spigot bearing and housing and do not add any additional oil or grease.

Thoroughly clean the bore of No.7 crankshaft journal by syringing it out with petrol and then wipe out with a clean cloth, also clean around the outer periphery of the sealing washer. As the crankshaft is nitride hardened, it is therefore difficult to solder unless very carefully cleaned. When soldering, use a good quality soldering flux i.e. not spirits of salts.

Taking the necessary precautions, apply heat to the washer by means of a small blow lamp or gas flame sufficiently to warm up the washer for soldering purposes. An oxy-acetylene flame must not be used for this purpose, as the heat is too intense and too localised.

Trim up as necessary the ends of the twelve flywheel bolts, providing a suitable die is available, i.e. .375" dia. 20 T.P.I., (R.H.) B.S.F. Clean up the first two or three threads only. It may be necessary to hold the die itself by hand, owing to the limited space between each bolt. Care must be taken when refitting the nuts not to damage the bolts, otherwise it will be necessary to remove No.7 main bearing cap in order to remove the damaged bolt and fit a new one.

Place the housing in position. It should be noted that one of the bolt holes in the housing is off-set for co-relation purposes. Providing the nuts have not been damaged, they can be cleaned up with a suitable tap. Should new nuts be required, the Part No. is K-4010. After thoroughly tightening up the nuts, re-centre punch each bolt in four places to lock the nut.

2. Escape of excess of Grease from the Clutch Spigot Bearing:

If too much grease has been packed into the clutch spigot ball bearings (26 Fig.2) in the flywheel, then it may eventually find its way on to the friction plate (24) of the flywheel with consequent contamination of the front facing of the driven plate. Remove all traces of grease, oil or foreign matter from the flywheel, friction plate and clutch casing. There should not be a repetition of this trouble, as any excess of grease in the spigot bearing will have found its way out. There is no need to remove the spigot bearing for cleaning purposes.

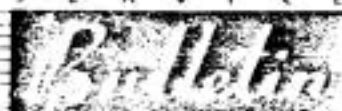
3. Over zealous application of the Foot-Operated Chassis Oil Pump or a faulty Oil Restrictor Type ZEO.

The above will probably allow too much oil to reach the clutch release bearing (32 Fig.5) and eventually find its way on the rear facing of the driven plate assembly. The chassis oil pump should only be operated in accordance with the instructions given in the Owners Handbook i.e. "Depress

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pedal once while engine is being started for the first time in the day and subsequently every 100 miles".

If the clutch has been removed for the purpose of fitting a new driven plate assembly, then prior to refitting the gearbox to the clutch casing, ascertain that the oil feed pipe (28 Fig.5) to the oil trough of the clutch trunnion is correctly positioned above the trough. The end of the pipe should be approximately over the front setscrew (i.e. the one nearer to the flywheel) retaining the trough to the trunnion when the clutch release bearing housing (33) is in contact with the adjusting screws of the three clutch release levers. Check that the oil feed hole from trough to the trunnion is clear. With sufficient oil in the foot-operated oil pump, depress the pedal once and count the number of oil drops delivered to the trough of the trunnion.

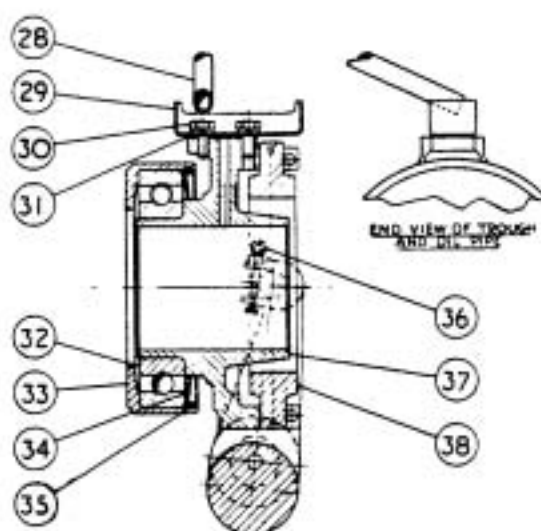


Fig.5. Section through clutch release bearing and trunnion.

Approximately three to five drops should be delivered with each application of the pedal. If either above or below this rate of flow, check the restrictor elbow situated on the right-hand top side of the clutch casing, by replacing with a new one of the same type (ZEO).

If the flow is still too great, then fit a type ZEOO elbow which will give a reduced rate of flow, conversely if there is still insufficient oil delivered, then check for a leakage or pipe breakage at some other point in the centralised chassis lubrication system.

If it is desired to check the oil flow with the gearbox in position, the elbow can be removed from the clutch casing and reconnected to the oil delivery pipe.

NOTE: Oil restrictors cannot be adjusted or dismantled. They are lettered to indicate their shape and numbered to indicate their rate of oil emission. A higher number indicates a greater rate.

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FOR INFORMATION:CLUTCH PRESSURE SPRINGS - 10" BORG & BECK CLUTCH.

The attention of Retailers is directed to an alteration in the colour coding of the nine thrust springs on all 10" Borg & Beck replacement units.

Originally ORANGE coloured springs (Part No. R-4209) were used, and these gave a minimum and maximum load figure of 130/140 lbs. for each spring at the correct assembled length of 1.562".

The latest type springs are coloured RED and give a minimum and maximum load figure of 150/155 lbs. for each spring at the same assembled length. The part number of the new spring is R-4210.

The above alteration affects only those chassis fitted with the 10" Borg & Beck clutch, i.e. all chassis prior to the introduction of the 11" C.F. clutch at B-2-IR.

It should be noted that this increase in thrust spring poundage in no way alters the instructions covering the assembly, adjustment and general maintenance of the clutch laid down in the Workshop Manual.

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CLUTCH PEDAL.

A pressed cup and rubber washer are fitted on the pedal shank immediately under the pedal pad.

The purpose of this cup is to act as a stop for downward travel, but it is prone to work loose and rattle, and since the carpet, in any case, provides an adequate stop, the cup may be removed.

REFACING THE FLYWHEEL FRICTION PLATE AND CLUTCH PRESSURE PLATE.

It is permissible to regrind the surface of both the flywheel friction plate and the clutch pressure plate should they show signs of scoring. Only the minimum amount of metal necessary to provide a clean, smooth surface should be removed. Grinding limits and original dimensions are given in Fig.1.

Flywheel Friction Plate

| | |
|----------------|-------------------|
| Dimension 'A' | .800" (20.32 m/m) |
| Grinding Limit | .050" (1.27 m/m) |

Clutch Pressure Plate

| | |
|-------------------|--------------------|
| Dimension 'B' | |
| 10" Clutch | 1.284" (32.61 m/m) |
| 11" Clutch | 1.286" (32.66 m/m) |
| (Light and Heavy) | |
| Grinding Limit | .030" (.76 m/m) |

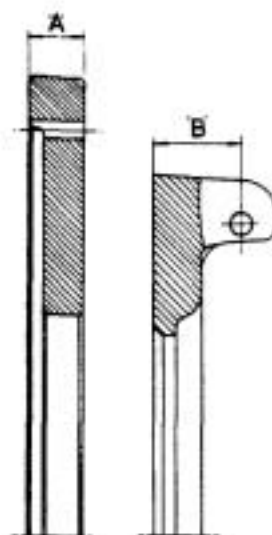


FIG.1 FLYWHEEL AND PRESSURE PLATE - ORIGINAL DIMENSIONS.

A surface grinder should be used and a Carborundum stone of grade BA80-N5-VBLU is recommended. The clutch pressure plate may be placed face downwards on the machine table and the backs of the lugs for the toggle levers lightly ground flat to provide a true surface. The plate may then be reversed and the face ground as required.

A flywheel friction plate that shows any sign of small, hair-line, contraction cracks should be discarded.

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FOR INFORMATION.CLUTCHES.

The increased cost of producing service parts for the special 11" lightweight clutch assembly is exorbitant in comparison with the cost of the normal heavyweight parts. Consequently all 11" lightweight assemblies returned for replacement will now be automatically exchanged for 11" heavyweight assemblies, which incorporate several technical improvements over the former lightweight unit.

Under normal circumstances a new friction plate will usually be required as there is a maximum reface grinding limit of only 0.010".

The Service Exchange heavyweight parts, which will be supplied in exchange for lightweight units returned, are as follows:-

| Heavyweight <u>Parts</u> | <u>Part Nos</u> | Lightweight <u>Part Nos</u> |
|-----------------------------|--|--------------------------------|
| Friction plate | GB. 5291 supplied | RE. 10695 |
| Centre plate | RG. 7068 in | RG. 7348 |
| Cover Assembly | RG. 7069) exchange or) for RE. 17585) | RG. 7071 |

ALL COMMUNICATIONS SHOULD BE ADDRESSED TO:

BENTLEY MOTORS (1951) LTD, PYMS LANE, CREWE, ENGLAND

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IMPROVED CLUTCH CENTRE PLATE - RH. 7199

With the introduction of the improved clutch centre plate (RH. 7199), it has become necessary to revise the settings for the release lever height adjustment and the pedal free travel measurement.

The revised settings are as follows:-

Release lever height adjustment : 2.155 in.

Pedal free travel measurement ;
(With the pedal set in the centre
notch position): 1.500 in.

For the necessary instructions on adjustment of these settings refer to the Service Handbook.

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