

Chapter 27A

GENERAL INFORMATION

(relating to detail inspection)

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THIS CHAPTER, which is applicable to the Ghost 48 Mk. 1, 48 Mk. 2, and 53 Mk. 1, contains information of a general nature in respect of the detail inspection of the majority of engine components. Separate chapters are provided for each main assembly, or group, and these chapters describe any special methods which may be necessary to carry out the dimensional checks detailed in the Table of Fits and Clearances (Chapter 38), and also the use of special tools and equipment. Information is contained in these chapters, or in chapters 28 to 31, to assist in determining whether components are fit for further service, may be repaired, or must be rejected. Where applicable, reference is made also to the appropriate repair scheme (T.R.), and details are given of defects which may require specific consideration during inspection.

During the dismantling of the engine, and its sub-assemblies, components will have been subjected to a general examination for signs of scoring, fretting, or burning through undue friction. Such defects are more readily detected before cleaning, due to the sludge formed from oil, and to loosened surface deposits. In the case of fretting, even when no oil is present, the powder formed by the rubbing of surfaces is plainly visible. Special attention, therefore, should be given to components in which defects of this nature were recorded during dismantling.

The necessity for systematic, and scrupulous inspection of components cannot be over emphasized, as the result of this will determine the degree of serviceability, and whether a component is repairable, or should be rejected as beyond economical repair. Components should be laid out on the inspection benches in their respective assemblies, so that those which have a direct relationship to each other may be viewed side by side.

To serve as a reference for comparison, it is an advantage to retain certain scrapped components. These can be used, in instances where difficulty may arise, in deciding acceptance or rejection standards when scored, fretted, and corroded parts are being inspected.

Before commencing inspection, entries in the log book should be read for any information which may indicate an abnormal condition in the life of the engine since the previous overhaul. For instance, if a heavy landing is recorded, special attention should be paid to components which experience has proved will be affected by shock-loading. Similarly, reference to overheating, or under-lubrication, will indicate where particular defects may be anticipated.

A hardness test on components will not be necessary unless signs of overheating are evident: general information, and the requirements for these tests, are described at the end of this chapter.

During visual inspection, all components must be examined carefully for cracks. Particular attention should be given to those parts which are not normally submitted to crack detection, but this process may be applied to any such parts at the discretion of the inspection authority.

MODIFICATIONS

Details of modifications are issued in the form of Modification News Sheets which, in conjunction with the Technical News Sheets issued by the Service Department of The de Havilland Engine Company, provide information of current developments in design and technique. A check should be made to ensure that all essential modifications are embodied, and that additional modifications, which are to be incorporated dur-

ing repair or reassembly, as appropriate, are listed. All redundant parts should be withdrawn, to avoid unnecessary time being spent on the inspection, or repair, of components which will be rejected during the reassembly of the engine.

DIMENSIONAL CHECKS

All the necessary dimensional checks of components which are subject to wear or distortion are listed in the Table of Fits and Clearances, and wherever the term "within the limits" is used in the text, it implies that reference must be made to the Table. It is assumed that all the dimensional checks specified in the Table will be carried out, and, therefore, apart from describing any special methods which may be necessary, the following chapters do not detail the specific checks. Tools and equipment are referred to as they are used.

To avoid multiplicity of plug gauges, the gauging of internal diameters is based on the use of a range of setting rings, and suitable comparators. The requirements of the Table of Fits and Clearances are such that it is necessary to know the internal diameter of each bore, and the external diameter of the mating part. This cannot be achieved with plug gauges, which merely divide bores into those which are within the largest permissible worn dimension, and those which exceed that dimension. Furthermore, this type of gauge can give little or no indication of ovality, taper, or wear which has occurred within the bore, but which has not affected the end diameter. These disadvantages are eliminated by the use of setting rings, and, since these do not need to be the exact diameter of the bore which is to be checked, only a limited range of rings is required. An additional advantage is that small dimensional changes, such as those introduced by modification, do not necessitate the use of new setting rings. These setting rings, each of which has its internal diameter to four places of decimals marked on it, are used in conjunction with standard comparators, such as a John Bull Intercheck for small bores, or a standard cylinder gauge for large bores. To measure the diameter of a bore, the comparator contacts are placed in the appropriate setting ring, and the dial indicator is set to zero. The comparator is then transferred to the bore which is to be measured, and the amount by which that bore differs from the setting ring will be indicated on the dial, either plus or minus. This reading may be taken at any position within the bore, and from this reading the precise diameter at any point can be calculated. As stated already, the diameter of the setting ring need not be the exact nominal diameter of the bore to be measured, but, in practice, a setting ring which has an internal diameter within 0.025 inch of that nominal should be selected.

To measure an internal diameter by means of a John Bull Intercheck small bore gauge, proceed as follows:—

1. Press the trigger on the gauge, thus enabling the contacts to be inserted into the setting ring.

2. Release the trigger to allow the contacts to expand into the bore of the setting ring.
3. Rock the instrument axially to determine the true reading.
4. Set the dial indicator to read zero.
5. Press the trigger to release the contacts, and, without altering the setting of the dial indicator, transfer the gauge to the bore which is to be measured.
6. Release the trigger, and rock the gauge axially to ensure a true reading.
7. Note the reading on the dial, and calculate, by direct addition or subtraction, the diameter of the bore. Compare the resultant dimension with that specified in the Table of Fits and Clearances.

When using the gauge for small bore measurement, a greater degree of control is obtained by removing the pistol grip, and turning the trigger to the position which allows the finger-piece to lie parallel with the body of the gauge.

PROTECTIVE FINISHES

Plating, enamelling, and other manufacturing processes, are classified as protective finishes. If, during the rectification of surface defects, the protective finish of a component has been damaged, or partially removed, the finish must be completely removed from the part, and the appropriate process reapplied. Reference should be made also to chapters 28 to 32 for any special instructions which may be applicable.

CORROSION

It is not possible to define precise limits of acceptance, or rejection, of corroded components, but the conditions described in the following subparagraphs will serve as a general guide to this type of defect.

1. Surface corrosion may be recognised by erosion of the surface, which is accompanied by a change in colour of the material, together with the formation of a flaky or powdery substance; resultant pitting and roughening of the underlying surface will also be found. The powdering and flaking reduces the thickness, and consequently the strength, of the material, but this type of corrosion can be readily observed.
2. The colour of the deposit resulting from surface corrosion differs from that of the original metal. Reddish-brown rust, and the characteristic darkish red-brown product of fretting corrosion, occur on steels; whitish or greyish powder on aluminum and its alloys; greenish powder on copper.
3. Corrosion on joint faces, if greater than

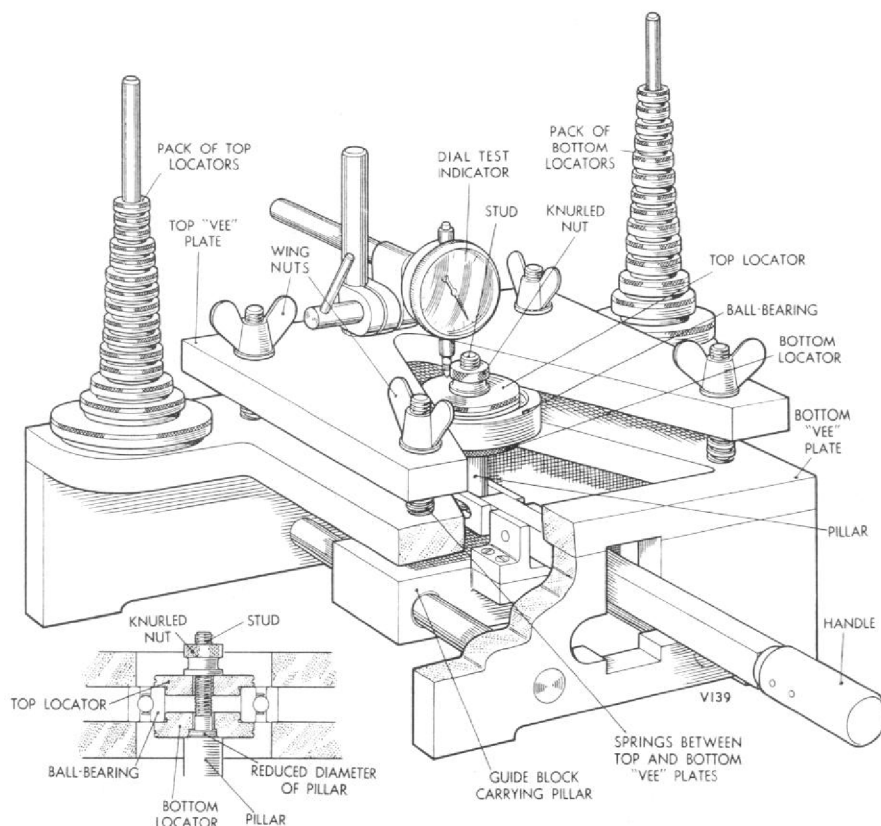


Fig. 1. Ball-bearing end float checking fixture.

10 per cent of the width, will render a component unserviceable.

4. Small areas of corrosion may be blended, but the depth of metal removed must not exceed 10 per cent of the section thickness.
5. Intercrystalline corrosion, although not as common as surface corrosion, is exceedingly dangerous, and is more difficult to detect. It attacks metals internally, often following a thin crack and spreading in all directions, thus making the material weak and brittle; light alloys, and stainless steels are particularly prone to attack. Corrosion of this type may be observed as microscopic pit marks in the material, which, at these points, is dull in colour, and tends to be of a loose, flaky nature. A component, in which the slightest sign of intercrystalline corrosion exists, must be rejected.

ACCESSORIES AND FUEL SYSTEM COMPONENTS

Engine accessories, and fuel system components should be inspected in accordance with the instructions contained in chapters 39 to 52 inclusive.

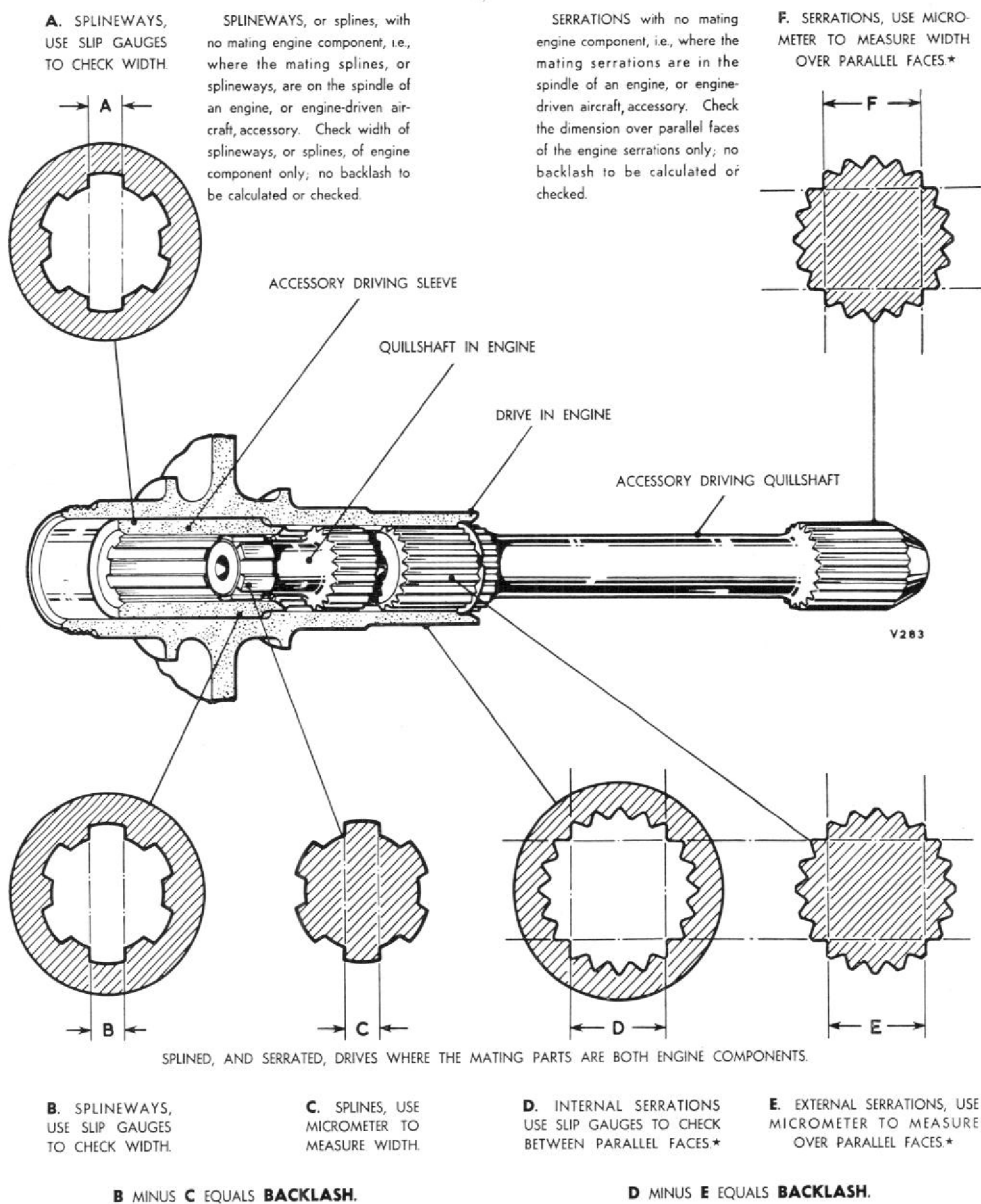
BALL BEARINGS

When specified, the end float of ball-bearings must be checked using fixture T.72851, Fig. 1. This fixture is suitable for checking any size of ball-bearing which comes within the range of locators provided with the fixture. To check the end float of a ball-bearing, proceed as follows:—

1. Select a locator from the pack of top locators, and a locator from the pack of bottom locators, ensuring that the smaller diameter on each locator is a reasonable fit in the bore of the inner race of the ball-bearing.

The reduced portion on the pillar is machined to a diameter of 0.589 inch, to serve as a bottom locator when the smallest size of ball-bearing is being checked.

2. Assemble the selected bottom locator over the pillar, so that the recess in the bottom face of the locator fits over the shoulder formed on the pillar.
3. Assemble the ball-bearing over the pillar, so



*To ascertain the parallel faces in any set of serrations, divide the total number of serrations by four and measure over that number of serrations.

Fig. 2. Method of checking wear in splined and serrated drives.

that its inner race locates on the spigot of the bottom locator.

4. Assemble the selected top locator over the pillar so that its spigot locates in the inner race of the ball-bearing.
5. Screw the knurled nut on to the pillar, and tighten to secure the inner race of the bearing between the two locators.
6. By means of the handle, move the guide block, which carries the pillar and assembled ball-bearing, until it is so positioned that the outer race of the ball-bearing can be clamped between the top and bottom Vee plates. Ensure that the Vee plates are clear of the inner race, which must be free to move.
7. Screw down the four wing nuts to secure the outer race of the ball-bearing between the Vee plates.
8. Position a dial test indicator so that its stylus rests on the top locator, and set the D.T.I. to read zero.
9. Raise the handle to the full extent of its movement, and read off the amount of end float on the D.T.I.

CASTINGS

Castings must be examined thoroughly for cracks, particular attention being given to the areas surrounding studs, bolt and dowel holes, internal webs, and bearing housings. Accessory mounting faces must be checked for bruising, nicks, burrs, and scores; such defects, if not too extensive, can be removed by blending. Where applicable, special tests for checking distortion are given in the chapter which deals with the sub-assembly concerned. All protective finishes must be examined carefully to ensure that the film is undamaged. Castings to which the chromate process has been applied include the air-intake, the centre housing, the diffuser casing and rear cover, the sealing plate, the top and bottom wheelcases, the oil pump body and cover, and the oil sump; any small areas of damage to the chromate finish on these components may be rectified by the application of selenious acid.

FLANGES AND MATING SURFACES

Flanges, and mating surfaces must be examined for distortion, flatness of abutment faces, and ovality, and they must conform to the limits shown in the Table of Fits and Clearances. Examine also for corrosion, fretting, and cracks, care being taken that the latter are not mistaken for surface defects. As a general rule, defects which can be removed by filing, scraping, and blending, followed by the use of twill crocus cloth and fine steel wool, can be accepted, provided that the wall thickness has not been seriously reduced. In the case of joint faces, only a small amount of corrosion is acceptable, but where joint washers are fitted, larger areas of surface pitting are permis-

sible; in each instance, however, consideration must be given to the operating pressure to which the joint is subjected.

SERRATIONS AND SPLINES

Serrations, and splines must be examined for picking-up, corrosion, pitting, stepping, wear, damage, and for signs of overheating. Use a micrometer to measure the width of each spline on male components (C in Fig. 2). Use slip gauges to check the width of each splineway in female components (B). Calculate the backlash by subtracting the width of the splines (C) from that of the mating splineways (B). Where serrations are concerned, use a micrometer to measure across parallel faces on male components (E), and use slip gauges to check between parallel faces in female components (D). Generally, throughout the chapters which follow, the number of serrations across or between which parallel faces occur, are stated in the text, but where this information is not given, it can be ascertained by dividing the total number of serrations by four. Calculate the backlash between mating serrations by subtracting the width across the male serrations (E) from that between the female serrations (D). In all instances, measurements must be made at several points along the splines, splineways, or serrations, and at several positions around the circumference, to ensure that the point of maximum wear is identified, and that it is within the limits. Where the backlash is not within the limits, consideration of the measured dimensions will enable the Inspector to decide whether the male or the female component must be renewed; in some instances, the rejected component can be mated with a component in another engine, provided that it has not been worn beyond the permissible worn dimension, and that the resultant backlash is within the permissible worn limit. Whilst it is possible, in some cases, to measure the backlash between mating components by direct methods, such as those employed when checking the backlash in gear trains, it will be found more convenient and accurate to ascertain the backlash by calculation, as described above.

Direct measurement of the amount of backlash between splined, or serrated, mating parts may be carried out by the use of backlash checking fixture T.79522, Fig. 3, and its associated tools.

The fixture consists of a base plate to which is attached a vertical pillar carrying two arms, one above the other, each of which is adjustable for height. The gear, and its mating shaft, are fitted together and placed in position between the two arms, so that the gear is held securely in a split adapter fitted to the upper arm, whilst the shaft is supported at its lower end on a centre fitted to the lower arm. A backlash flag is secured to the shaft, and a dial test indicator, which is attached to the fixture, is adjusted until its stylus makes contact with a datum point on the flag. Rotation of the shaft, and consequent movement of the backlash flag, results in a reading on the D.T.I. which is a multiple of the amount of backlash in the mating parts. To serve in instances where the mating

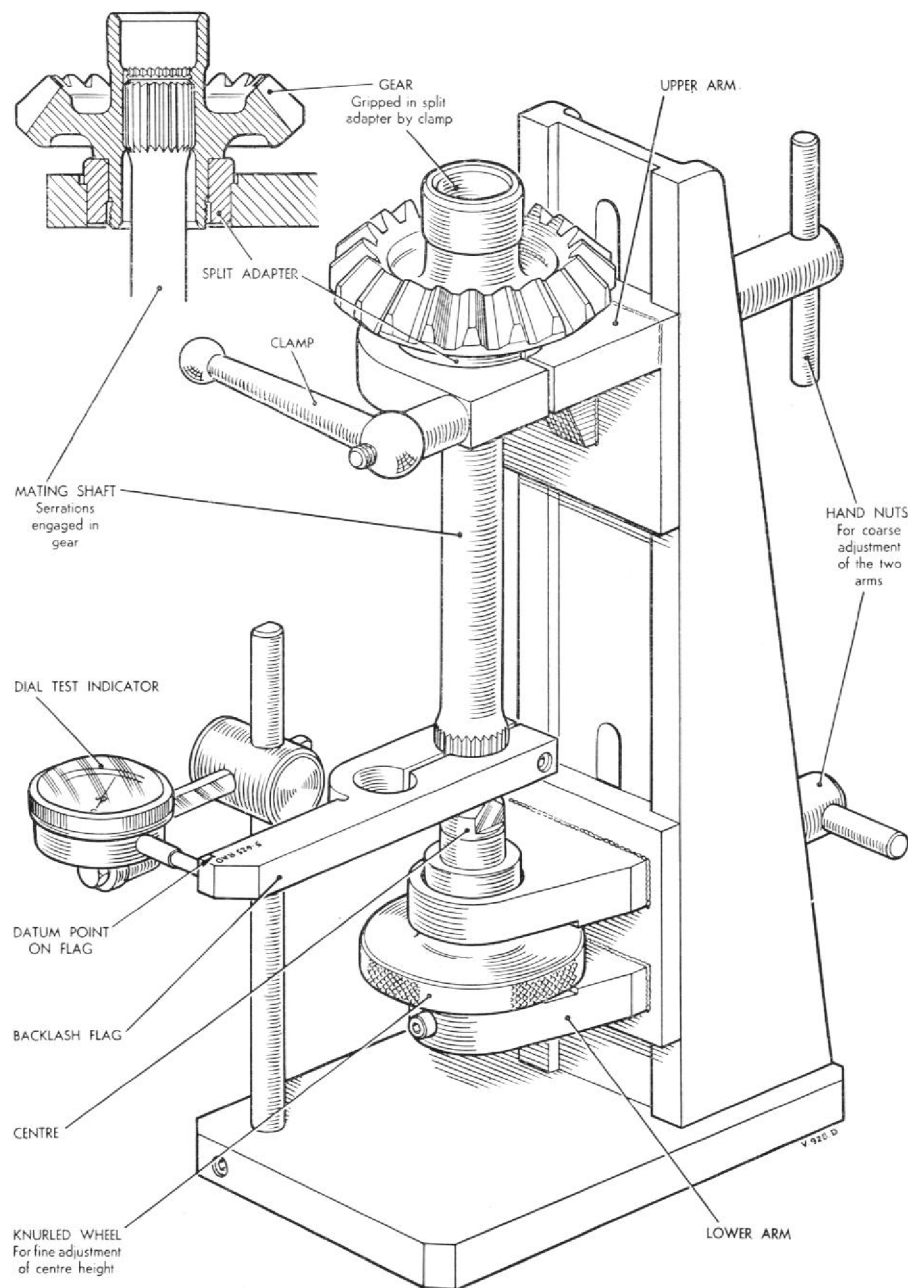


Fig. 3. Checking the backlash in mating parts.

shaft forms part of an engine-driven accessory, master shafts are provided.

The table on the facing page lists those parts of the 48 Mk. 2, and 53 Mk. 1, which should be checked for backlash, and also shows the appropriate tooling required to carry out the checks.

To measure the backlash in mating parts, Fig. 3, proceed as follows:—

1. Insert the locating peg of centre T.79529 into the recess in the carrier, which forms part of the lower arm of backlash checking fixture T.79522. Secure the centre in position by
2. Refer to the table on the facing page, and select the backlash flag appropriate to the parts which are to be checked.
3. With its mating end uppermost, insert the lower end of the shaft, which forms part of the mating pair, into the hole in the flag adjacent to the clamping bolt; ensure that the datum point marked on the flag is uppermost. Secure the flag in position on the splines, or serrations, by tightening the $\frac{1}{4}$ inch B.S.F. nut,

screwing in, and tightening, the $\frac{1}{4}$ inch B.S.F. bolt which is situated in the underside of the arm.

<i>Sub-assembly</i>	<i>Part</i>	<i>Split adapter Fig. 3 & 4</i>	<i>Master shaft Fig. 4</i>	<i>Backlash flag Fig. 3 & 4</i>	<i>Datum point on flag</i>	<i>Backlash = D.T.I. read- ing divided by</i>
Air-intake	Upper vertical drive shaft, and starter dog	T.79511	Not required	T.79523	5.625 inch rad.	10
Air-intake	Lower vertical drive shaft, and lower gear	T.79520	Not required	T.79524	3.75 inch rad.	10
Centre housing	Upper vertical drive shaft, and bevel gear	T.79513	Not required	T.79523	5.625 inch rad.	10
Centre housing	Lower vertical drive shaft, and bevel gear	T.79512	Not required	T.79524	3.75 inch rad.	10
Top wheelcase	Gear for generator drive shaft	T.79521	T.79530	T.79525	4.375 inch rad.	10
Top wheelcase	Coupling for generator shaft	T.79510	T.79530	T.79525	4.375 inch rad.	10
Top wheelcase	Bevel drive gear for compressor drive shaft	T.79514	T.79531	T.79524	5.00 inch rad.	20
Oil sump	Fuel pump driving gear on quillshaft (53 Mk. 1 only)	T.79519	T.79532	T.79526	6.25 inch rad.	20
Oil sump	Hydraulic pump quillshaft sleeve	T.79516	T.79531	T.79524	5.00 inch rad.	20
Oil sump	Fuel pump drive sleeve (53 Mk. 1 only)	T.79518	T.79534	T.79526	6.25 inch rad.	20
Oil sump	Oil pump driving gear on quillshaft	T.79520	T.79533	T.79524	5.00 inch rad.	20
Oil sump	Oil pump driving gear sleeve	T.79515	T.79533	T.79524	5.00 inch rad.	20
Oil sump	Hydraulic pump and oil pump driving gear on quillshaft	T.79517	T.79534	T.79524	5.00 inch rad.	20
Oil sump	Driving gear for blank drive (53 Mk. 1 only)	T.79520	T.79534	T.79526	6.25 inch rad.	20

- Refer to the table, and select the appropriate split adapter from those listed. The larger outside diameter on the adapter is provided to fit into the recessed bore in the upper arm of the fixture, and this must be borne in mind when the adapter is assembled to the gear, as described in the following operation.
- Insert the mating gear into the bore of the split adapter, so that when the latter is fitted into the upper arm, the mating end of the gear will be in the lower position.
- Release the hand nut on the upper, and on the lower arm, and adjust the position of the arms, until the distance between them is approximately equal to the length of the mated parts. Tighten the hand nuts to secure the arms in position.
- With the backlash flag parallel with the arm which carries the dial test indicator, hold the shaft with its mating end uppermost, and place its lower end onto the centre which was fitted to the lower arm. Simultaneously, insert the split adapter, and the gear, into the bore in the upper arm, so that the mating end of the shaft enters the splines, or serrations, in the gear. Some adjustment to the position of the upper, or lower, arm may be necessary to enable this operation to be carried out.
- Tighten the clamp to secure the split adapter, and the gear, in position in the upper arm.
- To ensure that accurate readings are obtained, it is essential that the shaft is positioned in its normal working relationship with the gear, and for this purpose a vernier adjustment is provided in the lower arm. Rotate the knurled wheel to raise, or lower, the shaft until the correct position is obtained.
- Rotate the shaft to the limit of its movement in an anti-clockwise direction.
- Refer to the table for the appropriate datum point on the backlash flag, and adjust the

position of the D.T.I., until the point of its stylus makes contact with the side of the flag adjacent to the engraved mark which indicates that datum point. Set the indicator to read zero.

12. Rotate the shaft to the limit of its movement in a clockwise direction. Note the indicator reading.
13. Refer to the last column in the table, and select the figure appropriate to the parts which are being checked. The reading obtained in operation 12, divided by the figure selected, will indicate the amount of backlash in the mating parts.

To measure the backlash in a gear, or coupling, where the mating shaft forms part of an engine-driven accessory, Fig. 4, proceed as follows:—

1. As operation 1 in the previous paragraph.
2. As operation 2 in the previous paragraph.
3. Refer to the table, and select the master shaft appropriate to the part which is to be checked.
4. With its splined, or serrated, end uppermost, insert the lower end of the master shaft into the hole in the flag adjacent to the clamping bolt; ensure that the datum point marked on the flag is uppermost. Secure the flag in position on the shaft, Fig. 4, by tightening the $\frac{1}{4}$ inch B.S.F. nut.
5. As operation 4 in the previous paragraph.
6. As operation 5 in the previous paragraph.
7. Release the hand nut on the upper, and on the lower arm, and adjust the position of the arms until the distance between them is approximately equal to the length of the master shaft, and the gear, when mated together. Tighten the hand nuts to secure the arms in position.

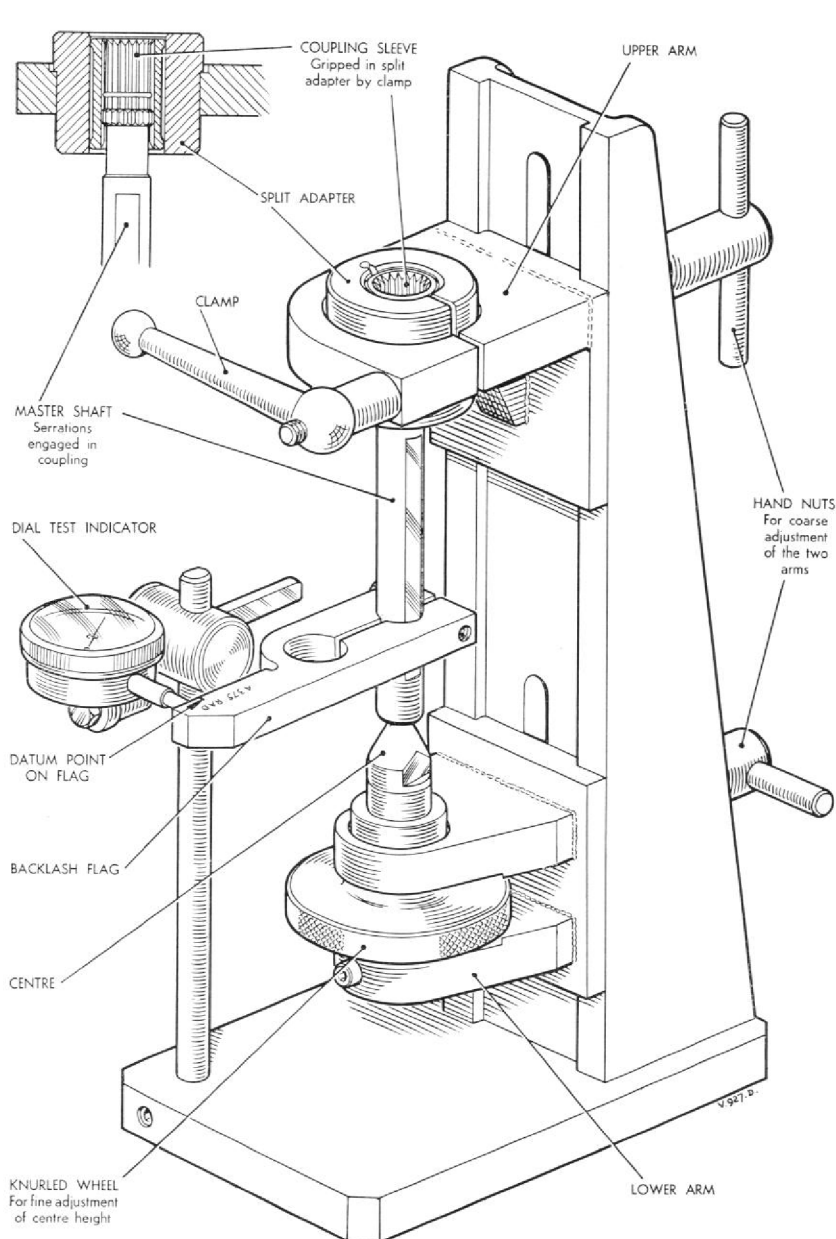


Fig. 4. Checking the backlash in a part, using a master shaft.

8. With the backlash flag parallel with the arm which carries the D.T.I., hold the master shaft with its splined, or serrated, end uppermost, and place its lower end onto the centre which was fitted to the lower arm. Simultaneously, insert the split adapter and the gear into the bore in the upper arm, so that the splines, or serrations, on the master shaft enter those in the gear. Some adjustment to the position of the upper, or lower, arm may be necessary to enable this operation to be carried out.
9. As operation 8 in the previous paragraph.
10. As operation 9 in the previous paragraph.
11. As operation 10 in the previous paragraph.

12. As operation 11 in the previous paragraph.
13. As operation 12 in the previous paragraph.
14. Refer to the last column in the table, and select the figure appropriate to the part which is being checked. The reading obtained in operation 13, divided by the figure selected, will indicate the amount of backlash in the gear, or coupling.

Where the mating component forms part of an engine-driven accessory, no backlash figures are given in the Table of Fits and Clearances, and in these instances the engine component must be accepted, or rejected, as a result of the direct measurement only (A, or F in Fig. 2).

In instances where splines, or serrations, are employed between two engine components which are rigidly secured together, no relative movement should take place, and, consequently, no dimensions are given in the Table of Fits and Clearances in respect of such parts. Therefore, the parts should be accepted, or rejected, as the result of visual inspection only; whenever possible, the two parts should be fitted together, and checked for picking-up, or for undue slackness.

GEARS

All gears must be examined for overloading, wear at the contact faces of the teeth on the pitch circles, signs of interference or incorrect meshing, pitting, chipping of teeth, breaking down of the case-hardened surface, and signs of overheating due to under-lubrication. Wear will be shown by a hard bearing line on the pitch circle, or a rough surface, on the teeth. Slight wear should be rectified by careful stoning. A hardness test must be applied to gears which show evidence of overheating.

SHAFTS

Shafts must be inspected for distortion, fretting, corrosion, stepping and twisting of splines or serrations due to wear, or shock-loading, and for scores. The alignment of splines, or serrations, at each end of a shaft should not be used as a check for twist, since they may not have been machined at one setting, and, therefore, may not be in line with each other; stepping, or twisting will necessitate rejection of the component. Threads should be inspected for condition. A hardness test must be applied to shafts which show evidence of overheating.

STANDARD ITEMS

Standard items, such as bolts etc., must be examined for distortion, stretching, and for the condition of threads. Studs should be checked for squareness to the relative face. Special fitting bolts, and dowels should be examined for scores, and burrs. Nuts should be examined for damage to flats, and corners, due to the misuse of tools. Examine the slots of slotted nuts for damage.

DISTORTION CHECKS

Normally, checks for distortion will not be necessary, except for certain components which are subject to high temperatures, or where the design

is such that distortion can occur due to malalignment. Details of any necessary checks are contained in the chapter which deals with the sub-assembly concerned.

HARDNESS TESTING

The table below lists the specifications of steels used in the manufacture of gears, shafts, etc., which are fitted in Ghost engines, together with the corresponding minimum hardness figures. This table is intended to provide only a guide to the serviceability of components manufactured from these materials. Owing to the range over which temperature limitation exists in an air hardening steel, such as S.28, a component which is manufactured from this type of material, and which shows signs of discolouration, should be checked for hardness.

TABLE OF MINIMUM HARDNESS VALUES

<i>Material specification</i>	<i>Minimum specification hardness figure, V.P.N.</i>
S.11	250-310
S.14	800
S.15	750
S.28	470
S.70	200-260
S.80	250-335
S.82	700
S.84	90-130
S.93	150-220
S.96	250-310
S.99	380-440
S.106	800
T.26	90
D.H.E.215	385
D.T.D.364	120

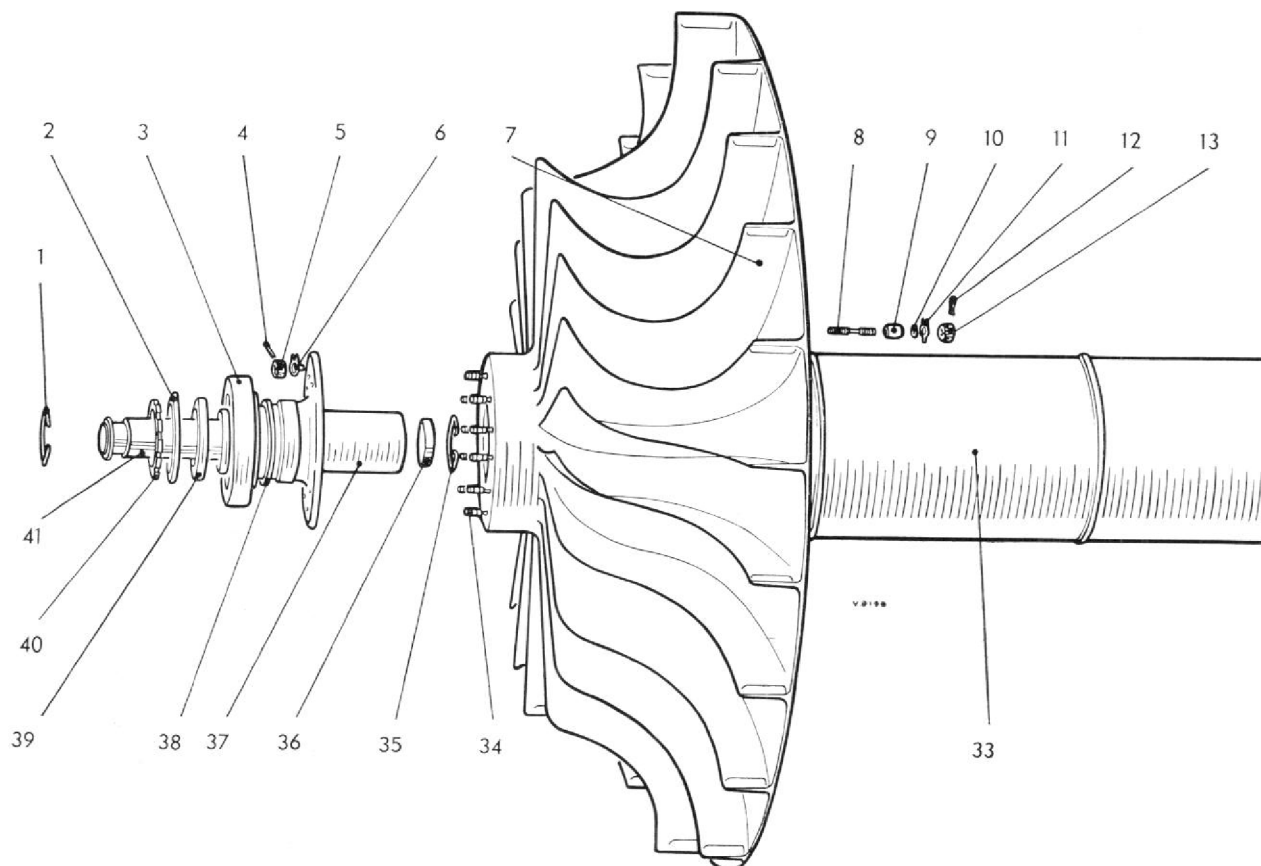
Certain components which have been subjected to overheating must be submitted to a hardness test, to ascertain their suitability for further service. Steel components which may require such a test are those which have been case-hardened, or have been manufactured from heat-treated alloy steels. Components such as turbine blades, flame tubes, and those which form the exhaust system, being manufactured of nimonic alloys, are intended to withstand high temperatures, and hardness test of such components is not considered to be necessary.

With heat-treated alloy steel components, no physical change in the material is likely to occur below a temperature of approximately 650 deg. C., and, therefore, the hardness figure is unlikely to be affected. Temperatures above this figure will result in such severe distortion, and scoring of the part, that its rejection will be necessary. At lower temperatures, if the heat has not been sufficient to cause distortion, the only effect will be to cause discolouration. Usually, this is caused by carbonised oil, and, provided that it can be removed with a rag soaked in kerosene, overheating of the material is not indicated. In such instances, a probable drop of up to 5 per cent below the bottom hardness limit may occur, but this is acceptable. If a component has been subjected to a temperature sufficiently high to reduce the hardness figure below the 5 per cent tolerance,

the effect will be obvious by the general distortion of that component.

Case-hardened parts are more susceptible to changes in hardness due to high temperatures.

The hardness of parts should be checked on a Vickers diamond pyramid machine with a load of 30 Kg. Normally, a drop of 5 per cent in the V.P.N. hardness figure below the bottom limit shown on the drawing, or on the specification, can be accepted.



Key to Fig. 1 of Chapter 27B.

- | | |
|--|---|
| 1. Seeger circlip for accessory drive shaft. | 21. Two bolts for turbine disc. |
| 2. Cup-washer for front bearing nut. | 22. Eight nuts for turbine disc bolts. |
| 3. Front bearing. | 23. Two tab-washers for turbine disc nuts. |
| 4. Ten split pins for front pivot nuts. | 24. Bladed turbine disc. |
| 5. Ten slotted nuts for front pivot studs. | 25. Hub shaft. |
| 6. Ten tab-washers for front pivot studs. | 26. Eight bolts for turbine disc. |
| 7. Impeller. | 27. Rear bearing. |
| 8. Twelve studs for centre shaft. | 28. Two shielding washers for rear bearing. |
| 9. Twelve locating dowels for centre shaft. | 29. Pressure plate. |
| 10. Twelve plain washers for centre shaft studs. | 30. Nut for hub shaft. |
| 11. Twelve tab-washers for centre shaft studs. | 31. Tab-washer for hub shaft nut. |
| 12. Twelve split pins for centre shaft nuts. | 32. Circlip for hub shaft nut. |
| 13. Twelve slotted nuts for centre shaft studs. | 33. Centre shaft. |
| 14. Sixteen bolts for centre shaft to extension shaft. | 34. Ten studs for front pivot. |
| 15. Sixteen tab-washers for centre shaft bolts. | 35. Circlip for accessory drive shaft plug. |
| 16. Sixteen plain nuts for centre shaft bolts. | 36. Plug for accessory drive shaft. |
| 17. Extension shaft. | 37. Front pivot. |
| 18. Distance piece for rear bearing. | 38. Adjusting washer for front bearing. |
| 19. Locking ring for turbine disc bolts. | 39. Spacer for front bearing. |
| 20. Two tab-washers for turbine disc bolts. | 40. Nut for front bearing. |
| | 41. Accessory drive shaft. |

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