TACHOMETER GENERATORS, TYPE 122 RV/SB, 122 RV/2 and 162 RV/SB

GENERAL AND TECHNICAL INFORMATION

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CONTENTS

Chapter 1

GENERAL DESCRIPTION

Introduction

1. The tachometer generators, Type 122 RV/SB, 122 RV/2, and 162 RV/SB, are constructionally similar and operate on the same principle. Variations peculiar to each type of generator are described in subsequent chapters.

DESCRIPTION

General

2. Each generator comprises, basically, a 2-pole permanent magnet rotor, a three-phase stator and an output plug, housed in a two-part, die-cast body. The rotor shaft is supported by two bearings and the front end of the shaft is provided with driving splines, which mesh with a splined drive on the engine. The leads of the three-phase, star-connected stator are attached to three pins of a 4-pin Breeze plug, the fourth pin of the plug being unused, or a 3-pin Cannon plug.

Rotor

3. The front face of the rotor bears against a stepped collar on the shaft and a spacer is located between the rear face of the rotor and the front face of the rear bearing. An oil seal and its retaining ring are located in the front housing of the tachometer generator, Type 162 RV/SB to prevent engine oil seeping into the stator winding. Similarly a grease cap and sealing washer are located over the rear end of the rotor shaft, to prevent the ingress of oil and grease.

OPERATION

4. Rotation of the tachometer generator rotor, by the engine, induces an electrical current in the generator stator windings. This current is fed, via the terminal block or output plug and an inter-connecting lead to the associated tachometer indicator.

SERVICING

5. The rotor bearings are pre-greased and therefore do not require subsequent lubrication. The only routine servicing required is periodic examination for damage and security of components.

6. Prior to installation, or at any time that serviceability of the generator is suspect, it should be subjected to the tests given in Chapter 2. These tests should also be carried out at reinspection periods at Equipment Depots.

Chapter 1-1

TACHOMETER GENERATOR

TYPE 122 RV/SB and 122 RV/2

LEADING PARTICULARS

Weight	1 lb 10 oz
Speed range	0 to 5 000 rev/min
Ref. No. 122 RV/SB	6A/4280
122 RV/2	6A/TBA

Introduction

1. Type 122 RV/SB and 122 RV/2 tachometer generators are identical in construction and operation except for connectors. Type 122 RV/SB is fitted with a Breeze plug and Type 122 RV/2 has a Cannon plug. Both types are used in conjunction with single tachometer indicators, of the drag cup type, to provide an indication of engine speed in revolutions per minute (rev/min).

DESCRIPTION

Generator body (fig.1)

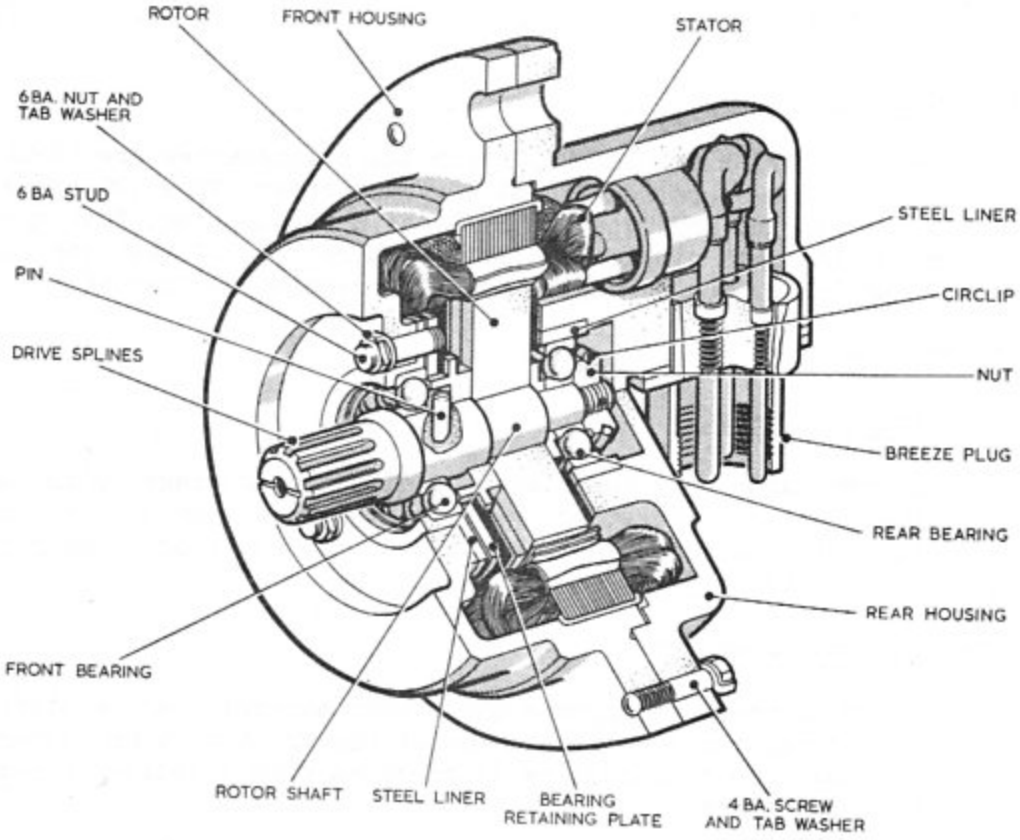
2. The generator body comprises two die cast housings, which are registered by a spigot and held together by six 4BA hexagon head screws, locked by tab washers. Jointing compound is applied to the abutting flanges of the body to obtain an oil tight joint.

Front and rear housings

3. The front housing supports the stator assembly, and a steel liner, located in a central bore in the end of the front housing, accommodates a front bearing; the rear housing is provided with a similar steel liner, to support a rear bearing.

Bearings

4. Three 6BA studs, fitted with tab washers, pass through the front housing and steel liner to secure a bearing retaining plate in position at the rear of the front bearing. The rear bearing, which is retained by a nut locked by a circlip, is free to move axially in its lining to permit thermal expansion.



NOTE :- 4-PIN BREEZE PLUG FITTED TO TYPE 122 RV/SB ONLY.
3-PIN CANNON PLUG FITTED TO TYPE 122 RV/2.

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Fig.1. Tachometer generator, Type 122 RV/SB and 122 RV/2

TABLE 1

List of Modifications

Mod No.	Type	Brief Description
Inst. A.325	106 RV/SB	To facilitate locking of Breeze plug.

Chapter 1-2

TACHOMETER GENERATOR

TYPE 162 RV/SB

LEADING PARTICULARS

Weight	2 lb 13 ozs
Speed range	0 to 500 rev/min
Ref.No. 162 RV/SB	6A/6720

Introduction

1. Tachometer generator, Type 162 RV/SB, is used in conjunction with tachometer indicator Type KTD 6701 for displaying percentage engine speed.

DESCRIPTION

Generator body

2. The generator body, comprises two di-cast housings, secured together by, four 46A hexagonal headed screws locked with tab washers. A jointing compound between the abutting flanges of the body provides an oil-tight joint.

Front and rear housing

3. The rear housing supports the stator assembly, and a sleeve, inserted into the central bore of the rear housing, accommodates a rear bearing, which is retained in position by a nut and a circlip. A front bearing is inserted into a bearing housing, which is attached to the forward end of the front housing by three 4BA studs, fitted with tab washers and hexagonal nuts. The pre-greased front and rear bearings support the rotor shaft coaxial with the stator.

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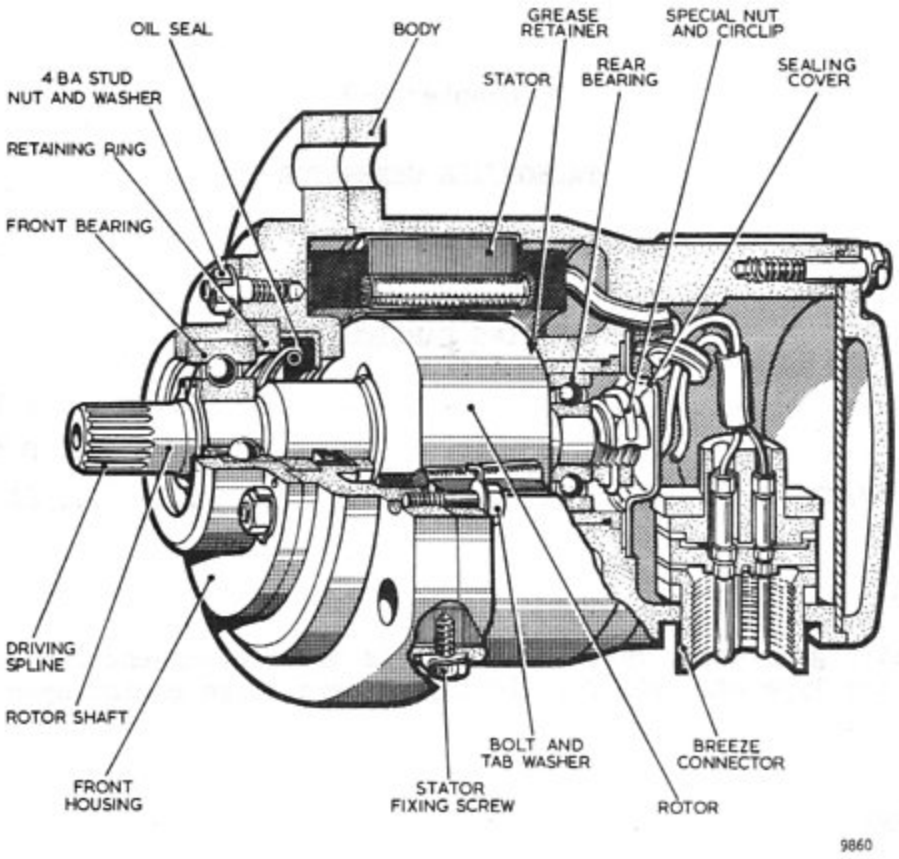

Fig.1. Tachometer generator - cutaway view

Chapter 2

STANDARD SERVICEABILITY TEST

for

TACHOMETER GENERATORS

TYPE 122 RV/SB, 122 RV/2 AND 162 RV/SB

Introduction

1. The tests detailed in this chapter are to be applied to the above mentioned equipment immediately prior to installation in aircraft, or if serviceability is suspect. The tests are also to be applied at reinspection periods at Equipment Depots. Any tolerances specified are not to be exceeded.

Test equipment

2. The following test equipment is required:-

(1) Tester insulation resistance, Type C (REF.No.5G/152).

(2) A Serviceable, compatible tachometer indicator.

(3) Dual tachometer tester (Ref.No.6C/3000, 6C/2391 or 6C/2392).

(4) Tachometer tester, bench type (Ref.No.6C/1879 or 6C/1880). alternative to item (3).

(5) Tachometer calibrator, Mk.2 (Ref.No.6C/869). alternative to item (3).

TEST PROCEDURE

Insulation resistance test - room temperature

Continuity test

3. Using a low-voltage ohmmeter connected across each pair of pins in turn, check that the resistance between each phase is 15.5 ±1.0 ohms (Type 162 RV/SB), or 27.5 ±1.5 ohms (Type 122 RV/SB, and 122 RV/2).

Insulation resistance test - room temperature

4. Before the generator undergoes its synchronization and ranging tests, measure the insulation resistance between pin A and the body, in turn. The resistance in each instance must not be less than two megohms at 250V.

Synchronization and ranging tests

5. Turn the generator by hand to ensure that it rotates freely. Mount the generator on the tester or calibrator, then connect the generator to the compatible indicator. Switch on the test equipment, and allow the generator and indicator to run at approximately 2/3 of the full scale range of the indicator for 10 minutes. At the end of the exercising run, slowly reduce the speed to zero.

6. To check the synchronization of the generator and indicator, start the test equipment, and slowly increase the speed from zero. Check the speed at which the indicator synchronizes; this will be apparent by cessation of pointer oscillation, and must occur at the speed stated in the Standard Serviceability test applicable to the indicator being used.

7. Provided that the generator can be driven freely, and the generator and indicator synchronize at the specified speed, the generator will not possess any inherent inaccuracies, since it is frequency and not voltage which is being measured.

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