

AP 112G-1247-1

TACHOMETER, PERCENTAGE R.P.M., MK.11 & 12 (ELLIOTT TYPES)

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

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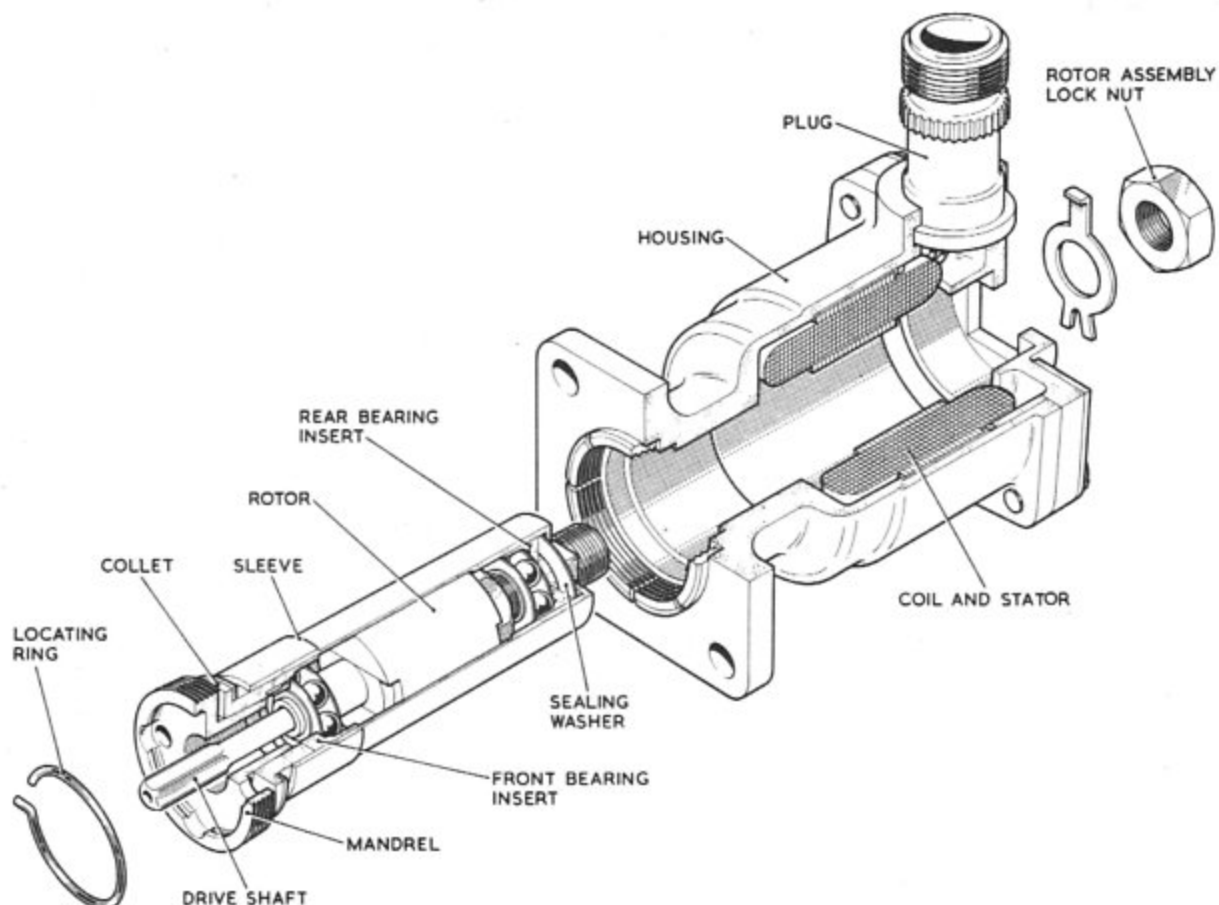
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Chapter 1-1

TACHOMETER GENERATOR, PERCENTAGE R.P.M., MK.12

Introduction

1. The tachometer generator Mk.12 (Ref.No.6A/4802) is provided for use with the percentage r.p.m. tachometer indicator Mk.11 (Ref.No.6A/3251). It is similar in construction to the Mk.11 except that it is designed to withstand higher operating temperatures up to 250 deg.C.



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Fig.1. Elliott type, exploded view

2. 
3. Smiths Mk.12, refer to A.P.112G-1209-13A6

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DESCRIPTION

4. This generator is similar in construction to the Mk.11 except that a sleeve has been added to cover the rotor as shown in fig.1. This seals off the coil and stator from the engine oil which lubricates the rotor bearings. The electrical socket is a special type and will not mate with plug provided for the Mk.11.

SERVICING

5. When required, the generator must be tested in accordance with the specification laid down for the Mk.11 generator in Chapter 2.

6. ▶◀

Chapter 2

STANDARD SERVICEABILITY TESTS

Introduction

1. The tests detailed in this Chapter are to be applied to the equipment prior to installation in aircraft, or if serviceability is suspect. The tests are also to be applied at re-inspection periods at Equipment Depots. Any tolerances specified are not to be exceeded.

Test equipment

2. The following test equipment is required:-

- (1) Tester, insulation (Ref.No.5G/9156675).
- (2) A serviceable, compatible generator.
- (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 in (3)

- (5) Tachometer calibrator, Mk.2 (Ref.No.6C/869)

Alternative to item in (3)

TEST PROCEDUREMethod of test

3. During the ranging tests, the indicator is to be mounted in the normal position, that is, with the dial upright and in the vertical plane. Light tapping of the indicator is permissible during the tests.

Insulation resistance - room temperature

4. Before the indicator undergoes its synchronization and ranging tests, measure the insulation resistance between each phase (pins A,B and C) and the body, in turn. The resistance in each instance must not be less than 2 megohms at 250V.

5. 

Ranging test - using the dual tachometer tester

6. Fit the 1: 0.44 adapter gearbox (Ref.No.6C/2656) to the tester. Attach the generator to the gearbox, then connect the indicator to the generator. If the generator is driven clockwise, pins A,B and C of the generator plug must be connected to pins A,B and C of the indicator. If the generator is driven counter-clockwise, pins A,B and C of the generator must be connected to pins A,C and B respectively of the indicator.

7. To check synchronization, slowly increase the generator speed from zero, and check that the generator and indicator synchronize at or before 10 per cent.

8. Fit the adapter gearbox (Ref.No.6C/3006) to the tester. Set the tester to run at the lowest speed given in Table 1, and check that the indicator is reading correctly. Repeat the test at the other points listed in Table 1. The lag, as shown by the difference in readings taken at increasing and decreasing speeds, must not exceed 1.0 per cent.

9. Change the attitude of the indicator during the ranging test, so that it is at 90 deg. clockwise, counter-clockwise, forward and backward to its original attitude. The difference in attitude must not cause the indicator to vary by more than 0.5 per cent for any point in the speed range.

TABLE 1

Conversion table

Test bench speed (rev/min)	Percentage indication (per cent)	Permissible error
1000	20	0.75%
1500	30	
2000	40	
2500	50	
3000	60	
4000	80	
5000	100	

Ranging test - using the tachometer tester - bench type

10. Using the adapter, Part No.1320, and a 1:1 gearbox attach the generator to the tester. Connect the indicator to the generator, using a suitable cable loom.

11. Before commencing the ranging tests, slowly increase the speed of the generator from zero, and check that the indicator and generator are synchronized before the indicator reads 10 per cent.

12. Set the test bench to run at the lowest speed given in Table 2, and check that the indicator is reading correctly. Continue these tests for all the points given in Table 2, at both increasing and decreasing speeds. The lag, as shown by the difference in readings taken at increasing and decreasing speeds, must not exceed 1.0 per cent.

TABLE 2

Test points and percentage reading

Test bench speed (rev/min)	Percentage indication (per cent)	Permissible error
800	19.05	} 0.75%
1000	23.81	
1500	35.72	
2000	47.62	
2500	59.55	
3000	71.44	
3500	83.35	
4000	95.26	
4200	100.00	

13. Change the attitude of the indicator during the ranging tests so that it is at 90 deg. clockwise, counter-clockwise, forward and backward to its original attitude. The difference in attitude must not cause the indicator to vary by more than 0.75 per cent at any point in the speed range.

Note...

If the adapter gearbox (Ref.No.6C/3006) is available, it can also be used with the tachometer tester - bench type. The instructions in para.8 and 9 will then apply to the bench-type tester.

Ranging test - using the tachometer calibrator, Mk.2

14. Attach the generator and indicator to the calibrator as detailed in A.P.112T-01151-1. The generator is mounted on the adapter gearbox, and the indicator in the support bracket. The two components are then connected by the cable looms.
15. Start the calibrator motor at minimum speed, then slowly increase the speed until the generator and indicator synchronize. This must occur at 10 per cent or less as shown on the indicator.
16. Check the accuracy of the indicator at the minimum speed given in Table 1, and also at several points throughout the speed range. The accuracy is to be checked at both increasing and decreasing speeds; any lag as shown by the difference between readings taken at increasing and decreasing speeds must not exceed 1.0 per cent.
17. During the tests, remove the indicator from the support bracket and rotate it through 90 deg. clockwise, counter-clockwise, forward and backwards. Check that any change in attitude does not cause the original indication to vary by more than 0.75 per cent.



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Chap.2
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