

## Chapter 6

### PROPELLER TEST CIRCUIT RIG

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#### LEADING PARTICULARS

|                                           |                            |
|-------------------------------------------|----------------------------|
| <i>Propeller test circuit rig</i> .. .. . | <i>Ref. No.</i> 26DM/95123 |
| <i>Motor</i> .. .. .                      | 110V d.c.                  |
| <i>Speed range</i> .. .. .                | 3000-6000 rev/min          |
| <i>Min. brush length</i> .. .. .          | $\frac{7}{16}$ in.         |
| <i>Brush grade</i> .. .. .                | EG4                        |
| <i>Brush spring pressure</i> .. .. .      | 3 lb.                      |
| <i>Max. commutator dimension</i> .. .. .  | 2 in.                      |
| <i>Min. commutator dimension</i> .. .. .  | $1\frac{3}{4}$ in.         |
| <i>Eccentricity</i> .. .. .               | 0.0005 in.                 |

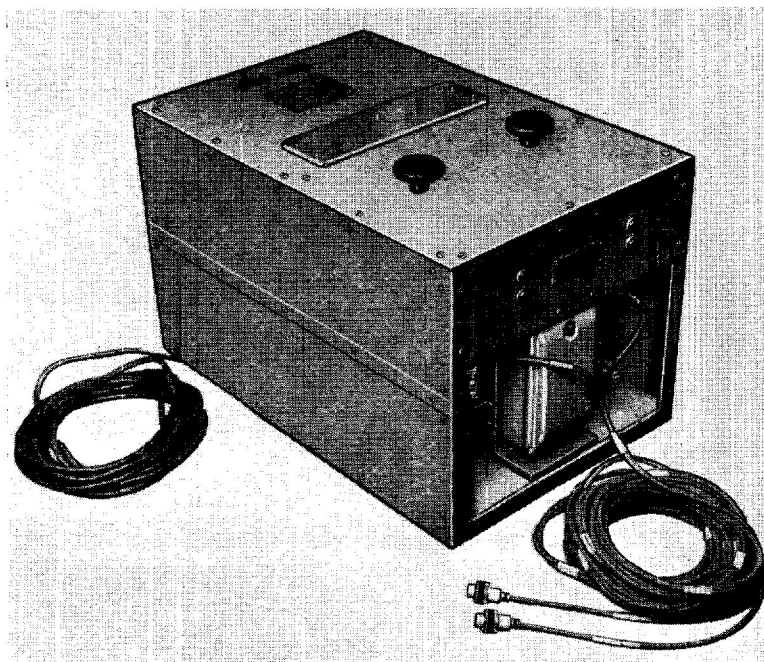


Fig. 1. Propeller test circuit rig

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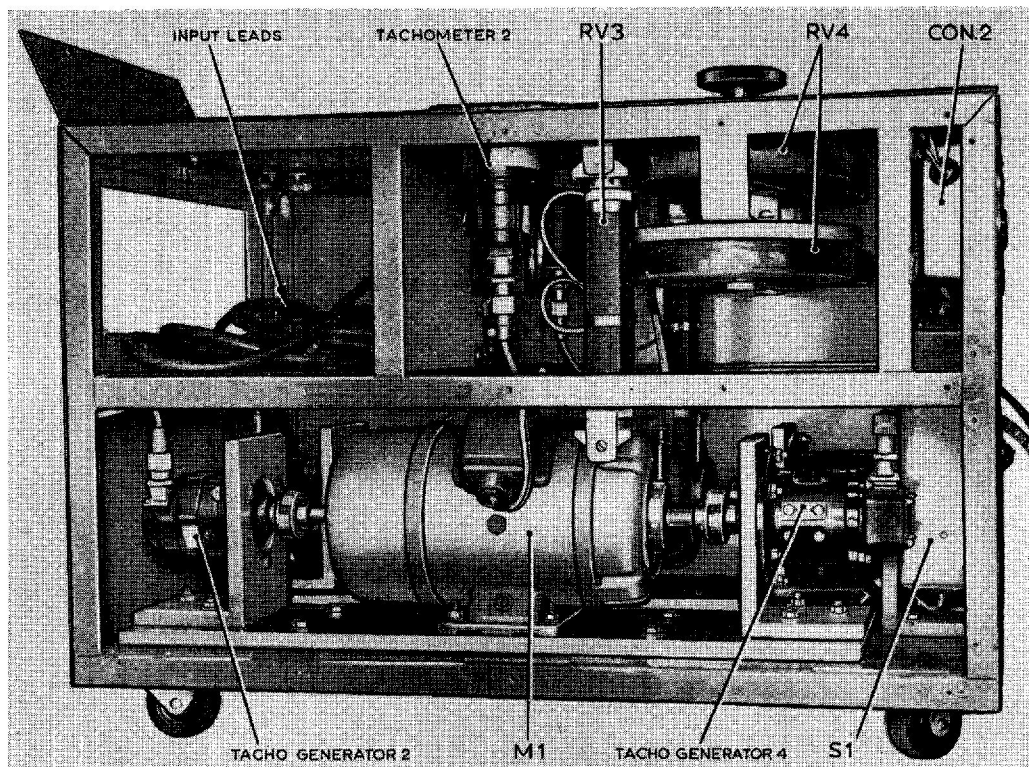


Fig. 2. Rig with side cover removed

### Introduction

1. The rig provides a calibrated speed signal source for testing the aircraft Propeller Control Channel, de Havilland Type Q1090/1, and it can be used alone with the Control Channel in situ, or in conjunction with the test circuit given in A.P.4343C, Vol. 1, Bk. 3, Sect. 11, Chap. 3 for bench testing.

### Description

2. It consists of two variable speed 110V d.c. compound motors, each driving two tacho-generators one each end of a straight through shaft. Start and stop controls for each motor are provided by the two push buttons direct on line starters situated adjacent to the main switch fuse at one end of the unit. A thermal overload device is

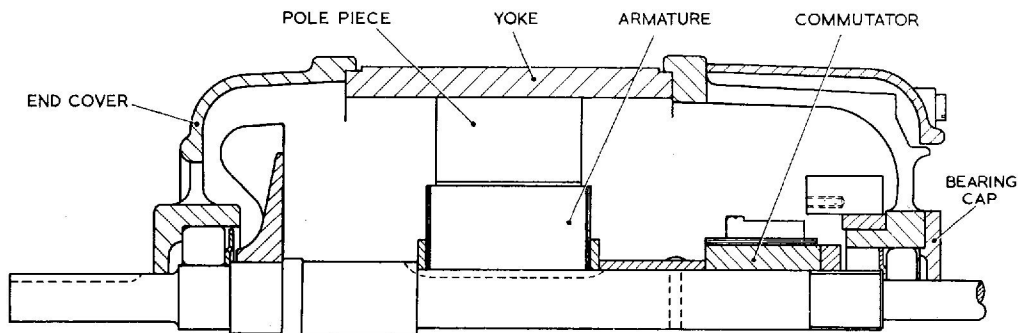


Fig. 3. Sectional view of driving motor

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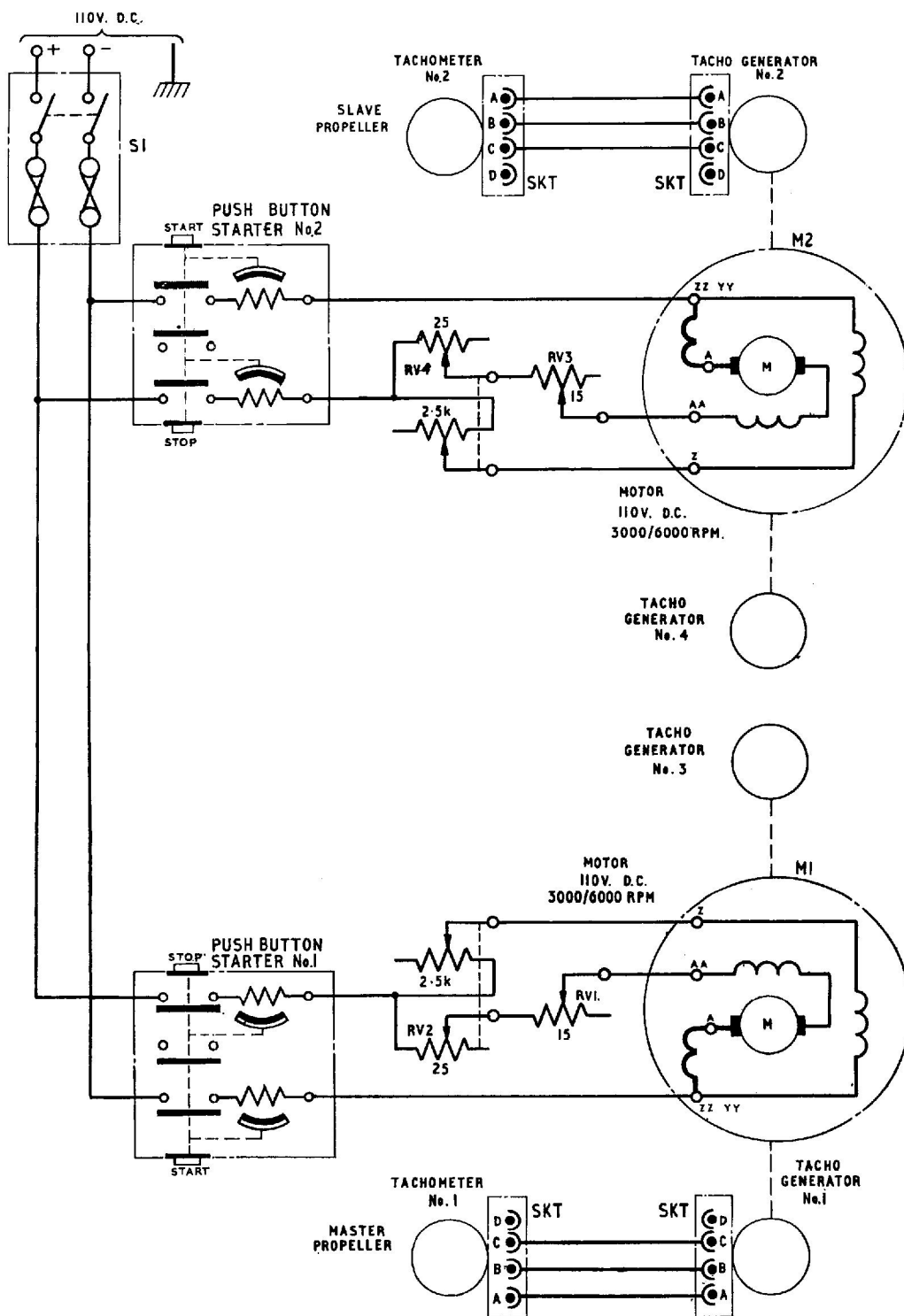


Fig. 4. Circuit diagram

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incorporated in the starters and provides protection in addition to the main fuses.

3. The motor speeds are controlled by rheostats (RV2 and RV4) within the range 3000-6000 rev/min/. The tacho-generator signal outputs and tachometer indications are directly proportional to this and are calibrated 0-12000 rev/min/.

4. The output from one tacho-generator of each motor unit is used to indicate the effective propeller speeds, whilst the output from the other provides the testing facilities for the propeller control circuits. The test leads together with the input lead are stored in a compartment at the rear.

### Operation

5. For in situ testing, the test leads of the rig are connected to the aircraft as described in the relevant Servicing Schedule, and the cockpit indicators are checked for various propeller speeds.

6. Instructions for operating the rig in conjunction with the test circuit for bench testing are contained in the Air Publication referred to in paragraph 1 of this chapter.

7. By adjustment of the speed controls (RV2 and RV4) the driving motor speed,

and hence the speed signal output can be varied. The rig supplies a speed signal appropriate to the speed indicated by the tachometers.

## SERVICING

### Motor

8. A lubricator is provided at the motor tail end, for applying grease to the bearing. At the commutator end no lubricator is provided, so for inspection and lubrication the bearing end cap should be removed. The grease for use with the motor is XG-271. To replace either bearing it will be necessary to dismantle the motor as described in the following paragraph.

9. To dismantle the armature from the motor, proceed as follows, with reference to fig. 3 :—

- (1) Remove coupling from both ends of shaft.
- (2) Remove motor from unit
- (3) Remove commutator inspection cover
- (4) Remove bolts holding tail end cover to frames
- (5) Remove brushes
- (6) Light mallet taps on the driving end cover will free it from the magnet frame spigot.
- (7) The armature core can now be withdrawn complete.

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