

## Chapter 8

# OVERSPEED TRIP GOVERNOR, TYPE O.T.G. SERIES

(Completely revised)

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#### Introduction

1. The overspeed trip governor is an automatic emergency device coupled to the power turbine shaft via a gear train. The governor is designed to operate only under conditions which, if unchecked, would allow engine revolutions to reach a dangerously high level.

2. The type number of the unit, e.g. O.T.G.101, indicates the installation standard, and also the calibration code to which the unit must be tested. Differences in the units of this series are listed in Table 1.

#### Description

3. The unit consists of a main housing accommodating the governor drive shaft, which rotates at a speed directly proportional to that of the turbine shaft at any given time, and which carries a pivoted trip weight; this weight is calibrated in such a manner that it remains in equilibrium at all normal turbine shaft speeds.

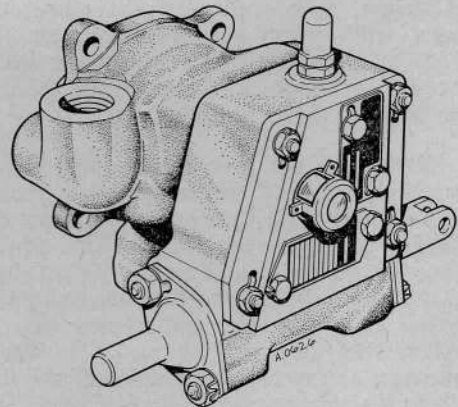


Fig. 1. External view of overspeed trip governor (O.T.G.)

4. Adjacent to the weight is a pivoted trip lever; one end of this lever closely adjoins the trip weight, and the opposite end retains a spring-loaded piston assembly in the COCKED position. The piston shaft is connected via external linkage to the emergency trip shut-off cock located in the fuel pump and control unit as described in Sect. 13, Chap. 10.

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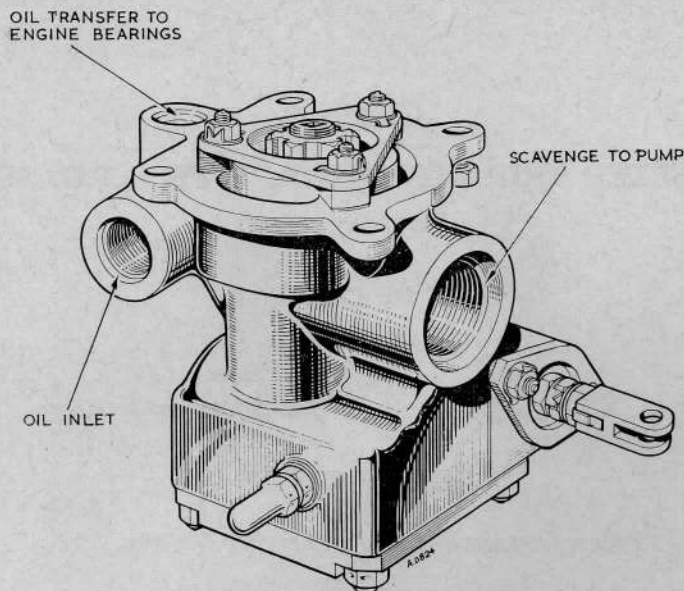


Fig. 2. Connections on overspeed trip governor

### Operation

5. Should turbine shaft or rotor failure occur, the consequent decrease in load will allow an immediate and rapid increase in the rotational speed of the turbine shaft. This speed increase is transmitted via the engine gear train and the governor drive shaft to the trip weight, at a predetermined speed, the weight will swing outwards through the agency of centrifugal force, and will contact the trip lever tappet screw and cause the trip lever to pivot on its retaining pin.

6. When the trip lever pivots, the piston assembly is released and immediately moves to the UNCOCKED (tripped) position under the influence of the spring force. This piston movement is transmitted via the piston shaft and connecting linkage to the emergency trip shut-off cock plunger, and causes this to rotate within the inner sleeve. This rotary movement of the plunger blanks-off the fuel ports in the emergency trip shut-off cock, and thus immediately cuts-off fuel supply to the burners.

7. The overspeed trip governor can be re-set in the COCKED position by moving the pilot's manual shut-off cock control lever to CLOSED, and then temporarily re-opening.

### Installation and servicing

8. Instructions for installing the unit are given in the relevant engine Air Publication.

### Note . . .

*When installing the unit on the engine, it is important to note that the nominal dimension between centre line of the governor drive shaft and the centre of the clevis holes (with piston in cocked position) is specified as 3.500 inches. It may be necessary to re-position the clevis in order to obtain the correct installation setting.*

9. An inspection window is provided in the housing end cover for observation of the drive shaft to ensure it is functioning correctly.

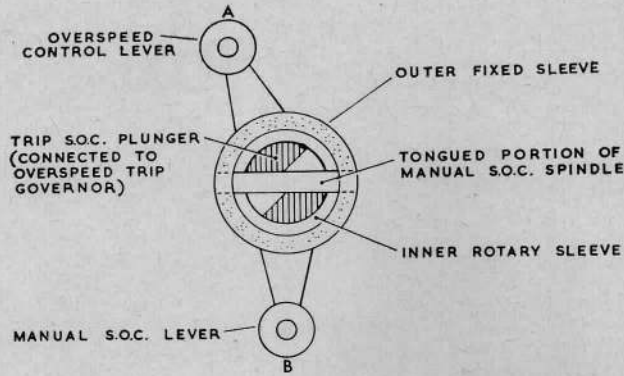
10. The unit is to be inhibited in accordance with the instructions contained in A.P.4471A.

TABLE 1

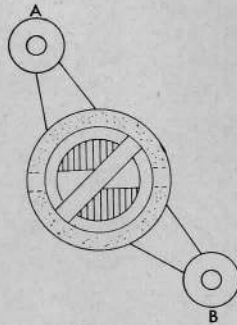
Types of overspeed trip governors. O.T.G. series

Type	Remarks
O.T.G.100	Basic unit as described.
O.T.G.101	As O.T.G.100 with redesigned tripping head and revised calibration.
O.T.G.103	As O.T.G.101 with redesigned trigger mechanism to overcome random tripping of the unit resulting in premature engine "shut-down".

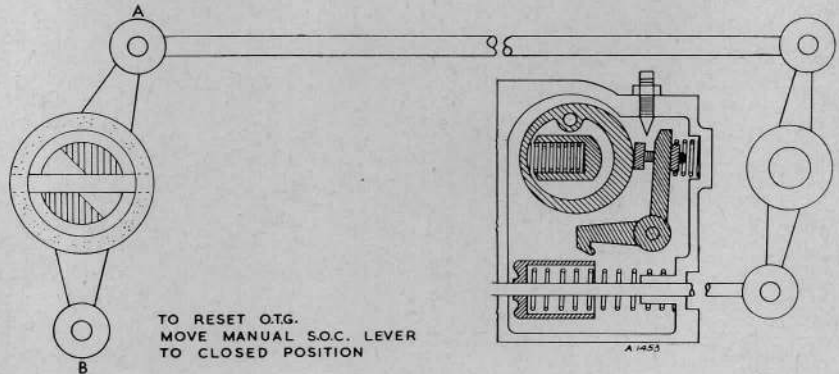
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MANUAL S.O.C. OPEN-TRIP S.O.C. OPEN (COCKED)



MANUAL S.O.C. CLOSED-TRIP S.O.C. OPEN (COCKED)



MANUAL S.O.C. OPEN-TRIP S.O.C. CLOSED (TRIPPED)

**Fig. 3. Operation diagram of overspeed trip governor**

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