# Chapter 3

# A.F.C. ISOLATOR, TYPE PD.1/1A

## LIST OF CONTENTS



## LIST OF ILLUSTRATIONS



### Introduction

**1.** In order to maintain stall free accelerations at all altitudes, a characteristic of the air fuel ratio control (AFC) is that it overrides the overspeed governor above 39,000 feet; this causes a reduction in cruise speed when governing and a consequent loss of power.

**2.** To overcome this limitation, the AFC isolator is dependent upon the fuel pump governor pressure, thus permitting automatic override or isolation of the AFC at a predetermined pump speed and pressure.

### Description and operation

**3.** Basically the unit is of similar construction to the pressure-drop assembly in the AFC described in Sect. 12, Chap. 2. The body houses a spring-loaded piston, fitted with a moulded skirt, which is free to move in a cylinder sleeve. A connection admits fuel at governor pressure (N2) to the top of the piston chamber, whilst from the lower half another drilling leads to the static governor inlet line. On the N2 side, the piston abuts against a push-rod which, at its other extremity, rests against a spring-loaded cantilever carrying a socket mounted half-ball valve. This valve controls an orifice which is connected to the servo line from the AFC and spills servo pressure back to the fuel pump inlet.

**4.** During normal operation, the spring-loaded piston acting through the push rod on to the cantilever maintains a closing force on the half-ball valve. During acceleration, the generated governor pressure, which is proportional to speed, acts upon the high-pressure side of the piston thereby opening the valve with a consequent fall in servo pressure. This results in the opening of the AFC servo line to the fuel pump and the isolation of the AFC. Conversely, decreasing governor pressure will arrive at the point where full AFC control is restored.

### Installation and servicing

**5.** The unit is mounted on a bracket on the engine and secured by four bolts and two studs. Fuel system connections are as follows:—

Inlet from fuel pump governor (N2)
L.P. to static governor inlet
Inlet from AFC servo
L.P. to pump inlet

**6.** When installed on an engine no adjustments are permissible. Wire-locking and union connections should be periodically inspected for security and leakage.

### Inhibiting

**7.** When the unit is removed from the engine, oil OM-11 must be injected and dust caps fitted to all connections.

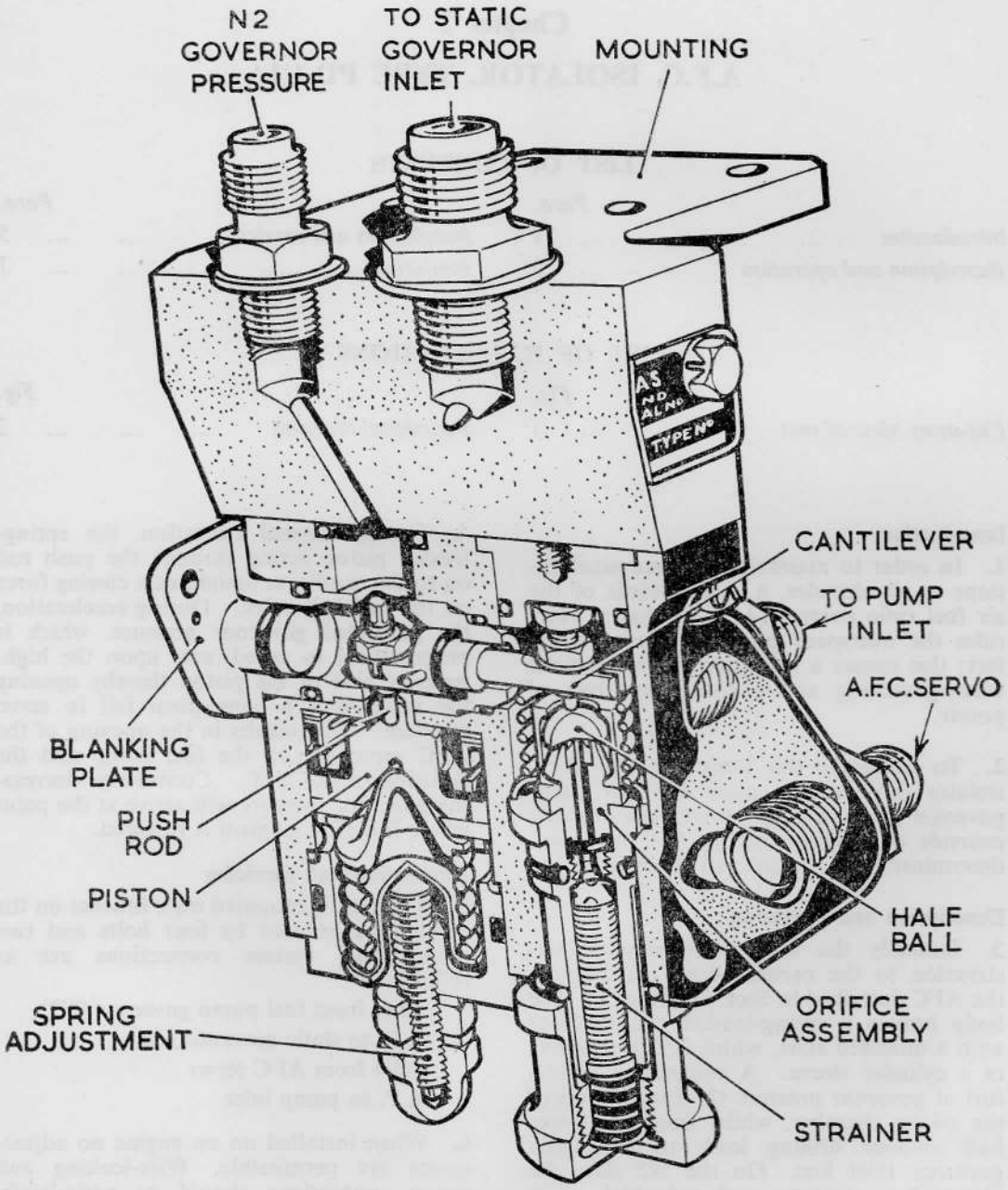


Fig. 1. Cut-away view of unit

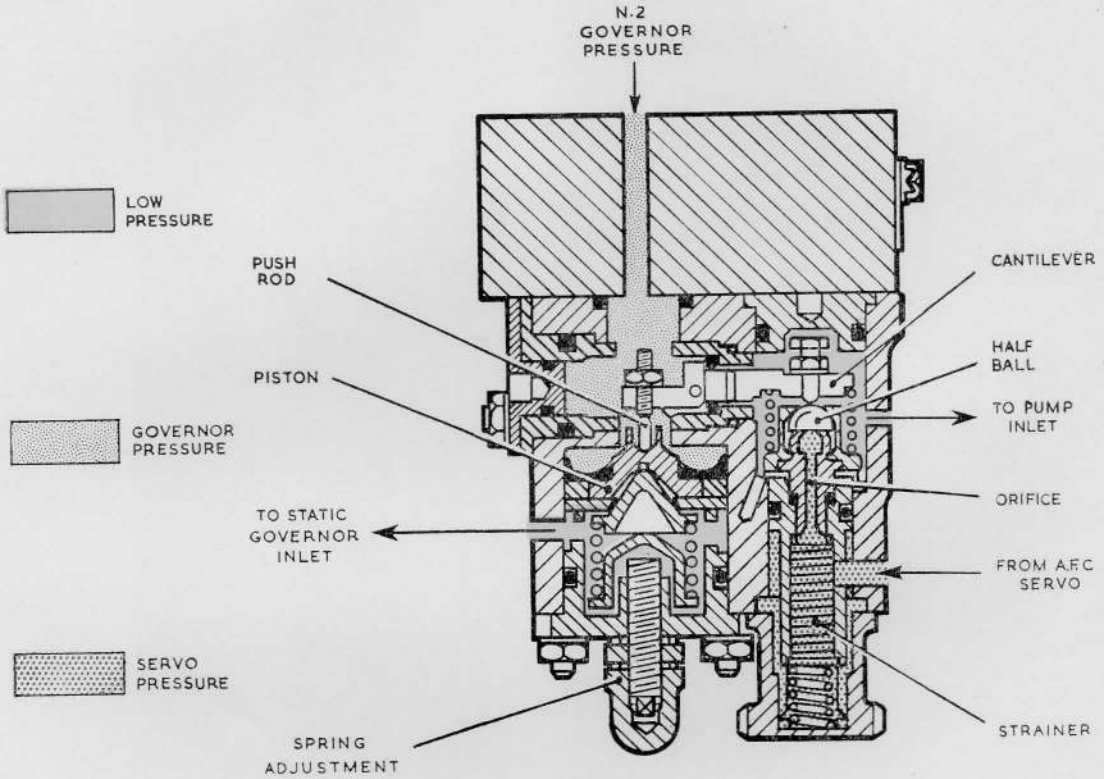


**Fig. 2. Functional diagram**



**RESTRICTED**

P29339 361433/5339 4/59 1375 C & P Gp 375