Chapter 3

ELECTRIC PRESSURE CONTROL, TYPE L.P.C.8

LIST OF CONTENTS

ILLUSTRATION

General

1. The electric pressure control is employed in conjunction with the engine hydraulic fuel control system to provide automatic limitation of jet pipe temperature and/or engine speed. It is essentially a solenoid-operated valve in which the solenoid is arranged to move its armature progressively over a range of approximately 200 milliamperes and provide a variable flow through the valve orifice from zero to about 60 g.p.h., depending on the requirements of the system in which it is installed.

2. As a temperature control the unit receives amplified signals from the jet pipe thermocouples and may be employed as a top temperature limiter, in which case an accurate and progressive control is provided. This is of particular advantage where the fuel system does not employ an acceleration control as, due to the progressive action of the LPC, control is applied increasingly as the temperature rises, thus preventing severe overshoot of maximum temperature.

3. In addition, the unit can be employed in conjunction with a temperature selector as a range temperature control. The selector is then interconnected with the engine throttle valve and provides a series of maximum temperature datums for different engine conditions, i.e. starting, idling, take-off, climb, cruise and maximum power.

4. Where the unit is used as a speed control, the signals are provided by an engine-driven alternator, through an amplifier. In this instance the unit provides a speed control that is not conscious of variable factors such as fuel density and ambient pressure conditions and gives a smooth progressive action that eliminates severe overswing and underswing of maximum permissible engine speed.

5. There are several ways of applying such a control; some of these are:—

(1) The L.P.C. may be connected into the fuel pump servo system, whereby the pump stroke and therefore delivery is reduced progressively under temperature or speed controlling conditions.

(2) The unit may be fitted into the burner delivery line and arranged to spill a proportion of the burner flow to the pump inlet (*Sect.* 13, *Chap.* 3).

(3) The L.P.C. may be included in the pressure-drop control mechanism of a flow control unit to achieve the required reduction in flow.

(4) The unit may be connected into the secondary flow line in a proportional flow control system (*Sect.* 13, *Chap.* 4).

(5) The control may be applied to a servo throttle valve in the pump delivery line to the manual throttle, so that under controlling conditions a progressive restriction is applied to the flow (*Sect.* 6, *Chap.* 2).

6. In some specialised types, an evacuated capsule subject to atmospheric or nacelle pressure is included in the unit, which is then designated B.L.P.C. By this means, in addition to the action of the solenoid armature under temperature or speed effects, as the aircraft gains height the capsule expands