Chapter 4

BURNER, DUPLEX 3, TYPES C.S.H. 65, 69, 76, 82, 84, 85, 92, 93, 94, 100, 101, 111, 114

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Description

1. These types of burners are all similar in their construction and operation. The differences are in their orifice sizes, shroud locking, and the build of the securing flange.

2. The Duplex 3 burner is of the fixed orifice type employing two sets of inlet passages each with its own swirl and orifice plates. Fuel is supplied to both or one of these passages according to engine requirements.

3. The burner comprises the flanged stem assembly which has fuel inlet passages for the main and primary flows. The flange forms the mounting plate for securing the burner in the combustion chamber.

4. A cylindrical wire wound strainer is fitted in the primary inlet passage in the flange.

5. The atomiser assembly comprises a primary inlet plug, rear orifice plate and front orifice plate. This assembly is located on the front face of the sprayer stem and retained

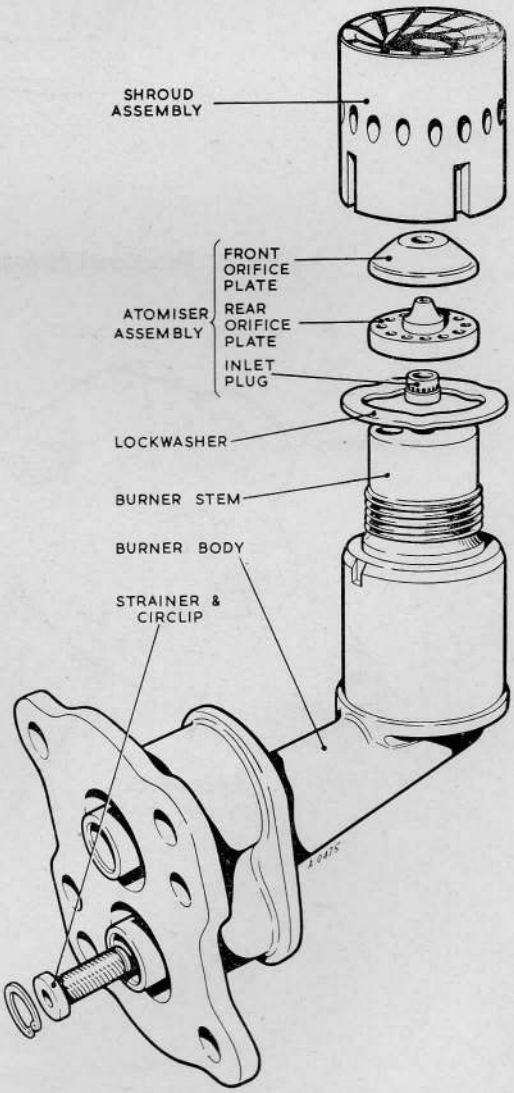

Fig. 1. Exploded view of burner, Type CSH.76

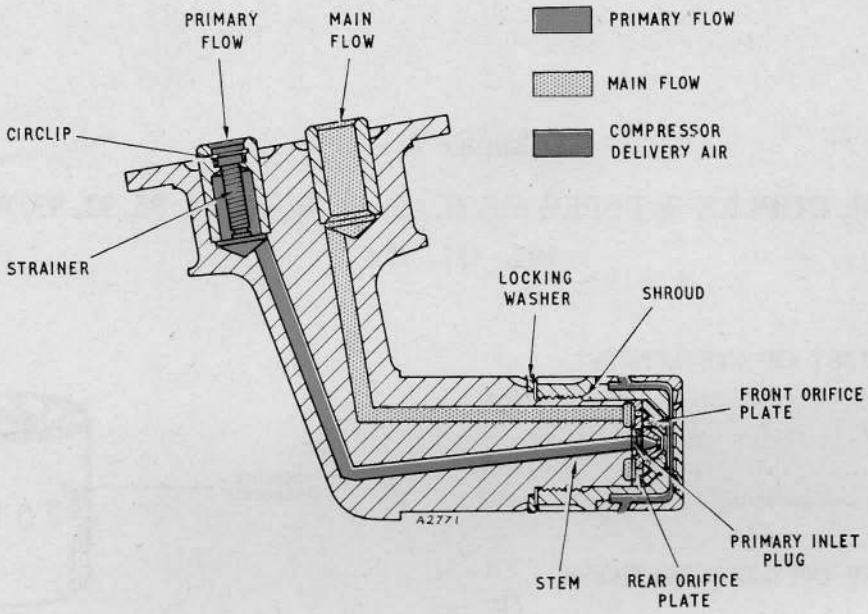

Fig. 2. Functional diagram of burner, Type CSH.76

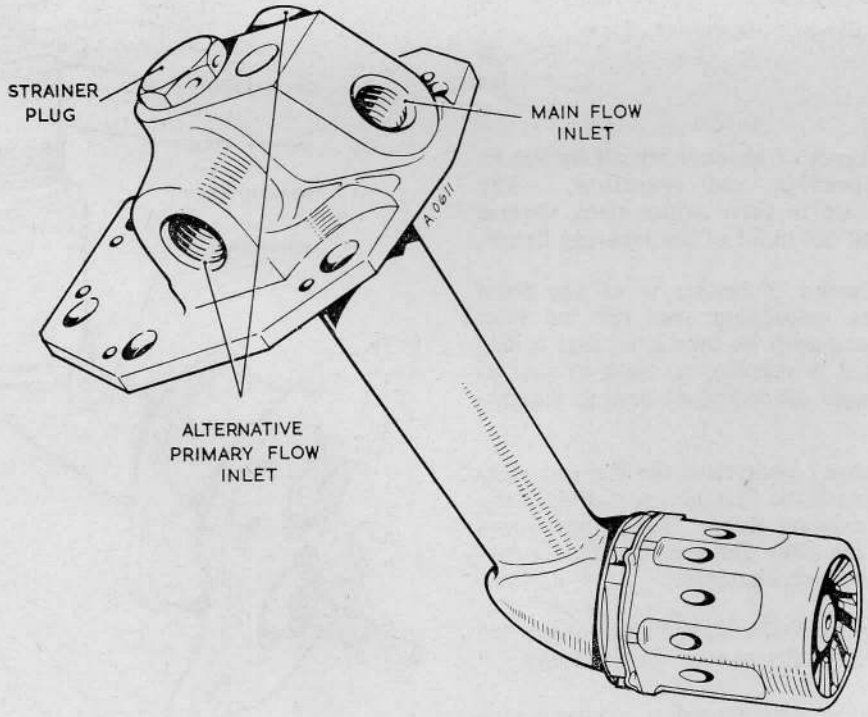

Fig. 3. Exterior view of burner, Type CSH.111

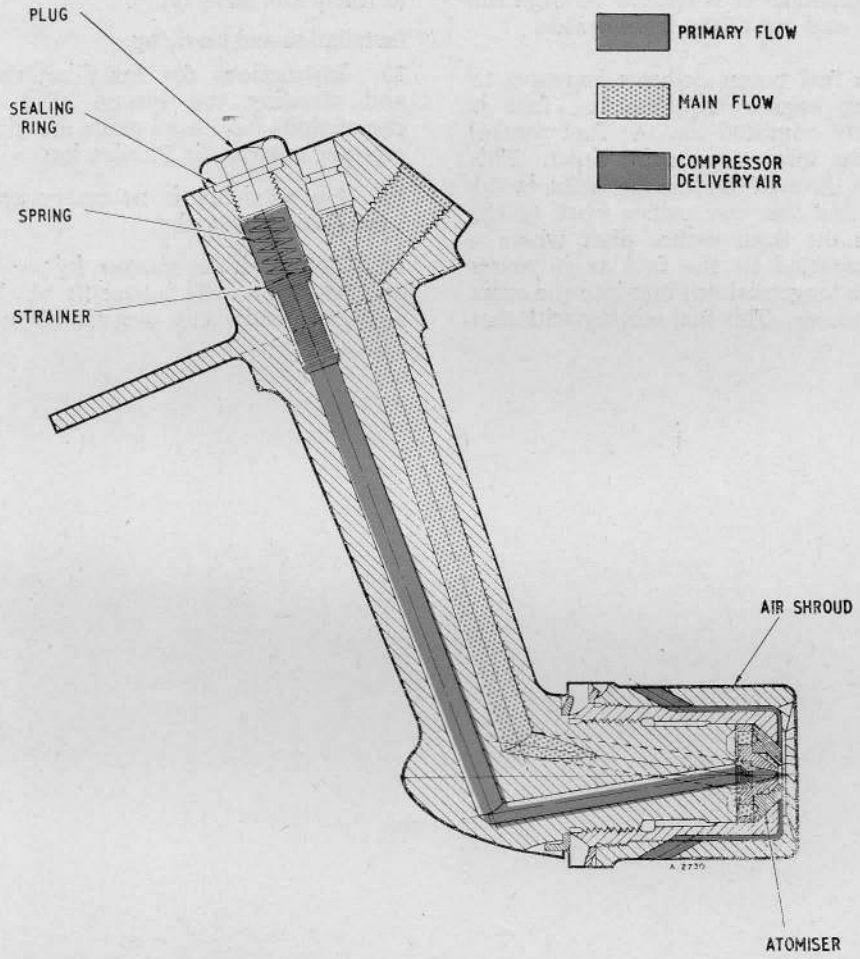

Fig. 4. Functional diagram of burner, Type CSH.111

in position by the air shroud which is locked to the sprayer stem by a lockwasher peened in to slots in the stem and shroud.

6. Tangential slots formed in the face of the air shroud and a series of holes admit a stream of air to an annulus formed in the shroud. The air is directed across the outlet orifice of the burner to delay the formation of carbon.

7. The stem face has a central hole and two annular holes which form the primary and main fuel ports. The central hole connects with the primary inlet plug, and tangential holes in the primary inlet plug link the primary delivery with a conical delivery chamber formed in the rear orifice plate. The main fuel ports formed by the two annular holes in the stem face connect the main fuel supply with a series of annular holes in the rear orifice plate. The front orifice plate has an annulus and a series of tangential holes for the main fuel supply to be directed into the outlet orifice and mix with the primary flow. The tangentially drilled holes in the primary inlet plug and the front orifice plate set up a swirling motion to the fuel passing through to the outlet orifice.

Operation

8. During starting, idling, or at low fuel pressure, fuel is delivered into the primary inlet passage via the strainer. It then passes through the primary inlet plug which imparts to the fuel a swirling motion as it passes

through the tangential holes and into the conical chamber of the rear orifice plate. From the chamber it is ejected through the rear orifice and out of the front orifice.

9. As the fuel pump delivery increases to meet rising engine requirements, fuel is progressively admitted via the fuel control unit into the sprayer main flow inlet. This flow passes through the annular holes in the stem face and the rear orifice plate to the annulus in the front orifice plate where a swirl is imparted to the fuel as it passes through the tangential drillings into the outer conical chamber. This fuel mingles with that issuing from the rear orifice, and the combined flow is ejected into the combustion chamber as finely atomised spray.

Installation and servicing

10. Instructions for installing the burner and bleeding the system after any disconnections have been made are given in the relevant engine Air Publication.

11. No servicing is necessary apart from examination for leaks.

12. To inhibit the sprayer, inject oil OM-11 or OM-13 into the inlets; fit blanking caps and a protective cap over the shroud.

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