Chapter 9

PUMP, FUEL, ADEL TYPE 70373

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Pump, fuel, Adel Type 70373	*Ref. No.* 5*UE*/8496
Nominal voltage	28V *d.c.*
Nominal current	3*A*
Rating	*continuous*
Weight (dry)	2 *lb.*
Rated output	67·5 *gal./hour*
Maximum pressure at no flow	25 *lb/in*^{2}
Brush spring pressure	3·5 *oz.*
Minimum brush length	0·1 *in.*

Introduction

1. The booster pump is of the conventional centrifugal type, driven by a 28V d.c. permanent magnet electric motor so mounted that it forms an integral part of the unit. The pump maintains the fuel supply to the engine driven fuel pump under all conditions of fuel temperature, rate of climb, altitude, and positive and negative 'G' that may be encountered during flight or take off. The pump is designed for installation in the external fuel supply line.

DESCRIPTION

2. The motor is totally enclosed and comprises armature, brush plate and cover assemblies. The pump comprises a light-alloy body, throat, impeller, rotating and stationary seals, preformed packing and shims.

Pump

3. The pump body is fitted with an integrally formed outlet connection and an internal drilling connected to an oriface in the side of the body accomodates the electrical leads protected by a grommet. One end of the body is enclosed by the throat which incorporates the fuel inlet connection, the other end is attached to the motor assembly.

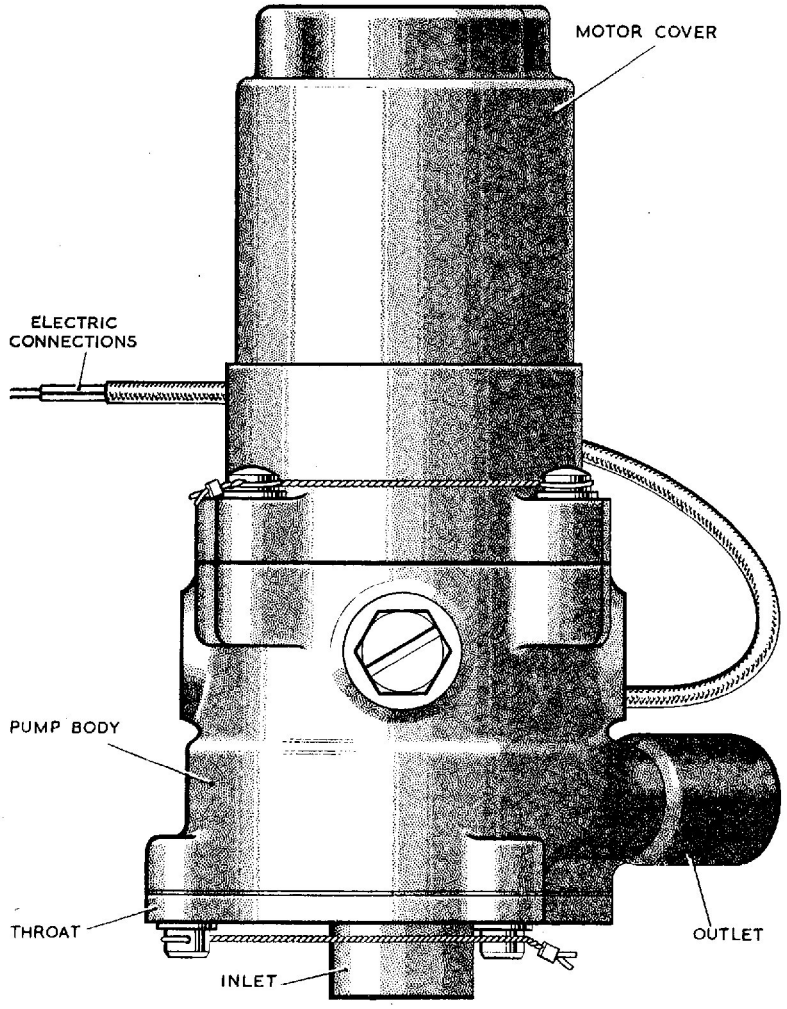

Fig. 1. General view of fuel booster pump, Adel Type 70373

4. The impeller is keyed on to the armature shaft and secured by a self-locking nut. Rotating and stationary seals are fitted between the impeller and the brush plate assembly (*fig.* 2) to prevent the ingress of fuel to the motor. A fuel drain trap is also incorporated between pump and motor which is vented to atmosphere through one of its three drain ports. The other two ports are plugged. Shims are used to centralise the impeller in the pump body to ensure it will rotate freely without fouling.

Motor

5. The motor cover assembly houses the two pole shoes and magnets, the end bearing of the armature and an insulator which surrounds the brush plate assembly. The cover is fitted over the armature and is flange mounted on the pump body.

Operation

6. The impeller, driven at constant speed, draws fuel from the fuel tank through the inlet connection and, by centrifugal force from the impeller, forces the fuel through the pump body and out of the outlet connection. When the booster pump is supplying fuel in excess of engine requirements, the impeller continues to rotate at normal speed without causing an excessive increase in fuel pressure.

7. When the booster pump is not operating, fuel can be drawn from the fuel tank by the engine driven pump, past the impeller of the booster pump without any appreciable drop in pressure.

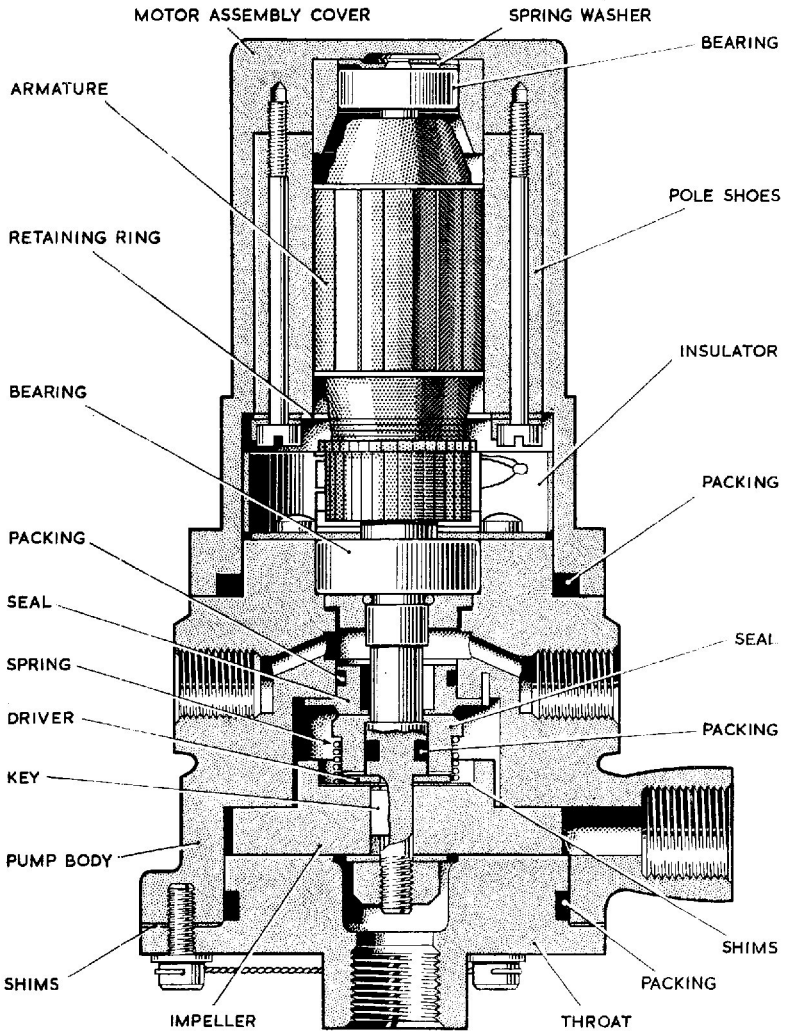

Fig. 2. Section view of pump and motor

SERVICING

8. Examine the pump for signs of external damage and leakage at the glands. Examine the electrical cables and grommet for signs of deterioration and damage.

Functional test

9. Plug a siutable ammeter into the test socket. With the fuel cocks closed ensure that the current does not exceed 3A at 27·5V.

Insulation resistance test

10. Remove the motor assembly cover and lift the negative brush from the uninsulated brush holder. Using a 250V insulation resistance tester test between the positive lead and frame, a reading of not less than 50000 ohm should be obtained.

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