Chapter 12

SOLENOID OPERATED VALVE, TYPE SV3, Mk. 2 and 3

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Stores reference (Mk. 2)	SUE/6344
Stores reference (Mk. 3)	
Nominal voltage	24V. d.c.
Current at 24V	... 2 amp.
Time rating at 24V	... 5 min.
Weight	1·75 lb.

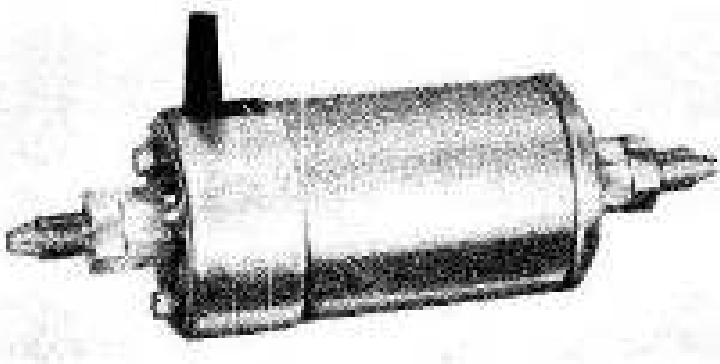

Fig. 1. Valve, Mk. 3

Introduction

1. The solenoid operated valves described in this chapter are used for the electrical control of fluid flow in a fuel system, or in any system of a similar nature. Reference may be made to the appropriate Aircraft Handbook for information on the function of these valves in a particular aircraft system.

2. The Mk. 2 valve will open against a maximum pressure of 80 lb. per sq. in. over an applied voltage range of 18-29 volts. The Mk. 3 valve will open against a maximum pressure of 750 lb. per sq. in. over a range of 16-29 volts. For both Marks, the permitted continuous operating time varies between 2 minutes at 29 volts and about 16 minutes at 18 volts. At all voltages, however, a minimum fluid flow through the valve of one pint per minute is essential to avoid exceeding the maximum permissible temperature rise.

DESCRIPTION

3. Both Marks of the valve are essentially the same in construction. The difference between them is that the Mk. 3 utilizes a modified valve body and has different inlet and outlet unions to cater for the higher working pressure involved. The exploded view of the valve (*fig. 2*) shows the difference between the unions.

4. Referring to fig. 2, the valve element has a conical valve seat covered with synthetic rubber. The valve seat is formed within the valve body, which carries the outlet union at one end, and also acts as a guide for the valve element. The valve core carries the inlet union and screws into the other end of the valve body, thus enclosing the valve element, spring, spacer and plunger.

5. The valve body and core assembly is held within the solenoid by four screws. The solenoid assembly consists of the coil clamped between two end plates and surrounded by a sleeve, the ends of which are spun into a groove provided in each end plate. The terminal block is attached by screws to one of the end plates. The terminal block cover, which secures the rubber lead grommet, is attached to the terminal block by three cheese-head screws.

6. The valve element is normally held pressed against the seat by the valve spring. When the solenoid coil is energized, the valve element is attracted to the centre of the solenoid, moving against the combined pressure of the spring and the fluid, and so opening the valve.

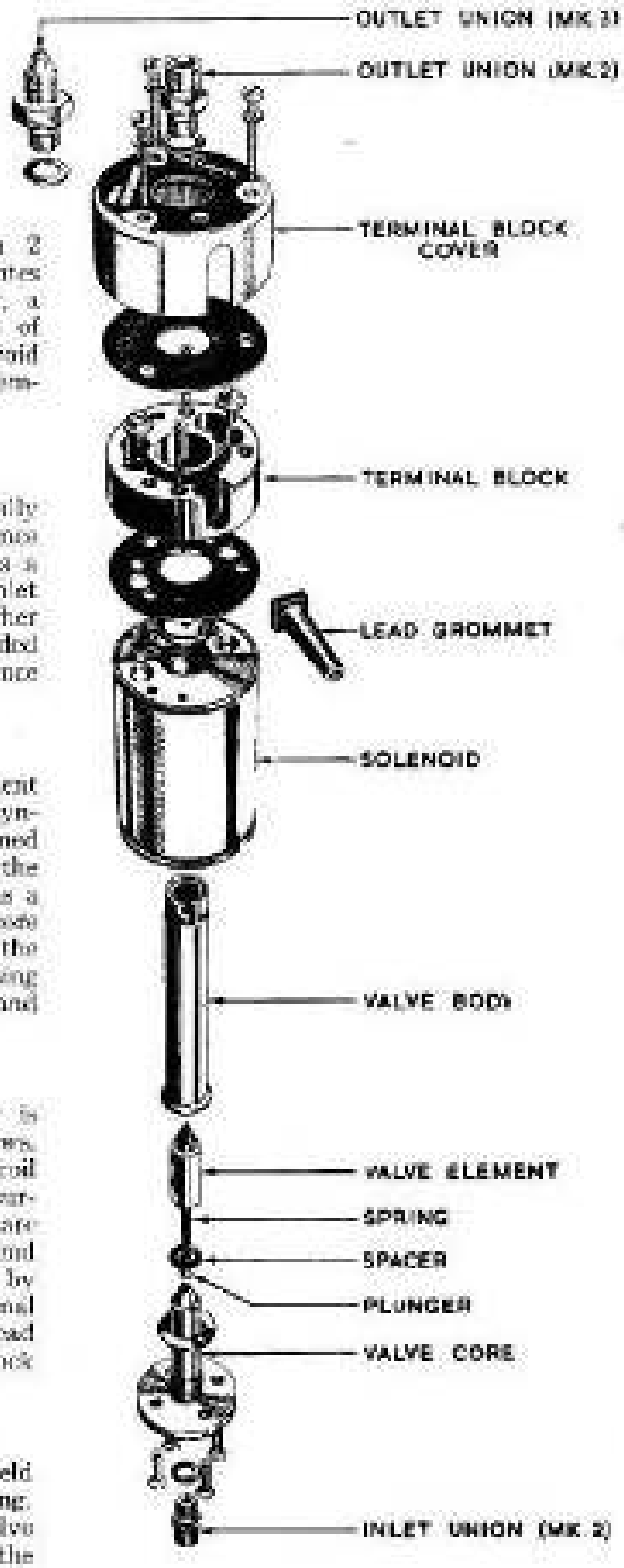

Fig. 2. Exploded view of valve

SERVICING

7. No dismantling is necessary for routine servicing, which is restricted to ensuring that the valve operates satisfactorily under working conditions, and that all screws and unions are tight. Inspect all joints, and if any sign of fluid leakage is observed, remove the valve and send it for repair. Substitute a complete new valve. Instructions for the dismantling, repair, and testing of these valves will be found in Vol. 6, Sect. 1, Chap. 1 of this publication.

8. Measure the insulation resistance between the solenoid coil terminals and the casing, using a standard 250 volt insulation resistance tester (Stores Ref. 5G/152). Renew the valve if the insulation resistance is less than 20 megohms.

9. Measure the resistance between the two coil terminals when the coil is at normal room temperature. The resistance of the coil should be between 12 and 13 ohms at 16°C. If the resistance is outside these limits, the valve must be renewed.