

Chapter 21

TRIM SWITCH, WESTERN, TYPE LSI621

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LEADING PARTICULARS

Trim switch, Type LSI621, Mk. 9 ...	Stores Ref. 5CW/4633
Operating voltage	24V d.c.
Current rating	5 amp.
Temperature range	+90 to -55 deg. C
Overall dimensions	
Length	6.06 in.
Width	2.74 in.
Depth	3.62 in.
Weight	1.15 lb.

Introduction

1. The trim switch, Western, Type LS1621, is illustrated in fig. 1, and is used for switching the aileron, elevator and rudder trimming actuators on and off. It is for use only with actuators that have a split series motor.

DESCRIPTION

Switches

2. The trim switch (fig. 2) consists of a hand control knob fastened to a shaft which has a universal coupling on its end. Movement of the shaft vertically or sideways moves a cruciform gate which operates two pairs of switches, one pair for aileron trimming and the other pair for elevator trimming. A rotary switch consisting of stud contacts secured in a contact plate, and wiper contacts attached to the end of the control shaft, is used for trimming the rudder. Rotary movement of the control knob turns the wiper contacts to engage with the stud contacts. All the switches are double-pole with silver contacts.

Switch cover and riser assembly

3. The switches are contained in a cover, the open end of which is covered by a top plate. Sealing washers at each end of the cover and a bellows near the control knob prevent the ingress of dust and oil. Distance tubes fastened to a base plate at the bottom of the cover, carry the micro switches and the top plate.

4. A spring-loaded riser assembly is used for preventing two switching operations being performed together. This assembly consists of steel balls held in a fixed plate, with a spring-loaded bent plate contacting the balls, and a steel pad behind the spring. When the control knob is turned, the bend in the plate rides along the balls and the spring is compressed; when the knob is released the pressure of the spring forces the plate back to its original position. When the control knob is pushed sideways or vertically, the spring is compressed by the forward movement of the pad and the whole assembly is jammed together, preventing the bent

plate from moving. Plungers with leaf springs behind them are fitted in the top plate, and these return the knob to its original position when released.

Control knob and electrical connections

5. A plan view of an aircraft is painted on the face of the control knob, and when the knob is operated this image indicates the resulting movement that the aircraft will make; e.g., when the control knob is turned in a clockwise direction the nose of the image turns to starboard and this is the direction in which the nose of the aircraft will turn.

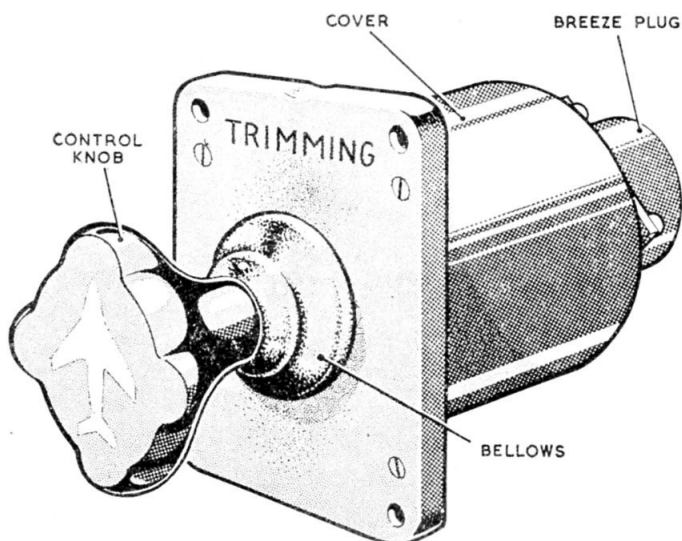


Fig. 1. Trim switch, Western, Type LS1621

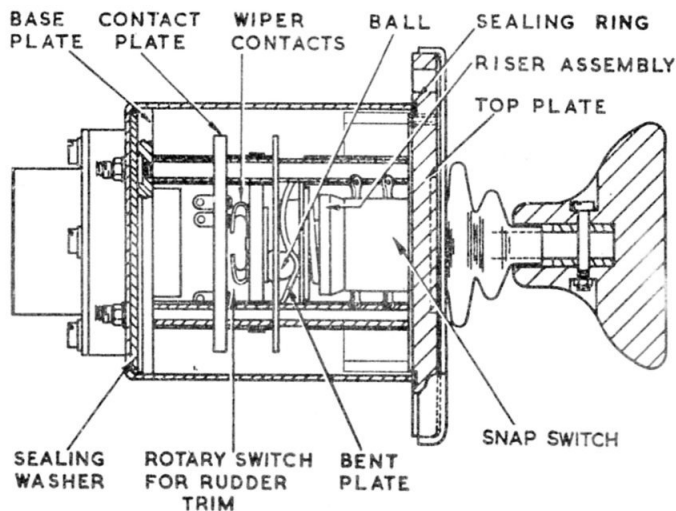


Fig. 2. Sectional view of trim switch

6. The internal wiring of the switch is brought out to a waterproof, 14-pole plug, Type C (Stores Ref. 5X/6091), on the end of the switch. A wiring diagram (fig. 3) illustrates the connections to the micro switches, rotary switch and plug.

Operation

7. Operation of the switch control knob is rotary, sideways, up and down, to suit the required trimming movement of the aircraft. When the control knob is turned in a clockwise direction, the rudder is trimmed to turn the nose of the aircraft to starboard, and when the knob is turned anti-clockwise the rudder is trimmed to turn the nose of the aircraft to port.

8. Trimming of the aileron is brought about by pushing the control knob over to the right or to the left, movement to the right trimming the port wing up, and movement to the left trimming the starboard wing up. The elevators are trimmed by upward and downward movement of the control knob which causes the nose of the aircraft to be trimmed downward and upward respectively. When released, the control knob returns automatically to its neutral position in all instances.

INSTALLATION

9. The switch must be mounted so that the image of the aircraft has its nose pointing upwards. The method of securing is by screws or studs through the four holes in the top plate.

SERVICING

10. To gain access to the inside of the switch, remove the seal, nuts and washers

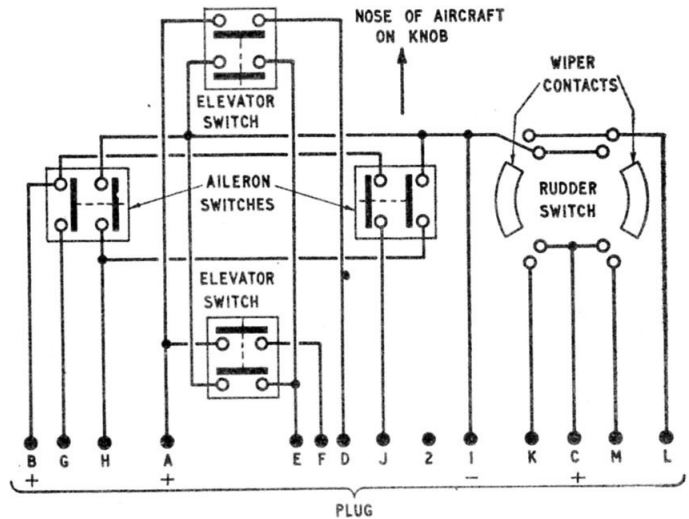


Fig. 3. Internal wiring diagram

from the end studs, and draw the cover away from the switch. If the contacts of the rotary switch are dirty, clean them with a piece of non-fluffy rag moistened with lead-free gasoline, then lightly smear the rotary switch contacts, balls and bent plate with protective PX-7 (Stores Ref. 34B/190). Ensure that the connections to the switches are securely soldered.

11. Using a 250V insulation resistance tester, check the insulation resistance between the terminals of any two separate circuits, and between all the terminals connected together and the frame of the switch. A reading of not less than 20 megohms should be obtained for each test.

12. On completion of the servicing, refit the cover, secure it by the washers and nuts and attach the seal by means of a piece of 24 S.W.G. locking wire.