

## Chapter 6

### AIRBRAKE TEST SET

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#### LEADING PARTICULARS

<i>Type</i> ... ..	Avro Part No. 1U.1339
<i>Ref. No.</i> ... ..	26DC/95215
<b>DIMENSIONS</b>	
<i>Length</i> ... ..	14 in.
<i>Width</i> ... ..	8.5 in.
<i>Height</i> ... ..	8.75 in.
<i>Weight</i> ... ..	18.5 lb.
<i>Operating voltage</i> ... ..	28 volts.

#### Introduction

1. The airbrake test set is designed to facilitate servicing of the airbrake systems installed in the Vulcan Mk. 1 and Mk. 2 aircraft. It provides a means for remote control of airbrake movement to the position selected on the aircraft selector switch, and by introducing an inching switch into the control circuit, it also allows the airbrakes to be set at any intermediate position as required for setting up purposes or for rigging of the system.

2. The following text includes a description of the test set and test circuit, a wiring diagram, and operating instructions.

#### WARNING . . .

**The test set must not be used if any part of the airbrake system is disconnected from the electric motors, or if any of the micro switches are isolated or disconnected.**

#### DESCRIPTION

##### Construction

3. The test set is a small rectangular section container of aluminium alloy mounted on two rubber faced stiffeners and equipped with a strap type handle for carrying purposes. Two panels are fitted to the interior of the container. The upper panel is the control

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Fig. 1. General view.

panel which carries the switches and indicator lamps associated with the test circuit, and the lower panel forms the mounting for two Mk. 4 fixed sockets. To provide access to the underside of the control panel, the lower panel is detachable, being secured to the container by four  $\frac{3}{16}$  in. screws and anchor nuts. A hinged lid is fitted at the top of the container to enclose the control panel when the set is not in use.

4. Three flanged plates attached horizontally around the outer surface of the container form the supports and stowage recesses for the two extension cables which connect the

test set to the aircraft system. Chamfered hardwood blocks are fitted to the end surfaces of the container between the plates to provide a smooth contoured surface around which the cables are wrapped for stowing. When stowed, the cables are retained in position by securing the free ends in the spring clips attached to the upper surface of the top plate. Sponge rubber buffer blocks are fitted to each corner of the upper and lower plates to provide protection for the test set during storage and handling.

5. Except for the control panel which is anodized black, the test set is finished in blue paint.

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### Test set circuit

6. The airbrakes are operated by an electrical actuator incorporating two electric motors, controlled by two linked double pole 3-position switches fitted to the engine control pedestal. During normal operation, selection of the control switch energises the motors and the air brakes will be driven to any one of the three positions controlled by switch selection. With the test set connected into the aircraft circuit, air brake movement is controlled by the test set, and the supply to the motors can be interrupted at any position.

7. Centrally positioned on the control panel is a double pole 3-position switch equipped with locking guard, either side of which is fitted a circuit breaker and associated warning lamp. The switch is labelled INCHING—OFF—NORMAL, and is spring-loaded to OFF from the INCHING position, the circuit breakers are labelled ON—OFF, and the warning lamps PORT and STARBOARD respectively. The control components are wired to two fixed sockets which are the couplings for the trisheathground extension cables. The cables are of a length which

allows for operation of the test set at the airbrake station on either wing, thus providing on the spot control which is desirable when checking airbrake slat rotation in relation to pillar extension in accordance with Servicing Schedule requirements. At the aircraft end, each cable terminates in a special fuse end type assembly and crocodile earthing clip which form the connections to the aircraft system. The cables are identified port and starboard and a positional marking TOP is stamped on each fuse assembly.

8. The warning lamps give indication when power is available at the electric motors. Power supply to the individual motors can be cut off by selecting the appropriate circuit breaker to OFF, and movement of the airbrakes can be effected by the remaining motor.

### OPERATION

#### General

9. The test set should be located as desired at either wing airbrake station, so that the extension cables can be connected into the aircraft circuit at the fuse and relay panels 3P port and 4P starboard. Ensure that the cables are routed to permit free movement of

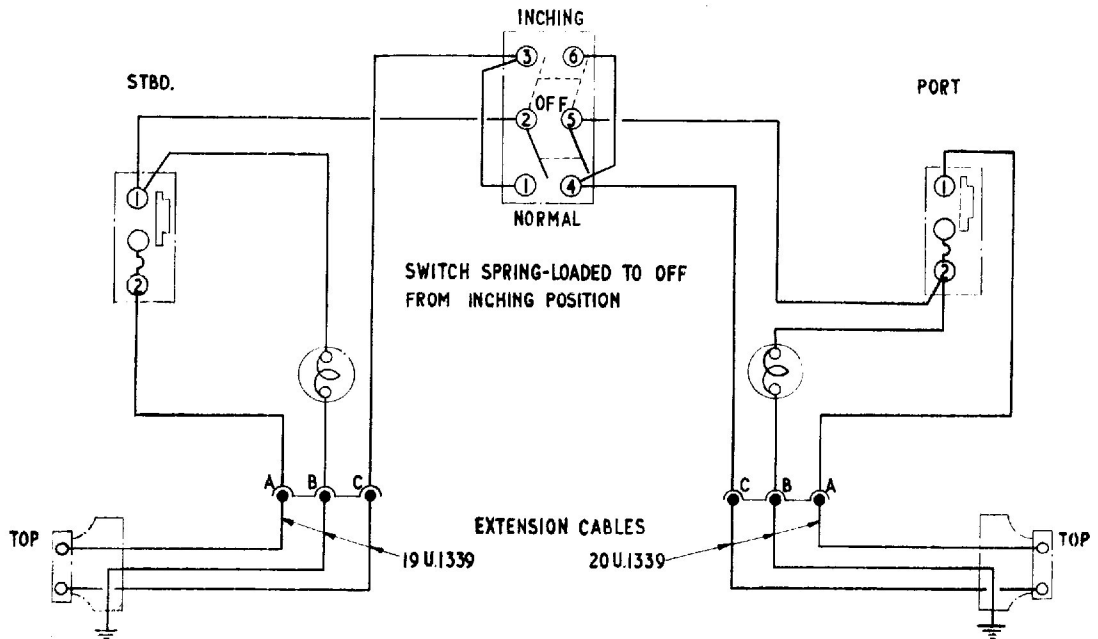


Fig. 2. Test set circuit.

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the airbrakes without fouling the cables. Current supplies of 28-volt and 112-volt d.c. will be required for Mk. 1 aircraft, and 28-volt d.c. and 200-volt a.c. for Mk. 2 aircraft.

#### Operating procedure

10. (1) Ensure that all ground supplies are disconnected from the aircraft.
- (2) Remove the airbrake circuit 2.5 amp. fuses from the aircraft panels 3P and 4P.
- (3) Connect the appropriate extension cable to each panel by inserting the fuse end fitting in the fuse holder, ensuring that the positional marking TOP is uppermost.
- (4) Connect the crocodile earthing clip to the panel.
- (5) Set the test set switch and circuit breakers to the OFF position.
- (6) Connect the appropriate current supplies to the aircraft ground connections.
- (7) Set the circuit breakers to the ON position. Indicator lamps should light.

#### WARNING . . .

**The indicator lamps must be ON before operating the air brakes.**

11. For normal operation, select the position required on the aircraft selector switch, set the test set switch to NORMAL, and the air brakes will be driven to the selected position.
12. To set the air brakes at any intermediate position, repeatedly engage the test set

switch in the INCHING position. The air brakes will be operated in stages and can thus be set to any position within the range selected on the aircraft selector switch.

#### WARNING

**Air brake drag post extension or retraction during each inching movement must not be less than four inches.**

#### Note . . .

*Due to installation of time delay units in the aircraft system, a period varying from 0.25 seconds to 1.05 seconds will elapse between selection of the test switch and air brake movement.*

#### After test

13. (1) Return the air brakes to the IN position.
- (2) Disconnect current supplies from the aircraft.
- (3) Disconnect the extension cables and stow in the test set.
- (4) Refit the airbrake circuit 2.5 amp. fuses.

#### SERVICING

14. The test set will require little servicing other than periodic checking of the lamp filaments for serviceability. Extension cables should be examined periodically for damage to the outer cover and end connections, and should be wiped free of oil and grease before stowing.

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LIGHTNING MK. 1  
COVER PITOT HEAD  
EB2-88-5111