# Chapter 18

# MISCELLANEOUS SYSTEMS

*(Completely Revised)*

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## LIST OF ILLUSTRATIONS



### Introduction

1. This chapter contains descriptive and servicing information on those systems not directly associated with any of the major aircraft systems described in the preceding and subsequent chapters. At present only the windscreen wipers fall into this category, but if at a later date other miscellaneous systems are fitted in the aircraft, they too will be described here.

## PILOTS' WINDSCREEN WIPERS

### General description

2. A Dunlop Maxivue windscreen wiper system is fitted in the aircraft to provide clear vision in foul weather, for both pilots. The system consists essentially of two motor driven hydraulic pumps which operate, three wiper heads and three wiper arms; one on each main panel of the windscreen. The pump motors are of the four-pole compound wound type, each fitted with a gear box which gives a reduction ratio of 39-1. The hydraulic system is described in Sect.3, Chap.6, where an illustration of the complete system will be found. A routing chart of the electrical supplies is provided (fig.1).

## DESCRIPTION AND OPERATION

3. The main components of the system are as follows:-

| | |
|---|---|
| Pump units | Type AC 13444 |
| Pump motors | Type LD 1206 |
| Wiper heads | |
| port | Type ACM 18606 |
| centre | Type ACM 21120 |
| stbd. | Type ACM 18608 |
| Wiper arms | |
| port | Type ACM 18610 |
| centre | Type ACM 18612 |
| stbd. | Type ACM 18612 |
| Wiper blades | Type ACM 20994 |

### Location

4. The two pump units, port and starboard, and their associated motors are mounted on the pilots' floor, one by each set of control pedals. The Type 02 suppressors, which are fitted one in each motor supply line, are mounted near their respective motors. Hydraulic pipe lines run from each pump unit to the wiper heads which are mounted on the cockpit rail immediately below their respective windscreen panels. In addition to operating the port wiper head the port pump unit also supplies the centre wiper head.

### Controls

5. Two 3-position double-pole switches control the supplies to the pump motors. The switches, Type 10004, are labelled OFF-FAST-SLOW and are fitted at the pilots' station; the port switch on the radio altimeter panel and the starboard switch on the second pilots' instrument panel. The port and centre panel wipers are controlled by the port switch, the starboard wiper by the starboard switch.

### Circuit operation

6. A 28-volt d.c. supply is fed to each motor from a 24-volt circuit breaker. The port motor is supplied by C/B 30 in panel 3P and the starboard motor by C/B 18 in panel 4P. The supplies are routed via fast and slow speed relays which are controlled by the pilots' switches.

7. Reference to fig.1 will show that when the first pilot's control switch is moved from OFF to FAST a 28-volt d.c. supply from fuse 518 passes via switch contacts 4-5 to energize relay 197. The closing of contacts A1-A2 in relay 197 will feed a supply from C/B 30 to the port control box.

8. Inside the control box the supply is split into two separate supplies, one to the field winding and one to the armature winding. Unlike the supply to the field winding, which is fed direct, the supply to the armature is presented with alternative paths, dependent upon the contacts of the relay within the box.

9. With the switch in the FAST position the control box relay is de-energized and the path for the armature winding supply is via the closed relay contacts A3-A2. The armature winding thus receives the full supply and the motor runs at maximum speed. When the switch is moved to the SLOW position the control box relay is energized by a supply from fuse 518, via switch contacts 1-2. Energizing the control box relay will break the direct path to the armature winding and the supply will be fed via the resistors in the control box. The motor will then run at a reduced speed. Operation of the starboard system is identical.

## SERVICING

#### PILOTS' WINDSCREEN WIPERS

10. The components and wiring of the windscreen wiper system should be examined periodically for security and signs of damage.

### Pump motors

11. The pump motors, Type L.D.1206 require little servicing other than a periodical check on brush lengths and brush spring pressures.

### Wiper assemblies

12. Complete servicing details for the pump units, wiper heads and wiper arms will be found in A.P.1803S, Vol.1, Book 2, Sect.11. Instructions for setting the wiper arms and for bleeding the hydraulic system will be found in Sect.3, Chap.6. The windscreen wipers must not be operated on a dry windscreen.

## REMOVAL AND ASSEMBLY

#### PILOTS' WINDSCREEN WIPERS

13. The components which comprise the windscreen wiper system are all readily accessible and no special instructions are required.

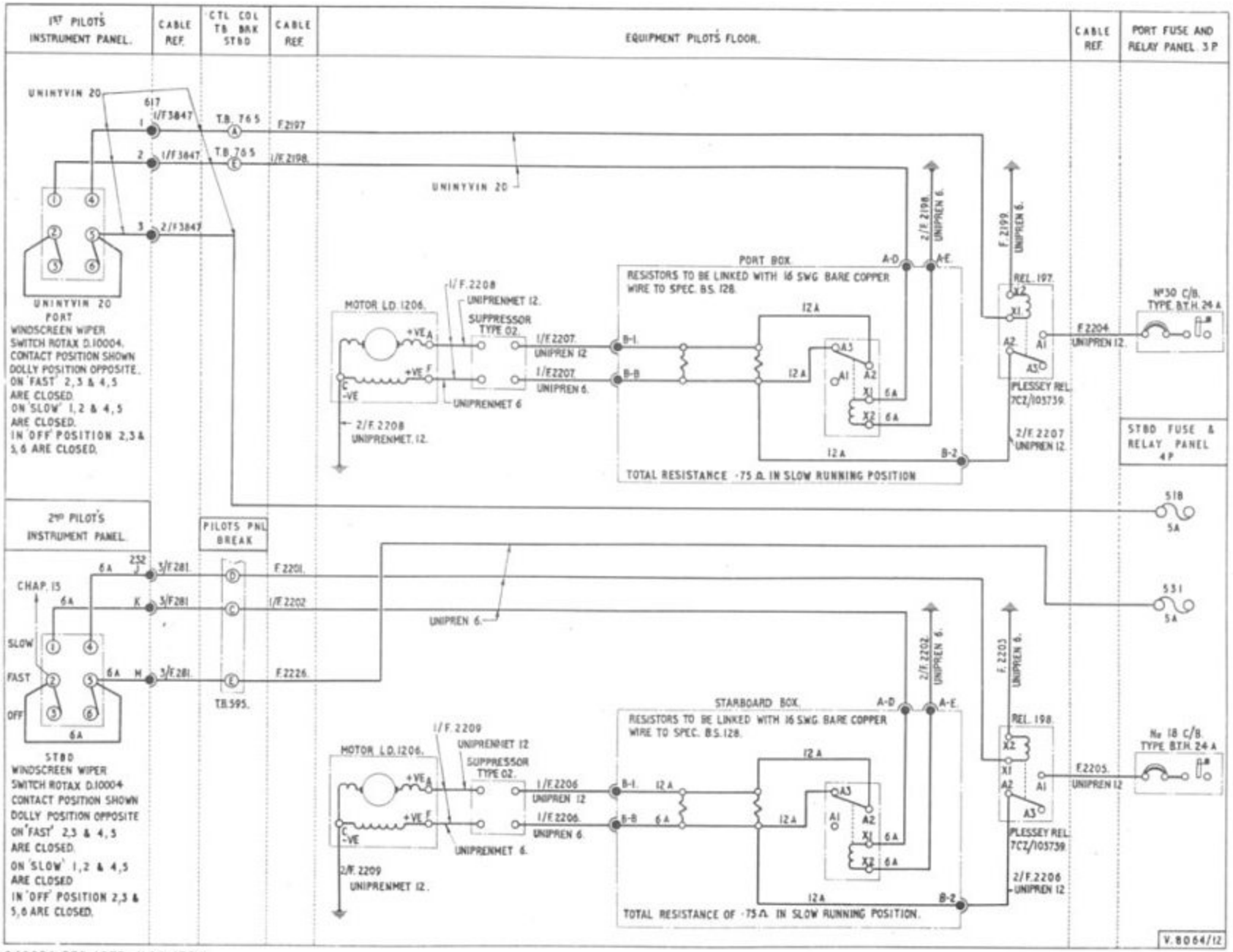


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Fig.1 Pilots windscreen wipers

◄ Mod. 908 and 1856 incorporated ►