

Chapter 20  
BOMB FUZING AND RELEASE - NORMAL

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**Introduction**

1. This chapter contains descriptive and servicing information on the circuits which form the normal bombing installation. Illustrations showing the location of equipment are included, along with theoretical circuit diagrams. The associated routing charts are provided at the end of the text.

2. The system can be selected by the nav./bomber for manual release or for automatic release under N.B.S. control. Further information on the N.B.S. will be found in Sect. 7, Chap. 5.

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3. The following modifications are included in this chapter:-

Mod.1439 - Introduction of double-pole bomb firing switches in lieu of single pole switches.

Mod.1666 - Introduction of Diamond H relay 796 in N.B.S. isolation circuit.

Mod.1977 - Introduction of double-pole bomb firing switch at pilots' engine console.

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Mod.2132 - To modify aircraft switching to cater for V.T. tail fuzing.

Mod.2201 - To introduce a low level visual release system.

With this amendment the following modification is included:-

Mod.2285 - To introduce fixed fittings and electrical connections to enable the installation of a conventional weapons response simulator operating from the Type 11/12 bombing system.

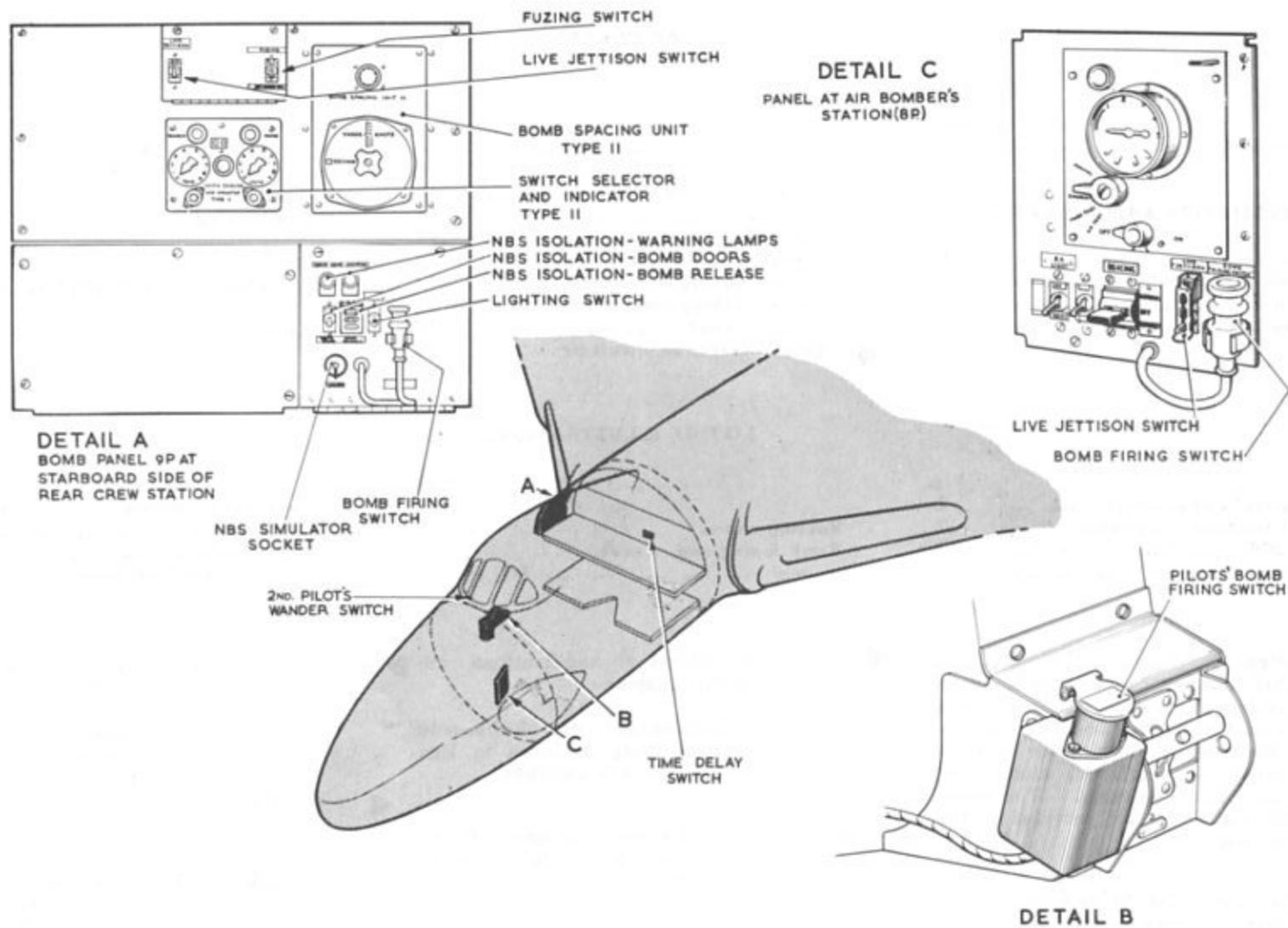


Fig.1 Bomb panel and controls

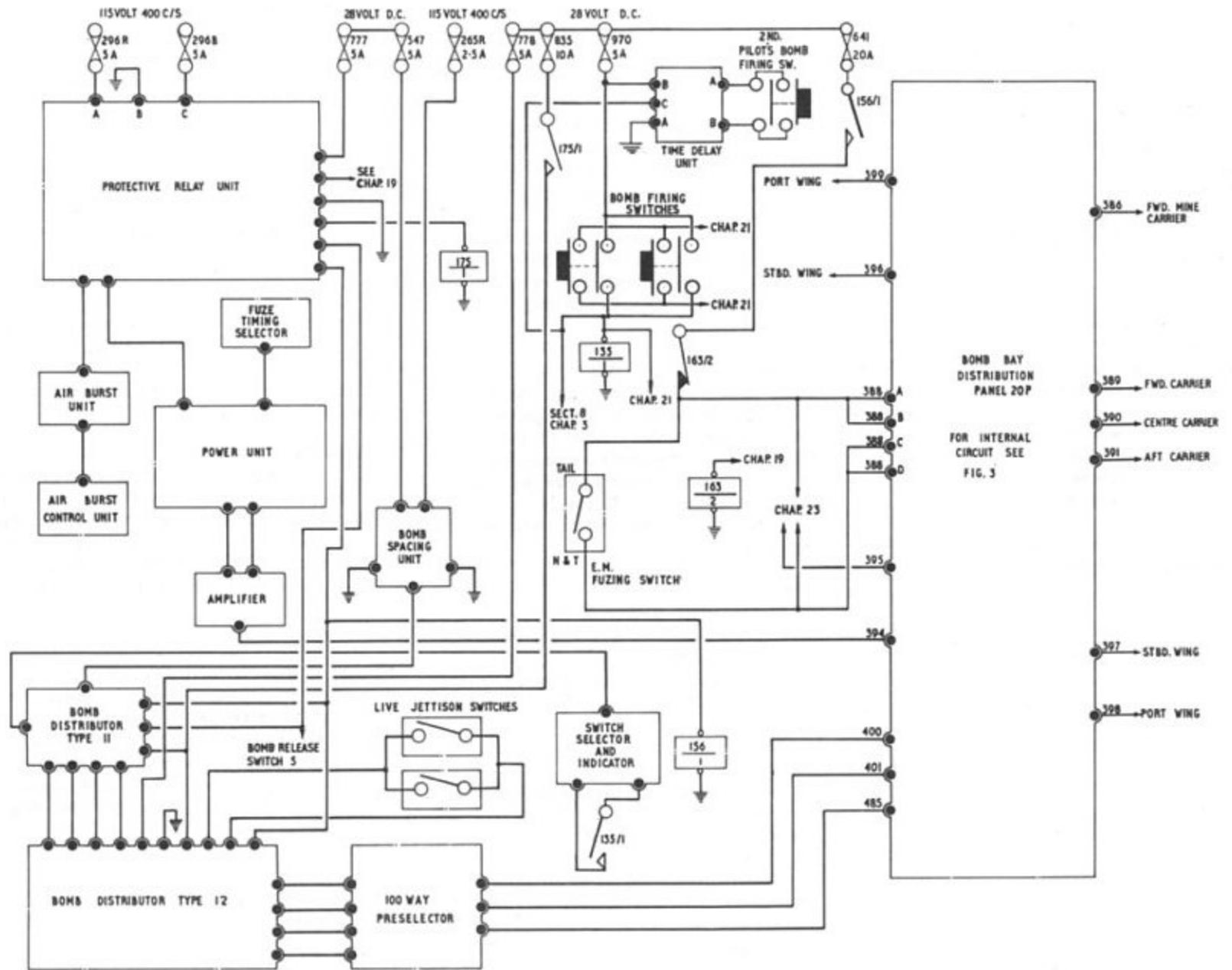


Fig.2 Normal bombing installation

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## DESCRIPTION AND OPERATION

### General

4. The normal bombing installation uses three 7-way, 1 000 lb carriers, Type AV179, mounted transversely in the bomb bay, the various controls for the fuzing and release of the stores being located on the nav./bomber's panel 9P. Bomb firing switches are also provided at the prone air bomber's panel 8P and at the pilot's station (fig.1). Remote control units for the system are mounted on the rear face of the front spar in the bomb bay as shown in fig.4.

### Switches and control units

5. The switches and control units for the normal bombing circuits may be grouped according to their function as follows:-

Selection  
Fuzing  
Release  
Jettison

This order is used for the description given in the following paragraphs.

### Selection

6. The units listed below provide the means of selecting which bombs shall be released, and the spacing, pattern and distribution of release.

Switch selector and indicator Type 11	
Bomb spacing unit, Type 11	Panel 9P
Air burst control unit (Space provision)	
Bomb distributor, Type 11	
100-way preselector unit	Bomb bay
Air burst apparatus	

A full description of each unit will be found in A.P.113G-0103-1.

### Fuzing

7. Bomb fuzing is controlled by the switch labelled EM. NOSE & TAIL, on 9P. A supply to the fuzing switch will be made when the bomb doors are in the full open position. The bomb doors open micro switches (Chap.19) will then complete the circuit from fuse 481 to the protective relay unit (fig.2) to energize relay 156. The fuzing switch will now be fed from fuse 641 via contacts 156/1 and 163/2. Note that when the emergency bomb jettison switch is selected to JETTISON (Chap.19), relay 163 will be energized to open contacts 163/2 and isolate the fuzing circuits.

### Release

Three double-pole bomb firing switches are fitted, one on the nav./bomber's panel 9P, one on the prone bomber's panel 8P and one on the port side of the pilot's engine console. Any bomb firing switch, when pressed, will energize relay 135 from fuse 970 (fig.2) to complete the circuits via the switch selector and indicator.

### NOTE . . .

*When Mod.2201 is embodied, an additional bomb firing switch is fitted at the 2nd. pilot's station and a time delay unit on the navigators' panel. Operation of the switch energizes relay 135 via the T.D.U. and fuse 970.*

### Jettison

9. Two switches, labelled LIVE JETTISON, one on 9P and one on 8P are for live jettisoning of the bombs. Operation of either switch will complete the circuit via the bomb distributor, Type 12, fitted on the front spar in the bomb bay. For details of emergency jettison operation using the emergency bomb jettison switch on the 1st pilot's port console, reference should be made to Chap.19.

### Power unit and amplifier

10. Provision is made on the front spar in the bomb bay for including a power unit and amplifier in the system when required.

### Bomb carriers

11. Three carriers, Type AV179, each carrying seven 1 000 lb bombs, are used in the normal bombing role. Hoisting and suspension units to accommodate the carriers are fitted, one port and one starboard, at the following stations:-

Forward station	- Bomb arch	44.5
Centre station	- Bomb arch	151.9
Aft station	- Bomb arch	259

Full details of the Type AV179 carrier will be found in A.P.110G-0122-125F.

### Panel 20P

12. This panel, mounted on the roof of the bomb bay at bomb arch 182.9 is the main distribution panel between the control circuits and the carriers. Fig.2 shows how the panel connects with the carriers and control units. Fig.3 shows the internal wiring of the panel.

### Connection to carriers

13. Connection of the aircraft wiring to the carriers is made via a UKAN plug break, 2-pole (UKAN-ET 8000-18-105, port) and a UKAN plug break, 20-pole (UKAN-ET 8000-22-145 stbd.) mounted in the bomb bay roof at the three carrier stations. The 2-pole connectors carry the jettison circuits and the 20-pole connectors carry the fuzing and release circuits.

### Carrier loading and locking

14. The carriers are preloaded then hoisted into position by special hydraulic jacks. The use of the jacks ensures that

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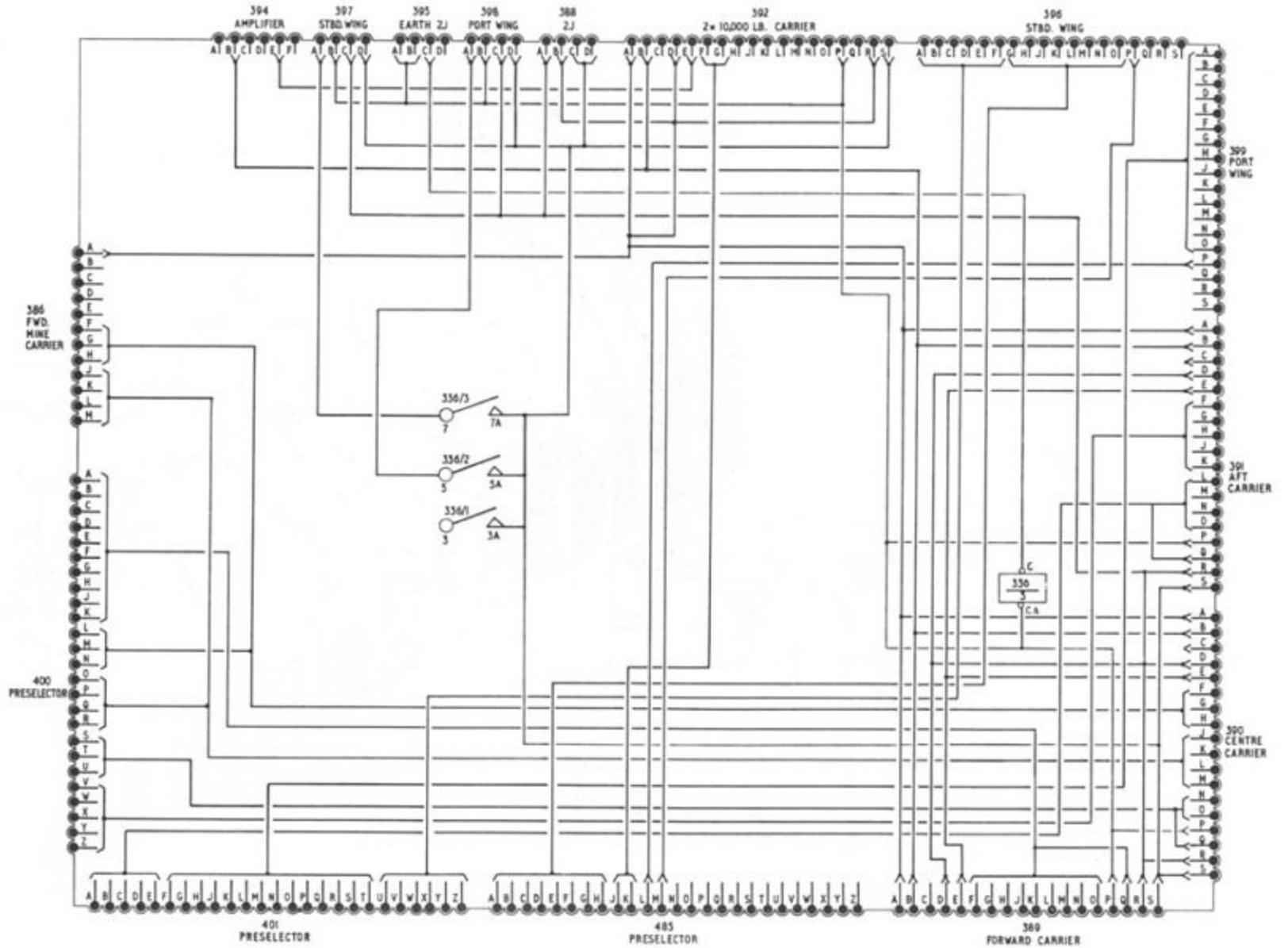


Fig.3 Panel 20P

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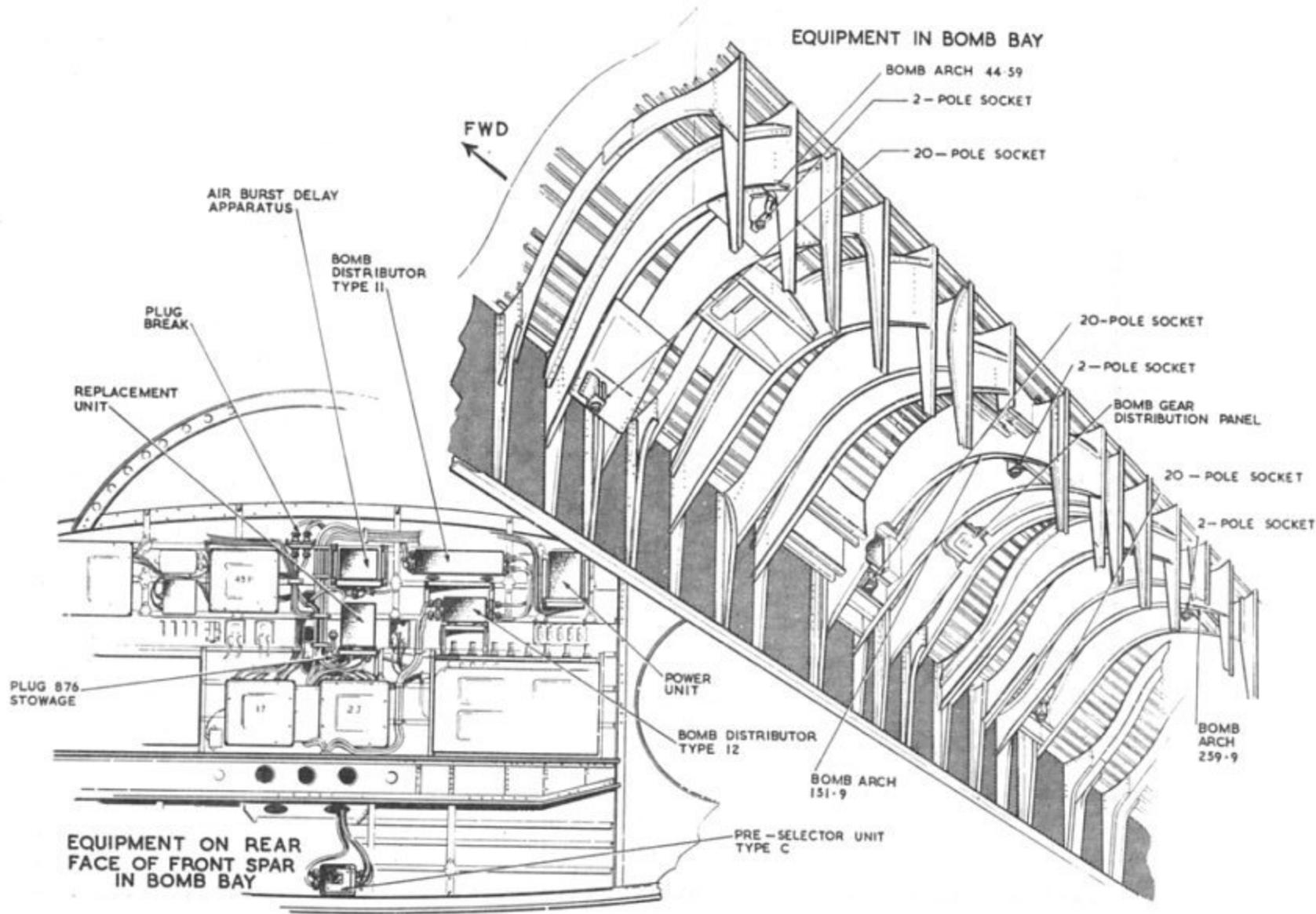


Fig.4. Bomb bay equipment

◀ Mod/Arm/641 - AV-179/6 ▶

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the carriers are correctly located in their hoisting and suspension units. A safety lock prevents the jacks being withdrawn until the carrier is mechanically locked to the hoisting and suspension units. Detailed instructions for loading the carriers into the aircraft are given in A.P.2852B, Vol.1.

#### Carrier locking indication

15. Each hoisting and suspension unit at the carrier stations is fitted with an internal micro switch, which is operated to close when the carrier locking wedge is fully locked on the hoisting and suspension unit. The switches are wired to a test socket fitted on the aft face of the front spar, and by plugging a cocking indicator test set into the socket, an indication will be given as each carrier wedge locks securely into the hoisting and suspension unit. The circuit is shown in fig.9.

#### General

21. All items of equipment should be examined periodically for security, cleanliness and freedom from damage, and particular attention should be paid to the tightness of connections of the associated cable assemblies. Servicing information

#### N.B.S. control

16. The system can be brought under N.B.S. control in which case opening of the bomb doors and release of the bombs will be made automatically by signals from the N.B.S. Reference to fig.8 will show that the N.B.S. signals are fed from plug 12 of the N.B.S. junction box via two isolation switches, one for bomb doors and one for bomb release, each labelled NORMAL - ISOLATE on 9P. Two indicator lamps, one green and one red above the switches, provide indication of the N.B.S. signals for bomb doors and bomb release respectively.

17. With the switches set to NORMAL and the system under N.B.S. control, a supply from pin E of plug 12 will energise relay 796 (fig.8). A supply from fuse 582 will then be made across contacts 2-3 of relay 796, contacts 2-1 of the bomb doors isolation switch and the contacts of the bomb doors selector switch to open the bomb doors. At the same time, the green indicator lamp will light.

#### SERVICING

on individual units will be found in A.P. 113G-0103-1.

#### Function tests

22. Function tests of the system are

18. Two further supplies from plug 12 will also be made, one from pin F via contacts 6-5 of the bomb release isolation switch to the protective relay unit and the bomb distributor, Type 11, and the other from pin A via contacts 2-3 of the bomb release isolation switch to energise the bomb firing relay 135. At the same time, the red indicator lamp will light (The operation of relay 548 is described in Chap.21).

19. The bomb doors and bomb release circuits can be isolated from N.B.S. control, when required, by placing the two isolation switches to ISOLATE.

#### ◀ Weapon response simulator

20. Where Mod.2285 is found embodied, fixed fittings and a stowage plug (876) are fitted to fuze control unit Type 2 pedestal to enable the installation of a conventional weapon response simulator. ▶

carried out using a bomb release test truck. The truck is equipped with bomb carrier simulators so that a complete check of the system can be made. Full details of the truck and the method of testing are given in A.P.4343V, Vol.1.

#### REMOVAL AND INSTALLATION

#### General

23. Most of the equipment of the normal bombing installation is readily accessible and easily removed, therefore no detailed removal instructions are necessary.

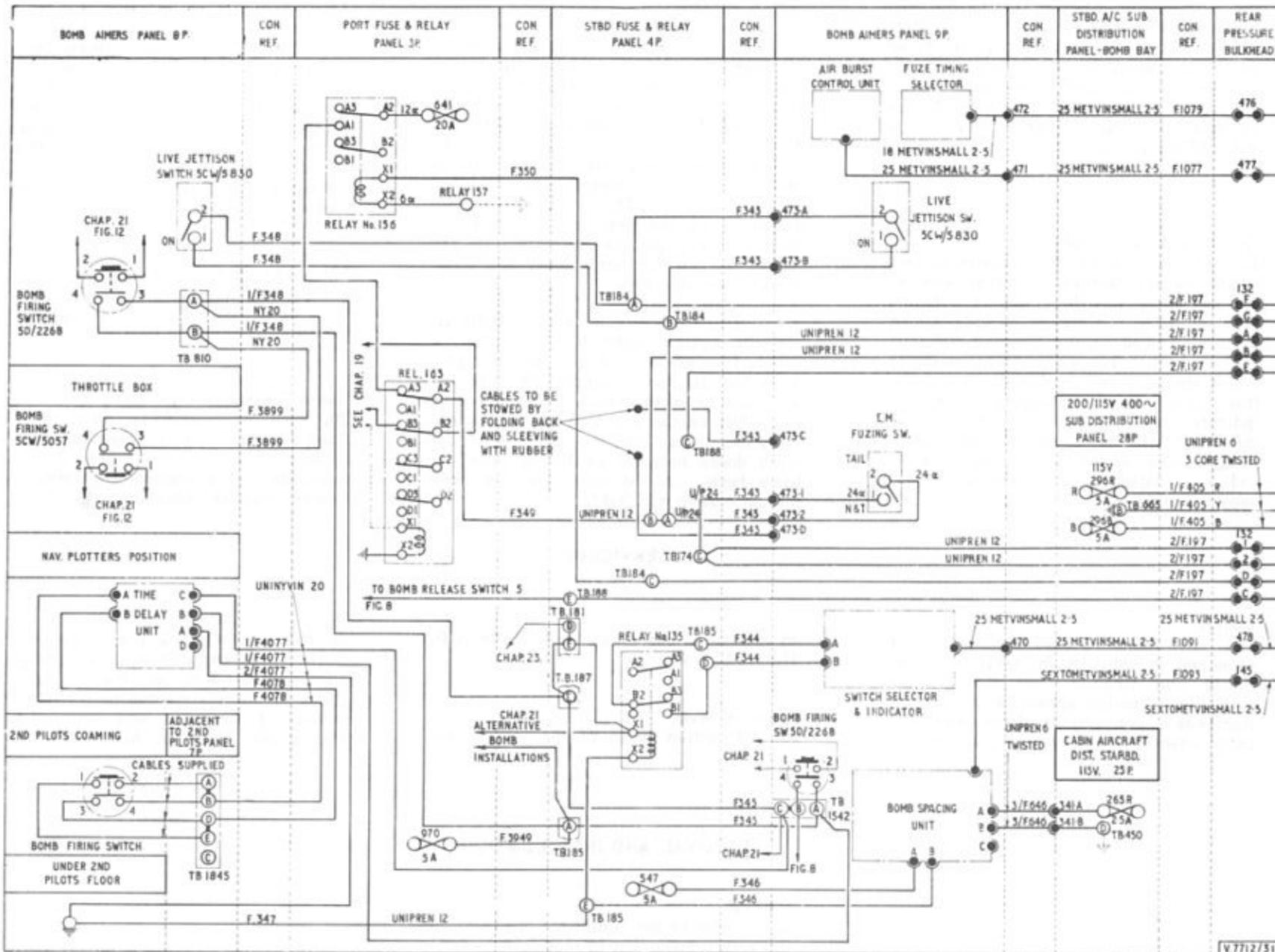


Fig. 5 (1) Bomb fuzing and release - normal



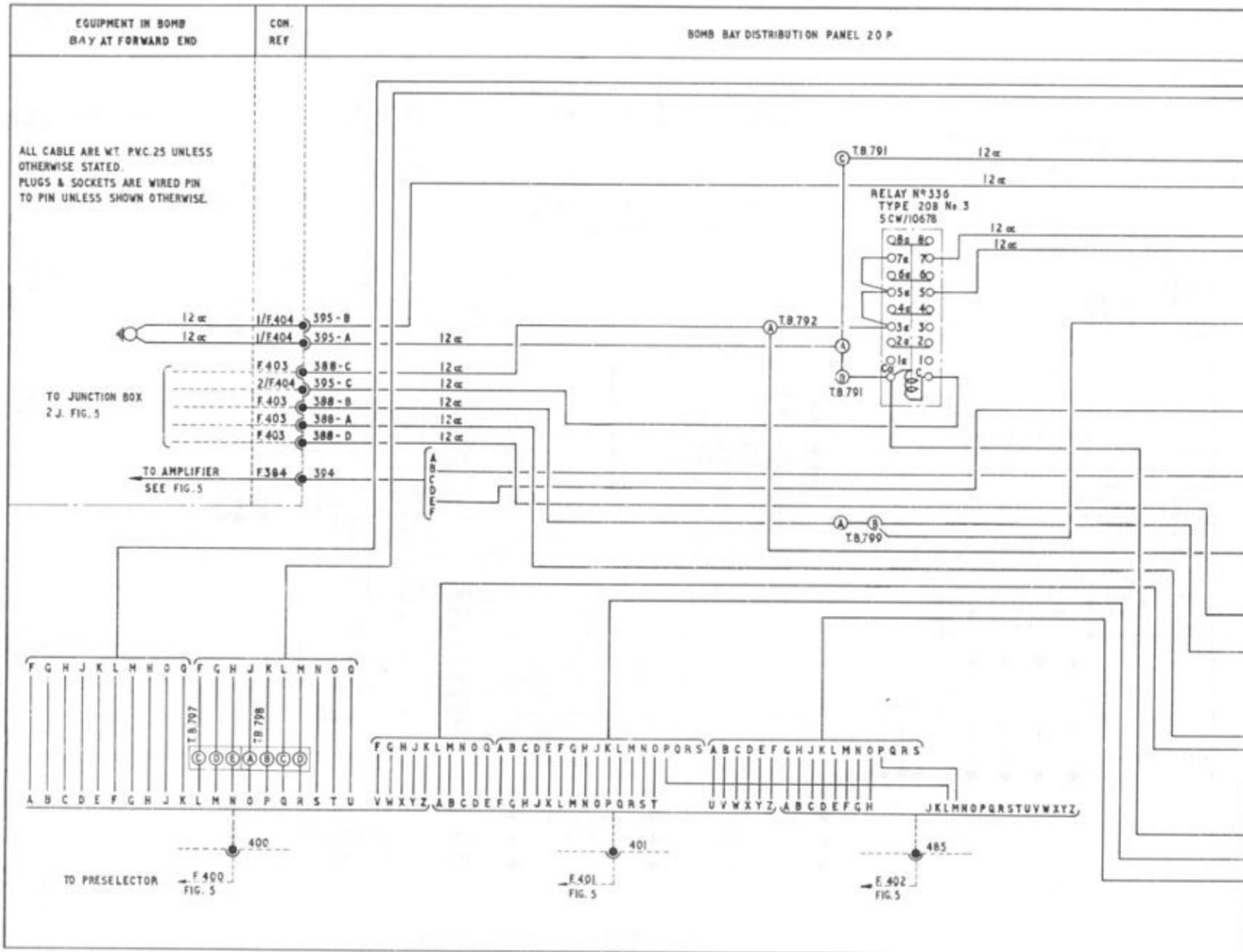


Fig.6(1) 7-way bomb carriers

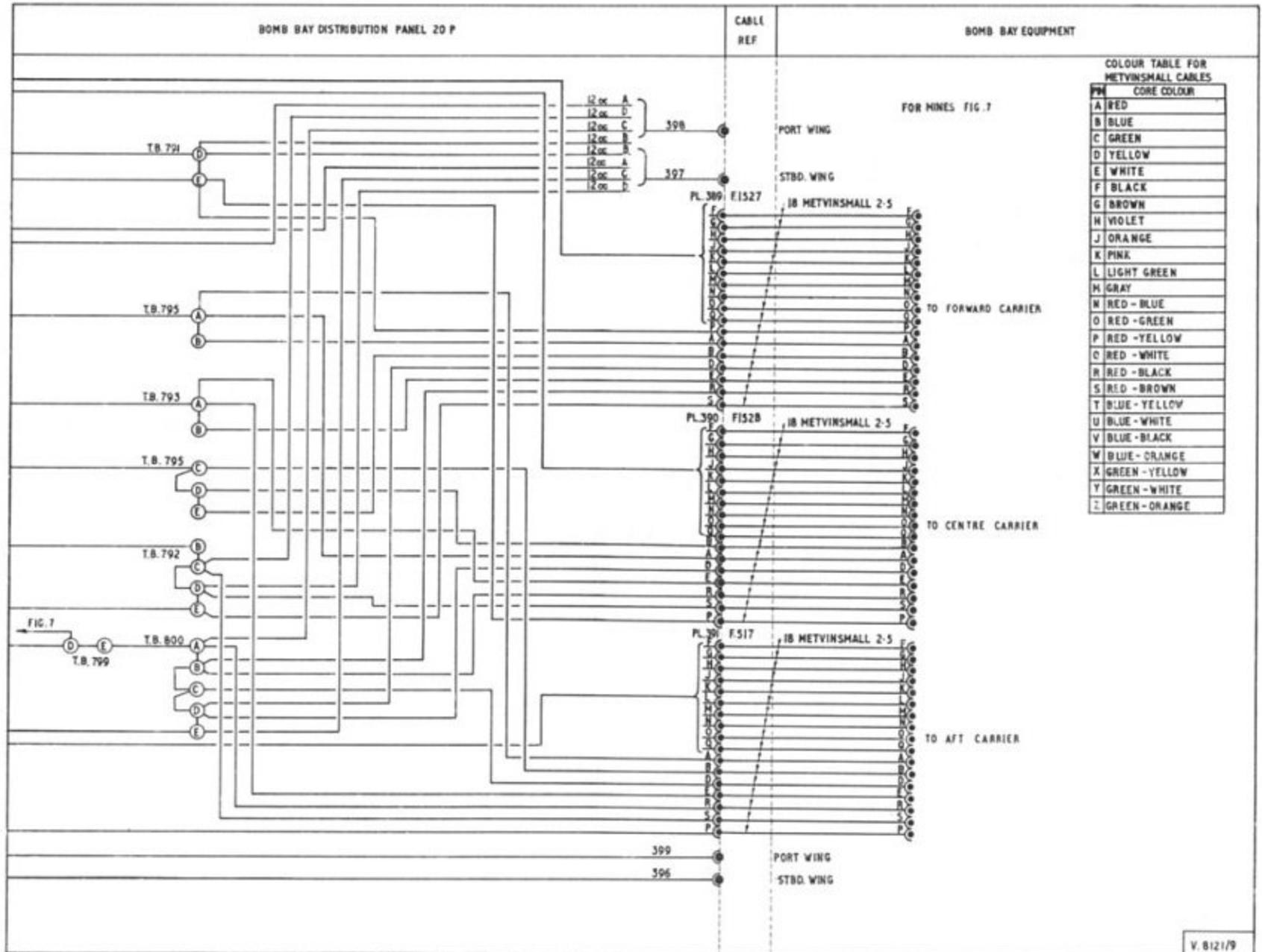
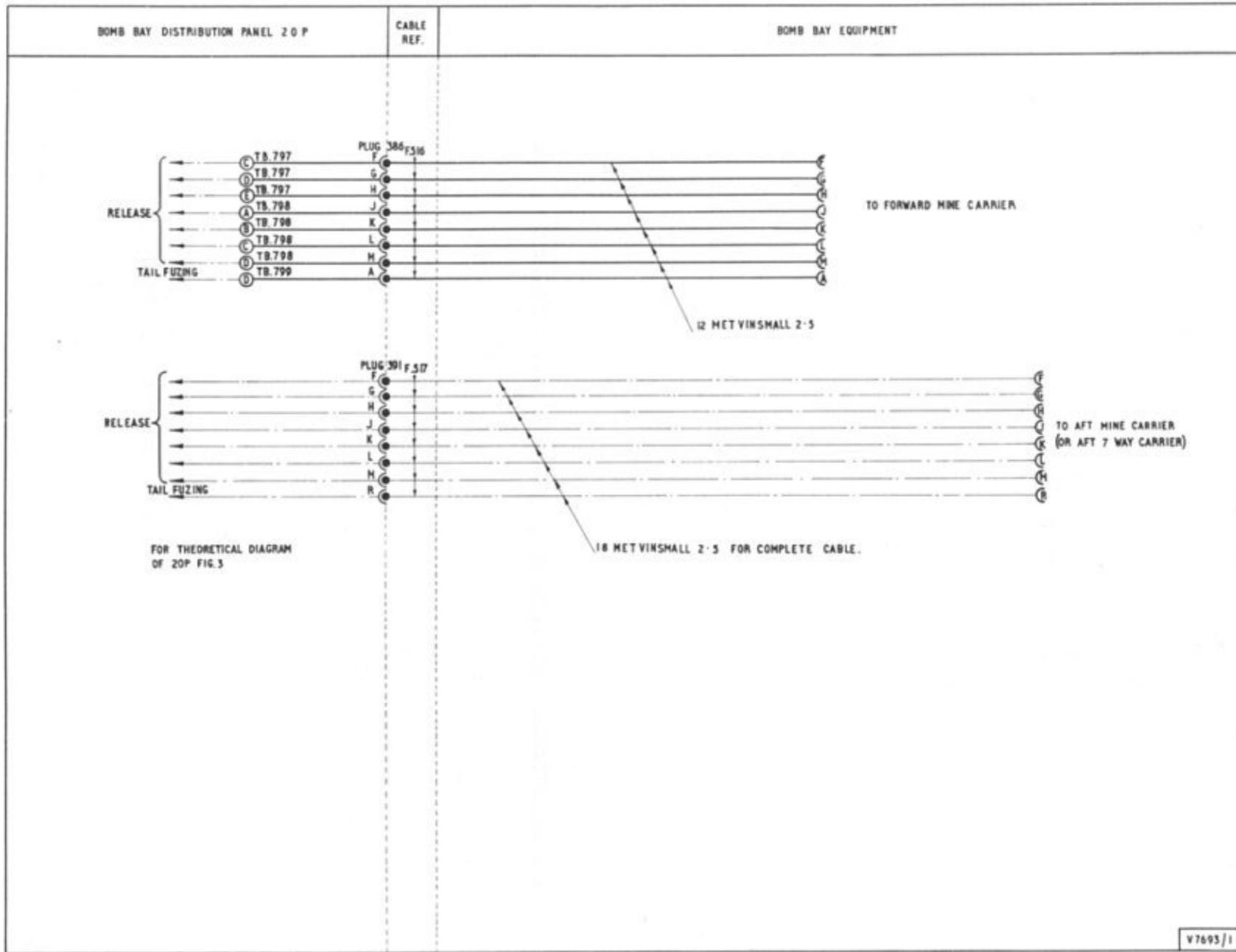


Fig. 6 (2) 7-way bomb carriers

Mod. IArm/641-AV-17916

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Fig. 7 Mine carriers  
 Mod/Arm/641-AV-179/6  
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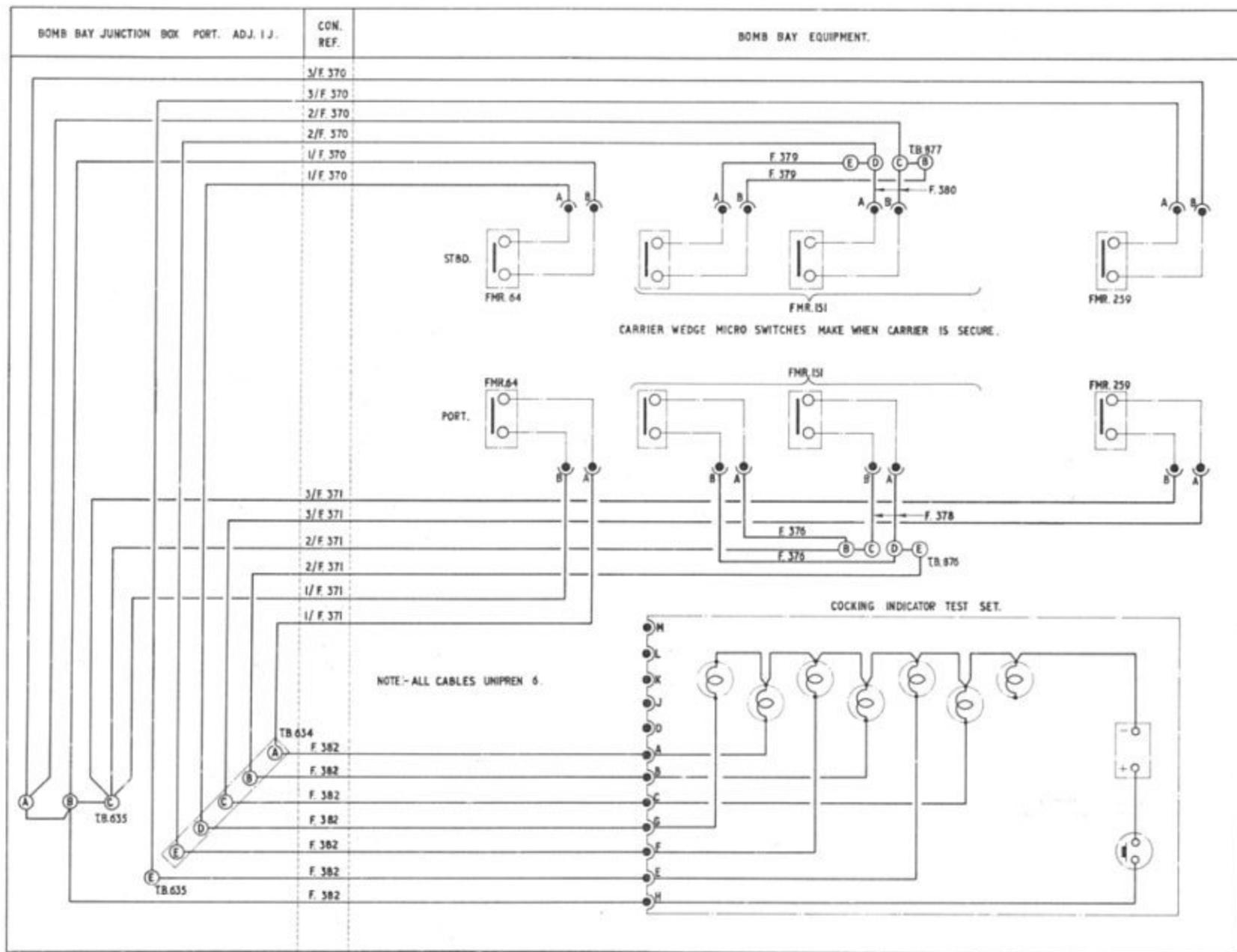


Fig.9 Carrier locking indication

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