Chapter 24

WINDOW INSTALLATION

(Completely revised)

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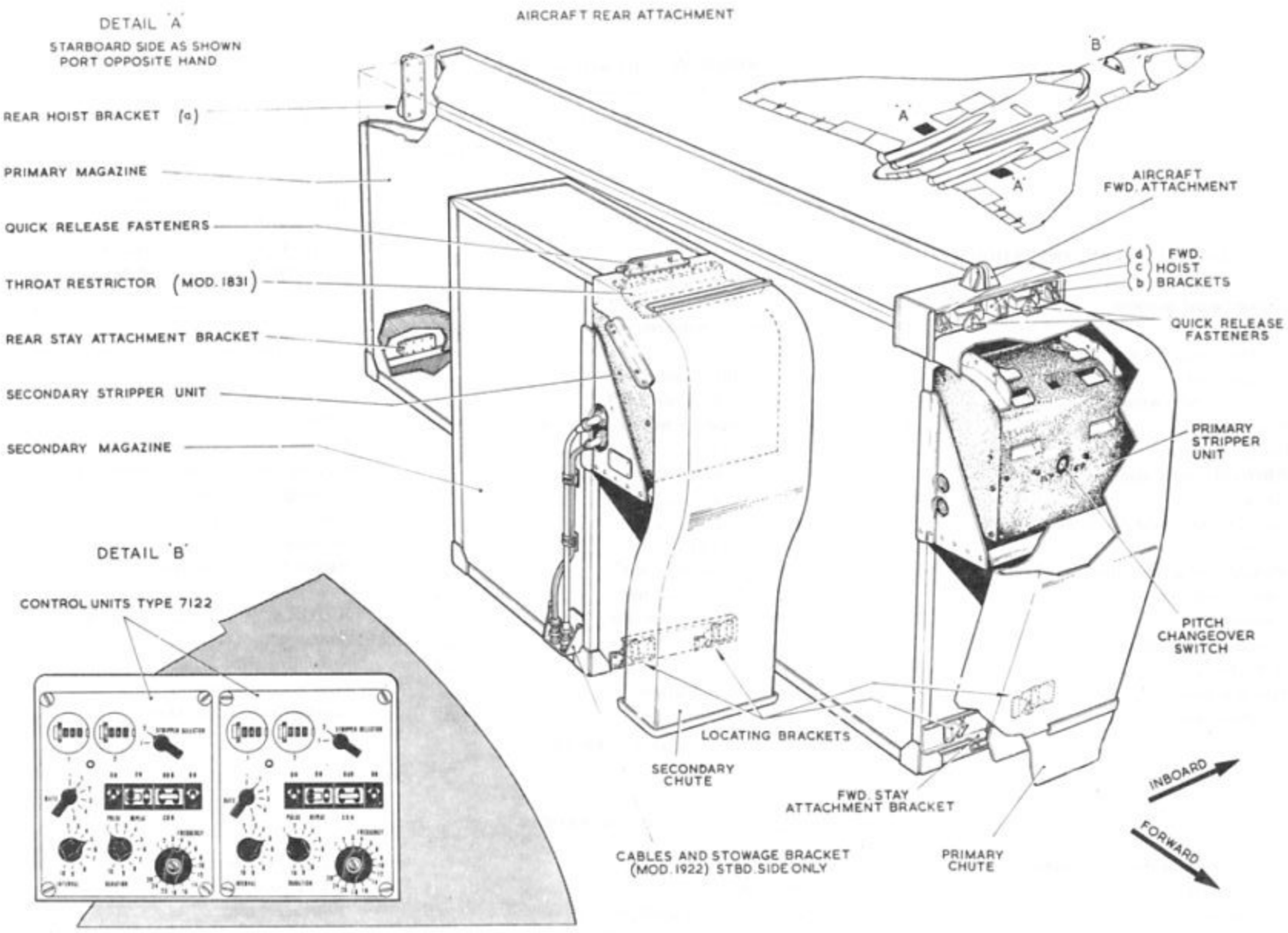


Fig. 1 Conventional window -- location of components.

Introduction

1. This chapter deals with the window dispensing installation (post Mod.1300) fitted to the aircraft and used for electronic counter-measure purposes.

2. The installation is designed to dispense/discharge conventional window, delayed action window (D.A.W.) and R.B.W/I.R.D. (rapid blooming window/infra-red decoy). The dispensing units and associated equipment are located in suitable compartments in the undersurface of each wing, aft of the port and starboard undercarriage bays. Control of the installation is by control units, located at the A.E.O. position at the navigation station.

3. Conventional window in the form of bundles of aluminium foil strips is ejected via the dispensers into the aircraft slipstream, at either a continuous rate, single bursts or repeated bursts. R.B.W/I.R.D. has an electro-mechanically operated firing mechanism to discharge either or both Type 200 and Type 400 payloads, using 2.25 in. cartridges, from the discharger chutes.

4. Descriptive and servicing information for conventional window equipment is contained in A.P.113F-1101-1. The overall R.B.W/I.R.D. equipment and cartridge dischargers are covered in A.P.1641H, Vol.1, Chap.17. Both publications should be read in conjunction with this chapter. The following modifications are included in this amendment:-

Mod.1300 – Makes provision for R.B.W/I.R.D. also introduces port and starboard bottom access panels embodying Mod.1458 (Blue Steel aircraft only). For free fall aircraft, the starboard access panel is modified to Mod.1458 and the port access panel to Mods.1458 and 1832 to accommodate D.A.W. (fixed fittings).

Mod.1357 – Introduces a secondary window container, Part No.28/Z9872 which is a modified version of container Part No.1/Z9872, and allows the secondary dispensers to be fitted alongside the R.B.W/I.R.D. discharger or conventional window primary dispenser (Removable fittings).

Mod.1414 – Provides for increased clearance for fitment and removal of window dispensers by re-routing certain vent and servo pipes of the fuel system, and also general electrical service cabling in the window bay. (Fixed fittings).

Mod.1458 – Repositions the A.A.P.P. bulkhead to allow the secondary dispenser to move forward, also introduces rubbing blocks fitted to rib 162.5 Details on modifying the bottom port and starboard access panels are also given, and the exit chutes are re-positioned to suit the re-designed normal launching chutes. (Fixed fittings).

Mod.1831 – Introduces throat restrictors to both port and starboard primary and secondary dispenser chutes for use with conventional window only. (Removable fittings).

Mod.1832 – S.O.O. Modifies an existing port bottom access panel, by repositioning a chute exit aperture to suit the new D.A.W. secondary container introduced by Mod.1833. The panel is a compatable item for aircraft carring a R.B.W/I.R.D. discharger or conventional window primary dispenser. (Fixed fittings).

Mod.1833 – Introduces a special secondary dispenser, S.O.O. Part No.1/Z11053 for fitment on port wing only and will dispense either conventional or D.A.W. (Removable fittings).

Mod.1922 – Introduce primary dispenser Part No.98/Z8226, which is a modified version of Part No.62/Z8226, and allows a secondary dispenser (Mod.1357 embodied) to be fitted alongside. The secondary container is also modified to provide cable stowage attachments when the container is used in the starboard installation and becomes Part No.33/Z9872. In addition the port and starboard primary chutes are also modified and become Part No's. 37 and 38/Z8277 respectively. (Removable fittings).

Mod.1976 – Provides a separate 28-volt power supply for the R.B.W/I.R.D. installation, obtained from the normal 200-volt busbars, using a transformer-rectifier unit, Part No. U/5002, Ref.No. 5UC/7882.

Mod.2061 – Introduces an isolation circuit to the R.B.W/I.R.D. installation to allow for separate isolation of the installation without interrupting other electrical work being carried out on the aircraft.

MOd.2177 – Introduces changes required to accommodate a mixed load of conventional window in the port side together with a 2.25 in. cartridge and secondary stripper in the starboard window bay.

Mod.2284 – Makes provision for a selector unit No.1 Mk.1, Ref.No. 7B/2584 to give the facility to operate the 2.25 in. cartridge installation from the A.R.I.5952 control unit action push-button.

NOTE . . .
A complete conventional window dispenser comprises a stripper unit, chute and container. The container may also be known as a magazine. An R.B.W/I.R.D. dispenser structure comprises two dispenser units, one with a long belt and the other a short belt. An R.B.W/I.R.D. dispenser may also be known as a discharger. R.B.W/I.R.D. is also known as Type 200/Type 400 payload.

DESCRIPTION AND OPERATION

CONVENTIONAL WINDOW

General

5. The installation is controlled by two identical control units, Type 7122, mounted side by side at the A.E.O. position, navigation station. The starboard unit controls the primary dispensers in the port and starboard window bays, and the port unit controls the secondary dispensers in the port and starboard window bays. The front panel of each selector control unit is equipped with mode switches, subtractive counters, lamp indicators etc., the functions of which are fully described in A.P.113F-1101-1.

6. An aluminium foil stripper unit, Ref.No. 10AS/460 is fitted into a magazine and the whole unit complete with launching chute is referred to as a primary dispenser. Similar dispensers, with an identical stripper unit but smaller magazines are also fitted, and referred to as secondary dispensers.

7. Two primary dispensers and two secondary dispensers may be fitted, a pair in each port and starboard window bay, according to the aircraft role. Location of the conventional window main components is given in fig.1.

8. Radio interference suppressors, Type B4 and 02 are connected to the 28-volt d.c. inputs at the control units and stripper units respectively. The two Type B4 suppressors are mounted together on a plate attached to the front face of the rear pressure bulkhead, the Type 02 suppressors are fitted in the port and starboard window bays.

9. In order to carry either conventional window, and/or R.B.W/I.R.D. certain cable-forms are utilised for the control of either system. These cable-forms are terminated at each end by sockets fitted to interconnection panels, situated in the port and starboard window bays and behind the A.E.O.'s starboard control aperture as shown in fig.3. The interconnection panels also have dummy sockets for the stowage of cables not in use. Short cables are used between the interconnecting panels and the associated control unit and dispensing system. Further details are given on fig.2 and 3.

Control units Type 7122

10. The STRIPPER SELECTOR switch on each control unit normally controls the following dispensers:-

Starboard control unit
Position No.1 - Starboard primary dispenser
Position No.2 - Port primary dispenser

Port control unit
Position No.1 - Starboard secondary dispenser
Position No.2 - Port secondary dispenser

However, with the introduction of Mod.2177, control of the port primary, port secondary and starboard secondary dispensers can be made from the port control unit, leaving the starboard primary portion of the installation to be fitted with R.B.W/I.R.D. equipment (See Para.46).

11. To effect this requirement, a single-pole selector switch, Ref.No. 5CW/9235, labelled PRIMARY-SECONDARY is fitted on the navigation plotter's panel adjacent to the port control unit. Fitted alongside the selector switch is an electro-magnetic counter, Type 52/3 SAE. Two changeover relays, No.823 and 824, are fitted on a junction and relay box behind the navigation station.

12. Under normal conditions (para.10), with the cables connected as shown by the solid lines on fig.2, the selector switch should be set to the SECONDARY position. The changeover relays 823 and 824, and the electro-magnetic counter are not connected. The port control unit controls the port and starboard secondary dispensers in the normal manner.

13. When the cables are connected according to the dotted positions as shown on fig.2, the port secondary dispenser is connected to the port control unit via the normally closed contacts of relays 823 and 824. With the control unit STRIPPER SELECTOR switch placed to position 2, a positive supply from the port control unit, (plug 2 pin M), is connected to terminal 2 on the PRIMARY - SECONDARY navigators panel selector switch. With the switch in the PRIMARY position, relays 823 and 824 are energised, as their contacts changeover. This action disconnects the port secondary dispenser from the port control unit, and connects the port primary dispenser in its place. Dispensation is metered on the electro-magnetic counter adjacent to the PRIMARY–SECONDARY selector switch.

14. By selection of the appropriate control unit switches, release of aluminium foil may be at a continuous rate, single bursts or repeated bursts. Each control unit also incorporates two electro-mechanical subtractive counter units, one for each stripper unit and a blue inidcator lamp located below the counter units, operated by micro switches in the stripper units. A blue indicator is illuminated each time a packet of foil is delivered, and at the same time, the selected subtractive counter will indicate one digit less. The counters are preset on initial loading to indicate the number of packets in reserve in the magazine.

Stripper unit

15. A stripper unit is attached to the magazine of each primary and secondary dispenser. The magazine is loaded with packets of aluminium foil taped either 2½ or 4 inches apart. An electrically-driven mechanism draws the packets of foil attached to the tapes from the magazine, frees the packets from the tapes, then jettison them via a chute into the aircraft slipstream. The packets of foil are then torn open by the high air pressure and the loose strips of aluminium foil are dispersed over a wide area.

16. The tapes themselves are pulled into the stripper unit via a series of rollers, one of which cuts the tapes into suitable lengths for jettisoning in the chute. Throat restrictors are fitted to the chute to improve the jettisoning of the foil packs.

17. To enable the spacing between the dispersal of packets of foil to be changed from 2½ to 4 inches, a push switch labelled PITCH CHANGEOVER 2½ - 4, is mounted on the front of the stripper unit. After the magazine has been loaded, and 4 inch spacing is selected, a solenoid-operated pitch clutch is engaged to provide the correct gear ratio. This arrangement ensures that the dispensing rate of the packets is the same for both spacings.

Delayed action window

18. The delayed action window (D.A.W.) is dispensed in a similar way to that described for normal window. A D.A.W. packet of aluminium foil, when jettisoned, deploys a small parachute, and also starts operating a clockwork mechanism. After a pre-determined delay, the clockwork mechanism releases the foil pack from the parachute. The packet is then torn open by air pressure and the foil is dispersed in a similar way to conventional window.

19. D.A.W. is dispensed by the port secondary dispenser only. The D.A.W. payload is carried in a special larger secondary magazine introduced by Mod.1833. A port bottom access panel having Mod.1832 embodied must be used so that the chute exit aperture will match up to the D.A.W. dispenser chute position.

Power supplies

20. 28-volt d.c. power supplies to the installation are fed from the following distribution fuses:

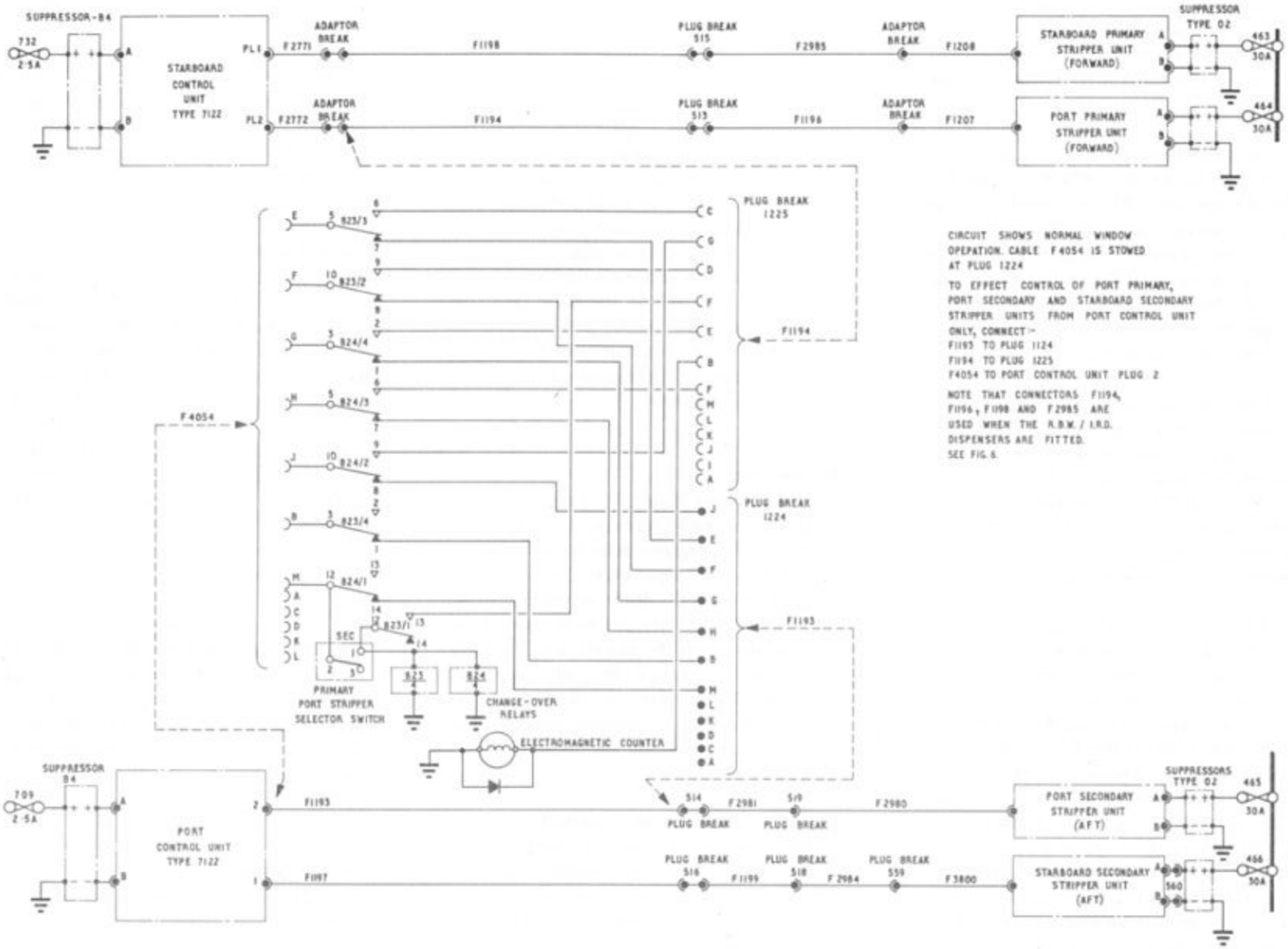


Fig. 2 Conventional window circuit diagram

Panel 48P
Fuse 709 - Port control unit, Type 7122 - port and starboard secondary dispensers.
Fuse 732 - Starboard control unit, Type 7122 - port and starboard primary dispensers.

Panel 26P
Fuse 463 - Starboard primary stripper unit
Fuse 464 - Port primary stripper unit
Fuse 465 - Port secondary stripper unit
Fuse 466 - Starboard secondary stripper unit

Circuit operation

21. The following circuit operation should be read in conjunction with the circuit diagram contained in A.P.113F-1101-1. As the port and starboard installations are similar, the port primary system only is described.

22. A 28-volt d.c. supply is fed from fuse 732 in 48P via the B4 suppressor to the starboard control unit, Type 7122. With the power control switch set to ON and the STRIPPER SELECTOR switch set to position No.2, (port primary dispenser), the supply is connected to the stripper unit and energizes the motor starting relay, Type P.1. Closure of the relay contacts connect a 28-volt d.c. supply, from fuse 464 in 26P, via suppressor 02, to the stripper unit motor, which will commence to rotate. It should be noted that only one stripper unit can be used at any one time.

R.B.W/I.R.D. INSTALLATION

General

23. The system provides a method of discharging either or both Rapid Blooming Window (R.B.W.) and Infra-Red Decoy (I.R.D.) from the aircraft. These are known as Type 200 and Type 400 payloads respectively and each payload is contained in an electrically initiated cartridge.

24. The installation comprises the following major components:-

Port Discharger (dispenser) No.3 Mk.1
Starboard Discharger (dispenser) No.3 Mk.1
Intervalometer No.2 Mk.1
Selector unit No.1 Mk.1

The port and starboard dischargers are carried in the window bays, in the positions normally occupied by the conventional window primary dispensers. The conventional window secondary dispensers can be attached one on the outboard structure of each R.B.W/I.R.D. discharger. The selector unit is located on the navigators panel and occupies the space normally used by the starboard conventional window control unit, Type 7122, and the intervalometer is mounted behind the navigators top shelf. Descriptive and functional information for the complete installations is contained in A.P.1641H, Vol.1, Chap.17, which should be read in conjunction with this chapter.

Port and starboard dischargers

25. These units are identical in construction, and may be fitted in either wing. A discharger comprises two longitudinal beams and two end frames to which are secured the discharger components. The aircraft attachment points are located at the top front and rear of the discharger. Each discharger has two compartments, one having a short chain belt carrying 92 cartridges, the other has a long chain belt carrying 172 cartridges. The drive system and functioning of each unit within the discharger is identical.

Drive units

26. Each discharger has two drive units, one to each cartridge compartment. The drive units contain a 200-volt 3-phase 400 c/s actuator and gearbox, electrical chassis, sweep arm, Geneva gear, sprockets, contact pin assemblies, microswitches, clutch and brake assembly and the means of selecting and firing the required cartridges. A manual drive handle is provided with each discharger for the manual operation of the drive unit and cartridge belts. Manual operations of the mechanism is necessary for the loading of the belts with cartridges, as at certain sections of the belts the discharger structure precludes this being accomplished until the belt is indexed.

Manual operation of the drive units

27. Referring to fig.5, it will be seen that the manual drive handle is secured to the drive shaft of a dispenser (discharger) by a special bolt, screwed in a clockwise direction, into the end of the drive shaft. The special bolt has a large knurled knob to facilitate fitment. The handle may be fitted at either end of the dispenser drive shaft.

28. The drive shaft is disengaged from the motor and clutch mechanism by pulling the handle outwards. The action withdraws the shaft a short way (fig.5). The belt chain can now be operated by the handle being rotated in the direction indicated by the arrows appearing on either side of the dispenser. One revolution of the handle will move the belt one cartridge position. Drive shaft plugs are fitted, and secured by pip-pins to cover the ends of the drive shaft when the manual drive handle is not in use.

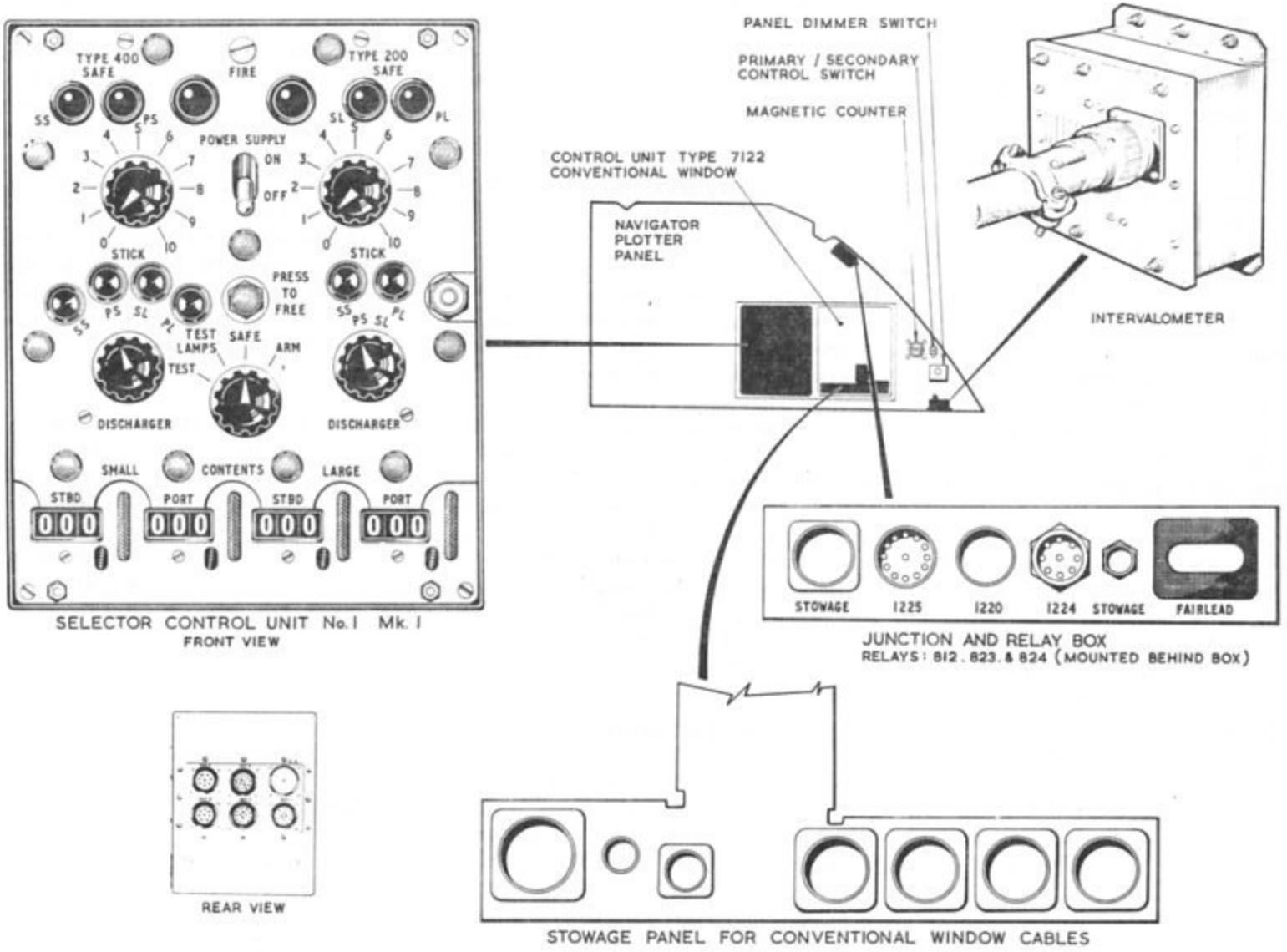


Fig. 3 R.B.W./ I.R.D. navigation station equipment

WARNING . . .
Care must be taken not to rotate the drive shaft in the wrong direction otherwise serious damage to the mechanism will occur.

29. Provided within each drive unit is a four position rotary GROUND selector switch which is set when the discharger belt is armed with cartridges. The four selection provided are:-

(1) Type 200 (R.B.W.) - one cartridge fired per pulse
(2) Type 400/1 (I.R.D.) - one cartridge fired per pulse
(3) Type 400/2 (I.R.D.) - two cartridges fired per pulse
(4) Type 400/4 (I.R.D.) - four cartridges fired per pulse

Before the dispensers are mounted in the aircraft the selector switch is set in accordance with the firing requirements detailed as follows:-

Type 200 — The switch is set to Type 200 when Type 200 cartridges are loaded on the belt and this will provide for cartridges to be fired one at a time from that belt and will ensure that it may only be operated by Type 200 selections made on the A.E.O's selector unit. Any Type 400 selections made at the selector will not cause this unit to function. The corresponding selector switch on the discharger mounted on the opposite side of the aircraft must also be set to Type 200.

Type 400/1 — This selection is made when it is intended to fire Type 400 cartridges, one for each firing pulse. This selection also ensures that only the Type 400 switches on the A.E.O.'s selector unit will control this discharger.

Type 400/2 — This selection enables two cartridges to be fired simultaneously per pulse. In each instance the cartridges fired will be 1 and 3 or 2 and 4. The firing positions are numbered 1, 2, 3 and 4 across the breach plate. This selection of the switch also ensures interlocking of the selection as per 400/1.

Type 400/4 — This position provides for firing of four cartridges per firing pulse; interlocking with the selector unit is provided for as for Type 400/1.

NOTE . . .
Type 200 (R.B.W.) and Type 400 (I.R.D.) cartridges cannot be mixed in any one belt. Type 200 cartridges must be loaded in pairs i.e. if one short or long belt is loaded with R.B.W. then the corresponding belt must also be loaded with the same type of cartridge.

Intervalometer

30. This unit consists of two self-contained solid state multi-vibrator units, one to provide pulses for Type 400 (I.R.D.) payloads at a repetition rate of one pulse every 3 seconds and the other to provide pulses for Type 200 (R.B.W.) payloads at a repetition rate of one pulse every one second. The output pulse from each pulsing unit has a 10 amp rating, using a relay as a final switching element in each instance.

Selector unit

31. This unit (fig.3) provides for the selection of either the starboard small (SS) and port small (PS) or starboard large (SL) and port large (PL) belts of the dischargers. The system is arranged so that when the dischargers are loaded with Type 200 cartridges only, the Type 200 system will indicate when selected, and similarly, when loaded with Type 400 cartridges only, the Type 400 system will indicate when selected.

32. Associated with the Type 200/Type 400 selector switches are stick-selector switches which provide for a stick length selection of between 1 and 10 shots inclusive. Also provided on the selector panel are a power supply switch and a TEST/TEST LAMPS/SAFE/ARM switch.

33. At the top centre of the panel are provided two firing buttons, one for firing Type 200 cartridges and the other for firing Type 400 cartridges. At the lower end of the selector panel are four subtractive counters which, having been set up to the number of shots loaded per belt during ground loading, will always indicate the quantity of cartridge remaining to be fired.

34. To operate the system the required discharger is selected, the required stick length

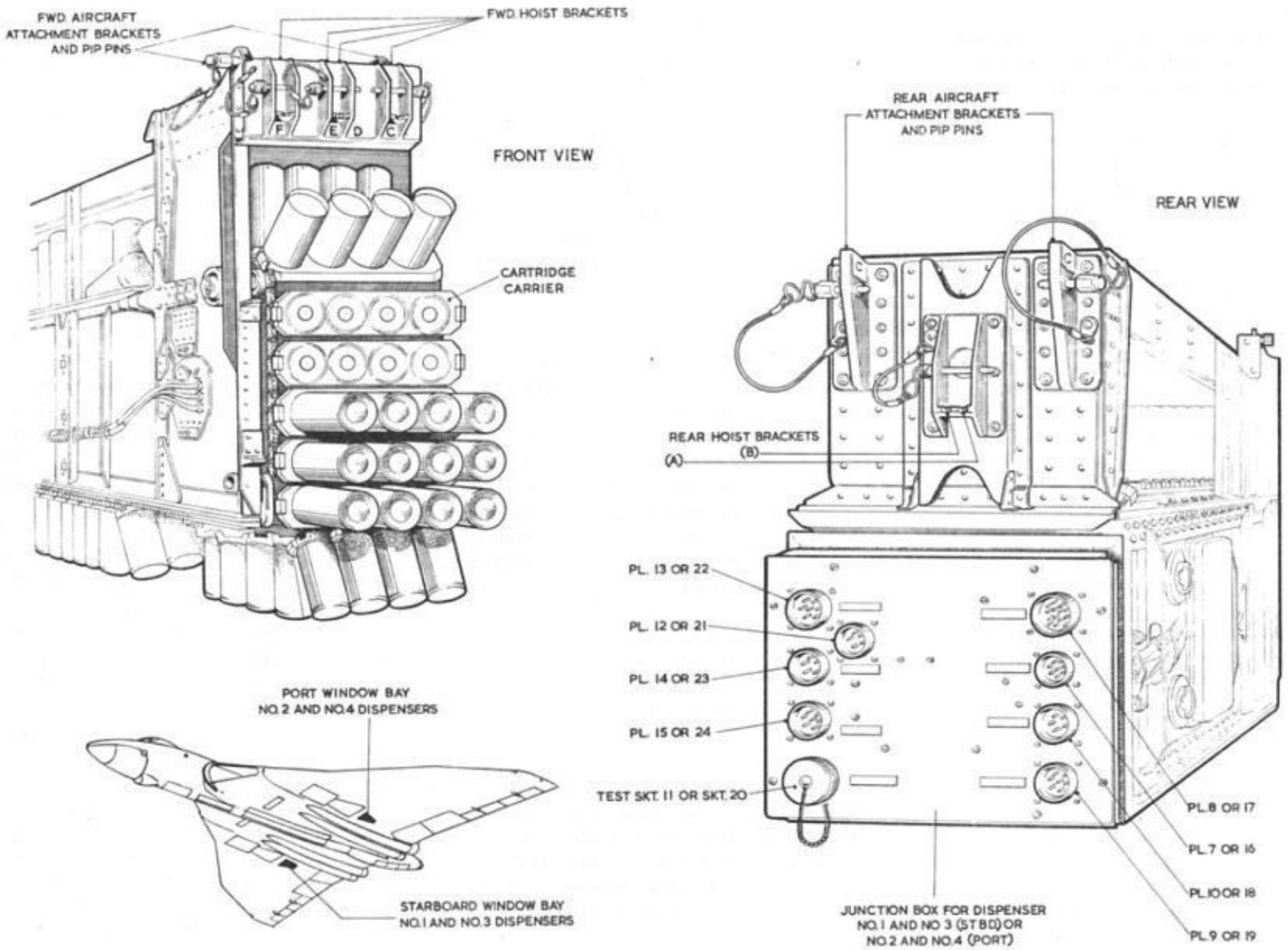


Fig. 4 R.B.W./I.R.D. Discharger (front and rear view)

is selected, then the associated firing button for the type of cartridge is momentarily depressed. Once the firing button is pressed, the equipment will go through a complete sequence of firing to the numbers selected on the stick switch, and will then automatically stop firing, but remain in an 'on demand' state, ready to recommence the sequence up a further depression of the firing button.

35. Where mixed loads of Type 200 and Type 400 cartridges are carried, both firing buttons may be pressed at the same time and the two systems will function independently.

36. The TEST/TEST LAMPS/SAFE/ARM switch provides the solution to enable certain ground testing to be carried out or to fly with the system either safe or armed, the action of the switch being as follows:-

(1) TEST. When the TEST selection is made, this by-passes the aircraft wheels off-ground safety switch (fig.6) and allows the complete discharger systems to be functioned on the ground. When functioned in this mode however, it is safee even when operated with live cartridges. Inadvertent firing being impossible due to both electrical and mechanical interlocks. The former interlock provides for the firing pins being un-energised and the latter interlock preventing the firing pins from making contact with the cartridge bases.

(2) TEST LAMPS. This position of the switch will illuminate all 10 indicator lamps thus checking the integrity of their filaments.

(3) SAFE. This position on the switch is the normal flight position and it retains the dischargers in a safe state, i.e. with the firing pins removed from the cartridge and with the drive motors de-energised.

(4) ARM. With the switch set to this position, the system will commence firing upon depression of either one or both of the firing buttons. The firing pins are in contact with the cartridge basis and the drive motors are running. To prevent inadvertent selection of the rotary switch to the ARM position, a mechanical interlock is incorporated. The interlock is freed when the button labelled PRESS TO FREE, located above the rotary switch, is depressed. This action entails the use of both hands.

SELECTOR UNIT LIGHTING

37. The selector unit front panel is illuminated by its own built in lighting system. 28-volt d.c. power is fed from the aircraft supply via fuse 732 on 48P. The brightness level of the panel lighting is controlled by a dimmer switch, Type 01/0016 positioned adjacent to the control unit as shown on fig.5

A.R.I.5952

38. With Mod.2284 embodied on the aircraft, provision is made on the system for the Type 200 and Type 400 cartridges to be discharged via the action button located on the A.R.I.5952 indicator control unit at the navigator plotter's station. (Sect.9 Chap.8).

39. Concurrent with Mod.2284, the selector unit No.1 Mk.1 is also affected by Mod. A.L.M.1724 (Air Log Ltd) and these changes supersede STC/ST1/VULCAN 0021. Referring to fig.6, it will be seen that relay 822/2 is energised by the A.R.I.5952 action button. Contacts 822/1 and 822/2 are connected across pins M and N and P and O respectively of Plug 1 on the selector unit. Assuming that the selector switch has been previously set to ARM, the normal firing buttons will be overriden by the A.R.I.5952 action switch.

Power supplies

40. Apart from the selector unit main power switch (fuse 732 49P) and the panel lighting circuit (fuse 653 3P), all other 28 volt d.c. supplies are fed from a transformer/rectifier unit located in the aft power compartment.

41. 200 volt 3-phase 400 c/s a.c. supplies are obtained from the aircraft bus-bars via main fuses 110 R.Y.B. and 114 R.Y.B. in 60P in the aft power compartment. These are then fed to fuses 1328, 1329, 1330, 1331, 1332 and 1333 R.Y.B. in 180P.

42. Referring to fig.7, it will be seen that the T.R.U. is fed from fuses 1330 R.Y.B. via the contacts of relay 787. Also connected across fuses 1330 R.Y.B. is a transistorised static sensing unit, Type AE5601, whose internal relay 789, is energised when the a.c. supply across fuses 1330 R.Y.B. is correct in voltage and phase rotation.

43. The sensing unit operation is described in A.P.4343B, Vol.1, Book 2. If undervoltage or incorrect phase is sensed the internal relay (789) will be de-energised. Relay 788 will be energised via the closure of internal contacts 789/1 and a supply from socket 6 pin P (fuse 732) on the selector unit. This will provide an alternative a.c. supply for the T.R.U. via the contacts of relay 788 and fuses 1331 R.Y.B.

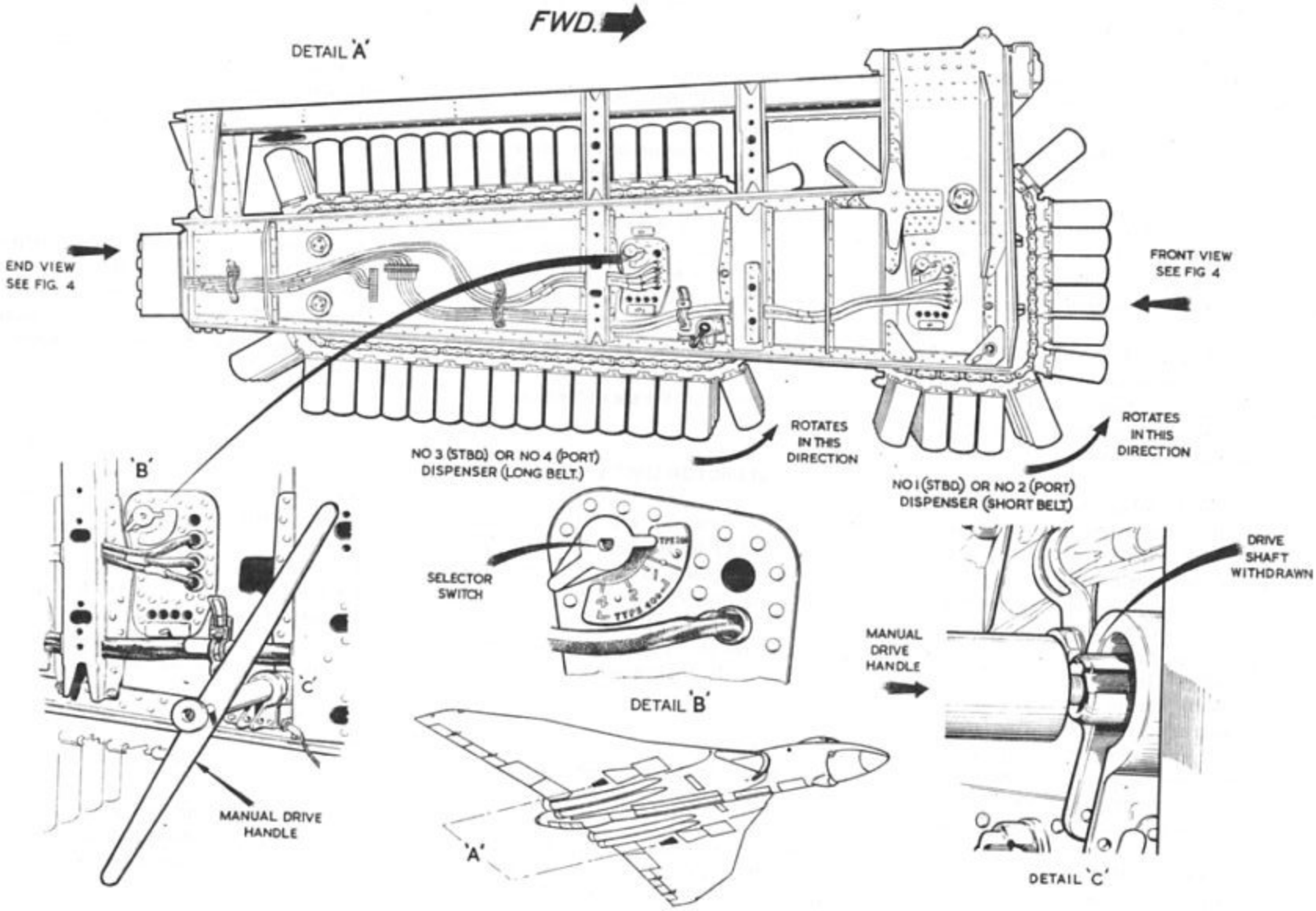


Fig. 5 R.B.W./I.R.D. discharger (side view)

ISOLATION RELAYS

44. The 200v 3-phase 400 c.p.s. a.c. supplies to the port and starboard dispensers are obtained from fuses 1328, 1329, 1332 and 1333 R.Y.B. via the appropriate contacts of isolation relays 803, 804, 805 and 806. The coils of these relays are again fed from fuse 732 in 48P, via socket 6 pins E and P in the selector unit. This circuit arrangement ensures that:-

(1) The 200 volt a.c. supply to the dischargers is isolated completely from the main a.c. bus-bars of the aircraft.

(2) A.C. power to the discharger drive motors is only available when the POWER ON switch on the selector unit is placed to the ON position.

T.R.U. OUTPUT

45. The 28-volt output from the T.R.U. is connected to the selector unit via circuit breakers 109, 110 and 111 connected in parallel to circuit breakers 106, 107 and 108. This parallel bus-bar arrangement feeds the supply via fuses 1334, 1335, 1336 and 1337 to the selector unit. The same supply is connected, direct from the T.R.U. to fuses 1340, 1341, 1342 and 1343 to feed the discharger drive units, via suitable junction boards fitted to the rear of each dishcarger container.

CHANGE OF ROLE

46. Depending upon the role of an aircraft, several permutations of both conventional window and/or R.B.W./I.R.D. (Type 200/Type 400) payloads may be carried and dispensed.

47. To effect these changes, certain cable assemblies running between the navigation station and the port and starboard dispenser bays are common to both installations, these cable assembly references are:-

F.1194 – Nav. panel to R.P.B. break 513
F.1196 – R.P.B. break 513 to adaptor break - port dispenser bay
F.1198 – Nav. panel to R.P.B. break 515
F.2985 – R.P.B. break 515 to adaptor break - starboard dispenser bay

Stowage boards, each fitted with seven dummy sockets are fitted one at the aft end of each dispenser bay; these boards provide stowage for the R.B.W./I.R.D. cable assemblies when the dispensers are not carried, or if the aircraft is fitted with conventional window.

48. Similarly, two further stowage points are fitted behind the navigator panel, one for stowage of the selector unit cables, the other a junction and relay box for the stowage of changeover cables. Fig.5, gives further details of these stowage points, and the theoretical circuits fig.2 and 6, give details of the cable connection changes required for the type of installation fitted to the aircraft according to role. Table 1 outlines the dispensers and control units fitted according to the role required.

CONVENTIONAL WINDOW

General

49. The setting up, operating and servicing instructions for conventional window are contained in A.P.113F-1101-1. All connectors, plugs and sockets associated with the installation should be examined for damage and ingress of dirt and moisture.

50. Since window is composed of aluminium foil, it is possible for damage to be caused should it short across live terminals. For this reason the stripper unit terminals have been additionally insulated and it is important to ensure that all such insulation remains intact.

SERVICING

Control units, Type 7122

51. Examine each unit externally for damage, corrosion and security of attachment. Remove the rear covers and examine the cable looms and switches. The pulsing switch and contact sequence switch within the control unit should be tested as laid down in para.52 to 55.

Pulsing switch, Type 2411

52. Test the insulation resistance with a 250-volt insulation resistance tester between the following points; the readings should be not less than 5 megohms.

+	to	case
CT	to	case
–	to	case
CT	to	–

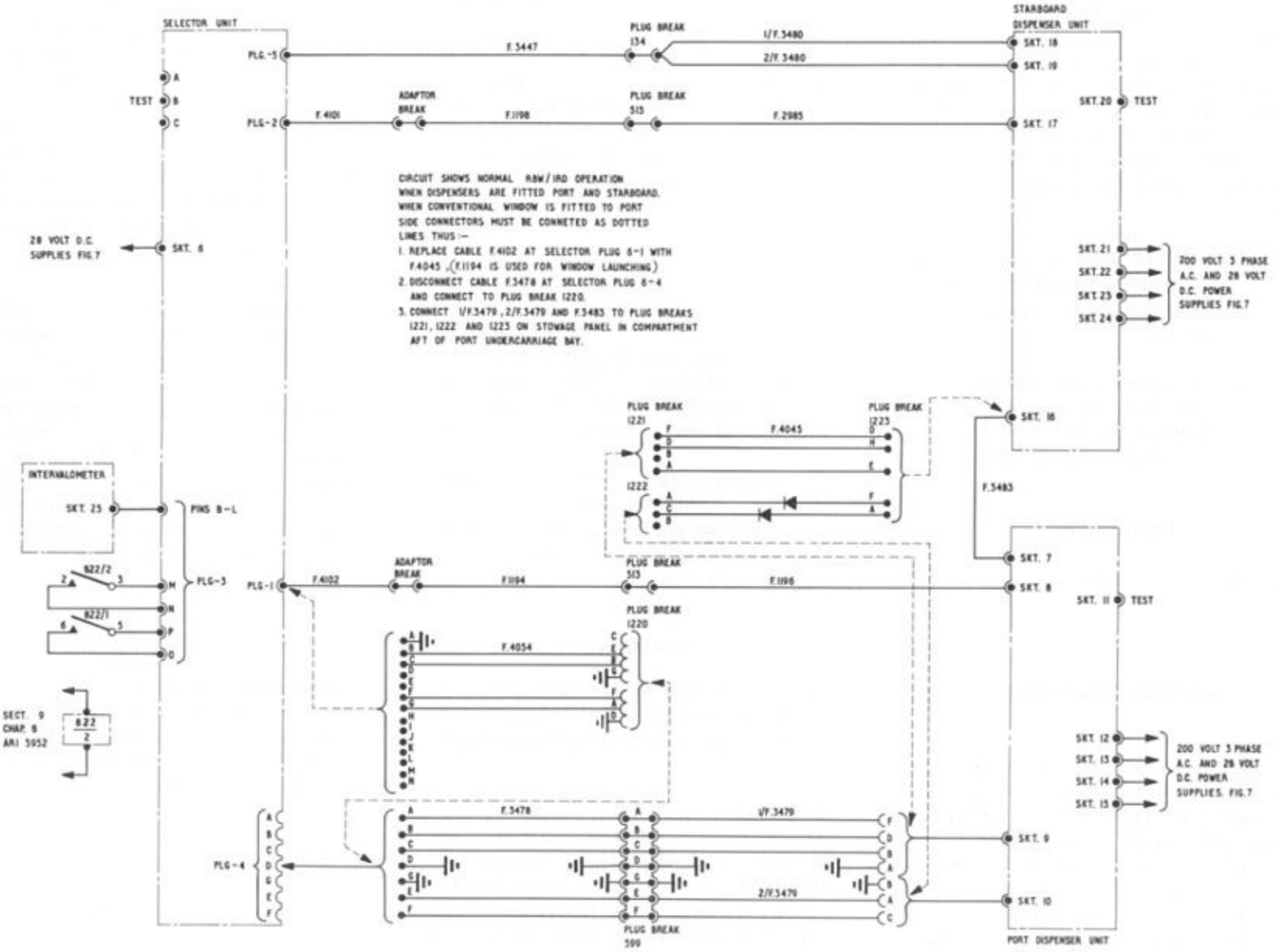


Fig. 6 R.B.W/I.R.D.Circuit diagram

53. With the aircraft 28-volt d.c. busbars energised and the stripper units disconnected, select any setting of the FREQUENCY switch. Place the main switch to ON, the BUR-CON switch to CON check that the motor runs.

54. Check the frequency at three widely placed settings of the FREQUENCY switch, switching OFF the main switch between each setting.

Contact sequence switch, Type 2412

55. Test the insulation resistance with a 250-volt insulation resistance tester between the following points; the reading should not be less than 5 megohms.

+	to	case	–	to	case
CT	to	case	P	to	case
R	to	case	+	to	CT
–	to	CT	CT	to	R
	CT	to		P	

56. With the aircraft 28-volt d.c. busbars energised and the stripper unit disconnected, at any setting of the RATE and DURATION switches, place the main switch to ON and the BUR-CON switch to BUR. Check that the motor runs. Operate the PULSE switch momentarily, and check that a pulse is transmitted. Time these pulses for 3 widely spaced settings of the RATE and DURATION switches.

57. With any setting of the RATE and DURATION switches, check the interval of the pulses at 3 widely spaced settings of the INTERVAL switch by operating the REPEAT switch, returning the right-hand switch to the central position between each setting.

Stripper units

58. Each stripper unit should be examined for damage, corrosion and security of attachment. Remove the side covers disconnect the plug and socket and remove the main covers. Examine relays, micro switches, cables and solenoids for damage, security and deterioration. Ensure terminal blocks are insulated with P.I.C. No.2 and have paxolin covers fitted. Ensure solenoid springs are in position.

59. Using an inspection lamp, examine motor gauze bands for excessive carbon dust, where this is evident, remove the motor for bay servicing. Where flameproof motors are installed, this examination is not possible. All motors should be removed for bay servicing after the period specified in the relevant servicing schedule.

60. Set the counter and hold-on micro switches so that the downward trip on the lever occurs at 0.25 in. to 0.35 in. measured normal to the bracket profile. Reconnect the plug and socket and refit the main cover, ensuring that the cable looms are aligned with the locating slots. Operate the levelling micro-switch levers and ensure the levers trip between 0.1 in. and 0.18 in. measured between the cover and the underside of the lever trip.

61. With the stripper unit to be tested connected but not loaded, and the STRIPPER SELECTOR switch on the control unit set to the appropriate position, place the main switch to ON and check that the motor runs. Set the RATE switch to each position in turn, and check that this varies the roller speed. Check also that the PITCH CHANGE switch varies the roller speed, being faster for the 4 in. pitch setting.

62. With the main switch set to ON, any frequency set on the FREQUENCY switch and the BUR-CON switch set to CON, both drive rollers should rotate together on a pulse, when the outer micro switchette levers are both free or both depressed. Depression of only one such lever should stop the rotation of the drive rollers on the same side.

63. The counter circuit can be checked by depressing the R.H. central switchette lever (with the unit pulsing (para.62)), when a count will be registered for each pulse.

64. Similarly by depression of the L.H. central switchette lever, the hold-on circuit may be verified, the pulse, which cannot be initiated by this lever, being extended by the length of time it is operated.

Magazine loading

65. During magazine loading, the following precautions must be observed:-

(1) When winding tape into the stripper unit, always use the key provided.

(2) Do not allow any grease to come into contact with the stripper rollers.

(3) When removing the main cover from the stripper unit, remove the side cover first.

(4) Removal of the control panel front cover on the stripper unit will necessitate checking the frequency switch when the cover is refitted.

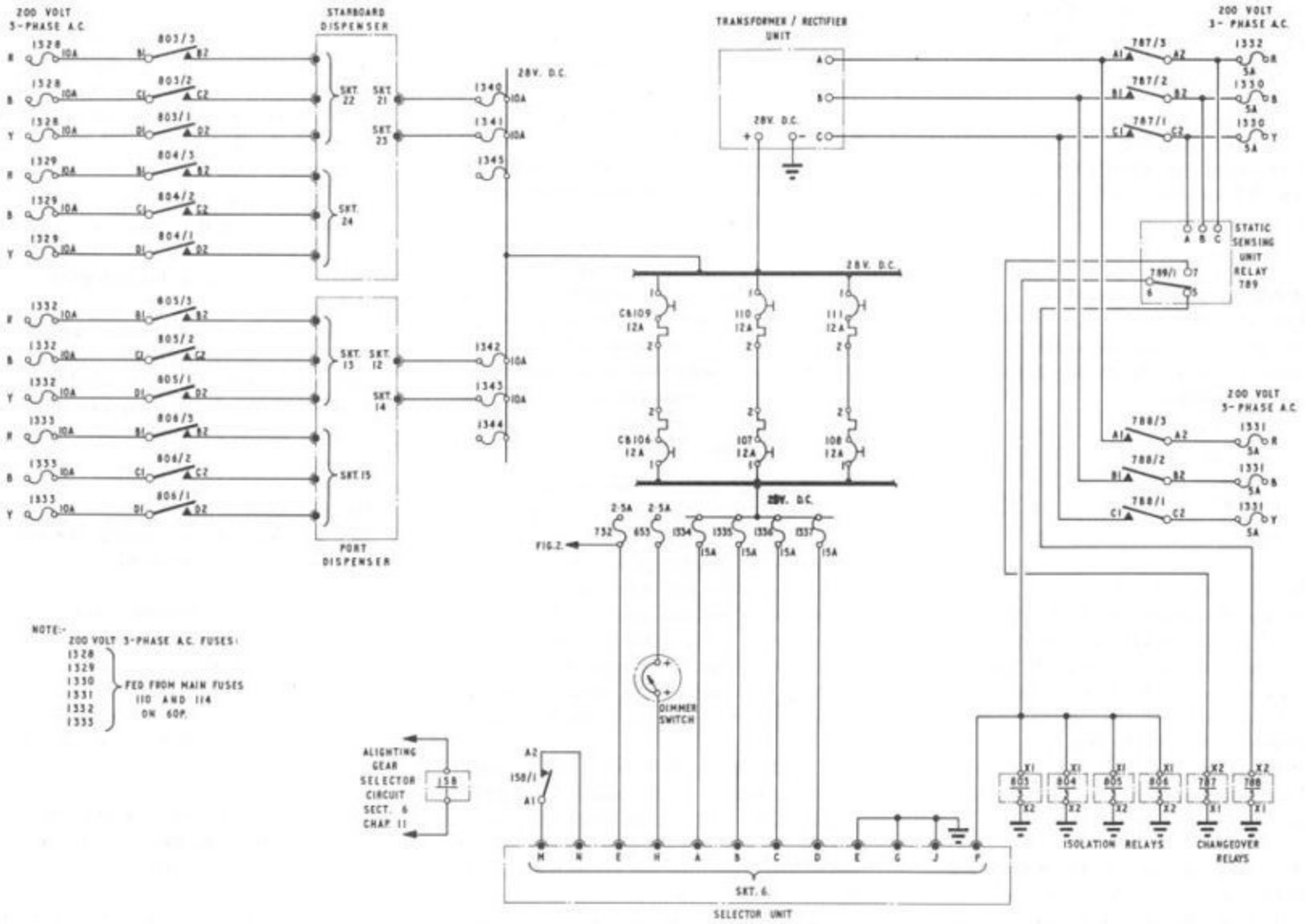


Fig.7. R.B.W. / I.R.D. Power supplies circuit

(5) Removal of the main cover on the stripper unit will necessitate checking the levelling micro switches when the cover is refitted.

(6) When loading window, remove staples and clean off any grease or compound from the tapes.

(7) The stripper unit should not be carried by the main cover.

Tape jointing

66. The tape joint between cartons must be carefully and accurately made, otherwise it may cause a failure to function. For the joint to be most effective, it is recommended that a different adhesive tape is used from the one supplied with the carton.

67. In the case of the older type of window, the ends of the tapes were fastened to the lid of the carton with metal staples. These staples must be removed completely, and failure to do so may seriously damage the tapecutter blades in the stripper unit. Until new stocks of window with an improved method of packing are available, the recommended method of tape jointing is as follows.

68. The tapes should be cut 2½ in. from the edge of the bundle along the alignment marks of both the leading and trailing ends to be joined together. The cut must be clean and at right angles to the edge of the tape. Two pieces of adhesive glass fibre tape, 4 in. length should be cut from a reel of 2.3/8 in. wide, Speedfix H.T. adhesive glass fibre tape (Ref.No.10AY/P30).

69. The 4 in. edge of the adhesive tape should be placed parallel to the window conveyer tapes, then by wrapping the adhesive tape tightly around the joint so that there will be no projections or rough edges beyond the edge of the conveyer tapes, press the adhesive firmly to make a strong joint.

Tape loading

70. The taped packets of window are packed in magazines which are fully loaded with F10, D10 or D15 window as applicable, which should be 4½ in. pitch.

71. After ensuring that all staples and grease have been removed from the tapes, and all the packets are correctly attached to the tapes, connect and fasten the stripper units to the magazine. Wind the tapes into the stripper units by using the key provided and in the direction of the arrow. Ensure that the first packet is level.

NOTE . . .
It is important that the tapes are entering the rollers in the same direction as that of the arrows marked on the tapes. On no account should loading be accomplished by driving the stripper.

72. Place the lid on the magazine and lock, then set pitch to appropriate position and mark up the amount of packets loaded on the appropriate counter on the control panel. This can be done by pressing the ratchet release at the side of the indicator and turning the knurled wheel.

73. A Standard Serviceability Test for conventional window is given in A.P.113F-1101-1. In-situ functional testing of the installation is given in the following paragraphs.

Functional tests

74. These tests, which are performed without special test equipment should be carried out at change of role periods, when the equipment is installed or re-installed in the aircraft, and at those periods laid down in A.P.101B-1902-4. With the installed magazine (s) loaded (para.65-72), and a 28-volt d.c. supply connected to the aircraft, the following functional tests should be carried out.

NOTE . . .
For these functional tests, it is assumed that conventional window only is installed in both dispenser bays, and that both primary and secondary dispensers are fitted (fig.2).

Continuous ejection test

75.

(1) Set the STRIPPER SELECTOR switch on the starboard control unit to position No.1 (starboard primary dispenser).

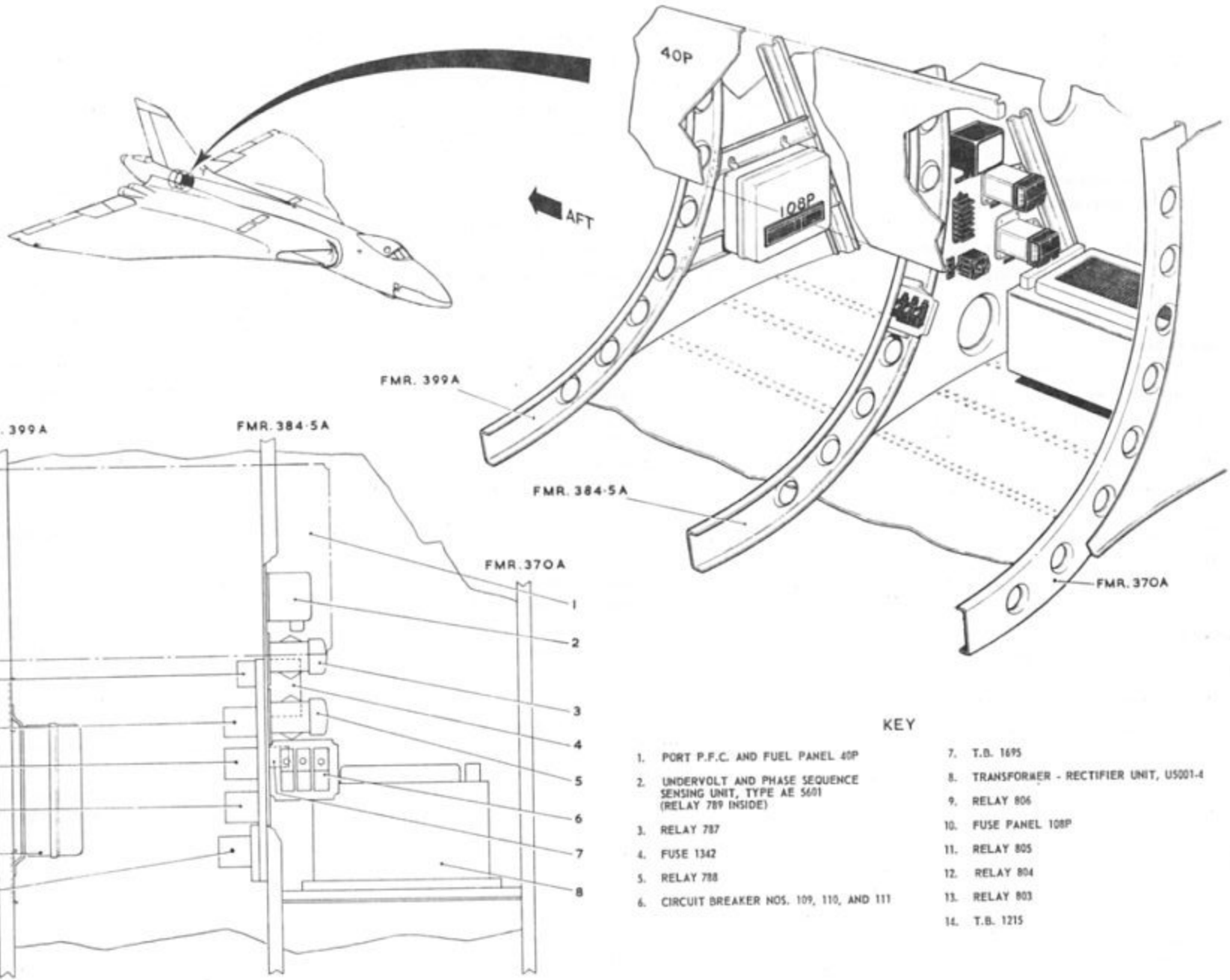
(2) Note the reading on the appropriate ammunition counter.

(3) Set the FREQUENCY switch to the required number of one second pulses or ejection required.

(4) Place the main on/off switch to ON, and the BUR-CON switch to CON.

(5) The dispenser should now dispense continuously the required number of packets per minute.

NOTE . . .
Due to packet gaps in magazine



KEY

1. PORT P.F.C. AND FUEL PANEL 40P
2. UNDERVOLT AND PHASE SEQUENCE SENSING UNIT, TYPE AE 5601 (RELAY 789 INSIDE)
3. RELAY 787
4. FUSE 1342
5. RELAY 788
6. CIRCUIT BREAKER NOS. 109, 110, AND 111
7. T.B. 1695
8. TRANSFORMER - RECTIFIER UNIT, US001-4
9. RELAY 806
10. FUSE PANEL 108P
11. RELAY 805
12. RELAY 804
13. RELAY 803
14. T.B. 1215

Fig. 8 Power supplies components

tapes the counter will not give 100% timing accuracy on the number of packages dispensed. A rate of between 25 and 30 packets is acceptable for a frequency setting of 30. During continuous operation, the RATE, INTERVAL, DURATION, PULSE and REPEAT switches are ineffective.

(6) Set the STRIPPER SELECTOR switch on the starboard control unit to position No.2 (port primary dispenser) and repeat items (2) to (4).

Single burst ejection test

76.

(1) Set the STRIPPER SELECTOR switch on the starboard control unit to position No.1 (starboard primary dispenser).

(2) Select the RATE switch to dispense packets at any rate from 1 to 5 packets per second.

(3) Set the DURATION switch to the required length of burst (in seconds).

(4) Place the main on/off switch to ON and the BUR-CON switch to BUR.

(5) Hold the PULSE switch momentarily to ON to start the single burst action.

(6) Ensure that a single burst of window packets is ejected at the rate selected per second, item (2), for the duration selected, item (3).

(7) Set the STRIPPER SELECTOR switch on the starboard control unit to position No.2 (port primary dispenser) and repeat items (2) to (6).

Repeat burst ejection test

77. This test provides for a sequence of burst, at pre-set intervals. The switch setting mentioned in para.76 (1), (2) and (3) and in addition the INTERVAL switch should be set to give the required interval between bursts.

78. When the main on/off switch is placed to ON, the BUR-CON switch to BUR, the appropriate rate selected and the REPEAT switch placed to ON, the sequence of burst ejections will be repeated continuously until the right hand REPEAT switch is returned to the central position. If this is done in the middle of an ejection, that ejection will be repeated.

NOTE . . .
The FREQUENCY switch is ineffective during burst ejection.

79. The functional tests outlined in para.75 to 78 should be carried out from the port control unit to check the secondary dispensers for correct operation.

Stopping

80. When it is required to stop ejection during functional tests, this can be done at any time by bringing the BUR-CON switch to the central position. If the INTERVAL and DURATION switches are altered during pulsing, no damage will be caused to the equipment, but temporary disarrangement of the pulsing may occur. The STRIPPER SELECTOR switch must not be changed over during operation; the main switch must be turned OFF first.

Mod.2177

81. If the conventional window installation is carried with RBW/IRD, where the port side is conventional window (primary and secondary dispensers) and the starboard side is RBW with conventional window (starboard secondary dispenser), it must be borne in mind that the port stripper selector switch labelled PRIMARY SECONDARY on the panel adjacent to the starboard control unit must be placed to the SECONDARY position to function the two secondary dispensers. The switch must be placed to the PRIMARY position to enable the controller to operate the port primary dispenser and the electro-magnetic counter adjacent to this switch will indicate the packages remaining in the port primary dispenser, see para.12 - 13.

R.B.W/I.R.D. INSTALLATION

LETHAL WARNING . . .

The dispenser system fitted to this aircraft is a potential source of lethal injury to personnel if inadvertently operated. Safety devices in the form of alighting gear, selector arming and firing interlock mechanical and electrical devices are provided to safeguard against any inadvertent operation. It is the responsibility of any individual, on entering the rear crew compartment of the aircraft, to be able to recognise the dispenser safety switches and to ensure that these are correctly set at all times when the system is installed and not in use.

General

82. Servicing information for the various

components comprising the complete system will be found in A.P.4343X, Vol.1, Book 1, Sect.22, Chap.3. Details of the overall installation for bay servicing will be found in A.P.1641H.

Functional tests

83. These tests which can be made without the use of special test equipment, should be carried out at change of role periods, when the equipment is installed or re-installed in the aircraft, and at those periods laid down in A.P.101B-1902-4.

NOTE . . .
For these functional tests, it is assumed that the R.B.W/I.R.D. equipment is installed in both port and starboard dispenser bays.

84. The following preparations are necessary before the tests can commence:-

(1) Fit DUMMY indicating cartridges, Type X13649, into the loading clips of the long and short belts of the four (2 small, 2 large) dischargers.

(2) Set the four subtractive counters on the selector unit to indicate the number of DUMMY cartridges fitted into each corresponding discharger.

(3) Using a suitable shorting bridge, short out terminals A1 and A2 on relay 158 in panel 3P.

WARNING . . .
It is essential that all servicing personnel are clear of both port and starboard discharger bays before the power supply is connected, and this area should remain clear of personnel during the test period. The mechanical action of the system is such that serious injury may result to personnel in close proximity to the equipment when it is operating.

Type 200 (RBW) test procedure

85.

(1) Set all four selector switches on the discharger units in the dispenser bays to Type 200.

(2) At the selector panel, set the TEST/TEST LAMPS/SAFE/ARM switch to TEST. Set the Type 200 discharger switch to SS/PS, set the STICK switch to 8, note the numbers on the contents counters SMALL PORT and STARBOARD. Set the POWER SUPPLY switch to ON. The following indications on the control panel should be observed:-

(a) Four green SAFE lamps illuminated.

(b) Amber Type 200 discharger lamp SS/PS illuminated.

(3) Rotate the Type 400 discharger selector switch on the selector unit through all four positions (SS, PS, SL and PL), check that none of the Type 400 indicator lamps are illuminated. Turn the Type 200 selector switch to SL/PL, check that the associated indicator lamp is illuminated. Note the numbers on the contents counters LARGE PORT and STARBOARD. Return the Type 200 discharger selector switch to SS/PS. Press the Type 200 FIRE button. The selector unit should be heard to operate 8 times and the two short discharger belts should move twice. The belt movement in each case should be one position. The belts on the two dischargers may or may not index at the same time. It is not necessary for indexing to occur simultaneously.

(4) Check that on the operation of the short belts, the dummy cartridges are not illuminated. In order that this test is effective the dummy cartridges must be loaded so that they are situated over the firing pin positions.

(5) After the operation has ceased, check the new reading on the contents counters SMALL, PORT and STARBOARD. In each case they should have reduced by a quantity of eight.

(6) Place the Type 200 selector switch to SL/PL Press the Type 200 FIRE button. The long belt in each discharger should now index two positions. The indexing of the two belts may not occur simultaneously (see sub-para.3).

(7) Check that on the operation of the long belts, the dummy cartridges are not illuminated. In order that this test is effective, the dummy cartridges must be loaded so that they are situated over the firing pin positions.

(8) Contents counters LARGE PORT and STARBOARD should have reduced their readings by a quantity of eight.

(9) Set the TEST/TEST LAMP/SAFE/ARM switch on the selector unit to SAFE. The drive motor in the dispenser should now stop running (it should be possible to hear these units). The four green safe lamps on the selector unit should remain illuminated, and the amber lamps associated with the dispenser selector switches should be extinguished. Rotate the Type 200 and Type 400 discharger selector switches through all positions and check that none of the indicator lamps associated with these positions are illuminated.

(10) Depress the PRESS TO FREE interlock button and rotate the selector switch to the ARM position.

NOTE...
The TEST/TEST LAMPS/SAFE/ARM selector switch cannot be rotated to ARM without depressing the PRESS TO FREE button at the same time.

(11) The drive motors should now be running in the dischargers and the belts will move forward to bring the firing pins onto the cartridge bases. The four green safe lamps on the selector unit should be extinguished. Set the selector unit Type 200 DISCHARGER SWITCH to SS/PS the appropriate indicator lamps should be illuminated. Rotate the Type 400 selector switch through all four positions and check that the indicator lamps remain extinguished. With the stick selector switch remaining set to position 8, note the contents readings for PORT and STARBOARD small.

(12) Depress the Type 200 FIRE push-switch. The illuminating dummy cartridges loaded into the short belts should illuminate at one second intervals across the belt, the first cartridge illuminating as soon as the firing button in depressed. When the cartridge in the fourth position has illuminated, the belt should index one position. A quantity of eight cartridges should be illuminated consecutively in each belt. Upon completion of this sequence, check that the readings on the STARBOARD and PORT SMALL counters are eight less than the previous reading.

(13) Set the selector unit Type 200 DISCHARGER switch to SL/PL, check that the appropriate indicator lamps are illuminated. Rotate the TYPE 400 DISCHARGER SWITCH through all four positions and check that the indicator lamps remain extinguished. The STICK switch should remain set to 8. Check the readings on the counters STARBOARD and PORT LARGE.

(14) Depress the Type 200 FIRE push-switch. The long belt illuminating dummy cartridges should be illuminated at one second intervals simultaneously on the two dischargers. The first cartridge should be illuminated immediately on depressing the firing button and it should be checked that the belts index upon the illumination of the cartridge in the fourth position on each belt. A quantity of eight cartridges in each belt should be illuminated. Upon completion of this sequence, check that the STARBOARD and PORT LONG counters have reduced their readings by a quantity of eight in each case.

(15) It should be noted that any cartridge in a line of four may be the first to fire, and the sequence will proceed from this point, and it is not necessary that firing will commence with cartridge No.1.

(16) In order to make an approximate check on the repetition rate of the intervalometer, the time for eight cartridges to be fired can be checked using a stop watch. Whilst this method of checking is not particularly accurate, it does give an indication of any wide divergence from the required intervalometer tolerances. The time required to illuminate eight cartridges in the Type 200 mode is approx. 7 secs.

(17) Return the selector unit POWER

SUPPLY switch to the OFF position. Switch OFF the 28-volt d.c. and 200-volt d.c. supplies

Type 400-1 (I.R.D.-1) test procedure

86.

(1) Set all four selector switches on the discharger units in the dispenser bays to Type 400-1. Switch on the 28-volt d.c. and 200-volt a.c. power supplies.

(2) At the selector panel, set the TEST/TEST LAMPS/SAFE/ARM switch to TEST, set the Type 400 STICK switch to 8, and set the POWER SUPPLY switch to ON. Check that the four green SAFE indicator lamps are illuminated. The drive motors in the four dischargers should be heard running.

(3) Set the selector unit Type 400 DISCHARGER switch to SS, check that the associated amber lamp is illuminated. Rotate the Type 200 DISCHARGER selector switch through its SS/PS and SL/PL positions check that none of the associated indicator lamps are illuminated. Note the contents on the Type 400 STARBOARD SMALL counter. Depress the Type 400 FIRE push-button. The system should be heard to operate and the associated discharger should be seen to index twice. The indicating dummy cartridges loaded on the belt should not be illuminated.

(4) When the sequence of operation has ceased, the reading on the STARBOARD SMALL contents counter should read eight less than previously shown.

(5) Repeat tests (3) and (4) for each remaining three selections on the Type 400 selector switch (PS-SL-PL) the operation is identical for each discharger and associated counter.

(6) Set the TEST/TEST LAMPS/SAFE/ARM switch to SAFE. Check the drive motors cease running. The selector unit amber indicator lamps should be extinguished, and only the four green SAFE lamps illuminated. Function the Type 200 and 400 DISCHARGER selector switches through all positions to ascertain that the amber indicator lamps are not illuminated in any position. Depress the PRESS-TO-FREE button and at the same time set the TEST/TEST LAMPS/SAFE/ARM selector switch to ARM. Check that the four green SAFE indicator lamps are extinguished.

(7) Set the Type 400 selector switch on the selector unit to SS, check that the appropriate indicator lamp is illuminated. Check that the Type 200 indicator lamps are not illuminated, irrespective of the position of the Type 200 DISCHARGER selector switch. With the Type 400 STICK switch set to position 8, observe the quantity shown on the STARBOARD SMALL contents counter, and depress the Type 400 FIRE push button.

(8) A total of eight indicating cartridges in the starboard discharger small belt should be illuminated, one at a time at approx. three second intervals. The total time taken to fire eight cartridges should be approx. 21 seconds. When the cartridge in the fourth position is illuminated, the belt should index one position. At the end of the sequence check that the STARBOARD SMALL contents counter now shows eight less than previously.

(9) Repeat tests (7) and (8) for each remaining three selections of the Type 400 selector switch.

(10) Set the POWER SUPPLY switch to OFF, disconnect the 28-volt d.c. and 200-volt a.c. power supplies.

Type 400 - 2 (IRD-2) test procedure

87.

(1) Set all four selector switches on the discharger units in the dispenser bays to Type 400-2. Switch on the 28-volt d.c. and 200-volt a.c. supplies.

(2) At the selector panel, set the TEST/TEST LAMPS/SAFE/ARM switch to TEST, set the Type 400 STICK switch to position 8, and

set the POWER SUPPLY switch to ON.

(3) Check that the green SAFE indicator lamps in all four positions are illuminated. The drive units in all four dischargers should be heard running. Set the Type 400 DISCHARGE selector switch to SS, and check that the associated amber indicating lamp is illuminated. Place the Type 200 DISCHARGER selector switch to each of its two positions (SS/PS - SL/PL), check that the associated amber indicator lamps are not illuminated. Note the quantity indicated on the SHORT STARBOARD contents counter. Depress the Type 400 FIRE button. The system should be heard to operate, and the starboard short belt discharger should be seen to index four times. Check that the indicating cartridges loaded on the belt are not illuminated.

(4) When the sequence of operation has ceased, check that the reading on the STARBOARD SMALL contents counter indicates eight less than previously shown.

(5) Repeat tests (3) and (4) for each remaining three selections on the Type 400 selector switch (PL, PS, SL). The operation is identical for each discharger and associated counter.

(6) Set the TEST/TEST LAMPS/SAFE/ARM switch on the selector unit to SAFE. Check that the drive motors cease running. All amber indicator lamps should be extinguished and only the four green SAFE lamps should remain illuminated. The Type 400 and Type 200 DISCHARGER selector switches should be switched through all positions to check that the amber indicator lamps are not illuminated at any position. Depress the PRESS TO FREE button, and at the same time set the TEST/TEST LAMPS/SAFE/ARM Selector switch to ARM. Check that the four green SAFE indicator lamps are extinguished.

(7) Set the selector unit Type 400 selector switch to SS, check that the appropriate indicator lamp is illuminated. Check that the Type 200 amber indicator lamps are not illuminated irrespective of the position of the Type 200 DISCHARGER selector switch. With the Type 400 STICK switch set to 8 observe the quantity indicated on the SMALL STARBOARD contents counter, and depress the Type 400 FIRE push button.

(8) A total of sixteen indicating cartridges on the starboard discharger short belt should be illuminated in pairs, at approximately three second intervals. The total time taken to fire sixteen cartridges should be approximately 21 seconds. When the indicating cartridges in the second and fourth positions are illuminated the belt should index one position. At the end of the sequence, check that the STARBOARD SMALL contents counter now indicates eight less than previous.

(9) Repeat tests (7) and (8) for each remaining three selections of the Type 400 selector switch.

(10) Set the POWER SUPPLY siwtch to OFF and disconnect the 28-volt d.c. and 200-volt a.c. supplies.

Type 400-4 (IRD-4) test procedure

88.

(1) Set all four selector switches on the discharger units in the dispenser bays to Type 400-4. Switch on the 28-volt d.c. and 200-volt a.c. supplies.

(2) At the selector panel, set the TEST/TEST LAMPS/SAFE/ARM switch to TEST, set the TYPE 400 STICK switch to position 8, and set the POWER SUPPLY switch to ON.

(3) Check that the four green SAFE indicator lamps are illuminated. The drive motors in the four dischargers should be heard running. Set the Type 400 DISCHARGER switch to SS, and check that the associated amber indicator lamp is illuminated. Place

the Type 200 DISCHARGER switch to each of its two positions (SS/PS, SL/PL), check that the associated amber indicator lamps are not illuminated. Note the quantity indicated on the STARBOARD SMALL contents counter. Depress the Type 400 FIRE push-button. The system should be heard to operate and the starboard short belt discharger should be seen to index eight times. The indicating cartridges loaded on the belt should not be illuminated.

(4) When the sequence of operations has ceased, check that the reading on the STARBOARD SMALL contents counter indicate eight less than previously shown.

(5) Repeat tests (3) and (4) for each remaining three selections on the Type 400 selector switch (PL, PS, SL). The operation is identical for each discharger and associated counter.

(6) Set the TEST/TEST LAMPS/SAFE/ARM siwtch on the selector unit to SAFE. Check that the drive motors cease running. All amber indicator lamps should be extinguished, and only the four green SAFE lamps should be illuminated. The Type 200 and Type 400 DISCHARGER selector switches should be switched through all positions to check that the amber indicator lamps are not illuminated at any position. Depress the PRESS TO FREE button, and at the same time set the TEST/TEST LAMPS/SAFE/ARM switch to ARM. Check that the four green SAFE indicator lamps are extinguished.

(7) Set the selector unit Type 400 selector switch to SS, check that the appropriate indicato; lamp is illuminated. Check that the Type 200 amber indicator lamps are not illuminated, irrespective of the Type 200 DISCHARGER selector switch. With the Type 400 STICK switch set to 8, observe the quantity indicated on the SMALL STARBOARD contents counter, and depress the Type 400 FIRE push button.

(8) A total of 32 indicating cartridge in the starboard discharger short belt should be illuminated in fours at approximately 3 second intervals. The total time taken to fire 32 cartridges should be approximately 21 seconds. The belt must index one position each time a group of four cartridges are illuminated. At the end of the sequence, check that the STARBOARD SMALL contents indicator now reads eight less than previously shown.

(9) Repeat tests (7) and (8) for each remaining three selections of the Type 400 selector switch.

(10) Set the TEST/TEST LAMPS/SAFE/ARM switch to TEST. This will withdraw the firing pins and leave the dischargers in a safe state, thus enabling them to be loaded or unloaded at the firing position. Set the POWER SUPPLY switch to OFF. Remove the aircraft 28-volt d.c. and 200-volt a.c. supplies.

(11) Finally, remove the shorting bridge fitted across terminals A1 and A2 of relay 158 in panel 3P.

CONVENTIONAL WINDOW

General

89. Access to the components is straightforward, and installation and removal procedures for the window system is given in the following paragraphs. When it is necessary to remove or replace a component, particularly when the aircraft role is changed, it is important that all unused cables are securely stowed either to the aircraft structure or on the stowage points, where provided.

Control units, Type 7122

90. To remove the control units, release the Dzus fasteners around the edge of the navigator plotters panel (port) and lower the panel. Disconnect the six connectors (3 per unit) and connect the cables to the dummy sockets provided on the stowage bracket behind the panel. Release the four securing bolts on each unit and withdraw the units from the panel. (See fig.3).

91. It should be noted that with the introduction of Mod.2177, a further junction and relay box is installed behind the navigator plotters panel, which provides extra stowage facilities for the cables required to enable the port conventional window control unit, Type 7122 to control both port and starboard primary dispensers and the starboard secondary dispenser, while carrying an R.B.W/I.R.D. discharger in the starboard bay. This box and its stowages is illustrated on fig.3, and further information on the method of cable stowage is given in para.101.

REMOVAL AND INSTALLATION

Primary and secondary dispensers

92. A primary or secondary dispenser comprises a magazine, stripper unit and chute. The primary dispenser has a larger capacity magazine to which the secondary dispenser may be attached to form a double unit.

93. The procedure for installing single or double units in either dispenser bay is similar, except that when hoisting a double unit, the selection of a hoisting bracket position differs for thee port and starboard installation.

Hoisting procedure

94. The primary container has four hoisting brackets specially designed to take the ball end of a 5 cwt. mini-hoist, Ref.42/1. Three of the brackets are located at the forward end of the container, and one at the rear, as shown on fig.1. The three forward brackets are used in conjunction with the two forward mini-hoist pulley attachments (fig.9) fitted to the top skin structure of the port and starboard dispenser bays.

95. The hoisting brackets on the primary dispenser shown on fig.1 are used as follows:-

(1) Centre forward bracket (c) and centre aft bracket (a) used to hoist single unit in port and starboard bays.

(2) Forward bracket (b) and aft bracket (a) used to hoist double unit intended for port bay only.

(3) Forward bracket (d) and aft bracket (a) used to hoist double unit intended for starboard bay only.

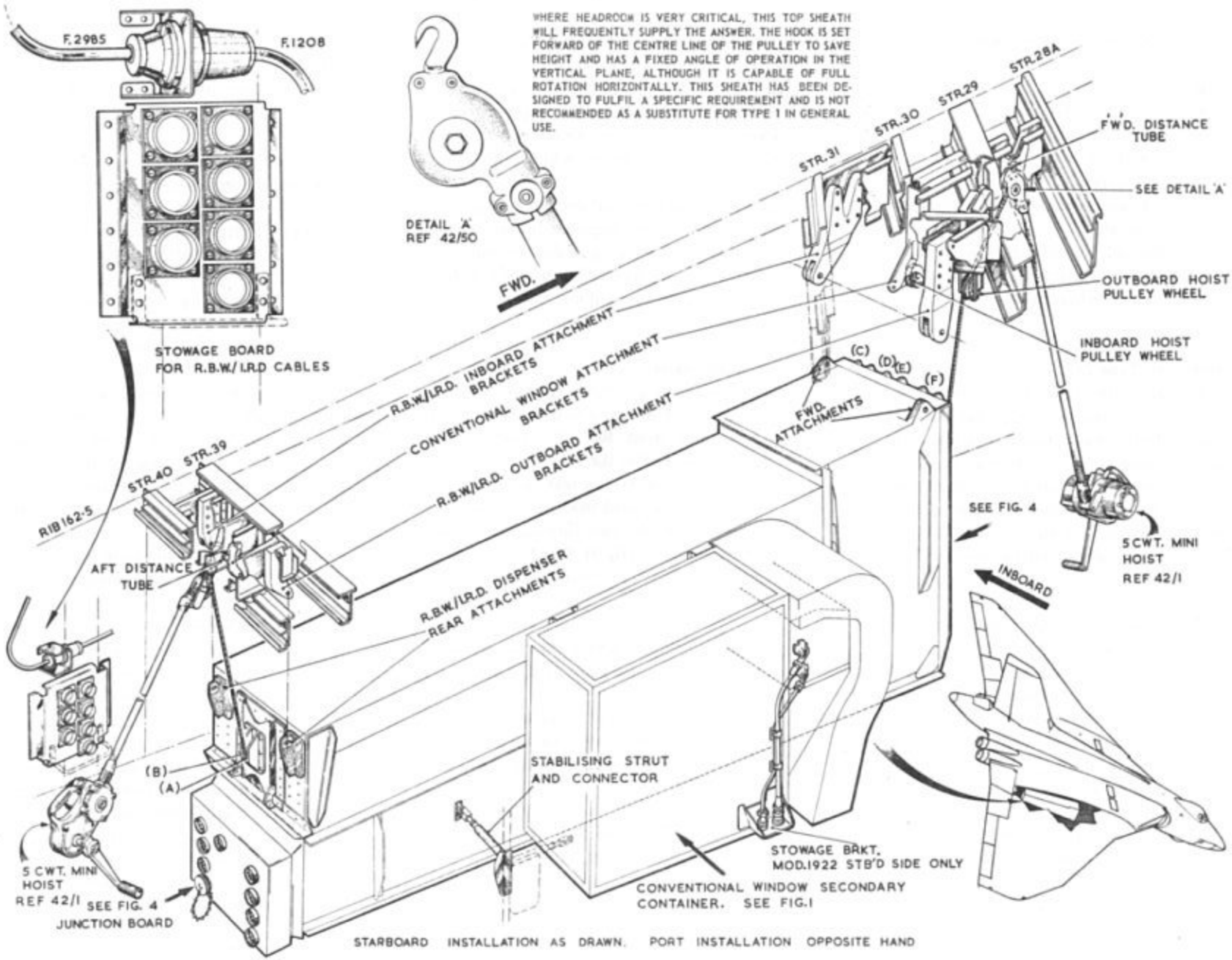
96. The procedure for installing the conventional window dispensers is as follows:-

(1) Release the Dzus fasteners securing the hinged panel on the underside of the port wing aft of the alighting gear bulkhead also remove the detachable panel in the port forward auxiliary bulkhead.

(2) Release the Dzus fasteners securing the two access panels on the underside of the starboard wing aft of the alighting gear bulkhead, also remove the detachable panel on the starboard A.A.P.P. bulkhead.

(3) Remove completely the detachable access panels immediately aft of the port and starboard undercarriage bays to allow access to the relevant window dispenser bays. From these panels remove the blanking covers over the chute outlets.

(4) Position the primary dispenser less chute, (secondary dispenser complete with chute bolted to the primary if double unit is to be fitted), stripper unit forward and uppermost, immediately below the appropriate window dispenser bay.



STARBOARD INSTALLATION AS DRAWN. PORT INSTALLATION OPPOSITE HAND

Fig. 9 Hoisting details R.B.W/I.R.D dischargers

(5) Using two 5 cwt. mini-hoists Ref.42/1, and with reference to fig.9, attach as follows:-

(a) As forward end, hook one hoist over the distance tube and bolt located in the top skin structure outboard of the transport rib (162.5 in.) and approximately in line with the centre beam.

(b) Take hold of the ball end of the cable on the hoist and thread it over the pulley, (inboard pulley for single unit and outboard pulley for double units, para.95), which lies immediately aft of the hook. Extend the cable down to the single or double unit.

(c) Attach the cable, in accordance with the conditions imposed in para.95, by fitting the ball end in the appropriate recessed bracket on the primary container. Secure the cable using the captive quick release pin provided.

(d) At the aft end, hook the second mini-hoist over the bolt located in the top skin structure, located approximately 7 feet aft of the forward bolt.

(e) Extend the cable down to the primary dispenser unit and fit the ball end into the aft recessed bracket on the centre line of the container. Secure the cable using the captive quick release pin provided.

(6) With an operator at each mini-hoist, raise the dispenser unit into the window bay, guiding the attachment lugs into the support brackets on the top skin structure.

(7) Secure the dispenser using the quick-release pins provided. Note that the aft attachment point is a swinging link to facilitate positioning.

(8) Release the cables and remove the mini-hoists.

(9) Secure the dispenser to the side of the transport rib (162.5 in.), using the stabilizing stays provided. One stay is attached to the front panel and the other to the rear panel of the primary dispenser container by captive quick-release pins and to the transport rib (162.5 in.) by suitable brackets and bolts. Note that two stay attachment brackets are fitted to the front and rear panels and are used as appropriate for the port or starboard fitment.

(10) Attach the chute to the primary magazine via the bottom locating bracket and Dzus fasteners at the top of the chute.

NOTE . . .
The secondary chute is fitted to the secondary magazine in a similar way to that given for the primary chute. It is important that the secondary chute must be fitted to the secondary magazine before the hoisting procedure for a double unit is carried out.

Connecting up procedure

97. The following connecting up procedure for the primary and secondary dispenser should be read in conjunction with the theoretical circuit contained in fig.2 and the routing chart, fig.10.

(1) Release the appropriate plugs from their stowage clips in the port and starboard dispenser bays and connect to the primary and secondary stripper units. The stowage clips are positioned as follows:-

(2) Port dispenser bay only.

(a) The stowage clip for the primary stripper unit cables (F1207 and D1209) is mounted on roof structure, situated aft of the bulkhead.

(b) The stowage clip for the secondary stripper unit cables (F2980 and F2978) is mounted on the outboard undercarriage rib, and situated adjacent to the secondary stripper unit suppressor, Type 02.

(3) Starboard dispenser bay only.

(a) The stowage clip for the primary stripper unit cables (F1208 and F1212) is mounted below the primary stripper unit suppressor Type 02, which is mounted on the A.A.P.P. tank guard bulkhead. When the cables are connected to the stripper unit, the cables are routed through the bulkhead and clamped by a fairlead provided for this purpose. Access is gained by the removal of the detachable panel detailed in para.96 (2).

(b) No stowage clip is provided for the starboard secondary stripper unit cables (F3800 and F3801). Instead the cables are terminated by two sockets (559 and 560) mounted together on a panel attached to the starboard outboard rib of the dispenser bay beneath the suppressor unit, Type 02, adjacent to the A.A.P.P. tank guard bulkhead.

(c) Connection to the secondary stripper unit is made via cables already attached to the secondary container (Mod.1922). At one end the cables are connected to the stripper unit, and at the other end terminated by plugs which are complementary to the sockets detailed in sub-para. (b). If a secondary container is not fitted to an aircraft, the attached cables are stowed in dummy sockets fitted on a bracket which is mounted on the outboard right-hand corner of the containers. The connection procedure is to transfer these cables from the stowage point to the sockets 559 and 560.

(d) It should be noted that only the special starboard secondary container embodying Mod.1922 (Part No.33/Z9872) can be fitted in the starboard window bay.

98. When the installation has been secured and connected up, all panels removed should be replaced. Ensure that the correct port and starboard underside skin panels to suit the chute positions are fitted.

Removal

99. Removal of the conventional window installation is largely the reverse procedure to that given for installation. Ensure that all cables not in use are stowed securely and that blanking covers are fitted on sockets where applicable.

R.B.W/I.R.D. INSTALLATION

Selector unit No.1 Mk.1

100. The R.B.W/I.R.D. (Type 200/Type 400) selector unit is fitted in the position normally occupied by the starboard conventional window control unit, Type 7122. When the control unit Type 7122 is being replaced by the selector unit No.1 Mk.1, remove the control unit as outlined in para.90, and secure the selector unit in the same manner used for the starboard control unit.

101. If the R.B.W/I.R.D. dischargers are being carried in both port and starboard bays, then the cables to the outlets on the rear of the selector unit should be connected as follows:-

(1) Remove cable F3477 from the stowage bracket and connect it to plug 5 on the selector unit.

(2) Remove cable F4101 from the stowage bracket and connect it to plug 2 on the selector unit.

(3) Remove cable F4102 from the stowage bracket and connect it to plug 1 on the selector unit.

(4) Remove cable F3478 from the stowage bracket and connect it to plug 4 on the selector unit.

(5) Remove cable 1 and 2/F3476 from the stowage bracket and connect it to plug 3 on the selector unit. Note that 2/F3476 are the leads connected to relay 822 on the junction and relay box (Mod.2271 and 2284).

(6) Remove cable 1, 2, 3, 4 and 5/F3481 from the stowage

bracket and connect it to socket 6 on the selector unit.

102. If the R.B.W/I.R.D. discharger is being carried in the starboard bay only, with a conventional window primary and secondary dispenser in the port bay and a conventional secondary dispenser attached to the starboard R.B.W/I.R.D. discharger (Mod.2271), then the cables to the outlets on the rear of the selector unit should be connected as in the previous paragraph but with the following changes:-

(1) Connect cable F4045 from outlet 1220 in the junction and relay box behind the plotters panel to plug 6 on the selector unit.

(2) Connect cable F3478 to the front of outlet 1220.

R.B.W/I.R.D. (Type 200/Type 400) dischargers

103. A discharger may be installed as a single unit or have a conventional window secondary dispenser bolted to it. The secondary dispenser cable stowage and connection remains as outlined in para.97.

Stabilising strut

104. A stabilising strut is provided in both port and starboard discharger bays to prevent lateral movement of the R.B.W/I.R.D. dischargers during flight. The strut is secured at one end to the undercarriage outboard rib by a swivel joint bracket thus allowing the strut to be either stowed and held on an adjacent spring clip, or be connected to a suitable bracket on the side of the discharger. A captive quick-release pip-pin is provided for this purpose as shown on fig.9.

Hoisting procedure

105. The R.B.W/I.R.D. discharger is equipped with six alternative hoist securing brackets. Four of these six are positioned at the forward end; the remaining two at the aft end of the discharger as shown on fig.4. The four forward brackets are used in conjunction with the two forward mini-hoist pulley attachments, as in the case of the conventional window primary dispenser (para.94).

106. With reference to fig.9, the hoisting brackets on the R.B.W/I.R.D. dischargers for port and starboard fitment are used as follows:-

(1) Aft bracket (A) and forward bracket (E) used to hoist a single unit in the port bay.

(2) Aft bracket (B) and forward bracket (D) used to hoist a single unit in the starboard bay.

(3) Aft bracket (A) and forward bracket (C) used to hoist a double unit (i.e. secondary window dispenser attached) in the port bay.

(4) Aft bracket (B) and forward bracket (F) used to hoist a double unit in the starboard bay.

107. The hoisting procedure for installing an R.B.W/I.R.D. discharger into the appropriate bay is similar to that given for the conventional window dispensers contained in para.96. The essential difference is the hoist attachment points outlined in para.106 and illustrated on fig.9 and the connection of the stabilizing strut shown on the same illustration.

Connecting up procedure

108. The connecting up procedure for the dischargers in the port and starboard bays varies according to the aircraft role. If R.B.W/I.R.D. dischargers with secondary window dispensers attached are fitted in both bays, then the following procedure should be adopted:-

Starboard discharger bay

(1) Disconnect cables, 1/F3480, 2/F3480, F3483, F3487, F2761, F2767 and F2768 from the stowage bracket and cable F2985 from the socket mounted on top of the bracket (fig.1) and connect them to their appropriate sockets on the discharger junction board (fig.4).

(2) Connect up the starboard secondary conventional window dispenser as detailed in para.97.

Port dischargerr bay

(3) Disconnect cables 1/F3479, 2/F3479, F3483, F2763, F2764, F2769 and F2770 from the stowage bracket, and cable F1196 from the socket mounted on top of the bracket, and connect them to their appropriate sockets on the discharger junction board (fig.9).

(4) Connect up the port

secondary conventional window dispenser as detailed in para.97.

NOTE...
With the introduction of Mod.2177, the port stowage bracket is altered to accommodate the changeover cable connectors terminating on stowages 1221, 1222 and 1223.

109. If the R.B.W/I.R.D. discharger with conventional window secondary dispenser is fitted only to the starboard bay, with conventional window primary and secondary dispensers in the port bay (Mod.2177), then the following procedure should be adopted:-

Starboard discharger bay

(1) Connect up the R.B.W/I.R.D. discharger as outlined in para.104, and the conventional window dispenser as outlined in para.97.

Port discharger bay

(2) Connect cable F3483 to plug 1223 on the stowage board.

(3) Connect cable 1/F3479 to plug 1221 and cable 2/F3479 to plug 1222. Cables F2760, F2770, F2763 and F2764 will remain connected to the stowage board.

(4) The conventional window dispensers should be connected up as detailed in para.97.

110. Whichever role is adopted, it is important that all cables not in use are correctly stowed and secure. When the installation has been secured and connected up, all removed panels should be replaced, and the relevant underside skin panels fitted to suit the installation fitted.

TABLE 1

CHANGE OF ROLE

Role	Control/Selector Unit		Dispenser Bays	
	Port	Starboard	Port	Starboard
Conventional Window	Type 7122 Controlling Secondary Dispensers	Type 7122 Controlling Primary Dispensers	Primary and Secondary Window Dispensers	Primary and Secondary Window Dispensers
Conventional and Delayed Action Window	Type 7122 Controlling Secondary Dispensers	Type 7122 Controlling Primary Dispensers	Primary Window and Secondary Delayed Action Window Dispensers	Primary and Secondary Window Dispensers
RBW/IRD and Conventional Window	Type 7122 Controlling Secondary Dispensers	Selector Unit No.1 Mk.1. Controlling RBW/IRD	RBW/IRD and Secondary Window Dispensers	RBW/IRD and Secondary Window Dispensers
RBW/IRD and Conventional and Delayed Action Window	Type 7122 Controlling Secondary Dispensers	Selector Unit No.1 Mk.1. Controlling RBW/IRD	RBW/IRD and Secondary Delayed Action Window Dispensers	RBW/IRD and Secondary Window Dispensers
RBW/IRD Starboard and Conventional Window Port and Starboard	Type 7122 Controlling Port Primary Port Secondary and Starboard Secondary Dispensers	Selector Unit No.1 Mk.1. Controlling RBW/IRD Starboard only	Primary Port and Secondary Window Dispensers	RBW/IRD and Secondary Window Dispensers
RBW/IRD Starboard and Conventional Window Port and Starboard with DAW port	Type 7122 Controlling Port Primary Port Secondary and Starboard Secondary Dispenser	Selector Unit No.1 Mk.1. Controlling RBW/IRD Starboard only	Primary Port, and Secondary DAW Dispenser	RBW/IRD and Secondary Window Dispensers

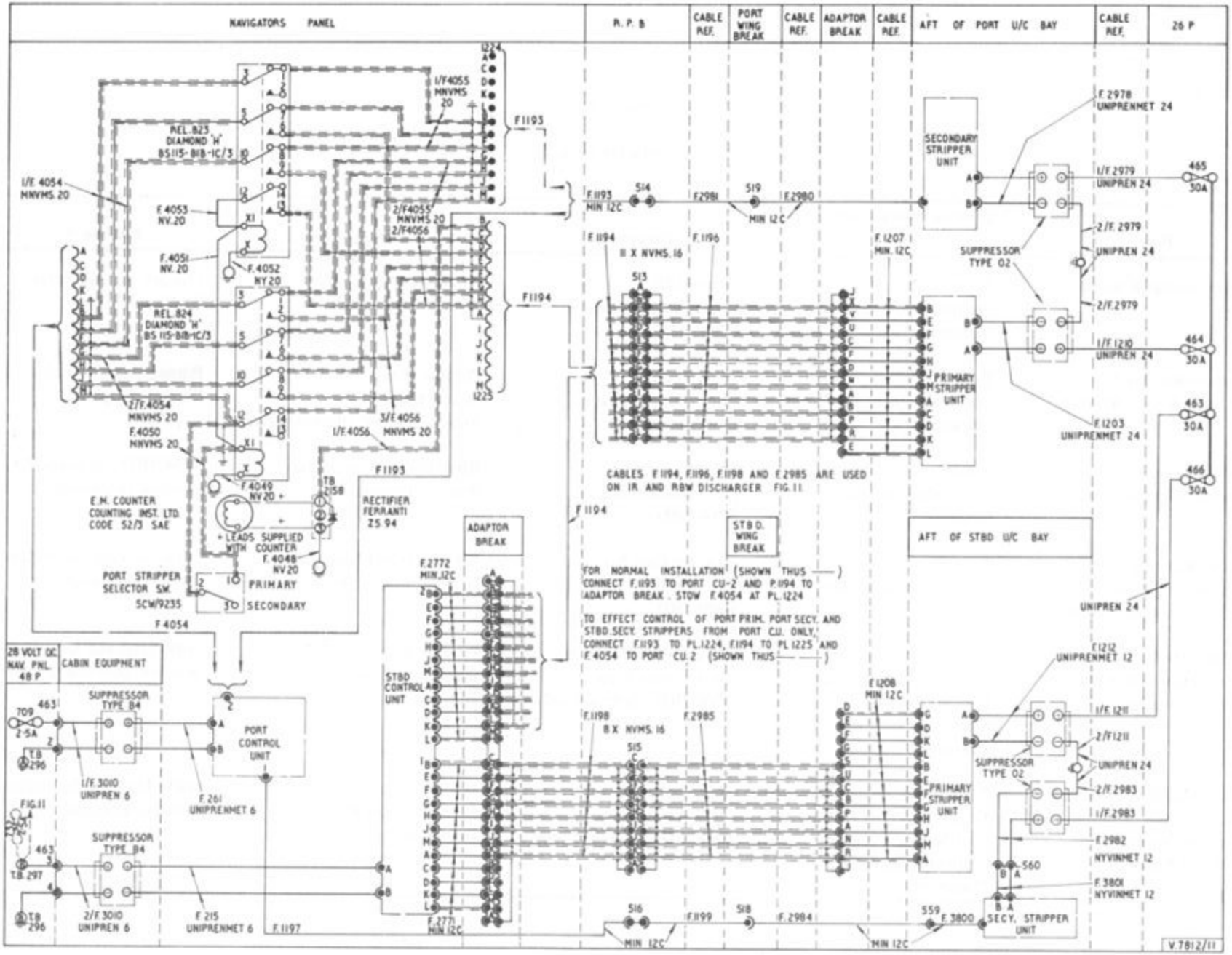


Fig. 10 Conventional window

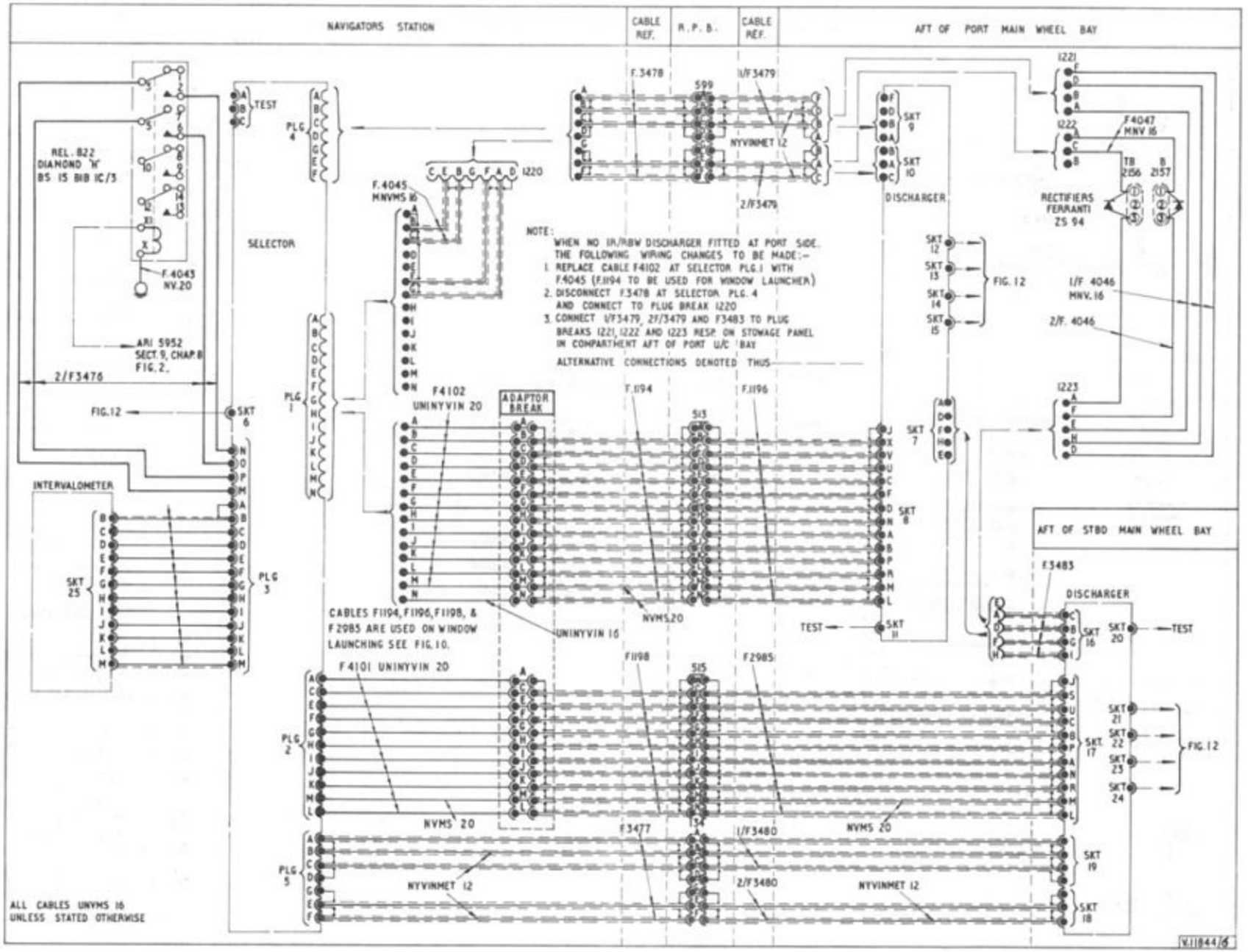
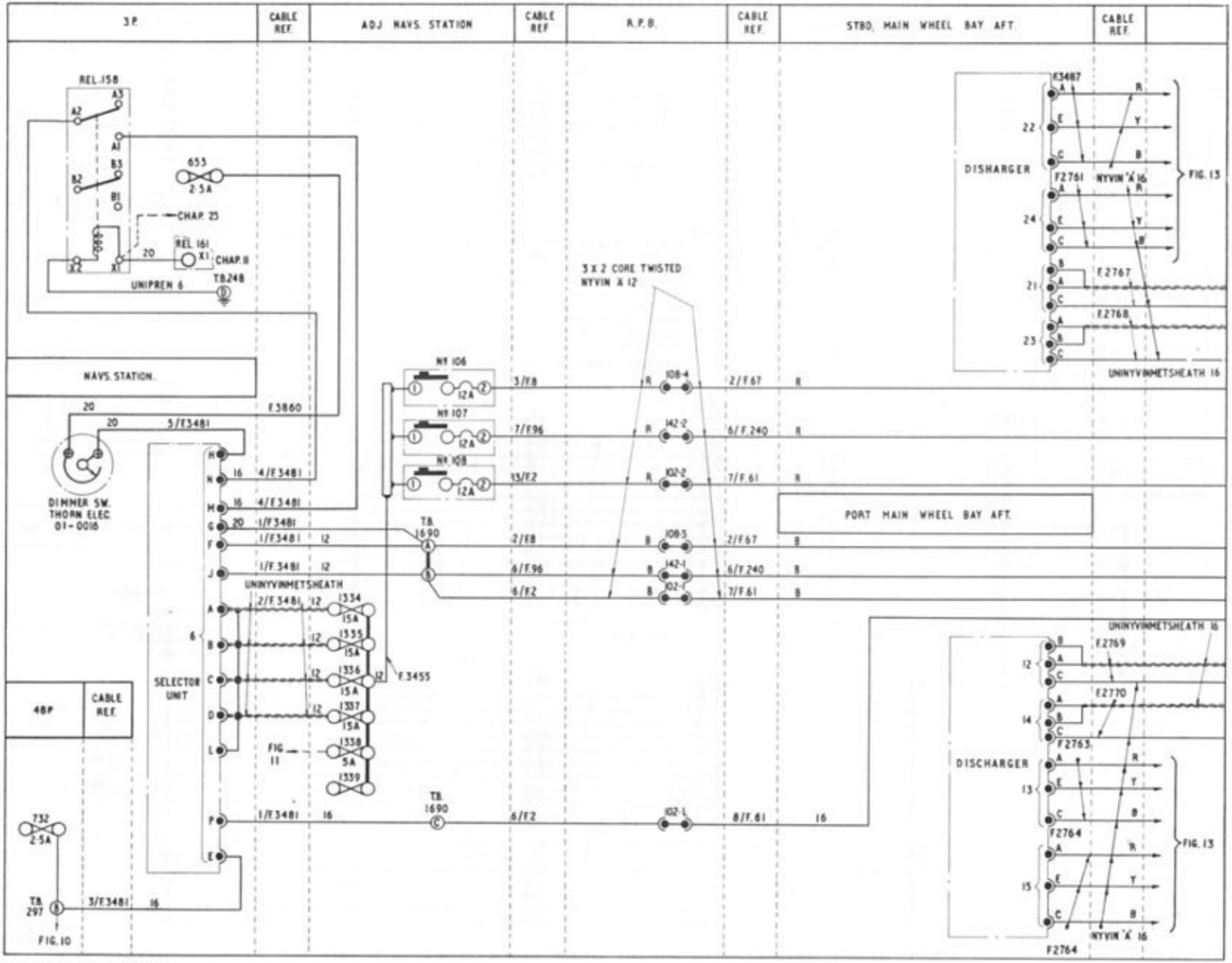


Fig. 11 R.B.W./I.R.D. dischargers.

◀ *Pole N changed to pole L on SKT 17 of stbd. discharger* ▶



186971 453 6,77 H.S.A.1354

Fig. 12 (1) R.B.W./I.R.D. power supplies

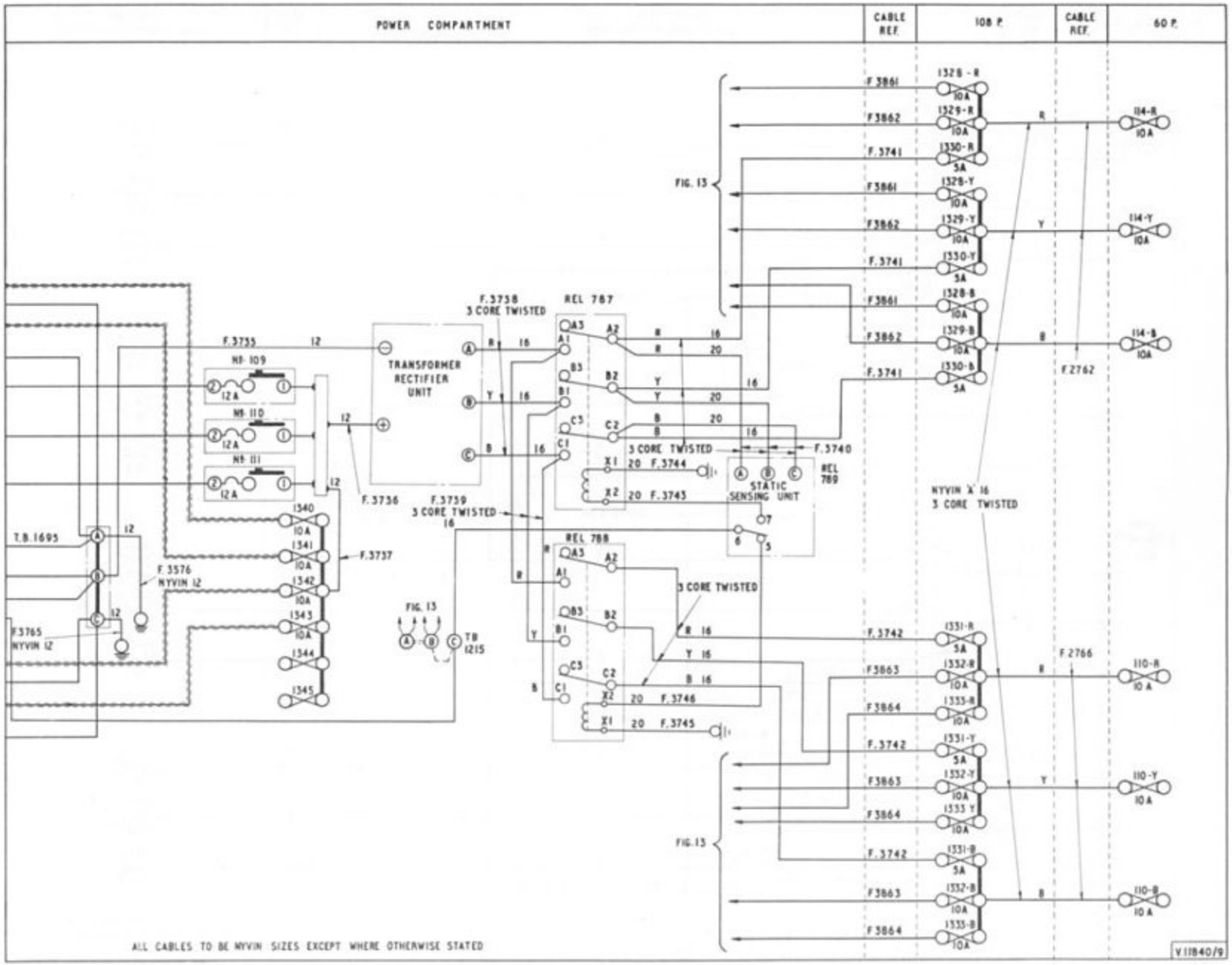
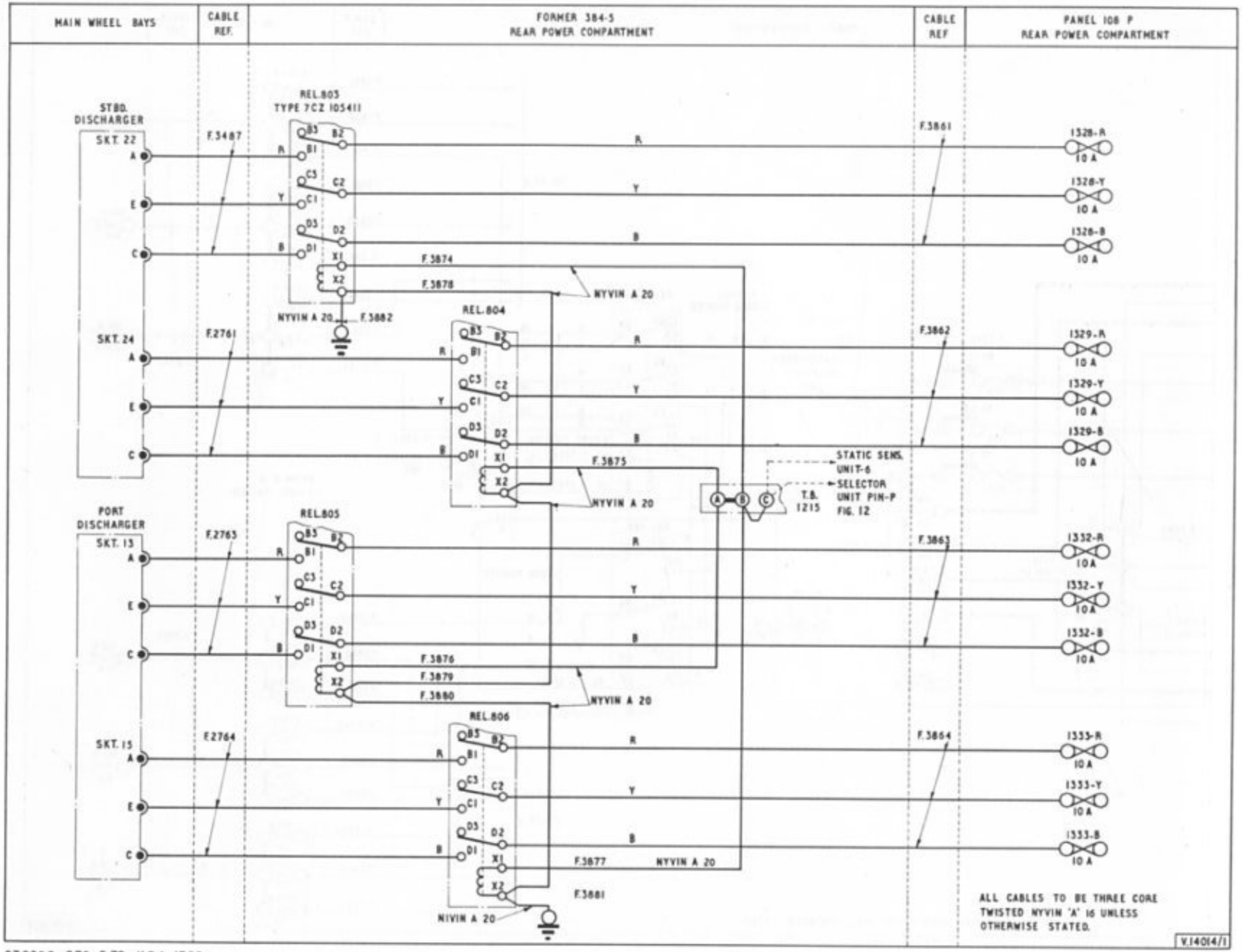


Fig. 12 (2) R.B.W./I.R.D. power supplies



939980 570 5.72 H.S.A. 1350

Fig. 13 RBW/IRD power supplies isolation

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