Chapter 2C RED TOP INSTALLATION

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LIST OF ILLUSTRATIONS

General

1. Technical and operational information relating to the guided weapon installation is given in Sect.5, Chap.7 of this publication, which should be read in conjunction with this chapter. The Red Top weapon pack is interchangeable with the Firestreak weapon pack and carries two Red Top missiles mounted one on each side. The missiles are fitted horizontally on pylons at the aft end, and are provided with electrical supplies through butt type connectors attached to the pylons and launching shoes. Prior to launch the missile controls and electronic equipment are heated by thermostatically controlled heater mats which are supplied from the aircraft a.c. system via the pack units. During the attack sequence the missile homing eyes are cooled by pure air which is supplied by a bottle in the pack. The pure air gauge is located on instrument panel A1 in the position occupied by the armed time indicator fitted for the Firestreak role.

2. Each missile can be jettisoned in an emergency by the operation of an ejector release unit which secures the launching shoe to the pylon. Details of the guided weapons, the weapon pack, and their components, with instructions for installing, operating and servicing the units are included in the Red Top publications listed in Chap.2A. The following system operation is written with reference to fig.3 and 3A in Chap. 2A.

Operation

Safety circuits

3. With the armament safety break made, supplies are fed to the contacts of the de-energized safety relay via AE2-AE211 and AA1-AA111, and also to the G.W. jettison microswitch assembly via AJ1-AJ111 and AJ2-AJ211.

4. When the alighting gear is set to UP, the safety relay is energized from fuse 123 via circuit GE1-GE111. Contacts 1-1a supply the acquisition unit and the contacts of the pure air system start relay via AE212 and pin L of the blue/grey pack-break connector; contacts 3-3a provide a positive supply (AA111-AA112) for the pairs/singles switch, the arming switch, the firing triggers, the gunsight caging push-button, the pupil's camera button and the armament master selector switch. Contacts 8-8a open to break the armament indicator test circuit AH1-AH141.

Automatic mode

5. With the armament master selector set to G.W., the AI role relay is energized from fuse 103 via AC1-AC112 and a positive supply is passed to the

◀ C.R.T./L.F.S. switch (AC111) and the L.F.S. system *(Sect.7, Chap.2)*. This supply ensures that the L.F.S. is not switched off when the C.R.T./L.F.S. switch is set to C.R.T. Contacts 3 of the selector complete circuit AA112-AA116 to energize relay T.

6. With relay I energized, the 'guided weapons selected' signal line (227) is connected to the AI 23C system.

7. With the C.R.T./L.F.S. switch set to C.R.T., the positive supply on AC111 is fed to the AI system via switch contacts 5, 4 and 230 ('L.F.S. OFF' signal line). Switch contacts 2, 3 connect a return supply from the AI system to energize relay D via 226-226a.

8. Selection of the arming switch to ARM energizes relay E (via AA118), and supplies the coil of the pure air system start relay via pin O of the red pack-break connector. This supply is also passed via the launching sequence unit to the pack units, the missiles, and the hydraulic alternator start valve solenoid to commence the arming sequence and is present when the gunnery training role is selected to prevent the missile disarming. A positive supply is now fed back from the pack via pin K of the red pack-break connector and AH118 to the ARMING caption lamps in the armament indicator.

9. The energized pure air system start relay now completes a circuit from pin L of the blue/grey pack-break 'connector (AE212) to the pure air run and start solenoids, the latter circuit being routed through the contacts of the de-energized run relay. At the same time a supply is passed to pin A of the pure air pressure switch. Should the pure air pressure now fall below 3000 lb/in^2 the pressure switch contacts will close to energize its relay and complete a hold-in circuit for the start relay. The missile conversion unit in the pack will receive its a.c. supplies from busbars XA, XB, and XC, via fuses 141, 145, 149, lines AEA4, AEB4, AEC4 and pins A, C, D of the dark blue/grey plug and socket connection.

10. Approximately 2 minutes after selecting ARM the missile arming sequence is completed and a positive supply is fed back from the launching sequence unit to energize the pure air system run relay and break the circuit to the start solenoid. This supply is also fed back to the ARMED caption lamps in the armament indicator via pin J of the red pack-break connector, AH121, rectifier 20 and AH122.

11. With the pairs/singles switch set to PAIRS a positive supply is fed to the launching sequence unit via AA112-AA141 and pin P of the red pack-break connector. This supply is used to modify the launching sequence circuits so that both missiles can be fired on acquiring the target. If the switch is set to SINGLES this supply is disconnected and only the first missile to acquire the target will be released.

12. During the attack sequence the pack units are fed with signals from the AI 23C system. These signals are passed to the pack via the pack-break connectors as follows:-

blue/grey	pin E,	core 145	BREAKAWAY SIGNAL
white	pin A,	core 16	40V, 3kHz, A
	pin B,	core 17	40V, 3kHz, B
	pin D,	core 98	K FACTOR
	pin E,	core 99	ALTITUDE, C
	pin F,	core 88	ANGLE FORE-CAST, A
	pin G,	core 89	ANGLE FORE-CAST, B
	pin H,	core 90	ANGLE FORE-CAST, C
	pin J,	core 199	AZIMUTH SLAVING, A
	pin K,	core 200	AZIMUTH SLAVING, B
	pin L,	core 201	ELEV. SLAV-ING, A
	pin M,	core 202	ELEV. SLAV-ING, B
	pin Q,	core 41	TRACK SIGNAL
	pin U,	core 203	ALTITUDE, C
	pin Y,	core 10	SCREENS

13. When the port missile acquires the target, a positive supply is fed back from the pack units via pin O of the white pack-break connector, core 42a, rectifier 10 and AH123 to the EVENT 1 caption lamps in the armament indicator. This supply is also fed direct to the light fighter sight and, via rectifier 9 and core 42, to the AI 23C indicator, to illuminate the 'acquired' event markers. ▶

14. Similarly, when the starboard missile acquires the target, a positive supply is fed back from the pack units via pin V of the white pack-break connector, core 43a, rectifier 4 and AH124 to the EVENT 2 caption lamps in the armament indicator. This supply is also fed direct to the light fighter sight and, via rectifier 6 and core 43, to the AI 23C indicator, to illuminate the 'acquired' event markers.

15. When the aircraft is within firing range of the target, a signal generated in the AI 23C system is used to illuminate the 'in range' markers on both the AI 23C indicator and the light fighter sight, and also to prepare the launch warning circuits. These circuits supply the armament system via cores 83 and 84, contacts 2F-H, and 1F-H of relay D, AA126 and AA135, contacts 2F-H and 1F-H of relay E, AA127 and AA136, to contacts 2F and 1F of the de-energized relay F. The supply on AA127 is also passed, via contacts 3F-H of relay D, AA128, diode 14, AA129 to energize relay V, whose contacts close to operate the G90 camera *(Sect.7, Chap.2).*

16. Operation of either the pupil's or instructor's firing trigger completes circuit AA112-AA121 to energize relay F. Contacts 4F-H close to supply the engine relight circuit *(Chap.7)* via AA123. Contacts 2F-H and 1F-H extend the launch warning circuits to the missile pack via AA132 and AA137, contacts 2F-H and 1F-H of relay T, AA133 and AF215, the AI 23C system, and pins Z, P of the white pack-break connector. Contacts 5F-H complete a circuit to the 2-missile conversion unit unit via AA139 and pin S of the red pack-break connector. These latter circuits commence the missile firing sequence. Contacts 6H-F extend the firing-trigger circuit to relay 47, in the A.C./D.C. fuse and relay box, to illuminate event markers on the AI 23C indicators and recorder visual *(Sect.9, Chap.3).* With 'L.F.S.' selected, the positive supply on AA112 is fed via contacts 3H-F (relay T, G.W. select), AA125, contacts 2B-H (relay D, auto/manual), AA126, contacts 2F-H (relay E, arming), contacts 2F-H (relay F, fire committal), contacts 2F-H (relay T, G.W. select), AA133 and contacts 5H-B (relay D, auto/manual) to relay 46, in the A.C./D.C. fuse and relay box, which energizes to illuminate additional event markers on the AI 23C indicators and recorder visual.

17. When the port missile has been released a positive supply is fed back from the pack units via pin H of the red pack-break connector and AH 125 to the P GONE caption lamps on the armament indicator. Similarly, when the starboard missile has been released the S GONE caption lamps are illuminated via pin W of the red pack-break connector and AH126.

18. Should either missile fail to fire after having received a firing signal, the appropriate pack misfire indicator relay is energized to complete a circuit to the associated misfire indicator, which is extended to indicate that the missile has received its signal. At the same time the P GONE or S GONE caption lamps are illuminated as described in para.17.

Manual mode

19. The sequence of operations for a manual attack is identical to that for an automatic attack *(para.5-18)* with the following exceptions:-

(1) The C.R.T./L.F.S. switch is set to L.F.S., breaking the circuit (226-226a) to relay D which remains de-energized. With the switch in this position the positive supply on AC111 (G.W. selected) is extended to the 2 missile conversion unit via core 305 and pin M of the blue/grey pack-break connector.

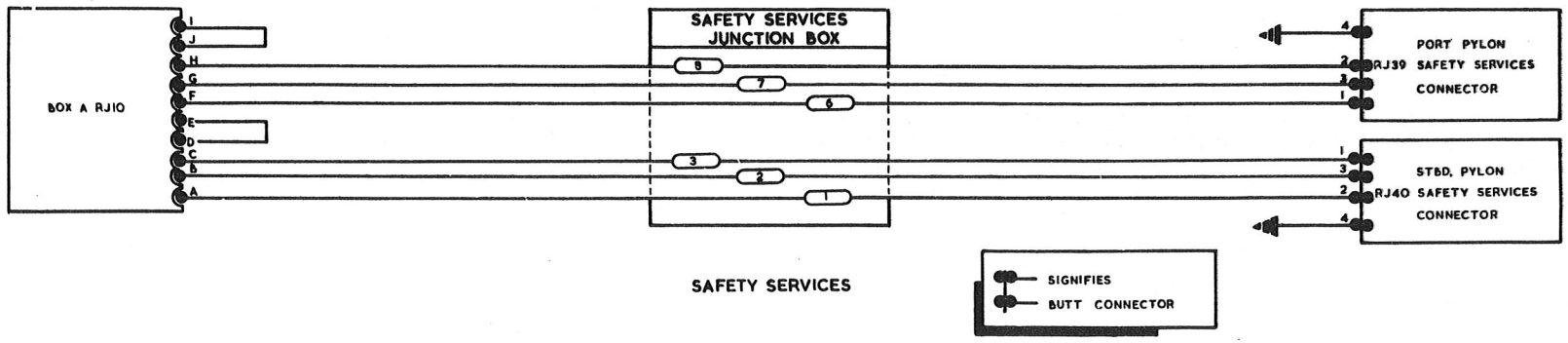
(2) The launch warning supply is now provided from fuse 61 (AH1) via contacts 3H-F of relay T, AA125, contacts 2B-H and 1B-H of relay D, AA126 and AA135, contacts 2F-H and 1F-H of relay E, AA127 and AA136, to contacts 2F and 1F of relay F. From these contacts the supply is fed to the missile pack as in the automatic mode *(para.16).*

(3) The supply to the G90 camera circuit is provided from contacts 3F of relay F, AA122 contacts 3B-H of relay D. AA128 diode 14 and AA129 to relay V, operating coil. Also the 'in-range' signal from the AI 23C via 84 energizes the Telford recorder camera *(Sect.7, Chap.2).* Both cameras are inoperative until the firing trigger is pressed.

(4) Operation of either the gunsight caging push-button or the 'reject out' switch energizes relay G whose contacts 1-1a close to supply +28 V d.c. ('launch warning') via AA133a, contacts 5B-H of relay D, AA133 the AI 23C system, 784 and pin Z of the white pack-break connector to the missile pack. Contact 5B also extends the positive supply to relay 46, in the A.C./D.C. fuse and relay box, to illuminate event markers on the AI 23C indicators and recorder visual *(Sect.9, Chap.3).*

G.W. jettison

20. In an emergency, and provided the armament safety break is made, the missiles can be jettisoned by the manual operation of the jettison microswitch assembly which is housed in the ventral tank jettison handle. Operation of the microswitch assembly completes circuits AJ111-AJ113 and AJ211-AJ213, via pins T and U of the red pack-break connector, to energize the two jettison relays in the pack. The relays complete circuits to the port and starboard ejector release units, which fire to release both missiles and launching shoes.



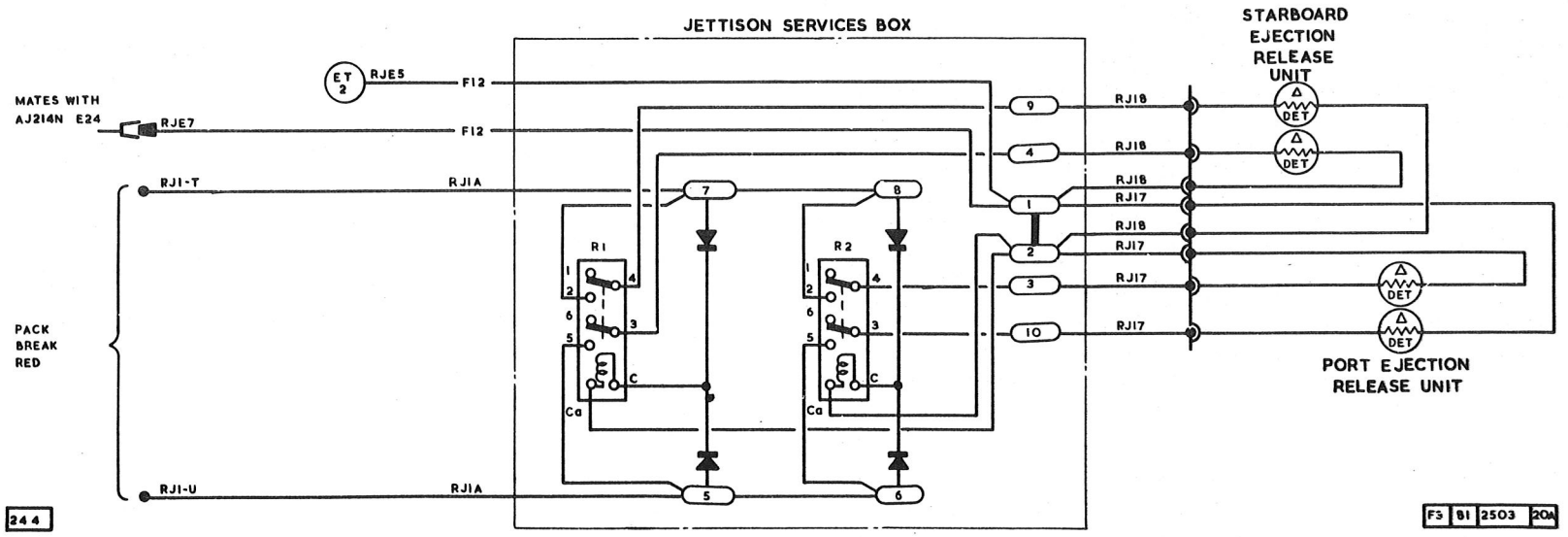


FIG.1 RED TOP PACK - SAFETY AND JETTISON SERVICES

REDRAWN TO SHOW EARTH LINKS

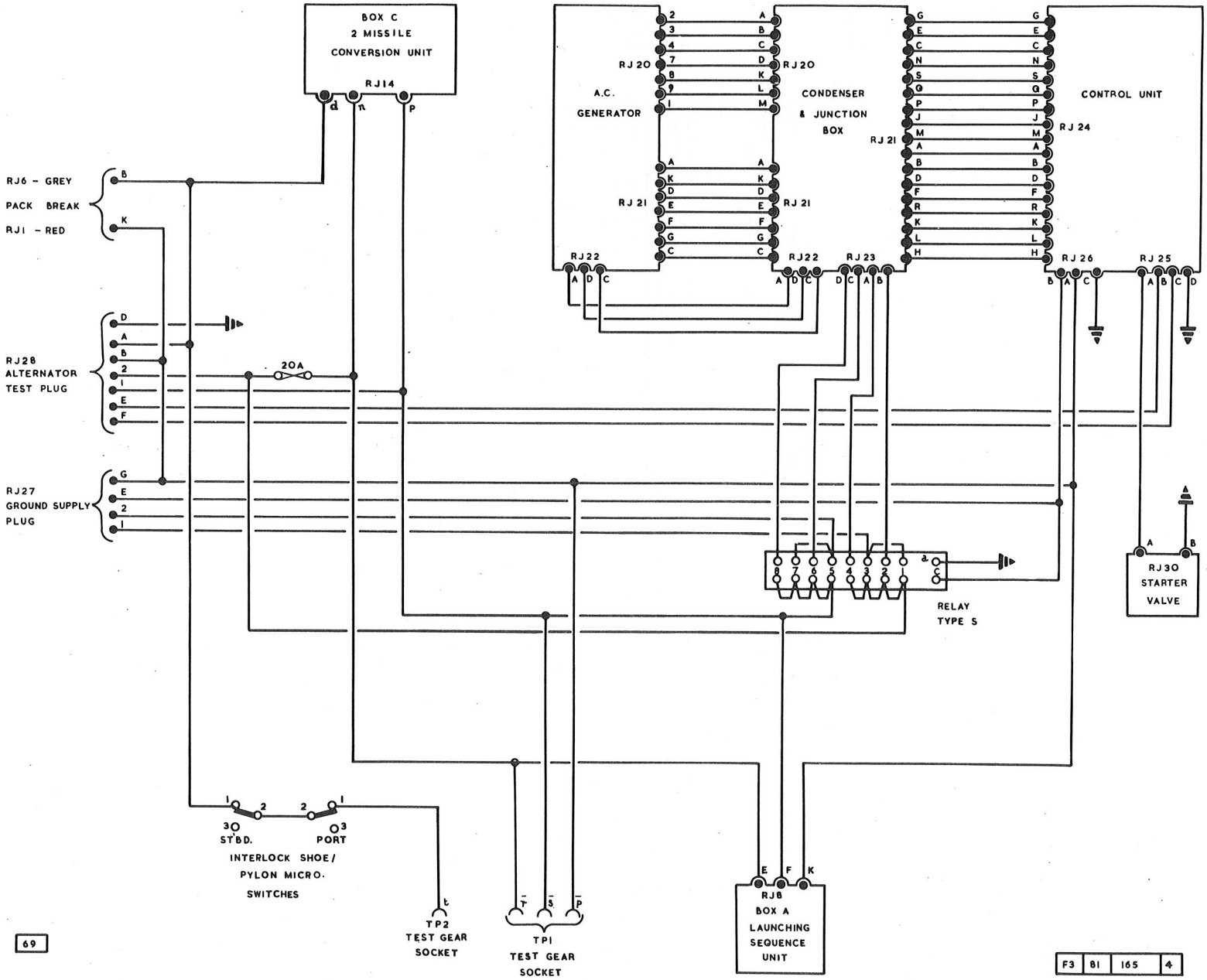


FIG.2. RED TOP PACK - ALTERNATOR SUPPLIES

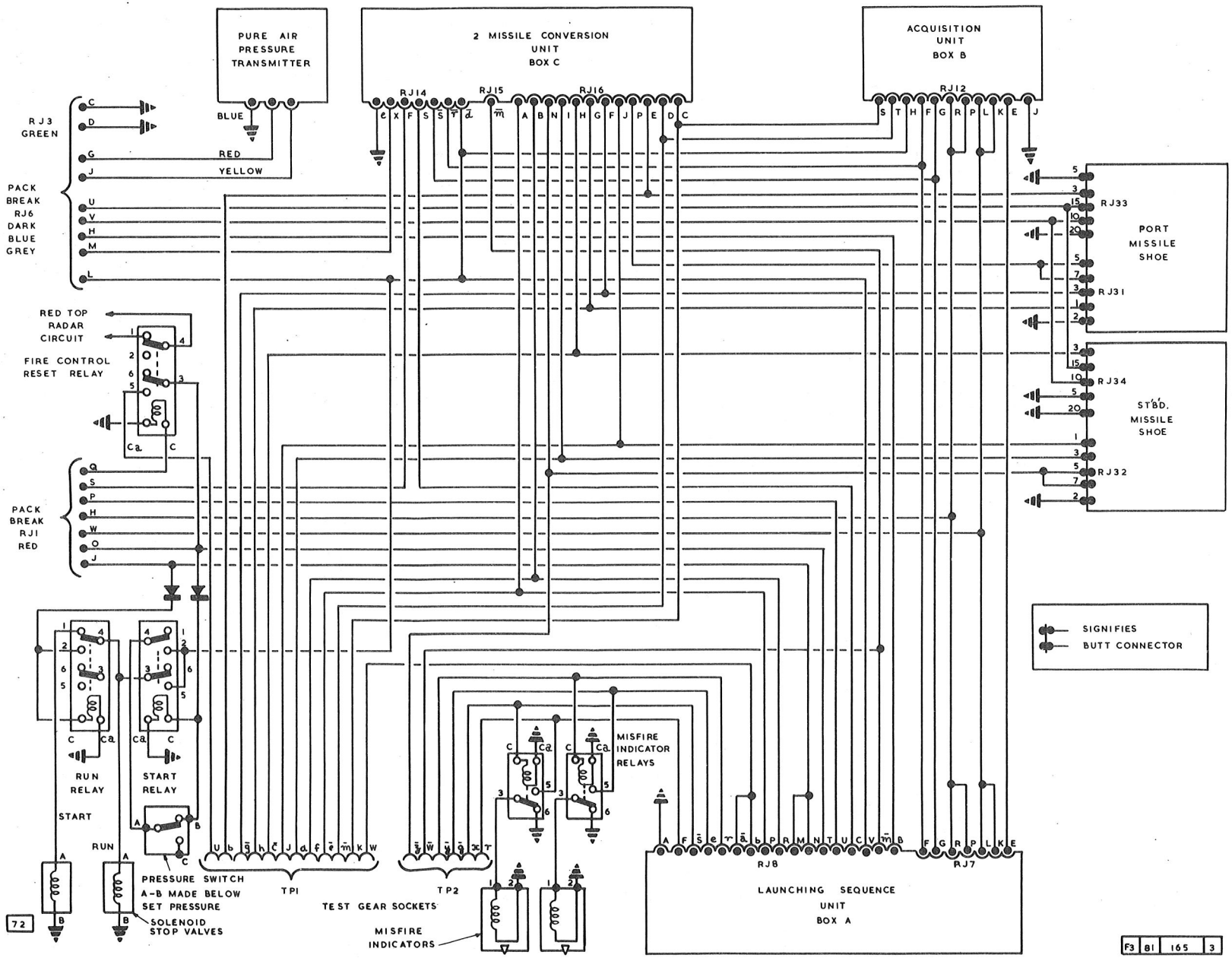


FIG.3. RED TOP PACK - D.C. SUPPLIES

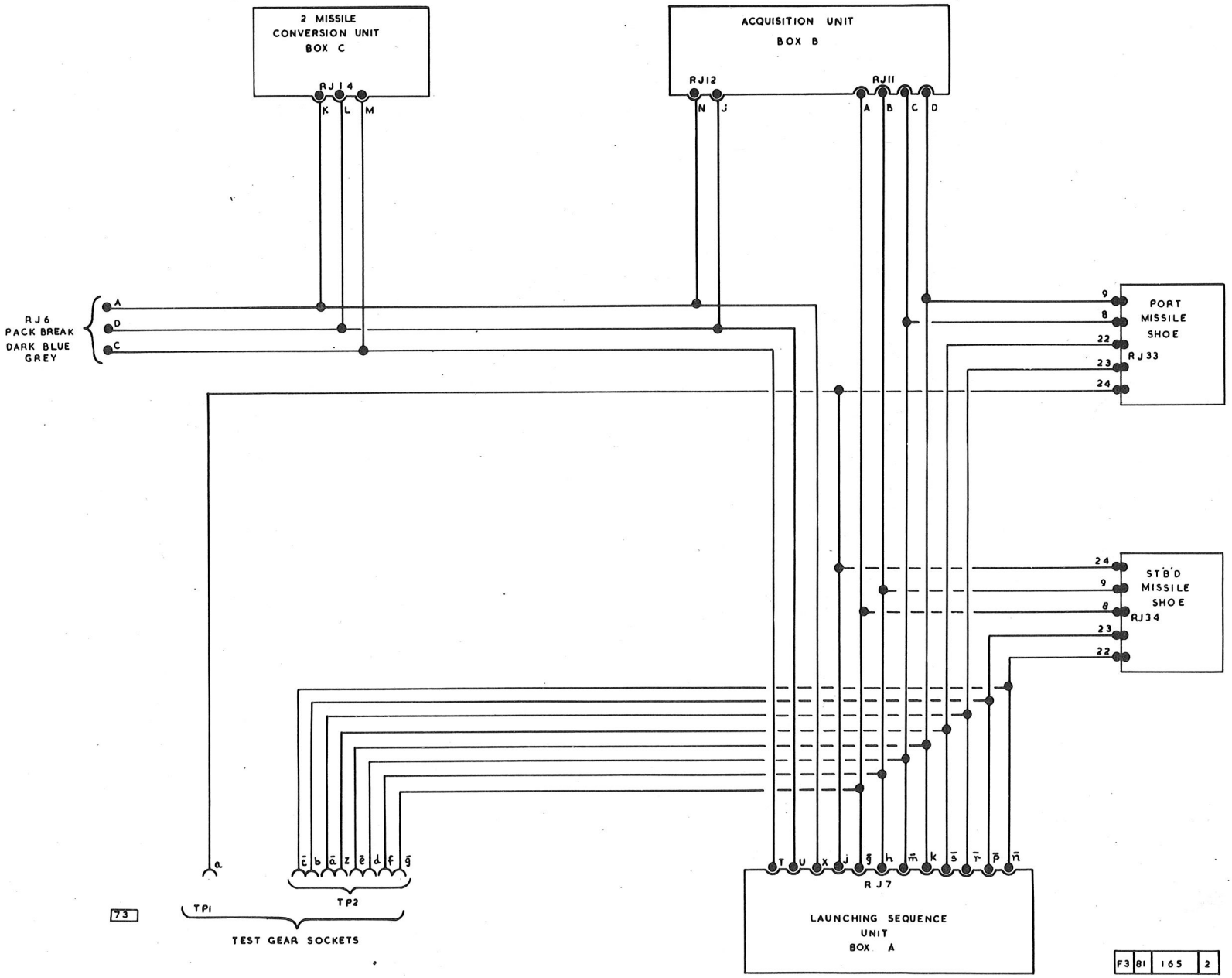


FIG.4. RED TOP PACK - A.C. SUPPLIES

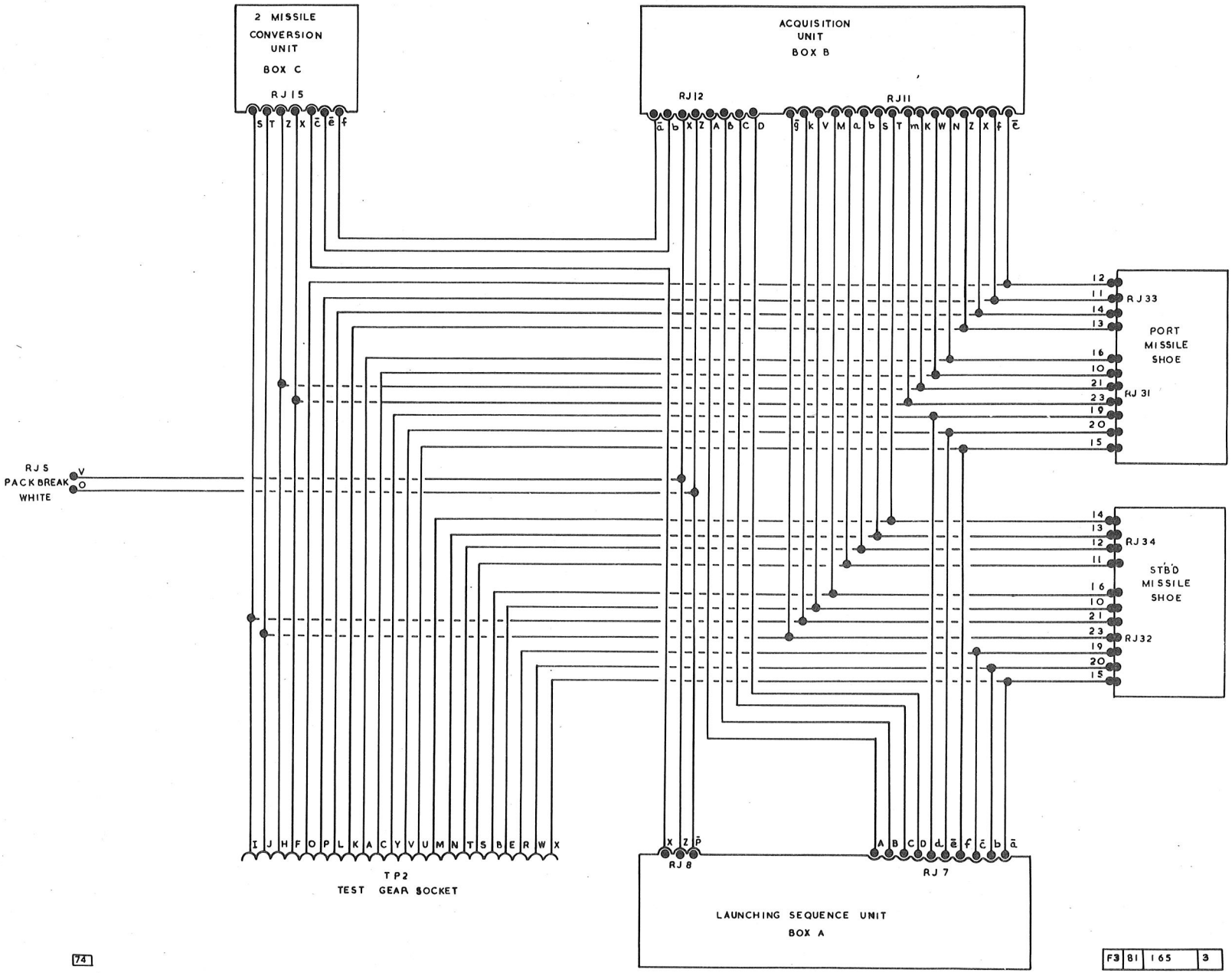
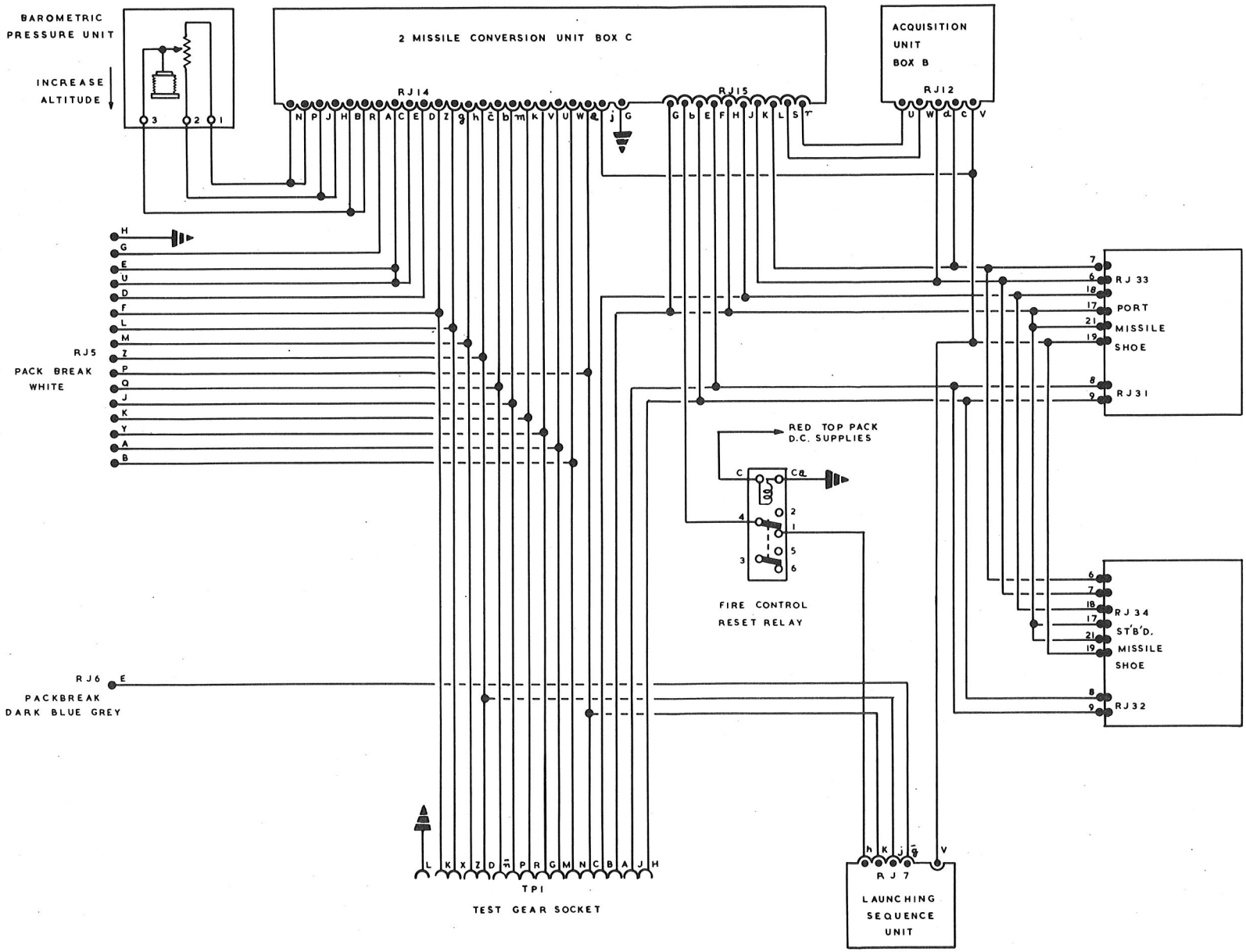


FIG.5. RED TOP PACK - ACQUISITION CIRCUIT



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F3 81 165 2

FIG.6. RED TOP PACK - RADAR CIRCUIT