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CHAPTER 4

ROCKET PROJECTILES INSTALLATION

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Chapter 4 ROCKET PROJECTILES INSTALLATION

LIST OF CONTENTS

					Para				Para
						Operation			
Introduction			 		1	Preparation		• • •	 13
Modificatio	n stan	dard	 		4	Automatic D S L attack			 14
General			 		5	Manual D S L attack	***		 18
Description			 	•••	9	Manual R R attack	•••		 20

ILLUSTRATION

Fig

Rocket projectiles firing system - theoretical 1

Introduction

1. This Chapter describes the electrical circuits used in the firing of 2-in. rocket projectiles (R Ps). The servicing diagrams associated with this Chapter and information regarding the location of components complete with a list of associated Air Publications is contained in the relevant chapter of A.P.101B-1202-10B.

2. For details of the basic armament controls and the wing pylons, reference should be made to Chap. 2 of this Section. For details of the stores jettison circuits, reference should be made to Chap. 8. 3. The SOO equipment required for the carriage of RPs includes:-

	(Mod 5004)
F • 1 • •	(Mod 5005)
Four wing pylons	(Mod 5013)
	(Mod 5014)
Central timing unit	(Mod 5152)

Modification standard

4. This Chapter includes Mod 913, 1136, 1190A, 1277, 1577 and 5152.

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General

5. The rocket projectile firing system provides control of the method of fire of 2-in. R Ps which are carried in launchers attached to pylons on each main plane. The system comprises three main sections; the fire control switches, the selector circuits and the firing points.

6. The fire control switches include a rotary switch, C-AA, marked MODE, 3" SLOW-OFF, and 2" FAST-SLOW-SINGLES, which is located on the observer's star-

board console panel, and four single-pole, on-off switches marked RP STATION SELECTORS, PORT OUTER-INNER, STBD INNER-OUTER, located on panel C-L above the observer's starboard console.

7. Supplies from the fire control switches feed into a central timing unit (C T U), a metal housing which contains the selector circuits, identified C-BU and fitted in the observer's cockpit. The firing point terminates the circuits in the rocket launchers on each pylon.

8. Three different modes of attack may be performed with RPs: automatic DSL (depressed sight line), manual DSL and manual RR (radar ranging). For automatic DSL attacks, firing of the RPs is initiated by depressing the accept switch on the port engine throttle lever, actual release being effected at the selected range when an automatic signal is emitted from the attack system control and release computer (*Cover* 2, *Sect.* 9, *Chap.* 4). For manual DSL and manual RR attacks, the RPs are fired immediately the weapons release trigger switch on the control column is depressed.

Description

9. The 2-in. R Ps are carried in No.7, Mk.1 launchers, one of which is attached to each of the pylons on the main planes. Each launcher is loaded with up to 36 2-in. RPs which are fitted in preset banks of either 2 or 4, so arranged to give a symmetrical unloading. The No.7, Mk.1 launcher is described in A.P.110G-0504-125 FNQ.

10. The banks of rockets are fired by electrical pulses initiated in the CTU which delivers the pulses in the following fixed order:-

1st Port Outer	Station No. 3
2nd Starboard Outer	Station No. 4
3rd Port Inner	Station No. 1
4th Starboard Inner	Station No. 2

11. The system provides for fast, slow and single shot firing of the 2-in. RPs. In the fast mode, rockets are fired from the same launcher at intervals of 40 ms, with a sequential time of 10 ms between rockets from successive launchers. In the slow mode, rockets are fired from the same launcher at intervals of 160 ms, with a sequential time of 40 ms between rockets from successive launchers. Firing of the 2-in. RPs ceases on release of the weapons release trigger switch or accept switch as appropriate; when the trigger switch or accept switch is again pressed the firing sequence starts at station No.3 (port outer).

12. In the single shot mode, only one firing pulse is distributed to each selected launcher at the fast ripple rate, irrespective of how long the weapons release trigger switch is pressed. This mode is for training purposes only.

OPERATION (fig 1)

Preparation

13. When the aircraft is airborne the circuit protection relays are energized and contacts

C6-5 and C9-10 prepare the circuits to secondary firing relays B and A respectively.

Automatic D S L attack

14. Selection of the attack selector switch to AUTO DSL and the weapons selector switch to ROCKETS, feeds a 28V d.c. supply from fuse N6 to the RP mode selector switch, to pin B of the C T U input plug and contact 12 of secondary firing relay B, and to a time delay unit in the engine auto-relight circuit (*Cover* 1, *Sect.* 6, *Chap.* 4). A further d.c. supply, from fuse N2, is fed to the control and release computer to alter its configuration to suit the automatic D S L mode. The mode of firing is selected on the RP mode selector switch, and stations from which the R Ps are to be fired are selected on the station selector switches.

15. At the start of the dive to the target, the accept switch is operated momentarily. This connects the 28V d.c. supplies from fuses M3 and N2 to the control and release computer and results in the start of radar ranging and the modification of the display on the pilot's display unit. As firing range is approached, the accept switch is depressed continuously and, when a specific distance from the target is reached, the computer emits a signal to energize the secondary firing relays A and B.

16. The closing of contacts 12-13 of relay B connects the supply from fuse N6 to pin A of the CTU input plug and to the engine auto-relight circuit, while contacts 2-3, of relays A and B, connect d.c. signals via resistors R2 and R3 in the SCR module, to the gate electrode of SCR VT1. This causes VT1 to be triggered into conduction and complete the earth return circuit for the stores release indicator lamp, which is then illuminated. Contacts A2-3 also route a d.c. signal via resistor R1 in the SCR module, to the weapons system performance recording system (Cover 2, Sect. 7, Chap. 10).

17. The output of the CTU provides four pulsed d.c. supplies which are fed to the launchers to drive the mechanism of a uniselector switch intergral with each launcher. In addition, the CTU provides four steady d.c. outputs to energize four relays located on panel R-L. The relays energized are those in the circuits selected by the station selector switches, and the associated contacts close and feed a d.c. supply to the selected launchers. The d.c. supplies are obtained from fuses F4, F5, F6 and F7 (panel R-C) feeding the port outer, port inner, starboard outer and starboard inner pylons respectively. As the uni-selector switch wipers are moved over the contacts

by the pulsing supply, the steady d.c. supply is applied which fires the selected RPs.

Manual D S L attack

Selection of the attack selector switch 18. to MANUAL D S L and the weapon selector switch to ROCKETS, feeds a 28V d.c. supply from fuse N6 to the R P mode selector switch, to pin B of the C T U input plug and contact 12 of secondary firing relay B, and to the time delay unit in the engine auto-relight circuit. Further d.c. supplies, from fuses C5 and N2, are fed to the control and release computer, resulting in the computer release circuits being inhibited. The supply from fuse C5 is also fed to the open contacts of the weapons release trigger switch. The mode of firing is selected on the R P mode selector switch, and the stations from which the R Ps are to be fired are selected on the station selector switches.

19. The RPs are fired by depressing the weapons release trigger switch on the control column, the contacts of the switch connecting the d.c. supply from fuse C5 directly to secondary firing relays A and B. The remainder of the operation is as described in para 16 and 17.

Manual R R attack

20. This attack is similar in electrical operation to the manual DSL attack described in para 18 and 19, except that with the attack selector switch selected to MANUAL RR, the control and release computer is switched to the dive toss mode to give radar ranging facilities. The RPs are fired by operating the weapons release trigger switch.

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Fig.1. Rocket projectiles firing system – theoretical (Pre-Mod 1277 details deleted)

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