

## Chapter II EMERGENCY EQUIPMENT

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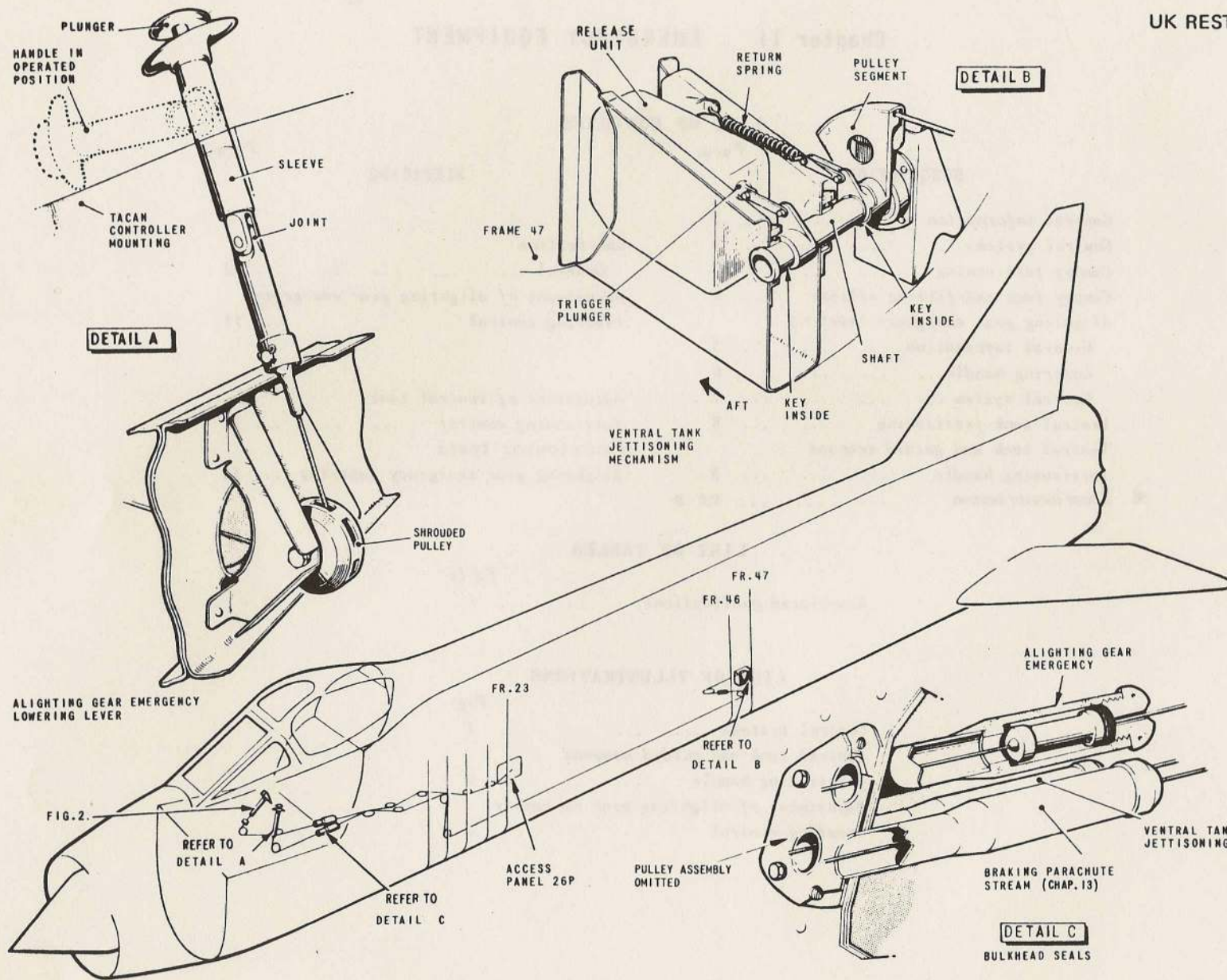


FIG. I. CONTROL SYSTEMS

## DESCRIPTION

**General information**

1. Emergency equipment includes an ejection seat assembly into which are incorporated a parachute, a demand oxygen system and a survival pack; means for independent jettisoning of the canopy, the guided weapons and the ventral tank; a fire detecting and extinguishing system and alighting gear lowering and retracting systems. A stand-by provision for manual release of the canopy is for ground use.

**Control systems**

2. With the exception of guided weapons fire detection and extinguishing and alighting gear emergency raising, all systems are cable operated.

**Canopy jettisoning**

3. The canopy jettisoning system is operated in conjunction with the seat ejecting system by pulling either of the two seat firing handles, or independently by pulling either the internal or external canopy jettisoning handle.

**Canopy jack end-fitting release**

4. The mechanism is operated by pulling either the internal handle (beneath the port cockpit sill) or the external handle (access panel in port side of the spine). Releasing the jack-end fitting enables the canopy to be opened manually in the case of electrical or hydraulic failure. It is essential that the canopy remains in the closed-and-locked position until the jack end-fitting is released.

**Alighting gear emergency lowering***General information*

5. The alighting gear emergency lowering system is for use when hydraulic or other failure precludes the use of the normal lowering system which is operated by the services hydraulic system. Pulling the handle in the cockpit operates a cable-and-pulley installation (*para.7*) connected to a hydraulic selector unit mounted in brackets on the aft face of frame 23, port side (access panel 26P). The selector is connected to the No.1 controls hydraulic system (*Chap.6*).

**Note...**

*It is important that the emergency lowering functioning tests in Chap.6 are carried out after emergency lowering of the alighting gear or partial movement of the emergency selector.*

*Lowering handle (fig.1 and 3)*

6. The T-handle is mounted in a guide forward of the Tacan control panel at the left of the seat. The handle is locked in the unoperated position and a spring-loaded button, on the top of the handle, must be depressed to release the lock and allow the handle to be pulled up to operate the emergency selector. Just prior to full travel the handle leaves its guide and is free to lie horizontally so that it cannot cause obstruction.

*Control system (fig.1 and 4)*

7. From the lowering handle (*para.6*) the operating cable runs down to a shrouded pulley mounted in brackets on the front face of frame 11, and then

aft to a seal at the pressure bulkhead. From the seal, shrouded pulleys, aft of frame 16, 19, 20, and 22 respectively, guide the cable to the lever of the emergency selector. A screwed fork end between frame 18 and 19 (access panel 21P) provides an adjustment/breakdown point.

**Ventral tank jettisoning***(fig.1)*

8. The ventral tank is suspended from a Mk.3A manual bomb-release unit mounted between frame 46 and 47 in the bottom of the rear fuselage (*detail A*). The cable from the cockpit handle terminates on a pulley segment which is keyed to a shaft supported by ball bearings in the fuselage structure. Two small levers, one keyed to the shaft and the other actuated by (and in the reverse direction, actuating) the pulley segment through a dog-type drive, are connected by links to the release-unit trigger and the mechanism return spring respectively. When the cockpit handle is pulled, the cable rotates the shaft to operate the release unit; after operation the return spring resets the mechanism. Cable adjustment is by means of a turnbuckle between frame 45 and 46, near the release unit.

**Ventral tank and guided weapons jettisoning handle**

9. The handle is mounted in guide blocks immediately forward of the port instrument panel with the handgrip projecting beyond the panel. It allows separate or simultaneous operation of the two systems.

◀ **Sonar locator beacon**

9A. The sonar locator beacon is located in the starboard wheel well and is mounted on the aft face of spar 3 web between ribs 11b and 12a. ▶

**SERVICING**

**WARNING**

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cockpit or performing any operations upon the aircraft.

**Lubrication**

*General*

10. All pulley bearings are pre-packed with grease XG-287 and the control handles and levers are similarly lubricated during assembly. Open cables do not require lubricating.

**Adjustment of alighting gear emergency lowering control**

(fig. 3)

11. To adjust the alighting gear emergency lowering control:-

(1) Ensure that the alighting gear is down and locked.

(2) Release all hydraulic pressure from the No.1 controls and the services systems.

(3) Depress the knob and pull up the handle until it can be laid horizontal.

(4) Set the lever of the emergency-selector valve hard against the forward end of the slot in the valve body (access panel 26P), and adjust the cable (access panel 21P) until all slack is taken up.

(5) Reset both the operating handle in

the cockpit and the selector valve to their normal positions.

Note...

*The operating handle and the selector valve lever must be moved simultaneously to avoid kinking the control cable in the fuselage.*

(6) Check that the selector valve lever

is in its normal position i.e., 0.010 in. clear of the aft end of the slot. If the clearance between the lever and the aft end of the slot exceeds 0.010 in. the cable must be adjusted to obtain this clearance.

(7) Move the operating handle to the operated position, lay the handle hori-

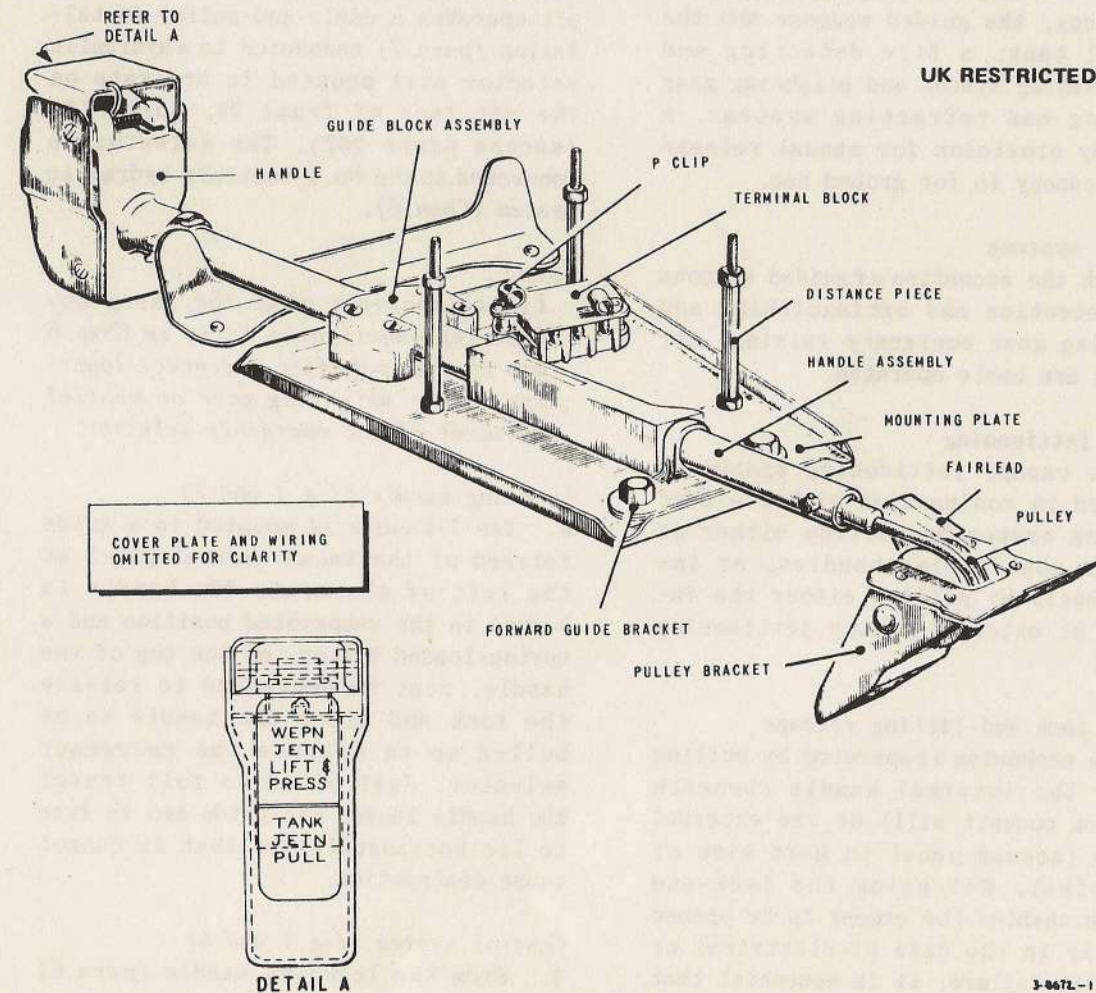


Fig. 2. Ventral tank and guided weapons jettisoning handle

zontal, and check that the selector-valve lever is hard against the forward end of the slot. If the lever does not move the full extent of its travel, adjust the cable until it does ensuring that a clearance of 0.010 in. is maintained between the lever and aft end of slot.

(8) Reset the system to the unoperated condition.

(9) Carry out the emergency lowering functioning tests described in Chap.6.

#### Adjustment of ventral tank jettisoning control

12. To adjust the ventral tank jettisoning control:-

(1) Operate the cockpit jettison handle and measure its travel. This must be  $1.60 \pm 0.030$  in.

(2) At the release unit (A.P.1664 (2nd Edn.) Vol.1, Book 2, Sect.4, Chap. 15) measure and check the free play of the operating rod: there must be a minimum of 0.002 in. and a maximum of

0.020 in., measured between the shoulder of the eye-end and the screwed bush insert, to ensure that the plunger is not pre-loaded.

#### Note...

*The end of the screwed bush insert must be used as the datum point for all subsequent measurements. If there is no free play at the eye-end, adjust the screwed bush insert. After adjustment, lock the bush by centre-punching.*

(3) Cock the release unit and measure the amount of travel of the eye-end to effect release. This measurement must not exceed 0.38 in., inclusive of the free play noted at (2).

(4) With the release unit cocked and the jettison handle in the unoperated position, adjust the cable at the turn-buckle at frame 45 and 46 so that the operating rod of the release unit just commences to move beyond the previously measured free play.

(5) Insert the ventral tank suspension

bolt into the release unit and check that the release unit is cocked.

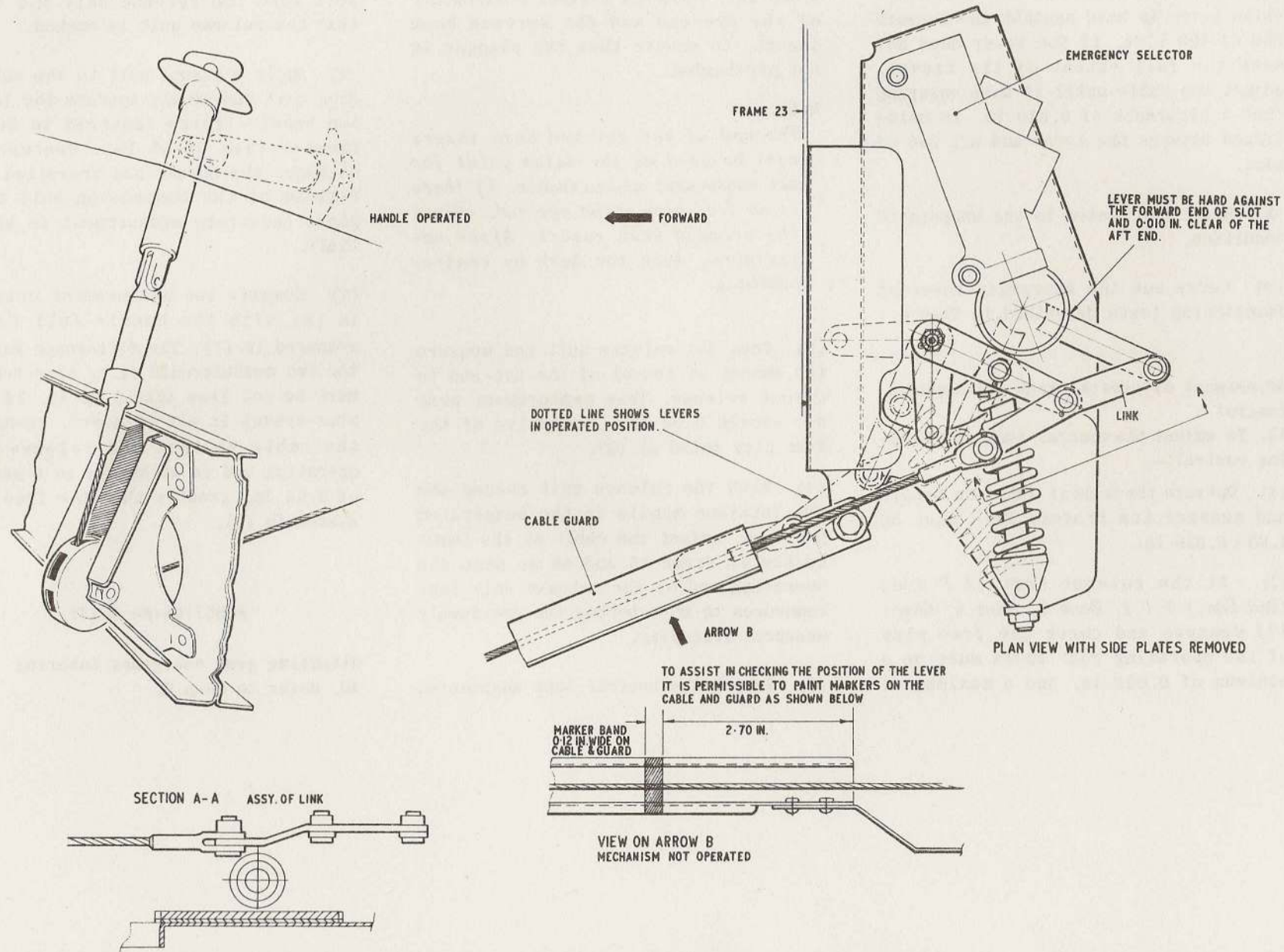
(6) Apply a manual pull to the suspension bolt and slowly operate the jettison handle (force required to be not greater than 20-30 lb). Measure the distance the handle has travelled when release of the suspension bolt takes place (accurate measurement is essential).

(7) Compare the measurement obtained in (6) with the handle full travel measured in (1). The difference between the two measurements (i.e. over-travel) must be not less than 0.20 in. If this over-travel is not obtained, re-adjust the cable so that the release unit operating rod is withdrawn to a maximum of 0.04 in. greater than the free play stated in (2).

#### FUNCTIONING TESTS

**Alighting gear emergency lowering**  
13. Refer to Chap.6.

RESTRICTED



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FIG.3 ADJUSTMENT OF ALIGHTING GEAR EMERGENCY LOWERING CONTROL

RESTRICTED

**TABLE 1**  
**Associated publications**

System	A. P.	Vol.	Sect.	Chap.
Ejection seats (description)	4288	1 (Pt. 1)		
Ejection seats (servicing, removal and assembly)		1 (Pt. 2 and 5)		
Canopy-jettisoning mechanism	A. P. 101B-1003-1A		3	1A
Emergency oxygen systems			3	10
Alighting gear emergency lowering	A. P. 101B-1003-1B		3	5 and 6
Alighting gear emergency raising			6	5
Fire protection system	A. P. 101B-1003-1A		4	5
Emergency operating controls			1	3
Airfield aircraft arresters	4717A	1 and 6		

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