Chapter 14

EMERGENCY EQUIPMENT

LIST OF CONTENTS

DESCRIPTION	Para.
Introduction	1
Emergency exits and hatches	2
Canopy escape hatch	3
Parachute exit	6
Aircraft main entrance door	9
Fuselage ditching exits	10
Fuselage escape exits	11
Ditching ropes	12
Type M.S.9 liferafts	13
Liferaft operation	15
Additional liferaft	17
Fire extinguishers	18
SERVICING	
Emergency exits and hatches	
Lubrication	20
Type M.S.9 liferafts	
Release mechanism	21
Fire extinguishers	25
Parachute escape hatch	
Operating mechanism adjustment	26
REMOVAL AND ASSEMBLY	
General	27
Liferaft installation	
Removal	28
Assembly	30

LIST OF ILLUSTRATIONS

	Fig.
Canopy escape hatch	1
Parachute exit	2
Centre section ditching exit	3
Escape hatch - formers 24 to 26	4
Escape hatch - formers 15 to 17	5
Entrance door	6
Type M.S.9 liferaft installation	7
Liferaft operation	8

DESCRIPTION

Introduction

1. This chapter covers the emergency equipment and fittings included in Sect.1, Chap.3 and are not included elsewhere in this Publication. Those covered elsewhere are as follows:-

(1) Emergency hydraulic services — Sect.3, Chap.6

(2) Fuel jettison systems — Sect.4, Chap.2

(3) Fire extinguisher systems — Sect.4, Chap.5

EMERGENCY EXITS AND HATCHES

2. One escape hatch is provided in the roof of the pilots' canopy, two in the fuselage intermediate centre section (one at each side for access to the main plane) and two in the roof of the rear centre section. In addition, there is a parachute exit between the pilots' positions and the main entrance door, in the starboard side of the rear centre section, which can be quickly removed from its hinges and jettisoned.

Canopy escape hatch

3. This hatch can be jettisoned or partially opened for ventilation purposes when the aircraft is on the ground. Four locking pins secure the hatch in position (fig.1) and all four are released by operating a black and yellow painted handle, located in the fuselage roof adjacent to the hatch. On release of the locking pins the hatch is manually jettisoned. Partial opening of the hatch for ventilation purposes is effected by the operation of a handle, attached to a cross-shaft, mounted in the rear section of the escape hatch pressing. This handle is secured in a clip attached to the pressing

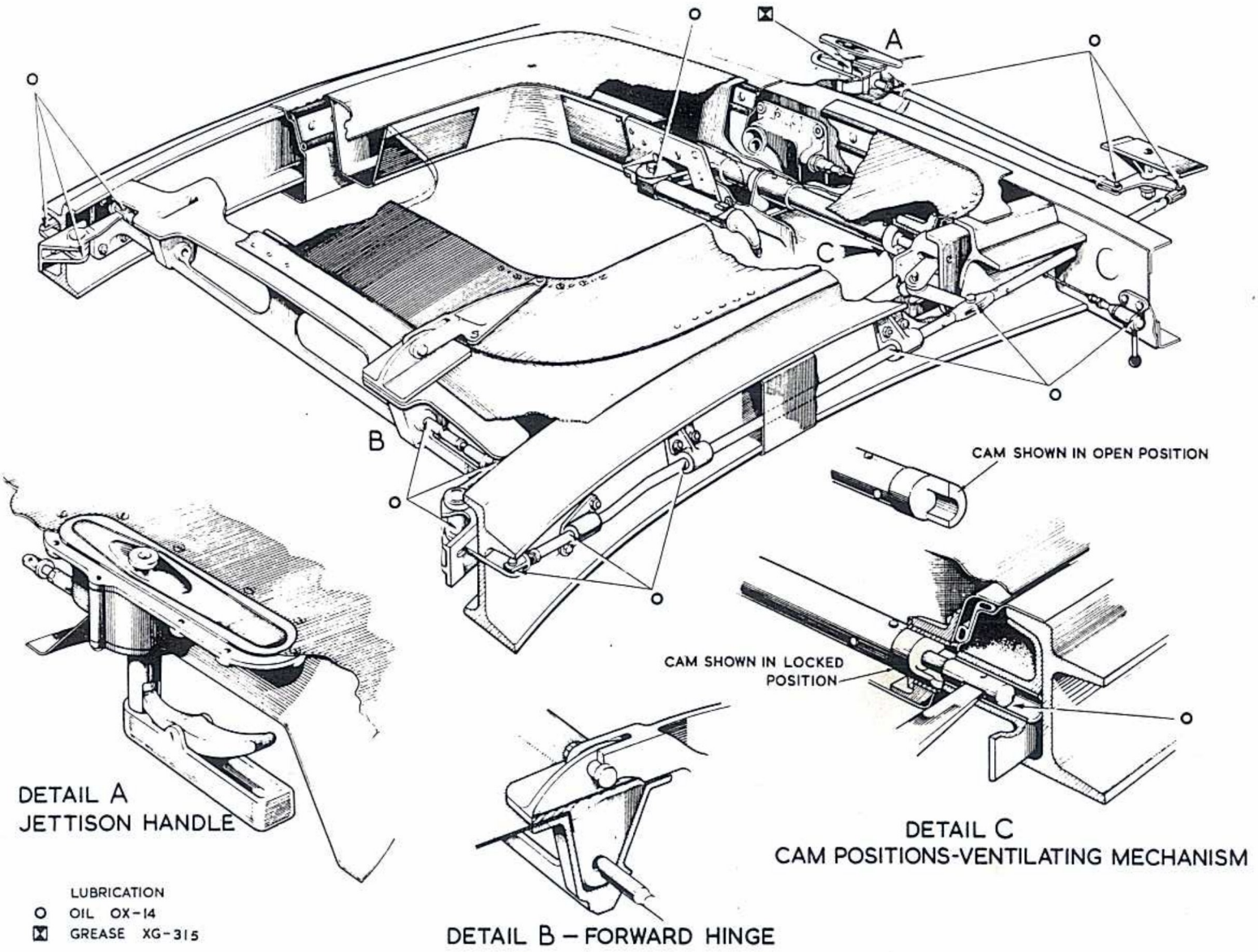

Fig. 1. Canopy escape hatch.

◄ *Lubrication change* ►

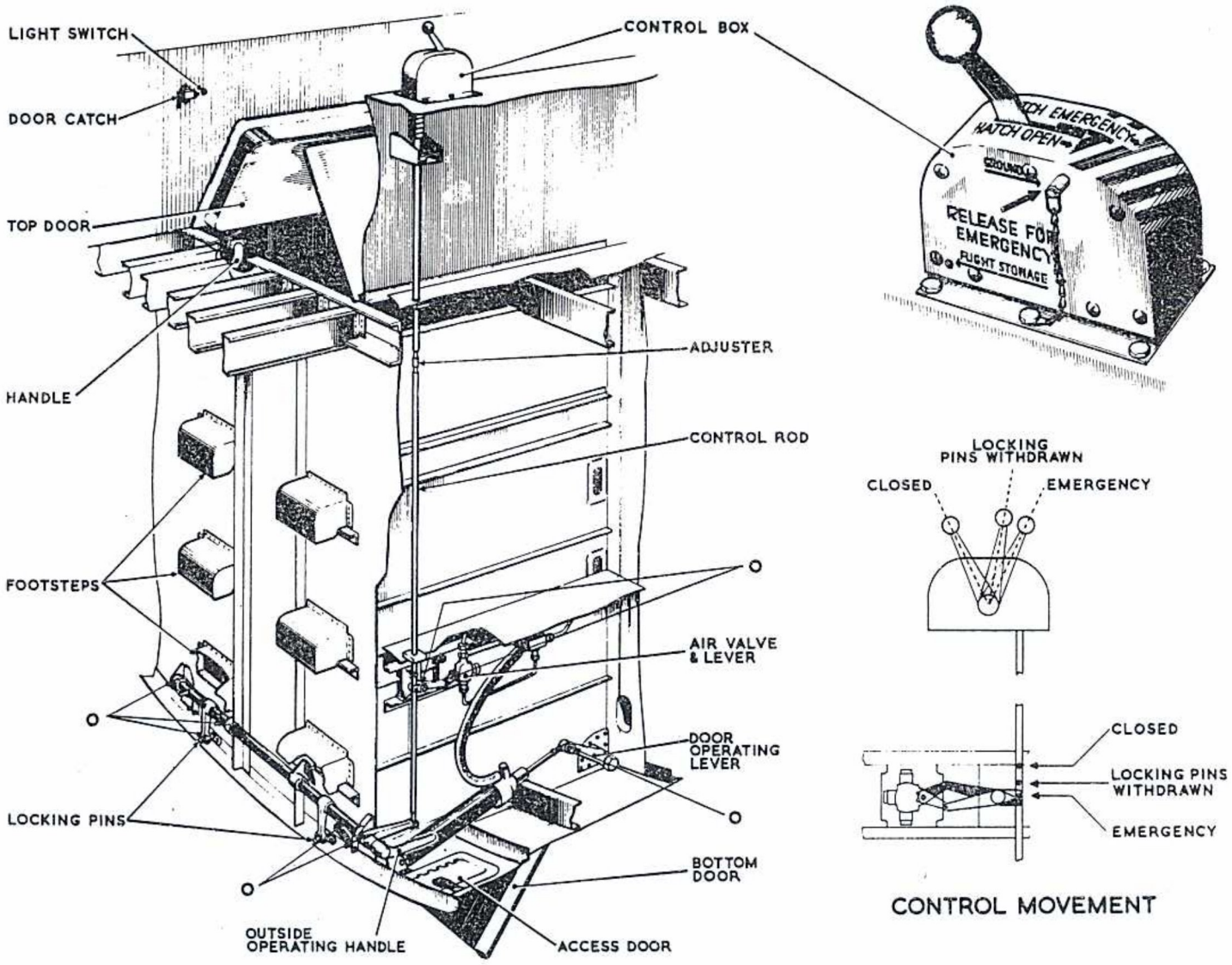

FIG. 2 PARACHUTE ESCAPE HATCH

Fig. 2. Parachute exit.

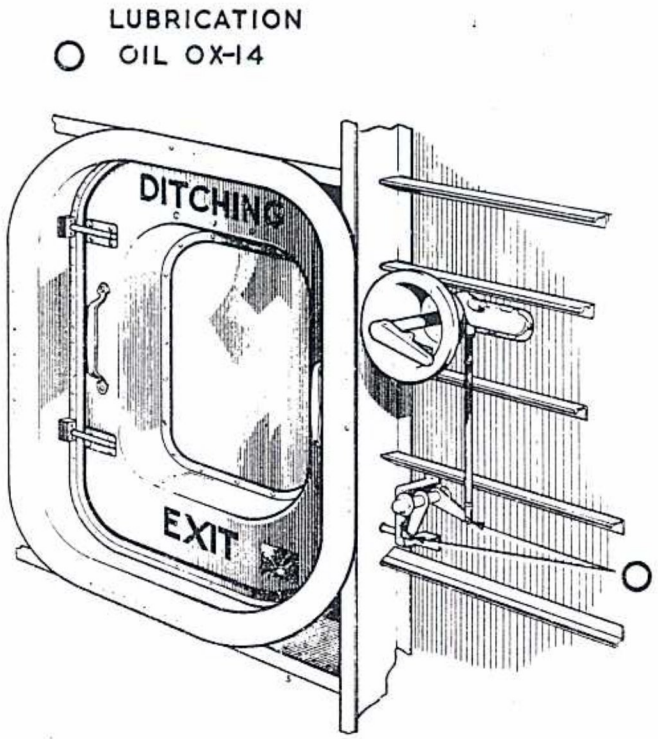

Fig.3. Centre section ditching exit

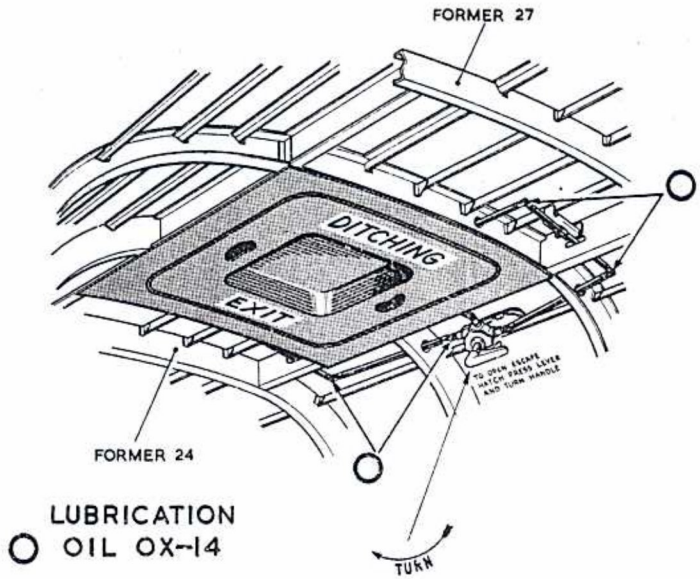

Fig.4. Escape hatch - formers 24 to 26

and a spigot is fitted to its lower end for use when the hatch is in the ventilating position.

4. Movement of the handle through 90 deg. forward and then 90 deg. down will release the hatch from the rear locking pins and allow it to hinge upwards on the forward locking pins. The spigoted end of the handle is then inserted into a release box attached to the forward face of former B. The spigot on the handle will automatically lock between two spring-loaded points in the box, securing the hatch in the ventilating position. The hatch MUST NOT BE OPENED DURING FLIGHT for ventilation purposes.

5. Operation of a release catch, located outboard and to port of the release box, releases the handle spigot to allow the hatch to be closed. To close and lock the hatch lift the handle from the release box, close the hatch and move the handle up through 90 deg. and aft through 90 deg. The first movement will turn the cross-shaft to bring the cams at each end of the shaft in the locked position. The second movement will secure the handle by inserting a tongue formed at one end, between two legs attached to the hatch pressing and bringing the handle shaft into the stowage clip provided.

Parachute exit

6. This is located under two hinged doors in the fuselage floor between the two pilots (fig.2). The doors are opened upwards and outwards, to give access to the parachute exit chute. The chute is closed at the bottom by a hinged door which may be opened manually or by pneumatic rams operated by compressed air from the emergency air system. The upper doors are secured by locking pins in the port door, operated by a sliding handle fitted to the door, and are held in the open position by spring catches fitted to the walls of the pilots' floors.

7. The lower door is locked in the 'close' position by two locking pins controlled by a lever mounted in a gated control box at the rear inboard side of the second pilot's floor. Two positions for

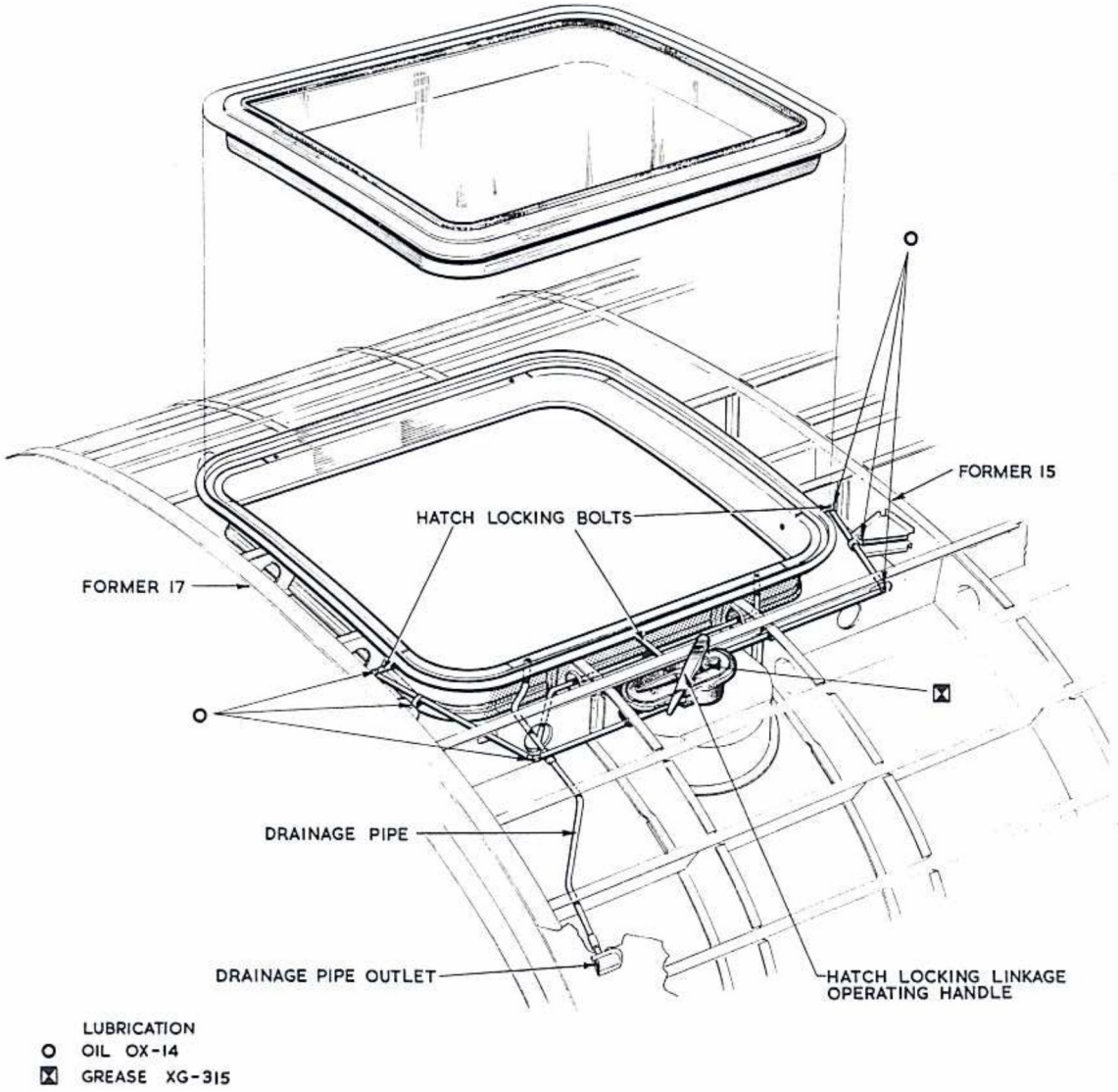

Fig.5. Escape hatch - formers 15 to 17

the control lever are marked on the control box, HATCH OPEN and HATCH EMERGENCY. A quick-release pin prevents the lever being moved to the HATCH EMERGENCY position unless the pin is removed. For normal operation of the door, as an entrance or exit on the ground, movement of the control lever to the HATCH OPEN position will release the door locking pins, through adjustable control rods, and a torque shaft and levers, allowing the door to be opened manually. An additional handle, attached to the torque shaft operating the door locking pins and accessible from outside of the aircraft through an access panel under the starboard heater bay, is provided to release the locking pins from the outside.

8. In case of emergency, removal of the quick-release pin from the control box and movement of the control lever to the HATCH EMERGENCY position operates a pneumatic valve and compressed air from the emergency air system, is admitted to the pneumatic rams operating the door. The door locking pins are automatically released as the lever moves past the HATCH OPEN position. A spring-loaded plunger, located in a housing on the outboard side of the box, locks the lever in the HATCH EMERGENCY position, thus retaining air pressure on the ram pistons and holding the door in the open position. The locking plunger is released by pulling the release knob attached to it, which will allow the lever to spring back to the normal position. This action will cut off the air supply, and exhaust the air in the rams, leaving the door free to close.

NOTE...
Two positions are provided in the control box for the quick-release pin, one marked GROUND and the other FLIGHT STOWAGE. The pin must be in the GROUND position when the aircraft is on the ground, thus preventing inadvertent operation of the control lever to

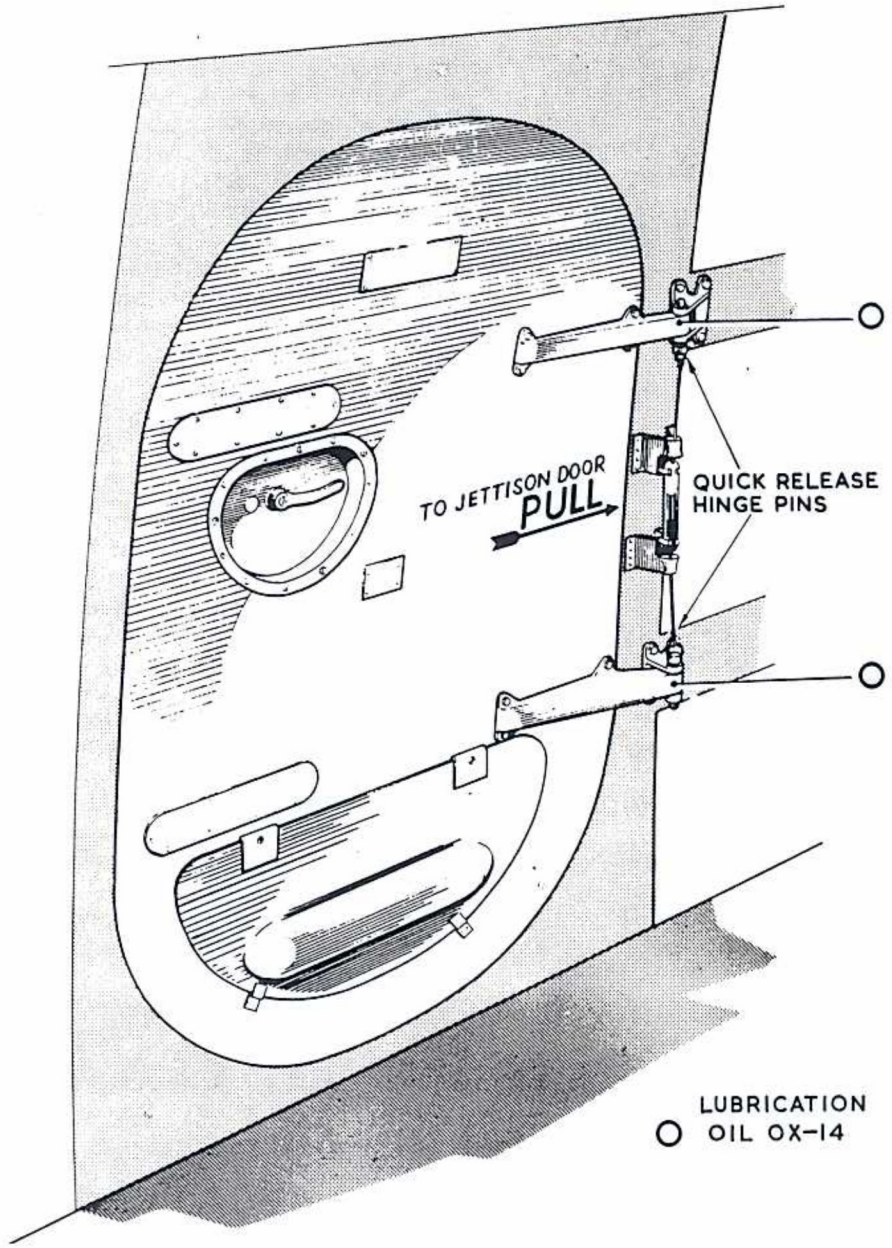

Fig.6. Entrance door

HATCH EMERGENCY. Immediately before take-off the pin must be removed from the GROUND position and placed in the FLIGHT STOWAGE position. The control is thus prepared for immediate operation to HATCH EMERGENCY, if required. On completion of the flight, the pin must be returned to the GROUND position.

Aircraft main entrance door

9. Quick-release pins are used as hinge pins in the door hinges. A cable from each pin is connected to a handle, secured in spring clips, on the door frame, midway between the door hinges. The handle is indicated by an arrow and an inscription TO JETTISON DOOR PULL stencilled on the door. The cables pass through fairleads, one above and one below the handle, which ensure that, when the handle is pulled, the quick-release pins are withdrawn. When the pins are withdrawn the door must be lifted, manually, from the hinges and jettisoned.

Fuselage ditching exits

10. The two ditching exits are situated in the fuselage intermediate centre section, one port and one starboard, between formers 9 and 10. Each hatch is secured in position by two dowels locating in blocks secured to the exit frame and two locking pins. The locking pin actuating mechanism is operated by a handle assembly adjacent to the exit. The handle assembly can be operated from inside or outside the aircraft. The inner handle incorporates a lever which is actuated by gripping, to free the handle for turning. Provision is made to enable the flush fitting outer handle to be pulled out prior to turning. Each hatch is fitted with two handles, this enables the hatch to be held firmly when opening during servicing operations.

Fuselage escape exits

11. Two escape exits are provided in

the roof of the rear centre section, one between formers 15 and 17 and one between formers 24 and 26. Each hatch is secured in position in a manner similar to the ditching exits (para.10). Drain pipes, leading to a drain exit, are fitted to disperse moisture which collects between the hatch and the exit frame.

Ditching ropes

12. Ropes, for use by crew members during ditching operations, are stowed adjacent to the main entrance door and the two ditching exits. The rope stowage for the entrance door is just forward of the door frame. The port ditching exit rope is in a stowage outboard of the subsidiary sonics operator's table and the starboard ditching exit rope is in the liferaft and parachute stowage under the ditching exit. Each rope is anchored at one end to an eye-bolt secured to the aircraft structure.

TYPE M.S.9 LIFERAFTS

13. Two liferafts Type M.S.9, housed in pre-packing pans, are stowed in compartments, one in the trailing edge section of each main plane centre section. A manual-release cable runs through lengths of tubing from each liferaft stowage compartment to two pull-off positions. Both pull-off positions are on the starboard side of the aircraft, one on the window frame between formers 13 and 14 and the other between formers 24 and 25. Each pull-off position is fitted with two handles one labelled PORT and the other STBD., secured in spring clips.

14. Each liferaft compartment lid is secured in position by two lugs, locating in blocks in the wing structure, and two locking pins engaging with release catches in the liferaft compartment. The two release catches are operated manually or automatically. Manual operation is effected by pulling the operating lever, access to which is through a transparent panel in the compartment lid. Automatic release is effected by a piston, operated by the gas from the liferaft inflation cylinder when the liferaft release handles are pulled. The release mechanism is illustrated in fig.8.

Liferaft operation

15. When the liferaft release handle is pulled, a lever in the cylinder operating head rotates a cam to actuate a plunger which pierces the cylinder sealing disc. The C.O.2 gas from the cylinder is directed through the operating head to the liferaft and to the lid release mechanism operating piston.

16. The release mechanism operating piston contacts a lever attached to the release mechanism operating lever to move the lever in its quadrant. Movement of the operating lever is transmitted via connecting rods to two bellcrank levers, one at each release catch. Movement of the bellcrank moves a roller, in contact with the face of the release catch, away from the release catch. This allows the release catch to move to the open position, under the influence of its spring loading, clear of the locking pin on the compartment lid.

ADDITIONAL LIFERAFTS

17. Due to service requirements calling for the transportation of additional personnel, provision is made for the carriage of two M.S.5 liferafts and two Type 4 survival packs. Both the liferafts and the packs are carried on the top bunk in the wardroom.

FIRE EXTINGUISHERS

18. Mountings for five B.C.F. trigger controlled fire extinguishers are provided at the following positions:-

One on the port side of the front gunner's position, just forward of the bulkhead at former K.

One on the top forward edge of the electrics crate on the starboard side of the nose section.

One on the rear face of the port bulkhead at former B.

One on the forward face of the galley.

One in the detachable compartment in the main entrance door.

The extinguishers, described in A.P.957C, Vol.1, Part 1, Sect.3, can be used on all types of fires.

19. Details of the automatic fire extinguisher systems in the Griffon and Viper power units, the fuel and water/methanol tank compartments and in the heater bays are contained in Sect.4, Chap.5 of this Book.

EMERGENCY EXITS AND HATCHES

Lubrication

20. The lock assemblies of the exits and hatches are packed with grease XG-295 on assembly. All other moving parts of the mechanisms must be lubricated using the lubricants shown on the relevant illustrations when specified in A.P.101B-1703-5B. The rubber seals, fitted to the exits, must be lubricated with grease XG-315 before the hatches are secured in position.

SERVICING

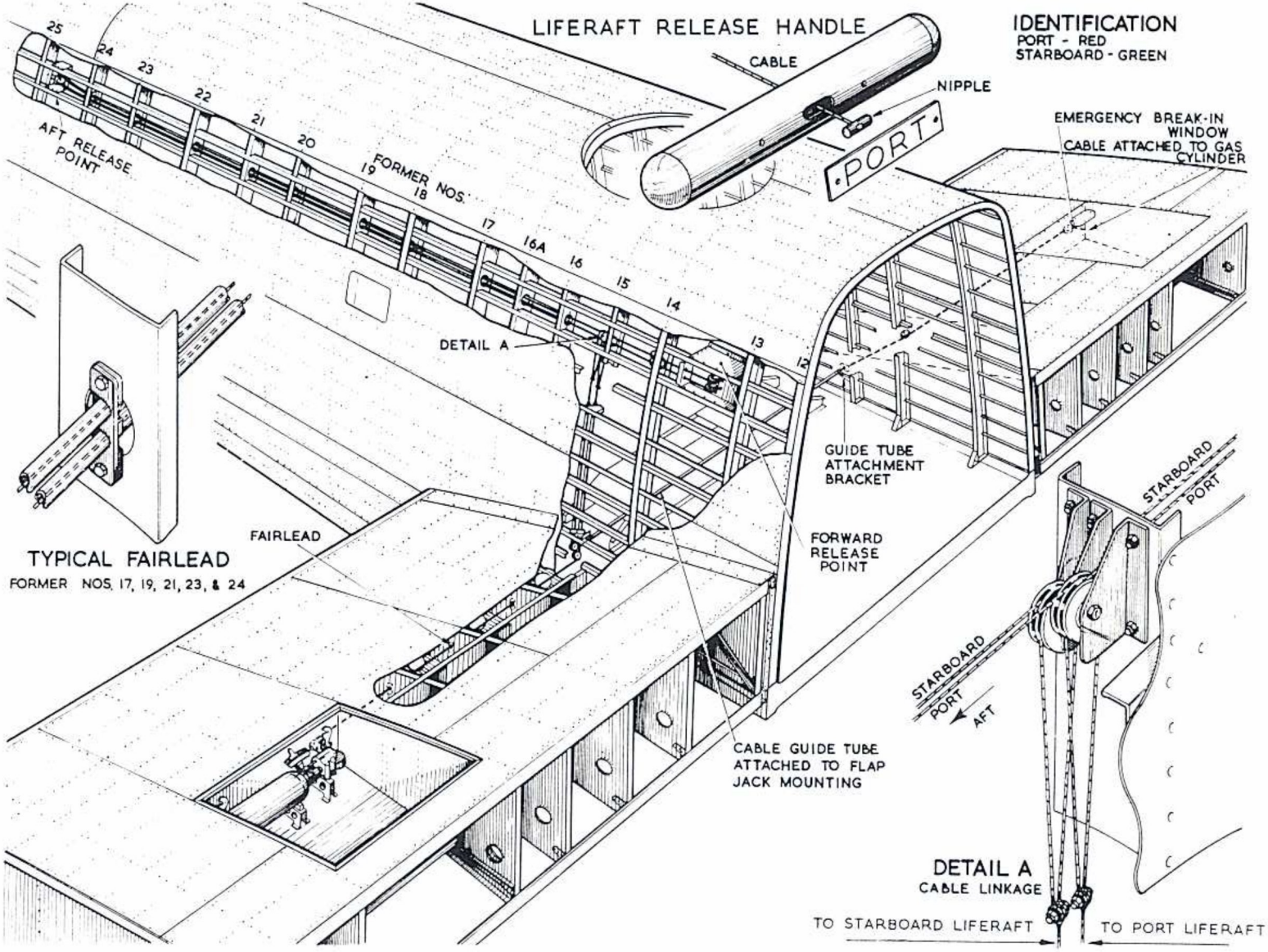

Fig. 7 Type M.S.9. liferaft installation

(◄ *Annotation change* ►)

RESTRICTED

TYPE M.S.9 LIFERAFTS

Release mechanism

21. The moving parts of the release mechanism must be lubricated when specified in A.P.101B-1703-5B using the lubricants shown on the relevant illustrations in this chapter.

22. The load required to operate the liferaft release must not exceed 20 lb. measured at the release handles in the fuselage. To avoid inflating the liferaft when doing this test, it is recommended that an uncharged C.O.2 cylinder is used.

23. The piston rod of the piston unit which operates the stowage lid release mechanism is shown in fig.8 in the operated position. Until the release is operated the piston rod remains inside the cylinder and protected against the ingress of moisture by a lead foil seal. When setting the piston unit, remove the piston rod guide retaining screw, the piston rod guide and the punctured lead foil seal. Push the piston rod in as far as it will go, fit a new seal and replace the piston rod guide and its retaining screw.

24. The liferaft must be serviced in accordance with the instructions in A.P.1182C.

FIRE EXTINGUISHERS

25. Periodic weighing using a pedestal spring balance (Ref.No.21C/328) is normally the only servicing required for the hand-operated fire extinguishers. The charged weight of these extinguishers is 5 lb. 7 oz. ± 4 oz. If the weight is not within this tolerance the fire extinguisher must be removed and a serviceable extinguisher fitted. Instructions on charging hand-operated extinguishers are given in A.P.957C, Vol.1, Part 2.

REMOVAL AND ASSEMBLY

General

26. No specific removal and assembly instructions are necessary in relation to the components described in this chapter other than for the liferaft. Instructions on the removal and assembly of the liferaft installation is given in the following paragraphs.

LIFERAFT INSTALLATION

Removal

27. To remove the liferaft stowage compartment lid, remove the screws securing the transparent break-in panel and operate the release catch mechanism operating lever. This frees the rear edge of the lid which is then lifted clear of the stowage to allow the lid to be pulled rearward to disengage the locating lugs from the liferaft compartment structure.

28. To remove the liferaft from the compartment, disengage the release cable from the C.O.2 cylinder operating head and lift the liferaft from the compartment using the handles provided on the pannier.

Assembly

29. Instructions on packing and folding the Type M.S.9 liferafts and their associated equipment is given in A.P.1182C, Vol.1, Book 2.

30. After installing the pannier complete with liferaft in the compartment and prior to connecting the release cable to the operating head the following checks must be carried out:-

(1) Ensure that the release cable acorns at the release handles in the fuselage are secure.

(2) Ensure that the green mark on the operating head pulley coincides with the pointer.

NOTE...
The green mark must not be allowed to move when connecting the release cable.

(3) Move the lid release mechanism operating lever to the locked position, i.e., until the arrows on the operating lever and quadrant coincide. Check that the stud on the operating lever locates in the aperture of the piston unit.

31. It must be noted that there are no connectors in the release cable, due to the cable pulley on the compartment wall being close to the operating head. There is no cover on the operating head pulley, this is to enable the cable to be threaded through the head assembly guide tube and fitted to the pulley. The cable is secured by the retaining clip, the ball-end being fitted between the clips on the pulley.

32. If insufficient slack is available on the cable to allow the connection to the pulley, the cable run must be disconnected at the joint below the pulley at former 15. When it is necessary to disconnect the cable, care must be taken when connecting the cable to prevent jerking which might operate the operating head.

33. To fit the compartment lids, first ensure that the release catch mechanism operating lever and the release catches

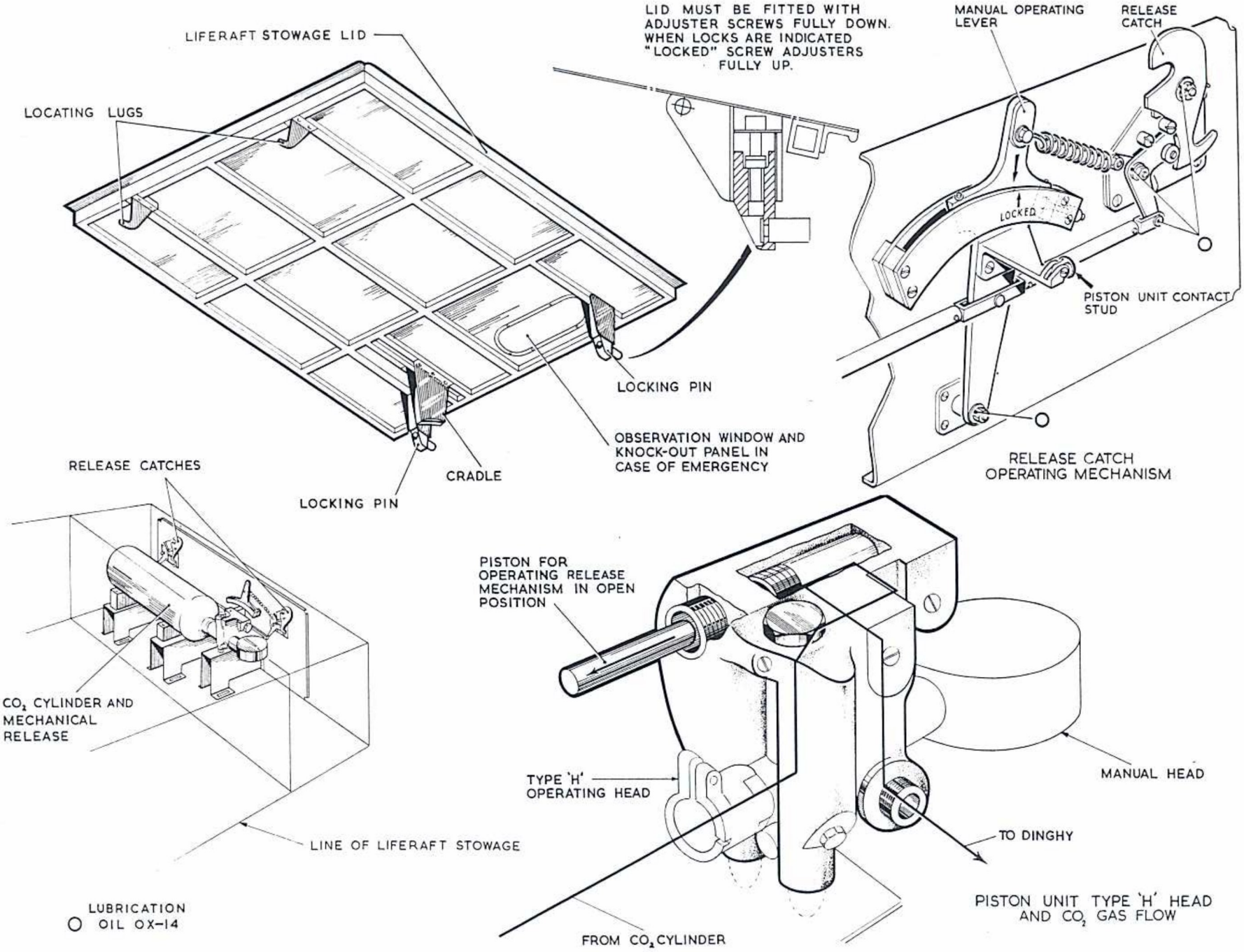

Fig. 8 Liferaft operation

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REMOVAL AND ASSEMBLY

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LIFERAFT INSTALLATION

Removal

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29. To remove the liferaft from the compartment, disengage the release cable from the C.O.2 cylinder operating head and lift the liferaft from the compartment using the handles provided on the pannier.

Assembly

30. Instructions on packing and folding the Type M.S.9 liferafts and their associated equipment are given in A.P.1182C, Vol.1, Book 2.

31. After installing the pannier complete with liferaft in the compartment and prior to connecting the release cable to the operating head the following checks must be carried out:-

(1) Ensure that the release cable acorns at the release handles in the fuselage are secure.

(2) Ensure that the green mark on the operating head pulley coincides with the pointer.

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The green mark must not be allowed to move when connecting the release cable.

(3) Move the lid release mechanism operating lever to the locked position, i.e., until the arrows on the operating lever and quadrant coincide. Check that the stud on the operating lever locates in the aperture of the piston unit.

32. It must be noted that there are no connectors in the release cable, due to the pulley on the compartment wall being close to the operating head. There is no cover on the operating head pulley, this is to enable the cable to be threaded through the head assembly guide tube and fitted to the pulley. The cable is secured by the retaining clip, the ball-end being fitted between the clips on the pulley.

33. If insufficient slack is available on the cable to allow the connection to the pulley, the cable run must be disconnected at the joint below the pulley at former 15. When it is necessary to disconnect the cable, care must be taken when connecting the cable to prevent jerking which might operate the operating head.

34. To fit the compartment lid, first ensure that the release catch mechanism operating lever and the release catches are in the unlocked position. Screw the lid locking pin adjusting screws fully down. Smear the inside edges of the lid and the seals around the compartment aperture with grease XG-315. Insert the lid locating lugs into the holes in the forward wall of the compartment, then press down on the rear edge of the lid until the release mechanism operating lever springs into the locked position. Visually check that the operating lever is in the locked position i.e., that the arrows on the lever and the quadrant coincide, then screw the locking pin adjusting screws fully out. Fit the transparent access panel and fit weatherproofing strips as detailed in Sect.2, Chap.4.