Chapter 14

FRESH WATER SYSTEMS

LIST OF CONTENTS

DESCRIPTION AND OPERATION

Introduction

1. The use of fresh water in the aircraft may be divided into two systems, each self contained with its own storage tank and piping installations as follows:-

(1) Galley water system

(2) Windscreen water-spray system

GALLEY WATER SYSTEM

Water tank

2. Made from monel metal and of oval cross-section, the tank, of 10 gallon capacity, is secured by two metal straps to the aft face of the bulkhead at former 12. The filler neck is accessible from outside the fuselage and an overflow pipe from the neck leads to atmosphere through the port fuselage skin. Cold water is drawn off through a tap on the bottom of the tank and a moveable swivel pipe enables the flow to be directed either into the urn or sink as required. Two sighting windows are fitted on the inboard end of the tank for checking the water level.

Hot water urn

3. The urn, which is fitted with a removeable lid, is heated electrically by a 750 watt element and is fitted, to port, under the cold water tank. The hot water outlet is controlled by an ordinary tap.

Galley sink

4. The sink forms part of the galley kitchen unit which is fully dealt with in Chapter 16 of this section.

Waste pipe

5. A waste pipe, attached to the forward port corner of the sink, is led vertically down, then to port through the side of the fuselage to the waste tank.

Waste tank

6. The waste tank, of cylindrical shape, is mounted vertically in a cradle bolted to the structure of the port inner trailing edge. A screw cap on the top of the tank, secured by a spring and ratchet device, retains an internal removeable filter which receives the waste water from the galley waste pipe. The screw cap is secured, against loss, by a cable fastened round an annular groove, leaving the cap free to rotate. A vent pipe, connected to the top of the tank, is led through the underskin of the wing. Adjacent to this vent opening is a tank drain plug, the associated socket elbow being joined to an elbow on the tank by a tubular connector and two clips.

7. A tank of 3 gallons 6 pints capacity (3 gallons 2.5 pints water, remainder air) pressurised to 7 p.s.i. from the pneumatic system, supplies fresh water for spraying the pilots', air-bomber's and front gunner's windscreens. The flow of water from the tank to the air-bomber's and front gunner's windscreen is controlled by manually-operated control valves. The flow to the pilots' windscreens is controlled by an electromatic tap.

Controls

8. The controls in this system consist of:-

(1) An electromatic tap to control the spray to the pilots' windscreens. This is operated by either of two push-button switches, mounted one at the top of the port and one at the top of the starboard pilot's instrument side panels.

(2) A manually-operated push-button control valve, mounted with the de-icing and wiper control valves on a panel forward of the air-bomber's starboard control panel, controls the air-bomber's windscreen spray.

(3) A manually-operated push-button control valve, mounted on the port side of the front gunner's control panel, controls the front gunner's windscreen spray.

Water tank

9. The tank is secured in two cradles, mounted between formers J and H just above the floor, starboard side, by two adjustable straps. At the top of the tank is a quick release filler cap, a banjo-union, a univalve, and a screw-on dip-stick (marked MAX. and MIN.). The univalve, to which the pressurisation pipe is connected, incorporates a manually-

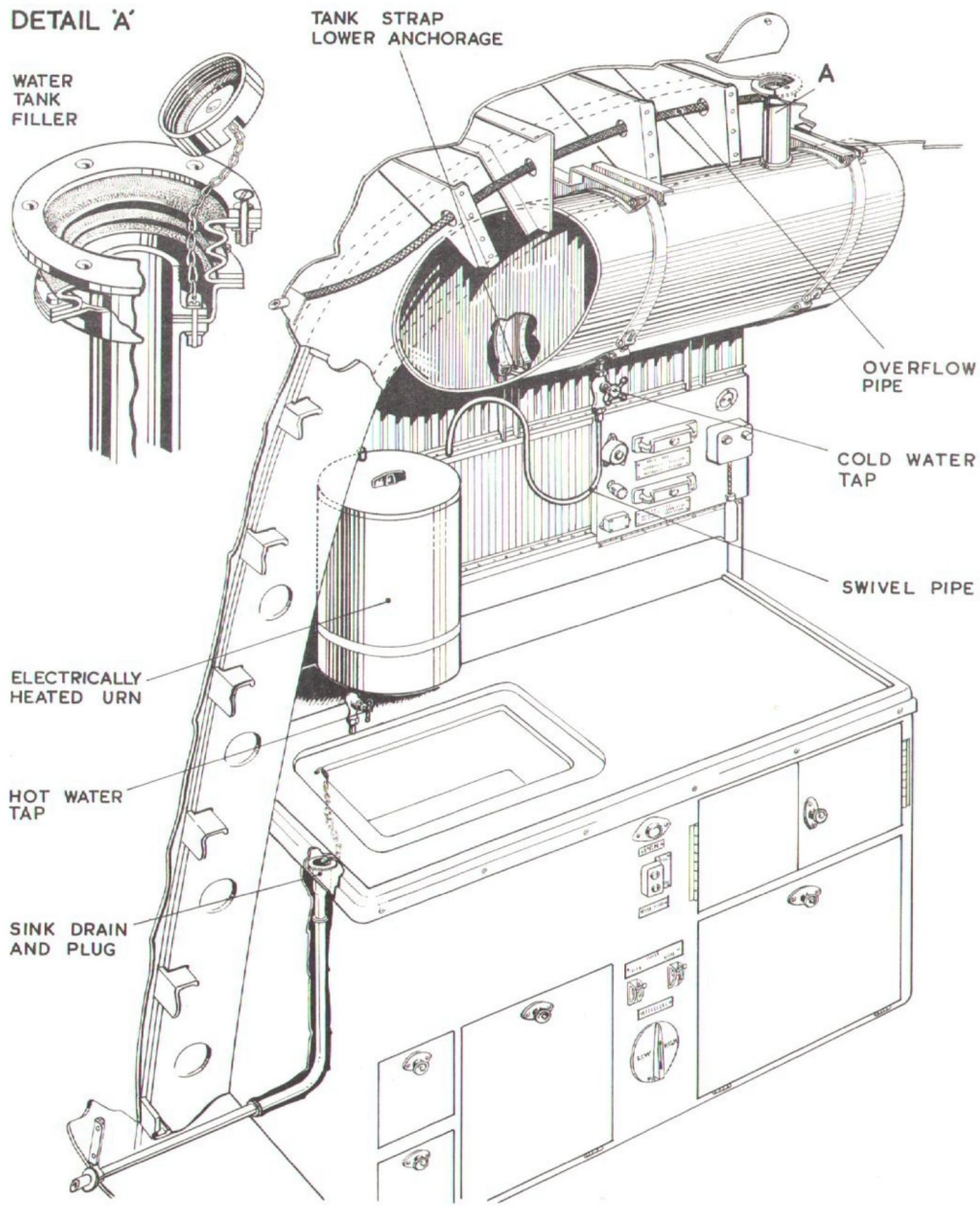

Fig.1. Water system

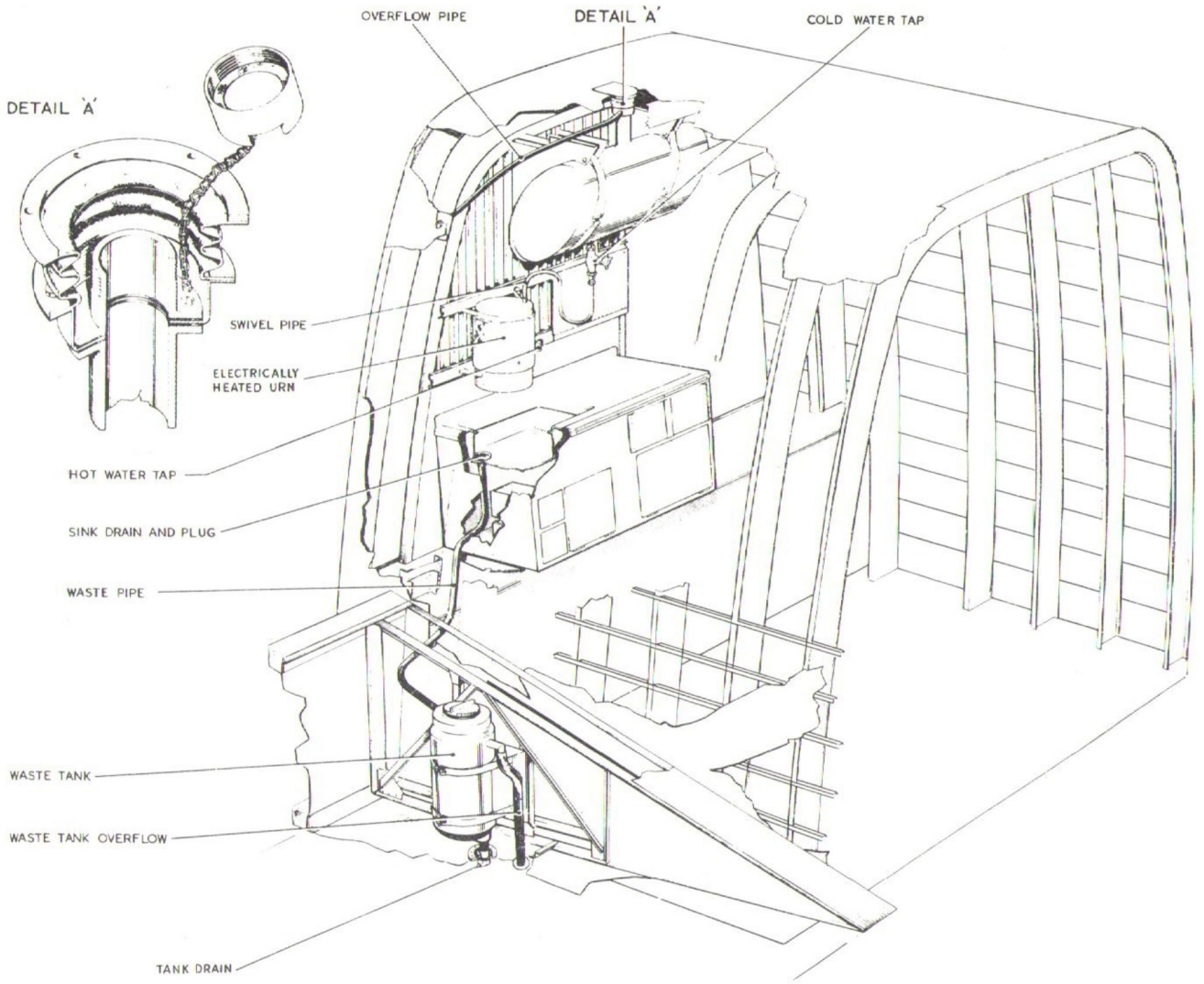

Fig.2. Water system {post Mod. 771}
(◀ Mod No. 1048 ▶)

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operated handle which, when operated, vents the tank to atmosphere. A drain pipe passes from the banjo-union, down the outside of the tank and drains to atmosphere through the underside of the nose. At the bottom of the tank is a drain connection, with a manually-operated on/off cock and a delivery connection. Access to the drain cock is through a hinged panel on the starboard undersurface of the nose section. An access panel located on the aft face of the tank is provided for internal examination. The tank is completely enclosed in a fibreglass blanket to insulate it against extreme temperature conditions. A flap at the top of this blanket gives access to the filler cap.

Delivery piping

10. From the delivery connection at the base of the tank, the delivery pipe is taken aft to a filter (Ref.No.26FP/9661), located aft of former H just above the floor beam. From the filter, the line passes to a tee-connection from which the supply passes fore and aft to supply the air-bomber's, front gunner's and pilots' windscreen spray nozzles.

11. The forward delivery pipe is taken to a second tee-connection located just above the floor, aft of former J, where the supply is again divided. The supply to the air-bomber's windscreen passes forward to the push-button control valve (Ref.No. 27VA/4549). The supply then passes upwards, then forward along the top of the gun beam to a manifold situated outside the nose turret fairing and on to a spray assembly, secured to the top edge of the air bomber's windscreen.

12. The supply to the front gunner's windscreen passes from the second tee-connection (para.11) upwards aft of former J, to the push-button control valve (Ref.No. 27VA/4549). From the control valve the supply passes to a manifold on the outside of the nose turret fairing and then to a spray assembly secured to the bottom edge of the gunner's windscreen.

13. The aft delivery pipe passes from the tee-connection (para.10) to the electromatic tap (Ref.No.27VA/4950) located just above the floor on the starboard side of the nose section aft of former F. The supply passes upwards from the electromatic tap to a manifold mounted at the base of the starboard windscreen, and a manifold mounted at the base of the port windscreen. The spray assemblies are mounted on the manifolds.

GALLEY WATER SYSTEM

Draining the tank

14 Turn on the tap at the bottom of the tank and allow the water to drain either through the sink drain to the waste tank if the aircraft is in the open, or into a receptacle if inside a hangar. To drain the swivel pipe completely it is necessary to remove this component from the cold water tap.

Replenishing the tank

15 Replenish the tank until the water level reaches the top of the top sighting window. Since the water is used for drinking ensure that the tank is replenished from vessels which are scrupulously clean.

Draining the urn

16 Open the tap and drain the water either through the sink drain to the waste tank or into a suitable receptacle.

SERVICING

Clearing the waste pipe

17 The waste pipe can be cleared of any obstacle by using either a flexible rod and subsequently flushing the pipe, or by limited use of an air line, if available, from inside the aircraft.

Emptying the waste tank

18 Remove the drain plug and allow the tank to empty into a vessel of at least four gallons capacity. The filter should be cleaned at the same time. To remove it, proceed as follows:-

(1) Remove the circular access panel in the upper surface of the wing trailing edge near the port side of the fuselage opposite former 13 approximately.

(2) Unscrew and remove the filter cover cap.

(3) Remove the filter and clean it with water.

(4) Refit the filter and the filter cap and secure the access pane . Finally, refit the drain plug and lock it with wire.

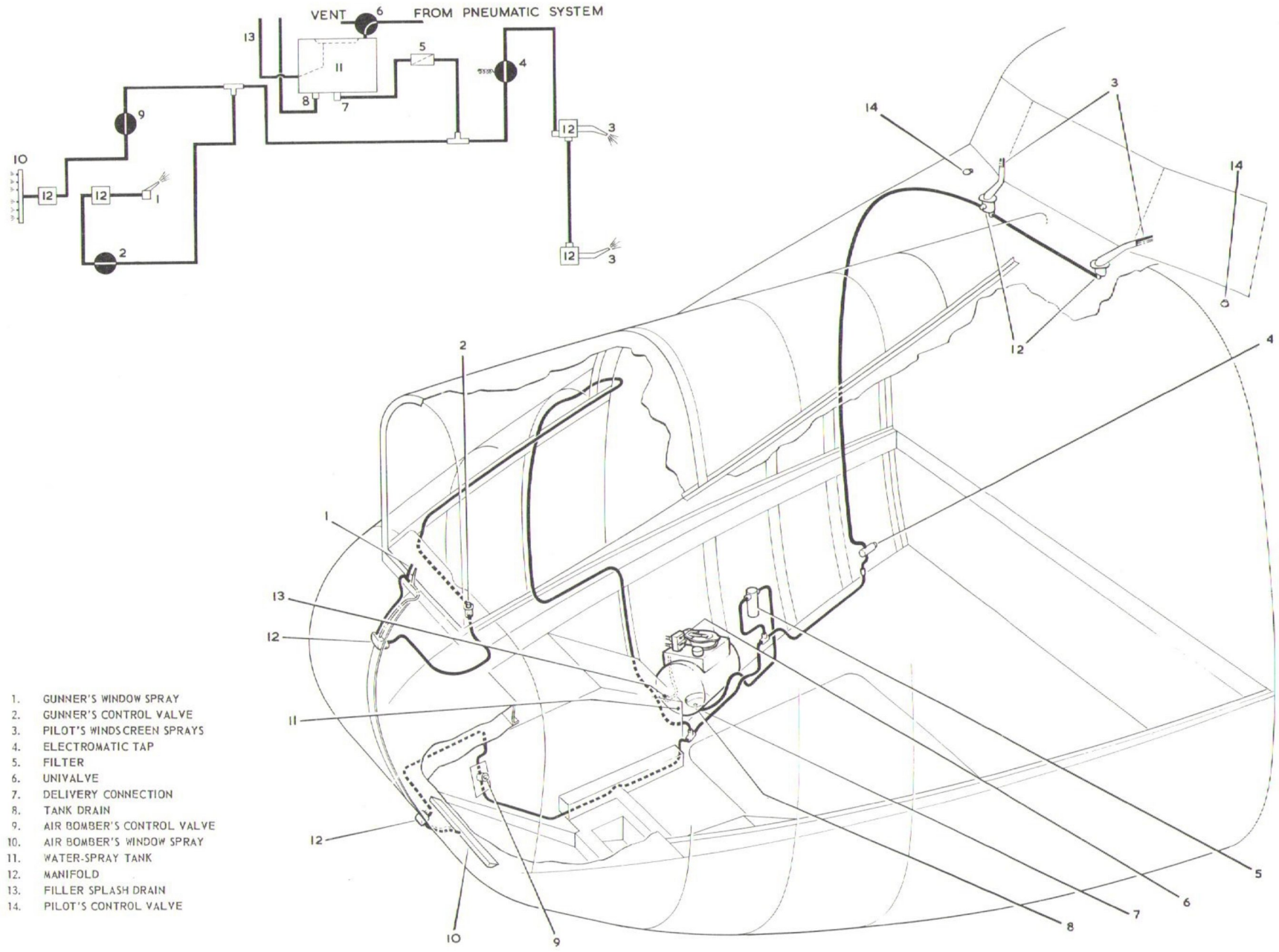
WINDSCREEN WATER-SPRAY SYSTEM

Draining the tank

19. Turn the handle on the univalve to the vent position to depressurise the tank. Open the drain cock ot the tank and allow the water to drain through the drain pipe into a suitable receptacle.

Replenishing the tank

20. Close drain cock. Ensure that the handle on the univalve is to the vent position and unscrew the filler cap. Fill the tank to dipstick indication. Screw down the filler cap and turn the handle on the univalve to open the pressurisation line to the tank.



1. GUNNER'S WINDOW SPRAY
2. GUNNER'S CONTROL VALVE
3. PILOT'S WINDSCREEN SPRAYS
4. ELECTROMATIC TAP
5. FILTER
6. UNIVALVE
7. DELIVERY CONNECTION
8. TANK DRAIN
9. AIR BOMBER'S CONTROL VALVE
10. AIR BOMBER'S WINDOW SPRAY
11. WATER-SPRAY TANK
12. MANIFOLD
13. FILLER SPLASH DRAIN
14. PILOT'S CONTROL VALVE

Fig.3. Windscreen water – spray system.

GALLEY WATER SYSTEM

Removal of water tank

21. Drain the tank and proceed as follows:-

(1) Remove the screws securing the rubber bellows at the top of the filler neck to the fuselage skin (detail A).

(2) Disconnect the overflow pipe from the filler neck by slackening the securing clip and withdrawing the pipe.

(3) Remove the swivel pipe from the cold water tap.

(4) Support the tank and release the securing strap turn-buckles.

Assembly of water tank

22. The assembly procedure is the reversal of the removal operations and, on completion, the turnbuckles are locked with wire.

Removal of urn

23.(1) Drain the urn.

(2) Disconnect the electrical lead from the urn.

(3) Applying temporary support, remove the four bolts securing the urn to the bulkhead and lift clear.

Removal of waste tank

24. The tank can only be removed when the port inner trailing edge section is detached from the aircraft (Sect.3, Chap.2) and is removed complete with its cradle after disconnecting the galley waste pipe, vent pipe and one of the Jubilee clips from the drain plug connection to the tank. A bonding strip connected to a lug at the top of the tank is reached through the servicing access panel (para.11).

WINDSCREEN WATER-SPRAY SYSTEM

◀ **Removal of water tank**

25. When removing the water tank all disconnected unions must be blanked off to prevent ingress of foreign matter. To remove the tank proceed as follows:-

(1) Drain the tank (para.19).

(2) Disconnect the pneumatic line at the self-sealing coupling, situated prior to the univalve.

(3) Disconnect the drain tube connecting clip inboard of the fuselage skin.

(4) Disconnect the tank drain, and the main feed connections.

(5) Release the securing straps by unscrewing the adjusting screws.

Assembly of water tank

26. The assembly procedure is the reversal of the removal operations and, on completion, wire lock the connections where necessary. ▶