

## Chapter 6

## WATER HEATERS, G.E.C. H.O. 800 SERIES

## LIST OF CONTENTS

	<i>Para.</i>		<i>Para.</i>
<i>Introduction</i> ... ..	1	<i>Testing</i>	
<b>Description</b> ... ..	2	<i>Insulation resistance test</i> ... ..	6
<b>Installation</b> ... ..	4	<i>Continuity test</i> ... ..	7
<b>Servicing</b> ... ..	5		

## LIST OF ILLUSTRATIONS

	<i>Fig.</i>		<i>Fig.</i>
<i>Section view of water heater</i> ... ..	1	<i>Circuit diagram</i> ... ..	3
<i>End view of water heater</i> ... ..	2		

## LIST OF APPENDICES

	<i>App.</i>		<i>App.</i>
<i>Water heater G.E.C. Type H.O.818</i> ... ..	1	<i>Water heater G.E.C. Type H.O.800</i> ... ..	3
<i>Water heater G.E.C. Type H.O.818A</i> ... ..	2		

**Introduction**

1. The G.E.C. H.O. 800 series of water heaters are half gallon, displacement type, water heaters, for use in aircraft toilets or galleys. The water in the heater is heated to ◀ 190° F. ▶ in seven minutes and is then stored in the heater and thermostatically maintained at that temperature. The water heater is lagged with aluminium foil to reduce the heat loss. When the tap is operated

cold water is permitted to flow into the heater which displaces the hot water through the water outlet, the maximum amount of hot water available at one time being half a gallon. ◀ This chapter deals with the basic water heater and details of 28 volt heaters will be found in the Appendices, details of the 112 volt heaters which are identical in construction and operation are given in Sect. 11 Chap. 7. ▶

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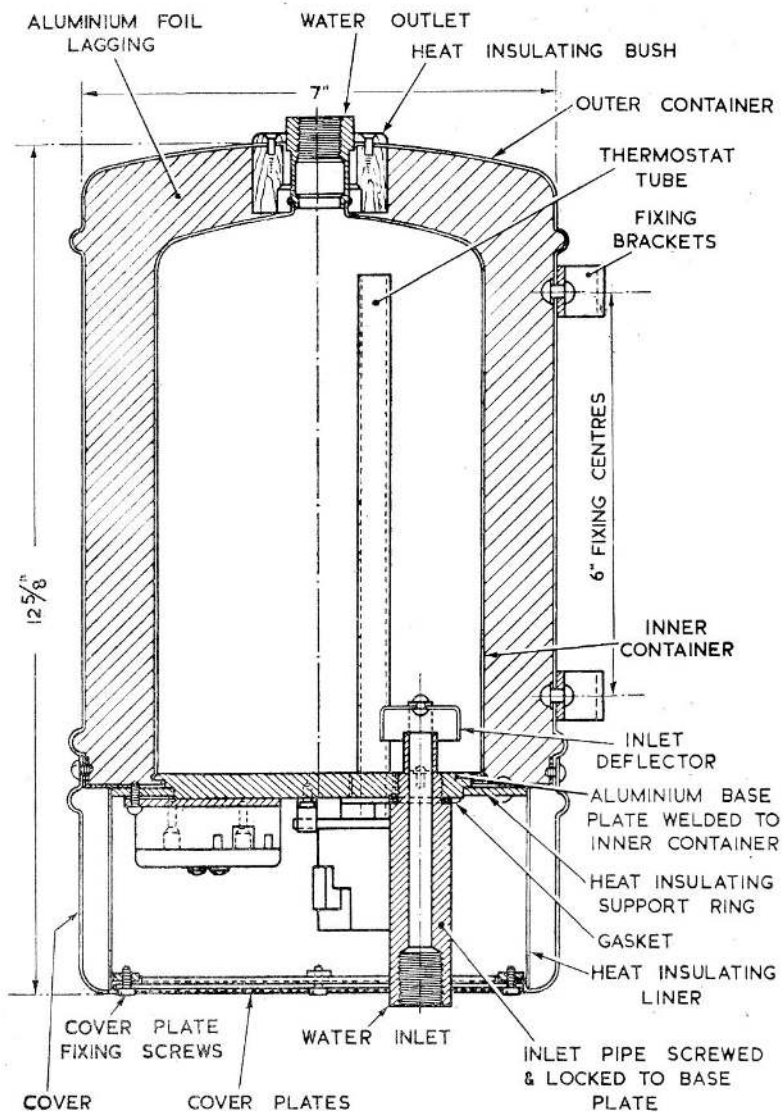


Fig. 1. Section view of water heater

## DESCRIPTION

2. A sectional view of the heater is given in fig. 1, the heater consists of the circular outer case and the inner storage container which are of aluminium alloy, the space between them is filled with aluminium foil lagging. The bottom of the inner container is closed by an aluminium base plate welded to the inner container and supported by a

heat insulated support ring. The base plate carries the water inlet pipe, the heater element and the thermostat pockets, and the terminal block which are positioned as shown in fig. 2. ◀ The base plate may also carry a sacrificial anode, which is made of 4% zinc alloy to attract the impurities of the water and minimise corrosion of the inner container, details of the heaters fitted with this item are given in the Appendices. ▶

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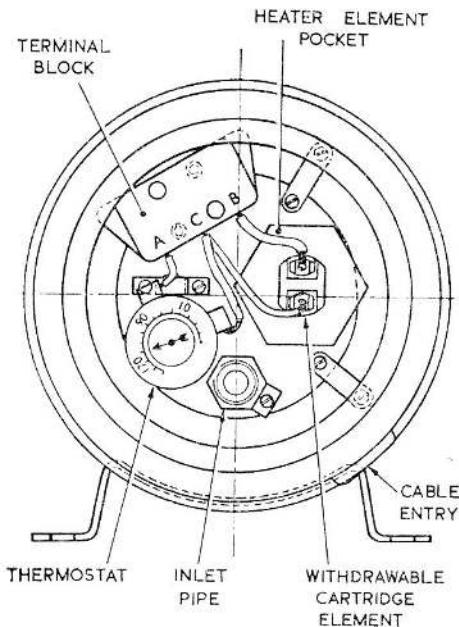


Fig. 2. End view of heater

3. The heater element and thermostat are fitted into pockets to protect them from furring, scaling and corrosion, and to facilitate component renewal without draining the heater. The heater element fits into the element pocket with a bayonet joint fitting and compresses a spring fitted into the head of the element pocket which thus spring loads and locks the bayonet fitting. The thermostat is a push fit into the pocket and is held in position by an aluminium clip which fits over the thermostat retaining lug. The lower section of the outer case, which is removable, acts as a cover round the items fitted to the base plate and incorporates the bushed cable entry, a heat insulating liner, and cover plates to seal the bottom of the outer case. The water outlet pipe is in the top of the container and passes through a heat insulating bush attached to the outer casing, the water outlet pipe also serves to locate the inner container at the top of the outer case.

### INSTALLATION

4. The heater is mounted by two wall brackets riveted to the outer case and is

positioned as near as possible to the point of use. Control of the water supply is in the cold feed pipe and no valves or taps should be fitted on the outlet side. When the heater has been removed and is being refitted, after connection to the water supply, it should be filled and left to stand for half an hour when it should be inspected for leaks at the water joints.

### SERVICING

5. Servicing whilst the heater is installed is limited to, inspection of the water connections and sealing gaskets for leaks. Inspection of the electrical connections for security, corrosion and damage due to burning or over heating. Testing of the element and the thermostat for continuity and insulation resistance and replacement of the element or thermostat. On overhaul the interior of the container should be checked for furring or scaling, if present this can be removed by using a solution of glacial acetic acid, mixed in the proportion of one part acid to 16 parts of water (i.e. half pint glacial acetic acid to 1 gallon of water).

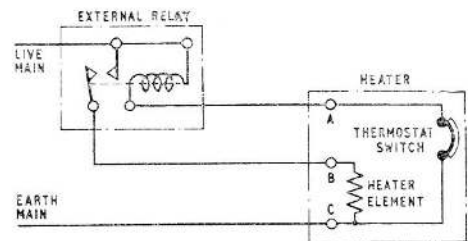


Fig. 3. Circuit diagram

### Testing

#### Insulation resistance test

6. Using a standard 250 volt insulation resistance tester the insulation resistance between the heater element to the element sheath should be not less than 5 megohm. ▶

#### Continuity test

7. A continuity test of the element can be made using a suitable test meter, the reading obtained should be approximately 1.567 ohm.

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## Appendix 1

### WATER HEATER, G.E.C. TYPE H.O. 818

#### LEADING PARTICULARS

<i>Water heater G.E.C. Type H.O.818</i>	...	...	...	...	...	...	...	<i>Ref. No. 5V/46</i>
<i>Capacity</i>	...	...	...	...	...	...	...	$\frac{1}{2}$ gallon
<i>Voltage</i>	...	...	...	...	...	...	...	28 volt
<i>Rating</i>	...	...	...	...	...	...	...	500 watt
<i>Weight</i>	...	...	...	...	...	...	...	5 $\frac{1}{4}$ lb.
<i>Heater Element</i>	...	...	...	...	...	...	...	<i>Ref. No. 5V/47</i>
<i>Thermostat, 7 in. A.C.S.</i>	...	...	...	...	...	...	...	30-190 deg. F.

1.◀ This heater is similar to that described in the main chapter but does not have the sacrificial anode fitted and is the early version of the Type 818A heater. Heaters with a serial number below 3020H3 have a sheathed wire element inserted directly into the container, on renewal an element pocket should be screwed into the mounting hole and a cartridge type element fitted. ▶

## Appendix 2

### WATER HEATER, G.E.C. TYPE H.O. 818A

#### LEADING PARTICULARS

<i>Water heater G.E.C. Type H.O.818A</i>	...	...	...	...	...	...	...	Ref. No. 5V/46
<i>Capacity</i>	...	...	...	...	...	...	...	$\frac{1}{2}$ gallon
<i>Voltage</i>	...	...	...	...	...	...	...	28 volt
<i>Rating...</i>	...	...	...	...	...	...	...	500 watt
<i>Weight</i>	...	...	...	...	...	...	...	5 $\frac{1}{4}$ lb.
<i>Heater Element</i>	...	...	...	...	...	...	...	5V/47
<i>Thermostat, 7 in. A.C.S.</i>	...	...	...	...	...	...	...	30-190 deg. F.

1. This water heater is similar to that described and illustrated in the main chapter and is controlled by an external relay, the circuit diagram for the heater is given in fig. 3 of the main chapter. Also incorporated in the heater is a sacrificial anode made of 4% zinc alloy which attracts the impurities in the water and thus protects the container walls, water pipes and heater and

thermostat pockets. The sacrificial anode is fitted through the base plate of the container and is positioned beneath the terminal block.

#### SERVICING

2. In addition to the servicing detailed in the main chapter the sacrificial anode should be replaced on overhaul.

### Appendix 3

## WATER HEATER, G.E.C. TYPE H.O. 800

### LEADING PARTICULARS

<i>Water heater G.E.C. Type H.O.800</i>	...	...	<i>Ref. No. 5V/230</i>
<i>Capacity</i>	...	...	$\frac{1}{2}$ gallon
<i>Voltage</i>	...	...	28 volt
<i>Rating...</i>	...	...	500 watt
<i>Weight</i>	...	...	5½ lb.
<i>Heater Element</i>	...	...	5V
<i>Thermostat, 7 in. A.C.S.</i>	...	...	30-190 deg. F.

1. This heater which supersedes the Type H.O. 818, is similar to that described and illustrated in the main chapter, but the inner container, water inlet and outlet connections, element and thermostat pockets are constructed of stainless steel. The heater also incorporates a drain tube and a drain plug of stainless steel which is located in the base of the heater, the drain plug is wire locked to a lug on the drain tube, using nickel chrome locking wire. Due to the stainless

steel construction of the inner container the sacrificial anode is not fitted. The heater is controlled by an external relay and the circuit diagram for the heater is given in fig. 3 of the main chapter.

### SERVICING

2. Servicing of the heater should be effected as detailed in the main chapter.

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