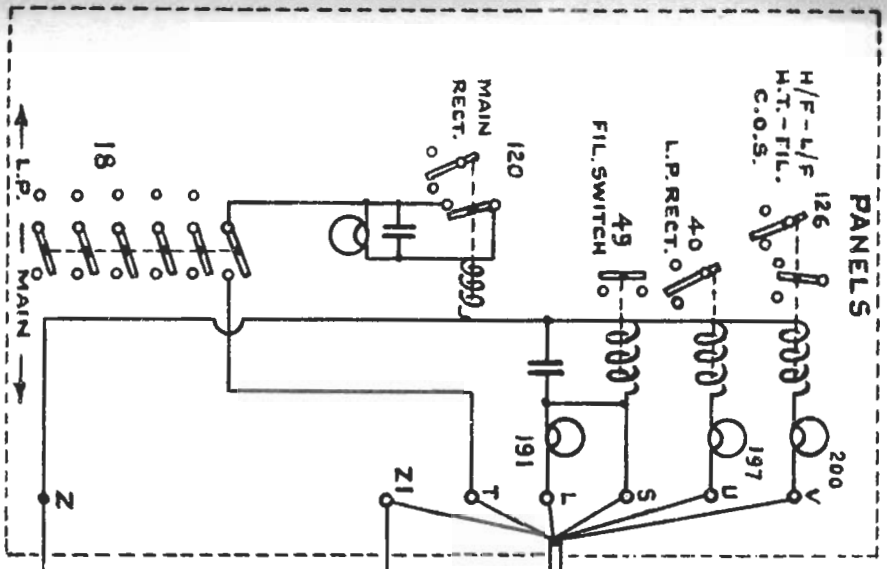


# PANEL CONTROL CIRCUITS

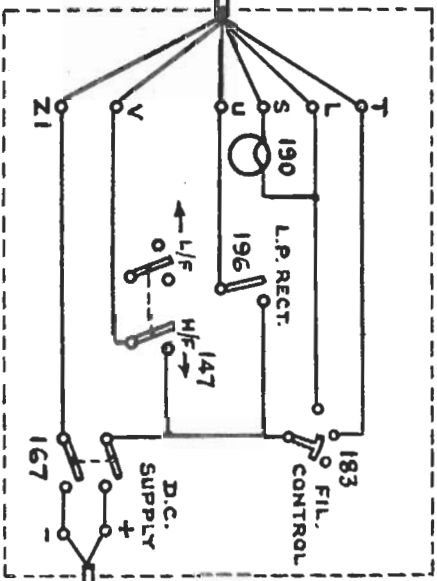
## SAFETY ENCLOSURE

### PANELS



## SILENT COMPARTMENT

### CONTROL BOARD



### D.C. SUPPLY BOARDS

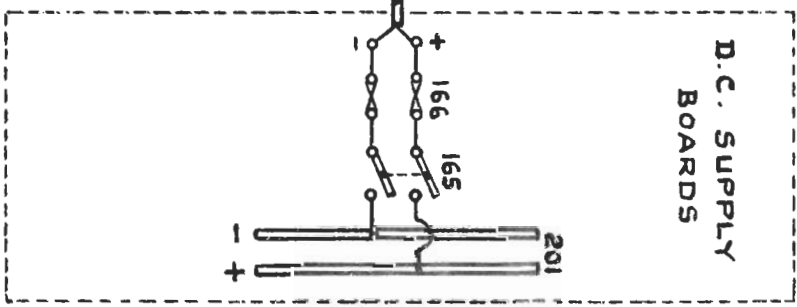


FIG. 16.

CHAPTER VII.AERIAL SYSTEM.1. AERIAL OUTFITS.

The aerial outfit is not standard for all submarines and will depend on the requirements for each particular vessel.

Generally a submarine is fitted with main, cable, loop and D/F aerials and arrangements made whereby a kite aerial can be used.

The main, loop and D/F aerial systems are fitted by the Dockyard or contractor in accordance with the current specifications.

2. CABLE AERIAL.

The cable aerial replaces the rod aerial and is described in Specification No. 9068, Signalling Requirements, Aerial Outfit Group AQ. A telescopic mast is used to raise the cable aerial above the top of the periscope and the raising and lowering of the mast does not involve any break in the continuity of the aerial conductor throughout its run from telescopic mast to W/T office.

A diagram of a typical arrangement of the cable aerial fitting is shown in Fig. 22.

3. KITE AERIAL.

The kite aerial is connected to the central conductor of the 15-inch deck tube as shown in Fig. 23. A conical insulator and a reel for the kite aerial are mounted on a hinged pedestal which can be stowed when the aerial is not in use. An earthing terminal is fitted just forward of the hinged pedestal.

4. DECK TUBE.

The deck tube is required to enclose the aerial lead completely and to form a continuous protection for it from the pressure hull of the submarine to the aerial feeder. A watertight deck insulator is fitted at the top of the tube and a trap valve at the bottom. The deck tube is in a position such that

- (i) a direct lead into the W/T office is obtained,
- (ii) the deck insulator is well protected from spray,
- (iii) a clear lead is obtained for the aerial feeder.

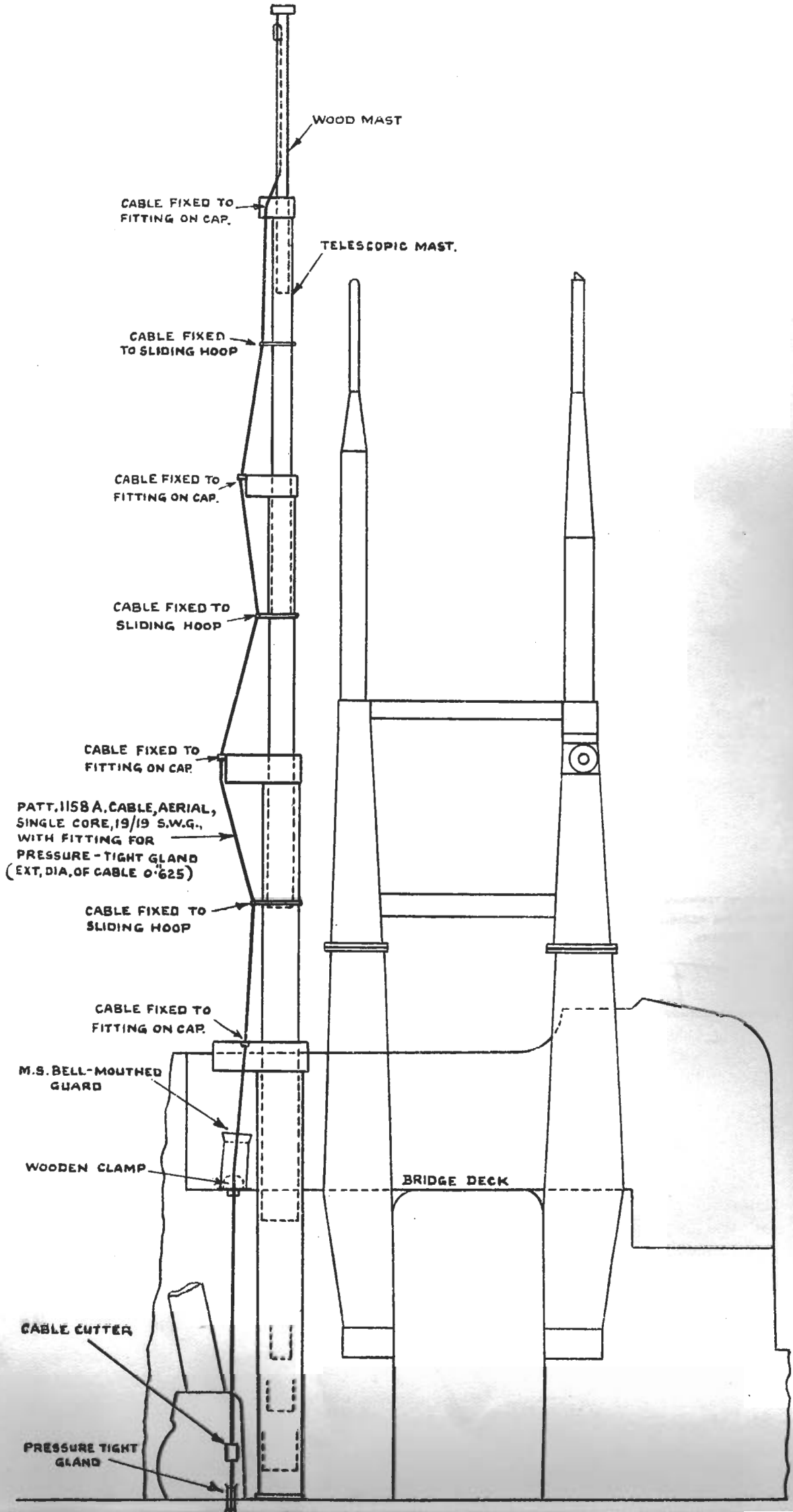
These conditions are taken into account when the position of the W/T office is selected.

5. TRAP VALVE.

The trap valve fitted at the bottom of the deck tube is so arranged that the closing of the valve automatically breaks a switch at the lower end of the deck tube and lowers the movable conductor so as to allow the valve to be completely closed. A limit stop is fitted to control the exact opening of the valve cover.

6. SAFETY SWITCH.

A hinged door to give access to the aerial conductor immediately below the trap valve is provided and fitted with a safety switch arranged so as to prevent the safety switch being closed by hand while the door is fully or partially open. The wiring of the safety switch is described in Chapter IV.



# METHOD OF FITTING KITE AERIAL TO CENTRAL CONDUCTOR

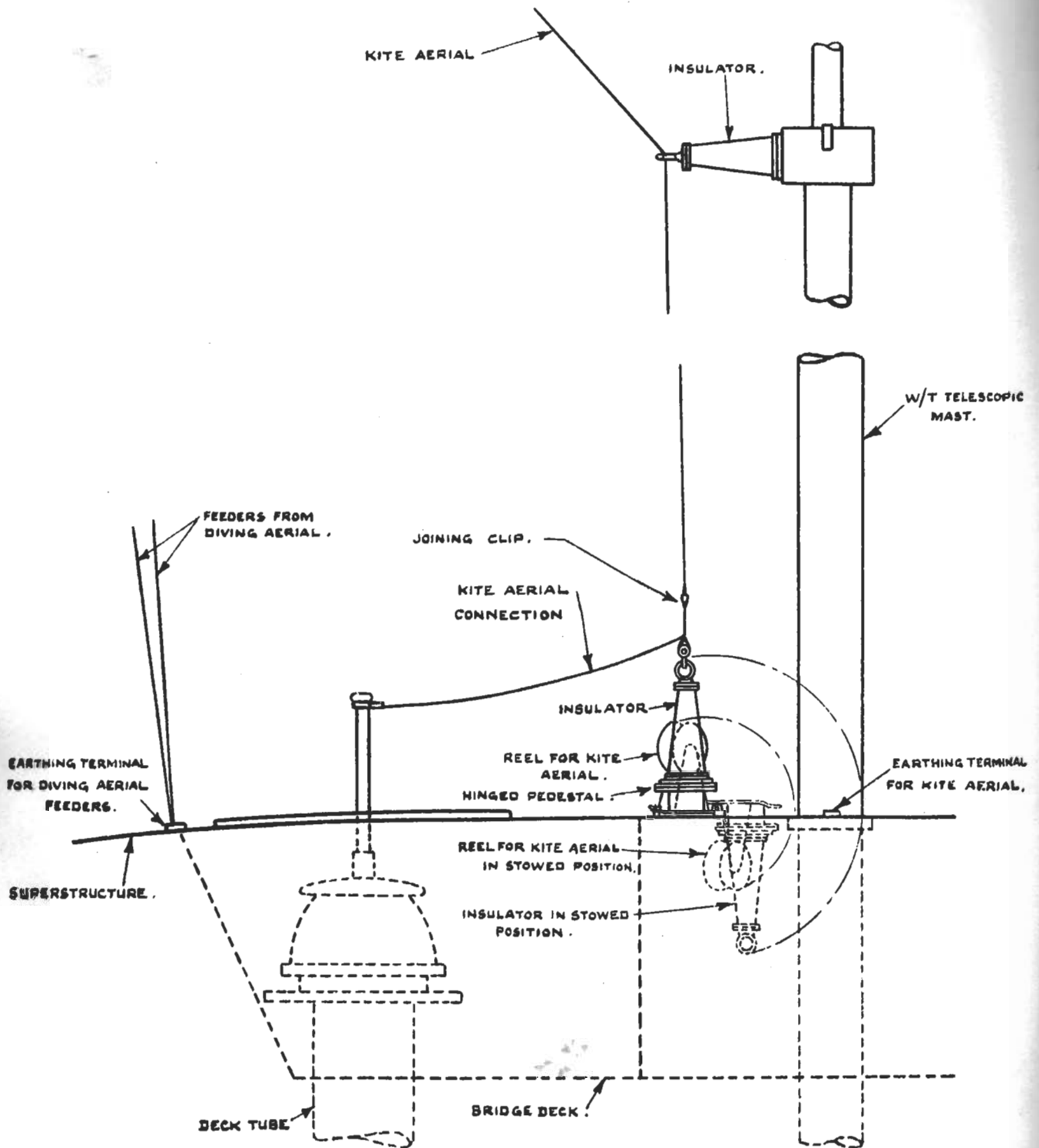


FIG. 23.

7. AERIAL CONDUCTORS.

The aerial conductors in the deck tube and trap valve consist of two main sections, the fixed conductor and the movable conductor, so arranged that the aerial connection is automatically broken on closing the trap valve. The connection between the fixed and movable conductors is made by means of a switch consisting of a laminated switch arm on the movable conductor and a contact surface at the end of the fixed conductor. The fixed conductor consists of a copper tube and end fitting inside the deck tube, together with the central conductor and extension at the deck insulator. The movable conductor extends from the trap valve to a position in the W/T office such that connection from its lower end to the transmitting instruments is conveniently made by means of flexible cable.

8. AERIAL COILS.

Two aerial coils Pattern 8340 are supplied and fitted in the safety enclosure, each coil being mounted on a stand Pattern 8341. Each coil has an approximate value of 2,200 mics. designed to carry 25 amps. at 200 kc/s per second. Six ebonite supports, slotted to receive turns of wire, are supported, one at each corner of a hexagon, by sheets of insulating material. The end cheeks also support a terminal board which is mounted above one of the ebonite supports. The wire used is Pattern 8380, copper, enamelled and silk covered, stranded 243/36, cotton braided. Approximately 170 yards of wire are used in each coil. The winding is in 21 sections connected in series, each end of the wire in the section being connected to the terminal board. The total number of turns in the coil is 122.