5. Just as we need a lamp to tell us that a unit is cocked and selected, so do we need an indication that the bomb doors are open. (You can see at once that the selector indicator lamp cannot light unless the bomb doors switch is closed.)

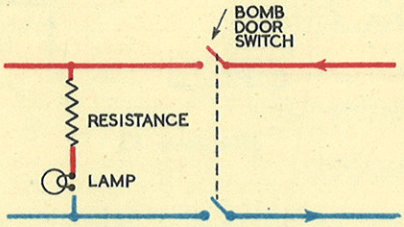


DIAGRAM 14

6. When the switch is closed by the opening of the bomb doors, a small current passes through the resistance and the lamp (Diagram 14), and this current is sufficient to light the lamp. There may be more than one bomb doors indicator lamp. Halifax aircraft, for example, have three : one each for the doors in the port and starboard wings, and one for the fuselage bomb doors. On Wellington aircraft, which have just the one fuselage bomb bay, only one lamp is necessary. The lighting of the bomb doors indicator lamp does not invariably indicate that the bomb doors are fully open ; it may be necessary to wait for a few seconds after the indicator lamp lights.

7. We now have a complete circuit for releasing bombs singly or in salvo. (Diagram 15.)

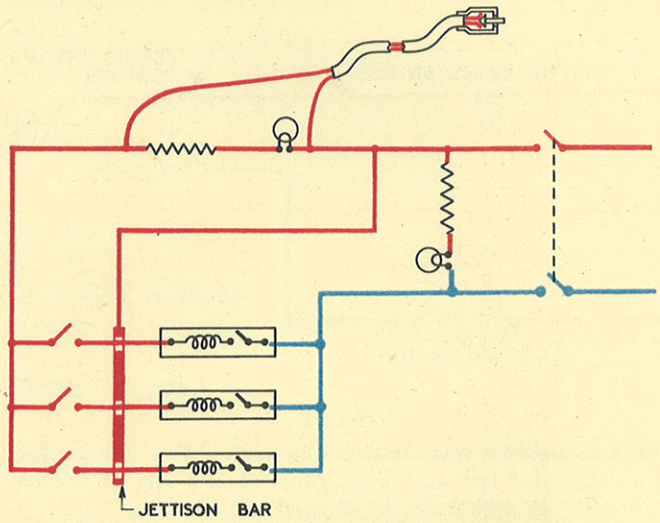


DIAGRAM 15

Conclusions

(1) When a cocked unit is selected the selector indicator lamp lights. When the firing switch is pressed the lamp goes out.

(2) The selector switches and selector indicator lamp are in the selector switchbox.

(3) A master switch is automatically closed when the bomb doors are opened.

(4) A separate indicator lamp lights to show that the circuit through the bomb doors switch is complete, but this does not necessarily indicate that the bomb doors are *fully* open.

(5) Some aircraft have an additional master switch controlled by the bomb aimer.

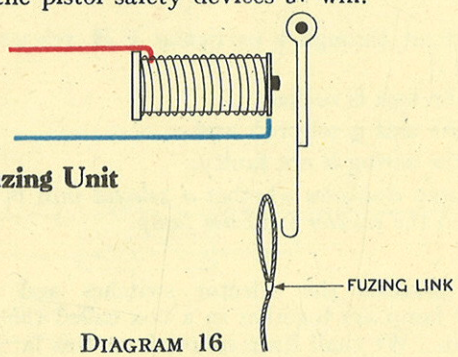
LECTURE No. 3

A.—THE FUZING CIRCUIT
B.—THE WIRING FOR THE SMALL BOMB CONTAINER

EXAMPLE OF PRESENTATION

A.—THE FUZING CIRCUIT

1. When a bomb is released from an aircraft, there is invariably a safety device to be removed from the nose or tail pistol if the bomb is to be dropped LIVE. On rare occasions it is necessary to drop bombs SAFE. We therefore need, for each pistol, a contrivance which, operated by the bomb aimer, can be made to retain or release the pistol safety devices at will.



The Fuzing Unit

DIAGRAM 16

2. When a current flows through the coil, the magnet attracts the arm with the hook. Suppose that the bomb is a 250-lb., G.P., fuzed in the tail. A length of wire or fuzing link is required. One end must be hooked on to the safety clip on the tail unit of the bomb, and the looped end must be inserted into the fuzing unit. The fuzing unit should now be adjusted for position and the fuzing link for length. (All this must be demonstrated.)

3. When a current flows through the coil of the fuzing unit, the hook moves into the loop of the fuzing link, and when the bomb is released, the fuzing link with safety clip is retained. The current to all the fuzing units is controlled by two switches : one for the nose units and one for the tail units.

4. The fuzing circuit is arranged like this :—

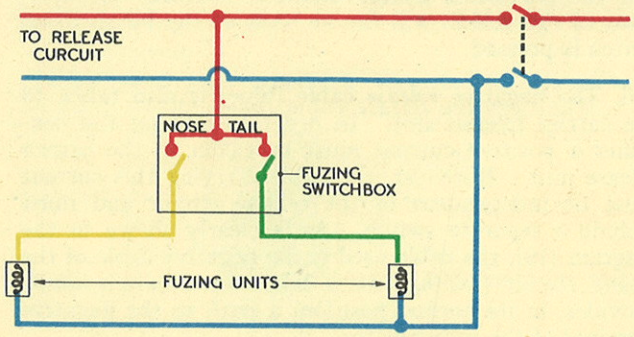


DIAGRAM 17

In the diagram (17), only one pair of fuzing units is shown. In practice, any number of units may be controlled by the one pair of switches. Although we use the expression, " Bombs fuzed ", whenever the fuzing switches are placed ON, it is clear from the diagram that the fuzing circuit is not live until the bomb doors are opened.

5. We can now show the release and fuzing circuits in one diagram (18). The diagram also shows how the aircraft wiring ends with a socket for a five-pin plug. There is one of these sockets for every bomb station, and on each carrier there is a five-pin plug ; the wiring is complete when the plug is pushed into the socket.

Colours are standard in all aircraft circuits of this kind :

Red	..	to release unit.
Blue	..	from release unit.
Yellow	..	to nose fuzing unit.
Green	..	to tail fuzing unit.
White	..	common return from both fuzing units.

6. In many aircraft the nose and tail fuzing units have been connected together, so that either fuzing switch controls all the fuzing units. This means that if the nose fuzing switch or the tail fuzing switch is placed at LIVE, all the nose and all the tail fuzing units will be operated. Where this arrangement exists there is an additional switch, which is normally tied in the ON position with a piece of wire, and this extra switch joins together the nose and tail fuzing circuits.

7. This arrangement has been adopted on squadrons engaged on operations which do not necessitate pre-selective fuzing. If at any time, because of a change in tactics, pre-selective fuzing is again required, it is an easy matter to switch the connecting switch OFF by first breaking the wire.

8. In the past a common failure has been that bomb aimers have forgotten to fuze their bombs. In order to prevent this happening, heavy bombers are now fitted with a device which we shall call the " positive fuzing device ". It consists of a housing for the firing switch. In the housing there is an electro-magnet, which frees the bomb firing switch when either the nose or the tail fuzing switch is placed at LIVE.

9. Just as the lighting of the various indicator lamps shows that the release circuit is complete, so does the freeing of the firing switch from its housing indicate that the fuzing circuit is complete.

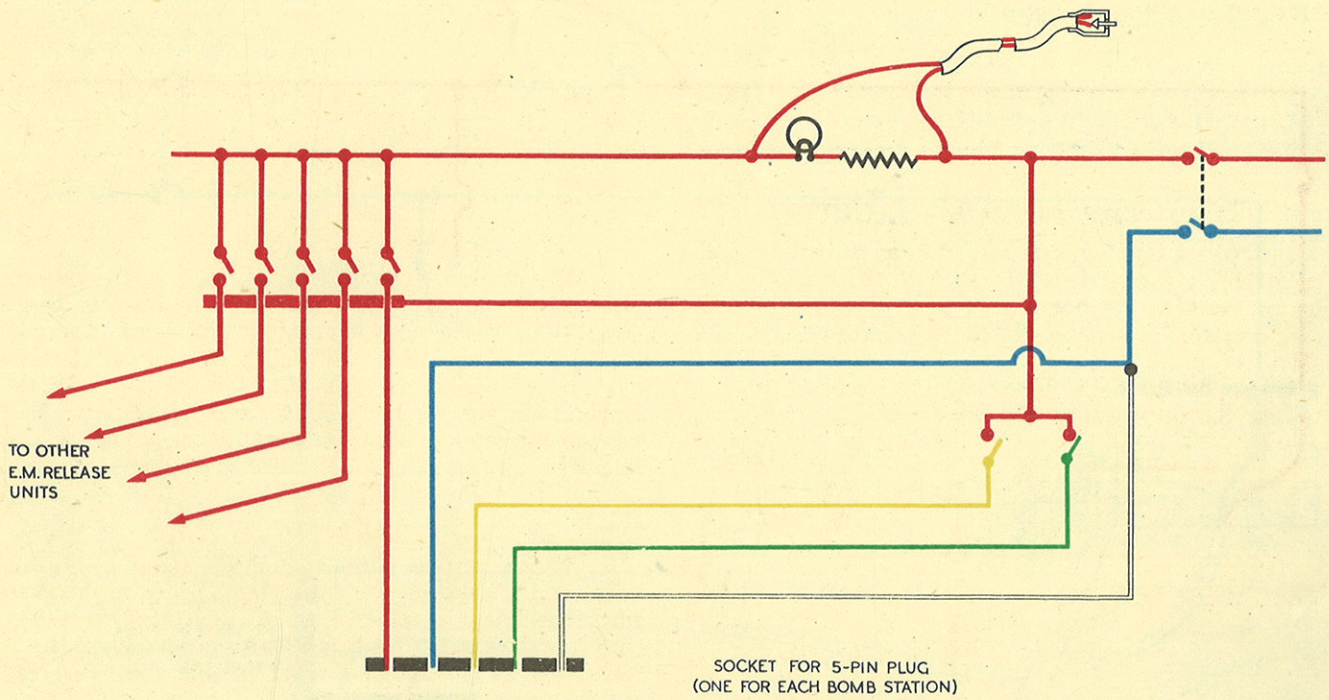


DIAGRAM 18