# CHAPTER 4

# ODDIE FASTENERS

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## LIST OF ILLUSTRATIONS



## General

1. Oddie fasteners (see fig. 1) have been introduced to secure engine cowlings, fairing panels, and similar sheet metal components requiring repeated and rapid attachment and removal, without being subjected to undue wear or localised fatigue of the surrounding metal.

2. Each fastener comprises essentially, a central pin, a coil spring or rubber washer and a two-legged spring clip (see fig. 1).

3. The spring clip is riveted to the underside of the structure at the point where the fastening is to be made.

## Description

4. The central stud is made of mild steel with a rustproof coating, and is available in standard and midget sizes, each in several lengths and with different types of head.

5. In all instances, the stud is undercut below the head to accommodate the rubber washer which retains the stud in its panel and absorbs vibration; the bullet-shaped end of the stud is recessed at each side to co-act with the spring legs, when in the locked position.

6. The heads may be of the following types:—

(i) *Slotted head*, generally used for panels from the engine cowling back to the tail plane fairing.

(ii) *Flush fitting head* can be used when in the airstream and a flush surface is required, namely the upper surface of a main plane, gun access doors on the upper wing surface, and various positions on other parts of the aircraft.

(iii) *Wing type* heads can be used for a large variety of applications, such as internal stowages on the aircraft, locker lids, etc.

7. Washers may be of two types:—

(i) Rubber, (ii) coiled spring.

The resilient watertight rubber washer is spaced between the panel and the mounting and is essential to reduce vibration and chattering to a minimum; the application of the coiled spring is similarly intended for positions where excessive heat is encountered.

8. Spring clips are held in position by two light alloy rivets, and are made from spring steel and are rustproofed. The spring clip legs engage with the flats on the stud, the leading ends of the spring acting as a guide on the bullet end of the stud.

## Installation

9. It is important and essential that all installation data and dimensions are adhered to strictly in order that the correct functioning of the fasteners is ensured, and that the fasteners are used to the best advantage. It is essential to ensure that the correct alignment is obtained between the stud and spring clip.

10. The maximum dimensions given on the various assemblies (see subjoined Table) between the top face of the clips and the top or outer face of the panel, must not be exceeded on any account, and it is always advisable to keep on the minus side of these dimensions to obtain secure engagement of the studs in the spring clips.

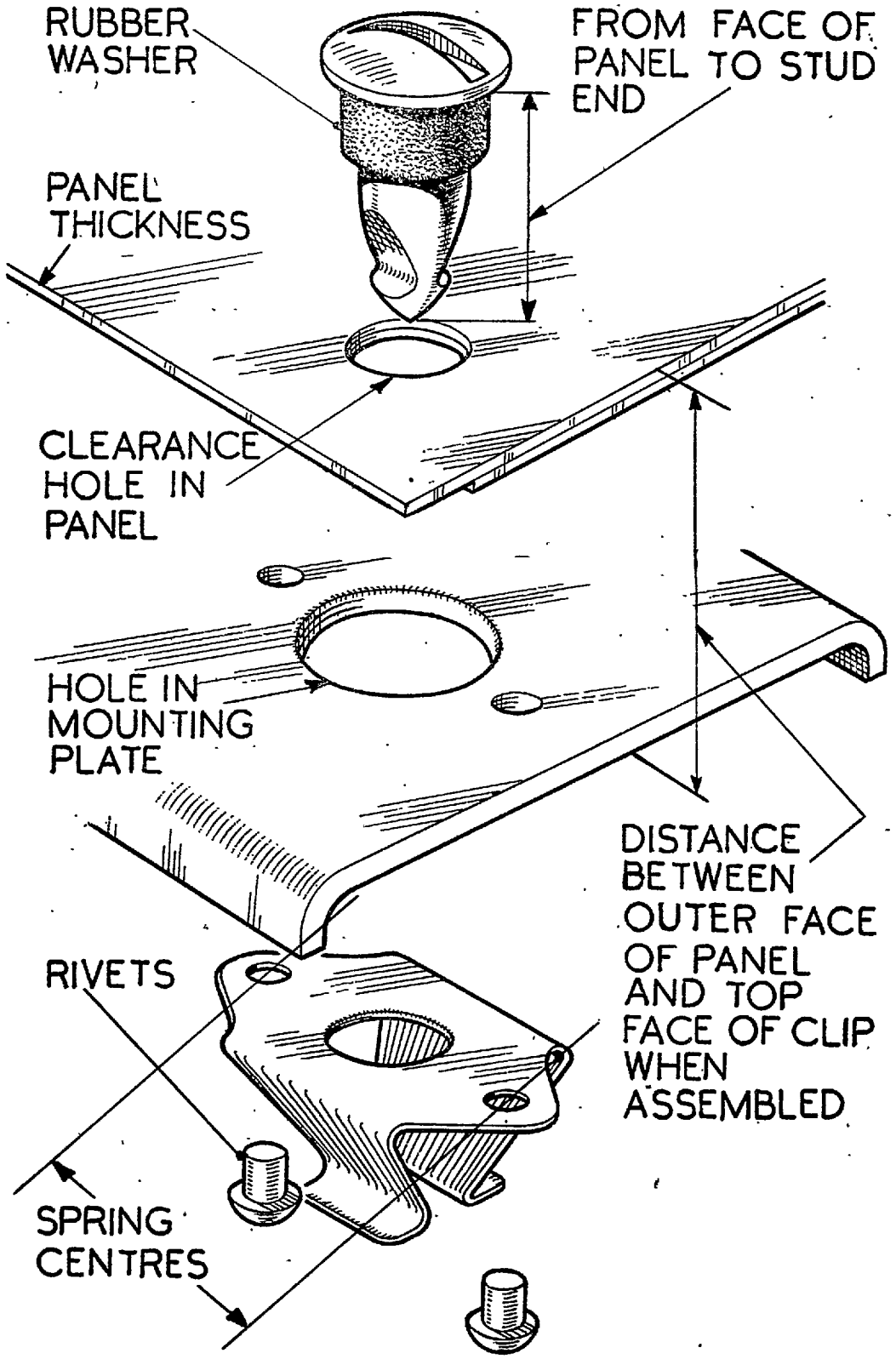


Fig. 1.—Exploded view of Oddie fastener

11. It should always be possible to engage the fasteners by finger-pressure only, and there must be a definite and audible "click" as the fastener engages, indicating that it is locked. If the "click" is not heard, then the installation is incorrect and the condition should be rectified.

12. The edge of a washer or similar device may be used to unlock the fastener by turning the head through 90°. When unlocked, it is advisable to turn the head 90° back again to its original position, ready for reassembly.

13. The essential dimensions for installation of various types of these fasteners are given in the Table.

## Removal of fasteners

14. To remove the stud from its mounting, the rubber washer at the inner side of the panel should be removed, the stud will then be easily slipped out. In order to remove the spring clip, the rivets in the structure should be drilled out and new rivets and spring clips fitted, using the same rivet holes.

**TABLE OF DIMENSIONS**
**(Oddie fasteners)**

| DESCRIPTION (see Fig. 1) | MIDGET | | STANDARD | |
|---|---|---|---|---|
| | DOME HEAD | FLUSH HEAD | DOME HEAD | FLUSH HEAD |
| Panel thickness ... ... ... | 0·065 in. | 0·065 in. dimpled<br>0·10 in. max. | 0·10 in. | 0·10 in. dimpled<br>0·15 in. max. |
| Clearance hole in panel ... ... | $\frac{1}{4}$ in. dia. | $\frac{1}{4}$ in. dia. | $\frac{3}{8}$ in. dia. | $\frac{3}{8}$ in. dia. |
| Hole in mounting plate ... ... | $\frac{15}{32}$ in. dia. | $\frac{15}{32}$ in. dia. | None | None |
| Radiused hole in mounting plate ... | None | None | $\frac{5}{8}$ in. dia. | $\frac{5}{8}$ in. dia. |
| Distance between outer face of panel and top face of spring clip when assembled | 0·17 in. max. | 0·24 in. max. | 0·26 in. max. | 0·34 in. max. |
| Dia. of light alloy rivets for spring clip | $\frac{3}{32}$ in. | $\frac{3}{32}$ in. | $\frac{1}{8}$ in. | $\frac{1}{8}$ in. |
| Recommended pitch of fasteners per inch run | 2 in. to 4 in. | 2 in. to 4 in. | 6 in. to 10 in. | 6 in. to 10 in. |
| Distance from top face of panel to end of stud | 0·70 in. | 0·77 in. | 0·95 in. | 1·04 in. |
| Distance of rivet hole centres ... | 0·69 in. | 0·69 in. | 1·000 in. min.<br>1·062 in. max. | 1·000 in. min.<br>1·062 in. max. |

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