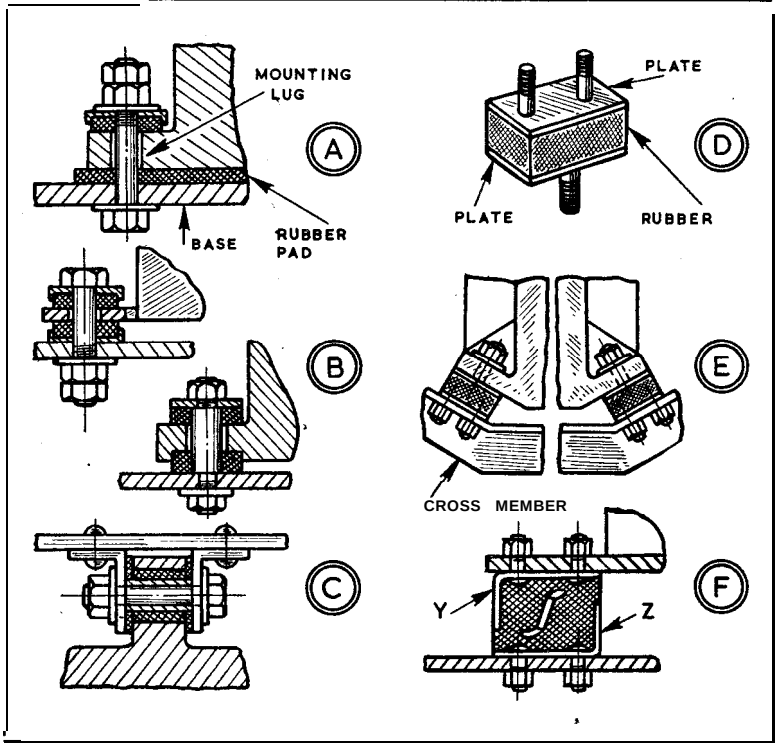
Rubber mountings

By Geometer



RESILIENCE in torsion and. extension and under direct pressure, coupled with ability to absorb shock and vibration, result in virtually infinite applications for rubber. As is well known, it can be stretched, twisted and bent, and under a compressive load will deform and accommodate itself reasonably to irregularities and contours, while bonding to metal, as accomplished in recent years widens the scope from the facility with which machine and component mountings, in particular, can be made and installed.

The benefits resulting from such mountings are avoidance of strain on components in flexing installations, and suppression, or limitation to the source, of vibration and noise. With rigid mountings, it is obvious that strain is set up elsewhere when part of a structure deflects . It is clear, too, that vibration travels more freely between components more or less rigidly joined than where they are separated by a flexing medium-and the same is true of noise.

In the case of these-vibration and noise-suppression or limitation involves isolation of machines and components from direct or rigid contact with sounding or transmitting mediums-which may be tables, benches or stands; floors or wails of buildings; frames or chassis of vehicles. For portable machines--like typewriters, or installations like motor-driven compressors on stands, rubber feet may be enough-the cup type, obtainable in various sizes and designs to fix with bolts or screws backed by washers or metal plates.

For semi-permanent set-ups, like bench, grinders or lathe motors, sufficiently rigid mountings can be obtained, together with a high degree of vibration and noise absorption, from use of soft rubber padding below and rubber washers on top of mounting lugs-as at A. Advisedly, the holes in the lugs should clear the bolts-which should have flanged washers on the rubber washers to prevent splaying, plain washers, and lock-nuts for adjustment.

Similar mountings are on occasion employed for the radiators of motor vehicles where leaks might ensue from strain or vibration. The rubber pads may be square or rectangular, or circular washers, and the bolts fitted with lock-nuts, as at B (left) or shouldered or fitted with distance pieces to pull firmly to the cross member . When the bolts are fitted with lock-nuts, care must be exercised in tightening to apply sufficient but not too much pressure, which could excessively splay the pads or washers.

In some machine and engine mountings, overtightening is obviated by employing shouldered studs, as at B (right). Total thickness of lugs and rubber washers then controls the degree of firmness of the mountings, and too much flexibility or slackness can be corrected through thicker rubber washers ,or flat metal or fibre washers, fitting on the larger diameter of the studs. Shallow cast or machined recesses in the undersides of lugs of such mountings, as shown, are to locate and limit the splaying of the rubber washers.

Horizontally-disposed lugs to fit between angle brackets on a chassis or frame may be arranged as at C. Each lug for such a mounting has a circular bore containing a rubber bush and a longer steel distance piece, a close fit endwise between the angle brackets, so the bolt can be firmly tightened. Two large-diameter rubber or fibre washers, 1ocating on the ends of the distance piece, centralise the lug.

A typical rubber-bonded mounting is as at *D, a* block of rubber between steel plates containing studs-or alternatively extended at the ends for bolt holes. Stability for engines may then be afforded by disposing pairs of mountings at an angle, as at *E,* which reduces side movement that could otherwise occur. Alternatively, as at *F,* when mountings are fitted flat, endplates may be turned down the sides, Y, Z, and on occasion the mounting may include a central plate. Correct fitting in the original attitude is then important when renewals are made. ❑