Buttons and mounting plates

WORKSHOP HINTS and TIPS

By CEOMETER

THOUGH toolmaker's buttons are the usual means of locating systems of hole centres accurately, there are various adaptations and extensions of the principle which can be conveniently employed. This applies if more than one part has to bc dealt with, or if two halves or matching portions (of a casing, say) must be in accurate alignment.

A mounting plate or jig plate with holes in required positions may then be used for setting up-though in making the plate the holes would be located with buttons. Again,. a button plate in which buttons (which may be of a special type) can be located either side may be required for matched components.

The ordinary button is attached to the work or component, as at Al, with a screw and washer, set true using an indicator, then removed for the hole to be bored. If a button is made with a recess concentric with the outside diameter, a small sleeve can subsequently be used to locate it in a plate, as at 2, on either side as required. But if this arrangement is questioned from the point of view of accuracy, the type of button at 3 can be used, this having an integral spigot to locate it in its hole. The initial layout of the plate is effected, of course, with ordinary buttons for the holes to be bored for the special type.

Examples of matching components on which accuracy is essential are flywheels which also form the webs of a crankshaft? as for an inside flywheel i.c. engine. Differences in the throw of the crankpin in the two flywheels would inevitably lead to wobble on the mainshafts, as would occur if the crankpin holes were bored out of square. Accuracy can be ensured, however, by either using a button direct or employing a mounting plate.

To use a button direct, as at ***B*** (left), each flywheel is bored for the mainshaft, and a plug inserted for measuring over to locate the button, which can then be brought to spin truly and the flywheel clamped to the faceplate. To employ a mounting plate (right), this must first be provided with two accurately spaced holes (using buttons); then with the mounting plate trued and clamped or bolted to the faceplate, a plug will locate the flywheel which can be separately clamped.

Such a mounting plate can be trued on the faceplate with a plug in the hole to be engaged by the indicator, or by using the indicator with a swinging arm direct in the hole. Parts with more than two holes can be set up; and the method is of equal value in the case of a radius outside a component, as at C.

Here the mounting plate has been prepared with hole X at the radius point; so when this hole is spinning truly, and the casting is located by a stepped plug in the other-then clamped-an accurate set-up is ensured.

Use of a button plate taking spigoted buttons either side enables halved or matching parts to be set up separately, so that bores which may not come to the outside can be accurately located. A common example is the timing case of a single cylinder i.c. engine where the cam spindles or bushes are enclosed.

In a small size, the button plate, as at D, can be prepared, then located to the crankcase half by a plug in the mainshaft bore, for screw or stud holes to be drilled-by which the plate can be held. A button having been fitted, the whole crankcase half can be adjusted on the faceplate to bring the button true. Following this, the button plate can be taken off, and the work proceed. Other holes are dealt with in the same manner.

For the timing case or cover, a mounting plate is prepared from the button plate, and the centre cut out, so with the case attached at the back, on a set-up as at ***E,*** the button plate (with button reversed) can be set up for truing-then afterwards removed for machining. ❑