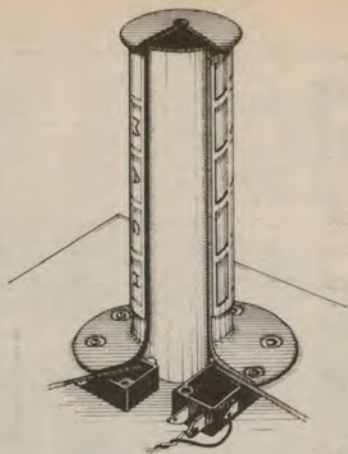


## Effective joystick

If you are seeking the ultimate joystick, this easy-to-build unit should fit the bill. It is built around a rubber motorbike handgrip, the base of which, when bolted to a strong baseplate, provides a self-centring, multidirectional hinge. The handgrip is linked to microswitches, wired to the unit to be controlled.

The main component is the handgrip, and this should have a large springy base about 65mm diameter and about 4mm thick, with a simple, comfortable grip design. The prototype had "OGK MODEL 68-15R" printed on the bottom, and "MACH" within the grip lattice. This grip has proved itself over two years of fanatical usage.

A section of 22mm tubing is fitted snugly into the handgrip so that about 15 to 20mm protrudes beyond the base. A metal baseplate is prepared with an oversize hole in the centre through which the tubing will pass when the base

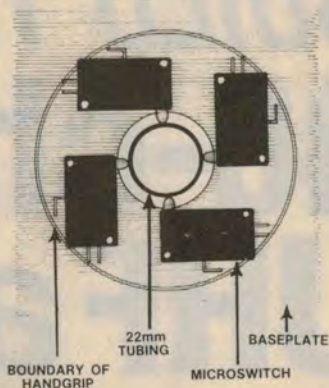


of the grip is mounted on it. This baseplate requires either side sections or rubber feet so that those parts underneath it will clear the surface on which the joystick is used.

Four microswitches are mounted underneath the baseplate in such a way that the activating pins just touch and are barely depressed by the metal tubing. This allows diagonal movement ie, up and left, to activate two switches simultaneously. The switches used in the prototype measured 25 x 15 x 10mm, and are rated at 250V, 15A. Smaller switches could be used.

Mounting holes (3mm) are drilled through the handgrip base and the baseplate, and fitted with 3mm x 20mm machine screws with washers to prevent the heads of the screws from pulling through the rubber. A firing button can be added by simply screwing it in the top or, for those who prefer a trigger action, through the side.

Ian Fieggen,  
Edithvale, Vic.



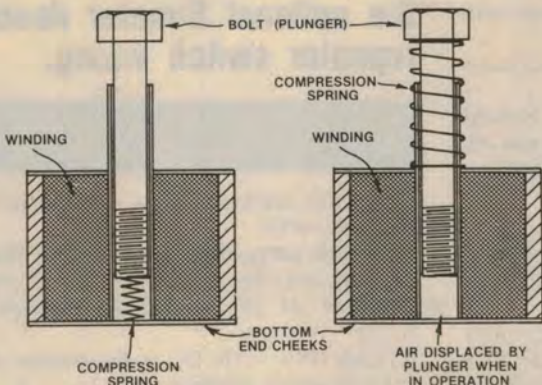
## Improving the solenoid

A problem with the solenoid described in the "Build Your Own Solenoid" article in EA for March 1983 was the energy lost in the spring loaded version, due to the high reluctance of the air gap caused by the compression spring.

This can be overcome by mounting the

spring externally, thus reducing the reluctance, since the air is displaced by the plunger. The plunger is now allowed to contact the end cheek at the bottom, locking it into position by the added magnetism of the cheek. To separate the plunger from the end cheek now requires a greater pulling force.

R. Christophers,  
Liverpool, NSW.



### WANTED

PSST! Got any neat circuit ideas? We pay between \$5 and \$40 per item, depending on how much work we have to do to publish it. Send your idea to "Electronics Australia," PO Box 163, Chippendale 2008.