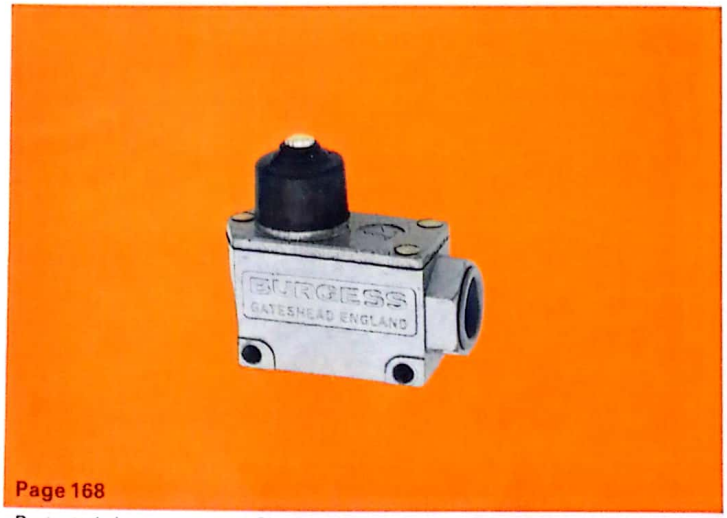
Burgess

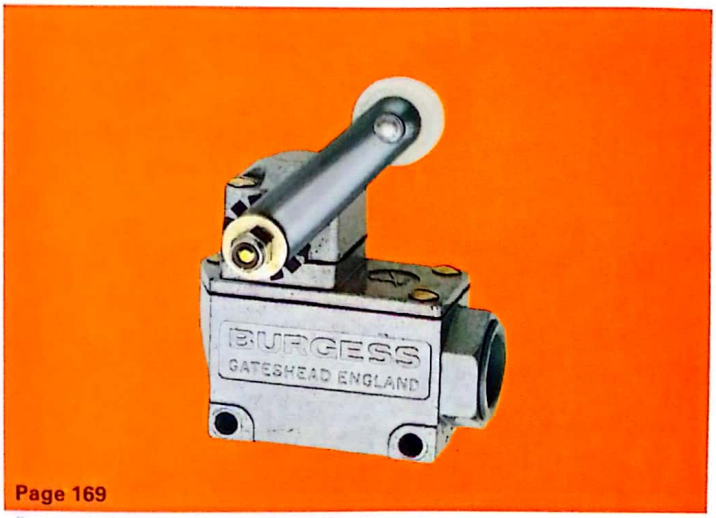
V3HM Series Compact Metal Housed Micro Switches

A small range of metalclad switches most of which contain two V3-type, changeover, snap-action micro switches. Because these are electrically independent, they may be used either as one double-pole switch or as two single-pole switches controlling separate circuits. The units are designed to resist derangement by vibration or abuse and also to facilitate fast installation and interior switch replacement. Actuators include a protected plunger and three varieties of rotary action, adjustable levers.



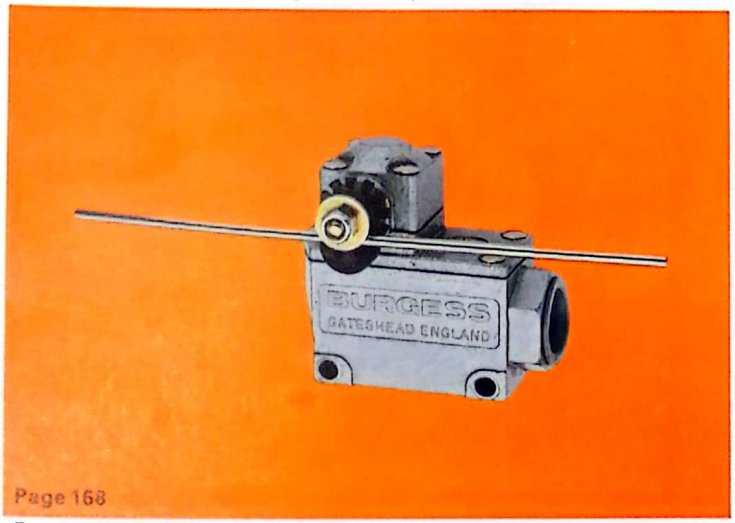
Page 168

Protected plunger actuator. Single or double pole switches



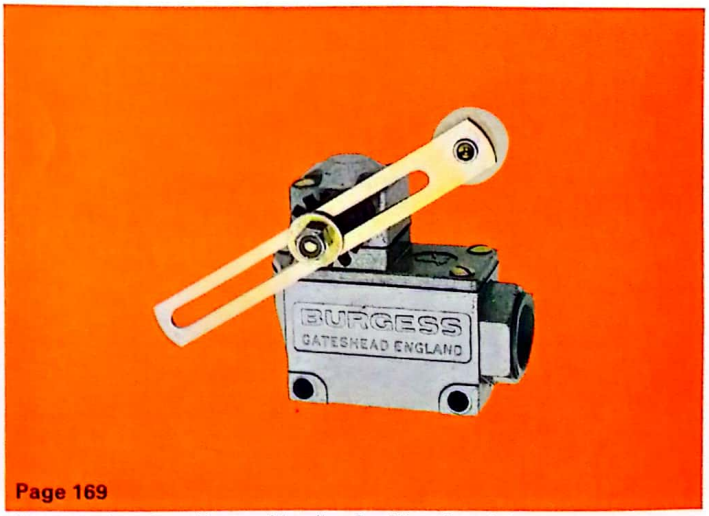
Page 169

Rotary-action roller-lever actuator. Double-pole switch



Page 168

Rotary-action rod actuator. Double-pole switch



Page 169

Rotary-action slotted lever with roller. Double-pole switch

Individual descriptions of these switches will be found on the pages shown. Replacement insert switching modules are listed on page 169.

Construction

Insert Switching Module
A package containing two switches (or one switch and a dummy moulding for the single-pole unit) of the V3 type as described on pages 38-39 and complete with adequate insulation and two nylon pins which engage in sockets on the inside walls of the base casting. The package is supported at its strongest points by these pins. It is held in position by strong springs secured to the lid casting. The micro switches have three terminals each and may be used for changeover or single-throw working. Contacts are silver (moving) and silver cadmium oxide (fixed).

Enclosure
The housing and the lid are metal castings. The former includes conduit-entry and two side-mounting holes. The lid, which is secured to the housing by three captive screws, accommodates either a plunger actuator assembly or a metal rotary head casting, the latter being attached by four captive screws. Synthetic rubber gaskets are used at each joint. When installed in the recommended manner, the unit is protected against dust and liquid splashing to the degree indicated by IEC Code IP65 and NEMA type 13.

Actuators
Spring returned, mild steel plunger, protected by a synthetic rubber cowl, is suitable for applications where the travel of the actuating device is both controllable and in-line with the plunger axis. For non-linear actuation select from three styles of rotary action levers – steel rod, plastic roller and lever or slotted lever with plastic roller. All three are fully adjustable as described on the opposite page.

Terminals
6BA screws with lockwashers.

Electrical Ratings

The ratings provided in the following table are in amperes and are recommended maxima. The abbreviations NC and NO mean Normally Closed and Normally Open terminals.

Voltage	Resistive Load	Tungsten Lamp Load		Inductive Load
		NC	NO	
AC				
125	10	2	1	10
250	10	1.5	1	10
DC				
Up to 15	15	3	1.5	15
30	10	3	1.5	10
50	3	0.8	0.8	2.5
75	1	0.6	0.6	0.5
125	0.5	0.5	0.5	0.07
250	0.25	0.25	0.25	0.03

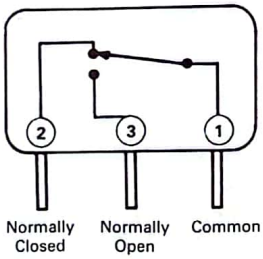
Installation and Service

Mounting
The unit should be mounted to a flat surface using M5 or #10 screws with lockwashers. First remove the lid casting and take out the switching module. The housing may then be mounted as if it were an ordinary conduit box. Mounting holes do not give access to the switch interior so need not be sealed.

Conduit Entry
20 mm ISO and ½ inch NPS are standards and other styles are available on special order (see page 57). The entry is sited to give direct access to the terminals. It is recommended that PTFE tape or an approved compound should be applied to conduit or cable gland before screwing it into the conduit entry.

Wiring
Run wires through the conduit entry into the empty housing and up through the open top where they can be connected to the switch terminals with open air convenience. Use crimped tabs and avoid loose strands of wire. After connecting, ease back the wires and replace the switching module in the housing. Ensure that the nylon pins are correctly seated in the sockets provided. Attach the lid to the housing.

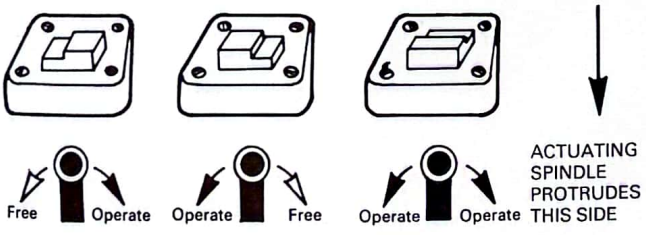
Diagram of Connections



Both switches similar

Rotary Action Adjustments
The rotary head casting may be mounted on the lid casting in any of four ways so that the actuating spindle points north, south, east or west. A choice of operation direction is offered. Remove the rotary head casting to reveal a stepped cam follower. Turn this so that the high step is facing to the right for clockwise operation, to the left for counter-clockwise operation. Movement of the lever in the opposite direction does not operate the switch. For operation in both directions position the high step to the front.

Diagram



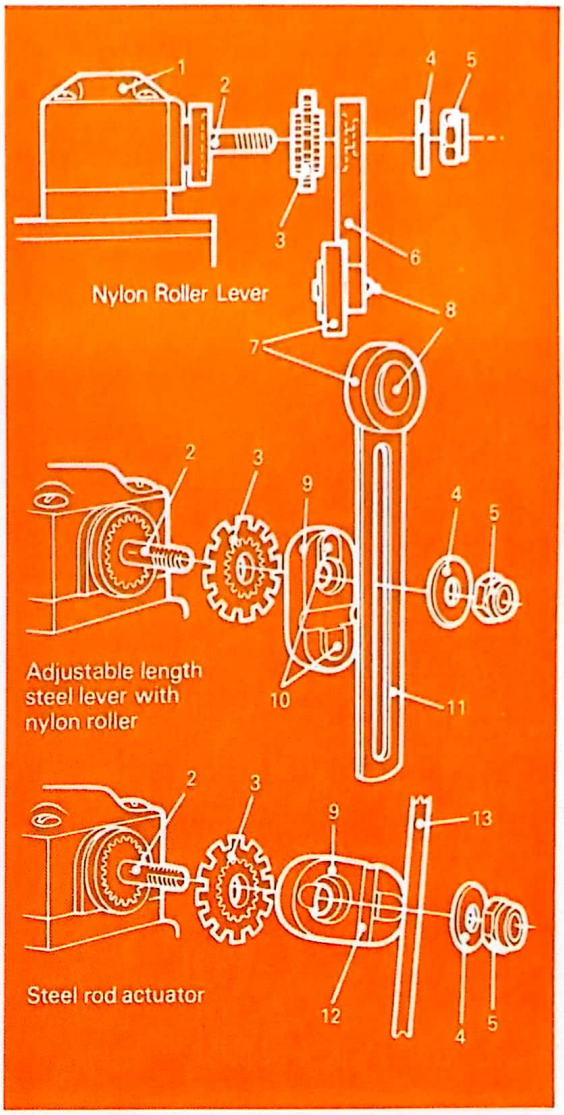
CAM FOLLOWER POSITIONS

See adjoining panel for lever adjustments

Cross Reference

Details of many other metal housed micro switches and limit switches are provided on pages 56-59, 62-65 and 159-176.

Rotary Action Levers



Key

1. Rotary head, casting secured to top of switch by four captive screws.
2. Actuating spindle protruding through side of rotary head with fixed vernier and rotation limiting washer.
3. Vernier adjusting spacer with 18 teeth on one side to engage with fixed vernier on actuating spindle and 17 teeth on other side to engage with lever 6 or actuator holding piece 9.
4. Washer.
5. Self-locking nut which secures all components on spindle 2.
6. Plastic actuating lever, 39.7 mm, 1.56 in, radius.
7. Free-running plastic roller 19 mm, 0.75 in, diameter and 6.3 mm, 0.25 in, wide.
8. Rivetted bearing pin with flat washer for added security.
9. Moulded actuator holding piece, used to position either slotted lever actuator 11 or rod actuator 13.
10. Two bosses on the holding piece to engage in slot of lever 11.
11. Steel slotted lever actuator with roller 7. The lever can be clamped at any position along its slot, providing radius adjustment between 25.4 mm (1 in) and 84 mm (3.3 in).
12. Recess in actuator holding piece 9 in which to locate rod actuator 13.
13. Steel plain rod actuator 152 mm, 6 in, long. It may be clamped at any position along its length.

Angular Adjustment
All these levers may be adjusted through 360° in small, vernier-controlled steps. Slacken self-locking nut 5 just sufficiently to allow lever 6 or actuator holding piece 9, spacer 3 and fixed boss on spindle 2 to disengage. Manipulate the freed components until they mesh in the desired lever position, then tighten nut 5. The lever is now locked in position and cannot slide out of adjustment.

Radius Adjustment
The slotted lever and the rod actuator may be adjusted for effective radius. Loosen self-locking nut 5, move lever or rod to desired position and tighten nut.