Burgess

Standard Industrial Metal Housed Micro Switches

Single-pole, changeover micro switches in robust metal enclosures offering great reliability and long life in most industrial environments. The split between lid and body diecasting is high and the insert micro switch is attached to the top element, an arrangement which greatly facilitates fast installation, wiring and insert switch replacement.

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Type 6 plunger actuator

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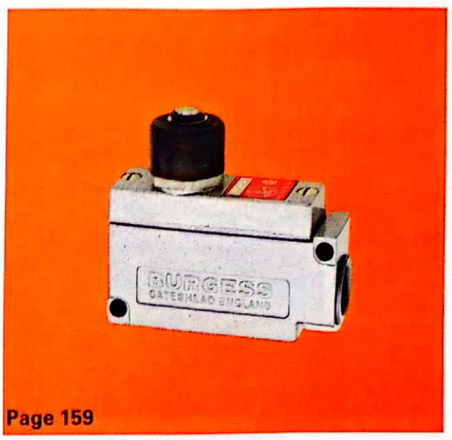
Type 7 plunger actuator



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Type 9 plunger actuator

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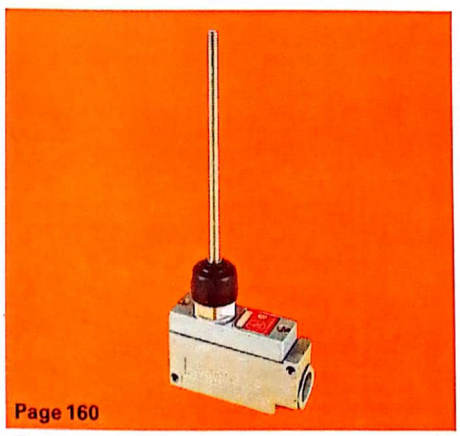
Type 6 roller-plunger actuator



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Type 9 wobble stick actuator

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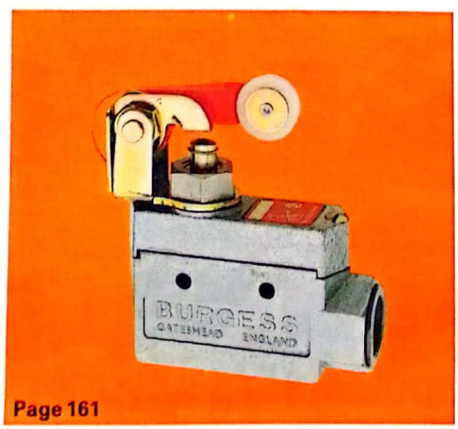
Type 9 telescopic rod actuator



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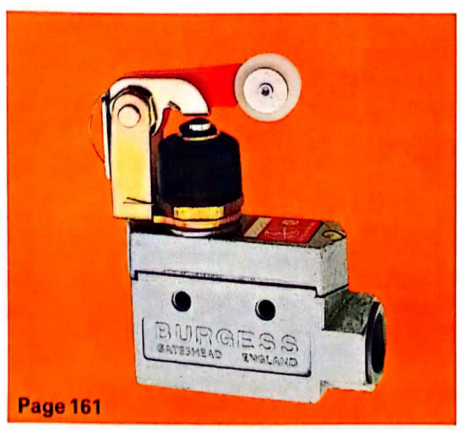
Type 6 roller-lever actuator



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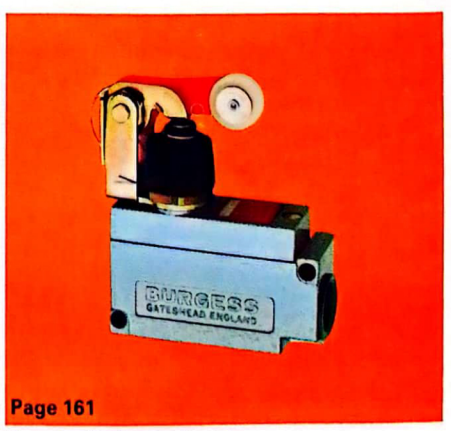
Type 7 roller-lever actuator



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Type 9 roller-lever actuator

These switches are available with 20 mm ISO or ½ in NPS conduit entries and are described individually on the pages indicated. Replacement insert micro switches for all models except those with wobble stick or telescopic rod actuators are listed on page 162.

Three Basic Styles

Type 6 Switches referenced M6CTQ . . . or C6CTQ . . . Unprotected plunger and with side mounting holes which give access to the switch interior. Suitable for dry, dust-free situations.

Type 7 Switches referenced M7CTQ . . . or C7CTQ . . . Plunger protected by synthetic rubber cowl. An envelope containing two 38 mm (1.5 in) #6 screws, six lead seals (two are spare), two lockwashers and two nuts is supplied with each switch. Used as recommended, these components will prevent dust or moisture gaining access to the switch interior via the side mounting holes.

Type 9 Switches referenced M9CTQ . . . or C9CTQ . . . The preferred style with mounting holes which run through solid casting and do not give access to the switch interior. With plunger cowl and one-piece moulded internal insulation, these switches may be sealed on site and used with complete confidence in damp or dusty situations.

Construction

Mechanism
The interior switch is of the single-pole, changeover snap-action, beryllium trident spring type described on page 49. Fine silver contacts. The switch is securely mounted to the lid die casting and thus offers facilities for fast wiring or replacement. Normally open only or normally closed only working is achieved by selecting the appropriate two terminals from the three provided.

Enclosure
The lid and body diecastings have a high split-line, a Burgess feature, which is of great assistance during installation. The body casting is lined with insulation and in the case of Type 9 switches this takes the form of a one-piece moulding with a rim which acts as a gasket.

Earth
An internal earth (ground) screw is provided below the insulated lining of the body casting.

Actuators

Plunger	: In steel, integral with insert switch. Most models have synthetic rubber cowl.
Roller plunger	: Steel roller, free-running and mounted in-line with the switch housing.
Wobble-stick	: Strong steel spring.
Telescopic Rod	: Spring loaded and adjustable between 232 mm (9.1 in) and 954 mm (37.5 in), as measured from top mounting hole.
Roller-Lever	: Steel bracket and sub-lever, plastic lever, roller and vernier adjustment components. Horizontal adjustment 360°, vertical adjustment 235° in controlled steps.

Terminals
Three 6-32 UNC screws with cup washers.

Electrical Ratings

Ratings in the following table are in amperes and are recommended maxima.. The abbreviations NC and NO refer to the normally closed and normally open terminals.

Voltage	Resistive Load	Tungsten Lamp Load NC	Tungsten Lamp Load NO	Inductive Load
AC				
125	15	3	1.5	15
250	15	2.5	1.5	15
380	15			5
480	15			4
DC				
Up to 15	15	3	1.5	10
30	5	3	1.5	5
50	1.25	0.7	0.7	1.25
75	0.75	0.5	0.5	0.3
125	0.5	0.4	0.4	0.05
250	0.25	0.2	0.2	0.03

Tapped Conduit Entries

All Burgess metal housed switches are provided with a conduit entry which is tapped for the reception of screwed conduit or cable gland. Several thread styles are available and the letter prefixing the switch ordering reference indicates which one is used, thus:

Prefix	*Style*
B	PG 13.5
C	½ inch NPS
D	½ inch to BS84
G	PG 11
M	20 mm ISO

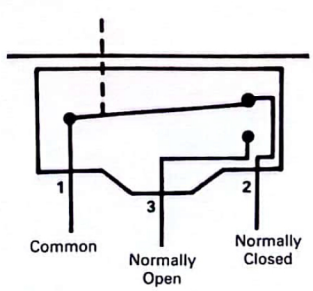
Each catalogued model is offered with at least two thread styles, sometimes three or four. Those styles not offered as standards are available against special order.

Installation and Service

Installation
Full data is supplied with every switch. Briefly, the sequence is as follows:

1. Separate the lid and body castings and mount the latter as if it was an ordinary conduit box.
2. 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.
3. On 6CT/7CT ranges, slightly loosen the larger hexagon nut on the plunger assembly to ease alignment of mounting holes, then hold the complete lid casting a few inches above the body casting.
4. Run the cable through the conduit entry. Connect the earth (ground) wire to the terminal below the insulated lining. Bring the other wires out through the top of the body casting.
5. Connect wires to switch terminals in 'open air' convenience. Use crimped tags and make sure there are no loose strands of wire.
6. Ease wires back into body casting and secure lid to body using the two captive screws provided. Note the lid will fit either way round.
7. Secure complete assembly to the installation using M5 or #10 screws for type 9 switches or M3.5 or #6 screws for types 6 and 7 switches. In moist or dusty situations type 7 switches should be secured with the hardware provided in an envelope supplied with each switch; arrange the screws, lead seals, lockwashers and nuts as shown on the sketch on the envelope.
8. Alternative base mounting can be achieved by drilling out the half cored holes in the base of the body casting.
9. If a roller lever actuator is fitted, adjust this vertically by slackening the hexagon nut on the lever axle until the vernier components can be separated, manipulating the lever and vernier until they mesh in the desired position and locking by tightening the hexagon nut. Position the lever in the horizontal plane as required.
10. Lastly, tighten the large hexagon nut on the plunger assembly.

Diagram of Connections



Replacement Insert Switches
Switches with plunger, roller-plunger or roller lever actuators have insert switches which may be removed and replaced. See page 162 for suitable replacement micro switches.

Environmental Data
Type 6 switches : IEC Code IP40
Type 7 switches : IEC Code IP65, NEMA type 13, provided the mounting holes are sealed using the hardware provided, and the conduit or cable gland is compounded in the recommended fashion.
Type 9 switches : IEC Code IP65 NEMA type 13, when installed as recommended. In this case there is no need to seal the mounting holes as they do not give access to the interior.
Always ensure that moisture which may be present in the conduit or cable cannot drain into the switch.
Continuous working recommended limits of temperature are −10° and +85°C.

Service
Apart from insert switch replacement in certain models, the assemblies are not user-maintainable but a common-sense surveillance routine will ensure efficient service. Cleanliness around the actuator is important as is a regular check for mounting security and for wear on the actuating medium.

Cross References

Details of many other metal housed micro switches and limit switches will be found on the next eight pages.
Explosion-proof metal housed switches – pages 74-76 and 201-202.
Positive action metal housed switches – page 77, 80-81 and 208-211.

Burgess 'Standard' Industrial Metal Housed Micro Switches

M6CTQRMS — 20 mm ISO Conduit Entry
C6CTQRMS — ½ in NPS Conduit Entry

Actuator	Plunger with free-running roller in-line with switch housing
Mechanism	Single-pole, changeover
Earth	Internal earth (ground) screw provided
Terminals	Three 6-32 UNC screws and cup washers
Replacement Insert Switch	CT2QR-A2. See page 162
Electrical Rating	Recommended maximum 15A on 125 or 250 Vac. Full ratings on page 57

Free Position (max)	50.6 mm	2.0 in
Operating Position	49.8 ±0.64 mm	1.96 in
Movement Differential (max)	0.08 mm	0.003 in
Available Overtravel	3.56 mm	0.14 in
Actuating Force (max)	4.2 N	15 ozf
Release Force (min)	1.7 N	6 ozf

Mechanical Life	Between 100,000 and 1 million operations
Enclosure	IP40
Temperature	−10° to +85°C
Weight	180 g max
Approvals*	CSA, UL

These models and similar models are described in detail on pages 56-57