

# Burgess

## 3BRM, CTHMS & CRMN Series Metal Housed Micro Switches

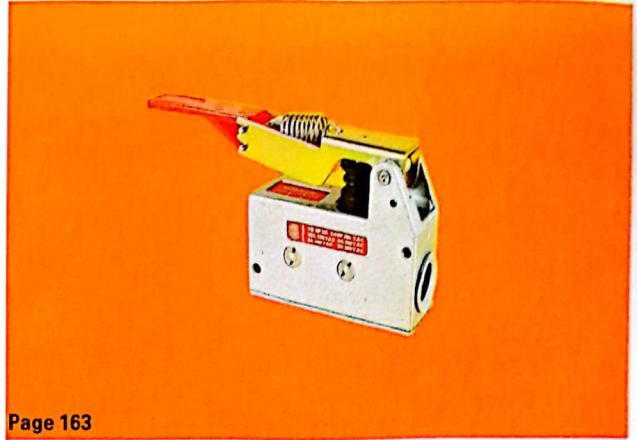
Three groups of Burgess metal housed micro switches – three quite different styles of well protected, single-pole precision controls with which to meet the multifarious requirements of industry.

### 3BRM Series



Page 163

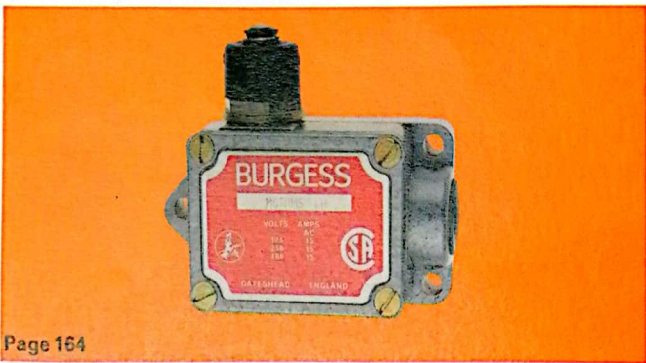
Plunger actuator. Also lever and roller-lever actuators



Page 163

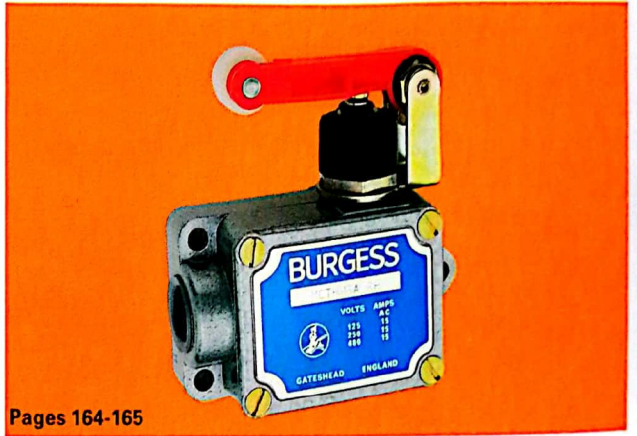
Two part lever actuator with collapsing action for reversible conveyors, etc

### CTHMS Series



Page 164

Plunger actuator. Left-handed style



Pages 164-165

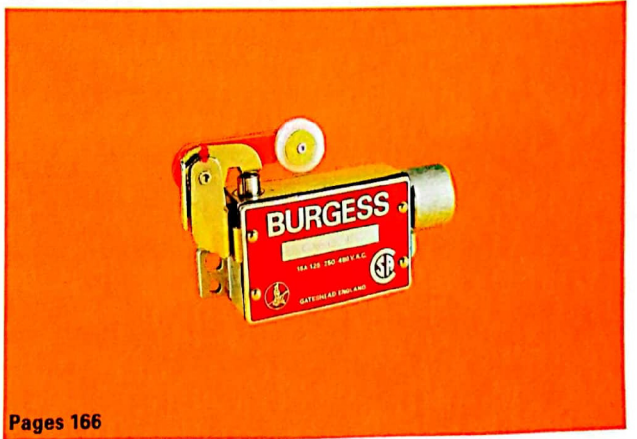
56.6 mm roller-lever actuator. Right-handed style

### CRMN Series



Page 166

Plunger actuator. Right-handed style



Pages 166

39.7 mm roller-lever actuator. Left-handed style

Individual switch descriptions appear on the pages shown.

## 3BRM Series

This series has an enviable reputation for efficient service extending over forty years. Each model comprises a strong metal housing containing a single-pole, changeover micro switch type 3BR/103, as described on page 151. This is held securely by two screws, allowing the cowl-protected plunger to protrude through the top of the casting. Insert switch replacement is quickly achieved.

The plunger may be used alone or with various lever actuators which pivot on an axis held between two integral lugs. Included in the range is a stainless steel adjustable lever with ramp end, a two-part plastic and metal lever with collapsing action and an adjustable metal lever with free-running plastic roller.

The switches are not handed and may be mounted either way round. A small base plate is fitted to the switch and this is used when the switch is side mounted; a flanged plate is supplied loose with each switch and this can be used instead of the small plate when base mounting is required. Use M3.5 or #6 screws, two for side mounting or four for base mounting.

A conduit entry, tapped 20 mm ISO or 1/2 inch NPS, is provided. Three terminals, accessible when housing and switch base plates are removed, consist of 6BA screws and captive washers located in wiring channels.

Diagram of Connections

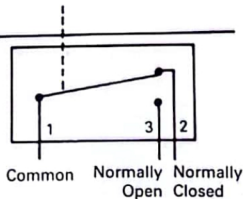
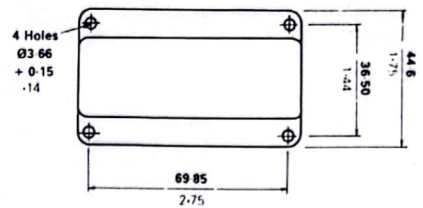


Diagram of Base Mounting Plate



Electrical Ratings – recommended maxima in amperes

Voltage	Resistive Load	Tungsten Lamp Load		Inductive Load
		NC	NO	
AC				
125	15	1.5	1.0	5
250	15	0.7	0.5	5
DC				
Up to 15	15	3	1.5	8
30	2	3	1.5	1
50	0.7	0.7	0.7	0.5
75	0.6	0.5	0.5	0.2
125	0.5	0.4	0.4	0.03
250	0.25	0.2	0.2	0.02

## CTHMS Series

Heavy-duty metal housed micro switches which, when installed in the recommended manner, are sealed against the ingress of moisture or dust.

Note that these switches are handed: left-handed models with references suffixed '-LH' have the plunger to the left and the conduit entry to the right when viewed with the label to the front and the plunger uppermost. In the same attitude right-handed ('-RH') models have the plunger to the right and conduit entry to the left.

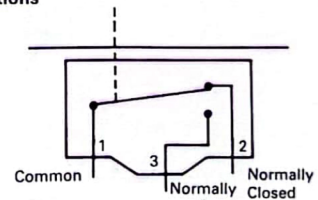
The insert switches are single-pole, changeover models as described on page 141. Select CT2/481-A2 for right-hand switches and CT2/484-A2 for left-handed switches. Each is held in the housing by two screws and may be replaced without disturbing the main plunger.

Switch actuation is either by this plunger, which is protected by a synthetic rubber cowl, or by one of two styles of plastic roller-levers, both of which may be adjusted horizontally through 360° and vertically, under vernier control, through 235°. The longer of the two levers, with a radius of 56.6 mm, 2.23 in, meets European requirements and is fitted to housings with 20 mm ISO conduit entry tapping. The shorter lever, radius 39.7 mm, 1.56 in, conforms to North American

standards and is offered on housings with 1/2 in NPS conduit entry tapping. Both conduit entry styles are offered on plunger actuated switches.

Three side-mounting holes are provided; use M6 or 1/4 UNF screws. The three switch terminals, accessible when the front cover is removed, are front-facing 6-32 UNC screws with cup washers.

Diagram of Connections



Electrical Ratings – see table below

## CRMN Series

Fully sealed metal housed micro switches which also are highly resistive to the sort of abusive treatment which may be encountered on production machinery and plant equipment. The interior single-pole, changeover micro switch is generally similar to type CRIM, described on page 147, and has wires connected to its three terminals. This switch and the whole assembly are tested separately in factory for efficient sealing by pressure testing. The sealing is permanent and no facilities are provided for gaining access to the interior.

Like the CTHMS Series, these switches are handed and it is important to specify from which side of the top face of the casting you wish the plunger to protrude. Mounting facilities include two dowel and two side-mounting holes. Use M6 or 1/4 UNF screws.

The plunger actuator is made of hardened steel and is fitted with 'O' ring sealing. It may be used alone, or switches with integral roller-levers are offered. These are of two styles: one is of steel with a plastic roller, radius 54.0 mm, 2.13 in, and is adjustable vertically through 145°, and the other uses plastic for lever and roller, has a radius of 39.7 mm, 1.56 in, and is adjustable vertically through 235° in vernier controlled steps. The longer roller-lever is fitted to switches with conduit entry tapped 20 mm ISO, while the short lever is associated with conduit entries tapped 1/2 in NPS. Plunger actuated models are offered with either conduit entry style.

Diagram of Connections

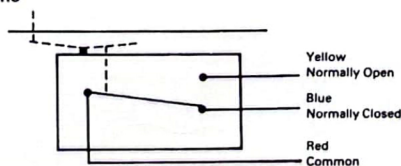
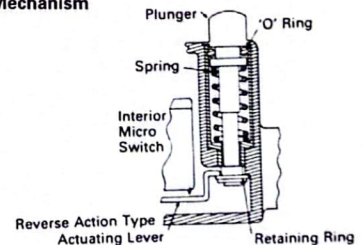


Diagram of Plunger Mechanism



Electrical Ratings – Recommended maxima in amperes – for CTHMS and CRMN Series

Voltage	Resistive Load	Tungsten Lamp Load		Inductive Load
		NC	NO	
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

## Installation and Service

See notes above and on page 27. Apart from insert switch replacement – 3BRM and CTHMS Series – the assemblies are not user-maintainable although, as usual, a common-sense surveillance routine will ensure a full and efficient switch life. Cleanliness around the actuator is important, as is a regular check on mounting security and wear on the actuating medium.

## Cross References

Other metal housed switches – pages 56-57, 60-65 and 159-176.  
Explosion-proof metal housed switches – pages 74-76 and 201-202.  
Positive action metal housed switches – pages 77, 80-81 and 208-211.  
Alternative conduit entry styles – page 57.

# Burgess Sealed Metal Housed Micro Switches

**MCRMN-LH**  
**CCRMN-LH**

20 mm ISO  
Conduit Entry  
1/2 in NPS  
Conduit Entry

<b>Actuator</b>	Plain plunger with 'O' ring sealing	
<b>Actuator Position</b>	Left-handed – i.e. plunger on left when in attitude shown on drawing	
<b>Mechanism</b>	Single-pole, changeover	
<b>Wires</b>	Three PVC insulated, approximately 1.5 m long	
<b>Electrical Rating</b>	Recommended maximum 15A on 125 or 250 Vac. Full ratings on page 59	
<b>Free Position (max)</b>	43.0 mm	1.69 in
<b>Operating Position</b>	41.66	1.64 in
	±0.1 mm	
<b>Movement Differential (max)</b>	0.4 mm	0.016 in
<b>Available Overtravel</b>	5.16 mm	0.20 in
<b>Actuating Force (max)</b>	22.3 N	80 ozf
<b>Release Force (min)</b>	4.5 N	16 ozf
<b>Mechanical Life</b>	In excess of 10 million operations	
<b>Enclosure</b>	IP67, NEMA type 6. Pressure tested	
<b>Temperature</b>	-10° to +85°C	
<b>Weight</b>	370 g max	
<b>Approvals*</b>	CSA, UL	

*These models and similar models are described in detail on pages 58-59*

