The data used in this Product Overview may be used as a guideline only. Specific operational characteristics of our products may vary according to individual applications. It is strongly recommended that specific operating conditions are clarified with Johnson Electric before application.

Johnson Electric Terms and Conditions of Sale apply.

All data may be subject to change without notice.
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Overview

The Johnson Electric Group is one of the world's largest providers of motion subsystems and motion components for automotive, medical and industrial applications.

Over the years, we have shipped billions of motors to more than thirty countries in over one hundred different applications. Johnson Electric has an annual production capacity of one billion motors and motion subsystems.

At the heart of Johnson Electric's success is our commitment to make our customers successful. Our customers include many of the world's leading industrial, consumer and automotive companies. We begin by understanding our customers' business needs, and the product application requirements of the end user of our customers' products. Then we design and deliver innovative motion solutions that help our customers to differentiate their products in the marketplace. Our goal is to be instrumental in the successful launch of our customers' products in their respective marketplaces.

Our Brand Promise

Johnson Electric delivers competitive advantage

Johnson Electric delivers differentiation and innovation through its motion products – subsystems comprising of Stepper Motors, DC Motors, AC Motors, Piezo-electric Motors, Switches, Solenoids, Flexi Circuits, Motion Control, Precision Plastics and Precision Gears.

Johnson Electric is the most reliable partner

Johnson Electric is responsive and flexible; and has the financial stability and organizational integrity to meet all of our commitments and to support our customers’ success. Product reliability and assurance of supply are our commitment.

Johnson Electric is «The Safe Choice»

- Financial strength and long standing supplier relationships.
- Unmatched assurance of supply.
- Rigorous supply chain management and complete integrity in compliance with standards.
- Unsurpassed on-time delivery.
- Global logistics support 24/7.
- Collaborative design and project management process.
- Product life cycle support from creation to end-of-life.

Our business growth hinges with leading «branded» goods producers to deliver differentiation and innovation through our motion products. The core platform for delivering these solutions is a highly developed production base and focused customer support teams throughout the world. This combines scale advantages in production and procurement with skilled and dedicated motion application experts.
How we are organized

<table>
<thead>
<tr>
<th>Automotive Products Group</th>
<th>Industry Products Group</th>
<th>Johnson Medtech</th>
<th>Components &amp; Services</th>
<th>Other Group Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GATE</strong></td>
<td><strong>JOHNSON MOTOR</strong></td>
<td><strong>JOHNSON MEDTECH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Saia-burgess</strong></td>
<td><strong>Johnson Motor</strong></td>
<td><strong>Johnson Medtech</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B‘AR</strong></td>
<td><strong>Saia</strong></td>
<td><strong>Johnson Medtech</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>burgess</strong></td>
<td><strong>Johnson Motor</strong></td>
<td><strong>Johnson Medtech</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>th Benton</strong></td>
<td><strong>Saia Motor</strong></td>
<td><strong>Johnson Medtech</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LEDEX</strong></td>
<td><strong>Ledex and Dormeyer</strong></td>
<td><strong>Johnson Medtech</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Group’s motion systems, motors and switches businesses are managed through three operating divisions: Automotive Products Group, Industry Products Group and Johnson Medtech.

The Automotive Products Group (APG) is focused on providing customized motion solutions for all major automotive applications. APG goes to market under three product brands: Saia-Burgess for custom actuators; GATE for engine cooling fan modules; and Johnson Motor for DC motors and brushless DC motors.

The Industry Products Group (IPG) provides motion products and solutions for various commercial and industrial application sectors, including home appliances, power tools, business equipment, personal care products, medical equipment, building automation, security, audio-visual and other industrial products. IPG goes to market under seven product brands: Johnson Motor for DC motors, AC motors and BLDC motors; Saia Motor for stepper motors and synchronous motors; Ledex and Dormeyer for solenoids; and Saia, Bár, Burgess, th-contact brands for switches.

Johnson Medtech is an ISO13485 certified designer and manufacturer of motion related products for the medical device industry. The focus of Johnson Medtech is primarily in subsystem for medication delivery systems, surgical robotics and image guided surgery.

Supporting these three business units is the Components & Services division which produces metal and plastic parts, tooling and production equipment for the Group. Johnson Electric is a highly vertically integrated business that manufactures an exceptionally wide range of components that form the basis for its final products. We make magnets, bearings, shafts, housings, laminations, commutators and die cast parts. We also build tools, assembly fixtures, plastic molds as well as armature winding and other production machines.

Supporting our customers worldwide are sixteen R&D centres located in Hong Kong (China), Shenzhen (China), Shanghai (China), Nagano (Japan), Yokneam (Israel), Asti (Italy), Murten (Switzerland), Halver (Germany), Dresden (Germany), Oldenburg (Germany), Isle of Wright (Parlex), San Jose (USA), Methuen (USA), Vandalia (USA), Springfield (USA) and Plymouth (USA).

The Group also includes a number of complementary subsidiary companies. These include an innovative provider of flexible printed circuits and interconnect solutions; a successful niche player in the programmable controls industry; and a rapidly growing China auto parts business.
Looking for a specialized switching solution?

Look no further:
In addition to the wide range of standard products shown in Johnson Electric catalogues, we will be happy to work with you to meet your system needs. If your application requires more than a standard product solution, please consider us early in your design process. Our product development team will be happy to discuss your specification, whether you need a special value-added assembly or a complete system. We specialize in developing solutions for medium and high-volume applications.

The images shown give some examples of our capabilities.
Burgess is the leading global brand for industrial switches

Burgess designs have defined industry standards. If you need a specific solution for your switching needs, call us to set your own standard.

A pioneer of snap-action technology, the Burgess brand stands for innovative, robust solutions for industrial switch requirements.

Wide range
Snap-action switches have to fulfill a wide variety of functions. The standard Burgess range ensures there will be a switch for your needs, with one of the broadest product portfolios around. From ultraminiature to metal-housed basic types, we are sure to have the type appropriate to your application, whether it is signal or power switching, high or low force actuation.

Environmental protection
The sealed switch is a Burgess speciality. In demanding environments – wet, humid or dusty – even the most sensitive signal can be switched reliably with IP67 rated products. Our robust metal-housed switches offer impact resistance outside whilst switching with precision inside.

Uncompromising reliability
With many UL, CSA and ENEC approvals, the performance of Burgess products is globally recognized. For safety-related applications, such as machine maintenance systems, positive-action mechanisms ensure a physical break in the circuit.

Precision actuation
Snap-action switches offer high levels of repeat accuracy and switch virtually independently of actuation speed and force. This is the mechanism of choice for pressure sensing, timing and position indicating applications.

Minimum size
Our F5 range demonstrates our capability to switch relatively high current from a small size envelope – 5A 250 VAC from a switch less than 13 mm long.

Typical Burgess switch applications
- Circuit breakers
- Special purpose vehicles
- Vending machines
Switches in General Industry

Switches can be found in a wide variety of applications:

Burgess switches for special purpose vehicles
Switches used in special purpose vehicle applications must have:
• high levels of environmental protection
• the ability to handle high DC inrush currents
• reliability throughout the life of the product

Burgess switches for circuit breakers
Circuit breaker applications demand:
• dependability and reliability
• a high degree of shock resistance in the mechanism
• the ability to carry high currents and voltages

Burgess switches for vending machines
Switches used in vending machines must:
• work reliably, time after time
• have appropriate environmental protection to resist dust and moisture

Switches for locking mechanisms
Switches are found in numerous applications that require a locking device. Whether it is a medical application, an office automation application or a door lock, switches provide an effective, cost-efficient locking mechanism.

Security Applications
• Hotel room door lock
• Hotel safe lock
• Prison door lock
• Fire safety door opening lock
• Garage door safety lock

Medical
• Sterilizer lock
• Centrifuge lock
• Blood analysis machine lock

Office Automation
• Disk drive door lock
• Personal computer chassis lock
• Docking station lock
• Locks to hold peripherals in place
• Tape library index lock

Industrial
• Overhead door lock
• Fire safety door lock
• Commercial laundry locks
Terminology: Snap-action switches

Positions – forces – movements

<table>
<thead>
<tr>
<th>Terms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free position</td>
<td>Position of the actuator, without any influence from an external force.</td>
</tr>
<tr>
<td>Operating position</td>
<td>Position of the actuator when contact changeover takes place.</td>
</tr>
<tr>
<td>Total travel position</td>
<td>Position of the actuator at the end of the allowed travel.</td>
</tr>
<tr>
<td>Release position</td>
<td>Position of the actuator when the switch mechanism resets.</td>
</tr>
<tr>
<td>Actuating force</td>
<td>The force required to move the actuator from the free position to the operating position.</td>
</tr>
<tr>
<td>Release force</td>
<td>The value to which the applied force must be reduced to allow the mechanism to reset after operation.</td>
</tr>
<tr>
<td>Force differential</td>
<td>Difference between actuating force and release force.</td>
</tr>
<tr>
<td>Pre-travel</td>
<td>Movement of the switch actuator between free and operating position.</td>
</tr>
<tr>
<td>Over-travel</td>
<td>Movement of the switch actuator beyond the operating position.</td>
</tr>
<tr>
<td>Total travel</td>
<td>The sum of pre-travel and over-travel.</td>
</tr>
<tr>
<td>Movement differential</td>
<td>Distance between operating position and release position.</td>
</tr>
<tr>
<td>Release travel</td>
<td>Movement of the switch actuator between release and total travel position.</td>
</tr>
<tr>
<td>Post release travel</td>
<td>Movement of the switch actuator between release and free position.</td>
</tr>
</tbody>
</table>

Contact force – movement – diagram

![Diagram of actuator operation](image-url)
Actuating force – movement – diagram

Contact force – movement – diagram
Switch Technology

Clearance Distance – the distance in air between current carrying parts of opposite polarity or between any current carrying part and an earthed-(grounded) metal plate to which the switch is attached.

Creepage Distance – the path along the surface of insulating material between current carrying parts of opposite polarity or between any current carrying part and an earthed (grounded) metal plate to which the switch is attached.

Insulation Resistance – resistance as measured between the normally closed terminals, or between all terminals connected together and a metal plate to which the switch is mounted. In dry conditions the value would be expected to be greater than 5Mh.

Single Throw – a switch which provided an ON-OFF or OFF-ON function but does not change over from one conductor to another. Such switches are usually referred to as being «normally-closed only» or «normally-open only».

Switching Cycle – one complete switching operating from free position into overtravel and back through release position to free position.

Switch Resistance – a total resistance offered by a switch in a circuit, as measured from terminal through mating contacts, to terminal.

Transit Time – the time taken by the moving contact in a snap-action mechanism to move from one stable position to another.

Electrical Ratings

Electrical ratings given in the catalog are ratings according to UL1054, CSA22.55 or IEC61058-1. Where these are not available, a general rating is given based upon in-house laboratory testing.

The ratings tables should be considered as safe working maximums for most applications. However, switch performance is influenced by a variety of factors, including:

- Frequency of operation
- Type of load
- Amount of travel used
- Temperature
- Humidity

Please do not hesitate to contact Burgess about your specific application.

Approvals

CSA mark. Switch meets CSA’s safety standards

UL Recognized Component Mark for Canada and the United States

ENEC Mark. Switch fulfills European EN standards. The two digit number indicates which certification body has issued the ENEC Certificate

CQC Approval (China) is available for certain switches

Switch Life

a. Electrical Life – the electrical life data contained in this catalog is based on laboratory controlled tests. In practice, frequency and speed of operation, type of load, suppression, actuator travel used, ambient humidity and temperature and other environmental conditions can have a major effect on switch life. Individual assessments for specific applications are possible and can be undertaken by Burgess on request. Please ask Burgess if you would like an assessment for your specific application.

b. Mechanical Life – the figures quoted relate to the number of switching cycles made without an electrical load.

Switch Drawings

All drawings in this catalogue are third angle projection. All dimensions in this catalogue are nominal, except where specifically shown.
Application Technology

Shock and Vibration
If switches are likely to be subjected to shock or vibration, select models with the highest available actuating force. Burgess switches feature low mass mechanisms which are inherently resistant to shock and vibration. If possible, the switches should be mounted so that the line of acceleration is at right angles to the travel of the plunger. The maximum available overtravel should be used.

Direct Current
Direct current (DC) ratings shown should not be exceeded if destructive arcing and contact welding are to be avoided. Some form of arc suppression is recommended when switches are used in DC circuits containing inductive devices wired in series with the switch and the supply.

Lamp Loads
Because of the very high inrush currents associated with incandescent lamps, applications should be subject to individual assessment.

Capacitive Loads (including fluorescent lamps)
These can generate very high peak currents which can cause contact welding. Applications should be subject to individual assessment.

Inductive Loads
The general ratings tables included in this catalog provide data for switches used to control inductive circuits at a power factor of 0.5 (EN 0.6; UL 0.7 means HP-Rating 0.5).

Contact Materials
Silver and silver alloys are the primary contact materials used in Burgess switches. The ratings tables shown refer to switches with silver/silver alloy contacts. Gold contacts should be specified when switches are to be used in low voltage control or logic circuits, especially when long periods of inactivity are expected or when atmospheres with a high sulphur content may be encountered. Gold contacts are generally available in two forms; gold plated silver alloy contacts, which can also be used at higher currents or gold alloy cross-point contacts, which are only suitable for switching low currents.

Please ask Burgess if you would like an assessment for your specific application.

Switch Actuation

Direct Operation
Actuating plungers should be operated in the direction of their axis. Where this is not possible the use of actuating levers is recommended. For direct actuation the attack angle should not exceed 30°.

Actuating Levers
Various lever types are available for use with Burgess switches. They are generally stainless steel. If roller or cam-follower levers are approached in the reverse direction, care must be taken to ensure that the angle of approach is small enough not to jam the lever.

Actuation by Cams
Cam-follower levers are particularly well suited for use with plastic actuating cams. Abrupt actuation or release of switch actuators shortens the life of the switches. For this reason cam should preferably provide a continuous movement. Ideally they should be of cycloidal form.
Environmental Protection

Protection Classifications
The protection classes of Burgess switches are in accordance with IEC 529 and are covered by just four codes.

IP40
Adequate protection against solids such as probing fingers and small wires >1mm. Liquids however can gain access and, unless externally protected, the switches should be mounted in dry or well-sheltered positions.

IP5K4
Good protection against solid foreign bodies, including dust and water splashing against the enclosure from any direction.
Switches may be used out of doors if sheltered from the worst of the elements or on factory machines subjected to normal washing down procedures.

IP65
Complete protection against solids, including dust, and against low pressure jets of water from all directions.

IP6K7
Complete protection against solids including dust and against immersion in water at a specific pressure for a specified time.
We reserve this code for switches which are factory sealed and tested. Switches should not be immersed in any liquid.

*International IK code indicates protection against mechanical impact regarding to EN 50102.

Working Temperatures
For details of the working temperatures applicable to individual types, refer to the appropriate specification sheet. Special versions suitable for temperatures outside these ranges may be possible. Please contact us for information.

All quoted temperatures assume stable operation. They do not imply an ability to withstand excessive cycling within the range.

Health & Safety

Burgess has ensured, so far as it is reasonably practicable, that their products are as described in this catalog or in other current company publications, or as specified on Burgess installation drawings. They have been so designed and constructed as to be safe and without risk to health when installed by suitably qualified personnel in accordance with relevant legislation, codes of practice, regulations (including IEE Wiring Regulations), the installation recommendations offered by the company and the accepted rules of the art. Their usage should be confined within the ratings limitations and parameters of application indicated in this catalog and elsewhere. Please contact us should you need additional information or guidance.

Service Recommendations

Maintenance
Burgess switches are not user-maintainable but they should be kept in a reasonably clean, paint-free condition, especially in the actuator area. Regular checks should be made on mounting security and on the actuating medium to switch actuator relationship.
Lubrication or the use of aqueous or chemical cleaning fluids is not recommended.

Installation Recommendations

The following notes are intended merely to stress the most important and general aspects of good switch installation procedure and to provide some helpful additional information. Safety Consideration
Installation should only be carried out by competent personnel.

Switch Positioning and Operation
Pre-loading of the switch actuator must be avoided. The actuating medium must be able to operate the switch through the operating position into overtravel and then to retract far enough to allow the switch to regain its free position.
Burgess recommends that the actuating medium should drive the switch into at least 50% of the available overtravel.
All ratings tables shown in this catalog are based on the use of all the available overtravel.
Mounting
Side mounting switches should be mounted on smooth, firm, flat surfaces using the recommended screw size. Avoid over tightening the screws. For added security, they should be locked using epoxy resin. Do not attempt to enlarge switch mounting holes and avoid over stressing the switch. Use insulating material between the switch and metallic plates to increase clearance on switches with open terminals.

Connections
When soldering, overheating of the switch insulation must be avoided. In certain circumstances, it may be advisable to use a heat shunt. For optimum mechanical strength, the conductor should be wrapped round the tip of the terminal taking care to avoid loose strands of wire.

The soldering iron tip should be applied to the end of the terminal while simultaneously applying solder. Remove the iron as soon as the solder has wetted the conductor and terminal end. A soldering iron tip temperature of 350°C (260°C/5 seconds for PCB Terminals) applied for a maximum of 2-3 seconds should be adequate.

For lead-free solder, is usually needed an iron tip temperature 15% higher.

Installation Recommendations (EN 61058-1)

<table>
<thead>
<tr>
<th>Normal hole Diameter (mm)</th>
<th>Metric Thread Diameter (in)</th>
<th>Unified Thread Diameter (in)</th>
<th>Mounting Screw Size</th>
<th>Mounting Screw Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2/2.3</td>
<td>0.067/0.091</td>
<td>M2</td>
<td>#2</td>
<td>M2 or #2 screws</td>
</tr>
<tr>
<td>3.1/3.2</td>
<td>0.122/0.126</td>
<td>M3</td>
<td>#4</td>
<td>M3 or #4 screws</td>
</tr>
<tr>
<td>3.6/3.7</td>
<td>0.142/0.146</td>
<td>M3.5</td>
<td>#6</td>
<td>M3.5 or #6 screws</td>
</tr>
<tr>
<td>5.1/5.2</td>
<td>0.201/0.205</td>
<td>M5</td>
<td>#10</td>
<td>M5 or #10 screws</td>
</tr>
</tbody>
</table>
## Snap-action Microswitches

### Ultraminiature

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>small size</td>
<td>250 VAC, 5 A</td>
<td>16 x 6 x 6.5</td>
<td>plunger</td>
<td>UL, CSA</td>
<td>16</td>
</tr>
<tr>
<td>F4</td>
<td>small size</td>
<td>250 VAC, 5 A</td>
<td>12.8 x 10 x 5</td>
<td>plunger</td>
<td>UL, CSA</td>
<td>19</td>
</tr>
<tr>
<td>F5</td>
<td>small size</td>
<td>250 VAC, 5 A</td>
<td>12.8 x 7 x 5</td>
<td>plunger</td>
<td>UL, CSA</td>
<td>22</td>
</tr>
<tr>
<td>F1NS</td>
<td>small size</td>
<td>up to 250 VAC, 1 A</td>
<td>14.6 x 6.5 x 6</td>
<td>plunger</td>
<td>Automotive standard</td>
<td>25</td>
</tr>
<tr>
<td>L16</td>
<td>small size</td>
<td>12–30 VDC, 1–300 mA</td>
<td>14.7 x 9 x 5.4</td>
<td>plunger</td>
<td>Automotive standard</td>
<td>28</td>
</tr>
</tbody>
</table>

### Subminiature

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FK4</td>
<td>double break switching</td>
<td>250 VAC, 5 A</td>
<td>18 x 8 x 5</td>
<td>plunger</td>
<td>UL, CSA</td>
<td>31</td>
</tr>
<tr>
<td>V4L</td>
<td>long overtravel of 2.2 mm minimum</td>
<td>250 VAC, 5 A</td>
<td>20 x 11 x 6.4</td>
<td>plunger</td>
<td>ENEC, UL, CSA</td>
<td>35</td>
</tr>
<tr>
<td>V3NS</td>
<td>sealed (IP67)</td>
<td>250 VAC, 6 A</td>
<td>33 x 10.4 x 15.9</td>
<td>plunger</td>
<td>UL, CSA, ENEC</td>
<td>40</td>
</tr>
<tr>
<td>V3S</td>
<td>sealed (IP67)</td>
<td>250 VAC, 5 A</td>
<td>32 x 24 x 10</td>
<td>plunger</td>
<td>UL, CSA, ENEC</td>
<td>43</td>
</tr>
</tbody>
</table>

### Miniature sealed

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sealed (IP67)</td>
<td>250 VAC, 5 A</td>
<td>14.6 x 6.5 x 6</td>
<td>plunger</td>
<td>UL, CSA</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>pre-wired</td>
<td>250 VAC, 6 A</td>
<td>33 x 10.4 x 15.9</td>
<td>plunger</td>
<td>ENEC</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>robust construction</td>
<td>250 VAC, 5 A</td>
<td>32 x 24 x 10</td>
<td>plunger</td>
<td>ENEC</td>
<td>43</td>
</tr>
</tbody>
</table>
# Snap-action Microswitches

## Standard

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| 3BR  | ■ choice of IP54 or IP67 sealed versions  
■ precise movements  
■ screw terminals  
■ pre-wired option  
■ long overtravel | 250 VAC, 10 A max. | 53.1 × 20.6 × 30.8 | plunger | UL, CSA | 52 |

## Metal housed

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| V9N  | ■ sealed (IP67)  
■ metal housed  
■ screw terminals  
■ pre-wired option | 250 VAC, 10 A max. | 42 × 24.5 × 16 | plunger | UL, CSA | 55 |

## Miniature

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| BVM3 | ■ positive-action forced break switching  
■ > 3 mm contact gap at full travel  
■ internationally recognized V3 housing  
■ faston terminals | 250 VAC, 10 A | 28 × 16 × 10.5 | plunger | ULS, CSA, ENEC | 63 |

## Standard

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| KB5  | ■ positive-action forced double break switching  
■ > 3 mm contact gap at full travel  
■ high electrical rating  
■ faston terminals | up to 250 V, 25 A | 41 × 19.5 × 15.5 | plunger | ULS, CSA | 66 |

## Forced break

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| XP   | ■ double break switching  
■ positive-action force break option  
■ > 3 mm contact gap at full travel option  
■ faston terminals | 400 VAC, 16 A | 30 × 32 × 12 | plain plunger | ULS, CSA, ENEC | 70 |

## Forced break

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Rating</th>
<th>Dimensions (mm)</th>
<th>Actuator</th>
<th>Approvals</th>
<th>Page</th>
</tr>
</thead>
</table>
| XT   | ■ 8 mm contact gap  
■ 8 mm creepage and clearance distances  
■ double break contacts | 400 VAC, 16.5 A max. | 30 × 32 × 12 | shrouded plunger | UL, cUL, CSA, ENEC | 73 |
### Auto Power-Off

#### Type 3600

**Characteristics**
- Single pole on/off power switch
- Auto power-off function embedded
- 4 variants:
  - Timer
  - IF with interface
  - iPlus with interface
  - iPlus with interface & microcontroller
- Ideal for small appliances & coffee machines

**Rating**
- 250 VAC, 12 (4) A or 125 VAC, 15 A

**Dimensions (mm)**
- 37,2 x 17 x ~38

**Actuator**
- Standard rocker 25,4 x 10,7 mm
- Customized actuators

**Approvals**
- ENEC, cULus

#### Type 3620

**Characteristics**
- Single or double pole on/off power switch
- Auto power-off function embedded
- 3 variants:
  - Timer, single disconnect
  - IF with interface, single disconnect
  - iFD with interface, double disconnect
- Programmable control option
- Ideal for appliances, coffee machines & white goods

**Rating**
- 250 VAC, 12 (4) A or 125 VAC, 15 A

**Dimensions (mm)**
- Tippmatic IF 25 x 40 x 13, Tippmatic iFD 44 x 32 x 12

**Actuator**
- Plunger
- Customized actuators

**Approvals**
- ENEC, cULus

---

Type | Characteristics | Rating | Dimensions (mm) | Actuator | Approvals |
--- | --- | --- | --- | --- | ---
3600 | Single pole on/off power switch, auto power-off function embedded, 4 variants: Timer, IF with interface, iPlus with interface, iPlus with interface & microcontroller, ideal for small appliances & coffee machines | 250 VAC, 12 (4) A or 125 VAC, 15 A | 37,2 x 17 x ~38 | Standard rocker 25.4 x 10.7 mm, Customized actuators | ENEC, cULus |
3620 | Single or double pole on/off power switch, auto power-off function embedded, 3 variants: Timer, single disconnect, IF with interface, single disconnect, iFD with interface, double disconnect, programmable control option, ideal for appliances, coffee machines & white goods | 250 VAC, 12 (4) A or 125 VAC, 15 A | Tippmatic IF 25 x 40 x 13, Tippmatic iFD 44 x 32 x 12 | Plunger, Customized actuators | ENEC, cULus |
Coil spring mechanism
Microswitch

Dimensions

Circuit diagram
**F1**

**Characteristics**
- small size
- high current
- long mechanical and electrical life
- PCB mounting

**Rating**
250 VAC, 5 A

**Dimensions (mm)**
16 × 6 × 6.5

**Actuator**
- plunger
- plain lever
- simulated roller lever/cam follower

**Approvals**
UL, CSA

---

**Preferred Range**

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos, (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1T8GPUL</td>
<td>1,4</td>
<td>IP40</td>
<td>6,35</td>
<td>PCB</td>
<td>CO</td>
<td>Plunger</td>
<td>Gold plate</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F1T8Y1GPUL</td>
<td>0,5</td>
<td>IP40</td>
<td>8,5</td>
<td>PCB</td>
<td>CO</td>
<td>Lever</td>
<td>Gold plate</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
</tbody>
</table>

---

**Specifications**

- **Housing**: Glass fibre reinforced flame retardant nylon
- **Plunger**: Nylon
- **Mechanism**: Snap-action, coil spring mechanism with stainless steel spring
- **Functions**: Single pole change-over
- **Contacts**: Gold plate on silver
- **Terminals**: PCB - copper, gold-flashed
- **Temperature range °C**: -40°C to +85°C
- **Mechanical life**: 10^6 cycles minimum (impact-free actuation)
- **Protection**: IP40 (enclosure)
- **Mounting**: Side mount PCB with locating pin on housing
- **Actuators**: Plain plunger, stainless steel

---

**Circuit diagram**
Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Resistive load (A)</th>
<th>Inductive load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>5</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>5</td>
<td></td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>3</td>
<td></td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>

Operating Characteristics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight lever</td>
<td>F1T8Y1GPUL</td>
<td>0.5</td>
<td>1,8</td>
<td>0.06</td>
<td>0.022</td>
<td>11,0</td>
<td>0.43</td>
<td>8.5 ± 1.5</td>
<td>0.33 ± 0.06</td>
<td>0.5</td>
<td>0.02</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Plunger</td>
<td>F1T8GPUL</td>
<td>1,4</td>
<td>5.00</td>
<td>0.28</td>
<td>1.00</td>
<td>7.1</td>
<td>0.28</td>
<td>6.35 ± 0.38</td>
<td>0.25 ± 0.015</td>
<td>0.1</td>
<td>0.004</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Width of lever 4.05 mm/0.16 in

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.
### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>F1</th>
<th>Example: F1</th>
<th>T8</th>
<th>Y1</th>
<th>GP</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals</td>
<td>T8</td>
<td>PCB</td>
<td>1.25 x 0.5 x 2.9 long</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuators</td>
<td>No symbol, without lever</td>
<td>Y1</td>
<td>Plain lever 21.0 mm</td>
<td>YR1</td>
<td>Roller lever 16.0 mm</td>
<td></td>
</tr>
<tr>
<td>Contacts Material</td>
<td>No symbol, Ag</td>
<td>GP</td>
<td>Gold plate on Ag (GP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>UL</td>
<td>UL and CSA approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Features</td>
<td>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**F4**

**Ultraminiature**

**Characteristics**
- Small size
- Long mechanical and electrical life
- Solder terminals

**Rating**
250 VAC, 5 A

**Dimensions (mm)**
12.8 x 10 x 5

**Actuator**
- Plunger
- Plain lever
- Simulated roller lever/cam follower

**Approvals**
UL, CSA

---

**Preferred Range**

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force</th>
<th>Sealing</th>
<th>Operating pos.</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>F4T7UL</td>
<td>1.4</td>
<td>5.00</td>
<td>IP40</td>
<td>8.1</td>
<td>0.32</td>
<td>Solder</td>
<td>CO</td>
<td>Plunger Ag</td>
</tr>
<tr>
<td>F4T7GPUL</td>
<td>1.4</td>
<td>5.00</td>
<td>IP40</td>
<td>8.1</td>
<td>0.32</td>
<td>Solder</td>
<td>CO</td>
<td>Plunger Gold plate</td>
</tr>
<tr>
<td>F4T7Y1UL</td>
<td>0.6</td>
<td>2.20</td>
<td>IP40</td>
<td>8.2</td>
<td>0.32</td>
<td>Solder</td>
<td>CO</td>
<td>Plain lever Ag</td>
</tr>
<tr>
<td>F4T7YG1PUL</td>
<td>0.6</td>
<td>2.20</td>
<td>IP40</td>
<td>8.2</td>
<td>0.32</td>
<td>Solder</td>
<td>CO</td>
<td>Plain lever Gold plate</td>
</tr>
<tr>
<td>F4T7YC1UL</td>
<td>0.7</td>
<td>2.50</td>
<td>IP40</td>
<td>10.3</td>
<td>0.41</td>
<td>Solder</td>
<td>CO</td>
<td>Simulated roller Ag</td>
</tr>
<tr>
<td>F4T7YCGPUL</td>
<td>0.7</td>
<td>2.50</td>
<td>IP40</td>
<td>10.3</td>
<td>0.41</td>
<td>Solder</td>
<td>CO</td>
<td>Simulated roller Gold plate</td>
</tr>
</tbody>
</table>
Specifications

Housing: Glass fibre reinforced flame retardent nylon
Plunger: Nylon
Mechanism: Snap-action, single pole
Functions: Change-over, Normally open, Normally closed
Contacts: Fixed, Moving – Ag or Gold plate on Ag
Terminals: 2.0 mm (0.08 in) faston and solder - brass, gold flashed
Temperature range °C: -40°C to +85°C
Mechanical life: 10^7 cycles minimum (impact free actuation)
Protection: IP 40 (enclosure)
Mounting: Side mounting
Actuators: Plain lever, simulated roller lever/cam follower, stainless steel
Accessories: Lug mounting frame, insulating sheet, spring-leaf actuator

Dimensions

Circuit diagram

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>5</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>3</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>
### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Minimum (N)</th>
<th>Release Force Minimum (ozf)</th>
<th>Free Position Maximum (mm)</th>
<th>Operating Position (mm)</th>
<th>Maximum Movement Differential Over travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>F4T7</td>
<td>1.4</td>
<td>5.00</td>
<td>0.25</td>
<td>0.90</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.1</td>
<td>3.5</td>
<td>0.35</td>
<td>0.50</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.32</td>
<td>0.01</td>
<td>0.08</td>
<td>0.01</td>
<td>0.005</td>
</tr>
</tbody>
</table>

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

---

### Width of lever 3.0 mm/0.12 in

### Operating characteristics are specified from the mounting holes.

---

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>F4</th>
<th>Example: F4 T7</th>
<th>Y1 GP UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals</td>
<td>T7</td>
<td>Solder 3.50 × 0.5 × 3.6 long</td>
<td></td>
</tr>
<tr>
<td>Circuit</td>
<td>No symbol, change-over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuators</td>
<td>Y1 Plain lever 21.0 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>YC Cam follower lever 16.9 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contacts Material</td>
<td>No symbol, Ag</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GP Gold plate on Ag (GP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>No symbol, without approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL UL and CSA approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Features</td>
<td>Burgess specialise in customer specific solutions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.
F5

Characteristics
- small size
- long mechanical and electrical life
- PCB mounting

Rating
250 VAC, 5 A

Dimensions (mm)
12.8 x 7 x 5

Actuator
- plunger
- plain lever
- simulated roller lever/cam follower

Approvals
UL, CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing (IP)</th>
<th>Operating pos. (mm)</th>
<th>Terminal (PCB)</th>
<th>Circuit (CO)</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>F5T8UL</td>
<td>1.4</td>
<td>5.00</td>
<td>8.75</td>
<td>0.34</td>
<td>PCB</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F5T8GPUL</td>
<td>1.4</td>
<td>5.00</td>
<td>8.75</td>
<td>0.34</td>
<td>PCB</td>
<td>Plunger</td>
<td>Gold plate</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F5T8Y1UL</td>
<td>0.6</td>
<td>2.20</td>
<td>8.80</td>
<td>0.35</td>
<td>PCB</td>
<td>Plain lever</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F5T8Y1GPUL</td>
<td>0.6</td>
<td>2.20</td>
<td>8.80</td>
<td>0.35</td>
<td>PCB</td>
<td>Plain lever</td>
<td>Gold plate</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F5T8YCU</td>
<td>0.7</td>
<td>2.50</td>
<td>10.90</td>
<td>0.43</td>
<td>PCB</td>
<td>Simulated roller</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>F5T8YCGPUL</td>
<td>0.7</td>
<td>2.50</td>
<td>10.90</td>
<td>0.43</td>
<td>PCB</td>
<td>Simulated roller</td>
<td>Gold plate</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
</tbody>
</table>
Specifications

- **Housing**: Glass fibre reinforced flame retardent nylon
- **Plunger**: Nylon
- **Mechanism**: Snap-action, single pole
- **Functions**: Change-over, Normally open, Normally closed
- **Contacts**: Fixed, Moving - Silver or Gold plate on silver
- **Terminals**: PCB - Brass, gold flashed
- **Temperature range**: -40°C to +85°C
- **Mechanical life**: 10⁷ cycles minimum (impact free actuation)
- **Protection**: IP 40 (enclosure)
- **Mounting**: PCB
- **Actuators**: Plain lever, simulated roller lever/cam follower, stainless steel

---

**Circuit diagram**

---

**Dimensions**

---

**Recommended maximum electrical ratings**

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>5</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>1</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>
### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Maximum (N)</th>
<th>Release Force Minimum (ozf)</th>
<th>Free Position Maximum (mm)</th>
<th>Operating Position (mm)</th>
<th>Movement Differential Maximum (mm)</th>
<th>Over travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>F5T8</td>
<td>1.4</td>
<td>5.00</td>
<td>0.25</td>
<td>0.90</td>
<td>9.5</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.75 ± 0.3</td>
</tr>
</tbody>
</table>

Width of lever 3.0 mm/0.12 in

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>F5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals</td>
<td>T8</td>
</tr>
<tr>
<td>Circuit</td>
<td>No symbol, change-over</td>
</tr>
<tr>
<td>Actuators</td>
<td>Y1 Plain lever 21.0 mm</td>
</tr>
<tr>
<td></td>
<td>YC Cam follower lever 16.9 mm</td>
</tr>
<tr>
<td>Contact Material</td>
<td>No symbol, Ag</td>
</tr>
<tr>
<td>GP Gold plate on Ag (GP)</td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>No symbol, without approval</td>
</tr>
<tr>
<td>UL UL and CSA approval</td>
<td></td>
</tr>
</tbody>
</table>

Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.
**F1NS**

**Characteristics**
- small size
- low current
- long mechanical life
- PCB mounting
- sealed IP54 (option)

**Rating**
Up to 250 VAC, 1 A

**Dimensions (mm)**
14.6 × 6.5 × 6

**Actuator**
- plunger
- plain lever
- simulated roller lever/cam follower

**Preferred Range**

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1NST8</td>
<td>2.0</td>
<td>IP5K4</td>
<td>5.9</td>
<td>PCB</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>250 VAC, 1 A</td>
</tr>
<tr>
<td>F1NST8A1</td>
<td>0.6</td>
<td>IP5K4</td>
<td>7.6</td>
<td>PCB</td>
<td>CO</td>
<td>Plain lever</td>
<td>Ag</td>
<td>250 VAC, 1 A</td>
</tr>
<tr>
<td>F1NST8AC</td>
<td>0.6</td>
<td>IP5K4</td>
<td>10.1</td>
<td>PCB</td>
<td>CO</td>
<td>Cam follower</td>
<td>Ag</td>
<td>250 VAC, 1 A</td>
</tr>
</tbody>
</table>
Specifications

Housing
Base: PA 6.6; Cowl: Silicon; Lid: PA 6.6

Plunger
POM

Mechanism
Snap-action, coil spring mechanism with stainless steel spring. Single-pole change-over contact

Contacts
Fine silver, Gold plate on silver

Terminals
PCB - Phosphor Bronze silver plated

Temperature range °C
-40°C bis +85°C

Mechanical life
10⁷ cycles minimum (impact-free actuation)

Protection
Enclosure IP40 (F1N), IP54 (F1NS)

Mounting
PCB. Locating pins on housing

Circuit diagram

Dimensions

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (VAC)</th>
<th>Resistive load (A)</th>
<th>Inductive load (A)</th>
<th>Voltage (VDC)</th>
<th>Resistive load (A)</th>
<th>Inductive load (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>1</td>
<td>1</td>
<td>up to 30</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>250</td>
<td>1</td>
<td>1</td>
<td>50</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>125</td>
<td>0.2</td>
<td>0.03</td>
</tr>
</tbody>
</table>
### Operating Characteristics

| Actuator | Reference | Actuating Force Maximum (N) | Release Force Minimum (Oz| | Free Position (mm) | Operating Position Maximum (mm) | Movement Differential Maximum (mm) | Total travelled position Maximum (mm) |
|----------|-----------|-----------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|
| Plunger  | F1NST8    | 2                           | 7.20                      | 0.2                      | 0.72                          | 6.5                                | 0.26                                | 5.9 ± 0.2                           | 0.23 ± 0.008                        | 0.2 | 0.008* |
| A1-Lever  | F1NST8A1  | 0.6                         | 2.20                      | 0.09                     | 0.32                          | 10.5                              | 0.41                                | 7.6 ± 1.2                           | 0.3 ± 0.05                         | 0.7 | 0.03  |
| AC-Lever  | F1NST8AC  | 0.6                         | 2.20                      | 0.09                     | 0.32                          | 13.3                              | 0.52                                | 10.1 ± 1.2                          | 0.4 ± 0.05                         | 0.7 | 0.03  |

Width of lever 3 mm/0.12 in

Datum for Free Position and Operating Position: base of switch opposite plunger.

* Flush with case. The case should not be used as an end stop.

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>F1N</th>
<th>Example: F1N S T8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of sealing</td>
<td>No symbol, unsealed</td>
<td>Sealed IP5K4</td>
</tr>
<tr>
<td>Terminals</td>
<td>T8 PCB 0.8 × 0.5 × 3.45 long</td>
<td></td>
</tr>
<tr>
<td>Circuit</td>
<td>No symbol, change-over</td>
<td></td>
</tr>
<tr>
<td>Actuators</td>
<td>No symbol, without lever</td>
<td>Special lever A type (see specification)</td>
</tr>
<tr>
<td>A</td>
<td>Plain lever 18.0 mm</td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>Cam follower lever 18.5 mm</td>
<td></td>
</tr>
<tr>
<td>Contact Material</td>
<td>No symbol, Ag</td>
<td>Gold on nickel</td>
</tr>
<tr>
<td>GP</td>
<td>Gold plate on Ag (GP)</td>
<td></td>
</tr>
</tbody>
</table>

Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.
L16

Characteristics
- small size
- sealed (IP6K7)
- PCB mounting

Rating
12–30 VDC, 1–300 mA

Dimensions (mm)
14.7 × 9 × 5.4

Actuator
- plunger
- plain lever
- cam follow lever

Approvals
Automotive standard

---

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating Pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>L16T8</td>
<td>1.6</td>
<td>IP6K7</td>
<td>10.9</td>
<td>PCB</td>
<td>CO</td>
<td>Plunger</td>
<td>Gold plated</td>
<td>30 VDC, 300 mA</td>
</tr>
</tbody>
</table>
Specifications

Base: PBT
Lid: PP6 with glass fibre
Plunger: POM
Mechanism: Snap-action, single pole
Contacts: Gold plated
Terminals: CuZn
Temperature range °C: -40°C up to +85°C
Mechanical life: $1 \times 10^6$
Protection: IP67
Actuators: Plain plunger, lever, cam follower stainless steel
Cowl: Thermoplastic elastomer

Circuit diagram

Dimensions L16T85

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (VDC)</th>
<th>Resistive load (A)</th>
<th>Cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>L16 12 to 30</td>
<td>0.001 – 0.3</td>
<td>200,000</td>
</tr>
</tbody>
</table>
### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Maximum (N)</th>
<th>Release Force Minimum (N)</th>
<th>Free Position Maximum (mm)</th>
<th>Operating Position (mm)</th>
<th>Movement Differential Maximum (mm)</th>
<th>Total travelled positions Minimum (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>L16</td>
<td>1.6</td>
<td>0.3</td>
<td>11.35</td>
<td>10.8 ± 2</td>
<td>0.3</td>
<td>9.5</td>
</tr>
<tr>
<td>H-Lever</td>
<td>L16-H</td>
<td>2.5</td>
<td>0.5</td>
<td>12.9</td>
<td>11.3 ± 0.55</td>
<td>0.45</td>
<td>10</td>
</tr>
</tbody>
</table>

Width of lever 3.0 mm/0.12 in

Datum for free position and operating position is button edge of base (stand-off’s).

The case should not be used as an end stop.

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>Example: F6 T8 H</th>
</tr>
</thead>
<tbody>
<tr>
<td>T8</td>
<td>PCB</td>
</tr>
<tr>
<td>T81</td>
<td>Formed PCB</td>
</tr>
<tr>
<td>T82</td>
<td>Formed PCB</td>
</tr>
<tr>
<td>T84</td>
<td>Short PCB</td>
</tr>
<tr>
<td>T85</td>
<td>Long PCB</td>
</tr>
</tbody>
</table>

Terminals

- T8: PCB 0.6 × 0.5 × 4.0 long
- T81: Formed PCB 0.6 × 0.5 × 2.35 long (Side mount L.H. plunger end)
- T82: Formed PCB 0.6 × 0.5 × 2.85 long (Side mount R.H. plunger end)
- T84: Short PCB 0.6 × 0.5 × 2.0 long
- T85: Long PCB 0.6 × 0.5 × 6.85 long

Circuit

Actuators

- H: Formed lever 0.3 mm thickness
- Y1: Plain lever 21 mm
- YC: Cam follower lever 16.9 mm
- H: Cam follower

Contact Material

- No symbol, gold plated

Special Features

- Burgess specialise in customer specific solutions.
- Additional product variants are available or can be provided.
- If your requirements cannot be satisfied from the options listed, please contact us.
FK4

Characteristics
- double break switching
- long mechanical and electrical life
- solder

Rating
250 VAC, 5 A

Dimensions (mm)
18 × 8 × 5

Actuator
- plunger
- plain lever
- simulated roller lever/cam follower

Approvals
UL and CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>FK4T7UL</td>
<td>1,8</td>
<td>IP40</td>
<td>8,25</td>
<td>Solder</td>
<td>SPDT</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>FK4T7Y1UL</td>
<td>0,8</td>
<td>IP40</td>
<td>8,25</td>
<td>Solder</td>
<td>SPDT</td>
<td>Plain lever</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>FK4T7YCUL</td>
<td>1,0</td>
<td>IP40</td>
<td>10,40</td>
<td>Solder</td>
<td>SPDT</td>
<td>Simulated roller</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
</tbody>
</table>
Specifications

- **Housing**: Glass fibre reinforced flame retardent nylon
- **Plunger**: Nylon
- **Mechanism**: Double pole, single throw snap-action coil spring mechanism with stainless steel springs
- **Functions**: Change-over, NO, NC
- **Contacts**: Silver
- **Terminals**: Solder, PCB - brass, gold flashed
- **Temperature range °C**: -40°C to +85°C
- **Mechanical life**: 10° cycles minimum (impact free actuation)
- **Protection**: IP40 (enclosure)
- **Mounting**: Side mounting or PCB mounting (T8 only)
- **Actuators**: Plain lever, simulated roller lever/cam follower, stainless steel

Circuit diagram

Dimensions

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>5</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>3</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>

Values shown are recommended maximum ratings for single circuit switching.
### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force</th>
<th>Release Force</th>
<th>Free Position</th>
<th>Operating Differential</th>
<th>Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Maximum (N)</td>
<td>Minimum (ozf)</td>
<td>Position (mm)</td>
<td>Maximum (in)</td>
<td>(in)</td>
</tr>
<tr>
<td>Plunger</td>
<td>FK4T7*</td>
<td>1,8</td>
<td>0,25</td>
<td>9,4</td>
<td>8,25 ± 0,25</td>
<td>0,50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6,50</td>
<td>0,9</td>
<td>37</td>
<td>0,32 ± 0,01</td>
<td>0,02</td>
</tr>
</tbody>
</table>

Plunger

Y1 Lever

|          | FK4T7Y1   | 0,8             | 0,09         | 0,3           | 12,1                  | 0,32 ± 0,04 |
| Width of lever 3.0 mm/0.12 in |

YC Lever

|          | FK4T7YC   | 1,0             | 0,1          | 0,4           | 13,5                  | 0,41 ± 0,02 |
| Width of lever 3.0 mm/0.12 in |

Overtravel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Datum for free position and operating position

* FK4T7 – Center of fixing hole

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>FK4</th>
<th>Example: FK4 ; T7 ; Y1 ; UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals</td>
<td>T7 Solder 0,5 × 3,5 × 3,6 long</td>
<td></td>
</tr>
<tr>
<td>Actuators</td>
<td>No symbol, plunger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y1 Plain lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YC Simulated roller lever/cam follower</td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>UL UL and CSA</td>
<td></td>
</tr>
</tbody>
</table>

---

Ultraniniature

Burgess switches www.burgess-switch.com

burgess-switch@johnsonelectric.om

www.burgess-switch.com
Long overtravel Microswitches

Circuit diagram

Dimensions

COMMON (black)
NORMALLY CLOSED (SPSC)
NORMALLY OPEN (NO)
### V4L

**Characteristics**
- long overtravel of 2.2 mm minimum
- sealed to (IP6K7) option
- pre-wired option
- solder terminals
- compliant to glow wire test IEC 60335-1, 4. ed. as optional item

**Rating**
- 250 VAC, 5 A

**Dimensions (mm)**
- 20 × 11 × 6.4

**Actuator**
- plunger
- plain lever
- ice break lever

**Approvals**
- ENEC, UL, CSA

---

### Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>V4LS</td>
<td>2,5</td>
<td>IP6K7</td>
<td>11,7 ± 0,4</td>
<td>Cable 500 mm</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>250 VAC, 5 A</td>
</tr>
<tr>
<td>V4LSA2</td>
<td>2,0</td>
<td>IP6K7</td>
<td>16,5 ± 1,0</td>
<td>Cable 500 mm</td>
<td>CO</td>
<td>Plain lever</td>
<td>Ag</td>
<td>250 VAC, 5 A</td>
</tr>
<tr>
<td>V4LST7</td>
<td>2,5</td>
<td>IP6K7</td>
<td>11,7 ± 0,4</td>
<td>Solder</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>250 VAC, 5 A</td>
</tr>
<tr>
<td>V4LST7A2</td>
<td>2,0</td>
<td>IP6K7</td>
<td>14,6 ± 1,0</td>
<td>Solder</td>
<td>CO</td>
<td>Plain lever</td>
<td>Ag</td>
<td>250 VAC, 5 A</td>
</tr>
</tbody>
</table>
Specifications

**Housing**
Glass fibre reinforced polyamide (PA 6.6)

**Plunger**
Polyacetal (POM)

**Mechanism**
Snap-action coil spring mechanism with stainless steel spring. Change-over, normally closed or normally open.

**Contact carrier**
Brass. Moving contact beryllium-copper

**Contacts**
Fine silver or gold crosspoint

**Terminals**
V4L – solder tags V4LS – PVC covered leads 0.5 m long

**Temperature range °C**
–40°C to +85°C

**Mechanical life**
V4L 2 T 10⁶ cycles/min., V4LS 2 T 10⁵ cycles/min. (impact free actuation)

**Protection**
V4L series IP40, V4LS series IP6K7, with encapsulated terminals

**Mounting**
Side mounting to a flat surface

**Actuators**
Plain lever, ice break lever, stainless steel

**Cowl**
Silicon elastomer

Circuit diagram

Dimensions

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Resistive load (A)</th>
<th>Motor load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>V4LS T7</td>
<td>250 VAC 5 (0,75 pf)</td>
<td>2</td>
<td>UL 1054/CSA 22.2 No. 55–6,000 operations – 65°C EN61058-1, T55, 50,000 operations</td>
</tr>
<tr>
<td></td>
<td>250 VAC 5</td>
<td>2</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
<tr>
<td></td>
<td>0–15 VDC 5</td>
<td>3</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
<tr>
<td></td>
<td>15–30 VAC 5</td>
<td>3</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
<tr>
<td>V4LS</td>
<td>250 VAC 5 (0,75 pf)</td>
<td>2</td>
<td>UL 1054/CSA 22.2 No. 55–6,000 operations – 65°C EN61058-1, T55, 50,000 operations</td>
</tr>
<tr>
<td></td>
<td>250 VAC 5</td>
<td>2</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
<tr>
<td></td>
<td>0–15 VDC 5</td>
<td>3</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
<tr>
<td></td>
<td>15–30 VAC 5</td>
<td>3</td>
<td>General rating – 50,000 operations (85°C)</td>
</tr>
</tbody>
</table>
V4L

**Ordering Reference**

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force</th>
<th>Release Position</th>
<th>Free Position</th>
<th>Operating</th>
<th>Movement Differential</th>
<th>Total overtravel</th>
<th>Overtravel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(N) (ozf)</td>
<td>(N) (ozf)</td>
<td>(mm) (in)</td>
<td>(mm) (in)</td>
<td>(mm) (in)</td>
<td>(mm) (in)</td>
<td></td>
</tr>
<tr>
<td>Plunger</td>
<td>V4LT7</td>
<td>2.4 8.60 0.4</td>
<td>12.9 0.507 0.44</td>
<td>0.46 0.012 0.9</td>
<td>0.023 9.2 0.36</td>
<td>2.2 0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V4LST7</td>
<td>2.5 9.00 0.5</td>
<td>12.9 0.507 0.44</td>
<td>0.46 0.012 0.9</td>
<td>0.023 9.2 0.36</td>
<td>2.2 0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1 Lever</td>
<td>V4L…</td>
<td>2.4 8.60 0.4</td>
<td>14.5 0.57 1.6</td>
<td>0.59 0.03 1.0</td>
<td>0.04 9.6 0.38</td>
<td>2.2 0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V4LS…</td>
<td>2.5 9.00 0.5</td>
<td>14.5 0.57 1.6</td>
<td>0.59 0.03 1.0</td>
<td>0.04 9.6 0.38</td>
<td>2.2 0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0 mm/0.16 in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2 Lever</td>
<td>V4L…</td>
<td>1.5 5.70 0.3</td>
<td>16.5 0.65 1.3</td>
<td>0.53 0.04 1.3</td>
<td>0.05 9.6 0.38</td>
<td>2.9 1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V4LS…</td>
<td>2    7.20 0.3</td>
<td>16.5 0.65 1.3</td>
<td>0.53 0.04 1.3</td>
<td>0.05 9.6 0.38</td>
<td>2.9 1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0 mm/0.16 in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Lever</td>
<td>V4L…</td>
<td>For positions and forces of this actuator please contact Burgess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V4LS…</td>
<td>Width of lever 4.0 mm/0.16 in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Ordering Reference

<table>
<thead>
<tr>
<th>Feature</th>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic type</strong></td>
<td>V4L</td>
<td>Example: V4L S T7 A1 X UL</td>
</tr>
<tr>
<td><strong>Type of sealing</strong></td>
<td></td>
<td>No symbol, unsealed</td>
</tr>
<tr>
<td><strong>Terminals</strong></td>
<td></td>
<td>No symbol, pre-wired 500 mm with cable FLRY 0.5 mm² and cable box (V4LS only)</td>
</tr>
<tr>
<td><strong>Circuit</strong></td>
<td></td>
<td>No symbol, change over</td>
</tr>
<tr>
<td><strong>Actuators</strong></td>
<td></td>
<td>No symbol, without lever</td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td>Plain lever 20.0 mm, fitted at the end opposite to plunger</td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td>Plain lever 30.0 mm, fitted at the end opposite to plunger</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>Special lever F type 20.0 mm, fitted at the end opposite to plunger</td>
</tr>
<tr>
<td><strong>Contact Material</strong></td>
<td></td>
<td>No symbol, Ag</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>Gold alloy on silver palladium crosspoint (AUX)</td>
</tr>
<tr>
<td><strong>Approvals</strong></td>
<td></td>
<td>No symbol, without approval</td>
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<tr>
<td>UL</td>
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<td>UL and CSA approval</td>
</tr>
<tr>
<td>EN</td>
<td></td>
<td>ENEC approval only</td>
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<tr>
<td>UN</td>
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<td>UL, CSA and ENEC approval</td>
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<td><strong>Special Features</strong></td>
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<td>Burgess specialise in customer specific solutions.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>please contact us.</td>
</tr>
</tbody>
</table>
Sealed Microswitch

Circuit diagram

- COMMON (black)
- NORMALLY CLOSED (grey)
- NORMALLY OPEN (blue)

Dimensions

- Operating Position
- Free Position
- 10.4 MAX
- 13.1 MA X

- Dimensions (mm):
  - 10.29 ± 0.1
  - 13.02
  - 5.66
  - 3.10
  - 2.80
  - 3.50
  - 22.22 ± 0.1
  - 13.1 MA X

- Operating Position
- Free Position

- Dimensions (mm):
  - 10.4 MAX
  - 13.1 MA X
V3NS

Characteristics
- sealed (IP67)
- pre-wired option
- faston terminals
- robust construction
- compliant to glow wire requirements IEC 60335

Rating
250 VAC, 6 A

Dimensions (mm)
33 x 15.9 x 10.4

Actuator
- plunger
- plain levers
- roller levers
- cam follower lever

Approvals
UL, CSA, ENEC

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force max. (N) (ozf)</th>
<th>Sealing (mm) (in)</th>
<th>Operating position (mm) (in)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3NSUL</td>
<td>2.2 8.0</td>
<td>IP67</td>
<td>14.7 ± 0.4 0.58 ± 0.016</td>
<td>Pre-wired CO Plunger</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3NSY1UL</td>
<td>1.3 4.7</td>
<td>IP67</td>
<td>16.3 ± 0.85 0.64 ± 0.034</td>
<td>Pre-wired CO Plain lever</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3NSYRUL</td>
<td>2.6 8.0</td>
<td>IP67</td>
<td>21.0 ± 0.45 0.83 ± 0.018</td>
<td>Pre-wired CO Roller lever - short</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3NSYR1UL</td>
<td>1.6 4.7</td>
<td>IP67</td>
<td>21.7 ± 0.8 0.85 ± 0.032</td>
<td>Pre-wired CO Roller lever - long</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
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<tr>
<td>V3NSYCLUL</td>
<td>1.6 4.7</td>
<td>IP67</td>
<td>19.45 ± 0.8 0.77 ± 0.032</td>
<td>Pre-wired CO Cam follower lever</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3NST1UL</td>
<td>2.2 8.0</td>
<td>IP67</td>
<td>14.7 ± 0.4 0.58 ± 0.016</td>
<td>Faston CO Plunger</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3NST1Y1UL</td>
<td>1.3 4.7</td>
<td>IP67</td>
<td>16.3 ± 0.85 0.64 ± 0.034</td>
<td>Faston CO Plain lever</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
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<tr>
<td>V3NST1YRUL</td>
<td>2.6 8.0</td>
<td>IP67</td>
<td>21.0 ± 0.45 0.83 ± 0.018</td>
<td>Faston CO Roller lever - short</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
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<tr>
<td>V3NST1YR1UL</td>
<td>1.6 4.7</td>
<td>IP67</td>
<td>21.7 ± 0.8 0.85 ± 0.032</td>
<td>Faston CO Roller lever - long</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
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<tr>
<td>V3NST1YCLUL</td>
<td>1.6 4.7</td>
<td>IP67</td>
<td>19.45 ± 0.8 0.77 ± 0.032</td>
<td>Faston CO Cam follower lever</td>
<td>Ag</td>
<td>Up to 250VAC, 6A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Specifications

Housing: Glass fibre reinforced flame retardant nylon
Plunger: Polyphenylene Sulphide
Mechanism: Snap-action, single pole
Functions: Change-over
Cowl: Silicone Rubber
Contacts: Silver
Terminals: Pre-wired, Faston
Temperature Range: -40°C to +85°C
Mechanical Life: 1 million cycles minimum (impact free operation)
Protection: IP67 (enclosure)
Mounting: Side mounting
Actuators: Plain lever, cam follower lever - stainless steel, roller levers - stainless steel, acetal roller

Dimensions

Circuit diagram

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 VAC</td>
<td>6 (0.75pf)</td>
<td>UL 1054/CSA 22.2 No.55 - 6000 operations (85°C)</td>
</tr>
<tr>
<td>250 VAC</td>
<td>6 (0.75pf)</td>
<td>UL 1054/CSA 22.2 No.55 - 6000 operations (85°C)</td>
</tr>
<tr>
<td>250 VAC</td>
<td>6 (2)</td>
<td>EN61058-1, T85 50,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>4</td>
<td>General inductive rating - 200,000 operations minimum</td>
</tr>
<tr>
<td>250 VAC</td>
<td>5</td>
<td>General resistive rating - 200,000 operations minimum</td>
</tr>
<tr>
<td>30 vdc</td>
<td>5</td>
<td>General resistive rating - 200,000 operations minimum</td>
</tr>
<tr>
<td>5 vdc</td>
<td>0.001</td>
<td>General resistive rating - 1 million operations minimum</td>
</tr>
</tbody>
</table>
V3NS

Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Maximum (N)</th>
<th>Release Force Minimum (ozf)</th>
<th>Free Position Maximum (mm) (in)</th>
<th>Operating Position Maximum (mm) (in)</th>
<th>Movement Differential Maximum (mm) (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>V3NSUL</td>
<td>2.2</td>
<td>8.0</td>
<td>0.4</td>
<td>1.4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>V3NST1UL</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>V3NST3UL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V3NST1Y1UL</td>
<td>1.3</td>
<td>4.7</td>
<td>0.2</td>
<td>0.7</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>V3NST3Y1UL</td>
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</tr>
<tr>
<td>Y1 lever</td>
<td>V3NSYRUL</td>
<td>2.6</td>
<td>8.0</td>
<td>0.4</td>
<td>1.4</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td>V3NST1YRUL</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>V3NST3YRUL</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>YR lever</td>
<td>V3NSYR1UL</td>
<td>1.6</td>
<td>4.7</td>
<td>0.2</td>
<td>0.7</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td>V3NST1YR1UL</td>
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<tr>
<td></td>
<td>V3NST3YR1UL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YR1 lever</td>
<td>V3NSYCUL</td>
<td>1.6</td>
<td>4.7</td>
<td>0.2</td>
<td>0.7</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>V3NST1YCUL</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Operating characteristics are specified from the lower mounting hole
Overtravel: Plunger can be depressed flush with housing. The housing should not be used as an end stop

Ordering Reference

Basic type: V3NS

Example: V3NS T3 C2 Y1 UL

Terminals: No symbol, pre-wired with standard 300mm cables
T1 6.4 x 0.8 Faston
T3 4.8 x 0.5 Faston

Circuit: No symbol, change-over
C2 Normally closed
C4 Normally open

Actuators: No symbol, without lever or actuator
Y1 Plain lever 35mm
YR Roller lever 20mm
YR1 Roller lever 32mm
YC Cam follower lever 32mm

Contact Material: No symbol, Ag

Approvals: No symbol, without approval
UL CSA, ENEC Approval

Special Features: Burgess specialise in customer specific solutions
Additional product variants are available or can be provided
If your requirements cannot be satisfied from the options listed, please contact us.
## V3S

### Characteristics
- **sealed (IP67)**
- pre-wired
- robust construction

### Rating
250 VAC, 5 A

### Dimensions (mm)
32 × 24 × 10

### Actuator
- plunger
- plain levers
- roller levers

### Approvals
UL, CSA, ENEC

### Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3SUL</td>
<td>3,9</td>
<td>IP67</td>
<td>14,5</td>
<td>Pre-wired</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>V3SYRUL</td>
<td>3,9</td>
<td>IP67</td>
<td>20,4</td>
<td>Pre-wired</td>
<td>CO</td>
<td>Roller lever - short</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>V3SYR1UL</td>
<td>2,3</td>
<td>IP67</td>
<td>22,0</td>
<td>Pre-wired</td>
<td>CO</td>
<td>Roller lever - long</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
<tr>
<td>V3SY1UL</td>
<td>1,7</td>
<td>IP67</td>
<td>14,9</td>
<td>Pre-wired</td>
<td>CO</td>
<td>Plain lever</td>
<td>Ag</td>
<td>Up to 250 VAC, 5 A</td>
</tr>
</tbody>
</table>
**Specifications**

- **Housing**: Glass fibre reinforced flame retardant nylon
- **Plunger**: Acetal (lever types), stainless steel (plunger types)
- **Mechanism**: Snap-action, single pole
- **Functions**: Change-over
- **Cowl**: Silicone rubber
- **Contacts**: Silver
- **Terminals °C**: Pre-wired
- **Temperature range**: −40°C to +85°C
- **Mechanical life**: 10⁶ cycles minimum, impact-free actuation
- **Protection**: IP67 (enclosure)
- **Mounting**: Side mounting
- **Actuators**: Plain lever - stainless steel, Roller levers - stainless steel, nylon roller

---

**Circuit diagram**

---

**Dimensions**

---

**Recommended maximum electrical ratings**

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (max)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)</td>
</tr>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)</td>
</tr>
<tr>
<td>250 VAC</td>
<td>5</td>
<td>EN61058-1, T85, 10,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>6</td>
<td>General rating - 50,000 operations (85°C)</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>3</td>
<td>General rating - 50,000 operations (85°C)</td>
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</table>
Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Maximum (N)</th>
<th>Release Force Minimum (ozf)</th>
<th>Free Position Maximum (mm)</th>
<th>Operating Position (mm)</th>
<th>Movement Differential (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>V3SUL</td>
<td>3,90</td>
<td>14,0</td>
<td>1,10</td>
<td>4,00</td>
<td>0,57 ± 0,02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,4</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>0,016</td>
</tr>
<tr>
<td>Plain lever</td>
<td>V3SY1UL</td>
<td>1,65</td>
<td>6,0</td>
<td>0,42</td>
<td>1,50</td>
<td>14,9 ± 1,0</td>
</tr>
<tr>
<td>Roller lever - short</td>
<td>V3SYRUL</td>
<td>3,90</td>
<td>14,0</td>
<td>1,10</td>
<td>4,00</td>
<td>20,45 ± 0,64</td>
</tr>
<tr>
<td>Roller lever - long</td>
<td>V3SYR1UL</td>
<td>1,65</td>
<td>7,5</td>
<td>0,42</td>
<td>1,50</td>
<td>18,1 ± 1,0</td>
</tr>
</tbody>
</table>

Over travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>V3S</th>
<th>Example: V3S Y1 UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit</td>
<td>No symbol, change-over</td>
<td></td>
</tr>
<tr>
<td>Actuators</td>
<td>No symbol, without lever or actuator</td>
<td></td>
</tr>
<tr>
<td>Y1</td>
<td>Plain lever 26.2 mm</td>
<td></td>
</tr>
<tr>
<td>YR</td>
<td>Roller lever 11.7 mm</td>
<td></td>
</tr>
<tr>
<td>YR1</td>
<td>Roller lever 24.2 mm</td>
<td></td>
</tr>
<tr>
<td>Contact Material</td>
<td>No symbol, Ag</td>
<td></td>
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<tr>
<td>Terminals</td>
<td>No symbol, fitted with standard 500 mm cables</td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>No symbol, without approval</td>
<td></td>
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<tr>
<td>UL</td>
<td>UL and CSA approval, ENEC</td>
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</tr>
<tr>
<td>Special Features</td>
<td>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.</td>
<td></td>
</tr>
</tbody>
</table>
Precision Switches

[Image of a precision switch with text: TP2 Modular Push Button Locknut mounting]

[Image of a circuit diagram showing normally closed and normally open positions]

[Image of dimensions for the switch]
3BR

Characteristics
- choice of IP54 or IP67 sealed versions
- precise movements
- screw terminals
- pre-wired option
- long overtravel

Rating
250 VAC, 10 A max.

Dimensions (mm)
53.1 x 20.6 x 30.8

Actuator
- plunger

Approvals
UL, CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>3BR103</td>
<td>7.2</td>
<td>IP54</td>
<td>39.3</td>
<td>Screw</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 125 VAC, 10 A</td>
</tr>
<tr>
<td>3BR510</td>
<td>7.2</td>
<td>IP67</td>
<td>39.3</td>
<td>Screw</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 125 VAC, 10 A</td>
</tr>
</tbody>
</table>

Specifications

Housing Phenolic
Plunger Stainless steel
Cowl Silicone rubber
Mechanism Single pole change-over
Contacts Silver
Terminals Screw terminals with captive washers
Temperature -10°C to +85°C
Mechanical life 10^6 cycles minimum (impact free actuation)
Protection 3BR / 510 IP67 / 3BR103 IP54 (enclosure)
Mounting Side mounting

Circuit diagram

- COMMON
- NORMALLY CLOSED
- NORMALLY OPEN
### Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>10 (0.75 pf)</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>¼ HP (0.45 pf)</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>¼ HP (0.45 pf)</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>10</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>5</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>

### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force</th>
<th>Release Force</th>
<th>Free Position</th>
<th>Operating Position</th>
<th>Movement Differential</th>
<th>Overtravel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>3BR103</td>
<td>7,2</td>
<td>1,7</td>
<td>40,8</td>
<td>1,6</td>
<td>0,08</td>
<td>4,6 0,18</td>
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</tbody>
</table>

### Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>Environmental sealing</th>
<th>Special Features</th>
</tr>
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<tbody>
<tr>
<td>3BR</td>
<td>SH</td>
<td>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact <a href="http://www.saia-burgess.com">www.saia-burgess.com</a> or your local SB outlet.</td>
</tr>
<tr>
<td></td>
<td>103</td>
<td></td>
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<tr>
<td></td>
<td>510</td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td>SH</td>
<td></td>
</tr>
<tr>
<td>3BR</td>
<td>SH</td>
<td></td>
</tr>
</tbody>
</table>
Metal housed Switches

Circuit diagram

Dimensions

Ultraminiature TP9 Short stroke Push Button Locknut mounting

Metal housed Switches

Dimensions

Ultraminiature TP9 Short stroke Push Button Locknut mounting
### V9N

**Characteristics**
- sealed (IP67)
- metal housed
- screw terminals or flying leads
- pre-wired option

**Rating**
250 VAC, 10 A max.

**Dimensions (mm)**
42 x 24.5 x 16

**Actuator**
- plunger
- plain levers
- reverse action lever
- roller lever

**Approvals**
UL and CSA

---

### Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing (mm)</th>
<th>Operating pos. (in)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>V9N</td>
<td>5,5</td>
<td>IP67</td>
<td>21,3</td>
<td>0,840</td>
<td>M3 screw</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
</tr>
<tr>
<td>V9NLR</td>
<td>6,0</td>
<td>IP67</td>
<td>27,5</td>
<td>1,080</td>
<td>M3 screw</td>
<td>CO</td>
<td>Roller lever - short</td>
<td>Ag</td>
</tr>
<tr>
<td>V9NLR1</td>
<td>4,5</td>
<td>IP67</td>
<td>34,5</td>
<td>1,360</td>
<td>M3 screw</td>
<td>CO</td>
<td>Roller lever - long</td>
<td>Ag</td>
</tr>
<tr>
<td>V9NL</td>
<td>3,0</td>
<td>IP67</td>
<td>24,7</td>
<td>0,970</td>
<td>M3 screw</td>
<td>CO</td>
<td>Plain lever</td>
<td>Ag</td>
</tr>
</tbody>
</table>
Specifications

Housing: Zinc diecasting
Plunger: Acetal
Mechanism: Snap-action, single pole
Functions: Change-over
Cowl: Silicon rubber
Contacts: Silver
Terminals: M3 screws with captive washers or pre-wired
Temperature range: −40°C to +125°C, switch only -10°C to +85°C pre-wired and roller levers
Mechanical life: 10⁶ cycles minimum, impact-free actuation
Protection: IP67 (enclosure)
Mounting: Side mounting
Actuators: Plain levers - stainless steel, roller levers - stainless steel, nylon roller

Circuit diagram

Dimensions

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>10 (0.75 pf)</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>10</td>
<td>General rating - 50,000 operations (85°C)</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>10</td>
<td>General rating - 50,000 operations (85°C)</td>
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</table>
### Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force Maximum (N)</th>
<th>Release Force Minimum (ozf)</th>
<th>Free Position Maximum (mm)</th>
<th>Operating Position (in)</th>
<th>Movement Differential (mm)</th>
<th>Over travel Maximum (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plunger</strong></td>
<td>V9N</td>
<td>5.5</td>
<td>19.8</td>
<td>1.0</td>
<td>3.6</td>
<td>22.6</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21.3 ± 0.3</td>
<td>0.84 ± 0.012</td>
</tr>
<tr>
<td><strong>Roller lever - short</strong></td>
<td>V9NLR</td>
<td>6.0</td>
<td>21.6</td>
<td>1.3</td>
<td>4.7</td>
<td>31.0</td>
<td>1.22</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27.5 ± 0.5</td>
<td>1.08 ± 0.02</td>
</tr>
<tr>
<td><strong>Roller lever - long</strong></td>
<td>V9NLR1</td>
<td>4.5</td>
<td>16.2</td>
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<td>2.9</td>
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<td>1.54</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34.5 ± 0.7</td>
<td>1.36 ± 0.028</td>
</tr>
<tr>
<td><strong>Plain lever</strong></td>
<td>V9NL</td>
<td>3.0</td>
<td>10.8</td>
<td>0.6</td>
<td>2.1</td>
<td>31.0</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>24.7 ± 01.0</td>
<td>0.97 ± 0.039</td>
</tr>
<tr>
<td><strong>Reverse action lever - short</strong></td>
<td>V9NM</td>
<td>7.5</td>
<td>27.0</td>
<td>1.5</td>
<td>5.4</td>
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<td></td>
<td></td>
<td></td>
<td>22.4 ± 0.5</td>
<td>0.88 ± 0.02</td>
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<tr>
<td><strong>Reverse action lever - long</strong></td>
<td>V9NML</td>
<td>4.5</td>
<td>16.2</td>
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<td>3.6</td>
<td>29.0</td>
<td>1.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23.6 ± 01.0</td>
<td>0.93 ± 0.039</td>
</tr>
<tr>
<td><strong>Reverse action roller lever - short</strong></td>
<td>V9NMR</td>
<td>9.5</td>
<td>34.2</td>
<td>1.5</td>
<td>5.4</td>
<td>36.0</td>
<td>1.42</td>
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<td></td>
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<td></td>
<td></td>
<td>32.9 ± 0.5</td>
<td>1.295 ± 0.02</td>
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<tr>
<td><strong>Reverse action roller lever - long</strong></td>
<td>V9NMLR</td>
<td>5.0</td>
<td>18.0</td>
<td>1.0</td>
<td>3.6</td>
<td>39.5</td>
<td>1.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34.0 ± 01.0</td>
<td>1.34 ± 0.039</td>
</tr>
</tbody>
</table>

Operating characteristics are specified from lower mounting hole

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.
## Ordering Reference

<table>
<thead>
<tr>
<th>Basic typ</th>
<th>V9N</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Actuators</th>
<th>No symbol, without lever</th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>Plain lever 44.5 mm</td>
</tr>
<tr>
<td>LR</td>
<td>Roller lever 22.2 mm</td>
</tr>
<tr>
<td>LR1</td>
<td>Roller lever 32.3 mm</td>
</tr>
<tr>
<td>M</td>
<td>Reverse action lever 187.2 mm</td>
</tr>
<tr>
<td>ML</td>
<td>Reverse action lever 28.7 mm</td>
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<tr>
<td>MR</td>
<td>Reverse action roller lever 14.0 mm</td>
</tr>
<tr>
<td>MLR</td>
<td>Reverse action roller lever 25.5 mm</td>
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</table>

<table>
<thead>
<tr>
<th>Terminals</th>
<th>No symbol, unwired</th>
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</thead>
<tbody>
<tr>
<td>H</td>
<td>Horizontal pre-wired cable</td>
</tr>
<tr>
<td>V</td>
<td>Vertical pre-wired cable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-wired with</th>
<th>No symbol, 1 m cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals H + V</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Features</th>
<th>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.</th>
</tr>
</thead>
</table>

Example: V9N | L | H
4BR

Characteristics
- choice of IP54 or IP67 sealed versions
- precise movements and exceptional repeat accuracy
- robust metal housing
- flying lead version available
- long overtravel

Rating
125 VAC, 10 A max.

Dimensions (mm)
53.1 × 20.6 × 29.2

Actuator
- plunger

Approvals
- UL, CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>4BR</td>
<td>7.2</td>
<td>IP54</td>
<td>39.3</td>
<td>Screw</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 125 VAC, 10 A</td>
</tr>
<tr>
<td>4BR510</td>
<td>7.2</td>
<td>IP67</td>
<td>39.3</td>
<td>Screw</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 125 VAC, 10 A</td>
</tr>
<tr>
<td>4BRSH</td>
<td>7.2</td>
<td>IP67</td>
<td>39.3</td>
<td>Pre-wired</td>
<td>CO</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 125 VAC, 10 A</td>
</tr>
</tbody>
</table>
### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing</strong></td>
<td>Zinc based alloy</td>
</tr>
<tr>
<td><strong>Base Plate</strong></td>
<td>Phenolic</td>
</tr>
<tr>
<td><strong>Plunger</strong></td>
<td>Stainless steel</td>
</tr>
<tr>
<td><strong>Cowl</strong></td>
<td>Silicon rubber</td>
</tr>
<tr>
<td><strong>Mechanism</strong></td>
<td>Single pole change-over</td>
</tr>
<tr>
<td><strong>Contacts</strong></td>
<td>Silver</td>
</tr>
<tr>
<td><strong>Terminals</strong></td>
<td>Removable screw terminals, insulated cover plate</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-10°C to +85°C</td>
</tr>
<tr>
<td><strong>Mechanical life</strong></td>
<td>$10^6$ cycles minimum (impact free actuation)</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>4BR/S10 IP67 / 4BR IP54 (enclosure)</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>Side mounting</td>
</tr>
</tbody>
</table>

### Circuit diagram

![Circuit diagram](image)

### Dimensions

![Dimensions diagram](image)

### Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Resistive load (A)</th>
<th>Inductive load (A)</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>5 (0.75 pf)</td>
<td>5</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>10 (0.75 pf)</td>
<td>-</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>1/4 HP (0.45 pf)</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>1/8 HP (0.45 pf)</td>
<td>-</td>
<td>CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>0 - 15 VDC</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15 - 30 VDC</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>
## Operating Characteristics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4BR</td>
<td>7.2</td>
<td>26.00</td>
<td>1.7</td>
<td>6</td>
<td>40.8</td>
<td>1.6</td>
</tr>
<tr>
<td>4BR510</td>
<td>7.2</td>
<td>26.00</td>
<td>1.7</td>
<td>6</td>
<td>40.8</td>
<td>1.6</td>
</tr>
<tr>
<td>4BRSH</td>
<td>7.2</td>
<td>26.00</td>
<td>1.7</td>
<td>6</td>
<td>40.8</td>
<td>1.6</td>
</tr>
</tbody>
</table>

### Ordering Reference

- **Basic type**: 4BR
- **Environmental sealing**: SH Sealed terminals with horizontal exiting 500 mm cables IP67, 103 Sealed to IP54, 510 Sealed to IP67
- **Special Features**: Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.

Example: 4BR SH
Positive-action Switches

Dimensions

Locknut mounting

NORMALLY CLOSED

COMMON
BVM3

BVM3F

Characteristics
- positive-action forced break switching
- > 3 mm contact gap at full travel
- internationally recognized V3 housing
- faston terminals

Rating 250 VAC, 10 A

Dimensions (mm) 28 × 16 × 10.5

Actuator
- plunger
- plain lever
- roller lever

Approvals ULS, CSA, ENEC

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVM3FULS</td>
<td>4.5</td>
<td>IP40</td>
<td>Faston</td>
<td>NC</td>
<td>Plunger</td>
<td>Ag/Ag nickel</td>
<td>Up to 250 VAC, 10 A</td>
</tr>
<tr>
<td>BVM3FYULS</td>
<td>4.5</td>
<td>IP40</td>
<td>Faston</td>
<td>NC</td>
<td>Plain lever</td>
<td>Ag/Ag nickel</td>
<td>Up to 250 VAC, 10 A</td>
</tr>
<tr>
<td>BVM3FYRULS</td>
<td>5.0</td>
<td>IP40</td>
<td>Faston</td>
<td>NC</td>
<td>Roller lever</td>
<td>Ag/Ag nickel</td>
<td>Up to 250 VAC, 10 A</td>
</tr>
</tbody>
</table>
**BVM3**

### Specifications

- **Housing**: Glass reinforced nylon
- **Plunger**: Nylon
- **Mechanism**: > 3 mm gap, positive-action, single pole
- **Contacts**: Fixed silver nickel, Moving silver
- **Terminals**: 6.3 mm (0.25 in) faston NC (2) - brass, Common (1) - brass, Ag-plated
- **Temperature range**: -40°C to +85°C
- **Mechanical life**: 106 cycles minimum, impact-free actuation
- **Protection**: IP40 (enclosure)
- **Mounting**: Side mounting
- **Actuators**: Plain lever - stainless steel, roller lever - stainless steel, nylon roller
- **Lid**: Polycarbonate

#### Circuit diagram

![Circuit diagram](image)

#### Dimensions

![Dimensions](image)

### Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>10 (0.75 pf)</td>
<td>-</td>
<td>ULS 1054/CSA 22.2 No. 55 - 100,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>½ HP</td>
<td>ULS 1054 - Horsepower - 6,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>10 (3)</td>
<td>-</td>
<td>EN 61058-1 T85 50,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>1/2 HP</td>
<td>ULS 1054 - Horsepower - 6,000 operations</td>
</tr>
</tbody>
</table>
## Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Force at contact break (N)</th>
<th>Actuating Force at total travel (N)</th>
<th>Free Position Minimum (ozf)</th>
<th>Free Position Maximum (ozf)</th>
<th>Contact gap at total travel Minimum (mm)</th>
<th>Contact gap at total travel Maximum (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>BVM3FULS</td>
<td>4,5</td>
<td>4,8</td>
<td>15,8</td>
<td>17,3</td>
<td>0,62</td>
<td>3,0</td>
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<tr>
<td></td>
<td></td>
<td>16,2</td>
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<td></td>
<td></td>
<td>17,3</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Y Lever</td>
<td>BVM3FYULS</td>
<td>4,5</td>
<td>4,8</td>
<td>16,8</td>
<td>17,3</td>
<td>0,66</td>
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<tr>
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<td></td>
<td>16,2</td>
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<td>4,8</td>
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<td></td>
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<td>17,3</td>
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<tr>
<td></td>
<td>YR Lever</td>
<td>BVM3FYRULS</td>
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<td>5,5</td>
<td>22,35</td>
<td>23,15</td>
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</tr>
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<td>19,8</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Operating characteristics are specified from the mounting holes.

Total travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

## Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>BVM3</th>
<th>Terminals</th>
<th>F Faston 6.3 × 0.8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuators</td>
<td>No symbol, without lever</td>
<td>Y Straight lever 13.7 mm</td>
<td>YR Roller lever 11.7 mm</td>
</tr>
<tr>
<td>Approvals</td>
<td>ULS UL 100 k operations and CSA approval, ENEC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Features</td>
<td>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
KB5

Characteristics
- positive-action forced double break switching
- > 3 mm contact gap at full travel
- high electrical rating
- faston terminals

Rating
Up to 250 VAC, 20 A

Dimensions (mm)
41 x 19.5 x 15.5

Actuator
- plunger
- plain lever
- roller levers

Approvals
ULS, CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Sealing</th>
<th>Operating pos (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB5FULS</td>
<td>3.00</td>
<td>IP40</td>
<td>16.8</td>
<td>Faston</td>
<td>NC</td>
<td>Plunger</td>
<td>Ag</td>
<td>Up to 250 VAC, 20 A</td>
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<tr>
<td>KB5FKULS</td>
<td>2.25</td>
<td>IP40</td>
<td>19.2</td>
<td>Faston</td>
<td>NC</td>
<td>Plain lever</td>
<td>Ag</td>
<td>Up to 250 VAC, 20 A</td>
</tr>
<tr>
<td>KB5FKRULS</td>
<td>2.25</td>
<td>IP40</td>
<td>31.0</td>
<td>Faston</td>
<td>NC</td>
<td>Roller lever</td>
<td>Ag</td>
<td>Up to 250 VAC, 20 A</td>
</tr>
</tbody>
</table>
KB5

Specifications

Housing: Polycarbonate
Plunger: Nylon
Mechanism: Single pole, double break, positive action
Functions: Normally closed
Contacts: Fixed – silver, Moving – silver cadmium oxide
Terminals: 6.3 mm (0.25 in) faston, brass
Temperature range: –40°C to +85°C
Mechanical life: 10^7 cycles minimum, impact-free actuation
Protection: IP40 (enclosure)
Mounting: Side mounting
Actuators: Plain lever - stainless steel, roller lever - stainless steel, nylon roller
Approvals: UL and CSA

Circuit diagram

Dimensions

Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Resistive load (A)</th>
<th>Inductive load</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>20 (0.75 pf)</td>
<td>-</td>
<td></td>
<td>ULS 1054/CSA 22.2 No. 55 - 100,000 operations</td>
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<tr>
<td>250 VAC</td>
<td>-</td>
<td>-</td>
<td>2 HP</td>
<td>ULS 1054 - Horsepower - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>-</td>
<td>1 HP</td>
<td>ULS 1054 - Horsepower - 6,000 operations</td>
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</table>
## Operating Characteristics

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Reference</th>
<th>Actuating Operation Force</th>
<th>Free Position</th>
<th>Contact gap at total travel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(N)</td>
<td>Maximum</td>
<td>Minimum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ozf)</td>
<td>(mm)</td>
<td>(mm)</td>
</tr>
<tr>
<td>Plunger</td>
<td>KB5FULS</td>
<td>3,00</td>
<td>16,8</td>
<td>0,66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10,8</td>
<td>19,3</td>
<td>0,76</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 T 3.0</td>
<td>2 T 0.12</td>
</tr>
</tbody>
</table>

K Lever  
KB5FKULS  
2,25  
8,0  
19,2  
0,76  
26,0  
1,02  
2 T 3.0  
2 T 0.12

KR Lever  
KB5FKRULS  
2,25  
8,0  
31,0  
1,22  
36,5  
1,40  
2 T 3.0  
2 T 0.12

Recommended minimum contact separation $2 \times 1.5$ mm ($2 \times 0.6$) indicated when groove in plunger lines up with case. Operating characteristics are specified from mounting holes.

Total travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

## Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>Terminals</th>
<th>Actuators</th>
<th>Approvals</th>
<th>Special Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB5</td>
<td>Faston 6.3 × 0.8 mm</td>
<td>No symbol, without lever</td>
<td>UL 100 k operations and CSA approved</td>
<td>Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact us.</td>
</tr>
</tbody>
</table>

Example: KB5 F K ULS
Forced break Switches
XP

Characteristics

- forced double break switching
- positive-action force break option
- > 3 mm contact gap at full travel option
- faston terminals

Rating
400 VAC, 16 A

Dimensions (mm)
30 x 32 x 12

Actuator
- plain plunger
- mushroom plunger
- plunger with external spring (for increased reset security)

Approvals
ENEC, UL, CSA

Preferred Range

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Operating position (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP2Z11</td>
<td>3,0</td>
<td>14,9</td>
<td>Faston</td>
<td>CO</td>
<td>Straight plunger</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16 A</td>
</tr>
<tr>
<td>XP4Z11</td>
<td>1,8</td>
<td>14,9</td>
<td>Faston</td>
<td>NC</td>
<td>Straight plunger</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16 A</td>
</tr>
<tr>
<td>XP5Z11</td>
<td>3,0</td>
<td>13,0</td>
<td>Faston</td>
<td>NO</td>
<td>Straight plunger</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16 A</td>
</tr>
<tr>
<td>XP52E1Z11</td>
<td>6,5</td>
<td>13,0</td>
<td>Faston</td>
<td>NO</td>
<td>Mushroom plunger, reset</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16 A</td>
</tr>
<tr>
<td>XP2E2Z11</td>
<td>3,0</td>
<td>14,9</td>
<td>Faston</td>
<td>CO</td>
<td>Mushroom plunger, reset</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16 A</td>
</tr>
</tbody>
</table>
**Specifications**

**Housing**  Glass fibre reinforced nylon  
**Plunger**  Glass fibre reinforced nylon  
**Mechanism**  Change-over, normally open, normally closed  
**Contacts**  Silver  
**Terminals**  6.3 mm (0.25 in) faston brass  
**Temperature range °C**  -20°C to +140°C  
**Mechanical life**  10" cycles minimum (impact free actuation)  
**Protection**  IP40 (enclosure)  
**Mounting**  Screw mounting  
**Actuators**  Straight or mushroom plunger  
**Special features**  Optional reset spring for increased reset security

---

**Circuit diagram**

---

**Dimensions**

---

**Recommended maximum electrical ratings**

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Resistive load (A)</th>
<th>Inductive load</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 VAC</td>
<td>16 (0.75 pf)</td>
<td>-</td>
<td>-</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>-</td>
<td>1⁄4 HP (0.45 pf)</td>
<td>UL 1054 - Horsepower- 6,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>-</td>
<td>1⁄4 HP (0.45 pf)</td>
<td>UL 1054 - Horsepower- 6,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>16</td>
<td>6</td>
<td>-</td>
<td>EN.60158-1 T85 (°C) 50,000 operations</td>
</tr>
<tr>
<td>400 VAC</td>
<td>16</td>
<td>4</td>
<td>-</td>
<td>EN.60158-1 T140 (°C) 10,000 operations</td>
</tr>
<tr>
<td>0-15 VDC</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
<tr>
<td>15-30 VDC</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>General rating - 50,000 operations</td>
</tr>
</tbody>
</table>
## Operating Characteristics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight plunger</td>
<td>XP2Z11</td>
<td>3.00</td>
<td>10.0</td>
<td>5.5</td>
<td>19.7</td>
<td>15.3</td>
<td>0.602</td>
<td>14.9</td>
<td>±0.4</td>
<td>0.587</td>
<td>±0.016</td>
<td>8.0</td>
<td>0.315</td>
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<tr>
<td></td>
<td>XP42Z11</td>
<td>1.75</td>
<td>6.20</td>
<td>5.5</td>
<td>19.7</td>
<td>15.3</td>
<td>0.602</td>
<td>14.9</td>
<td>±0.4</td>
<td>0.587</td>
<td>±0.016</td>
<td>8.0</td>
<td>0.315</td>
</tr>
<tr>
<td></td>
<td>XP52Z11</td>
<td>3.00</td>
<td>10.0</td>
<td>5.5</td>
<td>19.7</td>
<td>16.6</td>
<td>0.653</td>
<td>13.0</td>
<td>±0.4</td>
<td>0.511</td>
<td>±0.016</td>
<td>8.0</td>
<td>0.315</td>
</tr>
<tr>
<td>Mushroom plunger with reset spring</td>
<td>XP2E1Z11</td>
<td>6.5</td>
<td>23.3</td>
<td>9.0</td>
<td>32.3</td>
<td>15.3</td>
<td>0.602</td>
<td>14.9</td>
<td>±0.4</td>
<td>0.587</td>
<td>±0.016</td>
<td>10.5</td>
<td>0.413</td>
</tr>
<tr>
<td></td>
<td>XP42E1Z11</td>
<td>3.75</td>
<td>13.4</td>
<td>9.0</td>
<td>32.3</td>
<td>15.3</td>
<td>0.602</td>
<td>14.9</td>
<td>±0.4</td>
<td>0.587</td>
<td>±0.016</td>
<td>10.5</td>
<td>0.413</td>
</tr>
<tr>
<td></td>
<td>XP52E1Z11</td>
<td>6.5</td>
<td>23.3</td>
<td>9.0</td>
<td>32.3</td>
<td>16.6</td>
<td>0.653</td>
<td>13.0</td>
<td>±0.4</td>
<td>0.511</td>
<td>±0.016</td>
<td>10.5</td>
<td>0.413</td>
</tr>
<tr>
<td>Mushroom plunger</td>
<td>XP2E2Z11</td>
<td>3.0</td>
<td>10.0</td>
<td>5.5</td>
<td>19.7</td>
<td>15.3</td>
<td>0.602</td>
<td>14.9</td>
<td>±0.4</td>
<td>0.587</td>
<td>±0.016</td>
<td>8.6</td>
<td>0.339</td>
</tr>
</tbody>
</table>

## Ordering Reference

- **Basic type**:
  - XP: Momentary
  - XPS: Positive action forced break (normally closed only)

- **Circuit**:
  - 2: Change-over
  - 4: Normally closed
  - 5: Normally open

- **Terminals**:
  - 2: Faston 6.3 × 0.8

- **Actuators**:
  - No symbol, straight plunger
  - E1: Mushroom plunger with reset spring
  - E2: Mushroom plunger

- **Approvals**:
  - Z11: UL, cUL, CSA and ENEC

Example: XP  2  E1  Z11
**XT**

**Characteristics**
- 8 mm contact gap
- 8 mm creepage and clearance distances
- Forced double break contacts

**Rating**
- 400 VAC, 16.5 A max.

**Dimensions (mm)**
- 30 × 32 × 12

**Actuator**
- Shrouded plunger
- Optional key
- Plain plunger

**Approvals**
- UL, cUL, CSA, ENEC

---

**Preferred Range**

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Actuating Force (N)</th>
<th>Operating pos. (mm)</th>
<th>Terminal</th>
<th>Circuit</th>
<th>Actuator</th>
<th>Contacts</th>
<th>Electrical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>XTD22AZ1</td>
<td>3.8</td>
<td>13.6</td>
<td>13.0</td>
<td>0.511</td>
<td>Plunger</td>
<td>Ag nickel</td>
<td>Up to 400 VAC, 16.5 A</td>
</tr>
</tbody>
</table>

**Specifications**

- **Housing**: Glass fibre reinforced polyester
- **Plunger**: Glass fibre reinforced polyester
- **Mechanism**: Normally open
- **Contacts**: Silver nickel
- **Terminals**: 6.3 mm (0.25 in) faston - brass
- **Temperature range**: –20°C to +85°C
- **Mechanical life**: 10⁶ cycles minimum (impact free actuation)
- **Protection**: IP40 (enclosure)
- **Mounting**: Snap-on or screw mounting
- **Actuator**: Plunger (can be held depressed for maintenance with optional key shrouded option only)

**Accessories**
- Maintenance key N41784 and multiplug housing XTMHSG

---

**Circuit diagram**

**Dimensions**

- Panel thickness 1.0 – 2.5
## Recommended maximum electrical ratings

<table>
<thead>
<tr>
<th>Voltage (max)</th>
<th>Load (A)</th>
<th>Inductive load</th>
<th>Horsepower</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 VAC</td>
<td>15.5</td>
<td>-</td>
<td>-</td>
<td>UL 1054/CSA 22.2 No. 55 - 100,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>15.5</td>
<td>-</td>
<td>-</td>
<td>UL 1054/CSA 22.2 No. 55 - 100,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>½ HP (0.45 pf)</td>
<td>-</td>
<td>UL 1054 - Horsepower- 100,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>½ HP (0.45 pf)</td>
<td>-</td>
<td>UL 1054 - Horsepower- 100,000 operations</td>
</tr>
<tr>
<td>125 VAC</td>
<td>-</td>
<td>1½ HP (0.45 pf)</td>
<td>-</td>
<td>UL 1054 - Horsepower- 100,000 operations</td>
</tr>
<tr>
<td>250 VAC</td>
<td>-</td>
<td>1½ HP (0.45 pf)</td>
<td>-</td>
<td>UL 1054 - Horsepower- 100,000 operations</td>
</tr>
<tr>
<td>30 VAC</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
<td>EN.60158-1 T85 (°C) 50,000 operations</td>
</tr>
<tr>
<td>400 VAC</td>
<td>16.5</td>
<td>8</td>
<td>-</td>
<td>EN.60158-1 T85 (°C) 50,000 operations</td>
</tr>
<tr>
<td>30 VDC</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
<td>UL 1054/CSA 22.2 No. 55 - 6,000 operations</td>
</tr>
</tbody>
</table>

## Operating Characteristics

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plunger</td>
<td>XTD22AZ1</td>
<td>3,8 (± 0.5)</td>
<td>13,600 (± 3.5)</td>
<td>5.8</td>
<td>20.8</td>
<td>13.0 ± 0.4</td>
<td>0.511 ± 0.016</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(main contact)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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## Ordering Reference

<table>
<thead>
<tr>
<th>Basic type</th>
<th>XTD</th>
<th>Example: XTD</th>
<th>22</th>
<th>J</th>
<th>Z1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminals</td>
<td>22</td>
<td>6.3 X 0.8 mm faston terminals</td>
<td>A</td>
<td>100 k operations at 15:5 A 250 VAC, UL114 478</td>
<td></td>
</tr>
<tr>
<td>Form</td>
<td></td>
<td>Without identification: snap-on mounting with shroud</td>
<td>J</td>
<td>Snap-on mounting without shroud</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Without shroud, without snap-on mounting</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>Z1</td>
<td>UL, cUL, CSA and ENEC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example: XTD 22 J Z1
Auto Power-Off

Circuit diagram

Dimensions
TIPPMATIC® Auto Power-Off Series

TIPPMATIC® Exceeds the requirements of European Ecodesign Directive

Main applications
Coffee machines
Small domestic appliances

Characteristics
- single pole on/off power switch
- auto power-off function embedded
- manual shut-off at any time
- illuminated or non-illuminated
- contact gap 3 mm
- tracking resistance PT1 250
- glow wire test 850 °C & compliant to IEC 60335-1, 4 ed.
- faston terminals 4.8 x 0.8 mm
- snap-in mounting
- compatible to rocker switch series 3680

Rating
- 250 VAC, 12(4) A T100/55
- 125 VAC, 15 A T100
- 125 VAC, 12 A T100

Dimensions (mm)
- 38 x –32 x –17

Actuator
- standard rocker 25.4 x 10.7 mm
- customized actuators on request

Approvals
- ENEC, cULus

Product line

TIPPMATIC® Timer
Ideal for small applicances & filter coffee machines
- auto power-off switch with integrated timer electronics
- complete range of shut-off times to meet any requirements

TIPPMATIC® iF
Ideal for small applicances & automatic coffee machines
- auto power-off switch with integrated interface
- shut-off signal to be provided externally from appliance’s control unit

TIPPMATIC® Plus
Ideal for small applicances & automatic coffee machines
- auto power-off switch with integrated driver unit & interface
- shut-off signal to be provided externally from appliance’s control unit

TIPPMATIC® iPlus
Ideal for small applicances, filter & automatic coffee machines
- auto power-off switch with microcontroller, driver unit & interface
- microcontroller supports customized features
**Specifications**

**Switch type**  
Rocker switch with auto power-off function

**Features**  
Single pole on/off  
Power switch with integrated solenoid & timer electronics  
27 shut-off times ranging from 30 secs. to 20 h  
Start-up time of electronics ~5 sec.  
0-voltage function – shut-off in case of mains power failure  
Bulb for illumination

---

**Circuit diagram**

---

**Dimensions**

---

**Standard range switches**

<table>
<thead>
<tr>
<th>Ordering Reference</th>
<th>Illumination</th>
<th>Terminals 4.8</th>
<th>Time delay (50 Hz)</th>
<th>Time delay (60 Hz)</th>
<th>Approvals (ENEC)</th>
<th>Approvals (cUL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3600-411.27 1552</td>
<td>yes tab 4.8 mm</td>
<td>15 min.</td>
<td></td>
<td></td>
<td>250 VAC 12 (4) A</td>
<td></td>
</tr>
<tr>
<td>3600-412.28 1552</td>
<td>yes tab 4.8 mm</td>
<td>30 min.</td>
<td></td>
<td></td>
<td>250 VAC 12 (4) A</td>
<td></td>
</tr>
<tr>
<td>3600-414.27 1552</td>
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<td>25 min.</td>
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<td>125 VAC 15 A</td>
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Specifications

Switch type
Rocker switch with auto power-off function

Features
Single pole on/off
Power switch with integrated solenoid
Interface for connection to appliance’s control unit
Auto shut-off signal to be provided by external signal
Signal 16-22 VDC, 3 msec. max. pulse time
0-voltage function – shut-off in case of mains power failure
Bulb for illumination

Circuit diagram

Dimensions

TIPPMATIC® iF

Auto Power-Off

burgess-switch@johnsonelectric.om  www.burgess-switch.com
**Specifications**

<table>
<thead>
<tr>
<th>Switch type</th>
<th>Rocker switch with auto power-off function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>Single pole on/off</td>
</tr>
<tr>
<td></td>
<td>Power switch with integrated solenoid &amp; driver unit</td>
</tr>
<tr>
<td></td>
<td>Interface for connection to appliance’s control unit</td>
</tr>
<tr>
<td></td>
<td>Signal overload protection system</td>
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<tr>
<td></td>
<td>Auto shut-off signal to be provided by external signal</td>
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<tr>
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<td>Signal 5 VDC, 3 msec. max. pulse time</td>
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<tr>
<td></td>
<td>Start-up time of electronics ~5 sec.</td>
</tr>
<tr>
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<td>0-voltage function – shut-off in case of mains power failure</td>
</tr>
<tr>
<td></td>
<td>Bulb for illumination</td>
</tr>
</tbody>
</table>

**Dimensions**

- TIPPMATIC® Plus
  - Dimensions:...
  - 12.35±0.20
  - 10.00±0.15
  - 5.00±0.10
  - 16.20±0.20
  - 28.00±0.10
  - 16.65±0.15

- Auto Power-Off
  - Dimensions:...
  - 15.00±0.05
  - 9.60±0.10
  - 7.00±0.20
  - 5.75±0.10
Specifications

Switch type
Rocker switch with auto power-off function

Features
Single pole on/off
Power switch with solenoid, driver unit & microcontroller
Interface for connection to appliance’s control unit
Auto shut-off signal to be provided by external signal
Analog or digital shut-off signal, 5VDC max
Internal microcontroller supports customized features, typical functions are reservoir level indication, temperature, lime-scale, brew unit position etc.
Start-up time of electronics ~5sec.
0-voltage function – shut-off in case of mains power failure
LED for illumination & signal indication

Circuit diagram

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>TIPPMATIC® iPlus</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>12.35±0.20</td>
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<tr>
<td>N</td>
<td>10.00±0.15</td>
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<tr>
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<td>16.65±0.15</td>
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<td>16.20±0.20</td>
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<td>28.00±0.10</td>
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<tr>
<td>X</td>
<td>0.05</td>
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Mikroschalter
Microswitch
TIPPMATIC® Auto Power-Off Series

TIPPMATIC®
Exceeds the requirements of European Ecodesign Directive

Main applications
- Appliances & coffee machines
- Washer, dryer, dishwasher

Characteristics
- Single pole on/off power switch
- Double pole on/off switch (TIPPMATIC iFD Double Disconnect)
- Auto power-off function embedded
- Zero stand-by power consumption
- Manual shut-off at any time
- Illuminated as on option
- Contact gap 3 mm
- Tracking resistance PTI 250
- Glow wire test 850 °C & compliant to IEC 60335-1, 4 ed.
- PCB terminals

Rating
- 250 VAC, 12(4) A T100
- 125 VAC, 12 A T100
- 250 VAC, 13 A TB5
- 100 VAC, 13 A TB5

Dimensions (mm)
- TIPPMATIC iF 25 x 40 x 13

Actuator
- Plunger
- Customized actuators on request

Approvals
- ENEC, cULus

Product line

TIPPMATIC® Timer
Ideal for small appliances & filter coffee machines
- Auto power-off switch with integrated timer electronics
- Complete range of shut-off times to meet any requirements

TIPPMATIC® iF
Ideal for appliances, automatic coffee machines, washer, dryer, dishwasher
- Auto power-off switch with integrated interface
- Shut-off signal to be provided externally from appliance’s control unit

TIPPMATIC® Plus
Ideal for appliances, automatic coffee machines, washer, dryer, dishwasher
- Auto power-off switch with integrated driver unit & interface
- Shut-off signal to be provided externally from appliance’s control unit

TIPPMATIC® iPlus
Ideal for appliances, automatic coffee machines, washer, dryer, dishwasher
- Auto power-off switch with microcontroller, driver unit & interface
- Microcontroller supports customized features

TIPPMATIC® iFD Double Disconnect
Ideal for automatic coffee machines, washer, dryer, dishwasher
- Auto power-off switch with integrated interface
- Shut-off signal to be provided externally from appliance’s control unit
- Programmable control option
**TIPPMATIC® Timer**

**Specifications**

- **Switch type**: Push button switch with auto power-off function
- **Features**: Single pole on/off
  - Power switch with integrated solenoid & timer electronics
  - 27 shut-off times ranging from 30 secs. to 20 h
  - Start-up time of electronics ~5 sec.
  - Shut-off in case of mains power failure (0-voltage function)

**Circuit diagram**

**Dimensions**

- TIPPMATIC® Timer
  - 1.00
  - 3.00
  - 6.05
  - 12.60
  - 6.00±0.1
  - 2.40

- **Gesamthub** total travel
  - 27.95±0.2
  - 13.00±0.1/SPC
  - 8.60
  - 9.40
  - 13.00±0.1/SPC
  - 4.80x0.80
  - 23.20
  - 27.95±0.2
  - 6.65
  - 6.00±0.1
  - 12.60

- **Dimensions**
  - 3.00
  - 2.40
  - 9.40
  - 13.00±0.1/SPC
  - 8.60
  - 6.00±0.1
  - 12.60
  - 6.65
  - 6.00±0.1
  - 12.60

- **Tip**
  - 1.00
  - 3.00
  - 6.05
  - 12.60
  - 6.00±0.1
  - 2.40
Specifications

Switch type
Push button switch with auto power-off function

Features
- Single pole on/off
- Power switch with integrated solenoid
- Interface for connection to appliance’s control unit
- Auto shut-off signal to be provided externally
- Signal 16-22 VDC, 3 msec. max. pulse time

Circuit diagram

Dimensions

Positionsrippen für Leiterplatte
Position pegs for PCB

Abstand zur Platine
Distance to PCB

Stützlager für Schalter
in Kundenaapplikation notwendig.
Support bearing for switch
necessary in customer application.
Specifications

Switch type
Push button switch with auto power-off function

Features
Double pole on/off
Power switch with integrated solenoid
Interface for connection to appliance’s control unit
Auto shut-off signal to be provided externally
Signal 16-22 VDC, 3 msec. max. pulse time
Programmable control option
Start-up time of electronics ~5 sec.
Shut-off in case of mains power failure (0-voltage function)
Dimensions 44 x ≈36 x ≈14 mm

Circuit diagram

Dimensions

TIPPMATIC® iFD Double Disconnect
## Table of preferred products

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<tr>
<th>Snap-action Microswitches</th>
<th>Type</th>
<th>Preferred Products</th>
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<td>Ultraminiature</td>
<td>F1</td>
<td>F1T8GPUL</td>
<td>F1T8Y1GPUL</td>
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</table>
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