

**SW200 SERIES**

**UNIQUE RANGE**

The SW200 series of contactors has been designed for direct current loads, particularly motors as used on larger electric vehicles such as industrial trucks, airport tractors, etc. They have double breaking main contacts with silver alloy contact tips, which are weld resistant, hard wearing and have excellent conductivity.

The range comprises: Single Pole, on/off types (SW200), Single Pole normally closed types (SW210), paired version of these for motor reversing (SW202) and derivatives of these types to give various combinations and configurations.

**COMPACT SIZE**

The contactors are compact in size and are fully serviceable, with a full range of spare parts available.

**EASY INSTALLATION**

Mounting is by means of 5mm tapped holes in the switch frame together with a range of mounting brackets complete with screws and washers.

Coil connections are by means of 6mm spades of which two are supplied per terminal.

Contactor types SW202, SW204, SW205, SW208, SW213 and SW214 are supplied as an assembly which includes a mounting bracket as a standard feature.

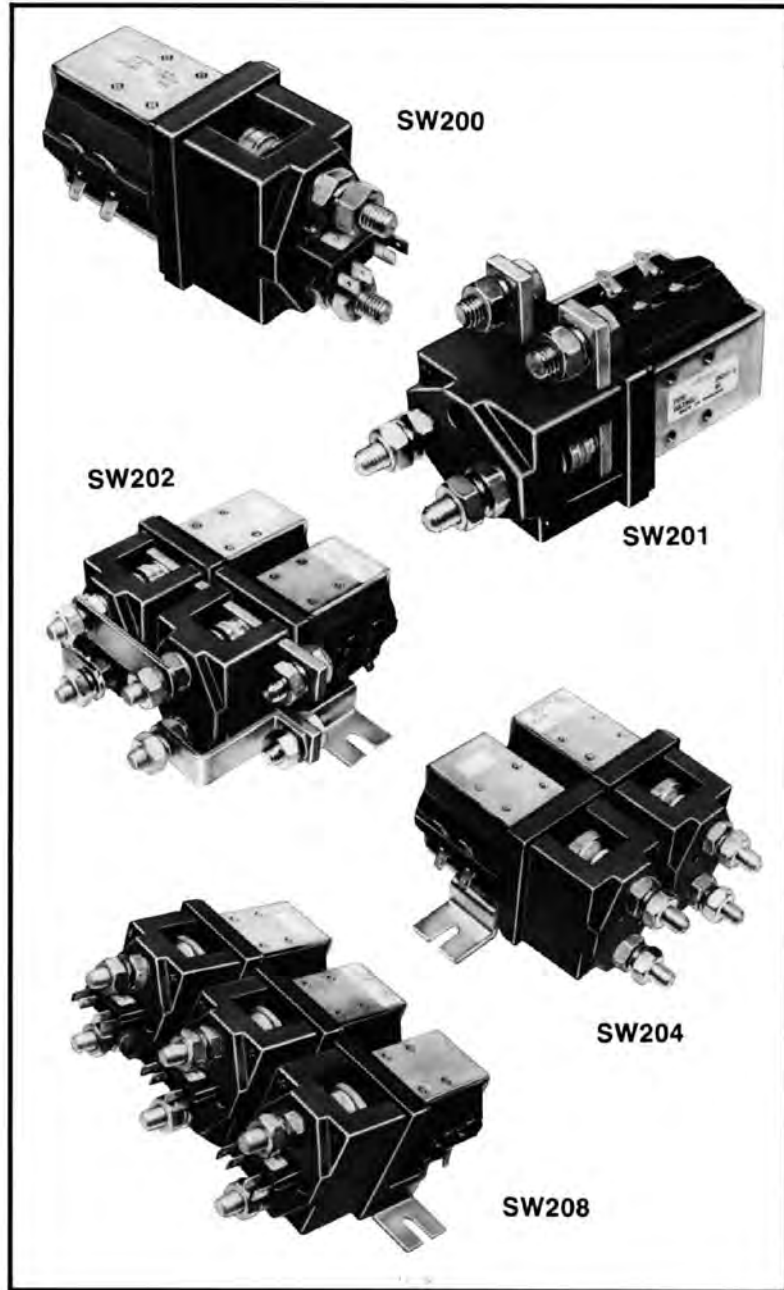
Mounting attitudes are detailed in the drawings on the following pages.

**OPERATING COILS**

Coil voltages ranging from 6 to 240 are available and these are wound for D.C. operation.

However coils can be fitted with a bridge rectifier for use from A.C. supplies.

Coils are normally wound for intermittent duty (up to 70% "on" time) but continuous duty version (100%) are also available.



**CONTACTORS IN THE SERIES**

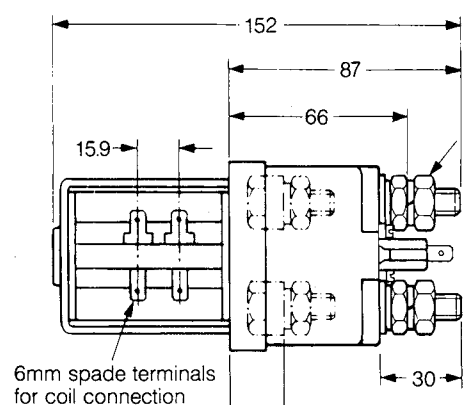
|              |  |              |   |
|--------------|--|--------------|---|
| <b>SW200</b> | <b>SINGLE POLE SINGLE THROW</b>  | <b>SW205</b> | <b>2xSW201 ON DOUBLE BRACKET</b>                  |
| <b>SW201</b> | <b>SINGLE POLE DOUBLE THROW</b>  | <b>SW208</b> | <b>3xSW200 ON TRIPLE BRACKET</b>                  |
| <b>SW202</b> | <b>PAIRED SINGLE POLE DOUBLE THROW ON DOUBLE BRACKET (for motor reversing)</b> | <b>SW210</b> | <b>SINGLE POLE SINGLE THROW (normally closed)</b> |
| <b>SW204</b> | <b>2xSW200 ON DOUBLE BRACKET</b>   | <b>SW213</b> | <b>3xSW210 ON TRIPLE BRACKET</b>                  |
|              |  | <b>SW214</b> | <b>2xSW210 ON DOUBLE BRACKET</b>                  |

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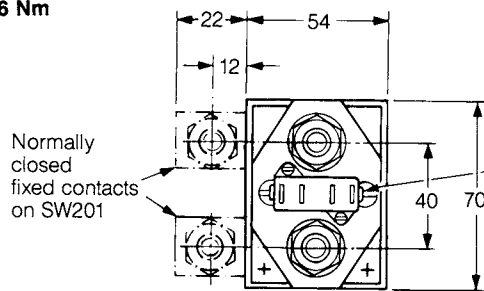
[www.curtisinstruments.com](http://www.curtisinstruments.com)

**DIMENSION DRAWINGS**



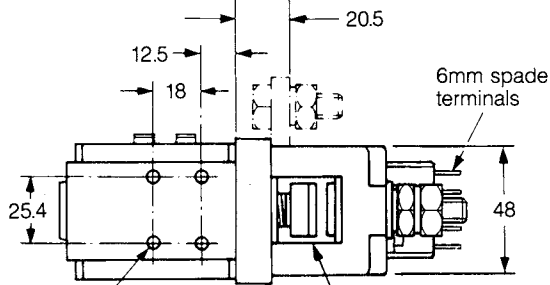
**M10 main terminals to be tightened within the range 13.4 to 14.6 Nm**

6mm spade terminals for coil connection



Normally closed fixed contacts on SW201

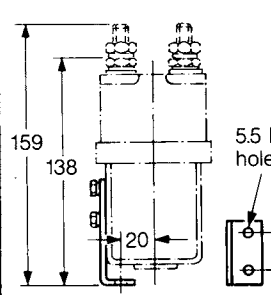
Optional microswitch auxiliary contact fitted here



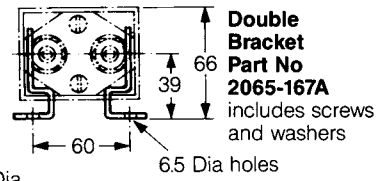
4 tapped holes each side M5 x 0.8

Closed contact housing can be supplied to prevent ingress of dust etc.

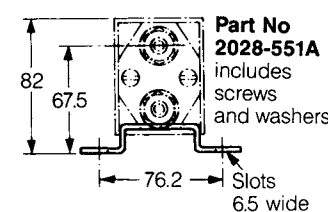
**OPTIONAL MOUNTING BRACKETS**



**Part No 2155-165** includes screws and washers



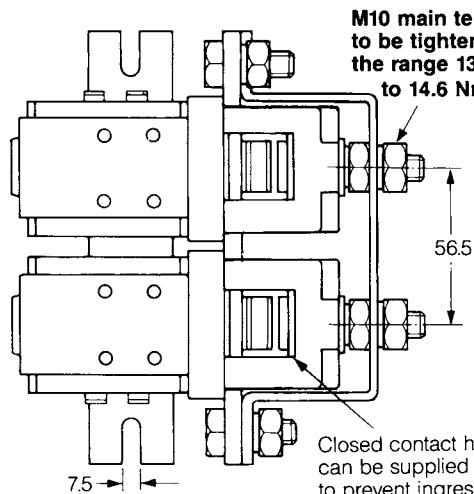
**Double Bracket Part No 2065-167A** includes screws and washers



**Part No 2028-551A** includes screws and washers

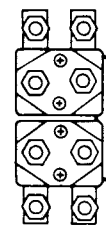
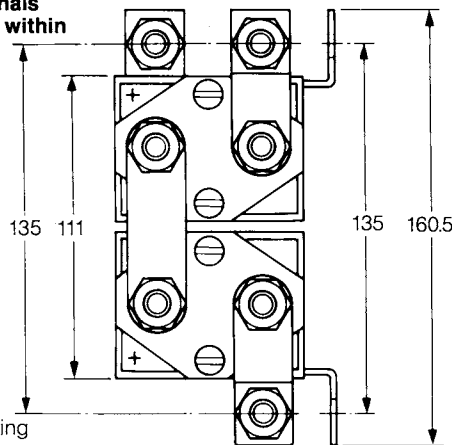
**SW200, 201 AND 210**

The contactors can be mounted either horizontally or vertically. If mounted vertically the contact studs must point upwards with the exception of the SW210 and its derivatives which should be mounted with the contact studs pointing downwards.

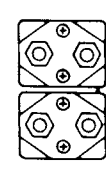


**M10 main terminals to be tightened within the range 13.4 to 14.6 Nm**

Closed contact housing can be supplied to prevent ingress of dust etc.



**SW205**  
(2 x SW201)

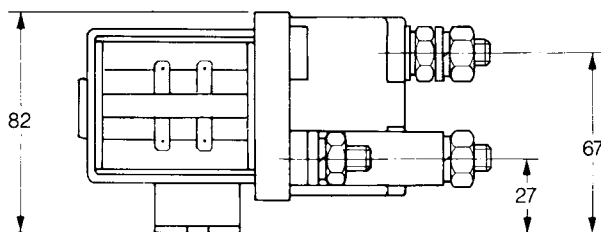


**SW204**  
(2 x SW200)



**SW214**  
(2 x SW210)

The paired contactors are fitted with mounting bracket as shown  
Auxiliary contacts can be fitted as shown on SW200

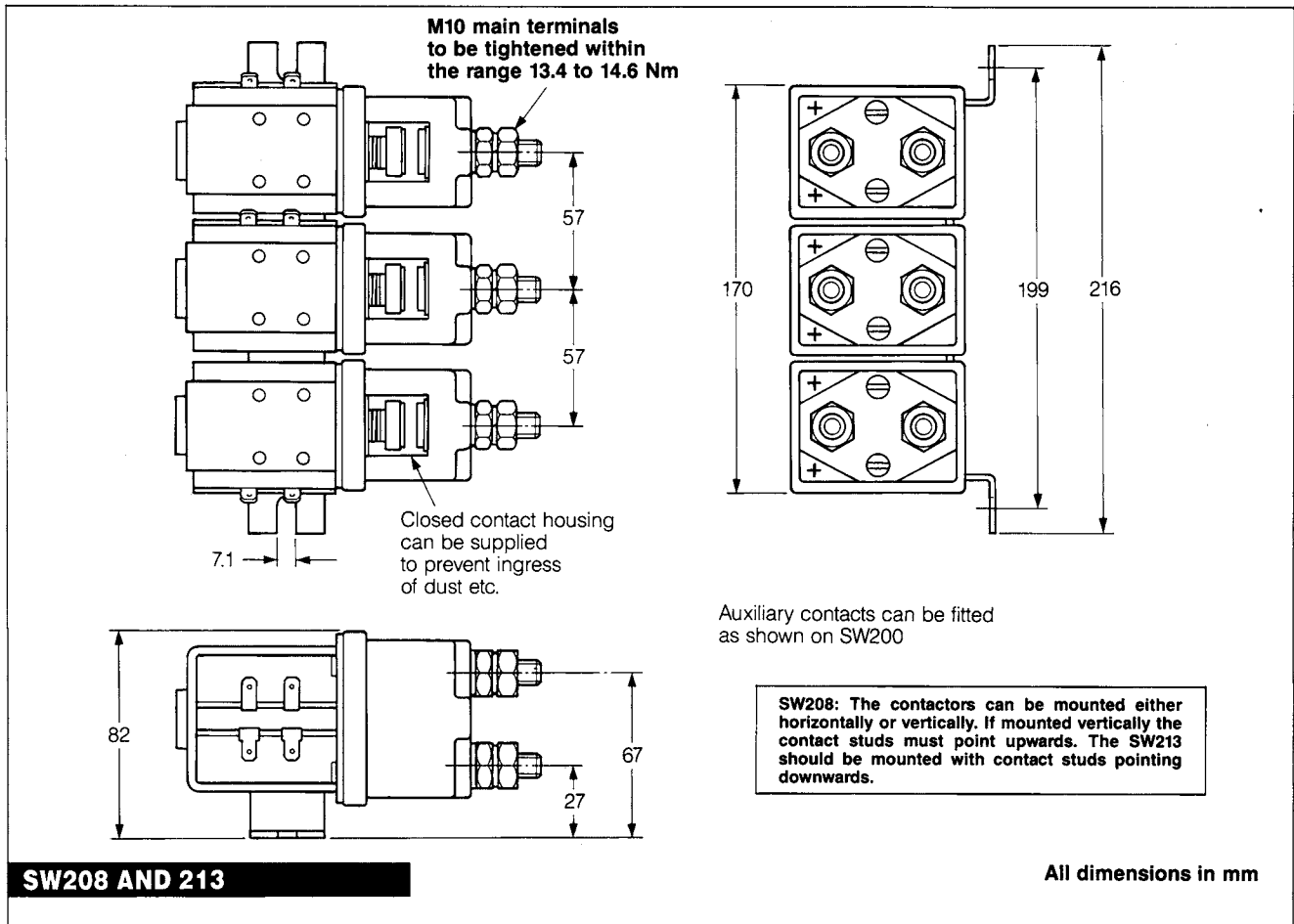


**SW202, 204, 205 AND 214**

**PLEASE NOTE**  
The Normally Closed contacts of the SW201 and SW202 are not designed to make and break current.

All dimensions in millimetres

## DIMENSION DRAWINGS



Pull-in voltages are approximately 60% and 66% of the rated voltage for intermittent and continuously rated types respectively.

Drop out voltage is nominally 10% of rated voltage.

Variations from these pull-in and drop-out figures can be engineered to suit particular applications.

### DOUBLE AND TRIPLE CONTACTOR ASSEMBLIES

Double or triple assemblies can be supplied on a common bracket together with inter-connecting electrical links. The most important of these arrangements are the motor reversing circuits provided by the SW202 contactor pair.

The SW202 type has a built in failsafe so that if both coils are energised simultaneously the contact design creates an open circuit situation.

### MAGNETIC BLOWOUTS

The contactors are of double break configuration and are fitted with permanent magnetic blowouts

across both contact gaps as standard.

These enable high currents to be ruptured very quickly so that arcing time is reduced to a minimum.

Should the contacts be required without magnetic blowouts, for example when used to switch alternating currents, these can be omitted. Closed contact housings can be supplied to prevent the ingress of dust and dirt although these are usually not recommended when magnetic blowouts are fitted.

The suffix 'N' denotes that magnetic blowouts are not fitted, for example SW200N.

Fitting of blowouts makes the contacts polarity sensitive and the **Positive markings** on the top cover of the contactor **must** be observed.

### AUXILIARY CONTACTS 'A'

A double circuit normally open, normally closed microswitch can be fitted which has a D.C. resistive rating of 5 Amperes at 24v.

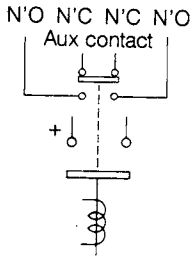
The suffix 'A' should be added to

the type number when an auxiliary contact is required, for example, SW200A.

## CONNECTION DIAGRAMS

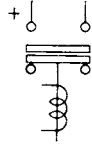
### SW200

Single Pole Single Throw (On/Off) Contactor



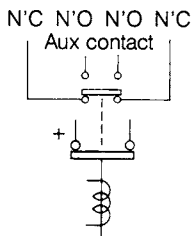
### SW201

Single Pole Double Throw (Changeover) Contactor



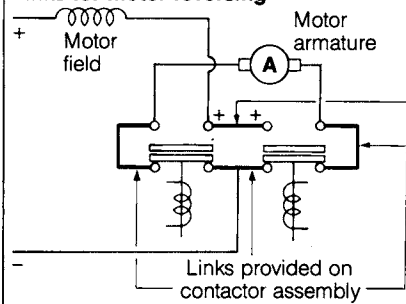
### SW210

Single Pole Single Throw (Off/On) Normally Closed Contactor



### SW202

Paired Single Pole Double Throw Contactor. Complete with necessary links for motor reversing

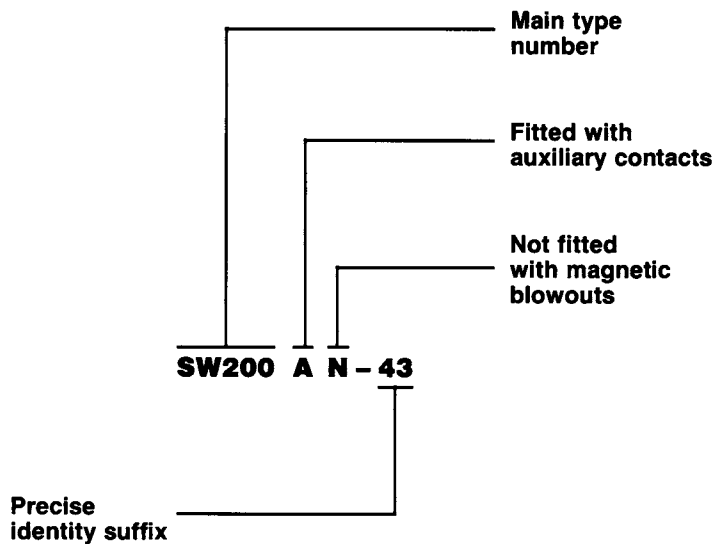


## CONTACTOR WEIGHTS

Add 20 gms for each auxiliary contact.

|       |          |
|-------|----------|
| SW200 | 1350 gms |
| SW201 | 1600 gms |
| SW202 | 3350 gms |
| SW204 | 2900 gms |
| SW205 | 3400 gms |
| SW208 | 4300 gms |
| SW210 | 1400 gms |
| SW213 | 4400 gms |
| SW214 | 3000 gms |

## EXPLANATION OF CONTACTOR TYPE NUMBERS



|       | Auxiliary Contacts | Magnetic Blowouts | Mounting Brackets | Closed Contact Housing |
|-------|--------------------|-------------------|-------------------|------------------------|
| SW200 | O                  | S                 | O                 | O                      |
| SW201 | O                  | S                 | O                 | O                      |
| SW202 | O                  | S                 | S                 | O                      |
| SW204 | O                  | S                 | S                 | O                      |
| SW205 | O                  | S                 | S                 | O                      |
| SW208 | O                  | S                 | S                 | O                      |
| SW210 | O                  | S                 | O                 | O                      |
| SW213 | O                  | S                 | S                 | O                      |
| SW214 | O                  | S                 | S                 | O                      |

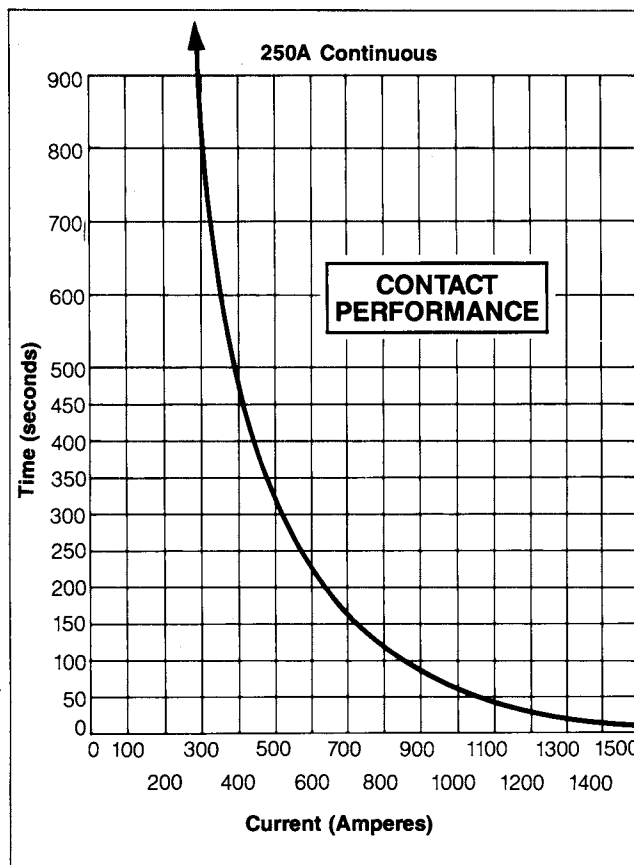
O = Optional Extra  
 S = Standard Feature

## COIL RESISTANCES FOR POPULAR VOLTAGES

|                                   | 12V DC | 24V DC | 36V DC | 48V DC | 60V DC | 72V DC | 80V DC |
|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Intermittently rated coils (ohms) | 4      | 15     | 32     | 54     | 94     | 167    | 141    |
| Continuously rated coils (ohms)   | 8      | 32     | 94     | 141    | 245    | 360    | 360    |

## PERFORMANCE DATA

|   |   |
|---|---|
| Thermal current rating (100%)                                       | 250 Amperes   |
| Intermittent current rating   |   |
| 30% duty  | 450 Amperes   |
| 40% duty  | 390 Amperes   |
| 50% duty  | 360 Amperes   |
| 60% duty  | 320 Amperes   |
| 70% duty  | 300 Amperes   |
| Typical fault currents which can be ruptured<br>(5ms time constant) |   |
| SW200N and SW210N   | 1500 Amperes at 48V D.C.                              |
| SW200 and SW210   | 1500 Amperes at 96V D.C.                              |
| SW201N* and SW202N*   | 1500 Amperes at 48V D.C.                              |
| SW201* and SW202*   | 1500 Amperes at 96V D.C.                              |
| * Normally open contacts, not normally closed contacts.             |   |
| Maximum recommended contact voltages                                |   |
| SW200N and SW210N   | 48V D.C.  |
| SW200 and SW210   | 96V D.C.  |
| SW201N and SW202N   | 48V D.C.  |
| SW201 and SW202   | 96V D.C.  |
| Typical voltage drop across contacts per 100 Amperes                |   |
| SW200 and SW210   | 40mV  |
| SW201 and SW202 (normally open contacts)                            | 40mV  |
| SW201 and SW202 (normally closed contacts)                          | 40mV  |
| Mechanical life   | > 5 x 10 <sup>6</sup>                                 |
| Coil power dissipation  |   |
| Intermittently rated types  | 30-60 Watts   |
| Continuously rated types  | 13-21 Watts   |
| Maximum pull-in voltage (coil at 20°C)                              |   |
| Intermittently rated types  | 60%V  |
| Continuously rated types  | 66%V  |
| Typical drop-out voltage  | 10-20%V   |
| Typical pull-in time (n/o contacts to close)                        | 40ms  |
| Typical drop-out time (n/o contacts to open)                        |   |
| Without suppression   | 10ms  |
| With diode suppression  | 100ms   |
| With diode and resistor (depending on value)                        | 30ms  |
| Typical main contact changeover time (SW201 and SW202)              |   |
| Normally closed to normally open                                    | 14ms  |
| Normally open to normally closed                                    | 8ms   |
| Typical contact bounce period                                       | 3ms   |
| Auxiliary contact thermal current rating                            | 5 Amperes   |
| Auxiliary contact switching capacities<br>(resistive load)          | 5A at 24V D.C.<br>2A at 48V D.C.<br>0.5A at 240V D.C. |



**All the above figures should be used as a guide only. Some derating may be necessary according to type and application.**