Operating life

The operating life specifies the minimum number of switch cycles within the specific values. It depends on a large number of parameters that are determined by the intended application case. Among these are, for example:

- switched current and switching voltage
- type of load (e.g. ohmic, inductive or lamp load)
- Combination of materials in actuating element/actuator
- Actuator type
- Actuator speed
- Switching frequency (switching cycles / min)
- Pretravel / Overtravel
- Environmental factors such as climate conditions or harmful gases (e.g. SO2)

Please note:
Media such as greases, oils and materials which contain silicon must not be used on the switch. There is a distinction between mechanical and electrical operating life.

Mechanical life

Indicates how often a switch can be actuated without an electrical load. Mechanical endurance is calculated by actuating the snap switches axially in relation to the actuator in a sinusoidal pattern using about 80% overtravel at a switching frequency of 4 Hz at room temperature.

Electrical life

The selection of the optimal contact material has great influence on the operating life. The electrical life test is conducted at rated voltage, rated current and resistive load at 23 °C ambient temperature. The lower the electrical current, the longer the electrical life - under some circumstances it may even equal the switch’s mechanical life.

Please note:
For switching loads which deviate from the values specified in the catalogue, we recommend that you discuss the issues involved with Cherry. This is especially important if you are using other loads as linear resistances. These can be electrical circuits with inductive resistances (motors), capacitive resistances (condensers) or lamp loads. To ensure that a switch reaches the maximum of its electrical operating life, the switch should not be subjected to pressure in its rest position (pre-stressed) and at least 50% of the available overtravel must be used. Operating life specifications for direct current loads are available on request. Where higher switching capacities are involved, we recommend the use of fuses to provide protection against arcing.

Please note:
Since the operating life of a snap switch depends on a number of factors, we recommend that field trials be performed in order to establish the likely electrical life of a switch in a given application. This is especially recommended when the application deviates considerably from the test conditions described above. Our specialists are always ready to provide you with more advice regarding possible solutions for your particular application.

Behaviour at different temperatures

Depending on the model, the operating temperatures of our switches range from -25 to +70 °C and -40 to +150 °C. If you attempt to use a switch at operating temperatures either above or below those recommended for your particular model, the switch’s material properties will change and its reliability will be affected. Where switch model codes start with “T” [e.g. 40T125 in compliance with EN 61058], the switches involved have been approved for use at the corresponding temperatures.

Vibration and shock resistance

Snap switches are naturally fairly resistant to shocks and vibrations thanks to their minimal mass of moving parts. They are at their most resistant when the actuator is in the rest position or end position, when vibration resistance is as high as 5 g at 20 – 200 Hz while shock resistance attains 50 g (6 ms).

Please note:
Snap switches are more susceptible to vibrations at the switching point and at the release point. In certain conditions, this could result in transient make or break contacts (bouncing) to the detriment of the switch’s operating life. This is why snap switches which are regularly exposed to vibration should, wherever possible, not be actuated slowly.

Electric strength

The electric strength of our snap switches – in the case of models suited for mains voltages – exceeds 1500 V AC between conducting parts and the earth and 750 V AC between the terminals (open contacts) measured over a period of one minute at an ambient temperature of 23 °C ± 5 °C, relative humidity of <70 % and normal atmospheric pressure.