

# 2

## Snap-action switches

Series  
S800, S804, S814, S820

Changeover switches  
with double-break contacts  
and positive opening operation

Catalogue D20.en



more information here:  
[schaltbau-gmbh.com](http://schaltbau-gmbh.com)

## Snap-action switches, S800, S804, S814, S820 Series

Featuring double-break contacts and positive opening operation

### S800 and S804 series – application proven snap switches

S800 and S804 series switches feature a VDE approved positive opening operation which guarantees - within the requirements of the standard - the forced opening of contacts that have become welded together after a short-circuit. This makes them ideally suited for use in all safety related applications.

### S814 series

The S814 has a plunger running through the switch. This makes it possible to mount two switches on top of each other, and trigger two operations with only one actuation. Wiping contacts ensure high contact reliability over the life of the switch.

### S820 – snap switches featuring higher ampacity

S820 series switches add to the well proven standard products, offering a current-carrying capacity which is twice as high ( $I_{th} = 20\text{ A}$ ) as for example S800, as well as a more ruggedized design making them best suited for use under unfavourable ambient conditions which call for higher shock and vibration resistance. A typical field of application is medium-voltage switchgear and controlgear.

The S820 is a Form Zb SPDT-DB switch with double-break contacts. Its two mechanically linked rigid contact bridges are galvanically isolated, thus ensuring the failsafe closing of two separate load circuits with independent voltage levels.

## Features

Series S800/S804/S814/S820



**Positive opening operation:** Reliable interruption of both circuits even after contact welding, in compliance with IEC 60947-5-1, Annex K (except for S814)

**IP rating:** Protection against dust, hazardous substances and direct contact with live parts in compliance with IEC 60529: Contacts IP40 / Terminals IP00



**Double-break contacts:** High electrical rating due to rigid contact bridge

**Contact material:**  
S800 and S814: Silver or Gold  
S804 and S820: Silver



**Precision switch:** High switching accuracy and resistance to shock and vibration

**Blowouts:** Optional magnetic blowout to ensure efficient quenching of electric arcs and high DC switching capacity



## Switch design and function

Series S800/S820

### Actuators

- Standard: Pushbutton
- Aux. actuator: roller lever

### Mounting styles

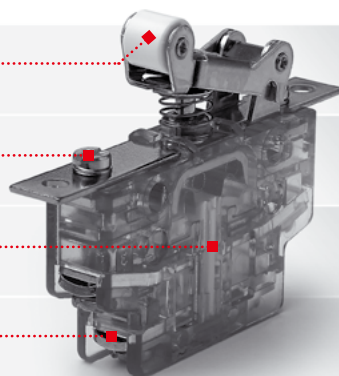
- Front mount
- Side mount (ganging)

### Contacts

- Double-break contacts and rigid contact bridge
- Positive opening operation
- Contact material: silver or gold

### Terminals

- M3 screws with saddle clamp
- Flat tabs 6.3x0.8
- M3 screws with spring washer



## Competence

## Applications

Series S800/S804/S814/S820

### The success of a product is owed to its quality




The Schaltbau product line is clearly defined and keeps up with the technological requirements of today's markets. Behind every individual snap-action switch you will find decades of experience in engineering and manufacturing. Snap-action switches are designed with a snap-mechanism that allows fast switching, largely independent of the actuation speed. This precisely reproduces the operating position, and controls the arc more efficiently. With their well known transparent-green housing, the safety function in Schaltbau's snap-action switches is visible.

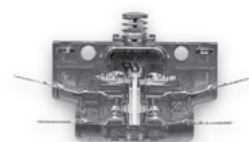
Schaltbau snap-action switches are typically used with systems and components that require a high degree of safety and reliability, such as:

- Limit switches for machine, door and plant control systems
- Aux. switches in cam gear and control and indicating devices
- Switching elements for automation
- Safety limit switches for control systems and plant controls

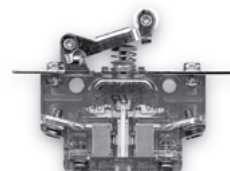
## Specifications

Series S800/S804/S814/S820

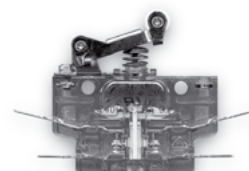
|   | Standard               | S800, S804  | S814  | S820  |
|---|------------------------|---|---|---|
| Contact configuration<br>SPDT-DB switch, contact bridge:<br>rigid (Form Za)<br>galvanically isolated (Form Zb)<br>Positive opening operation<br>Wiping action | IEC 60947              | ●<br>●<br>---<br>●<br>---   | ●<br>●<br>---<br>●<br>---   | ●<br>---<br>●<br>●<br>---   |
| Conv. thermal current $I_{th}$  | IEC 60947              | 10 A at $T = 85^{\circ}\text{C}$  | 10 A at $T = 85^{\circ}\text{C}$  | 20 A at $T = 85^{\circ}\text{C}$  |
| Rated insulation voltage $U_i$  | IEC 60947<br>UL 508    | 400 V<br>300 V *1   | 250 V<br>---  | 400 V<br>---  |
| Pollution degree  | IEC 60947<br>UL 508    | PD3<br>D3 *1  | PD3<br>---  | PD3<br>---  |
| Rated impulse withstand voltage $U_{imp}$   | IEC 60947              | 4 kV  | 2.5 kV  | 4 kV  |
| Overvoltage category  | IEC 60947<br>UL 508    | OV3<br>V3 *1  | OV3<br>---  | OV3<br>---  |
| Utilization category<br>for silver contacts *2  | IEC 60947<br>UL 508 *1 | AC-15: 230 V / 3.0 A<br>DC-13: 110 V / 1.0 A<br>240 V AC, 8 A<br>general purpose                        | AC-15: 230 V / 1.0 A<br>DC-13: 60 V / 0.5 A<br>---                                  | AC-15: 230 V / 5.0 A<br>DC-13: 110 V / 1.0 A<br>---                                   |
| Contact gap, typ.   | IEC 60947              | 2x 1.2 mm   | 2x 0.4 mm   | 2x 2.0 mm   |
| Contact force, typ.   | IEC 60947              | 0.35 ... 0.75 N   | 0.4 N   | 1.2 N   |
| Contact resistance, typ.  | IEC 60947              | 100 mΩ (no leads connected)   |   |   |
| Positive opening force *3   | IEC 60947              | 35 N  | ---   | 35 N  |
| Actuator travel for positive opening  | IEC 60947              | S800: see page 5<br>S804: see page 9  | ---   | see page 13   |
| Maximum actuator travel *3  | IEC 60947              | 3,2 mm  | 2,0 mm  | 4,0 mm  |
| Actuating speed   | IEC 60947              | max. 1 m/s<br>min. 1 mm/s   | max. 240 mm/s<br>min. 0,1 mm/s  | max. 1 m/s<br>min. 1 mm/s   |
| Vibration resistance, no aux. actuator,<br>at 0.1 ms max. opening time<br>10 ... 150 Hz all directions<br>10 ... 500 Hz all directions                        | IEC 60068-2-6          | 30 g<br>---   | 20 g<br>---   | ---<br>50 g   |
| Shock resistance<br>(no aux. actuator<br>at 0.1 ms max. opening time)   | IEC 60068-2-27         | 80 g, half sinus  | 50 g, half sinus  | 60 g, half sinus  |
| Short-circuit protection<br>for silver contacts *2  | IEC 60269-2            | 6 A gR  | ---   | 6 A gR  |
| Operating frequency, max.   | IEC 60947              | 465 cycles/min  | 300 cycles/min  | 80 cycles/min   |
| Actuating force *3<br>Standard / reinforced   | IEC 60947              | 3.3 N / 5,5 N   | 3.2 N / 5,2 N   | 8 N / 18 N  |
| Release force *3<br>Standard / reinforced   | IEC 60947              | 0.2 N / 2.9 N   | 0.5 N / 2.0 N   | 1.5 N / 2.0 N   |
| IP rating<br>Contacts<br>Terminals  | IEC 60529              | IP40<br>IP00  |   |   |
| Mechanical endurance, cycles  | IEC 60947              | 10 million min.   |   | 1 million min.  |
| Temperature range   | IEC 60947              | -40 °C ... +85 °C   |   |   |
| Material<br>Contacts<br>Terminals<br>Housing  | ---                    | Hard silver (AgCu3) or gold (AuAg26Ni3)<br>Brass, silver or gold plated<br>PC, light green, transparent |   | Hard silver (AgCu3)<br>Brass, silver-plated<br>PES, amber, transparent                |
| Mounting orientation  | ---                    | any   |   |   |
| Weight, no aux. actuator  | ---                    | S800: 26 g / S804: 25 g   | 25 g  | 45 g  |
| Approvals   | ---                    |                      |  |  |



**S800 b20**  
Version with pushbutton  
(standard),  
silver contacts and  
flat tabs 6.3 x 0.8



**S800 aL**  
Version with roller lever,  
mounting brackets,  
silver contacts,  
M3 screws with saddle clamp  
and blowouts



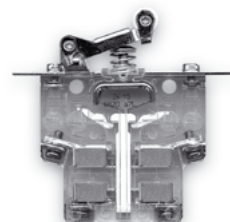
**S800 e20**  
Version with roller lever,  
silver contacts and  
flat tabs 6.3 x 0.8



**S804 b**  
Version with pushbutton  
(standard),  
silver contacts and  
M3 screws with saddle clamp



**S814 b**  
Version with pushbutton  
(standard),  
silver contacts and  
M3 screws with saddle clamp



**S820 a7**  
Version with roller lever,  
mounting brackets,  
silver contacts and  
M3 screws with saddle clamp

\*1 S800 series only

\*2 S800 and S814 only: Data for gold contacts on request

\*3 Measured next to actuator

**Note:**Data valid for new switches under laboratory conditions  
and at room temperature, unless otherwise mentioned.

## S800 Ordering code, Accessories

Series S800

### Ordering code

Example:

**S800 b10/20/40 L**

#### Series, Contact configuration

S800

Form Za SPDT-DB switch with positive opening operation and rigid contact bridge

#### Actuator and mounting styles

| Actuator        | Front mount                               |
|-----------------|---|
| b Pushbutton    | no mounting brackets                      |
| c Pushbutton    | with mounting brackets                    |
| e Roller lever  | no mounting brackets                      |
| a Roller lever  | with mounting brackets                    |
| as Roller lever | with mounting brackets, slotted holes     |
| d Roller lever  | with mounting brackets, angled on one end |

#### Contact material

|          |
|----------|
| * Silver |
| 10 Gold  |

#### Special designs, optional

Blowouts

L

#### Actuating and release forces

Standard

\*

Stronger reset spring

40

#### Terminals

M3 screws with saddle clamp

\*

Flat tabs 6.3x0.8

20



#### Note:

This catalogue shows only stock items. For some variants minimum quantities apply. Please ask for the conditions.










#### Special variant:

If you need a special variant of the switch, please do not hesitate to contact us. Maybe the type of switch you are looking for is among our many special designs. If not, we can also supply customized designs. In this case minimum quantities apply.

\* No index

### Accessories

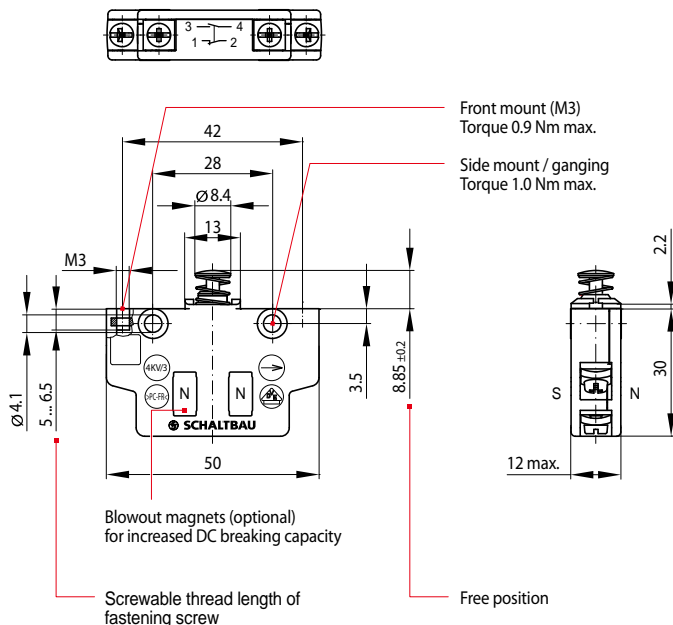
|        |  |
|--------|--|
| SK-100 | Protective housing (half shells) made of PA6     |
| SK-200 | Protective cover made of flexible soft PVC       |
| SK-400 | Protective cap made of glass fibre reinforced PC |

| Parameter  | Code                      | Version   |
|--|---------------------------|---|
| IP rating: contacts / terminals  |                           | IP40/20   |
| <b>Actuator styles</b>   |                           |   |
| ▶ Pushbutton (standard)<br>No mounting brackets  | b                         |   |
| ▶ Pushbutton<br>with mounting brackets   | c                         |   |
| ▶ Roller lever<br>No mounting brackets   | e                         |   |
| ▶ Roller lever<br>with mounting brackets   | a                         |   |
| ▶ Roller lever<br>with mounting brackets,<br>slotted holes                                     | as                        |   |
| ▶ Roller lever<br>with mounting brackets,<br>angled on one end                                 | d                         |   |
| ▶ Series<br>▶ Contact material<br>▶ Actuating and release force<br>▶ Blowouts (special design) | S800<br>*/10<br>*/40<br>L |  |
| <b>Terminal styles</b>   |                           |   |
| ▶ M3 screws with saddle clamp  | --- *                     |  |
| ▶ Flat tabs 6.3x0.8  | 20                        |  |

## Dimension and circuit diagrams

Series S800

### • Dimensions S800 b Form Za SPDT-DB switch



### Circuit diagram



### S800

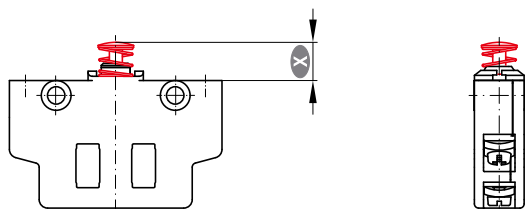
Form Za SPDT-DB switch with positive opening operation, silver or gold contacts and rigid contact bridge

S800 **b** Pushbutton (standard)

## Actuator styles and positions

Series S800

### • S800 Pushbutton (standard) **b** / **c**

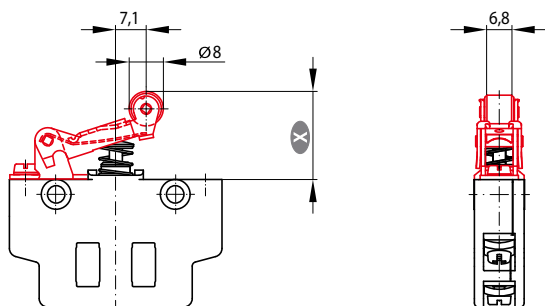


| Actuator positions  | Pushbutton (standard) <b>b</b> / <b>c</b><br>Dimension $\varnothing$ in mm |
|---|--|
| Free position   | 8.85 $\pm$ 0.20  |
| Operating position  | 6.60 $\pm$ 0.35  |
| Release position  | 7.80 $\pm$ 0.35  |
| Total positive opening travel                                     | 5.85   |
| Total travel position   | 5.65   |
| Movement differential<br>(between operating and release position) | 1.3<br>(typical)   |



**Note:** To ensure proper operation of the positive opening function it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.

### • S800 Roller lever **e** / **a** / **as** / **d**



| Actuator positions  | Roller lever <b>e</b> / <b>a</b> / <b>as</b> / <b>d</b><br>Dimension $\varnothing$ in mm |
|---|--|
| Free position   | 20.25 $\pm$ 0.35   |
| Operating position  | 16.60 $\pm$ 0.50   |
| Release position  | 18.40 $\pm$ 0.50   |
| Total positive opening travel                                     | 13.60  |
| Total travel position   | 13.3 min.  |
| Movement differential<br>(between operating and release position) | 2.2<br>(typical)   |



**Note:** To ensure proper operation of the positive opening function it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.

## Mechanical fastening Front mount, ganging

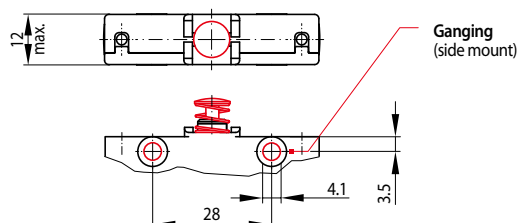
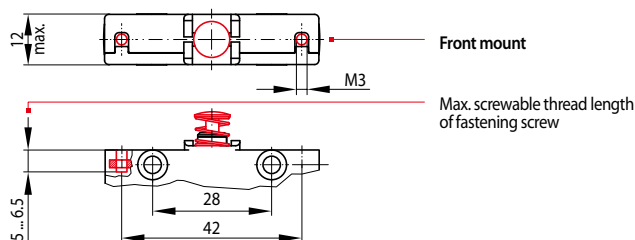
Series S800

### Front mount

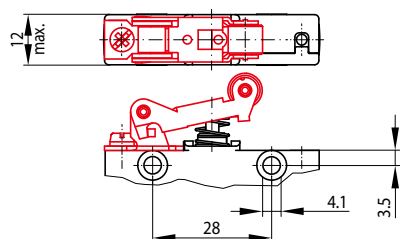
- **No mounting brackets:** By way of the nut retainers (M3) that are inserted into the switch housing. Torque 0.9 Nm max.
- **With mounting brackets:** By way of M3 screws for all actuator styles. Torque 0.9 Nm max.

### Actuators without mounting brackets

- **Pushbutton (standard) style [b]**



- **Roller lever style [e]**

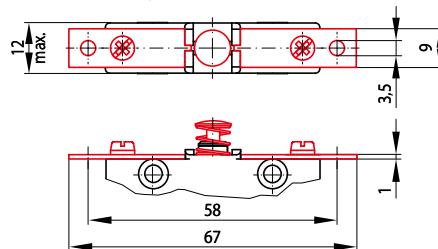


### Ganging

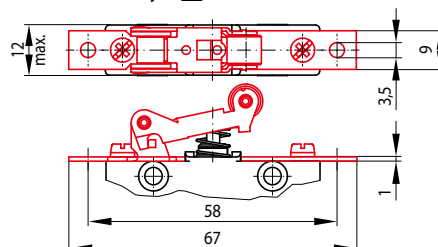
- Through the transversal bore holes with 4 mm screws or bolts. Torque 1.0 Nm max.
- Alternatively DUO clips or retaining rings can be used.

### Actuators with mounting brackets

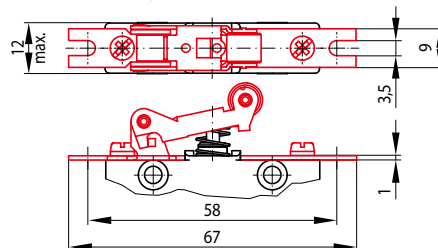
- **Pushbutton style [c]**



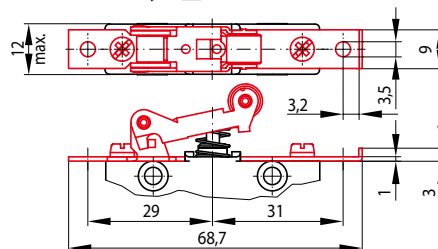
- **Roller lever style [a]**



- **Roller lever style [as]**



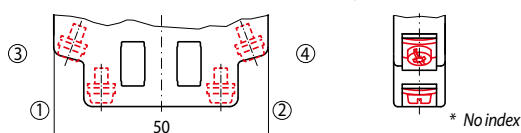
- **Roller lever style [d]**



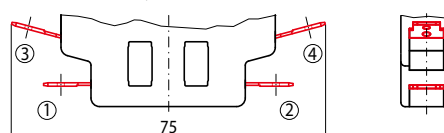
## Terminal styles M3 screws, flat tabs 6.3x0.8

Series S800

- **M3 screws with saddle clamp (standard) style [1]**



- **Flat tabs 6.3x0.8 style [20]**



### Note:

- Single and multiple-wire conductors with wire gauges AWG 18 ... 12 (0.75 mm<sup>2</sup> ... 2.5 mm<sup>2</sup>) can be clamped without wire end ferrules. If a ferrule is used the maximum wire gauge is AWG 14 (1.5 mm<sup>2</sup> max.)
- Max. 2 conductors with the same wire gauge can be clamped per terminal.
- Tightening torque of terminal screws should be 0.9 Nm max.
- IP rating: contacts IP00 / terminals IP40

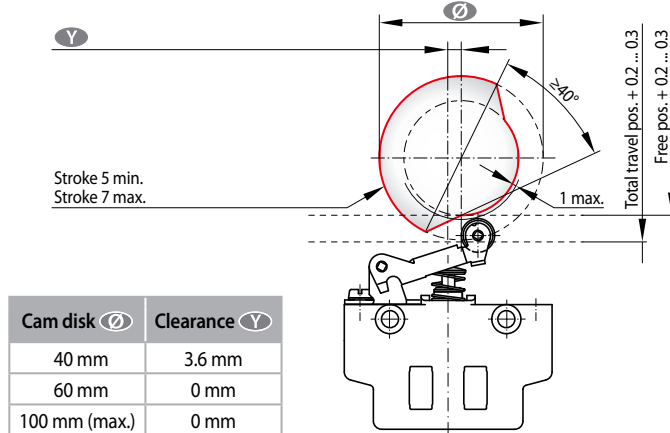


## Instruction on when to use a roller lever (examples)

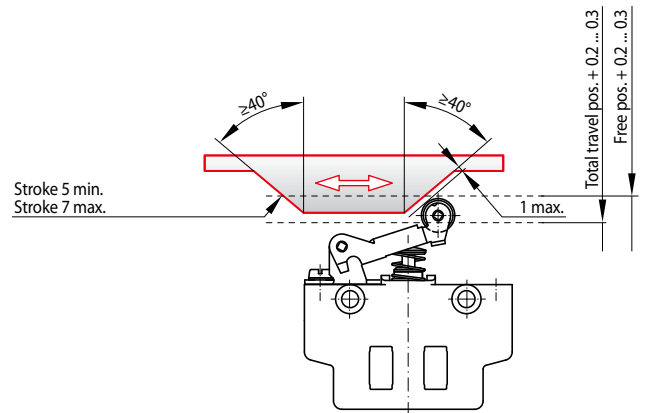
Series S800

Snap-action switches are designed for actuation with and without roller lever. A roller lever is required, if the direction of actuation deviates more than  $\pm 15^\circ$  from the perpendicular line.

### • Switch with roller lever actuated by cam disk



### • Switch with roller lever actuated by trigger cam

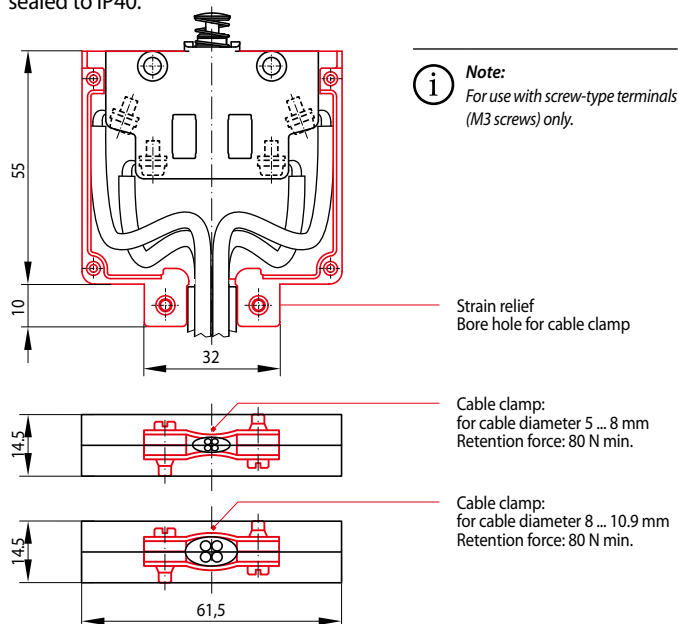


## Protective housing SK-100, SK-200, SK-400, SK-400-B

Series S800

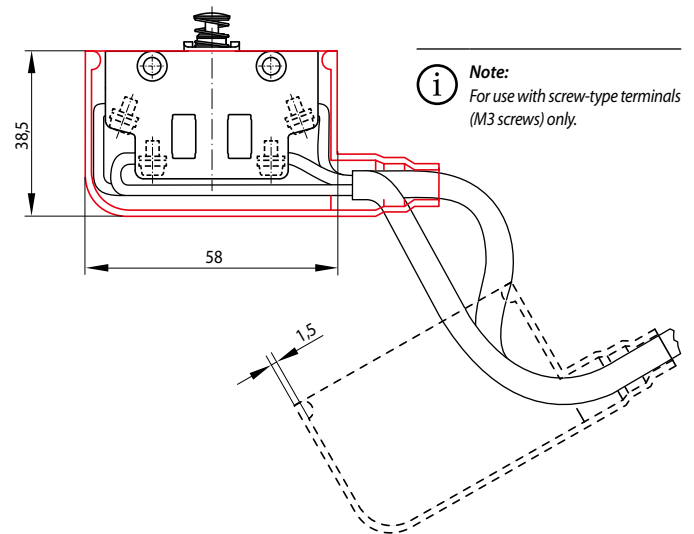
### SK-100

Protective housing (half shells) made of fibre glass reinforced PC. Screw-type terminals of switches used with protective housing SK-100 are sealed to IP40.



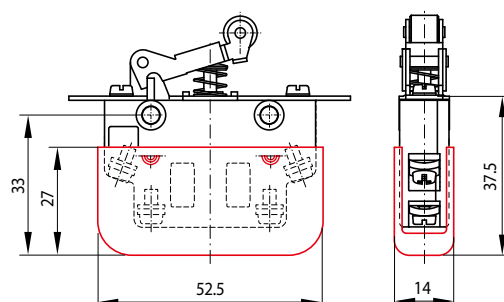
### SK-200

Protective cover made of flexible soft PVC. Protective cover SK-200 prevents accidental contact with the 4 live M3 screw terminals.



### SK-400

Protective cap made of fibre glass reinforced PC. Protective cap SK-400 prevents accidental contact with the 4 live M3 screw terminals.



S804 Ordering code

Series S804

Example: **S804 b40**

Series, Contact configuration

S804

Form Za SPDT-DB switch with silver contacts, positive opening operation, and rigid contact bridge

Actuator and mounting styles

b

Pushbutton

Actuating and release force

\*

Standard




40

Stronger reset spring

**Note:**  
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\* No index

| Parameter                       | Code   | Version   |
|---------------------------------|--------|---|
| IP rating: contacts / terminals |        | IP40/20   |
| Actuator style                  |        |   |
| ▶ Pushbutton (standard)         | b      |  |
| ▶ Series                        | S804   |  |
| ▶ Actuating and release force   | * / 40 |   |
| Terminal style                  |        |   |
| ▶ M3 screws with saddle clamp   | --- *  |  |

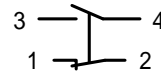
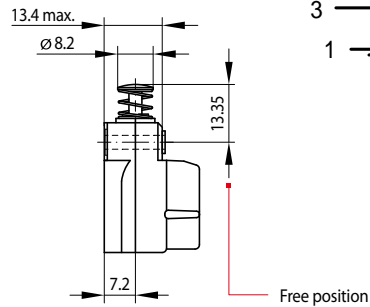
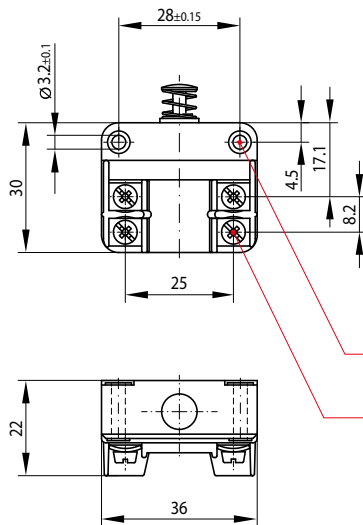


## Dimension and circuit diagrams

Series S804

### • Dimensions S804 b Form Za SPDT-DB switch

### Circuit diagram



Mount / ganging  
Torque 1.0 Nm max.

Terminal screws  
M3 with saddle clamp  
Torque 0.9 Nm max.



#### Note:

- Single and multiple-wire conductors with wire gauges AWG 18 ... 12 (0.75 mm<sup>2</sup> ... 2.5 mm<sup>2</sup>) can be clamped without wire end ferrules. If a ferrule is used the maximum wire gauge is AWG 14 (1.5 mm<sup>2</sup> max.)
- Max. 2 conductors with the same wire gauge can be clamped per terminal
- IP rating: contacts IP00 / terminals IP40



### S804

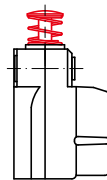
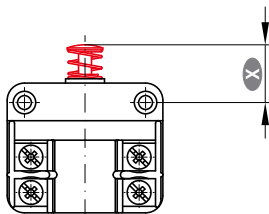
Form Za SPDT-DB switch with positive opening operation, silver contacts and rigid contact bridge

S804 **b** Pushbutton (standard)

## Actuator style and positions

Series S804

### • S804 Pushbutton (standard) **b**



| Actuator positions  | Pushbutton (standard) <b>b</b><br>Dimension $\varnothing$ in mm |
|---|---|
| Free position   | 13.35 ± 0.15  |
| Operating position  | 11.10 ± 0.35  |
| Release position  | 12.30 ± 0.35  |
| Total positive opening travel                                     | 10.35   |
| Total travel position   | 10.15   |
| Movement differential<br>(between operating and release position) | 1.3<br>(typical)  |



**Note:** To ensure proper operation of the positive opening function it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.

## S814 Ordering code

Series S814

Example:

**S814 b10/40**

Series, Contact configuration

S814

Form Za SPDT-DB switch with rigid contact bridge

Actuator style

b

Pushbutton

Contact material

\*

Silver

10

Gold

Actuating and release force

\*

Standard

40

Stronger reset spring




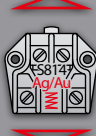

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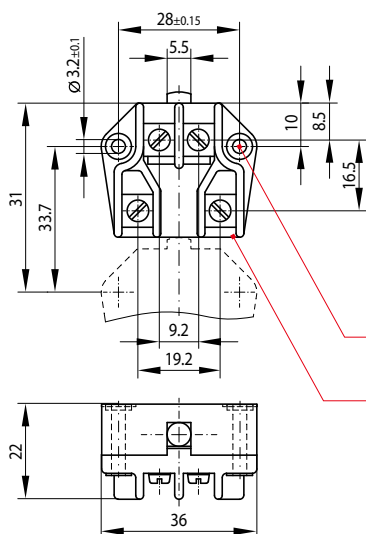
| Parameter   | Code                 | Version   |
|---|----------------------|---|
| IP rating: contacts / terminals                                 |                      | IP40/20   |
| Actuator style  |                      |   |
| ▶ Pushbutton (standard)   | b                    |  |
| ▶ Series<br>▶ Contact material<br>▶ Actuating and release force | S814<br>*/10<br>*/40 |  |
| Terminal style  |                      |   |
| ▶ M3 screws with saddle clamp                                   | --- *                |  |

## Dimension and circuit diagrams

Series S814

### • Dimensions S814 b Form Za SPDT-DB switch

### Circuit diagram



Mount / ganging  
Torque 1.0 Nm max.

Terminal screws  
M3 with saddle clamp  
Torque 0.9 Nm max.

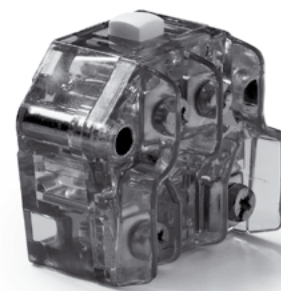


#### Note:

- Single and multiple-wire conductors with wire gauges AWG 18 ... 12 (0.75 mm<sup>2</sup> ... 2.5 mm<sup>2</sup>) can be clamped without wire end ferrules. If a ferrule is used the maximum wire gauge is AWG 14 (1.5 mm<sup>2</sup> max.)
- Max. 2 conductors with the same wire gauge can be clamped per terminal
- IP rating: contacts IP00 / terminals IP40



Free position



### S814

Form Za SPDT-DB switch with silver or gold contacts, rigid contact bridge and wiping action

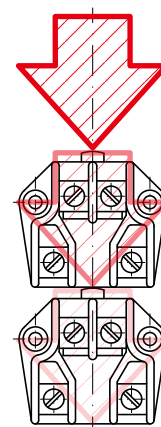
S814 **b** Pushbutton (standard)

## Plunger travelling full length through the switch

Series S814

A special feature of the S814 is its plunger which, on actuation travels the full-length of the switch. This makes them ideally suited for applications where the switching element must be in line with the perpendicular line of actuation. It is thereby possible to mount two S814 switches on top of each other and trigger two switching operations with only one actuation, like a full-blown dual changeover switch.

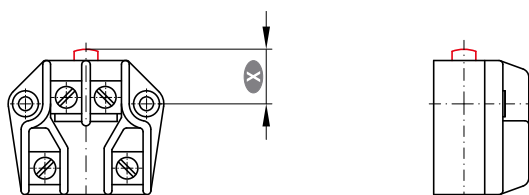
For this reason they are especially suited for use as emitter switches for meters and counters, for use with indicating devices, master controllers and control units and, last but not least, as switching elements for membrane switches.



## Actuator style and positions

Series S814

### • S814 Pushbutton (standard) **b**



| Actuator positions  | Pushbutton (standard) <b>b</b><br>Dimension $\text{X}$ in mm |
|---|--|
| Free position   | 12.6 ± 0.2   |
| Operating position  | 11.6 ± 0.2   |
| Release position  | 12.1 ± 0.2   |
| Total travel position   | 10.6   |
| Movement differential<br>(between operating and release position) | 0.5<br>(typical)   |



#### Note:

Actuator must not be pushed beyond total travel position.  
Data is valid for new switches..

## S820 Ordering code

Series S820

Example:

**S820 b7/40 L**

### Series, Contact configuration

S820

Form Zb SPDT-DB with positive opening operation and galvanically isolated contact bridges

### Actuator styles

|   | Actuator style | Mounting style         |
|---|----------------|------------------------|
| b | Pushbutton     | No mounting brackets   |
| e | Roller lever   | No mounting brackets   |
| a | Roller lever   | With mounting brackets |

### Contact material

7

Silver (Fixed contact AgCu3 / contact bridge AgSnO2)

### Special design, optional

Blowouts

L

### Actuating and release force

Standard

\*

Stronger reset spring

40






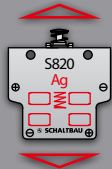

#### Note:

This catalogue shows only stock items. For some variants minimum quantities apply. Please ask for the conditions.

#### Special variant:

If you need a special variant of the switch, please do not hesitate to contact us. Maybe the type of switch you are looking for is among our many special designs. If not, we can also supply customized designs. In this case minimum quantities apply.

\* No index

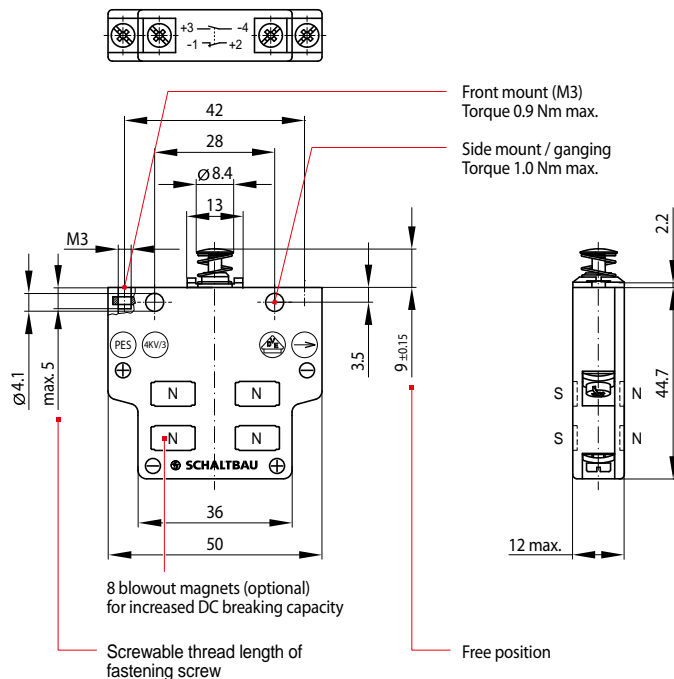
| Parameter  | Code                 | Version   |
|--|----------------------|---|
| IP rating: contacts / terminals  |                      | IP40/20   |
| Actuator styles  |                      |   |
| ▶ Pushbutton (standard), no mounting brackets  | b                    |   |
| ▶ Roller lever, no mounting brackets   | e                    |   |
| ▶ Roller lever, with mounting brackets   | a                    |   |
| ▶ Series<br>▶ Contact material<br>▶ Actuating and release force<br>▶ Blowouts (special design) | S820<br>7<br>40<br>L |  |
| Terminal style   |                      |   |
| ▶ M3 screws with saddle clamp  | --- *                |  |

 SCHALTBAU

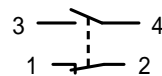
## Dimension and circuit diagrams

Series S820

### • Dimensions S820 b Form Zb SPDT



### Circuit diagram



### S820

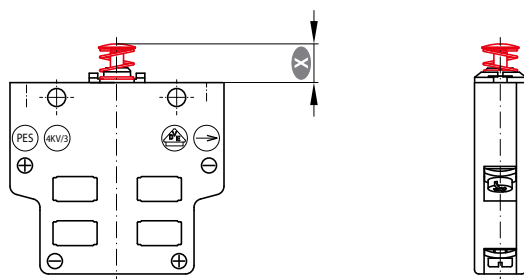
Form Zb SPDT-DB with silver contacts,  
positive opening operation and galvanic-  
ally isolated contact bridges

S820 **b** Pushbutton (standard)

## Actuator styles and positions

Series S820

### • S820 Pushbutton (standard) **b**

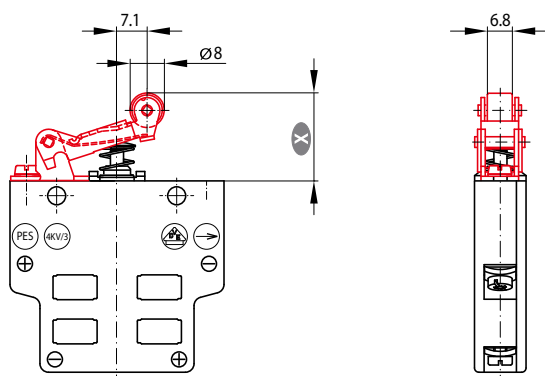


| Actuator positions   | Pushbutton (standard) <b>b</b><br>Dimension $\varnothing$ in mm |
|--|---|
| Free position  | 9.0 ± 0.15  |
| Operating position   | 6.0 ± 0.35  |
| Release position   | 8.0 ± 0.35  |
| Total positive opening travel  | 5.2   |
| Total travel position  | 5.0   |
| Movement differential<br>(between operating and<br>release position) | 2.0<br>(typical)  |



**Note:** To ensure proper operation of the positive opening function it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.

### • S820 Roller lever **e**, **a**



| Actuator positions   | Roller lever <b>e</b> , <b>a</b><br>Dimension $\varnothing$ in mm |
|--|---|
| Free position  | 20.9 ± 0.35   |
| Operating position   | 15.6 ± 0.5  |
| Release position   | 18.85 ± 0.5   |
| Total positive opening travel  | 13.1  |
| Total travel position  | 12.9  |
| Movement differential<br>(between operating and<br>release position) | 3.25<br>(typical)   |

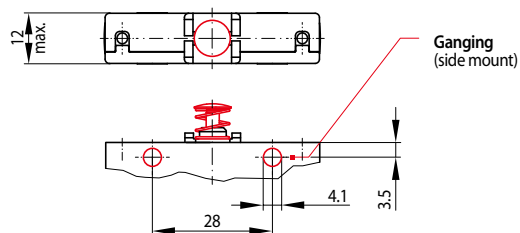
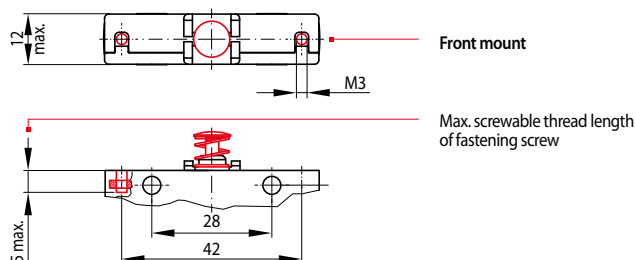


**Note:** To ensure proper operation of the positive opening function it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.

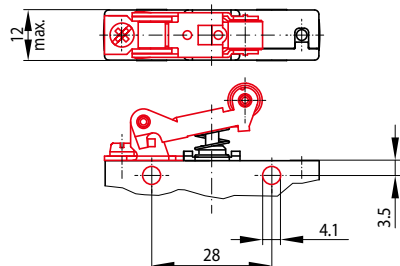
## Series S820

- **No mounting brackets:** By way of the nut retainers (M3) that are inserted in the housing of the switch. Torque 0.9 Nm max.
- **With mounting brackets:** By way of M3 screws for all actuator styles. Torque 0.9 Nm max.

- **Pushbutton (standard) no mounting brackets** style **b**

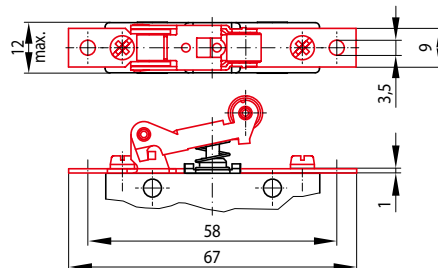


- **Roller lever without mounting brackets** style



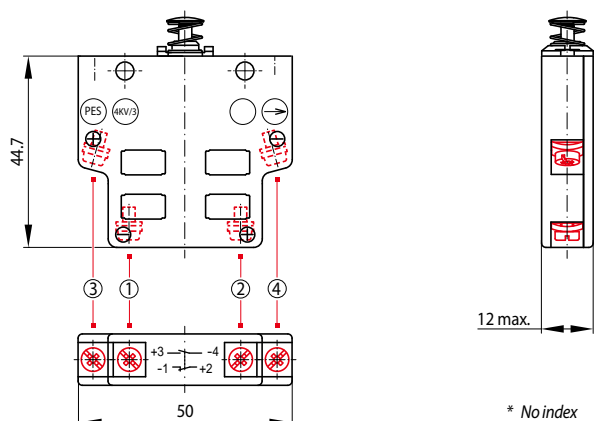
- Through the transversal bore holes with 4 mm screws or bolts. Torque 1.0 Nm max.
- Alternatively DUO clips or retaining rings can be used.

- Roller lever with mounting brackets style a



## Series S820

- M3 screws with saddle clamp (standard) style ☐



\* *No index*

①

**Note:**

- *Single and multiple-wire conductors with wire gauges AWG 18 ... 12 (0.75 mm<sup>2</sup> ... 2.5 mm<sup>2</sup>) can be clamped without wire end ferrules. If a ferrule is used the maximum wire gauge is AWG 14 (1.5 mm<sup>2</sup> max).*
- *Max. 2 conductors with the same wire gauge can be clamped per terminal.*
- *Tightening torque of terminal screws should be 0.9 Nm max.*
- *IP rating: contacts IP00 / terminals IP40*

*Dimensions in mm / Subject to technical alterations*

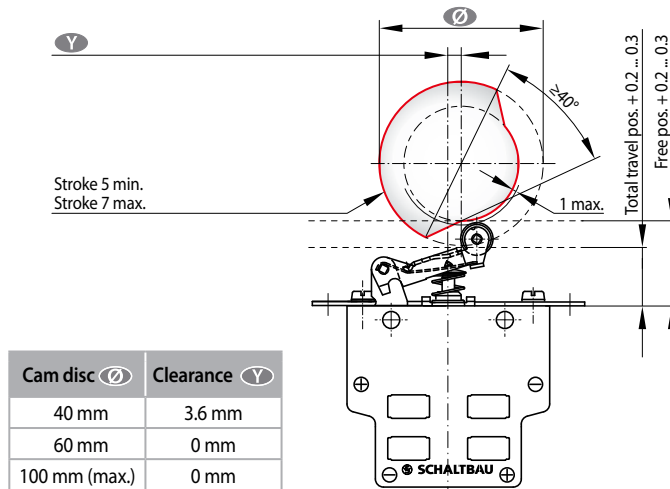


## Instruction on when to use a roller lever (examples)

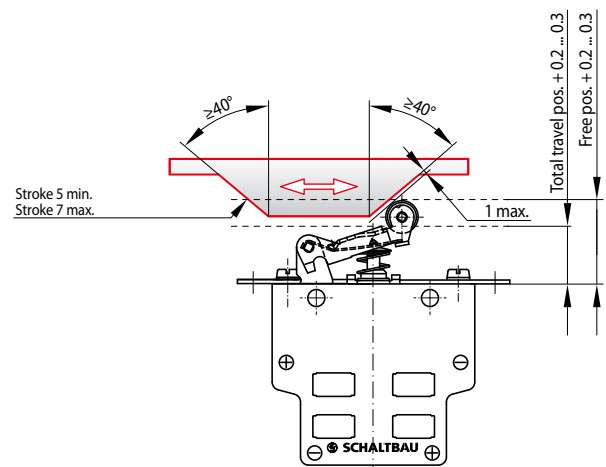
Series S820

Snap-action switches are designed for actuation with and without roller lever. A roller lever is required, if the direction of actuation deviates more than  $\pm 15^\circ$  from the perpendicular line.

### Switch with roller lever actuated by cam disk



### Switch with roller lever actuated by trigger cam



## Mounting and safety instructions, environmental conditions

Series S800/S804/S814/S820

### Mounting instructions:

- Snap-action switches should be mounted by qualified professional staff only.
- Observe the required clearance and creepage distances. This is also true for connected wires.
- It is necessary to use insulating plates when ganging or mounting switches on uninsulated surfaces.
- The switches can be mounted in any desired position.
- When mounting the switches mechanically make sure to have 2 fastening elements (e.g. screws).
- Only use adequate fastening elements such as cylinder head or collar screws or DUO-clips, including washers. When fastening make sure not to exceed the maximum tightening torque.
- When mounting switches with mounting brackets make sure that the mounting surface is level.
- Avoid tilting the screw when mounting and prevent mechanical tension on the housing.
- The actuator may not be pre-tensioned when in the free position. When actuated, the actuator should travel well beyond the operating position, for at least 50% of the predefined overtravel, all the way to total travel position.
- To ensure the proper function of the positive opening operation it is necessary to depress the plunger to the end point of the positive opening travel.
- To prevent mechanical destruction of the switch, make sure that actuation of the switch does not exceed the specified total travel position. Avoid using the switch as a mechanical end stop.
- High-impact actuation of the switch can also have a negative effect on its mechanical life.
- When securing stripped wire ends in the terminal clamp, make sure the wire insulation is flush with the clamp.
- Make sure that strain relief of the connected leads functions.
- Prevent a transfer of forces to the switch terminals.
- When using versions with blowout magnets observe the right polarity, see circuit diagram at the bottom of the switch.

### Non-permissible environmental conditions:

- Cleaning agents, adhesives, solvents, or screw-retaining varnish must be compatible with polycarbonate (S800, S804, S814 series) and polyethersulfone (S820 series), respectively. Never use chemicals not compatible with polycarbonate for S800, S804 and S814 series switches and polyethersulfone for S820 series switches, respectively.
- Using chemicals which are not compatible can result in cracks, deformation, breakage and dissolution of the housing or complete destruction of the switch.

### Safety instructions:

- Be sure to make visual inspections regularly.
- Improper handling of the switch, e. g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.



**Defective parts must be replaced immediately!**

## Standards

Series S800/S804/S814/S820

- **IEC 60947-5-1:** Low-voltage switchgear and controlgear, Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
- **IEC 60947-5-1, Annex K:** Special requirements for control switches with direct opening action
- **UL508:** Industrial control equipment
- **IEC 60529:** Degrees of protection provided by enclosures (IP Code)
- **UL 94V-0:** Flammability Standard
- **DIN 41636-6:** Dimensions correspond to type F as defined by the standard
- **DIN 40050-9:** Road vehicles; degrees of protection (IP code); protection against foreign objects; water and contact; electrical equipment
- **DIN 46244:** Tabs for receptacles

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