

## Panel cut-out: Ø 16.2 mm



**OKTRON®**

Front dimensions:  
25 x 25 mm

**014**



**OKTRON®-R**

Front dimensions:  
Ø 25 mm

**034**



**QUARTRON®**

Front dimensions:  
25 x 25 mm

**054**

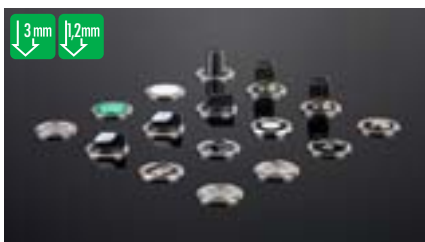


**mYnitron®**

Front dimensions:  
Ø 23,5 mm

**400**

## Panel cut-out: Ø 22.3 mm



**RONTRON-R-JUWEL**

Front dimensions:  
Ø 28 mm

**074**



**RONTRON-Q-JUWEL**

Front dimensions:  
28 x 28 mm

**104**



**SHORTRON®**

Front dimensions:  
Ø 28 mm

**122**



**SHORTRON for base-plate mounting**

Front dimensions:  
Ø 28 mm

**158**



**SHORTRON® connect**

Front dimensions:  
Ø 28 mm

**176**



**SHORTRON® M12**

Front dimensions:  
Ø 28 mm

**200**



**RX-JUWEL**

Front dimensions:  
Ø 28 mm

**210**



**RONDEX**

Front dimensions:  
Ø 28 mm

**226**



**RONDEX-M**

Front dimensions:  
Ø 28 mm

**242**

Panel cut-out: **Ø 22.3 mm**



**RONDEX-JUWEL**

Front dimensions:  
Ø 28 mm

**258**



**DUX-Basic**

Front dimensions:  
Ø 30 mm

**276**



**QUARTEX-R**

Front dimensions:  
30 x 30 mm

**296**



**RVA stainless steel**

Front dimensions:  
Ø 28 mm

**312**

Panel cut-out: **Ø 30.5 mm**

Panel cut-out: **23.1x23.1 mm**

Panel cut-out: **24x24 mm**



**KOMBITAST-R-JUWEL**

Front dimensions:  
Ø 36 mm

**322**



**OKTRON-JUWEL**

Front dimensions:  
25 x 25 mm

**344**



**QUARTRON-JUWEL**

Front dimensions:  
27 x 27 mm

**360**

Panel cut-out: **26x26 mm**



**QUARTEX-R-JUWEL**

Front dimensions:  
30 x 30 mm

**380**

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## Pushbuttons and switches

### → Use and application fields

Schlegel pushbuttons and switches include a variety of complete pushbutton and switch series for front-panel and base-plate mounting. The actuators are designed for exclusive applications as well as for use in harsh environments. They are housed in attractive, square, rectangular or round insulating bodies, allowing side-by-side assembly and thus full keyboard arrangements. Due to the flexible contact configurations and ease of assembly, the units can be used in every field of application.

### → Mounting of pushbuttons and switches

First, the required mounting holes have to be drilled, punched or lasered (refer to the relative drilling pattern on the starting page of each series). For round cut-outs, keep in mind to provide a recess for the locating lug. The actuators are then inserted into the cut-outs and fixed with a mounting nut on the rear.

Because they are almost completely recessed in the panel, the square Juwel actuator housings require a spacer to be put on from behind before securing them with the mounting nut. **Lenses and nameplates have to be ordered separately unless otherwise stated. This provides high flexibility to the combination of lens colours and inscriptions once the pushbuttons and switches are mounted in the panel (see illustration under "Mounting and Service Instructions").**

### → Mounting of contact blocks

All Schlegel contact blocks have rounded corners and edges and thus allow a comfortable use without risk of injury. For the 22 mm series with bayonet applies: With the M...type series, first insert the contact modules into a module holder, then snap the module holder onto the actuator neck by a rotary motion (bayonet coupling). For side-by-side arrangements with the D... type series, snap the module holder onto the actuator neck first by a rotary motion, then insert the contact modules into the module holder. The contact blocks ETR.. (one-piece) do not need a module holder, so snap them directly onto the actuator. As to the actuators with 16mm bayonet, simply snap the contact blocks of the type series A, B, C and P onto the actuator neck (no module holder necessary). A slight twist enables to snap them off again. The contact units of the type series CTP and CZ (suitable for PCB's) are first soldered onto the PCB, then put onto the actuator of the 16 mm series and fixed by a small locking bolt. This bolt can be moved with a screwdriver through a hole in the PCB.

### → Assembly instructions for base-plate mounted version

- snap the relative contact block onto the actuator neck
- spacer sleeves ensure the correct distance between PCB and mounting plate.
- screws must be secured against loosening.

Note for base-plate mounted type "FRVKZ"  
(with plunger extension):  
ATTENTION: must not be used for the illuminated version!

Note for base-plate mounted type "FRVKZL"  
(with plunger extension):  
ATTENTION. use only for the illuminated version!

### → Illumination

For the illumination of pushbuttons, selector or key switches and pilot lights either incandescent lamps, neon lamps or LED's can be used. The contact units are optionally available with BA9s, T5,5K or W2x4,6d sockets or integrated LEDs, depending on the particular type series.

### → Marking options

With the importance of an efficient component marking in mind, the Schlegel pushbuttons and switches have been designed to accept a clearly visible marking, easy to produce and comprising a variety of symbols and inscriptions. Hence, a multitude of standard nameplates are available, but also customer-specific imprints are possible. The nameplates are inserted under the lenses and are thus protected from wearing and soiling. Still today this is the best system which was originally a development of GEORG SCHLEGEL. Other marking options offer the external markings using special nameplate holders. These nameplates can also be printed with standard symbols or according to users' requirements.

### → Front bezel colours (refer to the relative series)

Other front bezel colours can be supplied on request.

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### Internationally protected design.

**Please refer to [www.schlegel.biz/web/de/manuals.php](http://www.schlegel.biz/web/de/manuals.php) for detailed instructions for use and assembly.**

→ **Degree of protection (acc. to EN 60529, ISO 20653)**

The Schlegel actuators generally comply with IP65 (this refers to the component in front of the switchboard). Special versions, as e.g. for the food processing sector, are classified up to IP69K (ISO 20653).

For extremely severe conditions, e.g. coarse dirt, chippings, flour, etc., there are membrane pushbuttons available or actuators with transparent silicone or PVC caps.

→ **Materials**

Only top-quality materials such as polyamide 6.6 / polyamide 12, partially reinforced, and other proven engineering plastics are utilised. Tin-plated brass is mostly used for the terminals of the contact blocks. The contacts are of a silver-nickel alloy but can also be gold-plated on request. A special surface makes them self-cleaning.

→ **Technical characteristics**

As to the technical characteristics, approvals and operating and ambient conditions of the contact blocks, please refer to the catalogue information given on the starting pages of the relevant type series.

The stroke / operating travel is shown in pictograms separately for each actuator and in switching diagrams for the relevant contact blocks. This information is included as well in the technical specifications.

The positive opening function of the NC contacts, which is necessary for emergency-stop applications is identified by a symbol (circle with horizontal arrow) next to the relative switching diagram.

→ **Definition of the IP Codes**

Standards & code digits	Numerals or letters	Protection of equipments	Protection of persons
EN 60529		Protection against solid foreign objects (incl. dust)	Protection against hazardous parts
First digit	0	non-protected	non-protected
	1	≥ Ø 50 mm	with the back of a hand
	2	≥ Ø 12.5 mm	with a finger
	3	≥ Ø 2.5 mm	with a tool
	4	≥ Ø 1.0 mm	with a wire
	5	dust-protected	with a wire
	6	dust-tight	with a wire
		Protection against ingress of water with harmful effects	
Second digit	0	non-protected	
	1	vertically falling water drops	
	2	water drops (tilted up to 15°)	
	3	spraying water	
	4	splashing water	
	5	water jets	
	6	powerful water jets	
	7	temporary immersion in water	
	8	continuous immersion in water	
9	high pressure and high temperature water jets		
ISO 20653:2013		Protection against solid foreign objects (incl. dust)	
Second digit	9K	high pressure and high temperature water jets	

## Mode of operation of 3-position selector and key switches

### → One-piece plunger:

The one-piece plunger of the 3-position selector and key switches is not pushed in the left position, in the centre position it is pushed half way whereas in the right switching position it is entirely pushed through. Using a contact block with a NC contact (opens after a travel of approx. 1.5mm) and a NO contact (closes after a travel of approx. 4mm), the switching mode changes as follows:

1. left position = switching travel 0 mm = NC closed, NO open
2. centre position = switching travel ~3 mm = NC and NO are open
3. right position = switching travel 6 mm = NC open, NO closed

This yields the advantage that it is not important in which "direction" the contact elements are snapped on, the switching situation always results from the switching travel. This also means that cross coupling of the contact elements is allowed.

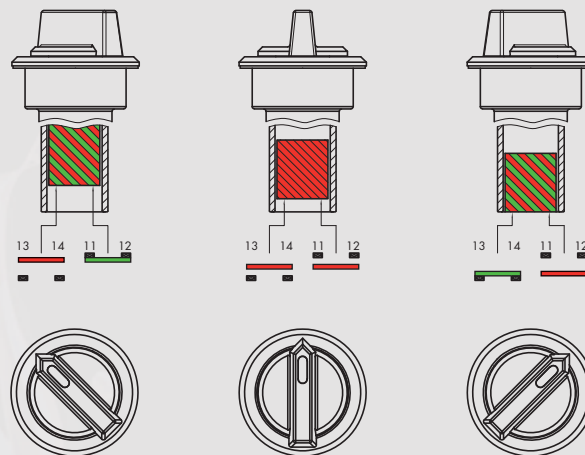


illustration of one-piece plunger

### → Two-piece plunger:

The switch has two separate half shells. In the left switching position the left plunger part and thus the left contact element is operated, in the right switching position it is the right contact element. In the centre position none of the two contact elements is activated. Therefore, it should be noted that a cross-coupling of the contact elements is NOT allowed! In addition, the contact elements must be snapped on in the correct direction, otherwise any actuation will lead to the opposite function. In order to obtain the same switching situations as mentioned before, two NO contacts must be used:

1. left position = left plunger part operated = left NO contact closed, right NO contact open
2. center position = no plunger part operated = both NO contacts open
3. right position = right plunger part operated = left NO contact open, right NO contact closed

The two-piece plunger is used in the selector heads and key switches of the following series: Oktron, Oktron-R, Oktron-Juwel, Rontron-R-Juwel, Rontron-Q-Juwel and RX-Juwel (RXJZSA12E and RXJZWBL), DUX-Basic, Kombitast-R-Juwel (KRJZ...), Rondex-Juwel.

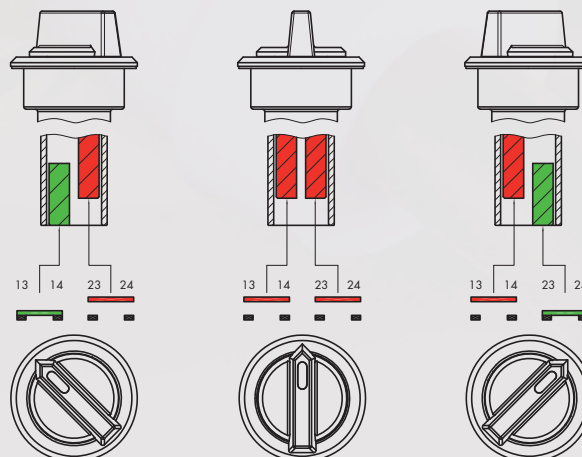


illustration of two-piece plunger