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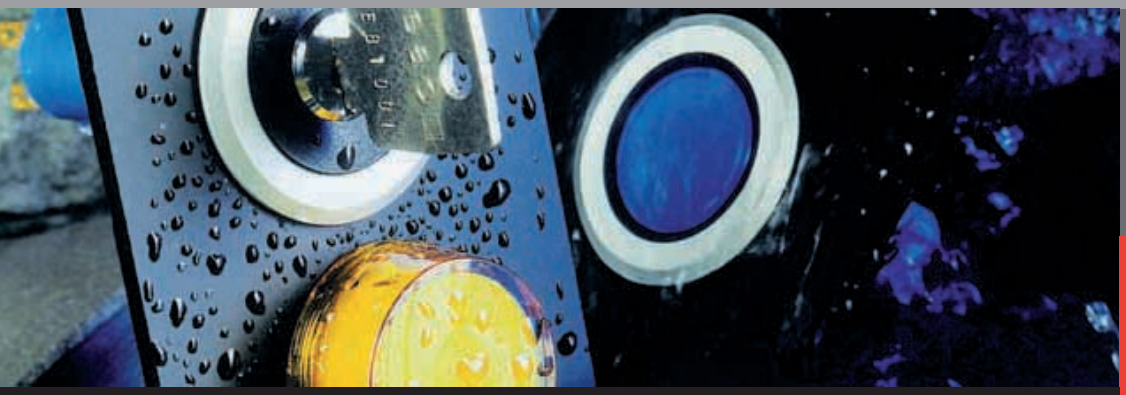
Human Machine Interfaces



EAO Product Information

Series 14

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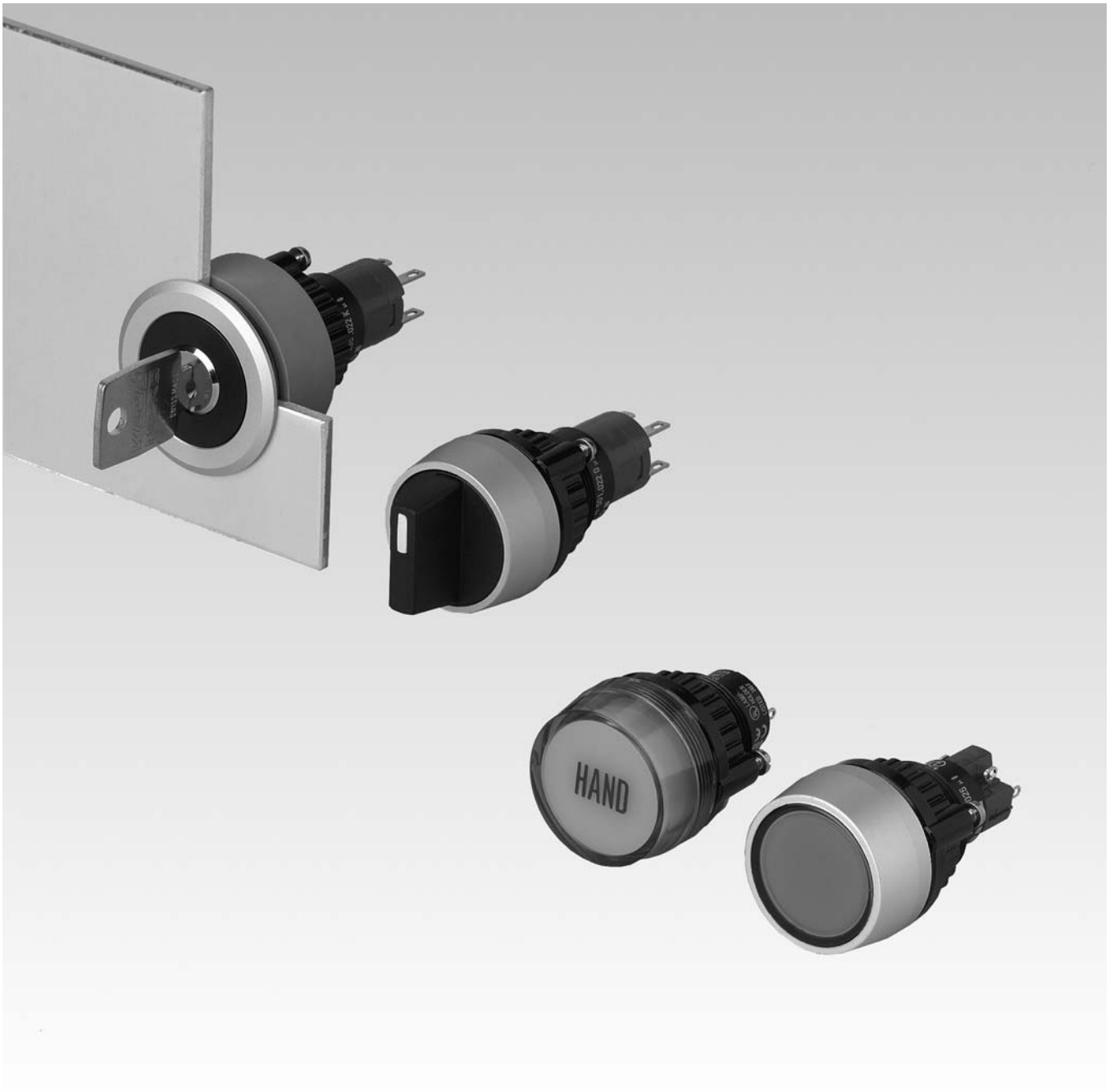
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Product Information

General notes
The Series 14 illuminated pushbuttons combine the robust actuators of the Series 04 with choice of either snap-action switching elements with gold plated silver contacts for one changeover only.
These pushbuttons have an IP 67 proof front (temporary emerson) and can be immersed to a depth of one metre.
The range includes pushbuttons, keylock switches and selector switches.
Anodized aluminium parts can have visible variations due production-technical reasons.

Mounting
Mounted from the front through either 22.5 mm dia cut out for raised or 30.5 mm dia for flush.
The pushbuttons are secured to the panel by means of a fixing ring/ nut and prevented from twisting by two srews.
To ensure correct positioning of the pushbuttons we can provide a positioning insert if required.
The Low Level switching elements with universal terminals allow them to PCB mounted. These terminals are also suitable for dip soldering. A plug-in base is available, which when soldered to the board allows the switch to be easily plugged-in.

Lenses
Lenses of transparent plastic or aluminium are available in various standard colours.

Marking
For further information about engraving, hot stamping and film inserts see part Marking.

Illumination
The T5.5 incandescent (filament) lamp (6, 12, 24, 28, 30, 36, 48 V) ensures perfect illumination of the lenses, which are supplied in various colours.
T5.5 Single-Chip LED (6, 12, 24, 28, 48 V) are also available in blue, green, red, white or yellow.
Do not solder the terminals directly, because of the high surface temperature.
Luminosity and wave length scattering caused by the technology used in the LED manufacturing processes may lead to visual differences in our products.

Position indication
The status of a maintained action switch can be determinded by the position of the lens.

Keylock switch
Single locks (2 positions).
There are 10 different locks with standard numbers 1001 ... 1010. If the lock number is not specified, we will supply standard number 1001.
Additional lock numbers are available on request.
Two keys are supplied with each keylock switch.
Spare keys for standard locks may be ordered by quoting Typ-Nr. 14-987 (please state the lock number).

Specimen order

Illuminated pushbutton :

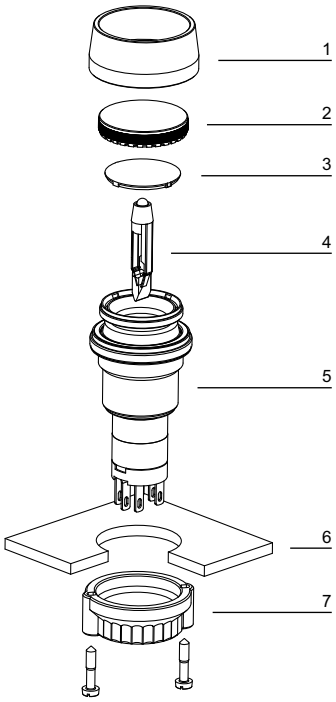
-	Illuminiated pushbutton actuator, 29 mm dia., snap-action switching element, 1NC + 1 NO, momentary action, soldering terminal	14-131.0252

Essential accessories :

-	Lens plastic red	704.602.2
-	Marking plate white translucent	704.609.9
-	Front ring aluminium natural	704.600.1
-	Single-LED, T5.5, 12 VAC/DC, white	10-2109.1069

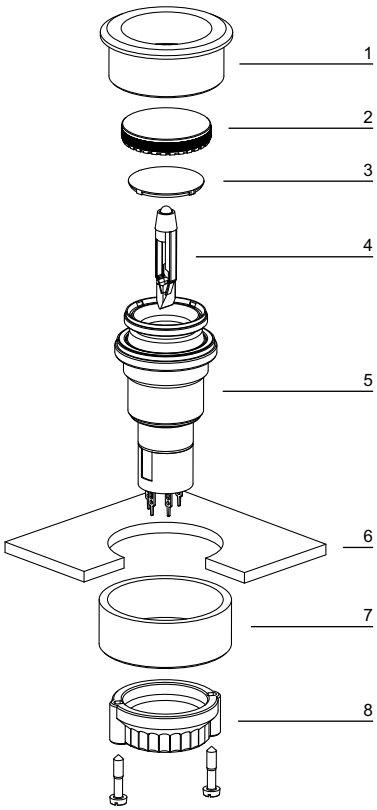
We reserve the right to modify technical data
All dimensions in mm

Illuminated pushbutton, raised mounting



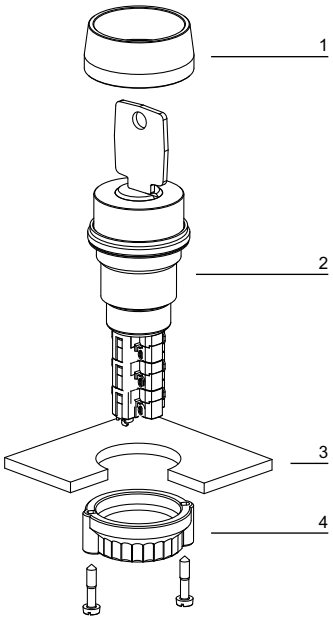
1 Front ring
2 Lens
3 Marking plate
4 LED
5 Actuator housing with switching element
6 Front plate
7 Fixing nut

Illuminated pushbutton, flush mounting



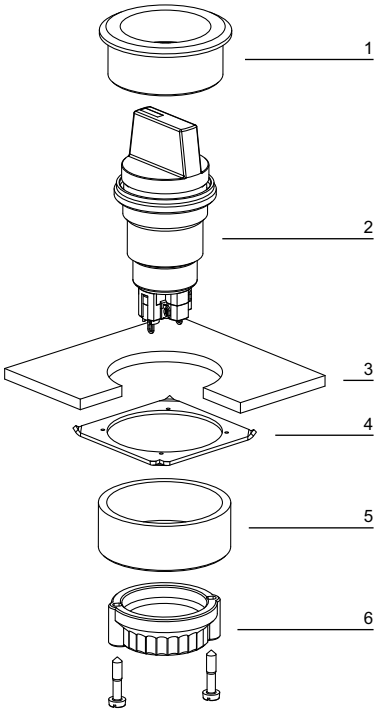
1 Front bezel set, flush mounting
2 Lens
3 Marking plate
4 LED
5 Actuator housing with switching element
6 Front panel
7 Pressure ring
8 Fixing nut

Keylock switch, raised mounting



1 Front ring
2 Actuator housing with switching element
3 Front plate
4 Fixing nut

Selector switch, flush mounting



1 Front ring
2 Actuator housing with switching element
3 Front plate
4 Anti-twist ring
5 Pressure ring
6 Fixing nut

Indicator actuator full face illumination

Essential Accessories:

- Lens cap page 18
- Marking cap for Lens cap page 19
- Single-LED page 24

	Front protection	Diode (1N 4007)	Terminals	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	[kg]
Indicator actuator full face illumination	IP 67	1 D	UT	**14-741.006**	2	5	17	56	0.011
		2 D	UT	**14-742.006**	2	5	17	57	0.011
		-	S	**14-030.005**		5	17	3	0.010
			S1	**14-030.002**		5	17	3	0.010
			UT	**14-031.006**	2	5	17	2	0.011

Diode (1N 4007): D = Diode, - = without
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Indicator actuator front illumination

Essential Accessories:

- Front ring page 19
- Lens plastic page 17
- Marking plate for Lens plastic and metal page 18
- Single-LED page 24

	Front protection	Terminals	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	[kg]
Indicator actuator front illumination	IP 67	S	**14-040.005**		5	19	3	0.050
		S1	**14-040.002**		5	19	3	0.050
		UT	**14-041.006**	2	5	19	2	0.050

Terminals: S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm), UT = Universal terminal
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Buzzer

	Front protection	Front cap	Terminals	Ø 29 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	kg
Buzzer Operation voltage 24 VDC	IP 65	Brass nickel-plated	S1	**14-810.902**	5	1	1	0.016
		Plastic black	S1	**14-810.002**	5	1	1	0.016

Further information in the Technical Data and Typical Applications
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Illuminated actuator pushbutton

Essential Accessories:

- Front ring page 19
- Lens plastic page 17
- Marking plate for Lens plastic and metal page 18
- Single-LED page 24

	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Illuminated actuator pushbutton	IP 67	LL	1 NC	-	MA	UT	**14-476.036**	2	5	20	12	0.015
					M	UT	**14-436.036**	2	5	20	39	0.015
			1 NC + 1 NO	-	MA	UT	**14-473.036**	2	5	20	15	0.015
					M	UT	**14-433.036**	2	5	20	42	0.015
			1 NO	-	MA	UT	**14-475.036**	2	5	20	14	0.015
					M	UT	**14-435.036**	2	5	20	41	0.015
			2 NC	-	MA	UT	**14-472.036**	2	5	20	13	0.015
					M	UT	**14-432.036**	2	5	20	40	0.015
			2 NO	-	MA	UT	**14-471.036**	2	5	20	16	0.015
					M	UT	**14-431.036**	2	5	20	43	0.015
		SA	1 NC + 1 NO	1 D	MA	UT	**14-747.0292**	2	5	20	9	0.014
					M	UT	**14-743.0292**	2	5	20	36	0.014
				2 D	MA	UT	**14-748.0292**	2	5	20	10	0.014
					M	UT	**14-744.0292**	2	5	20	37	0.014
				-	MA	S	**14-271.0252**		5	20	11	0.013
						S1	**14-271.022**		5	20	11	0.013
					M	S	**14-131.0252**		5	20	38	0.013
						S1	**14-131.022**		5	20	38	0.013
			2 NC + 2 NO	1 D	MA	UT	**14-749.0292**	2	5	20	6	0.016
					M	UT	**14-745.0292**	2	5	20	33	0.016
				2 D	MA	UT	**14-750.0292**	2	5	20	7	0.016
					M	UT	**14-746.0292**	2	5	20	34	0.016
				-	MA	S	**14-272.0252**		5	20	8	0.015
					M	S	**14-132.0252**		5	20	35	0.015
			3 NC + 3 NO	-	MA	S	**14-273.0252**		5	20	5	0.017
					M	S	**14-133.0252**		5	20	32	0.017
			4 NC + 4 NO	-	MA	S	**14-274.0252**		5	20	4	0.019
					M	S	**14-134.0252**		5	20	31	0.019

Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Diode (1N 4007): - = without, D = Diode
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Mushroom-head actuator pushbutton

Essential Accessories:

- Front ring page 19
- Marking plate for Mushroom-head cap page 18
- Mushroom-head cap page 18

	Front protection	Switching system	Contacts	Switching action	Terminals	Ø 40 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Mushroom-head actuator pushbutton	IP 67	LL	1 NC	MA	UT	**14-476.036**	2	2	18	12	0.015
				M	UT	**14-436.036**	2	2	18	39	0.015
			1 NC + 1 NO	MA	UT	**14-473.036**	2	2	18	15	0.015
				M	UT	**14-433.036**	2	2	18	42	0.015
			1 NO	MA	UT	**14-475.036**	2	2	18	14	0.015
				M	UT	**14-435.036**	2	2	18	41	0.015
			2 NC	MA	UT	**14-472.036**	2	2	18	13	0.015
				M	UT	**14-432.036**	2	2	18	40	0.015
			2 NO	MA	UT	**14-471.036**	2	2	18	16	0.015
				M	UT	**14-431.036**	2	2	18	43	0.015
		SA	1 NC + 1 NO	MA	S	**14-271.0252**		2	18	11	0.013
					S1	**14-271.022**		2	18	11	0.013
				M	S	**14-131.0252**		2	18	38	0.013
					S1	**14-131.022**		2	18	38	0.013
			2 NC + 2 NO	MA	S	**14-272.0252**		2	18	8	0.015
				M	S	**14-132.0252**		2	18	35	0.015
			3 NC + 3 NO	MA	S	**14-273.0252**		2	18	5	0.017
				M	S	**14-133.0252**		2	18	32	0.017
			4 NC + 4 NO	MA	S	**14-274.0252**		2	18	4	0.019
				M	S	**14-134.0252**		2	18	31	0.019

Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Illuminated mushroom-head actuator pushbutton

Essential Accessories:

- Front ring page 19
- Marking plate for Mushroom-head cap page 18
- Mushroom-head cap illuminated page 18
- Single-LED page 24

	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 40 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Illuminated mushroom-head actuator pushbutton	IP 67	LL	1 NC	-	MA	UT	**14-476.036**	2	2	18	12	0.015
					M	UT	**14-436.036**	2	2	18	39	0.015
			1 NC + 1 NO	-	MA	UT	**14-473.036**	2	2	18	15	0.015
					M	UT	**14-433.036**	2	2	18	42	0.015
			1 NO	-	MA	UT	**14-475.036**	2	2	18	14	0.015
					M	UT	**14-435.036**	2	2	18	41	0.015
			2 NC	-	MA	UT	**14-472.036**	2	2	18	13	0.015
					M	UT	**14-432.036**	2	2	18	40	0.015
			2 NO	-	MA	UT	**14-471.036**	2	2	18	16	0.015
					M	UT	**14-431.036**	2	2	18	43	0.015
		SA	1 NC + 1 NO	1 D	MA	UT	**14-747.0292**	2	2	18	9	0.014
					M	UT	**14-743.0292**	2	2	18	36	0.014
				2 D	MA	UT	**14-748.0292**	2	2	18	10	0.014
					M	UT	**14-744.0292**	2	2	18	37	0.014
				-	MA	S	**14-271.0252**		2	18	11	0.013
						S1	**14-271.022**		2	18	11	0.013
					M	S	**14-131.0252**		2	18	38	0.013
						S1	**14-131.022**		2	18	38	0.013
			2 NC + 2 NO	1 D	MA	UT	**14-749.0292**	2	2	18	6	0.016
					M	UT	**14-745.0292**	2	2	18	33	0.016
				2 D	MA	UT	**14-750.0292**	2	2	18	7	0.016
					M	UT	**14-746.0292**	2	2	18	34	0.016
				-	MA	S	**14-272.0252**		2	18	8	0.015
					M	S	**14-132.0252**		2	18	35	0.015
			3 NC + 3 NO	-	MA	S	**14-273.0252**		2	18	5	0.017
					M	S	**14-133.0252**		2	18	32	0.017
			4 NC + 4 NO	-	MA	S	**14-274.0252**		2	18	4	0.019
					M	S	**14-134.0252**		2	18	31	0.019

Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Diode (1N 4007): - = without, D = Diode
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

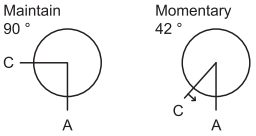
Keylock switch 2 positions

Maintain 90 ° / Momentary 42 °	Front protection	Front ring	Switching system	Contacts	Switching action	Terminals	Key remove	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Keylock switch 2 positions Position A : Basic position Position C : Maintained action Standard lock 1001, Front : Plastic black	IP 65	Aluminium natural	LL	1 NC + 1 NO	MA	UT	A	**14-415.036K**	2	5	21	54	0.030
							C	**14-418.036K**	2	5	21	54	0.030
							C + A	**14-412.036K**	2	5	21	54	0.030
				2 NO	MA	UT	A	**14-414.036K**	2	5	21	55	0.030
							C	**14-417.036K**	2	5	21	55	0.030
							C + A	**14-411.036K**	2	5	21	55	0.030
			SA	1 NC + 1 NO	MA	S	A	**14-235.025K2**		5	21	50	0.029
							C	**14-335.025K2**		5	21	50	0.029
							C + A	**14-135.025K2**		5	21	50	0.029
						S1	A	**14-235.022K**		5	21	50	0.029
							C	**14-335.022K**		5	21	50	0.029
							C + A	**14-135.022K**		5	21	50	0.029
				2 NC + 2 NO	MA	S	A	**14-236.025K2**		5	21	51	0.031
							C	**14-336.025K2**		5	21	51	0.031
							C + A	**14-136.025K2**		5	21	51	0.031
				3 NC + 3 NO	MA	S	A	**14-237.025K2**		5	21	52	0.033
							C	**14-337.025K2**		5	21	52	0.033
							C + A	**14-137.025K2**		5	21	52	0.033
				4 NC + 4 NO	MA	S	A	**14-238.025K2**		5	21	53	0.035
							C	**14-338.025K2**		5	21	53	0.035
							C + A	**14-138.025K2**		5	21	53	0.035
Position A : Basic position Position C : Momentary action Standard lock 1001 Front : Plastic black	IP 65	Aluminium natural	LL	1 NC + 1 NO	M	UT	A	**14-438.036K**	2	5	21	48	0.030
				2 NO	M	UT	A	**14-437.036K**	2	5	21	49	0.030
			SA	1 NC + 1 NO	M	S	A	**14-141.025K2**		5	21	44	0.029
						S1	A	**14-141.022K**		5	21	44	0.029
				2 NC + 2 NO	M	S	A	**14-142.025K2**		5	21	45	0.031
				3 NC + 3 NO	M	S	A	**14-143.025K2**		5	21	46	0.033
				4 NC + 4 NO	M	S	A	**14-144.025K2**		5	21	47	0.035

Keylock switches are supplied with 2 keys.
Other lock numbers on request
Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Selector switch 2 positions

non-illuminative



	Front protection	Front ring	Lever	Switching system	Contacts	Switching action	Terminals	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Selector switch 2 positions Position A : Basic position	IP 67	Aluminium natural	Plastic black long	LL	1 NC + 1 NO	MA	UT	**14-572.0360**	2	5	22	29	0.025
						M	UT	**14-567.0360**	2	5	22	22	0.025
					2 NC	MA	UT	**14-571.0360**	2	5	22	28	0.025
						M	UT	**14-566.0360**	2	5	22	21	0.025
					2 NO	MA	UT	**14-570.0360**	2	5	22	30	0.025
						M	UT	**14-565.0360**	2	5	22	23	0.025
				SA	1 NC + 1 NO	MA	S	**14-556.02502**		5	22	24	0.024
							S1	**14-556.0220**		5	22	24	0.024
						M	S	**14-551.02502**		5	22	17	0.024
							S1	**14-551.0220**		5	22	17	0.024
					2 NC + 2 NO	MA	S	**14-557.02502**		5	22	25	0.026
						M	S	**14-552.02502**		5	22	18	0.026
					3 NC + 3 NO	MA	S	**14-558.02502**		5	22	26	0.028
						M	S	**14-553.02502**		5	22	19	0.028
					4 NC + 4 NO	MA	S	**14-559.02502**		5	22	27	0.030
						M	S	**14-554.02502**		5	22	20	0.030
			Plastic black short	LL	1 NC + 1 NO	MA	UT	**14-522.0360**	2	5	23	29	0.025
						M	UT	**14-517.0360**	2	5	23	22	0.025
					2 NC	MA	UT	**14-521.0360**	2	5	23	28	0.025
						M	UT	**14-516.0360**	2	5	23	21	0.025
					2 NO	MA	UT	**14-520.0360**	2	5	23	30	0.025
						M	UT	**14-515.0360**	2	5	23	23	0.025
				SA	1 NC + 1 NO	MA	S	**14-506.02502**		5	23	24	0.024
							S1	**14-506.0220**		5	23	24	0.024
						M	S	**14-501.02502**		5	23	17	0.024
							S1	**14-501.0220**		5	23	17	0.024
					2 NC + 2 NO	MA	S	**14-507.02502**		5	23	25	0.026
						M	S	**14-502.02502**		5	23	18	0.026
					3 NC + 3 NO	MA	S	**14-508.02502**		5	23	26	0.028
						M	S	**14-503.02502**		5	23	19	0.028
					4 NC + 4 NO	MA	S	**14-509.02502**		5	23	27	0.030
						M	S	**14-504.02502**		5	23	20	0.030

Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Indicator actuator, flush mounting

Essential Accessories:

- Front bezel set, flush mounting page 20
- Lens plastic page 17
- Marking plate for Lens plastic and metal page 18
- Single-LED page 24

	Front protection	Terminals	Ø 35 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Indicator actuator, flush mounting	IP 67	S	**14-040.005**		1	24	3	0.050
		S1	**14-040.002**		1	24	3	0.050
		UT	**14-041.006**	2	1	24	2	0.050

Terminals: S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm), UT = Universal terminal
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Buzzer, flush mounting

	Front protection	Front cap	Terminals	Ø 35 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	kg
Buzzer, flush mounting Operation voltage : 24 VDC	IP 40	Aluminium black	S1	**14-810.910**	1	16	1	0.016
		Aluminium natural	S1	**14-810.918**	1	16	1	0.016

Further information in the Technical Data and Typical Applications
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Illuminated pushbutton actuator, flush mounting

Essential Accessories:

- Front bezel set, flush mounting page 20
- Lens plastic page 17
- Marking plate for Lens plastic and metal page 18
- Single-LED page 24

	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 35 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Illuminated pushbutton actuator, flush mounting	IP 67	LL	1 NC	-	MA	UT	**14-476.036**	2	1	25	12	0.015
					M	UT	**14-436.036**	2	1	25	39	0.015
			1 NC + 1 NO	-	MA	UT	**14-473.036**	2	1	25	15	0.015
					M	UT	**14-433.036**	2	1	25	42	0.015
			1 NO	-	MA	UT	**14-475.036**	2	1	25	14	0.015
					M	UT	**14-435.036**	2	1	25	41	0.015
			2 NC	-	MA	UT	**14-472.036**	2	1	25	13	0.015
					M	UT	**14-432.036**	2	1	25	40	0.015
			2 NO	-	MA	UT	**14-471.036**	2	1	25	16	0.015
					M	UT	**14-431.036**	2	1	25	43	0.015
		SA	1 NC + 1 NO	1 D	MA	UT	**14-747.0292**	2	1	25	9	0.014
					M	UT	**14-743.0292**	2	1	25	36	0.014
				2 D	MA	UT	**14-748.0292**	2	1	25	10	0.014
					M	UT	**14-744.0292**	2	1	25	37	0.014
				-	MA	S	**14-271.0252**		1	25	11	0.013
						S1	**14-271.022**		1	25	11	0.013
					M	S	**14-131.0252**		1	25	38	0.013
						S1	**14-131.022**		1	25	38	0.013
			2 NC + 2 NO	1 D	MA	UT	**14-749.0292**	2	1	25	6	0.016
					M	UT	**14-745.0292**	2	1	25	33	0.016
				2 D	MA	UT	**14-750.0292**	2	1	25	7	0.016
					M	UT	**14-746.0292**	2	1	25	34	0.016
				-	MA	S	**14-272.0252**		1	25	8	0.015
					M	S	**14-132.0252**		1	25	35	0.015
			3 NC + 3 NO	-	MA	S	**14-273.0252**		1	25	5	0.017
					M	S	**14-133.0252**		1	25	32	0.017
			4 NC + 4 NO	-	MA	S	**14-274.0252**		1	25	4	0.019
					M	S	**14-134.0252**		1	25	31	0.019

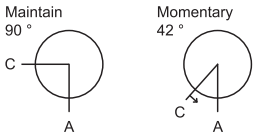
Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Diode (1N 4007): - = without, D = Diode
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Keylock switch actuator 2 positions, flush mounting

Essential Accessories:

Anti-twist ring, flush mounting page 25

Front bezel set, flush mounting page 20



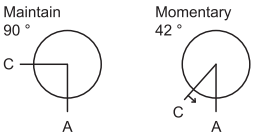
	Front protection	Switching system	Contacts	Switching action	Terminals	Key remove	Ø 35 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Keylock switch actuator 2 positions, flush mounting Position A : Basic position Position C : Maintained action Standard lock 1001, Front : Plastic black	IP 65	LL	1 NC + 1 NO	MA	UT	A	**14-415.036K**	2	1	26	54	0.030
						C	**14-418.036K**	2	1	26	54	0.030
						C + A	**14-412.036K**	2	1	26	54	0.030
			2 NO	MA	UT	A	**14-414.036K**	2	1	26	55	0.030
						C	**14-417.036K**	2	1	26	55	0.030
						C + A	**14-411.036K**	2	1	26	55	0.030
		SA	1 NC + 1 NO	MA	S	A	**14-235.025K2**		1	26	50	0.029
						C	**14-335.025K2**		1	26	50	0.029
						C + A	**14-135.025K2**		1	26	50	0.029
					S1	A	**14-235.022K**		1	26	50	0.029
						C	**14-335.022K**		1	26	50	0.029
						C + A	**14-135.022K**		1	26	50	0.029
			2 NC + 2 NO	MA	S	A	**14-236.025K2**		1	26	51	0.031
						C	**14-336.025K2**		1	26	51	0.031
						C + A	**14-136.025K2**		1	26	51	0.031
			3 NC + 3 NO	MA	S	A	**14-237.025K2**		1	26	52	0.033
						C	**14-337.025K2**		1	26	52	0.033
						C + A	**14-137.025K2**		1	26	52	0.033
			4 NC + 4 NO	MA	S	A	**14-238.025K2**		1	26	53	0.035
						C	**14-338.025K2**		1	26	53	0.035
						C + A	**14-138.025K2**		1	26	53	0.035
Position A : Basic position Position C : Momentary action Standard lock 1001 Front : Plastic black	IP 65	LL	1 NC + 1 NO	M	UT	A	**14-438.036K**	2	1	26	48	0.030
			2 NO	M	UT	A	**14-437.036K**	2	1	26	49	0.030
		SA	1 NC + 1 NO	M	S	A	**14-141.025K2**		1	26	44	0.029
					S1	A	**14-141.022K**		1	26	44	0.029
			2 NC + 2 NO	M	S	A	**14-142.025K2**		1	26	45	0.031
			3 NC + 3 NO	M	S	A	**14-143.025K2**		1	26	46	0.033
			4 NC + 4 NO	M	S	A	**14-144.025K2**		1	26	47	0.035

Keylock switches are supplied with 2 keys.
Other lock numbers on request
Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Selector switch actuator 2 positions, flush mounting

Essential Accessories:

- Anti-twist ring, flush mounting page 25
- Front bezel set, flush mounting page 20



	Front protection	Lever	Switching system	Contacts	Switching action	Terminals	Ø 35 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg
Selector switch actuator 2 positions, flush mounting Position A : Basic position	IP 67	Plastic black short	LL	1 NC + 1 NO	MA	UT	**14-522.0360**	2	1	27	29	0.025
					M	UT	**14-517.0360**	2	1	27	22	0.025
				2 NC	MA	UT	**14-521.0360**	2	1	27	28	0.025
					M	UT	**14-516.0360**	2	1	27	21	0.025
				2 NO	MA	UT	**14-520.0360**	2	1	27	30	0.025
					M	UT	**14-515.0360**	2	1	27	23	0.025
			SA	1 NC + 1 NO	MA	S	**14-506.02502**		1	27	24	0.024
						S1	**14-506.0220**		1	27	24	0.024
					M	S	**14-501.02502**		1	27	17	0.024
						S1	**14-501.0220**		1	27	17	0.024
				2 NC + 2 NO	MA	S	**14-507.02502**		1	27	25	0.026
					M	S	**14-502.02502**		1	27	18	0.026
				3 NC + 3 NO	MA	S	**14-508.02502**		1	27	26	0.028
					M	S	**14-503.02502**		1	27	19	0.028
				4 NC + 4 NO	MA	S	**14-509.02502**		1	27	27	0.030
					M	S	**14-504.02502**		1	27	20	0.030

Switching system: LL = Low level switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Switching action: MA = Maintained action, M = Momentary action
Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 36, Mounting dimensions from page 37, Technical drawing from page 38, Circuit drawing from page 48

Front

Lens plastic

To obtain IP 67 use Marking plate Typ-Nr. 704.609.X

	Lens	Ø 29 mm Typ-Nr.	kg
Lens plastic	black opaque flush	**704.602.0**	0.001
	blue transparent flush	**704.602.6**	0.001
	colourless transparent flush	**704.602.7**	0.001
	green transparent flush	**704.602.5**	0.001
	red transparent flush	**704.602.2**	0.001
	yellow transparent flush	**704.602.4**	0.001

Lens raised, plastic

To obtain IP 67 use Marking plate Typ-Nr. 704.610.X

	Lens	Ø 29 mm Typ-Nr.	kg
Lens raised, plastic	colourless transparent flush	**704.611.7**	0.002
	green transparent flush	**704.611.5**	0.002
	red transparent flush	**704.611.2**	0.002
	yellow transparent flush	**704.611.4**	0.002

Lens metal with spot

To obtain IP 67 use Marking plate Typ-Nr. 704.609.X

	Lens	Ø 29 mm Typ-Nr.	kg
Lens metal with spot	Aluminium black flush	**704.601.01**	0.001
	Aluminium blue flush	**704.601.61**	0.001
	Aluminium gold flush	**704.601.41**	0.001
	Aluminium natural flush	**704.601.81**	0.001
	Aluminium olive-green flush	**704.601.51**	0.001
	Aluminium red flush	**704.601.21**	0.001
	Stainless steel natural flush	**704.601.91**	0.001

Lens metal

To obtain IP 67 use Marking plate Typ-Nr. 704.609.9

	Lens	Ø 29 mm Typ-Nr.	kg
Lens metal	Aluminium black flush	**704.601.0**	0.001
	Aluminium blue flush	**704.601.6**	0.001
	Aluminium gold flush	**704.601.4**	0.001
	Aluminium natural flush	**704.601.8**	0.001
	Aluminium olive-green flush	**704.601.5**	0.001
	Aluminium red flush	**704.601.2**	0.001
	Stainless steel natural flush	**704.601.9**	0.001

Lens cap

To obtain IP 67 use Marking plate Typ-Nr. 704.608.X

	Lens	Ø 29 mm Typ-Nr.	kg
Lens cap	Plastic blue transparent	**704.603.6**	0.003
	Plastic colourless transparent	**704.603.7**	0.003
	Plastic green transparent	**704.603.5**	0.003
	Plastic red transparent	**704.603.2**	0.003
	Plastic yellow transparent	**704.603.4**	0.003

Mushroom-head cap

To obtain IP 67 use Marking plate Typ-Nr. 704.609.9

	Mushroom had cap	Ø 40 mm Typ-Nr.	kg
Mushroom-head cap	Plastic black opaque	**704.604.0**	0.001
	Plastic green opaque	**704.604.5**	0.001
	Plastic red opaque	**704.604.2**	0.001
	Plastic yellow opaque	**704.604.4**	0.001

Mushroom-head cap illuminated

To obtain IP 67 use Marking plate Typ-Nr. 704.609.9

	Mushroom had cap	Ø 40 mm Typ-Nr.	kg
Mushroom-head cap illuminated	Plastic blue transparent	**704.614.6**	0.007
	Plastic colourless transparent	**704.614.7**	0.007
	Plastic green transparent	**704.614.5**	0.007
	Plastic red transparent	**704.614.2**	0.007
	Plastic yellow transparent	**704.614.4**	0.007

Marking plate for Lens plastic and metal

	Marking plate	Typ-Nr.	kg
Marking plate for Lens plastic and metal LED	Plastic colourless transparent ribbed	**704.609.7**	0.001
LED and Filament lamp	Plastic white translucent	**704.609.9**	0.001
non-illuminative	Plastic black opaque	**704.609.0**	0.001

Marking plate for Mushroom-head cap

	Marking plate	Typ-Nr.	kg
Marking plate for Mushroom-head cap	Plastic white translucent	**704.609.9**	0.001

Marking cap for Lens raised, plastic

	Marking cap	Typ-Nr.	kg
Marking cap for Lens raised, plastic LED	Plastic colourless transparent ribbed	**704.610.7**	0.001
LED and Filament lamp	Plastic white translucent	**704.610.9**	0.001

Marking cap for Lens cap

	Marking cap	Typ-Nr.	kg
Marking cap for Lens cap LED	Plastic colourless transparent ribbed	**704.608.7**	0.002
LED and Filament lamp	Plastic white translucent	**704.608.9**	0.002

Front ring

	Ø 29 mm Typ-Nr.	kg
Front ring	**704.600.0**	0.003
	704.600.6	0.003
	704.600.1	0.005
	704.600.1A	0.005
	704.600.9	0.006

Front bezel set for Mushroom-head pushbutton

	Front Bezel	Ø 50 mm Typ-Nr.	Mounting dimensions	Technical drawing	kg
Front bezel set for Mushroom-head pushbutton	Aluminium black	**14-958.0**	4	28	0.042
	Aluminium natural	**14-958.8**	4	28	0.042

Mounting dimensions from page 37, Technical drawing from page 38

Front bezel set, flush mounting

	Front bezel	Ø 35 mm Typ-Nr.	Mounting dimensions	kg
Front bezel set, flush mounting	Aluminium black	**704.955.0**	1	0.015
	Aluminium natural	**704.955.1**	1	0.015
	Stainless steel natural	**704.955.9**	1	0.033

Mounting dimensions from page 37

Legend frame

adhesive, Aluminium black

	Typ-Nr.	Technical drawing	kg
Legend frame 30 x 50 mm for raised mounting	**704.968.2**	9	0.001
35 x 57.5 mm for flush mounting	**704.968.3**	10	0.001

Technical drawing from page 38

Legend plate insert

for Legend frame 704.968.2 and 704.968.3

	Typ-Nr.	kg
Legend plate insert 14.5 x 23.5 mm, adhesive, Aluminium black	**704.968.1**	0.001
14.5 x 23.5 mm, adhesive, Aluminium natural	**704.968.0**	0.001

Protective cover, raised mounting

Mounting hole size 22.5 mm dia.

	Typ-Nr.	Technical drawing	kg
Protective cover, raised mounting hinged, transparent, with means for sealing, for Pushbutton	**704.925.0**	4	0.007
hinged, transparent, with means for sealing, for Selector switch	**704.925.2**	6	0.007
hinged, transparent, with means for sealing, with spring fitted, for Pushbutton	**704.925.3**	4	0.007

Protection cover 704.925.2 only for selector switches in basic position A applicable.
Technical drawing from page 38

Protective cover, flush mounting

Mounting hole size 30.5 mm dia.

	Typ-Nr.	Technical drawing	kg
Protective cover, flush mounting hinged, Aluminium natural, with means for sealing, for Pushbutton and Selector switch short lever	**704.928.38**	8	0.019
hinged, Aluminium natural, with means for sealing, spring fitted, for Pushbutton and Selector switch short lever	**704.928.28**	5	0.019
hinged, Aluminium natural, with window, spring fitted, for Pushbutton	**704.928.18**	7	0.019

Technical drawing from page 38

Front protective cap

for Indicator and Illuminated pushbutton for protection IP 68

	Front protective cap	Typ-Nr.	kg
Front protective cap only together with Lenses 704.602.X, 704.601.X and Front rings 704.600.X	Silicone colourless transparent	**704.953.0**	0.002

Front protective ring

for Illuminated pushbutton with front illumination (IP 67)

	Front protective ring	Ø 29 mm Typ-Nr.	kg
Front protective ring with transparent Pebax membrane, temperature resistance -40 °C ... +85 °C	Aluminium natural	**704.600.5/A**	0.005
with transparent silicone membrane (extent resistant to sea water), temperature resistance -40 °C ... +85 °C	Aluminium natural	**704.600.3**	0.005
	Chromed brass	**704.600.2**	0.005

Front protective ring to be mounted with a torque of 40 Ncm onto actuator.

Front bezel with protective membrane, flush mounting

for Illuminated pushbutton (IP 67)

	Front bezel	Ø 35 mm Typ-Nr.	kg
Front bezel with protective membrane, flush mounting with transparent silicone membrane	Aluminium black	**704.955.4**	0.015
	Aluminium natural	**704.955.3**	0.015
with transparent silicone membrane, resistant to sea water	Stainless steel natural	**704.955.9E**	0.033

Front bezel to be mounted with a torque of 40 Ncm onto actuator.

Blind plug

	Blind plug	Front protection	Typ-Nr.	Technical drawing	kg
Blind plug Size 28 mm dia., for mounting hole 22.5 mm dia.	Plastic black	IP 65	**704.960.4**	3	0.004
Size 36 mm dia., for mounting hole 30.5 mm dia.	Plastic black	IP 65	**704.964.8**	2	0.007

Technical drawing from page 38

Spare key

	Typ-Nr.	kg
Spare key Standard lock 1001 (KABA)	**14-987.1001**	0.006

Other lock numbers on request

Backside

PCB plug-in base

	Typ-Nr.	Component layout	kg
PCB plug-in base 16.4 mm dia. x 9.8 mm for Low level switching element, Pins axial	**31-940**	3	0.002
17.8 x 12.9 mm x 9.8 mm for Snap-action switching element 2.8 mm, Pins axial	**31-942**	4	0.002
17.9 x 17.9 x 8.4 mm for Low level switching element, Pins bent at right-angle	**31-941**	1	0.004

PCB plug-in base Pins right-angle : With the extendable mounting the distance between plug-in base and PCB can be varied up to 3 mm.
Component layout from page 36

Flat receptacle

	Typ-Nr.	kg
Flat receptacle 2.0 x 0.5 mm for Universal terminal	**31-945**	0.001
2.8 x 0.5 mm for Plug-in terminal	**31-946**	0.001

Insulation sleeve

	Typ-Nr.	kg
Insulation sleeve Cover Plug-in terminals for snap-action switching element 2.8 mm	**01-928**	0.001
for Flat receptacle 31-945	**31-928**	0.001
for Flat receptacle 31-946	**31-929**	0.001

Terminal cover

	Typ-Nr.	kg
Terminal cover	**01-929**	0.010

Illumination

Filament lamp

	Socket	Operating voltage/-current	Typ-Nr.	kg
Filament lamp	T5.5	12 VAC/DC, 100 mA	**10-1109.1329**	0.001
		12 VAC/DC, 50 mA	**10-1109.1279**	0.001
		24 VAC/DC, 25 mA	**10-1112.1199**	0.001
		24 VAC/DC, 50 mA	**10-1112.1279**	0.001
		28 VAC/DC, 40 mA	**10-1113.1249**	0.001
		30 VAC/DC, 40 mA	**10-1114.1249**	0.001
		36 VAC/DC, 35 mA	**10-1116.1229**	0.001
		48 VAC/DC, 25 mA	**10-1119.1199**	0.001
		6 VAC/DC, 200 mA	**10-1106.1369**	0.001

Single-LED

	Socket	Light colour	Operating voltage/-current	Typ-Nr.	kg
Single-LED	T5.5	blue	12 VAC/DC, 7/14 mA	**10-2109.1066**	0.001
			24 VAC/DC, 7/14 mA	**10-2112.1066**	0.001
			28 VAC/DC, 7/14 mA	**10-2113.1066**	0.001
			48 VAC/DC, 4/8 mA	**10-2119.1046**	0.001
			6 VDC, 15 mA	**10-2106.3146**	0.001
		green	12 VAC/DC, 7/14 mA	**10-2109.1065**	0.001
			24 VAC/DC, 7/14 mA	**10-2112.1065**	0.001
			28 VAC/DC, 7/14 mA	**10-2113.1065**	0.001
			48 VAC/DC, 4/8 mA	**10-2119.1045**	0.001
			6 VDC, 15 mA	**10-2106.3145**	0.001
		red	12 VAC/DC, 7/14 mA	**10-2109.1062**	0.001
			24 VAC/DC, 7/14 mA	**10-2112.1062**	0.001
			28 VAC/DC, 7/14 mA	**10-2113.1062**	0.001
			48 VAC/DC, 4/8 mA	**10-2119.1042**	0.001
			6 VDC, 15 mA	**10-2106.3142**	0.001
		white diffuse	12 VAC/DC, 7/14 mA	**10-2109.1069**	0.001
			24 VAC/DC, 7/14 mA	**10-2112.1069**	0.001
			28 VAC/DC, 7/14 mA	**10-2113.1069**	0.001
			48 VAC/DC, 4/8 mA	**10-2119.1049**	0.001
			6 VDC, 15 mA	**10-2106.3149**	0.001
		yellow	12 VAC/DC, 7/14 mA	**10-2109.1064**	0.001
			24 VAC/DC, 7/14 mA	**10-2112.1064**	0.001
			28 VAC/DC, 7/14 mA	**10-2113.1064**	0.001
			48 VAC/DC, 4/8 mA	**10-2119.1044**	0.001
			6 VDC, 15 mA	**10-2106.3144**	0.001

Note:
AC operation through halve-wave rectifier possible, slight flickering can occure.

Terminal plate empty

for fitting with series resistors

	Typ-Nr.	kg
Terminal plate empty 10 spaces 125 x 60 x 15 mm	**02-912.2**	0.045
15 spaces 187.5 x 60 x 15 mm	**02-912.3**	0.090
20 spaces 250 x 60 x 15 mm	**02-912.4**	0.095
5 spaces 62.5 x 60 x 15 mm	**02-912.1**	0.025

Assembling

Positioning insert

	Typ-Nr.	Mounting dimensions	kg
Positioning insert	**14-910**	3	0.001

Mounting dimensions from page 37

Anti-twist ring, flush mounting

	Typ-Nr.	kg
Anti-twist ring, flush mounting	**704.954.0**	0.002

Reducing ring

Devices 22.5 mm dia. in mounting hole size 30.5 mm dia.

	Typ-Nr.	kg
Reducing ring Aluminium black	**704.960.0**	0.004
Aluminium natural	**704.960.8**	0.004

You need to install two reduction rings.

Lens plug for round lens, flush mounting

	Typ-Nr.	kg
Lens plug for round lens, flush mounting for mounting and dismantling of Lens round, flush mounting	**700.006.0**	0.003

Lamp remover

	Typ-Nr.	kg
Lamp remover	**02-906**	0.002

CAUTION
A switching process might be released when replacing the Lamp/LED !

Enclosure

Grey similar RAL 7035; cover lead-sealable

	Dimension	Typ-Nr.	Technical drawing	kg
Enclosure with mounting hole 1 x 22.5 mm dia., with anti-twist device	L 94 mm, W 94 mm, H 81 mm	**704.945.1**	11	0.211
with mounting hole 2 x 22.5 mm dia., with anti-twist device	L 130 mm, W 94 mm, H 81 mm	**704.945.2**	12	0.251
with mounting hole 3 x 22.5 mm dia., with anti-twist device	L 180 mm, W 94 mm, H 81 mm	**704.945.3**	13	0.313
with mounting hole 4 x 22.5 mm dia., with anti-twist device	L 180 mm, W 182 mm, H 110 mm	**704.945.4**	14	0.572
with mounting hole 6 x 22.5 mm dia., with anti-twist device	L 180 mm, W 182 mm, H 110 mm	**704.945.5**	15	0.568

Openings for cable gland M16 or M20.
Protection class IP 66.
Technical drawing from page 38

Cable gland

	Typ-Nr.	kg
Cable gland M16, Plastic grey	**61-9481.6**	0.007
M20, Plastic grey	**704.945.6**	0.011

with traction relief; protection degree IP 68.

Actuator with snap-action switching element

Switching system

Self-cleaning, double-break, snap action switching system (with contact gap 2 x 0.5 mm).
1 normally closed or 1 normally open contact per element.
Snap-action switching elements with soldering terminals at the sides: up to 4 switching element can be on a pushbutton (max. 4 normally closed and 4 normally open contacts).
Snap-action switching element with axial plug-in terminals 2.8 mm stackable, only 1 switching element can be on a pushbutton.

Material

Material of contact
Gold plated silver

Switch housing
Plug-in-/soldering terminal
Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing
Soldering terminal: PA 6.6 Ultramide

Actuator housing
Polyamide

Mechanical characteristics

Terminals
Snap-action switching element with tinned soldering terminals at the sides:
Max. wire diameter 2 wires à 1.2 mm
max. wire cross-section of stranded cable 1x 1 mm²

Snap-action switching element with axial plug-in terminals, which can also be used as soldering terminals: Plug-in terminal 2.8 x 0.5 mm

Soldering terminal:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm² or 1 x 1.0 mm²

Actuating torque
Measured at the key or lever of the keylock- or selector switch 2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

Actuating force
Maintain 5 N ... 7.8 N
Momentary 3.2 N ... 6 N
depending on the number of switching elements

Actuating travel

Illuminated pushbutton:	3 mm
Switch actuator 2 positions:	
Momentary action	1 x ca. 42° deflection momentary action
Maintained action	1 x ca. 90° deflection maintained action

Rebound time
≤5ms

Mechanical lifetime

Momentary action	2 million	Cycles of operation
Maintained action	1 million	Cycles of operation

Electrical characteristics

Standards
The devices comply with : EN IEC 61058-1

Rated voltage
250 VAC/DC as per EN IEC 61058-1-15

Contact resistance
New state ≤50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)
Keylock switch 15 kV

Rated current
5 A

Conventional free air thermal current I_{th}
5 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

Switch rating
250 VAC, 5 A (cosϕ 1)
250 VAC, 3 A (cosϕ 0,3)

Switch rating AC (cosϕ 0,7)

Voltage	125 VAC	250 VAC
Current	3 A	2 A

Switch rating DC (inductive) L:R = 30 ms

Voltage	24 VDC	60 VDC	110 VDC	220 VDC
Current	2 A	0.7 A	0.2 A	0.1 A

Electric strength
3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Isolation resistance
>7 MΩ between the opend contats at 500 VDC, as per EN IEC 61058-1-15 (reinforced insulation)

Protection class
II

Environmental conditions

Storage temperature
-40 °C ... +85 °C

Service temperature
-25 °C ... +55 °C
For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree
as per EN IEC 60529
front side IP 67

Shock resistance
(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Vibration resistance
(sinusoidal)
max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

Climate resistance
Damp heat state as per EN IEC 60068-2-30
Damp heat cyclic as per EN IEC 60068-2-78

Approvals

Approbations
CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
UL

Declaration of conformity
CE

Actuator with low level switching element

Switching system

This low level switching element was designed for switching low powers in electronic circuits. The mechanism assures reliable switching of loads ranging from a few µA/µV up to 100 mA/42 VAC/DC.
Single-break momentary contact, as normally open or normally closed with 4 independent points of contact. 2 momentary contacts per switching element; combination of normally open and normally closed is possible.
Special features are the long life, extremely short rebound time and stable contact resistance.

Material

Material of contact
Gold plated

Switch housing
Polysulfone, heat-resistant and self-extinguishing

Actuator housing
Polyamide

Mechanical characteristics

Terminals
The universal terminals permit these units to be mounted on printed circuit boards (PCB). These terminals can also be used as soldering or plug-in terminals.
For these terminals we can also supply a plug-in base which, when soldered on to the board, enables the switch to be plugged in.
Soldering terminal:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm²
Plug-in terminal: 2.0 x 0.5 mm.

Actuating torque
Measured at the key or lever of the keylock- or selector switch
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

Actuating force
3 ... 4 N, depending on the number of switching elements

Actuating travel

Illuminated pushbutton : 3 mm
Switch actuator 2 positions:
Momentary action 1 x ca. 42° deflection momentary action
Maintained action 1 x ca. 90° deflection maintained action

Rebound time
typical <100 µs

Mechanical lifetime
Momentary action 5 million cycles of operation
Maintained action 1 million cycles of operation

Electrical characteristics

Contact resistance
New state ≤50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)
Keylock switch 15 kV

Switch rating
10 µA, 100 µV to 100 mA at 42 VAC/VDC

Electric strength
3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Protection class
II

Environmental conditions

Storage temperature
-40 °C ... +85 °C

Service temperature
-25 °C ... +55 °C
For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree
as per EN IEC 60529
front side IP 67

Shock resistance
(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Buzzer

Buzzer system

System
Piezo disc

Material

Alarm buzzer case
Polyamide

Front cap
Plastic Polyamide
Metal Nickel-plated brass (sea-water proof)

Mechanical characteristics

Terminals
Plug-in terminal 2.8 x 0.5 mm

Electrical characteristics

Frequency (tone)
approx. 2.8 kHz continuous tone only

Sound pressure
95 db (A) ±8 dB at a distance of 0.1 m

Operation Voltage/Current

Operation Voltage	24 VDC ±10 %
Operation Current	≤25 mA

Environmental conditions

Storage temperature
-40 °C ... +85 °C

Operating temperature
-25 °C ... +55 °C

Protection degree
as per EN IEC 60529, frontside
IP 40, devices flush mounting
IP 65, devices raised mounting

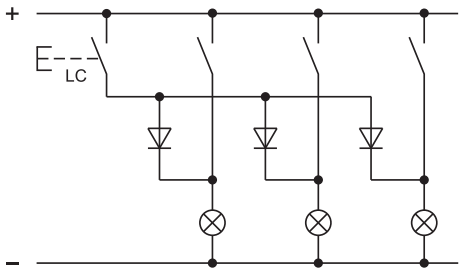
Approvals

Declaration of conformity
CE

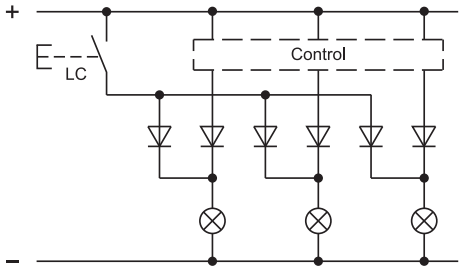
Diode element

When indicators and illuminated pushbuttons equipped with diodes, the user is able to perform a lamp check or wire an alarm circuit simply with a considerable saving of space.

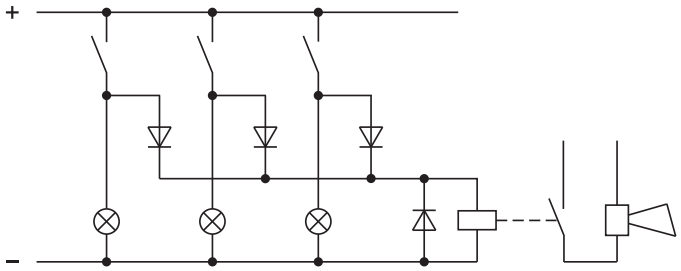
Lamp check



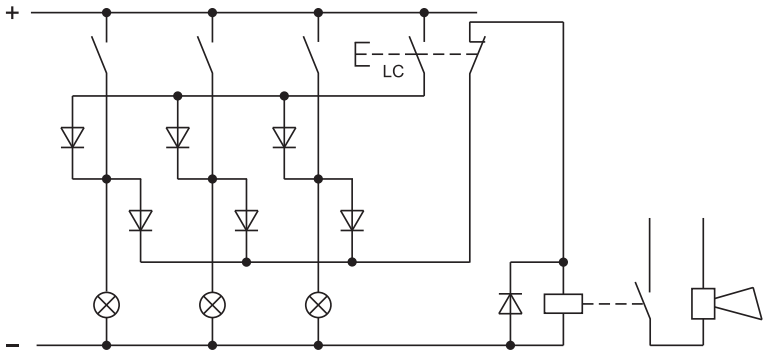
Lamp check with blocking diodes



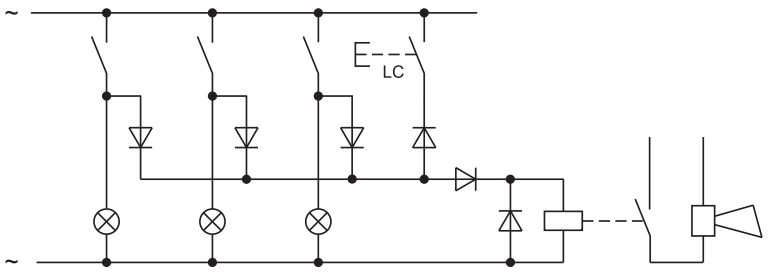
Alarm circuit from fault annunciation system



Lamp check and alarm circuit



Lamp check and alarm circuit with only one diode and AC voltage



LC = Lamp Check

Suppressor circuits

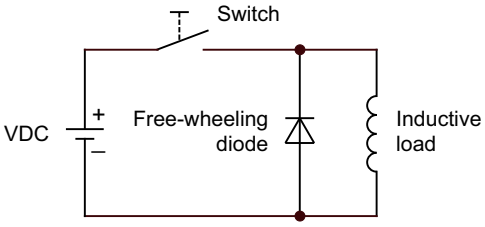
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilovolts in amplitude even when nominal circuit voltages are low (e.g. 12 VDC) see Fig. 2.

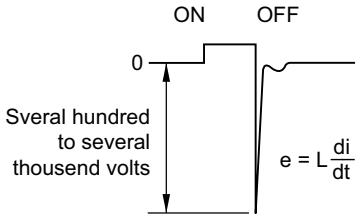
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (VR) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current flowing through the load.

To get an efficient protection, the free-wheeling diode must be connected as close as possible to the inductive load!

Switching with inductive load
Fig. 1



Counter emf
over load without free-wheeling diode
Fig. 2



General notes

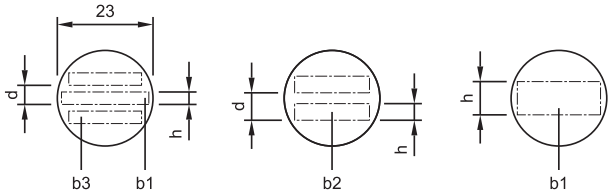
1. Engraving
In addition to the most commonly used world languages, in DIN 1451-3 close spacing, other typefaces are available as Scandinavian, Slavic, Greek, Russian and Polish.
The lenses are filled with black or white colour.
Standard height of letters is 3 mm. If the height is not specified, we will supply 3 mm engraved letters.

2. Hot stamping
Standard legends and ISO symbols are hot stamped. For larger series it is worth considering markings by means of hot stamping. We will pleased to advise you.

Engraving marking cap for Indicator round, full face illumination

All dimensions in mm

Height of letters	Number of lines	Number of (target value) letters per line			Line spacing
h		b1	b2	b3	d
3	3	11	10	9	4.6
4	2	8	7	-	6.6
8	1	4	-	-	-

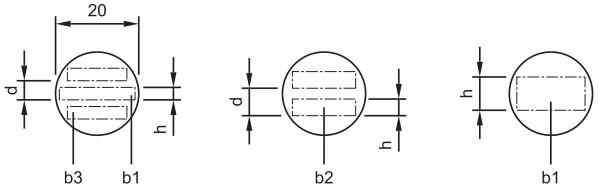


The gap between 2 words results in each case a letter less.

Engraving marking cap for Indicator and illuminated Pushbutton round, front illumination

All dimensions in mm

Height of letters	Number of lines	Number of (target value) letters per line			Line spacing
h		b1	b2	b3	d
3	3	9	9	7	4.6
4	2	7	6	-	6.6
8	1	3	-	-	-



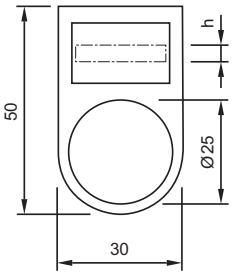
The gap between 2 words results in each case a letter less.

Engraving legend plates

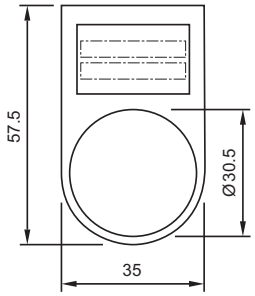
All dimensions in mm

Dimension	Devices mounting style	Height of letters h	Number of lines	Number of (target value) letters per line	Image
30 x 50	round, raised	3	2	12	B1
		4	1	7	B1
		8	1	4	B1
35 x 57.5	round, flush	3	2	12	B2
		4	1	7	B2
		8	1	4	B2

B1



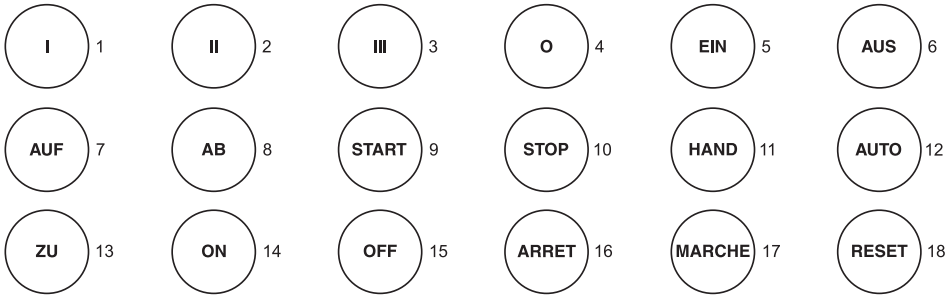
B2



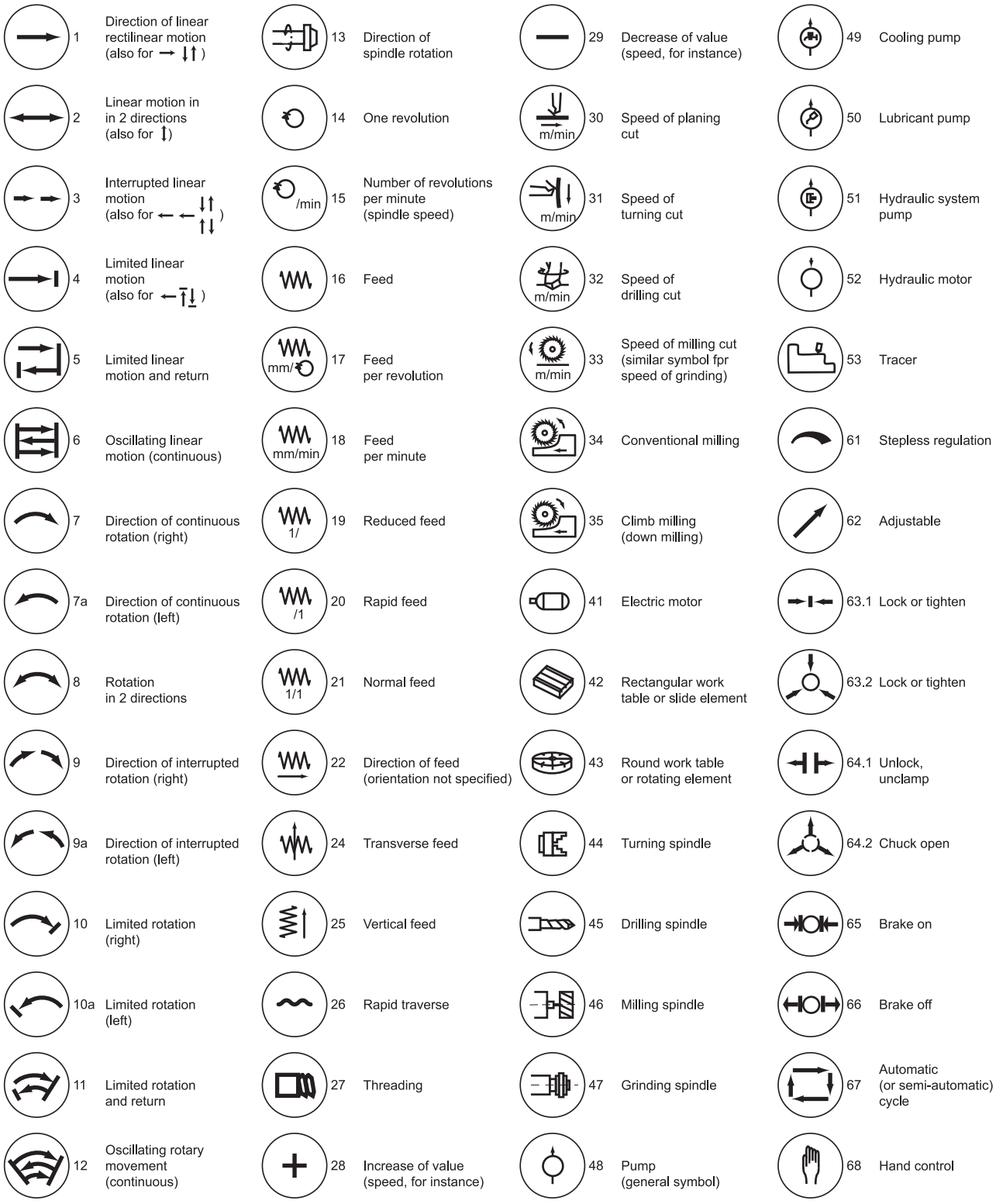
The gap between 2 words results in each case a letter less.

Standard texts for marking plates and marking caps for Indicator and Illuminated Pushbutton

Height of letters 6 mm



Symbols for marking plates and marking caps for Indicator and Illuminated Pushbutton



Continuation see next page

Continued from previous page

69 Start, on

70 Stop, off

71 Start and stop with same button

72 In action as long as button is operated

74 Engaging (mechanical start)

75 Disengaging (mechanical stop)

76 Close lock-nut

77 Open lock-nut

78 Engage sensor

79 Disengage sensor

80 Change speed only in stopped position

81 Change speed only in motion

91 Shear pin construction

92 Danger (high voltage)

93 Caution!

94 Main switch

101 Coolant fluid

102 Machine lighting

103 Weight

104 Filter opening

105 Overflow

106 Drain

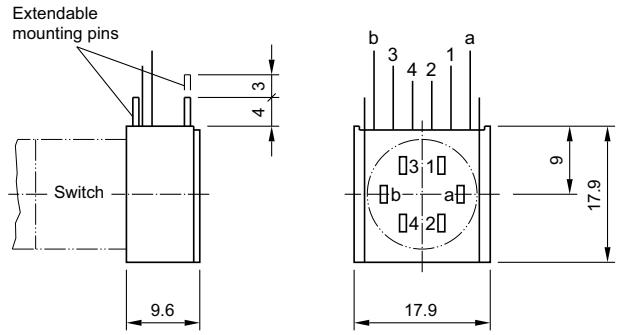
107 Oil, lubricant

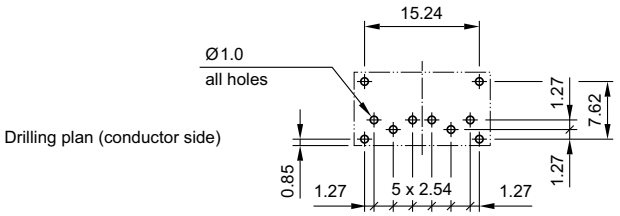
108 Blast

109 Suction

Component layout

1 PCB plug-in base page 22

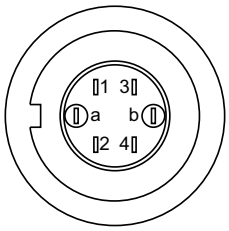




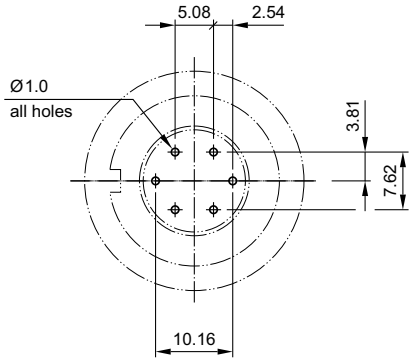
Drilling plan (conductor side)

2 Indicator actuator full face illumination page 6 **| Indicator actuator front illumination** page 6 **| Illuminated actuator pushbutton** page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Keylock switch 2 positions** page 11 **| Selector switch 2 positions** page 12 **| Indicator actuator, flush mounting** page 13 **| Illuminated pushbutton actuator, flush mounting** page 14 **| Keylock switch actuator 2 positions, flush mounting** page 15 **| Selector switch actuator 2 positions, flush mounting** page 16

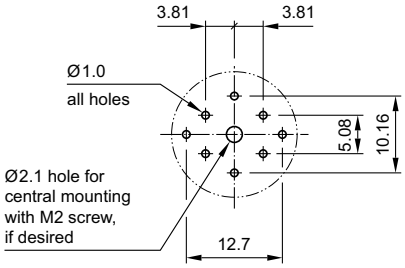
Terminals (rearside)



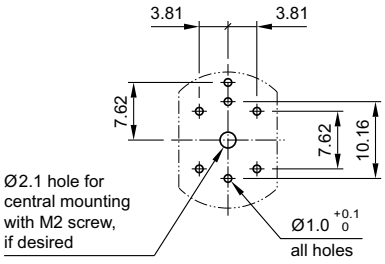
PCB layout (conductor side)



3 PCB plug-in base page 22

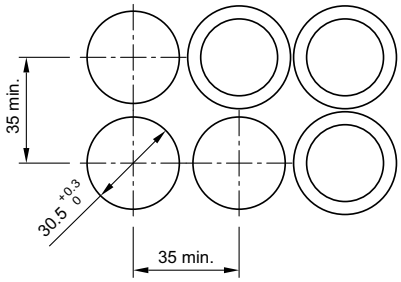


4 PCB plug-in base page 22



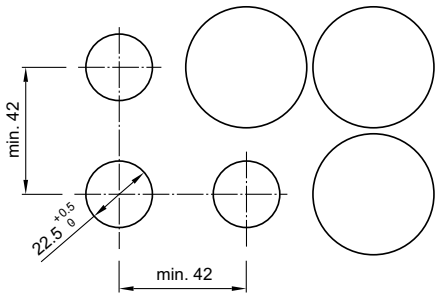
Mounting dimensions

1 Indicator actuator, flush mounting page 13 **| Buzzer, flush mounting** page 13 **| Illuminated pushbutton actuator, flush mounting** page 14 **| Keylock switch actuator 2 positions, flush mounting** page 15 **| Selector switch actuator 2 positions, flush mounting** page 16 **| Front bezel set, flush mounting** page 20

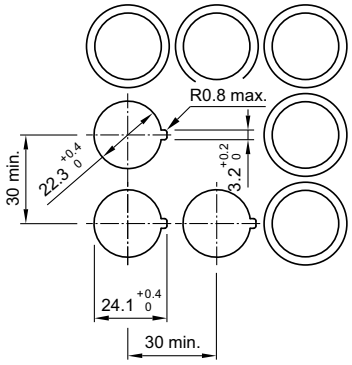


Hole spacing 37 mm min. by using blind plug 704.960.8

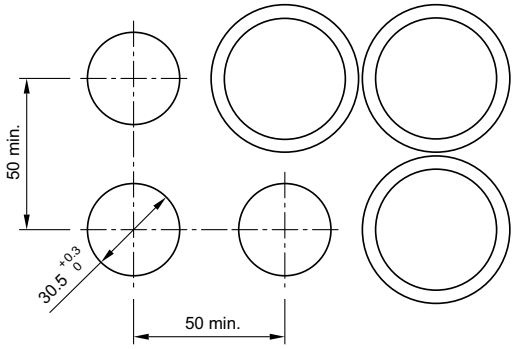
2 Mushroom-head actuator pushbutton page 9 **| Illuminated mushroom-head actuator pushbutton** page 10



3 Positioning insert page 25

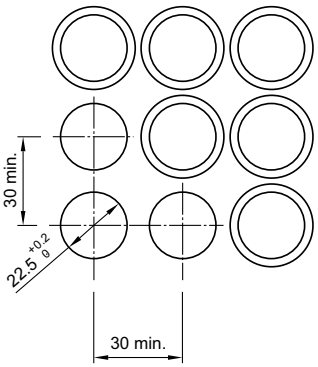


4 Front bezel set for Mushroom-head pushbutton page 19

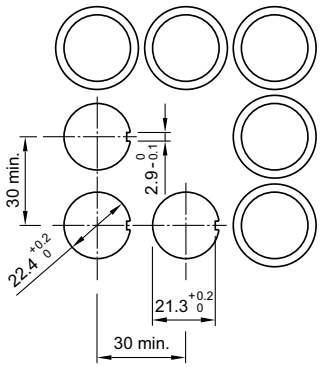


5 Indicator actuator full face illumination page 6 **| Indicator actuator front illumination** page 6 **| Buzzer** page 7 **| Illuminated actuator pushbutton** page 8 **| Keylock switch 2 positions** page 11 **| Selector switch 2 positions** page 12

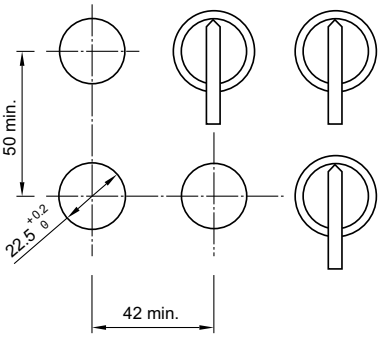
for devices
without anti-twist device



for devices
with anti-twist device (rotary)
(recommended for keylock switch)



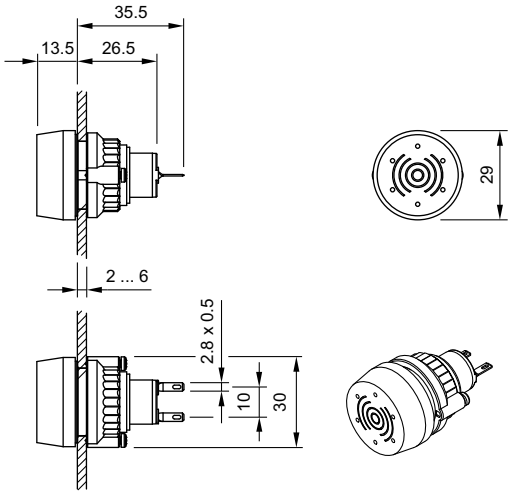
for devices
selector switch long lever



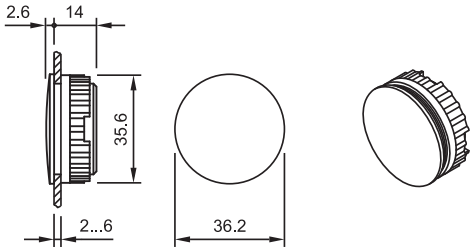
Hole spacing 31 mm min. by using blind plug 704.960.4

Technical drawing

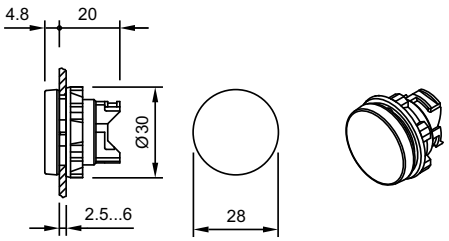
1 Buzzer page 7



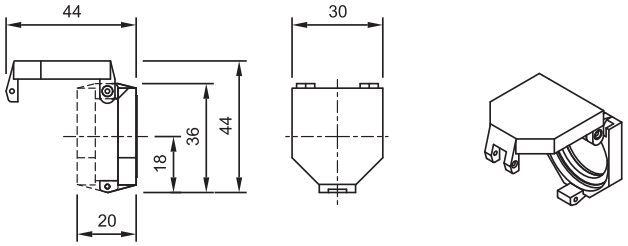
2 Blind plug page 22



3 Blind plug page 22

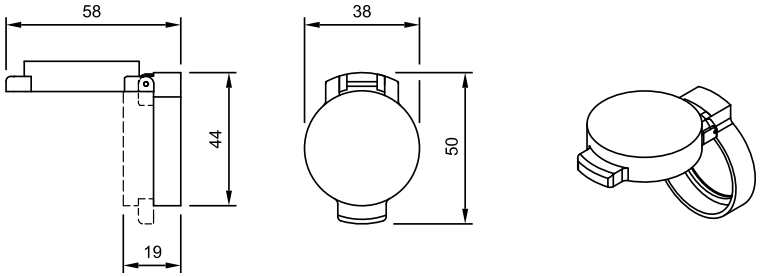


4 Protective cover, raised mounting page 20



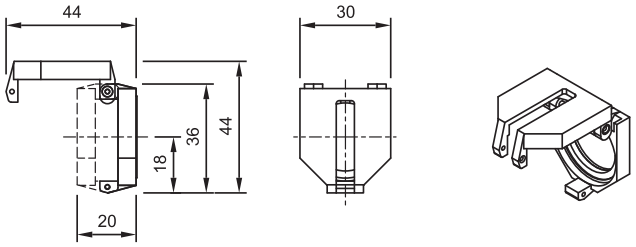
Front panel thickness reduces by 3.5 mm to max. 4.5 mm

5 Protective cover, flush mounting page 21



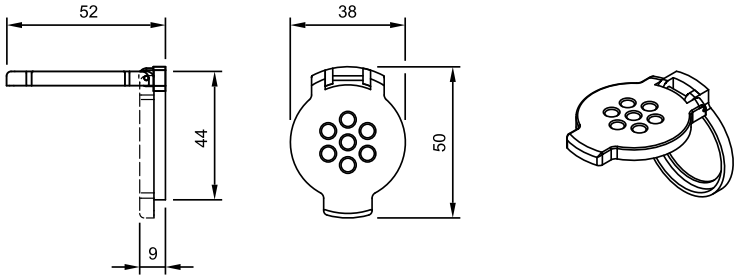
Front panel thickness reduces by 2.5 mm to max. 3.5 mm

6 Protective cover, raised mounting page 20



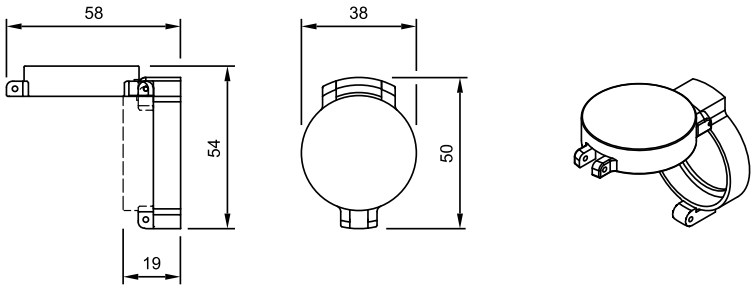
Front panel thickness reduces by 3.5 mm to max. 4.5 mm

7 Protective cover, flush mounting page 21



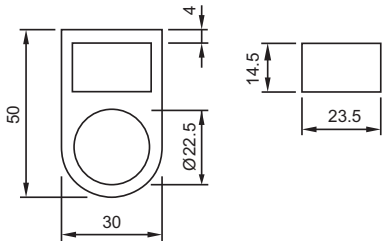
Front panel thickness reduces by 2.5 mm to max. 3.5 mm

8 Protective cover, flush mounting page 21

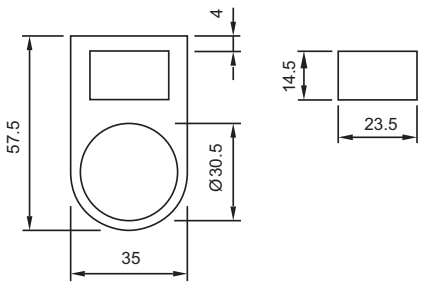


Front panel thickness reduces by 2.5 mm to max. 3.5 mm

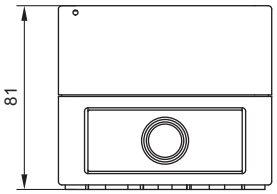
9 Legend frame page 20

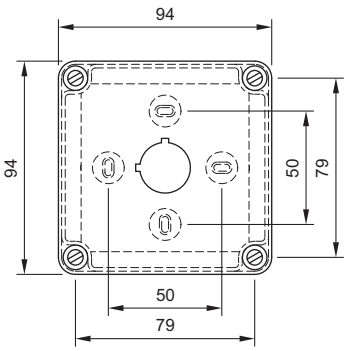


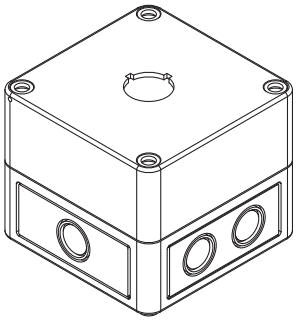
10 Legend frame page 20



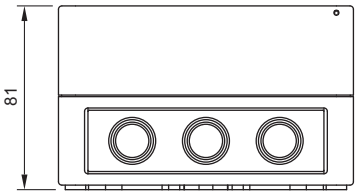
11 Enclosure page 26

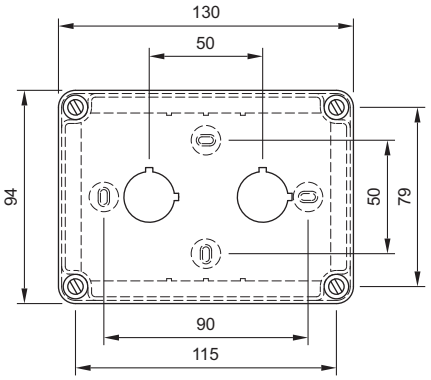


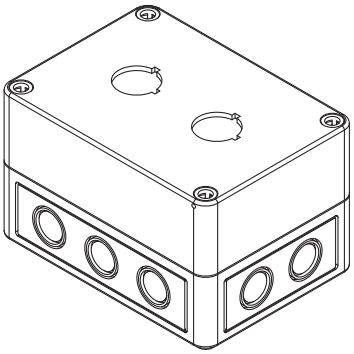




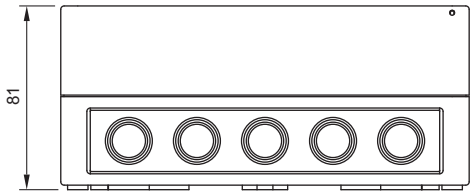
12 Enclosure page 26

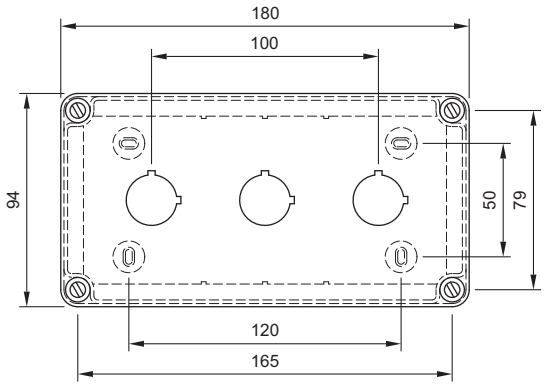


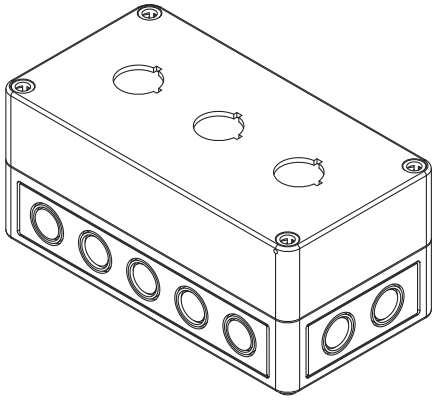




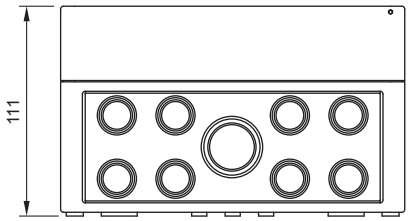
13 Enclosure page 26

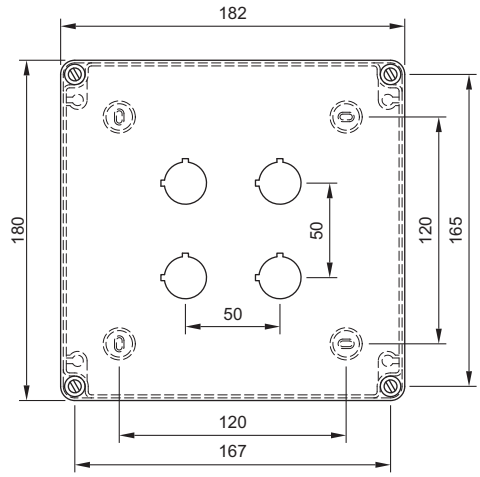


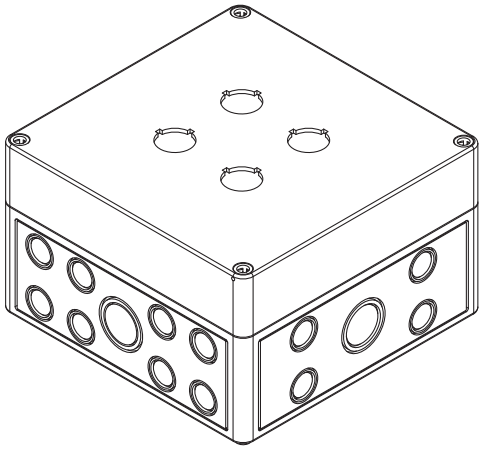




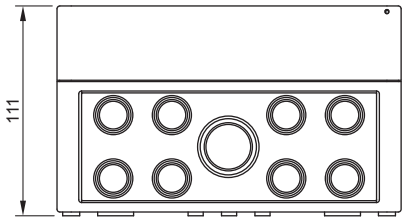
14 Enclosure page 26

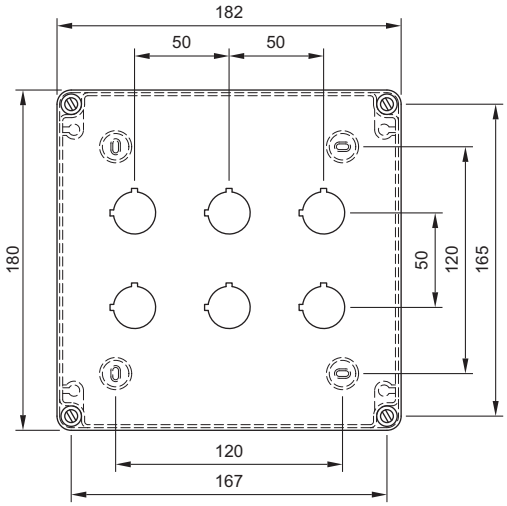


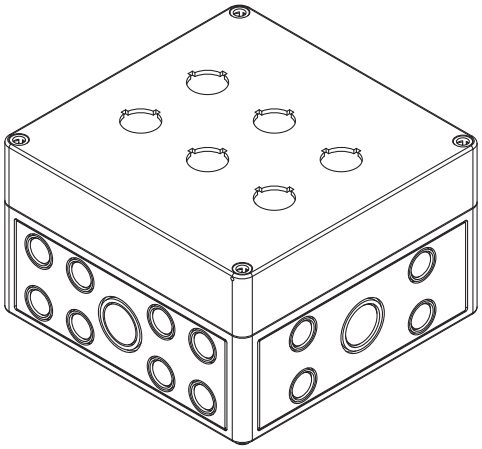




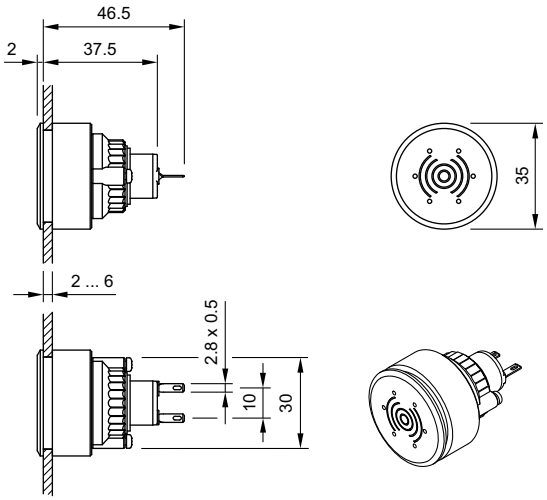
15 Enclosure page 26



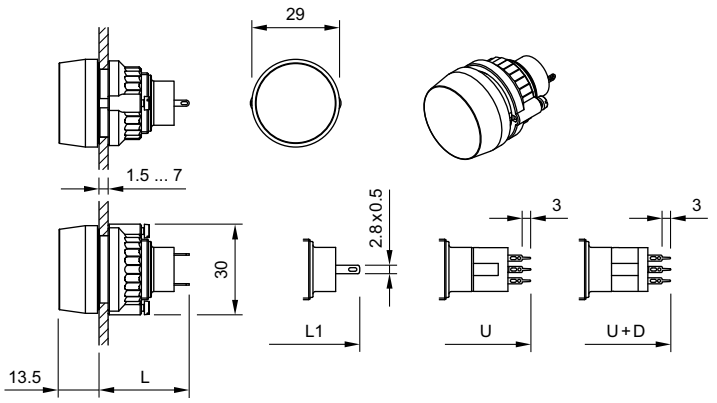




16 Buzzer, flush mounting page 13

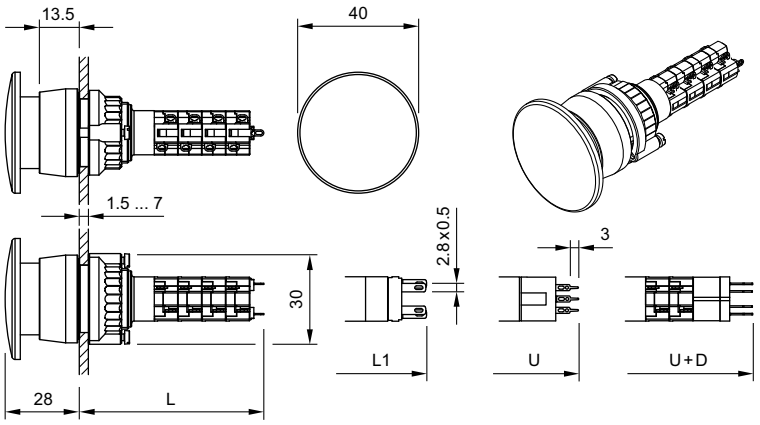


17 Indicator actuator full face illumination page 6



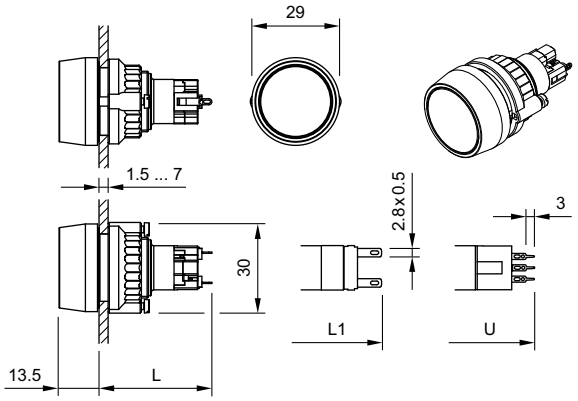
Soldering terminal	Soldering terminal (also pluggable)	Universal terminal	Universal terminal + diodes
L	L1	U	U+D
30	33	44.5	-
1D, 2D			44.5

18 Mushroom-head actuator pushbutton page 9 **| Illuminated mushroom-head actuator pushbutton** page 10



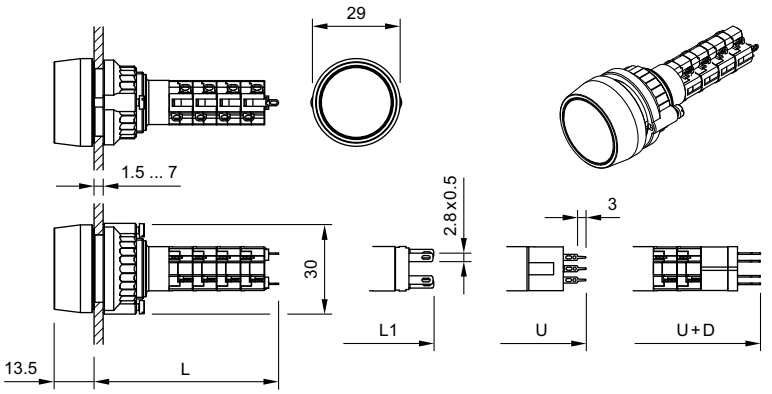
	Soldering terminal	Soldering terminal (also pluggable)	Universal terminal	Universal terminal + diode
	L	L1	U	U+D
1NC+1NO	37.5	45.5	-	-
2NC+2NO	45	-	-	-
3NC+3NO	52.5	-	-	-
4NC+4NO	60	-	-	-
1NC+1NO+D	-	-	-	52
2NC+2NO+D	-	-	-	60
1NC, 1NO, 1NC+1NO, 2NC, 2NO			44.5	-

19 Indicator actuator front illumination page 6



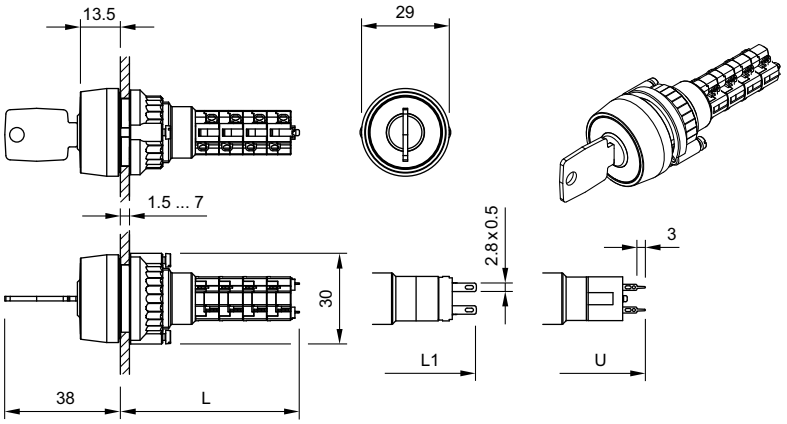
Soldering terminal	Soldering terminal (also pluggable)	Unversal terminal
L	L1	U
37.5	45.5	44.5

20 Illuminated actuator pushbutton page 8



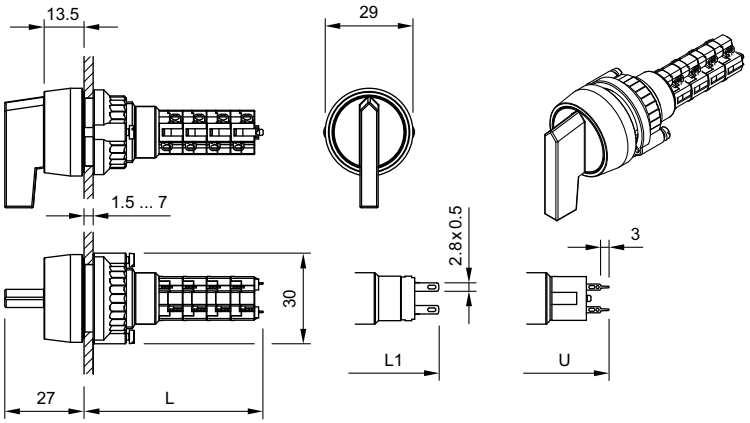
	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U	Universal terminal + diode U+D
1NC+1NO	37.5	45.5	-	-
2NC+2NO	45	-	-	-
3NC+3NO	52.5	-	-	-
4NC+4NO	60	-	-	-
1NC+1NO+D	-	-	-	52
2NC+2NO+D	-	-	-	60
1NC, 1NO, 1NC+1NO, 2NC, 2NO			44.5	-

21 Keylock switch 2 positions page 11



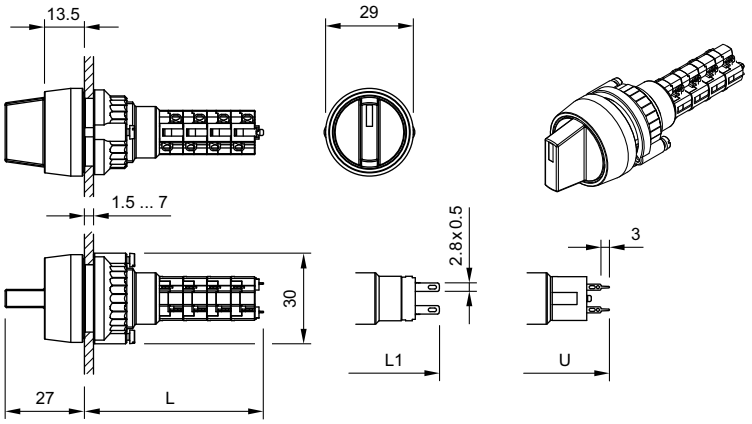
	Soldering terminal L	Soldering terminal (also pluggable) L1	Unversal terminal U
1NC+1NO	35.5	45.5	
2NC+2NO	43	-	-
3NC+3NO	50.5	-	-
4NC+4NO	58	-	-
1NC, 1NO, 1NC+1NO, 2NC, 2NO			44.5

22 Selector switch 2 positions page 12



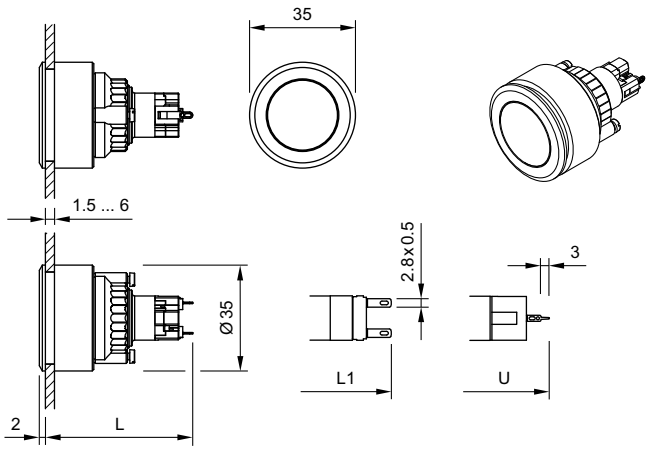
	Soldering terminal L	Soldering terminal (also pluggable) L1	Unversal terminal U
1NC+1NO	35.5	45.5	-
2NC+2NO	43	-	-
3NC+3NO	50.5	-	-
4NC+4NO	58	-	-
1NC, 1NO, 1NC+1NO, 2NC, 2NO			44.5

23 Selector switch 2 positions page 12



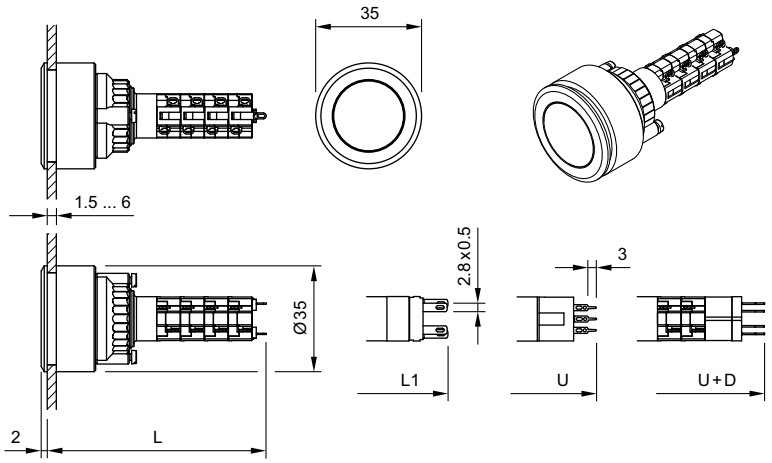
	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U
1NC+1NO	35.5	45.5	
2NC+2NO	43	-	-
3NC+3NO	50.5	-	-
4NC+4NO	58	-	-
1NC, 1NO, 1NC+1NO, 2NC, 2NO			44.5

24 Indicator actuator, flush mounting page 13



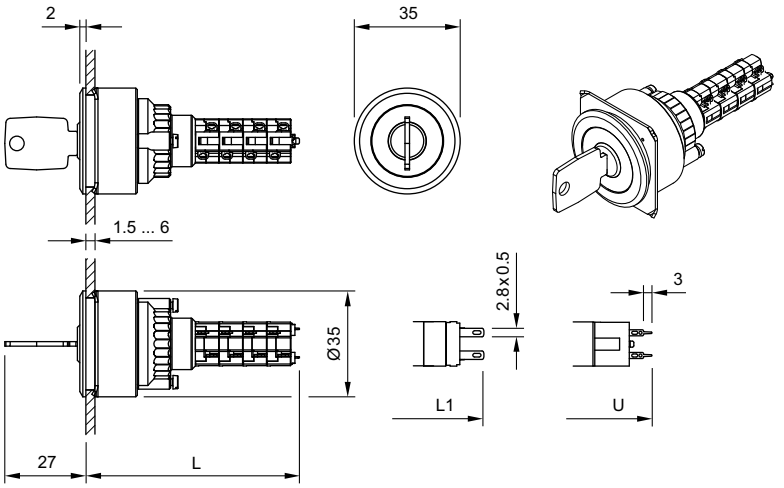
Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U
48.5	56.5	55.5

25 Illuminated pushbutton actuator, flush mounting page 14



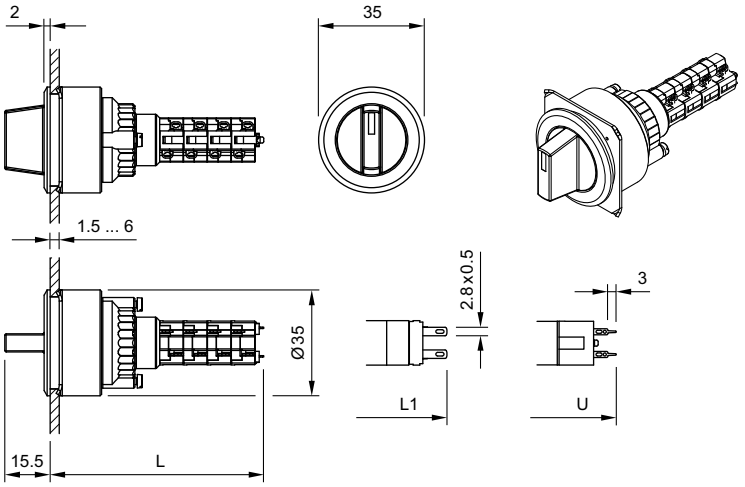
	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U	Universal terminal + diode U+D
1NC+1NO	48.5	56	-	-
2NC+2NO	56	-	-	-
3NC+3NO	63.5	-	-	-
4NC+4NO	71	-	-	-
1NC+1NO+D	-	-	-	63.5
2NC+2NO+D	-	-	-	71
1NC, 1NO, 1NC+1NO, 2NC, 2NO			55,5	-

26 Keylock switch actuator 2 positions, flush mounting page 15



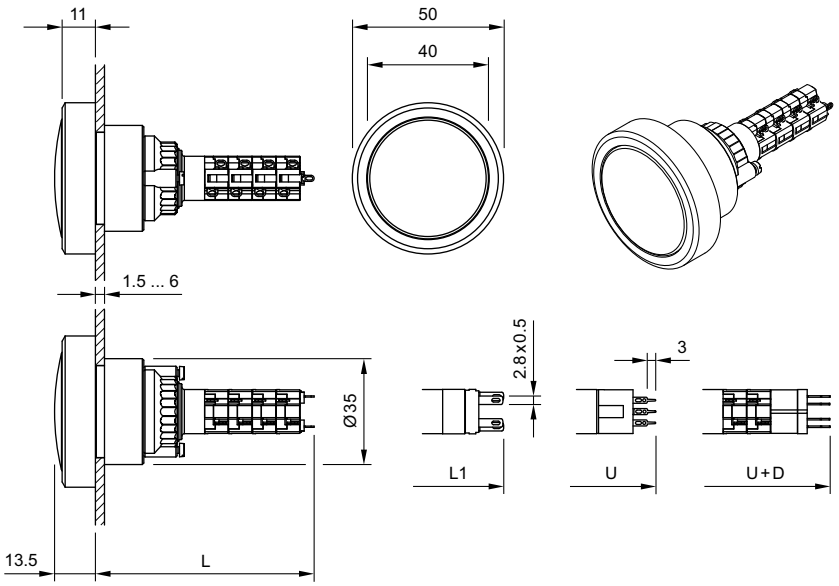
	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U
1NC+1NO	46.5	56	-
2NC+2NO	54	-	-
3NC+3NO	61.5	-	-
4NC+4NO	69	-	-
1NC+1NO, 2NO			55.5

27 Selector switch actuator 2 positions, flush mounting page 16



	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U
1NC+1NO	46.5	56	
2NC+2NO	54	-	-
3NC+3NO	61.5	-	-
4NC+4NO	69	-	-
1NC+1NO, 2NC, 2NO			55.5

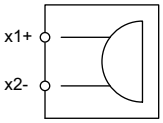
28 Front bezel set for Mushroom-head pushbutton page 19



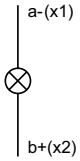
	Soldering terminal L	Soldering terminal (also pluggable) L1	Universal terminal U	Universal terminal + diode U+D
1NC+1NO	48.5	56	-	-
2NC+2NO	56	-	-	-
3NC+3NO	63.5	-	-	-
4NC+4NO	71	-	-	-
1NC+1NO+D	-	-	-	63.5
2NC+2NO+D	-	-	-	71
1NC, 1NO, 1NC+1NO, 2NC, 2NO			55,5	-

Circuit drawing

1 Buzzer page 7 **| Buzzer, flush mounting** page 13

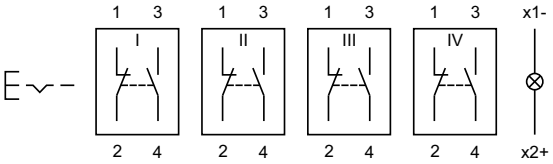


2 Indicator actuator full face illumination page 6 **| Indicator actuator front illumination** page 6 **| Indicator actuator, flush mounting** page 13

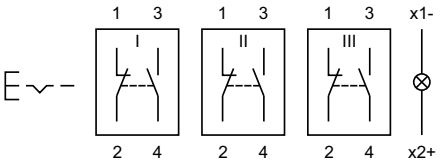


3 Indicator actuator full face illumination page 6 **| Indicator actuator front illumination** page 6 **| Indicator actuator, flush mounting** page 13

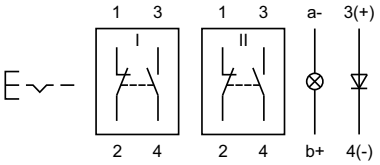
4 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



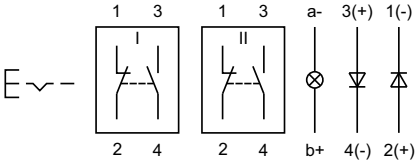
5 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



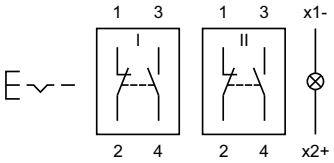
6 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



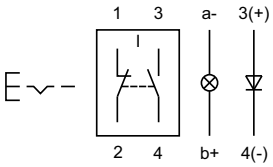
7 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



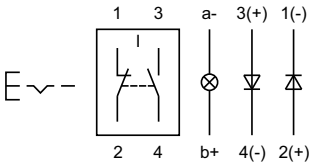
8 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



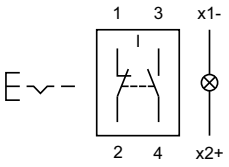
9 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



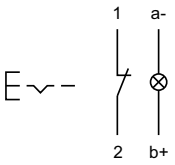
10 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



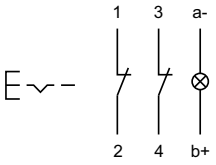
11 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



12 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



13 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



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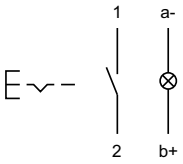
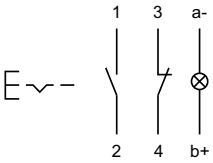


15 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



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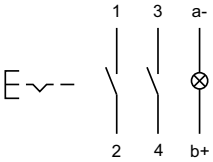
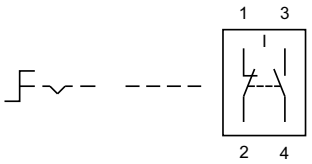
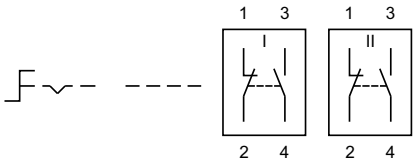


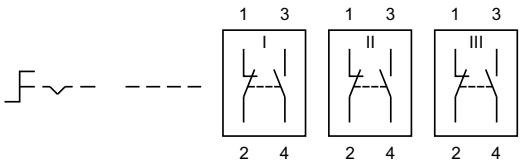
17 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



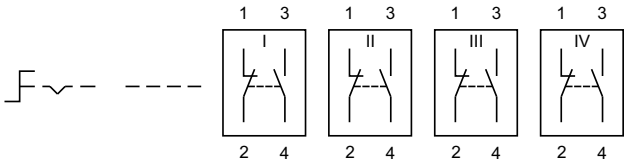
18 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



19 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16

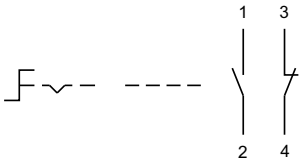


20 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16

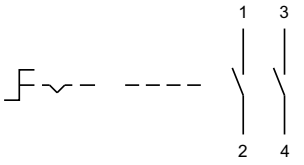


21 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16

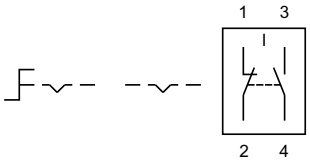
22 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



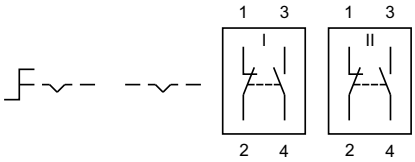
23 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



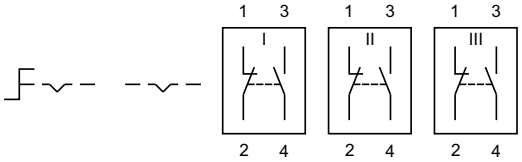
24 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



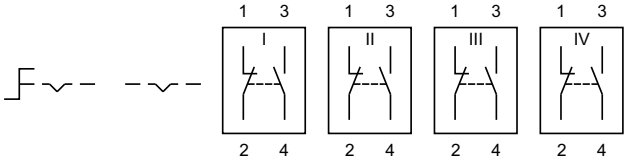
25 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



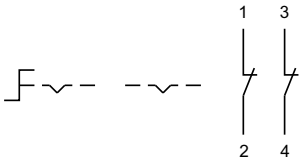
26 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



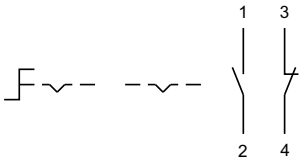
27 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



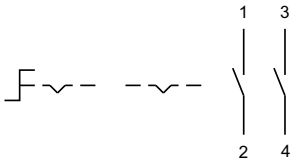
28 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



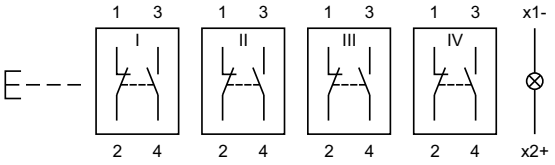
29 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



30 Selector switch 2 positions page 12 **| Selector switch actuator 2 positions, flush mounting** page 16



31 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



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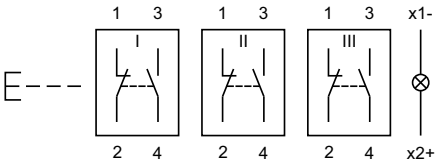
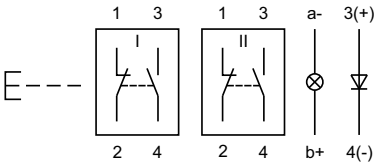
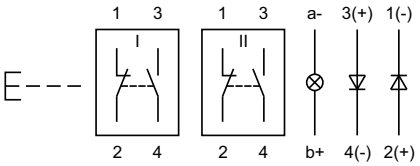


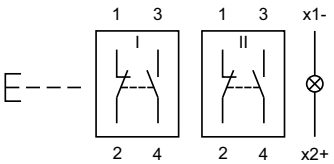
33 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



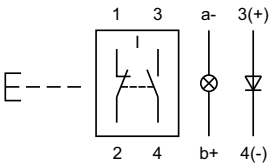
34 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



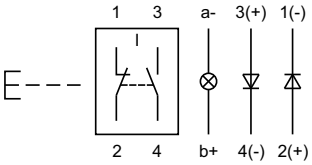
35 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



36 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



37 Illuminated actuator pushbutton page 8 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



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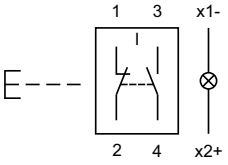
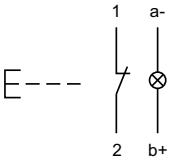


39 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



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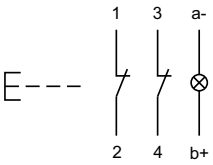
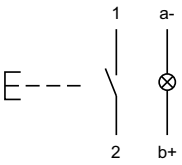
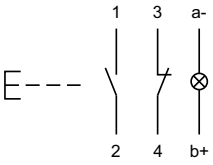


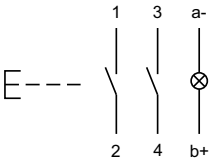
41 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



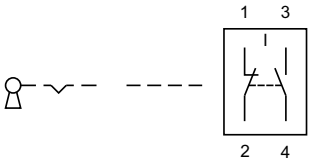
42 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



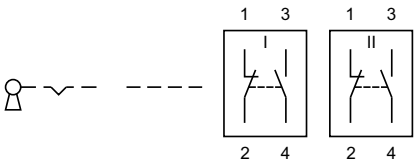
43 Illuminated actuator pushbutton page 8 **| Mushroom-head actuator pushbutton** page 9 **| Illuminated mushroom-head actuator pushbutton** page 10 **| Illuminated pushbutton actuator, flush mounting** page 14



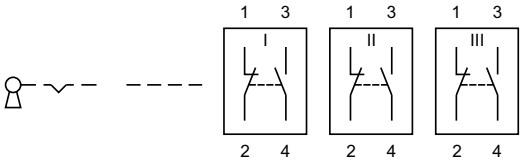
44 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



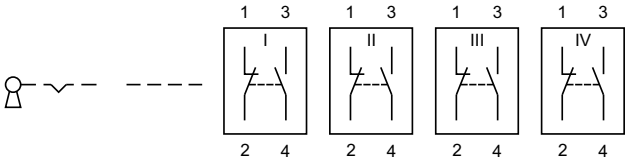
45 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



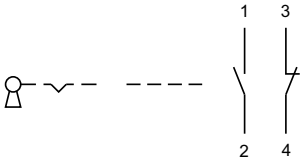
46 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



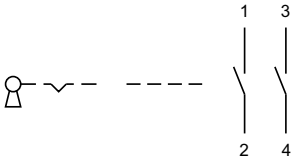
47 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



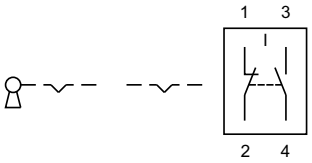
48 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



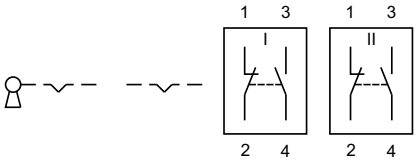
49 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



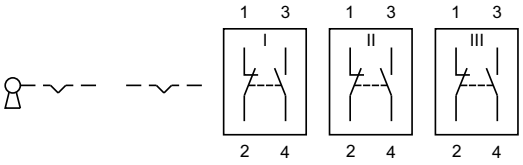
50 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



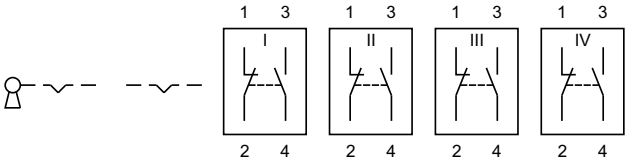
51 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



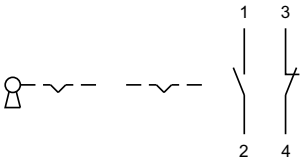
52 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



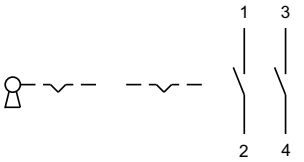
53 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



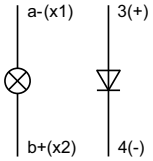
54 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



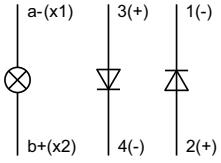
55 Keylock switch 2 positions page 11 **| Keylock switch actuator 2 positions, flush mounting** page 15



56 Indicator actuator full face illumination page 6



57 Indicator actuator full face illumination page 6



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