



Index

Series 03

	Description	Page 225
	Product Assembly	Page 226
	Product Range	
	- pushbuttons for standard mounting	Page 227
	- accessories / spare parts	Page 237
	Technical Data	Page 245
	Technical Drawing / Dimension	Page 247
	Circuit Drawing	Page 251
	Typical Applications	Page 252
	Marking	Page 253

General Notes

The pushbuttons of series 03 are noteworthy for the robust design of their case, their operational reliability and the large marking and illuminated area.

The pushbuttons contain one or two separately operating snap-action switching elements.

For technical data see page 2.

The illuminated pushbuttons 03, with two independent lamps, permit different modes of indication.

- Indication of two different functions
 - Indication in two colours of two different functions
 - Enhanced reliability of indication with two lamps
- Furthermore, series 03 can be equipped with two switching systems operating independently or mechanically interlocked.

Switches with free choice of bezel

The free choice of bezel enables users to match switches in front design to suit different purposes.

These bezels protect against unintentional switching. Bezels can be obtained in black.

Mounting

The switches, which are pushed into the opening in the panel from the front, are fixed with a plastic sleeve with a maximum effort of 20 Ncm. (For mounting dimensions and spacing, see pages 3-7.)

Lenses

The flat lenses, made of polymethyl methacrylate, are obtainable in various colours, as well as transparent and translucent. For series 03 we can supply lenses in two colours or for separately operated switching mechanisms (2 lenses per switch). Also a number of special lenses are available with special illumination facilities, e.g. for dark rooms. All lenses can be exchanged without affecting the switch position.

Marking

For engravings, hot stamping and film inserts, see under "Marking" on page 253.

Illumination

Perfect illumination of the different coloured lenses is assured by lamps T 6,8 (6-60 V).

For supply voltages above 60 V, it is necessary to use a voltage reduction element (external series resistor, capacitor or transformer). Do not solder the terminals directly, because of the high surface temperature. Multi-LED lamps T 6,8 (6, 12, 24, 48 V) are available in the colours, white, red, yellow and green.

Keylock switch

1 standard no. YB1. If the lock number is not specified, we supply no. YB1.

Additional 9 locks are available on request.

Two keys are supplied with each switch.

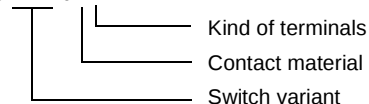
Spare keys may be ordered by quoting no. 02-989.

All dimensions in mm.

We reserve the right to modify technical data.

Number structure

03-XXX.OXX



03-9XX.X

Lens

03-9XX.X

Other accessories

Example:

- Illuminated pushbutton;
momentary action, free choice of front frame;
plug-in terminals 2,8; 1 switching element
03-616.012
- Lens red
03-901.2
- Front frame, black
03-967.0

Specimen order

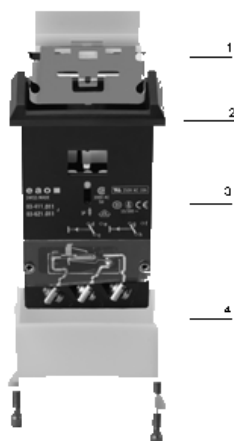
Indicator

- indicator, screw terminal 03-021.001

Recommended accessories:

- lens one-part in one colour,
for pushbutton one-part,
transparent, clear 03-941.7
- holder one-part, clear 03-908.7
- diffusor plate one part 03-909
- front bezel flat, black 03-965.0
- LED, 6 chips, 6 VDC, yellow 10-5206.3254

illuminated pushbutton



- 1 lens
- 2 switch housing
- 3 fixing bezel
- 4 front bezel

indicator

with two independent lamp bases



recommended accessories:

- lens one-part, in one colour for pushbutton one-part → 237
- holder one-part → 239
- diffuser plate one-part → 240
- lens one-part, in two colours for pushbutton one-part → 238; holder halved → 239; diffuser plate halved → 239
- front bezel flat → 240; front bezel raised on all sides → 240
- incandescent lamp → 242; LED → 242

	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
indicator	PT 2.8	03-021.002	1	1	1	0,045
	PT 4.8	03-021.003	1	1	1	0,045
	SCH	03-021.001	1	1	1	0,045

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal
marking see page 253
technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

pushbutton one-part



recommended accessories:
🛒 lens one-part, in one colour for pushbutton one-part → 237; lens one-part, in two colours for pushbutton one-part → 238
🛒 front bezel flat → 240; front bezel raised on all sides → 240

	switching system	contacts	switching action	connection method	⏏ 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	⚖ kg
pushbutton one-part	SA	1 DC	main	PT 2.8	03-613.012	2	2	1	0,055
				PT 4.8	03-613.013	2	2	1	0,055
				SCH	03-613.011	2	2	1	0,055
			mom	PT 2.8	03-611.012	4	2	1	0,055
				PT 4.8	03-611.013	4	2	1	0,055
				SCH	03-611.011	4	2	1	0,055
		2 DC	main	PT 2.8	03-614.012	3	2	1	0,065
				PT 4.8	03-614.013	3	2	1	0,065
				SCH	03-614.011	3	2	1	0,065
			mom	PT 2.8	03-612.012	6	2	1	0,065
				PT 4.8	03-612.013	6	2	1	0,065
				SCH	03-612.011	6	2	1	0,065
			mom/main	PT 2.8	03-615.012	5	2	1	0,065
				PT 4.8	03-615.013	5	2	1	0,065
				SCH	03-615.011	5	2	1	0,065

switching system: SA = snap-action switching element
contacts: 1 DC = 1 changeover, 2 DC = 2 changeover
switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action
connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal
[marking see page 253](#)
[technical drawing as of page 247](#), [mounting dimensions as of page 249](#), [circuit drawing as of page 251](#)

pushbutton two-part



recommended accessories:

-  lens halved for pushbutton two-part → 237
-  front bezel flat → 240; front bezel raised on all sides → 240

	switching system	contacts	switching action	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
pushbutton two-part changeover can be separately actuated	SA	2 independent changeover	main	PT 2.8	03-622.012	7	2	1	0,065
				PT 4.8	03-622.013	7	2	1	0,065
				SCH	03-622.011	7	2	1	0,065
			mom	PT 2.8	03-621.012	9	2	1	0,065
				PT 4.8	03-621.013	9	2	1	0,065
				SCH	03-621.011	9	2	1	0,065
			mom/main	PT 2.8	03-623.012	8	2	1	0,065
				PT 4.8	03-623.013	8	2	1	0,065
				SCH	03-623.011	8	2	1	0,065

switching system: SA = snap-action switching element

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

marking see page 253

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

pushbutton, locked mechanically



- recommended accessories:**
- 🛒 lens halved for pushbutton locked mechanically → 237
 - 🛒 front bezel flat → 240; front bezel raised on all sides → 240

	switching system	contacts	switching action	connection method	▢ 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	 kg
pushbutton, locked mechanically double-throw contacts mutually blocking and releasing	SA	2 DC	main	PT 2.8	03-629.012	7	3	1	0,075
				PT 4.8	03-629.013	7	3	1	0,075
				SCH	03-629.011	7	3	1	0,075

switching system: SA = snap-action switching element
contacts: 2 DC = 2 changeover
switching action: main = maintained action
connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal
marking see page 253
technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

illuminated pushbutton one-part

with two independent lamp bases



recommended accessories:

🛒 lens one-part, in one colour for pushbutton one-part → 237

🛒 holder one-part → 239

🛒 diffuser plate one-part → 240

🛒 lens one-part, in two colours for pushbutton one-part → 238; holder halved → 239; diffuser plate halved → 239

🛒 front bezel flat → 240; front bezel raised on all sides → 240

🛒 incandescent lamp → 242; LED → 242

	switching system	contacts	switching action	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
illuminated pushbutton one-part	SA	1 DC	main	PT 2.8	03-618.012	10	2	1	0,070
				PT 4.8	03-618.013	10	2	1	0,070
				SCH	03-618.011	10	2	1	0,070
			mom	PT 2.8	03-616.012	12	2	1	0,070
				PT 4.8	03-616.013	12	2	1	0,070
				SCH	03-616.011	12	2	1	0,070
		2 DC	main	PT 2.8	03-619.012	11	2	1	0,075
				PT 4.8	03-619.013	11	2	1	0,075
				SCH	03-619.011	11	2	1	0,075
			mom	PT 2.8	03-617.012	14	2	1	0,075
				PT 4.8	03-617.013	14	2	1	0,075
				SCH	03-617.011	14	2	1	0,075
			mom/main	PT 2.8	03-620.012	13	2	1	0,075
				PT 4.8	03-620.013	13	2	1	0,075
				SCH	03-620.011	13	2	1	0,075

switching system: SA = snap-action switching element

contacts: 1 DC = 1 changeover, 2 DC = 2 changeover

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

marking see page 253

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

illuminated pushbutton two-part

with two independent lamp bases



recommended accessories:

-  lens halved for pushbutton two-part → 237
-  holder halved → 239
-  diffuser plate halved → 239
-  front bezel flat → 240; front bezel raised on all sides → 240
-  incandescent lamp → 242; LED → 242

	switching system	contacts	switching action	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	 kg
illuminated pushbutton two-part	SA	1 changeover/1 indicator	main	PT 2.8	03-628.012	16	2	1	0,075
				PT 4.8	03-628.013	16	2	1	0,075
				SCH	03-628.011	16	2	1	0,075
			mom	PT 2.8	03-627.012	12	2	1	0,075
				PT 4.8	03-627.013	12	2	1	0,075
				SCH	03-627.011	12	2	1	0,075
changeover can be separately actuated	SA	2 independent changeover	main	PT 2.8	03-625.012	15	2	1	0,080
				PT 4.8	03-625.013	15	2	1	0,080
				SCH	03-625.011	15	2	1	0,080
			mom	PT 2.8	03-624.012	18	2	1	0,080
				PT 4.8	03-624.013	18	2	1	0,080
				SCH	03-624.011	18	2	1	0,080
			mom/main	PT 2.8	03-626.012	17	2	1	0,080
				PT 4.8	03-626.013	17	2	1	0,080
				SCH	03-626.011	17	2	1	0,080

switching system: SA = snap-action switching element

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

marking see page 253

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

illuminated pushbutton, locked mechanically

with two independent lamp bases



recommended accessories:

-  lens halved for pushbutton locked mechanically → 237
-  front bezel flat → 240; front bezel raised on all sides → 240
-  incandescent lamp → 242; LED → 242

	switching system	contacts	switching action	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
illuminated pushbutton, locked mechanically double-throw contacts mutually blocking	SA	2 DC	mom	PT 2.8	03-630.012	18	3	1	0,090
				PT 4.8	03-630.013	18	3	1	0,090
				SCH	03-630.011	18	3	1	0,090
double-throw contacts mutually blocking and releasing	SA	2 DC	main	PT 2.8	03-631.012	15	3	1	0,090
				PT 4.8	03-631.013	15	3	1	0,090
				SCH	03-631.011	15	3	1	0,090
double-throw contacts mutually blocking and releasing on the momentary side	SA	2 DC	mom/main	PT 2.8	03-632.012	17	3	1	0,090
				PT 4.8	03-632.013	17	3	1	0,090
				SCH	03-632.011	17	3	1	0,090

switching system: SA = snap-action switching element

contacts: 2 DC = 2 changeover

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

marking see page 253

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

pushbutton with mushroom-head cap



recommended accessories:

mushroom-head cap → 239

front bezel flat → 240

	switching system	contacts	switching action	connection method	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
pushbutton with mushroom-head cap	SA	1 DC	main	PT 2.8	03-613.012	10	4	1	0,055
				PT 4.8	03-613.013	10	4	1	0,055
				SCH	03-613.011	10	4	1	0,055
			mom	PT 2.8	03-611.012	12	4	1	0,055
				PT 4.8	03-611.013	12	4	1	0,055
				SCH	03-611.011	12	4	1	0,055
		2 DC	main	PT 2.8	03-614.012	11	4	1	0,065
				PT 4.8	03-614.013	11	4	1	0,065
				SCH	03-614.011	11	4	1	0,065
			mom	PT 2.8	03-612.012	14	4	1	0,065
				PT 4.8	03-612.013	14	4	1	0,065
				SCH	03-612.011	14	4	1	0,065
			mom/main	PT 2.8	03-615.012	13	4	1	0,065
				PT 4.8	03-615.013	13	4	1	0,065
				SCH	03-615.011	13	4	1	0,065

switching system: SA = snap-action switching element

contacts: 1 DC = 1 changeover, 2 DC = 2 changeover

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

keylock switch 2 positions



recommended accessories:

keylock front bezel → 239

front bezel flat → 240; front bezel raised on all sides → 240

 maint. 90°	switching system	contacts		connection method	key removable in	 24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
keylock switch 2 positions standard lock YB 1, other lock numbers on request	SA	2 DC	can be locked	PT 2.8	A	03-695.012	19	5	1	0,065
			pos. A + C, pos. A, not actuated, pos. C, actuated	PT 4.8	A	03-695.013	19	5	1	0,065
				SCH	A	03-695.011	19	5	1	0,065
			pos. A, actuated	PT 2.8	A	03-690.012	19	5	1	0,065
				PT 4.8	A	03-690.013	19	5	1	0,065
				SCH	A	03-690.011	19	5	1	0,065
			pos. A, actuated or non-actuated	PT 2.8	A	03-692.012	19	5	1	0,065
				PT 4.8	A	03-692.013	19	5	1	0,065
				SCH	A	03-692.011	19	5	1	0,065
			pos. A, actuated or non-actuated (can be used with protective cover 03-925)	PT 2.8	A	03-198.012	19	5	1	0,065
				PT 4.8	A	03-198.013	19	5	1	0,065
				SCH	A	03-198.011	19	5	1	0,065
			pos. A, non- actuated	PT 2.8	A	03-691.012	19	5	1	0,065
				PT 4.8	A	03-691.013	19	5	1	0,065
				SCH	A	03-691.011	19	5	1	0,065

switching system: SA = snap-action switching element

contacts: 2 DC = 2 changeover

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

After turning the key 90° clockwise, the switch can be operated.

In the unlocked positions the switch always performs a momentary action.

description see page 225

technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251

keylock switch with mushroom-head cap, 2 positions



recommended accessories:

keylock front bezel for keylock switches with mushroom-head cap → 239

front bezel flat → 240

	switching system	contacts	can be locked	connection method	key removable in	24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
maint. 90° keylock switch with mushroom-head cap, 2 positions To unlock it the key has to be inserted and turned 90° C clockwise. standard lock YB 1, other lock numbers on request	SA	2 DC	pos. A, actuated	PT 2.8	A	03-199.012	19	6	1	0,065
				PT 4.8	A	03-199.013	19	6	1	0,065
				SCH	A	03-199.011	19	6	1	0,065

switching system: SA = snap-action switching element

contacts: 2 DC = 2 changeover

connection method: PT 2.8 = plug-in terminal 2.8 mm, PT 4.8 = plug-in terminal 4.8 mm, SCH = screw terminal

[description see page 225](#)

[technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251](#)

buzzer



recommended accessories:

front bezel raised on all sides → 240

	operation voltage	front cap	connection method	example for using	24 x 48 mm part no.	circuit drawing	technical drawing	mounting dimension	
buzzer with continuous and intermittent tone	10-55 VAC/10-75 VDC	plastic black	SCH	1	03-810.001	20	7	1	0,060

connection method: SCH = screw terminal

[typical applications see page 252](#)

[technical drawing as of page 247, mounting dimensions as of page 249, circuit drawing as of page 251](#)

at front

lens halved for pushbutton two-part

order 2 pcs.

	shape	lens	colour	 24 x 48 mm part no.	 kg	
lens halved for pushbutton two-part 18 x 19 mm (for film insert use a holder) 18 x 19 mm (not for film insert and LED)	flat	transparent, no diffusing pattern	colourless, clear	03-943.7	0,005	  
	flat	translucent, with diffusing pattern	blue	03-921.6	0,005	
			green	03-921.5	0,005	
			orange	03-921.3	0,005	
			red	03-921.2	0,005	
			smoked	03-921.1	0,005	
			white	03-921.9	0,005	
			yellow	03-921.4	0,005	
18 x 19 mm (not for film insert and illumination)	flat	opaque	colourless, clear	03-921.7	0,005	
			black	03-921.0	0,005	
18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	transparent, no diffusing pattern	grey	03-921.8	0,005	
			smoked	03-954.1	0,005	
	flat	opaque	colourless, clear	03-953.7	0,005	
			black			

lens halved for pushbutton locked mechanically

order 2 pcs.

	shape	lens	colour	 24 x 48 mm part no.	 kg	
lens halved for pushbutton locked mechanically 18 x 19 mm (not for film insert and LED)	flat	translucent, with diffusing pattern	blue	03-923.6	0,003	
			green	03-923.5	0,003	
			orange	03-923.3	0,003	
			red	03-923.2	0,003	
			white	03-923.9	0,003	
			yellow	03-923.4	0,003	
	flat	transparent, with diffusing pattern	colourless, clear	03-923.7	0,003	
			black	03-923.0	0,003	
18 x 19 mm (not for film insert and illumination)	flat	opaque	grey	03-923.8	0,003	
			black			

lens one-part, in one colour for pushbutton one-part

	shape	lens	colour	 24 x 48 mm part no.	 kg	
lens one-part, in one colour for pushbutton one-part 18 x 38 mm (for film insert use a holder) 18 x 38 mm (not for film insert and LED)	flat	transparent, no diffusing pattern	colourless, clear	03-941.7	0,009	  
	flat	translucent, with diffusing pattern	blue	03-901.6	0,009	
			green	03-901.5	0,009	
			orange	03-901.3	0,009	
			red	03-901.2	0,009	
			smoked	03-901.1	0,009	
			white	03-901.9	0,009	
			yellow	03-901.4	0,009	
18 x 38 mm (not for film insert and illumination)	flat	opaque	colourless, clear	03-901.7	0,009	
			black	03-901.0	0,009	
18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	transparent, no diffusing pattern	grey	03-901.8	0,009	
			colourless, clear	03-946.7	0,009	
	flat	opaque	smoked	03-947.1	0,009	
			black			

lens one-part, in two colours for pushbutton one-part

	shape	lens	colour	24 x 48 mm part no.		
lens one-part, in two colours for pushbutton one-part 18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	transparent, no diffusing pattern	colourless, clear/colourless, clear	03-951.7/7	0,010	
			smoked/smoked	03-952.1/1	0,010	
18 x 38 mm, with light barrier (for film insert use a holder)	flat	transparent, no diffusing pattern	colourless, clear/colourless, clear	03-942.7/7	0,010	 
18 x 38 mm, with light barrier (not for film insert and LED)	flat	translucent, with diffusing pattern	black/black	03-902.0/0	0,010	
			black/blue	03-902.0/6	0,010	
			black/colourless, clear	03-902.0/7	0,010	
			black/green	03-902.0/5	0,010	
			black/grey	03-902.0/8	0,010	
			black/orange	03-902.0/3	0,010	
			black/red	03-902.0/2	0,010	
			black/white	03-902.0/9	0,010	
			black/yellow	03-902.0/4	0,010	
			blue/blue	03-902.6/6	0,010	
			blue/colourless, clear	03-902.6/7	0,010	
			blue/grey	03-902.6/8	0,010	
			blue/white	03-902.6/9	0,010	
			colourless, clear/colourless, clear	03-902.7/7	0,010	
			colourless, clear/grey	03-902.7/8	0,010	
			colourless, clear/white	03-902.7/9	0,010	
			green/blue	03-902.5/6	0,010	
			green/colourless, clear	03-902.5/7	0,010	
			green/green	03-902.5/5	0,010	
			green/grey	03-902.5/8	0,010	
			green/white	03-902.5/9	0,010	
			grey/grey	03-902.8/8	0,010	
			grey/white	03-902.8/9	0,010	
			orange/blue	03-902.3/6	0,010	
			orange/colourless, clear	03-902.3/7	0,010	
			orange/green	03-902.3/5	0,010	
			orange/grey	03-902.3/8	0,010	
			orange/orange	03-902.3/3	0,010	
			orange/white	03-902.3/9	0,010	
			orange/yellow	03-902.3/4	0,010	
			red/blue	03-902.2/6	0,010	
			red/colourless, clear	03-902.2/7	0,010	
			red/green	03-902.2/5	0,010	
			red/grey	03-902.2/8	0,010	
			red/orange	03-902.2/3	0,010	
			red/red	03-902.2/2	0,010	
			red/white	03-902.2/9	0,010	
			red/yellow	03-902.2/4	0,010	
			smoked/smoked	03-902.1/1	0,010	
			white/white	03-902.9/9	0,010	
			yellow/blue	03-902.4/6	0,010	
			yellow/colourless, clear	03-902.4/7	0,010	
			yellow/green	03-902.4/5	0,010	
			yellow/grey	03-902.4/8	0,010	
			yellow/white	03-902.4/9	0,010	
			yellow/yellow	03-902.4/4	0,010	

mushroom-head cap

use flat front bezel

					
	mushroom	colour	24 x 48 mm part no.		
mushroom-head cap 23 x 47 mm	opaque	black	03-930.0	0,018	
		green	03-930.5	0,018	
		red	03-930.2	0,018	
		yellow	03-930.4	0,018	

keylock front bezel

for standard lock YB1, supplied with 2 keys, other lock numbers on request

		part no.		
keylock front bezel grey		03-980.1	0,010	
grey, for keylock switch 03-695.		03-982.1	0,010	

keylock front bezel for keylock switches with mushroom-head cap

for standard lock YB1, supplied with 2 keys, other lock numbers on request

	part no.		
keylock front bezel for keylock switches with mushroom-head cap red	03-981.1	0,020	

holder halved

for film insert; order 2 pcs.

	colour	part no.		
holder halved translucent for lens two colours and halved	blue	03-922.6	0,001	
	colourless, clear	03-922.7	0,001	
	green	03-922.5	0,001	
	orange	03-922.3	0,001	
	red	03-922.2	0,001	
	white	03-922.9	0,001	
	yellow	03-922.4	0,001	

holder one-part

for use with film insert

	colour	part no.		
holder one-part translucent, for lens one-part, in one colour	blue	03-908.6	0,001	
	colourless, clear	03-908.7	0,001	
	green	03-908.5	0,001	
	orange	03-908.3	0,001	
	red	03-908.2	0,001	
	white	03-908.9	0,001	
	yellow	03-908.4	0,001	

diffuser plate halved

for film insert; order 2 pcs.

	part no.		
diffuser plate halved lettering only visible when illuminated, for lens in two colours and halved	03-926	0,001	

diffuser plate one-part

for film insert

	part no.		
diffuser plate one-part lettering only visible when illuminated, for lens one-part in one colour	03-909	0,001	

front bezel flat

	material	colour	 24 x 48 mm part no.		
front bezel flat	plastic	black	03-965.0	0,001	
		grey	03-965.8	0,001	

front bezel raised on all sides

	material	colour	 24 x 48 mm part no.		
front bezel raised on all sides lens only removable with lens remover 98-969	plastic	black	03-967.0	0,001	

light barrier

	part no.		
light barrier	03-907	0,002	

protective cover

use with flat front bezel 03-965

	 24 x 48 mm part no.	technical drawing		
protective cover hinged, transparent, cover to prevent accidental operation	03-925	8	0,001	

technical drawing as of page 247

sprayproof cover

front protection IP 65, use flat front bezel

	front shape	material	part no.	technical drawing	mounting dimension		
sprayproof cover three-part	rectangular	PVC (-20°C to + 60°C)	03-924	9	2	0,005	

technical drawing as of page 247, mounting dimensions as of page 249

blind plug

	colour	 24 x 48 mm part no.	mounting dimension		
blind plug	black	03-949.0	1	0,005	
	grey	03-949.8	1	0,005	

mounting dimensions as of page 249

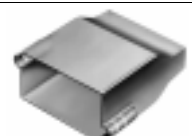
spare key

	part no.		
spare key for standard lock YB1, other lock numbers on request	02-989.001	0,001	

description see page 225

at back

terminal cover

	use	part no.		
terminal cover	all terminals	03-929	0,007	

for illumination

incandescent lamp

order 2 pcs.

	voltage/current	part no.		
incandescent lamp base T 6.8	6 AC/DC/200 mA	10-1206.1369 (02-903.0)	0,001	
	12 AC/DC/100 mA	10-1209.1329 (02-903.1)	0,001	
	12 AC/DC/50 mA	10-1209.1279 (02-913.12)	0,001	
	24 AC/DC/25 mA	10-1212.1199 (02-913.24)	0,001	
	24 AC/DC/50 mA	10-1212.1279 (02-903.2)	0,001	
	28 AC/DC/40 mA	10-1213.1249 (02-903.28)	0,001	
	30 AC/DC/40 mA	10-1214.1249 (02-903.3)	0,001	
	36 AC/DC/35 mA	10-1216.1229 (02-903.4)	0,001	
	48 AC/DC/25 mA	10-1219.1199 (02-903.5)	0,001	
	60 AC/DC/20 mA	10-1220.1179 (02-903.6)	0,001	

LED

order 2 pcs.

	number of chips	voltage/current	colour	part no.		
LED base T 6.8	6 chips	6 VDC/45 mA	green	10-5206.3255 (02-963.05)	0,001	
			red	10-5206.3252 (02-963.02)	0,001	
			yellow	10-5206.3254 (02-963.04)	0,001	
		12 VDC/30 mA	green	10-5209.3205 (02-963.15)	0,001	
			red	10-5209.3202 (02-963.12)	0,001	
			yellow	10-5209.3204 (02-963.14)	0,001	
		24 VDC/15 mA	green	10-5212.3145 (02-963.25)	0,001	
			red	10-5212.3142 (02-963.22)	0,001	
			yellow	10-5212.3144 (02-963.24)	0,001	
		28 VDC/15 mA	green	10-5213.3145 (02-963.35)	0,001	
			red	10-5213.3142 (02-963.32)	0,001	
			yellow	10-5213.3144 (02-963.34)	0,001	
		48 VDC/13 mA	green	10-5219.3125 (02-963.45)	0,001	
			red	10-5219.3122 (02-963.42)	0,001	
			yellow	10-5219.3124 (02-963.44)	0,001	
	8 chips	6 VDC/60 mA	green	10-6206.3285 (03-994.5)	0,001	
			red	10-6206.3282 (03-994.2)	0,001	
			yellow	10-6206.3284 (03-994.4)	0,001	
		12 VDC/30 mA	green	10-6209.3205 (03-995.5)	0,001	
			red	10-6209.3202 (03-995.2)	0,001	
			yellow	10-6209.3204 (03-995.4)	0,001	
		24 VDC/15 mA	green	10-6212.3145 (03-996.5)	0,001	
			red	10-6212.3142 (03-996.2)	0,001	
			yellow	10-6212.3144 (03-996.4)	0,001	
		28 VDC/15 mA	green	10-6213.3145 (03-997.5)	0,001	
			red	10-6213.3142 (03-997.2)	0,001	
			yellow	10-6213.3144 (03-997.4)	0,001	
		48 VDC/11 mA	green	10-6219.3095 (03-999.5)	0,001	
			red	10-6219.3092 (03-999.2)	0,001	
			yellow	10-6219.3094 (03-999.4)	0,001	
	1 chip	12 VDC/14 mA	white	10-2209.3139	0,001	
		24 VDC/14 mA	white	10-2212.3139	0,001	
		28 VDC/14 mA	white	10-2213.3139	0,001	

capacitor

for lamp voltage reduction

	value	part no.		
capacitor use with 60 VAC/20 mA, 50 Hz lamp voltage	230 VAC/0.27 μ F	02-917.0	0,004	

Wire in accordance with local electrical safety regulations.

series resistor

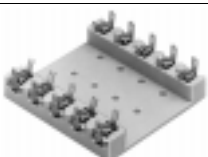
for lamp voltage reduction

	value	part no.		
series resistor use with 60 VAC/20 mA lamp rating	110 V/2.7 kOhm	02-904.0	0,003	
	125 V/3.3 kOhm	02-904.1	0,003	
	145 V/4.7 kOhm	02-904.3	0,003	
	230-240 V/10 kOhm	02-904.7	0,003	

Wire in accordance with local electrical safety regulations.

terminal plate empty

for fitting with series resistors and capacitors

	no. of spaces	part no.		
terminal plate empty	5 spaces	02-912.1	0,035	
	10 spaces	02-912.2	0,045	
	15 spaces	02-912.3	0,090	
	20 spaces	02-912.4	0,095	

terminal plate with capacitor

	value	no. of components	part no.		
terminal plate with capacitor use with 60 VAC/20 mA lamp rating	0,27 μ F/230 VAC/60 VAC	5 spaces	02-914.10	0,045	
		10 spaces	02-914.20	0,090	
		15 spaces	02-914.30	0,135	
		20 spaces	02-914.40	0,180	

Wire in accordance with local electrical safety regulations.

terminal plate with series resistor

	value	no. of components	part no.		
terminal plate with series resistor use with 60 VAC/20 mA lamp rating	2.7 kOhm/110/60 V	5 spaces	02-913.10	0,040	
		10 spaces	02-913.20	0,075	
		15 spaces	02-913.30	0,115	
		20 spaces	02-913.40	0,155	
	3.3 kOhm/125/60 V	5 spaces	02-913.11	0,040	
		10 spaces	02-913.21	0,075	
		15 spaces	02-913.31	0,115	
		20 spaces	02-913.41	0,155	
	10 kOhm/230-240/60 V	5 spaces	02-913.17	0,040	
		10 spaces	02-913.27	0,075	
		15 spaces	02-913.37	0,115	
		20 spaces	02-913.47	0,155	

Wire in accordance with local electrical safety regulations.

assembling

lens remover

	part no.		
lens remover for front bezel 4-full face raised	98-968	0,004	
standard	02-905	0,011	

lamp remover

	part no.		
lamp remover	02-906	0,002	

LED remover

	part no.		
LED remover	51-996	0,024	

Technical Data

actuator with snap-action switching element

switching system

- 1 or 2 self-cleaning, snap-action switching elements.
- 1 or 2 double-throw contacts

material

material of contacts

standard version: silver ($U > 20$ V)
 special versions: (on request)
 gold/silver 700 Au/300 Ag ($U < 50$ V)
 silver/ palladium 700 Ag/300 Pd ($U > 20$ V) for
 atmospheres containing sulphur

switching element

thermosetting material, heat-resistant

mechanical characteristics

actuating force

6-12 N

ambient air temperature

-25°C to +55°C

for indicators and illuminated pushbuttons mounted as a block ,
 make sure the heat can escape freely
 (as per DIN IEC 68-)

connection method

screw terminal (with self-lifting clip):
 max. wire cross-section: $2 \times 2.5 \text{ mm}^2$
 max. wire cross-section of stranded cable: $2 \times 1.5 \text{ mm}^2$
 plug-in terminal: $2.8 \times 0.8 \text{ mm}$:
 max. wire cross-section of stranded cable: 1 mm^2 can also be used
 as soldering terminal:
 max. wire cross-section: $2 \times 1 \text{ mm}^2$
 max. wire cross-section of stranded cable: $2 \times 0.75 \text{ mm}^2$
 plug-in terminal: $4.8 \times 0.8 \text{ mm}$:
 max. wire cross-section of stranded cable: 2.5 mm^2 can also be
 used as soldering terminal:
 max. wire cross-section: $2 \times 1 \text{ mm}^2$
 max. wire cross-section of stranded cable: $2 \times 0.75 \text{ mm}^2$

degree of protection

front as per IEC 529:
 IP 40
 IP 65 with spray cover

mechanical life

momentary action 2 mio. operations
 maintained action 1 mio. operations

resistance to vibration

10 g at 10-2000 Hz, amplitude 1,0 mm as per IEC 68-2-6

storage temperature

-30°C to +85°C
 (as per DIN IEC 68-)

travel

5 mm

electrical characteristics

continuous thermal current I_{th2}

10 A

The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

electric strength

2500 VAC, 50 Hz, 1 min. between all terminals and earth, as per IEC 512-2-11.

rated insulation voltage

380 VAC/440 VDC as per VDE 0110, group B

switch rating

400 VAC/10 A (cos. ϕ 0.3)
 250 VAC/10 A (as per UL)

switch rating AC, cos. ϕ 0.7 as per AC 11 (IEC 337):

voltage	125 V	250 V	380 V
current	8 A	5 A	3 A

switch rating DC (inductive), L:R=30 ms as per DC 11 (IEC 337):

voltage	24 V	60 V	110 V	220 V
current	6 A	1,5 A	0,4 A	0,2 A

approvals

- SEV 380 VAC/10 A
- CSA 300 VAC
- Lloyds Marine Register
- UL
- DEMKO
- VDE 0630/0710
- NEMKO- ÖVE
- Russian Marine Register
- German Lloyd
- German Navy, SAK-page no. 3337-... on request

buzzer

switching system

- contactless electronic buzzer
- with IC oscillator

buzzer system

system

electronic non-contacting buzzer
 with IC oscillator

material

alarm buzzer case

duroplastic

front bezel

polymethylcrylat

front cap

polycarbonate

mechanical characteristics

connection method

screw terminal

degree of protection

IP 40 as per IEC 529

operating temperature

-25°C to +55°C

storage temperature

-40°C to +85°C
 (as per DIN IEC 68-)

electrical characteristics

frequency (tone)

ca. 2.8 kHz

operation voltage/current

part no. 03-810.001

typ. 10-55 VAC; 25 mA

typ. 10-75 VAC; 15 mA

sound pressure

part no. 03-810.001:

85 dB $\pm$ 10 at a distance of 0.1 m

Volume variable with a 1 M Ω potentiometer or corresponding fixed resistor.

part no. 03-811.001:

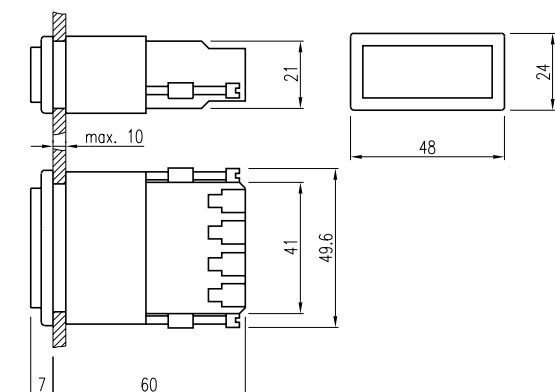
90 dB $\pm$ 5 at a distance of 0,1 m

Volume variable with a 1 M Ω potentiometer or corresponding fixed resistor.

technical drawing

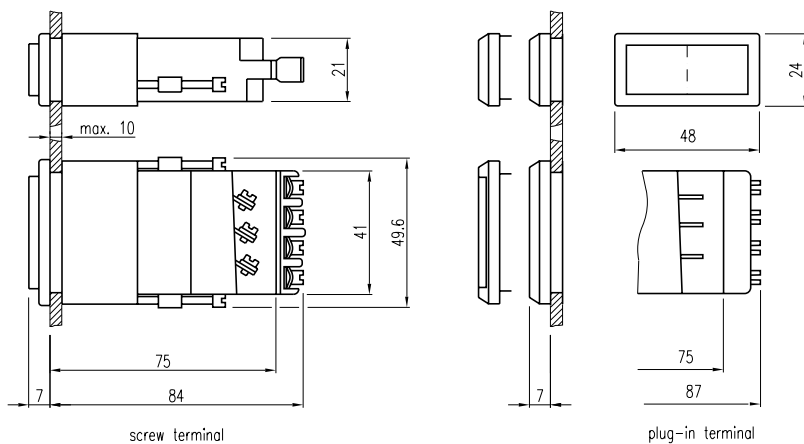
1 indicator

page 227



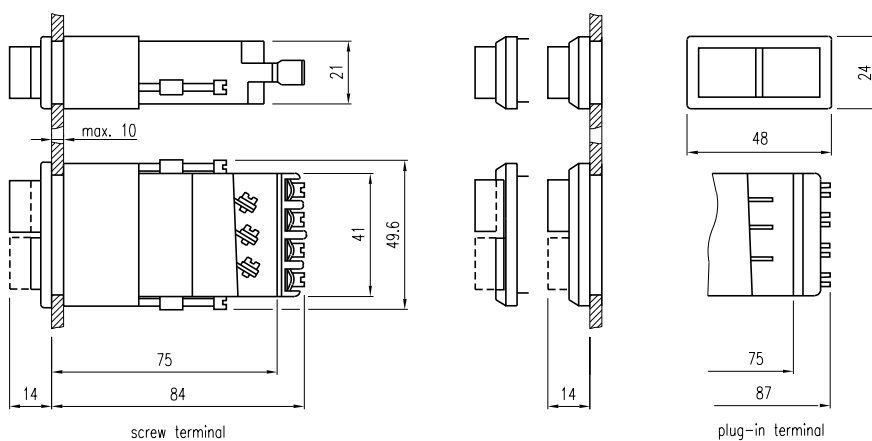
2 pushbutton one-part, pushbutton two-part, illuminated pushbutton one-part, illuminated pushbutton two-part

page 228, 229, 231, 232

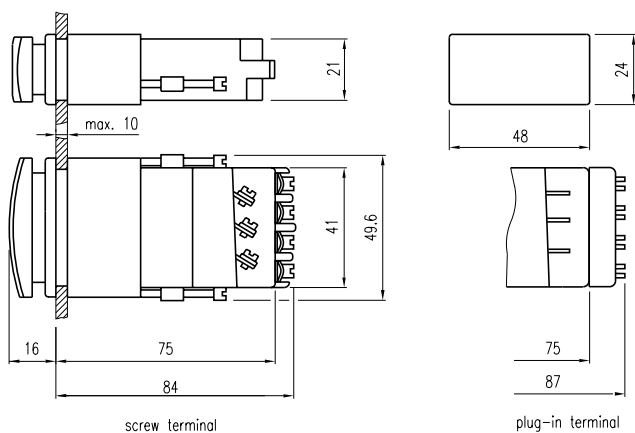


3 pushbutton, locked mechanically, illuminated pushbutton, locked mechanically

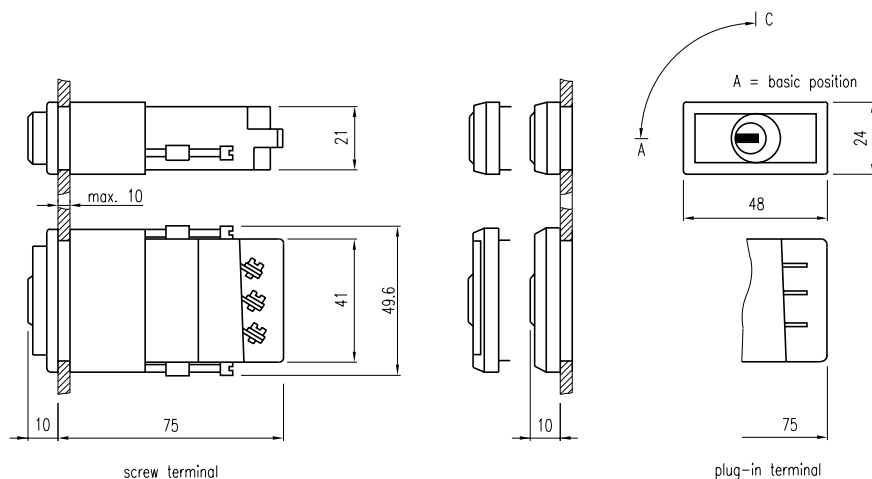
page 230, 233



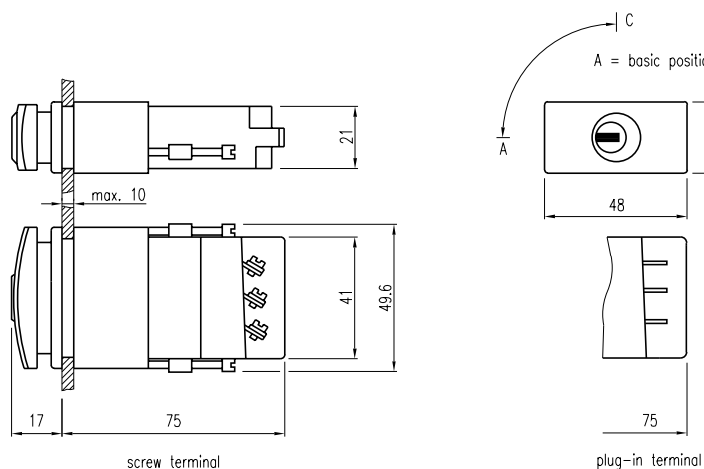
4 pushbutton with mushroom-head cap page 234



5 keylock switch 2 positions page 235

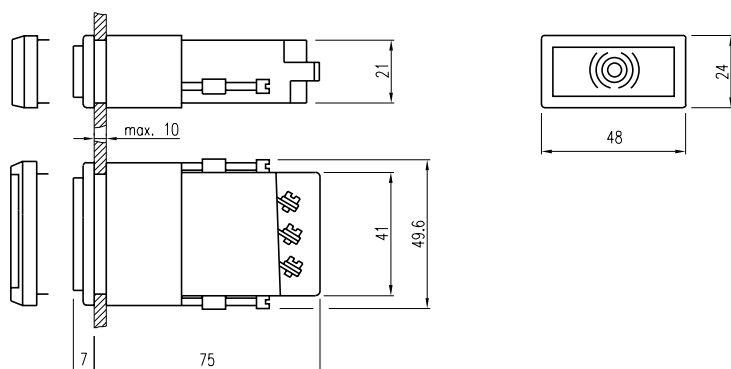


6 keylock switch with mushroom-head cap, 2 positions page 236



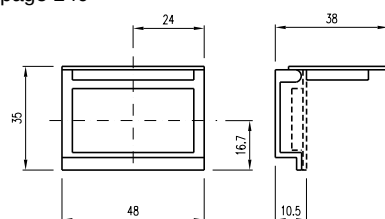
7 buzzer

page 236



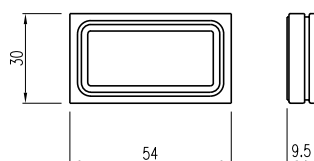
8 protective cover

page 240



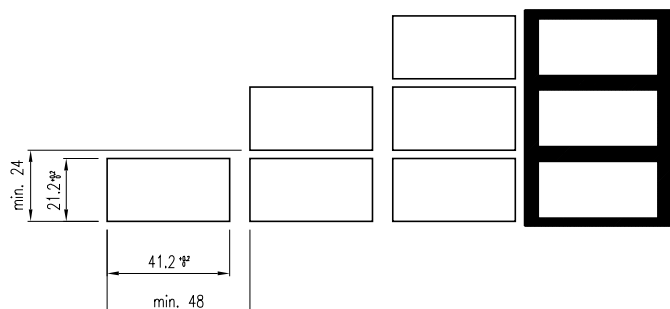
9 sprayproof cover

page 241

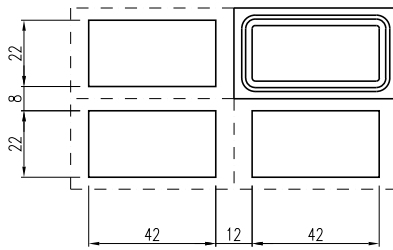


mounting dimension

1 indicator, pushbutton one-part, pushbutton two-part, pushbutton, locked mechanically, illuminated pushbutton one-part, illuminated pushbutton two-part, illuminated pushbutton, locked mechanically, pushbutton with mushroom-head cap, keylock switch 2 positions, keylock switch with mushroom-head cap, 2 positions, buzzer, blind plug
page 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 241

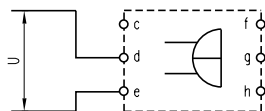


2 sprayproof cover page 241

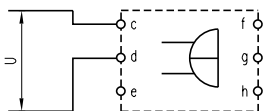


	circuit drawing
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

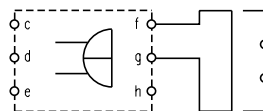
1 buzzer



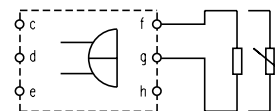
1. Supply voltage I
continuous tone
 $U = 10-35 \text{ VAC}$
 $U = 10-50 \text{ VDC}$



2. Supply voltage II
continuous tone
 $U = 35-55 \text{ VAC}$
 $U = 35-75 \text{ VDC}$

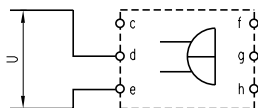


Intermittent tone
interval apr. 3 Hz

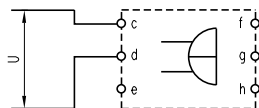


4. volume control

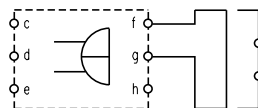
2 buzzer



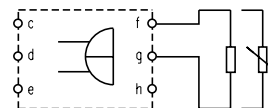
1. supply voltage I
contionous tone
 $U = 110/115 \text{ VAC/DC}$



2. supply voltage II
continous tone
 $U = 230 \text{ VAC}$



3. Intermittent tone
interval apr. 3 Hz



4. Volume control

1. Engraving

Typefaces

In addition to the most commonly used world languages (see DIN 1451) with close spacing, the following typefaces are available: Scandinavian, Slavian, Greek, Russian.

Coloured filling of engraving

Specify the infill colour, character height and the text or symbol orientation.

Symbols

A list of the symbols available can be supplied on request.

2. Hot stamping

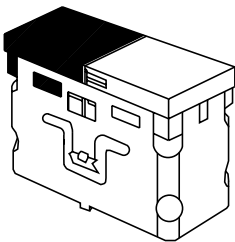
For large batches it is worth while to have the lettering produced by hot stamping.

Typefaces

For letters and figures, typefaces with 2,5 mm, 3 mm and 4 mm are available.

Symbols

A list of the symbols available can be supplied on request.



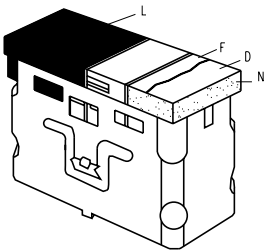
3. Film inserts

Instead of using engraving, the lenses can be fitted with transparent film inserts. For this purpose, though, it is advisable to use transparent lenses. When a smoked lens is used, the lettering does not become visible until the lens lights. The film (F) is inserted in the cap. To ensure even illumination a diffusor (D) is recommended, which is inserted beneath the film. If, on the other hand, the diffusor is inserted above the film, the lettering only becomes legible when the lamp is alight. To hold the film and diffusor in position, the use of a holder (N) is advised.

Film dimensions

max. 34,3 x 14,3 mm
(for type No. 03-941/03-946/03-947)
max. 15,6 x 14,3 mm
(for type No. 03-942/03-943/03-951/03-952/03-953/03-954)

Film thickness 0,2 mm



Height of letters	Thickness of letters												
		Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line
h	s		(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)
3	0,4	4	16	18	8	6	8	4	7-8	9-10	4	7-8	9-10
4	0,5	2	11	13	4	4	5	2	5	6	2	5	6
5	0,5	2	8	10	4	3	4	2	4	4	2	4	4
6	0,6	1	7	9	3	3	3	1	3	4	1	3	4
8	0,6	1	5	6	2	2	2	1	2	2	1	2	2