Kraus & Naimer

BLUE LINE switchgear

since 1907

Technical Catalog

Kraus & Naimer

Kraus & Naimer switches are used all around the world in office buildings, private houses and public buildings in electrical appliances.

In industrial environments, Kraus & Naimer has been the reliable name for decades. Our switches are the right choice especially in chemically aggressive and other demanding environments.

Kraus & Naimer switches are trusted to control and run machines in tough outdoor environments, whether it shines or snows.

In the world of transportation, Kraus & Naimer switches are used in trains, trucks, trams and military vehicles all around the globe.

Marine environment requires a lot from a switch. Therefore, Kraus & Naimer switches are used in first class sailboats, icebreakers, harbor cranes, freight ships and luxury sea cruisers – not to forget navy vessels.

How to Use This Catalog

This Catalog is divided into seven chapters. The first four chapters are for control switches, after that comes a chapter for main and safety switches and the last chapter contains our push buttons. In the end of this catalog is a short chapter for special applications. In this page, we will go through the chapters for control switches. Please see the next page for information about the chapters for Main and Safety switches and push buttons.

Information for control switches is divided into four chapters, because when you need to configure the Kraus & Naimer code for your switch, you need at least three of the four parts of the code in order to get the order right. The four different parts of the code are as follows:

First comes the technical part of the code. In this chapter, you should choose the type of switch you need based on the technical requirements. For example, if you need a switch for 20A thermal current you may choose switch type CA10.

The second part of the code is for the switch function. In this chapter, you may choose the switch code based on what you want the switch to do. For example, if you need a three pole On/Off switch with a 60 degree switching angle you would choose A202. Now you have the code CA10 A202. The switch functions are presented in drawings in this section, but if you already know what you need you may use the quick selection table on page 14.

The third part of the code is for the mounting of the switch. In this chapter, you find the most common mounting options for Kraus & Naimer switches including the dimension drawings. For example, if you need a four-hole panel mounting for your switch you choose the code E. On the last page there is a table for the length of the switch based on its size, so please don't forget to check that for your details. Now you have the code CA10 A202 E.

The fourth part consists of the optional extras, which you might need for your switch. As Kraus & Naimer has a wide selection of different optional extras we have not given a specific example of an order. Some of the optional extras are quite complicated to order. Therefore, please make a note of the optional extra you need in your inquiry or order, and your supplier will let you know the final code for the switch.

The switch code CA10 A202 E is almost final. If you use this code you will get standard escutcheon plate and handle, which give an additional color code for your switch. The full code would now be CA10 A202 -600E. The color code is not that important, if you don't need a special handle or engraving. Special handles you may find in the chapter about optional extras on page 45.

Kraus & Naimer switches are divided into five different size groups, which are marked with an S and a number: for example, S0. Switch size refers to the front plate, handle and stack size of the switch, which varies greatly based on the size. This marking is used in some tables and texts. Here are the different sizes per switch type:

Switch Size	Switch type	Front plate (mm)
S00	CA4,CA4-1,CG4,CG4-1,CGD4-1,CL4,CG6	30x30
S0	CG8,CA10,CH10, CL10, CA20,CA25	48x48
S1	CA10B,CA20B,CA40,CA50,CA63	64x64
S2	C43,C80,C125	88x88
S3	C315	130x130

S00 S0 S1 S2 S3

International Standards and Approvals

Control and Miniature Switches

	GOST	IEC	Russian Maritime Register of Shipping	Lloyd register of shipping	UL	CULUS	CUL	CSA	CCC	VDE	BS EN	ÖVE
CA4	A	C	A	C	A	A	A	A	-	C	C	C
CG4	A	C	-	C	A	A	A	A	A	C	C	C
CL4	A	C	-	C	-	-	-	-	-	C	C	C
CG6	A	C	-	C	A	A	A	A	-	C	C	C
CG8	A	C	-	C	A	A	A	A	-	C	C	C
CG8X	-	C	-	C	A	A	A	-	-	C	C	C
CA10	A	C	A	A	A	A	A	A	A	C	C	C
CA10B	A	C	A	A	A	A	A	A	A	C	C	C
CA10X	-	C	-	C	A	A	A	-	-	C	C	C
CA10Y	-	C	-	C	A	A	A	-	-	C	C	C
CH10	A	C	-	A	A	A	A	A	A	C	C	C
CH10B	A	C	-	C	A	A	A	A	A	C	C	C
CH10X	-	C	-	C	A	A	A	-	-	C	C	C
CA20	A	C	A	C	A	A	A	A	A	C	C	C
CA20B	A	C	A	C	A	A	A	A	A	C	C	C
CA20X	-	C	-	C	A	A	A	-	-	C	C	C
CA20Y	-	C	-	C	A	A	A	-	-	C	C	C
CA25	A	C	A	C	A	A	A	A	-	C	C	C
CA25B	A	C	A	C	A	A	A	A	-	C	C	C
CA25X	-	C	-	C	A	A	A	-	-	C	C	C
CA40	-	C	-	C	C	C	C	C	-	C	C	C
CA50	-	C	-	C	C	C	C	C	-	C	C	C
CA63	-	C	-	C	C	C	C	C	-	C	C	C
C80	A	C	-	C	A	A	A	A	-	C	C	C
C125	A	C	-	C	A	A	A	A	-	C	C	N
C315	A	C	-	C	-	-	-	A	-	C	C	N

Programmable Logic Switches

CAD11	A	C	-	C	A	A	A	C	A	C	C	C
DH11	A	C	-	C	A	A	A	-	-	C	C	C
CGD4-1	C	C	-	C	A	A	A	-	-	C	C	C
CG4-1	A	C	-	C	A	A	A	A	A	C	C	C
CA4-1	A	C	A	C	A	A	A	A	-	C	C	C
CAD12	A	C	-	C	A	A	A	C	A	C	C	C
DH12	A	C	-	C	A	A	A	-	-	C	C	C

Main and Safety Switches

KG10	A	C	-	C	A	A	A	A	-	C	C	C
KG100	A	C	A	C	A	A	A	A	-	C	C	C
KG105	C	C	A	C	A	A	A	-	A	C	C	C
KG10A	A	C	-	C	A	A	A	A	-	C	C	C
KG10B	A	C	-	C	A	A	A	A	-	C	C	C
KG20	A	C	A	A	A	A	A	A	A	C	C	C
KG20A	A	C	A	A	A	A	A	A	A	C	C	C
KG20B	A	C	A	A	A	A	A	A	A	C	C	C
KG32	A	C	A	A	A	A	A	A	A	C	C	C
KG32A	A	C	A	A	A	A	A	A	A	C	C	C
KG32B	A	C	A	A	A	A	A	A	A	C	C	C
KG41	A	C	A	A	A	A	A	A	A	C	C	C
KG41B	A	C	A	A	A	A	A	A	A	C	C	C
KG64	A	C	A	A	A	A	A	A	A	C	C	C
KG64B	A	C	A	A	A	A	A	A	A	C	C	C
KG80	A	C	A	A	A	A	A	A	A	C	C	C
KG80C	A	C	A	C	A	A	A	A	A	C	C	C
KG125	A	C	-	C	A	A	A	A	A	C	C	C
KG160	A	C	-	C	A	A	A	A	A	C	C	C
KG210	A	C	-	C	A	A	A	A	-	C	C	C
KG250	A	C	-	C	A	A	A	A	A	C	C	C
KG315	A	C	-	C	A	A	A	A	A	C	C	C
KH16	A	C	-	-	A	A	A	A	-	C	C	C
KH16B	A	C	-	-	A	A	A	A	-	C	C	C
KH20	A	C	-	-	A	A	A	A	-	C	C	C
KH20B	A	C	-	-	A	A	A	A	-	C	C	C
KH25	A	C	-	-	A	A	A	A	-	C	C	C
KH25B	A	C	-	-	A	A	A	A	-	C	C	C
KH32	A	C	-	-	A	A	A	A	-	C	C	C
KH40	A	C	-	-	A	A	A	A	-	C	C	C
KH63	A	C	-	-	A	A	A	A	-	C	C	C
KH80	A	C	-	-	A	A	A	A	-	C	C	C

A= Switch approved

C= Switch conforms to requirements

N=No approval required

X & Y at the end of the switch type refers to power failure release optional extra.

Technical Data

These pages contain technical information for switches. Based on this technical information you get the first part of the switch code. These pages are divided in two different tables: The first one contains technical information for control switches and miniature switches. Miniature switches are small in size and current, where as control switches cover the full range from 10A to 315A. Second table is for programmable logic switches, which are used with low currents.

Control and Miniature Switches

CL4

CL10

CH10

CG8

CA10

CA10B

Rated Thermal Current I_u/I_{th}		IEC 60947-3, EN 60947-3 VDE 0660 part 107		A
		SEV[4]	380 V 660 V	A A
		UL/Canada		A
Rated Insulation Voltage U_i		IEC 60947-3, EN 60947-3[1] VDE 0660 part 107[1] SEV[2] UL/Canada CEE/NEMKO		V V V V
Rated Operational Current I_e				
AC-21A	Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107		A
AC-1	Resistive or low inductive loads	SEV[2]	380 V 660 V	A A
AC-22A	Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107	220 V-500 V 660 V-690 V	A A
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-3, EN 60947-3 VDE 0660 part 107	220 V-240 V 380 V-440 V	A A
Pilot Duty		UL/Canada[2]	Heavy	VAC
Ampere Rating	Resistive or low inductive loads	UL/Canada[2]		A
Resistive load/motor load		CEE NEMKO		A A
Short Circuit Protection				
	Max. fuse size Rated short-time withstand current	(gL-characteristic) (1s-current)		A A
Max. Permissible Wire Gage				
	Single-core or stranded wire			mm^2
	Flexible wire (sleeving in accordance with DIN 46228)			AWG mm^2
	Flexible AWG wires (without sleeve)			AWG
Ambient Temperature of Stages				

Rated Impulse Withstand Voltage U_{imp} 6kV except for CA4, CA4-1 and CL4, where it is 4kV.
[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
[2]International Standards and Approvals, refer to page 4.

CA4, CG8, CL4 and CG6 are miniature switches. CG8, CH10 and CA10-C315 are control switches. In the CG series the terminal screws are reachable at an angle of 45° to the switch axis. This way the screwdriver access is from the installation side, therefore CG-switches can be mounted in very close proximity of each other.

The C and CA series the terminal screws are accessible from 90° to the switch axis, providing screwdriver access from the side.

The CL4 and CL10 switch have an Insulation Displacement Connection (IDC), so it is no more necessary to spend time for loosening the terminal screws, stripping, preparing of the conductors and tightening the terminal screws again.

Letter B in the end of the switch type means that the switch is physically one size bigger and mechanically stronger. Even though the technical values are the same like Ith 20A for CA10 and CA10B the latter one is physically bigger.

Switches over 315A can be found in our web page.

CA4 CG4	CL4	CG6 CG8 CA10 CA10B	CH10	CL10	CA20 CA20B	CA25 CA25B	CA40	CA50	CA63	C80	C125	C315
10	10	20	20	20	25	32	40	50	63	115	150	315
10	10	16	–	16	25	32	40	50	63	100	160	315
–	–	12	–	12	25	32	40	50	63	–	–	315
10	10	16/20[1]	20	20	30	30	45	55	65	100	150	240
440	440	690	690	690	690	690	690	690	690	690	690	690/1000
380	380	690/660[1]	–	690	660	690	690	690	660	660	660	660
300	300	300	600	600	600	300	600	600	600	600	600	600
400/380[3]	–	380	–	–	400	–	–	–	–	400	–	–
10	10	20	20	20	25	32	40	50	63	100	150	315
10	10	16[1]	–	16	25	32	40	50	63	100	160	315
–	–	12[1]	–	12	20	32	40	50	63	–	–	315
10	10	20	20	20	25	32	40	50	63	100	150	315
–	–	16/20[1]	16	20	25	32	40	50	63	100	125	125
2,5	2,5	6/5[1]	5	5	8	12	14	16	16	–	–	–
1,5	1,5	4	4	4	5	6	6	7	7	–	–	–
300	300	300	600	600	600	300	600	600	600	–	–	600
10	10	16/20[1]	20	20	30	30	45	55	60	100	150	240
4/2	–	10/6	–	–	16/10	–	–	–	–	63/10	–	–
6/4	–	10/6	–	–	20/10	–	–	–	–	–	–	–
10	10	25	25	25	35	35	50	63	63	125	200	315
60/90[3]	90	140	200	140	280	480	950	950	950	1300	2000	4200
2x	1x[4]	2x	2x	1x[4]	2x	2x						
1,5	0,5-1,5	2,5	4	0,5-2,5	4	6	16	16	16	35	70	185[2]
14	20-16	12	10	20-14	10	8	6	6	6	2	2/0	MCM350
2x	1x[4]	2x	2x	1x[4]	2x	2x						
1,5	0,5-1,5	2,5	2,5	0,5-2,5	4	6	10	10	10	25	50	150[2]
(–)	(–)	(2,5)			(2,5)	(4)	10	10	10	(25)	(50)	
16	20-16	14	12	20-14	12	10	6	6	6	3	1/0	MCM300

53°C during 24 hours with peaks up to 60°C at 100% load.

[1] Only for CA10,CA10B
[2] Cable lug must accept M12 screw.
[3] CG4 only
[4] The insulation material of the conductor has to be PVC.

Control and Miniature Switches

CL4

CL10

CH10

CG8

CA10

CA10B

Rated Utilization Category		IEC 60947-3, EN 60947-3 VDE 0660 part 107		
AC-2	Slip ring motor starting, reversing and plugging, star-delta starting CA4-CA50	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW
AC-3	Direct-on-line starting, star-delta starting CA63-C315	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW
AC-23A	Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW
Ratings		UL/Canada		
	Standard motor load DOL-Rating (similar to AC-3)	3 phase 3 pole	110 V-120 V 220 V-240 V 440 V-480 V **550 V**-600 V	HP
		1 phase 2 pole	110 V-120 V 220 V-240 V 277 V 440 V-480 V **550 V**-600 V	HP
	Heavy motor load Reversing-Rating (similar to AC-4)	3 phase 3 pole	110 V-120 V 220 V-240 V 440 V-600 V	HP
		1 phase 2 pole	110 V-120 V 220 V-240 V 277 V	HP

CA4, CG8, CL4 and CG6 are miniature switches. CG8, CH10 and CA10-C315 are control switches. In the CG series the terminal screws are reachable at an angle of 45° to the switch axis. This way the screwdriver access is from the installation side, therefore CG-switches can be mounted in very close proximity of each other.

The C and CA series the terminal screws are accessible from 90° to the switch axis, providing screwdriver access from the side.

The CL4 switch has an Insulation Displacement Connection (IDC), so it is no more necessary to spend time for loosening the terminal screws, stripping, preparing of the conductors and tightening the terminal screws again.

Letter B in the end of the switch type means that the switch is physically one size bigger and mechanically stronger. Even though the technical values are the same like Ith 20A for CA10 and CA10B the latter one is physically bigger.

CA4 CG4	CL4	CG6 CG8 CA10 CA10B	CH10	CL10	CA20 CA20B	CA25 CA25B	CA40	CA50	CA63	C80	C125	C315
2,5	2,5	4	4	4	5,5	7,5	10	11	18,5	30	37	55
4,5	4,5	7,5	7,5	7,5	11	15	18,5	22	30	45	55	90
–	–	10	10	10	15	18,5	22	30	40	55	75	110
–	–	10	10	10	13	15	22	30	37	55	55	55
1,5	1,5	3	3	3	4	5,5	7,5	11	11		15	22
372,2	2,2	5,5	5,5	5,5	7,5	11	15	18,5	18,5	30	37	55
–	–	5,5	5,5	5,5	7,5	11	15	18,5	18,5	30	37	55
–	–	5,5	5,5	5,5	7,5	11	15	18,5	18,5	30	30	37
0,3	0,3	0,6	0,6	0,6	1,5	2,2	2,5	3	3	3,7	5,5	11
0,55	0,55	2,2	2,2	2,2	3	4	5,5	6	6	7,5	11	22
0,75	0,75	3	3	3	3,7	5,5	7,5	11	11	13	18,5	30
0,37	0,37	0,55	0,55	0,55	1,5	2,5	3,7	4	5,5	6	10	15
0,55	0,55	1,5	1,5	1,5	3	5,5	6	7	7,5	11	15	25
–	–	1,5	1,5	1,5	3	5,5	6	7	7,5	11	15	25
–	–	1,5	1,5	1,5	3	5,5	6	7,5	7,5	11	15	22
0,15	0,15	0,3	0,3	0,3	0,45	0,75	1,1	1,2	1,2	1,5	2,2	4
0,25	0,25	0,75	0,75	0,75	1,1	1,5	2,2	2,4	2,4	3	4	7,5
0,5	0,5	1,5	1,5	1,5	2,2	3	3,7	4	4	5,5	7,5	11
1,8	1,8	3,7	3,7	3,7	5,5	7,5	7,5	11	15	30	37	75
3	3	7,5	7,5	7,5	11	15	18,5	22	30	45	75	132
–	–	7,5	7,5	7,5	11	15	18,5	22	30	55	90	132
–	–	7,5	7,5	7,5	11	15	18,5	22	30	45	55	37
0,37	0,37	0,75	0,75	0,75	1,5	2,2	2,2	2,5	4	5,5	11	18,5
0,75	0,75	2,5	2,5	2,5	3	4	4	5,5	10	15	22	37
1,1	1,1	3,7	3,7	3,7	5,5	7,5	7,5	11	18,5	22	37	55
0,75	0,75	1,5	1,5	1,5	3	5	7,5	7,5	7,5	10	15	30
1	1	1/3[1]	3	3	7,5	10	15	15	15	20	25	75
–	–	–	5	5	10	–	25	25	25	30	40	75
–	–	–	5	5	10	–	30	30	30	40	50	60
0,33	0,33	0,5	0,5	0,5	1,5	2	3	3	3	5	7,5	15
0,75	0,75	1	1	1	3	5	7,5	7,5	7,5	10	15	40
0,75	0,75	1/2[1]	2	2	3	5	7,5	7,5	7,5	10	15	40
–	–	–	2	2	5	–	15	15	15	20	25	50
–	–	–	2	2	5	–	20	20	20	25	30	50
–	–	0,5	0,5		1	2	-	-	-	7,5	10	15
–	–	1	1		2	3	-	-	-	15	20	30
–	–	–	3		5	–	-	-	-	25	30	40
–	–	0,17	0,17		0,33	1,5	-	-	-	3	5	7,5
–	–	0,5	0,5		0,75	3	-	-	-	7,5	10	15
–	–	0,5/0,6[1]	0,6		1	3	-	-	-	7,5	10	15

[1] Only for CA10,CA10B

Programmable Logic Usage Switches

CA4-1 CG4-1 CAD11 DH11

Rated Insulation Voltage U_i		IEC 60947-3, EN 60947-3[1] VDE 0660 part 107 SEV[2] UL/Canada min. voltage		V V V V
Rated Impulse Withstand Voltage U_{imp}				
Rated Thermal Current $I_{u/Ith}$		IEC 60947-3, EN 60947-3 VDE 0660 part 107 SEV[2] UL/Canada		A A A
Rated Operational Current Ie		IEC 60947-3, EN 60947-3 VDE 0660 part 107		
AC-21A	Switching of resistive loads, including moderate overloads	UL/Canada[3]	1 V/6 V 12 V/24 V 48 V/110 V 220 V/400 V 440 V/500 V 600 V	A A A A A A
AC-1	Resistive or low inductive loads	SEV[2]	1 V/6 V 12 V/24 V 48 V/110 V 220 V/380 V 440 V/500 V 600 V	A A A A A A
Short Circuit Protection				
	Max. fuse size Rated short-time withstand current		(gL-characteristic) (1s-current)	A A
DC Switching Capacity		IEC 60947-3, EN 60947-3 VDE 0660 part 107		
DC-1	Resistive load T = 1 ms	SEV[2] UL/Canada[3]	1 V/6 V 12 V/24 V 48 V/60 V 110 V/220 V 240 V/500 V 600 V	A A A A A A
Max. Permissible Wire Gage				
	Single-core or stranded wire			mm² AWG
	Flexible wire (sleeving in accordance with DIN 46228)			mm²
Ambient Temperature of Stages				AWG

[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
[2]International Standards and Approvals, refer to page 4.
[3]Max. 300 V.

CAD11 and DH11 switches have stages with gold contacts and a self-cleaning H-bridge design with a cross-wire contact system. This guarantees very high switching reliability even in chemically aggressive, dusty or otherwise polluted environments. In addition to these features, DH11 has fully enclosed stages.

CAD12 and DH12 switches are similar to CAD11 and DH11 but they have silver contacts.

CGD4-1, CG4-1 and CA4-1 are small switches with gold plated contacts. CGD4-1 is a small size switch equivalent to DH11.

CAD11	DH11(B)	CGD4-1	CG4-1	CA4-1	CAD12	DH12(B)
600 600 300	600 600 600	440 300	440 400 300	440 380 300	600 600 300	600 600
1	1	on request			6	6
on request						
6 5 6	6 6	5 5	10 10	10 10 10	6 5 6	6 6
6/3 2/1 0,8/0,4 0,2/0,13 0,1/0,08 0,05	6/3 2/1 0,8/0,4 0,2/0,13 0,1/0,09 0,05	5/2 1,2/0,7 0,45/0,25 - 0,1/- -			–/6 5/5 4/3 2/1,3 1/0,8 0,5	-/6 6/5 4/3 2/1,3 1/0,9 0,5
5/3 2/1 0,8/0,4 0,2/0,13 0,1/0,08 0,05					–/5 5/5 4/3 2/1,3 1/0,8 0,5	
6 35	6 40	5 30	10 90	10 60	6 50	6 65
4/2,5 1,5/0,8 0,3/0,27 0,2/0,1 0,08/0,03 0,02	4/2,5 1,5/0,8 0,3/0,27 0,2/0,1 0,08/0,04 0,02	3/1,2 0,7/0,4 0,25/0,2 0,13/- 0,08/-	6/2,5 0,7/0,3	6/2,5 0,7/0,3	–/4 3/2,2 1,2/1 0,6/0,3 0,25/0,1 0,1	-/4 3/2,2 1,2/1 0,6/0,3 0,27/0,12 0,1
2x 2,5 12	2x 2,5 12	2x 1,5 14	2x 1,5 14	2x 1,5 14	2x 2,5 12	2x 2,5 12
2x 2,5 (2,5) 14	2x 2.5 (1,5) 14	2x 1,5 - 16	2x 1,5 - 16	2x 1,5 - 16	2x 2,5 (2,5) 14	2x 2,5 (1,5) 14
55 °C during 24 hours with peaks up to 60 °C at 100 % load						

Switch Functions

These pages contain several function drawings for different switch types. You may choose your desired function on these pages. Quick selection table for different switch functions are on page 14. In the function drawing pages each drawing has a four letter code next to it, which defines the second part of the switch code. The function code starts always with an A.

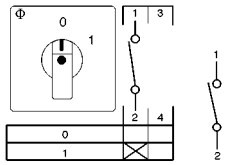
Switch Function Table

ON/OFF Switches with 60° Switching	switch°	pol.	stages	code	page
0-1	60	1	1	A200	16
0-1	60	2	1	A201	
0-1	60	3	2	A202	
0-1	60	4	2	A203	
0-1	60	5	3	A341	
0-1	60	6	3	A342	
0-1	60	7	4	A343	
ON/OFF Switches with 90° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
0-1	90	1	1	A290	16
0-1	90	2	1	A291	
0-1	90	3	2	A292	
0-1 Pre-close N	90	4	2	A293	
0-1	90	3	2	A324	
Double-throw Switches without "OFF" 60° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
1-2	60	1	1	A220	17
1-2	60	2	2	A221	
1-2	60	3	3	A222	
1-2	60	4	4	A223	
Double-throw Switches without "OFF" 90° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
1-2	90	1	1	A520	17
1-2	90	2	2	A521	
1-2	90	3	3	A522	
1-2	90	4	4	A523	
Double-throw Switches without "OFF" 90° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
1-2	90	1	1	A530	18
1-2	90	2	2	A531	
1-2	90	3	3	A532	
1-2	90	4	4	A533	
Double-throw Switches with Center "OFF" 60° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
1-0-2	60	1	1	A210	18
1-0-2	60	2	2	A211	
1-0-2	60	3	3	A212	
1-0-2	60	4	4	A213	
Double-throw Switches with Center "OFF" 90° Switching	**switch°**	**pol.**	**stages**	**code**	**page**
1-0-2	90	1	1	A510	19
1-0-2	90	2	2	A511	
1-0-2	90	3	3	A512	
1-0-2	90	4	4	A513	
Double-throw Switches with Spring Return to Center	**switch°**	**pol.**	**stages**	**code**	**page**
1>0<2	60	1	1	A214	19
1>0<2	60	2	2	A215	
1>0<2	60	3	3	A216	
1>0-2	30+60	1	1	A320	
1>0-2	30+60	2	2	A321	
General Application Switches	**switch°**	**pol.**	**stages**	**code**	**page**
2 Gang Switching Sequence: 0,A,A+B, 0-1-2	60	1	1	A310	20
3 Gang Switching Sequence: 0,A,A+B, 0-1-2	60	2	2	A312	
4 Gang Switching Sequence: 0,A,A+B, 0-1-2	60	3	3	A314	
3 Gang Switching Sequence: 0,A,A+B, A+B+C, 0-1-2-3	30	1	2	A311	
4 Gang Switching Sequence: 0,A,A+B, A+B+C, 0-1-2-3	30	2	3	A313	
5 Gang Switching Sequence: 0,A,A+B, A+B+C, 0-1-2-3	30	3	5	A315	
2 Gang Switching Sequence: 0,A,B,A+B, 0-1-2-3	30	1	1	A330	
3 Gang Switching Sequence: 0,A,B,A+B, 0-1-2-3	30	2	2	A331	
4 Gang Switching Sequence: 0,A,B,A+B, 0-1-2-3	30	3	3	A332	
2 Gang Series-parallel Sw.Switching sequence:0,A+B series,A,A+B parallel	30	2	2	A339	
Coding Switches / Binary Code	**switch°**	**pol.**	**stages**	**code**	**page**
0-7 360° rotation	45		2	A540	21
0-7 complement 360° rotation	45		2	A541	
0-7 + complement 360° rotation	45		3	A542	
0-9	30		2	A550	
0-9 complement	30		2	A551	
0-7 + complement	30		4	A552	
0-11 360° rotation	30		2	A543	
0-11 + complement 360° rotation	30		4	A545	

Multi-step Switches without ”OFF”	switch°	pol.	stages	code	page
3 Step	60	1	2	A230	22
3 Step	60	2	3	A250	
3 Step	60	3	5	A270	
3 Step	60	4	6	A476	
4 Step	60	1	2	A231	
4 Step	60	2	4	A251	
4 Step	60	3	6	A271	
4 Step	60	4	8	A477	
5 Step	60	1	3	A232	
5 Step	60	2	5	A252	
5 Step	60	3	8	A272	
6 Step	60	1	3	A233	23
7 Step	45	1	4	A234	
8 Step	45	1	4	A235	
9 Step	30	1	5	A236	
10 Step	30	1	5	A237	
11 Step	30	1	6	A238	
12 Step	30	1	6	A239	
Multi-step Switches with ”OFF”	**°switch.**	**pol.**	**stages**	**code**	**side**
2 Step	60	1	1	A240	24
3 Step	45	1	2	A241	
4 Step	30	1	2	A242	
5 Step	30	1	3	A243	
6 Step	30	1	3	A244	
7 Step	30	1	4	A245	
8 Step	30	1	4	A246	
9 Step	30	1	5	A247	
10 Step	30	1	5	A248	25
11 Step	30	1	6	A249	
2 Step	60	2	2	A260	
3 Step	45	2	3	A261	
4 Step	30	2	4	A262	
2 Step	60	3	3	A280	
3 Step	45	3	5	A281	
Voltmeter Switches with ”OFF”	**°switch.**	**pol.**	**stages**	**code**	**side**
3 phase, 3 wire, 0- L1-L2 - L2-L3 - L3-L1	45		2	A004	26
3 phase to neutral, 0 - L1-N - L2-N - L3-N	45		2	A005	
3 phase to phaase and 3 phase to neutral, L3L1-L2L3-L1L2-0-L1N-L2N-L3N	45		3	A007	
Ammeter Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
2 pole 3 current transformers, 0-1-2-3	90		5	A038	26
Singel pole with 3 current transformers with ”OFF”, 0-1-2-3	90		3	A048	
Control Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
Stop switch, STOP>	30		1	A174	27
Start switch , <START	30		1	A175	
Stop start switch, single pole, STOP><START	30		1	A176	
Stop start switch with spring return to run for 2 units, START>1-0-2<START	60, 30		2	A177	
Stop start switch with spring return from start to run, 0-1<START	60+30		1	A178	
Contactor control with spring return to ”OFF”, 1>0<2	30		2	A179	
Control and Alarm Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
With slip clutch and without indicator device			5	A190	27
Without indicator device			2	A192	
Motor Reversing Switch	**°switch.**	**pol.**	**stages**	**code**	**side**
3 pole, 1-0-2	60		3	A401	28
Motor Control Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
2 speed single winding, 0-1-2	60		4	A440	28
2 speed single winding with center ”OFF”, 2-1-OFF-1-2	60		4	A441	
2 speed single winding reversing, 2-1-OFF-1-2	45		6	A442	
Star-Delta Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
OFF-Star-Delta, 0-Y-D	60		4	A410	29
Reversing, D-Y-0-Y-D	45		5	A413	
For use with reversing contactors, 0-Y-D	90		4	A419	
Star and Run Switches	**°switch.**	**pol.**	**stages**	**code**	**side**
Split-phase start, 0-1<STAR	90+30		2	A425	29

ON/OFF Switches with 60° Switching

A200



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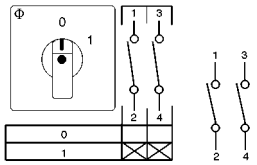
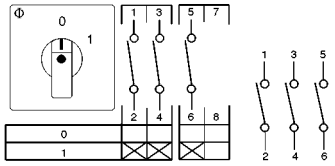


A202



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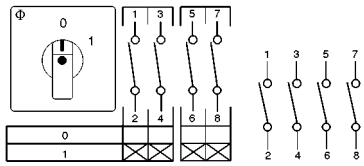

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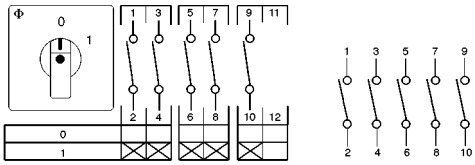

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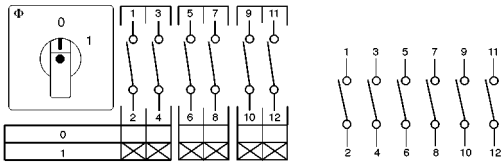

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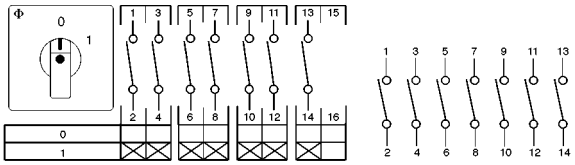
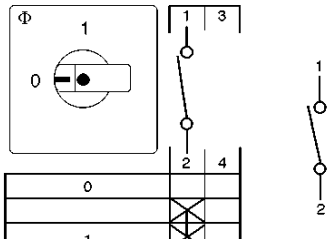
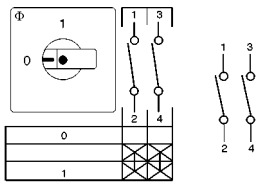


ON/OFF Switches with 90° Switching

A290



A291



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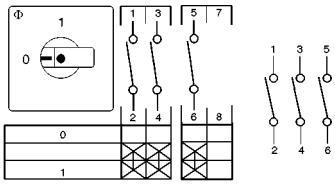

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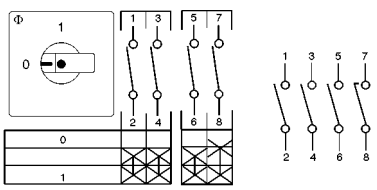
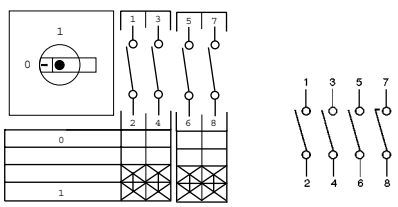
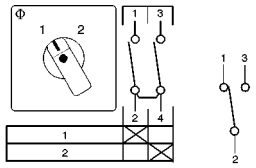


A324

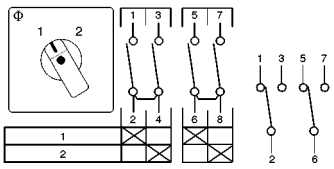


Double – Throw Switches without “OFF” 60° Switching

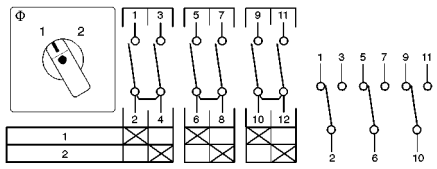
A220



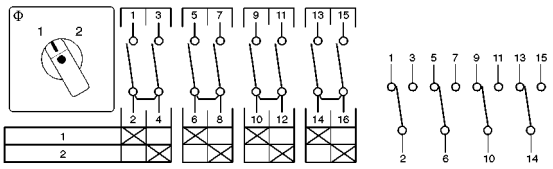
A221



A222

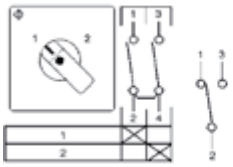


A223



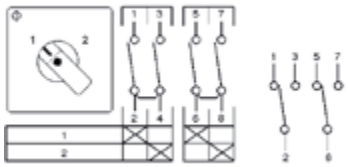
Double – Throw Switches without “OFF” 90° Switching

A520



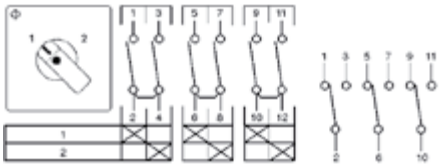
Code for a switch with out jumpers is 575

A521



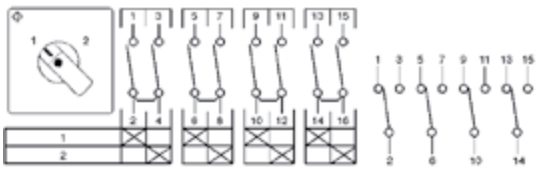
Code for a switch with out jumpers is 576

A522



Code for a switch with out jumpers is 577

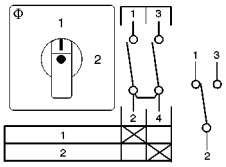
A523



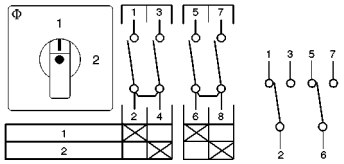
Code for a switch with out jumpers is 578

Double – Throw Switches without “OFF” 90° Switching

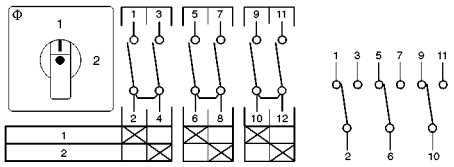
A530



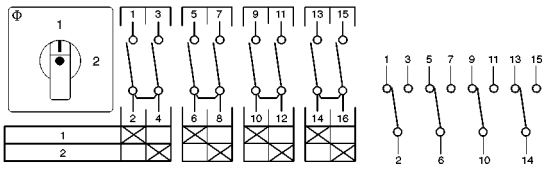
A531



A532

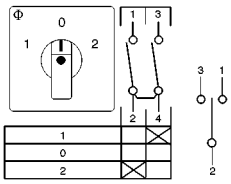


A533

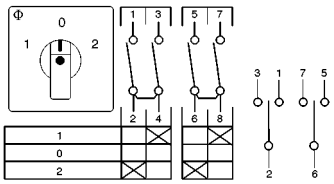


Double – Throw Switches with Center “OFF” 60° Switching

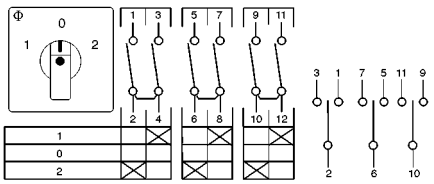
A210



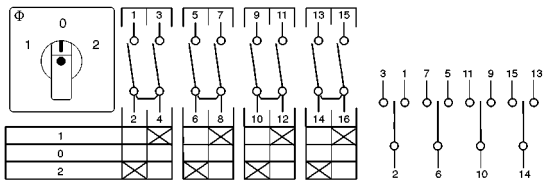
A211



A212

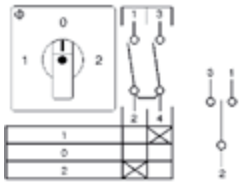


A213

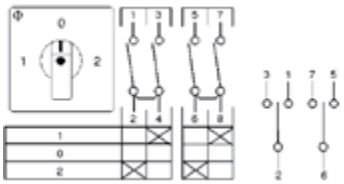


Double – Throw Switches with Center “OFF” 90° Switching

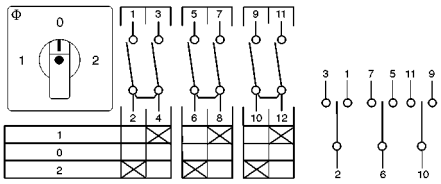
A510



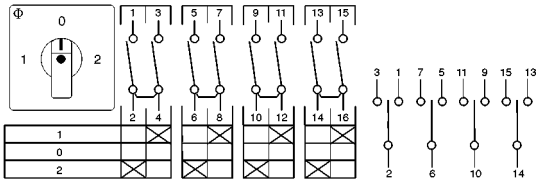
A511



A512

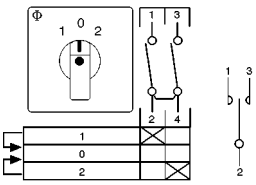


A513

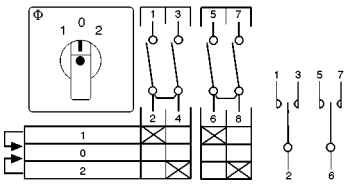


Double – Throw Switches with Spring Return to Center

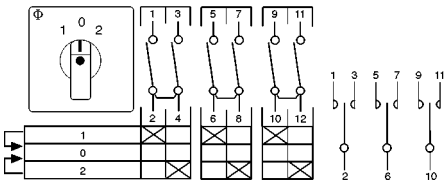
A214



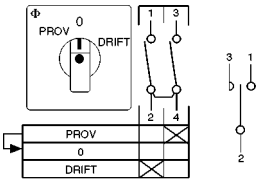
A215



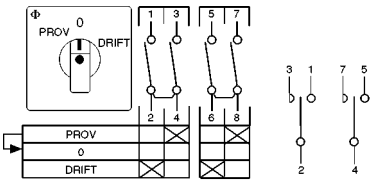
A216



A320

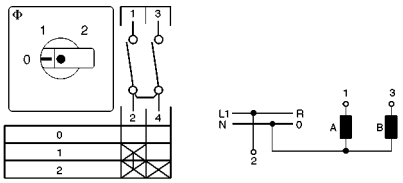


A321

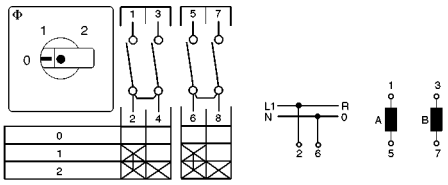


General Application Switches

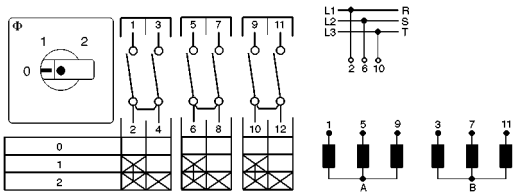
A310



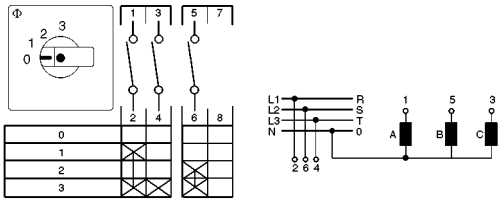
A312



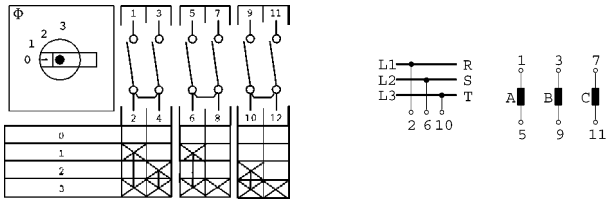
A314



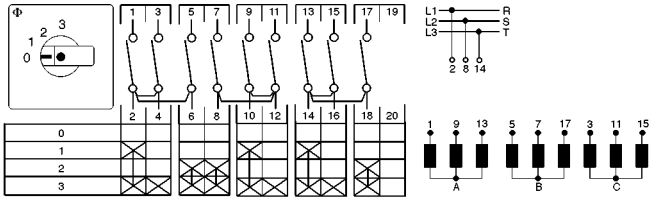
A311



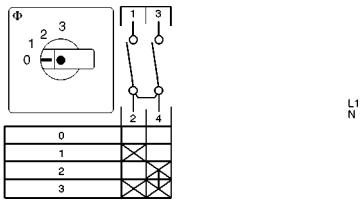
A313



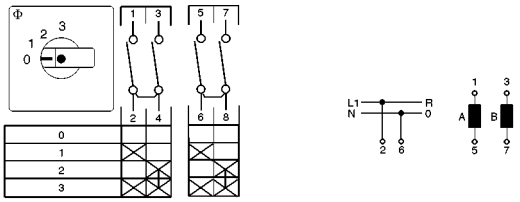
A315



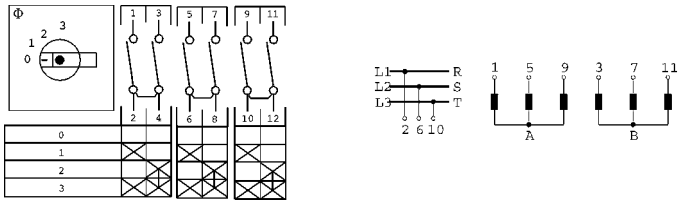
A330



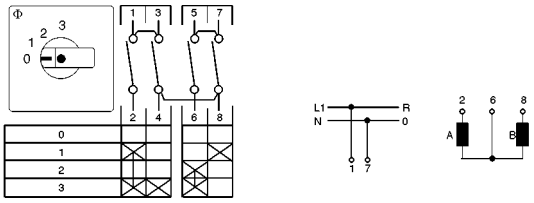
A331



A332

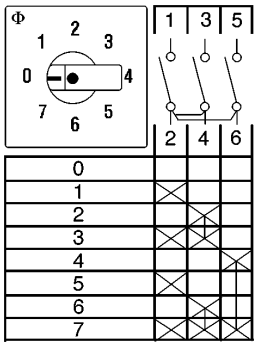


A339



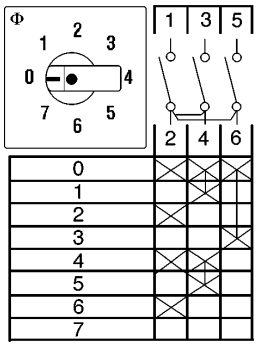
Coding Switches / Binary Code

A540



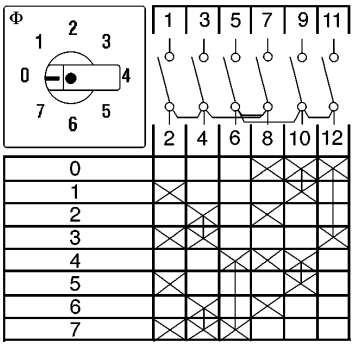
0			
1	X		
2		X	X
3	X	X	
4			X
5	X		
6		X	X
7	X	X	X

A541



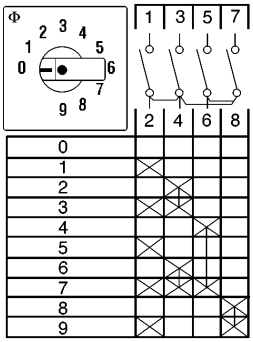
0	X	X	X
1		X	X
2	X		
3			X
4	X	X	
5		X	
6	X		
7			

A542



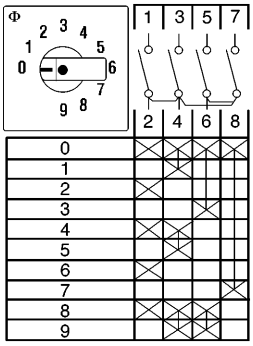
0				X	X	X
1	X				X	X
2		X		X		
3	X	X				X
4			X	X		
5	X				X	
6		X		X		
7	X	X	X			

A550



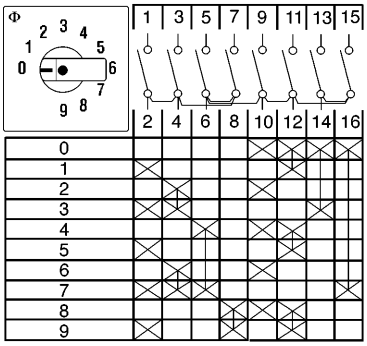
0				
1	X			
2		X		
3	X	X		
4			X	
5	X			
6		X		
7	X	X	X	
8				X
9	X			X

A551



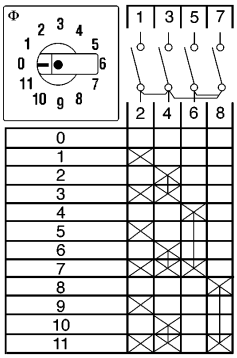
0				
1	X			
2		X		
3	X	X		
4			X	
5	X		X	
6		X		
7	X	X	X	X
8			X	X
9	X		X	X

A552



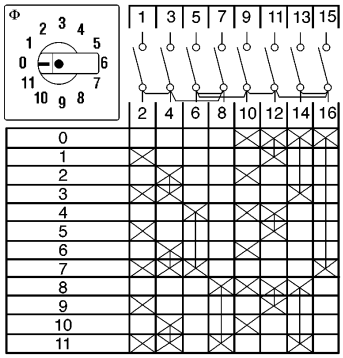
0					X	X	X	X
1	X					X	X	X
2		X			X			
3	X	X					X	
4			X		X	X		
5	X					X		
6		X			X			
7	X	X	X	X				X
8				X	X	X		
9	X			X		X		

A543



0				
1	X			
2		X		
3	X	X		
4			X	
5	X			
6		X		
7	X	X	X	
8				X
9	X			X
10		X		X
11	X	X	X	X

A545

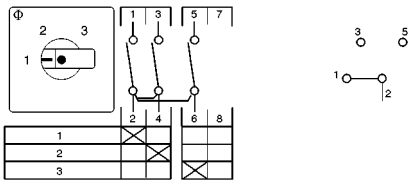


0					X	X	X	X
1	X					X	X	X
2		X			X			
3	X	X					X	
4			X		X	X		
5	X					X		
6		X			X			
7	X	X	X	X				X
8				X	X	X		
9	X			X		X		
10		X		X				
11	X	X	X	X				

Multi-Step Switches without "OFF"

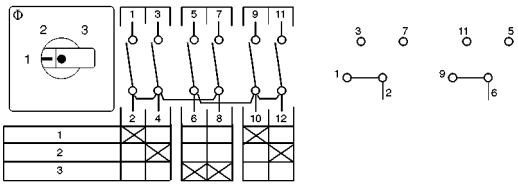
1-2-3

A230



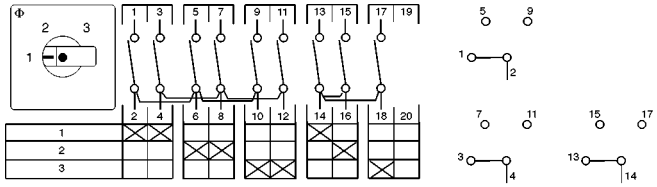
Code for a switch with out jumpers is 730

A250

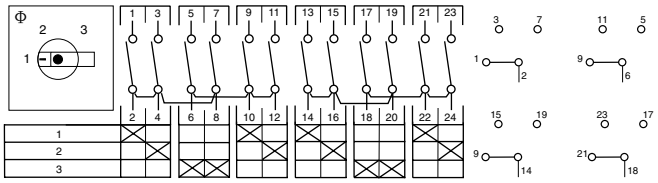


Code for a switch with out jumpers is 750

A270



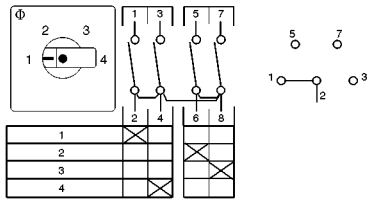
A476



Maximum number of poles is 6

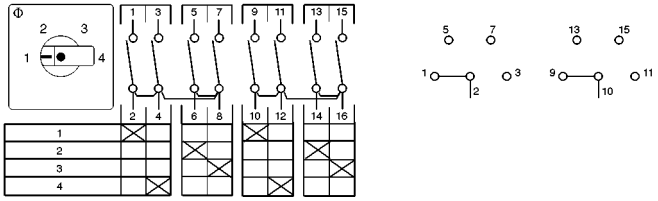
1-2-3-4

A231



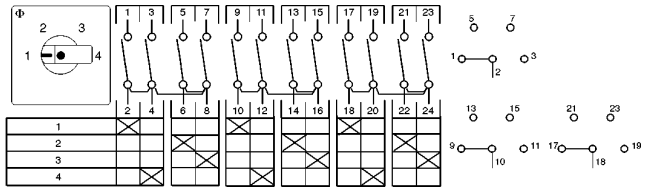
Code for a switch with out jumpers is 731

A251



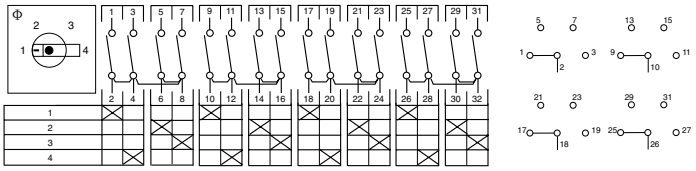
Code for a switch with out jumpers is 751

A271



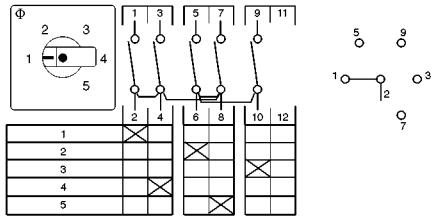
Maximum number of poles is 6

A477

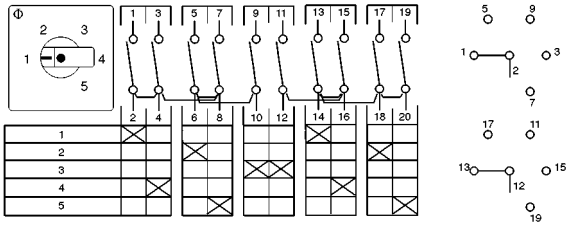


1-2-3-4-5

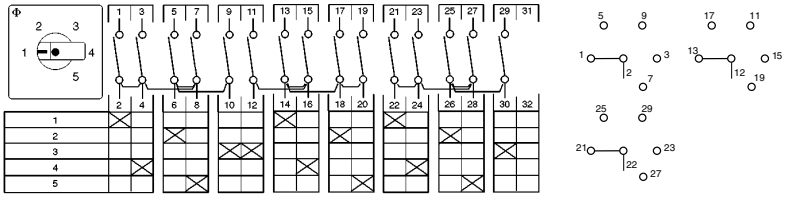
A232



A252



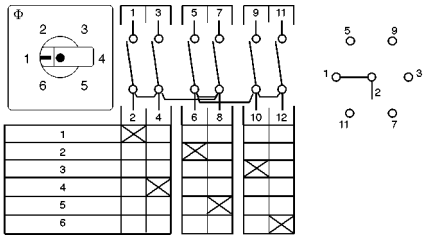
A272



Maximum number of poles is 4

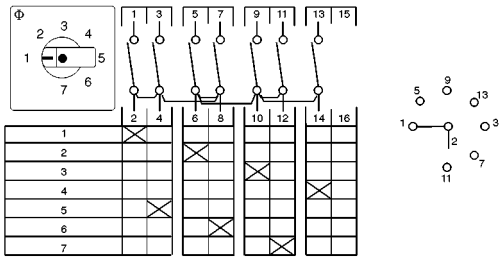
1-2-3-4-5…

A233

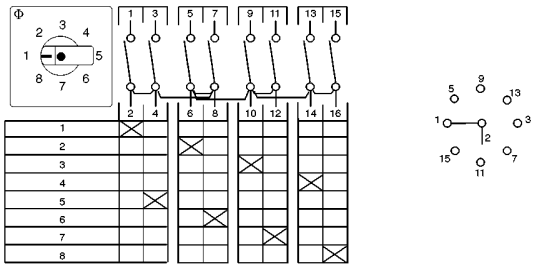


Maximum number of poles is 3

A234

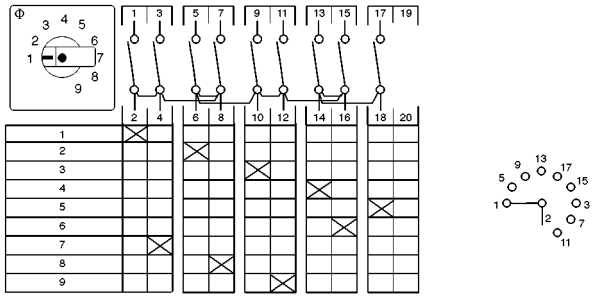


A235



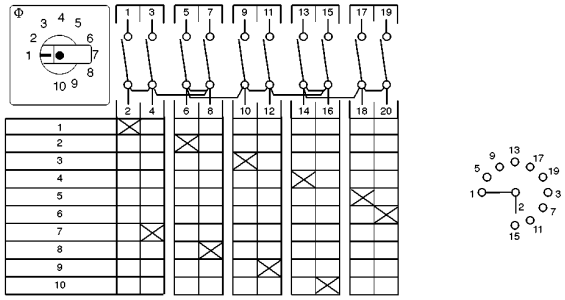
Maximum number of poles is 3

A236

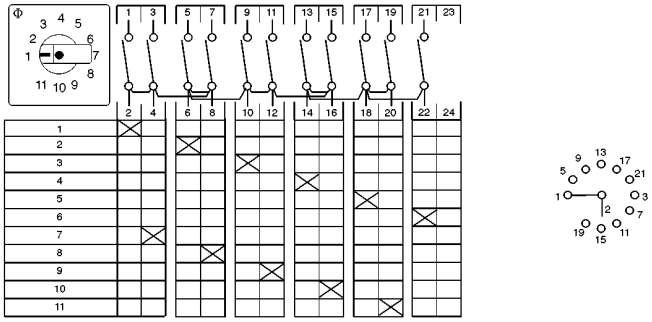


Maximum number of poles is 3

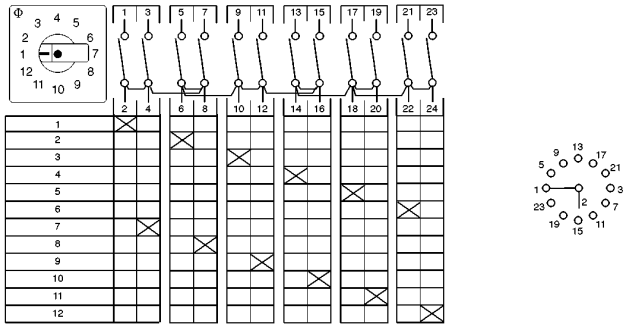
A237



A238



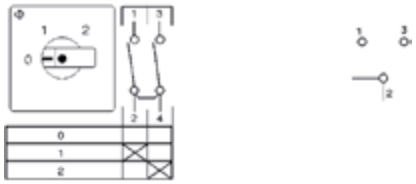
A239



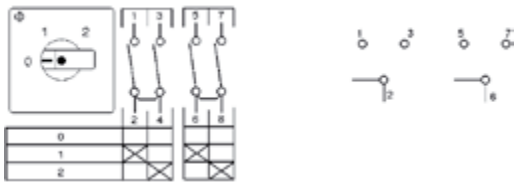
Multi-Step Switches with “OFF”

0-1-2

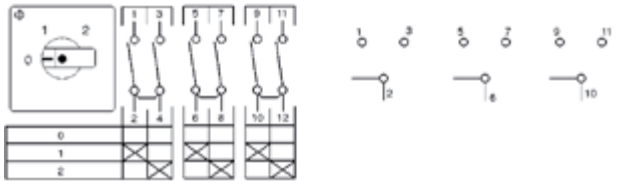
A240



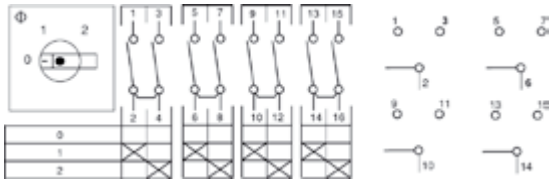
A260



A280



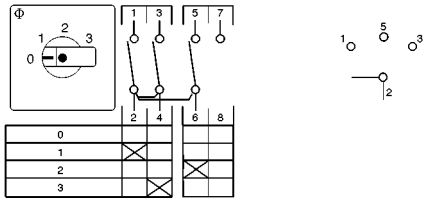
A480



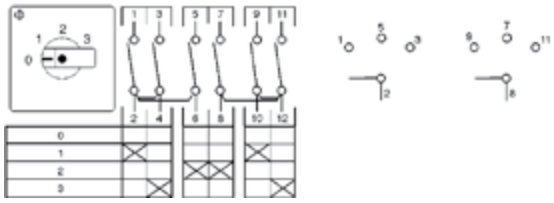
Maximum number of poles is 6

0-1-2-3

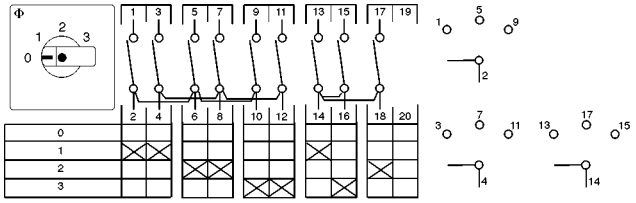
A241



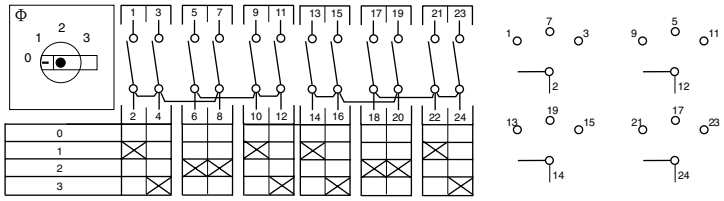
A261



A281



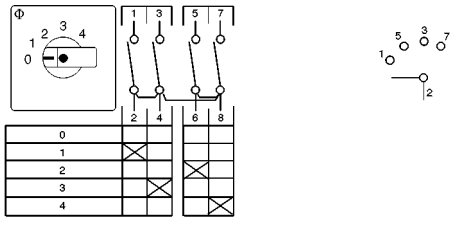
A481



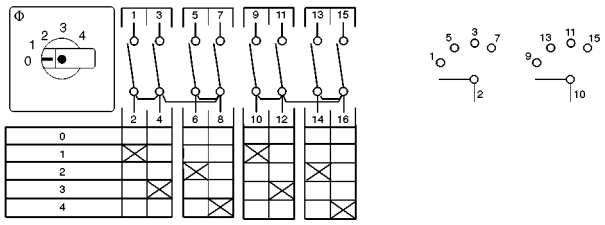
Maximum number of poles is 5

0-1-2-3-4

A242



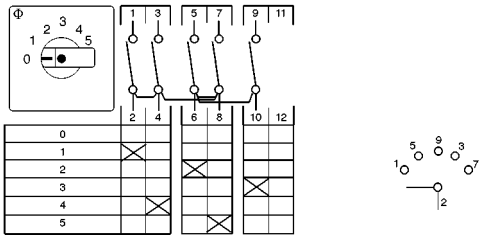
A262



Maximum number of poles is 4

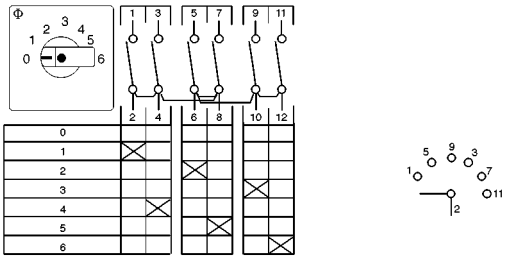
0-1-2-3-4-5…

A243



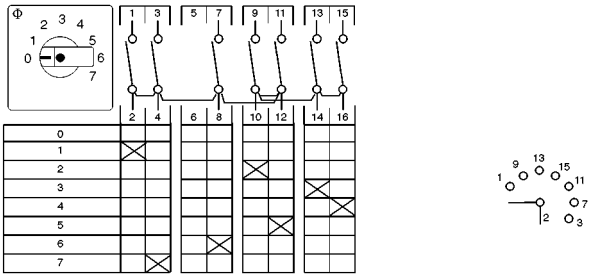
Maximum number of poles is 3

A244



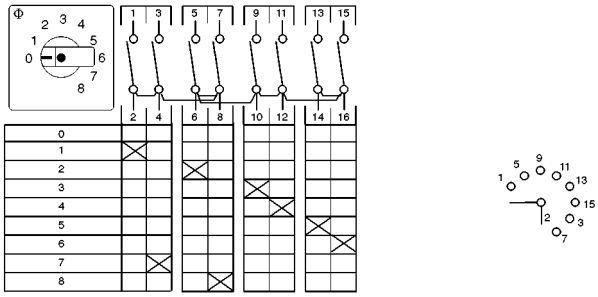
Maximum number of poles is 3

A245

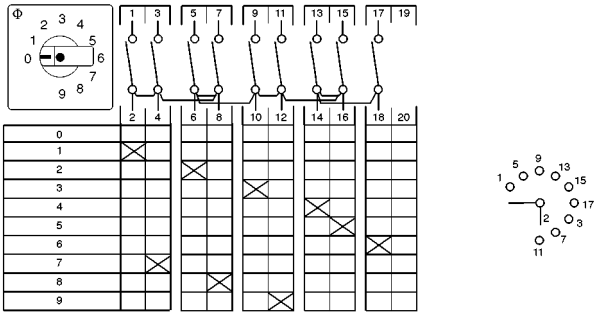


Maximum number of poles is 2

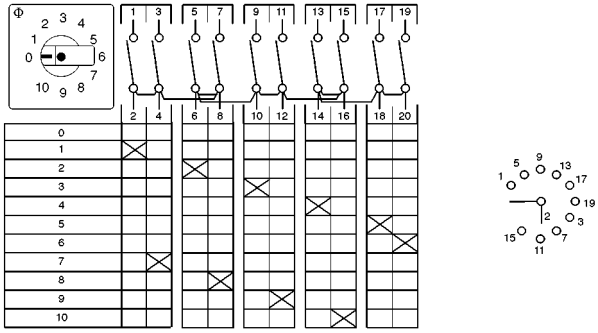
A246



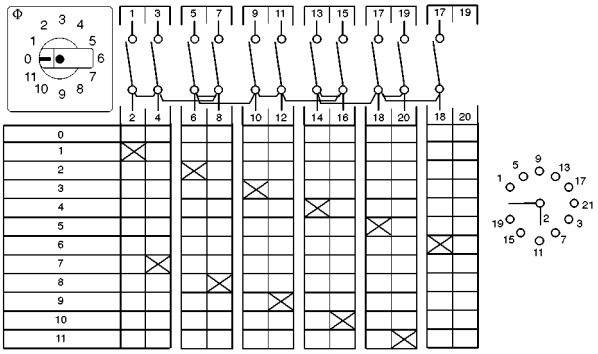
A247



A248

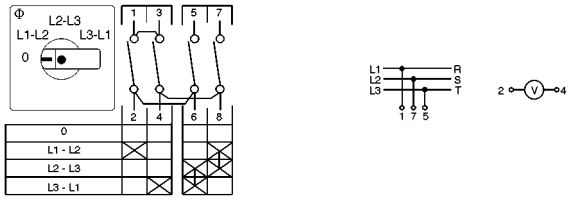


A249

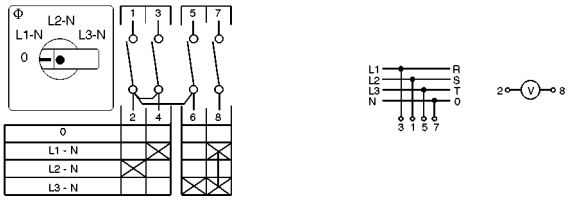


Voltmeter Switches with “OFF”

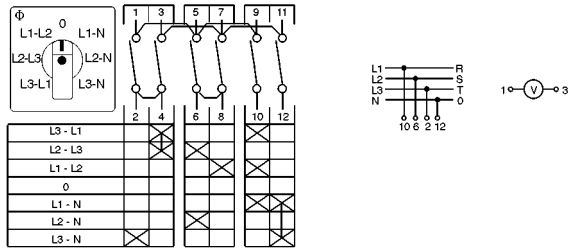
A004



A005

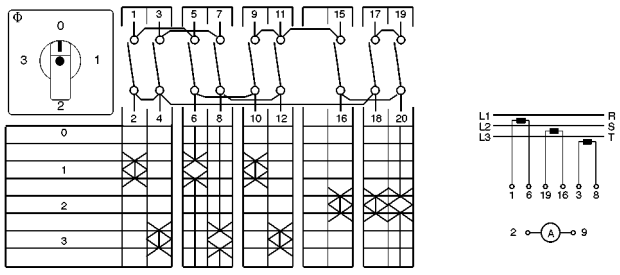


A007

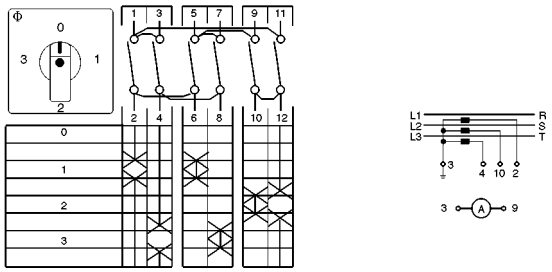


Ammeter Switches

A038

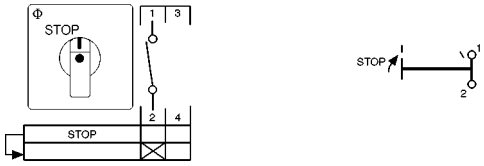


A048

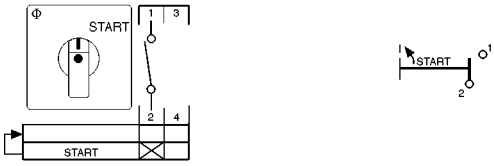


Control Switches

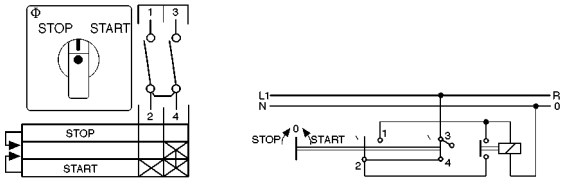
A174



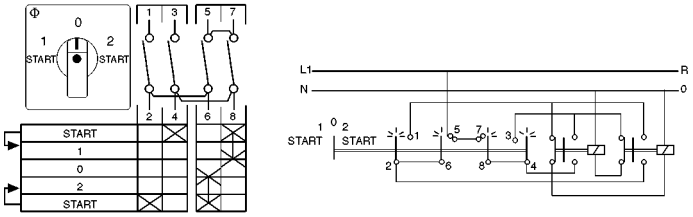
A175



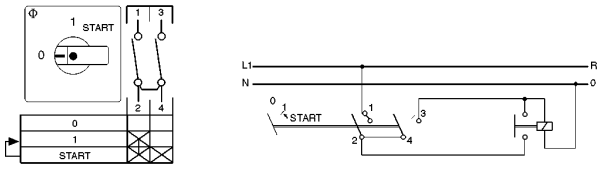
A176



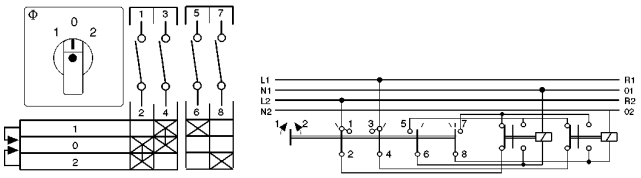
A177



A178

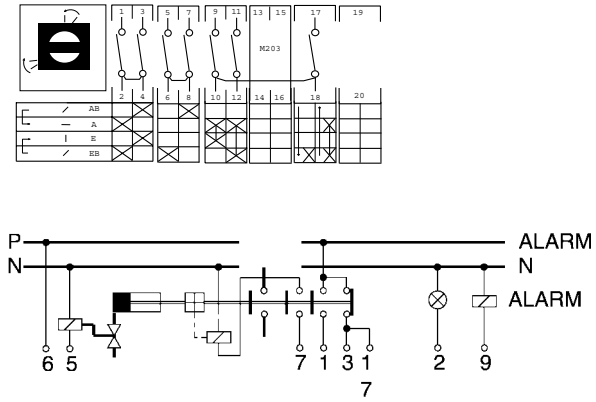


A179

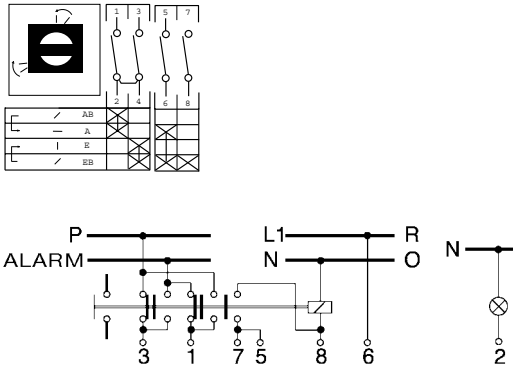


Control and Alarm Switches

A190

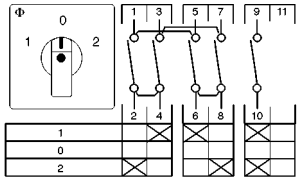


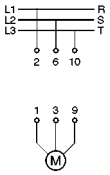
A192



Motor Reversing Switch

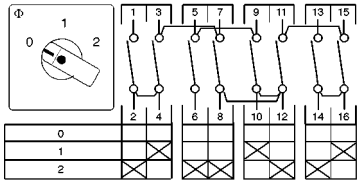
A401

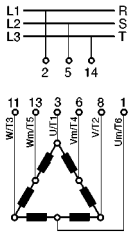




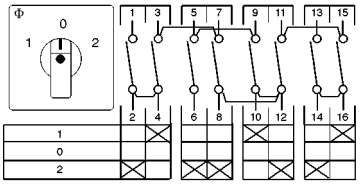
Motor Control Switches

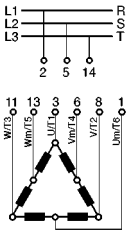
A440



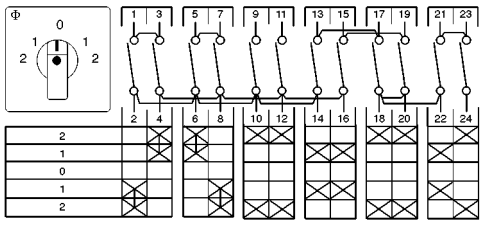


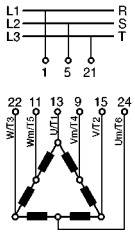
A441





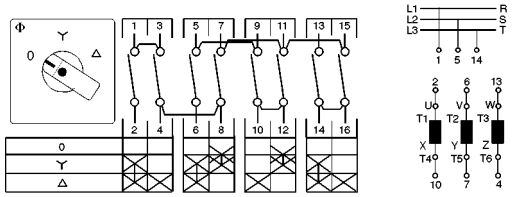
A442



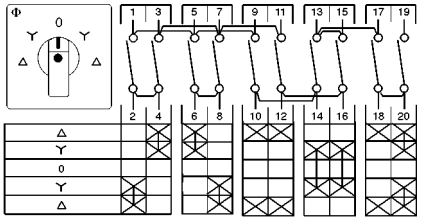


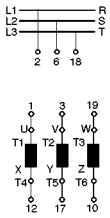
Star – Delta Switches

A410

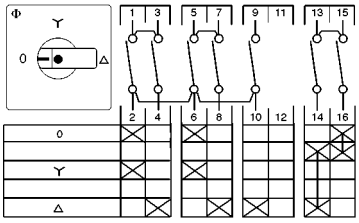


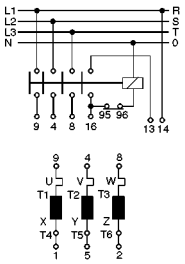
A413





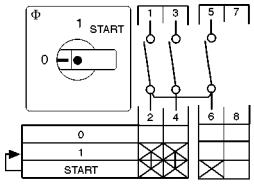
A419

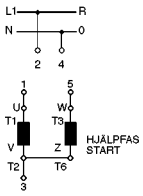




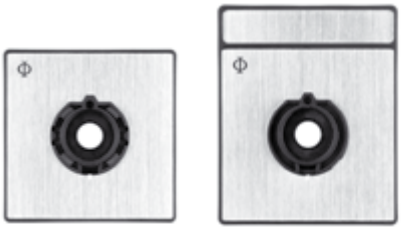
Start and Run Switch

A425





Escutcheon Plates

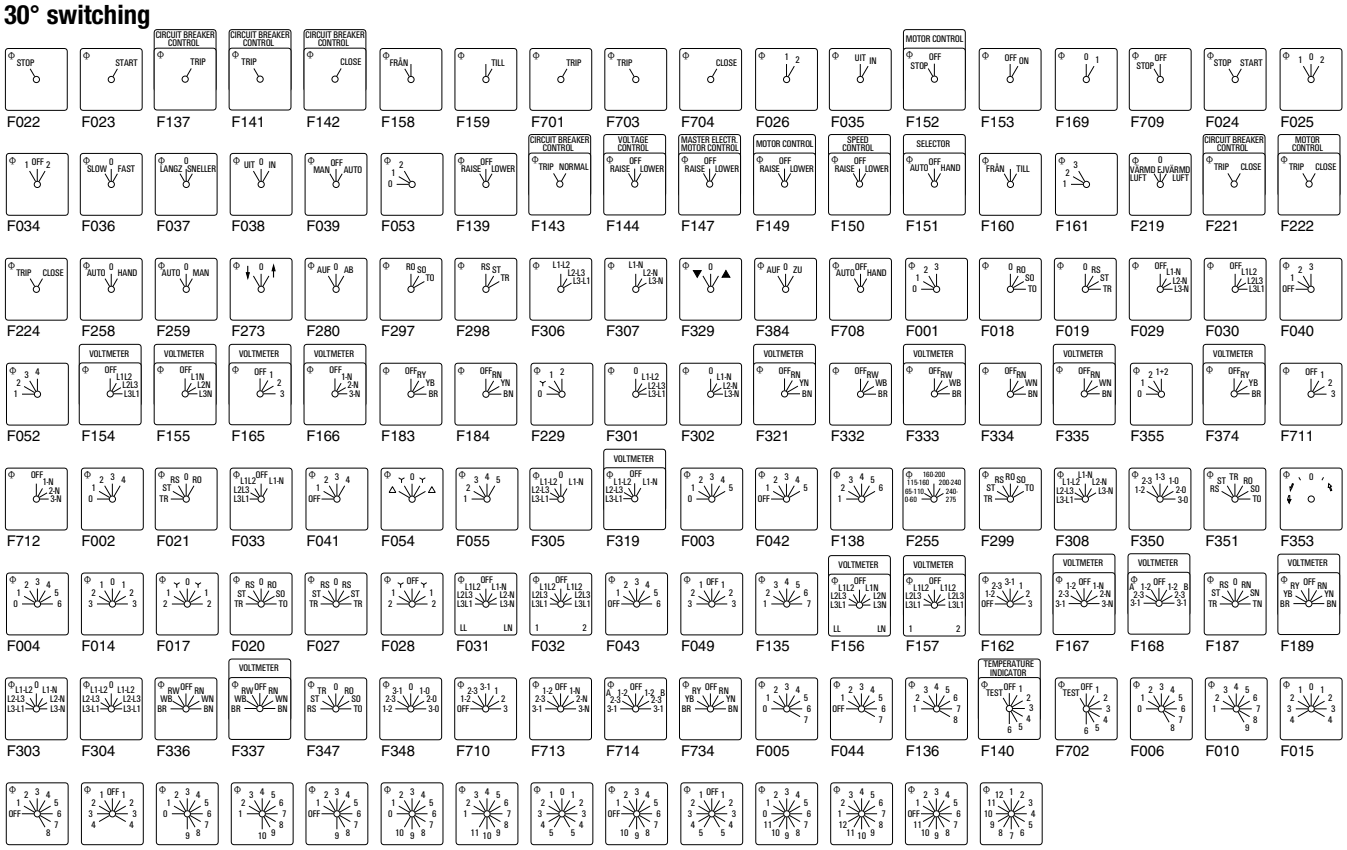


Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch positions which is than embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface for the handle. If the switch is to be mounted without an escutcheon plate we would recommend for size S1, S2 and S3 the handle bearing plate T100-04.

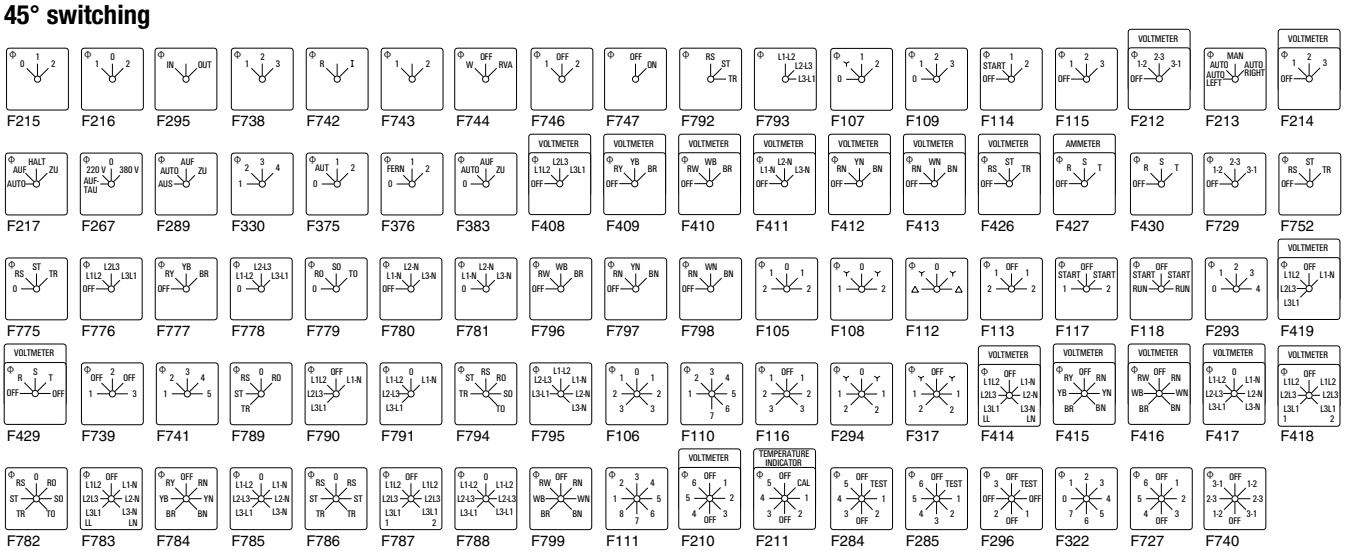
Standard Letterings Available

(Over 500 standard letterings, special letterings upon request.)

30° switching

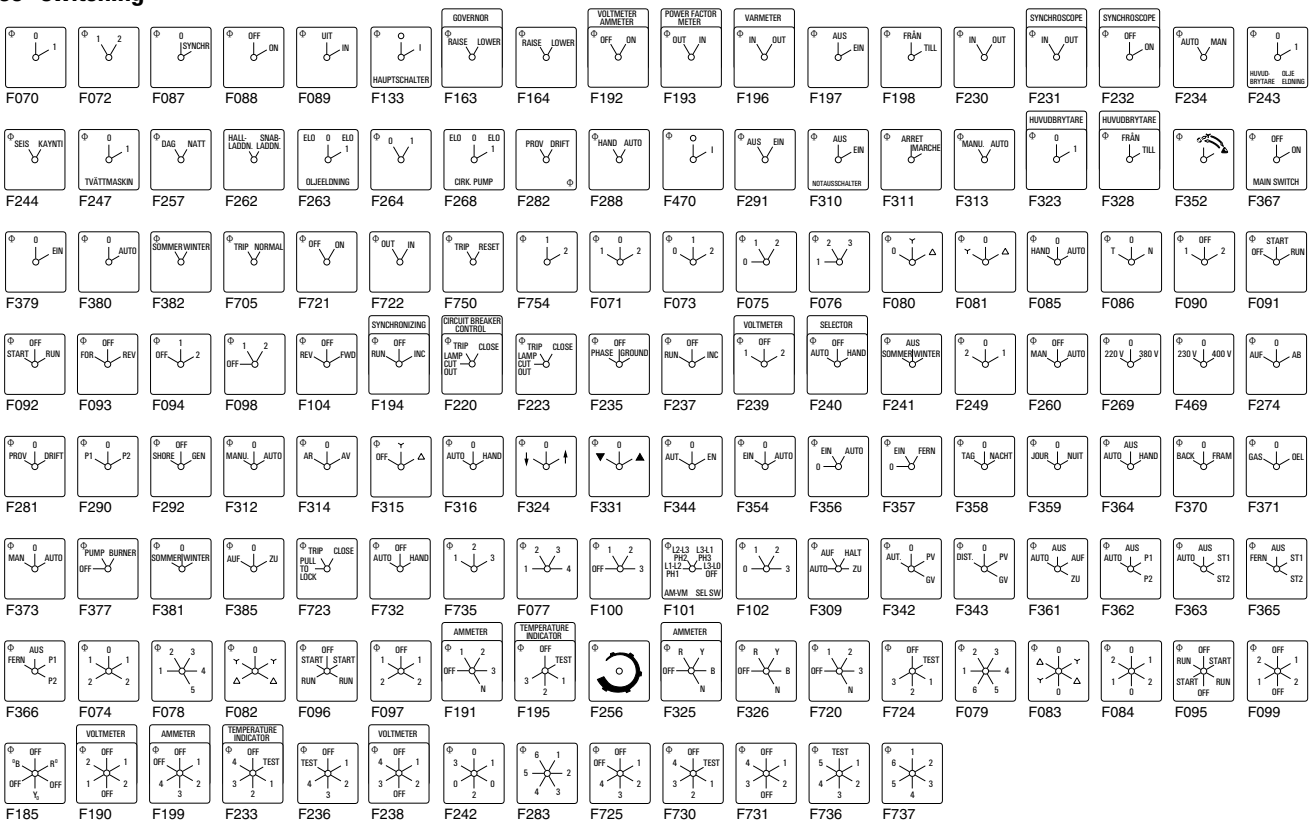


45° switching

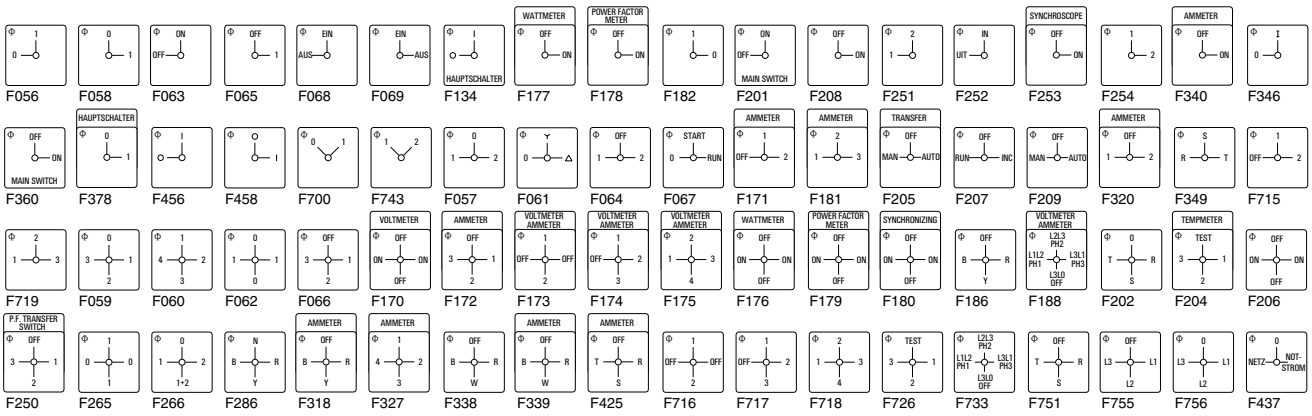


Escutcheon Plates

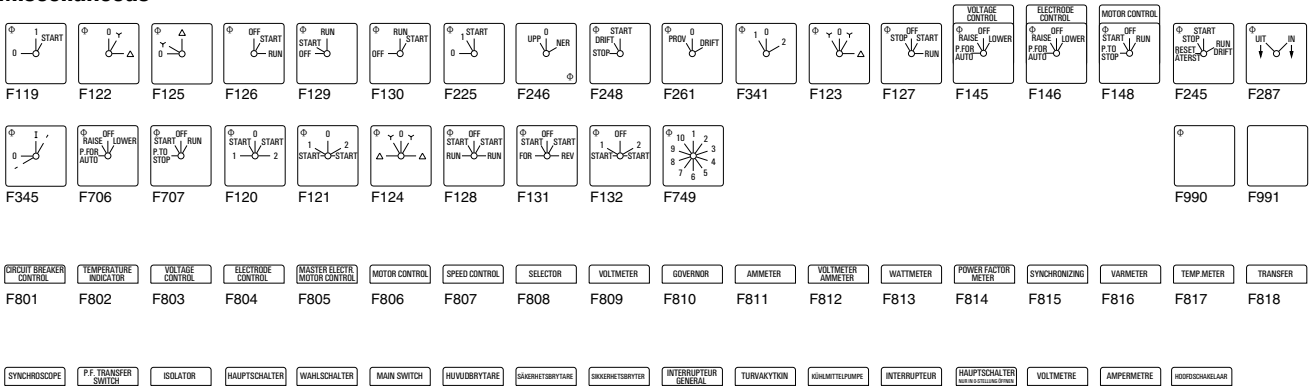
60° switching



90° switching



Miscellaneous

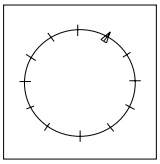


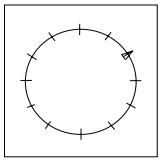
To change the first postion of a switch

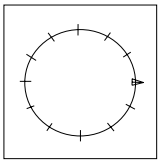
In order to change the first position (start position) of a switch you need to give an additional code to it. In the diagrams below you are able to see the different codes for different start positions for a switch. For example CA10 A230 -600E is a step switch, in which the first position(start position) is in 9 o'clock. To change it to 10 o'clock, you need to choose the diagram M999/470 from below.

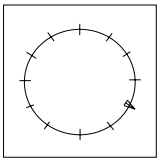
The order code for this switch would then be CA10 A230 -600E + M999/470

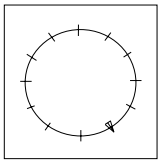
Also see the pictures in below to see the difference.

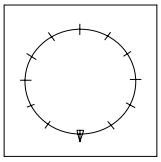

M999/461

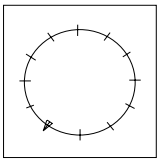

M999/462

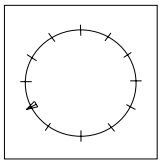

M999/463

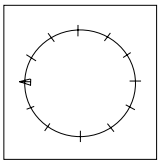

M999/464

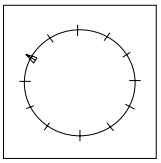

M999/465

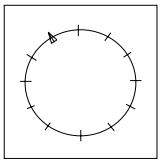

M999/466

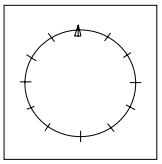

M999/467


M999/468


M999/469


M999/470


M999/471


M999/472

Mounting

These pages contain detailed information regarding different mountings for your switch. The code for your desired mounting is the third required information for you switch code. Switch lenthgs for mountings are on page 41.

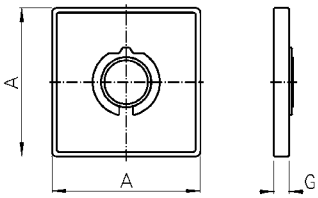
Two or Four Hole Panel Mounting, IP40

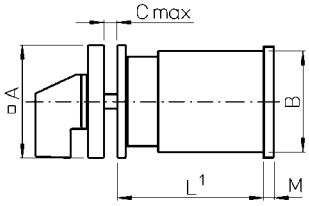
E, E-V, ER

Mounting E is a four hole panel mounting with protection IP40 with the exception of switches CG4 and CA4 where it is a two hole mounting.

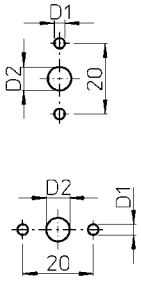
By changing the mounting name to E-V the terminals can be rotated 90° clockwise for several switch types.

Mounting ER is a four hole panel mounting with protection IP40. Switch with mounting ER is supplied with an additional mounting plate at the rear.

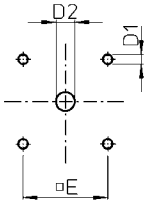




For CG4... CA4 ... only



For other swiches



Logic usage

	CAD11 CAD12	DH11 DH12	DH11B DH12B	CG4-1 CGD4-1	CA4 CA4-1
A	48	48	64	30	30
B	43	42	56	28	29,5
C	4	4	4	4	4
D1	5	5	5	3,2	3,2
D2	8-15	8-15	10-15	8-11	8-11
E	36	36(48)	48	-	-
G	6,3	6,3	6,3	5,5	5,5
M[2]	4,5	5,5	5,5	-	-

Miniature

	CG4	CA4	CL4	CG6
A	30	30	30	30
B	28	29,5	38x46	38
C	4	4	4	4
D1	3,2	3,2	3,2	3,2
D2	8-11	8-11	8-11	8-11
E	-	-	-	-
G	5,5	5,5	5,5	5,5

Control switches

	CA10	CG8	CH10	CL10	CA20	CA25[3]	CA10B CH10B CA20B	CA25B	CA40[3] CA50[3] CA63[3]	C80	C125	C315
A	48	48	48	48	48	48 (64)	64	64	64 (88)	88	88	130
B	43	38	46	50x56	45	46	56	56	55,5x64	84	88	126
C	4	4	4	4	4	4	4	4	4	5,5	5,5	7
D1	5	5	5	5	5	5	5	5	5 (6)	6	6	7
D2	8-15	8-15	8-15	8-15	8-15	8-15	10-15	10-15	10-15	13-17	13-17	15,5-20
E	36	36	36	36	36	36 (48)	48	48	48 (68)	68	68	104
G	6,3	6,3	6,3	6,3	6,3	6,3	7,4	7,4	7,4	8,5	8,5	11,5
M[2]	4,5				4,5	5,5	5	5,5	7,6	9,4	9,4	11,9

[1] Length L is on page 41.
[2] M, additional length for mounting ER only
[3] Dimensions in ( ) for ER mounting plate only

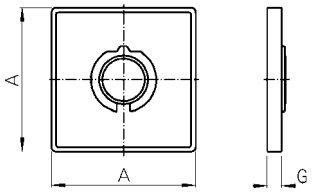
Two or Four Hole Panel Mounting, IP66

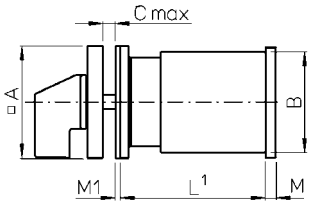
EF, EF-V, ERF

Mounting EF is a four hole panel mounting with protection IP66 with the exception of switches CG4 are two hole mounting.

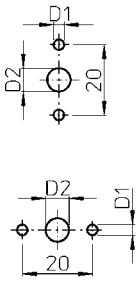
By changing the mounting name to EF-V the terminals can be rotated 90° clockwise for several switch types.

Mounting ERF is a four hole panel mounting with protection IP65. Switch with mounting ERF is supplied with an additional mounting plate at the rear.

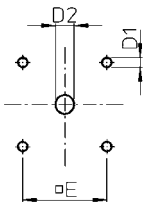




For CG4... CA4 ... only



For other swiches



Logic usage

	CAD11 CAD12	DH11 DH12[3]	DH11B DH12B	CG4-1 CGD4-1	CA4-1
A	48	48	64	30	30
B	43	42	56	28	29,5
C	4	4	4	4	4
D1	5	5	5	3,2	3,2
D2	15-19	15-19	19-22	8-11	8-11
E	36	36(48)	48	-	-
G	6,3	6,3	6,3	5,5	5,5
M[2]	4,5	5,5	5,5	-	-

Miniature

	CG4	CA4	CL4	CG6 CG7
A	30	30	30	30
B	28	29,5	38x46	38
C	4	4	4	4
D1	3,2	3,2	3,2	3,2
D2	8-11	8-11	8-11	8-11
E	-	-	-	-
G	5,5	5,5	5,5	5,5
M1	1	1	1	1

Control switches

	CA10	CG8	CH10	CL10	CA20	CA25[3]	CA10B CH10B CA20B	CA25B	CA40[3] CA50[3] CA63[3]	C80	C125	C315	
A	48	48	48	48	48	48 (64)	64	64	64 (88)	88	88	130	
B	43	38	46	50x56	45	46	56	58	55,5x64		84	88	126
C	4	4	4	4	4	4	4	4	4	5,5	5,5	7	
D1	5	5	5	5	5	5	5	5	5 (6)	6	6	7	
D2	15-19	15-19	15-19	15-19	15-19	15-19	19-22	19-22	19-22	26-30	26-30	22-25	
E	36	36	36	36	36	36 (48)	48	48	48 (68)	68	68	104	
G	6,3	6,3	6,3	6,3	6,3	6,3	7,4	7,4	7,4	8,5	8,5	11,5	
M[2]	4,5	-	-	-	4,5	5,5	5	5,5	7,6	9,4	9,4	11,9	

[1] Length L is on page 41.
[2] M, additional length for mounting ERF only
[3] Dimensions in ( ) for ERF mounting plate only

Single Hole Mounting, IP66

FS1, FS2, FT1, FT2, FT4

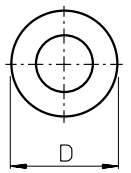
In single-hole mounting, the shaft hole is used for fixation. A single-hole mounting is approximately 5 times faster to install than a two/four-hole panel mounting. All switches with a single-hole mounting have a degree of protection IP66. The single-hole mounting is delivered with an escutcheon plate or a front ring.

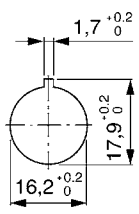
The code of the single-hole mounting depends on the size of the switch, the diameter of the hole and the presence of an escutcheon plate.

Switch size	Code of Mounting	Ø panel hole (mm)	Descriptions
S00	FS1	16,2 / 22,3	With a front ring
S00	FS2	16,2 / 22,3	With a square escutcheon plate
S0	FT1	22,3	With a front ring
S0	FT2	22,3	With a square escutcheon plate
S0	FT4	22,3 / 30,5	With a square escutcheon plate

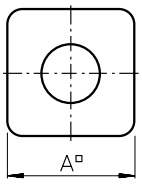
For most of the switches, the terminals can be rotated 90° clockwise by changing the mounting code to F…-V.

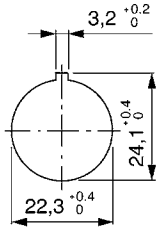
FS1
FT1

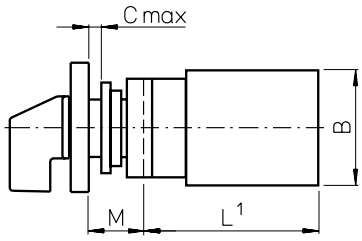


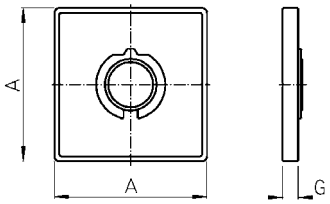


FS2
FT2
FT4









Logic usage Miniature Control switches

	CAD11 CAD12	DH11 DH12	CG4-1 CGD4-1	CA4-1	CG4	CA4	CL4	CG6	CA10	CG8	CH10	CL10	CA20	CA25
A	48	48	30	30	30	30	30	30	48	48	48	48	48	48
B	43	42	28	28	28	28	38x46	38	43	38	46	50x56	45	46
C	6	6	5	5	5	5	5	5	6	6	6	6	6	6
D	39	39	29,5	29,5	29,5	29,5	29,5	29,5	39	39	39	39	39	39
F	-	-	39	39	39	39	39	39	-	-	-	-	-	-
G	6,3	6,3	5,5	5,5	5,5	5,5	5,5	5,5	6,3	6,3	6,3	6,3	6,3	6,3
M	18,2	18,2	12,5	12,5	12,5	12,5	12,5	12,5	18,2	18,2	18,2	18,2	18,2	18,2

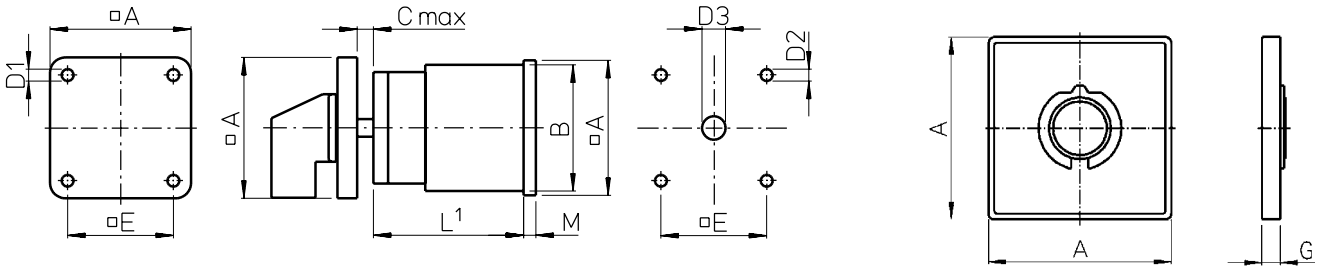
[1] Length L is on page 41

Front rings come in black, but it is possible to order a white or a grey front ring with handles of the same color.

Base Mounting, IP40

VE

Mounting VE is a four hole base mounting with protection IP40.
By changing the mounting name to VE-V the terminals can be rotated 90° clockwise for several switch types.



Logic usage

	CAD11 CAD12	DH11 DH12[3]	DH11B DH12B
A	48	48	64
B	43	42	56
C	10,5	10,5	13,5
D1	4,1	4,1	4,1
D2	5	5	5
D3	8-15	8-15	10-15
E	36	36	48
G	6,3	6,3	6,3
M	2,2	3,2	2,5

Control switches

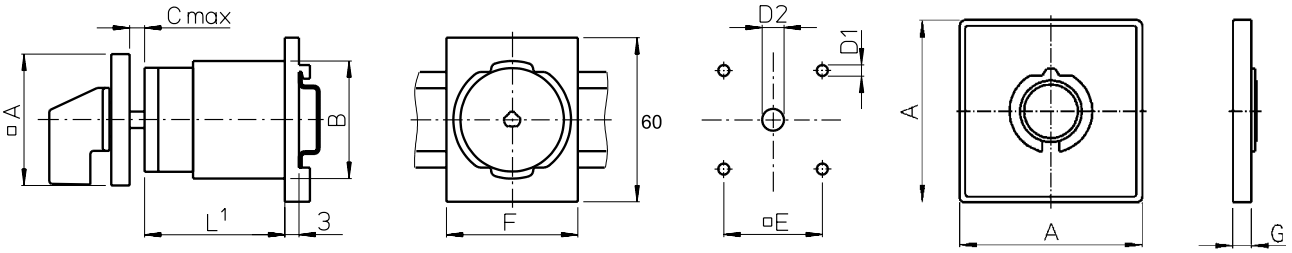
	CA10	GG8	CH10	CL10	CA20	CA25[2]	CA10B CA20B	CA25B	CA40[2] CA50[2] CA63[2]	C80	C125	C315
A	48	48	48 (64)	48	48	48(64)	64	64	64 (88)	88	88	128
B	43	38	46	50x56	45	46	56	56	55,5x64	84	88	126
C	10,5	10,5	10,5	10,5	10,5	10,5	10,5	13,5	13,5	16	16	19,3
D1	4,1	4,1	4,1		4,1	4,1	4,1	4,1	5,4	5,4	5,4	7
D2	5	5	5		5	5	5	5	5	6	6	7
D3	8-15	8-15	8-15		8-15	8-15	8-15	10-15	10-15	13-17	13-17	15,5-20
E	36	36	36 (48)		36	36(48)	36 (48)	48	48 (68)	68	68	104
G	6,3	6,3	6,3		6,3	7,4	7,4	7,4	7,4	8,5	8,5	11,5
M	2,2	2,2	5,2		2,2	2,5	2,5	2,5	5,1	8,9	8,9	11,4

[1] Length L is on page 41.
[2] Dimensions in ( ) for revertive mounting plate

Snap On Base Mounting, IP40

VE1

Mounting VE1 is a snap-on base mounting with protection IP40. This mounting is for tracks acc. to EN 50022.



Logic usage Control switches

	CAD12	CA10	CL10	CA20	CA25	CA10B CA20B,CA25B	CA40 C50, CA63
A	48	48	48	48	48	64	64
B	43	43	50x56	45	46	56	55,5x64
C	10,5	10,5	10,5	10,5	10,5	13,5	13,5
D1	5	5	5	5	5	5	5
D2	8-15	8-15	8-15	8-15	8-15	10-15	10-15
E	36	36	36	36	36	48	48
G	6,3	6,3	6,3	6,3	6,3	7,4	7,4
F	48	48	48	48	48	70	70

[1] Length L is on page 41.

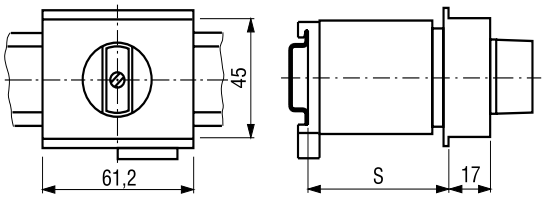
Snap On Base Mounting for 45mm Standard Knock-Out, IP40

VE2, VE21

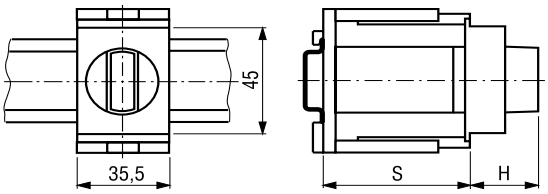
Mounting VE2 is a snap-on base mounting with protection IP40. This mounting is for 45mm standard knock-out and tracks acc. to EN50022.

Mounting VE21 is a depth adjustable snap-on base mounting with protection IP40. This mounting is for 45mm standard knock-out and tracks acc. to EN50022.

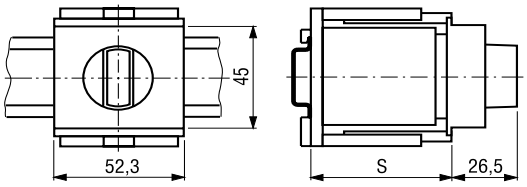
VE2



VE21 (for CA4 and CA4-1)



VE21 (for CA10-CA25, DH11 - DH12)



VE2

	CA10 CAD11 CAD12	CL10 CA20	CA25	DH11-DH12
	Max. no. of stages			
S = 46	3	1	-	1
S = 50	3	1	1	1
S = 61	4	2	2	2
S = 67	5	2	2	2
S = 69	5	3[1]	3	2

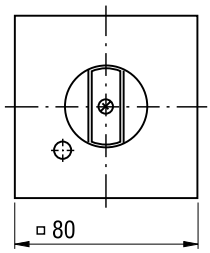
VE21

		CA4 CA4-1	CA10 CAD11 CAD12	CA20	CA25	DH11-DH12
S min.	H	No. of stages				
44	21	1/2	1/2	1/2	1	1
46	26,5	3	3	-	2	-
54	26,5	4	-	-	-	2
56	-	-	-	3	-	-
60	-	-	-	-	3	-
62	26,5	5	-	-	-	-
66	-	-	4/5	-	-	-
68	-	-	-	-	-	-
70	26,5	6	-	4	-	-
72	-	-	-	-	-	3
74	-	-	6	-	4	-

[1]not available for switch type CA20

Wall Mounting for Plaster Depth Boxes, IP20

UE1
UE2
UE3

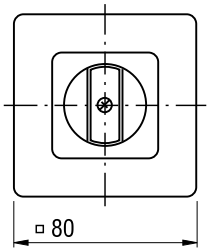


Mounting UE1 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508.

Mounting UE2 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508. This mounting is supplied with a lamp.

Mounting UE3 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508. This mounting provides the facility for light addition.

UE4
UE5
UE6

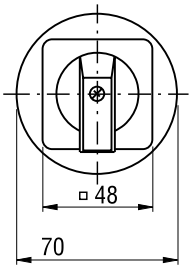


Mounting UE4 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508. This mounting uses a regular escutcheon plate.

Mounting UE5 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508. This mounting is supplied with a lamp and uses a regular escutcheon plate.

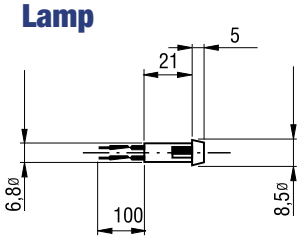
Mounting UE6 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508.
This mounting has the facility for light addition and uses a regular escutcheon plate.

UE7



Mounting UE7 is used to fix switches directly onto walls in plaster depth boxes acc. to DIN 49070 and ÖNORM E6508. This mounting is designed for use in multiple boxes.

Lamp



Length L for Switch Drawings

Miniature

Logic usage

Number of stacks	CG4	CA4	CL4	CG6	CAD11 CAD12	DH11 DH12	DH11B DH12B	CG4-1 CGD4-1	CA4-1
1	38,5	30	34	43,2	33,5	43,5	48,9	38,5	30
2	50,5	38	46	55,9	43	61	66,4	50,5	38
3	62,5	46	58	68,6	52,5	78,5	83,9	62,5	46
4	74,5	54	70	81,3	62	96	101,4	74,5	54
5	86,5	62	82	-	71,5	113,5	118,9	86,5	62
6	98,5	70	94	-	81	131	136,4	98,5	70
7	110,5	78	106	-	90,5	148,5	153,9	110,5	78
8	122,5	86	118	-	100	166	171,4	122,5	86
9	-	94	-	-	109,5	183,5	188,9	-	94
10	-	-	-	-	119	201	206,4	-	-
11	-	-	-	-	128,5	218,5	223,9	-	-
12	-	-	-	-	138	236	241,4	-	-

Control swiches

Number of stacks	CA10	CG8	CH10	CA10B	CH10B	CL10	CA20	CA20B	CA25	CA25B	CA40 CA50 CA63	C80	C125	C315
1	33,5	40,7	43,5	38,9	48,9	37,2	37,7	43,1	39	44,4	42,5	61,5	67,5	78,6
2	43	53,4	57,5	48,4	62,9	49,9	50,4	55,8	53	58,4	55,2	88,0	100	117,2
3	52,5	66,1	71,5	57,9	76,9	62,6	63,1	68,5	67	72,4	67,9	114,5	132,5	155,8
4	62	78,8	85,5	67,4	90,9	75,3	75,8	81,2	81	86,4	80,6	141	165	194,4
5	71,5	91,5	99,5	76,9	104,9	88	88,5	93,9	95	100,4	93,3	167,5	197,5	233
6	81	104,2	113,5	86,4	118,9	100,7	101,2	106,6	109	114,4	106	194	230	271,6
7	90,5	116,9	127,5	95,9	132,9	113,4	113,9	119,3	123	128,4	118,7	220,5	262,5	310,2
8	100	129,6	141,5	105,4	146,9	126,1	126,6	132	137	142,4	131,4	247	295	348,8
9	109,5	142,3	155,5	114,9	160,9	138,8	139,3	144,7	151	156,4	144,1	273,5	327,5	387,4
10	119	155	169,5	124,4	174,9	151,5	152	157,4	165	170,4	156,8	300	360	426
11	128,5	167,7	183,5	133,9	188,9		164,7	170,1	179	184,4	169,5	326,5	392,5	464,6
12	138	180,4	197,5	143,4	202,9		177,4	182,8	193	198,4	182,2	353	425	503,2

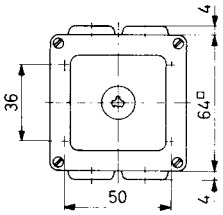
Plastic Enclosures PN / PF

Protection IP42 / IP65

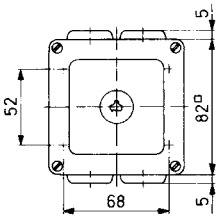
This mounting is characterized by small dimensions and entries with thread.
A lamp can be installed on request.

Four different entries are available: ISO (metric) -threads.
The entries are specified by an extension to the mounting name:
Standard enclosures come with metric entries. For other entry types please contact your K&N dealer.

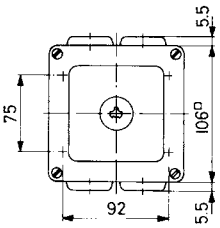
Protection	ISO M20	ISO M25
IP42	PN1	PN4
IP65	PF1	PF4



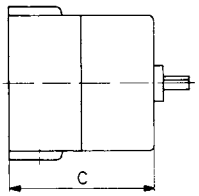
For switch type CA10



For switch type
CA20, CA10B
CA20B, CH10
CA25



For switch type
CA40, CA50
and CA63



Switch type	No of stages	C		4 entries	
		IP42 PN1 or PN4	IP65 PF1 or PF4	PN1 PF1	PN4 PF4
CA10	1 2 3 4	36,6 45,8 55,3 64,8	41,3 50,8 60,3 69,8	M20	M25
CA20 CA20B	1-2	59,7	64,7	M20	M25
CA10B CA20, CA20B	3-4[1]	85,1	90,1	M20	M25
CH10	1 2-3 4	59,7 85,1 93	64,7 90,1 98	M20	M25
CA25	1-2 3 4	59,7 85,1 93	64,7 90,1 98	M20	M25
CA50, CA63	1 2-3 4-6	67,5 89 132	73 94,5 137,5	-	M25

[1] CA10B only for 4 stages

Plastic Enclosures KS/CS, KL/CL

Protection IP66/IP67

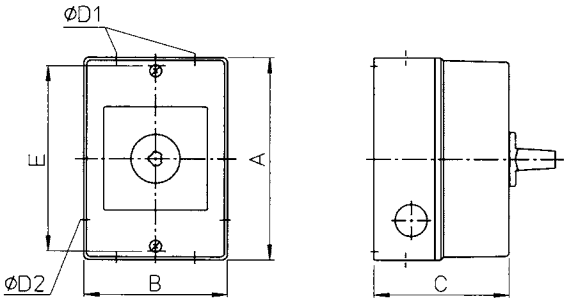
Enclosure series protection with IP66/67 (IP 65 for switch size S00), made of strong durable plastic, increased wiring space and cover coupling.

KS and KL series have high UV-resistance

CS and CL series are for applications in aggressive environment, such as oil, chemical substances and grease

Each enclosure has 2 knock-outs on top and bottom for metric thread according to EN 50262. Standard equipment includes both a ground and neutral terminal. Size S0 enclosures are also available with lateral conduit knock-out and a cover interlock which allows the enclosure to be opened without dismantling the handle. They can also be supplied with a cover locked in 1 position. These enclosures are also available for conduit entries for PG-thread.

without cover interlock	with cover interlock the enclosure can only be opened at 9 o'clock position	with cover interlock the enclosure can only be opened at 12 o'clock position
KS, CS	-	-
KS50, CS50	KS51, CS51	KS52, CS52
KL50, CL50	KL51, CL51	KL52, CL52



Mounting	Switch Type	No of stages	A	B	C	D1 4 Entries for ISO / [mm]	D2 2 Entries for ISO / [mm]	E
KS1[1] CS1[1]	CA4 CG4	2 1	90	70	60	M16 (16)	-	82
	CA4 CG4 CG6	3 2 1	90	70	72,5	M16 (16)	-	82
KS50,CS50 KS51,CS51 KS52,CS52	CA10 CA20, CA25, CG8 CH10	4 2 2	120	85	80	M20 (20)	M20 (20)	110
	CA10 CA20 CA25, CG8, CH10	6 5 4	120	85	106	M20 (20)	M20 (20)	110
KL50,CL50 KL51,CL51 KL52,CL52	CA10 CA20, CA25, CG8 CH10	3 2 2	160	85	80	M20 (20)	M20 (20)	150

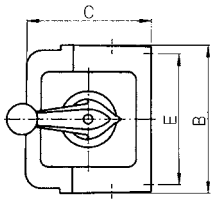
Plastic Enclosures (Lateral Drive) PK

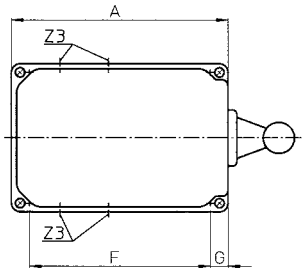
Protection IP44

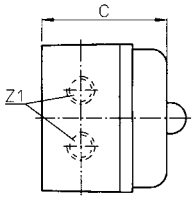
Mounting PK is an isolating enclosure with protection IP44. This mounting is characterized by a lateral drive and entries with or without thread.

Five different entries are available: ISO (metric) without threads. The entries are specified by an extension to the mounting name.

Conduit entries with ISO-thread PK1
Conduit entries with PG-thread PK
Without conduit entries PK9







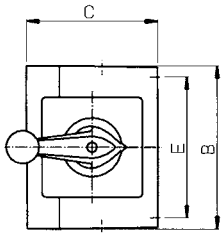
Switch types	No.of Stages	A	B	C	E	F	G	Conduit entries Z1	Conduit entries Z3	ISO(metric)
CA10, CAD11, CAD12, CA10B CA20, CA20B	4 3	92	90	75	80	68	12	•		M25
CA10, CAD11, CAD12, CA10B CA20, CA20B	7 5	115	90	75	80	91	12		•	M25
CA10, CAD11, CAD12, CA10B CA20, CA20B	10 7	140	90	75	80	116	12		•	M25
CA10, CAD11, CAD12, CA10B CA20, CA20B	12 9	165	90	75	80	141	12		•	M25
CA20, CA20B	11	190	90	75	80	166	12		•	M25
CA20, CA20B	12	215	90	75	80	191	12		•	M25

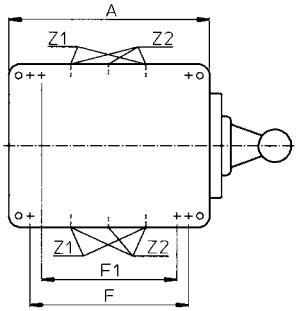
Aluminium Enclosures GK

Protection IP65

Conduit entries with ISO-thread GK1
Conduit entries with PG-thread GK
Without conduit entries GK9

Additional conduit entries on request.





Switch types	No.of Stages	A	B	C	E	F	F1	Conduit entries Z1	Conduit entries Z2	ISO(metric)
CA10, CA11,CA20	3 2	80	75	57	63	-	52	•		M20
CA10B CA20B CA25B	4 3 2	100	100	80	80	66		•		M20
CA10B CA20B, CA25B	7 5	140	140	90	120	93		•		M25
CA10B CA20B CA25B	12 10 9	200	140	90	93	180			•	M25

Optional Extras

If you desire something extra for your switch, you may find it in these pages. These pages do not have all possible optional extras, so please check our web page or contact your Kraus & Naimer dealer, if you are not able to find desired optional extra for you application. On page 64 is a table on which you may check which optional extras can be used with which switch.

Handles

Handle types	I -Handle	R -Handle	B -Handle	F -Handle	L -Handle	K -Handle	P -Handle	P -Handle
Codes per color								
black	G251	G001	G521	G221	G501	G411	G211	G211
red	G252	G002	G522	G222	G502	G412	G212	G212
white	G253	G003	G523	G223	G503	G413	G213	G213
electro-grey	G257	G007	G527	G227	G507	G417	G217	G217

Applicable for

Programmable logic usage switches

CAD11	❍	❍	❍	❍			❍	
DH11	❍	❍	❍	❍			❍	
CGD4-1	❍			❍				
CG4-1	❍			❍				
CG4-1	❍			❍				
CAD12	❍	❍	❍	❍			❍	
DH12	❍	❍	❍	❍			❍	

Miniature switches

CG4	❍			❍				
CL4	❍			❍				
CG6	❍			❍				

Control switches

CA4	❍			❍				
CG8	❍	❍	❍	❍			❍	
CA10	❍	❍	❍	❍			❍	
CA10B	❍	❍	❍	❍	❍	❍		❍
CH10	❍	❍	❍	❍			❍	
CH10B	❍	❍	❍	❍	❍	❍		❍
CA20	❍	❍	❍	❍			❍	
CA20(B)	❍	❍	❍	❍	❍	❍		❍
CA25	❍	❍	❍	❍			❍	
CA25(B)	❍	❍	❍	❍	❍	❍		❍
CA40	❍	❍	❍	❍	❍	❍		❍
CA50	❍	❍	❍	❍	❍	❍		❍
CA63	❍	❍	❍	❍	❍	❍		❍
C80	❍	❍		❍		❍		❍
C125	❍	❍		❍		❍		❍
C315	❍	❍				❍		❍

Standard handle which comes with each switch is G251

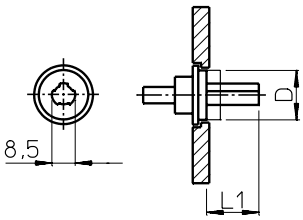
I and B handles are also available in white or grey. It is possible to order
a white or a grey front ring for switch sizes S00 and S0 for single hole panel mounting.

Shaft Extension

With asymmetric profile

L100

Shaft length not adjustable



Size	D
S0	13.8
S1	18.5

Size	L1	L1	L1	L1	L1	L1	L1	L1	L1
CG4,CA10	19	23	27	32	37	42	47	52	57

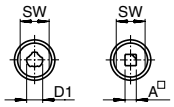
Size	L1	L1	L1	L1	L1	L1	L1	L1	L1
CG4,CA10	62	67	72	77	82	87	92	97	102

L1= Free shaft length max.

M004D

With set screw shaft unlimited adjustable length

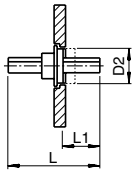
Shaft size	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	D1 [mm]	D2 [mm]
S0	21-40	41-60	61-80	81-100	6	13.8
S1	21-40	41-60	61-80	81-100	8.5	18.5
S2	41-70	71-100	101-130	131-160	11.2	24.6



M004

With shear ring shaft unlimited adjustable length

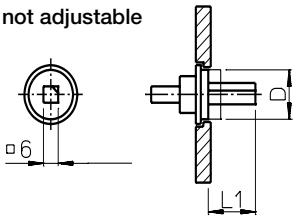
Shaft size	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	D1 [mm]	D2 [mm]	SW
S0	21-40	41-60	61-80	81-100	6	13.8	12
S1	21-40	41-60	61-80	81-100	8.5	18.5	16
S2	41-70	71-100	101-130	131-160	11.2	24.6	22
S3	41-75	76-110	111-145	146-180	14	35.1	39



With square profile

L100A

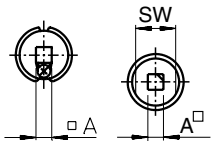
Shaft length not adjustable



Size	D
S0	13.8
S1	18.5

Size	L1	L1	L1	L1	L1	L1	L1	L1	L1
CG4,CA10	19	23	27	32	37	42	47	52	57

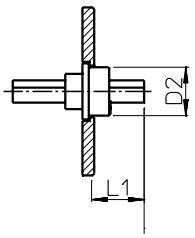
Size	L1	L1	L1	L1	L1	L1	L1	L1	L1
CG4,CA10	62	67	72	77	82	87	92	97	102



M004E

With set screw Shaft unlimited adjustable length

Shaft size	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	D2 [mm]	A [mm]
S1	11-20	21-40	41-60	61-80	81-100	18.5	6
S2	21-40	41-70	71-100	101-130	131-160	24.6	8



M004A

With clamping bushing. Shaft unlimited adjustable length

	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	L1 [mm]	D2 [mm]	SW	A [mm]
S2	21-40	41-70	71-100	101-130	131-160	24.6	22	8
S3	5-40	41-75	76-110	111-145	146-180	35.1	39	10

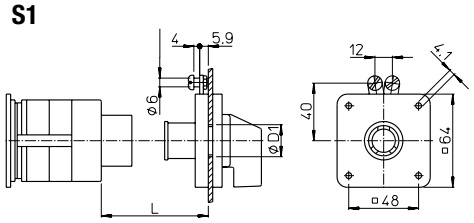
Standard Door Clutch

With profile extension parts

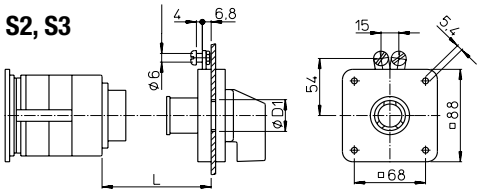
M280
Front protection IP 40

M280/.EF
Front protection IP 66/67

S1



S2, S3



Switch size	D1 (mm)
S1	22
S2	27
S3	38

L=Shaft length

Number of extension parts	L [mm] S1	L [mm] S2, S3
0	34-49	40-55
1	49-64	55-70
2	64-79	70-85
3	79-94	85-100
4	94-109	100-115
5	109-124	115-130

With shaft extension, shaft with unlimited adjustable length

Shaft fixation with set screw

M280E
Front protection IP 40

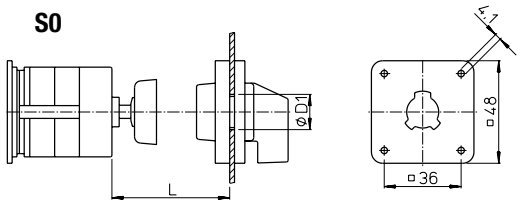
M280E/.EF
Front protection IP 66/67

Shaft fixation with shear ring

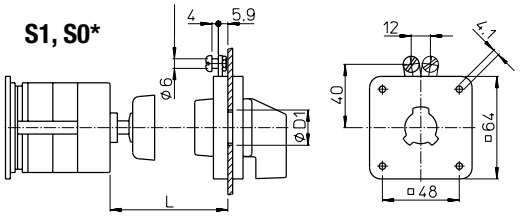
M280D
Front protection IP 40

M280D/.EF
Front protection IP 66/67

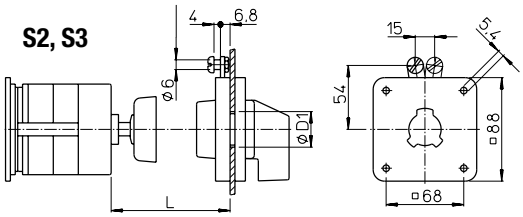
S0



S1, S0*



S2, S3



L=Shaft length

Size	L	L	L	L	D1
S0 *	36-55	56-75	76-95	96-116	18
S1	32-57	58-77	78-97	98-118	22
S2	60-90	90-120	120-150	150-180	27
S3	60-95	95-130	130-165	165-200	38

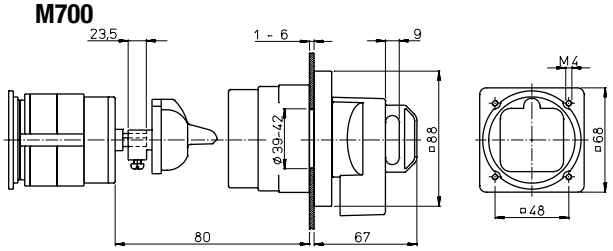
* for Cxx B versions.

M700/.
Handle lockable with padlocks Protection IP66/67

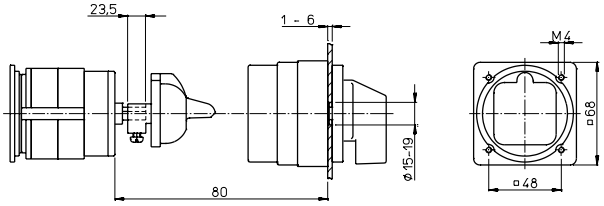
The M700 is a padlock door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in OFF position. Note: Knowledgeable personnel using a simple tool are able to defeat the interlock. The M700's flexibility allows for successful installation with as much as + or - 5 mm of misalignment between the shaft and the door.

M701
Standard handle and standard escutcheon plate protection IP65

M700



M701



Simplified Door Clutch

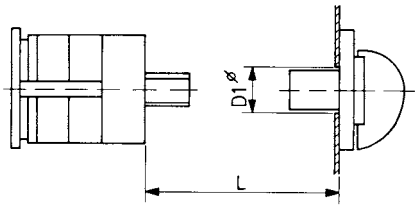
The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and the escutcheon plate are mounted on the cover.

With profile extension parts

M290/A1
Front protection IP 40

M290/A1.EF
Front protection IP 65

M290/A1

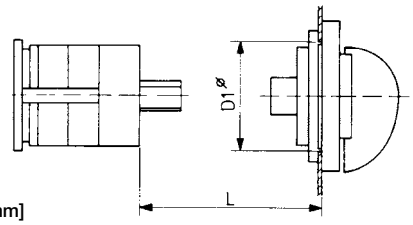


Switch size	D1 [mm]
S0, S1	18
S2, S3	45

L=Shaft length

Number of extension parts	L [mm] S0	L [mm] S1	L [mm] S2, S3
0	10-15	10-15	36-51
1	15-20	25-30	51-66
2	20-25	40-45	66-71
3	25-40		71-86
4	40-55		86-91
5	55-70		91-106
6	70-85		

M290/A1.EF



Switch size	D1 [mm]
S0	22 (45.6 for Cxx B versions.)
S1, S2	45.6

L=Shaft length

Number of extension parts	L [mm] S0, S1	L [mm] S2
0	25-30	31-40
1	27-37	38.5-47.5
2	34-44	46-55
3	42-52	53.5-62.5
4	49-59	61-70
5	57-67	

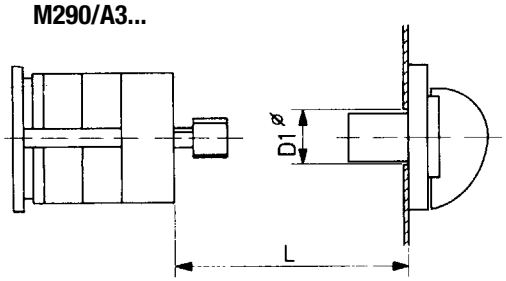
With shaft extension

Without locking device

M290/A3
With front protection IP 40

M290/A3.EF
With front protection IP 65

M290/A3...



Switch size	D1 [mm]
S0, S1	18
S2, S3	45

L=Shaft length

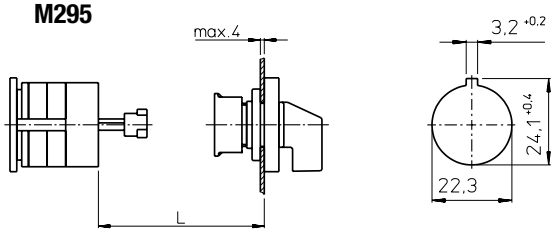
L [mm] S0	L [mm] S1	L [mm] S2	L [mm] S3
37-57	28-55	40-65	45-65
57-77	55-75	65-95	65-100
77-97	75-95	95-125	100-135
97-117	95-115	125-155	135-170
		155-185	170-205

M295
Single hole mounting 22 mm, protection IP 66.
Additional profile extension parts and shaft extension must be specified.

M295/.A For shaft extension

M295/.B For profile extension parts

M295



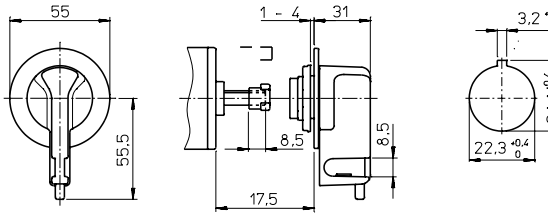
L=Shaft length

	L min	L max
M295/A	27	112
M295/B	25	90

With locking device

V840E
With padlock device and single hole mounting 22 mm, protection IP 65.
Additional shaft extension must be specified.

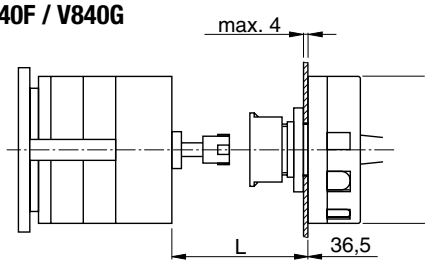
V840E



V840G (3 padlocks) **/ V840F** (4 padlocks)

The cover disc is available in black, yellow and electro-gray.
The handle may be supplied in red, black and electro-gray.

V840F / V840G

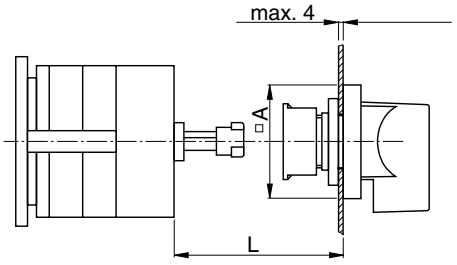


L=Shaft length

Size	L min.	L max.
S0	30	55
S1	28	55

V845

Operation of the locking bar from the front.
Available in black, red and electro-gray.

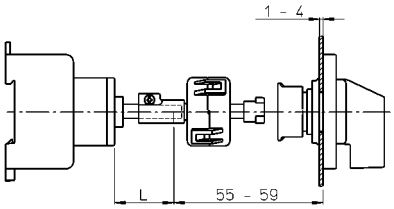


L=Shaft length

Size	A	H	L
S0	48	52	30-55
S1	64	58	28-55

M600

Centering aid for simplified door clutches with single hole mounting and shaft extension
Misalignment between the shaft and the mounting are compensated in all 4 directions.



Indicator Lamp Device

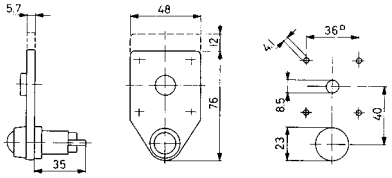
With square escutcheon plate

Q200/A1
With white lamp socket
Additional colors on request.

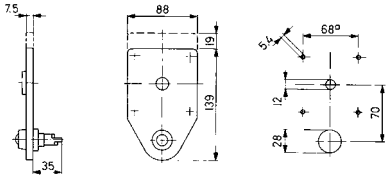
Q200/A2
Without lamp socket

The lamp socket for switch size SO had been designed for glowing lamps with socket E10.
For switches size S1, S2 and S3 the sockets are provided for lamps with thread E14.

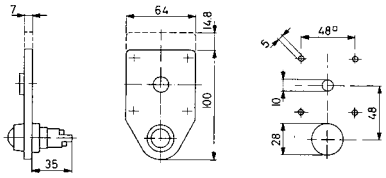
For switches of size S0



For switches of size S2



For switches of size S1

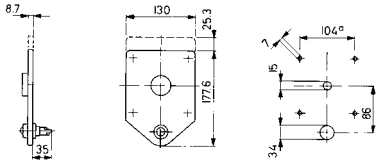


With rectangular escutcheon plate

Q200/B1
With white lamp socket
Additional colors on request.

Q200/B2
Without lamp socket

For switches of size S3



Control and Indicator Device without Lamps

This device has a 30mm single-hole mounting with locking nut.
Lamp: max. 2.8W, socket BA 9s (Lamp not supplied with the optional extra)
Attention: Switching is possible between 8 o'clock position and 1 o'clock position only.
The device can be supplied with the following front end assemblies:
Front ring (alternatively with add-on escutcheon plate), Escutcheon plate 48 x 48 mm (alternatively with add-on escutcheon plate) or escutcheon plate 64 x 64 mm.

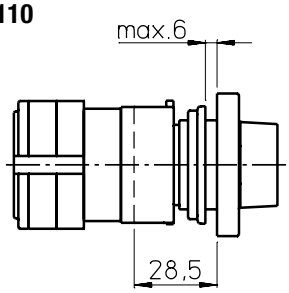
The operation may be as follows:

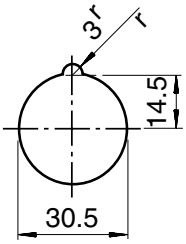
Q110
Turn to operate

Q110/F
Push-to-turn operation (interlock as control and alarm switch)

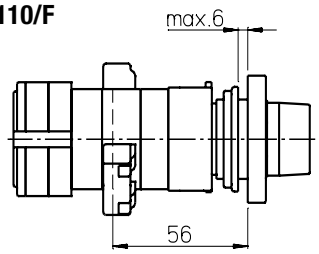
This version is available with 1 or 2 auxiliary contacts.
Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities which is also available with gold contacts for use in aggressive environments or an H-bridge design with a "cross-wire" contact system with gold-plated contacts for low voltages and currents.

Q110





Q110/F



Eschutcheon plates
48x48mm
48x60mm
64x64mm
64x79mm

Trip Indicator

The trip indicator used on switches with spring return positions. It includes a colored indicator to show the last SR position where handle has been turned.

There are two possibilities for the flag indicator
a) left red - right green
b) left green - right red

M120/A
With square escutcheon plate

M120/B
With rectangular escutcheon plate

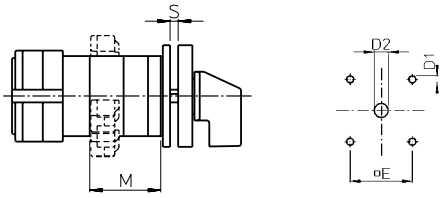
Push - Pull Interlock

The push-pull device is used to interlock the switch so that the handle can be rotated only when pushed or pulled. The push-pull device can be programmed to allow the interlock to operate only between pre-determined switch positions. Auxiliary contacts can be operated by means of the axial handle movement. For switches size S0 the max. number of auxiliary contacts is 2. In addition, switches of size S0 can also be combined with a trip indicator.

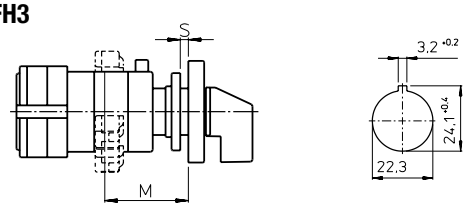
Function of the device	Code of the device
to pull lateral spring return	V110A, V110
to pull lateral latching	V115A, V115
to pull and push lateral spring return	V120
to push lateral spring return	V130A, V130
to push lateral latching	V135A, V135

V110A,V115A,V130A,V135A

E, EG



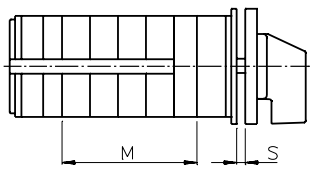
FT2, FH3



M=Additional length of the switch

	E		EG		FT2		FH3	
Size S0	V110A V130A	V115A V135A	V110A V130A	V115A V135A	V110A V130A	V115A V135A	V110A V130A	V115A V135A
M (mm) without auxiliary contacts	17,5	33,5	24,5	40,5	24	40	31	47
M (mm) without auxiliary contacts	33,5	33,5	40,5	40,5	40	47	47	47
S (mm)	1-4	1-4	1-2	1-4	1-6	1-6	1-6	1-6
E (mm)	36	36	48	48				
Escutcheon plate size [mm]	48x48	48x48	64x64	64x64	49x49	49x49	64x64	64x64
D1	5	5	5	5				
D2	15-19	15-19	19-22	19-22				

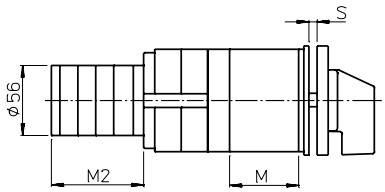
V110,V115,V130,V135



M=Additional length of the switch

	No. of auxiliary contacts				
	0-2	3+4	5+6	7+8	
Size	M	M	M	M	S
S1	29.5	47	64.5	82	0-4

V110,V120,V130



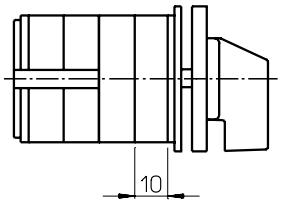
M=Additional length of the switch
M2=Additional length of the auxiliary switch

	No. of auxiliary contacts					
	0	1+2	3+4	5+6	7+8	
Size	M	M+M2	M+M2	M+M2	M+M2	S
S1[1]	51.7	101.4	120.4	139.4	158.4	0-4,5
S2	69	127.6	146.6	165.6	184.6	0-5,5
S3	76	137.1	156.1	175.1	194.1	0-7

[1] only for V120

Stop and Go Device

V160



The stop and go device prevents fast switching through the center 'OFF'-position on 60° double-throw switches. The stop and go device only becomes activated in the center switch position, either in both directions or only one.

Push Button Interlock

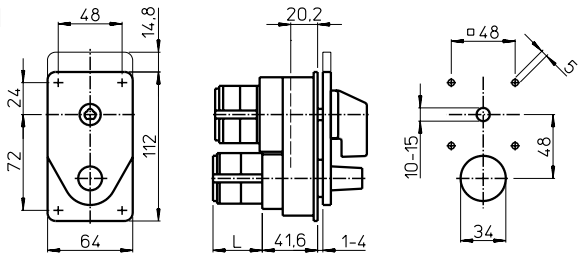
Up to 4 auxiliary contacts can be operated by depressing the push button.

With square escutcheon plate

V400/A1
Switching only possible if push button is depressed.

V400/A2
Switching only possible if push button has been depressed and released.

S0, S1



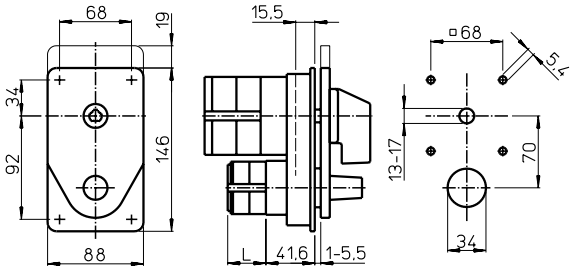
	No. of auxiliary contacts	
	2	4
L	24,5	42

With rectangular escutcheon plate

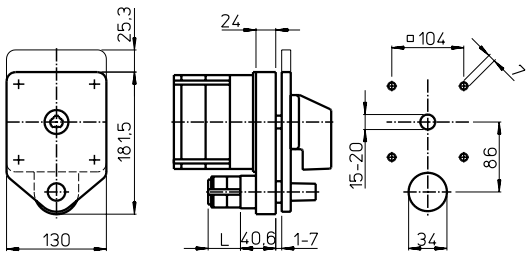
V400/B1
Switching only possible if push button is depressed.

V400/B2
Switching only possible if push button has been depressed and released.

S2



S3



Protective Cover

M160

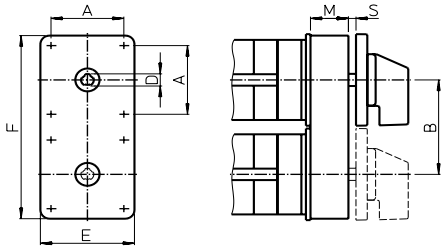
The protective cover prevents accidental contact with current-carrying terminals (requirements in accordance with VDE 0113 for main switches)
For switches C80,C125,C315

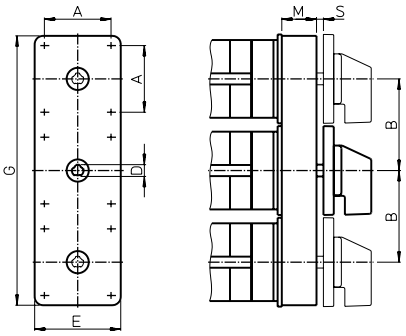
Tandem Drive

Two or three switch columns can be operated simultaneously.
Special programs are available to reinforce the device for heavy duty applications.

M300/B
For 2 switch columns

M300/C
For 3 switch columns





M300/B, M300/C

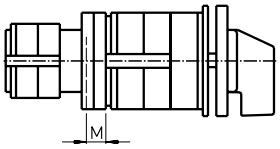
Size	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	G [mm]	M [mm]	S [mm]
S1	48	66	8.5	62	128	194	25	1.4-4.5
S2	68	93	11.2	92	183	276	30	1.5-7
S3	88	144	14	130	274	418	24	1.5-8.3

Bayonet/Switch Coupling

The device is used to couple switches into one column

M270
Switches of the same size

M275
Switches of different sizes



	Coupled switch				
	S00	S0	S1	S2	S3
Main switch	M	M	M	M	M
S0		5,5			
S1	1,30	0,8	(9,8)		
S2	10,20	4,4	2,9	(12,9)	
S3	12,70	12,2	11,4	11,4	(32,9)

Values in brackets are for M270

Special Drives

G800/A,G800/B,G900/A,G900/B,G800/C

G800/B

G900/A

G900/B

G800/C

Spring Return Over Several Positions

M470/A
Spring return from both sides

M470
Spring return from one side

Spring return for angular displacement up to 30° can be accomplished by using the latching mechanism. If a large number of contacts must be opened simultaneously or the total angular displacement is larger than 30°, the switch must use one of the spring return devices. Spring return from both sides can be designed to permit maintained positions on each side of the center.

Uni-Directional Interlock

M400

The uni-directional interlock prevents the switch from being operated counterclockwise.
The interlock may be either in all positions or in pre-determined positions only.
This device can only be used in switches with a 360° total switching angle.

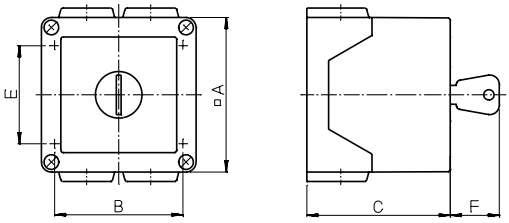
Slip Clutch and Ratchet Coupling

M200
Slip clutch

Using the slip clutch, two cam shafts can be coupled in such a way that the secondary cam shaft will operate only after the primary cam shaft has been moved over a pre-determined angle. This slip clutch allows e. g. the de-energized changing back of switches for pole-changeable motors. Not available for D-switches.

M230
Ratchet coupling
A ratchet coupling attaches to the rear of the switch. Additional stages are then attached behind the coupling device which serves to operate that portion of the switch only when the handle is turned counterclockwise. When the handle is turned clockwise, the rear switch portion remains in the same position.

Key-Lock Device



V750/

For 1 stage switches in PN enclosure, IP42
For 2 stage switches in PN enclosure, IP42

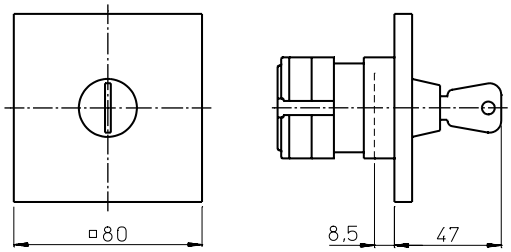
With small cylinder lock

	CA10	CA20
A [mm]	64	82
B [mm]	50	68
C [mm]	68.8	75.5
E [mm]	36	52
F [mm]	26	29
4 x metric	20	20

Order Example:

CA10 A200*PN
+S0 V750 / C 0 – PN

C = locking program where the key can be removed, see locking program picture in below for different positions
0 = standard lock cylinder, please contact your K&N dealer for other possibilities



V750

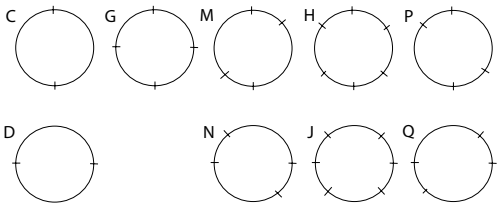
For 1 stage switches with plaster depth trim
With small cylinder lock

Order Example:

CA10 A200*UE1
+S0 V750 / G 0 – UE1

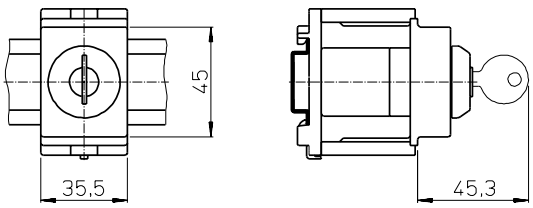
G = locking program where the key can be removed, see locking program picture in below for different positions, only programs G and J are possible
0 = standard lock cylinder, please contact your K&N dealer for other possibilities

Locking Programs



V750D/

For base mounting with type of mounting VE21
The device is available with small cylinder lock or Micro-Kaba lock



Order Example:

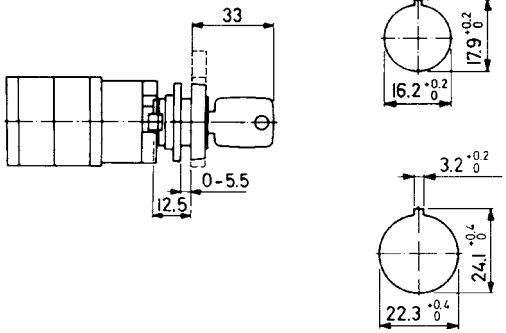
CA4 A200*VE21
+S00 V750D / 2 C / 87

2 = standard mounting and lock, replace 2 by number 1 for Kaba-Micro lock
C = locking program where the key can be removed, see locking program picture for different positions on page 58

V750D/2

For single hole mounting combined with 16/22mm with small cylinder lock, IP65

With front ring FS1



Order Example:

CA4 A200*FS2
+S00 V750D / 2 C / 21

2 = standard lock
C = locking program where the key can be removed, see locking program picture for different positions. Programs C, D, G, H, J, M, N, P and Q

V750D/1

For single hole mounting combined with 16/22 mm, Micro-Kaba lock. IP 65

With front ring FS1
Escutcheon plate 30x30mm FS2

Order Example:

CA4 A200*FS2
+S00 V750D / 1 A / 21

1 = Kaba-Micro lock
A = locking program where the key can be removed, see locking program picture for different positions. Programs A, B, E, F, G and R possible

V750D/3

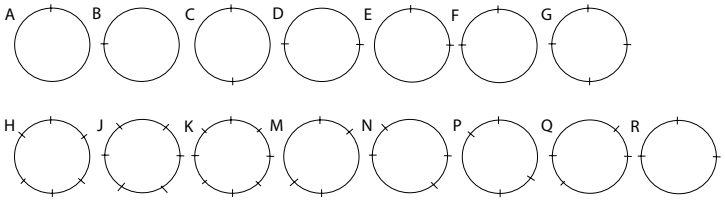
For single hole mounting 22 mm
with frontring FT1, Escutcheon plate 48x48 FT2

Order Example:

CA10 A200*FT2
+S0 V750D / 3 C / 21

3 = standard lock for switches CA10, CG8, CH10 and CA20
C = locking program where the key can be removed, see locking program picture for different positions. Programs C, D, G, H, K, J, M, N, P and Q

Locking programs



Kaba Key Lock Device

V750D/A

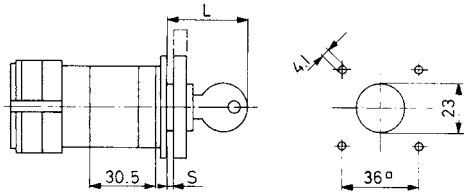
For four hole panel mounting,
escutcheon plate size is 48x48mm
(mounting E) or 64x64 (mounting EG)

Order Example:

CA10 A200*E
+S0 V750D/A 1 A / 1

1 = Kaba 8 lock for switches with short cylinder for programs A to G, replace number 1 by number 2 to get Kaba 8 long cylinder lock for programs G to L
A = locking program where the key can be removed, see locking program picture on page 59 for different positions
1 = Black escutcheon plate and mounting E, to get mounting EG replace number 1 by number 11

For mounting E



Locking program	S	L
1A-1G	1-3,5	40,3
2G-2L	1-12,5	49,3

V750D/B

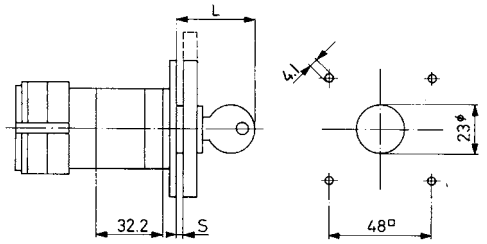
For four hole panel mounting,
escutcheon plate size is 48x60mm
or 64x78,8mm

Order Example:

CA10 A200*E
+S0 V750D/B 1 A / 1

1 = Kaba 8 lock for switches with short cylinder for programs A to G, replace number 1 by number 2 to get Kaba 8 long cylinder lock for programs G to L
A = locking program where the key can be removed, see locking program picture in below for different positions
1 = Black escutcheon plate and mounting E, to get mounting EG replace number 1 by number 11

For mounting EG



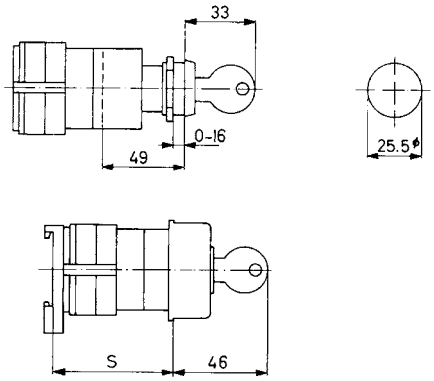
Locking program	S	L
1A-1G	1-3,5	39,8
2G-2L	1-12,5	48,8

V750D/

For single hole mounting combined
with 25 mm, with front ring

Order Example:

CA10 A200*EL
+S0 V750D/ 1 A / 1



1 = Kaba 8 lock for switches with short cylinder for programs A to G, replace number 1 by number 2 to get Kaba 8 long cylinder lock for programs G to L
A = locking program where the key can be removed, see locking program picture in below for different positions
1 = mounting EL

V750/D

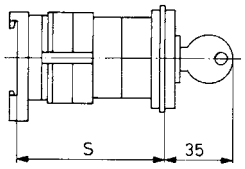
For snap-on base mounting on track acc.
to En50022, with escutcheon plate
45mm knock out (mounting VE2)

Order Example:

CA10 A200*VE2
+S0 V750D/ 1 A / 2

Max.no. of Stages

S	CA10	CA20	CG8	CH10
50mm	1	-	-	-
61mm	2	1	1	1
67mm	-	2	-	-
69mm	3	2	-	-



1 = Kaba 8 lock for switches with short cylinder for programs A to G, replace number 1 by number 2 to get Kaba 8 long cylinder lock for programs G to L
A = locking program where the key can be removed, see locking program picture for different positions
2 = mounting VE2

Max.no. of Stages

S	CA10	CA20	CG8
67mm	1	1	-
69mm	1	1	1

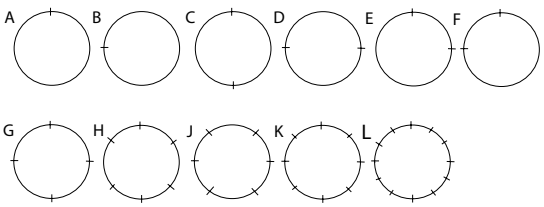
V750/D

For snap-on base mounting on track acc.
to En50022, with escutcheon plate 46mm
knock out (mounting VE3)

Order Example:

CA10 A200*VE3
+S0 V750D/ 1 A / 3

Locking programs

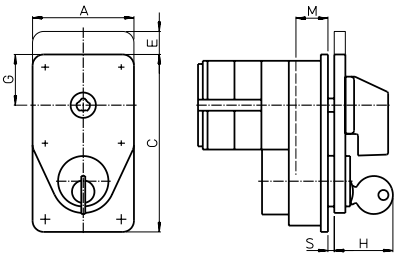


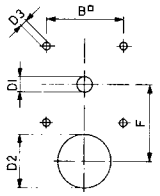
1 = Kaba 8 lock for switches with short cylinder for programs A to G, replace number 1 by number 2 to get Kaba 8 long cylinder lock for programs G to L
A = locking program where the key can be removed, see locking program picture for different positions
3 = mounting VE3

Safety – Key-Lock Device

With small cylinder lock

V760/A.E
Square escutcheon plate





Order Example:

CA10 A200*E
+S0 V760/ A 1 E 1 / 60 1

A = square plate frame, replace A by B to get a rectangular plate frame
1 = key can be removed in both postions, replace number 1 by number 2 to be able to remove the key only in the locked position
1 = locking program please see the table below to see features for each locking program number
60 = Angular displacement, please note that the angle comes from the switch program e.g. for A200 it is 60

Locking program	Switching angle	Lockable switch positions	Not lockable switch positions	Switch size
1	30°-90°	one	other	S0,S3
2	30°-90° (20°)	all	none	S0,S3 (S3)
3	30°-90°	the balance	one	S1
4 This program permits the locking of the device in any switch position. However, the actual locking becomes effective in a pre-determined position only.	30°-90°	one	other	S0,S3

With commercial half-cylinder lock

V760/A
Square escutcheon plate

Order Example:

C80 A200*E
+S2 V760/A1B1/601

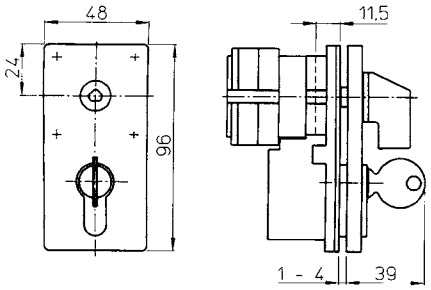
A = square plate frame, replace A by B to get a rectangular plate frame
1 = key can be removed in both positions, replace number 1 by number 2 to be able to remove the key only in the locked position
1= locking program please see the table below to see features for each locking program number
60 = Angular displacement, please note that the angle comes from the switch program e.g. for A200 it is 60

Switch size	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	D1 [mm]	D2 [mm]	D3 [mm]	M [mm]	S [mm]
S0	48	36	82	12	40	24	31	8,5	20	5	9,5	1-4
S0,S1	64	48	112	14,8	48	32	34,5	10	34	5	20,2	1-6
S2	88	68	146	19	70	44	35,5	12	34			
S3	130	104	181,5	25,3	86	65	36,5	15	34			

With half-cylinder lock

V765
Square escutcheon plate

It is possible to order a dust cap for the lock device. Various key positons and locking programs are available. Key can be removed in locked and unlocked positions or it can be removed only in locked positions.



Order Example:

CA10 A200*E

+S0 V765/ A 1 H 6 1

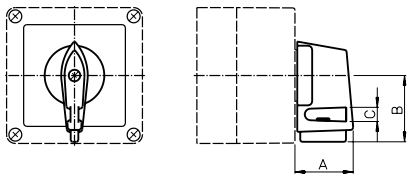
A = key can be removed in both positions, replace A by B to be able to remove the key only in the locked position
1 = locking program please see the table below to see features for each locking program number
6 = Angular displacement, please note that the angle comes from the switch program e.g. for A200 it is 6 for 60 degrees. Other possibilities are: 3 for 30, 4 for 45, and 9 for 90

Locking program	Switching angle	Lockable switch positions	Not lockable switch positions
1	30°-90°	one	other
2	30°-90°	all	none
4 This program permits the locking of the device in any switch position. However, the actual locking becomes effective in a pre-determined position only.	30°-90°	one	other

Padlock Device

V840A

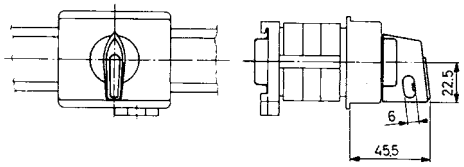
The padlock device is an integral part of the switch handle and it can hold 2 padlocks.
The lock bar is accessible from the bottom.
The handle may be supplied in black, red and electro-gray.



Size	A	B	C
S0	27.7	31.5	5
S1	41.6	40	7

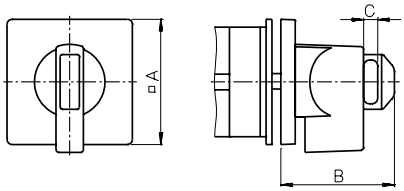
V840B

For mounting VE2 and VE21 with lock bar accessible from the front.
Available in red and electro-gray.



V845

For 4 padlocks
The lock bar is accessible from the front and may be supplied in black, red and electro-gray.



Size	A	B	C
S0	48	51	7.2
S1	64	58	8.1
S2	88	73	9
S3	130	86.5	9

Padlock device with integrated F or B handle

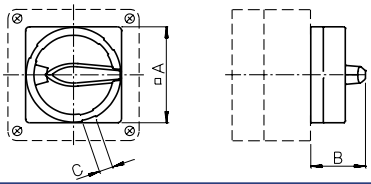
The cover disc is available in black, yellow and electro-gray.
The handle may be supplied in black, red and electro-gray.

V840D

For 2 padlocks with F-handle

V840G

For 3 padlocks with F-handle



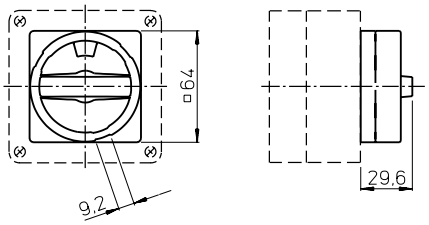
Size	A	B	C
S0	64	40.1	9.2
S1	88	49.3	10

V840G/B

For 3 padlocks with B-handle

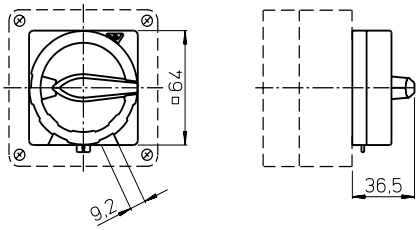
V840F/B

For 4 padlocks with B-handle



V840F/F

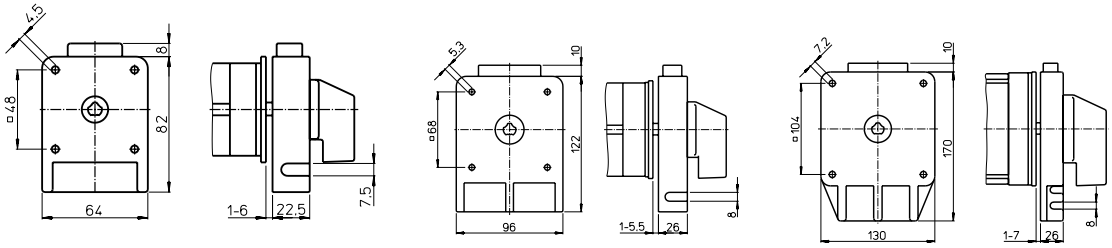
For 4 padlocks with F-handle



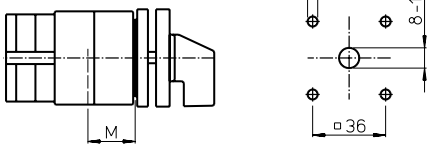
V840/K

V850

For 2-6 padlocks depending on switch type.
Upon request the device can be programmed to lock in several switch positions.



Power Failure Release



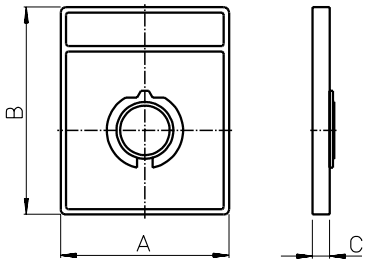
	M
X	23.3
Y	31.5

X without trip release
Y with trip release

The PFR switch series is designed to provide protection for both machines and machine operators by preventing the equipment (which has been operating) from restarting automatically after a power failure.
The device includes a magnetic system which releases the switch (by means of a linear spring return mechanism) to the 'OFF'-position at voltage failure or undervoltage (below 70% of nominal voltage)

The magnetic system includes a low hum DC coil with incapsulated diode rectifier (blocking voltage 1000 V) = it.
Therefore, it works independent of frequency. PFR switches are available with 24 V-600 V coils.
Available switching detents: 1 x 60° (60° to the right of center OFF), 2 x 60° (60° to the right and left of center OFF), 1 x 60° + 30° (60° plus an additional 30° to the right of OFF).

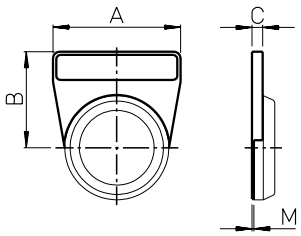
Rectangular Add-on Escutcheon Plates



Size	A	B	C
S00	30	39	5,5
S0	48	60	6,3
S1	64	78,8	7,4

Add-on escutcheon plates for switches with single hole mounting and four hole panel mounting
The face plates can be engraved or embossed from the front or alternatively from the back. Face plates are also available in different height. The escutcheon plate frame is black, the face plate is brushed aluminum. Switch sizes SO, S1, S2 and S3 are also available with yellow escutcheon plate frames and yellow face plates.

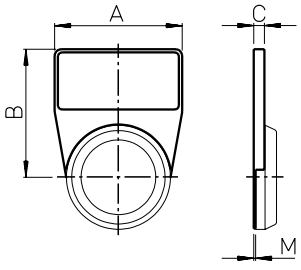
Switches with single hole mounting and front ring



F991/A0B/C-PRD

For front inscription

Size	A [mm]	B [mm]	C [mm]	M [mm]
S00	29.5	25.5	4	0.7
S0	47.8	36	4	0.7

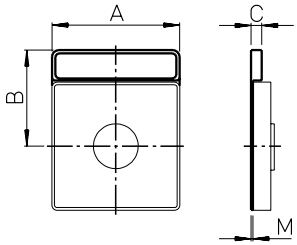


F991/A0B/C-PRB

For front inscription

Size	A [mm]	B [mm]	C [mm]	M [mm]
S00	29.5	35	4	0.7
S0	47.8	48	4	0.7

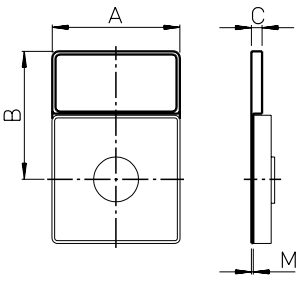
Switches with single hole mounting or four hole panel mounting and square escutcheon plate.



F991/A0B/C-PRC

For front inscription

Size	A [mm]	B [mm]	C [mm]	M [mm]
S00	29.5	25.5	4	0.7
S0	47.8	36	4	0.7
S1	63.8	47	5	0.8



F991/A0B/C-PRA

For front inscription

Size	A [mm]	B [mm]	C [mm]	M [mm]
S00	29.5	35	4	0.7
S0	47.8	48	4	0.7
S1	63.8	60	5	0.8
S2	87.8	80	6	1
S3	129.8	115	7	1.2

Quick Selection Chart

Optional extras	Logic usage switches				Miniature switches							Control switches										
	CAD11	CAD12	DH11	DH12	CGD4-1	CG4-1	CA4-1	CG4	CG6	CA4	CL4	CG8	CH10	CA10(B)	CA20(B)	CA25(B)	CA40	CA50	CA63	C80	C125	C315
Shaft extension																						
L100	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
M004D	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	
M004	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
L100A	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
M004E																	❍	❍	❍	❍	❍	
M004A																				❍	❍	❍
Standard door clutch																						
M280																	❍	❍	❍	❍	❍	❍
M280/.EF																	❍	❍	❍	❍	❍	❍
M280E	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	
M280/.EF	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	
M280D	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
M280D/.EF	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
M700	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
M701	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	
Simplified door clutch																						
M290/A1	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
M290/A1.EF	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	
M290/A3	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
M290/A3.EF	❍	❍	❍	❍								❍	❍	❍[1]	❍[1]	❍[1]						
M295/.A	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
M295/.B	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840E	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840G	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840F	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V845	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
M600																	❍	❍	❍			
Indicator lamp device																						
Q200/A1	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Q200/A2	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Q200/B1	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Q200/B2	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Control and indicator device																						
Q110	❍	❍	❍	❍								❍	❍	❍[1]	❍[1]	❍[1]						
Q110/F	❍	❍	❍	❍								❍	❍	❍[1]	❍[1]	❍[1]						
Trip indicator																						
M120/A	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
M120/B	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
Push - pull interlock																						
V110A	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V115A	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V130A	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V135A	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V110																	❍	❍	❍	❍	❍	❍
V115																	❍	❍	❍			
V120																	❍	❍	❍	❍	❍	❍
V130																	❍	❍	❍	❍	❍	❍
V135																	❍	❍	❍			
Stop and go device																						
V160	❍	❍	❍	❍								❍	❍	❍	❍	❍						
Push button ilnterlock																						
V400/A1	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
V400/A2																				❍	❍	
V400/B1	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
V400/B2																				❍	❍	
Protective cover																						
M160																				❍	❍	❍
Tandem drive																						
M300/B																	❍	❍	❍	❍	❍	❍
M300/C																	❍	❍	❍	❍	❍	❍
Special drives																						
G800/A																	❍	❍	❍			
G800/B																	❍	❍	❍			
G900/A																	❍	❍	❍			
G900/B																	❍	❍	❍			
G800/C																	❍	❍	❍			
Uni-directional interlock																						
M400	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Slip clutch and ratchet coupling																						
M200	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
																	❍	❍	❍			
Key-lock device																						
V750/	❍	❍	❍	❍								❍	❍	❍	❍							
V750D/					❍	❍	❍	❍	❍	❍												
V750D/2					❍	❍	❍	❍	❍	❍												
V750D/3	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V750D/1					❍	❍	❍	❍	❍	❍												
Kaba key-lock device																						
V750D/	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V750D/A	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V750D/B	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V750D/for VE21	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V750D/for VE3	❍	❍	❍	❍								❍	❍	❍	❍	❍						
Safety- key -lock device																						
V760/A.E	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V760/B.E	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V760/A	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
V760/B	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
V765	❍	❍	❍	❍								❍	❍	❍	❍	❍						
Padlock device																						
V840A	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840B	❍	❍	❍	❍								❍	❍	❍	❍	❍						
V845	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
V840D	❍	❍	❍	❍								❍	❍	❍	❍	❍				❍	❍	❍
V840G	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840G/B	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840F/F	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840F/B	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
V840/K					❍	❍	❍	❍		❍	❍											
V850	❍	❍	❍	❍								❍	❍	❍	❍	❍	❍	❍	❍			
Power failure release																						
X			❍	❍								❍	❍	❍	❍		❍	❍	❍			
Y			❍	❍										❍	❍							
Rectangular add-on escutcheon plates																						
F991/A0B/C-PRA	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
F991/A0B/C-PRB	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍						
F991/A0B/C-PRC	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍			
F991/A0B/C-PRD	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍						

[1] Not for type B

Main and Safety Switches

These pages contain the most common main switches. Please check our web page for other solutions. Both main and safety switches are divided in separate pages in this chapter. Switches are divided in diffetent pages based on the mounting. Main switches start from page 66 and safety switches start from page 84. Optional extras for main and safety switches start from page 95.
Technical table for main and safety switches starts from page 103. Connection diagrams for main and safety switches are on page 105.

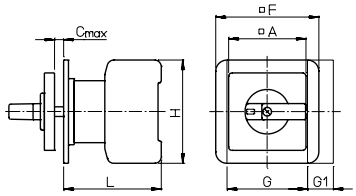
Main Switches

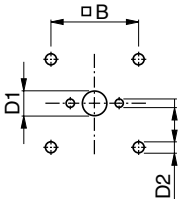
Four Hole Panel Mounting, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
2-pole switches,IP66			
20	KG10B T102/01 E	1,5/120	2,5
3-pole switches,IP66			
20	KG10B T103/01 E	5,5/120	2,5
25	KG20B T103/01 E	7,5/180	6
32	KG32B T103/01 E	11/220	6
40	KG41B T103/01 E	15/300	16
63	KG64B T103/01 E	22/350	16
80	KG80 T103/01 E	30/560	50
100	KG100 T103/01 E	37/650	50
125	KG125 T103/01 E	45/750	95
160	KG160 T103/01 E	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
2-pole switches,IP66			
20	KG10B T102/04 E	1,5/120	2,5
3-pole switches,IP66			
20	KG10B T103/04 E	5,5/120	2,5
25	KG20B T103/04 E	7,5/180	6
32	KG32B T103/04 E	11/220	6
40	KG41B T103/04 E	15/300	16
63	KG64B T103/04 E	22/350	16
80	KG80 T103/04 E	30/560	50
100	KG100 T103/04 E	37/650	50
125	KG125 T103/04 E	45/750	95
160	KG160 T103/04 E	55/850	95
200	KG210 T103/05 E	75/1100	185
250	KG250 T103/05 E	90/1380	185
315	KG315 T103/05 E	110/1650	185

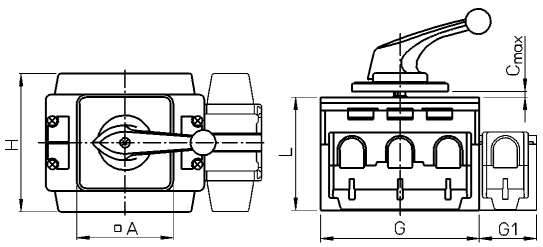
For KG10A -KG100C

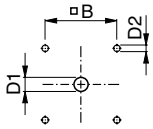




	A	B	C	D1	D2	F	G	H	L
KG10A	48	36	4	11-15	5	48	48	50	48,2
KG10B	64	48	4	11-15	5	64	48	50	57,2
KG20A, KG32A	48	36	4	10-15	5	48	42	54	53,8
KG20B, KG32B	64	48	4	10-15	5	64	42	54	53,8
KG41B, KG64B	64	48	4	10-15	5	64	50	64	60,5
KG80, KG100	64	48	4	10-15	5	70	70	80	70,6

For KG125, KG160, KG210, KG250, KG315





	A	B	C	D1	D2	G	H	L
KG125, KG160	88	68	5,5	13-17	6	112	108	96
KG210, KG250, KG315	88	68	5,5	13-17	6	145	126	103

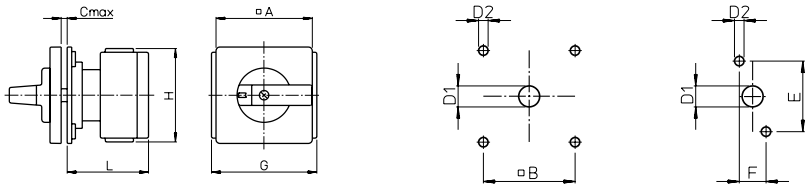
For bolt terminals see also page 83.

Four Hole Panel Mounting, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66			
16	KH16B T104/01 E	7,5/160	6
20	KH20B T104/01 E	10/200	6
25	KH25B T104/01 E	12/250	6
32	KH32 T104/01 E	16/300	10
40	KH40 T104/01 E	20/380	10
63	KH63 T104/01 E	30/500	35
80	KH80 T104/01 E	40/630	35
100	KG100 T104/01 E	37/650	50
125	KG125 T104/01 E	45/750	95
160	KG160 T104/01 E	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66			
80	KH80 T104/04 E	40/630	35
100	KG100 T104/04 E	37/650	50
125	KG125 T104/04 E	45/750	95
160	KG160 T104/04 E	55/850	95
200	KG210 T104/05 E	75/1100	185
250	KG250 T104/05 E	90/1380	185
315	KG315 T104/05 E	110/1650	185

For KH16B - KG100

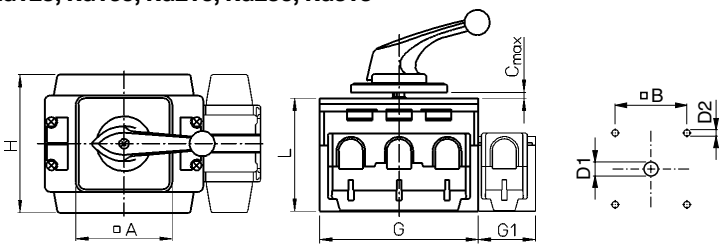


	A	B	C	D1	D2[1]	E	F	G	H	L
KH16-KHR25	48	36	4	10-15	5/3,5	30	12.2	60	56	49
KH16B-KHR25B	64	48	4	10-15	5/3,5	30	12.2	60	56	49
KH32, KHR32, KH40, KHR40	64	48	4	10-15	5/3,5	30	12.2	70	62	54
KH63, KHR63, KH80, KHR80	64	48	4	10-15	5/4,5	37	14	86	90	62
KG80, KG100	64	48	4	10-15	5	-	-	92	80	70,6

[1] Dimensions after the slash are valid for two hole panel mounting.

For ring type terminations replace the switch code KH with KHR when ordering.

For KG125, KG160, KG210, KG250, KG315



	A	B	C	D1	D2	G	G1	H	L
KG125, KG160	88	68	5,5	13-17	6	112	38	108	96
KG210, KG250, KG315	88	68	5,5	13-17	6	145	52,5	126	103

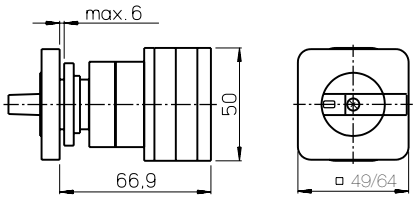
For bolt terminals see also page 83.

Single Hole Mounting 22mm, IP66

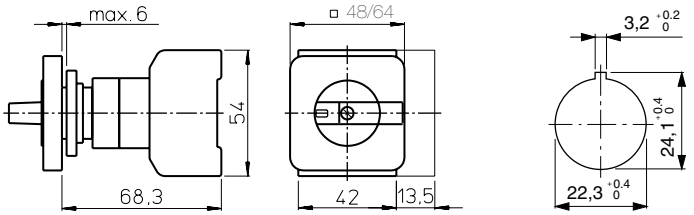
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
2-pole switches, IP66			
20	KG10B T102/01 FT2	1,5/120	2,5
3-pole switches, IP66			
20	KG10B T103/01 FT2	5,5/120	2,5
25	KG20B T103/01 FT2	7,5/180	6
32	KG32B T103/01 FT2	11/220	6

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
2-pole switches, IP66			
20	KG10B T102/04 FT2	1,5/120	2,5
3-pole switches, IP66			
20	KG10A T103/04 FT2	5,5/120	2,5
25	KG20A T103/04 FT2	7,5/180	6
32	KG32A T103/04 FT2	11/220	6
20	KG10B T103/04 FT2	5,5/120	2,5
25	KG20B T103/04 FT2	7,5/180	6
32	KG32B T103/04 FT2	11/220	6

KG10A/KG10B



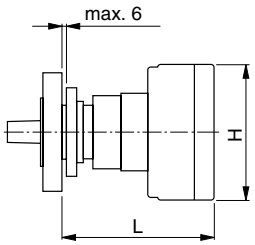
KG20A, KG32A/KG20B, KG32B

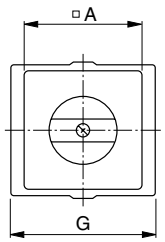


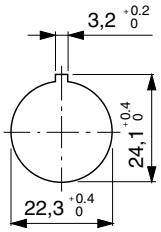
Single Hole Mounting 22mm, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66			
16	KH16 T104/01 FH3	7,5/160	6
20	KH20 T104/01 FH3	10/200	6
25	KH25 T104/01 FH3	12/250	6
32	KH32 T104/01 FH3	16/300	10
40	KH40 T104/01 FH3	20/380	10
63	KH63 T104/01 FH3	30/500	35
80	KH80 T104/01 FH3	40/630	35

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66			
16	KH16 T104/04 FT2	7,5/160	6
20	KH20 T104/04 FT2	10/200	6
25	KH25 T104/04 FT2	12/250	6
32	KG32A T104/04 FT2	16/300	10
16	KH16 T104/04 FH3	7,5/160	6
20	KH20 T104/04 FH3	10/200	6
25	KH25 T104/04 FH3	12/250	6
32	KH32A T104/04 FH3	16/300	10
40	KH40 T104/04 FH3	20/380	10
63	KH63 T104/01 FH3	30/500	35
80	KH80 T104/01 FH3	40/630	35







	A	G	H	L
KH16-KHR25	48 (64)[1]	60	56	63,5
KG32A	48 (64)[1]	56	54	68,3
KH32, KHR32 KH40, KHR40	64 (64)[1]	70	62	68,7
KH63, KH80 KHR63, KHR80	64 (64)[1]	86	90	77,1

[1] dimensions in ( ) for FH3 mounting plate.

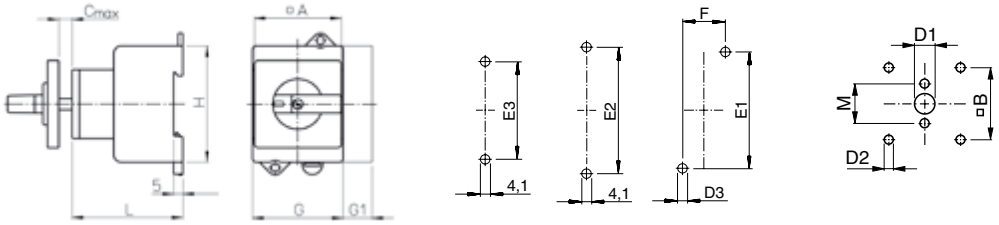
For ring type terminations replace the switch code KH with KHR when ordering.

Base Mounting with Door Clutch

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
3-pole switches, IP66/67			
20	KG10B T103/09 VE	5,5/120	2,5
25	KG20B T103/09 VE	7,5/180	6
32	KG32B T103/09 VE	11/220	6
40	KG41B T103/09 VE	15/300	16
63	KG64B T103/09 VE	22/350	16
80	KG80 T103/09 VE	30/560	50
100	KG100 T103/09 VE	37/650	50
125	KG125 T103/09 VE	45/750	95
160	KG160 T103/09 VE	55/850	95

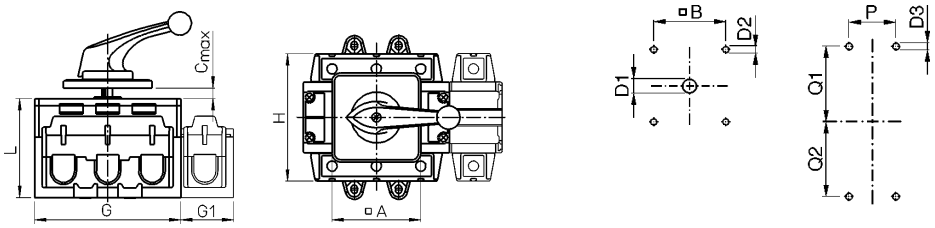
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
3-pole switches, IP66/67			
200	KG210 T103/13 VE	75/1100	185
250	KG250 T103/13 VE	90/1380	185
315	KG315 T103/13 VE	110/1650	185

For KG10A - KG100C



	A	B	C	D1	D2	D3	E1[1]	E2[1]	E3[1]	F	G	H	L	Lmax
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	50	56,2	190
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	22	42	54	50	190
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	25	50	64	61	190, 330
KG80, KG100	64	48	13,5	10-15	5	5,2	90	-	-	25	70	80	68	450

For KG125 - KG315



	A	B	C	D1	D2	D3	G	H	L	P	Q1	Q2	Lmax
KG125, KG160	88	68	16	13-17	6	6,4	112	108	91	36	59-61	59-61	450
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	126	98	44	70-72	70-72	550

[1] Switches KG10A and KG10B allow use of E1, E2 or E3

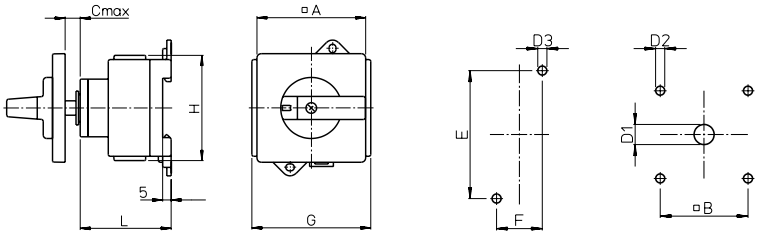
For bolt terminals see also page 83.

Base Mounting with Door Clutch

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66/67			
16	KH16B T104/09 VE	7,5/160	6
20	KH20B T104/09 VE	10/200	6
25	KH25B T104/09 VE	12/250	6
32	KH32 T104/09 VE	16/300	10
40	KH40 T104/09 VE	20/380	10
63	KH63 T104/09 VE	30/500	35
80	KH80 T104/09 VE	40/630	35
100	KG100 T104/09 VE	37/650	50
125	KG125 T104/09 VE	45/750	95
160	KG160 T104/09 VE	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²
4-pole switches, IP66/67			
200	KG210 T104/13 VE	75/1100	185
250	KG250 T104/13 VE	90/1380	185
315	KG315 T104/13 VE	110/1650	185

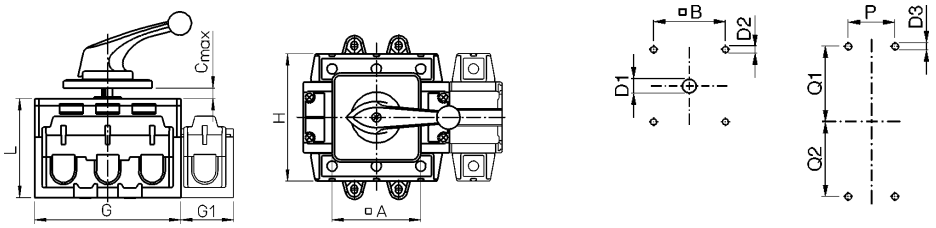
For KH16B - KG100



	A	B	C	D1	D2	D3	E	F	G	H	L	Lmax
KH16B-KHR25B	64	48	13,5	10-15	5	4,2	60	22	60	56	47	190
KH32, KHR32, KH40, KHR40	64	48	25,5	10-15	5	4,1	70	25	70	62	53,5	190
KH63, KHR63, KH80, KHR80	64	48	25,5	10-15	5	4,1	90	25	86	90	59,5	330, 380
KG100	64	48	13,5	10-15	5	5,2	90	25	70	80	68	450

For ring type terminations replace the switch code KH with KHR when ordering.

For KG125 - KG315



	A	B	C	D1	D2	D3	G	H	L	P	Q1	Q2	Lmax
KG125, KG160	88	68	16	13-17	6	6,4	112	108	91	36	59-61	59-61	450
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	126	98	44	70-72	70-72	550

For bolt terminals see also page 83.

Switches in Plastic Enclosures

V840/B

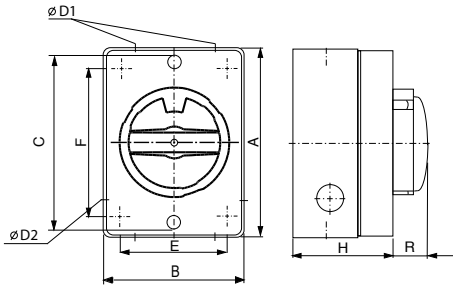
V840/F

V845

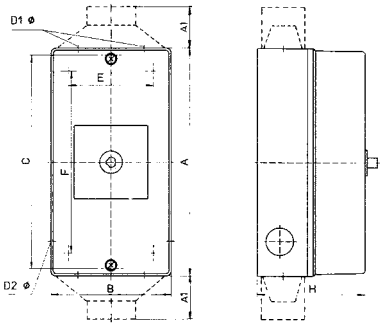
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
3-pole switches, IP66/67				
20	KG10 T103/33 KS51V	5,5/120	2,5	V840/B
25	KG20 T103/33 KL51V	7,5/180	6	V840/B
32	KG32 T103/33 KL51V	11/220	6	V840/B
40	KG41 T103/33 KL11V	15/300	16	V840/B
63	KG64 T103/33 KL11V	22/350	16	V840/B
80	KG80 T103/33 KL71V	30/560	50	V840/B
100	KG100 T103/33 KL71V	37/650	50	V840/B
3-pole switches, IP65				
125	KG125 T103/38 STM	45/750	95	V840/F
160	KG160 T103/38 STM	55/850	95	V840/F
250	KG250 T103/39 STM	90/1380	185	V845
315	KG315 T103/39 STM	110/1650	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
3-pole +2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
20	KG10 T103/40 KS51V	5,5/120	2,5	V840/B
25	KG20 T103/40 KL51V	7,5/180	6	V840/B
32	KG32 T103/40 KL51V	11/220	6	V840/B
40	KG41 T103/40 KL11V	15/300	16	V840/B
63	KG64 T103/40 KL11V	22/350	16	V840/B
80	KG80 T103/40 KL71V	30/560	50	V840/B
100	KG100 T103/40 KL71V	37/650	50	V840/B
3-pole +2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP65				
125	KG125 T103/45 STM	45/750	95	V840/F
160	KG160 T103/45 STM	55/850	95	V840/F
250	KG250 T103/46 STM	90/1380	185	V845
315	KG315 T103/46 STM	110/1650	185	V845

For KG10A - KG100



For KG125 - KG315



	A	A1	B	C	D1 ISO[1] /mm	D2 ISO[1] /mm	E	F	H	R
KG10... KS51V	120		85	110	2x20	20			90	17
KG20... KL51V	160		85	150	2x20	20			80	17
KG32... KL51V	160		85	150	2x20	20			80	17
KG41... KL11V	190		100	178	2x25	25			91	17
KG64... KL11V	190		100	178	2x25	25			91	17
KG80...KL71V	250		145		2x40	25	124	229	107	17
KG100...KL71V	250		145		2x40	25	124	229	107	17
KG125...STM	400		280		2x63 1x20		254	354	180	
KG160...STM	400		280		2x63 1x20		254	354	180	
KG250...STM	560	110	280		1x28-60 2x20		254	534	180	
KG315 ...STM	560	110	280		1x28-60 2x20		254	534	180	

[1] Enclosures with conduit entries for PG thread are available.

Switches in Plastic Enclosures

V840/B

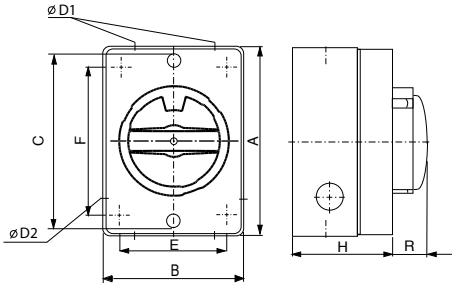
V840/F

V845

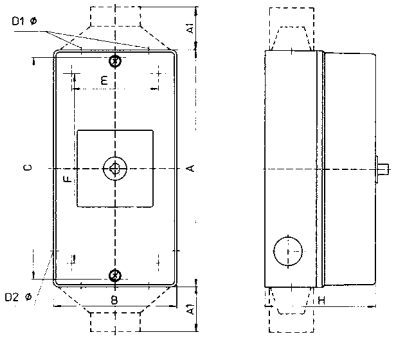
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
4-pole switches, IP66/67				
16	KH16 T104/33 KS51V	7,5/160	6	V840/B
20	KH20 T104/33 KL11V	10/200	6	V840/B
25	KH25 T104/33 KL11V	12/250	6	V840/B
32	KH32 T104/33 KL11V	16/300	10	V840/B
40	KH40 T104/33 VKL11V	20/380	10	V840/B
63	KH63 T104/33 KL71V	30/500	35	V840/B
80	KH80 T104/33 KL71V	40/630	35	V840/B
100	KG100 T104/33 KL71V	37/650	50	V840/B
4-pole switches, IP66/67				
125	KG125 T104/38 STM	45/750	95	V840/F
160	KG160 T104/38 STM	55/850	95	V840/F
250	KG250 T104/47 STM	90/1380	185	V845
315	KG315 T104/47 STM	110/1650	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
4-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
16	KH16 T104/40 KS51V	7,5/160	6	V840/B
20	KH20 T104/40 KL11V	10/200	6	V840/B
25	KH25 T104/40 KL11V	12/250	6	V840/B
32	KH32 T104/40 KL11V	16/300	10	V840/B
40	KH40 T104/40 VKL11V	20/380	10	V840/B
63	KH63 T104/40 KL71V	30/500	35	V840/B
80	KH80 T104/40 KL71V	40/630	35	V840/B
100	KG100 T104/40 KL71V	37/650	35	V840/B
4-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
125	KG125 T104/45 STM	45/750	95	V840/F
160	KG160 T104/45 STM	55/850	95	V840/F
250	KG250 T104/48 STM	90/1380	185	V845
315	KG315 T104/48 STM	110/1650	185	V845

For KH16 - KG100



For KG125 - KG315



	A	B	C	D1	D2	E	F	H	R
KH16 ... KS51V	120	85	110	2x20	20	-		80	17
KH20 ... KL11V	120	85	110	2x25	20	-		80	17
KH25 ... KL11V	160	85	150	2x25	20	-		80	17
KH32 ... KL11V	190	100	178	2x25	25	-		91	17
KH40 ... VKL11V	190	100	178	2x25	25	-		91	17
KH63 ... KL71V	250	145	-	2x40	25	124	229	107	17
KH80 ... KL71V	250	145	-	2x40	25	124	229	107	17
KG100 ... KL71V	250	145	-	2x40	25	124	229	107	17

	A	A1	B	D1 ISO[1] /mm	E	F	H
KG125...STM	400		280	2x63 1x20	254	354	180
KG160...STM	400		280	2x63 1x21	254	354	180
KG250...STM	560	110	380	1x28-60 2x20	354	534	180
KG315 ...STM	560	110	380	1x28-60 2x20	354	534	180

[1] Enclosures with conduit entries for PG thread are available.

Switches in Plastic Enclosures

V840/B

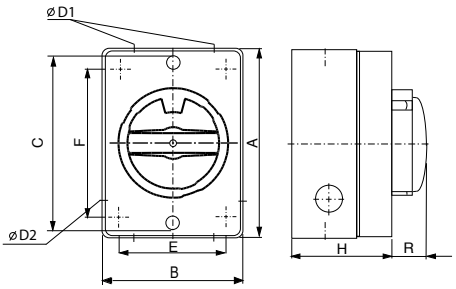
V840/F

V845

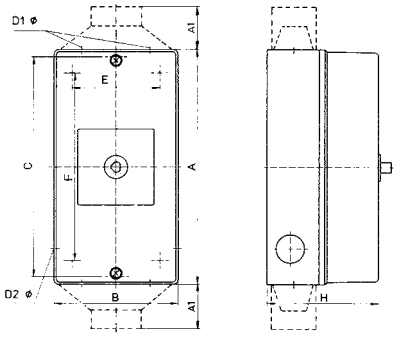
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
6-pole switches, IP66/67				
20	KG10 T106/33 KS51V	5,5/120	2,5	V840/B
25	KG20B T106/33 KL11V	7,5/180	6	V840/B
32	KG32B T106/33 KL11V	11/220	6	V840/B
40	KG41BT106/33 KL71V	15/300	16	V840/B
63	KG64BT106/33 KL71V	22/350	16	V840/B
6-pole switches, IP66/67				
80	KG80C T106/34 STM	30/560	50	V840/F
100	KG100C T106/34 STM	37/650	50	V840/F
125	KG125 T106/86 STM	45/750	95	V840/F
160	KG160 T106/86 STM	55/850	95	V840/F
275	C316T106/47STM	132/2000	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
6 pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
20	KG10 T106/40 KS51V	5,5/120	2,5	V840/B
25	KG20B T106/40 KL11V	7,5/180	6	V840/B
32	KG32B T106/40 KL11V	11/220	6	V840/B
40	KG41BT106/40KL71V	15/300	16	V840/B
63	KG64BT106/40 KL71V	22/350	16	V840/B
6 pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
80	KG80C T106/41 STM	30/560	50	V840/F
100	KG100C T106/41 STM	37/650	50	V840/F
125	KG125 T106/90 STM	45/750	95	V840/F
160	KG160 T106/90 STM	55/850	95	V840/F
275	C316T106/48STM	132/2000	185	V845

For KG10 - KG64B



For KG80C - C316



	A	A1	B	C	D1 ISO[1] /mm	D2 ISO[1] /mm	E	F	H	R
KG10...KS51V	120		85	110	2x20	20			80	
KG20B...KL11V	190		100	178	2x25	25			91	17
KG32B...KL11V	190		100	178	2x25	25			91	17
KG41B...KL71V	250		145		2x40	25	124	229	107	17
KG64B... KL71V	250		145		2x40	25	124	229	107	17
KG80C...STM	300		200		2x40 1x20		172	272	172	
KG100C...STM	300		200		2x50 1x20		172	272	172	
KG125 ... STM	400		300		2x63 1x20		272	372	172	
KG160 ... STM	400		300		2x63 1x20		272	372	172	
C316...STM	560	110	380		2x28-60 2x20		354	534	230	

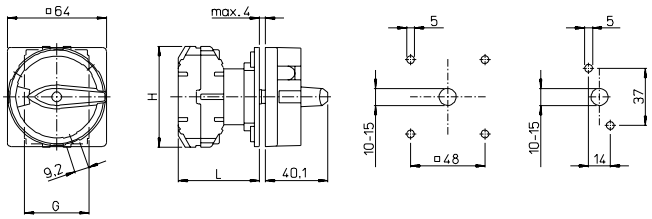
[1] Enclosures with conduit entries for PG thread are available.

Main switches with spring clamp terminals, 3-Pole

V840/F

Four hole panel mounting, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC 16B T103/01 E	7,5	2 x 0,5-6	V840/F
20	KC 20B T103/01 E	10	2 x 0,5-6	V840/F
25	KC 25B T103/01 E	12	2 x 0,5-6	V840/F
32	KC 32B T103/01 E	16	2 x 0,5-6	V840/F

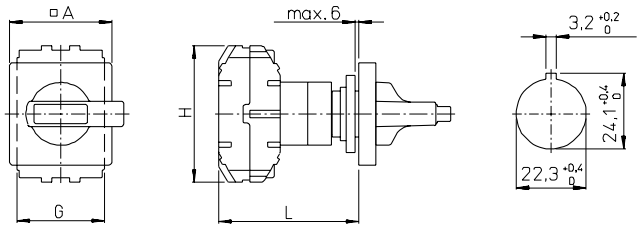


	G	H	L
KG16B-32B	42	65	52,4

V845

Single hole mounting 22mm, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC16 T103/04 FT2	7,5	2x0,5-6	V845
20	KC20 T103/04 FT2	10	2x0,5-6	V845
25	KC25 T103/04 FT2	12	2x0,5-6	V845
32	KC32 T103/04 FT2	16	2x0,5-6	V845



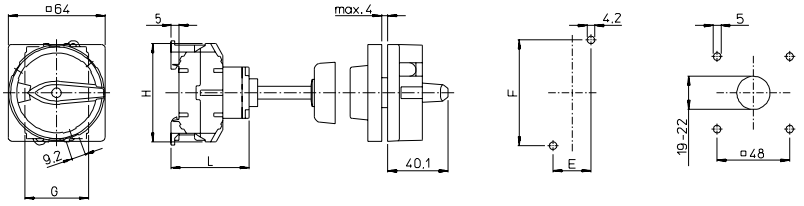
	A	G	H	L
KC16-32	48	42	65	66,9

Base mounting with door clutch, IP 66/67

V840/F

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC 16B T103/65 VE	7,5	2 x 0,5-6	V840/F
20	KC 20B T103/65 VE	10	2 x 0,5-6	V840/F
25	KC 25B T103/65 VE	12	2 x 0,5-6	V840/F
32	KC 32B T103/65 VE	16	2 x 0,5-6	V840/F

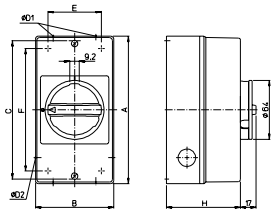
	E	F	G	H	L
KC16B-32B	22	60	42	65	50



In plastic enclosures, IP 66/67

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T103/33 KS51V	7,5	2 x 0,5-6
20	KC 20 T103/33 KS51V	10	2 x 0,5-6
25	KC 25 T103/33 KS51V	12	2 x 0,5-6
32	KC 32 T103/33 KS51V	16	2 x 0,5-6

	A	B	C	D1	D2	E	F	H
KS51V	120	85	110	20	20	-	-	80
KL51V	160	85	150	20	20	-	-	82



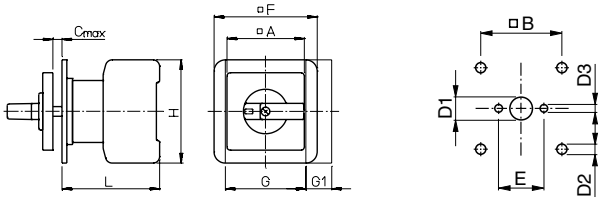
Switch Disconnectors 0-1

Four Hole Panel Mounting

3-pole switches, IP 66

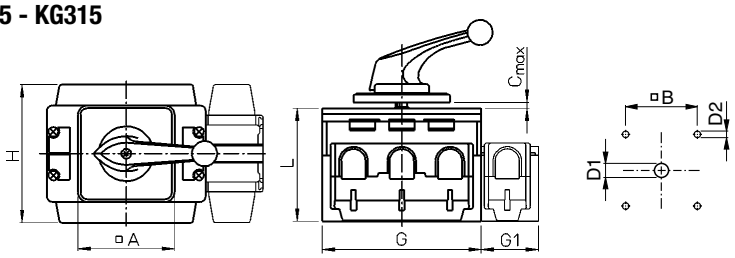
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
20	KG10A T303 E	5.5/120	2,5
20	KG10B T303 E	5.5/120	2,5
25	KG20A T303 E	7.5/180	6
25	KG20B T303 E	7.5/180	6
32	KG32A T303 E	11/220	6
32	KG32B T303 E	11/220	6
40	KG41 T303 E	15/300	16
40	KG41B T303 E	15/300	16
63	KG64 T303 E	22/350	16
63	KG64B T303 E	22/350	16
80	KG80 T303 E	30/560	50
80	KG80C T303 E	30/560	50
100	KG100 T303 E	37/650	50
100	KG100C T303 E	37/650	50
125	KG125 T303 E	45/750	95
160	KG160 T303 E	55/850	95
200	KG210 T303 E	75/1100	185
250	KG250 T303 E	90/1380	185
315	KG315 T303 E	110/1650	185

For KG10A - KG100C



	A	B	C	D1	D2	F	G	G1[1]	H	L
KG10A	48	36	4	11-15	5	48	48	-	50	48,2
KG10B	64	48	4	11-15	5	64	48	-	50	56,7
KG20A, KG32A	48	36	4	10-15	5	48	42	13,5	54	53,8
KG20B, KG32B	64	48	4	10-15	5	64	42	13,5	54	53,8
KG41B, KG64B	64	48	4	10-15	5	64	50	16	64	60,5
KG80, KG100	64	48	4	10-15	5	70	70	22	80	70,6
KG80C, KG100C	88	68	4	13-17	6	88	70	22	80	70,6

For KG125 - KG315



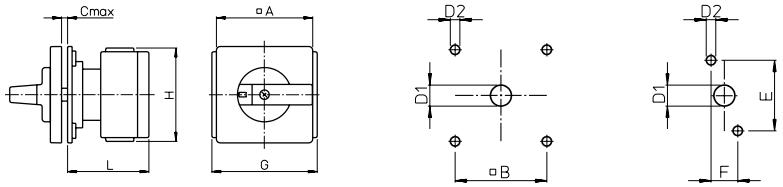
	A	B	C	D1	D2	G	G1[1]	H	L
KG125, KG160	88	68	5,5	13-17	6	112	38	108	96
KG210, KG250, KG315	88	68	5,5	13-17	6	145	52,5	126	103

[1] for ON/OFF switches 4 pole.

Four Hole Panel Mounting

4-pole switches, IP 66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KH16 T304 E	7.5/160	6
16	KH16B T304 E	7.5/160	6
20	KH20 T304 E	10/200	6
20	KH20B T304 E	10/200	6
25	KH25 T304 E	12/250	6
25	KH25B T304 E	12/250	6
32	KH32 T304 E	16/300	10
40	KH40 T304 E	20/380	10
63	KH63 T304 E	30/500	35
80	KH80 T304 E	40/630	35
80	KG80C T304 E	30/560	50
100	KG100 T304 E	37/650	50
100	KG100C T304 E	37/650	50
125	KG125 T304 E	45/750	95
160	KG160 T304 E	55/850	95
200	KG210 T304 E	75/1100	185
250	KG250 T304 E	90/1380	185
315	KG315 T304 E	110/1650	185



	A	B	C	D1	D2[1]	E	F	G	H	L
KH16-KHR25	48	36	4	10-15	5/3,5	30	12,2	60	56	49
KH16B-KHR25B	64	48	4	10-15	5/3,5	30	12,2	60	56	49
KH32, KHR32, KH40, KHR40	64	48	4	10-15	5/3,5	30	12,2	70	62	54
KH63, KHR63, KH80, KHR80	64	48	4	10-15	5/4,5	37	14	86	90	62

[1] Dimensions after the slash are for two hole panel mounting.
Dimensions for KG switches, see previous page.

For ring type terminations replace the switch code KH with KHR when ordering.

Direct Mounting on Printed Circuit Board, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches			
25	KG21A T303 E	7.5/180	6
32	KG33A T303 E	11/220	6

Base Mounting for Track, IP40

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches			
20	KG10A T303/58 VE21	5.5/120	2,5
25	KG20A T303/58 VE2	7.5/180	6
32	KG32A T303/58 VE2	11/220	6
40	KG41 T303/58 VE2	15/300	16
63	KG64 T303/58 VE2	22/350	16
80	KG80 T303/58 VE2	30/560	50
100	KG100 T303/58 VE2	37/650	50

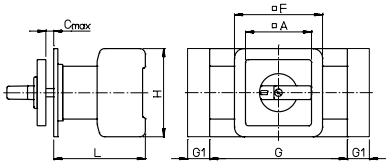
Switch Disconnectors 1-0-2

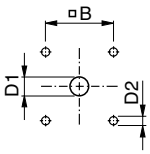
Four Hole Panel Mounting

3-pole Double Throw Switches , IP 66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
25	KG20A T903 E	7.5/180	6
25	KG20B T903 E	7.5/180	6
32	KG32A T903 E	11/220	6
32	KG32B T903 E	11/220	6
40	KG41B T903	15/300	16
63	KG64B T903 E	22/350	16
80	KG80 T903 E	30/560	50
80	KG80C T903 E	30/560	50
100	KG100 T903 E	37/650	50
100	KG100C T903 E	37/650	50
125	KG125 T903 E	45/750	95
160	KG160 T903 E	55/850	95

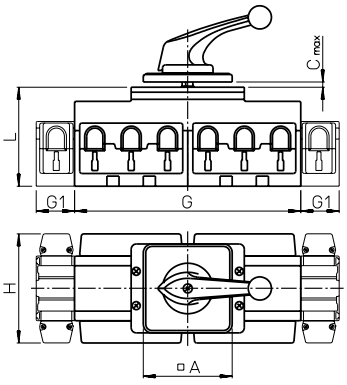
For KG10A - KG100C

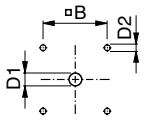




	A	B	C	D1	D2	F	G	H	L
KG10A	48	36	4	11-15	5	48	48	50	57,7
KG10B	64	48	4	11-15	5	64	48	50	66,7
KG20A, KG32A	48	36	4	10-15	5	48	84	54	61,3
KG20B, KG32B	64	48	4	10-15	5	64	84	54	61,3
KG41B, KG64B	64	48	4	10-15	5	64	100	64	66,5
KG80, KG100	64	48	4	10-15	5	70	140	80	81,8
KG80C, KG100C	88	68	4	13-17	6	88	140	80	81,8

For KG125, KG160

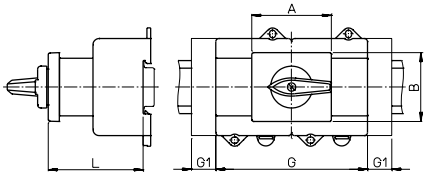




	A	B	C	D1	D2	G	H	L
KG125, KG160	88	68	5,5	13-17	6	224	108	98

For bolt terminals see also page 83.

Base Mounting for Track, IP 40



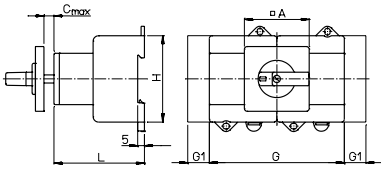
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
25	KG20A T903 VE2	7.5/180	6
32	KG32A T903 VE2	11/220	6
41	KG41B T903 VE2	15/300	16
63	KG64B T903 VE2	22/350	16
80	KG80 T903 VE2	30/560	50
100	KG100 T903 VE2	37/650	50

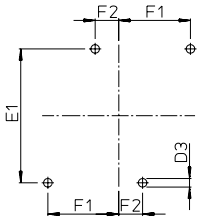
	A	B	G	G¹	L
KG20A, KG32A	43,7	45,4	84	13,5	64
KG41B, KG64B	105,4	45,4	100	16	62,5
KG80, KG100	70	45	140	22	76,2

Base Mounting, IP 40

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
25	KG20B T903/57 VE	7.5/180	6
32	KG32B T903/57 VE	11/220	6
40	KG41B T903/57 VE	15/300	16
63	KG64B T903/57 VE	22/350	16
80	KG80 T903/57 VE	30/560	50
80	KG80C T903/57 VE	30/560	50
100	KG100 T903/57 VE	37/650	50
100	KG100C T903/57 VE	37/650	50
125	KG125 T903/57 VE	45/750	95
160	KG160 T903/57 VE	55/850	95

For KG10A - KG100C

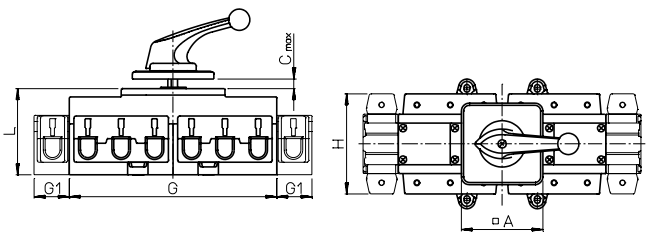


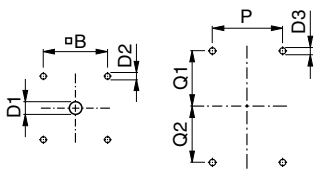


	A	B	C	D1	D2	D3	E1	F1	F2	G	H	L	max length C+L
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	32	10	84	54	57,5	190
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	37,5	12,5	100	64	67	190 (330)
KG80, KG100	64	48	13,5	10-15	5	5,2	90	47,5	22,5	140	80	79,2	380 (450)
KG80C, KG100C	88	68	13,5	10-15	6	5,2	90	47,5	22,5	140	80	79,2	380 (450)

Values in brackets are for the bigger switches

For KG125, KG160





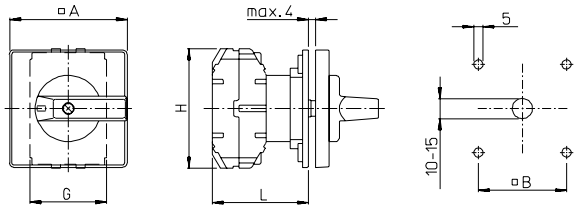
	A	B	C	D1	D2	D3	G	H	L3	P	Q1	Q2	max length C+L
KG125, KG160	88	68	16	13-17	6	6,4	224	108	93	76	59-61	59-61	450

For bolt terminals see also page 83.

Switch Disconnectors with spring clamp terminals 0-1

Four hole panel mounting, IP66

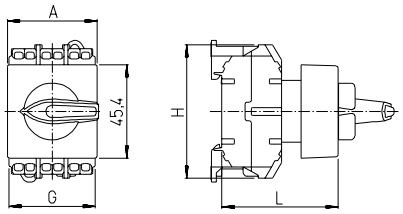
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16B T303 E	7,5	2 x 0,5-6
20	KC 20B T303 E	10	2 x 0,5-6
25	KC 25B T303 E	12	2 x 0,5-6
32	KC 32B T303 E	16	2 x 0,5-6



	A	B	G	H	L
KC16-32	48	36	42	65	52,4

Base mounting for track, 3 -pole, IP40

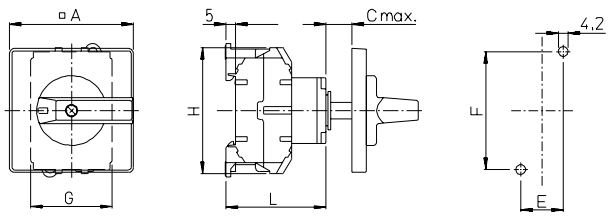
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T303/58 VE2	7,5	2 x 0,5-6
20	KC 20 T303/58 VE2	10	2 x 0,5-6
25	KC 25 T303/58 VE2	12	2 x 0,5-6
32	KC 32 T303/58 VE2	16	2 x 0,5-6



	A	G	H	L
KC16-32	43,7	42	65	56,5

Base mounting, 3 -pole, IP40

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T303 VE	7,5	2 x 0,5-6
20	KC 20 T303 VE	10	2 x 0,5-6
25	KC 25 T303 VE	12	2 x 0,5-6
32	KC 32 T303 VE	16	2 x 0,5-6



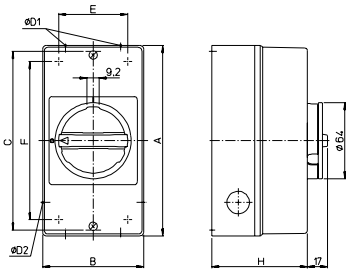
	A	B	C	D	E	F	G	H	L
KC16-32	48	36	12	8-15	22	60	42	65	50

Switch Disconnectors with spring clamp terminals 0-1

In plastic enclosures, IP 66/67

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T303 KS51	7,5	2 x 0,5-6
20	KC 20 T303 KS51	10	2 x 0,5-6
25	KC 25 T303 KS51	12	2 x 0,5-6
32	KC 32 T303 KS51	16	2 x 0,5-6

	A	B	C	D1	D2	E	F	H
KS51...	120	85	110	20	20	-	-	80



Four hole panel mounting, 6-pole, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T306 E	7,5	2 x 0,5-6
16	KC 16B T306 E	7,5	2 x 0,5-6
20	KC 20 T306 E	10	2 x 0,5-6
20	KC 20B T306 E	10	2 x 0,5-6
25	KC 25 T306 E	12	2 x 0,5-6
25	KC 25B T306 E	12	2 x 0,5-6
32	KC 32 T306 E	16	2 x 0,5-6
32	KC 32B T306 E	16	2 x 0,5-6

Bolt Terminals

For Kraus & Naimer main switches it is also possible to use bolt terminal connections. For 3, 4 and 6 pole switches the bolt terminal is possible for switches over 125A.
Technical details are same as for wire connected switches. To order a bolt terminal switch you need to change only the beginning of the product code.

Below is a table where you can find the bolt terminal codes for different standard main switches.

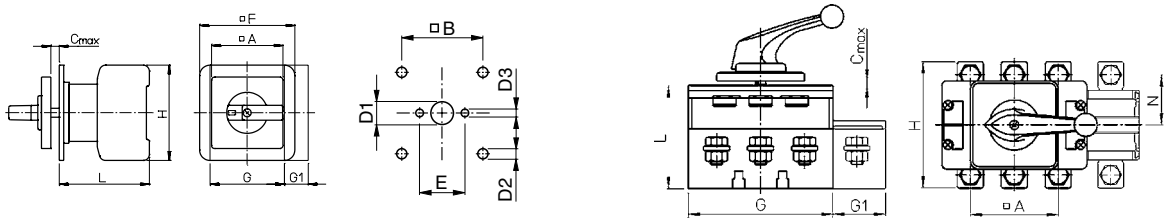
3,4 and 6 pole

Ith	wire terminal	bolt terminal
125	KG125	KG126
160	KG160	KG161
200	KG210	KG211
250	KG250	KG251
315	KG315	KG316

Below are the dimension drawings for the bolt type terminals for switches KG126-KG316.

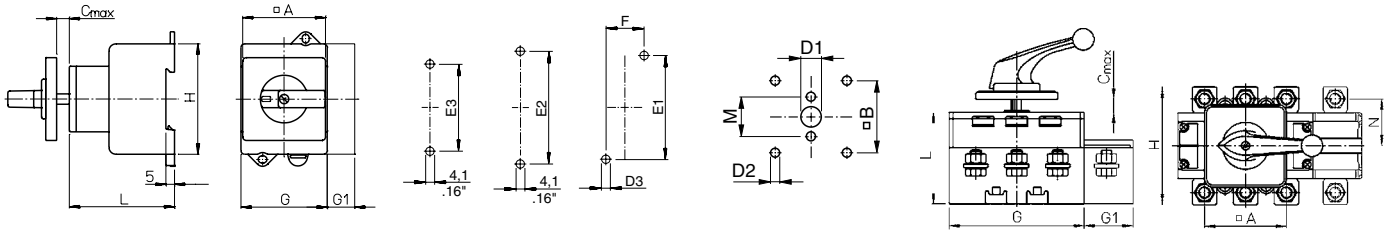
3 and 4 pole switches, four hole panel mounting E

	A	B	C	D1	D2	G	G1(four pole)	H	L	N
KG126, KG161	88	68	5.5	13-17	6	112	38	108	96	45
KG211, KG251, KG316	88	68	5.5	13-17	6	145	52.5	126	103	50



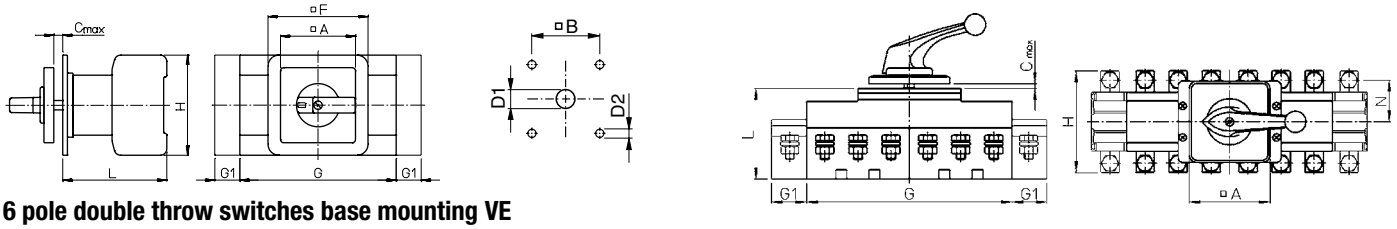
3 and 4 pole swithces base mounting VE

	A	B	C	D1	D2	D3	GG1(four pole	H	N	P	Q1	Q2
KG126, KG161	88	68	16	13-17	6	6.4	112	38	110	45	36	38-40	38-40
KG211, KG251, KG316	88	68	16	13-17	6	6.4	145	52.5	126	50	44	40-42	40-42



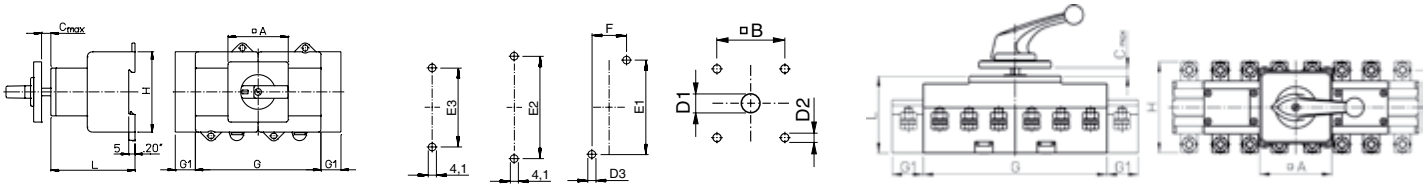
6 pole double throw switches four hole panel mounting E

	A	B	C	D1	D2	G	H	L	N
KG126, KG161	88	68	5.5	13-17	6	224	110	98	45



6 pole double throw switches base mounting VE

	A	B	C	D1	D2	D3	G	H	L	N	P	Q1	Q2
KG126, KG161	88	68	16	13-17	6	6,4	224	110	93	45	76	38-40	38-40



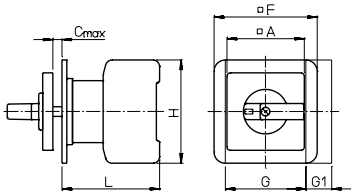
Safety Switches

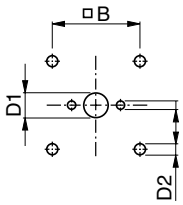
Four Hole Panel Mounting, IP65

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches, IP66			
20	KG10B T203/01 E	5,5/120	2,5
25	KG20B T203/01 E	7,5/180	6
32	KG32B T203/01 E	11/220	6
40	KG41B T203/01 E	15/300	16
63	KG64B T203/01 E	22/350	16
80	KG80 T203/01 E	30/560	50
100	KG100 T203/01 E	37/650	50
125	KG125 T203/01 E	45/750	95
160	KG160 T203/01 E	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches, IP66			
20	KG10B T203/04 E	5,5/120	2,5
25	KG20B T203/04 E	7,5/180	6
32	KG32B T203/04 E	11/220	6
40	KG41B T203/04 E	15/300	16
63	KG64B T203/04 E	22/350	16
80	KG80 T203/04 E	30/560	50
100	KG100 T203/04 E	37/650	50
125	KG125 T203/04 E	45/750	95
160	KG160 T203/04 E	55/850	95
200	KG210 T203/05 E	75/1100	185
250	KG250 T203/05 E	90/1380	185
315	KG315 T203/05 E	110/1650	185

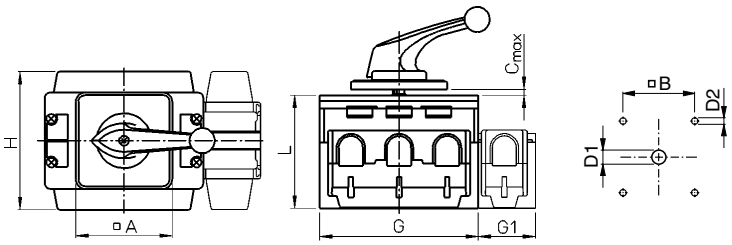
For KG10A -KG100C





	A	B	C	D1	D2	F	G	H	L
KG10B	64	48	4	11-15	5	64	48	50	56,7
KG20B, KG32B	64	48	4	10-15	5	64	42	54	53,8
KG41B, KG64B	64	48	4	10-15	5	64	50	64	60,5
KG80, KG100	64	48	4	10-15	5	70	70	80	70,6

For KG125 - KG315



	A	B	C	D1	D2	G	H	L
KG125, KG160	88	68	5,5	13-17	6	112	108	96
KG210, KG250, KG315	88	68	5,5	13-17	6	145	126	103

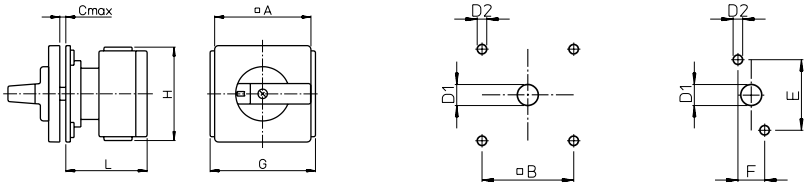
For bolt terminals see also page 83.

Four Hole Panel Mounting, IP65

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
4-poles switches, IP66			
16	KH16B T204/01 E	7,5/160	6
20	KH20B T204/01 E	10/200	6
25	KH25B T204/01 E	12/250	6
32	KH32 T204/01 E	16/300	10
40	KH40 T204/01 E	20/380	10
63	KH63 T204/01 E	30/500	35
80	KH80 T204/01 E	40/630	35
100	KG100 T204/01 E	37/650	50
125	KG125 T204/01 E	45/750	95
160	KG160 T204/01 E	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
4-poles switches, IP66			
80	KH80 T204/04 E	40/630	35
100	KG100 T204/04 E	37/650	50
125	KG125 T204/04 E	45/750	95
160	KG160 T204/04 E	55/850	95
200	KG210 T204/05 E	75/1100	185
250	KG250 T204/05 E	90/1380	185
315	KG315 T204/05 E	110/1650	185

For KH16B - KG100

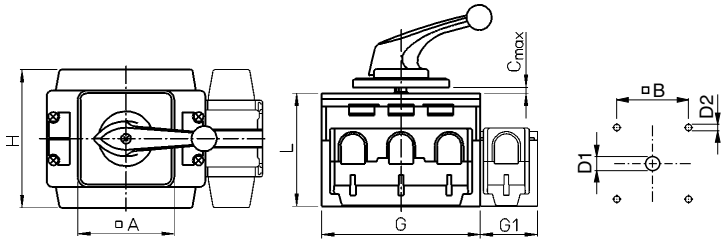


	A	B	C	D1	D2[1]	E	F	G	H	L
KH16-KHR25	48	36	4	10-15	5/3,5	30	12.2	60	56	49
KH16B-KHR25B	64	48	4	10-15	5/3,5	30	12.2	60	56	49
KH32, KHR32, KH40, KHR40	64	48	4	10-15	5/3,5	30	12.2	70	62	54
KH63, KHR63, KH80, KHR80	64	48	4	10-15	5/4,5	37	14	86	90	62
KG80, KG100	64	48	4	10-15	5	-	-	92	80	70,6

[1] Dimensions after the slash are valid for two hole panel mounting.

For ring type terminations replace the switch code KH with KHR when ordering.

For KG125 - KG315



	A	B	C	D1	D2	G	G1	H	L
KG125, KG160	88	68	5,5	13-17	6	112	38	108	96
KG210, KG250, KG315	88	68	5,5	13-17	6	145	52,5	126	103

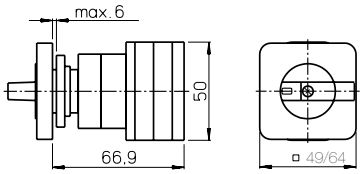
For bolt terminals see also page 83.

Single Hole Mounting 22mm,IP65

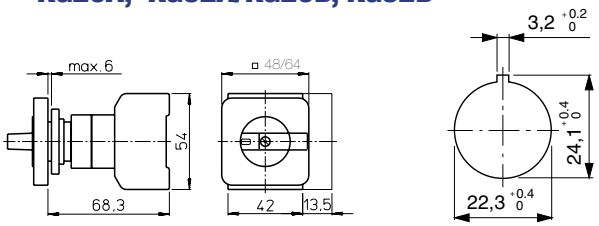
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches,IP66			
20	KG10B T203/01 FT2	5,5/120	2,5
25	KG20B T203/01 FT2	7,5/180	6
32	KG32B T203/01 FT2	11/220	6

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches,IP66			
20	KG10A T203/04 FT2	5,5/120	2,5
25	KG20A T203/04 FT2	7,5/180	6
32	KG32A T203/04 FT2	11/220	6
20	KG10B T203/04 FT2	5,5/120	2,5
25	KG20B T203/04 FT2	7,5/180	6
32	KG32B T203/04 FT2	11/220	6

KG10A/KG10B



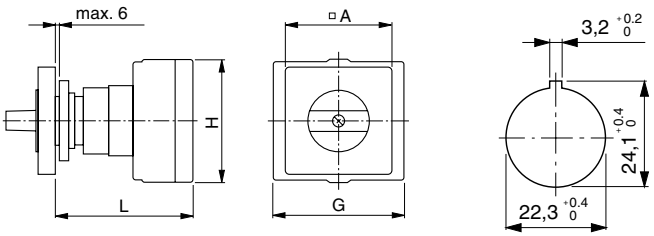
KG20A, KG32A/KG20B, KG32B



Single Hole Mounting 22mm

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
4-pole switches, IP66			
16	KH16 T204/01 FH3	7,5/160	6
20	KH20 T204/01 FH3	10/200	6
25	KH25 T204/01 FH3	12/250	6
32	KH32 T204/01 FH3	16/300	10
40	KH40 T204/01 FH3	20/380	10
63	KH63 T204/01 FH3	30/500	35
80	KH80 T204/01 FH3	40/630	35

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
4-pole switches, IP66			
16	KH16 T204/04 FT2	7,5/160	6
20	KH20 T204/04 FT2	10/200	6
25	KH25 T204/04 FT2	12/250	6
32	KH32A T204/04 FT2	16/300	10
16	KH16 T204/04 FH3	7,5/160	6
20	KH20 T204/04 FH3	10/200	6
25	KH25 T204/04 FH3	12/250	6
32	KH32 T204/04 FH3	16/300	10
40	KH40 T204/04 FH3	20/380	10
63	KH63 T204/04 FH3	30/500	35
80	KH80 T204/04 FH3	40/630	35



	A	G	H	L
KH16-KHR25	48 (64)[1]	60	56	63,5
KH32, KHR32 KH40, KHR40	64 (64)[1]	70	62	68,7
KH63,KHR63	64(64) [1]	86	90	77,1
KH80,KHR80				

[1] dimensions in brackets for FH3 mounting plate.

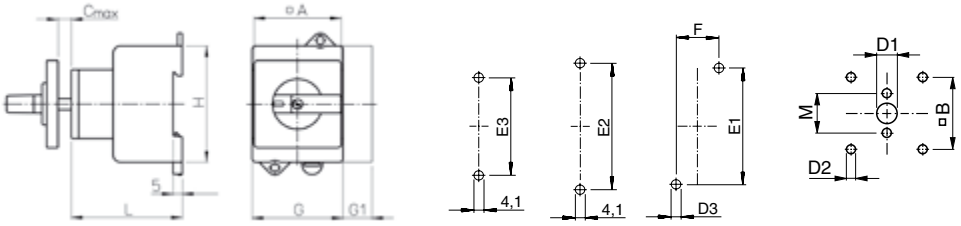
For ring type terminations replace the switch code KH with KHR when ordering.

Base Mounting with Door Clutch

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches, IP66/67			
20	KG10B T203/09 VE	5,5/120	2,5
25	KG20B T203/09 VE	7,5/180	6
32	KG32B T203/09 VE	11/220	6
40	KG41B T203/09 VE	15/300	16
63	KG64B T203/09 VE	22/350	16
80	KG80 T203/09 VE	30/560	50
100	KG100 T203/09 VE	37/650	50
125	KG125 T203/09 VE	45/750	95
160	KG160 T203/09 VE	55/850	95

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
3-pole switches, IP66/67			
200	KG210 T203/13 VE	75/1100	185
250	KG250 T203/13 VE	90/1380	185
315	KG315 T203/13 VE	110/1650	185

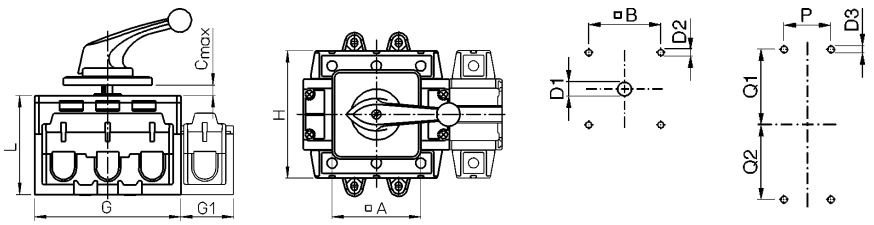
For KG10A - KG100C



	A	B	C	D1	D2	D3	E1[1]	E2[1]	E3[1]	F	G	H	L	Lmax
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	50	56,2	190
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	22	42	54	50	190
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	25	50	64	61	190, 330
KG80, KG100	64	48	13,5	10-15	5	5,2	90	-	-	25	70	80	68	450

[1] Switches KG10A and KG10B allow use of E1, E2 or E3

For KG125 - KG315



	A	B	C	D1	D2	D3	G	H	L	P	Q1	Q2	Lmax
KG125, KG160	88	68	16	13-17	6	6,4	112	108	91	36	59-61	59-61	450
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	126	98	44	70-72	70-72	550

For bolt terminals see also page 83.

Base Mounting with Door Clutch

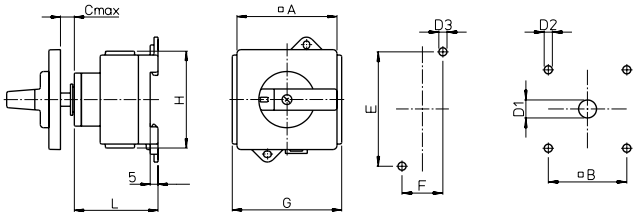
4-pole switches, IP66/67

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KH16B T204/09 VE	7,5/160	6
20	KH20B T204/09 VE	10/200	6
25	KH25B T204/09 VE	12/250	6
32	KH32 T204/09 VE	16/300	10
40	KH40 T204/09 VE	20/380	10
63	KH63 T204/09 VE	30/500	35
80	KH80 T204/09 VE	40/630	35
100	KG100 T204/09 VE	37/650	50
125	KG125 T204/09 VE	45/750	95
160	KG160 T204/09 VE	55/850	95

4-pole switches, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
200	KG210 T204/13 VE	75/1100	185
250	KG250 T204/13 VE	90/1380	185
315	KG315 T204/13 VE	110/1650	185

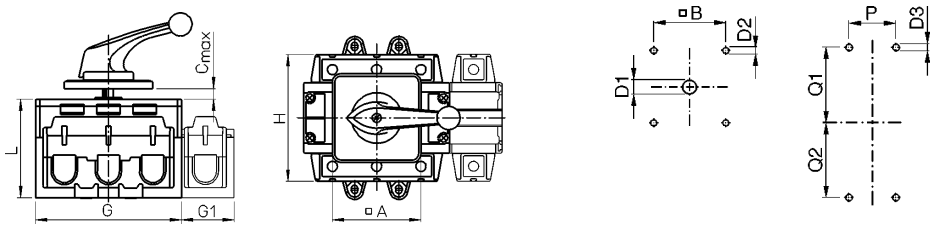
For KH16B - KG100



	A	B	C	D1	D2	D3	E	F	G	H	L	Lmax
KH16B-KHR25B	64	48	13,5	19-22	5	4,2	60	22	60	56	47	190
KH32, KHR32, KH40, KHR40	64	48	25,5	19-22	5	4,1	70	25	70	62	53,5	190
KH63, KHR63, KH80, KHR80	64	48	25,5	19-22	5	4,1	90	25	86	90	59,5	330, 380
KG100	64	48	13,5	10-15	5	5,2	90	25	70	80	68	450

For ring type terminations replace the switch code KH with KHR when ordering.

For KG125 - KG315



	A	B	C	D1	D2	D3	G	H	L	P	Q1	Q2	Lmax
KG125, KG160	88	68	16	13-17	6	6,4	112	108	91	36	59-61	59-61	450
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	126	98	44	70-72	70-72	550

For bolt terminals see also page 83.

Switches in Plastic Enclosures

V840/B

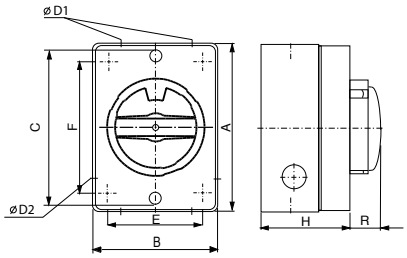
V840/F

V845

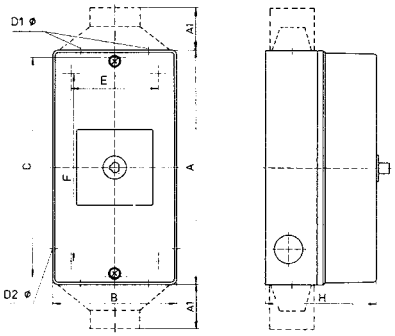
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
3-pole switches, IP66/67				
20	KG10 T203/33 KS51V	5,5/120	2,5	V840/B
25	KG20 T203/33 KL51V	7,5/180	6	V840/B
32	KG32 T203/33 KL51V	11/220	6	V840/B
40	KG41 T203/33 KL11V	15/300	16	V840/B
63	KG64 T203/33 KL11V	22/350	16	V840/B
80	KG80 T203/33 KL71V	30/560	50	V840/B
100	KG100 T203/33 KL71V	37/650	50	V840/B
3-pole switches, IP66/67				
125	KG125 T203/38 STM	45/750	95	V840/F
160	KG160 T203/38 STM	55/850	95	V840/F
250	KG250 T203/39 STM	90/1380	185	V845
315	KG315 T203/39 STM	110/1650	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
3-pole +2 cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
20	KG10 T203/40 KS51V	5,5/120	2,5	V840/B
25	KG20 T203/40 KL51V	7,5/180	6	V840/B
32	KG32 T203/40 KL51V	11/220	6	V840/B
40	KG41 T203/40 KL11V	15/300	16	V840/B
63	KG64 T203/40 KL11V	22/350	16	V840/B
80	KG80 T203/40 KL71V	30/560	50	V840/B
100	KG100 T203/40 KL71V	37/650	50	V840/B
3-pole +2 cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
125	KG125 T203/45 STM	45/750	95	V840/F
160	KG160 T203/45 STM	55/850	95	V840/F
250	KG250 T203/46 STM	90/1380	185	V845
315	KG315 T203/46 STM	110/1650	185	V845

For KG10 - KG100



For KG125 - KG315



	A	A1	B	C	D1 ISO[1] /mm	D2 ISO[1] /mm	E	F	H	R
KG10... KS51V	120		85	110	2x20	20			90	17
KG20... KL51V	160		85	150	2x20	20			80	17
KG32... KL51V	160		85	150	2x20	20			80	17
KG41... KL11V	190		100	178	2x25	25			91	17
KG64... KL11V	190		100	178	2x25	25			91	17
KG80...KL71V	250		145		2x40	25	124	229	107	17
KG100...KL71V	250		145		2x40	25	124	229	107	17
KG125...STM	400		280		2x63 1x20		254	354	180	
KG160...STM	400		280		2x63 1x20		254	354	180	
KG250...STM	560	110	280		1x28-60 2x20		254	534	180	
KG315 ...STM	560	110	280		1x28-60 2x20		254	534	180	

[1] Enclosures with conduit entries for PG thread are available.

Switches in Plastic Enclosures

V840/B

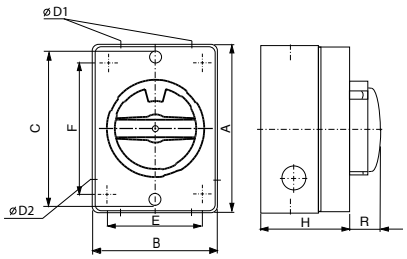
V840/F

V845

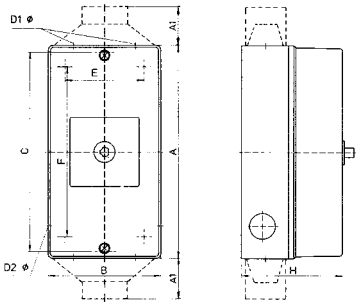
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
4-pole switches, IP66/67				
16	KH16 T204/33 KS51V	7,5/160	6	V840/B
20	KH20 T204/33 KL11V	10/200	6	V840/B
25	KH25 T204/33 KL11V	12/250	6	V840/B
32	KH32 T204/33 KL11V	16/300	10	V840/B
40	KH40 T204/33 VKL11V	20/380	10	V840/B
63	KH63 T204/33 KL71V	30/500	35	V840/B
80	KH80 T204/33 KL71V	40/630	35	V840/B
100	KG100 T204/33 KL71V	37/650	50	V840/B
4-pole switches, IP65				
125	KG125 T204/38 STM	45/750	95	V840/F
160	KG160 T204/38 STM	55/850	95	V840/F
250	KG250 T204/47 STM	90/1380	185	V845
315	KG315 T204/47 STM	110/1650	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
4-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
16	KH16 T204/40 KS51V	7,5/160	6	V840/B
20	KH20 T204/40 KL11V	10/200	6	V840/B
25	KH25 T204/40 KL11V	12/250	6	V840/B
32	KH32 T204/40 KL11V	16/300	10	V840/B
40	KH40 T204/40 VKL11V	20/380	10	V840/B
63	KH63 T204/40 KL71V	30/500	35	V840/B
80	KH80 T204/40 KL71V	40/630	35	V840/B
100	KG100 T204/40 KL71V	37/650	50	V840/B
4-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP65				
125	KG125 T204/45 STM	45/750	95	V840/F
160	KG160 T204/45 STM	55/850	95	V840/F
250	KG250 T204/48 STM	90/1380	185	V845
315	KG315 T204/48 STM	110/1650	185	V845

For KH16 - KG100



For KG125 - KG315



	A	B	C	D1	D2	E	F	H	R
KH16 ... KS51V	120	85	110	2x20	20	-		80	17
KH20 ... KL11V	120	85	110	2x25	20	-		80	17
KH25 ... KL11V	160	85	150	2x25	20	-		80	17
KH32 ... KL11V	190	100	178	2x25	25	-		91	17
KH40 ... VKL11V	190	100	178	2x25	25	-		91	17
KH63 ... KL71V	250	145	-	2x40	25	124	229	107	17
KH80 ... KL71V	250	145	-	2x40	25	124	229	107	17
KG100 ... KL71V	250	145	-	2x40	25	124	229	107	17

	A	A1	B	D1 ISO[1] /mm	E	F	H
KG125...STM	400		280	2x63 1x20	254	354	180
KG160...STM	400		280	2x63 1x21	254	354	180
KG250...STM	560	110	380	1x28-60 2x20	354	534	180
KG315 ...STM	560	110	380	1x28-60 2x20	354	534	180

[1] Enclosures with conduit entries for PG thread are available.

Switches in Plastic Enclosures

V840/B

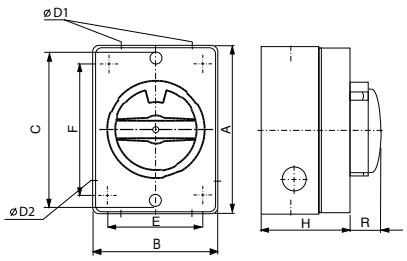
V840/F

V845

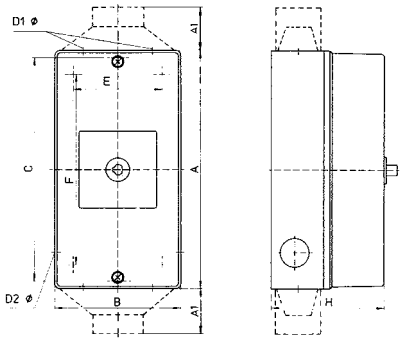
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
6-pole switches, IP66/67				
20	KG10 T206/33 KS51V	5,5/120	2,5	V840/B
25	KG20B T206/33 KL11V	7,5/180	6	V840/B
32	KG32B T206/33 KL11V	11/220	6	V840/B
40	KG41BT206/33 KL71V	15/300	16	V840/B
63	KG64BT206/33 KL71V	22/350	16	V840/B
6-pole switches, IP66/67				
80	KG80C T206/34 STM	30/560	50	V840/B
100	KG100C T206/34 STM	37/650	50	V840/B
125	KG125 T206/86 STM	45/750	95	V840/F
160	KG160 T206/86 STM	55/850	95	V840/F
275	C316T206/47STM	132/2000	185	V845

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
6-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
20	KG10 T206/40 KS51V	5,5/120	2,5	V840/B
25	KG20B T206/40 KL11V	7,5/180	6	V840/B
32	KG32B T206/40 KL11V	11/220	6	V840/B
40	KG41BT206/40 KL71V	15/300	16	V840/B
63	KG64BT206/40 KL71V	22/350	16	V840/B
80	KG80C T206/41 STM	30/560	50	V840/B
100	KG100C T206/41STM	37/650	50	V840/B
6-pole+2-cam or rack-operated auxiliary contacts (1NO, 1NC), IP66/67				
125	KG125 T206/90 STM	45/750	95	V840/F
160	KG160 T206/90 STM	55/850	95	V840/F
275	C316T206/48STM	132/2000	185	V845

For KG10 - KG64



For KG80 - C316

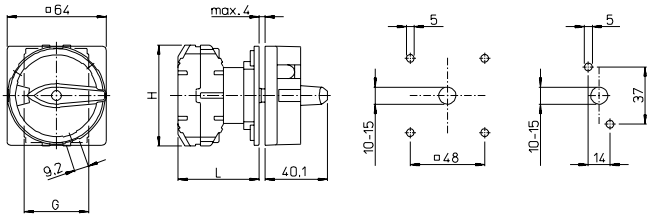


	A	A1	B	C	D1 ISO[1] /mm	D2 ISO[1] /mm	E	F	H	R
KG10...KS51V	120		85	110	2x20	20			90	
KG20B...KL11V	190		100	178	2x25	25			93	17
KG32B...KL11V	190		100	178	2x25	25			93	17
KG41B...KL71V	250		145		2x40	25	124	229	107	17
KG64B... KL71V	250		145		2x40	25	124	229	107	17
KG80C...STM	300		200		2x40 1x20		172	272	172	
KG100C...STM	300		200		2x50 1x20		172	272	172	
KG125 ... STM	400		300		2x63 1x20		272	372	172	
KG160 ... STM	400		300		2x63 1x20		272	372	172	
C316...STM	560	110	380		2x28-60 2x20		354	534	230	

[1] Enclosures with conduit entries for PG thread are also available.

Safety switches with spring clamp terminals, 3-Pole

V840/F

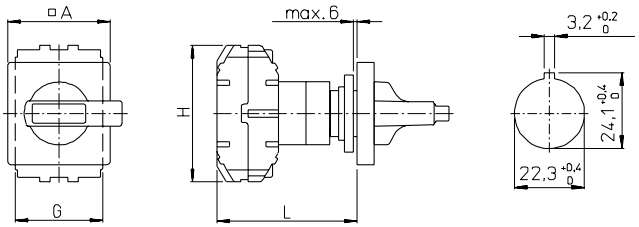


Four hole panel mounting, IP66

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC 16B T203/01 E	7,5	2 x 0,5-6	V840/F
20	KC 20B T203/01 E	10	2 x 0,5-6	V840/F
25	KC 25B T203/01 E	12	2 x 0,5-6	V840/F
32	KC 32B T203/01 E	16	2 x 0,5-6	V840/F

	G	H	L
KG16B-32B	42	65	52,4

V845



Single hole mounting 22mm, IP66

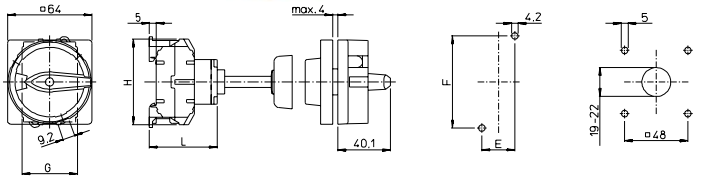
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC16 T203/04 FT2	7,5	2x0,5-6	V845
20	KC20 T203/04 FT2	10	2x0,5-6	V845
25	KC25 T203/04 FT2	12	2x0,5-6	V845
32	KC32 T203/04 FT2	16	2x0,5-6	V845

	A	G	H	L
KC16-32	48	42	65	66,9

Base mounting with door clutch, IP 66/67

V840/F

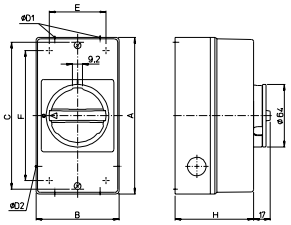
Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW/A)	Max wire gage mm²	Handle
16	KC 16B T203/65 VE	7,5	2 x 0,5-6	V840/F
20	KC 20B T203/65 VE	10	2 x 0,5-6	V840/F
25	KC 25B T203/65 VE	12	2 x 0,5-6	V840/F
32	KC 32B T203/65 VE	16	2 x 0,5-6	V840/F



	E	F	G	H	L
KC16B-32B	22	60	42	65	50

In plastic enclosures, IP 66/67

Thermal Current Ith (A)	Switch code	Ratings AC-23A Breaking capacity (kW)	Max wire gage mm²
16	KC 16 T103/33 KS51V	7,5	2 x 0,5-6
20	KC 20 T103/33 KS51V	10	2 x 0,5-6
25	KC 25 T103/33 KS51V	12	2 x 0,5-6
32	KC 32 T103/33 KS51V	16	2 x 0,5-6

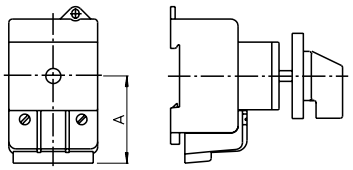


	A	B	C	D1	D2	E	F	H
KS51V	120	85	110	20	20	-	-	90
KL51V	160	85	150	20	20	-	-	82

Protective Covers

Protection class IP20

M160

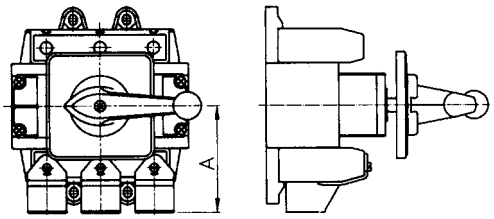


Type	A
KG20, KG20A, KG20B, KG32, KG32A, KG32B	47
KG41, KG41B, KG64, KG64B	49
KG80, KG80C, KG100, KG100C	66

M160/3 For 3 main contacts with box or bolt terminals

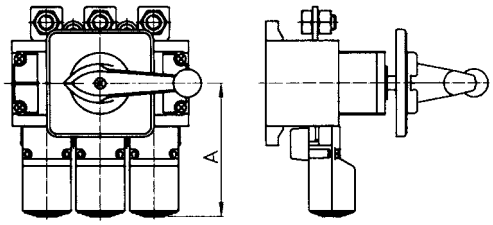
M160/4 For 4 main contacts with box or bolt terminals

With box terminal



Type	A
KG125-KG162	76,2
KG210-KG317	88

With bolt terminal



Type	A
KG125-KG162	95
KG210-KG317	109,5

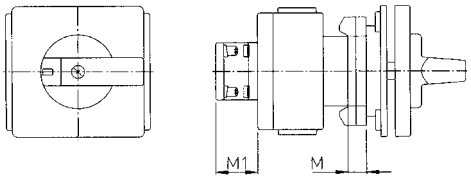
Cam and Rack Operated Auxiliary Contacts

M510A

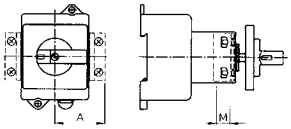
Cam-operated auxiliary contacts for KG20-KG100C , KH16-KHR80
Up to 4 cam-operated auxiliary contacts can be added to all switches.

Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or an H-bridge design (available for KG41-KG100C panel mounting; KG80-KG100C base mounting; KH and KHR both mountings) with 'cross wire' contacts for low voltages and currents. The contact systems can be delivered as a silver version or even as a gold version for use in aggressive environments.
IEC I_{th} = 10A and AC-15 = 2,5A (240V).

E



VE



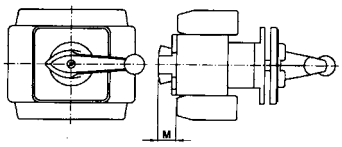
Type	Mounting	A	M	
			1 or 2 contacts	3 or 4 contacts
KG20,KG32	E/VE		9	25,8
KG41, KG64	E/VE		10	30
KG80, KG100	E		10	30
	VE	47,2	10	30
KH16-KHR25B	E/VE		9	25,8
			M1	
KH32, KHR32, KH40, KHR40	E		20,5	32,5
KH63, KHR63, KH80, KHR80	E		18,5	30,5

M510B

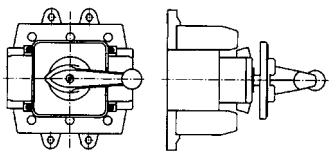
Rack-operated auxiliary contacts for KG125-KG317

Switch types KG125-KG162 can be supplied with up to 4, KG210-KG317 with up to 6 auxiliary contacts.
Contact systems:
Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or an H-bridge design with 'cross wire' contacts for low voltages and currents. The contact systems can be delivered as a silver version or even as a gold version for use in aggressive environments.

E



VE



Type	Mounting	M
KG125-KG317	E	21

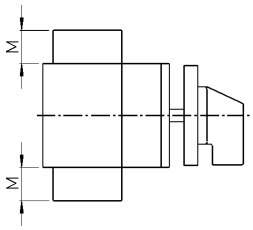
Lateral Mounted Auxiliary / Ground / Neutral/ Additional Main Contacts

Type	Auxiliary contacts	Ground terminal	Neutral terminal	Additional main contacts	Technical data Ith (IEC)	(240V) AC-15
	1 NO 1 NC					
KG20 –KG32B	K0 H010/A11	K0 H052/A	K0 H053/A		10	2.5
KG41 - KG64B	K1 H010/A11	K1 H052/B	K1 H053/B		16	6
KG80 – KG100C	K2 H010/A11	K2 H052/C	K2 H053/C		16	6
	2 NO 1 NC					
KG 125	K3 H010/A21	K3 H052/H	K3 H053/H	K3 H050/P	16	6
KG126	K3 H010/A21	K3 H052/J	K3 H053/J	K3 H050/Q	16	6
KG160	K3 H010/A21	K3 H052/H	K3 H053/H	K3 H050/S	16	6
KG161	K3 H010/A21	K3 H052/J	K3 H053/J	K3 H050/T	16	6
KG210, KG250	K3 H010/A21	K3 H052/D	K3 H053/D	K3 H050/G	16	6
KG211, KG251	K3 H010/A21	K3 H052/E	K3 H053/E	K3 H050/H	16	6
KG315	K3 H010/A21	K3 H052/D	K3 H053/D	K3 H050/K	16	6
KG316	K3 H010/A21	K3 H052/L	K3 H053/L	K3 H050/L	16	6

Type	Auxiliary contacts Standard contacts	Ground terminal Overlapping contacts				
KH16-KHR25B	H010/A11	H010/B11	H052		10	2,5
KH32-KHR80	H010/11AH010/11B	H052			10	2,5

More technical details on page 106.

Type	M Auxiliary contacts	Ground, neutral add. main contacts
KG20, KG20A, KG20B, KG32, KG32A, KG32B	10	13,5
KG41, KG41B, KG64, KG64B	11	16
KG80, KG80C, KG100, KG100C	11	22
KG125, KG126, KG160, KG161	14	38
KG210, KG211,KG250, KG251 KG315, KG316	14	52,5
KH16-KHR25B	10	13,5
KH32, KHR32, KH40, KHR40	10	13,5
KH63, KHR63, KH80, KHR80	10	20

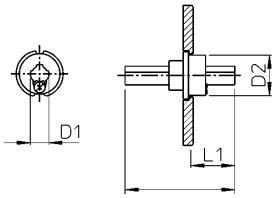


Shaft Extensions with Asymmetric Profile

M004D

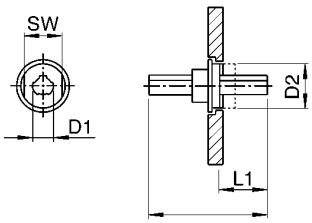
With set screw shaft
unlimited adjustable length

L1=Free shaft length



M004

With shear ring shaft unlimited adjustable length



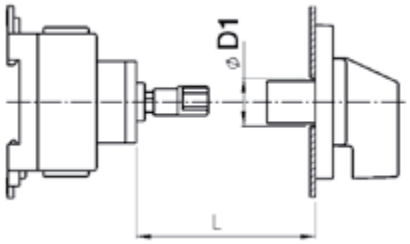
KG, KH and KHR switches in mountings E and VE

Type	Mounting	L1	L1	L1	L1	D1	D2	SW
KG10A	E,VE	21-41	41-61	61-81	81-101	6	13,8	12
KG20A, KG32A	E	34,5-38	54,5-58	74,5-78	94,5-98	6	13,8	12
	VE	41,5-45	61,5-65	81,5-85	101,5-105	6	13,8	12
KG41B, KG64B	E	43-49	63-69	83-89	103-109	8,5	18,5	16
	VE	46-52	66-72	86-92	106-112	8,5	18,5	16
KG80, KG80C	E	39-45	59-65	79-85	99-105	8,5	18,5	16
KG100,KG100C	VE	44-50	64-70	84-90	104-110	8,5	18,5	16
KG125,KG126 KG160, KG161	E	69-83	99-113	129-143	159-173	11,2	24,6	22
	VE	74-88	104-118	134-148	164-178	11,2	24,6	22
KG210 KG211, KG250, KG251 KG315, KG316	E	68-82	98-112	128-142	158-172	11,2	24,6	22
	VE	73-87	103-117	133-147	163-177	11,2	24,6	22
KH16-KHR25	E	11-38	31-58	51-78	71-98	6	13,8	12
	VE	18-45	38-65	58-85	78-105	6	13,8	12
KH32, KHR32 KH40, KHR40 KH63, KHR63 KH80, KHR80	E	17-49	37-69	57-89	77-109	8,5	18,5	16
	VE	22-55	42-75	62-95	82-115	8,5	18,5	16

Simplified Door Clutches

The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and escutcheon plate are mounted on the cover.

With shaft extension



M290/A3

Front protection IP 40
Available for switch types KG10, KG20A, KG32A, KG41B-KG100 and KH16-KHR80

M290/A3.EF

Front protection IP65
Available for switch types KG10A, KG20A , KG32A and from KH32

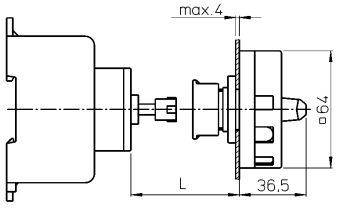
S= Standard length for switches of mounting VE

Type	L	L	L	L	D1
KG10A	37-87	57-77	77-97	97-117	18
KG20A, KG32A	55-68	75-88	95-108	115-128	18
KG41B, KG64B	60-70	80-90	100-110	120-130	18
KG80, KG100	56-68	76-88	96-108	116-128	18
KH16-KHR25	34,5-61,5	54,5-81,5	74,5-101,5	94,5-121,5	18
KH32, KHR32, KH40, KHR40 KH63, KHR63, KH80, KHR80	28-55	55-75	75-95	95-115	18

D[1] For KG10A with M290/A3.EF 22 mm

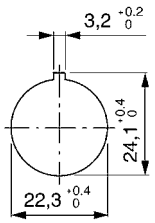
V840F

for 4 padlocks



V840G

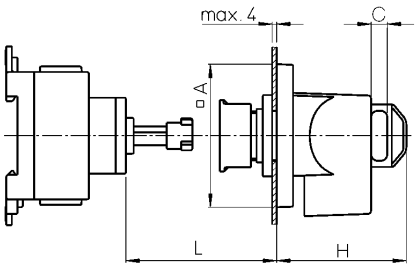
for 3 padlocks
The cover disc is available in black, yellow and electro-gray.
The handle may be supplied in red, black and electro-gray.

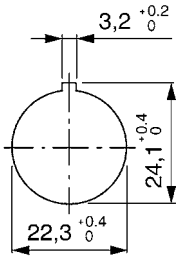


Type	L min	L max
KG10B	30	115
KG20B, KG32B	27,5	113
KG41B, KG64B	39,5	124
KG80, KG100	27,5	122
KH16B-KHR25B	27,5	113
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	28	124

V845

Operation of the locking bar from the front.
Available in black, red and electro-gray.





Type	A	C	H	Lmin	Lmax
KG10A	48	8,1	52	30	115
KG10B	64	8,1	58	26	114
KG20A, KG32A	48	8,1	52	50,5	119
KG20B, KG32B	64	8,1	58	27,5	113
KG41B, KG64B	64	8,1	58	39,5	124
KG80, KG100	64	8,1	58	27,5	122
KH16-KHR25	48	7,2	52	29,5	119
KH16B-KHR25B	64	8,1	58	27,5	113
KH32, KHR32, KH40, KHR40 KH63, KHR63, KH80, KHR80	64	8,1	58	28	124

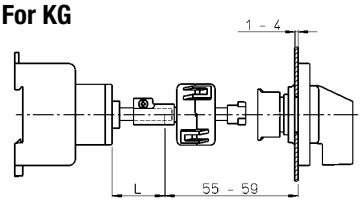
Centering Aid for Door Clutch

M600

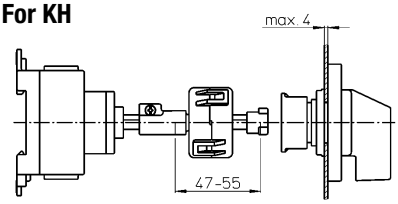
Centering aid for simplified door clutches with single hole mounting and shaft extension
Misalignment between the shaft and the mounting are compensated in all 4 directions.

Available for: All cam-switches of size S1; KG10B, KG20B, KG32B, KG41B-KG100, KH32-KHR40

For KG



For KH



Right Angle Drive

M330

The new right angle drive M330 is an elegant solution for special mounting situations for main switches KG125 - KG317. Furthermore, this device offers the possibility to mount an additional cam switch which serves a wider range of applications.

Standard Door Clutches

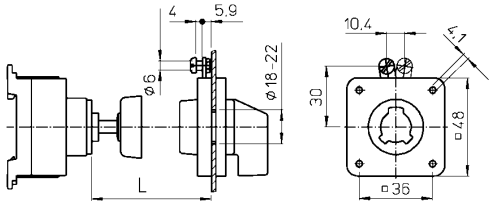
With shaft extension, shaft with unlimited adjustable length.

Shaft fixation with set screw

M280E
Front protection IP 40

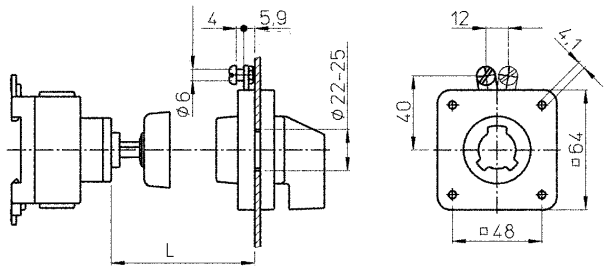
M280E/.EF
Front protection IP 66/67

For KG10A, KG20A, KG32A, KH16-KHR25



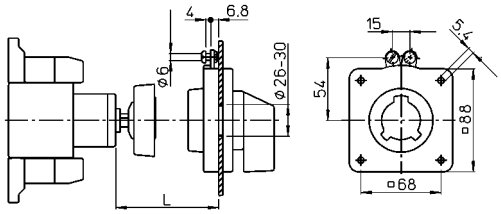
Type	L	L	L	L
KG10A	36-55	56-75	76-95	96-116
KG20A, KG32A	58,5-66	78,5-86	98,5-106	118,5-126
KH16-KHR25	35-60	60-80	80-100	100-120

For KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KH16B-KHR80



Type	L	L	L	L
KG10B	32-57	58-77	78-97	98-118
KG20B, KG32B	57,5-65	77,5-85	97,5-105	117,5-125
KG41B, KG64B	62-72	82-92	102-112	122-132
KG80, KG100	60-70	80-90	100-110	120-130
KH16B-KHR25B	37-64	64-84	84-104	104-124
KH32, KHR32, KH40 KHR40, KH63, KHR63 KH80, KHR80	32-57	57-77	77-97	97-117

For KG125-KG316

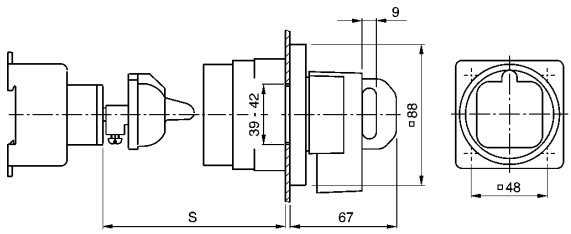


Type	L	L	L	L
KG125-KG316	93-119	123-139	153-169	183-199

M700 is a padlock door clutch and a mechanical interlocking safety device. With the help of this device the electrical panel may be opened only when the switch is in OFF position. Note: Knowledgeable personnel using a simple tool are able to defeat the interlock. The M700's flexibility allows for successful installation with as much as ± 5 mm misalignment between shaft and door.

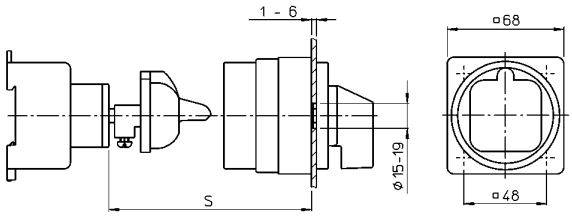
M700/

Handle lockable with padlocks Protection IP66



M701

Standard handle and standard escutcheon plate protection IP65

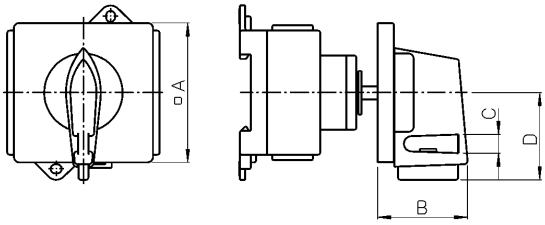


Type	S min
KG10B	80
KG20B-KG316, KG16B-KHR80	61,5

Padlock Device

V840A

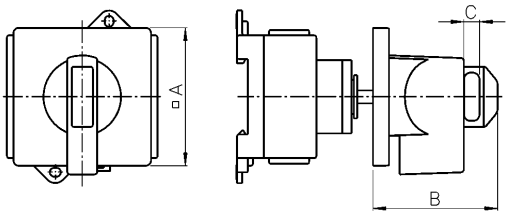
The padlock device is an integral part of the switch handle and can hold 2 padlocks.
The lock bar is accessible from the bottom. The handle may be supplied in black, red and electro-gray.



Type	A	B	C	D
KG10A, KG20A, KG32A, KG41, KG64	48	32,9	5	31,5
KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100	64	42	7	40
KH16-KHR25	48	32,9	5	31,5
KH16B-KHR25B	64	42	7	40
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	64	42	7	40

V845

For 4 padlocks
The lock bar is accessible from the front and may be supplied in black, red and electro-gray.

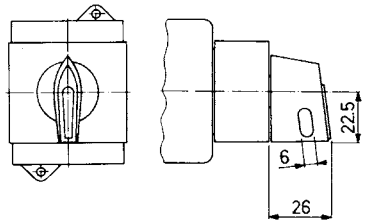


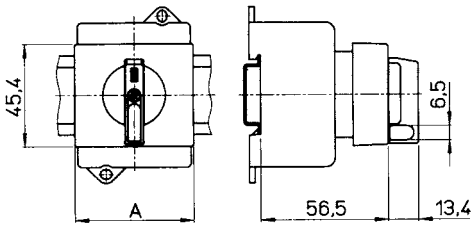
Type	A	B	C
KG10A, KG20A, KG32A, KG41, KG64	48	51	7,2
KG10B, KG20B, KG32B, KG41B KG64B, KG80, KG100	64	58	7,2
KG80C, KG100C, KG125-KG316	88	73	9
KH16-KHR25	48	51	7,2
KH16B-KHR25B	64	58	7,2
KH32, KHR32, KH40, KHR40 KH63, KHR63, KH80, KHR80	64	58	7,2

V840B
For mounting VE2 and VE21 with lock bar accessible from the front. Available in red and electro-gray.

For KG10A, KG20A, KG32A, KG41, KG64, KG80, KG100

V840H/...E
For distribution box with a depth of 70mm.





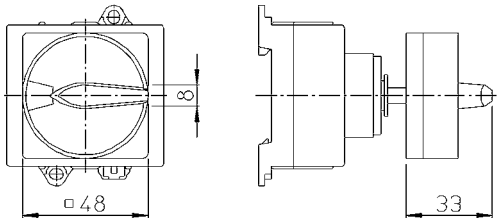
Type	A
KG20A, KG32A	43,7
KG41, KG64	52,4

Padlock device with integrated F- or B-handle

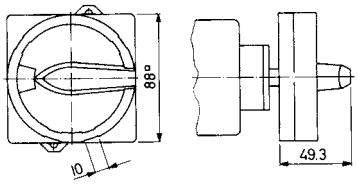
The cover disc is available in black, yellow and electro-gray. The handle may be supplied in black, red and electro-gray.

V840D with F-handle

For KG10A, KG20A, KG32A, KG41, KG64, KH16-KHR25 (2 padlocks)

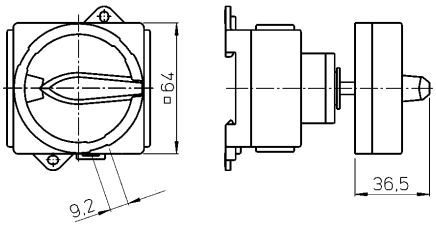


For KG80C, KG100, KG125-KG162 (3 padlocks)



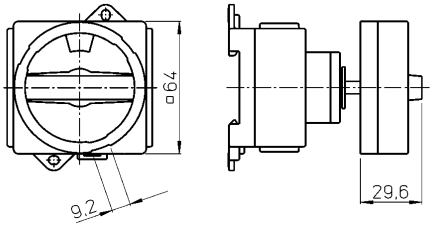
V840G
For 3 padlocks with F-handle

For KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KH16B-KHR80



V840F/F
For 4 padlocks with F-handle

For KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KH16B-KHR80



V840G/B
for 3 padlocks with B-handle

V840F/B
For 4 padlocks With B-handle

Technical Data KG Switches

				KG10 KG10A KG10B	KG20 KG20A KG20B	KG32 KG32A KG32B	KG41 KG41B	KG64 KG64B	KG80 KG80C	KG100 KG100C	KG125	KG160	KG210	KG250	KG315
Rated Insulation Voltage U_i	IEC/VDE[1]		V	690	690	690	690	690	690	690	1000[2]	1000[2]	1000[2]	1000[2]	1000[2]
	UL/Canada		V	300	600	600	600	600	600	600	600	600	600	600	600
	CEE/NEMKO		V	400	500	500	500	500	500	500	-	-	-	-	-
Rated Impulse Withstand Voltage U_{imp}[1]			kV	4	6	6	6	6	6	6	8	8	8	8	8
Rated Thermal Current	IEC/VDE	I_u open = I_{th}	A	20	25	32	40	63	80	100	125	160	200	250	315
		I_{the} enclosed	A	20	25	32	40	63	80	100	125	160	200	250	315
	UL/CanadaON/OFF function		A	20	25	30	40	60	80[3]	100[3]	150[3]	200[3]	200[3]	250[3]	300[3]
	UL/CanadaDouble-throw funct.		A	20	25	30	40	60	80[3]	100[3]	125[3]	160[3]	-	-	-
Rated Operational Current I_e															
AC-21A Switching of resistive loads, including moderate overloads	IEC/VDE		A	20	25	32	40	63	80	100	125	160	200	250	315
AC-22A Switching of combined resistive or low inductive loads, including moderate overloads	IEC/VDE	220 V-500 V	A	20	20	32	40	63	80	100	125	160	200	200	250
		660 V-690 V	A	16	20	32	40	55	65	85	100	100	125	125	140
Ampere-Rating ON/OFF function	UL/Canada[4]	600 V	A	20	25	30	40	60	80[3]	100[3]	150[3]	200[3]	200[3]	250[3]	300[3]
Double-throw function Resistive or low inductive loads	UL/Canada[4]	600 V	A	20	25	30	40	60	80[3]	100[3]	125[3]	160[3]	-	-	-
Rated Utilization Category	IEC/VDE														
AC-3 Direct-on-line starting	3 phase 3 pole	220 V-240 V	kW	2,2	4	5,5	7,5	11	15	18,5	22	30	37	37	45
		380 V-440 V	kW	3,7	5,5	7,5	11	18,5	22	30	37	45	55	55	75
		500 V	kW	3,7	5,5	7,5	15	22	30	37	45	55	75	75	90
		690 V	kW	3,7	5,5	7,5	11	15	18,5	22	30	37	45	45	45
AC-23A Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V	kW	3	5,5	5,5	7,5	11	18,5	22	30	30	37	37	55
		380 V-440 V	kW	5,5	7,5	11	15	22	30	37	45	55	75	90	110
		500 V	kW	5,5	7,5	11	18,5	30	37	45	55	75	90	110	132
		690 V	kW	5,5	7,5	11	15	18,5	22	30	37	37	45	45	45
DOL-Rating Standard motor load (similar to AC-3)	UL/Canada4 3 phase 3 pole	120 V	HP	1	1,5	2	3	5	7,5	10	15	20	25	30	40
		240 V	HP	2	3	5	7,5	10	20	25	30	40	50	60	75
		480 V	HP	-	5	10	15	20	40	50	60	60	75	75	100
		600 V	HP	-	5	10	15	20	50	50	60	60	75	75	100
Short Circuit Protection															
Max. fuse size	(gL-characteristic)		A	20	35	35	50	63	80	100	125	160	200	250	315
Rated short-time withstand current	(1 s-current)		A	130	350	430	500	580	1600	1850	2500	3000	4000	4600	5800
Max. Permissible Wire Gage															
For box terminal	Single-core or stranded wire		mm^2	2,5	6	6	16	16	50	50	95	95	185	185	185
			AWG	12	10	10	6	6	2(1/0)	1/0	3/0	3/0	-	-	-
			MCM	-	-	-	-	-	-	-	-	-	350	350	350
	Flexible wire sleeving in accordance with DIN 46228		mm^2	2,5	4	4	10	10	35	35	70	70	120	120	120
	Flexible wire without sleeve		mm^2	2,5	4	4	10	10	35	35	70	70	150	150	150
			AWG	12	10	10	6	6	2	2	2/0	2/0	-	-	-
			MCM	-	-	-	-	-	-	-	-	-	300	300	300
	Cable lug or track must accept connection screw		mm	-	-	-	-	-	-	-	M10 x 20	M10 x 20	M12 x 20	M12 x 20	M12 x 20
	Max. width		mm	-	-	-	-	-	-	-	20	20	25	25	25
	Max. width with protective cover		mm	-	-	-	-	-	-	-	25	25	34	34	34
Ambient Temperature	open at 100 % I_u/I_{th}			50 °C during 24 hours with peaks up to 55 °C											
	enclosed at 100 % I_{the}			35 °C during 24 hours with peaks up to 40 °C											

[1]Valid for lines with common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
[2]Suitable for no load switching applications (AC-20A) above 690 V.
[3]Valid when connected with wire rated for 75 °C.
[4]International Standards and Approvals, refer to page 4.

Technical Data KH, KHR Switches

				KH16 KH16B	KHR16 KHR16B	KH20 KH20B	KHR20 KHR20B	KH25 KH25B	KHR25 KHR25B	KH32 KHR32	KH40	KHR40	KH63 KHR63	KH80 KHR80
Rated Insulation Voltage U_i	IEC/EN/VDE[1]		V	800[2]	800[2]	800[2]	800[2]	800[2]	800[2]	800[2]	800[2]	800[2]	1000[2]	1000[2]
	UL/Canada		V	600	600	600	600	600	600	600	600	600	600	600
Rated Impulse Withstand Voltage U_{imp}[1]			kV	6	6	6	6	6	6	6	6	6	8	8
Rated Thermal Current	IEC/EN/VDE I_u open = I_{th}		A	16	16	20	20	25	20	32	40	32	63	80
	I_{the} enclosed		A	16	16	20	20	25	20	32	40	32	63	80
	UL/Canada		A	16	16	20	20	25	20	30	40	30	60	80
Rated Operational Current I_e														
AC-21A Switching of resistive loads, including moderate overloads	IEC/EN/VDE		A	16	16	20	20	25	20	32	40	32	63	80
AC-22A Switching of combined resistive or low inductive loads, including moderate overloads	IEC/EN/VDE		A	16	16	20	20	25	20	32	40	32	63	80
Ampere-Rating Resistive or low inductive loads	UL/Canada		A	16	16	20	20	25	20	30	40	30	60	80
Rated Utilization Category	IEC/EN/VDE													
AC-3 Direct-on-line starting	3 phase 3 pole	220 V-240 V	kW	3	3	3,5	3,5	4	4	5,5	7,5	7,5	11	15
		380 V-440 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	22	30
		500 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	30	37
		660 V-690 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	18,5	22
AC-23A Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V	kW	4,5	4,5	5,5	5,5	7	5,5	9	11	9	18,5	23
		380 V-440 V	kW	7,5	7,5	10	10	12	10	16	20	16	30	40
		500 V	kW	10	10	12	12	15	13	20	25	20	40	55
		660 V-690 V	kW	13	13	15	15	17	17	22	25	25	30	37
DOL-Rating Standard motor load (similar to AC-3)	UL/Canada 3 phase 3 pole	110 V-120 V	HP	1	1	1	1	1,5	1,5	2	3	3	7,5	10
		220 V-240 V	HP	2	2	2	2	3	3	5	7,5	7,5	20	25
		440 V-480 V	HP	5	5	5	5	7,5	7,5	10	15	15	30	40
		550 V-600 V	HP	5	5	5	5	7,5	7,5	10	15	15	40	50
Short Circuit Protection														
Max. fuse size (gL-characteristic)			A	25	25	35	35	35	35	35	50	50	80	100
Rated short-time withstand current (1s-current)			A	400	400	450	450	500	500	850	950	950	1200	1600
Max. Permissible Wire Gage														
KH For box terminal	Single-core or stranded wire		mm^2	6	-	6	-	6	-	10	10	-	35	35
			AWG	10	-	10	-	10	-	8	8	-	2	2
	Flexible wire sleeving in accordance with DIN46228		mm^2	4	-	4	-	4	-	6	6	-	25	25
	Flexible wire without sleeve		mm^2	4	-	4	-	4	-	6	6	-	25	25
			AWG	12	-	12	-	12	-	10	10	-	4	4
KHR Connection with insulated ring and fork type terminals														
Internal diameter ≥			mm	-	3,2	-	3,2	-	3,2	3,7	-	3,7	5,2	5,2
External diameter ≤			mm	-	7,4	-	7,4	-	7,4	8,8	-	8,8	12,7	12,7
Ambient Temperature	open at 100 % Iu/Ith			50 °C during 24 hours with peaks up to 55 °C										
	enclosed at 100 % Ithe			35 °C during 24 hours with peaks up to 40 °C										

[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
[2]Suitable for no load switching applications (AC-20A) above 690 V.

Technical Data KC

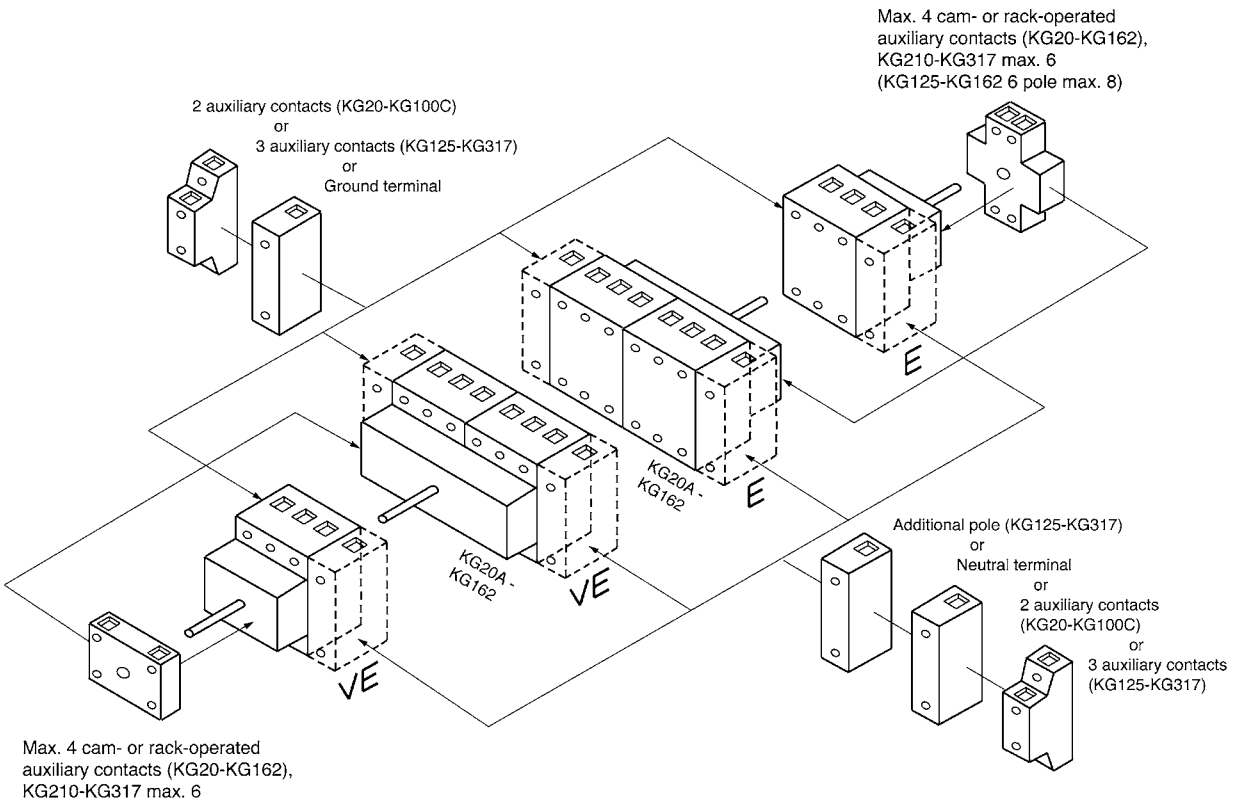
				KC16 KC16B	KC20 KC20B	KC25 KC25B	KC32 KCR32
Rated Insulation Voltage U_i	IEC/EN/VDE[1]		V	690	690	690	690
	UL/Canada[3]		V	600	600	600	600
Rated Impulse Withstand Voltage U_{imp}[1]			kV	6	6	6	6
Rated Thermal Current[2]	IEC/EN/VDE I_u open = I_{th}		A	16	20	25	32
	I_{the} enclosed		A	16	20	25	32
	UL/Canada[3]		A	16	20	25	30
Rated Operational Current I_e[2]							
AC-21A Switching of resistive loads, including moderate overloads	IEC/EN/VDE		A	16	20	25	32
AC-22A Switching of combined resistive or low inductive loads, including moderate overloads	IEC/EN/VDE		A	16	20	25	32
Ampere-Rating Resistive or low inductive loads	UL/Canada[3]		A	16	20	25	30
Rated Utilization Category[2]	IEC/EN/VDE						
AC-3 Direct-on-line starting	3 phase 3 pole	220 V-240 V	kW	3	3,5	4	5,5
		380 V-440 V	kW	5,5	6,5	7,5	11
		500 V	kW	5,5	6,5	7,5	11
		660 V-690 V	kW	5,5	6,5	7,5	11
AC-23A Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V	kW	4,5	5,5	7	9
		380 V-440 V	kW	7,5	10	12	16
		500 V	kW	10	12	15	20
		660 V-690 V	kW	13	15	17	22
DOL-Rating Standard motor load (similar to AC-3)	UL/Canada[4] 3 phase 3 pole	110 V-120 V	HP	1	1	1,5	2
		220 V-240 V	HP	2	2	3	5
		440 V-480 V	HP	5	5	7,5	10
		550 V-600 V	HP	5	5	7,5	10
Short Circuit Protection							
Max. fuse size	(gL-characteristic)		A	25	35	35	35
Rated short-time withstand current	(1s-current)		A	350	350	350	350
Max. Permissible Wire Gage							
KH Copper wires only	Single-core or stranded wire		mm^2	2x0,5-6	2x0,5-6	2x0,5-6	2x0,5-6
			AWG	2x20-10	2x20-10	2x20-10	2x20-10
	Flexible wire sleeving in accordance with DIN46228		mm^2	2x0,5-2,5	2x0,5-2,5	2x0,5-2,5	2x0,5-2,5
	Flexible wire without sleeve		mm^2	2x0,5-4	2x0,5-4	2x0,5-4	2x0,5-4
			AWG	2x26-10	2x26-10	2x26-10	2x26-10
Ambient Temperature	open at 100 % Iu/Ith			50 °C during 24 hours with peaks up to 55 °C			

[1]...IEC 60947-3, EN60947-3, VDE 0660 part 107 - Valid for lines with grounded common neutral termination, overvoltage category III, other values on request
[2]...IEC 60947-3, EN 60947-3, VDE 0660 part 107
[3]...UL/Canada - Refer to international standards and approvals on page 4
[4]...UL/Canada

Auxiliary Contacts for KG & KH Switches

				Auxiliary contacts for:					
				KG10 KG10A KG10B	KG20 KG20B- KG32B	KG41- KG100C	KG125- KG162	KG210- KG317	KH16 KH80
Rated Insulation Voltage U_i	IEC/VDE UL/Canada		V V	690 300	500 600	690 600	690 600	690 600	440 300
Rated Thermal Current I_u/I_{th}	IEC/VDE/BS UL/Canada		A A	10 20	- 10	16 10	16 10	16 10	10 10
Rated Operational Current I_e									
AC-21A Switching of resistive loads, including moderate overloads	IEC/VDE		A	20	10	16	16	16	10
AC-15 Switching of control devices, contactors, valves etc.		110 V-240 V 380 V-440 V 500 V	A A A	6 4 -	2,5 1,5 1	6 3 1,5	6 3 1,5	6 3 1,5	2,5 1,5
Pilot Duty Heavy	UL/Canada			A300	A600	A600	A600	A600	A300
Ampere-Rating Resistive or low inductive loads	UL/Canada		A	20	10	10	10	10	
Short Circuit Protection									
Max. fuse size	(gL-characteristic)		A	20	10	16	16	16	10
Max. Permissible Wire Gage									
	Single-core or stranded wire		mm² AWG	2,5 12	1,5 14	2,5 12	2,5 12	2,5 12	1,5 14
	Flexible wire sleeving in accordance with DIN 46228		mm²	2,5	1,5	2,5	2,5	2,5	1,5
	Flexible wire without sleeve		mm² AWG	2,5 12	1,5 16	2,5 14	2,5 14	2,5 14	1,5 16

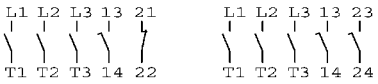
Modular System (KG20-KG315)



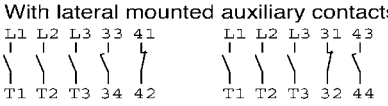
Connection Diagrams

KG

ON/OFF Switches 3 pole (with cam-operated auxiliary contacts)

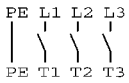


With lateral mounted auxiliary contacts

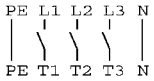


Mounting E, FT1, FT2 — VE, VE2, KL., PF..

With GRD-terminal



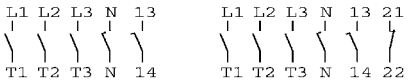
With GRD- and N-terminal



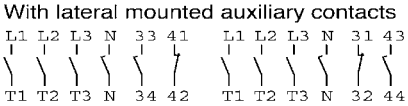
[1]When using KS. the switch type changes to KG10.

KH

ON/OFF Switches 4 pole (with cam-operated auxiliary contacts)

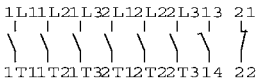


With lateral mounted auxiliary contacts

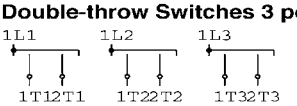


Mounting E, FT1, FT2 — VE, VE2

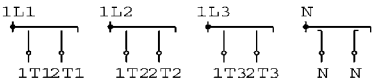
ON/OFF Switches 6 pole (with cam-operated auxiliary contacts)



Double-throw Switches 3 pole

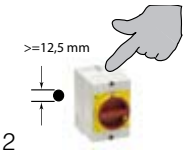
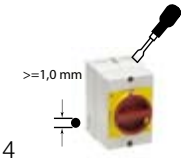
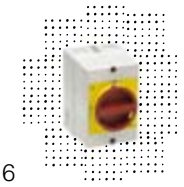


Double-throw Switches 4 pole



IP Classifications

Ingress protection class of enclosures is given in form of IP classification, a two digit coding which is shown below. Kraus & Naimer has tested the enclosures according to IEC 529 or EN 60529. The latter requires the second digit to be tested from class 6 upwards separately to each level of class, thus the double marking IP 66 / IP 67 indicates that the actual tests have been made for both levels.

FIRST NUMBER Protection against solid objects		SECOND NUMBER Protection against liquids	
IP	**TEST**	**IP**	**TEST**
0	**No protection**	0	**No protection**
 1	**Protected against solid foreign objects over 50 mm e.g. accidental touch by hands**	 1	**Protected against vertically falling water drops.**
 2	**Protected against solid foreign objects over 12,5 mm e.g. fingers.**	 2	**Protected vertically falling water drops when the enclosure is tilted up to 15 °.**
 3	**Protected against solid foreign objects over 2,5 mm (tools + small wires).**	 3	**Protected against water sprays up to 60° on either side of the vertically.**
 4	**Protected against solid foreign objects over 1 mm (tools + small wires).**	 4	**Protected against splashing water from all directions – limited ingress permitted.**
 5	**Dust protected – limited ingress permitted (no harmfull deposit.)**	 5	**Protected agains low pressure jets of water from all directions - limited ingress permitted.**
 6	**Dust tigth. No ingress of dust.**	 6	**Protected against powerful water jets e.g. for use on shipdecks - limited ingress permitted.**
		 7	**Protected against the effects of temporary immersion in water (between 15 cm and 1 m).**
		 8	**Protected against the effects of continous immersion in water.**

Push Buttons

These pages contain the push buttons. The main idea in this chapter is that the complete units are on the first pages, and as you go further in this chapter the product code is divided into more parts. On pages 112-116 are the pre-assembled parts for front and rear elements for the most common variations. Therefore, you should be able to define your push button with two codes; one for the front part and the other for contacts.

Push Buttons and Pilot Lights, 22,5 mm Ø

Front Element

Front Elements
- ergonomical design, front rings metallic or black
- illuminated elements offer excellent brightnesst and contrast in all light conditions
- pilot lights with perfect light due to special lenses
- inseription are abrasion - resistant and made with laser
- latched push buttons and rotary switches are convertible into spring return function
- mushroom push buttons with large points
- high protection and food resistance: push buttons and pilot lights IP 67/IP 69K, double-push buttons and rotary switches IP 66
- available with protection caps for special operating

Legend Plate

Legend Plates
- for front elements and double-push buttons
- with legend inserts
- available with lasered or engraved inscription

Fixation Ring

Fixation Nut
- is part of the front element
- nut key for fixation nut is an accessory

Coupling Plate

Coupling Plate
- for contact blocks and LED pilot light assemblies
- for max. 3 elements per contact level
- up to 6 contacts on 2 contact levels are possible

Contact Blocks and LED Pilot Light Assemblies

Contact Blocks and LED Pilot Light Assemblies
- finger-proof and open terminals (IP 20)
- captive mounting screws
- low overall depth, for mounting in commercial plaster depth box

Contact Blocks
- available as N/C and N/O
- high switching capacity, both in AC-15 and DC-13 operation (technical data see page 126)

LED Pilot Light Assemblies
- in green, red and white color
- long life (100 000 running hours), especially low power consumption and vibration resistance
- with only 2 voltage ranges the worldwide common applications are covered
- for decoupled function control LED series elements are available

Order Information

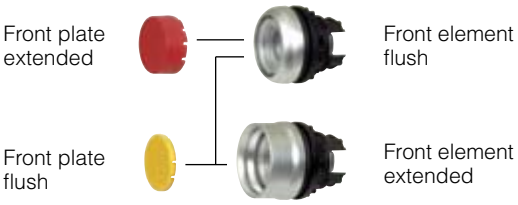
By changing the order text from P SN to P SB the unit will be delivered with black front ring.

Push Buttons and Pilot Lights, 22,5 mm Ø

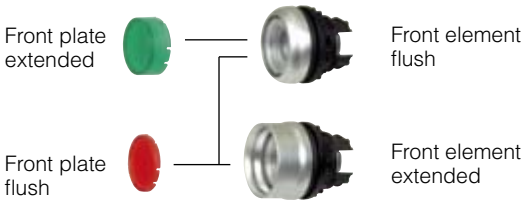
The modular design of the series push buttons and pilot lights meets your personal requirements in every respect.

Front Elements

Push buttons non-illuminated



Push buttons, illuminated



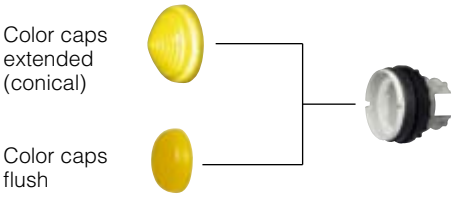
Mushroom push buttons

Rotary switches

Double-push buttons

Emergency stop push buttons

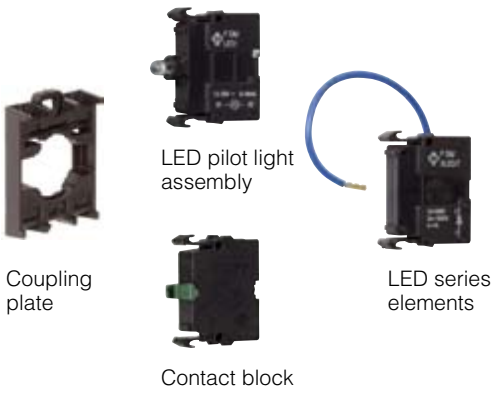
Pilot lights



Complete standard units

Solid pilot lights

Contact blocks and LED pilot light assemblies

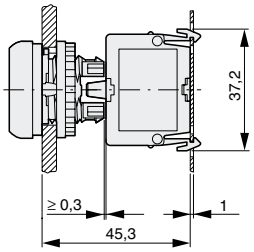


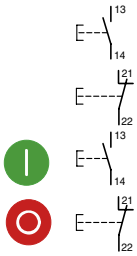
Potentiometer

Signal device

Complete Standard Units

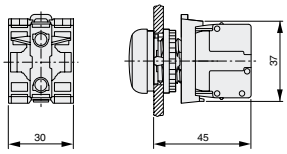
Push buttons flush,
IP 67/IP 69K
non-illuminated





Code
P SN-WD0001
P SN-WD0002
P SN/D/G/X1-K10
P SN/D/R/X0-K01

Pilot lights flush,
IP 67/IP 69K
with LED element

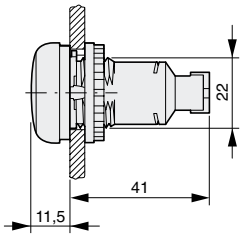


12 V-30 V AC/DC
12 V-30 V AC/DC
85 V-264 V AC
85 V-264 V AC

Code
P SN-WD0003
P SN-WD0004
P SN-WD0005
P SN-WD0006

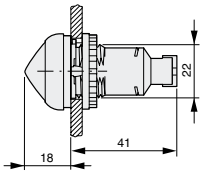
Solid pilot lights
IP 67/IP 69K
for direct wire (without bulb),
bulb holder BA 9s

flush



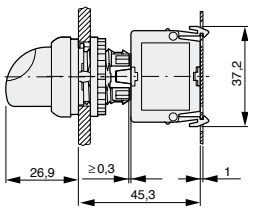
Code
P SN/LC/G
P SN/LC/R
P SN/LC/Y
P SN/LC/B
P SN/LC/W

extended (conical)

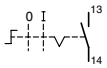


Code
P SN/LCH/G
P SN/LCH/R
P SN/LCH/Y
P SN/LCH/B
P SN/LCH/W

Rotary switches
IP 66
non-illuminated, latched
(changeable by coding
pieces to spring return function)

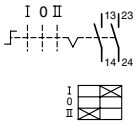


2 positions



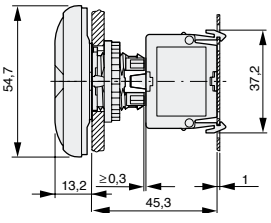
Code
P SN/WRK-K10

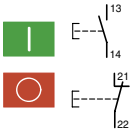
3 positions



Code
P SN/WRK3-K20

Double-push buttons, IP 66
with LED element,
color cap opaque

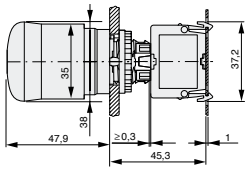


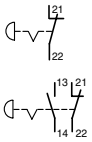


Code
P SN/DDL/GR/X1-X0-K11

Emergency stop push buttons

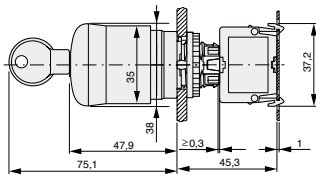
IP 66/IP 69K
fool-proof acc. to ISO 13850/EN 418
reset by pulling
complement max:
4 contact blocks





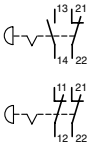
Code
P SN/PV-K01
P SN/PV-K11

reset by key operation
1 key, locking MS1



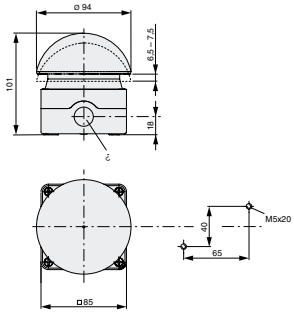
Code
P SN/PVS-K01

top yellow, bottom black
reset by pulling
complement
max: 3 contact blocks



Code
P SN/PV-KC11-IY
P SN/PV-KC02-IY

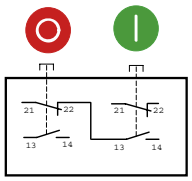
foot and palm switch
IP 67/IP 69K
top yellow, bottom black
reset by pulling



Code
P FT/R-V-KC01-IY

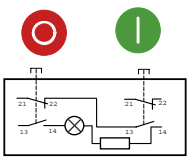
Complete sets

Green and red push button,
both with 1+1 contact blocks



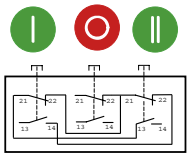
Code
P SN/I2/M1

Green and red push button,
both with 1+1 contact blocks
and a white lamp



Code
P SN/I3/M2

2 green and red buttons
with 1+1 contacts



Code
P SN/I3/M1

Pre-Assembled Front Elements

Push buttons non-illuminated
IP 67/IP 69K

	Flush Momentary	Latched	Extended Momentary	Latched
●	P SN/D/S	P SN/DR/S	P SN/DH/S	P SN/DRH/S
○	P SN/D/W	P SN/DR/W	P SN/DH/W	P SN/DRH/W
●	P SN/D/R	P SN/DR/R	P SN/DH/R	P SN/DRH/R
●	P SN/D/G	P SN/DR/G	P SN/DH/G	P SN/DRH/G
●	P SN/D/Y	P SN/DR/Y	P SN/DH/Y	P SN/DRH/Y
●	P SN/D/B	P SN/DR/B	P SN/DH/B	P SN/DRH/B
◎	P SN/D/R/X0	P SN/DR/R/X0	P SN/DH/R/X0	P SN/DRH/R/X0
I	P SN/D/G/X1	P SN/DR/G/X1	P SN/DH/G/X1	P SN/DRH/G/X1
I	P SN/D/W/X1	P SN/DR/W/X1	P SN/DH/W/X1	P SN/DRH/W/X1
◎	P SN/D/S/X0	P SN/DR/S/S0	P SN/DH/S/X0	P SN/DRH/S/X0

Push buttons illuminated
IP 67/IP 69K

	Flush Momentary	Latched	Extended Momentary	Latched
○	P SN/DL/W	P SN/DRL/W	P SN/DLH/W	P SN/DRLH/W
●	P SN/DL/R	P SN/DRL/R	P SN/DLH/R	P SN/DRLH/R
●	P SN/DL/G	P SN/DRL/G	P SN/DLH/G	P SN/DRLH/G
●	P SN/DL/Y	P SN/DRL/Y	P SN/DLH/Y	P SN/DRLH/Y
●	P SN/DL/B	P SN/DRL/B	P SN/DLH/B	P SN/DRLH/B
◎	P SN/DL/R/X0	P SN/DRL/R/X0	P SN/DLH/R/X0	P SN/DRLH/R/X0
I	P SN/DL/G/X1	P SN/DRL/G/X1	P SN/DLH/G/X1	P SN/DRLH/G/X1
◎	P SN/DL/W/X0	P SN/DRL/W/X0	P SN/DLH/W/X0	P SN/DRLH/W/X0
I	P SN/DL/W/X1	P SN/DRL/W/X1	P SN/DLH/W/X1	P SN/DRLH/W/X1

Pilot lights
IP 67/IP 69K
flush

extended (conical)

	Flush	Conical
○	P SN/L/W	P SN/LH/W
●	P SN/L/R	P SN/LH/R
●	P SN/L/G	P SN/LH/G
●	P SN/L/Y	P SN/LH/Y
●	P SN/L/B	P SN/LH/B
	P SN/L/X	P SN/LH/X

Illuminated Rotary Switches

Rotary switches

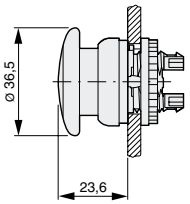
IP 66
switching angle 60°,
latched1

	2 positions Momentary	Latched	3 positions Momentary	Latched
○	P SN/WLK/W	P SN/WRLK/W	P SN/WLK3/W	P SN/WRLK3/W
●	P SN/WLK/R	P SN/WRLK/R	P SN/WLK3/R	P SN/WRLK3/R
●	P SN/WLK/G	P SN/WRLK/G	P SN/WLK3/G	P SN/WRLK3/G
●	P SN/WLK/Y	P SN/WRLK/Y	P SN/WLK3/Y	P SN/WRLK3/Y
●	P SN/WLK/B	P SN/WRLK/B	P SN/WLK3/B	P SN/WRLK3/B

Non Illuminated rotary switches

P SN/WK	P SN/WRK	P SN/WK3	P SN/WRK3

Mushroom push buttons



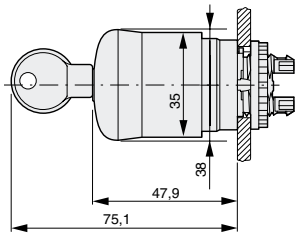
	Momentary	Latched
●	P SN/DP/S	P SN/DRP/S
●	P SN/DP/R	P SN/DRP/R
●	P SN/DP/G	P SN/DRP/G
●	P SN/DP/Y	P SN/DRP/Y
◎	P SN/DP/R/X0	P SN/DRP/R/X0
●	P SN/DP/G/X1	P SN/DRP/G/X1
◎	P SN/DP/S/X0	P SN/DRP/S/X0
●	P SN/DP/W/X1	P SN/DRP/W/X1

Emergency stop push buttons

IP 67/IP 69K (turning)
IP 66/IP 69K (pulling)
fool-proof acc. to ISO 13 850/EN 418
complement max.: 4 contact blocks

Non-illuminated

Illuminated



	Code	
●	P SN/PV	reset by pulling
●	P SN/PVT	reset by turning
●	P SB/PV	reset by pulling

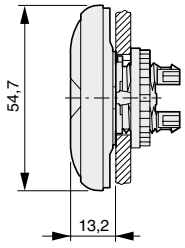
	Code	
●	P SN/PVL	reset by pulling
●	P SN/PVLT	reset by turning

Reset by key operation

	Code	
●	P SN/PVS	1 key, locking MS1

Double-push buttons

IP 66
color cap opaque



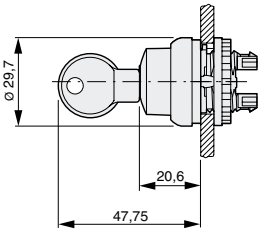
	Code
■	P SN/DDL/GR
■	
■	P SN/DDL/GR/X1-X0
◎	
START	P SN/DDL/GR/GB1-GB0
STOP	
↑	P SN/DDL/S/X7-X7
↓	

Rotary switches, key operated

IP 66
switching angle 60°, latched
1 key, locking MS1

2 positions

key can be removed in O I
key can only be removed in O



	Code
↓ ↓	P SN/WRS
	P SN/WRS/A1

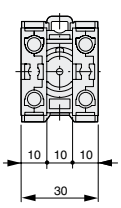
3 positions

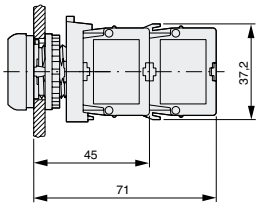
key can be removed in I O II
key can only be removed in O

	Code
↓ ↓	P SN/WRS3
	P SN/WRS3/A1

Complete Contact Blocks

Contact blocks
front mounting
and adapter





Code	
P SN/AK10	
P SN/AK01	
P SN/AK11	
P SN/A4+ 4xP SN/AK10	

Light Elements and Contact Blocks

LED pilot light assemblies
front mounting

	Code	
12 V-30 V AC/DC	P SN/LED/G	
	P SN/LED/R	
	P SN/LED/W	
85 V-264 V AC	P SN/LED230/G	
	P SN/LED230/R	
	P SN/LED230/W	

base mounting

	Code
12 V-30 V AC/DC	P SN/LEDC/G
	P SN/LEDC/R
	P SN/LEDC/W
85 V-264 V AC	P SN/LEDC230/G
	P SN/LEDC230/R
	P SN/LEDC230/W

LED series elements
for front mounting
and base mounting

	Code
resistor element for 42 V-60 V AC/DC for pilot light assemblies 12 V-30 V AC/DC	P SN/XLED60
LED test elements for decoupled operational test for connecting to: 12 V-30 V AC/DC 85 V-264 V AC	P SN/XLED/T P SN/XLED230/T

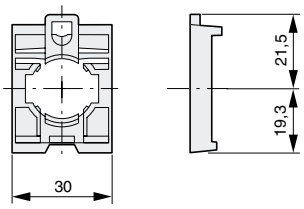
Contact blocks
front mounting

Code	
P SN/K10	
P SN/K01	

base mounting

Code	
P SN/KC10	
P SN/KC01	

Coupling plate



Code	Contacts
P SN/A	2
P SN/A4	4

Other

IP 67/IP 69K
totally insulated, lid screws made of stainless steel

top yellow, bottom black

Code	Control positions Ø 22,5 mm
P SN/IY1	1

Plastic enclosure
IP 67/IP 69K
totally insulated,
lid screws made of stainless steel

top gray, bottom black

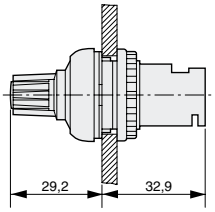
Code	Control positions Ø 22,5 mm
P SN/I1	1

top gray, bottom black

Code	Control positions Ø 22,5 mm
P SN/I2	2
P SN/I3	3
P SN/I4	4
P SN/I6	6

Potentiometer
IP 66
3 separate screw terminals,
Pmax. = 0,5 W

Other resistance values on request.



Code	k
P SN/R1K	1
P SN/R4K7	4.7
P SN/R10K	10

Signal Device
Including signal device
18-30V DC, 83 dB/10cm, 100% LED plus in x1

Code	k
P SN/AM	

Quadruple
four contacts
Use coupling plate P SN/A4

Code
P SN/D4/S

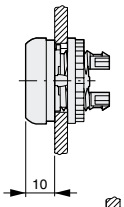
Joy stick
four contacts
Use coupling plate P SN/A4

Code
P SN/WJ4

Push Button Front Elements

Non-illuminated

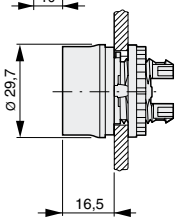
Push buttons
IP 67/IP 69K
without front plate
with flush front ring,



momentary
latched

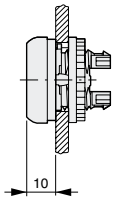
Code
P SN/D/X
P SN/DR/X

Push buttons
IP 67/IP 69K
without front plate
with extended front ring,



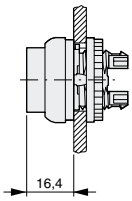
Code
P SN/DG/X

Front plates
flush



	Code
●	P SN/XD/G
●	P SN/XD/R
●	P SN/XD/Y
●	P SN/XD/B
○	P SN/XD/W
●	P SN/XD/S

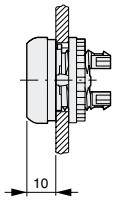
Front plates
extended



	Code
●	P SN/XDH/G
●	P SN/XDH/R
●	P SN/XDH/Y
●	P SN/XDH/B
○	P SN/XDH/W
●	P SN/XDH/S

Illuminated

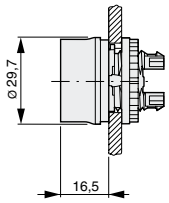
Push buttons
IP 67/IP 69K
without front plate
with flush front rin



momentary
latched

Code
P SN/DL/X
P SN/DRL/X

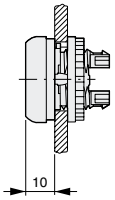
Push buttons
IP 67/IP 69K
without front plate
with extended front ring



momentary

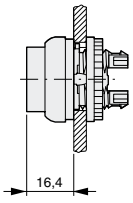
Code
P SN/DGL/X

Front plates
flush



	Code
●	P SN/XDL/G
●	P SN/XDL/R
●	P SN/XDL/Y
●	P SN/XDL/B
○	P SN/XDL/W

Front plates
extended



	Code
●	P SN/XDLH/G
●	P SN/XDLH/R
●	P SN/XDLH/Y
●	P SN/XDLH/B
○	P SN/XDLH/W

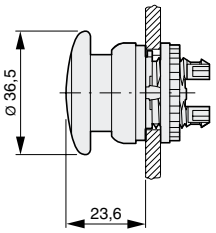
Order example: For non-illuminated push buttons, you may combine a front ring and a front plate from the green tables on this and the next page. For example, a front ring P SN/D/X together with a front plate P SN/XD/S/X7 forms an arrow push button. For illuminated push buttons, choose the code from the yellow tables. Please note: when ordering the front ring/front plate combination you need to use both product codes when placing your order.

Front Plates for Push Buttons

				non-illuminated		illuminated	
Color	Legend	Symbol	Meaning	Code Front Plates flush	Code Front Plates extended	Code Front Plates flush	Code Front Plates extended
●	Zu			P SN/XD/S/D2	P SN/XDH/S/D2		
	Auf			P SN/XD/S/D3	P SN/XDH/S/D3		
	Ab			P SN/XD/S/D4	P SN/XDH/S/D4		
○ opaque	Zu					P SN/XDL/W/D2	P SN/XDLH/W/D2
	Auf					P SN/XDL/W/D3	P SN/XDLH/W/D3
	Ab					P SN/XDL/W/D4	P SN/XDLH/W/D4
●	Aus			P SN/XD/R/D5	P SN/XDH/R/D5	P SN/XDL/R/D5	P SN/XDLH/R/D5
○ opaque	Ein					P SN/XDL/W/D6	P SN/XDLH/W/D6
●	Ein			P SN/XD/S/D6	P SN/XDH/S/D6		
●	Entsperren			P SN/XD/B/D14	P SN/XDH/B/D14	P SN/XDL/B/D14	P SN/XDLH/B/D14
○ opaque	Vorwärts					P SN/XDL/W/D15	P SN/XDLH/W/D15
	Rückwärts					P SN/XDL/W/D16	P SN/XDLH/W/D16
	Heben					P SN/XDL/W/D17	P SN/XDLH/W/D17
	Senken					P SN/XDL/W/D18	P SN/XDLH/W/D18
●	Vorwärts			P SN/XD/S/D15	P SN/XDH/S/D15		
	Rückwärts			P SN/XD/S/D16	P SN/XDH/S/D16		
	Heben			P SN/XD/S/D17	P SN/XDH/S/D17		
	Senken			P SN/XD/S/D18	P SN/XDH/S/D18		
●	STOP			P SN/XD/R/GB0	P SN/XDH/R/GB0	P SN/XDL/R/GB0	P SN/XDLH/R/GB0
○ opaque	STOP					P SN/XDL/W/GB0	P SN/XDLH/W/GB0
●	STOP			P SN/XD/S/GB0	P SN/XDH/S/GB0		
●	START			P SN/XD/G/GB1	P SN/XDH/G/GB1	P SN/XDL/G/GB1	P SN/XDLH/G/GB1
○ opaque	START					P SN/XDL/W/GB1	P SN/XDLH/W/GB1
	CLOSE					P SN/XDL/W/GB2	P SN/XDLH/W/GB2
	UP					P SN/XDL/W/GB3	P SN/XDLH/W/GB3
	DOWN					P SN/XDL/W/GB4	P SN/XDLH/W/GB4
○	START			P SN/XD/W/GB1	P SN/XDH/W/GB1		
●	CLOSE			P SN/XD/S/GB2	P SN/XDH/S/GB2		
	UP			P SN/XD/S/GB3	P SN/XDH/S/GB3		
	DOWN			P SN/XD/S/GB4	P SN/XDH/S/GB4		
●	OFF			P SN/XD/R/GB5	P SN/XDH/R/GB5	P SN/XDL/R/GB5	P SN/XDLH/R/GB5
○ opaque	ON					P SN/XDL/W/GB6	P SN/XDLH/W/GB6
	TEST					P SN/XDL/W/GB9	P SN/XDLH/W/GB9
●	ON			P SN/XD/S/GB6	P SN/XDH/S/GB6		
	TEST			P SN/XD/S/GB9	P SN/XDH/S/GB9		
●	RESET			P SN/XD/B/GB14	P SN/XDH/B/GB14	P SN/XDL/B/GB14	P SN/XDLH/B/GB14
○ opaque	FORWARD					P SN/XDL/W/GB15	P SN/XDLH/W/GB15
	REVERSE					P SN/XDL/W/GB16	P SN/XDLH/W/GB16
	RAISE					P SN/XDL/W/GB17	P SN/XDLH/W/GB17
	LOWER					P SN/XDL/W/GB18	P SN/XDLH/W/GB18
●	FORWARD			P SN/XD/S/GB15	P SN/XDH/S/GB15		
	REVERSE			P SN/XD/S/GB16	P SN/XDH/S/GB16		
	RAISE			P SN/XD/S/GB17	P SN/XDH/S/GB17		
	LOWER			P SN/XD/S/GB18	P SN/XDH/S/GB18		
●		O	stop	P SN/XD/R/X0	P SN/XDH/R/X0	P SN/XDL/R/X0	P SN/XDLH/R/X0
○ opaque		O				P SN/XDL/W/X0	P SN/XDLH/W/X0
●		O		P SN/XD/S/X0	P SN/XDH/S/X0		
●		I	start	P SN/XD/G/X1	P SN/XDH/G/X1	P SN/XDL/G/X1	P SN/XDLH/G/X1
○ opaque		I				P SN/XDL/W/X1	P SN/XDLH/W/X1
●		I		P SN/XD/S/X1	P SN/XDH/S/X1		
○		I		P SN/XD/W/X1	P SN/XDH/W/X1		
●		II		P SN/XD/G/X2	P SN/XDH/G/X2	P SN/XDL/G/X2	P SN/XDLH/G/X2
○ opaque		II				P SN/XDL/W/X2	P SN/XDLH/W/X2
		+	increase			P SN/XDL/W/X4	P SN/XDLH/W/X4
		-	decrease			P SN/XDL/W/X5	P SN/XDLH/W/X5
●		II		P SN/XD/S/X2	P SN/XDH/S/X2		
		+	increase	P SN/XD/S/X4	P SN/XDH/S/X4		
		-	decrease	P SN/XD/S/X5	P SN/XDH/S/X5		
●		R	reset	P SN/XD/B/X6	P SN/XDH/B/X6	P SN/XDL/B/X6	P SN/XDLH/B/X6
●			guide motion	P SN/XD/S/X7	P SN/XDH/S/X7		
			guide motion	P SN/XD/S/X8	P SN/XDH/S/X8		
			hand-control	P SN/XD/S/X9	P SN/XDH/S/X9		
			automatic cycle	P SN/XD/S/X10	P SN/XDH/S/X10		
			inching	P SN/XD/S/X11	P SN/XDH/S/X11		
			disengaging	P SN/XD/S/X12	P SN/XDH/S/X12		
			unlock	P SN/XD/S/X13	P SN/XDH/S/X13		
			tighten	P SN/XD/S/X14	P SN/XDH/S/X14		
			release	P SN/XD/S/X15	P SN/XDH/S/X15		
			liquid	P SN/XD/S/X16	P SN/XDH/S/X16		
			horn	P SN/XD/S/X17	P SN/XDH/S/X17		
○ opaque			guide motion			P SN/XDL/W/X7	P SN/XDLH/W/X7
			guide motion			P SN/XDL/W/X8	P SN/XDLH/W/X8
			hand-control			P SN/XDL/W/X9	P SN/XDLH/W/X9
			automatic cycle			P SN/XDL/W/X10	P SN/XDLH/W/X10
			inching			P SN/XDL/W/X11	P SN/XDLH/W/X11
			disengaging			P SN/XDL/W/X12	P SN/XDLH/W/X12
			unlock			P SN/XDL/W/X13	P SN/XDLH/W/X13
			tighten			P SN/XDL/W/X14	P SN/XDLH/W/X14
			release			P SN/XDL/W/X15	P SN/XDLH/W/X15
			liquid			P SN/XDL/W/X16	P SN/XDLH/W/X16
			horn			P SN/XDL/W/X17	P SN/XDLH/W/X17

Front Plates for Mushroom Push Buttons

Mushroom push buttons
IP 67/IP 69K
without front plate



Front plates

momentary

latched

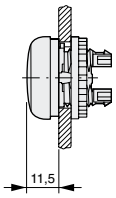
Code	
●	P SN/DP/G/X
●	P SN/DP/R/X
●	P SN/DP/Y/X
●	P SN/DP/S/X
●	P SN/DRP/G/X
●	P SN/DRP/R/X
●	P SN/DRP/Y/X
●	P SN/DRP/S/X

Color	Legend	Symbol	Meaning	Code
●	Zu			P SN/XDP/S/D2
	Auf			P SN/XDP/S/D3
	Ab			P SN/XDP/S/D4
●	Aus			P SN/XDP/R/D5
●	Ein			P SN/XDP/S/D6
	Vorwärts			P SN/XDP/S/D15
	Rückwärts			P SN/XDP/S/D16
	Heben			P SN/XDP/S/D17
	Senken			P SN/XDP/S/D18
●	STOP			P SN/XDP/R/GB0
●	STOP			P SN/XDP/S/GB0
●	START			P SN/XDP/G/GB1
○	START			P SN/XDP/W/GB1
●	CLOSE			P SN/XDP/S/GB2
	UP			P SN/XDP/S/GB3
	DOWN			P SN/XDP/S/GB4
●	OFF			P SN/XDP/R/GB5
●	ON			P SN/XDP/S/GB6
	TEST			P SN/XDP/S/GB9
	FORWARD			P SN/XDP/S/GB15
	REVERSE			P SN/XDP/S/GB16
	RAISE			P SN/XDP/S/GB17
	LOWER			P SN/XDP/S/GB18
●		○	stop	P SN/XDP/R/X0
●		○		P SN/XDP/S/X0
●		I	start	P SN/XDP/G/X1
●		I		P SN/XDP/S/X1
○		I		P SN/XDP/W/X1
●		II		P SN/XDP/G/X2
●		II		P SN/XDP/S/X2
		+	increase	P SN/XDP/S/X4
		-	decrease	P SN/XDP/S/X5
			guide motion	P SN/XDP/S/X7
				P SN/XDP/S/X8
			hand-control	P SN/XDP/S/X9
			automatic cycle	P SN/XDP/S/X10
			inching	P SN/XDP/S/X11
			disengaging	P SN/XDP/S/X12
			unlock	P SN/XDP/S/X13
			tighten	P SN/XDP/S/X14
			release	P SN/XDP/S/X15
			liquid	P SN/XDP/S/X16
			horn	P SN/XDP/S/X17
●				P SN/XDP/G
●				P SN/XDP/R
●				P SN/XDP/Y
○				P SN/XDP/W
●				P SN/XDP/S

Order example: You may combine any front plate with any mushroom push button in the upper table. For example, to get a red momentary STOP push button you need to combine two codes: P SN/DP/R/X + P SN/XDP/R/GB0.

Color Caps for Pilot Lights Flush

Pilot light
IP 67, IP 69K
flush, without color cap



Code
P SN/L/X

Color caps

Color	Legend	Symbol	Meaning	Code Front Plates flush
opaque	Zu			P SN/XL/W/D2
	Auf			P SN/XL/W/D3
	Ab			P SN/XL/W/D4
red	Aus			P SN/XL/R/D5
opaque	Ein			P SN/XL/W/D6
	Vorwärts			P SN/XL/W/D15
	Rückwärts			P SN/XL/W/D16
	Heben			P SN/XL/W/D17
	Senken			P SN/XL/W/D18
red	STOP			P SN/XL/R/GB0
opaque	STOP			P SN/XL/W/GB0
green	START			P SN/XL/G/GB1
opaque	START			P SN/XL/W/GB1
	CLOSE			P SN/XL/W/GB2
	UP			P SN/XL/W/GB3
	DOWN			P SN/XL/W/GB4
red	OFF			P SN/XL/R/GB5
opaque	ON			P SN/XL/W/GB6
	TEST			P SN/XL/W/GB9
	FORWARD			P SN/XL/W/GB15
	REVERSE			P SN/XL/W/GB16
	RAISE			P SN/XL/W/GB17
	LOWER			P SN/XL/W/GB18
red		○	stop	P SN/XL/R/X0
opaque		○		P SN/XL/W/X0
green		I	start	P SN/XL/G/X1
opaque		I		P SN/XL/W/X1
green		II		P SN/XL/G/X2
opaque		II		P SN/XL/W/X2
		+	increase	P SN/XL/W/X4
		-	decrease	P SN/XL/W/X5
			guide motion	P SN/XL/W/X7
				P SN/XL/W/X8
			hand-control	P SN/XL/W/X9
			automatic cycle	P SN/XL/W/X10
			inching	P SN/XL/W/X11
			disengaging	P SN/XL/W/X12
			unlock	P SN/XL/W/X13
			tighten	P SN/XL/W/X14
			release	P SN/XL/W/X15
			liquid	P SN/XL/W/X16
			horn	P SN/XL/W/X17
green				P SN/XL/G
red				P SN/XL/R
yellow				P SN/XL/Y
blue				P SN/XL/B
opaque				P SN/XL/W

Order example: You may combine any front plate with the pilot light front ring P SN/L/X. For example, to get a red STOP pilot light you need to combine two codes: P SN/L/X + P SN/XL/R/GB0.

Accessories

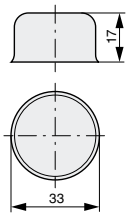
Reset units
IP 67/IP 69K
non-illuminated

		Code
blue	RESET	P SN/DZ/B/GB14
blue	R	P SN/DZ/B/X6

Bulb extractor

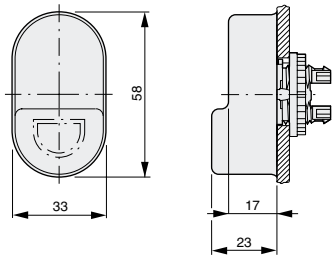
Code
P SN/LG

Protection caps
IP 67
transparent, for aggravating environments
and in food areas.
Cannot be combined
with legends plates



push buttons, flush
pilot lights, flush

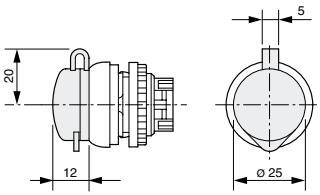
Code
P SN/T/D



double-push buttons

Code
P SN/T/DD

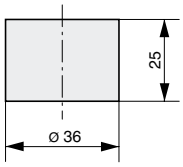
Protection cap
prevents dirt and dust from getting into the keyhole



rotary switches,
key operated

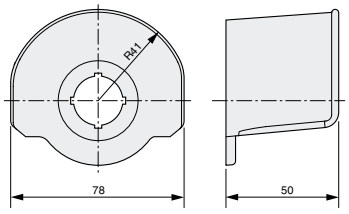
Code
P SN/XWS

Protective shroud
IP 66
protection against accidental operation for push buttons and rotary switches



Code
P SN/XGWK

Protective shroud
IP 65
yellow, for emergency stop buttons



Code
P SN/XGPV

Rod link
for operating the middle contact block of non illuminated rotary switches with 3 positions

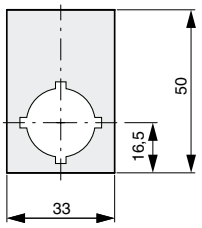
Code
P SN/XW

Coding pieces
for rotary switches to convert the latched function into spring return function
(1 kit = 2 pieces)

Code
P SN/XC/Y

Accessories

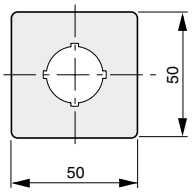
Emergency stop plates
IP 66
rectangular



German
English

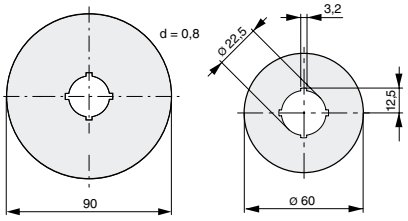
Code
P SN/XZK/D99
P SN/XZK/GB99

square, in four languages



Code
P SN/XYK1

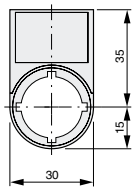
Emergency stop plates
IP 66
round, in four languages



Ø 90 mm
Ø 60 mm

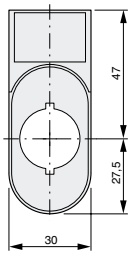
Code
P SN/XAK1
P SN/XBK1

Legend carrier
IP 66
without plate



for push buttons

Code
P SB/ST/X



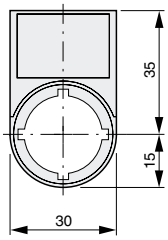
for double-push buttons

Code
P SB/STDD/X

Legend insert

Code
P SN/XST

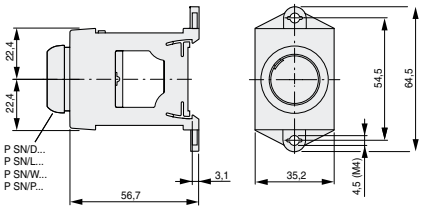
Legend plates
IP 66
complete standard unit



			Code
	O	I	P SB/ST/X88
O		I	P SB/ST/X89
I	O	II	P SB/ST/X93
	STOP		P SB/ST/GB0
	START		P SB/ST/GB1
	Aus		P SB/ST/D5
	OFF		P SB/ST/GB5
	Ein		P SB/ST/D6
	ON		P SB/ST/GB6
	Störung		P SB/ST/D8
	FAULT		P SB/ST/GB8
	Betrieb		P SB/ST/D7
	RUN		P SB/ST/GB7
HAND		AUTO	P SB/ST/D11
MAN.		AUTO	P SB/ST/GB11
Aus		Ein	P SB/ST/D10
OFF		ON	P SB/ST/GB10
HAND	O	AUTO	P SB/ST/D12
MAN.	O	AUTO	P SB/ST/GB12

Accessories

Track adapter
for tracks acc. to EN 50 022
for front mounted units



Code
P SN/IVS

Nut key
for push buttons, pilot lights and rotary switches

Code
P SN/MS

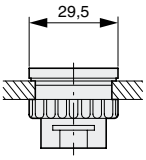
Fixation nut
for push buttons,
pilot lights and rotary
switches

Code
P SN/GR

Spare key
locking MS1

Code
P SN/ES/MS1

Blanking plug
IP 67/IP 69K
gray, for surplus
control positions



Code
P SN/B

Lamps
BA 9s
for solid pilot lights

filament bulbs

Code	V	W
P SN/GL6	6	2
P SN/GL12	12	2
P SN/GL24	24	2
P SN/GL48	48	2
P SN/GL60	60	2
P SN/GL130	110-130	2,4

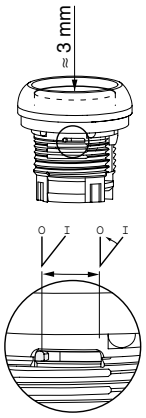
neon bulbs

Code	V AC	W
P SN/GIL110K	110-130	0,1
P SN/GIL220K	220-240	0,33

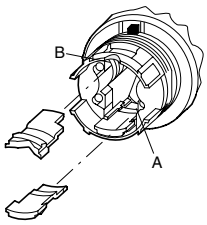
Programming and Circuit Design

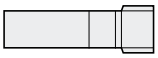
Programming for converting the latched function into spring return function

Push buttons



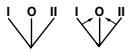
Rotary switches





P SN/XC/Y

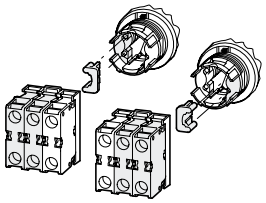
P SN/XC/Y in B



P SN/XC/Y in A and B

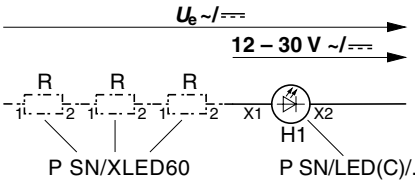
Key cannot be removed in spring return position

Rod link for operating the middle contact block of non-illuminated rotary switches with 3 positions



LED resistor element

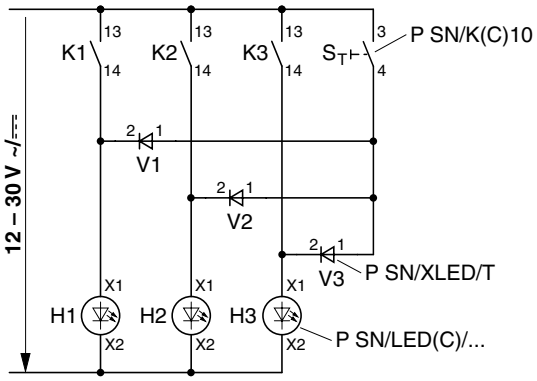
P SN/XLED60



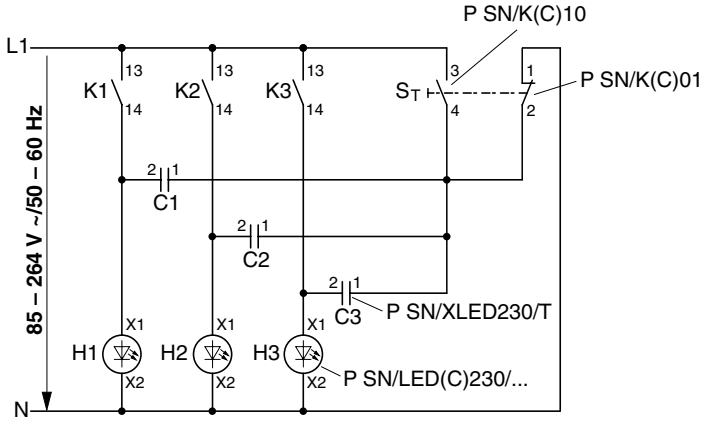
P SN/XLED60	1x	2x	3x	4x	5x	6x	7x
U_e ≤	60 V	90 V	120 V	150 V	180 V	210 V	240 V

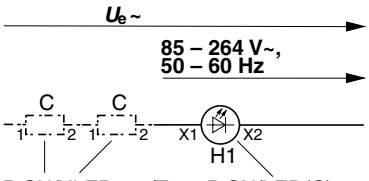
LED test element

P SN/XLED/T

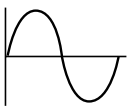


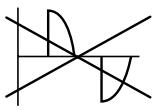
P SN/XLED230/T





P SN/XLED230/T	1x	2x
U_e ≤	400 V AC	500 V AC





Technical Data

			Contact Blocks	LED Elements	Push Buttons Mushroom P/B momentary	Double-Push Buttons	Rotary Switches Rotary Switches illuminated
General							
Standards and requirements			IEC/EN 60947, VDE 0660				
Mechanical life	operations	x 10^6	5	–	5	0,2	0,1
Max. operating frequency		S/h	3600	–	3600	3600	2000
Operating force		N	≤ 5	–	≤ 5	≤ 5	–
Operating torque		Nm	≤ 0,8 (screw terminals)	≤ 0,8 (screw terminals)	–	–	≤ 0,3
Protection IEC/EN 60529			IP 20	IP 20	IP 67/IP 69K	IP 66	IP 66
Environmental resistance			humidity, constant, acc. to IEC 60068-2-78 humidity, cyclic, acc. to IEC 60068-2-30				
Ambient temperature							
open	min./max.	°C	-25/+70	-25/+70[1]	-25/+70	-25/+70	-25/+70
Mounting position			any	any	any	any	any
Shock withstand acc. to IEC 60068-2-27		g	> 30	> 30	> 30	> 30	> 30
Shock period 11 ms, 1/2 sinus wave							
Max. permissible wire gage							
single core	min.-max.	mm^2	0,75-2,5	0,75-2,5	–	–	–
stranded wire	min.-max.	mm^2	0,5-2,5	0,5-2,5	–	–	–
Current Paths							
Rated impulse withstand voltage U_{imp}		V	6000	6000	–	–	–
Rated insulation voltage U_i		V	500	500	–	–	–
Overvoltage category/		III/3	III/3	–	–	–	
Pollution degree							
Control circuit reliability at							
24 V DC/5 mA	fault frequency H_F		< 10^{-7}, < 1 failure per 10^7 operations				
5 V DC/1 mA	fault frequency H_F		< 5 x 10^{-6}, < 1 failure per 5 x 10^6 operations				
Max. fuse size	characteristic	A gL/gG	10	–	–	–	–
Switching Capacity							
Rated operational current I_e							
AC-15							
115 V		A	6	–	–	–	–
230 V		A	6	–	–	–	–
400 V		A	4	–	–	–	–
500 V		A	2	–	–	–	–
DC-13							
24 V		A	3	–	–	–	–
42 V		A	1,7	–	–	–	–
60 V		A	1,2	–	–	–	–
110 V		A	0,8	–	–	–	–
220 V		A	0,3	–	–	–	–
Electrical life							
AC-15							
230 V/0,5 A	operations	x 10^6	1,6	–	–	–	–
230 V/1,0 A	operations	x 10^6	1,0	–	–	–	–
230 V/3,0 A	operations	x 10^6	0,7	–	–	–	–
DC-13							
12 V/2,8 A	operations	x 10^6	1,2	–	–	–	–
Approvals							
Technical data on request.			UL/CSA	UL/CSA	UL/CSA	UL/CSA	UL/CSA

Technical Data

			Rotary Switches key operated	Potentiometer Solid Pilot Lights	Pilot Lights Push Buttons,	Push Buttons illuminated Mushroom P/B, latched	Emergency Stop Push Buttons
General							
Standards and requirements			IEC/EN 60947, VDE 0660				
Mechanical life	operations	x 10^6	> 0,1			> 0,1	> 0,1
Max. operating frequency		S/h	100			1800	600
Operating force		N				≤ 5	≤ 50
Operating torque		Nm	≤ 0,5				
Protection acc. to IEC/EN 60529			IP 66	IP 66 (Potentiometer) IP 66/IP 69K (pilot light)	IP 67/IP 69K	IP 67/IP 69K	reset by turning IP 67/IP 69K reset by pulling IP 67/IP 69K
Environmental resistance			humidity, constant, acc. to IEC 60068-2-78 humidity, cyclic, acc. to IEC 60068-2-30				
Ambient temperature							
open	min./max.	°C	-25/+70	-25/+70	-25/+70	-25/+70	-25/+70
Mounting position			any	any	any	any	any
Shock withstand acc. to IEC 60068-2-27		g	> 30	> 30	> 30	> 30	> 50
Shock period 11 ms, 1/2 sinus wave							
Max. permissible wire gage				0,5-1,5			
single core	min.-max.	mm^2		0,5-1,5			
stranded wire	min.-max.	mm^2					
Current Paths							
Rated impulse withstand voltage U_{imp}		V		4000			
Rated insulation voltage U_i		V		250			
Overvoltage category/ Pollution degree				III/3			
Approvals							
Technical data on request.			UL/CSA	UL/CSA	UL/CSA	UL/CSA	UL/CSA
Foot and Palm Switches latched							
General							
Standards and requirements			IEC/EN 60947, VDE 0660				
Mechanical life	operations	x 10^6	> 0,1				
Max. operating frequency		S/h	≤ 600				
Operating force		N	≤ 60				
Protection acc. to IEC/EN 60529			IP 67, IP 69K				
Environmental resistance			humidity, constant, acc. to IEC 60068-2-78 humidity, cyclic, acc. to IEC 60068-2-30				
Ambient temperature	min./max.	°C	-25/+40				
Mounting position			any				
Shock withstand acc. to IEC 60068-2-27		g	> 15				
Shock period 11 ms, 1/2 sinus wave							

Special Switch Order Form

When ordering a special switch and an escutcheon plate it is advisable to use our order form. In addition to the switch operation drawing, it is important that you also mark all the following information:

- Switch type (this information can be found in the Technical data section, pages 5-12)
- Mounting (this information can be found in the Mounting section, pages 33-44)
- Handle (this information can be found on page 46)
- Optional extras (this information can be found in the Optional Extras section, pages 46-64).
- Use the escutcheon plate part of the picture to describe the engraving you desire.

FIRM:

Contact: **Tel:**

Date

Optional Extras

Escutcheon Plate

○30X30 ○48X48 ○64X64 ○88X88 ○130X130

Ith

○10A ○20A ○25A ○32A
○63A ○100A ○150A ○315A

Mounting

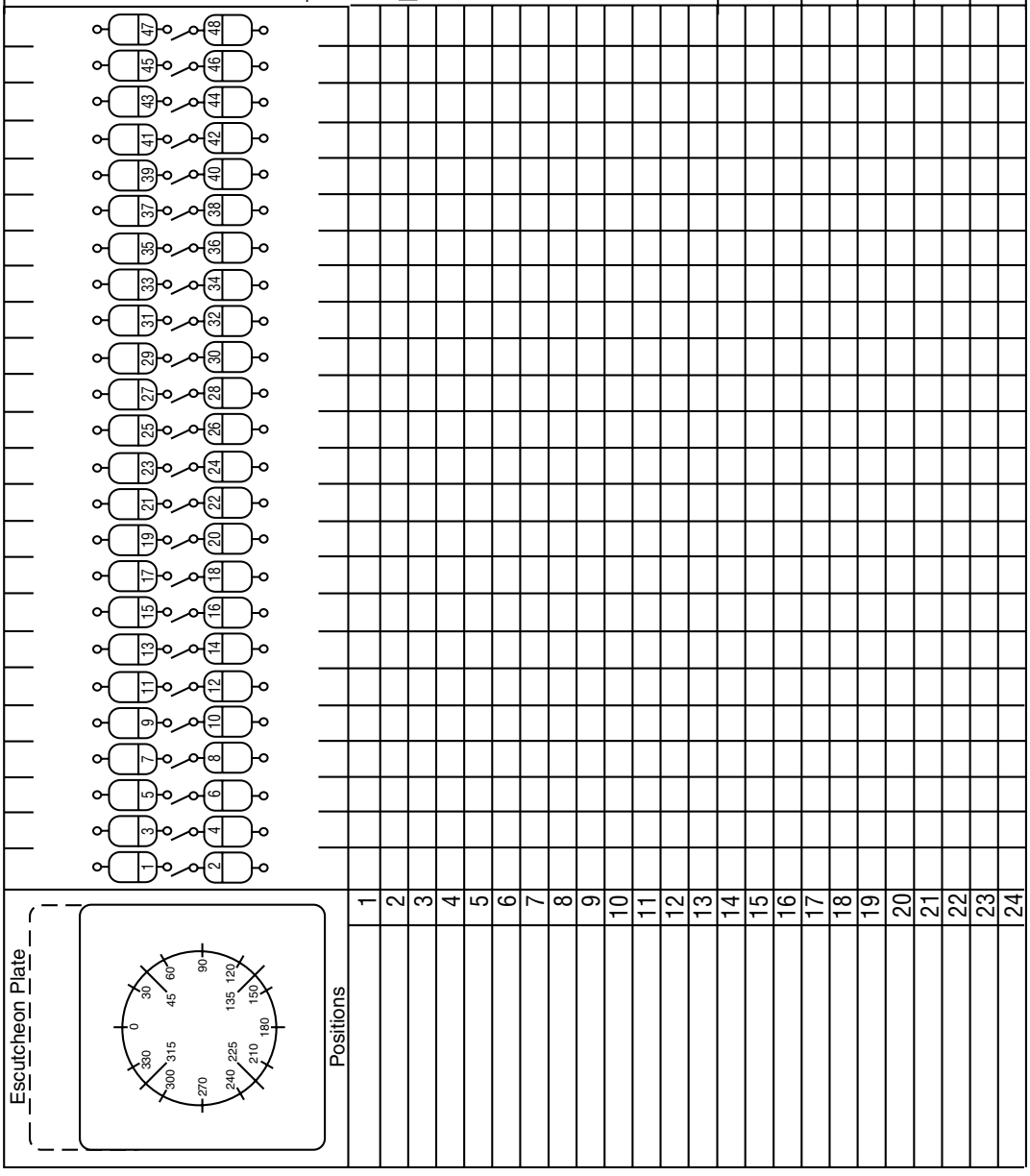
E	EF	ER	FS2	FT2
FT4	VE	PN	KS	UE

Handle	B	F	I	K	R	S
Color	Black		Red	White		Grey

x Contact Closed

x x Contact closed over several pos.

Return



This drawing can be found in PDF -format in our home page.

EKR

This solid enclosure is designed for the heavy industry and especially for an aggressive environment. The whole range of KG and KH load-break switches as well as every cam switch can be built in this enclosure. Optionally, we can deliver the enclosure with conduit entries.

Technical details:

- oil and acid resistant
- double isolated, class II
- heat resistant
- suitable for outside use (IP65)

EKN

This enclosure with rain cap is made of Noryl, and it is very suitable for wet conditions. Also in an area with cleaning products the EKN enclosure is the right choice. Optionally, we can deliver the enclosure with conduit entries.

Technical details:

- oil and acid resistant
- double isolated, class II
- heat resistant
- suitable for outside use (IP65)

Ventilation switch

This range of switches is fully designed for all kinds of ventilation or air handling markets, also for house-building. The latest development is a combination of switch and timer. After touching the contact, the function will continue for half an hour. Other varieties in accordance. This solution can be delivered in plastic enclosure as well.

NMBS switch

After research with leading railway companies, Solenoid Benelux designed a highly reliable vandal proof switch. It is possible to order a triangle or a square shaft.

Prison switch

Our special range of switches for prisons and closed institutes are a combination of security and functionality. The knowledge, quality and flexibility of Solenoid Benelux and Kraus & Naimer has resulted in a design of switches for light, communications and fire alarm.

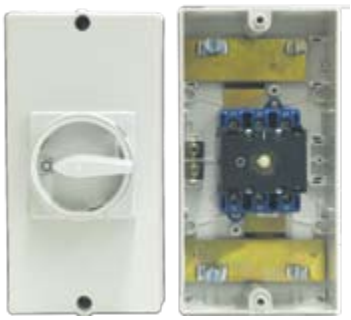
Timer switch

In a situation of constant threats of automation and computerisation we search for alternative solution of switching. PLC technique f.e. will replace a lot of hand operated switches or signs. Nowadays we feel confident that this revolution by automation decreases. In case of safety the human hand is still necessary to take the right decisions.
Although our market does not increase with double figures, we are successful in finding new products to raise our turnover.
One of our recent projects was a 3 step switch including an electronic timer module. This application was developed for a big supplier of fan products. For us this was the beginning of a new area to combine high and low voltage products.
After a period of research we found a solution by using electric components and electronic parts. Custom made products are highly appreciated and find it's way to several branches.

Ex switch zone 21 and 22

Powders or dust like substances are processed or are by-products of the production process in many industries. Whether the dust is useful or waste, a large majority or dust like substances pose the danger of fire or possibly even explosions. Eighty percent of all industrial dusts are combustible and even a dust layer of 1 mm in a closed room is sufficient to trigger an explosion when the dusty is swirled up and ignited. The statements mentioned before, combined with the fact that those affected are not sufficiently aware of the danger (in contrast to the danger of gas explosions) underlines the importance of preventing dust explosions. To avoid the circumstances as described we developed a range of explosion save switches. Regular main switches in a large current range and customer required switching programs belongs to our EX program. All enclosures are certified following to the ATEX specification.

EMC wire shield carrier



Kraus & Naimer has developed a wire shield carried through system for its KL and KS enclosures. This system is available for KL and KS enclosures in size S0, S1 and S2 and allows the uninterrupted leading through of the wire shield

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