



Kraus & Naimer

BLUE LINE switchgear

since 1907

CATALOG 150 ^{12/2007}

KG Switches 20 A-315 A

KH and KHR Switches 16 A-80 A



Kraus & Naimer

The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues to be recognized as the world leader in that product field.

BLUE LINE

Blue Line products are protected by numerous patents throughout the industrial world. They are built to national and international standards and designed to withstand adverse temperatures and climates.

Blue Line products are accepted and universally recognized for their quality and workmanship. They are supported by a worldwide sales and service organization.

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

Disconnectors and Main Switches acc. to IEC 60947-3 see Catalog 500

Contents	KG Switches	KH, KHR Switches
	Page	Page
Construction Data	2	23
Nominal Ratings	3	23
How to order	4, 5	4, 5
Types of Mounting and Enclosures	6-8	24, 25
Switch Function and Configuration	9-11	25
Escutcheon Plates	12	26
Handles	13	27
Optional Extras		
Shaft Extensions	16	29
Auxiliary Contacts	14	28, 29
Protective Covers	14	28
Ground and Neutral Terminals	15	29
Padlock Devices	18	32
Door Clutches	16, 17	30, 31
Additional Main Contacts	15	
Additional Module for Motor Control Center (MCC)	19	
Angular drive	19	
Technical Data	20, 21	34, 35
International Standards and Approvals	22	33
Dimensions		
Types of Mounting and Enclosures	36-40	46, 47, 49
Optional Extras	40-45	48-51
Blue Line Switchgear: Summary		52

Construction Data

Disconnectors and Main Switches according to IEC 60947-3 see Catalog 500

KG Switches

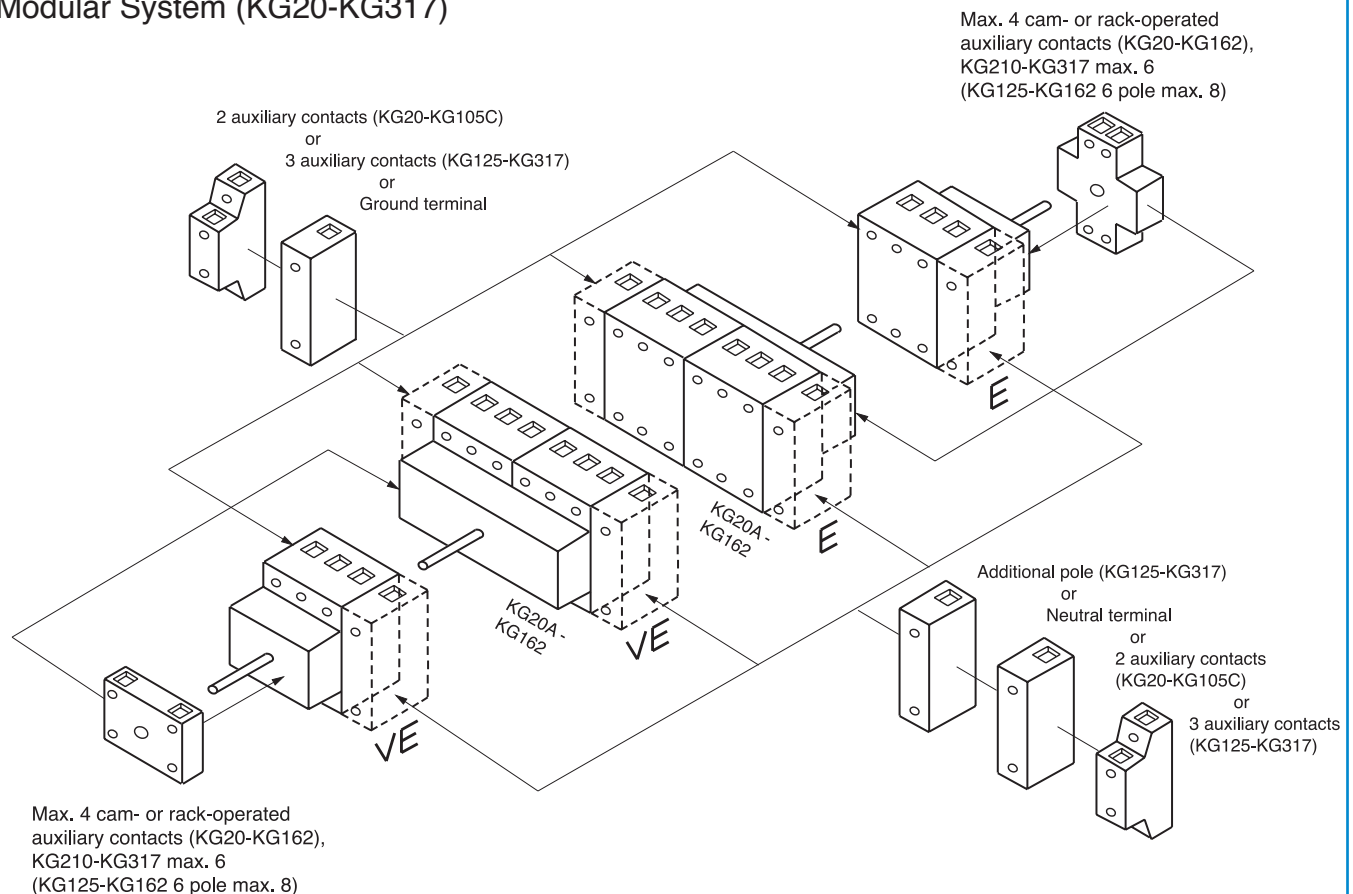
The KG10A through KG317 switch line offers excellent performance characteristics and exceed the requirements of IEC 60947-3 as well as the new VDE 0660 part 107. KG switches are principally used as motor and industrial panel disconnectors, double-throw transfer switches, safety switches, main disconnect switches and distribution system isolation switches. This durable switch line possesses high short-circuit withstand capabilities, with positive contact movement during making and breaking functions. KG switches exhibit excellent AC-3 and AC-23 making and breaking capabilities providing an additional safety advantage.

The safety level of the KG switch series in numerous areas surpasses those of many international standards organizations: Positive contact movement during making and breaking operations. Higher dimensioned air and creepage distances for 690 V or 1000 V. Dead front, finger-proof box terminals according to EN 50274, VDE 0660 part 514 and BGV A3. Switch types KG210, KG250 and KG315 require an option protective cover.

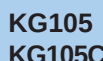
This advanced switch-generation affords significant advantages during mounting and wiring. For ease of installation, switch terminals are on the same plane as the power conductors. The KG10A through KG105C base mounted switches feature a two hole mounting as well as a "quick mount" designed for standard DIN rails according to EN 50022. KG125 through KG317 feature a four hole mounting.

The flexibility of the KG's modular system offers maximum versatility for the modifying of switches in the field. Modules can easily be added to switches which have already been installed in equipment often without having to remove existing wiring. This modular design also minimizes the need for high inventory levels. Other important accessories such as make before break auxiliary contacts, additional box and bolt terminals, shaft extensions, door clutches, terminal covers and padlock devices enhance the flexibility and versatility of this proven line of switches.

Modular System (KG20-KG317)



Nominal Ratings

Escutcheon Plate Frame mm			Typen	IEC 60947-3/VDE 0660 part 107			UL and Canada			
				Rated Values						
				Thermal Current I_U/I_{th} A	Utilization AC-23A kW	Category AC-3 V-440 V	Ampere- Rating 3 x 600 V A	Standard Motor Load DOL-Rating 3 x 240 V HP	3 x 480 V HP	
48 x 48			 KG10A	KG10A	20	5,5	3,7	20	2	3
64 x 64				KG10B	20	5,5	3,7	20	2	3
30 x 30			 KG20 KG32	KG20	25	7,5	5,5	25	3	5
48 x 48				KG20A	25	7,5	5,5	25	3	5
64 x 64				KG20B	25	7,5	5,5	25	3	5
			 KG20A KG32A	KG32	32	11	7,5	30	5	10
				KG32A	32	11	7,5	30	5	10
				KG32B	32	11	7,5	30	5	10
48 x 48			 KG41 KG64	KG41	40	15	11	40	7,5	15
64 x 64				KG41B	40	15	11	40	7,5	15
			 KG41B KG64B	KG64	63	22	18,5	60	10	20
				KG64B	63	22	18,5	60	10	20
64 x 64			 KG80 KG100 KG105	KG80	80	30	22	80 ¹	20	40
88 x 88				KG80C	80	30	22	80 ¹	20	40
			 KG80C KG100C KG105C	KG100	100	37	30	100 ¹	25	50
				KG100C	100	37	30	100 ¹	25	50
			 KG105C	KG105	125	45	37	125	30	60
				KG105C	125	45	37	125	30	60
88 x 88			 KG125, KG160 KG210, KG250, KG315 (with box terminals)	KG125	125	45	37	150 ¹	30	60
88 x 88				KG126	125	45	37	150 ¹	30	60
88 x 88				KG127	125	45	37	150 ¹	30	60
			 KG126, KG161 KG211, KG251, KG316 (with bolt terminals)	KG160	160	55	45	200 ¹	40	60
				KG161	160	55	45	200 ¹	40	60
				KG162	160	55	45	200 ¹	40	60
			 KG125, KG160 KG210, KG250, KG315 (with box terminals)	KG210	200	75	55	200 ¹	50	75
				KG211	200	75	55	200 ¹	50	75
				KG212	200	75	55	200 ¹	50	75
88 x 88			 KG127, KG162 KG212, KG252, KG317 (bolt terminals on top, box terminals at the bottom)	KG250	250	90	55	250 ¹	60	75
				KG251	250	90	55	250 ¹	60	75
				KG252	250	90	55	250 ¹	60	75
			 KG127, KG162 KG212, KG252, KG317 (bolt terminals on top, box terminals at the bottom)	KG315	315	110	75	300 ¹	75	100
				KG316	315	110	75	300 ¹	75	100
				KG317	315	110	75	300 ¹	75	100

¹Valid when connected with wire rated for 75 °C.

How to order

Disconnectors and Main Switches according to IEC 60947-3 see Catalog 500

Three or four pieces of data (shown below) are required for ordering Blue Line Switch Disconnectors. Code numbers for ordering are shown in this catalog.

1. Type of Switch

The type of switch required may be easily selected by referring to the tables on pages 3 and 23 which show the thermal current and power rating of each switch. For further technical details, refer to pages 20/21 and 34/35.

2. Switch Function

The code numbers for the KG switches shown on pages 9-11 and on page 25 for the KH switches indicate the switch function, escutcheon plates and handles. Additional coding to modify the type and color of handle and escutcheon plate is explained below and on page 5.

3. Type of Mounting

Switch types and enclosures for the KG switches are shown on pages 6-8. The KH switches may be selected by referring to the table on page 24.

KG100

**K302-600
M004**

VE

4. Optional Extras

Pages 14-19 list optional extras and their coding for the KG switches. For the KH/KHR switches refer to pages 28-32. A table shows the different switch sizes in which the optional extra is available.

There are some optional extras which are available in a variety of programs. Additional ordering data may, therefore, be required.

Modification of Switches

The part number or switch function and options may be modified in cases where items are required other than standard. The modification may involve the escutcheon plate inscription, color combination of escutcheon plate and handle, type of escutcheon plate and handle, or the optional extra.

Color combination of escutcheon plate and handle for KG and KH/KHR switches

Switch Type	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash-number
KG ¹ , KH/KHR	electro-gray	electro-gray	brushed alu	black	-100
KG ¹ , KH/KHR	electro-gray	electro-gray	black	mat silver	-500
KG, KH/KHR	black	black	brushed alu	black	-600
KG, KH/KHR	black	black	black	mat silver	-700

¹Not available for switch types KG20 and KG32.

How to order

Modification of Switches

Color combinations of escutcheon plate and handle for KG and KH/KHR switches

The standard switch consists of a transparent escutcheon plate with brushed aluminum backing and black inscription. The escutcheon plate frame is black and it has a black handle. Pages 4, 12 and 26 show further combinations which are available. The subcoding shown on this page should be specified when color combinations are required.

Example: The complete coding for switch type KG100 with a 3 pole ON/OFF switch function, electro-gray handle and electro-gray escutcheon plate frame with brushed aluminum backing and black inscription which reads **0-1** is as follows: **KG100 K300-100 E**.

The following is a list of special programs for escutcheon plate and handle combinations. They may be obtained by specifying any one of the corresponding two digit dash-numbers as a part of the dash-number. It is necessary to prefix these two numbers with a digit number which represents the color combination required.

Special programs for plate and handle combinations for KG and KH/KHR switches

- | | |
|--|---|
| - 000 = without escutcheon plate, without handle | - .08 = with F-handle |
| - .01 = without escutcheon plate | - .09 = with P-handle |
| - .02 = without handle | - .10 = escutcheon plate with frame and fixation ring only
(if using switches with single hole mounting: - .16) |
| - .03 = with square escutcheon plate without lettering | - .11 = without escutcheon plate, but with handle
bearing plate |
| - .04 = with rectangular escutcheon plate without lettering | - .12 = with yellow escutcheon plate backing and
red handle |
| - .05 = with square escutcheon plate without lettering and
without handle | - .14 = with B-handle |
| - .06 = with rectangular escutcheon plate without lettering
and without handle | - .16 = escutcheon plate with frame and fixation ring only
if using switches with single hole mounting |
| - .07 = standard escutcheon plate, without lettering
on rectangular section | |

Example: The complete coding for switch type KG100C with a 3 pole ON/OFF switch function with electro-gray escutcheon plate frame, square escutcheon plate without lettering, brushed aluminum plate backing and electro-gray handle reads as follows: **KG100C K300-103 VE**.

Handles, Escutcheon Plates and Optional Extras

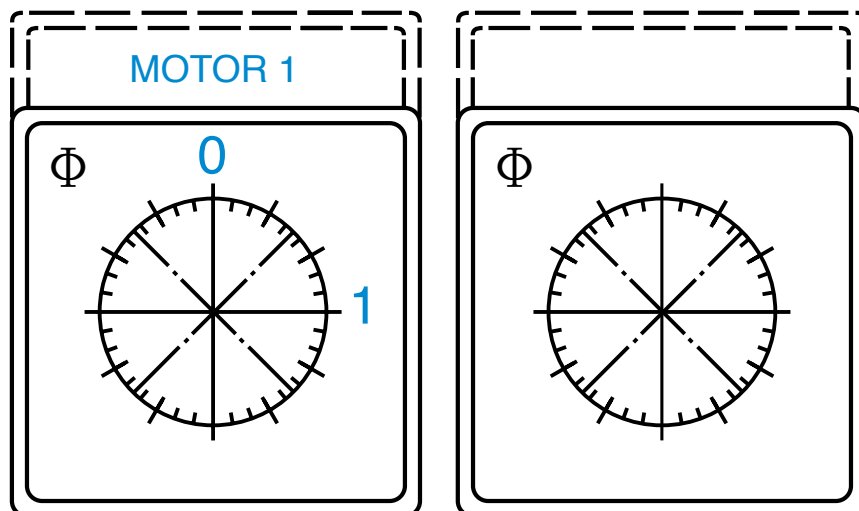
Various standards for the KG switches are listed in the table on pages 6-8 and for the KH/KHR switches on page 24.

When a handle, escutcheon plate or optional extra is required but not covered by the dash-number, the code number for the selected component should be entered separately. A complete range of standard escutcheon plates are illustrated on pages 12/13 and 26/27. Non standard or special escutcheon plate engravings are available at extra cost.

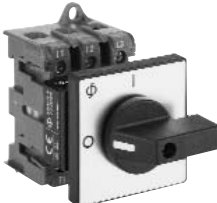
Ordering of Special Escutcheon Plates

When ordering special escutcheon plates it is advisable to use our order form, as illustrated.

Example: Customer's requirements are shown beside.



Order forms are available upon request.

Mounting	Type	Code
	Front mounting protection IP 66	
	Two hole panel mounting	KG20 KG32
	Four hole panel mounting	KG10A- KG317
	Single hole mounting 22 mm Protection IP 66	
	Without escutcheon plate	KG10A KG20A KG32A
	With square escutcheon plate	KG10A KG20A KG32A
	Base mounting	
	Screw/Snap-on base mounting for track EN 50022, protection IP 40	KG10A- KG317
	Snap-on base mounting for track EN 50022, protection IP 40	KG125- KG162
	Screw base mounting (KG20A-KG162) and Snap-on base mounting (KG20A-KG105) for track EN 50022. Escutcheon plate for 45 mm knock-out.	KG20A KG32A KG41- KG64B KG80- KG105 KG125- KG162
	Snap-on base mounting for track EN 50022. Both the escutcheon plate for 45 mm standard knock-out and the handle are adjustable in height.	KG10A

Plastic Enclosure Protection IP 66/67	Type	Code
	The KL and CL enclosures are available in 3 sizes allowing for installation of 3, 4, 6 and 8 pole KG switches. The KL-series is made of strong durable plastic and offers high UV-resistance. The CL-series is especially designed for applications in an 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. Included in each enclosure is a ground and neutral terminal. One of these terminals must be eliminated if a 3 pole switch with lateral mounted auxiliary contacts or a 4 pole switch is installed. All enclosures can be supplied with a cover coupling for additional safety. Increased wiring space and mounting holes with slots are featured in this new line. These enclosures are also available for conduit entries for PG-thread.	KG20 KG32 KG20B KG32B KG41 KG64 KG41B KG64B KG80 KG100 KG105
	Without cover interlock	KL.0 CL.0
	With cover interlock (The enclosure can only be opened at 9 o'clock position)	KL.1 CL.1
	With cover interlock (The enclosure can only be opened at 12 o'clock position)	KL.2 CL.2
	 KS and CS enclosures have a compact size which allows for the installation of a 3, 4 or 6 pole KG10 ON/OFF switch or a 3 pole KG20 ON/OFF switch. The design, options and mounting are the same as those of the KL and CL enclosures.	KG10 KG20
	Without cover interlock	KS50 CS50
	With cover interlock (The enclosure can only be opened at 9 o'clock position)	KS51 CS51
	With cover interlock (The enclosure can only be opened at 12 o'clock position)	KS52 CS52

Plastic Enclosure with Ground Terminal Protection IP 65 resp. IP 54		Threads	Type	Code
 KG20A, KG32A, KG41, KG64 3 and 4 pole (ON/OFF Switches) Protection IP 65	Conduit entries with NPT-thread		KG20A KG32A KG41 KG64	
	Without cover coupling	1/2" 3/4"		PFA4 PFA PFD4 PFD
	And for switches with cam-operated auxiliary contacts	1/2" 3/4"		
	With cover coupling	1/2" 3/4"		PFB4 PFB PFE4 PFE
	And for switches with cam-operated auxiliary contacts	1/2" 3/4"		
	Without cover coupling, combined with padlock device V840A	1/2" 3/4"		PFC4 PFC
	And for switches with cam-operated auxiliary contacts	1/2" 3/4"		PFF4 PFF
			KG20B KG32B KG41B KG64B KG80 KG100	
	Without cover coupling	3/4" 1"		PFA5 PFA PFD5 PFD
	And for switches with cam-operated auxiliary contacts	3/4" 1"		
 KG80, KG100 3 and 4 pole¹ (ON/OFF Switches) KG20B, KG32B, KG41B, KG64B 6 and 8 pole (ON/OFF Switches) 3 and 4 pole (Double-throw Switches) Protection IP 54 On top and at the bottom an additional conduit entry .63"	Without cover coupling	3/4" 1"		PFA5 PFA PFD5 PFD
	And for switches with cam-operated auxiliary contacts	3/4" 1"		
	With cover coupling	3/4" 1"		PFB5 PFB PFE5 PFE
	And for switches with cam-operated auxiliary contacts	3/4" 1"		
	Without cover coupling, combined with padlock device V840A	3/4" 1"		PFC5 PFC
	And for switches with cam-operated auxiliary contacts	3/4" 1"		PFF5 PFF
	These enclosures are also available with PG-, BSI- or metric ISO-thread on request.			

¹For switches with cam-operated auxiliary contacts only 3 pole.

Function	KG10A	KG10B	KG20 KG32	KG20A KG32A	KG20B KG32B	KG41 KG64	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- KG317	Escutch. Plate	Code
----------	-------	-------	--------------	----------------	----------------	--------------	----------------	------------------------	---------------------------	-----------------	-------------------	------

ON/OFF Switches 3 pole

Types of Mounting

Without auxiliary contacts	E	E	E	E	E	E	E	E	E	E		K300-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³ VE2 ³		K300-620
With cam/rack-operated auxiliary contact 1 NO	E	E	E	E	E		E	E	E	E		K301-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K301-620
With cam/rack-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		K302-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K302-620
With cam/rack-operated auxiliary contacts 2 NO			E	E	E		E	E	E	E		K312-600
			VE KL. PF..	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K312-620
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			K304-600
			VE KL. PF..	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE			K304-620
With GRD-terminal			E	E	E	E	E	E	E	E		K305-600
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 ³ VE2 ³		K305-620
With GRD- and N-terminal			E	E	E	E	E	E	E	E		K307-600
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 ³ VE2 ³		K307-620

¹Only for switch type KG20. ²When using KS. the switch type changes to KG10. ³Only for switch types KG125-KG162.⁴Only for switch types KG80 and KG100.

Function	KG10A	KG10B	KG20 KG32	KG20A KG32A	KG20B KG32B	KG41 KG64	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- KG137	Escutch. Plate	Code
----------	-------	-------	--------------	----------------	----------------	--------------	----------------	------------------------	---------------------------	-----------------	-------------------	------

ON/OFF Switches 4 pole

Types of Mounting

Without auxiliary contacts	E	E	E	E	E	E	E	E	E	E		K400-600
	FT1 FT2 VE VE21 KS. ¹	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL. PF.. ³	VE	VE VE1 ² VE2 ²		K400-620
With cam-operated auxiliary contact 1 NO			E	E	E		E	E	E	E		K401-600
			VE KL. PF..	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL.	VE VE2 KL.	VE	VE VE1 ²		K401-620
With cam-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		K402-600
	FT1 FT2 VE VE21 KS. ¹	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL.	VE	VE VE1 ²		K402-620
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			K404-600
			VE	FT1 FT2 VE VE2 PF..	VE	VE VE2	VE VE2	VE VE2 PF.. ³	VE			K404-620

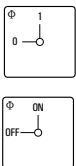
ON/OFF Switches 6 pole

Without auxiliary contacts	E	E		E	E		E	E	E	E ²		K600-600
	FT1 FT2 VE VE21 KS. ¹	VE		VE VE2 KL. PF..	VE KL. PF..		VE VE2 KL. PF..	VE VE2	VE	VE ² VE1 ²		K600-620
With cam-operated auxiliary contact 1 NO				E	E		E	E	E	E ²		K601-600
				VE VE2 KL. PF..	VE KL. PF..		VE VE2 KL. PF..	VE	VE	VE ² VE1 ²		K601-620
With cam-operated auxiliary contacts 1 NO and 1 NC	E	E		E	E		E	E	E	E ²		K602-600
	FT1 FT2 VE VE21 KS. ¹	VE		VE VE2 KL. PF..	VE KL. PF..		VE VE2 KL. PF..	VE	VE	VE ² VE1 ²		K602-620

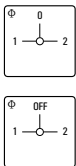
¹When using KS. the switch type changes to KG10. ²Only for switch types KG125-KG162. ³Only for switch types KG80 and KG100.

Function	KG10A	KG10B	KG20A KG32A	KG20B KG32B	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- KG162	Escutch. Plate	Code
----------	-------	-------	----------------	----------------	----------------	------------------------	---------------------------	-----------------	-------------------	------

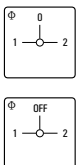
ON/OFF Switches 8 pole**Types of Mounting**

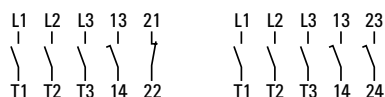
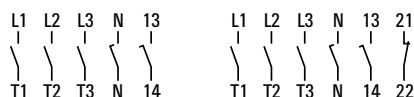
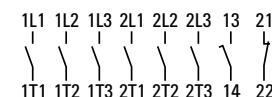
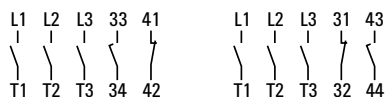
Without auxiliary contacts			E VE VE2	E VE KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1		K800-600 K800-620
----------------------------	--	--	----------------	------------------------	-------------------------------	----------------	---------	----------------	---	----------------------

Double-throw Switches 3 pole

Without auxiliary contacts			E VE VE2	E VE KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1		K900-600 K900-620
----------------------------	--	--	----------------	------------------------	-------------------------------	----------------	---------	----------------	---	----------------------

Double-throw Switches 4 pole

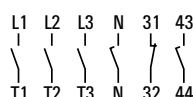
Without auxiliary contacts			E VE VE2	E VE KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1		K950-600 K950-620
----------------------------	--	--	----------------	------------------------	-------------------------------	----------------	---------	----------------	--	----------------------

Connection Diagrams**ON/OFF Switches 3 pole (with cam-operated auxiliary contacts)****ON/OFF Switches 4 pole (with cam-operated auxiliary contacts)****ON/OFF Switches 6 pole (with cam-operated auxiliary contacts)****With lateral mounted auxiliary contacts**

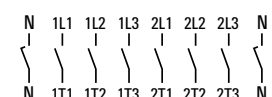
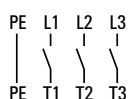
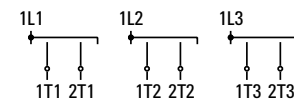
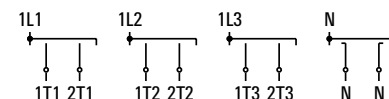
Mounting E, FT1, FT2

With lateral mounted auxiliary contacts

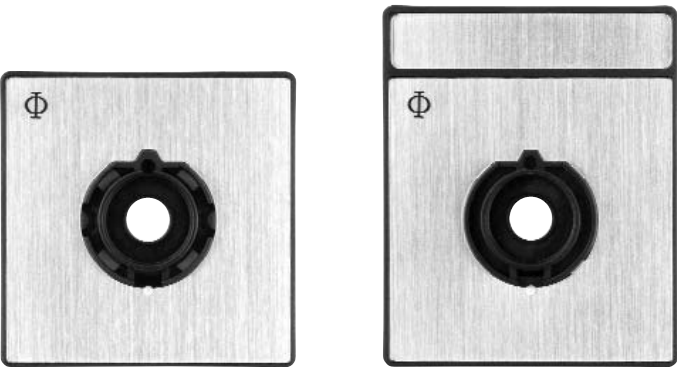
Mounting E, FT1, FT2

With lateral mounted auxiliary contacts

VE, VE2

ON/OFF Switches 8 pole**With GRD-terminal****With GRD- and N-terminal****Double-throw Switches 3 pole****Double-throw Switches 4 pole**

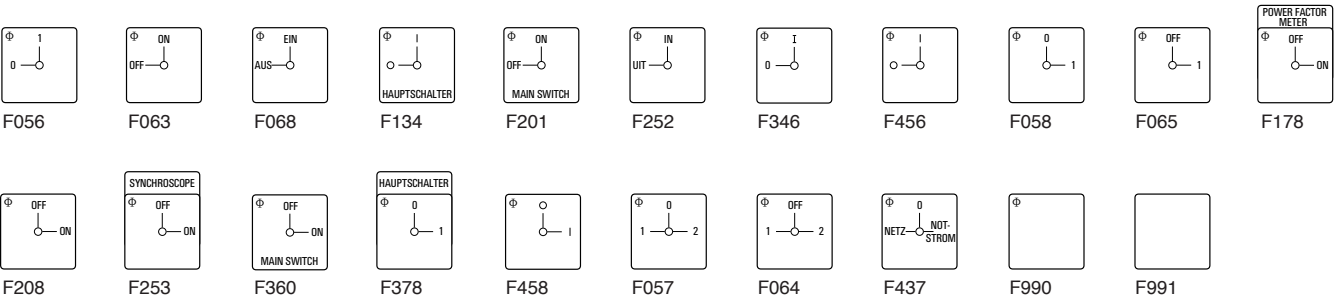
Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch position which is than embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface for the handle. If the switch is to be mounted without an escutcheon plate we would recommend the handle bearing plate T100-04, which is available for switch types KG10B, KG20B, KG32B, KG41B, KG80, KG100, KG105, KG80C, KG100C, KG105C and KG125-KG317. Escutcheon plates with special lettering are also available upon request.



Escutcheon plate frame and faceplate can be obtained in different colors as listed below and defined in the first digit of the dash-number (1, 5, 6, 7):

Switch Type	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash-number
KG10A ¹ -KG317	electro-gray	electro-gray	brushed alu	black	-100
KG10A ¹ -KG317	electro-gray	electro-gray	black	mat silver	-500
KG10A-KG317	black	black	brushed alu	black	-600
KG10A-KG317	black	black	black	mat silver	-700

Standard Escutcheon Plates

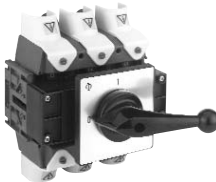


¹Not available for switch types KG20 and KG32.

Handles

KG Switches

Type	Color	Code	KG20 KG32	KG10A- KG64	KG10B- KG105	KG80C- KG105C	KG125- KG162	KG210- KG317
I-Handle 	black red white electro gray	G251 G252 G253 G257	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	— — — —
B-Handle 	black red white electro-gray	G521 G522 G523 G527	— — — —	● ● ● ●	● ● ● ●	— — — —	— — — —	— — — —
R-Handle 	black red white electro-gray	G001 G002 G003 G007	— — — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	— — — —
F-Handle 	black red white electro-gray	G221 G222 G223 G227	● ● — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	— — — —
L-Handle 	black red white electro-gray	G501 G502 G503 G507	— — — —	— — — —	● ● ● ●	— — — —	— — — —	— — — —
P-Handle  KG10A-KG64 KG10B-KG317	black red white electro-gray	G211 G212 G213 G217	— — — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
K-Handle 	black red white electro-gray	G411 G412 G413 G417	— — — —	— — — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●

Protective Covers, Auxiliary Contacts		Type	Code
Protective Covers			
	For 3 resp. 4 main contacts	KG10A KG10B	M160/A12 K2
	For 3 main contacts with box terminal with bolt terminal	KG20- KG315 KG126 KG161 KG211 KG251 KG316	M160/3. M160/33 M160/31
	For 4 main contacts with box terminal with bolt terminal	KG20- KG315 KG126 KG161 KG211 KG251 KG316	M160/4. M160/43 M160/41

Cam- and rack-operated Auxiliary Contacts (mounting only at factory)

 	Cam-operated auxiliary contacts 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 a H-bridge design with "cross-wire" contacts for low voltages and currents (mounting E from KG41 and mounting VE from KG80). The contact systems with gold contacts or gold-plated contacts allow for use in aggressive environments also. Special programs are also available upon request.	KG20- KG105C	M510A
	Rack-operated auxiliary contacts Switch types KG125-KG162 can be supplied with up to 4 auxiliary contacts, KG210-KG317 with up to 6 auxiliary contacts.	KG125- KG317	M510B
Ordering data:	Quantity and operation of the auxiliary contacts and type of the contact system.		

Lateral mounted Auxiliary Contacts

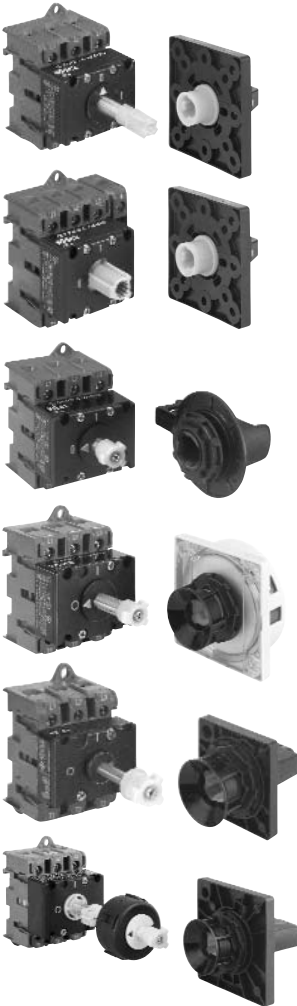
	Lateral mounted auxiliary contacts with 1 NO and 1 NC. Standard contacts (nonoverlapping) For mounting E, FT1 and FT2 For mounting VE, VE2, KL. and PF.. Overlapping contacts For mounting E, FT1 and FT2 For mounting VE, VE2, KL. and PF..	<table><tr><th colspan="2">Terminal numbers</th></tr><tr><th colspan="2">Attachment</th></tr><tr><th>left</th><th>right</th></tr><tr><td>(33-34, 41-42)</td><td>(53-54, 61-62)</td></tr><tr><td>(31-32, 43-44)</td><td>(51-52, 63-64)</td></tr></table>	Terminal numbers		Attachment		left	right	(33-34, 41-42)	(53-54, 61-62)	(31-32, 43-44)	(51-52, 63-64)	KG20- KG105C	H010/A11-E H010/A11-VE H010/B11-E H010/B11-VE
Terminal numbers														
Attachment														
left	right													
(33-34, 41-42)	(53-54, 61-62)													
(31-32, 43-44)	(51-52, 63-64)													
	Lateral mounted auxiliary contacts with 2 NO and 1 NC. Standard contacts (nonoverlapping) For mounting E For mounting VE Overlapping of 1 NO and 1 NC For mounting E For mounting VE	<table><tr><th colspan="2">Terminal numbers</th></tr><tr><th colspan="2">Attachment</th></tr><tr><th>left</th><th>right</th></tr><tr><td>(013-014, 023-024, 031-032)</td><td>(043-044, 053-054, 061-062)</td></tr><tr><td>(011-012, 023-024, 033-034)</td><td>(041-042, 053-054, 063-064)</td></tr></table>	Terminal numbers		Attachment		left	right	(013-014, 023-024, 031-032)	(043-044, 053-054, 061-062)	(011-012, 023-024, 033-034)	(041-042, 053-054, 063-064)	KG125- KG317	H010/A21-E H010/A21-VE H010/B21-E H010/B21-VE
Terminal numbers														
Attachment														
left	right													
(013-014, 023-024, 031-032)	(043-044, 053-054, 061-062)													
(011-012, 023-024, 033-034)	(041-042, 053-054, 063-064)													

Ground and Neutral Terminals	Type	Code	Additional Main Contacts	Type	Code								
Ground terminal  	KG20- KG32B	K0 H052/A	 Terminals for Control Circuit  Max. Permissible Wire Gage Single-core or Flexible wire stranded wire <table><tr><td>2,5 mm² AWG12</td><td>2,5 mm² AWG14</td></tr><tr><td>2,5 mm² AWG12</td><td>2,5 mm² AWG14</td></tr><tr><td>4 mm² AWG10</td><td>4 mm² AWG12</td></tr><tr><td>4 mm² AWG10</td><td>4 mm² AWG12</td></tr></table> Wiring Aid  Ordering data:	2,5 mm ² AWG12	2,5 mm ² AWG14	2,5 mm ² AWG12	2,5 mm ² AWG14	4 mm ² AWG10	4 mm ² AWG12	4 mm ² AWG10	4 mm ² AWG12	KG125 KG126 KG127	K3 H050/P¹ K3 H050/Q¹ K3 H050/R¹
	2,5 mm ² AWG12	2,5 mm ² AWG14											
	2,5 mm ² AWG12	2,5 mm ² AWG14											
	4 mm ² AWG10	4 mm ² AWG12											
	4 mm ² AWG10	4 mm ² AWG12											
	KG41- KG64B	K1 H052/B		KG160 KG161 KG162	K3 H050/S¹ K3 H050/T¹ K3 H050/U¹								
	KG80- KG105C	K2 H052/C		KG210 KG250 KG211 KG251 KG212 KG252	K3 H050/G¹ K3 H050/H¹ K3 H050/J¹								
	KG125 KG160	K3 H052/H¹		KG315 KG316 KG317	K3 H050/K¹ K3 H050/L¹ K3 H050/M¹								
	KG126 KG161	K3 H052/J¹											
	KG127 KG162	K3 H052/K¹											
KG210 KG250 KG315	K3 H052/D¹												
KG211 KG251	K3 H052/E¹												
KG212 KG252	K3 H052/F¹												
KG316 KG317	K3 H052/L¹ K3 H052/M¹												
Neutral terminal  	KG20- KG32B	K0 H053/A											
	KG41- KG64B	K1 H053/B	KG41- KG64B	K1B D220 KS									
	KG80- KG100C	K2 H053/C	KG80- KG105C	K2B D520 KSA									
	KG125 KG160	K3 H053/H¹	KG125- KG162	K3A D720 KS									
	KG126 KG161	K3 H053/J¹	KG210- KG317	K3B D520 KS									
	KG127 KG162	K3 H053/K¹	KG126 KG127 KG161 KG162	K3A D720 09									
	KG210 KG250 KG315	K3 H053/D¹	KG211 KG212 KG251 KG252 KG316 KG317	K3B D520 09									
	KG211 KG251	K3 H053/E¹											
	KG212 KG252	K3 H053/F¹											
	KG316 KG317	K3 H053/L¹ K3 H053/M¹											

¹Mounting only at factory.

Shaft Extensions, Simplified Door Clutch		Type	Code
Shaft Extensions			
	With asymmetric profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	L100
	Shaft with adjustable length with set screw with shear ring	KG10A KG20A, KG32A KG41-KG317	M004D M004
	With square profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	L100A
	Shaft with adjustable length with set screw with clamping bushing	KG41B-KG317 KG125-KG317	M004E M004A
Ordering data:		Free shaft length or dimension from mounting surface to cover.	

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 escutcheon plate are mounted on the cover.		
	With shaft extension Front protection IP 40 Front protection IP 65	KG10A KG20A, KG32A KG41B-KG105	M290/A3 M290/A3.EF¹
	With profile extension parts Front protection IP 65	KG41B-KG105	M290/A1.EF
	With padlock device, single hole mounting 22 mm, protection IP 66. An additional aluminum shaft extension is required.	KG10B KG20B, KG32B KG41B-KG105, KG125-KG317 ²	V840E
	The cover disc is available in black, yellow and electro-gray. The handle may be supplied in black, red and electro-gray.	KG10B KG20B, KG32B KG41B-KG105	V840G V840F
	Operation of the locking bar from the front. Available in black, red and electro-gray.	KG10A KG20A, KG32A KG41, KG64 KG10B KG20B, KG32B KG41B-KG105	V845
	Centering device for simplified door clutches with single hole mounting and shaft extension Misalignment between the shaft and mounting are compensated in all 4 directions.	KG10B KG20B, KG32B KG41B-KG105	M600
Ordering data:		Free shaft length or dimension from face of the switch to the cover and color selection.	

¹Available for switch types KG10A, KG20A and KG32A. ²Only for ON/OFF switches 3 and 4 pole.

Door Clutches	Type	Code
	The M280 door clutch has an adjustable shaft and can be supplied with an interlock device. With protected profile shaft fixation with set screw Front protection IP 40 Front protection IP 66/67 (KG10A - KG32A: IP 65) shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67 (KG10A - KG32A: IP 65) Without protected profile Front protection IP 40 Front protection IP 65 The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the 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 shaft and door. Handle lockable with padlocks Protection IP 66 The escutcheon plate is available in black, yellow and alu. The handle may be supplied in black and red. Standard handle and standard escutcheon plate Protection IP 65 Unlock insert for the M700 to open the door in ON-position. (After the locking has been made inactive, it is necessary to take effective precautions against an opening of the door by unauthorized persons.) The M800 door clutch utilizes a simple and robust design and features a compact size. It has an interlock in the On-position while a padlock can be fitted in the OFF-position. The door clutch may be opened only if the switch is in the OFF-position. In special cases, however, authorized people have a requirement to open the door, even if the switch is in the ON-position. Further characteristics are the single hole mounting with IP 66/67 protection degree, as well as the Accepted Misalignment up to ± 3 mm horizontally and ± 5 mm vertically. Maximum 3 padlocks with a minimum shackle diameter from 5 up to 8 mm are possible.	KG10A KG20A KG32A KG41B KG64B KG80 KG100 KG105 KG125- KG317 M280E M280E/.EF M280D M280D/.EF KG41 KG64 M280B/. M280B/.EF KG10B KG20B KG32B KG41B KG64B KG80 KG100 KG105 KG125- KG317 M700/. M701 S1D M700 29 M800/.
Ordering data:	Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.	

Padlock Devices		Type	Code
	The padlock device is an integral part of the switch. For 2 padlocks Operation of the locking bar from the bottom. Available in black, red and electro-gray.	KG10A KG20A, KG32A KG10B KG20B, KG32B KG41-KG105	V840A
	For 4 padlocks Operation of the locking bar from the front. Available in black, red and electro-gray.	KG10A KG20A, KG32A KG41, KG64 KG10B KG20B, KG32B KG41B, KG64B KG80-KG105 KG80C-KG105C KG125-KG317	V845
	For mounting VE2 Operation of the locking bar from the front.	KG10A KG20A, KG32A KG41, KG64 KG80-KG105	V840B
	For distribution box with 70 mm depth.	KG20A, KG32A KG41, KG64	V840H/..E
	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.		
	For 2 padlocks with F-handle	KG10A KG20A, KG32A KG41, KG64	V840D
	For 3 padlocks with F-handle	KG80C-KG105C KG125-KG162	
	For 3 padlocks with F-handle with B-handle	KG10B KG20B, KG32B KG41B, KG64B KG80-KG105	V840G V840G/B
	For 4 padlocks with F-handle with B-handle		V840F/F V840F/B
	Padlock device for switches with base mounting for locking when control cabinet is opened. Padlock devices with simplified door clutch and single hole mounting see page 16.	KG20B, KG32B KG41B, KG64B KG80-KG105 KG125-KG317	V840VE
Ordering data:		For V840 and V845 color selection required.	

Additional Module for Motor Control Center (MCC), Angular drive	Type	Code
 This additional module is for use in Motor Control Center (MCC). It allows for testing and unlocking, with up to 3 additional positions. The module is used in connection with the padlock device V840F and cam-operated auxiliary contacts. Interlock has to be assembled by the customer. ON-position: All circuits on, module interlocked, i. e. cannot be withdrawn. OFF-position: All circuits off, module interlocked, padlocks can be applied. Test position: Main incoming off, control circuits on, module interlocked. Isolated position: All circuits off, module can be withdrawn. Removed position: All circuits off, module can be removed. With 2 additional positions A = Test position B = Removed position  With 3 additional positions A = Test position B = Isolated position C = Removed position  With 3 additional positions A = Test position B = Isolated position C = Removed position  With 1 additional position A = Removed position 	KG20B KG32B KG41B KG64B KG20B KG32B KG41B KG64B KG20B KG32B KG41B KG64B KG20B KG32B KG41B KG64B	V500/1 V500/2 V500/3 V500/4

Angular drive

	KG125- KG317¹	M330
---	-------------------------------------	--------------------

¹Only for ON/OFF switches 3 and 4 pole.

Selection Data

KG10	KG20	KG32	KG41	KG64	KG80	KG100	KG105	KG125	KG160	KG210	KG250	KG315
KG10A	KG20A	KG32A	KG41B	KG64B	KG80C	KG100C	KG105C	KG126	KG161	KG211	KG251	KG316
KG10B	KG20B	KG32B						KG127	KG162	KG212	KG252	KG317

Rated Insulation Voltage U_i IEC/VDE ¹ UL/Canada CEE/NEMKO	V	690	690	690	690	690	690	690	690	1000 ²	1000 ²	1000 ²	1000 ²	1000 ²
	V	300	600	600	600	600	600	600	600	600	600	600	600	600
	V	400	500	500	500	500	500	500	-	-	-	-	-	-
Rated Impulse Withstand Voltage U_{imp} ¹	kV	4	6	6	6	6	6	6	6	8	8	8	8	8
Rated Thermal Current IEC/VDE $I_{u\text{ open}} = I_{th}$ $I_{the\text{ enclosed}}$ UL/Canada ON/OFF function UL/Canada Double-throw function	A	20	25	32	40	63	80	100	125	125	160	200	250	315
	A	20	25	32	40	63	80	100	125	125	160	200	250	315
	A	20	25	30	40	60	80 ³	100 ³	125	150 ³	200 ³	200 ³	250 ³	300 ³
	A	20	25	30	40	60	80 ³	100 ³	115	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	125	160	200	250	315
AC-22A Switching of combined resistive or low inductive loads, including moderate overloads	IEC/VDE 220 V-500 V 660 V-690 V A	20	20	32	40	63	80	100	125	125	160	200	200	250
	A	16	20	32	40	55	65	85	90	100	100	125	125	140
Ampere-Rating ON/OFF function Double-throw function Resistive or low inductive loads	UL/Canada ⁴ 600 V A	20	25	30	40	60	80 ³	100 ³	125	150 ³	200 ³	200 ³	250 ³	300 ³
	UL/Canada ⁴ 600 V A	20	25	30	40	60	80 ³	100 ³	115	125 ³	160 ³	-	-	-
Rated Utilization Category AC-3 Direct-on-line starting	IEC/VDE 3 phase 220 V-240 V 3 pole 380 V-440 V 500 V 690 V kW	2,2	4	5,5	7,5	11	15	18,5	22	22	30	37	37	45
	kW	3,7	5,5	7,5	11	18,5	22	30	37	37	45	55	55	75
	kW	3,7	5,5	7,5	15	22	30	37	45	45	55	75	75	90
	kW	3,7	5,5	7,5	11	15	18,5	22	22	30	37	40	40	45
AC-23A Frequent switching of motors or other high inductive loads	3 phase 220 V-240 V 3 pole 380 V-440 V 500 V 690 V kW	3	5,5	5,5	7,5	11	18,5	22	25	30	30	37	37	55
	kW	5,5	7,5	11	15	22	30	37	45	45	55	75	90	110
	kW	5,5	7,5	11	18,5	30	37	45	55	55	75	90	110	132
	kW	5,5	7,5	11	15	18,5	22	30	30	37	37	45	45	45
DOL-Rating Standard motor load (similar AC-3)	UL/Canada ⁴ 120 V 3 phase 240 V 3 pole 480 V 600 V HP	1	1,5	2	3	5	7,5	10	15	15	20	25	30	40
	HP	2	3	5	7,5	10	20	25	30	30	40	50	60	75
	HP	-	5	10	15	20	40	50	60	60	60	75	75	100
	HP	-	5	10	15	20	50	50	50	60	60	75	75	100
Power loss per contact at I_u Resistance to vibration ⁵ Resistance to shock ⁵	W C C C	0,9 A B	0,7 A B	1,1 A B	1 A B	2,2 A B	1,7 A B	2,4 A B	3,8 A B	3,1 C C	5 C C	5 C C	8 C C	12,7 C C
Short Circuit Protection Max. fuse size (gL-characteristic) Rated short-time withstand current (1 s-current)	A A	20 130	35 350	35 430	50 500	63 580	80 1600	100 1850	125 2000	125 2500	160 3000	200 4000	250 4600	315 5800
Max. Permissible Wire Gage - Use copper wire only For box terminal Single-copper or stranded wire Flexible wire sleeving in accordance with DIN 46228 Flexible wire without sleeve Cable lug or track must accept connection screw Max. width Max. width with protective cover	mm ²	2,5	6	6	16	16	50	50	50	95	95	185	185	185
	AWG	12	10	10	6	6	1/0	1/0	1/0	3/0	3/0	-	-	-
	MCM	-	-	-	-	-	-	-	-	-	-	350	350	350
	mm ²	2,5	4	4	10	10	35	35	35	70	70	120	120	120
	mm ²	2,5	4	4	10	10	35	35	35	70	70	150	150	150
	AWG	12	10	10	6	6	2	2	2	2/0	2/0	-	-	-
	MCM	-	-	-	-	-	-	-	-	-	-	300	300	300
	mm	-	-	-	-	-	-	-	-	M10 x 20	M10 x 20	M12 x 20	M12 x 20	M12 x 20
	mm	-	-	-	-	-	-	-	-	20	20	25	25	25
	mm	-	-	-	-	-	-	-	-	25	25	34	34	34
Ambient Temperature ⁶ open at 100 % I_u/I_{th} enclosed at 100 % I_{the}		50 °C during 24 hours with peaks up to 55 °C 35 °C during 24 hours with peaks up to 40 °C												

¹Valid for lines with common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²Suitable for no load switching applications (AC-20A) above 690 V. ³Valid when connected with wire rated for 75 °C. ⁴International Standards and Approvals, refer to page 22. ⁵A: min. 4 g, 2-100 Hz, 1,6 mm. B: min. 6 g, 6 ms. C: on request. ⁶Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible).

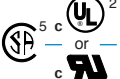
Technical Data

Auxiliary Contacts for KG Switches

Selection Data	Auxiliary contacts for:					
	KG10 KG10A KG10B	KG20 KG20B- KG32B	KG41- KG105C	KG125- KG162	KG210- KG317	

Rated Insulation Voltage U_i			IEC/VDE UL/Canada	V V	690 300	500 600	690 600	690 600	690 600
Rated Thermal Current I_u/I_{th}			IEC/VDE/BS UL/Canada	A A	10 20	- 10	16 10	16 10	16 10
Rated Operational Current I_e									
AC-21A	Switching of resistive loads, including moderate overloads	IEC/VDE		A	20	10	16	16	16
AC-15	Switching of control devices, contactors, valves etc.	110 V-240 V 380 V-440 V 500 V		A	6	2,5	6	6	6
				A	4	1,5	3	3	3
				A	-	1	1,5	1,5	1,5
Pilot Duty	Heavy	UL/Canada			A300	A600	A600	A600	A600
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
Max. Permissible Wire Gage - Use copper wire only									
	Single-core or stranded wire		mm ² AWG		2,5 12	1,5 14	2,5 12	2,5 12	2,5 12
	Flexible wire sleeving in accordance with DIN 46228		mm ²		2,5	1,5	2,5	2,5	2,5
	Flexible wire without sleeve		mm ² AWG		2,5 12	1,5 16	2,5 14	2,5 14	2,5 14

Country	Authority	Mark or Standard	KG10	KG20	KG32	KG41	KG64	KG80	KG100	KG105	KG125	KG160	KG210	KG250	KG315
			KG10A	KG20A	KG32A	KG41B	KG64B	KG80C	KG100C	KG105C	KG126	KG161	KG211	KG251	KG316
			KG10B	KG20B	KG32B						KG127	KG162	KG212	KG252	KG317

USA	Underwriters Laboratories	 ¹	●	●	●	●	●	●	●	●	●	●	●	●	●
Canada	Canadian Standards Association	 ²	●	●	●	●	●	●	●	●	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+	+	+	+	+	+	+	+
Danmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontrollanstalten		+	+	+	+	+	+	+	+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+	+	+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+	+	+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ³ VDE 0113 ³	+	+	+	+	+	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ³	+	+	+	+	+	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60204-1 ⁴ IEC 60947-3 ⁴	+	+	+	+	+	+	+	+	+	+	+	+	+
China	China Quality Certification Centre	 ⁶ GB14048.3	●	●	●	●	●	●	●	●	●	●	●	●	●
Russian Federation	GOST	 ⁶ CH01	●	●	●	●	●	●	●	●	●	●	●	●	●
Russian Federation	Russian Maritime Register of Shipping		●	●	●	●	●	●	●	●	●	●	●	●	●
Germanischer Lloyd			+	+	+	+	+	+	+	+	+	+	+	+	+
Lloyds Register of Shipping			+	●	●	●	●	●	+	+	+	+	+	+	+

● Switch approved + Switch conforms to requirements

¹Devices provided with terminals suitable to connect unprepared wires are approved under the "Listing Program" (File No. E35541, Guide No. NLRV). Devices with bolt terminals are approved under the "Recognized Component Program" (File No. E35541, Guide No. NLRV2).

²Approved by use of "UL Certification Services for Canada" (File No. E35541, Guide No. NLRV7 or NLRV8 respectively).

³Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.

⁴IEC does not operate an approval program.

⁵File No. 13002, Class No. 3211-05 resp. 4652-04.

⁶If this approval is required, please request when ordering.

KG switches are approved by UL and CSA as „disconnect switches for use in motor circuits“. Switches using ring type terminations (KG127, KG162, KG212, KG252, KG317) it is necessary to make connections to separate terminals.

The switches described in this catalog exceed the requirements of IEC 60947-3 and VDE 0660 part 107 and meet the standard on main switches and maintenance switches.

The new series offers a 4 pole switch body and symmetrically placed contacts. The adjustable length through shaft offers increased stability and permits interlocking devices to be added at the end of the switch. While reduced forces of the latching mechanism allows for easier operation.

The safety level of the KH- and KHR-series in numerous areas surpasses those of many international standard organizations: Positive contact movement during making and breaking operations. Higher air and creepage distances as well as for 800 V or 1000 V and finger-proof terminals according to EN 50274, VDE 0660 part 514 and BGV A3 (protection IP 20 up to KHR40). Excellent AC-3 and AC-23A making and breaking capabilities providing

an additional safety advantage. For connecting with ring type terminals the KHR-series were designed. The terminal screw is held in place by a clamp allowing the ring type wire lug to be easily inserted in the terminal and tightened.

The KH- and KHR-series affords significant advantages during mounting and wiring. For ease of installation, switch terminations are on the same plane as the power conductors. Captive plus-minus screws and integrated screwdriver guides reduce wiring time. All base mounted switches feature a two hole mounting as well as "quick mount" designed for standard DIN rails according to EN 50022.

A large range of optional extras such as lateral mounted auxiliary contacts, ground terminals, auxiliary contacts (installed only at factory) also with contact systems for special programs, door clutches, shaft extensions and padlock devices enhance the flexibility of this proven line.

KH-series

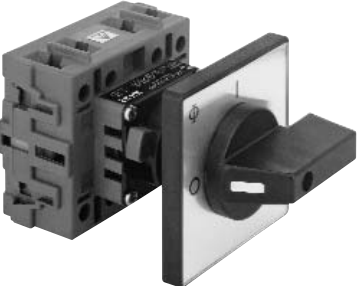
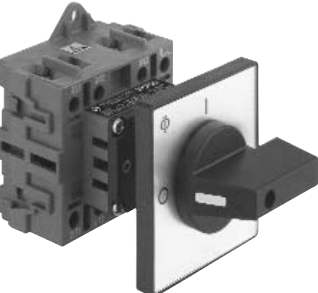
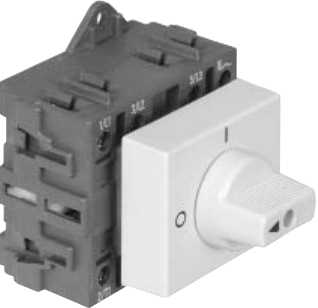


KHR-series



Nominal Ratings

Escutcheon Plate Frame mm	Type	IEC 60947-3/VDE 0660 part 107		UL and Canada		
		Rated Values				
		Thermal Current I_n/I_{th}	Utilization Category AC-23A AC-3 3 x 380 V-440 V	Ampere- Rating 3 x 600 V	Standard Motor Load DOL-Rating	
		A	kW	A	3 x 240 V HP	3 x 480 V HP
48 x 48 	KH16	16	7,5	16	2	5
	KH20	20	10	20	2	5
	KH25	25	12	25	3	7,5
	KHR16	16	7,5	16	2	5
	KHR20	20	10	20	2	5
	KHR25	20	10	20	3	7,5
64 x 64 	KH16B	16	7,5	16	2	5
	KH20B	20	10	20	2	5
	KH25B	25	12	25	3	7,5
	KHR16B	16	7,5	16	2	5
	KHR20B	20	10	20	2	5
	KHR25B	20	10	20	3	7,5
	KH32	32	16	30	5	10
	KH40	40	20	40	7,5	15
	KHR32	32	16	30	5	10
	KHR40	32	16	30	7,5	15
64 x 64 	KH63	63	30	60	20	40
	KH80	80	40	80	25	50
	KHR63	63	30	60	20	40
	KHR80	80	40	80	25	50

Mounting	Type	Code
 Panel mounting protection IP 66 Four hole panel mounting	KH16-KHR80	E
 Single hole mounting 22 mm Protection IP 66 With square escutcheon plate 48 x 48 mm	KH16-KHR25	FT2
 With square escutcheon plate 64 x 64 mm	KH16-KHR80	FH3¹
 Base mounting Screw/Snap-on base mounting for track EN 50022 Protection IP 40	KH16-KHR80	VE
 Screw/Snap-on base mounting for track EN 50022. Escutcheon plate for 45 mm knock-out.	KH16-KHR80	VE2

¹For KH63-KHR80 use flexible wire only in order to avoid excessive pressure on single hole mounting.

Plastic Enclosure Protection IP 66/67		Type	Code
	The KL and CL enclosures are available in 3 sizes allowing for installation of 3, 4 and 6 pole KG switches. The KL-series is made of strong durable plastic and offers high UV-resistance. The CL-series is especially designed for applications in an 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. Included in each enclosure is a ground terminal. All enclosures can be supplied with a cover coupling for additional safety. Increased wiring space and mounting holes with slots are featured in this new line. These enclosures are also available for conduit entries for PG-thread. KS and CS enclosures have a compact size which allows for the installation of a 4 pole KH16/KHR16 ON/OFF switch or a KH20/KHR20 ON/OFF switch. The design, options and mounting are the same as those of the KL and CL enclosures.	KH16-KHR80	KL. CL. KS. CS.
			0
			1
			2

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)

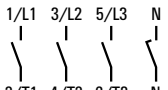
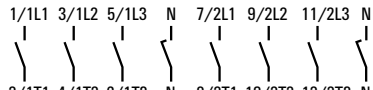
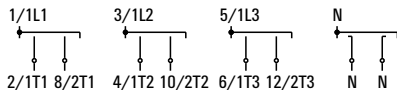
Switch Function and Configuration

Function	KH16 KH20 KH25	KHR16 KHR20 KHR25	KH16B KH20B KH25B	KHR16B KHR20B KHR25B	KH32 KH40	KHR32 KHR40	KH63 KH80	KHR63 KHR80	Escutch. Plate	Code
----------	----------------------	-------------------------	-------------------------	----------------------------	--------------	----------------	--------------	----------------	-------------------	------

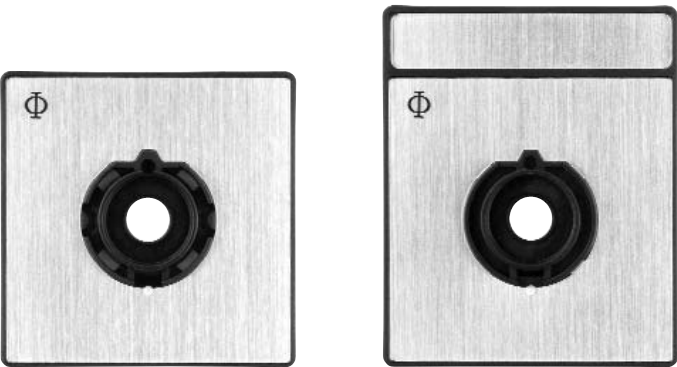
Types of Mounting

ON/OFF Switches 4 pole	E FT2 FH3 VE VE2 KS./KL.	E FT2 FH3 VE VE2 KS./KL.	E VE	E VE	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	 	K400-600
										K400-620
ON/OFF Switches 8 pole	E VE	E VE	E VE KL.	E VE KL.	E VE	E VE			 	K800-600
										K800-620
Double-throw Switches 4 pole	E VE	E VE	E VE KL.	E VE KL.	E VE VE2				 	K950-600
										K950-620

Connection Diagrams

ON/OFF Switches 4 pole	ON/OFF Switches 8 pole	Double-throw Switches 4 pole
		

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 position 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 the handle bearing plate T100-04 which is available for switch types KH16B-KHR25B, KH32-KHR40 and KH63-KHR80. Escutcheon plates with special lettering are also available upon request.



Escutcheon plate frame and faceplate can be obtained in different colors as listed below and defined in the first digit of the dash-number (1, 5, 6, 7):

Switch Type	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash-number
KH/KHR	electro-gray	electro-gray	brushed alu	black	-100
KH/KHR	electro-gray	electro-gray	black	mat silver	-500
KH/KHR	black	black	brushed alu	black	-600
KH/KHR	black	black	black	mat silver	-700

Standard Escutcheon Plates

F056

F063

F068

F134

F201

F252

F346

F456

F058

F065

F178

F208

F253

F360

F378

F458

F990

F991

Handles

KH, KHR Switches

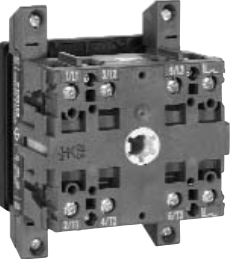
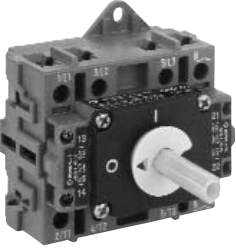
Type	Color	Code	KH16- KH25	KHR16- KHR25	KH16B- KH25B	KHR16B- KHR25B	KH32- KHR40	KH63- KHR80
I-Handle 	black red white electro-gray	G251 G252 G253 G257	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
B-Handle 	black red white electro-gray	G521 G522 G523 G527	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
R-Handle 	black red white electro-gray	G001 G002 G003 G007	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
F-Handle 	black red white electro-gray	G221 G222 G223 G227	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
L-Handle 	black red white electro-gray	G501 G502 G503 G507	— — — —	— — — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
P-Handle  KH16-KHR25 KH16B-KHR80	black red white electro-gray	G211 G212 G213 G217	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
K-Handle 	black red white electro-gray	G411 G412 G413 G417	— — — —	— — — —	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●

Protective Covers and Auxiliary Contacts	Type	Code
--	------	------

Protective Covers

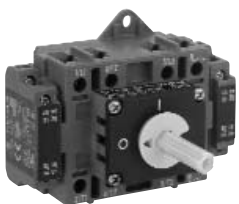
	For mounting E	KH32-KHR40	K1 M160/45-E
	For mounting VE		K1 M160/45-VE
	For mounting E	KH63-KHR80	K1 M160/44-E
	For mounting VE		K1 M160/44-VE

Cam-operated Auxiliary Contacts (mounting only at factory)

For mounting E  KH16-KHR25B  KH32-KHR80 For mounting VE 	Up to 4 cam-operated auxiliary contacts can be added to all switches (KH16-KHR25B max. 4/KH32-KHR80 max. 2). Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or a H-bridge design with "cross-wire" contacts for low voltages and currents. The contact system with gold contacts or gold-plated contacts allow for use in aggressive environments also.	KH16-KHR80	M510A
Ordering data:	Quantity and operation of the auxiliary contacts and type of the contact system.		

Auxiliary Contacts, Ground Terminal and Shaft Extensions	Type	Code
--	------	------

Lateral mounted Auxiliary Contacts

	Lateral mounted auxiliary contacts with 1 NO and 1 NC.		KH16-KHR25B KH32-KHR80	H010/A11-E H010/A11-VE H010/11A-E H010/11A-VE H010/B11-E H010/B11-VE H010/11B-E H010/11B-VE
	Standard contacts (nonoverlapping)	Terminal numbers		
		Attachment		
		left	right	
	For mounting E	(33-34, 41-42)	(53-54, 61-62)	
	For mounting VE	(31-32, 43-44)	(51-52, 63-64)	
	For mounting E	(33-34, 41-42)	(53-54, 61-62)	
	For mounting VE	(31-32, 43-44)	(51-52, 63-64)	
	Overlapping contacts			
	For mounting E	(33-34, 41-42)	(53-54, 61-62)	
	For mounting VE	(31-32, 43-44)	(51-52, 63-64)	
	For mounting E	(33-34, 41-42)	(53-54, 61-62)	
	For mounting VE	(31-32, 43-44)	(51-52, 63-64)	

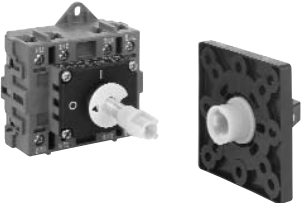
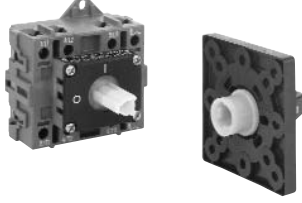
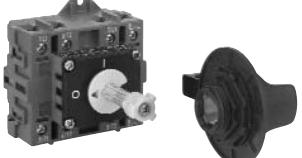
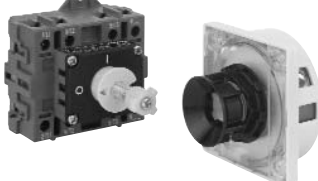
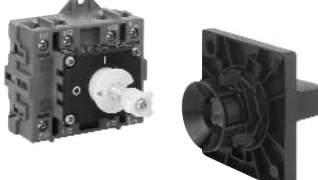
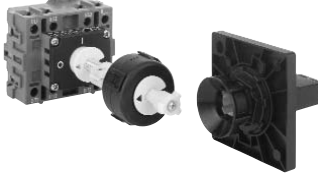
Ground Terminal

	KH16-KHR80	H052
--	------------	-------------

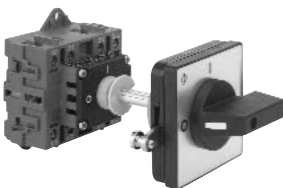
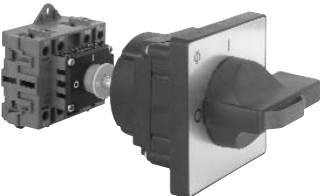
Shaft Extensions

	With asymmetric profile Shaft length not adjustable	KH16-KHR80	L100 ¹ M004D ³ M004 ³
	Shaft with adjustable length with set screw with shear ring		
	With square profile Shaft length not adjustable		
	Shaft with adjustable length with set screw		
Ordering data:		Free shaft length or dimension from mounting surface to cover.	

¹Available for switch types from KH16B. ²Available for switch types from KH32. ³Not available for KH..B.

Simplified Door Clutch	Type	Code
 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 Front protection IP 40  With profile extension parts Front protection IP 65  With padlock device, single hole mounting 22 mm, protection IP 66. An additional aluminum shaft extension is required.  The cover disc is available in black, yellow and electro-gray. The handle may be supplied in black, red and electro-gray.  Operation of the locking bar from the front. Available in black, red and electro-gray.  Centering device for simplified door clutches with single hole mounting and shaft extension Misalignment between the shaft and mounting are compensated in all 4 directions.	KH16- KHR80	M290/A3 M290/A1.EF² V840E¹ V840G¹ V840F¹ V845 M600¹
Ordering data:	Free shaft length or dimension from face of the switch to the cover and color selection.	

¹Available for switch types from KH16B. ²Available for switch types from KH32.

Door Clutches	Type	Code																								
 The M280 door clutch has an adjustable shaft and can be supplied with an interlock device. The following interlock programs are available: A = Without interlock by door clutch B = With interlock by door clutch C = With interlock by rods D = With interlock by door clutch and rods With protected profile shaft fixation with set screw Front protection IP 40 Front protection IP 66/67 (KH16 - KHR25: IP65) shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67 (KH16 - KHR25: IP65) The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the “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 shaft and door.  Handle lockable with padlocks Protection IP 65 Selection of escutch. plate and handle color required: <table><tr><th>Escutcheon Plate</th><th>Frame Plate</th><th>Handle</th><th>Lock Bar</th></tr><tr><td>A = brushed alu</td><td>black</td><td>black</td><td>red</td></tr><tr><td>B = brushed alu</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>C = brushed black</td><td>black</td><td>black</td><td>red</td></tr><tr><td>D = brushed black</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>E = yellow</td><td>black</td><td>red</td><td>yellow</td></tr></table>  Standard handle and standard escutcheon plate Protection IP 66  Unlock insert for the M700 to open the door in ON position. (After the locking has been made inactive, it is necessary to take effective precautions against an opening of the door by unauthorized persons.)	Escutcheon Plate	Frame Plate	Handle	Lock Bar	A = brushed alu	black	black	red	B = brushed alu	black	red	yellow	C = brushed black	black	black	red	D = brushed black	black	red	yellow	E = yellow	black	red	yellow	KH16-KHR80 KH16B-KHR80	M280E M280E/.EF M280D M280D/.EF M700/. M701 S1D M700 29
Escutcheon Plate	Frame Plate	Handle	Lock Bar																							
A = brushed alu	black	black	red																							
B = brushed alu	black	red	yellow																							
C = brushed black	black	black	red																							
D = brushed black	black	red	yellow																							
E = yellow	black	red	yellow																							
Ordering data:	Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.																									

Padlock Devices	Type	Code
The padlock device is an integral part of the switch.  For 2 padlocks Operation of the locking bar from the bottom. Available in black, red and electro-gray.  For 4 padlocks Operation of the locking bar from the front. Available in black, red and electro-gray. 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.  For 2 padlocks with F-handle  For 3 padlocks with F-handle with B-handle  For 4 padlocks with F-handle with B-handle Padlock devices with simplified door clutch and single hole mounting see page 30.		KH16-KHR80 V840A V845 KH16-KHR25 V840D KH16B-KHR80 V840G V840G/B V840F/F V840F/B
Ordering data:	For V840 and V845 color selection required.	

Country	Authority	Mark or Standard	KH16 KH16B	KHR16 KHR16B	KH20 KH20B	KHR20 KHR20B	KH25 KH25B	KHR25 KHR25B	KH32 KHR32	KH40 KHR40	KH63 KHR63	KH80 KHR80
USA	Underwriters Laboratories	 or 	●	●	●	●	●	●	●	●	●	●
Canada	Canadian Standards Association	 ³  or 	●	●	●	●	●	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+	+	+	+	+
Danmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontrollanstalten		+	+	+	+	+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ¹ VDE 0113 ¹	+	+	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ¹	+	+	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60204-1 ² IEC 60947-3 ²	+	+	+	+	+	+	+	+	+	+
Russian Federation	GOST	 ⁴ CH01	● ●	+	● ●	+	● ●	+	● +	● +	● +	● +
● Switch approved + Switch conforms to requirements ¹Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met. ²IEC does not operate an approval program. ³File No. 13002, Class No. 3211-05 resp. 4652-04. ⁴If this approval is required, please request when ordering. The switches of the KH/KHR-series are approved by UL and CSA as „disconnect switches for use in motor circuits“. UL approved terminals are required when making connection to switches having ring type terminations (KHR).												

Selection Data

KH16 KHR16 KH20 KHR20 KH25 KHR25 KH32 KH63 KH80
KH16B KHR16B KH20B KHR20B KH25B KHR25B KHR32 KH40 KHR40 KHR63 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	1000 ²	1000 ²	
				UL/Canada	V	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	8	8	
Rated Thermal Current		IEC/EN/VDE	I _u open = I _{th} I _{the} enclosed	A	16	16	20	20	25	20	32	40	32	63	80	
				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	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	
		3 pole	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	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	
		3 pole	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 AC-3)	UL/Canada	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	
		3 phase	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	
Power loss per contact at I _u					W	0,2	0,2	0,3	0,3	0,3	0,3	0,4	0,6	0,4	1,5	2,7
Resistance to vibration ³						C	C	C	C	C	C	C	C	C	C	C
Resistance to shock ³						C	C	C	C	C	C	C	C	C	C	C
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 - Use copper wire only																
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	
				mm ²	4	-	4	-	4	-	6	6	-	25	25	
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	
				mm	-	7,4	-	7,4	-	7,4	8,8	-	8,8	12,7	12,7	
Ambient Temperature ⁴		open at 100 % I _u /I _{th} enclosed at 100 % I _{the}			50 °C during 24 hours with peaks up to 55 °C 35 °C during 24 hours with peaks up to 40 °C											

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.

²Suitable for no load switching applications (AC-20A) above 690 V. ³C: on request. ⁴Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible).

Selection Data	Auxiliary contacts for: KH16-KHR80
-----------------------	---------------------------------------

Rated Insulation Voltage U_i		IEC/EN/VDE	V	440
		UL/Canada	V	300
Rated Thermal Current I_u/I_{th}		IEC/EN/VDE	A	10
		UL/Canada	A	10
Rated Operational Current I_e				
AC-21A	Switching of resistive loads, including moderate overloads	IEC/EN/VDE	A	10
AC-15	Switching of control devices, contactors, valves etc.	110 V-240 V	A	2,5
		380 V-440 V	A	1,5
Pilot Duty	Heavy	UL/Canada		A300
Ampere-Rating	Resistive or low inductive loads	UL/Canada	A	10
Short Circuit Protection				
Max. fuse size	(gL-characteristic)		A	10
Max. Permissible Wire Gage - Use copper wire only				
		Single-core or stranded wire	mm ² AWG	1,5 (2,5) ¹ 14 (12) ¹
		Flexible wire sleeving in accordance with DIN46228	mm ²	1,5 (2,5) ¹
		Flexible wire without sleeve	mm ² AWG	1,5 (2,5) ¹ 16 (14) ¹

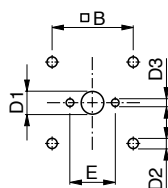
¹The values in brackets are valid for switches KH32-KHR80 E mounting.

Mounting

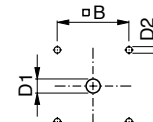
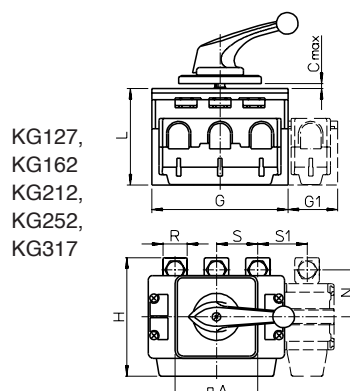
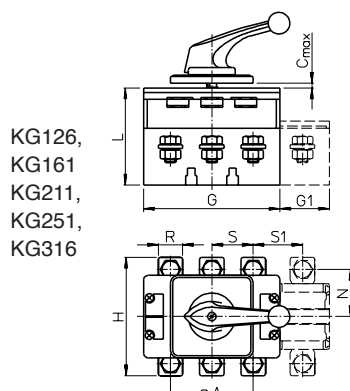
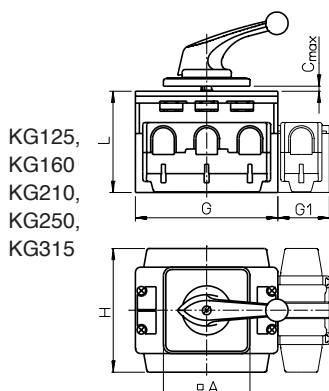
(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 3 and 4 pole

E		A	B	C	D1	D2	D3	E	F	G	G1 ¹	H	L
	KG10A	48	36	4	11-15	5	-	-	48	48	-	50	48,2
		1.89	1.42	.16	.43-.59	.20	-	-	1.89	1.65	-	1.97	1.90
	KG10B	64	48	4	11-15	5	-	-	64	48	-	50	57,2
		2.52	1.89	.16	.43-.59	.20	-	-	2.52	1.65	-	1.97	2.25
	KG20, KG32	30	-	4	8-11	-	3,2	20	-	42	13,5	54	50,8
		1.18	-	.16	.31-.43	-	.13	.79	-	1.65	.53	2.13	2.00
	KG20A, KG32A	48	36	4	10-15	5	-	-	48	42	13,5	54	53,8
		1.89	1.42	.16	.39-.59	.20	-	-	1.89	1.65	.53	2.13	2.12
	KG20B, KG32B	64	48	4	10-15	5	-	-	64	42	13,5	54	53,8
		2.52	1.89	.16	.39-.59	.20	-	-	2.52	1.65	.53	2.13	2.12
	KG41, KG64	48	36	4	10-15	5	-	-	64	50	16	64	60,5
		1.89	1.42	.16	.39-.59	.20	-	-	2.52	1.97	.63	2.52	2.38
	KG41B, KG64B	64	48	4	10-15	5	-	-	64	50	16	64	60,5
		2.52	1.89	.16	.39-.59	.20	-	-	2.52	1.97	.63	2.52	2.38
	KG80, KG100, KG105	64	48	4	10-15	5	-	-	70	70	22	80	70,6
		2.52	1.89	.16	.39-.59	.20	-	-	2.76	2.76	.87	3.15	2.78
	KG80C, KG100C, KG105C	88	68	4	10-15	6	-	-	88	70	22	80	70,6
		3.46	2.68	.16	.39-.59	.24	-	-	3.46	2.76	.87	3.15	2.78



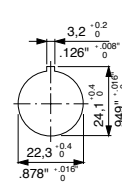
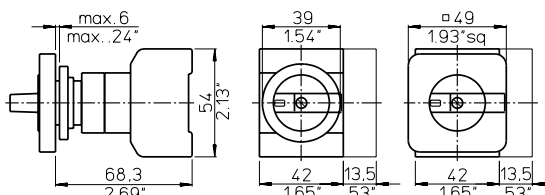
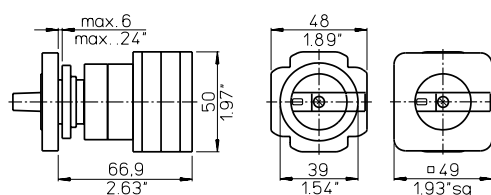
	A	B	C	D1	D2	G	G1 ¹	H	L	N	R	S	S1
KG125, KG160	88	68	5,5	13-17	6	112	38	108	96	-	-	-	-
	3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.25	3.78	-	-	-	-
KG126, KG161	88	68	5,5	13-17	6	112	38	110	96	45	20	36	38
	3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.33	3.78	1.77	.79	1.36	1.50
KG127, KG162	88	68	5,5	13-17	6	112	38	109	96	45	20	36	38
	3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.29	3.78	1.77	.79	1.36	1.50
KG210, KG250, KG315	88	68	5,5	13-17	6	145	52,5	126	103	-	-	-	-
	3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	-	-	-	-
KG211, KG212, KG251, KG252, KG316, KG317	88	68	5,5	13-17	6	145	52,5	126	103	50	26	44	52,5
	3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	1.97	1.02	1.73	2.07



FT1, FT2

KG10A

KG20A, KG32A

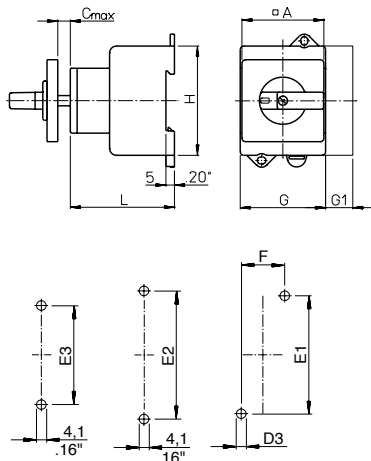


Mounting

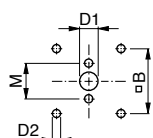
(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 3 and 4 pole

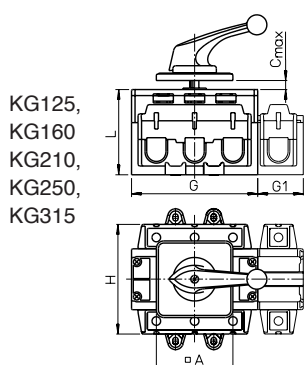
VE, VE1



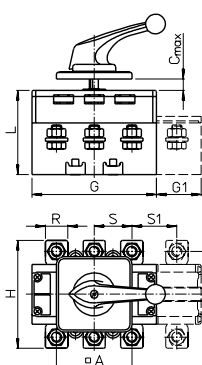
	A	B	C	D1	D2	D3	E1 ¹	E2 ¹	E3 ¹	F	G	G1 ²	H	L	M
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	48	-	50	49,2	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	-	50	56,2	-
KG20, KG32	30	-	12	8-11	3,2	4,1	60	-	-	22	42	13,5	54	50	20
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	22	42	13,5	54	50	-
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	22	42	13,5	54	50	-
KG41, KG64	48	36	12	10-15	5	4,1	70	-	-	25	50	16	64	61	-
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	25	50	16	64	61	-
KG80, KG100, KG105	64	48	13,5	10-15	5	5,2	90	-	-	25	70	22	80	68	-
KG80C, KG100C, KG105C	88	68	13,5	10-15	6	5,2	90	-	-	25	70	22	80	68	-



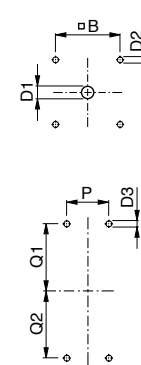
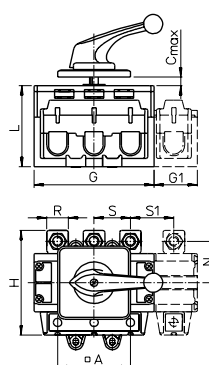
	A	B	C	D1	D2	D3	G	G1 ²	H	L ³	N	P	Q1	Q2	R	S	S1
KG125, KG160	88	68	16	13-17	6	6,4	112	38	108	91	-	36	59-61	59-61	-	-	-
KG126, KG161	88	68	16	13-17	6	6,4	112	38	110	91	45	36	38-40	38-40	20	36	38
KG127, KG162	88	68	16	13-17	6	6,4	112	38	109	91	45	36	38-40	59-61	20	36	38
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	52,5	126	98	-	44	70-72	70-72	-	-	-
KG211, KG251, KG316	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	40-42	26	44	52,5
KG212, KG252, KG317	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	70-72	26	44	52,5



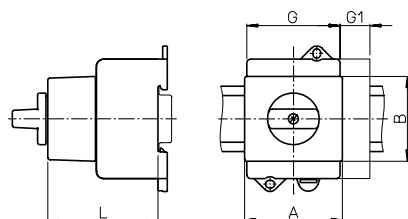
KG126,
KG161
KG211,
KG251,
KG316



KG127,
KG162
KG212,
KG252,
KG317

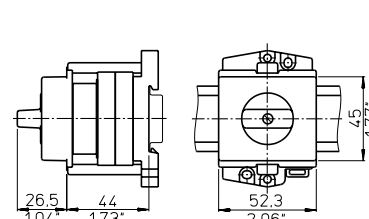


VE2



	A	B	G	G1 ²	L
KG20A, KG32A	43,7	45,4	42	13,5	56,5
KG41, KG64	52,4	45,4	50	16	56,5
KG80, KG100, KG105	70	45	70	22	65
KG125-KG162	112	45	112	38	98

VE21

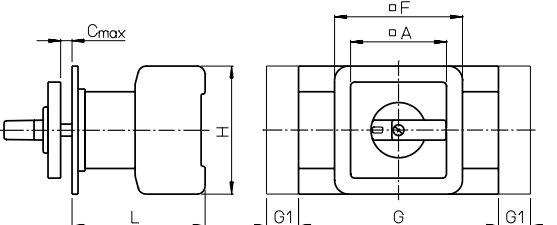


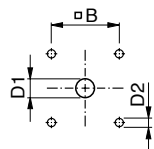
¹Switches KG10A and KG10B allow use of E1, E2 or E3. ²For ON/OFF switches 4 pole. ³KG125-KG162 additional length for mounting VE1 = 7,5 mm/.30 inch.

Mounting

(Additional length for auxiliary contacts see page 40)

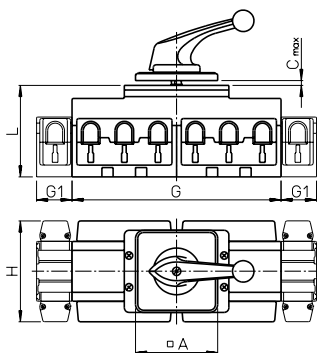
ON/OFF Switches 6 and 8 pole and Double-throw Switches

E		A	B	C	D1	D2	F	G	G1 ¹	H	L
	KG10A	48	36	4	11-15	5	48	48	-	50	57,7
		1.89	1.42	.16	.43-.59	.20	1.89	1.89	-	1.97	2.27
	KG10B	64	48	4	11-15	5	64	48	-	50	66,7
		2.52	1.89	.16	.43-.59	.20	2.52	1.89	-	2.13	2.84
	KG20A, KG32A	48	36	4	10-15	5	48	84	13,5	54	61,3
		1.89	1.42	.16	.39-.59	.20	1.89	3.30	.53	2.13	2.41
	KG20B, KG32B	64	48	4	10-15	5	64	84	13,5	54	61,3
		2.52	1.89	.16	.39-.59	.20	2.52	3.31	.53	2.13	2.41
	KG41B, KG64B	64	48	4	10-15	5	64	100	16	64	66,5
		2.52	1.89	.16	.39-.59	.20	2.52	3.94	.63	2.52	2.62
	KG80, KG100, KG105	64	48	4	10-15	5	70	140	22	80	81,8
		2.52	1.89	.16	.39-.59	.20	2.76	5.51	.87	3.15	3.22
	KG80C, KG100C, KG105C	88	68	4	10-15	6	88	140	22	80	81,8
		3.46	2.68	.16	.39-.59	.24	3.46	5.51	.87	3.15	3.22

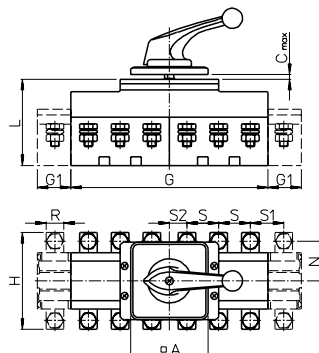


	A	B	C	D1	D2	G	G1 ¹	H	L	N	R	S	S1	S2
KG125, KG160	88	68	5,5	13-17	6	224	38	108	98	-	-	-	-	-
	3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.25	3.86	-	-	-	-	-
KG126, KG161	88	68	5,5	13-17	6	224	38	110	98	45	20	36	38	20
	3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.33	3.86	1.77	.79	1.42	1.50	.79
KG127, KG162	88	68	5,5	13-17	6	224	38	109	98	45	20	36	38	20
	3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.29	3.86	1.77	.79	1.42	1.50	.79

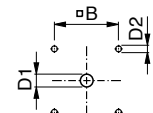
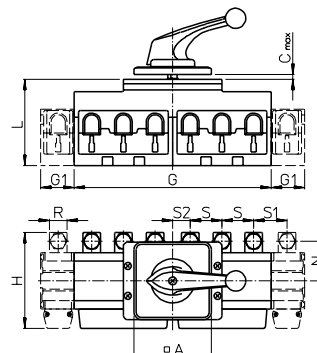
KG125, KG160



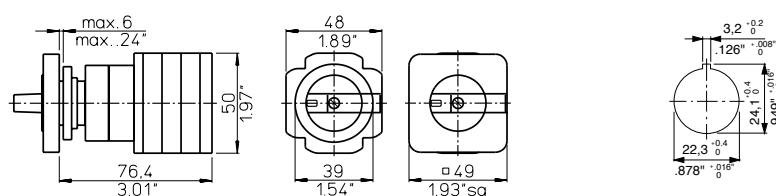
KG126, KG161



KG127, KG162



FT1, FT2



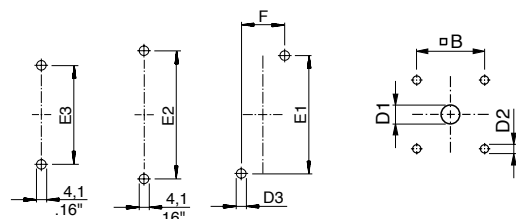
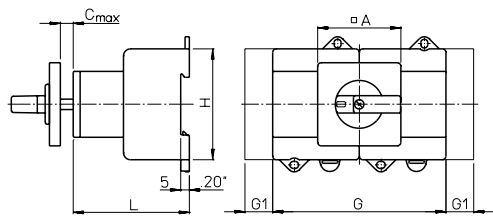
¹For ON/OFF switches 8 pole and double-throw switches 4 pole.

Mounting

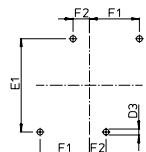
(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 6 and 8 pole and Double-throw Switches

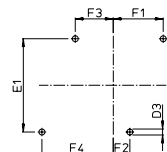
VE, VE1



ON/OFF switches 6 pole
double-throw switches 3 pole



double-throw switches 4 pole



KG10A

KG10B

KG20A, KG32A

KG20B, KG32B

KG41B, KG64B

KG80, KG100

KG105

KG80C, KG100C

KG105C

A	B	C	D1	D2	D3	E1 ¹	E2 ¹	E3 ¹	F	F1
48	36	12	8-15	5	4,2	60	65	50	22	-
1.89	1.42	.47	.31-.59	.20	.17	2.36	2.56	1.97	.87	-
64	48	29	10-15	5	4,2	60	65	50	22	-
2.52	1.89	1.14	.39-.59	.20	.17	2.36	2.56	1.97	.87	-
48	36	12	8-15	5	4,1	60	-	-	-	32
1.89	1.42	.47	.31-.59	.20	.16	2.36	-	-	-	1.26
64	48	13,5	10-15	5	4,1	60	-	-	-	32
2.52	1.89	.53	.39-.59	.20	.16	2.36	-	-	-	1.26
64	48	13,5	10-15	5	4,1	70	-	-	-	37,5
2.52	1.89	.53	.39-.59	.20	.16	2.76	-	-	-	1.48
64	48	13,5	10-15	5	5,2	90	-	-	-	47,5
2.52	1.89	.53	.39-.59	.20	.21	3.54	-	-	-	1.87
88	68	13,5	10-15	6	5,2	90	-	-	-	47,5
3.46	2.68	.53	.39-.59	.24	.21	3.54	-	-	-	1.87

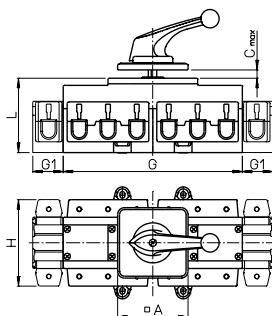
F2 F3 F4 G G1² H L

KG10A	-	-	-	48	-	50	58,7
KG10B	-	-	-	48	-	50	65,7
KG20A, KG32A	10	23,5	45,5	84	13,5	54	57,5
KG20B, KG32B	.39	.92	1.79	3.31	.53	2.13	2.26
KG41B, KG64B	12,5	28,5	53,5	100	16	64	67
KG80, KG100,	.49	1.12	2.11	3.94	.63	2.52	2.64
KG105	22,5	44,5	69,5	140	22	80	79,2
KG80C, KG100C,	.89	1.75	2.74	5.51	.87	3.15	3.12
KG105C	22,5	44,5	69,5	140	22	80	79,2
	.89	1.75	2.74	5.51	.87	3.15	3.12

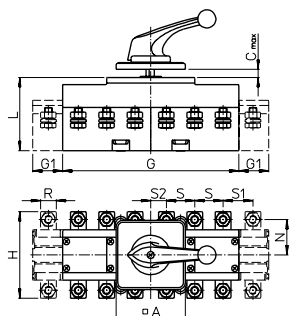
A B C D1 D2 D3 G G1² H L³ N P Q1 Q2 R S S1 S2

KG125, KG160	88	68	16	13-17	6	6,4	224	38	108	93	-	76	59-61	59-61	-	-	-	-
	3.46	2.68	.63	.51-.67	.24	.25	8.82	1.50	4.25	3.66	-	2.99	2.32-2.40	2.32-2.40	-	-	-	-
KG126, KG161	88	68	16	13-17	6	6,4	224	38	110	93	45	76	38-40	38-40	20	36	38	20
	3.46	2.68	.63	.51-.67	.24	.25	8.82	1.50	4.33	3.66	1.77	2.99	1.50-1.57	1.50-1.57	.79	1.42	1.50	.79
KG127, KG162	88	68	16	13-17	6	6,4	224	38	109	93	45	76	38-40	59-61	20	36	38	20
	3.46	2.68	.63	.51-.67	.24	.25	8.82	1.50	4.29	3.66	1.77	2.99	1.50-1.57	2.32-2.40	.79	1.42	1.50	.79

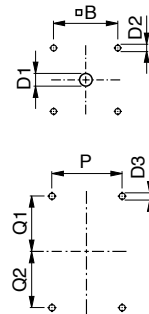
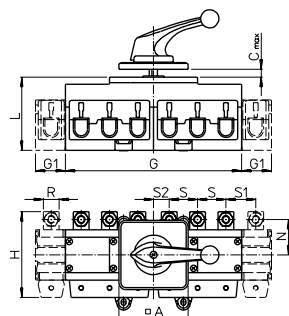
KG125, KG160



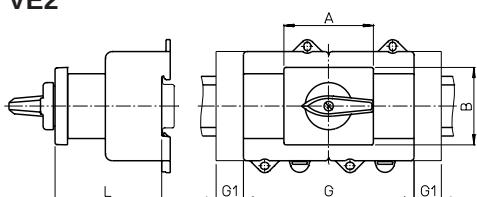
KG126, KG161



KG127, KG162



VE2



KG20A, KG32A

KG41B, KG64B

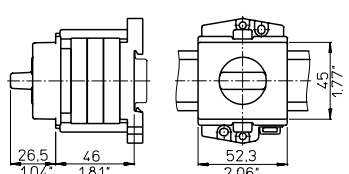
KG80, KG100,

KG105

A B G G1² L

43,7	45,4	84	13,5	64
1.72	1.79	3.31	.53	2.52
105,4	45,4	100	16	62,5
4.15	1.79	3.94	.63	2.46
70	45	140	22	76,2
2.76	1.77	5.51	.87	3.00

VE21



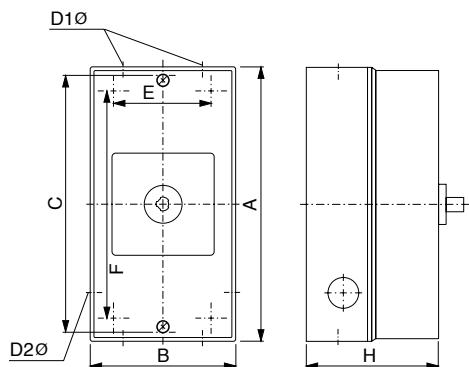
¹Switches KG10A and KG10B allow use of E1, E2 or E3. ²For ON/OFF switches 8 pole and double-throw switches 4 pole.

³Additional length for mounting VE1 = 7,5 mm/.30 inch.

Plastic Enclosures and Optional Extras

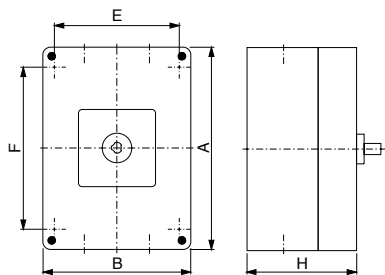
Switches in Plastic Enclosure

KL..., CL..., KS5., CS5.



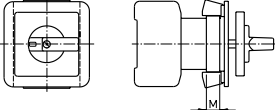
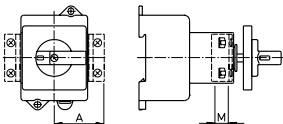
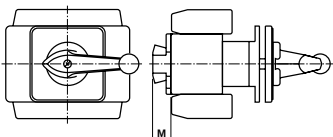
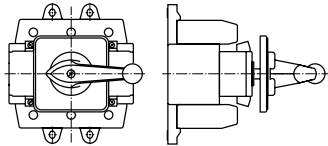
	3 and 4 pole	6 and 8 pole, Double-throw Switches	A	B	C	D1	D2	E	F	H
KG10 ¹	x	x	120	85	110	2x20	20	-	-	80
			4.72	3.35	4.33	2x.79	.79	-	-	3.15
KG20 ¹	x		120	85	110	2x20	20	-	-	80
			4.72	3.35	4.33	2x.79	.79	-	-	3.15
KG20, KG32	x		160	85	150	2x20	20	-	-	80
			6.30	3.35	5.91	2x.79	.79	-	-	3.15
KG20B, KG32B		x	190	100	178	2x25	25	-	-	91
			7.48	3.94	7.01	2x.98	.98	-	-	3.58
KG41, KG64	x		190	100	178	2x25	25	-	-	91
			7.48	3.94	7.01	2x.98	.98	-	-	3.58
KG41B, KG64B		x	250	145	-	2x40	25	124	229	107
			9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21
KG80, KG100, KG105	x		250	145	-	2x40	25	124	229	107
			9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21

PFA-PFF5



	3 and 4 pole	6 and 8 pole, Double-throw Switches	A	B	E	F	H
KG20A, KG32A, KG41, KG64	x		135	92	78	110	91
			5.31	3.62	3.07	4.33	3.58
KG20B, KG32B, KG41B, KG64B		x	180	140	128	150	98
			7.09	5.51	5.04	5.91	3.86
KG80, KG100	x		180	140	128	150	98
			7.09	5.51	5.04	5.91	3.86

Cam/rack-operated Auxiliary Contacts

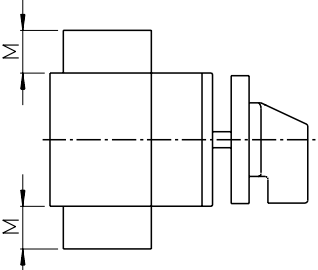
E	VE		Mount- ing	A	M	
KG20-KG105C	KG20-KG105C				allows use of 1 or 2 contacts	allows use of 3 or 4 contacts
		KG20, KG32	E/VE	-	9	25,8
					.35	1.02
		KG41, KG64	E/VE	-	10	30
					.39	1.18
		KG80, KG100	E	-	10	30
		KG105			.39	1.18
			VE	47,2	10	30
				1.86	.39	1.18
KG125-KG317	KG125-KG317					
			Mounting	M		
		KG125-KG317	E		21	
					.83	

Lateral mounted Auxiliary Contacts

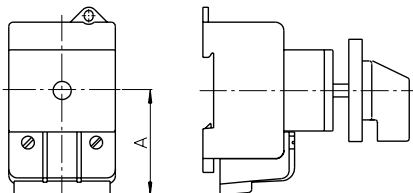
	M
KG20, KG20A, KG20B, KG32, KG32A, KG32B	10
	.39
KG41, KG41B, KG64, KG64B	11
	.43
KG80, KG80C, KG100, KG100C, KG105, KG105C	11
	.43
KG125-KG317	14
	.55

Optional Extras

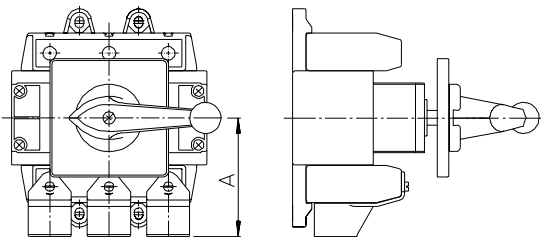
Ground and Neutral Terminal, Additional Main Contact

		M
	KG20, KG20A, KG20B, KG32, KG32A, KG32B	13,5 .53
	KG41, KG41B, KG64, KG64B	16 .63
	KG80, KG80C, KG100, KG100C, KG105, KG105C	22 .87
	KG125, KG126, KG127, KG160, KG161, KG162	38 1.50
	KG210, KG211, KG212, KG250, KG251, KG252, KG315, KG316, KG317	52,5 2.07

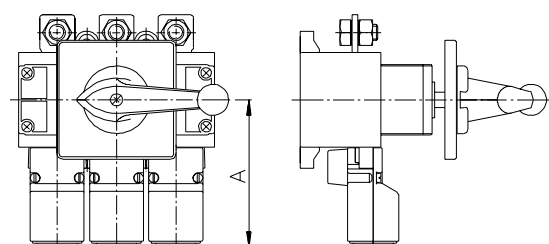
Protective Cover

		A
	KG10A, KG10B	30 1.18
	KG20, KG20A, KG20B, KG32, KG32A, KG32B	47 1.85
	KG41, KG41B, KG64, KG64B	49 1.93
	KG80, KG80C, KG100, KG100C, KG105, KG105C	66 2.60

With box terminal

			A
	KG125-KG162	with box terminal	76,2 3.00
		with bolt terminal	112 4.41
	KG210-KG317	with box terminal	88 3.46
		with bolt terminal	109,5 4.29

With bolt terminal



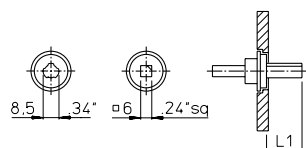
Optional Extras

Shaft Extension

L100, L100A

L1 = Free shaft length

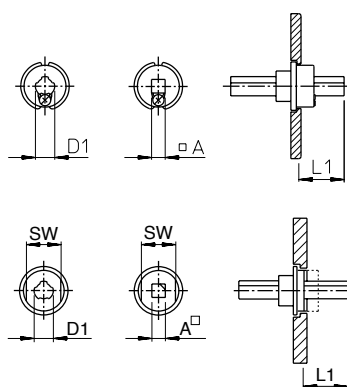
	Mount- ing										
		L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	19	23	27	32	37	42	47	52	57	
		.75	.91	1.06	1.26	1.46	1.65	1.85	2.05	2.24	
	VE	18	22	26	31	36	41	46	51	56	
		.71	.87	1.02	1.22	1.42	1.61	1.85	2.01	2.20	
KG20B, KG32B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	
		.45	.65	.81	.96	1.16	1.36	1.56	1.75	1.95	
	VE	18	23	27	31	36	41	46	51	56	
		.71	.91	1.06	1.22	1.42	1.61	1.81	2.01	2.20	
KG41B, KG64B	E	13,5	17,5	21,5	26,5	31,5	36,5	41,5	46,5	51,5	
		.53	.69	.85	1.04	1.24	1.44	1.63	1.83	2.03	
	VE	15,8	19,8	23,8	28,8	33,8	38,8	43,8	48,8	53,8	
		.62	.78	.94	1.13	1.33	1.53	1.72	1.92	2.12	
KG80, KG80C	E	13,5	17,5	21,5	26,5	31,5	36,5	41,5	46,5	51,5	
		.53	.69	.85	1.04	1.24	1.44	1.63	1.83	2.03	
KG100, KG100C	E	13,5	17,5	21,5	26,5	31,5	36,5	41,5	46,5	51,5	
		.53	.69	.85	1.04	1.24	1.44	1.63	1.83	2.03	
KG105, KG105C	VE	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	54,5	
		.65	.81	.96	1.16	1.36	1.56	1.75	1.95	2.15	
		L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	62	67	72	77	82	87	92	97	102	
		2.44	2.64	2.83	3.03	3.23	3.43	3.62	3.82	4.02	
	VE	61	66	71	76	81	86	91	96	101	
		2.40	2.60	2.80	2.99	3.19	3.39	3.58	3.78	3.98	
KG20B, KG32B	E	54,5	59,5	64,5	69,5	74,5	79,5	84,5	89,5	94,5	
		2.15	2.34	2.54	2.74	2.93	3.13	3.33	3.52	3.72	
	VE	61	66	71	77	81	86	91	96	101	
		2.40	2.60	2.80	3.03	3.19	3.39	3.58	3.78	3.98	
KG41B, KG64B	E	56,5	61,5	66,5	71,5	76,5	81,5	86,5	91,5	96,5	
		2.22	2.42	2.62	2.81	3.01	3.21	3.41	3.60	3.80	
	VE	58,8	63,8	68,8	73,8	78,8	83,8	88,8	93,8	98,8	
		2.31	2.51	2.71	2.91	3.10	3.30	3.50	3.69	3.89	
KG80, KG80C	E	56,5	61,5	66,5	71,5	76,5	81,5	86,5	91,5	96,5	
		2.22	2.42	2.62	2.81	3.01	3.21	3.41	3.60	3.80	
KG100, KG100C	E	56,5	61,5	66,5	71,5	76,5	81,5	86,5	91,5	96,5	
		2.22	2.42	2.62	2.81	3.01	3.21	3.41	3.60	3.80	
KG105, KG105C	VE	59,5	64,5	69,5	74,5	79,5	84,5	89,5	94,5	99,5	
		2.34	2.54	2.74	2.93	3.23	3.33	3.52	3.72	3.92	



M004, M004A, M004D, M004E

L1 = Free shaft length

	Mount- ing						D1	A	SW
		L1 ¹	L1	L1	L1	L1			
KG10A	E, VE	-	21-41	41-61	61-81	81-101	6	-	12
		-	.83-1.61	1.61-2.40	2.40-3.19	3.19-3.98	.24	-	.47
KG20A, KG32A	E	-	34,5-38	54,5-58	74,5-78	94,5-98	6	-	12
		-	1.36-1.50	2.15-2.28	2.93-3.07	3.72-3.86	.24	-	.47
	VE	-	41,5-45	61,5-65	81,5-85	101,5-105	6	-	12
		-	1.63-1.77	2.42-2.56	3.21-3.35	4.00-4.13	.24	-	.47
KG41B, KG64B	E	29,5-35,5	43-49	63-69	83-89	103-109	8,5	6	16
		1.16-1.40	1.69-1.93	2.48-2.72	3.27-3.50	4.06-4.29	.33	.24	.63
	VE	32,5-38,5	46-52	66-72	86-92	106-112	8,5	6	16
		1.28-1.52	1.81-2.05	2.60-2.83	3.39-3.62	4.17-4.41	.33	.24	.63
KG80, KG80C	E	25,5-31,5	39-45	59-65	79-85	99-105	8,5	6	16
		1.00-1.24	1.54-1.77	2.32-2.56	3.11-3.35	3.90-4.13	.33	.24	.63
KG100, KG100C	E	25,5-31,5	39-45	59-65	79-85	99-105	8,5	6	16
		1.00-1.24	1.54-1.77	2.32-2.56	3.11-3.35	3.90-4.13	.33	.24	.63
KG105, KG105C	VE	30,5-36,5	44-50	64-70	84-90	104-110	8,5	6	16
		1.20-1.44	1.73-1.97	2.52-2.76	3.31-3.54	4.09-4.33	.33	.24	.63
KG125, KG126	E	39-53	69-83	99-113	129-143	159-173	11,2	8	22
		1.54-2.09	2.72-3.27	3.90-4.45	5.08-5.63	6.26-6.81	.44	.32	.87
KG127, KG160	E	39-53	69-83	99-113	129-143	159-173	11,2	8	22
		1.54-2.09	2.72-3.27	3.90-4.45	5.08-5.63	6.26-6.81	.44	.32	.87
KG161, KG162	VE	44-58	74-88	104-118	134-148	164-178	11,2	8	22
		1.73-2.28	2.91-3.46	4.09-4.65	5.28-5.83	6.46-7.01	.44	.32	.87
KG210, KG211	E	38-52	68-82	98-112	128-142	158-172	11,2	8	22
		1.50-2.03	2.68-3.23	3.86-4.41	5.04-5.59	6.22-6.77	.44	.32	.87
KG212, KG250	E	38-52	68-82	98-112	128-142	158-172	11,2	8	22
		1.50-2.03	2.68-3.23	3.86-4.41	5.04-5.59	6.22-6.77	.44	.32	.87
KG251, KG252	VE	43-57	73-87	103-117	133-147	163-177	11,2	8	22
		1.69-2.24	2.87-3.43	4.06-4.61	5.24-5.78	6.42-6.97	.44	.32	.87
KG315, KG316	VE	43-57	73-87	103-117	133-147	163-177	11,2	8	22
		1.69-2.24	2.87-3.43	4.06-4.61	5.24-5.78	6.42-6.97	.44	.32	.87
		L1	L1	L1	L1	L1	L1	L1	L1



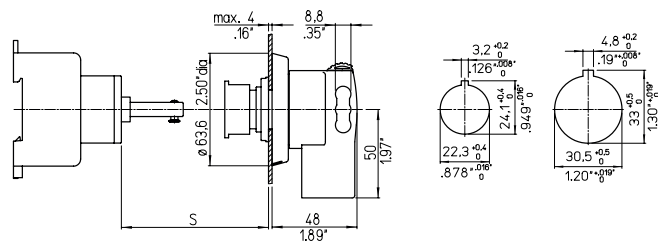
Optional Extras

Simplified Door Clutches

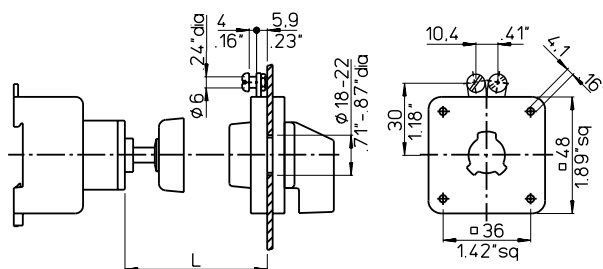
		M290/A3, M290/A3.EF L = Standard length for switches of mounting VE	
		L	D¹
		37-57	18
		1.46-2.24	.71
		55-68	18
		2.17-2.68	.71
		60-70	18
		2.36-2.76	.71
		56-68	18
		2.20-2.68	.71
		75-88	18
		2.95-3.46	.71
		80-90	18
		3.15-3.54	.71
		96-108	18
		3.78-4.25	.71
		100-110	18
		3.94-4.33	.71
		116-128	18
		4.57-5.04	.71
		120-130	18
		4.72-5.12	.71
		125-137	18
		4.91-5.39	.71
		130-143	18
		5.12-5.64	.71
		135-148	18
		5.31-5.84	.71
		140-154	18
		5.51-6.04	.71
		145-159	18
		5.71-6.24	.71
		150-164	18
		5.91-6.44	.71
		155-169	18
		6.11-6.64	.71
		160-174	18
		6.31-6.84	.71
		165-179	18
		6.51-7.04	.71
		170-184	18
		6.71-7.24	.71
		175-189	18
		6.91-7.44	.71
		180-194	18
		7.11-7.64	.71
		185-199	18
		7.31-7.84	.71
		190-204	18
		7.51-8.04	.71
		195-209	18
		7.71-8.24	.71
		200-214	18
		7.91-8.44	.71
		205-219	18
		8.11-8.64	.71
		210-224	18
		8.31-8.84	.71
		215-229	18
		8.51-9.04	.71
		220-234	18
		8.71-9.24	.71
		225-239	18
		8.91-9.44	.71
		230-244	18
		9.11-9.64	.71
		235-249	18
		9.31-9.84	.71
		240-254	18
		9.51-10.04	.71
		245-259	18
		9.71-10.24	.71
		250-264	18
		9.91-10.44	.71
		255-269	18
		10.11-10.64	.71
		260-274	18
		10.31-10.84	.71
		265-279	18
		10.51-11.04	.71
		270-284	18
		10.71-11.24	.71
		275-289	18
		10.91-11.44	.71
		280-294	18
		11.11-11.64	.71
		285-299	18
		11.31-11.84	.71
		290-304	18
		11.51-12.04	.71
		295-309	18
		11.71-12.24	.71
		300-314	18
		11.91-12.44	.71
		305-319	18
		12.11-12.64	.71
		310-324	18
		12.31-12.84	.71
		315-329	18
		12.51-13.04	.71
		320-334	18
		12.71-13.24	.71
		325-339	18
		12.91-13.44	.71
		330-344	18
		13.11-13.64	.71
		335-349	18
		13.31-13.84	.71
		340-354	18
		13.51-14.04	.71
		345-359	18
		13.71-14.24	.71
		350-364	18
		13.91-14.44	.71
		355-369	18
		14.11-14.64	.71
		360-374	18
		14.31-14.84	.71
		365-379	18
		14.51-15.04	.71
		370-384	18
		14.71-15.24	.71
		375-389	18
		14.91-15.44	.71
		380-394	18
		15.11-15.64	.71
		385-399	18
		15.31-15.84	.71
		390-404	18
		15.51-16.04	.71
		395-409	18
		15.71-16.24	.71
		400-414	18
		15.91-16.44	.71
		405-419	18
		16.11-16.64	.71
		410-424	18
		16.31-16.84	.71
		415-429	18
		16.51-17.04	.71
		420-434	18
		16.71-17.24	.71
		425-439	18
		16.91-17.44	.71
		430-444	18
		17.11-17.64	.71
		435-449	18
		17.31-17.84	.71
		440-454	18
		17.51-18.04	.71
		445-459	18
		17.71-18.24	.71
		450-464	18
		17.91-18.44	.71
		455-469	18
		18.11-18.64	.71
		460-474	18
		18.31-18.84	.71
		465-479	18
		18.51-19.04	.71
		470-484	18
		18.71-19.24	.71
		475-489	18
		18.91-19.44	.71
		480-494	18
		19.11-19.64	.71
		485-499	18
		19.31-19.84	.71
		490-504	18
		19.51-20.04	.71
		495-509	18
		19.71-20.24	.71
		500-514	18
		19.91-20.44	.71
		505-519	18
		20.11-20.64	.71
		510-524	18
		20.31-20.84	.71
		515-529	18
		20.51-21.04	.71
		520-534	18
		20.71-21.24	.71
		525-539	18
		20.91-21.44	.71
		530-544	18
		21.11-21.64	.71
		535-549	18
		21.31-21.84	.71
		540-554	18
		21.51-22.04	.71
		545-559	18
		21.71-22.24	.71
		550-564	18
		21.91-22.44	.71
		555-569	18
		22.11-22.64	.71
		560-574	18
		22.31-22.84	.71
		565-579	18
		22.51-23.04	.71
		570-584	18
		22.71-23.24	.71
		575-589	18
		22.91-23.44	.71
		580-594	18
		23.11-23.64	.71
		585-599	18
		23.31-23.84	.71
		590-604	18
		23.51-24.04	.71
		595-609	18
		23.71-24.24	.71
		600-614	18
		23.91-24.44	.71
		605-619	18
		24.11-24.64	.71
		610-624	18
		24.31-24.84	.71
		615-629	18
		24.51-25.04	.71
		620-634	18
		24.71-25.24	.71
		625-639	18
		24.91-25.44	.71
		630-644	18
		25.11-25.64	.71
		635-649	18
		25.31-25.84	.71
		640-654	18
		25.51-26.04	.71
		645-659	18
		25.71-26.24	.71
		650-664	18
		25.91-26.44	.71
		655-669	18
		26.11-26.64	.71
		660-674	18
		26.31-26.84	.71
		665-679	18
		26.51-27.04	.71
		670-684	18
		26.71-27.24	.71
		675-689	18
		26.91-27.44	.71
		680-694	18
		27.11-27.64	.71
		685-699	18
		27.31-27.84	.71
		690-704	18
		27.51-28.04	.71
		695-709	18
		27.71-28.24	.71
		700-714	18
		27.91-28.44	.71
		705-719	18
		28.11-28.64	.71
		710-724	18
		28.31-28.84	.71
		715-729	18
		28.51-29.04	.71
		720-734	18
		28.71-29.24	.71
		725-739	18
		28.91-29.44	.71
		730-744	18
		29.11-29.64	.71
		735-749	18
		29.31-29.84	.71
		740-754	18
		29.51-30.04	.71
		745-759	18
		29.71-30.24	.71
		750-764	18
		29.91-30.44	.71
		755-769	18
		30.11-30.64	.71
		760-774	18
		30.31-30.84	.71
		765-779	18
		30.51-31.04	.71
		770-784	18
		30.71-31.24	.71
		775-789	18
		30.91-31.44	.71
		780-794	18
		31.11-31.64	.71
		785-799	18
		31.31-31.84	.71
		790-804	18
		31.51-32.04	.71
		795-809	18
		31.71-32.24	.71
		800-814	18
		31.91-32.44	.71
		805-819	18
		32.11-32.64	.71
		810-824	18
		32.31-32.84	.71
		815-829	18
		32.51-33.04	.71
		820-834	18
		32.71-33.24	.71
		825-839	18
		32.91-33.44	.71
		830-844	18
		33.11-33.64	.71
		835-849	18
		33.31-33.84	.71
		840-854	18
		33.51-34.04	.71
		845-859	18
		33.71-34.24	.71
		850-864	18
		33.91-34.44	.71
		855-869	18
		34.11-34.64	.71
		860-874	18
		34.31-34.84	.71
		865-879	18
		34.51-35.04	.71
		870-884	18
		34.71-35.24	.71
		875-889	18
		34.91-35.44	.71
		880-894	18
		35.11-35.64	.71
		885-899	18
		35.31-35.84	.71
		890-904	18
		35.51-36.04	.71
		895-909	18
		35.71-36.24	.71
		900-914	18
		35.91-36.44	.71
		905-919	18
		36.11-36.64	.71
		910-924	18
		36.31-36.84	.71
		915-929	18
		36.51-37.04	.71
		920-934	18
		36.71-37.24	.71
		925-939	18
		36.91-37.44	.71
		930-944	18
		37.11-37.64	.71
		935-949	18
		37.31-37.84	.71
		940	

Optional Extras

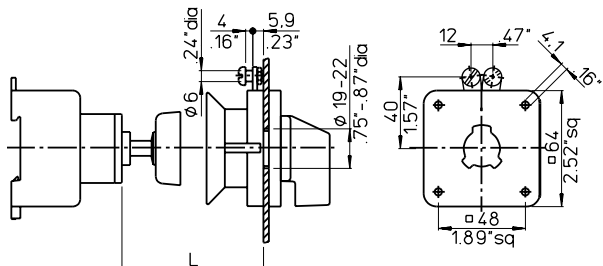
Simplified Door Clutches



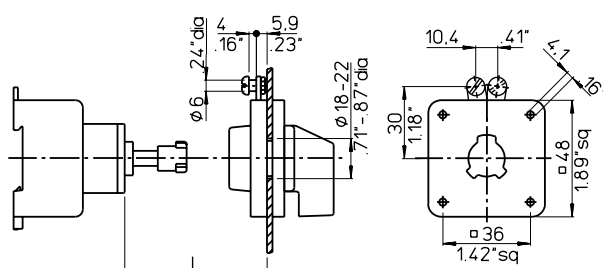
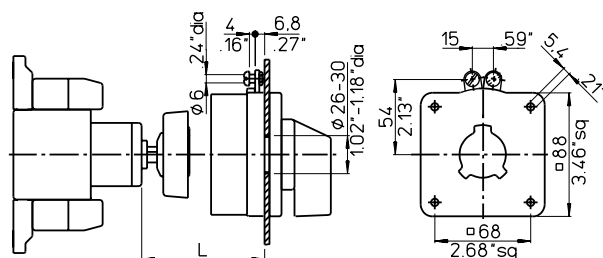
KG10A, KG20A, KG32A



KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KG105



KG125-KG317



M800

		S
KG41B, KG64B	3-pole	59
	6-pole	2.32
KG80, KG100	3-pole	57
KG105		2.24
	6-pole	56
		2.20
KG125-KG317		53
		2.09
		56
		2.20

M280D, M280D/.EF, M280E, M280E/.EF

L = Standard length for switches of mounting VE

	L	L	L	L
KG10A	36-55 1.42-2.17	56-75 2.20-2.95	75-95 2.99-3.74	96-116 3.78-4.57
KG20A, KG32A	58,5-66 2.30-2.60	78,5-86 3.09-3.50	98,5-106 3.88-4.17	118,5-126 4.67-4.96

	L	L	L	L
KG10B	32-57 1.26-2.24	58-77 2.28-3.03	78-97 3.07-3.82	98-118 3.86-4.65
KG20B, KG32B	57,5-65 2.26-2.56	77,5-85 3.05-3.35	97,5-105 3.84-4.13	117,5-125 4.63-4.92
KG41B, KG64B	62-72 2.44-2.83	82-92 3.23-3.62	102-112 4.02-4.41	122-132 4.80-5.20
KG80, KG100	60-70 2.36-2.76	80-90 3.15-3.54	100-110 3.94-4.33	120-130 4.72-5.12

	L	L	L	L
KG125-KG317	93-109 3.66-4.29	123-139 4.84-5.47	153-169 6.02-6.65	183-199 7.20-7.83

M280B/., M280B/.EF

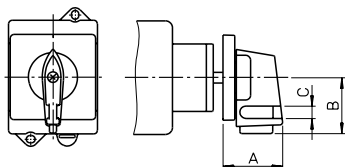
L = Standard length for switches of mounting VE

	L	L	L	L
KG41, KG64	26-34 1.02-1.34	41-49 1.61-1.93	56-64 2.20-2.52	71-79 2.80-3.11

Optional Extras

Padlock Devices, Additional Module for Motor Control Center (MCC), Angular drive

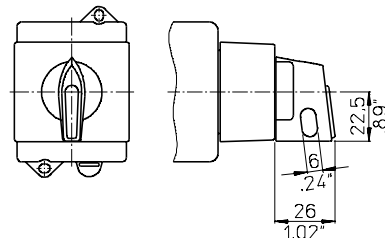
V840A



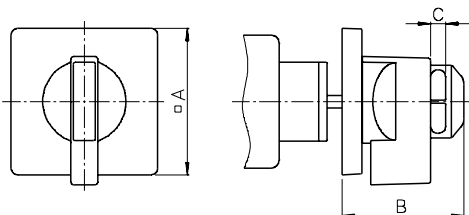
KG10A, KG20A, KG32A, KG41			
KG64			
KG10B, KG20B, KG32B, KG41B			
KG64B, KG80, KG100, KG105			

A	B	C
32,9	31,5	5
1.30	1.24	.20
41,6	40	7
1.64	1.57	.28

V840B



V845

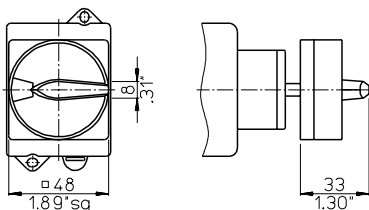


KG10A, KG20A, KG32A, KG41			
KG64			
KG10B, KG20B, KG32B, KG41B			
KG64B, KG80, KG100, KG105			
KG80C, KG100C, KG105C			
KG125-KG317			

A	B	C
48	51	7,2
1.89	2.01	.28
64	58	8,1
2.52	2.28	.32
88	73	9
3.47	2.87	.35

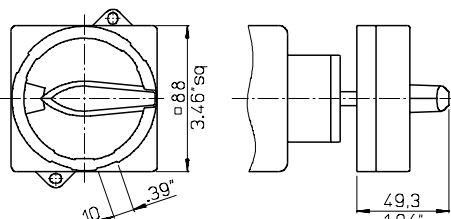
V840D

KG10A, KG20A, KG32A, KG41, KG64



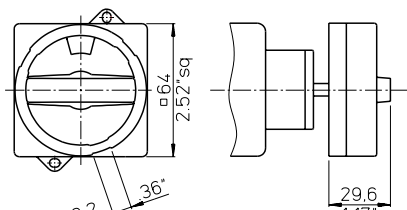
V840D

KG80C, KG100C, KG105C, KG125-KG162



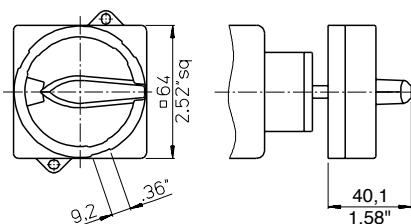
V840G/B, V840F/B

KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KG105

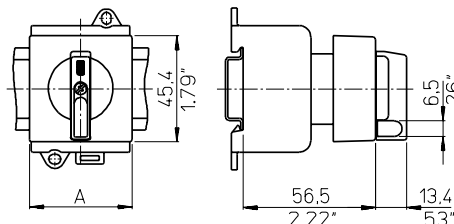


V840G, V840F/F

KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KG105

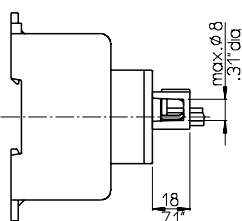


V840H/..E

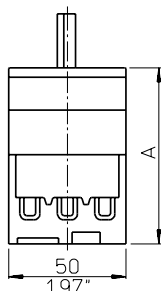


A	
KG20A, KG32A	43,7
	1.72
KG41, KG64	52,4
	2.06

V840VE



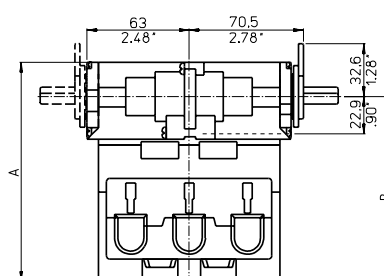
V500



KG20B	
KG32B	
KG41B	
KG64B	

A
69,5
2.74
75
2.95

M330



A	B
KG125-	135
KG162	5.31
KG210-	142
KG317	5.59
	113,9
	4.48
	120,9
	4.76

Mounting

(Additional length for auxiliary contacts see page 48)

ON/OFF Switches 4 pole

E			A	B	C	D1	D2¹	E	F	G	H	L
		KH16-KHR25	48	36	4	10-15	5/3,5	30	12,2	60	56	49
			1.89	1.42	.16	.39-.59	.20/.14	1.18	.48	2.36	2.20	1.93
		KH16B-KHR25B	64	48	4	10-15	5/3,5	30	12,2	60	56	49
			2.52	1.89	.16	.39-.59	.20/.14	1.18	.48	2.36	2.20	1.93
		KH32, KHR32, KH40, KHR40	64	48	4	10-15	5/3,5	30	12,2	70	62	54
			2.52	1.89	.16	.39-.59	.20/.14	1.18	.48	2.76	2.44	2.13
		KH63, KHR63 KH80, KHR80	64	48	4	10-15	5/4,5	37	14	86	90	62
			2.52	1.89	.16	.39-.59	.20/.18	1.46	.55	3.39	3.54	2.44

¹Dimensions after the slash are valid for two hole panel mounting**FT2
FH3**

			A	G	H	L
		KH16-KHR25	49	60	56	63,5
			1.93	2.36	2.20	2.50
		KH32, KHR32, KH40, KHR40	64	70	62	68,7
			2.52	2.76	2.44	2.70
		KH63, KHR63, KH80, KHR80	64	86	90	77,1
			2.52	3.39	3.54	3.04

VE

			A	B	C	D1	D2	D3	E	F	G	H	L
		KH16-KHR25	48	36	12	8-15	5	4,2	60	22	60	56	47
			1.89	1.42	.47	.31-.59	.20	.17	2.36	.86	2.36	2.20	1.85
		KH16B-KHR25B	64	48	13,5	10-15	5	4,2	60	22	60	56	47
			2.52	1.89	.53	.39-.59	.20	.17	2.36	.86	2.36	2.20	1.47
		KH32, KHR32, KH40, KHR40	64	48	25,5	10-15	5	4,1	70	25	70	62	53,5
			2.52	1.89	1.00	.39-.59	.20	.16	2.76	.98	2.76	2.44	2.11
		KH63, KHR63, KH80, KHR80	64	48	25,5	10-15	5	4,1	90	25	86	90	59,5
			2.52	1.89	1.00	.39-.59	.20	.16	3.54	.98	3.39	3.54	2.34

VE2

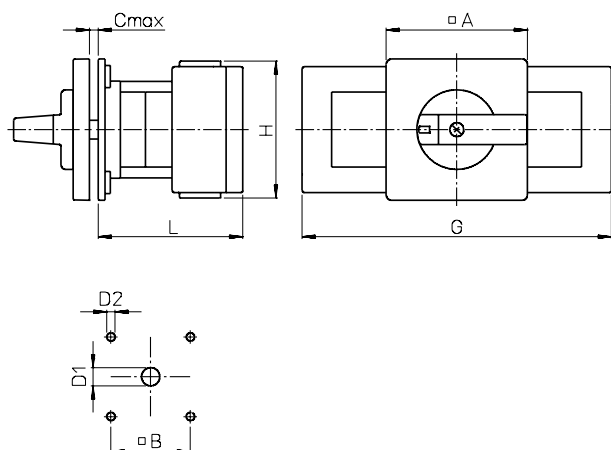
			A	B	G	L
		KH16-KHR25	43,7	45,4	60	53,5
			1.72	1.79	2.36	2.11
		KH32, KHR32 KH40, KHR40	70,4	45,4	70	54,7
			2.77	1.79	2.76	2.15
		KH63, KHR63 KH80, KHR80	70,4	45,4	86	61,7
			2.77	1.79	3.39	2.43

Mounting

(Additional length for auxiliary contacts see page 48)

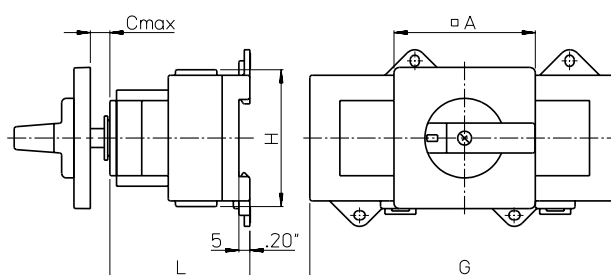
ON/OFF Switches 8 pole and Double-throw Switches

E

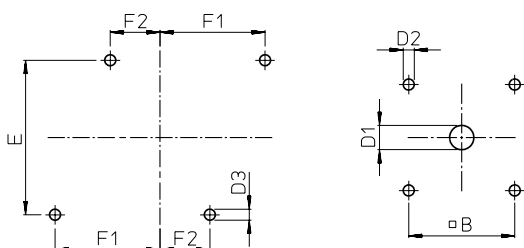


	A	B	C	D1	D2	G	H	L
KH16-KHR25	48	36	4	10-15	5	120,1	56	60
	1.89	1.42	.16	.39-.59	.20	4.73	2.20	2.36
KH16B-KHR25B	64	48	4	10-15	5	120,1	56	60
	2.52	1.89	.16	.39-.59	.20	4.73	2.20	2.36
KH32, KHR32	64	48	4	10-15	5	140,1	62	65,4
KH40, KHR40	2.52	1.89	.16	.39-.59	.20	5.52	2.44	2.57

VE

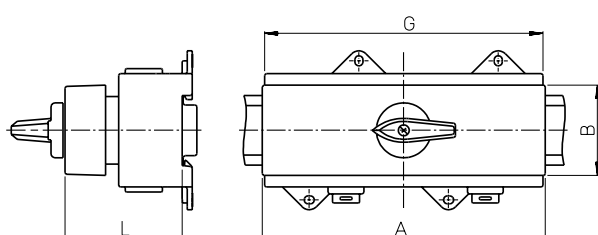


	A	C	G	H	L
KH16-KHR25	48	12	120,1	56	58
	1.89	.47	4.73	2.20	2.28
KH16B-KHR25B	64	13,5	120,1	56	58
	2.52	.53	4.73	2.20	2.28
KH32, KHR32	64	13,5	140,1	62	63,4
KH40, KHR40	2.52	.53	5.52	2.44	2.50



	B	D1	D2	D3	E	F1	F2
KH16-KHR25	36	10-15	5	4,2	60	41	19
	1.42	.39-.59	.20	.17	2.36	1.61	.75
KH16B-KHR25B	48	10-15	5	4,2	60	41	19
	1.89	.39-.59	.20	.17	2.36	1.61	.75
KH32, KHR32	48	10-15	5	4,1	70	47,5	22,5
KH40, KHR40	1.89	.39-.59	.20	.16	2.76	1.87	.89

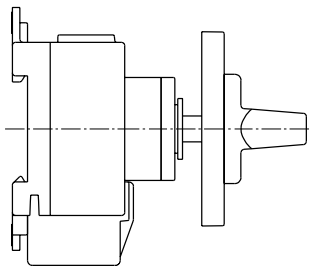
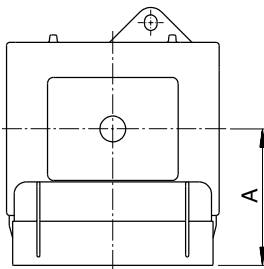
VE2



	A	B	G	L
KH32	142,4	45,4	140,1	60,9
KH40	5.61	1.79	5.52	2.40

Optional Extras

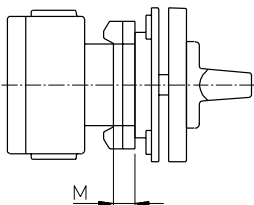
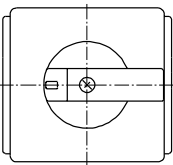
Protective Cover



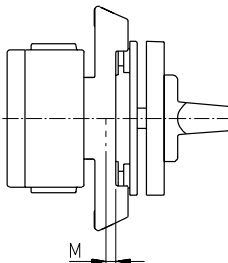
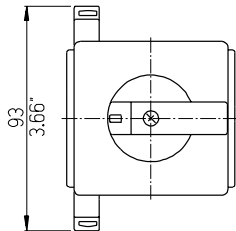
	A
KH32-KHR40	45 1.77
KH63-KHR80	68,5 2.70

Cam/rack-operated Auxiliary Contacts

E

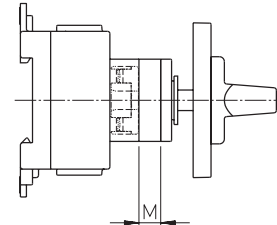
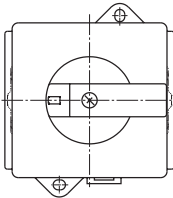


KH16-KHR25B



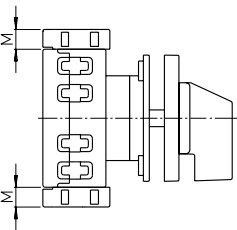
KH32-KHR80

VE



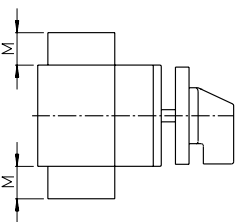
		M
KH16-KHR25B	1 or 2 contacts	9 .35
	3 or 4 contacts	25,8 1.02
KH32, KHR32, KH40, KHR40	1 or 2 contacts	0
KH63, KHR63, KH80, KHR80	1 or 2 contacts	0

Lateral mounted Auxiliary Contacts



	M
KH16-KHR25B	10 .39
KH32, KHR32, KH40, KHR40	10 .39
KH63, KHR63, KH80, KHR80	10 .39

Ground Terminal

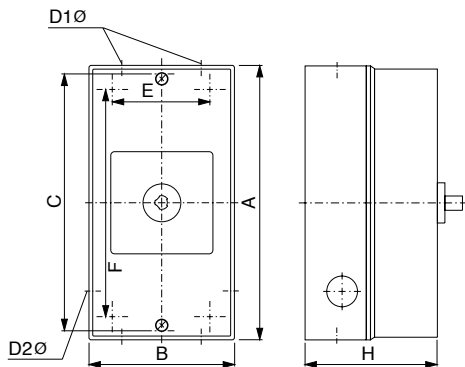


	M
KH16-KHR25B	13,5 .53
KH32, KHR32, KH40, KHR40	13,5 .53
KH63, KHR63, KH80, KHR80	20 .79

Optional Extras

Switches in Plastic Enclosure

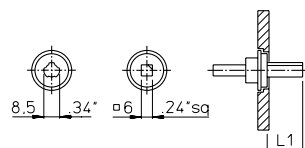
KL..., CL..., KS..., CS..



	A	B	C	D1	D2	E	F	H
KH16 - KHR25	120	85	110	2x20	20	-	-	80
	4.72	3.35	4.33	2x.79	.79	-	-	3.15
KH16 - KHR25	160	85	150	2x25	20	-	-	80
	6.30	3.35	5.91	2x.98	.79	-	-	3.15
KH32 - KHR40	190	100	178	2x25	25	-	-	91
	7.48	3.94	7.01	2x.98	.98	-	-	3.58
KH63 - KHR80	250	145	-	2x40	25	124	229	107
	9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21
KH16B - KHR25B	250	145	-	2x40	25	124	229	107
	9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21

Shaft Extension

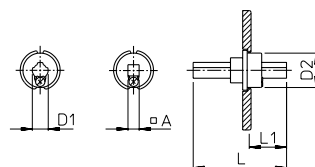
L100, L100A



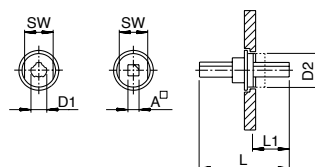
L1 = Free shaft length

	Mount- ing	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
KH16B-KHR25B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	54,5	59,5	64,5	69,5	74,5	79,5	84,5
		.45	.65	.81	.96	1.16	1.36	1.56	1.75	1.95	2.15	2.34	2.54	2.74	2.93	3.13	3.33
	VE	18	23	27	31	36	41	46	51	56	61	66	71	77	81	86	91
		.71	.91	1.06	1.22	1.42	1.61	1.81	2.01	2.20	2.40	2.60	2.80	3.03	3.19	3.39	3.58
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E	14,3	18,3	22,3	27,3	32,3	37,3	42,3	47,3	52,3	57,3	62,3	67,3	72,3	77,3	82,3	87,3
		.56	.72	.88	1.07	1.27	1.47	1.67	1.86	2.06	2.26	2.45	2.65	2.85	3.04	3.24	3.44
	VE	19,8	23,8	27,8	32,8	37,8	42,8	47,8	52,8	57,8	62,8	67,8	72,8	77,8	82,8	87,8	92,8
		.78	.94	1.09	1.29	1.49	1.69	1.88	2.09	2.28	2.47	2.67	2.87	3.06	3.26	3.46	3.65

M004D, M004E



M004, M004A



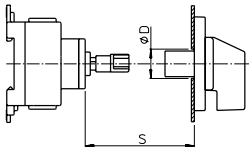
L = Shaft length
L1 = Free shaft length max.
1 = Only for square shaft

	Mount- ing	L ¹	L1 ¹	L	L1	L	L1	L	L1	L	L1	D1	D2	A	SW
KH16-KHR25	E	-	-	60	11-38	80	31-58	100	51-78	120	71-98	6	13.8	-	12
				2.36	.43-1.50	3.15	1.22-2.28	3.94	2.01-3.07	4.72	2.80-3.86	.24	.54		.47
	VE	-	-	60	18-45	80	38-65	100	58-85	120	78-105	6	13.8	-	12
				2.36	.71-1.77	3.15	1.50-2.56	3.94	2.28-3.35	4.72	3.07-4.13	.24	.54		.47
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E	56,5	3-36	70	17-49	90	37-69	110	57-89	130	77-109	8,5	18,5	6	16
		2.22	.12-1.42	2.76	.67-1.93	3.54	1.46-2.72	4.33	2.24-3.50	5.12	3.03-4.29	.34	.73	.24	.63
	VE	56,5	8-41	70	22-55	90	42-75	110	62-95	130	82-115	8,5	18,5	6	16
		2.22	.31-1.61	2.76	.87-2.17	3.54	1.65-2.95	4.33	2.44-3.74	5.12	3.23-4.53	.34	.73	.24	.63

Optional Extras

Simplified Door Clutches

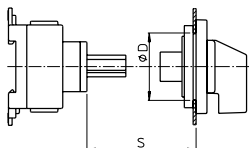
M290/A3, M290/A3.EF



S = Standard length for switches of mounting VE

	S	S	S	S	D
KH16-KHR25	34,5-61,5	54,5-81,5	74,5-101,5	94,5-121,5	18
	1.36-2.42	2.15-3.21	2.93-4.00	3.72-4.78	.71
KH32, KHR32,	28-55	55-75	75-95	95-115	18
KH40, KHR40,	1.10-2.17	2.17-2.95	2.95-3.74	3.74-4.53	.71
KH63, KHR63,					
KH80, KHR80					

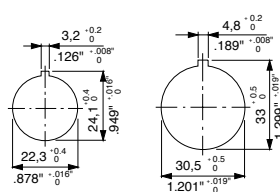
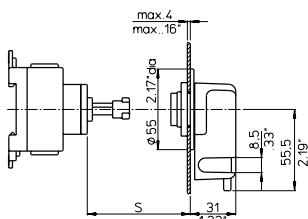
M290/A1.EF



S = Standard length for switches of mounting VE

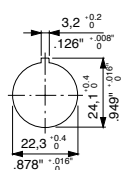
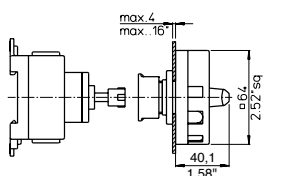
	S	S	S	S	S	S	D
KH32, KHR32,	25-30	27-37	34-44	42-52	49-59	57-67	45,6
KH40, KHR40,	.98-1.18	1.06-1.46	1.34-1.73	1.65-2.05	1.93-2.32	2.24-2.64	1.80
KH63, KHR63,							
KH80, KHR80							

V840E



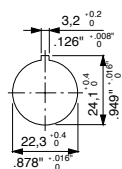
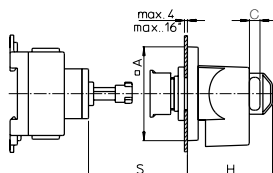
	S _{min.}	S _{max.}
KH16B-KHR25B	24,5	110
	.96	4.33
KH32, KHR32,	20	120
KH40, KHR40,	.79	4.72
KH63, KHR63,		
KH80, KHR80		

V840G/V840F



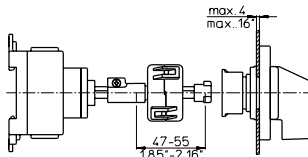
	S _{min.}	S _{max.}
KH16B-KHR25B	27,5	113
	1.08	4.45
KH32, KHR32,	28	124
KH40, KHR40,	1.10	4.88
KH63, KHR63,		
KH80, KHR80		

V845



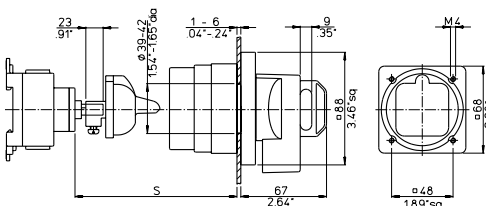
	A	C	H	S _{min.}	S _{max.}
KH16-KHR25	48	7,2	52	29,5	119
	1.89	.28	2.05	1.16	4.69
KH16B-KHR25B	64	8,1	58	27,5	113
	2.52	.32	2.28	1.08	4.45
KH32, KHR32,	64	8,1	58	28	124
KH40, KHR40,	2.52	.32	2.28	1.10	4.88
KH63, KHR63,					
KH80, KHR80					

M600

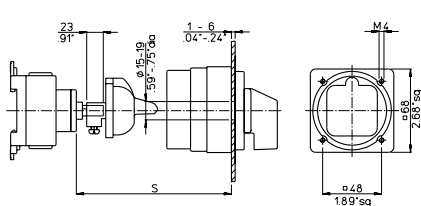


Door Clutches

M700/.



M701

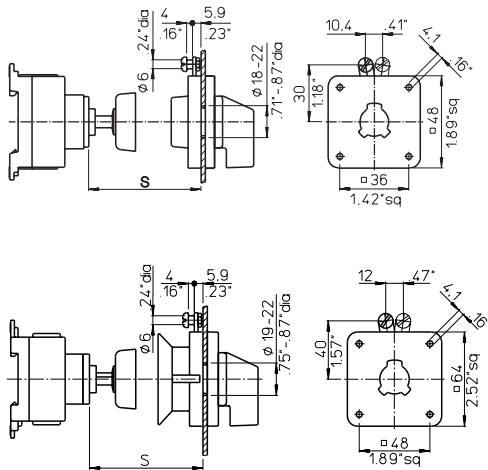


	S _{min.}
L100	M004D,
	M004
KH16B-KHR25B	61,5
	2.42
KH32, KHR32,	61,5
KH40, KHR40,	2.42
KH63, KHR63,	68
KH80, KHR80	2.68

Optional Extras

Door Clutches

M280D, M280D/.EF, M280E, M280E/.EF



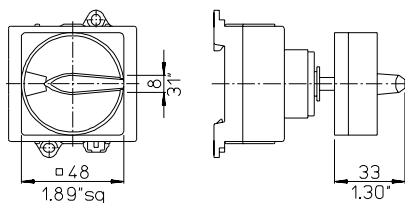
S = Standard length for switches of mounting VE

	S	S	S	S
KH16-KHR25	35-60	60-80	80-100	100-120
	1.38-2.36	2.36-3.15	3.15-3.94	3.94-4.72

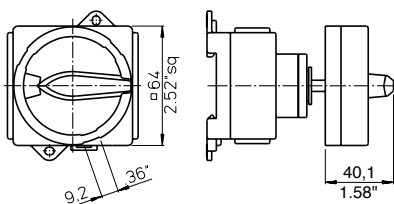
	S	S	S	S
KH16B-KHR25B	37-64 1.46-2.52	64-84 2.52-3.31	84-104 3.31-4.09	104-124 4.09-4.88
KH32, KHR32,	32-57	57-77	77-97	97-117
KH40, KHR40,	1.26-2.24	2.24-3.03	3.03-3.82	3.82-4.61
KH63, KHR63,				
KH80, KHR80				

Padlock Devices

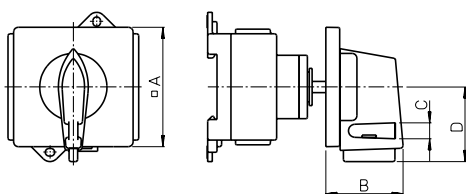
V840D



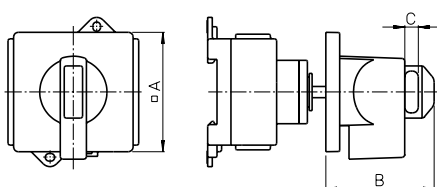
V840G, V840F/F



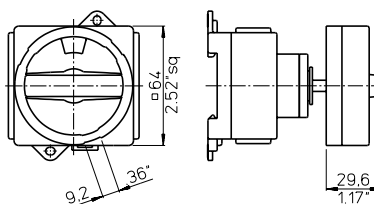
V840A



V845



V840G/B, V840F/B



	A	B	C	D
KH16-KHR25	48	32,9	5	31,5
	1.89	1.30	.20	1.24
KH16B-KHR25B	64	41,6	7	40
	2.52	1.64	.28	1.57
KH32, KHR32,	64	41,6	7	40
KH40, KHR40,	2.52	1.64	.28	1.57
KH63, KHR63,				
KH80, KHR80				

	A	B	C
KH16-KHR25	48	51	7,2
	1.89	2.01	.28
KH16B-KHR25B	64	58	8,1
	2.52	2.28	.32
KH32, KHR32,	64	58	7,2
KH40, KHR40,	2.52	2.28	.28
KH63, KHR63,			
KH80, KHR80			

The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

	Catalog Number
Main Switches and Main Switches with Emergency Function 16 A-315 A Maintenance Switches 20 A-315 A Switch Disconnectors 20 A-315 A According to IEC 60947-3, EN 60947-3, VDE 0660 part 107, IEC 60204, EN 60204 and VDE 0113	500
CL Switches 10 A-20 A C, CA and CAD Switches 10 A-315 A and L Switches 350 A-2400 A C, CA and CAD switches are designed for universal application. They are recommended for instrument, isolator, double-throw and motor control. L switches are designed for load and off-load applications. They are used to switch resistive or low inductive loads.	100
Optional Extras and Enclosures The complete product line, a large number of optional extras is available, including door interlocks, push-pull devices, cylinder and padlock attachments, control and indicator devices, AC motor drives, as well as enclosures, both insulated and metal.	101
A and AD Switches 6 A-25 A A and AD switches have 4 contacts in each switching stage. These switches provide an extensive range of switch functions and require a minimum mounting depth. Up to 36 switching positions are possible, with availability of 48 contacts per 12 stage switch column.	110
CG, CH and CHR Switches 10 A-25 A Ultra compact CG, CH and CHR switches are ideally suited for control and instrumentation applications. Switch terminals are “finger-proof” and conveniently accessible for wiring and are delivered open. All CG4 switches offer specially designed gold plated contacts or H-bridges with “cross-wire” contact systems, which facilitates their use in electronic circuitry and chemically aggressive environments.	120
DH, DHR, DK and DKR Switches 6 A-16 A DH, DHR, DK and DKR switches incorporate unique corrosion resistant contacts that permit operation on system voltage as low as 1 V. They have fully enclosed and protected contacts which can be operated either by rotary and/or lateral handle movement. D switches are used in calibration and semiconductor circuits. They are also used for relay and contactor control.	130
X Switches 80 A-630 A X switches can be applied for load, tap and gang switching duties. They incorporate 6 contacts in each switching stage. Their compact design provides a minimum length dimension for mounting purposes.	140
KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A KG, KH and KHR switches are excellent circuit interruptors. They have high through fault and fault making capacities and are especially designed for use as isolators and safety switches for machine tools, distribution panels and switchboards. KG ON/OFF switches offer unusually high dimensioned air and creepage distances between terminals which are designed for time saving “straight-line” wiring. ON/OFF switches are available with up to 8 poles and double-throw switches are available with up to 4 poles.	150
Contactors 16 A-115 A and Motor Starters 1,1 kW-55 kW These include control relays, motor contactors, two and four pole output contactors, heating contactors, thermal overload relays.	200
Push Buttons and Pilot Lights, 22,5 mm Ø A complete range of state-of-the-art push buttons and pilot lights represent an ideal combination of functional security and economical efficiency in a modular design.	302

Australia

australian solenoid  **co.pty.ltd.**
379 Liverpool Road, ASHFIELD, N.S.W. 2131
P. O. Box 1093, ASHFIELD, N.S.W. 1800
Tel: +61 2 9797-7333, Fax: 0092
sales@austrasol.com.au

Austria

austro solenoid  **ges.m.b.h.**
Schumannsgasse 35, Postfach 431
A-1181 WIEN
Tel: +43 1 404 06-0, Fax: 404 06-190
aso@krausnaimer.com

Belgium, Luxembourg

solenoid benelux  **b. v.**
Ikaros Business Park
Ikaroslaan 2
B-1930 ZAVENTHEM
Tel: +32 2 757-0141, Fax: 1640
sales@bensol.be

Brazil

solenoid do brasil  **tda.**
Avenida Berna 230
04774-020 SAO PAULO
Tel: +55 11 2198-1288, Fax: 1251
knbrasil@krausnaimer.com.br

Canada

canadian solenoid  **inc.**
219 Connie Crescent, Unit 13A
CONCORD, Ontario, L4K 1L4
Tel: +1 905 738-1666, Fax: 9327
cdnsolenoid@cansol.on.ca

Chile

ASEA BROWN BOVERI S. A.
Vicuña Mackenna 1602, Casilla 3555
SANTIAGO DE CHILE
Tel: +56 2 544-7411, Fax: 7418

Cyprus

ELECTROMATIC CONSTRUCTIONS LTD.
72, Evagoras Pallikarides Str., CY-2235 LATSIA-Nicosia
P. O. Box 12630, CY-2251 LATSIA-Nicosia
Tel: +357 2 48 41 41, Fax: 48 57 47

Czech Republic

OBZOR, výrobní družstvo Zlín
Na Slanici 378
CZ-76413 ZLÍN
Tel: +420 57 7195-111/-153 (Techn. Supp.)
Fax: +420 57 7195-152/-138
ots@obzor.cz

Denmark

THIIM A/S
Transformervej 31
DK-2730 HERLEV
Tel: +45 4485 8000, Fax: 8005
thiim@thiim.com

Finland

suomen solenoid  **oy**
Karitie 7
FIN-01530 VANTAA
Tel: +358 9 825-424-0, Fax: 424-10
etunimi.sukunimi@finsol.fi

France

solenoid france  **s. a.**
33, rue Bobillot
F-75013 PARIS
Tel: +33 1 58 40 80 80, Fax: 45 80 91 19
sales@solfrance.fr

Germany

deutsche solenoid  **vertriebs-gmbh**
Wikingerstraße 20-28, D-76189 KARLSRUHE
Postfach 10 01 24, D-76231 KARLSRUHE
Tel: +49 721 59 88-0, Fax: 59 28 28
desol@krausnaimer.com

Great Britain

u. k. solenoid  **ltd.**
115 London Road
NEWBURY / BERKSHIRE RG14 2AH
Tel: +44 1635 45991, Fax: 37807
sales@uksol.co.uk

Greece

KALAMARAKIS-SAPOUNAS S. A.
Ionias & Neromilou Str., P. O. Box 46566
GR-13671 ACHARNES/ATHENS
Tel: +30 2 10 240-6000-6, Fax: 240-6007
ksa@ksa.gr

Hungary

GANZ, Schalter- u. Gerätefabrik
X. Kőbányai út 41/c, Postfach 87
H-1475 BUDAPEST
Tel: +36 1 261-5479, Fax: 4685
ganzkk@ganzkk.hu

Iceland

BRAEDURNIR ORMSSON EHF
Lágmúli 6-9, P. O. Box 8670
REYKJAVIK
Tel: +354 530-28 00, Fax: 28 10
skuli@ormsson.is

India

Liaison Office, Solenoid Singapore Pte Ltd
12/103, Tulsidham Kalyani CHS Ltd
SV Road, Majiwade
THANE (W) 400610, Maharashtra
Tel: +91 22 2589-8450, Fax: 8450
kane.shriram@singsol.co.in

Republic of Ireland

irish solenoid  **ltd.**
Bay 145, Shannon Free Zone
SHANNON, Co. Clare
Tel: +353 61 704700, Fax: 471084
salesirs@krausnaimer.ie

Italy

solenoid italia  **s.r.l.**
Via Terracini, 9
I-24047 TREVIGLIO (BG)
Tel: +39 0363-30 11 12, Fax: 30 21 13
infoits@italsol.it

Japan

solenoid japan  **co.ltd.**
Yoshiwada Building 2F
1-11-6 Hamamatsucho
Minato-Ku, TOKYO 105-0013
Tel: +81 3 3436-6151, Fax: 6325
kazumi.nakazato@japsol.co.jp

Kuwait

AMMAR & PARTNERS ELECTRICAL CO.
P. O. Box 1871
13019 SAFAT
Tel: +965 483-0122/483-0133
Fax: +965 484-1818

Malaysia

INDUSTRIAL AUTOMATION (M) SDN BHD
158 Jalan Loke Yew 52200
KUALA LUMPUR
Tel: +60 3-9-2210511, Fax: 2222299
inquiry@iasb.com.my

Mexico

ING. JAVIER CABALLERO B.
A. Gavino 30, Satélite,
53100, Edo. de Mexico, MEXICO
Tel: +52 5555 62-7577, Fax: 0434
j_caballero_b@infosel.net.mx

Netherlands

solenoid benelux  **b. v.**
Wegtersweg 38, Postbus 199
NL-7556 BR HENGLO (Ov.)
Tel: +31 74 291-9441, Fax: 8380
sales@bensol.nl

New Zealand

new zealand solenoid  **co.ltd.**
42 Miramar Avenue, WELLINGTON 6022
P. O. Box 15-009, WELLINGTON 6243
Tel: +64 4 380-9888, Fax: 9877
sales@nzsolenoid.co.nz

Norway

norsk solenoid  **a/s**
Hjalmar Brantings vei 8, P. O. Box 21, Økern
N-0508 OSLO
Tel: +47 22 64 44 20, Fax: 65 39 49
nos@norsksol.no

Poland

ASTAT sp. z o.o.
ul. Dąbrowskiego 461
PL-60451 POZNAN
Tel: +48 61 848-8871/72, Fax: 8276
info@astat.com.pl

Portugal

ELECTRICOL-DAMAS, FERREIRA & DAMASCENO, LDA.
Apartado 1063, S. Ant. Cavaleiros
P-2670 LOURES
Tel: +351 21 989-8939, Fax: 988-6464

Singapore

solenoid singapore  **pte.ltd.**
115A, Commonwealth Drive
03-17/23
SINGAPORE 149 596
Tel: +65 6473-8166, Fax: 8643
krausnaimer@singsol.com.sg

Slovenia

SCHRACK Technik d.o.o.
Glavni trg 47
SI-2380 SLOVENJ GRADEC
Tel: +386 2 883 92 00, Fax: +386 2 884 34 71
schrack.sg@schrack-energietechnik.si

Republic of South Africa

south african solenoid  **co.pty.ltd.**
7 Village Crescent, Linbro Village
Linbro Business Park, SANDTON 2065
P. O. Box 511, KELVIN 2054
Tel: +27 11 608-6060, Fax: 608-2874
sales@sasolenoid.co.za

Spain

HAZEMEYER HES S.L.
CIF. B-08282337
C/ta. de Tiana s/n, esq. N-II
08911 BADALONA
Tel: +34 93 389-4262, Fax: 384-3586
konno@grupo-hes.net

Sweden

skandinaviska solenoid  **ab**
Dr. Widerströms Gata 11, FRUÅNGEN
Box 42097, S-126 14 STOCKHOLM
Tel: +46 8 97 00 80, Fax: 97 87 33
order@skansol.se

Switzerland

AWAG Elektrotechnik AG
Sandbühlstraße 2, Postfach
CH-8604 VOLKETSCH
Tel: +41 44 908 19 19, Fax: 19 99
info@awag.ch, www.awag.ch

Taiwan

NUWTEC ENTERPRISE Co Ltd
No. 301, Sec. 1, Nan Kang Road
TAIPEI 115, Taiwan, R. o. C.
Tel: +886 2 265-13279, Fax: 13264
nathan.nuwtec@msa.hinet.net

Turkey

UNAL KARDEŞ ELEKTRİK GEREÇLERİ A. Ş.
Beşyol, Eski Londra Asfaltı-6
TR-34295 İSTANBUL-Sefaköy
Tel: +90 212 624-9204, Fax: 592-4810
info@unal kardes.com.tr

USA

american solenoid  **co.inc.**
760 New Brunswick Road
SOMERSET, NJ 08873
Tel: +1 732 560-1240, Fax: 8823
amsol@krausnaimer-us.com

