



A collage of various electrical components. It includes a white wall switch with a red rocker and a red emergency stop button, a blue three-phase relay with a red handle, a blue terminal block with six terminals, a blue terminal block with four terminals, a blue terminal block with six terminals, a blue terminal block with four terminals, a blue terminal block with six terminals, and a blue terminal block with four terminals. The components are arranged in a grid-like fashion, with some overlapping. The background is a solid light blue color.

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# Kraus & Naimer

The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than hundred 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

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

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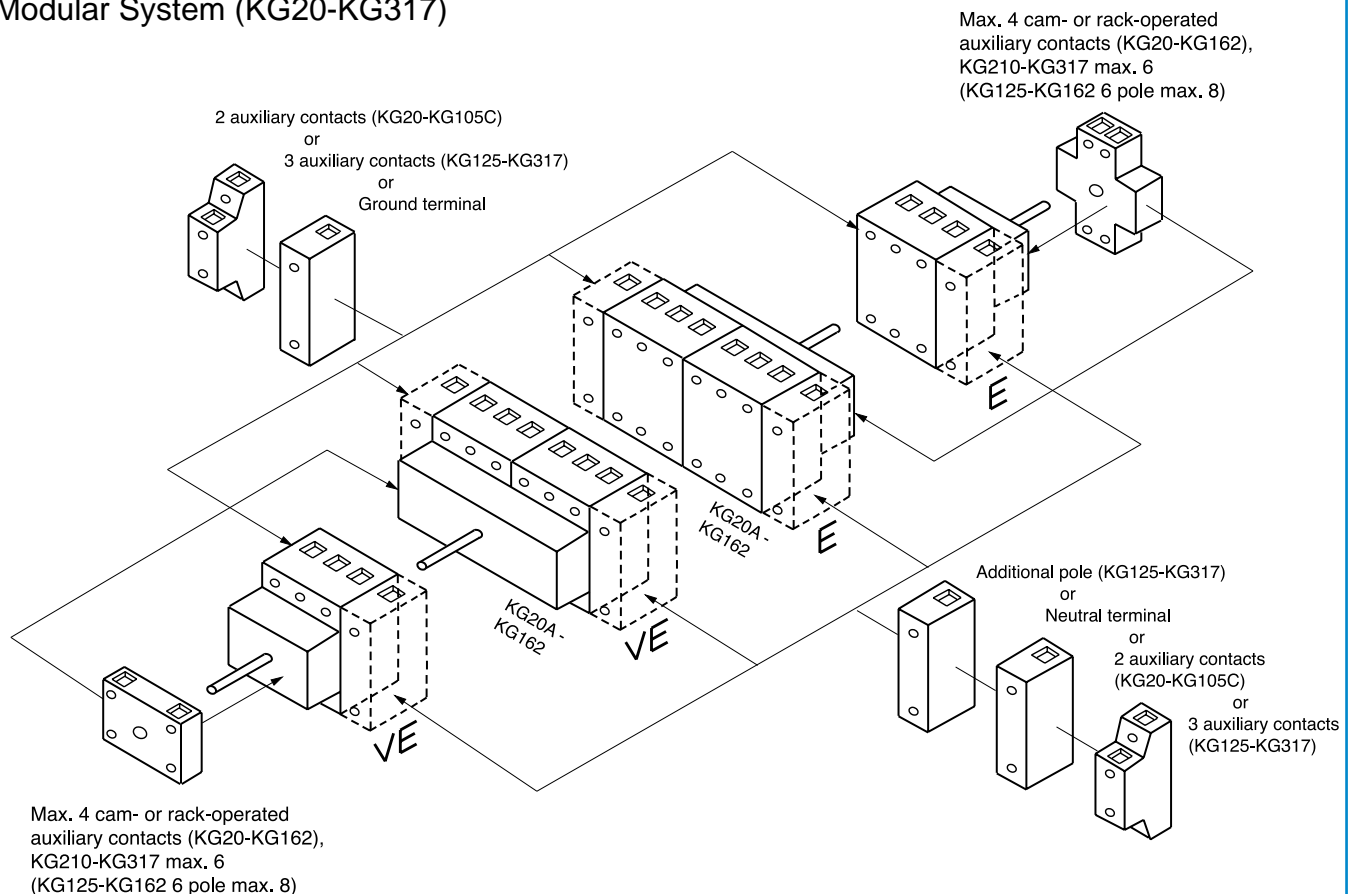
The KG10A through KG317 switch line offers excellent performance characteristics and exceed the requirements of IEC 60947-3 as well as the new VDE 0660 part 107. KG switches are principally used as motor and industrial panel disconnectors, double-throw transfer switches, safety switches, main disconnect 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 DGUV V3. 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

Face plate Frame mm			Typen	IEC 60947-3/VDE 0660 part 107		UL and Canada			
				Rated Values					
				Thermal Current $I_u/I_{th}$ <b>A</b>	Utilization Category AC-23A 3 x 380 V-440 V <b>kW</b>	Ampere- Rating 3 x 600 V <b>A</b>	Standard Motor Load DOL-Rating 3 x 240 V <b>HP</b>		
							3 x 480 V <b>HP</b>		
 48 x 48  KG10A	 64 x 64  KG10B		<b>KG10A</b>	20	5,5	3,7	20	2	3
			<b>KG10B</b>	20	5,5	3,7	20	2	3
 30 x 30  KG20 KG32	 48 x 48  KG20A KG32A	 64 x 64  KG20B KG32B	<b>KG20</b>	25	7,5	5,5	25	7,5	15
			<b>KG20A</b>	25	7,5	5,5	25	7,5	15
			<b>KG20B</b>	25	7,5	5,5	25	7,5	15
			<b>KG32</b>	32	11	7,5	30	10	20
			<b>KG32A</b>	32	11	7,5	30	10	20
			<b>KG32B</b>	32	11	7,5	30	10	20
 48 x 48  KG41 KG64	 64 x 64  KG41B KG64B		<b>KG41</b>	40	15	11	40	15	25
			<b>KG41B</b>	40	15	11	40	15	25
			<b>KG64</b>	63	22	18,5	60	15	30
			<b>KG64B</b>	63	22	18,5	60	15	30
 64 x 64  KG80 KG100 KG105	 88 x 88  KG80C KG100C KG105C		<b>KG80</b>	80	30	22	80 <sup>1</sup>	25	50
			<b>KG80C</b>	80	30	22	80 <sup>1</sup>	25	50
			<b>KG100</b>	100	37	30	100 <sup>1</sup>	25	50
			<b>KG100C</b>	100	37	30	100 <sup>1</sup>	25	50
 88 x 88  KG125, KG160 KG210, KG250, KG315 (with box terminals)	 88 x 88  KG126, KG161 KG211, KG251, KG316 (with bolt terminals)		<b>KG105</b>	125	45	37	125	40	60
			<b>KG105C</b>	125	45	37	125	40	60
			<b>KG125</b>	125	45	37	150 <sup>1</sup>	30	60
			<b>KG126</b>	125	45	37	150 <sup>1</sup>	30	60
 88 x 88  KG125, KG160 KG210, KG250, KG315 (with box terminals)	 88 x 88  KG126, KG161 KG211, KG251, KG316 (with bolt terminals)		<b>KG127</b>	125	45	37	150 <sup>1</sup>	30	60
			<b>KG160</b>	160	55	45	200 <sup>1</sup>	40	60
			<b>KG161</b>	160	55	45	200 <sup>1</sup>	40	60
			<b>KG162</b>	160	55	45	200 <sup>1</sup>	40	60
 88 x 88  KG125, KG160 KG210, KG250, KG315 (with box terminals)	 88 x 88  KG126, KG161 KG211, KG251, KG316 (with bolt terminals)		<b>KG210</b>	200	75	55	200 <sup>1</sup>	50	75
			<b>KG211</b>	200	75	55	200 <sup>1</sup>	50	75
			<b>KG212</b>	200	75	55	200 <sup>1</sup>	50	75
			<b>KG250</b>	250	90	55	250 <sup>1</sup>	60	75
 88 x 88  KG125, KG160 KG210, KG250, KG315 (with box terminals)	 88 x 88  KG126, KG161 KG211, KG251, KG316 (with bolt terminals)		<b>KG251</b>	250	90	55	250 <sup>1</sup>	60	75
			<b>KG252</b>	250	90	55	250 <sup>1</sup>	60	75
			<b>KG315</b>	315	110	75	300 <sup>1</sup>	75	100
			<b>KG316</b>	315	110	75	300 <sup>1</sup>	75	100
 88 x 88  KG125, KG160 KG210, KG250, KG315 (with box terminals)	 88 x 88  KG126, KG161 KG211, KG251, KG316 (with bolt terminals)		<b>KG317</b>	315	110	75	300 <sup>1</sup>	75	100

<sup>1</sup>Valid 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 5 and 25 which show the thermal current and power rating of each switch. For further technical details, refer to pages 22/23 and 36/37.

### 2. Switch Function

The code numbers for the KG switches shown on pages 11-13 and on page 27 for the KH switches indicate the switch function, face plates and handles. Additional coding to modify the type and color of handle and face plate is explained below and on page 7.

### 3. Type of Mounting

Switch types and enclosures for the KG switches are shown on pages 8-10. The KH switches may be selected by referring to the table on page 26.

**KG100**

**K302  
M004**

**VE**

### 4. Optional Extras

Pages 16-21 list optional extras and their coding for the KG switches. For the KH/KHR switches refer to pages 30-34. 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.

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## Handles, Face plates and Optional Extras

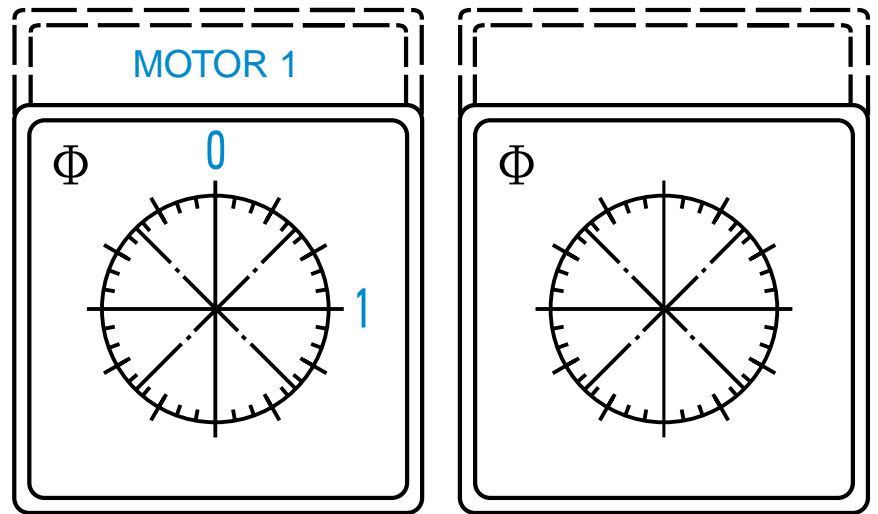
Various standards for the KG switches are listed in the table on pages 8-10 and for the KH/KHR switches on page 26.

When a handle, face plate or optional extra is required but not covered by the standard code number, the code number for the selected component should be entered separately. A complete range of standard face plates are illustrated on pages 14/15 and 28/29. Non standard or special face plate engravings are available at extra cost.


## How to order

### Ordering of Special Face plates



When ordering special escutcheon plates it is advisable to use our order form, as illustrated. **Example:** Customer's requirements are shown beside these two numbers with a digit number which represents the color combination required.





Order forms are available upon request.

Mounting	Type	Code
<div>  <p><b>Front mounting</b></p> <p>Two hole panel mounting, Protection IP 66/67</p> <p>Four hole panel mounting, Protection IP 66/67 Protection IP 66/67 Protection IP 66/67</p> <p><b>Single hole mounting 22 mm</b></p> <p>Without face plate, Protection IP 66/67/69k</p> <p>With square face plate, Protection IP 66/67/69k</p> <p><b>Base mounting</b></p> <p>Screw/Snap-on base mounting for track EN 50022, Protection IP 40</p> <p>Snap-on base mounting for track EN 50022, Protection IP 40</p> <p>Screw base mounting (KG20A-KG162) and Snap-on base mounting (KG20A-KG105) for track EN 50022. Face plate for 45 mm knock-out. Protection IP 40</p> <p>Snap-on base mounting for track EN 50022. Both the face plate for 45 mm standard knock-out and the handle are adjustable in height. Protection IP 40</p> </div>		
	KG20 KG32	<b>E</b>
	KG10A KG41- KG100 KG160- KG315	<b>E</b>
	KG10A KG20A KG32A	<b>FT1</b>
	KG10A KG20A KG32A	<b>FT2</b>
	KG10A- KG317	<b>VE</b>
	KG125- KG162	<b>VE1</b>
	KG20A KG32A KG41- KG64B KG80- KG105 KG125- KG162	<b>VE2</b>
	KG10A	<b>VE21</b>



Plastic Enclosure Protection IP 66	Type	Code
	<p>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. All KL- and KS-enclosures are flame resistant in accordance with UL94V-0. 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.</p> <p>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.</p>	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
	<p>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.</p>	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
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






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

<sup>1</sup>For 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
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## ON/OFF Switches 3 pole

## Types of Mounting





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

<sup>1</sup>Only for switch type KG20. <sup>2</sup>When using KS. the switch type changes to KG10. <sup>3</sup>Only for switch types KG125-KG162.<sup>4</sup>Only 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- KG317	Escutch. Plate	Code
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## ON/OFF Switches 4 pole

## Types of Mounting

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


## ON/OFF Switches 6 pole

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


<sup>1</sup>When using KS. the switch type changes to KG10. <sup>2</sup>Only for switch types KG125-KG162. <sup>3</sup>Only 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
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
**ON/OFF Switches 8 pole****Types of Mounting**

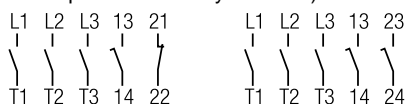
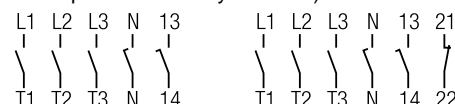
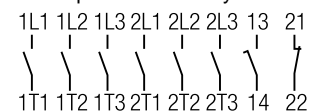
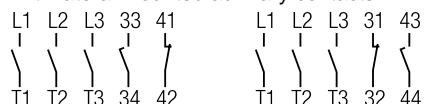
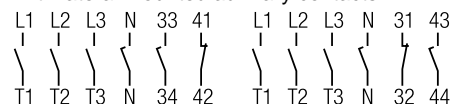
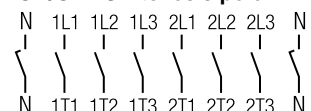
Without auxiliary contacts			E VE VE2	E VE KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1		<b>K800</b>
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**Double-throw Switches 3 pole**

Without auxiliary contacts			E VE VE2	E VE KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1		<b>K900</b>
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**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		<b>K950</b>
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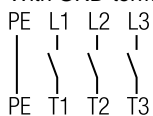
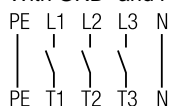
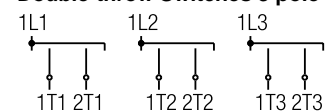
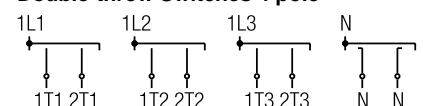
**Connection Diagrams****ON/OFF Switches 3 pole (with cam-operated auxiliary contacts)****ON/OFF Switches 4 pole (with cam-operated auxiliary contacts)****ON/OFF Switches 6 pole (with cam-operated auxiliary contacts)****With lateral mounted auxiliary contacts****With lateral mounted auxiliary contacts****ON/OFF Switches 8 pole**

Mounting E, FT1, FT2

VE, VE2, KL., PF..

Mounting E, FT1, FT2

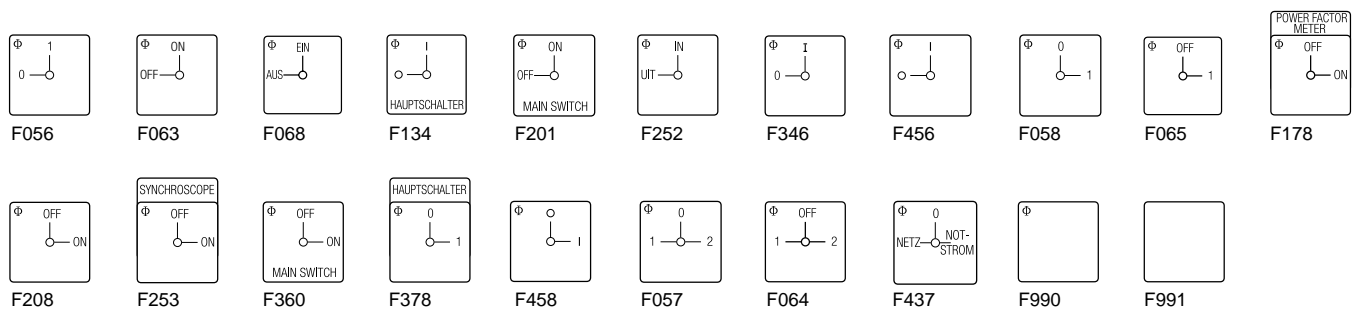
VE, VE2

**With GRD-terminal****With GRD- and N-terminal****Double-throw Switches 3 pole****Double-throw Switches 4 pole**

Square and rectangular face plates are available for each size of switch. The face plate consists of a frame and a faceplate having the switch position which is then embossed with hot-foil backing. The face 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 face 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. Face plates with special lettering are also available upon request.










## Standard Face plates





<sup>1</sup>Not 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
<b>I-Handle</b> 	black red	G251 G252	● ●	● ●	● ●	● ●	● ●	— —
<b>B-Handle</b> 	black red	G521 G522	— —	● ●	● ●	— —	— —	— —
<b>R-Handle</b> 	black red	G001 G002	— —	● ●	● ●	● ●	● ●	— —
<b>F-Handle</b> 	black red	G221 G222	● ●	● ●	● ●	● ●	● ●	— —
<b>L-Handle</b> 	black red	G501 G502	— —	— —	● ●	— —	— —	— —
<b>P-Handle</b>  KG10A-KG64    KG10B-KG317	black red	G211 G212	— —	● ●	● ●	● ●	● ●	● ●
<b>K-Handle</b> 	black red	G411 G412	— —	— —	● ●	● ●	● ●	● ●



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

**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 switch configurations.	KG20- KG105C	<b>M510A</b>
	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.		
	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	<b>M510B</b>
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.	KG20- KG105C	
	Standard contacts (nonoverlapping)	Terminal numbers	
	For mounting E, FT1 and FT2	Attachment	
	For mounting VE, VE2, KL. and PF..	left	right
		(33-34, 41-42)	(53-54, 61-62)
	Overlapping contacts	(31-32, 43-44)	(51-52, 63-64)
	For mounting E, FT1 and FT2	(33-34, 41-42)	(53-54, 61-62)
	For mounting VE, VE2, KL. and PF..	(31-32, 43-44)	(51-52, 63-64)
	Lateral mounted auxiliary contacts with 2 NO and 1 NC.	KG125- KG317	
	Standard contacts (nonoverlapping)	Terminal numbers	
	For mounting E	Attachment	
	For mounting VE	left	right
	Overlapping of 1 NO and 1 NC	(013-014, 023-024, 031-032)	(043-044, 053-054, 061-062)
	For mounting E	(011-012, 023-024, 033-034)	(041-042, 053-054, 063-064)
	For mounting VE	(013-014, 023-024, 031-032)	(043-044, 053-054, 061-062)
		(011-012, 023-024, 033-034)	(041-042, 053-054, 063-064)

H010/A11-E  
H010/A11-VE  
  
H010/B11-E  
H010/B11-VE

H010/A21-E  
H010/A21-VE  
  
H010/B21-E  
H010/B21-VE




Ground and Neutral Terminals	Type	Code	Additional Main Contacts	Type	Code
Ground terminal   	KG20-KG32B	<b>K0 H052/A</b>	  <b>Terminals for Control Circuit</b>   Max. Permissible Wire Gage Single-core or      Flexible wire stranded wire  <hr/> 2,5 mm <sup>2</sup> 2,5 mm <sup>2</sup> AWG12      AWG14  2,5 mm <sup>2</sup> 2,5 mm <sup>2</sup> AWG12      AWG14  4 mm <sup>2</sup> 4 mm <sup>2</sup> AWG10      AWG12  4 mm <sup>2</sup> 4 mm <sup>2</sup> AWG10      AWG12  <b>Wiring Aid</b>   Ordering data:      Switch mounting.	KG125 KG126 KG127	<b>K3 H052/H<sup>1</sup></b>
	KG41-KG64B	<b>K1 H052/B</b>		KG160 KG161 KG162	<b>K3 H052/J<sup>1</sup></b>
	KG80-KG105C	<b>K2 H052/C</b>		KG210 KG250 KG211 KG251 KG212 KG252	<b>K3 H052/K<sup>1</sup></b>
	KG125 KG160	<b>K3 H052/H<sup>1</sup></b>		KG315 KG316 KG317	<b>K3 H052/L<sup>1</sup></b> <b>K3 H052/M<sup>1</sup></b>
	KG126 KG161	<b>K3 H052/J<sup>1</sup></b>			
	KG127 KG162	<b>K3 H052/K<sup>1</sup></b>			
	KG210 KG250 KG315	<b>K3 H052/D<sup>1</sup></b>			
	KG211 KG251	<b>K3 H052/E<sup>1</sup></b>			
	KG212 KG252	<b>K3 H052/F<sup>1</sup></b>			
	KG316 KG317	<b>K3 H052/L<sup>1</sup></b> <b>K3 H052/M<sup>1</sup></b>			
Neutral terminal   	KG20-KG32B	<b>K0 H053/A</b>		KG41-KG64B	<b>K1B D220 KS</b>
	KG41-KG64B	<b>K1 H053/B</b>		KG80-KG105C	<b>K2B D520 KSA</b>
	KG80-KG100C	<b>K2 H053/C</b>		KG125-KG162	<b>K3A D720 KS</b>
	KG125 KG160	<b>K3 H053/H<sup>1</sup></b>		KG210-KG317	<b>K3B D520 KS</b>
	KG126 KG161	<b>K3 H053/J<sup>1</sup></b>		KG126 KG127 KG161 KG162	<b>K3A D720 09</b>
	KG127 KG162	<b>K3 H053/K<sup>1</sup></b>		KG211 KG212 KG251 KG252 KG316 KG317	<b>K3B D520 09</b>
	KG210 KG250 KG315	<b>K3 H053/D<sup>1</sup></b>			
	KG211 KG251	<b>K3 H053/E<sup>1</sup></b>			
	KG212 KG252	<b>K3 H053/F<sup>1</sup></b>			
	KG316 KG317	<b>K3 H053/L<sup>1</sup></b> <b>K3 H053/M<sup>1</sup></b>			


<sup>1</sup>Mounting only at factory.

Shaft Extensions, Simplified Door Clutch	Type	Code
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## Shaft Extensions



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


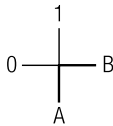
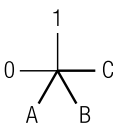
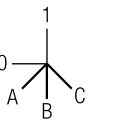
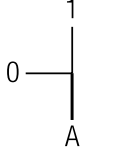
## Simplified Door Clutch

	The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and face plate are mounted on the cover.		
	With shaft extension Front protection IP 40 Front protection IP 65	KG10A KG20A, KG32A KG41B-KG105	<b>M290/A3 M290/A3.EF<sup>1</sup></b>
	With profile extension parts Front protection IP 65	KG41B-KG105	<b>M290/A1.EF</b>
	With padlock device, single hole mounting 22 mm, protection IP 66. An additional aluminum shaft extension is required.		
	Loc bar is accessible from 3 o'clock which achieve a compact design.	KG10B KG20B, KG32B KG41B-KG105, KG125-KG317 <sup>2</sup>	<b>V840E</b>
	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	<b>V840G V840F</b>
	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	<b>V845</b>
	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	<b>M600</b>
Ordering data:		Free shaft length or dimension from face of the switch to the cover and color selection.	

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


Door Clutches	Type	Code
      	<p>The M280 door clutch has an adjustable shaft and can be supplied with an interlock device.</p> <p>With protected profile shaft fixation with set screw Front protection IP 40 Front protection IP 66/67</p> <p>shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67</p> <p>Without protected profile Front protection IP 40 Front protection IP 65</p> <p>Handle lockable with padlocks Protection IP 66 The face plate is available in black, yellow and alu. The handle may be supplied in black and red.</p> <p>The M700 is a padlock door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the OFF position and no padlock is fitted. <b>Note: Only in the ON position can knowledgeable personnel using a simple tool to defeat the interlock.</b> The M700's flexibility allows for successful installation with as much as + or – 5 mm of misalignment between the shaft and door.</p> <p>Standard handle and standard face plate Protection IP 66 The M700's flexibility allows for successful installation with as much as + or – 5 mm of misalignment between the shaft and door.</p> <p>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.)</p> <p>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.</p>	<div>             KG10A KG20A KG32A KG41B KG64B KG80 KG100 KG105 KG125- KG317           </div> <div> <b>M280E</b> <b>M280E/.EF</b> </div> <div> <b>M280D</b> <b>M280D/.EF</b> </div> <div>             KG41 KG64           </div> <div> <b>M280B/.</b> <b>M280B/.EF</b> </div> <div> <b>M700/.</b> </div> <div>             KG10B KG20B KG32B KG41B KG64B KG80 KG100 KG105 KG125- KG317           </div> <div> <b>M701</b> </div> <div> <b>S1D M700 29</b> </div> <div> <b>M810/.</b> <b>M800/.</b> </div>
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
	<p>The padlock device is an integral part of the switch.</p> <p>For 2 padlocks Operation of the locking bar from the bottom. Available in black, red and electro-gray.</p>	<p>KG10A KG20A, KG32A KG10B KG20B, KG32B KG41-KG105</p> <p><b>V840A</b></p>
	<p>For 4 padlocks Operation of the locking bar from the front. Available in black, red and electro-gray.</p>	<p>KG10A KG20A, KG32A KG41, KG64 KG10B KG20B, KG32B KG41B, KG64B KG80-KG105 KG80C-KG105C KG125-KG317</p> <p><b>V845</b></p>
	<p>For mounting VE2 Operation of the locking bar from the front.</p>	<p>KG10A KG20A, KG32A KG41, KG64 KG80-KG105</p> <p><b>V840B</b></p>
	<p>For distribution box with 70 mm depth.</p>	<p>KG20A, KG32A KG41, KG64</p> <p><b>V840H/.E</b></p>
	<p>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.</p>	
	<p>For 2 padlocks with F-handle</p>	<p>KG10A KG20A, KG32A KG41, KG64</p> <p><b>V840D</b></p>
	<p>For 3 padlocks with F-handle</p>	<p>KG80C-KG105C KG125-KG162</p>
	<p>For 3 padlocks with F-handle with B-handle</p>	<p>KG10B KG20B, KG32B KG41B, KG64B KG80-KG105</p> <p><b>V840G V840G/B</b></p>
	<p>For 4 padlocks with F-handle with B-handle</p>	<p><b>V840F/F V840F/B</b></p>
	<p>Padlock device for switches with base mounting for locking when control cabinet is opened.</p> <p>Padlock devices <b>with simplified door clutch and single hole mounting</b> see page 18.</p>	<p>KG20B, KG32B KG41B, KG64B KG80-KG105 KG125-KG317</p> <p><b>V840VE</b></p>
Ordering data:	For V840 and V845 color selection required.	

Additional Module for Motor Control Center (MCC), Angular drive		Type	Code
 <p>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.</p> <p>ON-position: All circuits on, module interlocked, i. e. cannot be withdrawn.</p> <p>OFF-position: All circuits off, module interlocked, padlocks can be applied.</p> <p>Test position: Main incoming off, control circuits on, module interlocked.</p> <p>Isolated position: All circuits off, module can be withdrawn.</p> <p>Removed position: All circuits off, module can be removed.</p> <p>With 2 additional positions A = Test position B = Removed position</p> <p>With 3 additional positions A = Test position B = Isolated position C = Removed position</p> <p>With 3 additional positions A = Test position B = Isolated position C = Removed position</p> <p>With 1 additional position A = Removed position</p>	   	KG20B KG32B KG41B KG64B  KG20B KG32B KG41B KG64B  KG20B KG32B KG41B KG64B  KG20B KG32B KG41B KG64B	<b>V500/1</b>       <b>V500/2</b>       <b>V500/3</b>       <b>V500/4</b>

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### Angular drive

	KG125- KG317 <sup>1</sup>	<b>M330</b>
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<sup>1</sup>Only 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 <sup>1</sup> UL/Canada CEE/NEMKO				V V V	690 300 400	690 600 500	690 600 500	690 600 500	690 600 500	690 600 500	690 600 -	1000 <sup>2</sup> 600 -	1000 <sup>2</sup> 600 -	1000 <sup>2</sup> 600 -	1000 <sup>2</sup> 600 -	1000 <sup>2</sup> 600 -		
Rated Impulse Withstand Voltage $U_{imp}$ <sup>1</sup>				kV	4	6	6	6	6	6	6	8	8	8	8	8		
Rated Thermal Current IEC/VDE $I_{u\ open} = I_{th}$ $I_{the\ enclosed}$ UL/Canada ON/OFF function UL/Canada Double-throw function				A A A A	20 20 20 20	25 25 25 25	32 32 30 30	40 40 40 40	63 63 60 60	80 80 80 <sup>3</sup> 80 <sup>3</sup>	100 100 100 <sup>3</sup> 100 <sup>3</sup>	125 125 125 115	125 125 150 <sup>3</sup> 125 <sup>3</sup>	160 160 200 <sup>3</sup> 160 <sup>3</sup>	200 200 200 <sup>3</sup> -	250 250 250 <sup>3</sup> -	315 315 300 <sup>3</sup> -	
	Rated Operational Current $I_o$ AC-21A Switching of resistive loads, including moderate overloads			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 A	20 16	20 20	32 32	40 40	63 55	80 65	100 85	125 90	125 100	160 100	200 125	200 125	250 140	
		Ampere-Rating ON/OFF function Double-throw function Resistive or low inductive loads	UL/Canada <sup>4</sup> UL/Canada <sup>4</sup> 600 V 600 V	A A	20 <sup>7</sup> 20 <sup>7</sup>	25 25	30 30	40 40	60 60	80 <sup>3</sup> 80 <sup>3</sup>	100 <sup>3</sup> 100 <sup>3</sup>	125 115	150 <sup>3</sup> 125 <sup>3</sup>	200 <sup>3</sup> 160 <sup>3</sup>	200 <sup>3</sup> -	250 <sup>3</sup> -	300 <sup>3</sup> -	
Rated Utilization Category IEC/VDE																		
AC-3 Direct-on-line starting	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 690 V	kW kW kW kW	2,2 3,7 3,7 3,7	4 5,5 5,5 5,5	5,5 7,5 7,5 7,5	7,5 11 15 11	11 18,5 22 15	15 22 30 18,5	18,5 30 37 22	22 37 45 22	22 37 45 30	30 45 55 37	37 55 75 40	37 55 75 40	45 75 90 45		
	AC-23A Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 690 V	kW kW kW kW	3 5,5 5,5 5,5	5,5 7,5 7,5 7,5	5,5 11 11 11	7,5 15 18,5 15	11 22 30 22	18,5 30 37 22	22 37 45 30	25 45 55 30	30 45 55 37	30 55 75 37	37 75 90 45	37 90 110 45	55 110 132 45	
		DOL-Rating Standard motor load (similar AC-3)	UL/Canada <sup>4</sup> 3 phase 3 pole	120 V 240 V 480 V 600 V	HP HP HP HP	1 2 - -	2 7,5 15 20	3 10 20 25	5 15 25 30	5 15 30 40	10 25 50 50	10 25 50 50	15 40 60 50	15 30 60 60	20 40 60 60	25 50 75 75	30 60 75 75	40 75 100 100
			Power loss per contact at $I_u$ Resistance to vibration <sup>5</sup> Resistance to shock <sup>5</sup>			W C C	0,9 C C	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
Short Circuit Protection Max. fuse size (gG-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-core or stranded wire				mm <sup>2</sup> AWG MCM	2,5 12 -	6 10 -	6 10 -	16 6 -	16 6 -	50 1/0 -	50 1/0 -	50 1/0 -	95 3/0 -	95 3/0 -	185 - 350	185 - 350	185 - 350	
Flexible wire sleeving in accordance with DIN 46228				mm <sup>2</sup>	2,5	4	4	10	10	35	35	35	70	70	120	120	120	
Flexible wire without sleeve				mm <sup>2</sup> AWG MCM	2,5 12 -	4 10 -	4 10 -	10 6 -	10 6 -	35 2 -	35 2 -	35 2 -	70 2/0 -	70 2/0 -	150 - 300	150 - 300	150 - 300	
Cable lug or track must accept connection screw Max. width Max. width with protective cover				mm mm mm	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	M10 x 20 20 25	M10 x 20 20 20	M12 x 25 25 34	M12 x 20 25 34	M12 x 20 25 34	
Min. Ambient Temperature Max. Ambient Temperature <sup>6</sup> open at 100 % $I_u/I_{th}$ enclosed at 100 % $I_{the}$					-5 °C 50 °C during 24 hours with peaks up to 55 °C 35 °C during 24 hours with peaks up to 40 °C													

<sup>1</sup>Valid for lines with common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. <sup>2</sup>Suitable for no load switching applications (AC-20A) above 690 V. <sup>3</sup>Valid when connected with wire rated for 75 °C. <sup>4</sup>International Standards and Approvals, refer to page 24. <sup>5</sup>A: min. 4 g, 2-100 Hz, 1,6 mm. B: min. 6 g, 6 ms. C: on request. <sup>6</sup>Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible). <sup>7</sup>Max. 277 V.



DC Switching Capacity								Rated Operational Current I <sub>e</sub> / A																	
No. of series connected contacts, total voltage / V								KG20 for utilization category						KG32 for utilization category						KG41 for utilization category					
								DC-21		DC-22		DC-23		DC-21		DC-22		DC-23		DC-21		DC-22		DC-23	
1	2	3	4	5	6	7	8	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
80	160	240	320	400	480	560	640	25	25	25	25	21	21	32	32	32	32	30	30	40	40	40	40	40	40
110	220	330	440	550	660	770	880	25	25	18	18	12	12	32	32	25	25	18	18	40	40	32	32	25	25
140	280	420	560	700	840	1000	-	21	21	12	12	8	8	28	28	18	18	12	12	28	28	20	20	14	14
170	340	510	680	850	1000	-	-	-	20	-	9	-	5	-	25	-	12	-	8	-	25	-	12	-	10
200	400	600	800	1000	-	-	-	-	18	-	6	-	3	-	23	-	8	-	5	-	23	-	8	-	5
230	460	690	920	1000	-	-	-	-	11	-	4	-	2	-	15	-	5	-	3	-	10	-	5	-	3

## 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	690	500	690	690	690
			V	300	600	600	600	600
Rated Thermal Current $I_{th}$		IEC/VDE/BS UL/Canada	A	20	10	16	16	16
			A	20	10	10	10	10
Rated Operational Current $I_e$								
AC-21A	Switching of resistive loads, including moderate overloads	IEC/VDE	A	20	10	16	16	16
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 <sup>1</sup>	10	10	10	10
Short Circuit Protection								
Max. fuse size		(gG-characteristic)	A	20	10	16	16	16
Max. Permissible Wire Gage - Use copper wire only								
		Single-core or stranded wire	mm <sup>2</sup>	2,5	1,5	2,5	2,5	2,5
			AWG	12	14	12	12	12
		Flexible wire sleeving in accordance with DIN 46228	mm <sup>2</sup>	2,5	1,5	2,5	2,5	2,5
		Flexible wire without sleeve	mm <sup>2</sup>	2,5	1,5	2,5	2,5	2,5
			AWG	12	16	14	14	14

<sup>1</sup>Max. 277 V.

## Tightening torque of screws

Type	Tightening torque		Type	Tightening torque		Type	Tightening torque		Type	Tightening torque		Type	Tightening torque	
KG10	0,8 Nm	7 lb-in	KG32A	1,25 Nm	11 lb-in	KG80C	3 Nm	27 lb-in	KG127	14 Nm	125 lb-in	KG250	16 Nm	140 lb-in
KG10A	0,8 Nm	7 lb-in	KG32B	1,25 Nm	11 lb-in	KG100	3 Nm	27 lb-in	KG160	14 Nm	125 lb-in	KG251	16 Nm	140 lb-in
KG10B	0,8 Nm	7 lb-in	KG41	1,8 Nm	16 lb-in	KG100C	3 Nm	27 lb-in	KG161	14 Nm	125 lb-in	KG252	16 Nm	140 lb-in
KG20	1,25 Nm	11 lb-in	KG41B	1,8 Nm	16 lb-in	KG105	3 Nm	27 lb-in	KG162	14 Nm	125 lb-in	KG315	16 Nm	140 lb-in
KG20A	1,25 Nm	11 lb-in	KG64	1,8 Nm	16 lb-in	KG105C	3 Nm	27 lb-in	KG210	16 Nm	140 lb-in	KG316	16 Nm	140 lb-in
KG20B	1,25 Nm	11 lb-in	KG64B	1,8 Nm	16 lb-in	KG125	14 Nm	125 lb-in	KG211	16 Nm	140 lb-in	KG317	16 Nm	140 lb-in
KG32	1,25 Nm	11 lb-in	KG80	3 Nm	27 lb-in	KG126	14 Nm	125 lb-in	KG212	16 Nm	140 lb-in			

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	 <sup>1</sup> or 	●	●	●	●	●	●	●	●	●	●	●	●	●
Canada	Canadian Standards Association	 <sup>5</sup> c or  <sup>2</sup> c	●	●	●	●	●	●	●	●	●	●	●	●	●
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 <sup>3</sup> VDE 0113 <sup>3</sup>	+	+	+	+	+	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 <sup>3</sup>	+	+	+	+	+	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60204-1 <sup>4</sup> IEC 60947-3 <sup>4</sup>	+	+	+	+	+	+	+	+	+	+	+	+	+
China	China Quality Certification Centre	 GB14048.3	●	●	●	●	●	●	●	●	●	●	●	●	●
Russia Belarus Kazakhstan	Eurasian Conformity		●	●	●	●	●	●	●	●	●	●	●	●	●
Russian Federation	Russian Maritime Register of Shipping		●	●	●	●	●	●	●	●	●	●	●	●	●
Germanischer Lloyd			+	+	+	+	+	+	+	+	+	+	+	+	+
Lloyds Register EMEA			+	●	●	●	●	●	+	+	+	+	+	+	+

● Switch approved      + Switch conforms to requirements

<sup>1</sup>Devices 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).

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

<sup>3</sup>Industrial 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.

<sup>4</sup>IEC does not operate an approval program.

<sup>5</sup>File No. 13002, Class No. 3211-05 resp. 4652-04.

**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 DGUV V3. (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

Face 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
64 x 64 	KHR40	32	16	30	7,5	15
	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
 <p><b>Panel mounting</b></p> <p>Four hole panel mounting, Protection IP 66/67</p>	KH16-KHR80	E
 <p><b>Single hole mounting 22 mm</b></p> <p>With square face plate 48 x 48 mm, Protection IP 66/67/69k</p>	KH16-KHR25	FT2
 <p>With square face plate 64 x 64 mm, Protection IP 66/67/69k</p>	KH16-KHR80	FH3 <sup>1</sup>
 <p><b>Base mounting</b></p> <p>Screw/Snap-on base mounting for track EN 50022, Protection IP 40</p>	KH16-KHR80	VE
 <p>Screw/Snap-on base mounting for track EN 50022. Face plate for 45 mm knock-out, Protection IP 40</p>	KH16-KHR80	VE2

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

Plastic Enclosure Protection IP 66/67		Type	Code
	<p>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. All KL- and KS-enclosures are flame resistant in accordance with UL94V-0. 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.</p>	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)

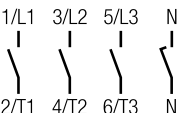
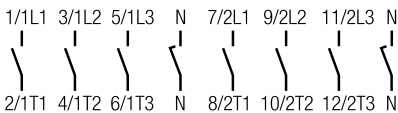
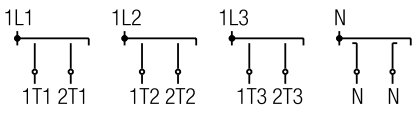
## Switch Function and Configuration

Function	KH16 KH20 KH25	KHR16 KHR20 KHR25	KH16B KH20B KH25B	KHR16B KHR20B KHR25B	KH32 KH40	KHR32 KHR40	KH63 KH80	KHR63 KHR80	Escutch. Plate	Code
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## 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
ON/OFF Switches 8 pole	E VE	E VE	E VE KL.	E VE KL.	E VE	E VE			 	K800
Double-throw Switches 4 pole	E VE	E VE	E VE KL.	E VE KL.	E VE VE2				 	K950

## Connection Diagrams

<b>ON/OFF Switches 4 pole</b> 	<b>ON/OFF Switches 8 pole</b> 	<b>Double-throw Switches 4 pole</b> 
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Square and rectangular face plates are available for each size of switch. The face plate consists of a frame and a faceplate having the switch position which is than embossed with hot-foil backing. The face 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 face plate we would recommend the handle bearing plate T100-04 which is available for switch types KH16B-KHR25B, KH32-KHR40 and KH63-KHR80. Face plates with special lettering are also available upon request.










Standard Face 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
<b>I-Handle</b> 	black red	G251 G252	● ●	● ●	● ●	● ●	● ●	● ●
<b>B-Handle</b> 	black red	G521 G522	● ●	● ●	● ●	● ●	● ●	● ●
<b>R-Handle</b> 	black red	G001 G002	● ●	● ●	● ●	● ●	● ●	● ●
<b>F-Handle</b> 	black red	G221 G222	● ●	● ●	● ●	● ●	● ●	● ●
<b>L-Handle</b> 	black red	G501 G502	— —	— —	● ●	● ●	● ●	● ●
<b>P-Handle</b>  KH16-KHR25    KH16B-KHR80	black red	G211 G212	● ●	● ●	● ●	● ●	● ●	● ●
<b>K-Handle</b> 	black red	G411 G412	— —	— —	● ●	● ●	● ●	● ●




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Protective Covers and Auxiliary Contacts	Type	Code
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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	Up to 4 cam-operated auxiliary contacts can be added to all switches (KH16-KHR25B max. 4/KH32-KHR80 max. 2).	KH16-KHR80	M510A
	Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or a contact system with gold contacts applicable for aggressive environments also.		
			
For mounting VE			
			


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Auxiliary Contacts, Ground Terminal and Shaft Extensions	Type	Code
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## Lateral mounted Auxiliary Contacts

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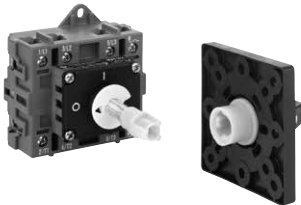
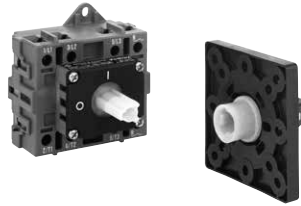
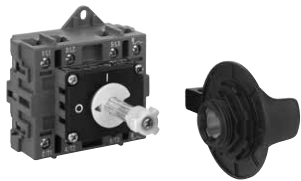
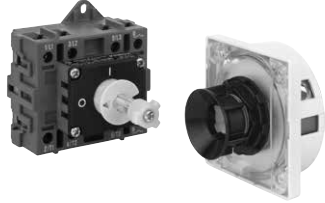
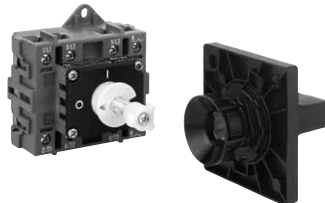
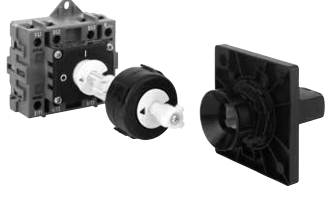
## Ground Terminal

	KH16-KHR80	<b>H052</b>
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## Shaft Extensions





	With asymmetric profile Shaft length not adjustable	KH16-KHR80	L100 <sup>1</sup>
	Shaft with adjustable length with set screw with shear ring		
	With square profile Shaft length not adjustable		L100A <sup>1</sup>
	Shaft with adjustable length with set screw		
Ordering data:		Free shaft length or dimension from mounting surface to cover.	






<sup>1</sup>Available for switch types from KH16B. <sup>2</sup>Available for switch types from KH32. <sup>3</sup>Not available for KH..B.

Simplified Door Clutch	Type	Code
 <p>The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and face plate are mounted on the cover.</p> <p>With shaft extension Front protection IP 40</p>  <p>With profile extension parts Front protection IP 65</p> <p>With padlock device, single hole mounting 22 mm, protection IP 66. An additional aluminum shaft extension is required.</p>   <p>The cover disc is available in black, yellow and electro-gray. The handle may be supplied in black, red and electro-gray.</p>  <p>Operation of the locking bar from the front. Available in black, red and electro-gray.</p>  <p>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.</p>	KH16-KHR80	<p><b>M290/A3</b></p> <p><b>M290/A1.EF<sup>2</sup></b></p> <p><b>V840E<sup>1</sup></b></p> <p><b>V840G<sup>1</sup></b> <b>V840F<sup>1</sup></b></p> <p><b>V845</b></p> <p><b>M600<sup>1</sup></b></p>
Ordering data:	Free shaft length or dimension from face of the switch to the cover and color selection.	












<sup>1</sup>Available for switch types from KH16B. <sup>2</sup>Available for switch types from KH32.



Door Clutches		Type	Code																								
   	<p>The M280 door clutch has an adjustable shaft and can be supplied with an interlock device.</p> <p>The following interlock programs are available:</p> <p>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</p> <p>With protected profile</p> <p>shaft fixation with set screw Front protection IP 40 Front protection IP 66/67</p> <p>shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67</p> <p>Handle lockable with padlocks Protection IP 66 Selection of escutch. plate and handle color required:</p> <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> <p>The M700 is a padlock door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the OFF position and no padlock is fitted. <b>Note: Only in the ON position can knowledgeable personnel using a simple tool to defeat the interlock.</b> The M700's flexibility allows for successful installation with as much as + or – 5 mm of misalignment between the shaft and door.</p> <p>Standard handle and standard face plate Protection IP 66 The M700's flexibility allows for successful installation with as much as + or – 5 mm of misalignment between the shaft and door.</p> <p>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.)</p>	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	<p>KH16-KHR80</p> <p>KH16B-KHR80</p>	<p><b>M280E</b> <b>M280E/.EF</b></p> <p><b>M280D</b> <b>M280D/.EF</b></p> <p><b>M700/.</b></p> <p><b>M701</b></p> <p><b>S1D M700 29</b></p>
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
<p>The padlock device is an integral part of the switch.</p> <div data-bbox="98 456 376 672">  </div> <p>For 2 padlocks Operation of the locking bar from the bottom. Available in black, red and electro-gray.</p> <div data-bbox="98 775 363 990">  </div> <p>For 4 padlocks Operation of the locking bar from the front. Available in black, red and electro-gray.</p> <p>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.</p> <div data-bbox="98 1317 355 1538">  </div> <p>For 2 padlocks with F-handle</p> <div data-bbox="98 1570 355 1664">  </div> <p>For 3 padlocks with F-handle with B-handle</p> <div data-bbox="98 1765 355 1859">  </div> <p>For 4 padlocks with F-handle with B-handle</p> <p>Padlock devices <b>with simplified door clutch and single hole mounting</b> see page 32.</p>	<p>KH16- KHR80</p> <p>KH16- KHR25</p> <p>KH16B- KHR80</p>	<p><b>V840A</b></p> <p><b>V845</b></p> <p><b>V840D</b></p> <p><b>V840G</b> <b>V840G/B</b></p> <p><b>V840F/F</b> <b>V840F/B</b></p>
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
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USA	Underwriters Laboratories	 or 	●	●	●	●	●	●	●	●	●	●
Canada	Canadian Standards Association	 or 	●	●	●	●	●	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+	+	+	+	+
Danmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontroll-anstalten		+	+	+	+	+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 <sup>1</sup> VDE 0113 <sup>1</sup>	+	+	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 <sup>1</sup>	+	+	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60204-1 <sup>2</sup> IEC 60947-3 <sup>2</sup>	+	+	+	+	+	+	+	+	+	+
Russia Belarus Kazakhstan	Eurasian Conformity		● ●	+	● ●	+	● ●	+	● +	● +	● +	● +

● Switch approved

⊕ Switch conforms to requirements

<sup>1</sup>Industrial 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.

<sup>2</sup>IEC does not operate an approval program.

<sup>3</sup>Approved by use of "UL Certification Services for Canada" (File No. E35541, Guide No. NLRV7 or NLRV8 respectively).

**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 <sup>1</sup>	V	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	800 <sup>2</sup>	1000 <sup>2</sup>	1000 <sup>2</sup>	
				UL/Canada	V	600	600	600	600	600	600	600	600	600	600	
Rated Impulse Withstand Voltage $U_{imp}$ <sup>1</sup>					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 3 pole	220 V-240 V	kW	3	3	3,5	3,5	4	4	5,5	7,5	7,5	11	15	
			380 V-440 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	22	30	
			500 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	30	37	
			660 V-690 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	18,5	22	
AC-23A	Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V	kW	4,5	4,5	5,5	5,5	7	5,5	9	11	9	18,5	23	
			380 V-440 V	kW	7,5	7,5	10	10	12	10	16	20	16	30	40	
			500 V	kW	10	10	12	12	15	13	20	25	20	40	55	
			660 V-690 V	kW	13	13	15	15	17	17	22	25	25	30	37	
DOL-Rating Standard motor load (similar 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		
		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 <sup>3</sup>					C	C	C	C	C	C	C	C	C	C	C	
Resistance to shock <sup>3</sup>					C	C	C	C	C	C	C	C	C	C	C	
Short Circuit Protection																
Max. fuse size		(gG-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 <sup>2</sup>	6	-	6	-	6	-	10	10	-	35	35	
			AWG	10	-	10	-	10	-	8	8	-	2	2		
		Flexible wire sleeving in accordance with DIN46228		mm <sup>2</sup>	4	-	4	-	4	-	6	6	-	25	25	
		Flexible wire without sleeve		mm <sup>2</sup>	4	-	4	-	4	-	6	6	-	25	25	
				AWG	12	-	12	-	12	-	10	10	-	4	4	
KHR	Connection with insulated ring and fork type terminals	Internal diameter $\geq$		mm	-	3,2	-	3,2	-	3,2	3,7	-	3,7	5,2	5,2	
		External diameter $\leq$		mm	-	7,4	-	7,4	-	7,4	8,8	-	8,8	12,7	12,7	
Ambient Temperature <sup>4</sup>					-5 °C (-25 °C on request)											
Ambient Temperature <sup>4</sup>		open at 100 % $I_u/I_{th}$			50 °C during 24 hours with peaks up to 55 °C											
		enclosed at 100 % $I_{the}$			35 °C during 24 hours with peaks up to 40 °C											

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

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

<b>Selection Data</b>	Auxiliary contacts for: KH16-KHR80
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<b>Rated Insulation Voltage <math>U_i</math></b>		IEC/EN/VDE	V	440
		UL/Canada	V	300
<b>Rated Thermal Current <math>I_U/I_{th}</math></b>		IEC/EN/VDE	A	10
		UL/Canada	A	10
<b>Rated Operational Current <math>I_e</math></b>				
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 380 V-440 V	A	2,5
			A	1,5
Pilot Duty	Heavy	UL/Canada		A300
Ampere-Rating	Resistive or low inductive loads	UL/Canada	A	10
<b>Short Circuit Protection</b>				
Max. fuse size		(gG-characteristic)	A	10
<b>Max. Permissible Wire Gage</b> - Use copper wire only				
	Single-core or stranded wire	mm <sup>2</sup> AWG		1,5 (2,5) <sup>1</sup>
				14 (12) <sup>1</sup>
	Flexible wire sleeving in accordance with DIN46228	mm <sup>2</sup>		1,5 (2,5) <sup>1</sup>
	Flexible wire without sleeve	mm <sup>2</sup> AWG		1,5 (2,5) <sup>1</sup> 16 (14) <sup>1</sup>

<sup>1</sup>The values in brackets are valid for switches KH32-KHR80 E mounting.

## Tightening torque of screws

Type	Tightening torque		Type	Tightening torque		Type	Tightening torque	
KH16	1,2 Nm	10 lb-in	KH25B	1,2 Nm	10 lb-in	KHR20	1,2 Nm	10 lb-in
KH16B	1,2 Nm	10 lb-in	KH32	1,2 Nm	10 lb-in	KHR20B	1,2 Nm	10 lb-in
KH20	1,2 Nm	10 lb-in	KH40	1,2 Nm	10 lb-in	KHR32	1,2 Nm	10 lb-in
KH20B	1,2 Nm	10 lb-in	KH63	3 Nm	27 lb-in	KHR63	2,2 Nm	20 lb-in
KH25	1,2 Nm	10 lb-in	KH80	3 Nm	27 lb-in	KHR80	2,2 Nm	20 lb-in

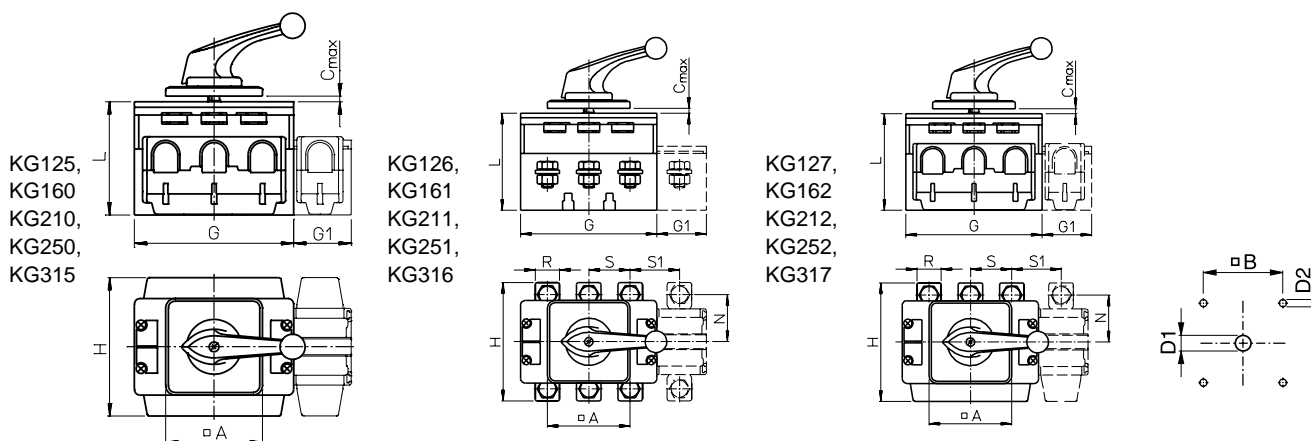
## Mounting

(Additional length for auxiliary contacts see page 42)

## ON/OFF Switches 3 and 4 pole

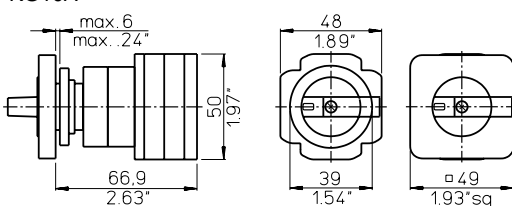
E		A	B	C	D1	D2	D3	E	F	G	G1 <sup>1</sup>	H	L
	KG10A	48	36	4	11-15	5	-	-	48	48	-	50	48,2
		1.89	1.42	.16	.43-.59	.20	-	-	1.89	1.65	-	1.97	1.90
	KG10B	64	48	4	11-15	5	-	-	64	48	-	50	57,2
		2.52	1.89	.16	.43-.59	.20	-	-	2.52	1.65	-	1.97	2.25
	KG20, KG32	30	-	4	8-11	-	3,2	20	-	42	13,5	54	50,8
		1.18	-	.16	.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 <sup>1</sup>	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
		3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.33	3.78	1.77	.79	1.36
	KG127, KG162	88	68	5,5	13-17	6	112	38	109	96	45	20	36
		3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.29	3.78	1.77	.79	1.36
	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	88	68	5,5	13-17	6	145	52,5	126	103	50	26	44
		3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	1.97	1.02	1.73
	KG316, KG317	88	68	5,5	13-17	6	145	52,5	126	103	50	26	52
		3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	1.97	1.02	2.05

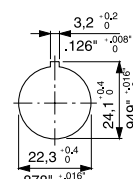
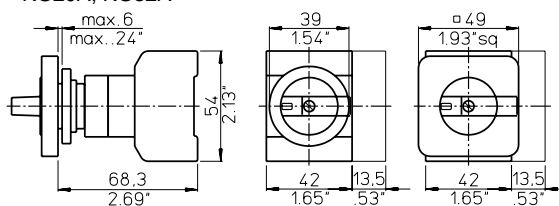


## FT1, FT2

KG10A



KG20A, KG32A



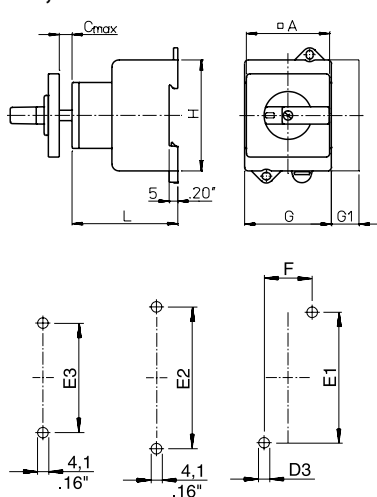
<sup>1</sup>For ON/OFF switches 4 pole.

**Mounting**

(Additional length for auxiliary contacts see page 42)

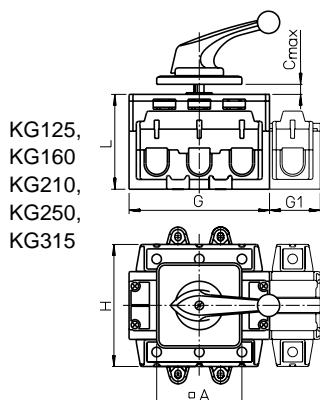
**ON/OFF Switches 3 and 4 pole**

**VE, VE1**

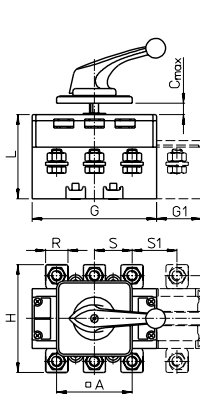


	A	B	C	D1	D2	D3	E1 <sup>1</sup>	E2 <sup>1</sup>	E3 <sup>1</sup>	F	G	G1 <sup>2</sup>	H	L	M
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	48	-	50	49,5	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	-	50	56,5	-
KG20, KG32	30	-	12	8-11	3,2	4,1	60	-	-	22	42	13,5	54	50	20
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	22	42	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	-

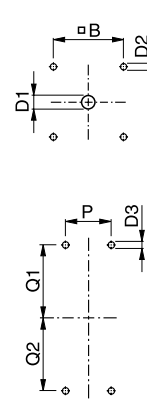
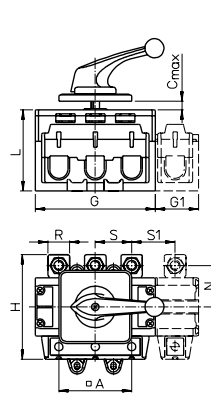
	A	B	C	D1	D2	D3	G	G1 <sup>2</sup>	H	L <sup>3</sup>	N	P	Q1	Q2	R	S	S1
KG125, KG160	88	68	16	13-17	6	6,4	112	38	108	91	-	36	59-61	59-61	-	-	-
KG126, KG161	88	68	16	13-17	6	6,4	112	38	110	91	45	36	38-40	38-40	20	36	38
KG127, KG162	88	68	16	13-17	6	6,4	112	38	109	91	45	36	38-40	59-61	20	36	38
KG210, KG250, KG315	88	68	16	13-17	6	6,4	145	52,5	126	98	-	44	70-72	70-72	-	-	-
KG211, KG25	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	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	70-72	26	44	52,5
KG316	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	40-42	26	52	52,5
KG317	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	70-72	26	52	52,5



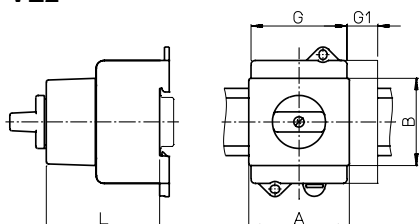
KG126,  
KG161  
KG211,  
KG251,  
KG316



KG127,  
KG162  
KG212,  
KG252,  
KG317

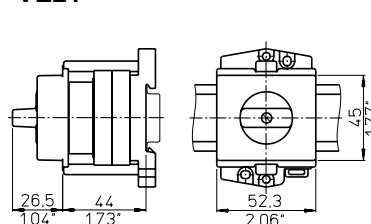


**VE2**



	A	B	G	G1 <sup>2</sup>	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**

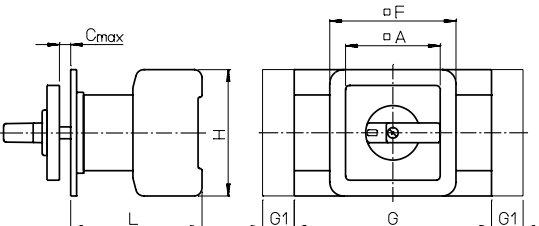


<sup>1</sup>Switches KG10A and KG10B allow use of E1, E2 or E3. <sup>2</sup>For ON/OFF switches 4 pole.

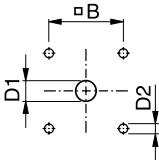
<sup>3</sup>KG125-KG162 additional length for mounting VE1 = 7,5 mm/.30 inch.

**Mounting**  
(Additional length for auxiliary contacts see page 42)

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

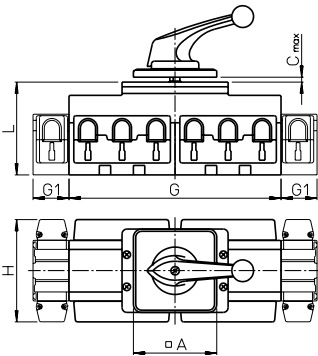


E	A	B	C	D1	D2	F	G	G1 <sup>1</sup>	H	L <sub>6p.</sub>	L <sub>8p.</sub>
KG10A	48	36	4	11-15	5	48	48	-	50	57,7	67,2
	1.89	1.42	.16	.43-.59	.20	1.89	1.89	-	1.97	2.27	2.65
KG10B	64	48	4	11-15	5	64	48	-	50	66,7	76,2
	2.52	1.89	.16	.43-.59	.20	2.52	1.89	-	2.13	2.84	3.00
KG20A, KG32A	48	36	4	10-15	5	48	84	13,5	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	-

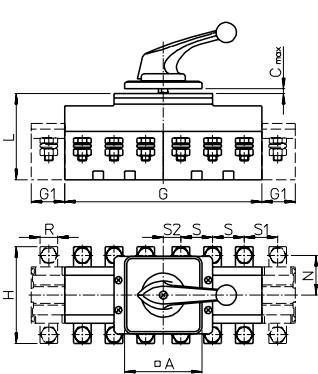


	A	B	C	D1	D2	G	G1 <sup>1</sup>	H	L	N	R	S	S1	S2
KG125, KG160	88	68	5,5	13-17	6	224	38	108	98	-	-	-	-	-
	3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.25	3.86	-	-	-	-	-
KG126, KG161	88	68	5,5	13-17	6	224	38	110	98	45	20	36	38	20
	3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.33	3.86	1.77	.79	1.42	1.50	.79
KG127, KG162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

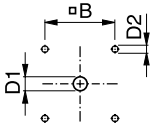
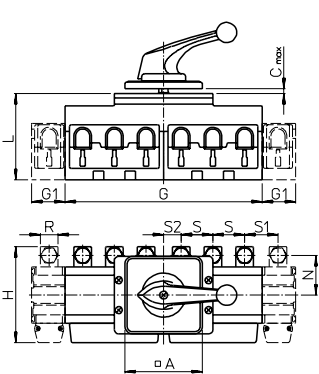
KG125, KG160



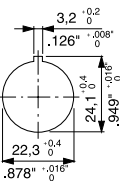
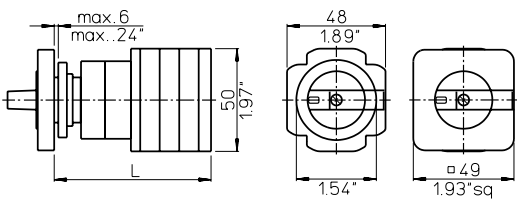
KG126, KG161



KG127, KG162



**FT1, FT2**



	L <sub>6p.</sub>	L <sub>8p.</sub>
KG10A	76,4	85,9
	3.01	3.38

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

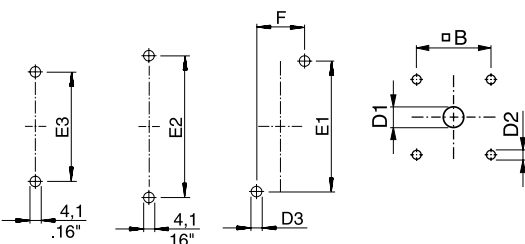
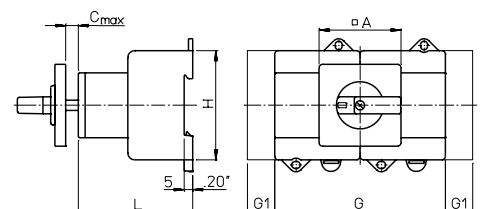


**Mounting**

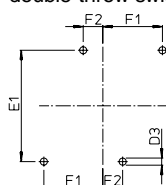
(Additional length for auxiliary contacts see page 42)

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

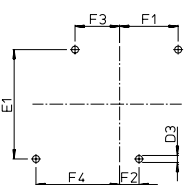
**VE, VE1**



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



double-throw switches 4 pole

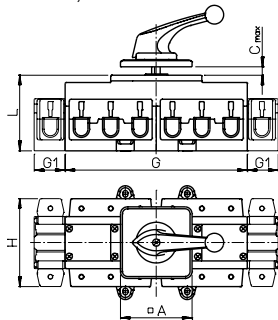


	A	B	C	D1	D2	D3	E1 <sup>1</sup>	E2 <sup>1</sup>	E3 <sup>1</sup>	F	F1
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	-
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	-	32
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	-	32
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	-	37,5
KG80, KG100	64	48	13,5	10-15	5	5,2	90	-	-	-	47,5
KG105	2,52	1,89	.53	.39-.59	.20	.16	2,36	-	-	-	1,87
KG80C, KG100C	88	68	13,5	10-15	6	5,2	90	-	-	-	47,5
KG105C	3,46	2,68	.53	.39-.59	.24	.21	3,54	-	-	-	1,87

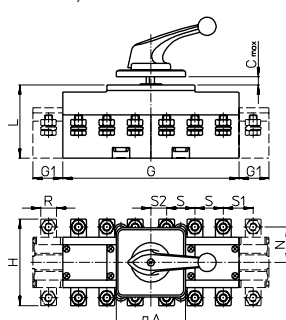
	F2	F3	F4	G	G1 <sup>2</sup>	H	L 6p.	L 8p.
KG10A	-	-	-	48	-	50	58,7	68,2
KG10B	-	-	-	48	-	50	65,7	75,2
KG20A, KG32A	10	23,5	45,5	84	13,5	54	57,5	-
KG20B, KG32B	10	23,5	45,5	84	13,5	54	57,5	-
KG41B, KG64B	12,5	28,5	53,5	100	16	64	67	-
KG80, KG100,	22,5	44,5	69,5	140	22	80	79,2	-
KG105	.89	1,75	2,74	5,51	.87	3,15	3,12	-
KG80C, KG100C,	22,5	44,5	69,5	140	22	80	79,2	-
KG105C	.89	1,75	2,74	5,51	.87	3,15	3,12	-

	A	B	C	D1	D2	D3	G	G1 <sup>2</sup>	H	L <sup>3</sup>	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	-	-	-	-
KG126, KG161	88	68	16	13-17	6	6,4	224	38	110	93	45	76	38-40	38-40	20	36	38	20
KG127, KG162	88	68	16	13-17	6	6,4	224	38	109	93	45	76	38-40	59-61	20	36	38	20

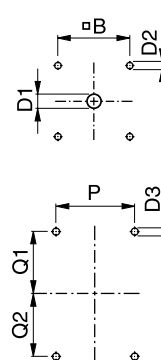
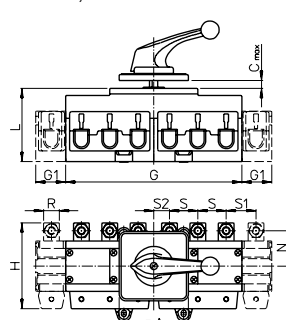
KG125, KG160



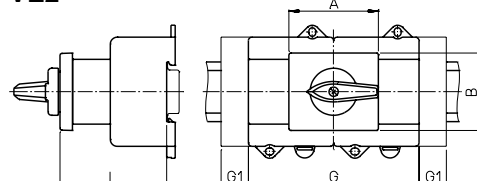
KG126, KG161



KG127, KG162

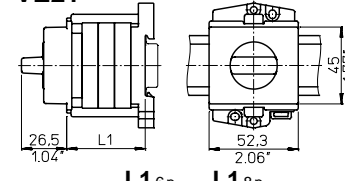


**VE2**



	A	B	G	G1 <sup>2</sup>	L
KG20A, KG32A	43,7	45,4	84	13,5	64
KG41B, KG64B	105,4	45,4	100	16	62,5
KG80, KG100,	70	45	140	22	76,2
KG105	2,76	1,77	5,51	.87	3,00

**VE21**



KG10A 46/1.81 54/2.13

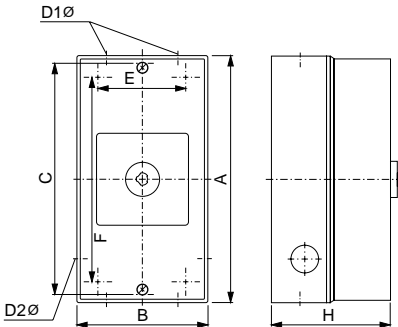
<sup>1</sup>Switches KG10A and KG10B allow use of E1, E2 or E3. <sup>2</sup>For ON/OFF switches 8 pole and double-throw switches 4 pole.

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

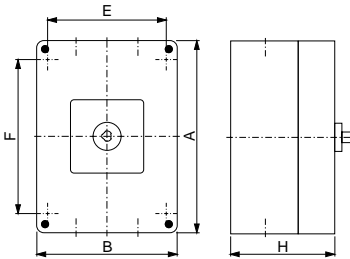
## Plastic Enclosures and Optional Extras

### Switches in Plastic Enclosure

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

			3 and 4 pole	6 pole, Double-throw Switches 3 pole	8 pole, Double-throw Switches 4 pole	A	B	C	D1	D2	E	F	H
	KG10 <sup>1</sup>	x	x	x	120	85	110	2x20/25 <sup>2</sup>	20	-	-	-	80
	KG20 <sup>1</sup>	x			120	85	110	2x20/25 <sup>2</sup>	20	-	-	-	80
	KG20, KG32	x			160	85	150	2x20	20	-	-	-	80
	KG20B, KG32B		x		190	100	178	2x25	25	-	-	-	91
					250	145	-	2x40	25	124	229	107	
	KG41, KG64	x			190	100	178	2x25	25	-	-	-	91
	KG41B, KG64B		x		250	145	-	2x40	25	124	229	107	
	KG80, KG100, x KG105			x	250	145	-	2x40	25	124	229	107	
					120	85	110	2x20/25 <sup>2</sup>	20	-	-	-	80
					160	85	150	2x20	20	-	-	-	80
					190	100	178	2x25	25	-	-	-	91
					250	145	-	2x40	25	124	229	107	

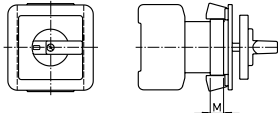
#### PFA-PFF5

		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
	KG20B, KG32B, KG41B, KG64B		x	180	140	128	150	98
	KG80, KG100	x		180	140	128	150	98
				5.31	3.62	3.07	4.33	3.58
				7.09	5.51	5.04	5.91	3.86
				7.09	5.51	5.04	5.91	3.86

### Cam/rack-operated Auxiliary Contacts

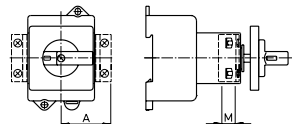
E

KG20-KG105C

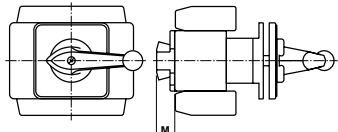


VE

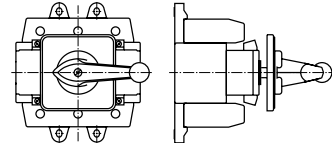
KG20-KG105C



KG125-KG317



KG125-KG317



	Mount- ing	A	M		
			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 KG105	E	-	10	30	
			.39	1.18	
	VE	47,2	10	30	
		1.86	.39	1.18	
VE2	47,2	20	40		
	1.86	.79	1.57		
	<b>Mounting</b>	<b>M</b>			
KG125-KG317	E	21			
		.83			

### Lateral mounted Auxiliary Contacts

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

<sup>1</sup>KS5., CS5.

Optional Extras

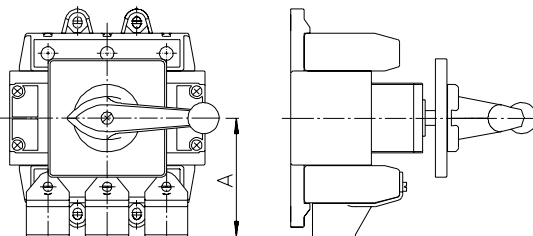
Ground and Neutral Terminal, Additional Main Contact

		
		<u>M</u>
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

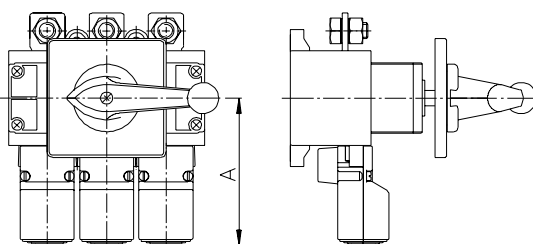
Protective Cover

		
		<u>A</u>
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

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

With bolt terminal

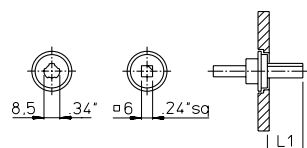


Optional Extras

Shaft Extension

**L100, L100A**

L1 = Free shaft length

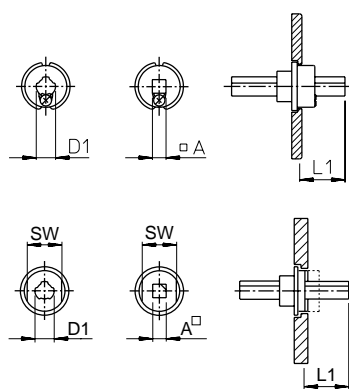


	Mount- ing	L1									
		L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	19	23	27	32	37	42	47	52	57	
		.75	.91	1.06	1.26	1.46	1.65	1.85	2.05	2.24	
	VE	18	22	26	31	36	41	46	51	56	
		.71	.87	1.02	1.22	1.42	1.61	1.85	2.01	2.20	
KG20B, KG32B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	
		.45	.65	.81	.96	1.16	1.36	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	

	Mount- ing	L1									
		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

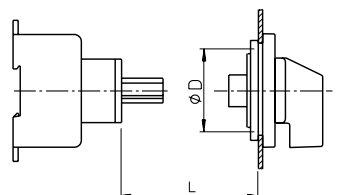
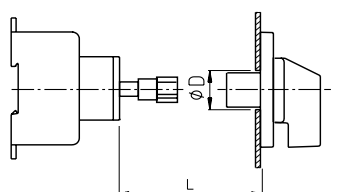


	Mount- ing	L1 <sup>1</sup>					D1	A	SW
		L1	L1	L1	L1	L1			
KG10A	E, VE	-	21-41	41-61	61-81	81-101	6	-	12
		-	.83-1.61	1.61-2.40	2.40-3.19	3.19-3.98	.24	-	.47
KG20A, KG32A	E	-	34,5-38	54,5-58	74,5-78	94,5-98	6	-	12
		-	1.36-1.50	2.15-2.28	2.93-3.07	3.72-3.86	.24	-	.47
	VE	-	41,5-45	61,5-65	81,5-85	101,5-105	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
KG317	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

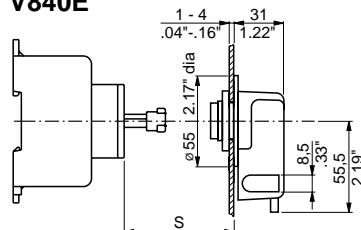
<sup>1</sup>Only for square shaft

Optional Extras

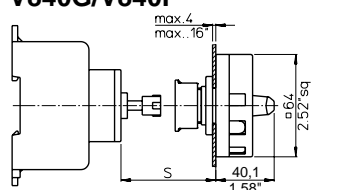
Simplified Door Clutches



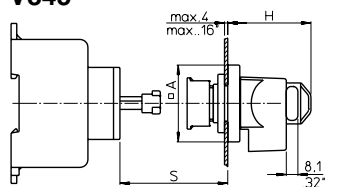
V840E



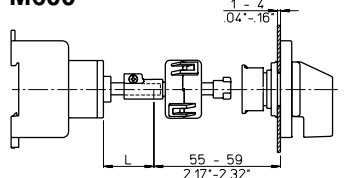
V840G/V840F



V845



M600



M290/A3, M290/A3.EF

	L	L	L	L	L	D <sup>1</sup>
KG10A	37-57	57-77	77-97	97-117	-	18
	1.46-2.24	2.24-3.03	3.03-3.82	3.82-4.61	-	.71
KG20A, KG32A	55-68	75-88	95-108	115-128	-	18
	2.17-2.68	2.95-3.46	3.74-4.25	4.53-5.04	-	.71
KG41B, KG64B	60-70	80-90	100-110	120-130	-	18
	2.36-2.76	3.15-3.54	3.94-4.33	4.72-5.12	-	.71
KG80, KG100	56-68	76-88	96-108	116-128	-	18
KG105	2.20-2.68	2.99-3.46	3.78-4.25	4.57-5.04	-	.71

<sup>1</sup>For KG10A, KG20A and KG32A with M290/A3.EF: 22/.87

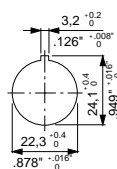
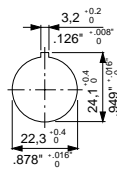
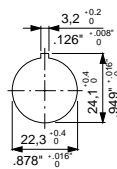
M290/A1.EF

	L	L	L	L	L	D
KG41B, KG64B	27-31	27-38	32-45	41-54	47-60	56-69
	1.06-1.22	1.06-1.50	1.26-1.77	1.61-2.13	1.85-2.36	1.97-2.72
KG80, KG100	27-32	27-40	33-47	42-55	48-62	57-70
KG105	1.06-1.26	1.06-1.57	1.30-1.85	1.65-2.17	1.89-2.44	2.24-2.76

	S	min.	max.
KG10B		23	106
		.91	4.17
KG20B, KG32B		24,5	110
		.96	4.33
KG41B, KG64B		20	108
		.79	4.25
KG80, KG100		23	109
KG105		.91	4.29
KG125-KG317		21	110
		.83	4.33

	S	min.	max.
KG10B		30	115
		1.02	4.49
KG20B, KG32B		27,5	113
		1.08	4.45
KG41B, KG64B		39,5	124
		1.56	4.88
KG80, KG100		27,5	122
KG105		1.08	4.80

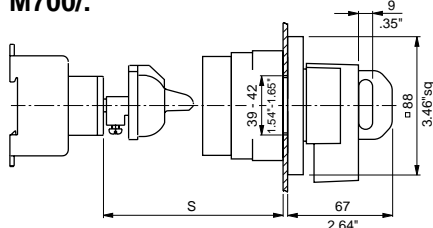
	A	H	S	min.	max.
KG10A	48	52	30	115	
	1.89	2.05	1.18	4.53	
KG10B	64	58	26	114	
	2.52	2.28	1.02	4.49	
KG20A, KG32A	48	52	50,5	119	
	1.89	2.05	1.99	4.69	
KG20B, KG32B	64	58	27,5	113	
	2.52	2.28	1.08	4.45	
KG41B, KG64B	64	58	39,5	124	
	2.52	2.28	1.56	4.88	
KG80, KG100	64	58	27,5	122	
KG105	2.52	2.28	1.08	4.80	



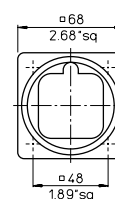
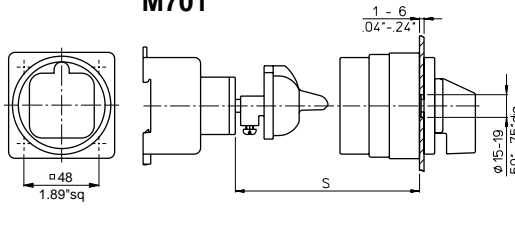
L see L100, M004D, M004, page 44.

Door Clutches

M700/.



M701

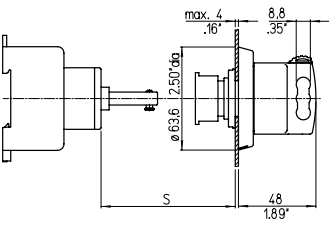


	S
KG10B	80
	3.15
KG20B, KG32B	61,5
	2.42
KG41B, KG64B	61,5
	2.42
KG80, KG100	61,5
KG105	2.42
KG125-KG317	61,5
	2.42

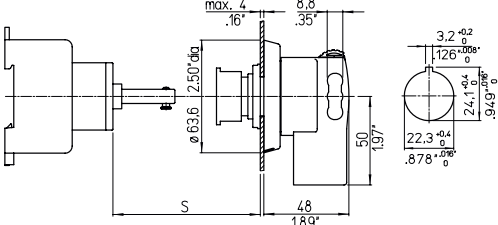
Optional Extras

Simplified Door Clutches

M810



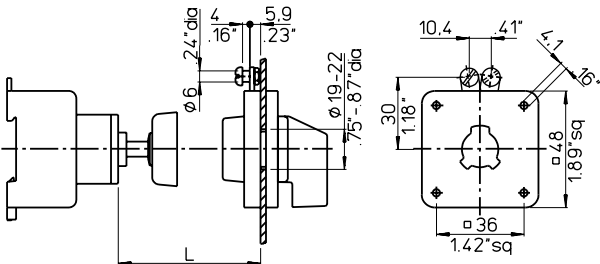
M800



M810, M800

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

KG10A, KG20A, KG32A

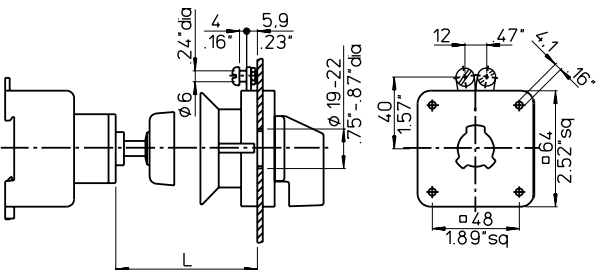


M280D, M280D/.EF, M280E, M280E/.EF

L = Standard length for switches of mounting VE

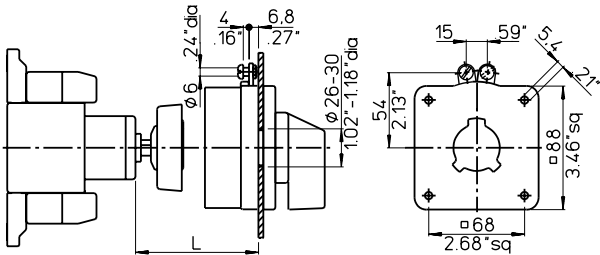
	L	L	L	L
KG10A	36-55	56-75	75-95	96-116
	1.42-2.17	2.20-2.95	2.99-3.74	3.78-4.57
KG20A, KG32A	58,5-66	78,5-86	98,5-106	118,5-126
	2.30-2.60	3.09-3.50	3.88-4.17	4.67-4.96

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



	L	L	L	L
KG10B	32-57	58-77	78-97	98-118
	1.26-2.24	2.28-3.03	3.07-3.82	3.86-4.65
KG20B, KG32B	57,5-65	77,5-85	97,5-105	117,5-125
	2.26-2.56	3.05-3.35	3.84-4.13	4.63-4.92
KG41B, KG64B	62-72	82-92	102-112	122-132
	2.44-2.83	3.23-3.62	4.02-4.41	4.80-5.20
KG80, KG100	60-70	80-90	100-110	120-130
KG105	2.36-2.76	3.15-3.54	3.94-4.33	4.72-5.12

KG125-KG317



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

M280B/., M280B/.EF

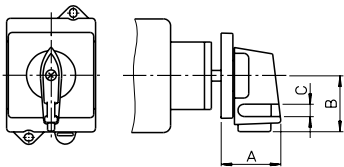
L = Standard length for switches of mounting VE

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

Optional Extras

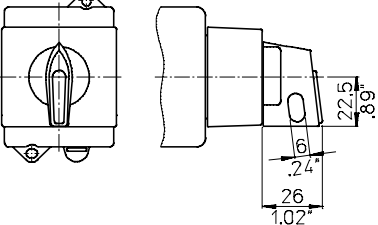
Padlock Devices, Additional Module for Motor Control Center (MCC), Angular drive

V840A

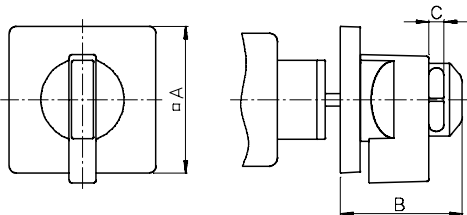


KG10A, KG20A, KG32A, KG41	32,9	31,5	5
KG64	1.30	1.24	.20
KG10B, KG20B, KG32B, KG41B	41,6	40	7
KG64B, KG80, KG100, KG105	1.64	1.57	.28

V840B



V845

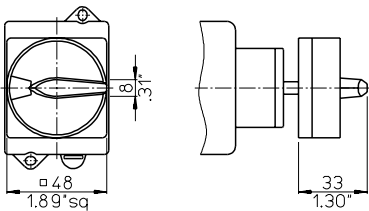


KG10A, KG20A, KG32A, KG41	48	51	7,2
KG64	1.89	2.01	.28
KG10B, KG20B, KG32B, KG41B	64	58	8,1
KG64B, KG80, KG100, KG105	2.52	2.28	.32
KG80C, KG100C, KG105C	88	73	9
KG125-KG317	3.47	2.87	.35

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

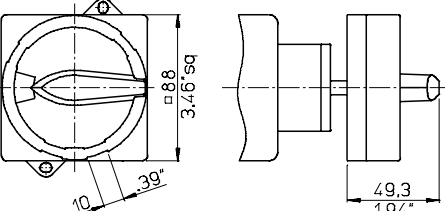
V840D

KG10A, KG20A, KG32A, KG41, KG64



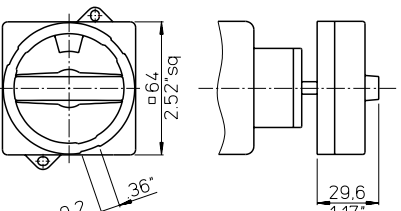
V840D

KG80C, KG100C, KG105C, KG125-KG162



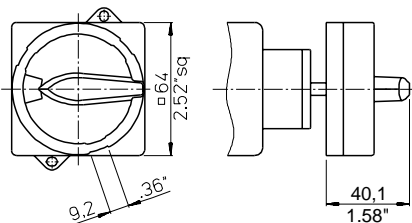
V840G/B, V840F/B

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

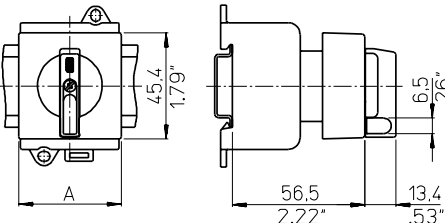


V840G, V840F/F

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

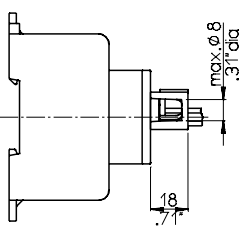


V840H/..E

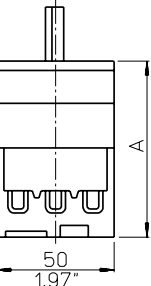


A	
KG20A, KG32A	43,7
	1.72
KG41, KG64	52,4
	2.06

V840VE



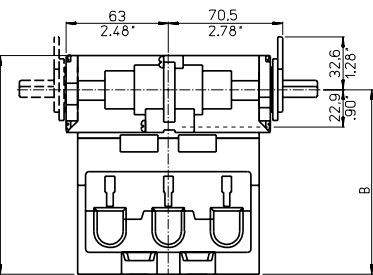
V500



KG20B	69,5
KG32B	2.74
KG41B	75
KG64B	2.95

A
69,5
2.74
75
2.95

M330



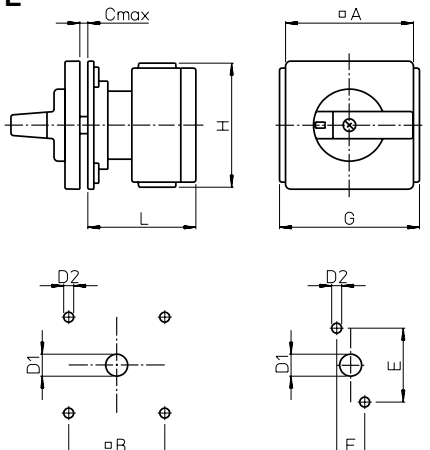
A	B
KG125-	135
KG162	5.31
KG210-	142
KG317	5.59
	113,9
	4.48
	120,9
	4.76

**Mounting**

(Additional length for auxiliary contacts see page 50)

**ON/OFF Switches 4 pole**

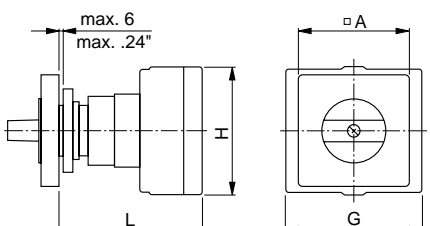
**E**



	A	B	C	D1	D2 <sup>1</sup>	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

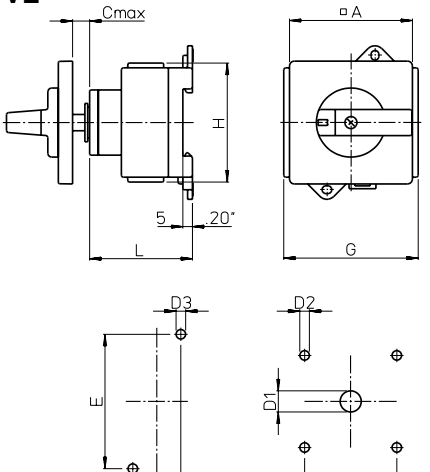
<sup>1</sup>Dimensions after the slash are valid for two hole panel mounting

**FT2  
FH3**



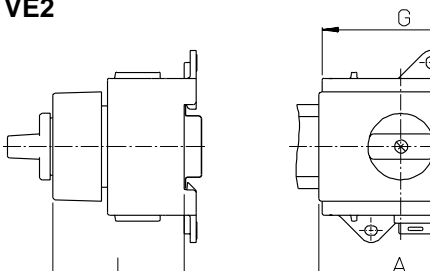
	A	G	H	L
KH16-KHR25 FT2	49	60	56	63,5
	1.93	2.36	2.20	2.50
FH3	64	60	56	63,5
	2.52	2.36	2.20	2.50
KH32, KHR32, KH40, KHR40	64	70	62	68,7
	2.52	2.76	2.44	2.70
KH63, KHR63, KH80, KHR80	64	86	90	77,1
	2.52	3.39	3.54	3.04

**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**

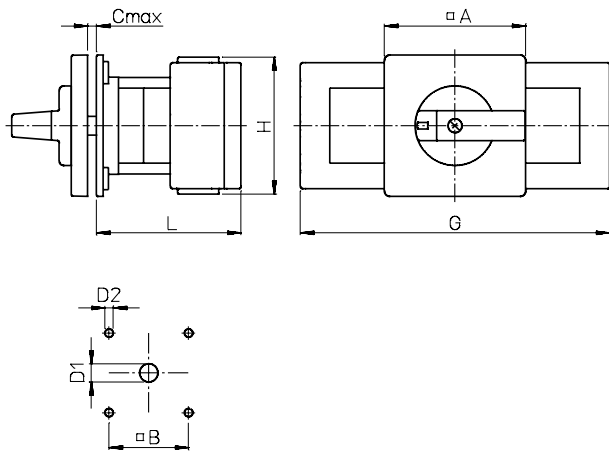


	A	B	G	L
KH16-KHR25	43,7	45,4	60	53,5
	1.72	1.79	2.36	2.11
KH32, KHR32	70,4	45,4	70	54,7
KH40, KHR40	2.77	1.79	2.76	2.15
KH63, KHR63	70,4	45,4	86	61,7
KH80, KHR80	2.77	1.79	3.39	2.43

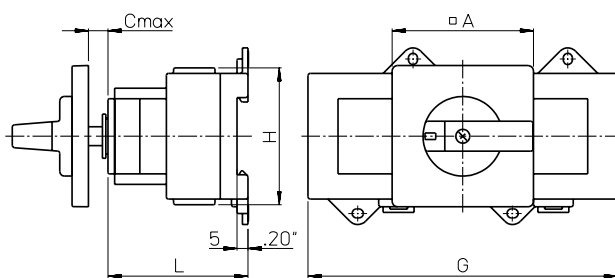


**Mounting**

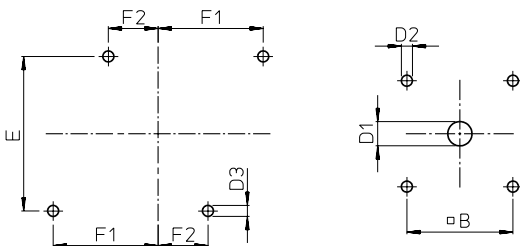
(Additional length for auxiliary contacts see page 50)

**ON/OFF Switches 8 pole and Double-throw Switches****E**

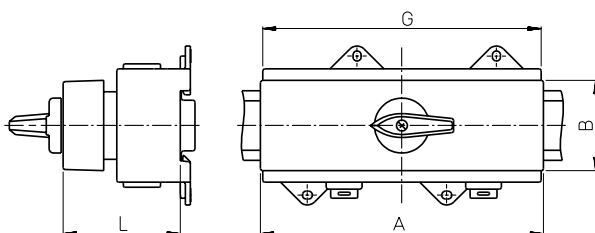
	A	B	C	D1	D2	G	H	L
KH16-KHR25	48	36	4	10-15	5	120,1	56	60
	1.89	1.42	.16	.39-.59	.20	4.73	2.20	2.36
KH16B-KHR25B	64	48	4	10-15	5	120,1	56	60
	2.52	1.89	.16	.39-.59	.20	4.73	2.20	2.36
KH32, KHR32	64	48	4	10-15	5	140,1	62	65,4
KH40, KHR40	2.52	1.89	.16	.39-.59	.20	5.52	2.44	2.57

**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



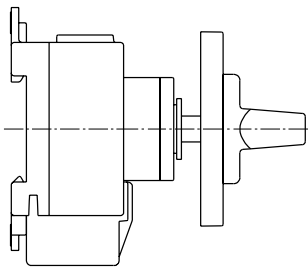
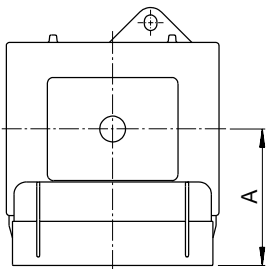
	B	D1	D2	D3	E	F1	F2
KH16-KHR25	36	10-15	5	4,2	60	41	19
	1.42	.39-.59	.20	.17	2.36	1.61	.75
KH16B-KHR25B	48	10-15	5	4,2	60	41	19
	1.89	.39-.59	.20	.17	2.36	1.61	.75
KH32, KHR32	48	10-15	5	4,1	70	47,5	22,5
KH40, KHR40	1.89	.39-.59	.20	.16	2.76	1.87	.89

**VE2**

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

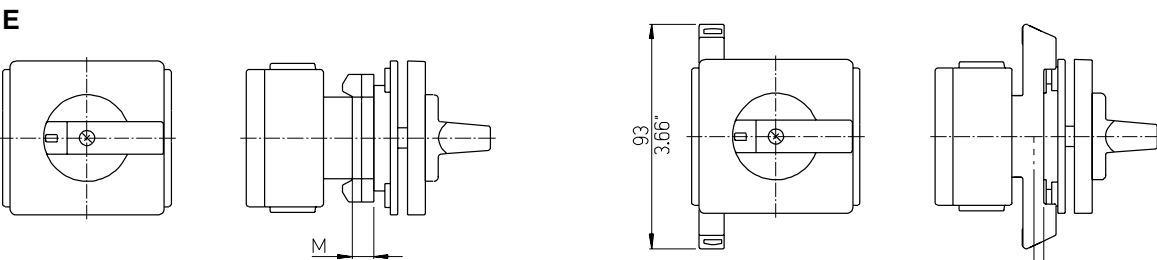
Optional Extras

Protective Cover



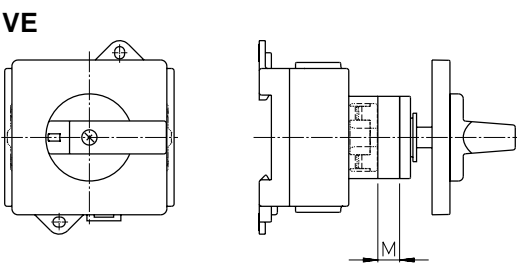
	<b>A</b>
KH32-KHR40	45 1.77
KH63-KHR80	68,5 2.70

Cam/rack-operated Auxiliary Contacts



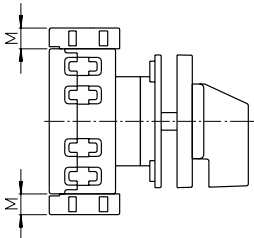
KH16-KHR25B

KH32-KHR80



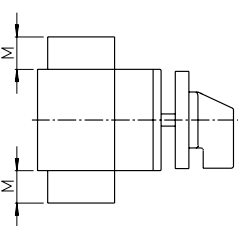
		<b>M</b>
KH16-KHR25B	1 or 2 contacts	9 .35
	3 or 4 contacts	25,8 1.02
KH32, KHR32, KH40, KHR40	1 or 2 contacts	0
KH63, KHR63, KH80, KHR80	1 or 2 contacts	0

Lateral mounted Auxiliary Contacts



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

Ground Terminal

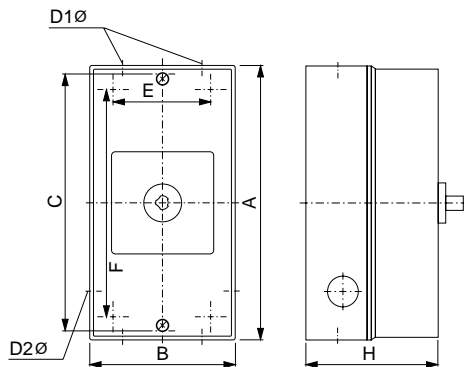


	<b>M</b>
KH16-KHR25B	13,5 .53
KH32, KHR32, KH40, KHR40	13,5 .53
KH63, KHR63, KH80, KHR80	20 .79

Optional Extras

Switches in Plastic Enclosure

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

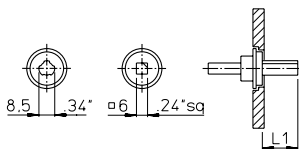


	A	B	C	D1	D2	E	F	H
KH16 - KHR25	120	85	110	2x20/25 <sup>1</sup>	20	-	-	80
	4.72	3.35	4.33	2x.79/.98 <sup>1</sup>	.79	-	-	3.15
KH16 - KHR25	160	85	150	2x25	20	-	-	80
	6.30	3.35	5.91	2x.98	.79	-	-	3.15
KH32 - KHR40	190	100	178	2x25	25	-	-	91
	7.48	3.94	7.01	2x.98	.98	-	-	3.58
KH63 - KHR80	250	145	-	2x40	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

<sup>1</sup>CS... 2x20, 2 x .79

Shaft Extension

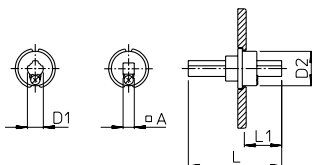
L100, L100A



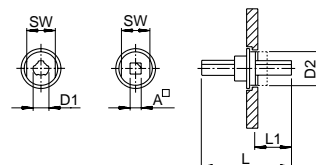
L1 = Free shaft length

	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,	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
KH40, KHR40,		.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
KH63, KHR63,	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
KH80, KHR80		.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



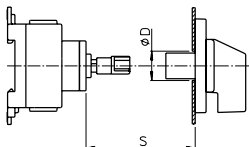
L = Shaft length  
L1 = Free shaft length max.  
<sup>1</sup> = Only for square shaft

	Mount- ing	L <sup>1</sup>	L1 <sup>1</sup>	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,	E	56,5	3-36	70	17-49	90	37-69	110	57-89	130	77-109	8,5	18,5	6	16
KH40, KHR40,		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
KH63, KHR63,	VE	56,5	8-41	70	22-55	90	42-75	110	62-95	130	82-115	8,5	18,5	6	16
KH80, KHR80		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

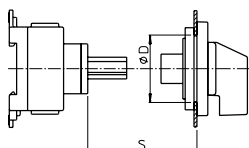
M290/A3, M290/A3.EF



S = Standard length for switches of mounting VE

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

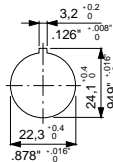
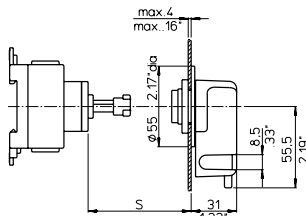
M290/A1.EF



S = Standard length for switches of mounting VE

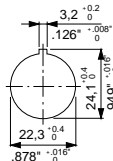
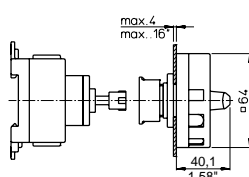
	S	S	S	S	S	S	D
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	25-30 .98-1.18	27-37 1.06-1.46	34-44 1.34-1.73	42-52 1.65-2.05	49-59 1.93-2.32	57-67 2.24-2.64	45,6 1.80

V840E



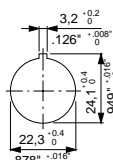
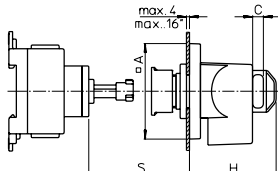
	S <sub>min.</sub>	S <sub>max.</sub>
KH16B-KHR25B	24,5 .96	110 4.33
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	20 .79	120 4.72

V840G/V840F



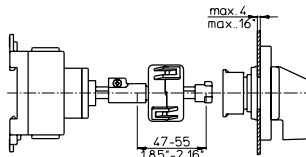
	S <sub>min.</sub>	S <sub>max.</sub>
KH16B-KHR25B	27,5 1.08	113 4.45
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	28 1.10	124 4.88

V845



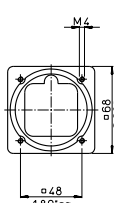
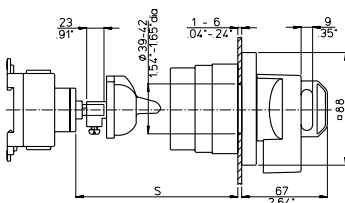
	A	C	H	S <sub>min.</sub>	S <sub>max.</sub>
KH16-KHR25	48 1.89	7,2 .28	52 2.05	29,5 1.16	119 4.69
KH16B-KHR25B	64 2.52	8,1 .32	58 2.28	27,5 1.08	113 4.45
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	64 2.52	8,1 .32	58 2.28	28 1.10	124 4.88

M600

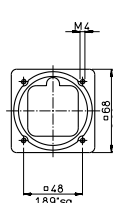
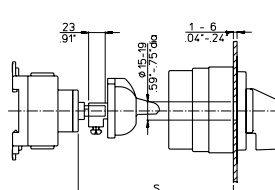


Door Clutches

M700/.



M701

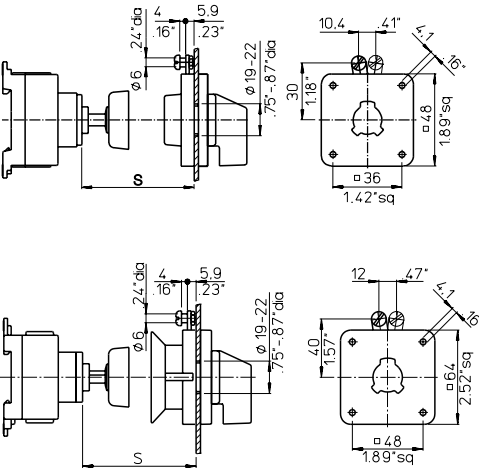


	S <sub>min.</sub>	S <sub>max.</sub>
KH16B-KHR25B	61,5 2.42	-
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	61,5 2.42	68 2.68

Optional Extras

Door Clutches

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



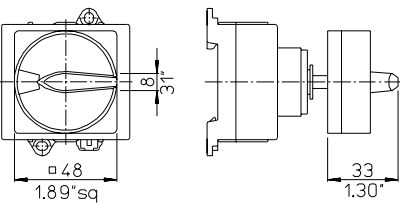
S = Standard length for switches of mounting VE

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

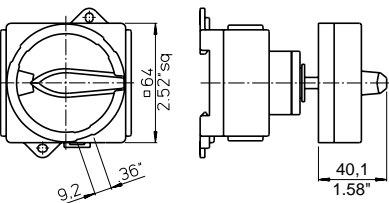
	S	S	S	S
KH16B-KHR25B	37-64 1.46-2.52	64-84 2.52-3.31	84-104 3.31-4.09	104-124 4.09-4.88
KH32, KHR32,	32-57	57-77	77-97	97-117
KH40, KHR40,	1.26-2.24	2.24-3.03	3.03-3.82	3.82-4.61
KH63, KHR63,				
KH80, KHR80				

Padlock Devices

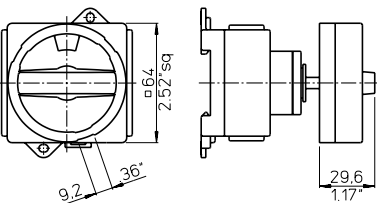
V840D



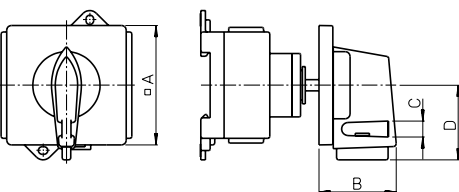
V840G, V840F/F



V840G/B, V840F/B

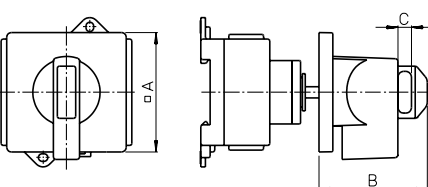


V840A



	A	B	C	D
KH16-KHR25	48 1.89	32.9 1.30	5 .20	31.5 1.24
KH16B-KHR25B	64 2.52	41.6 1.64	7 .28	40 1.57
KH32, KHR32,	64	41.6	7	40
KH40, KHR40,	2.52	1.64	.28	1.57
KH63, KHR63,				
KH80, KHR80				

V845



	A	B	C
KH16-KHR25	48 1.89	51 2.01	7.2 .28
KH16B-KHR25B	64 2.52	58 2.28	8.1 .32
KH32, KHR32,	64	58	8.1
KH40, KHR40,	2.52	2.28	.32
KH63, KHR63,			
KH80, KHR80			

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# The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

	Catalog Number
<b>Main Switches and Main Switches with Emergency Function 16 A-315 A</b> <b>Maintenance Switches 20 A-315 A</b> <b>Switch Disconnectors 20 A-315 A</b> According to IEC 60947-3, EN 60947-3, VDE 0660 part 107, IEC 60204, EN 60204 and VDE 0113	<b>500</b>
<b>CL Switches 10 A-20 A</b> <b>C, CA and CAD Switches 10 A-315 A and L Switches 350 A-2400 A</b> 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.	<b>100</b>
<b>Optional Extras and Enclosures</b> 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.	<b>101</b>
<b>A and AD Switches 6 A-25 A</b> 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.	<b>110</b>
<b>CG, CH and CHR Switches 10 A-25 A</b> 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.	<b>120</b>
<b>DH, DHR, DK and DKR Switches 6 A-16 A</b> 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.	<b>130</b>
<b>X Switches 80 A-630 A</b> 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.	<b>140</b>
<b>KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A</b> 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.	<b>150</b>
<b>Push Buttons and Pilot Lights, 22,5 mm Ø</b> 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.	<b>302</b>

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