

## Catalog 150

**KG Switches 20 A-315 A**

**KH and KHR Switches 16 A-80 A**



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# KRAUS & NAIMER

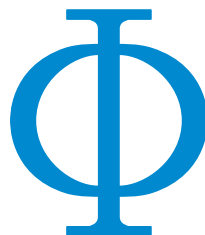
*The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues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

## BLUE LINE

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

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

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

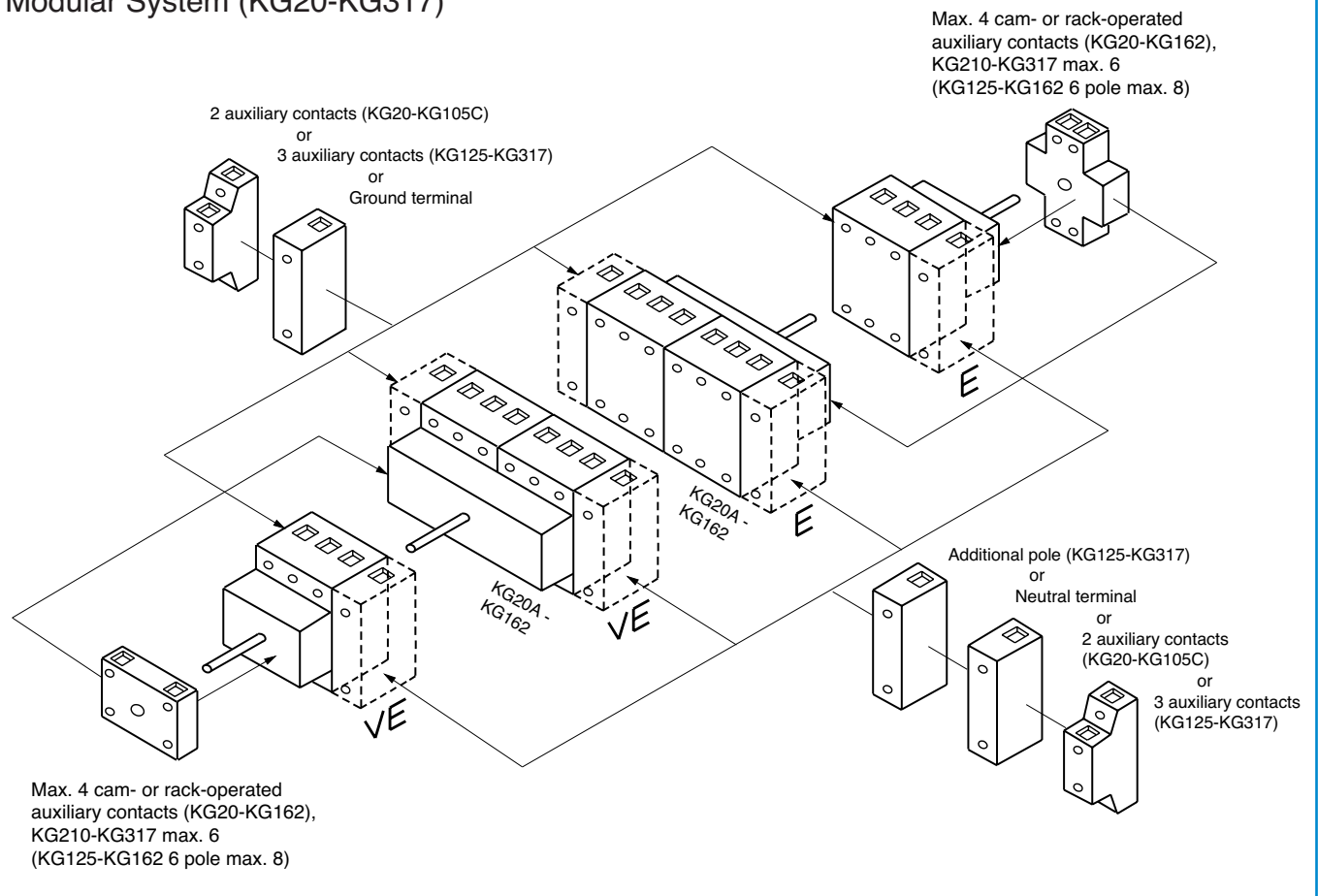
The KG10A through KG317 switch line offers excellent performance characteristics and exceed the requirements of IEC 60947-3 as well as the new VDE 0660 part 107. KG switches are principally used as motor and industrial panel disconnectors, double-throw transfer switches, safety switches, main disconnect 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 VDE 0106 part 100 resp. VBG 4. Switch types KG210, KG250 and KG315 require an option protective cover.













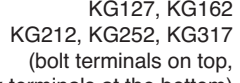
This advanced switch-generation affords significant advantages during mounting and wiring. For ease of installation, switch terminals are on the same plane as the power conductors. The KG10A through KG105C base mounted switches feature a two hole mounting as well as a "quick mount" designed for standard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

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

**Modular System (KG20-KG317)**



## Nominal Ratings

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

<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 3 and 23 which show the thermal current and power rating of each switch. For further technical details, refer to pages 20/21 and 34/35.

### 2. Switch Function

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

### 3. Type of Mounting

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

**KG100**

**K302-600  
M004**

**VE**

### 4. Optional Extras

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

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

## Modification of Switches

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

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

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

<sup>1</sup>Not available for switch types KG20 and KG32.

## How to order

### Modification of Switches

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

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

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

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

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

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

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

### Handles, Escutcheon Plates and Optional Extras

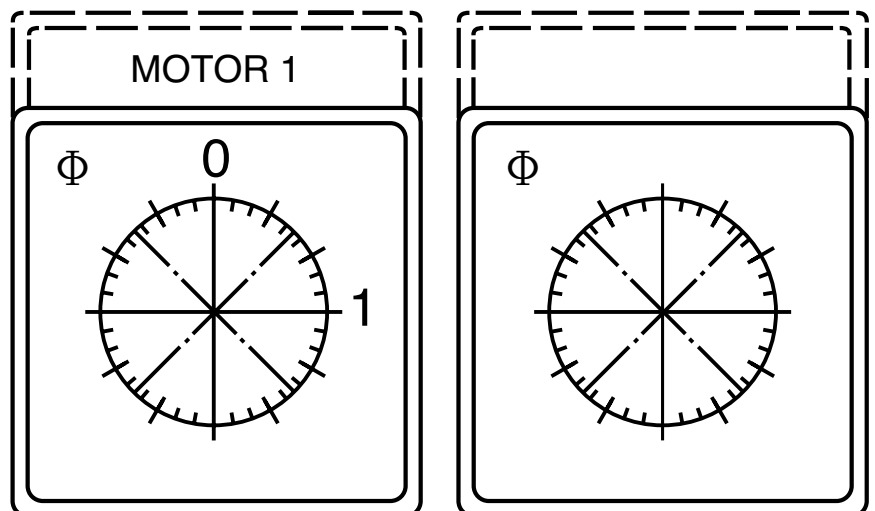
Various standards for the KG switches are listed in the table on pages 6-8 and for the KH/KHR switches on page 24.

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




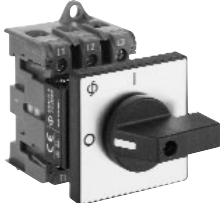

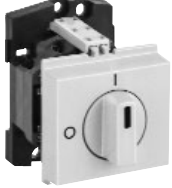
### Ordering of Special Escutcheon Plates

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



**Example:** Customer's requirements are shown beside.





Order forms are available upon request.

Mounting	Type	Code
	<p>Front mounting protection IP 65</p> <p>Two hole panel mounting</p> <p>Four hole panel mounting</p>	<p>KG20 KG32</p> <p>KG10A- KG317</p> <p><b>E</b></p> <p><b>E</b></p>
	<p>Single hole mounting 22 mm Protection IP 65</p> <p>Without escutcheon plate</p>	<p>KG10A KG20A KG32A</p> <p><b>FT1</b></p>
	<p>With square escutcheon plate</p>	<p>KG10A KG20A KG32A</p> <p><b>FT2</b></p>
	<p>Base mounting</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>KG10A- KG317</p> <p>KG125- KG162</p> <p><b>VE</b></p> <p><b>VE1</b></p>
	<p>Screw/Snap-on base mounting for track EN 50022. Escutcheon plate for 45 mm knock-out.</p>	<p>KG20A KG32A KG41- KG64B KG80- KG105 KG125- KG162</p> <p><b>VE2</b></p>
	<p>Snap-on base mounting for track EN 50022. Both the escutcheon plate for 45 mm standard knock-out and the handle are adjustable in height.</p>	<p>KG10A</p> <p><b>VE21</b></p>



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. 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
---------------------------------------------------------------------	---------	------	------

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

<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	E	E	E	E	E	E	E	E	E		<b>K300-600</b>
	FT1 FT2 VE  VE21  KS. <sup>2</sup>	VE	VE	FT1 FT2 VE VE2  PF..	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 <sup>3</sup> VE2 <sup>3</sup>		<b>K300-620</b>
With cam/rack-operated auxiliary contact 1 NO	E	E	E	E	E		E	E	E	E		<b>K301-600</b>
	FT1 FT2 VE  VE21  KS. <sup>2</sup>	VE	VE	FT1 FT2 VE VE2  PF..	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 <sup>3</sup>		<b>K301-620</b>
With cam/rack-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		<b>K302-600</b>
	FT1 FT2 VE  VE21  KS. <sup>2</sup>	VE	VE	FT1 FT2 VE VE2  PF..	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 <sup>3</sup>		<b>K302-620</b>
With cam/rack-operated auxiliary contacts 2 NO			E	E	E		E	E	E	E		<b>K312-600</b>
			VE KL.	FT1 FT2 VE VE2  PF..	VE	VE VE2 KL. PF..	VE VE2	VE VE2 KL. PF.. <sup>4</sup>	VE	VE VE1 <sup>3</sup>		<b>K312-620</b>
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			<b>K304-600</b>
			VE KL.	FT1 FT2 VE VE2  PF..	VE	VE VE2 KL. PF..	VE VE2	VE VE2 KL. PF.. <sup>4</sup>	VE			<b>K304-620</b>
With GRD-terminal			E	E	E	E	E	E	E	E		<b>K305-600</b>
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 <sup>3</sup> VE2 <sup>3</sup>		<b>K305-620</b>
With GRD- and N-terminal			E	E	E	E	E	E	E	E		<b>K307-600</b>
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 <sup>3</sup> VE2 <sup>3</sup>		<b>K307-620</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	E	E	E	E	E	E	E	E	E		<b>K400-600</b>
	FT1 FT2 VE  VE21 KS. <sup>1</sup>	VE	VE	FT1 FT2 VE VE2  PF..	VE	VE VE2  KL. PF..	VE VE2  KL. PF..	VE VE2  KL. PF.. <sup>3</sup>	VE VE2  KL.	VE VE1 <sup>2</sup> VE2 <sup>2</sup>		<b>K400-620</b>
With cam-operated auxiliary contact 1 NO			E	E	E		E	E	E	E		<b>K401-600</b>
			VE KL.	FT1 FT2 VE VE2  PF..	VE	VE VE2 KL. PF..	VE KL.	VE KL.	VE KL.	VE VE1 <sup>2</sup>		<b>K401-620</b>
With cam-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		<b>K402-600</b>
	FT1 FT2 VE  VE21 KS. <sup>1</sup>	VE	VE	FT1 FT2 VE VE2  PF..	VE	VE VE2  KL. PF..	VE KL.	VE KL.	VE KL.	VE VE1 <sup>2</sup>		<b>K402-620</b>
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			<b>K404-600</b>
			VE	FT1 FT2 VE VE2 PF..	VE	VE VE2	VE VE2 PF.. <sup>3</sup>	VE VE2 PF.. <sup>3</sup>	VE			<b>K404-620</b>

<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 6 pole

Types of Mounting

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

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>K900-600</b>
										<b>K900-620</b>

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>K950-600</b>
										<b>K950-620</b>

Connection Diagrams

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

With lateral mounted auxiliary contacts

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

With GRD-terminal

With GRD- and N-terminal

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

With lateral mounted auxiliary contacts

Mounting E, FT1, FT2 VE, VE2

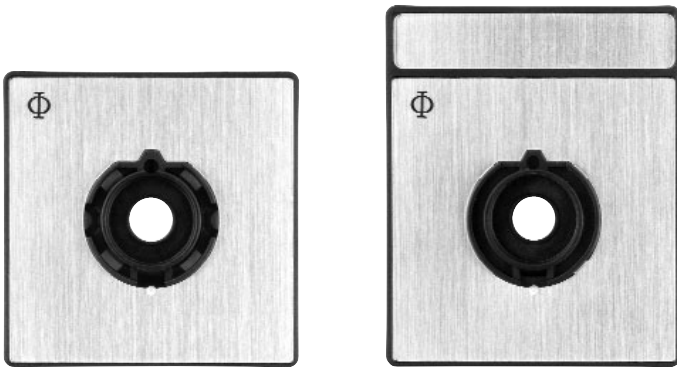
**ON/OFF Switches 6 pole (with cam-operated auxiliary contacts)**

**Double-throw Switches 3 pole**

**Double-throw Switches 4 pole**

<sup>1</sup>When using KS. the switch type changes to KG10.

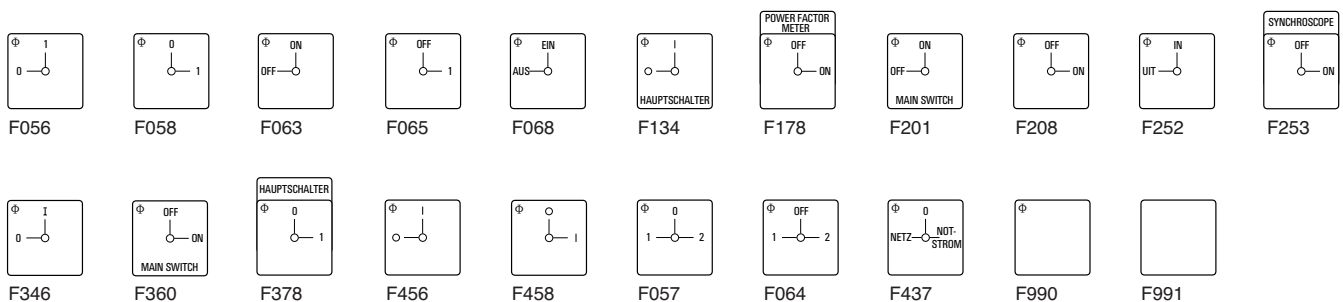
Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch position which is then embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface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



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

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








Standard Escutcheon Plates



<sup>1</sup>Not available for switch types KG20 and KG32.


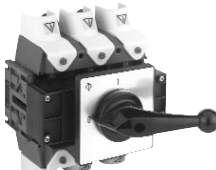
# Handles

# KG Switches


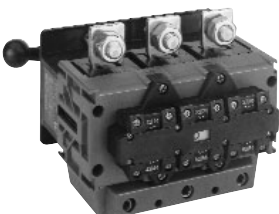
Type	Color	Code	KG20 KG32	KG10A- KG64	KG10B- KG105	KG80C- KG105C	KG125- KG162	KG210- KG317
<b>I-Handle</b> 	black red white electro gray	G251	●	●	●	●	●	—
		G252	●	●	●	●	●	—
		G253	●	●	●	●	●	—
		G257	●	●	●	●	●	—
<b>B-Handle</b> 	black red white electro-gray	G521	—	●	●	—	—	—
		G522	—	●	●	—	—	—
		G523	—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

<b>Protective Covers, Auxiliary Contacts</b>	Type	Code
----------------------------------------------	------	------



**Protective Covers**

	For 3 resp. 4 main contacts	KG10A	<b>M160/A12 K2</b>
	For 3 main contacts with box terminal	KG10B	
	with bolt terminal	KG20- KG315	<b>M160/3.</b>
		KG126	<b>M160/33</b>
		KG161	<b>M160/31</b>
		KG211	<b>M160/31</b>
		KG251	<b>M160/31</b>
		KG316	<b>M160/31</b>
	For 4 main contacts with box terminal	KG20- KG315	<b>M160/4.</b>
	with bolt terminal	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>



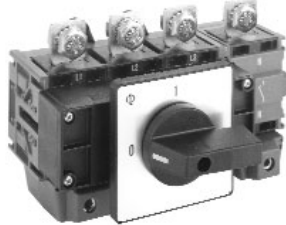




**Cam- and rack-operated Auxiliary Contacts** (mounting only at factory)

	Cam-operated auxiliary contacts	KG20- KG105C	<b>M510A</b>
	Up to 4 cam-operated auxiliary contacts can be added to all switches.		
	Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or a H-bridge design with "cross-wire" contacts for low voltages and currents (mounting E from KG41 and mounting VE from KG80). The contact systems with gold contacts or gold-plated contacts allow for use in aggressive environments also. Special programs are also available upon request.	KG125- KG317	<b>M510B</b>
	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.		
Ordering data:	Quantity and operation of the auxiliary contacts and type of the contact system.		

**Lateral mounted Auxiliary Contacts**

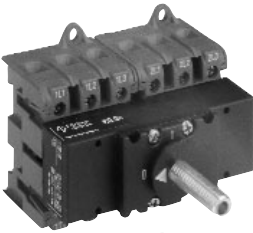

	Lateral mounted auxiliary contacts with 1 NO and 1 NC.	KG20- KG105C	<b>H010/A11-E</b> <b>H010/A11-VE</b>	
	Standard contacts (nonoverlapping)			Terminal numbers Attachment
	For mounting E, FT1 and FT2			left (33-34, 41-42) right (53-54, 61-62)
	For mounting VE, VE2, KL. and PF..			(31-32, 43-44) (51-52,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



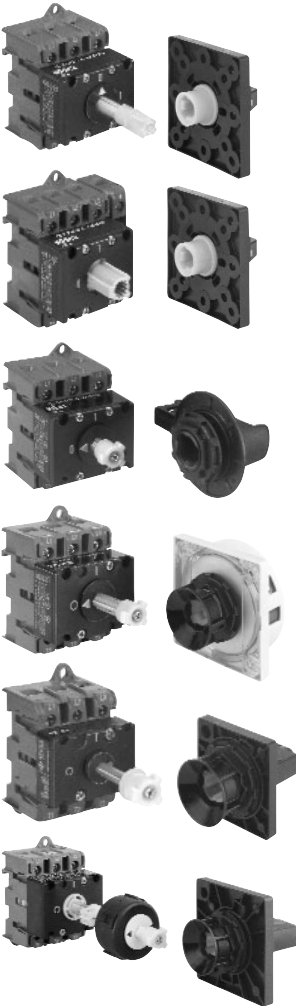
Ground and Neutral Terminals	Type	Code	Additional Main Contacts	Type	Code																
<p>Ground terminal</p>  	KG20- KG32B	<b>K0 H052/A</b>	 <p><b>Terminals for Control Circuit</b></p>  <p>Max. Permissible Wire Gage Single-core or Flexible wire stranded wire</p> <table border="1"> <tr> <td>2,5 mm<sup>2</sup> AWG12</td> <td>2,5 mm<sup>2</sup> AWG14</td> <td>KG41- KG64B</td> <td><b>K1B D220 KS</b></td> </tr> <tr> <td>2,5 mm<sup>2</sup> AWG12</td> <td>2,5 mm<sup>2</sup> AWG14</td> <td>KG80- KG105C</td> <td><b>K2B D520 KSA</b></td> </tr> <tr> <td>4 mm<sup>2</sup> AWG10</td> <td>4 mm<sup>2</sup> AWG12</td> <td>KG125- KG162</td> <td><b>K3A D720 KS</b></td> </tr> <tr> <td>4 mm<sup>2</sup> AWG10</td> <td>4 mm<sup>2</sup> AWG12</td> <td>KG210- KG317</td> <td><b>K3B D520 KS</b></td> </tr> </table> <p><b>Wiring Aid</b></p>  <p>Ordering data:                      Switch mounting.</p>	2,5 mm <sup>2</sup> AWG12	2,5 mm <sup>2</sup> AWG14	KG41- KG64B	<b>K1B D220 KS</b>	2,5 mm <sup>2</sup> AWG12	2,5 mm <sup>2</sup> AWG14	KG80- KG105C	<b>K2B D520 KSA</b>	4 mm <sup>2</sup> AWG10	4 mm <sup>2</sup> AWG12	KG125- KG162	<b>K3A D720 KS</b>	4 mm <sup>2</sup> AWG10	4 mm <sup>2</sup> AWG12	KG210- KG317	<b>K3B D520 KS</b>	KG125 KG126 KG127	<b>K3 H050/P</b> <b>K3 H050/Q</b> <b>K3 H050/R</b>
	2,5 mm <sup>2</sup> AWG12	2,5 mm <sup>2</sup> AWG14		KG41- KG64B	<b>K1B D220 KS</b>																
	2,5 mm <sup>2</sup> AWG12	2,5 mm <sup>2</sup> AWG14		KG80- KG105C	<b>K2B D520 KSA</b>																
	4 mm <sup>2</sup> AWG10	4 mm <sup>2</sup> AWG12		KG125- KG162	<b>K3A D720 KS</b>																
	4 mm <sup>2</sup> AWG10	4 mm <sup>2</sup> AWG12		KG210- KG317	<b>K3B D520 KS</b>																
	KG41- KG64B	<b>K1 H052/B</b>		KG160 KG161	<b>K3 H050/S</b> <b>K3 H050/T</b> <b>K3 H050/U</b>																
	KG80- KG105C	<b>K2 H052/C</b>		KG210 KG250 KG315	<b>K3 H050/G</b> <b>K3 H050/H</b> <b>K3 H050/J</b>																
	KG125 KG160	<b>K3 H052/H</b>		KG211 KG251																	
	KG126 KG161	<b>K3 H052/J</b>		KG212 KG252																	
	KG127 KG162	<b>K3 H052/K</b>		KG316 KG317	<b>K3 H050/K</b> <b>K3 H050/L</b> <b>K3 H050/M</b>																
	KG210 KG250 KG315	<b>K3 H052/D</b>																			
	KG211 KG251	<b>K3 H052/E</b>																			
	KG212 KG252	<b>K3 H052/F</b>																			
	KG316 KG317	<b>K3 H052/L</b> <b>K3 H052/M</b>																			
<p>Neutral terminal</p>  	KG20- KG32B	<b>K0 H053/A</b>																			
	KG41- KG64B	<b>K1 H053/B</b>																			
	KG80- KG105C	<b>K2 H053/C</b>																			
	KG125 KG160	<b>K3 H053/H</b>																			
	KG126 KG161	<b>K3 H053/J</b>																			
	KG127 KG162	<b>K3 H053/K</b>																			
	KG210 KG250 KG315	<b>K3 H053/D</b>																			
	KG211 KG251	<b>K3 H053/E</b>																			
	KG212 KG252	<b>K3 H053/F</b>																			
	KG316 KG317	<b>K3 H053/L</b> <b>K3 H053/M</b>																			

Shaft Extensions, Simplified Door Clutch	Type	Code
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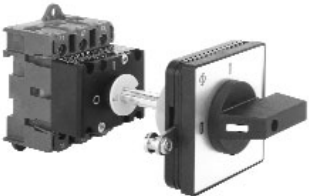
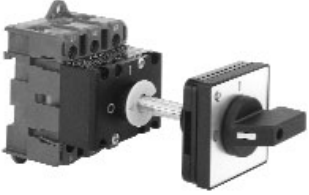

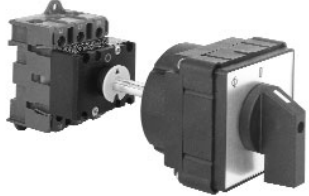

**Shaft Extensions**






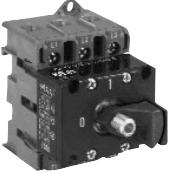
	With asymmetric profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	<b>L100</b>
	Shaft with adjustable length with set screw with shear ring	KG10A KG20A, KG32A KG41-KG317	
	With square profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	<b>L100A</b>
	Shaft with adjustable length with set screw with clamping bushing	KG41B-KG317 KG80C-KG317	
Ordering data:	Free shaft length or dimension from mounting surface to cover.		


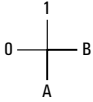
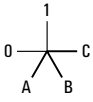
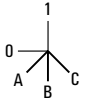


**Simplified Door Clutch**

	The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and escutcheon plate are mounted on the cover.		
	With shaft extension Front protection IP 40 Front protection IP 65	KG10A KG20A, KG32A KG41B-KG105	<b>M290/A3</b> <b>M290/A3.EF<sup>1</sup></b>
	With profile extension parts Front protection IP 65	KG41B-KG105	
	With padlock device, single hole mounting 22 mm, protection IP 65. An additional aluminum shaft extension is required.	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>V840F</b> <b>V840G</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. The following interlock programs are available: A = Without interlock by door clutch B = With interlock by door clutch C = With interlock by rods D = With interlock by door clutch and rods</p> <p><b>With protected profile</b> shaft fixation with set screw Front protection IP 40 Front protection IP 65 shaft fixation with shear ring Front protection IP 40 Front protection IP 65</p> <p><b>Without protected profile</b> Front protection IP 40 Front protection IP 65</p> <p>The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the "OFF" position. <b>NOTE: Knowledgeable personnel using a simple tool are able to defeat the interlock.</b> The M700's flexibility allows for successful installation with as much as + or - 5 mm of misalignment between shaft and door.</p> <p>Handle lockable with padlocks Protection IP 65 Selection of escutcheon plate and handle color required:</p> <table border="1" data-bbox="550 1406 1161 1646"> <thead> <tr> <th>Escutcheon Plate</th> <th>Frame Plate</th> <th>Handle</th> <th>Lock Bar</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>Standard handle and standard escutcheon plate Protection IP 65</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>KG10A KG20A KG32A KG41B KG64B KG80- KG317</p> <p><b>M280E M280E/.EF</b></p> <p><b>M280D M280D/.EF</b></p> <p>KG41 KG64</p> <p><b>M280B/. M280B/.EF</b></p> <p>KG10B KG20B KG32B KG41B KG64B KG80 KG100 KG105 KG125- KG317</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																							
<p>Ordering data:</p>	<p>Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.</p>																									

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 16.</p>	<p>KG20B, KG32B KG41B, KG64B KG80-KG105 KG125-KG317</p>	<p><b>V840VE</b></p>
<p>Ordering data:</p>	<p>For V840 and V845 color selection required.</p>	

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> 	<p>KG20B                      KG32B                      KG41B                      KG64B</p> <p>KG20B                      KG32B                      KG41B                      KG64B</p> <p>KG20B                      KG32B                      KG41B                      KG64B</p> <p>KG20B                      KG32B                      KG41B                      KG64B</p>	<p><b>V500/1</b></p> <p><b>V500/2</b></p> <p><b>V500/3</b></p> <p><b>V500/4</b></p>
	<p>KG125-                      KG317<sup>1</sup></p>	<p><b>M330</b></p>

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

<b>Selection Data</b>	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

<b>Rated Insulation Voltage <math>U_i</math></b> IEC/VDE <sup>1</sup> UL/Canada CEE/NEMKO	V	690	690	690	690	690	690	690	690	1000 <sup>2</sup>	1000 <sup>2</sup>	1000 <sup>2</sup>	1000 <sup>2</sup>	1000 <sup>2</sup>
	V	300	600	600	600	600	600	600	600	- <sup>6</sup>	600	600	600	600
	V	400	500	500	500	500	500	500	500	- <sup>6</sup>	-	-	-	-
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math></b> <sup>1</sup>	kV	4	6	6	6	6	6	6	6	8	8	8	8	8
<b>Rated Thermal Current</b> IEC/VDE $I_{u, open} = I_{th}$ $I_{the, enclosed}$ UL/Canada ON/OFF function UL/Canada Double-throw function	A	20	25	32	40	63	80	100	125	125	160	200	250	315
	A	20	25	32	40	63	80	100	125	125	160	200	250	315
	A	20	25	30	40	60	80 <sup>3</sup>	100 <sup>3</sup>	- <sup>6</sup>	150 <sup>3</sup>	200 <sup>3</sup>	200 <sup>3</sup>	250 <sup>3</sup>	300 <sup>3</sup>
	A	20	25	30	40	60	80 <sup>3</sup>	100 <sup>3</sup>	- <sup>6</sup>	125 <sup>3</sup>	160 <sup>3</sup>	-	-	-
<b>Rated Operational Current <math>I_e</math></b>  AC-21A Switching of resistive loads, including moderate overloads  AC-22A Switching of combined resistive or low inductive loads, including moderate overloads  Ampere-Rating ON/OFF function Double-throw function Resistive or low inductive loads	A	20	25	32	40	63	80	100	125	125	160	200	250	315
	A	20	20	32	40	63	80	100	125	125	160	200	200	250
	A	16	20	32	40	55	65	85	90	100	100	125	125	140
	A	20	25	30	40	60	80 <sup>3</sup>	100 <sup>3</sup>	- <sup>6</sup>	150 <sup>3</sup>	200 <sup>3</sup>	200 <sup>3</sup>	250 <sup>3</sup>	300 <sup>3</sup>
A	20	25	30	40	60	80 <sup>3</sup>	100 <sup>3</sup>	- <sup>6</sup>	125 <sup>3</sup>	160 <sup>3</sup>	-	-	-	
<b>Rated Utilization Category</b> IEC/VDE  AC-3 Direct-on-line starting 3 phase 3 pole 220 V-240 V 380 V-440 V 500 V 690 V  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  DOL-Rating Standard motor load (similar AC-3) 3 phase 3 pole 120 V 240 V 480 V 600 V	kW	2,2	4	5,5	7,5	11	15	18,5	22	22	30	37	37	45
	kW	3,7	5,5	7,5	11	18,5	22	30	37	37	45	55	55	75
	kW	3,7	5,5	7,5	15	22	30	37	45	45	55	75	75	90
	kW	3,7	5,5	7,5	11	15	18,5	22	22	30	37	45	45	45
	kW	3	5,5	5,5	7,5	11	18,5	22	25	30	30	37	37	55
	kW	5,5	7,5	11	15	22	30	37	45	45	55	75	90	110
	kW	5,5	7,5	11	18,5	30	37	45	55	55	75	90	110	132
	kW	5,5	7,5	11	15	18,5	22	30	30	37	37	45	45	45
	HP	1	1,5	2	3	5	7,5	10	- <sup>6</sup>	15	20	25	30	40
	HP	2	3	5	7,5	10	20	25	- <sup>6</sup>	30	40	50	60	75
	HP	-	5	10	15	20	40	50	- <sup>6</sup>	60	60	75	75	100
	HP	-	5	10	15	20	50	50	- <sup>6</sup>	60	60	75	75	100
<b>Short Circuit Protection</b>  Max. fuse size (gL-characteristic) Rated short-time withstand current (1 s-current)	A	20	35	35	50	63	80	100	125	125	160	200	250	315
	A	130	350	430	500	580	1600	1850	2000	2500	3000	4000	4600	5800
<b>Max. Permissible Wire Gage</b> - Use copper wire only  For box terminal Single-core or stranded wire  Flexible wire sleeving in accordance with DIN 46228  Flexible wire without sleeve  Cable lug or track must accept connection screw Max. width Max. width with protective cover	mm <sup>2</sup>	2,5	6	6	16	16	35(50) <sup>5</sup>	35(50) <sup>5</sup>	50	95	95	185	185	185
	AWG	12	10	10	6	6	2(1/0)	2(1/0)	1/0	3/0	3/0	-	-	-
	MCM	-	-	-	-	-	-	-	-	-	-	350	350	350
	mm <sup>2</sup>	2,5	4	4	10	10	25(35) <sup>5</sup>	25(35) <sup>5</sup>	35	70	70	120	120	120
	mm <sup>2</sup>	2,5	4	4	10	10	25(35) <sup>5</sup>	25(35) <sup>5</sup>	35	70	70	150	150	150
	AWG	12	10	10	6	6	3(2)	3(2)	2	2/0	2/0	-	-	-
	MCM	-	-	-	-	-	-	-	-	-	-	300	300	300
	mm	-	-	-	-	-	-	-	-	M10 x 20	M10 x 20	M12 x 20	M12 x 20	M12 x 20
	mm	-	-	-	-	-	-	-	-	20	20	25	25	25
	mm	-	-	-	-	-	-	-	-	25	25	34	34	34
<b>Ambient Temperature</b>  open at 100 % $I_u/I_{th}$ enclosed at 100 % $I_{the}$		50 °C during 24 hours with peaks up to 55 °C												
		35 °C during 24 hours with peaks up to 40 °C												

20 <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 22. <sup>5</sup>The values in brackets are valid for switches 4 pole. <sup>6</sup>Ratings in preparation.















# Technical Data

# Auxiliary Contacts for KG Switches

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

<b>Rated Insulation Voltage <math>U_i</math></b>		IEC/VDE UL/Canada	V V	690 300	500 600	690 600	690 600	690 600
<b>Rated Thermal Current <math>I_u/I_{th}</math></b>		IEC/VDE/BS UL/Canada	A A	10 20	- 10	16 10	16 10	16 10
<b>Rated Operational Current <math>I_o</math></b>								
AC-21A	Switching of resistive loads, including moderate overloads	IEC/VDE	A	20	10	16	16	16
AC-15	Switching of control devices, contactors, valves etc.	110 V-240 V 380 V-440 V 500 V	A	6	2,5	6	6	6
			A	4	1,5	3	3	3
			A	-	1	1,5	1,5	1,5
Pilot Duty	Heavy	UL/Canada		A300	A600	A600	A600	A600
Ampere-Rating	Resistive or low inductive loads	UL/Canada	A	20	10	10	10	10
<b>Short Circuit Protection</b>								
	Max. fuse size	(gL-characteristic)	A	20	10	16	16	16
<b>Max. Permissible Wire Gage - Use copper wire only</b>								
	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
			AWG	12	16	14	14	14
	Flexible wire without sleeve		mm <sup>2</sup>	2,5	1,5	2,5	2,5	2,5
			AWG	12	16	14	14	14

Country	Authority	Mark or Standard	KG10	KG20	KG32	KG41	KG64	KG80	KG100	KG105	KG125	KG160	KG210	KG250	KG315
			KG10A	KG20A	KG32A	KG41B	KG64B	KG80C	KG100C	KG105C	KG126	KG161	KG211	KG251	KG316

USA	Underwriters Laboratories	 <sup>1</sup> or 	●	●	●	●	●	●	●	— <sup>7</sup>	●	●	●	●	●
			●	●	●	●	●	●	●	●	— <sup>7</sup>	●	●	●	●
Canada	Canadian Standards Association	 <sup>2</sup> or 	●	●	●	●	●	●	●	— <sup>7</sup>	●	●	●	●	●
			●	●	●	●	●	●	●	●	— <sup>7</sup>	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+	+	+	+	+	+	+	+
Danmark	Danmarks Elektriske Materiekkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materiekkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materiekkontrollanstalten		+	+	+	+	+	+	+	+	+	+	+	+	+
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	 <sup>6</sup> GB14048.3	●	●	●	●	●	●	●	+	●	●	●	●	●
			●	●	●	●	●	●	●	+	●	●	●	●	●
Russian Federation	GOST	 <sup>6</sup> CH01	●	●	●	●	●	●	●	+	●	●	●	●	●
Germanischer Lloyd			+	+	+	+	+	+	+	+	+	+	+	+	+
Lloyds Register of Shipping			+	+	+	+	+	+	+	+	+	+	+	+	+

● 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.

<sup>6</sup> If this approval is required, please request when ordering.

<sup>7</sup> Ratings in preparation.

**KG switches are approved by UL 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.

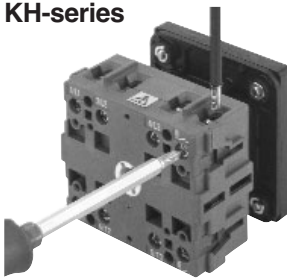
The safety level of the KH- and KHR-series in numerous areas surpasses those of many international standard organizations: Positive contact movement during making and breaking operations. Higher air and creepage distances as well as for 800 V or 1000 V and finger-proof terminals according to VDE 0106 part 100 (protection IP 20 up to KHR40). Excellent AC-3 and AC-23A making and breaking capabilities providing an additional safety

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

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

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




**KH-series**

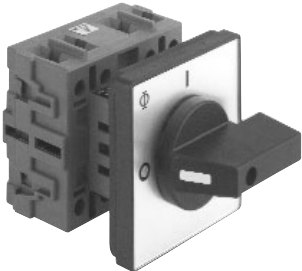
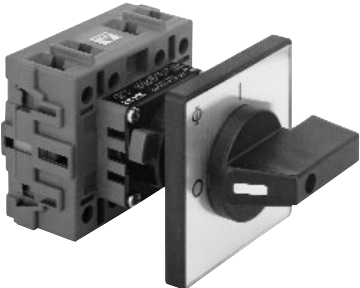
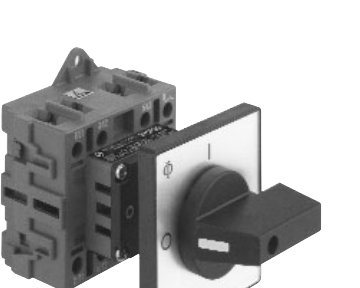
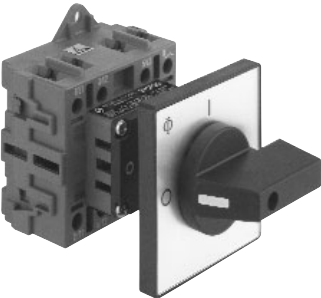
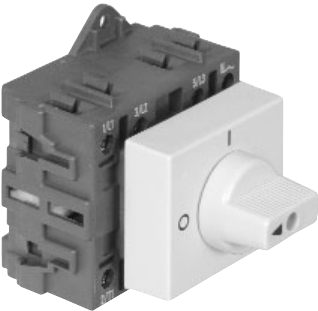


**KHR-series**




**Nominal Ratings**

Escutcheon Plate Frame mm	Type	IEC 60947-3/VDE 0660 part 107		UL and Canada			
		Rated Values	Utilization Category	Ampere-Rating	Standard Motor Load		
		Thermal Current $I_n/I_{th}$	AC-23A 3 x 380 V-440 V	AC-3 3 x 600 V	DOL-Rating		
		<b>A</b>	<b>kW</b>	<b>A</b>	<b>HP</b>	<b>HP</b>	
48 x 48 	<b>KH16</b>	16	7,5	5,5	16	2	5
	<b>KH20</b>	20	10	6,5	20	2	5
	<b>KH25</b>	25	12	7,5	25	3	7,5
	<b>KHR16</b>	16	7,5	5,5	16	2	5
	<b>KHR20</b>	20	10	6,5	20	2	5
	<b>KHR25</b>	20	10	7,5	20	3	7,5
64 x 64 	<b>KH16B</b>	16	7,5	5,5	16	2	5
	<b>KH20B</b>	20	10	6,5	20	2	5
	<b>KH25B</b>	25	12	7,5	25	3	7,5
	<b>KHR16B</b>	16	7,5	5,5	16	2	5
	<b>KHR20B</b>	20	10	6,5	20	2	5
	<b>KHR25B</b>	20	10	7,5	20	3	7,5
64 x 64 	<b>KH32</b>	32	16	11	30	5	10
	<b>KH40</b>	40	20	15	40	7,5	15
	<b>KHR32</b>	32	16	11	30	5	10
	<b>KHR40</b>	32	16	15	30	7,5	15
	<b>KH63</b>	63	30	22	60	20	40
	<b>KH80</b>	80	40	30	80	25	50
	<b>KHR63</b>	63	30	22	60	20	40
	<b>KHR80</b>	80	40	30	80	25	50

Mounting	Type	Code
 <p>Panel mounting protection IP 65 Four hole panel mounting</p>	KH16-KHR80	<b>E</b>
 <p>Single hole mounting 22 mm Protection IP 65 With square escutcheon plate 48 x 48 mm</p>	KH16-KHR25	<b>FT2</b>
 <p>With square escutcheon plate 64 x 64 mm</p>	KH16-KHR80	<b>FH3<sup>1</sup></b>
 <p>Base mounting Screw/Snap-on base mounting for track EN 50022 Protection IP 40</p>	KH16-KHR80	<b>VE</b>
 <p>Screw/Snap-on base mounting for track EN 50022. Escutcheon plate for 45 mm knock-out.</p>	KH16-KHR80	<b>VE2</b>

<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. 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.</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> <p>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		
	<p>Without cover interlock</p>			<p>KL.0 CL.0 KS.0 CS.0</p>
	<p>With cover interlock (The enclosure can only be opened at 9 o'clock position)</p>			<p>KL.1 CL.1 KS.1 CS.1</p>
<p>With cover interlock (The enclosure can only be opened at 12 o'clock position)</p>	<p>KL.2 CL.2 KS.2 CS.2</p>			

Switch Function and Configuration

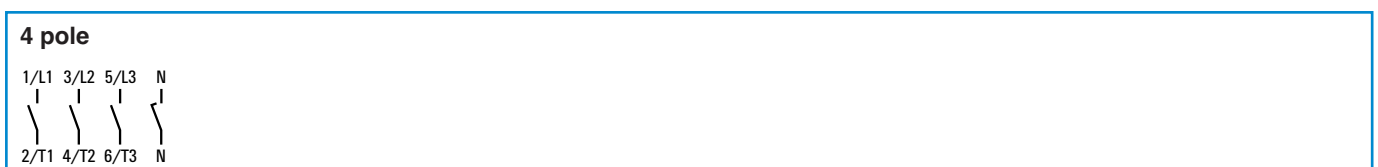
Function	KH16 KH20 KH25	KHR16 KHR20 KHR25	KH16B KH20B KH25B	KHR16B KHR20B KHR25B	KH32 KH40	KHR32 KHR40	KH63 KH80	KHR63 KHR80	Escutch. Plate	Code
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ON/OFF Switches 4 pole

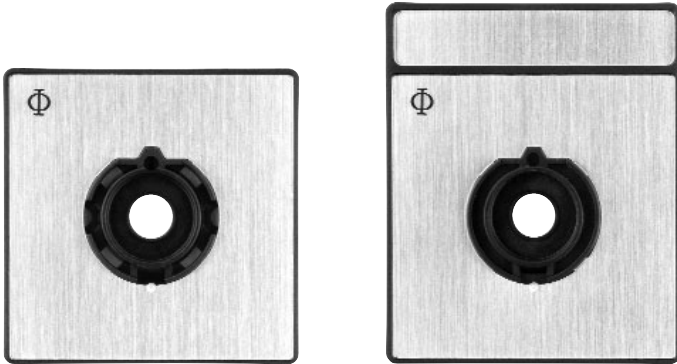
Types of Mounting

Without auxiliary contacts	E	E	E	E	E	E	E	E		K400-600
	FT2 FH3 VE VE2 KL. KS.	FT2 FH3 VE VE2 KL. KS.	VE KL.	VE KL.	FH3 VE VE2 KL.	FH3 VE VE2 KL.	FH3 VE VE2 KL.	FH3 VE VE2 KL.		

Connection Diagrams



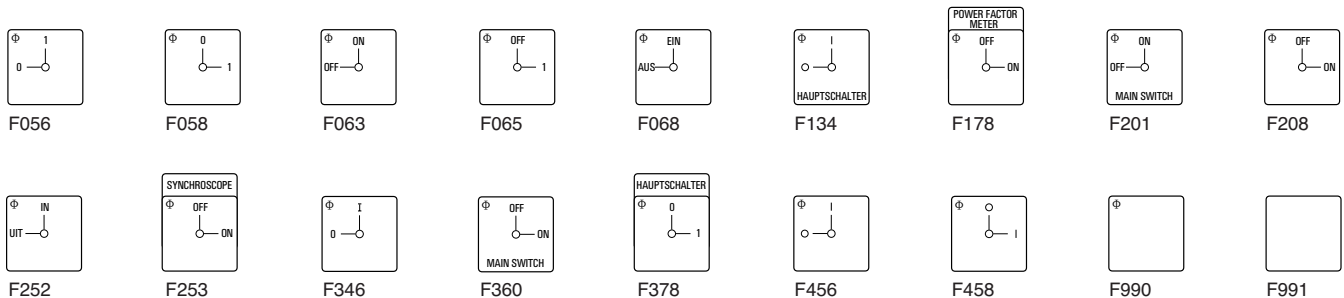
Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch position which is then embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface for the handle. If the switch is to be mounted without an escutcheon plate we would recommend the handle bearing plate T100-04 which is available for switch types KH16B-KHR25B, KH32-KHR40 and KH63-KHR80. Escutcheon plates with special lettering are also available upon request.



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








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

**Standard Escutcheon Plates**



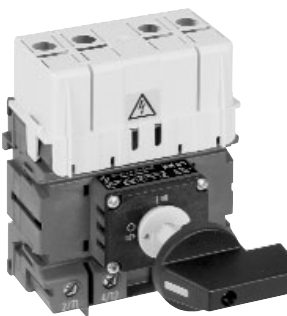
# Handles

# KH, KHR Switches

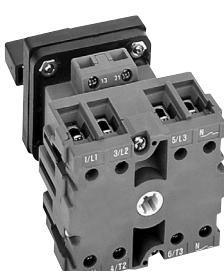

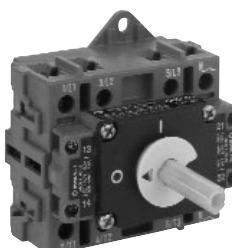
Type	Color	Code	KH16- KH25	KHR16- KHR25	KH16B- KH25B	KHR16B- KHR25B	KH32- KHR40	KH63- KHR80
<b>I-Handle</b> 	black red white electro-gray	G251 G252 G253 G257	●	●	●	●	●	●
<b>B-Handle</b> 	black red white electro-gray	G521 G522 G523 G527	●	●	●	●	●	●
<b>R-Handle</b> 	black red white electro-gray	G001 G002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

Protective Covers and Auxiliary Contacts	Type	Code
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**Protective Covers**

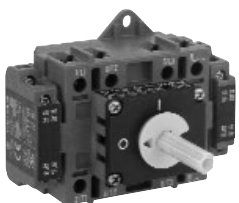
	For mounting E	KH32-KHR40	K1 M160/45-E
	For mounting VE		K1 M160/45-VE
	For mounting E	KH63-KHR80	K1 M160/44-E
	For mounting VE		K1 M160/44-VE

**Cam-operated Auxiliary Contacts** (mounting only at factory)


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

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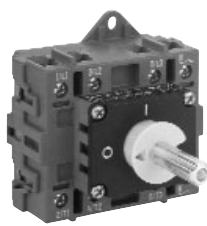
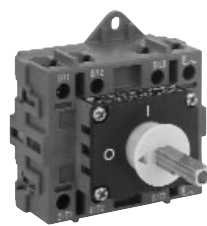
**Lateral mounted Auxiliary Contacts**

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

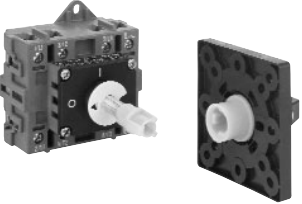
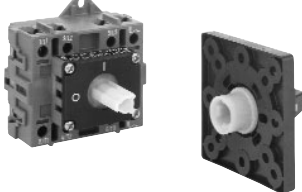
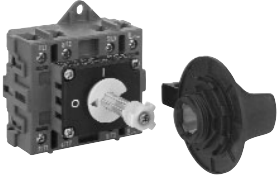
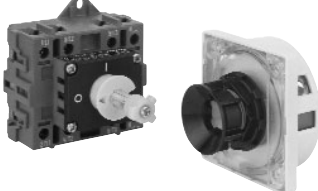
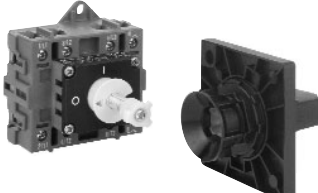
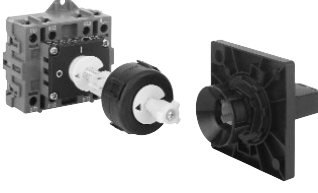
**Ground Terminal**

	KH16-KHR80	H052
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**Shaft Extensions**

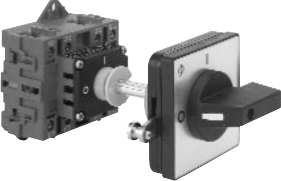



	With asymmetric profile	KH16-KHR80	L100 <sup>1</sup>
	Shaft length not adjustable		
	Shaft with adjustable length with set screw with shear ring		M004D <sup>3</sup> M004 <sup>3</sup>
	With square profile		L100A <sup>1</sup>
	Shaft length not adjustable		
	Shaft with adjustable length with set screw		M004E <sup>2</sup>
Ordering data:		Free shaft length or dimension from mounting surface to cover.	





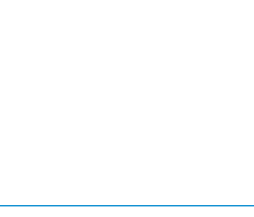
<sup>1</sup>Available for switch types from KH16B. <sup>2</sup>Available for switch types from KH32. <sup>3</sup>Not available for KH..B.

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 escutcheon plate are mounted on the cover.</p> <p>With shaft extension Front protection IP 40</p>	<p>KH16-KHR80</p> <p><b>M290/A3</b></p>
	<p>With profile extension parts Front protection IP 65</p>	<p><b>M290/A1.EF<sup>2</sup></b></p>
	<p>With padlock device, single hole mounting 22 mm, protection IP 65. An additional aluminum shaft extension is required.</p>	<p><b>V840E<sup>1</sup></b></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><b>V840F<sup>1</sup></b> <b>V840G<sup>1</sup></b></p>
	<p>Operation of the locking bar from the front. Available in black, red and electro-gray.</p>	<p><b>V845</b></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>	<p><b>M600<sup>1</sup></b></p>
<p>Ordering data:</p>	<p>Free shaft length or dimension from face of the switch to the cover and color selection.</p>	


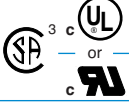







<sup>1</sup>Available for switch types from KH16B. <sup>2</sup>Available for switch types from KH32.



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 65</p> <p>shaft fixation with shear ring            Front protection IP 40            Front protection IP 65</p> <p>The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the "OFF" position.</p> <p><b>NOTE: Knowledgeable personnel using a simple tool are able to defeat the interlock.</b></p> <p>The M700's flexibility allows for successful installation with as much as + or - 5 mm of misalignment between shaft and door.</p>  <p>Handle lockable with padlocks            Protection IP 65</p> <p>Selection of escutcheon plate and handle color required:</p> <table border="1" data-bbox="531 1413 1161 1648"> <thead> <tr> <th>Escutcheon Plate</th> <th>Frame Plate</th> <th>Handle</th> <th>Lock Bar</th> </tr> </thead> <tbody> <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> </tbody> </table>  <p>Standard handle and standard escutcheon plate            Protection IP 65</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>M280E M280E/.EF</p> <p>M280D M280D/.EF</p> <p>M700/.</p> <p>M701</p> <p>S1D M700 29</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>Ordering data:</p>	<p>Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.</p>																									

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>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>  <p>For 2 padlocks with F-handle</p>  <p>For 3 padlocks with F-handle</p>  <p>For 4 padlocks with F-handle</p> <p>For 3 padlocks with B-handle</p> <p>Padlock devices <b>with simplified door clutch and single hole mounting</b> see page 30.</p>	<p>KH16-KHR80</p> <p>KH16-KHR25</p> <p>KH16B-KHR80</p>	<p>V840A</p> <p>V845</p> <p>V840D</p> <p>V840G V840G/B</p> <p>V840F/F V840F/B</p>
<p>Ordering data:</p>	<p>For V840 and V845 color selection required.</p>	

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		●	●	●	●	●	●	●	●	●	●
Canada	Canadian Standards Association		●	●	●	●	●	●	●	●	●	●
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>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>	+	+	+	+	+	+	+	+	+	+
Russian Federation	GOST	 <sup>4</sup> CH01	●	+	●	+	●	+	●	●	●	●

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

<sup>4</sup>If this approval is required, please request when ordering.

**The switches of the KH/KHR-series are approved by UL as „disconnect switches for use in motor circuits“. Switches using ring type terminations (KHR) it is necessary to make connections to separate terminals.**

<b>Selection Data</b>	KH16	KHR16	KH20	KHR20	KH25	KHR25	KH32		KH63	KH80
	KH16B	KHR16B	KH20B	KHR20B	KH25B	KHR25B	KHR32	KH40	KHR40	KHR63

<b>Rated Insulation Voltage <math>U_i</math></b>	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>	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	600		
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math><sup>1</sup></b>		kV	6	6	6	6	6	6	6	6	6	8	8		
<b>Rated Thermal Current</b>	IEC/EN/VDE	$I_u$ open = $I_{th}$	A	16	16	20	20	25	20	32	40	32	63	80	
		$I_{the}$ enclosed	A	16	16	20	20	25	20	32	40	32	63	80	
	UL/Canada	A	16	16	20	20	25	20	30	40	30	60	80		
<b>Rated Operational Current <math>I_e</math></b>															
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	
<b>Rated Utilization Category</b>	IEC/EN/VDE														
AC-3	Direct-on-line starting	3 phase	220 V-240 V	kW	3	3	3,5	3,5	4	4	5,5	7,5	7,5	11	15
			3 pole	380 V-440 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	22
		500 V	660 V-690 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	30	37
			660 V-690 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	18,5	22
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	4,5	4,5	5,5	5,5	7	5,5	9	11	9	18,5	23
			3 pole	380 V-440 V	kW	7,5	7,5	10	10	12	10	16	20	16	30
		500 V	660 V-690 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
			3 phase	220 V-240 V	HP	2	2	2	2	3	3	5	7,5	7,5	20
		3 pole	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
<b>Short Circuit Protection</b>															
	Max. fuse size	(gL-characteristic)	A	25	25	35	35	35	35	35	50	50	80	100	
	Rated short-time withstand current	(1s-current)	A	400	400	450	450	500	500	850	950	950	1200	1600	
<b>Max. Permissible Wire Gage</b> - Use copper wire only															
<b>KH</b>	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	
			AWG	12	-	12	-	12	-	10	10	-	4	4	
<b>KHR</b>	Connection with insulated ring and fork type terminals	Internal diameter ≥ External diameter ≤	mm	-	3,2	-	3,2	-	3,2	3,7	-	3,7	5,2	5,2	
			mm	-	7,4	-	7,4	-	7,4	8,8	-	8,8	12,7	12,7	
<b>Ambient Temperature</b>	open at 100 % $I_u/I_{th}$ enclosed at 100 % $I_{the}$		50 °C during 24 hours with peaks up to 55 °C 35 °C during 24 hours with peaks up to 40 °C												

<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.

## Technical Data

## Auxiliary Contacts for KH, KHR Switches

<b>Selection Data</b>	Auxiliary contacts for: KH16-KHR80
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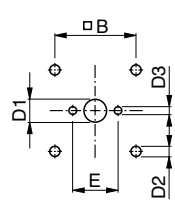
<b>Rated Insulation Voltage <math>U_i</math></b>	IEC/EN/VDE	V	440			
	UL/Canada	V	300			
<b>Rated Thermal Current <math>I_{\theta}/I_{th}</math></b>	IEC/EN/VDE	A	10			
	UL/Canada	A	10			
<b>Rated Operational Current <math>I_e</math></b>	AC-21A	Switching of resistive loads, including moderate overloads	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	(gL-characteristic)		A	10	
<b>Max. Permissible Wire Gage - Use copper wire only</b>						
	Single-core or stranded wire		mm <sup>2</sup>		1,5	
			AWG		14	
	Flexible wire sleeving in accordance with DIN46228		mm <sup>2</sup>		1,5	
			AWG		16	

**Mounting**

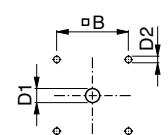
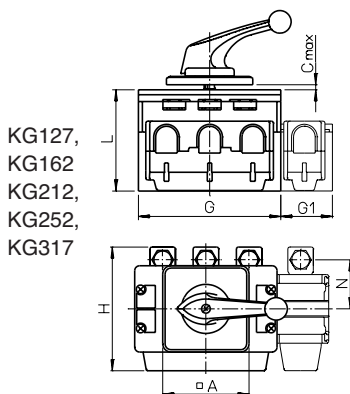
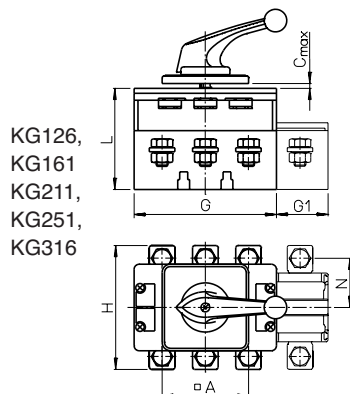
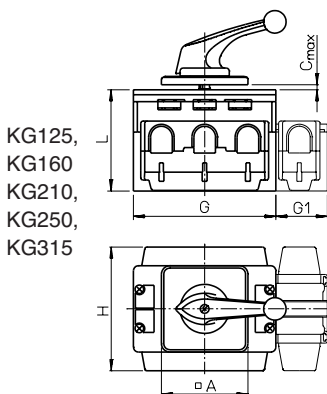
(Additional length for auxiliary contacts see page 40)

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

E		A	B	C	D1	D2	D3	E	F	G	G1 <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	64	48	4	10-15	5	-	-	88	70	22	80	70,6
		2.52	1.89	.16	.39-.59	.20	-	-	3.46	2.76	.87	3.15	2.78
KG80C, KG100C	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	
KG105	64	48	4	10-15	5	-	-	88	92	0	80	70,6	
	2.52	1.89	.16	.39-.59	.20	-	-	3.46	3.62	0	3.15	2.78	
KG105C	88	68	4	10-15	6	-	-	88	92	0	80	70,6	
	3.46	2.68	.16	.39-.59	.24	-	-	3.46	3.62	0	3.15	2.78	



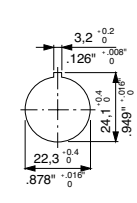
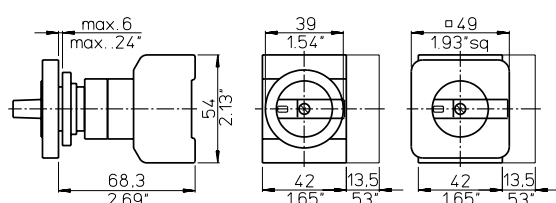
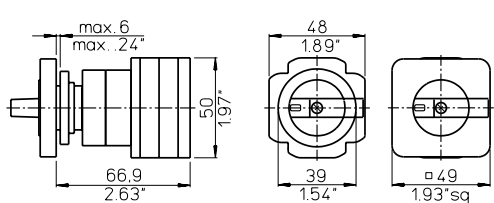
	A	B	C	D1	D2	G	G1 <sup>1</sup>	H	L	N
KG125, KG160	88	68	5,5	13-17	6	112	38	108	96	-
	3.46	2.68	.22	.51-.67	.24	4.41	1.50	4.25	3.78	-
KG210, KG250, KG315	88	68	5,5	13-17	6	145	52,5	126	103	-
	3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	-
KG126, KG161	88	68	5,5	13-17	6	112	38	110	96	45
	3.46	2.68	.22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



**FT1, FT2**

KG10A

KG20A, KG32A

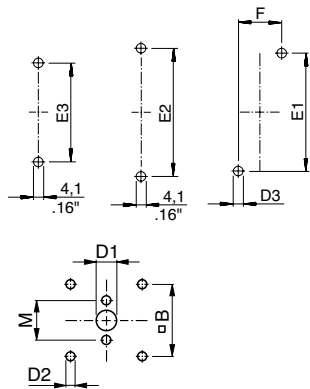
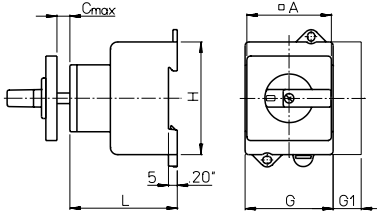


<sup>1</sup>For ON/OFF switches 4 pole.

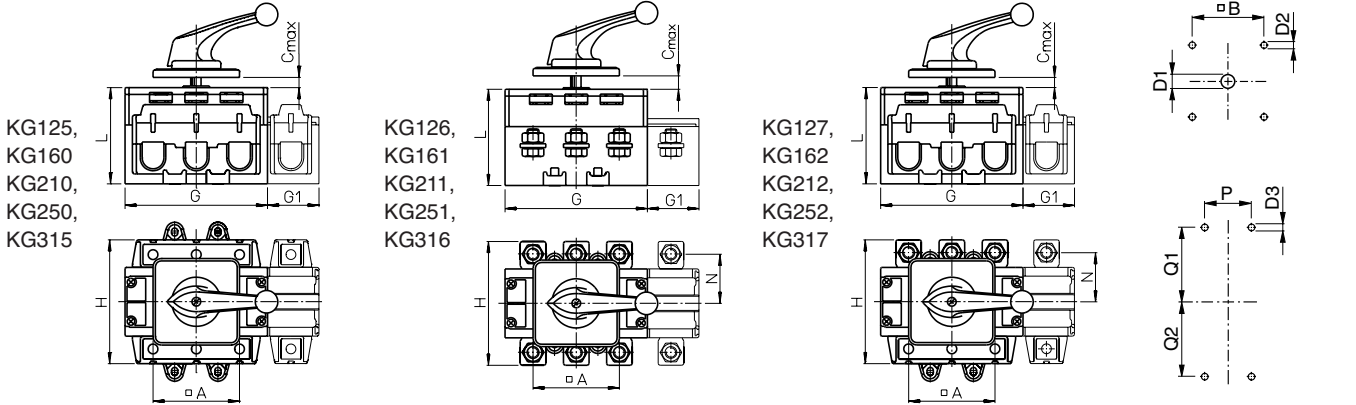
**Mounting**  
(Additional length for auxiliary contacts see page 40)

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

VE, VE1	A	B	C	D1	D2	D3	E1 <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	49,2	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	-	50	56,2	-
KG20, KG32	30	-	12	8-11	3,2	4,1	60	-	-	22	42	13,5	54	50	20
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	22	42	13,5	54	50	-
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	22	42	13,5	54	50	-
KG41, KG64	48	36	12	10-15	5	4,1	70	-	-	25	50	16	64	61	-
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	25	50	16	64	61	-
KG80, KG100	64	48	13,5	10-15	5	5,2	90	-	-	25	70	22	80	68	-
KG80C, KG100C	88	68	13,5	10-15	6	5,2	90	-	-	25	70	22	80	68	-
KG105	64	48	13,5	10-15	5	5,2	90	-	-	25	92	0	80	68	-
KG105C	88	68	13,5	10-15	6	5,2	90	-	-	25	92	0	80	68	-



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



VE2	A	B	G	G1 <sup>2</sup>	L	VE21
KG20A, KG32A	43,7	45,4	42	13,5	56,5	
KG41, KG64	52,4	45,4	50	16	56,5	
KG80, KG100	70	45	70	22	65	
KG105	70	45	92	0	65	
KG125-KG162	112	45	112	38	98	
	4,41	1,77	4,41	1,50	3,86	

<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.



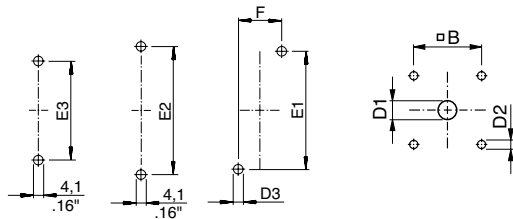
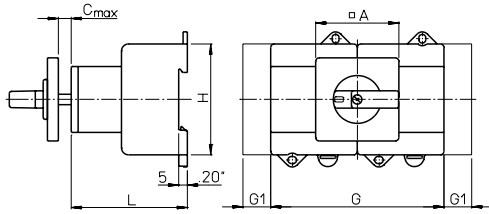


**Mounting**

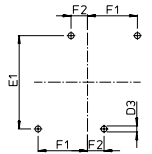
(Additional length for auxiliary contacts see page 40)

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

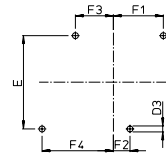
**VE, VE1**



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



double-throw switches 4 pole

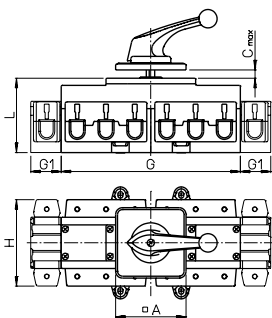


	A	B	C	D1	D2	D3	E1 <sup>1</sup>	E2 <sup>1</sup>	E3 <sup>1</sup>	F	F1
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	-
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	-	32
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	-	32
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	-	37,5
KG80, KG100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

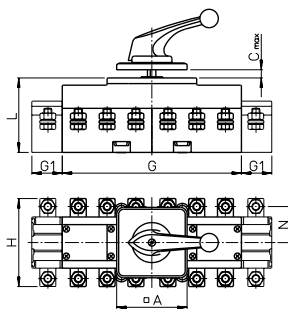
	F2	F3	F4	G	G1 <sup>2</sup>	H	L
KG10A	-	-	-	48	-	50	58,7
KG10B	-	-	-	48	-	50	65,7
KG20A, KG32A	10	23,5	45,5	84	13,5	54	57,5
KG20B, KG32B	10	23,5	45,5	84	13,5	54	57,5
KG41B, KG64B	12,5	28,5	53,5	100	16	64	67
KG80, KG100	22,5	44,5	69,5	140	22	80	79,2
KG80C, KG100C	22,5	44,5	69,5	140	22	80	79,2
KG105, KG105C	22,5	44,5	69,5	162	0	80	79,2
	.89	1,75	2,74	6,38	0	3,15	3,12

	A	B	C	D1	D2	D3	G	G1 <sup>2</sup>	H	L <sup>3</sup>	N	P	Q1	Q2
KG125, KG160	88	68	16	13-17	6	6,4	224	38	108	93	-	76	59-61	59-61
	3,46	2,68	.63	.51-.67	.24	.25	8,82	1,50	4,25	3,66	-	2,99	2,32-2,40	2,32-2,40
KG126, KG161	88	68	16	13-17	6	6,4	224	38	110	93	45	76	38-40	38-40
	3,46	2,68	.63	.51-.67	.24	.25	8,82	1,50	4,33	3,66	1,77	2,99	1,50-1,57	1,50-1,57
KG127, KG162	88	68	16	13-17	6	6,4	224	38	109	93	45	76	38-40	59-61
	3,46	2,68	.63	.51-.67	.24	.25	8,82	1,50	4,29	3,66	1,77	2,99	1,50-1,57	2,32-2,40

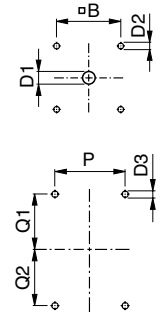
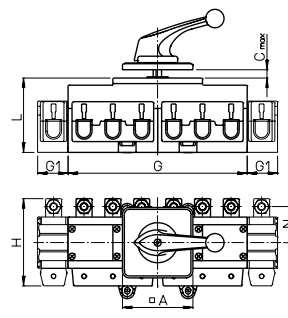
**KG125, KG160**



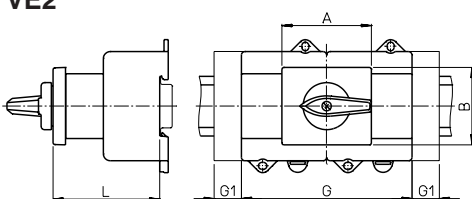
**KG126, KG161**



**KG127, KG162**

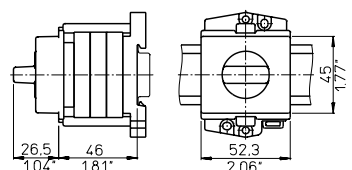


**VE2**



	A	B	G	G1 <sup>2</sup>	L
KG20A, KG32A	43,7	45,4	84	13,5	64
	1,72	1,79	3,31	.53	2,52
KG41B, KG64B	52,4	45,4	100	16	62,5
	2,06	1,79	3,94	.63	2,46
KG80, KG100	70	45	140	22	76,2
	2,76	1,77	5,51	.87	3,00
KG105	70	45	162	0	76,2
	2,76	1,77	6,38	0	3,00

**VE21**

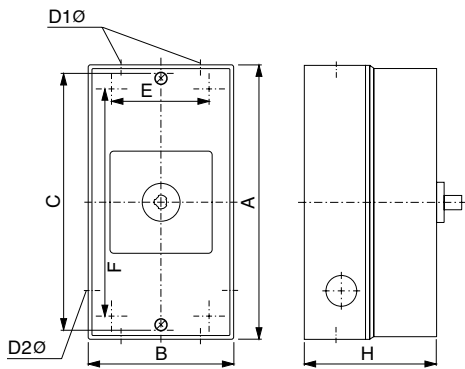


<sup>1</sup>Switches KG10A and KG10B allow use of E1, E2 or E3. <sup>2</sup>For double-throw switches 4 pole. <sup>3</sup>Additional length for mounting VE1 = 7,5 mm/.30 inch.

Plastic Enclosures and Optional Extras

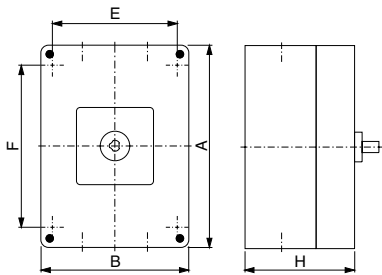
Switches in Plastic Enclosure

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



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

PFA-PFF5



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

Cam/rack-operated Auxiliary Contacts

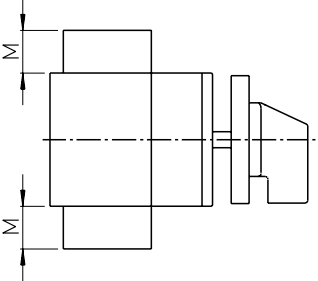
E	VE	Mount- ing	A	M		
KG20-KG105C	KG20-KG105C			allows use of 1 or 2 contacts	allows use of 3 or 4 contacts	
		KG20, KG32	E/VE	-	9	25,8
					.35	1.02
		KG41, KG64	E/VE	-	10	30
					.39	1.18
		KG80, KG100	E	-	10	30
		KG105			.39	1.18
			VE	47,2	10	30
				1.86	.39	1.18
			<b>Mounting</b>	<b>M</b>		
		KG125-KG317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

Lateral mounted Auxiliary Contacts

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

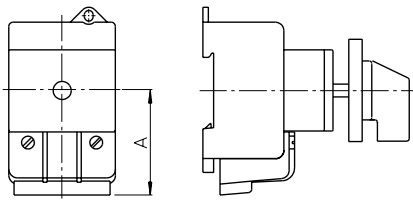
**Optional Extras**

**Ground and Neutral Terminal, Additional Main Contact**



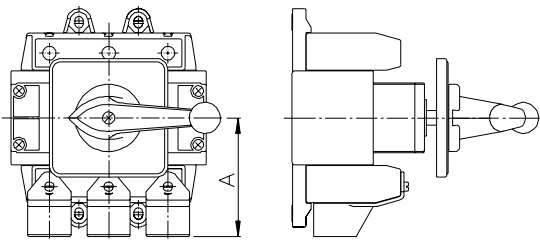
	<u>M</u>
KG20, KG20A, KG20B, KG32, KG32A, KG32B	13,5
	.53
KG41, KG41B, KG64, KG64B	16
	.63
KG80, KG80C, KG100, KG100C, KG105, KG105C	22
	.87
KG125, KG126, KG127, KG160, KG161, KG162	38
	1.50
KG210, KG211, KG212, KG250, KG251, KG252, KG315, KG316, KG317	52,5
	2.07

**Protective Cover**



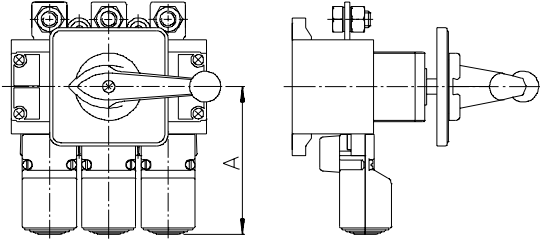
		<u>A</u>
KG10A, KG10B		30
		1.18
KG20, KG20A, KG20B, KG32, KG32A, KG32B		47
		1.85
KG41, KG41B, KG64, KG64B		49
		1.93
KG80, KG80C, KG100, KG100C, KG105, KG105C		66
		2.60

With box terminal



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

With bolt terminal

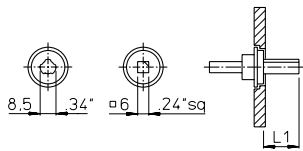


Optional Extras

Shaft Extension

**L100, L100A**

L1 = Free shaft length

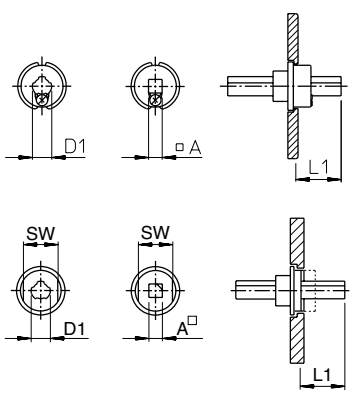


	Mounting	L1								
		L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	19	23	27	32	37	42	47	52	57
	VE	.75	.91	1.06	1.26	1.46	1.65	1.85	2.05	2.24
KG20B, KG32B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5
	VE	.45	.65	.81	.96	1.16	1.36	1.56	1.75	1.95
KG41B, KG64B	E	13,5	17,5	21,5	26,5	31,5	36,5	41,5	46,5	51,5
	VE	.53	.69	.85	1.04	1.24	1.44	1.63	1.83	2.03
KG80, KG80C	E	13,5	17,5	21,5	26,5	31,5	36,5	41,5	46,5	51,5
	VE	.53	.69	.85	1.04	1.24	1.44	1.63	1.83	2.03
KG100, KG100C	E	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	54,5
	VE	.65	.81	.96	1.16	1.36	1.56	1.75	1.95	2.15

	Mounting	L1								
		L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	62	67	72	77	82	87	92	97	102
	VE	2.44	2.64	2.83	3.03	3.23	3.43	3.62	3.82	4.02
KG20B, KG32B	E	61	66	71	76	81	86	91	96	101
	VE	2.40	2.60	2.80	2.99	3.19	3.39	3.58	3.78	3.98
KG41B, KG64B	E	54,5	59,5	64,5	69,5	74,5	79,5	84,5	89,5	94,5
	VE	2.15	2.34	2.54	2.74	2.93	3.13	3.33	3.52	3.72
KG80, KG80C	E	61	66	71	77	81	86	91	96	101
	VE	2.40	2.60	2.80	3.03	3.19	3.39	3.58	3.78	3.98
KG100, KG100C	E	56,5	61,5	66,5	71,5	76,5	81,5	86,5	91,5	96,5
	VE	2.22	2.42	2.62	2.81	3.01	3.21	3.41	3.60	3.80
KG105, KG105C	E	58,8	63,8	68,8	73,8	78,8	83,8	88,8	93,8	98,8
	VE	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
	VE	2.22	2.42	2.62	2.81	3.01	3.21	3.41	3.60	3.80
KG100, KG100C	E	59,5	64,5	69,5	74,5	79,5	84,5	89,5	94,5	99,5
	VE	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

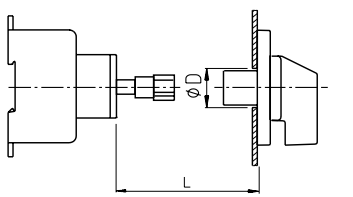


	Mounting	L1					D1	A	SW
		L1 <sup>1</sup>	L1	L1	L1	L1			
KG10A	E, VE	-	21-41	41-61	61-81	81-101	6	-	12
		-	.83-1.61	1.61-2.40	2.40-3.19	3.19-3.98	.24	-	.47
KG20A, KG32A	E	-	34,5-38	54,5-58	74,5-78	94,5-98	6	-	12
	VE	-	1.36-1.50	2.15-2.28	2.93-3.07	3.72-3.86	.24	-	.47
KG41B, KG64B	E	-	41,5-45	61,5-65	81,5-85	101,5-105	6	-	12
	VE	-	1.63-1.77	2.42-2.56	3.21-3.35	4.00-4.13	.24	-	.47
KG80, KG80C	E	29,5-35,5	43-49	63-69	83-89	103-109	8,5	6	16
	VE	1.16-1.40	1.69-1.93	2.48-2.72	3.27-3.50	4.06-4.29	.33	.24	.63
KG100, KG100C	E	32,5-38,5	46-52	66-72	86-92	106-112	8,5	6	16
	VE	1.28-1.52	1.81-2.05	2.60-2.83	3.39-3.62	4.17-4.41	.33	.24	.63
KG105, KG105C	E	25,5-31,5	39-45	59-65	79-85	99-105	8,5	6	16
	VE	1.00-1.24	1.54-1.77	2.32-2.56	3.11-3.35	3.90-4.13	.33	.24	.63
KG125, KG126	E	30,5-36,5	44-50	64-70	84-90	104-110	8,5	6	16
	VE	1.20-1.44	1.73-1.97	2.52-2.76	3.31-3.54	4.09-4.33	.33	.24	.63
KG127, KG160	E	39-53	69-83	99-113	129-143	159-173	11,2	8	22
	VE	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	E	44-58	74-88	104-118	134-148	164-178	11,2	8	22
	VE	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
	VE	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	43-57	73-87	103-117	133-147	163-177	11,2	8	22
	VE	1.69-2.24	2.87-3.43	4.06-4.61	5.24-5.78	6.42-6.97	.44	.32	.87
KG251, KG252	E	43-57	73-87	103-117	133-147	163-177	11,2	8	22
	VE	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	E	43-57	73-87	103-117	133-147	163-177	11,2	8	22
	VE	1.69-2.24	2.87-3.43	4.06-4.61	5.24-5.78	6.42-6.97	.44	.32	.87
KG317									

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

Optional Extras

Simplified Door Clutches



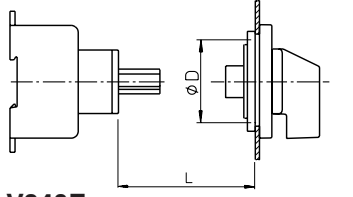
**M290/A3, M290/A3.EF** L = Standard length for switches of mounting VE

	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

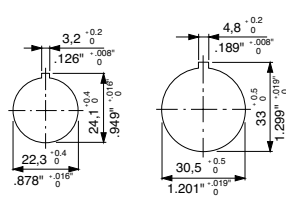
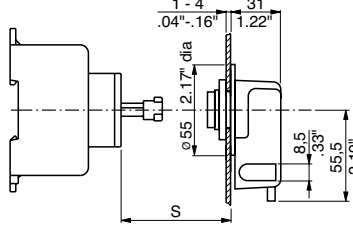
<sup>11</sup>For KG10A with M290/A3.EF: 22/87

**M290/A1.EF** L = Standard length for switches of mounting VE

	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

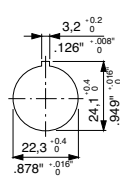
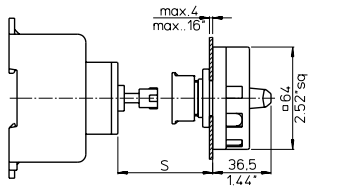


**V840E**



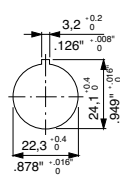
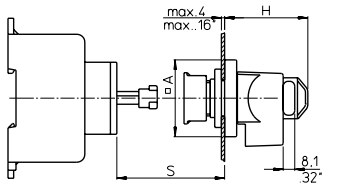
	S	
	min.	max.
KG10B	23	106
	.91	4.17
KG20B, KG32B	24,5	110
	.96	4.33
KG41B, KG64B	20	108
	.79	4.25
KG80, KG100	23	109
KG105	.91	4.29
KG125-KG317	21	110
	.83	4.33

**V840F/V840G**



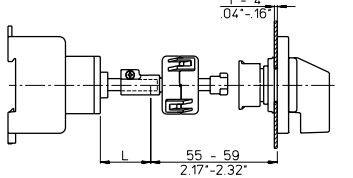
	S	
	min.	max.
KG10B	30	115
	1.02	4.49
KG20B, KG32B	27,5	113
	1.08	4.45
KG41B, KG64B	39,5	124
	1.56	4.88
KG80, KG100	27,5	122
KG105	1.08	4.80

**V845**



	A		H		S	
	min.	max.	min.	max.	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		

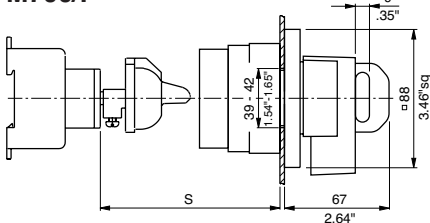
**M600**



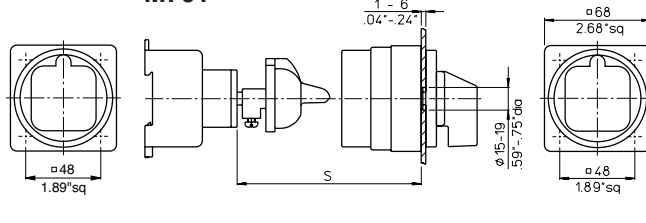
L see L100, M004D, M004, page 42.

Door Clutches

**M700/.**



**M701**

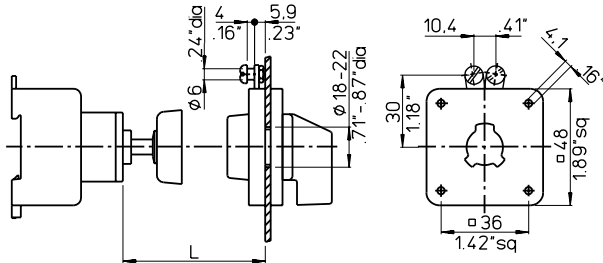


	S
KG10B	80
	3.15
KG20B, KG32B	61,5
	2.42
KG41B, KG64B	61,5
	2.42
KG80, KG100	61,5
KG105	2.42
KG125-KG317	61,5
	2.42

Optional Extras

Door Clutches

KG10A, KG20A, KG32A

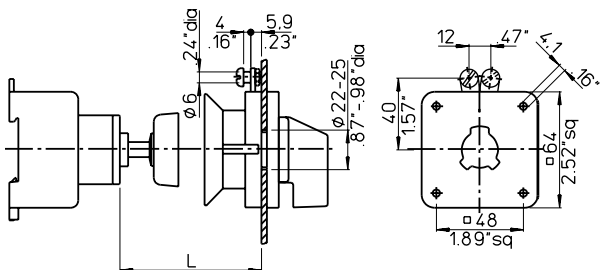


M280D, M280D/.EF, M280E, M280E/.EF

L = Standard length for switches of mounting VE

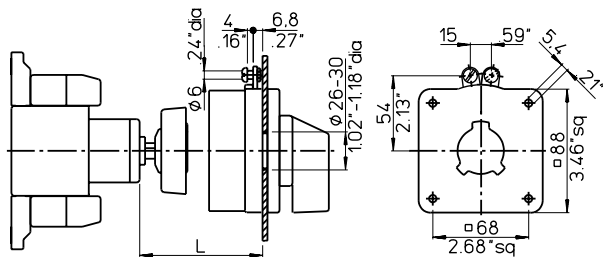
	L	L	L	L
KG10A	36-55 1.42-2.17	56-75 2.20-2.95	75-95 2.99-3.74	96-116 3.78-4.57
KG20A, KG32A	58,5-66 2.30-2.60	78,5-86 3.09-3.50	98,5-106 3.88-4.17	118,5-126 4.67-4.96

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



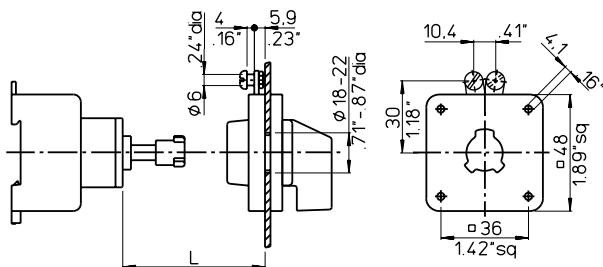
	L	L	L	L
KG10B	32-57 1.26-2.24	58-77 2.28-3.03	78-97 3.07-3.82	98-118 3.86-4.65
KG20B, KG32B	57,5-65 2.26-2.56	77,5-85 3.05-3.35	97,5-105 3.84-4.13	117,5-125 4.63-4.92
KG41B, KG64B	62-72 2.44-2.83	82-92 3.23-3.62	102-112 4.02-4.41	122-132 4.80-5.20
KG80, KG100 KG105	60-70 2.36-2.76	80-90 3.15-3.54	100-110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

KG125-KG317



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

KG41, KG64



M280B/., M280B/.EF

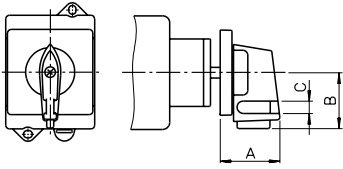
L = Standard length for switches of mounting VE

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

**Optional Extras**

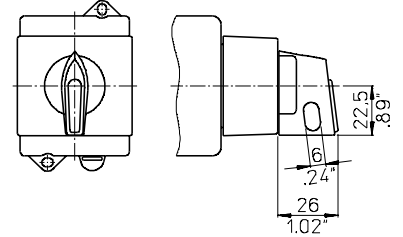
**Padlock Devices, Additional Module for Motor Control Center (MCC)**

**V840A**

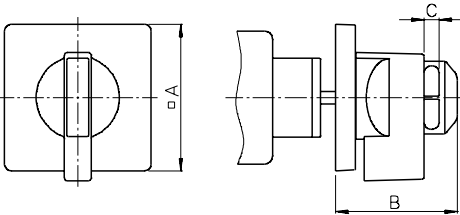


KG10A, KG20A, KG32A, KG41	32,9	31,5	5
KG64	1.30	1.24	.20
KG10B, KG20B, KG32B, KG41B	41,6	40	7
KG64B, KG80, KG100, KG105	1.64	1.57	.28

**V840B**



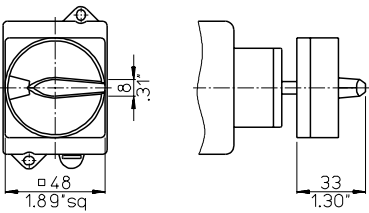
**V845**



	A	B	C
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

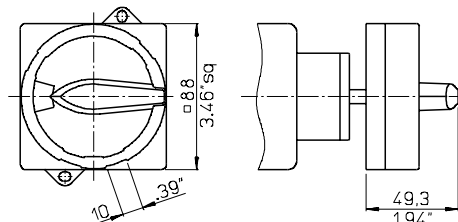
**V840D**

KG10A, KG20A, KG32A, KG41, KG64



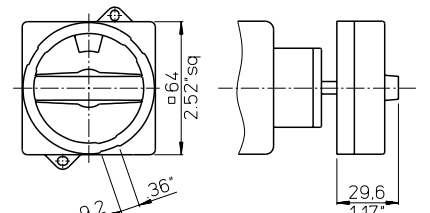
**V840D**

KG80C, KG100C, KG105C, KG125-KG162



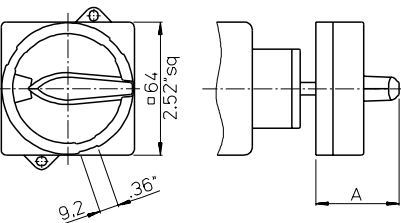
**V840G/B, V840F/B**

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



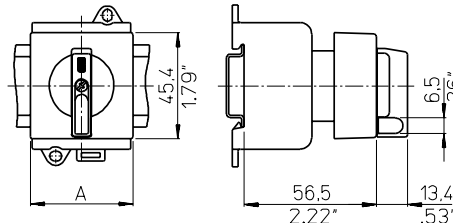
**V840G, V840F/F**

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



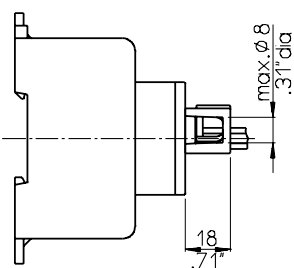
	A
V840G	40,1
	1.58
V840F/F	36,5
	1.43

**V840H/.E**

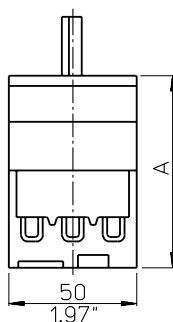


	A
KG20A, KG32A	43,7
	1.72
KG41, KG64	52,4
	2.06

**V840VE**

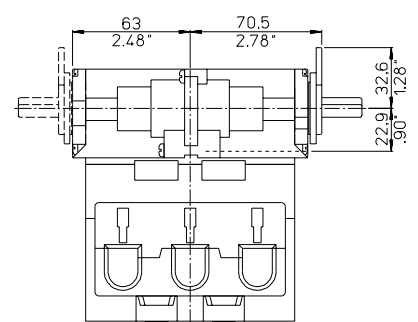


**V500**



	A
KG20/32B	69,5
	2.74
KG41/64B	75
	2.95

**M330**



**Mounting**

(Additional length for auxiliary contacts see page 48)

**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	64	48	4	10-15	5/3,5	37	14	86	90	62
	2.52	1.89	.16	.39-.59	.20/.14	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	49	60	56	63,5
	1.93	2.36	2.20	2.50
KH32, KHR32, KH40, KHR40	64	70	62	68,7
	2.52	2.76	2.44	2.70
KH63, KHR63,	64	86	90	77,1
KH80, KHR80	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**

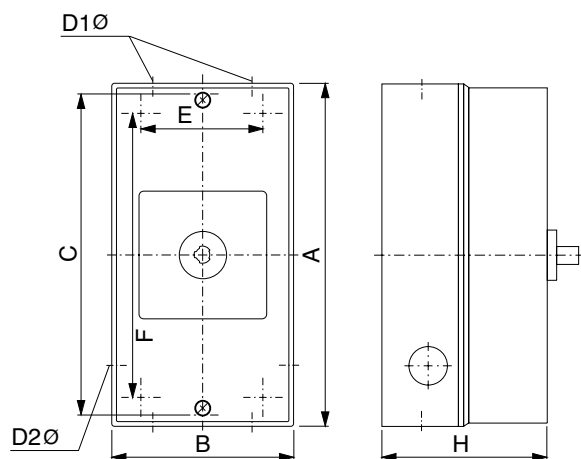
	A	B	G	L
KH16-KHR25	43,7	45,4	60	53,5
	1.72	1.79	2.36	2.11
KH32, KHR32	70,4	45,4	70	54,7
	2.77	1.79	2.76	2.15
KH63, KHR63	70,4	45,4	86	61,7
	2.77	1.79	3.39	2.43



## Plastic Enclosures and Optional Extras

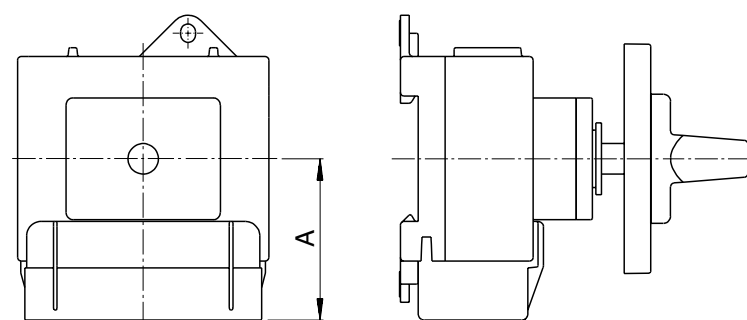
### Switches in Plastic Enclosure

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



	A	B	C	D1	D2	E	F	H
KH16, KHR16	120	85	110	2x20	20	-	-	80
	4.72	3.35	4.33	2x.79	.79	-	-	3.15
KH20, KHR20	120	85	110	2x25	20	-	-	80
	4.72	3.35	4.33	2x.98	.79	-	-	3.15
KH25, KHR25	160	85	150	2x25	20	-	-	80
	6.30	3.35	5.91	2x.98	.79	-	-	3.15
KH32, KHR32	190	100	178	2x25	25	-	-	91
	7.48	3.94	7.01	2x.98	.98	-	-	3.58
KH40, KHR40	190	100	178	2x25	25	-	-	91
	7.48	3.94	7.01	2x.98	.98	-	-	3.58
KH63, KHR63	250	145	-	2x40	25	124	229	107
	9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21
KH80, KHR80	250	145	-	2x40	25	124	229	107
	9.84	5.71	-	2x1.57	.98	4.88	9.02	4.21

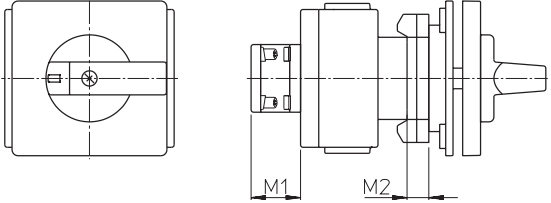
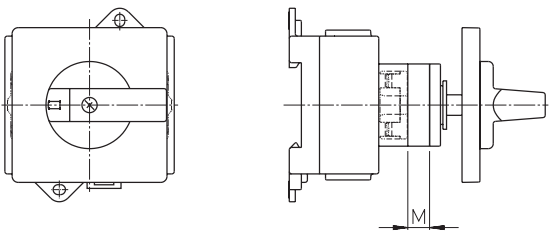
### Protective Cover



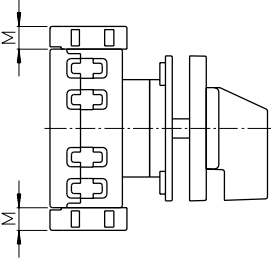
	A
KH32-KHR40	45
	1.77
KH63-KHR80	68,5
	2.70

**Optional Extras**

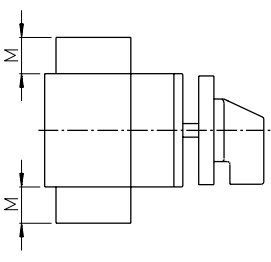
**Cam/rack-operated Auxiliary Contacts**

		<b>M</b>	<b>M1</b>	<b>M2</b>	
<b>E</b> 	KH16-KHR25B	1 or 2 contacts	9	-	9
		3 or 4 contacts	.35 25,8 1.02	-	.35 25,8 1.02
	KH32, KHR32, KH40, KHR40	1 or 2 contacts	0	20,5	-
		3 or 4 contacts	0	.81 32,5 1.28	-
<b>VE</b> 	KH63, KHR63, KH80, KHR80	1 or 2 contacts	0	18,5	-
		3 or 4 contacts	0	.73 30,5 1.20	-

**Lateral mounted Auxiliary Contacts**

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

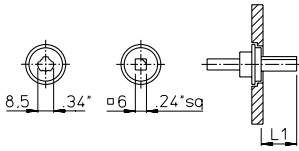
**Ground Terminal**

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

Optional Extras

Shaft Extension

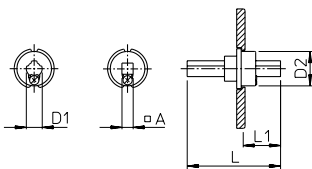
L100, L100A



L1 = Free shaft length

		Mounting	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
	VE		.45	.65	.81	.96	1.16	1.36	1.56	1.75	1.95
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E		14,3	18,3	22,3	27,3	32,3	37,3	42,3	47,3	52,3
	VE		.56	.72	.88	1.07	1.27	1.47	1.67	1.86	2.06
			19,8	23,8	27,8	32,8	37,8	42,8	47,8	52,8	57,8
			.78	.94	1.09	1.29	1.49	1.69	1.88	2.09	2.28
			L1	L1	L1	L1	L1	L1	L1	L1	L1
KH16B-KHR25B	E		54,5	59,5	64,5	69,5	74,5	79,5	84,5	89,5	94,5
	VE		2.15	2.34	2.54	2.74	2.93	3.13	3.33	3.52	3.72
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E		57,3	62,3	67,3	72,3	77,3	82,3	87,3	92,3	97,3
	VE		2.26	2.45	2.65	2.85	3.04	3.24	3.44	3.63	3.83
			62,8	67,8	72,8	77,8	82,8	87,8	92,8	97,8	102,8
			2.47	2.67	2.87	3.06	3.26	3.46	3.65	3.85	4.05

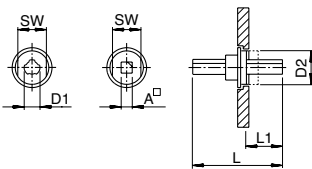
M004D, M004E



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

		Mounting	L¹	L1¹	L	L1	L	L1	L	L1	L	L1
KH16-KHR25	E		-	-	60	11-38	80	31-58	100	51-78	120	71-98
	VE		-	-	2.36	.43-1.50	3.15	1.22-2.28	3.94	2.01-3.07	4.72	2.80-3.86
					60	18-45	80	38-65	100	58-85	120	78-105
					2.36	.71-1.77	3.15	1.50-2.56	3.94	2.28-3.35	4.72	3.07-4.13

M004, M004A



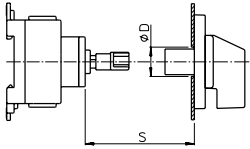
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E		56,5	3-36	70	17-49	90	37-69	110	57-89	130	77-109
	VE		2.22	.12-1.42	2.76	.67-1.93	3.54	1.46-2.72	4.33	2.24-3.50	5.12	3.03-4.29
			56,5	8-41	70	22-55	90	42-75	110	62-95	130	82-115
			2.22	.31-1.61	2.76	.87-2.17	3.54	1.65-2.95	4.33	2.44-3.74	5.12	3.23-4.53

		Mounting	D1	D2	A	SW
KH16-KHR25	E		6	13.8	-	12
	VE		.24	.54	-	.47
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E		8,5	18,5	6	16
	VE		.34	.73	.24	.63
			8,5	18,5	6	16
			.34	.73	.24	.63

Optional Extras

Simplified Door Clutches

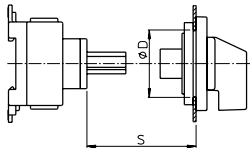
M290/A3, M290/A3.EF



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

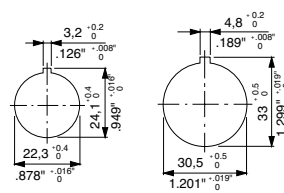
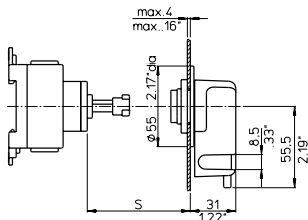
M290/A1.EF



S = Standard length for switches of mounting VE

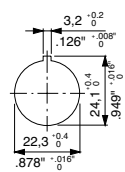
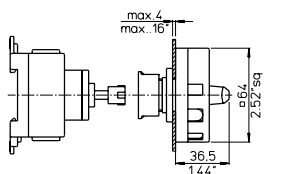
	S	S	S	S	S	S	D
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	25-30 .98-1.18	27-37 1.06-1.46	34-44 1.34-1.73	42-52 1.65-2.05	49-59 1.93-2.32	57-67 2.24-2.64	45,6 1.80

V840E



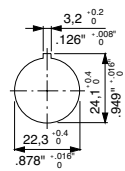
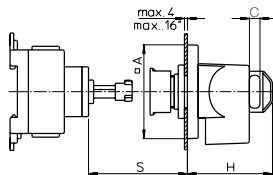
	S <sub>min.</sub>	S <sub>max.</sub>
KH16B-KHR25B	24,5 .96	110 4.33
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	20 .79	120 4.72

V840F/V840G



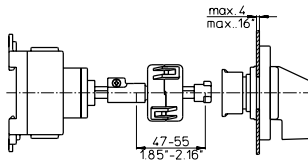
	S <sub>min.</sub>	S <sub>max.</sub>
KH16B-KHR25B	27,5 1.08	113 4.45
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	28 1.10	124 4.88

V845



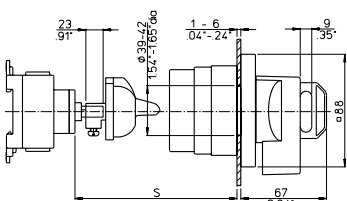
	A	C	H	S <sub>min.</sub>	S <sub>max.</sub>
KH16-KHR25	48 1.89	7,2 .28	52 2.05	29,5 1.16	119 4.69
KH16B-KHR25B	64 2.52	8,1 .32	58 2.28	27,5 1.08	113 4.45
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	64 2.52	8,1 .32	58 2.28	28 1.10	124 4.88

M600

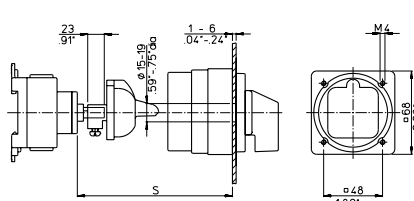


Door Clutches

M700/.



M701

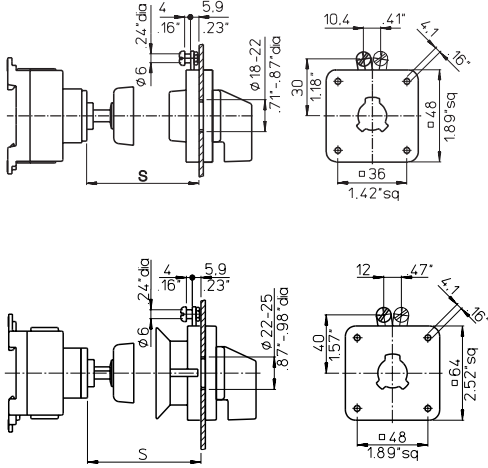


	S <sub>min.</sub>	
	L100	M004D, M004
KH16B-KHR25B	61,5 2.42	-
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	61,5 2.42	68 2.68

**Optional Extras**

**Door Clutches**

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



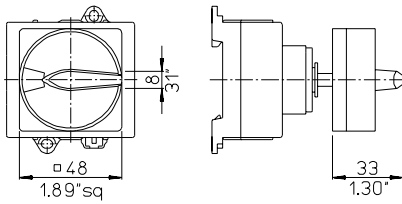
S = Standard length for switches of mounting VE

	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

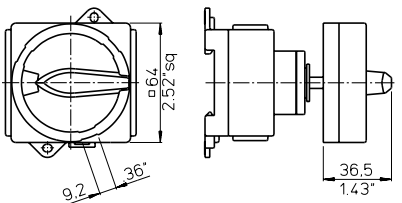
	S	S	S	S
KH16B-KHR25B	37-64 1.46-2.52	64-84 2.52-3.31	84-104 3.31-4.09	104-124 4.09-4.88
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	32-57 1.26-2.24	57-77 2.24-3.03	77-97 3.03-3.82	97-117 3.82-4.61

**Padlock Devices**

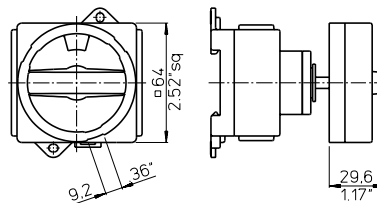
**V840D**



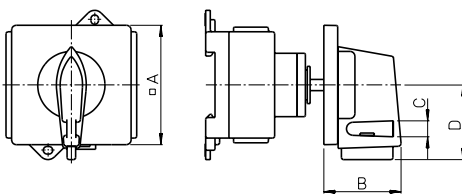
**V840G, V840F/F**



**V840G/B, V840F/B**

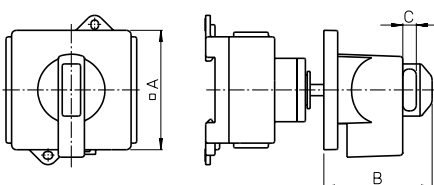


**V840A**



	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, KH40, KHR40, KH63, KHR63, KH80, KHR80	64 2.52	41,6 1.64	7 .28	40 1.57

**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, KH40, KHR40, KH63, KHR63, KH80, KHR80	64 2.52	58 2.28	7,2 .28

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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-1250 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. CG switch terminals are “finger-proof”, according to VDE 0106. Terminals are 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>Contactors 16 A-115 A and Motor Starters 1,1 kW-55 kW</b> These include control relays, motor contactors, two and four pole output contactors, heating contactors, thermal overload relays.	<b>200</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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