

Catalog 150

KG Switches 20 A-315 A

KH and KHR Switches 16 A-80 A



KRAUS & NAIMER

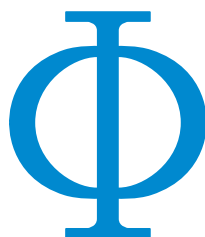
The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues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

BLUE LINE

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

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

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

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

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Construction Data

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

KG Switches

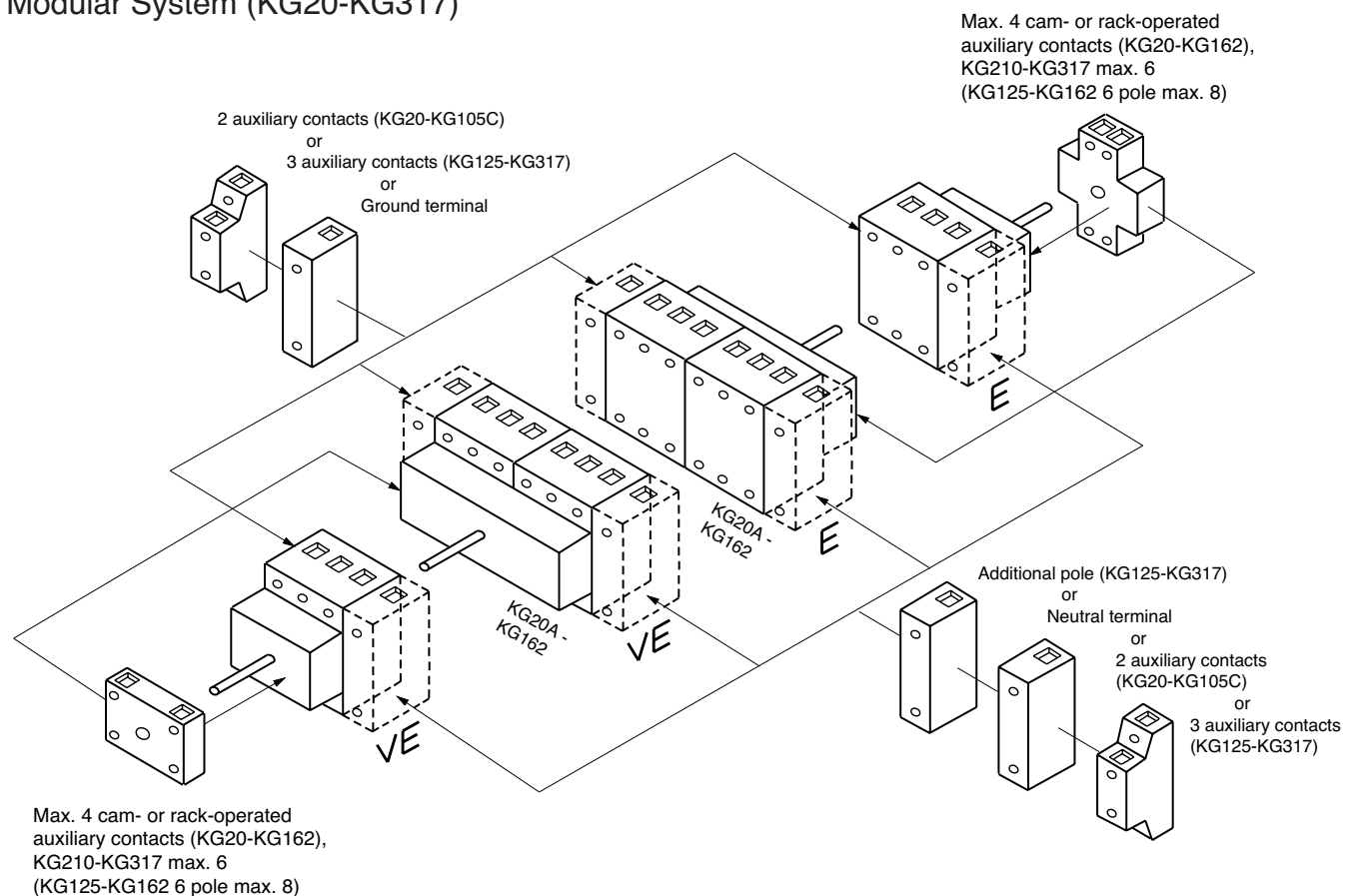
The KG10A through KG317 switch line offers excellent performance characteristics and exceed the requirements of IEC 60947-3 as well as the new VDE 0660 part 107. KG switches are principally used as motor and industrial panel disconnectors, double-throw transfer switches, safety switches, main disconnect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

The safety level of the KG switch series in numerous areas surpasses those of many international standards organizations: Positive contact movement during making and breaking operations. Higher dimensioned air and creepage distances for 690 V or 1000 V. Dead front, finger-proof box terminals according to 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						
				Thermal Current I_u/I_{th} A	Utilization Category AC-23A kW	AC-3 3 x 380 V-440 V	Ampere- Rating 3 x 600 V A	Standard Motor Load DOL-Rating 3 x 240 V 3 x 480 V HP HP		
48 x 48			 KG10A	KG10A	20	5,5	3,7	20	2	3
64 x 64				KG10B	20	5,5	3,7	20	2	3
30 x 30			 KG20 KG32	KG20	25	7,5	5,5	25	3	5
48 x 48				KG20A	25	7,5	5,5	25	3	5
64 x 64				KG20B	25	7,5	5,5	25	3	5
			 KG20A KG32A	KG32	32	11	7,5	30	5	10
				KG32A	32	11	7,5	30	5	10
				KG32B	32	11	7,5	30	5	10
48 x 48			 KG41 KG64	KG41	40	15	11	40	7,5	15
64 x 64				KG41B	40	15	11	40	7,5	15
			 KG41B KG64B	KG64	63	22	18,5	60	10	20
				KG64B	63	22	18,5	60	10	20
64 x 64			 KG80 KG100 KG105	KG80	80	30	22	80 ¹	20	40
88 x 88				KG80C	80	30	22	80 ¹	20	40
			 KG80C KG100C KG105C	KG100	100	37	30	100 ¹	25	50
				KG100C	100	37	30	100 ¹	25	50
			 KG125, KG160 KG210, KG250, KG315 (with box terminals)	KG105	125	45	37	in preparation		
				KG105C	125	45	37			
88 x 88			 KG125, KG160 KG210, KG250, KG315 (with box terminals)	KG125	125	45	37	150 ¹	30	60
				KG126	125	45	37	150 ¹	30	60
				KG127	125	45	37	150 ¹	30	60
			 KG126, KG161 KG211, KG251, KG316 (with bolt terminals)	KG160	160	55	45	200 ¹	40	60
				KG161	160	55	45	200 ¹	40	60
				KG162	160	55	45	200 ¹	40	60
			 KG127, KG162 KG212, KG252, KG317 (bolt terminals on top, box terminals at the bottom)	KG210	200	75	55	200 ¹	50	75
				KG211	200	75	55	200 ¹	50	75
				KG212	200	75	55	200 ¹	50	75
88 x 88			 KG127, KG162 KG212, KG252, KG317 (bolt terminals on top, box terminals at the bottom)	KG250	250	90	55	250 ¹	60	75
				KG251	250	90	55	250 ¹	60	75
				KG252	250	90	55	250 ¹	60	75
			 KG127, KG162 KG212, KG252, KG317 (bolt terminals on top, box terminals at the bottom)	KG315	315	110	75	300 ¹	75	100
				KG316	315	110	75	300 ¹	75	100
				KG317	315	110	75	300 ¹	75	100

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

How to order

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

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

1. Type of Switch

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

2. Switch Function

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

3. Type of Mounting

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

KG100

**K302-600
M004**

VE

4. Optional Extras

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

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

Modification of Switches

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

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

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

¹Not available for switch types KG20 and KG32.

How to order

Modification of Switches

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

The standard switch consists of a 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

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

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

Handles, Escutcheon Plates and Optional Extras

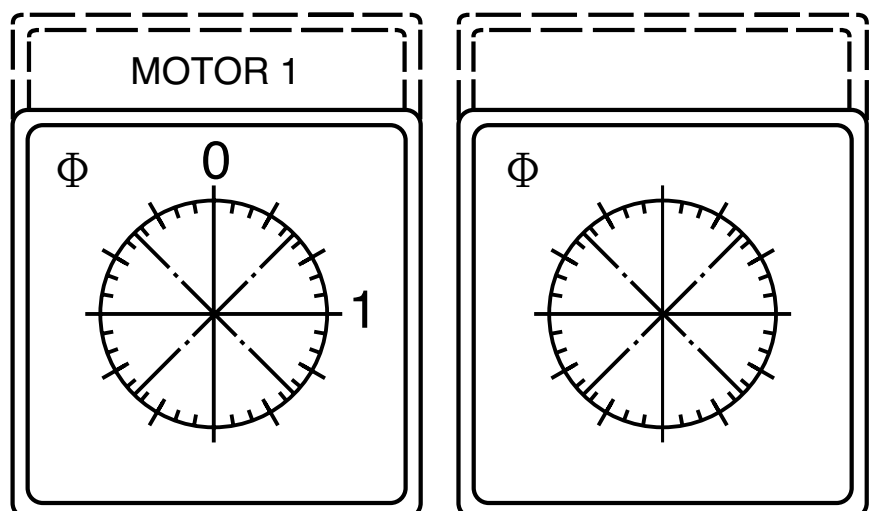
Various standards for the KG switches are listed in the table on pages 6-8 and for the KH/KHR switches on page 24.

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

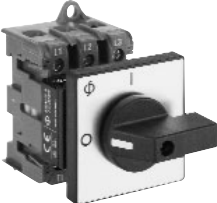
Ordering of Special Escutcheon Plates

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

Example: Customer's requirements are shown beside.



Order forms are available upon request.

Mounting	Type	Code
 Front mounting protection IP 65 Two hole panel mounting Four hole panel mounting	KG20 KG32 KG10A- KG317	E E
 Single hole mounting 22 mm Protection IP 65 Without escutcheon plate	KG10A KG20A KG32A	FT1
 With square escutcheon plate	KG10A KG20A KG32A	FT2
 Base mounting Screw/Snap-on base mounting for track EN 50022, protection IP 40 Snap-on base mounting for track EN 50022, protection IP 40	KG10A- KG317 KG125- KG162	VE VE1
 Screw/Snap-on base mounting for track EN 50022. Escutcheon plate for 45 mm knock-out.	KG20A KG32A KG41- KG64B KG80- KG105 KG125- KG162	VE2
 Snap-on base mounting for track EN 50022. Both the escutcheon plate for 45 mm standard knock-out and the handle are adjustable in height.	KG10A	VE21

Plastic Enclosure Protection IP 66/67	Type	Code
	The KL and CL enclosures are available in 3 sizes allowing for installation of 3, 4 and 6 pole KG switches. The KL-series is made of strong durable plastic and offers high UV-resistance. The CL-series is especially designed for applications in an aggressive environment, such as oil, chemical substances and grease. Each enclosure has 2 knock-outs on top and bottom for metric thread according to EN 50262. Included in each enclosure is a ground and neutral terminal. One of these terminals must be eliminated if a 3 pole switch with lateral mounted auxiliary contacts or a 4 pole switch is installed. All enclosures can be supplied with a cover coupling for additional safety. Increased wiring space and mounting holes with slots are featured in this new line. These enclosures are also available for conduit entries for PG-thread.	KG20 KG32 KG20B KG32B KG41 KG64 KG41B KG64B KG80 KG100 KG105
	Without cover interlock	KL.0 CL.0
	With cover interlock (The enclosure can only be opened at 9 o'clock position)	KL.1 CL.1
	With cover interlock (The enclosure can only be opened at 12 o'clock position)	KL.2 CL.2
	KS and CS enclosures have a compact size which allows for the installation of a 3, 4 or 6 pole KG10 ON/OFF switch or a 3 pole KG20 ON/OFF switch. The design, options and mounting are the same as those of the KL and CL enclosures.	KG10 KG20
	Without cover interlock	KS50 CS50
	With cover interlock (The enclosure can only be opened at 9 o'clock position)	KS51 CS51
	With cover interlock (The enclosure can only be opened at 12 o'clock position)	KS52 CS52

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

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

Function	KG10A	KG10B	KG20 KG32	KG20A KG32A	KG20B KG32B	KG41 KG64	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- KG317	Escutch. Plate	Code
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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		K300-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³ VE2 ³		K300-620
With cam/rack-operated auxiliary contact 1 NO	E	E	E	E	E		E	E	E	E		K301-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K301-620
With cam/rack-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		K302-600
	FT1 FT2 VE VE21 KS. ²	VE	VE	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K302-620
With cam/rack-operated auxiliary contacts 2 NO			E	E	E		E	E	E	E		K312-600
			VE KL. PF..	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE	VE VE1 ³		K312-620
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			K304-600
			VE KL. PF..	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ⁴	VE VE2 KL. PF.. ⁴	VE			K304-620
With GRD-terminal			E	E	E	E	E	E	E	E		K305-600
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 ³ VE2 ³		K305-620
With GRD- and N-terminal			E	E	E	E	E	E	E	E		K307-600
			VE	FT1 FT2 VE VE2	VE	VE VE2	VE VE2	VE VE2	VE	VE VE1 ³ VE2 ³		K307-620

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

Function	KG10A	KG10B	KG20 KG32	KG20A KG32A	KG20B KG32B	KG41 KG64	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- 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		K400-600
	FT1 FT2 VE VE21 KS. ¹	VE	VE KL.	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL. PF.. ³	VE VE2 KL. PF.. ³	VE VE2 KL. PF.. ³	VE VE1 ² VE2 ²		K400-620
With cam-operated auxiliary contact 1 NO			E	E	E		E	E	E	E		K401-600
			VE KL.	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL.	VE VE2 KL.	VE VE2 KL.	VE VE1 ²		K401-620
With cam-operated auxiliary contacts 1 NO and 1 NC	E	E	E	E	E		E	E	E	E		K402-600
	FT1 FT2 VE VE21 KS. ¹	VE	VE KL.	FT1 FT2 VE VE2 PF..	VE	VE VE2 KL. PF..	VE VE2 KL.	VE VE2 KL.	VE VE2 KL.	VE VE1 ²		K402-620
With lateral mounted auxiliary contacts 1 NO and 1 NC			E	E	E	E	E	E	E			K404-600
			VE	FT1 FT2 VE VE2 PF..	VE	VE VE2	VE VE2 PF.. ³	VE VE2 PF.. ³	VE			K404-620

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

Function	KG10A	KG10B	KG20A KG32A	KG20B KG32B	KG41B KG64B	KG80 KG100 KG105	KG80C KG100C KG105C	KG125- KG162	Escutch. Plate	Code
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ON/OFF Switches 6 pole

Types of Mounting

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

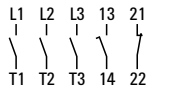
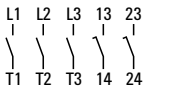
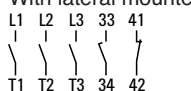
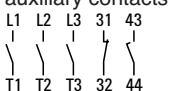
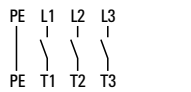
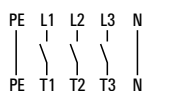
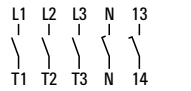
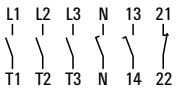
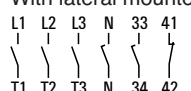
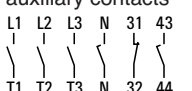
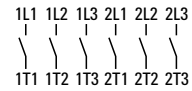
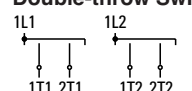
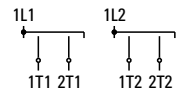
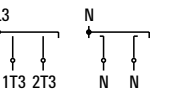
Double-throw Switches 3 pole

Without auxiliary contacts			E VE VE2	E VE VE2 KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1	 	K900-600 K900-620
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Double-throw Switches 4 pole

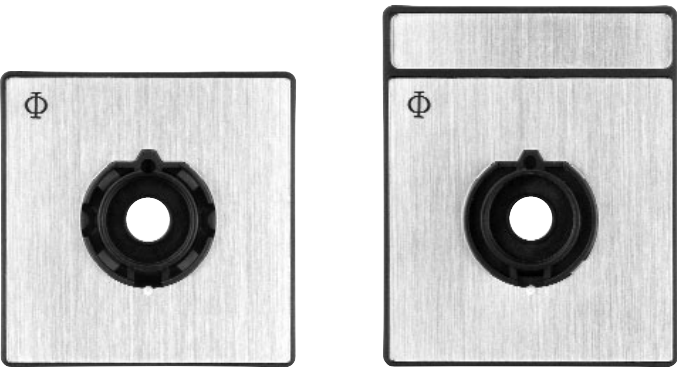
Without auxiliary contacts			E VE VE2	E VE VE2 KL. PF..	E VE VE2 KL. PF..	E VE VE2	E VE	E VE VE1	 	K950-600 K950-620
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Connection Diagrams

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  PE L1 L2 L3 PE T1 T2 T3 With GRD- and N-terminal  PE L1 L2 L3 N PE T1 T2 T3 N	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  
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¹When using KS. the switch type changes to KG10.

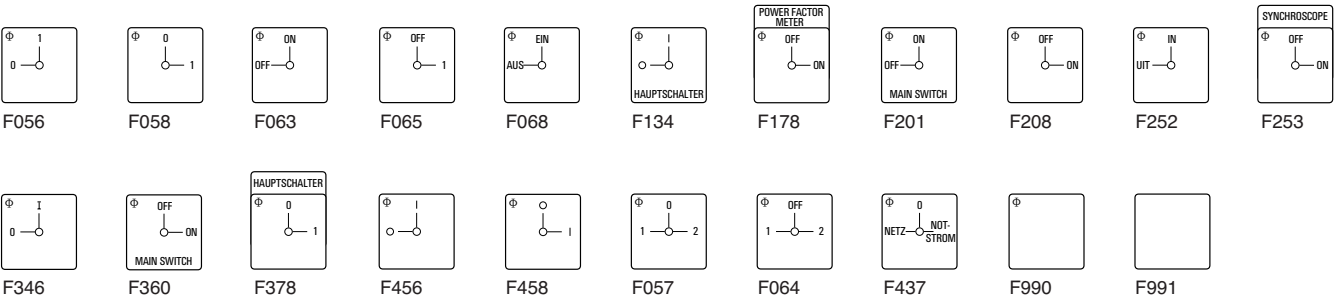
Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch position which is than embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface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



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

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

Standard Escutcheon Plates

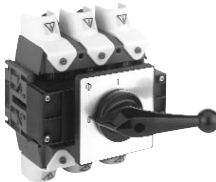


¹Not available for switch types KG20 and KG32.

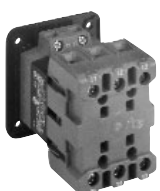
Handles

KG Switches

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

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

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

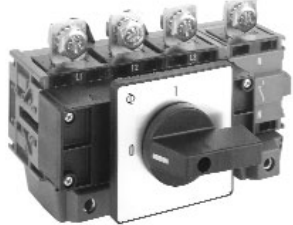
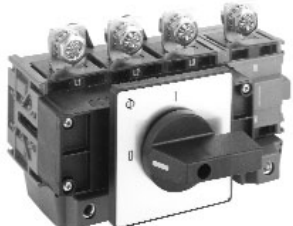
	Cam-operated auxiliary contacts Up to 4 cam-operated auxiliary contacts can be added to all switches.	KG20- KG105C	M510A
	Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities or a H-bridge design with "cross-wire" contacts for low voltages and currents (mounting E from KG41 and mounting VE from KG80). The contact systems with gold contacts or gold-plated contacts allow for use in aggressive environments also. Special programs are also available upon request.		
	Rack-operated auxiliary contacts Switch types KG125-KG162 can be supplied with up to 4 auxiliary contacts, KG210-KG317 with up to 6 auxiliary contacts.	KG125- KG317	M510B
Ordering data:	Quantity and operation of the auxiliary contacts and type of the contact system.		

Lateral mounted Auxiliary Contacts

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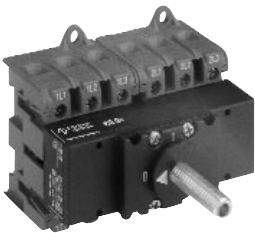
Optional Extras

KG Switches

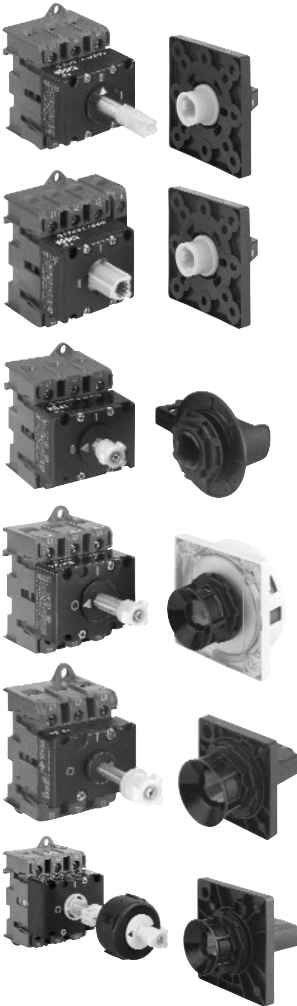
Ground and Neutral Terminals	Type	Code	Additional Main Contacts	Type	Code
Ground terminal  	KG20- KG32B	K0 H052/A	 Terminals for Control Circuit  Max. Permissible Wire Gage Single-core or Flexible wire stranded wire 2,5 mm ² 2,5 mm ² AWG12 AWG14 2,5 mm ² 2,5 mm ² AWG12 AWG14 4 mm ² 4 mm ² AWG10 AWG12 4 mm ² 4 mm ² AWG10 AWG12 Wiring Aid  Ordering data: Switch mounting.	KG125 KG126 KG127	K3 H050/P K3 H050/Q K3 H050/R
	KG41- KG64B	K1 H052/B		KG160 KG161 KG162	K3 H050/S K3 H050/T K3 H050/U
	KG80- KG105C	K2 H052/C		KG210 KG250 KG211 KG251 KG212 KG252	K3 H050/G K3 H050/H K3 H050/J
	KG125 KG160	K3 H052/H		KG315 KG316 KG317	K3 H050/K K3 H050/L K3 H050/M
	KG126 KG161	K3 H052/J			
	KG127 KG162	K3 H052/K			
	KG210 KG250 KG315	K3 H052/D			
	KG211 KG251	K3 H052/E			
	KG212 KG252	K3 H052/F			
	KG316 KG317	K3 H052/L K3 H052/M			
Neutral terminal  	KG20- KG32B	K0 H053/A			
	KG41- KG64B	K1 H053/B		KG41- KG64B	K1B D220 KS
	KG80- KG105C	K2 H053/C		KG80- KG105C	K2B D520 KSA
	KG125 KG160	K3 H053/H		KG125- KG162	K3A D720 KS
	KG126 KG161	K3 H053/J		KG210- KG317	K3B D520 KS
	KG127 KG162	K3 H053/K		KG126 KG127 KG161 KG162	K3A D720 09
	KG210 KG250 KG315	K3 H053/D		KG211 KG212 KG251 KG252 KG316 KG317	K3B D520 09
	KG211 KG251	K3 H053/E			
	KG212 KG252	K3 H053/F			
	KG316 KG317	K3 H053/L K3 H053/M			

Shaft Extensions, Simplified Door Clutch	Type	Code
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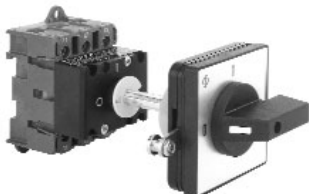
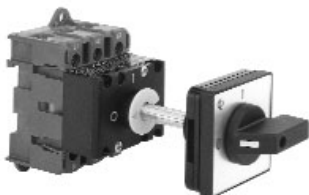
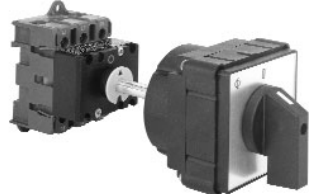
Shaft Extensions

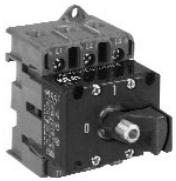
	With asymmetric profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	L100
	Shaft with adjustable length with set screw with shear ring	KG10A KG20A, KG32A KG41-KG317	M004D M004
	With square profile Shaft length not adjustable	KG10B KG20B, KG32B KG41B-KG105C	L100A
	Shaft with adjustable length with set screw with clamping bushing	KG41B-KG317 KG80C-KG317	M004E M004A
Ordering data:	Free shaft length or dimension from mounting surface to cover.		

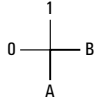
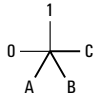
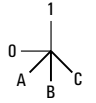
Simplified Door Clutch

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

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

Door Clutches	Type	Code																								
    	The M280 door clutch has an adjustable shaft and can be supplied with an interlock device. The following interlock programs are available: A = Without interlock by door clutch B = With interlock by door clutch C = With interlock by rods D = With interlock by door clutch and rods With protected profile shaft fixation with set screw Front protection IP 40 Front protection IP 66/67 (KG10A-KG32A: IP 65) shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67 (KG10A-KG32A: IP 65) Without protected profile Front protection IP 40 Front protection IP 65 The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the “OFF” position. NOTE: Knowledgeable personnel using a simple tool are able to defeat the interlock. The M700’s flexibility allows for successful installation with as much as + or - 5 mm of misalignment between shaft and door. Handle lockable with padlocks Protection IP 65 Selection of escutcheon plate and handle color required: <table><tr><th>Escutcheon Plate</th><th>Frame Plate</th><th>Handle</th><th>Lock Bar</th></tr><tr><td>A = brushed alu</td><td>black</td><td>black</td><td>red</td></tr><tr><td>B = brushed alu</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>C = brushed black</td><td>black</td><td>black</td><td>red</td></tr><tr><td>D = brushed black</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>E = yellow</td><td>black</td><td>red</td><td>yellow</td></tr></table> Standard handle and standard escutcheon plate Protection IP 65 Unlock insert for the M700 to open the door in ON position. (After the locking has been made inactive, it is necessary to take effective precautions against an opening of the door by unauthorized persons.)	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	KG10A KG20A KG32A KG41B KG64B KG80- KG317 M280E M280E/.EF M280D M280D/.EF KG41 KG64 M280B/. M280B/.EF KG10B KG20B KG32B KG41B KG64B KG80 KG100 KG105 KG125- KG317 M700/. M701 S1D M700 29
Escutcheon Plate	Frame Plate	Handle	Lock Bar																							
A = brushed alu	black	black	red																							
B = brushed alu	black	red	yellow																							
C = brushed black	black	black	red																							
D = brushed black	black	red	yellow																							
E = yellow	black	red	yellow																							
Ordering data:	Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.																									

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

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

Angular drive

	KG125- KG317¹	M330
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¹Only for ON/OFF switches 3 and 4 pole.

Selection Data

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

Rated Insulation Voltage U _i IEC/VDE ¹ UL/Canada CEE/NEMKO				V V V	690 300 400	690 600 500	690 600 500	690 600 500	690 600 500	690 600 500	690 600 500	690 ⁻⁶ 600 500	1000 ² 600 -	1000 ² 600 -	1000 ² 600 -	1000 ² 600 -	1000 ² 600 -
Rated Impulse Withstand Voltage U _{imp} ¹				kV	4	6	6	6	6	6	6	6	8	8	8	8	8
Rated Thermal Current		IEC/VDE	I _u open = I _{th} I _{the} enclosed UL/Canada ON/OFF function UL/Canada Double-throw function	A A A A	20 20 20 20	25 25 25 25	32 32 30 30	40 40 40 40	63 63 60 60	80 80 80 ³ 80 ³	100 100 100 ³ 100 ³	125 125 125 ⁻⁶ 125 ⁻⁶	125 125 150 ³ 125 ³	160 160 200 ³ 160 ³	200 200 200 ³ -	250 250 250 ³ -	315 315 300 ³ -
Rated Operational Current I _e																	
AC-21A Switching of resistive loads, including moderate overloads		IEC/VDE		A	20	25	32	40	63	80	100	125	125	160	200	250	315
AC-22A Switching of combined resistive or low inductive loads, including moderate overloads		IEC/VDE	220 V-500 V 660 V-690 V	A A	20 16	20 20	32 32	40 40	63 55	80 65	100 85	125 90	125 100	160 100	200 125	200 125	250 140
Ampere-Rating ON/OFF function Double-throw function Resistive or low inductive loads		UL/Canada ⁴ UL/Canada ⁴	600 V 600 V	A A	20 20	25 25	30 30	40 40	60 60	80 ³ 80 ³	100 ³ 100 ³	⁻⁶ ⁻⁶	150 ³ 125 ³	200 ³ 160 ³	200 ³ -	250 ³ -	300 ³ -
Rated Utilization Category IEC/VDE																	
AC-3 Direct-on-line starting		3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 690 V	kW kW kW kW	2,2 3,7 3,7 3,7	4 5,5 5,5 5,5	5,5 7,5 7,5 7,5	7,5 11 15 11	11 18,5 22 15	15 22 30 18,5	18,5 30 37 22	22 37 45 22	22 37 45 30	30 45 55 37	37 55 75 45	37 55 75 45	45 75 90 45
AC-23A Frequent switching of motors or other high inductive loads		3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 690 V	kW kW kW kW	3 5,5 5,5 5,5	5,5 7,5 7,5 7,5	5,5 11 11 11	7,5 15 18,5 15	11 22 30 22	18,5 30 37 30	22 37 45 30	25 45 55 30	30 45 55 37	30 55 75 37	37 75 90 45	37 90 110 45	55 110 132 45
DOL-Rating Standard motor load (similar AC-3)		UL/Canada ⁴ 3 phase 3 pole	120 V 240 V 480 V 600 V	HP HP HP HP	1 2 - -	1,5 3 5 5	2 5 10 10	3 7,5 15 15	5 10 20 20	7,5 20 40 50	10 25 50 50	⁻⁶ ⁻⁶ ⁻⁶ ⁻⁶	15 30 60 60	20 40 60 60	25 50 75 75	30 60 75 75	40 75 100 100
Short Circuit Protection																	
Max. fuse size (gL-characteristic)				A	20	35	35	50	63	80	100	125	125	160	200	250	315
Rated short-time withstand current (1 s-current)				A	130	350	430	500	580	1600	1850	2000	2500	3000	4000	4600	5800
Max. Permissible Wire Gage - Use copper wire only																	
For box terminal		Single-core or stranded wire		mm ² AWG MCM	2,5 12 -	6 10 -	6 10 -	16 6 -	16 6 -	35(50) ⁵ 2(1/0) -	35(50) ⁵ 2(1/0) -	50 1/0 -	95 3/0 -	95 3/0 -	185 -	185 -	185 -
		Flexible wire sleeving in accordance with DIN 46228		mm ²	2,5	4	4	10	10	25(35) ⁵	25(35) ⁵	35	70	70	120	120	120
		Flexible wire without sleeve		mm ² AWG MCM	2,5 12 -	4 10 -	4 10 -	10 6 -	10 6 -	25(35) ⁵ 3(2) -	25(35) ⁵ 3(2) -	35 2 -	70 2/0 -	70 2/0 -	150 -	150 -	150 300
Cable lug or track must accept connection screw				mm	-	-	-	-	-	-	-	-	M10 x 20	M10 x 20	M12 x 20	M12 x 20	M12 x 20
Max. width				mm	-	-	-	-	-	-	-	-	20	20	25	25	25
Max. width with protective cover				mm	-	-	-	-	-	-	-	-	25	25	34	34	34
Ambient Temperature open at 100 % I _u /I _{th} 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												

Technical Data

Auxiliary Contacts for KG Switches

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

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

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

USA	Underwriters Laboratories	 ¹ or 	●	●	●	●	●	●	●	— ⁷	●	●	●	●	●
Canada	Canadian Standards Association	 ⁵ c  ² or  c 	●	●	●	●	●	●	●	— ⁷	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+	+	+	+	+	+	+	+
Danmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontrollanstalten		+	+	+	+	+	+	+	+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+	+	+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+	+	+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ³ VDE 0113 ³	+	+	+	+	+	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ³	+	+	+	+	+	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60204-1 ⁴ IEC 60947-3 ⁴	+	+	+	+	+	+	+	+	+	+	+	+	+
China	China Quality Certification Centre	 ⁶ GB14048.3	●	●	●	●	●								
Russian Federation	GOST	 ⁶ CH01	●	●	●	●	●	●	+	+	●	●	●	●	●
Germanischer Lloyd			+	+	+	+	+	+	+	+	+	+	+	+	+
Lloyds Register of Shipping			+	+	+	+	+	+	+	+	+	+	+	+	+

● Switch approved + Switch conforms to requirements

¹ 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).

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

³ 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.

⁴ IEC does not operate an approval program.

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

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

⁷ 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

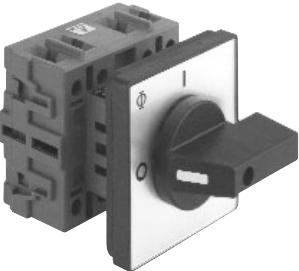
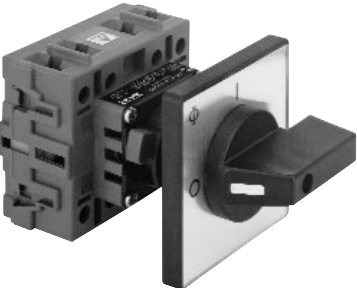
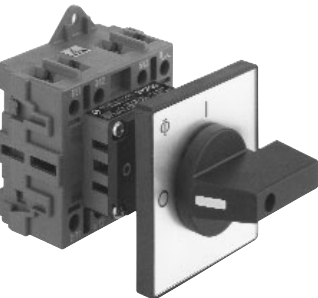
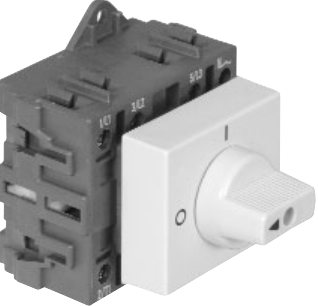


KHR-series



Nominal Ratings

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

Mounting	Type	Code
 Panel mounting protection IP 65 Four hole panel mounting	KH16-KHR80	E
 Single hole mounting 22 mm Protection IP 65 With square escutcheon plate 48 x 48 mm	KH16-KHR25	FT2
 With square escutcheon plate 64 x 64 mm	KH16-KHR80	FH3¹
 Base mounting Screw/Snap-on base mounting for track EN 50022 Protection IP 40	KH16-KHR80	VE
 Screw/Snap-on base mounting for track EN 50022. Escutcheon plate for 45 mm knock-out.	KH16-KHR80	VE2

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

Plastic Enclosure Protection IP 66/67		Type	Code
	The KL and CL enclosures are available in 3 sizes allowing for installation of 3, 4 and 6 pole KG switches. The KL-series is made of strong durable plastic and offers high UV-resistance. The CL-series is especially designed for applications in an aggressive environment, such as oil, chemical substances and grease. Each enclosure has 2 knock-outs on top and bottom for metric thread according to EN 50262. Included in each enclosure is a ground terminal. All enclosures can be supplied with a cover coupling for additional safety. Increased wiring space and mounting holes with slots are featured in this new line. These enclosures are also available for conduit entries for PG-thread. KS and CS enclosures have a compact size which allows for the installation of a 4 pole KH16/KHR16 ON/OFF switch or a KH20/KHR20 ON/OFF switch. The design, options and mounting are the same as those of the KL and CL enclosures.	KH16-KHR80	
	Without cover interlock		KL.0 CL.0 KS.0 CS.0
	With cover interlock (The enclosure can only be opened at 9 o'clock position)		KL.1 CL.1 KS.1 CS.1
	With cover interlock (The enclosure can only be opened at 12 o'clock position)		KL.2 CL.2 KS.2 CS.2

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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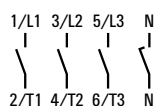
ON/OFF Switches 4 pole

Types of Mounting

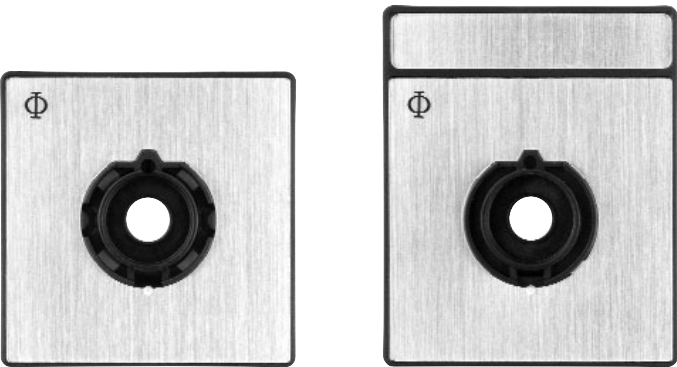
Without auxiliary contacts	E FT2 FH3 VE VE2 KL. KS.	E FT2 FH3 VE VE2 KL. KS.	E VE KL.	E VE KL.	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	E FH3 VE VE2 KL.	 	K400-600 K400-620
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Connection Diagrams

4 pole



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



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

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

Standard Escutcheon Plates

F056

F058

F063

F065

F068

F134

F178

F201

F208

F252

F253

F346

F360

F378

F456

F458

F990

F991

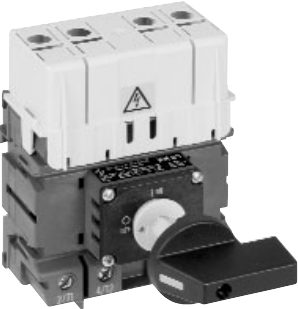
Handles

KH, KHR Switches

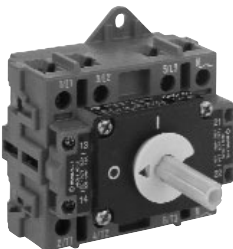
Type	Color	Code	KH16- KH25	KHR16- KHR25	KH16B- KH25B	KHR16B- KHR25B	KH32- KHR40	KH63- KHR80
I-Handle 	black red white electro-gray	G251 G252 G253 G257	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
B-Handle 	black red white electro-gray	G521 G522 G523 G527	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ●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

Protective Covers and Auxiliary Contacts	Type	Code
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Protective Covers

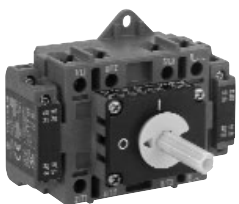
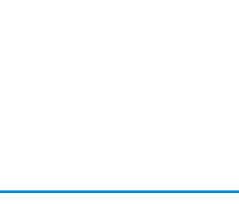
	For mounting E	KH32-KHR40	K1 M160/45-E
	For mounting VE		K1 M160/45-VE
	For mounting E	KH63-KHR80	K1 M160/44-E
	For mounting VE		K1 M160/44-VE

Cam-operated Auxiliary Contacts (mounting only at factory)

For mounting E	Up to 4 cam-operated auxiliary contacts can be added to all switches.	KH16-KHR80	M510A
			
KH16-KHR25B			
			
KH32-KHR80			
For mounting VE	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.		
			
Ordering data:	Quantity and operation of the auxiliary contacts and type of the contact system.		

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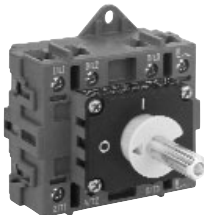
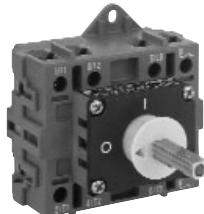
Lateral mounted Auxiliary Contacts

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

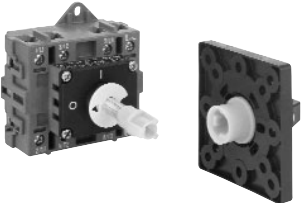
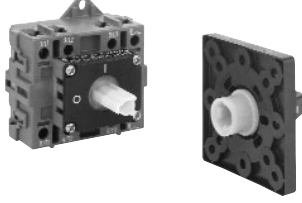
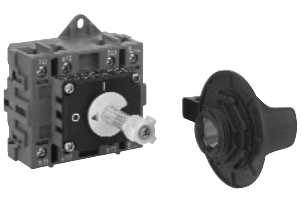
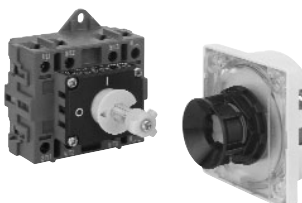
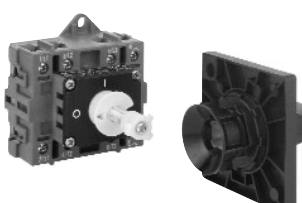
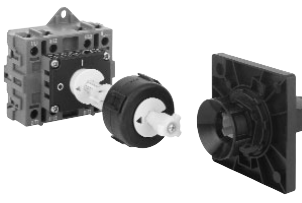
Ground Terminal

	KH16-KHR80	H052
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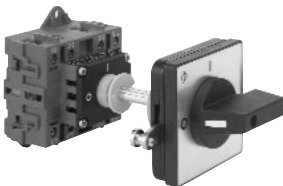
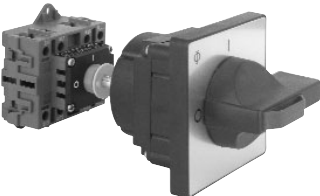
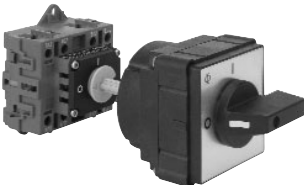
Shaft Extensions

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

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

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

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

Door Clutches	Type	Code																								
 The M280 door clutch has an adjustable shaft and can be supplied with an interlock device. The following interlock programs are available: A = Without interlock by door clutch B = With interlock by door clutch C = With interlock by rods D = With interlock by door clutch and rods With protected profile shaft fixation with set screw Front protection IP 40 Front protection IP 66/67 (KG10A-KG32A: IP 65) shaft fixation with shear ring Front protection IP 40 Front protection IP 66/67 (KG10A-KG32A: IP 65) The M700 is a padlockable door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the “OFF” position. NOTE: Knowledgeable personnel using a simple tool are able to defeat the interlock. The M700’s flexibility allows for successful installation with as much as + or - 5 mm of misalignment between shaft and door.  Handle lockable with padlocks Protection IP 65 Selection of escutch. plate and handle color required: <table><tr><th>Escutcheon Plate</th><th>Frame Plate</th><th>Handle</th><th>Lock Bar</th></tr><tr><td>A = brushed alu</td><td>black</td><td>black</td><td>red</td></tr><tr><td>B = brushed alu</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>C = brushed black</td><td>black</td><td>black</td><td>red</td></tr><tr><td>D = brushed black</td><td>black</td><td>red</td><td>yellow</td></tr><tr><td>E = yellow</td><td>black</td><td>red</td><td>yellow</td></tr></table>  Standard handle and standard escutcheon plate Protection IP 65  Unlock insert for the M700 to open the door in ON position. (After the locking has been made inactive, it is necessary to take effective precautions against an opening of the door by unauthorized persons.)	Escutcheon Plate	Frame Plate	Handle	Lock Bar	A = brushed alu	black	black	red	B = brushed alu	black	red	yellow	C = brushed black	black	black	red	D = brushed black	black	red	yellow	E = yellow	black	red	yellow	KH16-KHR80 KH16B-KHR80	M280E M280E/.EF M280D M280D/.EF M700/. M701 S1D M700 29
Escutcheon Plate	Frame Plate	Handle	Lock Bar																							
A = brushed alu	black	black	red																							
B = brushed alu	black	red	yellow																							
C = brushed black	black	black	red																							
D = brushed black	black	red	yellow																							
E = yellow	black	red	yellow																							
Ordering data:	Dimension from face of the switch to the cover or dimension from mounting surface to cover, the interlock program and the color selection.																									

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

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

Selection Data

KH16 KHR16 KH20 KHR20 KH25 KHR25 KH32 KH63 KH80
KH16B KHR16B KH20B KHR20B KH25B KHR25B KHR32 KH40 KHR40 KHR63 KHR80

Rated Insulation Voltage U _i				IEC/EN/VDE ¹	V	800 ²	800 ²	800 ²	800 ²	800 ²	800 ²	800 ²	800 ²	1000 ²	1000 ²
				UL/Canada	V	600	600	600	600	600	600	600	600	600	600
Rated Impulse Withstand Voltage U _{imp} ¹					kV	6	6	6	6	6	6	6	6	8	8
Rated Thermal Current		IEC/EN/VDE	I _u open = I _{th} I _{the} enclosed	A	16	16	20	20	25	20	32	40	32	63	80
		A		16	16	20	20	25	20	32	40	32	63	80	
		UL/Canada	A	16	16	20	20	25	20	30	40	30	60	80	
Rated Operational Current I _e															
AC-21A	Switching of resistive loads, including moderate overloads	IEC/EN/VDE		A	16	16	20	20	25	20	32	40	32	63	80
AC-22A		Switching of combined resistive or low inductive loads, including moderate overloads	IEC/EN/VDE	A	16	16	20	20	25	20	32	40	32	63	80
Ampere-Rating	Resistive or low inductive loads	UL/Canada		A	16	16	20	20	25	20	30	40	30	60	80
Rated Utilization Category					IEC/EN/VDE										
AC-3	Direct-on-line starting	3 phase	220 V-240 V	kW	3	3	3,5	3,5	4	4	5,5	7,5	7,5	11	15
			380 V-440 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	22	30
		3 pole	500 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	30	37
			660 V-690 V	kW	5,5	5,5	6,5	6,5	7,5	7,5	11	15	15	18,5	22
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	4,5	4,5	5,5	5,5	7	5,5	9	11	9	18,5	23
			380 V-440 V	kW	7,5	7,5	10	10	12	10	16	20	16	30	40
		3 pole	500 V	kW	10	10	12	12	15	13	20	25	20	40	55
			660 V-690 V	kW	13	13	15	15	17	17	22	25	25	30	37
DOL-Rating	Standard motor load (similar AC-3)	UL/Canada	110 V-120 V	HP	1	1	1	1	1,5	1,5	2	3	3	7,5	10
			220 V-240 V	HP	2	2	2	2	3	3	5	7,5	7,5	20	25
		3 phase	440 V-480 V	HP	5	5	5	5	7,5	7,5	10	15	15	30	40
			550 V-600 V	HP	5	5	5	5	7,5	7,5	10	15	15	40	50
Short Circuit Protection															
Max. fuse size		(gL-characteristic)	A	25	25	35	35	35	35	35	50	50	80	100	
			A	400	400	450	450	500	500	850	950	950	1200	1600	
Max. Permissible Wire Gage - Use copper wire only															
KH	For box terminal	Single-core or stranded wire		mm ²	6	-	6	-	6	-	10	10	-	35	35
				AWG	10	-	10	-	10	-	8	8	-	2	2
		Flexible wire sleeving in accordance with DIN46228		mm ²	4	-	4	-	4	-	6	6	-	25	25
				mm ²	4	-	4	-	4	-	6	6	-	25	25
KHR	Connection with insulated ring and fork type terminals		mm	-	3,2	-	3,2	-	3,2	3,7	-	3,7	5,2	5,2	
			mm	-	7,4	-	7,4	-	7,4	8,8	-	8,8	12,7	12,7	
Ambient Temperature		open at 100 % I _u /I _{th} enclosed at 100 % I _{the}		50 °C during 24 hours with peaks up to 55 °C 35 °C during 24 hours with peaks up to 40 °C											

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

Selection Data	Auxiliary contacts for: KH16-KHR80
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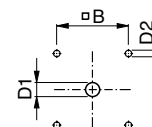
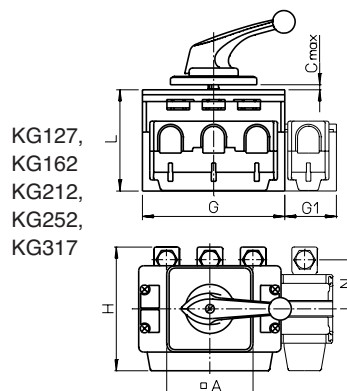
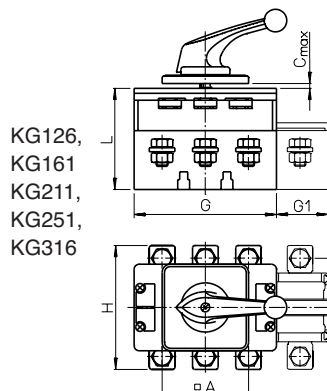
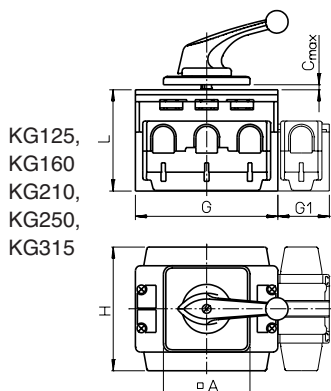
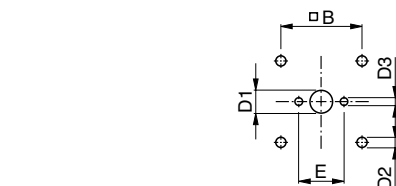
Rated Insulation Voltage U_i		IEC/EN/VDE	V	440
		UL/Canada	V	300
Rated Thermal Current I_{θ}/I_{th}		IEC/EN/VDE	A	10
		UL/Canada	A	10
Rated Operational Current I_e				
AC-21A	Switching of resistive loads, including moderate overloads	IEC/EN/VDE	A	10
AC-15	Switching of control devices, contactors, valves etc.	110 V-240 V	A	2,5
		380 V-440 V	A	1,5
Pilot Duty	Heavy	UL/Canada		A300
Ampere-Rating	Resistive or low inductive loads	UL/Canada	A	10
Short Circuit Protection				
Max. fuse size	(gL-characteristic)		A	10
Max. Permissible Wire Gage - Use copper wire only				
		Single-core or stranded wire	mm ² AWG	1,5 14
		Flexible wire sleeving in accordance with DIN46228	mm ²	1,5
		Flexible wire without sleeve	mm ² AWG	1,5 16

Mounting

(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 3 and 4 pole

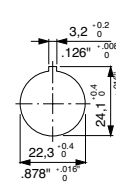
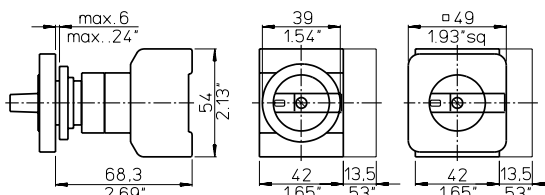
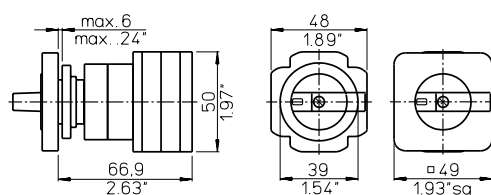
E		A	B	C	D1	D2	D3	E	F	G	G1 ¹	H	L
	KG10A	48	36	4	11-15	5	-	-	48	48	-	50	48,2
		1.89	1.42	.16	.43-.59	.20	-	-	1.89	1.65	-	1.97	1.90
	KG10B	64	48	4	11-15	5	-	-	64	48	-	50	57,2
		2.52	1.89	.16	.43-.59	.20	-	-	2.52	1.65	-	1.97	2.25
	KG20, KG32	30	-	4	8-11	-	3,2	20	-	42	13,5	54	50,8
		1.18	-	.16	.31-.43	-	.13	.79	-	1.65	.53	2.13	2.00
	KG20A, KG32A	48	36	4	10-15	5	-	-	48	42	13,5	54	53,8
		1.89	1.42	.16	.39-.59	.20	-	-	1.89	1.65	.53	2.13	2.12
	KG20B, KG32B	64	48	4	10-15	5	-	-	64	42	13,5	54	53,8
		2.52	1.89	.16	.39-.59	.20	-	-	2.52	1.65	.53	2.13	2.12
	KG41, KG64	48	36	4	10-15	5	-	-	64	50	16	64	60,5
		1.89	1.42	.16	.39-.59	.20	-	-	2.52	1.97	.63	2.52	2.38
	KG41B, KG64B	64	48	4	10-15	5	-	-	64	50	16	64	60,5
		2.52	1.89	.16	.39-.59	.20	-	-	2.52	1.97	.63	2.52	2.38
	KG80, KG100	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 ¹	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,	88	68	5,5	13-17	6	145	52,5	126	103	-		
	KG315	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,	88	68	5,5	13-17	6	145	52,5	126	103	50		
	KG316	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,	88	68	5,5	13-17	6	145	52,5	126	103	50		
	KG317	3.46	2.68	.22	.51-.67	.24	5.71	2.07	4.96	4.05	1.97		



FT1, FT2

KG10A

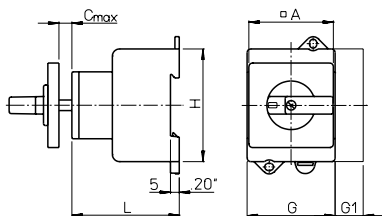
KG20A, KG32A



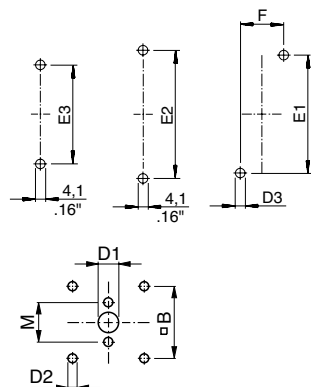
(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 3 and 4 pole

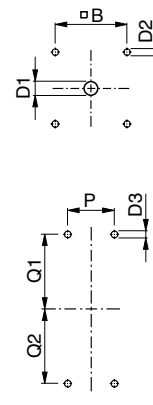
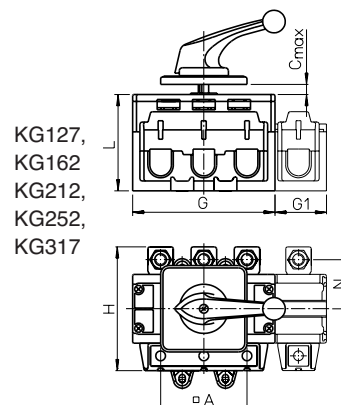
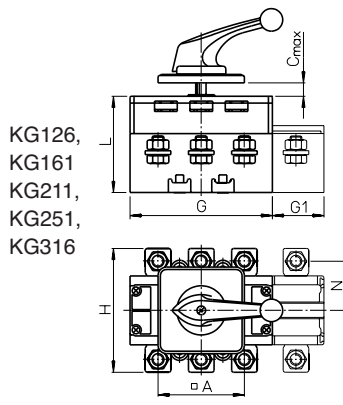
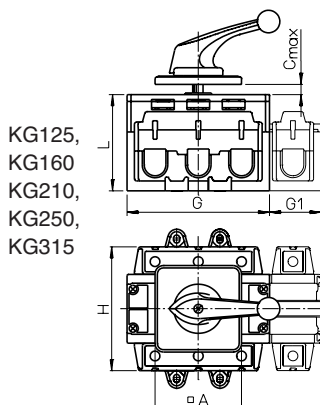
VE, VE1



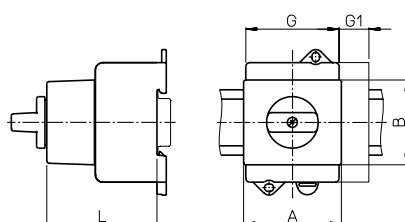
	A	B	C	D1	D2	D3	E1 ¹	E2 ¹	E3 ¹	F	G	G1 ²	H	L	M
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	48	-	50	49,2	-
	1.89	1.42	.47	.31-.59	.20	.17	2.36	2.56	1.97	.87	1.89	-	1.97	1.94	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	48	-	50	56,2	-
	2.52	1.89	1.14	.39-.59	.20	.17	2.36	2.56	1.97	.87	1.89	-	1.97	2.21	-
KG20, KG32	30	-	12	8-11	3,2	4,1	60	-	-	22	42	13,5	54	50	20
	1.18	-	.47	.31-.43	.13	.16	2.36	-	-	.87	1.65	.53	2.13	1.97	.79
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	22	42	13,5	54	50	-
	1.89	1.42	.47	.31-.59	.20	.16	2.36	-	-	.87	1.65	.53	2.13	1.97	-
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	22	42	13,5	54	50	-
	2.52	1.89	.53	.39-.59	.20	.16	2.36	-	-	.87	1.65	.53	2.13	1.97	-
KG41, KG64	48	36	12	10-15	5	4,1	70	-	-	25	50	16	64	61	-
	1.89	1.42	.47	.39-.59	.20	.16	2.76	-	-	.98	1.97	.63	2.52	2.40	-
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	25	50	16	64	61	-
	2.52	1.89	.53	.39-.59	.20	.16	2.76	-	-	.98	1.97	.63	2.62	2.40	-
KG80, KG100	64	48	13,5	10-15	5	5,2	90	-	-	25	70	22	80	68	-
	2.52	1.89	.53	.39-.59	.20	.21	3.54	-	-	.98	2.76	.87	3.15	2.68	-
KG80C, KG100C	88	68	13,5	10-15	6	5,2	90	-	-	25	70	22	80	68	-
	3.46	2.68	.53	.39-.59	.24	.21	3.54	-	-	.98	2.76	.87	3.15	2.68	-
KG105	64	48	13,5	10-15	5	5,2	90	-	-	25	92	0	80	68	-
	2.52	1.89	.53	.39-.59	.20	.21	3.54	-	-	.98	3.62	0	3.15	2.68	-
KG105C	88	68	13,5	10-15	6	5,2	90	-	-	25	92	0	80	68	-
	3.46	2.68	.53	.39-.59	.24	.21	3.54	-	-	.98	3.62	0	3.15	2.68	-



	A	B	C	D1	D2	D3	G	G1 ²	H	L ³	N	P	Q1	Q2
KG125, KG160	88	68	16	13-17	6	6,4	112	38	108	91	-	36	59-61	59-61
	3.46	2.68	.63	.51-.67	.24	.25	4.41	1.50	4.25	3.58	-	1.42	2.32-2.40	2.32-2.40
KG210, KG250,	88	68	16	13-17	6	6,4	145	52,5	126	98	-	44	70-72	70-72
KG315	3.46	2.68	.63	.51-.67	.24	.25	5.71	2.07	4.96	3.85	-	1.73	2.76-2.83	2.76-2.83
KG126, KG161	88	68	16	13-17	6	6,4	112	38	110	91	45	36	38-40	38-40
	3.46	2.68	.63	.51-.67	.24	.25	4.41	1.50	4.33	3.58	1.77	1.42	1.50-1.57	1.50-1.57
KG211, KG251,	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	40-42
KG316	3.46	2.68	.63	.51-.67	.24	.25	5.71	2.07	4.96	3.85	3.94	1.73	1.57-1.63	1.57-1.63
KG127, KG162	88	68	16	13-17	6	6,4	112	38	109	91	45	36	38-40	59-61
	3.46	2.68	.63	.51-.67	.24	.25	4.41	1.50	4.29	3.58	1.77	1.42	1.50-1.57	2.32-2.40
KG212, KG252,	88	68	16	13-17	6	6,4	145	52,5	126	98	50	44	40-42	70-72
KG317	3.46	2.68	.63	.51-.67	.24	.25	5.71	2.07	4.96	3.85	1.97	1.73	1.57-1.63	2.76-2.83

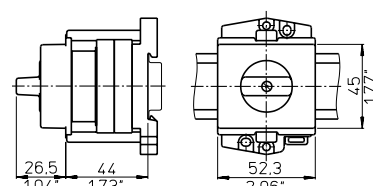


VE2



	A	B	G	G1 ²	L
KG20A, KG32A	43,7	45,4	42	13,5	56,5
	1.72	1.79	1.65	.53	2.22
KG41, KG64	52,4	45,4	50	16	56,5
	2.06	1.79	1.97	.63	2.22
KG80, KG100	70	45	70	22	65
	2.76	1.77	2.76	.87	2.56
KG105	70	45	92	0	65
	2.76	1.77	3.62	0	2.56
KG125-KG162	112	45	112	38	98
	4.41	1.77	4.41	1.50	3.86

VE21



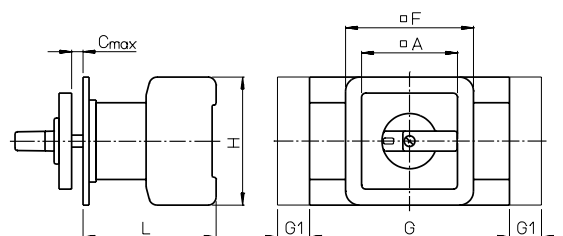
¹Switches KG10A and KG10B allow use of E1, E2 or E3. ²For ON/OFF switches 4 pole. ³KG125-KG162 additional length for mounting VE1 = 7,5 mm/.30 inch.

Mounting

(Additional length for auxiliary contacts see page 40)

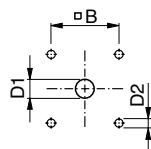
ON/OFF Switches 6 pole and Double-throw Switches

E



KG10A

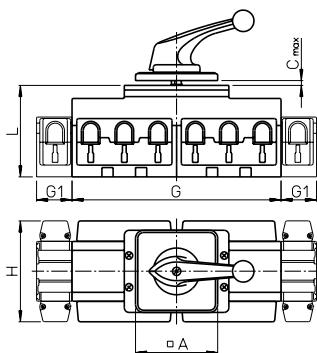
A	B	C	D1	D2	F	G	G1 ¹	H	L
48	36	4	11-15	5	48	48	-	50	57,7
1.89	1.42	.16	.43-.59	.20	1.89	1.89	-	1.97	2.27
64	48	4	11-15	5	64	48	-	50	66,7
2.52	1.89	.16	.43-.59	.20	2.52	1.89	-	2.13	2.84
48	36	4	10-15	5	48	84	13,5	54	61,3
1.89	1.42	.16	.39-.59	.20	1.89	3.30	.53	2.13	2.41
64	48	4	10-15	5	64	84	13,5	54	61,3
2.52	1.89	.16	.39-.59	.20	2.52	3.31	.53	2.13	2.41
64	48	4	10-15	5	64	100	16	64	66,5
2.52	1.89	.16	.39-.59	.20	2.52	3.94	.63	2.52	2.62
64	48	4	10-15	5	88	140	22	80	81,8
2.52	1.89	.16	.39-.59	.20	3.46	5.51	.87	3.15	3.22
88	68	4	10-15	6	88	140	22	80	81,8
3.46	2.68	.16	.39-.59	.24	3.46	5.51	.87	3.15	3.22
64	48	4	10-15	5	88	162	0	80	81,8
2.52	1.89	.16	.39-.59	.20	3.46	6.38	0	3.15	3.22
88	68	4	10-15	6	88	162	0	80	81,8
3.46	2.68	.16	.39-.59	.24	3.46	6.38	0	3.15	3.22



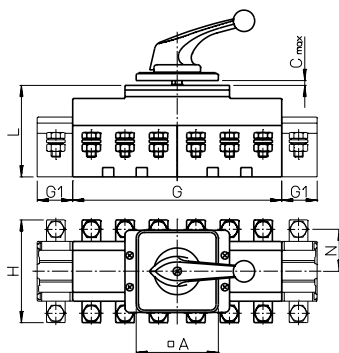
KG125, KG160

A	B	C	D1	D2	G	G1 ¹	H	L	N
88	68	5,5	13-17	6	224	38	108	98	-
3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.25	3.86	-
88	68	5,5	13-17	6	224	38	110	98	45
3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.33	3.86	1.77
88	68	5,5	13-17	6	224	38	109	98	45
3.46	2.68	.22	.51-.67	.24	8.82	1.50	4.29	3.86	1.77

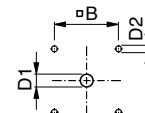
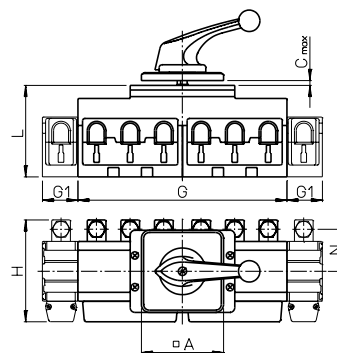
KG125, KG160



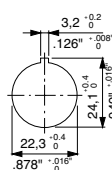
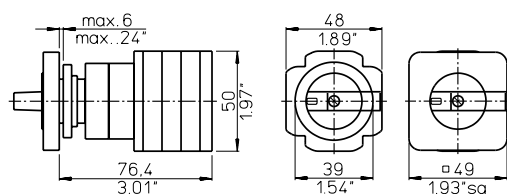
KG126, KG161



KG127, KG162



FT1, FT2

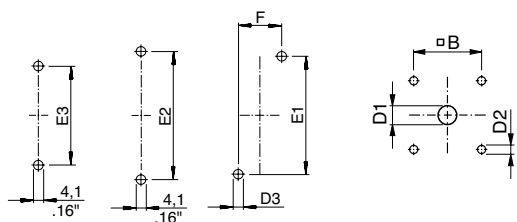
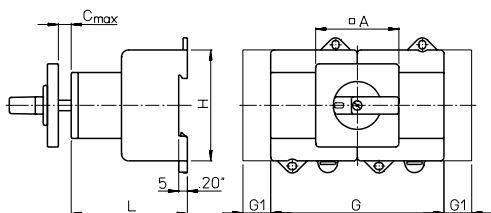


Mounting

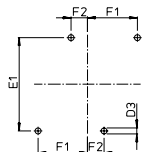
(Additional length for auxiliary contacts see page 40)

ON/OFF Switches 6 pole and Double-throw Switches

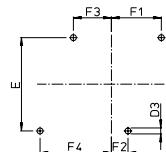
VE, VE1



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



double-throw switches 4 pole

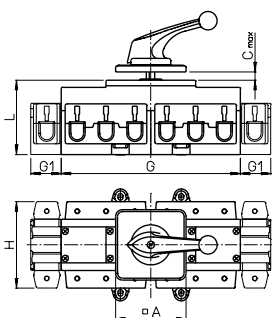


	A	B	C	D1	D2	D3	E1 ¹	E2 ¹	E3 ¹	F	F1
KG10A	48	36	12	8-15	5	4,2	60	65	50	22	-
	1.89	1.42	.47	.31-.59	.20	.17	2.36	2.56	1.97	.87	-
KG10B	64	48	29	10-15	5	4,2	60	65	50	22	-
	2.52	1.89	1.14	.39-.59	.20	.17	2.36	2.56	1.97	.87	-
KG20A, KG32A	48	36	12	8-15	5	4,1	60	-	-	-	32
	1.89	1.42	.47	.31-.59	.20	.16	2.36	-	-	-	1.26
KG20B, KG32B	64	48	13,5	10-15	5	4,1	60	-	-	-	32
	2.52	1.89	.53	.39-.59	.20	.16	2.36	-	-	-	1.26
KG41B, KG64B	64	48	13,5	10-15	5	4,1	70	-	-	-	37,5
	2.52	1.89	.53	.39-.59	.20	.16	2.76	-	-	-	1.48
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

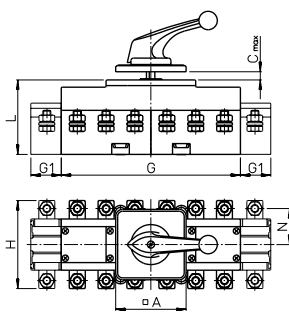
	F2	F3	F4	G	G1 ²	H	L
KG10A	-	-	-	48	-	50	58,7
	-	-	-	1.89	-	1.97	2.31
KG10B	-	-	-	48	-	50	65,7
	-	-	-	1.89	-	1.97	2.59
KG20A, KG32A	10	23,5	45,5	84	13,5	54	57,5
	.39	.92	1.79	3.31	.53	2.13	2.26
KG20B, KG32B	10	23,5	45,5	84	13,5	54	57,5
	.39	.92	1.79	3.31	.53	2.13	2.26
KG41B, KG64B	12,5	28,5	53,5	100	16	64	67
	.49	1.12	2.11	3.94	.63	2.52	2.64
KG80, KG100	22,5	44,5	69,5	140	22	80	79,2
	.89	1.75	2.74	5.51	.87	3.15	3.12
KG80C, KG100C	22,5	44,5	69,5	140	22	80	79,2
	.89	1.75	2.74	5.51	.87	3.15	3.12
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 ²	H	L ³	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

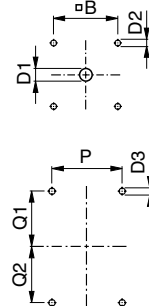
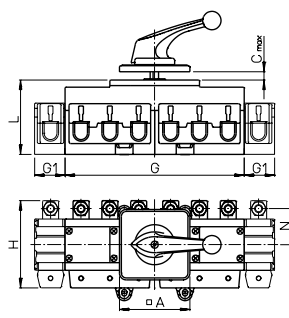
KG125, KG160



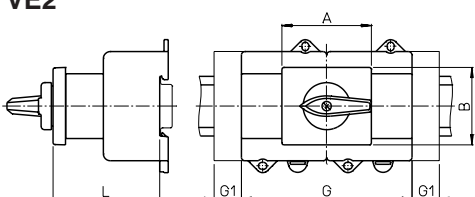
KG126, KG161



KG127, KG162

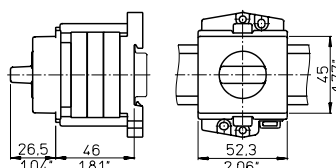


VE2



	A	B	G	G1 ²	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



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

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

Switches in Plastic Enclosure

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

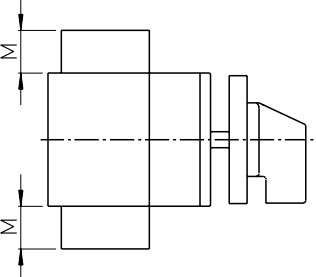
3 and 4 pole		6 pole		A	B	E	F	H
	KG20A, KG32A, KG41, KG64	x		135	92	78	110	91
	KG20B, KG32B KG41B, KG64B		x	5.31	3.62	3.07	4.33	3.58
	KG80, KG100	x		180	140	128	150	98
				7.09	5.51	5.04	5.91	3.86
				180	140	128	150	98
				7.09	5.51	5.04	5.91	3.86

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

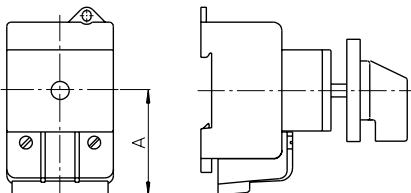
	M
KG20, KG20A, KG20B, KG32, KG32A, KG32B	10 .39
KG41, KG41B, KG64, KG64B	11 .43
KG80, KG80C, KG100, KG100C, KG105, KG105C	11 .43
KG125-KG317	14 .55

Optional Extras

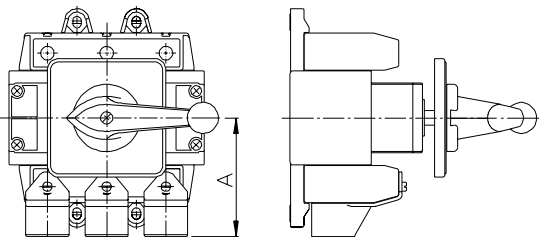
Ground and Neutral Terminal, Additional Main Contact

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

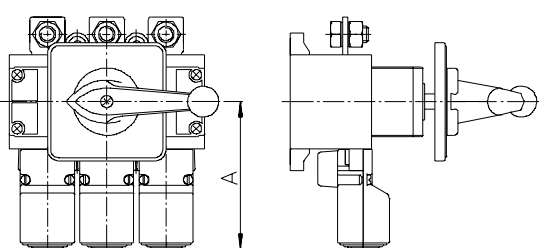
Protective Cover

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

With box terminal

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

With bolt terminal



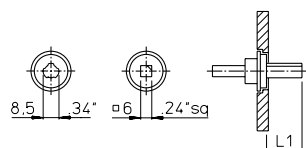
Optional Extras

Shaft Extension

L100, L100A

L1 = Free shaft length

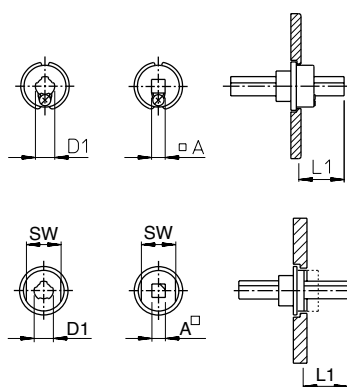
	Mount- ing										
		L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
KG10B	E	19	23	27	32	37	42	47	52	57	
		.75	.91	1.06	1.26	1.46	1.65	1.85	2.05	2.24	
	VE	18	22	26	31	36	41	46	51	56	
		.71	.87	1.02	1.22	1.42	1.61	1.85	2.01	2.20	
KG20B, KG32B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5	
		.45	.65	.81	.96	1.16	1.36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



M004, M004A, M004D, M004E

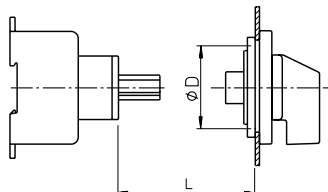
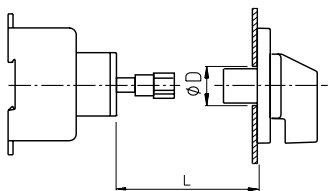
L1 = Free shaft length

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

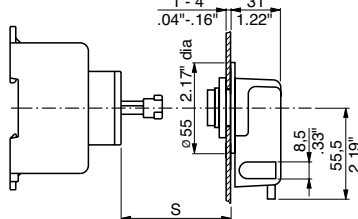


Optional Extras

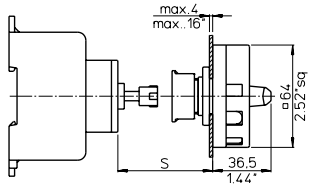
Simplified Door Clutches



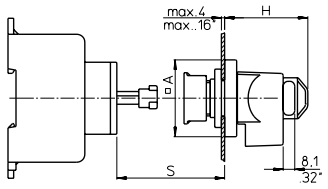
V840E



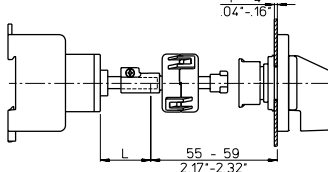
V840F/V840G



V845



M600



L see L100, M004D, M004, page 42.

M290/A3, M290/A3.EF

L = Standard length for switches of mounting VE

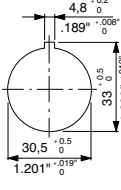
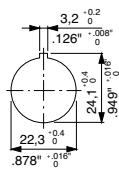
	L	L	L	L	L	D ¹
KG10A	37-57	57-77	77-97	97-117	-	18
	1.46-2.24	2.24-3.03	3.03-3.82	3.82-4.61	-	.71
KG20A, KG32A	55-68	75-88	95-108	115-128	-	18
	2.17-2.68	2.95-3.46	3.74-4.25	4.53-5.04	-	.71
KG41B, KG64B	60-70	80-90	100-110	120-130	-	18
	2.36-2.76	3.15-3.54	3.94-4.33	4.72-5.12	-	.71
KG80, KG100	56-68	76-88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

¹¹For KG10A with M290/A3.EF: 22/87

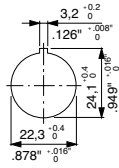
M290/A1.EF

L = Standard length for switches of mounting VE

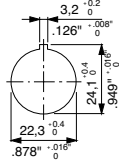
	L	L	L	L	L	L	D
KG41B, KG64B	27-31	27-38	32-45	41-54	47-60	56-69	45,6
	1.06-1.22	1.06-1.50	1.26-1.77	1.61-2.13	1.85-2.36	1.97-2.72	1.80
KG80, KG100	27-32	27-40	33-47	42-55	48-62	57-70	45,6
KG105	1.06-1.26	1.06-1.57	1.30-1.85	1.65-2.17	1.89-2.44	2.24-2.76	1.80



	S	
	min.	max.
KG10B	23	106
	.91	4.17
KG20B, KG32B	24.5	110
	.96	4.33
KG41B, KG64B	20	108
	.79	4.25
KG80, KG100	23	109
KG105	.91	4.29
KG125-KG317	21	110
	.83	4.33



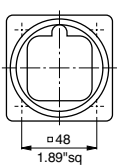
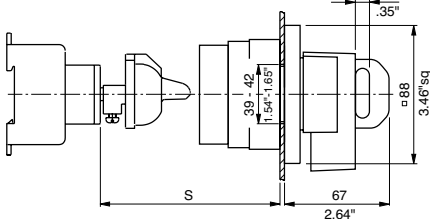
	S	
	min.	max.
KG10B	30	115
	1.02	4.49
KG20B, KG32B	27,5	113
	1.08	4.45
KG41B, KG64B	39,5	124
	1.56	4.88
KG80, KG100	27,5	122
KG105	1.08	4.80



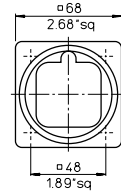
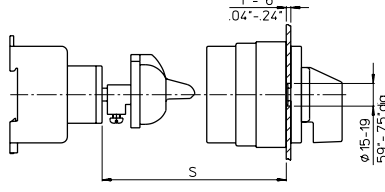
	A	H	min.	max.
KG10A	48	52	30	115
	1.89	2.05	1.18	4.53
KG10B	64	58	26	114
	2.52	2.28	1.02	4.49
KG20A, KG32A	48	52	50,5	119
	1.89	2.05	1.99	4.69
KG20B, KG32B	64	58	27,5	113
	2.52	2.28	1.08	4.45
KG41B, KG64B	64	58	39,5	124
	2.52	2.28	1.56	4.88
KG80, KG100	64	58	27,5	122
KG105	2.52	2.28	1.08	4.80

Door Clutches

M700/.



M701

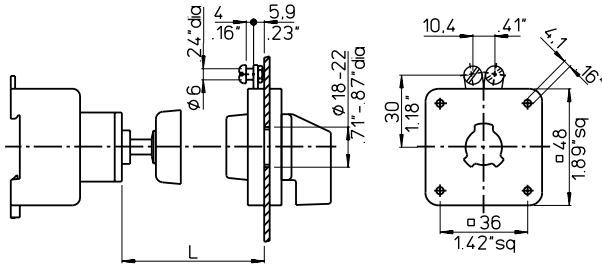


	S
KG10B	80 3.15
KG20B, KG32B	61,5 2.42
KG41B, KG64B	61,5 2.42
KG80, KG100	61,5
KG105	2.42
KG125-KG317	61,5 2.42

Optional Extras

Door Clutches

KG10A, KG20A, KG32A

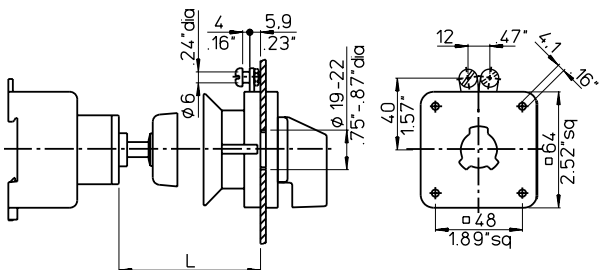


M280D, M280D/.EF, M280E, M280E/.EF

L = Standard length for switches of mounting VE

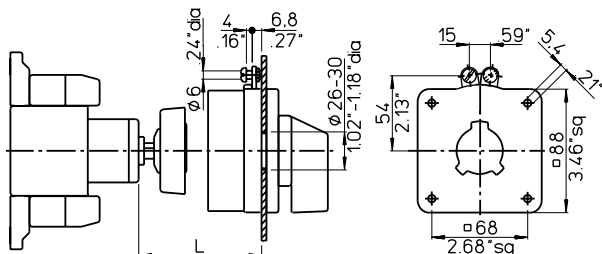
	L	L	L	L
KG10A	36-55 1.42-2.17	56-75 2.20-2.95	75-95 2.99-3.74	96-116 3.78-4.57
KG20A, KG32A	58,5-66 2.30-2.60	78,5-86 3.09-3.50	98,5-106 3.88-4.17	118,5-126 4.67-4.96

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



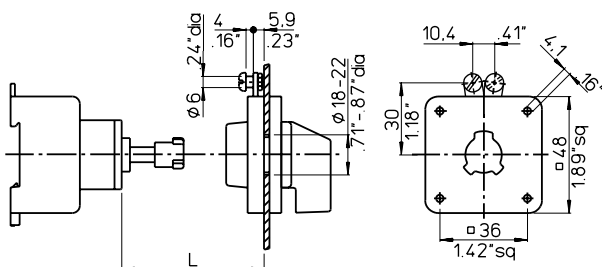
	L	L	L	L
KG10B	32-57 1.26-2.24	58-77 2.28-3.03	78-97 3.07-3.82	98-118 3.86-4.65
KG20B, KG32B	57,5-65 2.26-2.56	77,5-85 3.05-3.35	97,5-105 3.84-4.13	117,5-125 4.63-4.92
KG41B, KG64B	62-72 2.44-2.83	82-92 3.23-3.62	102-112 4.02-4.41	122-132 4.80-5.20
KG80, KG100 KG105	60-70 2.36-2.76	80-90 3.15-3.54	100-110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

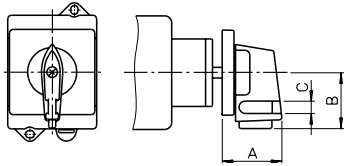
L = Standard length for switches of mounting VE

	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)

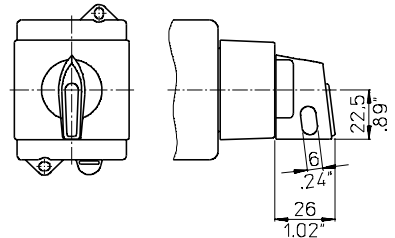
V840A



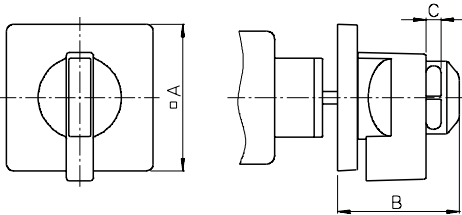
KG10A, KG20A, KG32A, KG41 KG64			
KG10B, KG20B, KG32B, KG41B KG64B, KG80, KG100, KG105			

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

V840B



V845

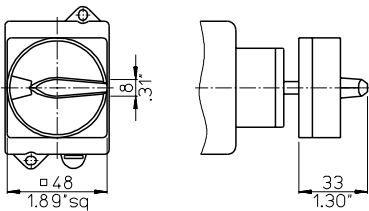


KG10A, KG20A, KG32A, KG41 KG64			
KG10B, KG20B, KG32B, KG41B KG64B, KG80, KG100, KG105 KG80C, KG100C, KG105C KG125-KG317			

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

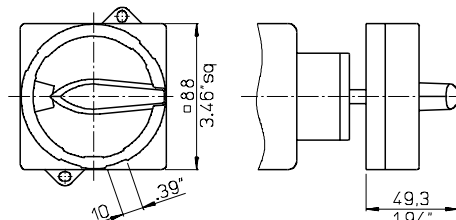
V840D

KG10A, KG20A, KG32A, KG41, KG64



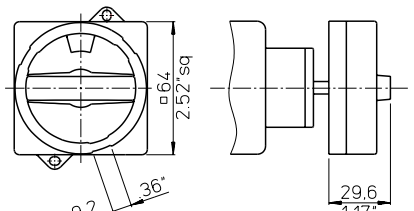
V840D

KG80C, KG100C, KG105C, KG125-KG162



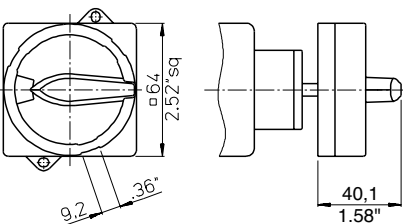
V840G/B, V840F/B

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



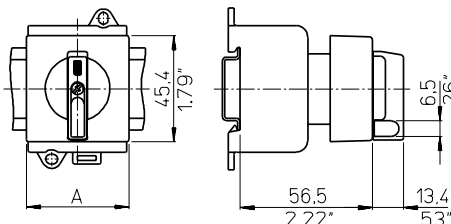
V840G, V840F/F

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



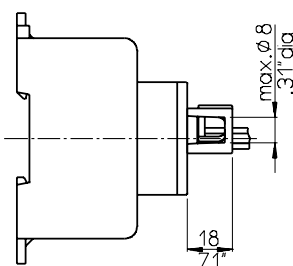
A	
V840G	40,1
	1.58
V840F/F	36,5
	1.43

V840H../E

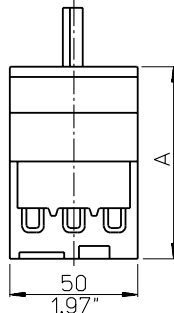


A	
KG20A, KG32A	43,7
	1.72
KG41, KG64	52,4
	2.06

V840VE

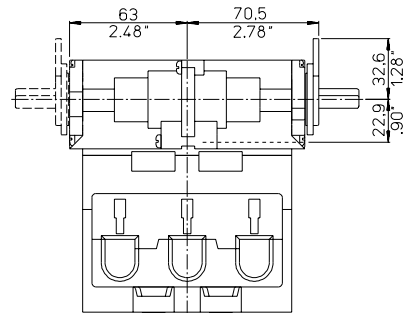


V500



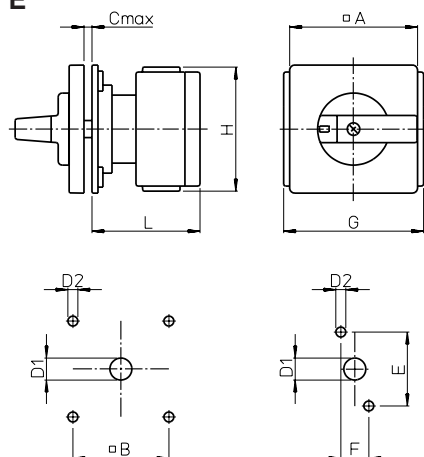
A	
KG20/32B	69,5
	2.74
KG41/64B	75
	2.95

M330



Mounting

(Additional length for auxiliary contacts see page 48)

ON/OFF Switches 4 pole**E**

KH16-KHR25

KH16B-KHR25B

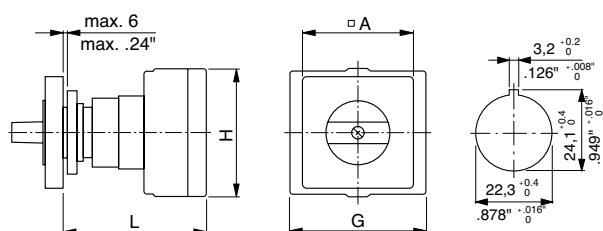
KH32, KHR32,

KH40, KHR40

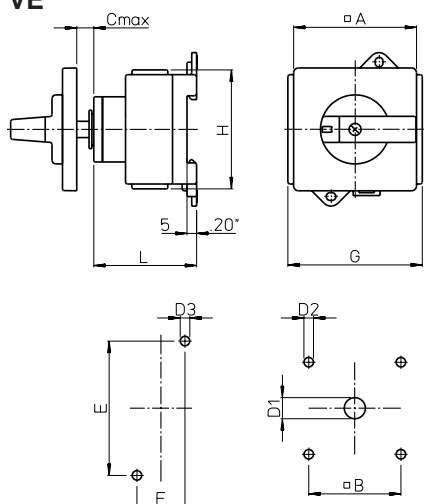
KH63, KHR63

KH80, KHR80

A	B	C	D1	D2 ¹	E	F	G	H	L
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
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
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
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

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

A	G	H	L
49	60	56	63,5
1.93	2.36	2.20	2.50
64	70	62	68,7
2.52	2.76	2.44	2.70
64	86	90	77,1
2.52	3.39	3.54	3.04

VE

KH16-KHR25

KH16B-KHR25B

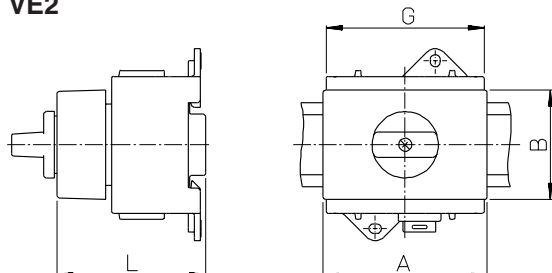
KH32, KHR32,

KH40, KHR40

KH63, KHR63,

KH80, KHR80

A	B	C	D1	D2	D3	E	F	G	H	L
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
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
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
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

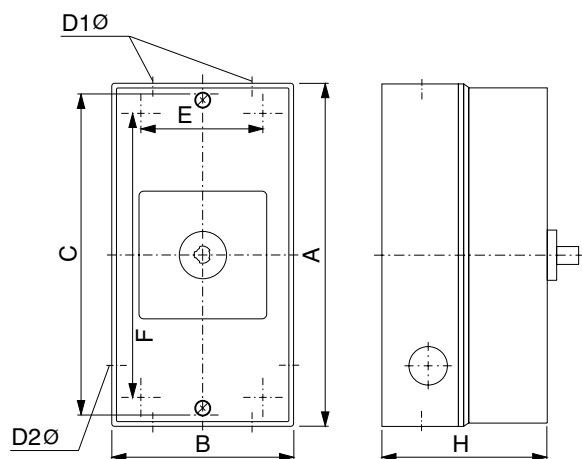
VE2

A	B	G	L
43,7	45,4	60	53,5
1.72	1.79	2.36	2.11
70,4	45,4	70	54,7
2.77	1.79	2.76	2.15
70,4	45,4	86	61,7
2.77	1.79	3.39	2.43

Plastic Enclosures and Optional Extras

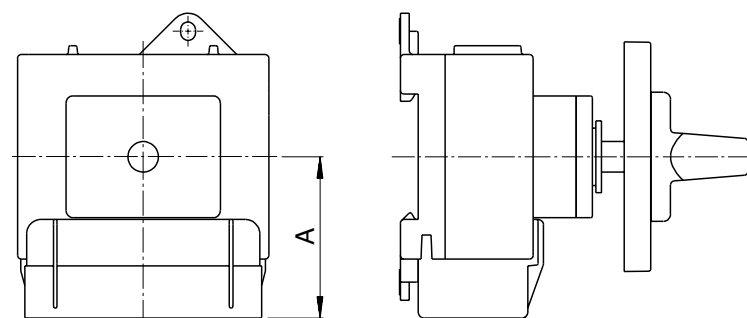
Switches in Plastic Enclosure

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

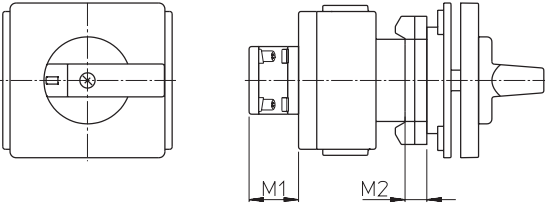
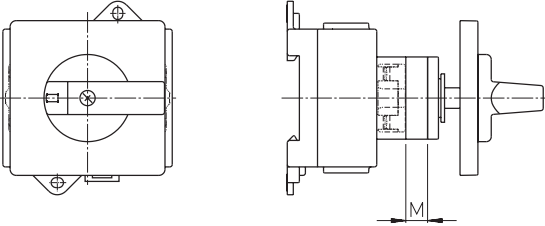
Protective Cover



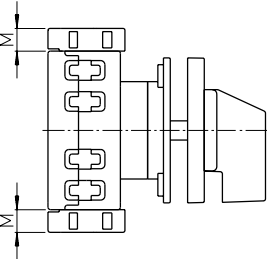
	A
KH32-KHR40	45
	1.77
KH63-KHR80	68,5
	2.70

Optional Extras

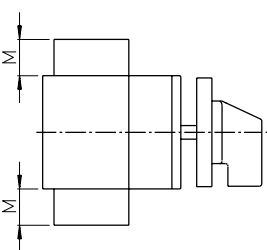
Cam/rack-operated Auxiliary Contacts

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

Lateral mounted Auxiliary Contacts

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

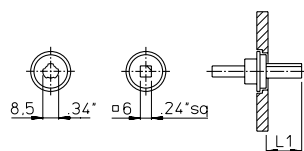
Ground Terminal

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

Optional Extras

Shaft Extension

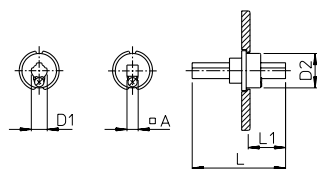
L100, L100A



L1 = Free shaft length

	Mount- ing	L1	L1	L1	L1	L1	L1	L1	L1	L1
KH16B-KHR25B	E	11,5	16,5	20,5	24,5	29,5	34,5	39,5	44,5	49,5
	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
	E	19,8	23,8	27,8	32,8	37,8	42,8	47,8	52,8	57,8
	VE	.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
	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
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
	E	62,8	67,8	72,8	77,8	82,8	87,8	92,8	97,8	102,8
	VE	2.47	2.67	2.87	3.06	3.26	3.46	3.65	3.85	4.05

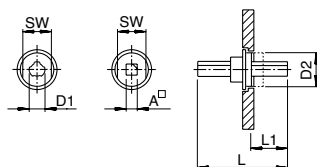
M004D, M004E



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

	Mount- ing	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
	E	-	-	60	18-45	80	38-65	100	58-85	120	78-105
	VE	-	-	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



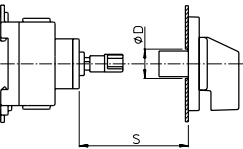
KH32, KHR32, KH40, KHR40, KH63, KHR63, KH80, KHR80	E	56,5	3-36	70	17-49	90	37-69	110	57-89	130	77-109
	VE	2.22	.12-1.42	2.76	.67-1.93	3.54	1.46-2.72	4.33	2.24-3.50	5.12	3.03-4.29
	E	56,5	8-41	70	22-55	90	42-75	110	62-95	130	82-115
	VE	2.22	.31-1.61	2.76	.87-2.17	3.54	1.65-2.95	4.33	2.44-3.74	5.12	3.23-4.53

	Mount- ing	D1	D2	A	SW
KH16-KHR25	E	6	13.8	-	12
	VE	.24	.54		.47
	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
	E	8,5	18,5	6	16
	VE	.34	.73	.24	.63

Optional Extras

Simplified Door Clutches

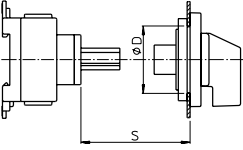
M290/A3, M290/A3.EF



S = Standard length for switches of mounting VE

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

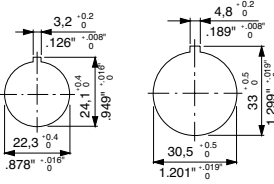
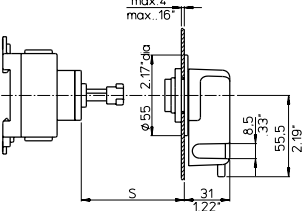
M290/A1.EF



S = Standard length for switches of mounting VE

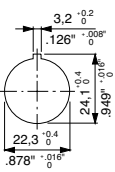
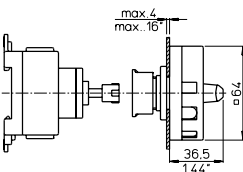
	S	S	S	S	S	S	D
KH32, KHR32,	25-30	27-37	34-44	42-52	49-59	57-67	45,6
KH40, KHR40,	.98-1.18	1.06-1.46	1.34-1.73	1.65-2.05	1.93-2.32	2.24-2.64	1.80
KH63, KHR63,							
KH80, KHR80							

V840E



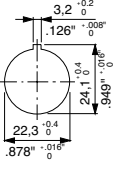
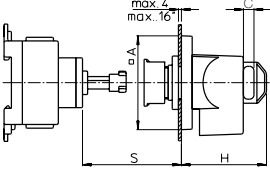
	S _{min.}	S _{max.}
KH16B-KHR25B	24,5	110
	.96	4.33
KH32, KHR32,	20	120
KH40, KHR40,	.79	4.72
KH63, KHR63,		
KH80, KHR80		

V840F/V840G



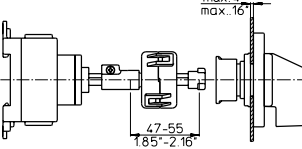
	S _{min.}	S _{max.}
KH16B-KHR25B	27,5	113
	1.08	4.45
KH32, KHR32,	28	124
KH40, KHR40,	1.10	4.88
KH63, KHR63,		
KH80, KHR80		

V845



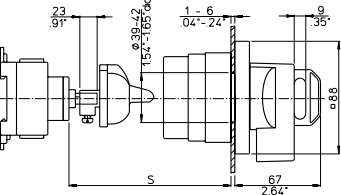
	A	C	H	S _{min.}	S _{max.}
KH16-KHR25	48	7,2	52	29,5	119
	1.89	.28	2.05	1.16	4.69
KH16B-KHR25B	64	8,1	58	27,5	113
	2.52	.32	2.28	1.08	4.45
KH32, KHR32,	64	8,1	58	28	124
KH40, KHR40,	2.52	.32	2.28	1.10	4.88
KH63, KHR63,					
KH80, KHR80					

M600

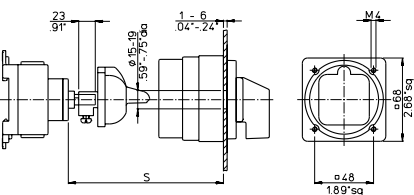


Door Clutches

M700/.



M701

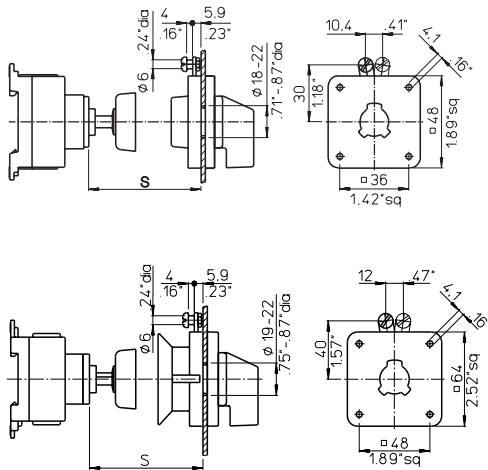


	S _{min.}
L100	M004D,
	M004
KH16B-KHR25B	61,5
	2.42
KH32, KHR32,	61,5
KH40, KHR40,	2.42
KH63, KHR63,	
KH80, KHR80	

Optional Extras

Door Clutches

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



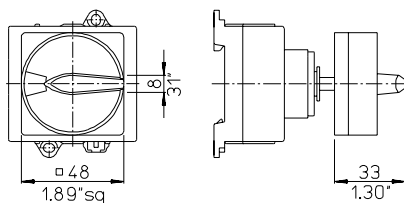
S = Standard length for switches of mounting VE

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

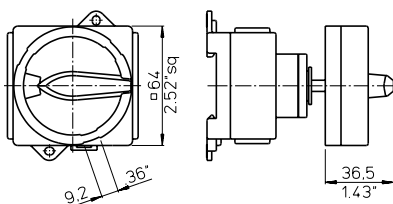
	S	S	S	S
KH16B-KHR25B	37-64 1.46-2.52	64-84 2.52-3.31	84-104 3.31-4.09	104-124 4.09-4.88
KH32, KHR32,	32-57	57-77	77-97	97-117
KH40, KHR40,	1.26-2.24	2.24-3.03	3.03-3.82	3.82-4.61
KH63, KHR63,				
KH80, KHR80				

Padlock Devices

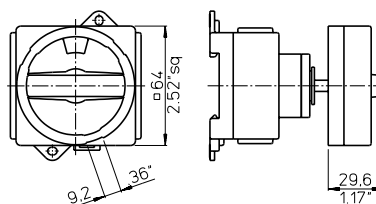
V840D



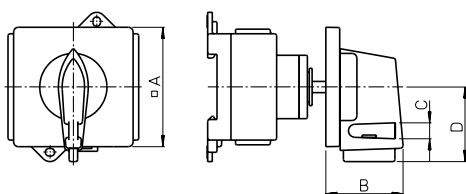
V840G, V840F/F



V840G/B, V840F/B

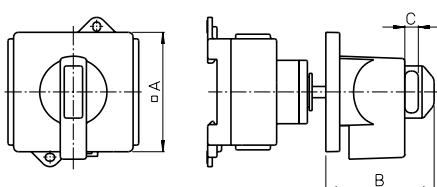


V840A



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

V845



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