

KRAUS & NAIMER
BLUE LINE SWITCHGEAR

www.krausnaimer.com

SINCE 1907

Catalog 120

CG, CH, CHR Switches

10 A-25 A



KRAUS & NAIMER

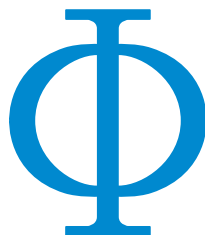
The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues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

Cam switches of the CG, CH and CHR-series are designed for universal application and may ideally be used for control switches, instrumentation switches and motor control switches. Different contact designs, contact materials and terminals allow the use as well as in electronic circuitry and in aggressive environments in accordance with IEC 60947-3, EN 60947-3, VDE 0660 part 107, UL and cUL (cUR).

The stage is the basis for all switches and can be supplied with a maximum of 2 contacts. All switches of this series are supplied with open terminals which are accessible while the switch is installed. The terminals are protected against accidental finger contact according to EN 50274, VDE 0660 part 514 and BGV A3. Captive plus-minus terminal screws and integrated screwdriver guides facilitate wiring. Due to the particular arrangement of the terminals of the CG switches, it is possible

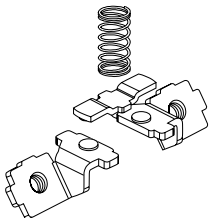
to install the switches closely, side by side, or to mount them directly at the cable trays. The contact terminal numbers are easy to read, even if the switch is installed.

The captive plus-minus screws of the CH and CHR-series are located about 90° apart from the terminal direction. This allows for connecting wires without any interference with the terminal screws.

For connection with ring type terminals the CHR-series were designed. The switches are supplied with large open terminals. This allows for connection without removing the screws.

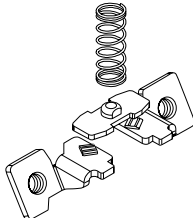
3 different Contact Systems are available

CG6 to
CHR16B



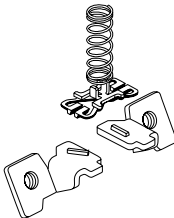
A rigid, double-break bridge with silver alloy contacts provides high making and breaking capabilities for regular control applications.

CG4 and
CG4-1



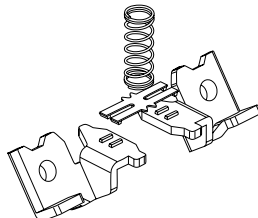
High contact reliability by multiple cross-point contacts, CG4 with 1 μ and CG4-1 with 35 μ gold plating.

CGD4-1



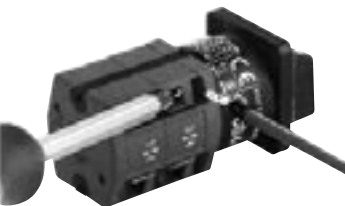
High contact reliability by H-bridge design with “cross-wire” contacts. The contact system with gold-plated contacts (CH12/CHR12 with silver contact) allows for low voltages, electronic compatible.

CH11/CHR11
CH12/CHR12

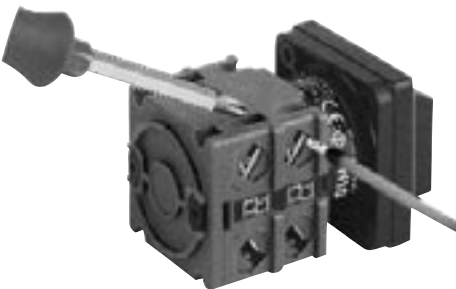


Type	Size	Possible Switching Angles	Max. No. of Stages
CG4-CGD4-1	S00	30°, 45°, 60°, 90°	8
CG6-CHR6	S00	30°, 45°, 60°, 90°	4
CG8-CHR16	S0	30°, 45°, 60°, 90°	12
CG8B	S1	30°, 45°, 60°, 90°	12
CH10B-CHR16B	S1	30°, 45°, 60°, 90°	12
CG8S	S0	60°	on request

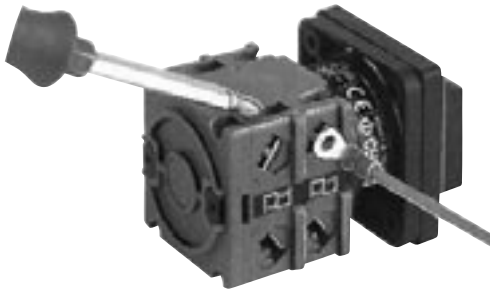
CG-series



CH-series

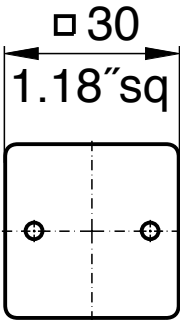
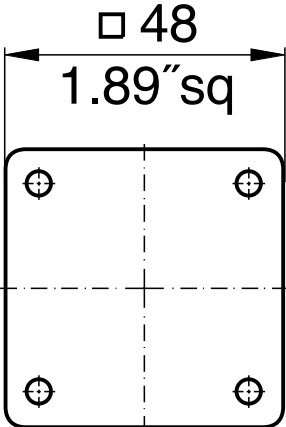
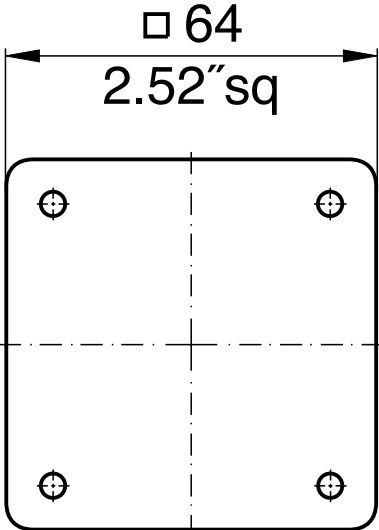


CHR-series



Above illustrates the standard terminal positions.

Nominal Ratings

Switch Size	Type	According to IEC 60947-3, EN 60947-3, VDE 0660 part 107			
		Operational Voltage ¹	Thermal Current	Motor Rating	
		U_e	I_u/I_{th}	3 x 380 V-440 V AC-23A	AC-3
		V	A	kW	kW
S00 	CG4	440	10	3	2,2
	CG4-1	440	10	3	2,2
	CGD4-1	440	5	-	-
	CG6	690	20	7,5	5,5
	CH6	690	20	7,5	5,5
	CHR6	690	20	7,5	5,5
S0 	CG8	690	20	7,5	5,5
	CH10	690	20	7,5	5,5
	CH11	600	6	-	-
	CH12	600	6	-	-
	CH16	690	25	11	7,5
	CHR10	690	20	7,5	5,5
	CHR11	600	6	-	-
	CHR12	600	6	-	-
	CHR16	690	25	11	7,5
S1 	CH10B	690	20	7,5	5,5
	CH16B	690	25	11	7,5
	CHR10B	690	20	7,5	5,5
	CHR16B	690	25	11	7,5

For further technical details, refer to pages 34-36.

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

How to order

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

Three types of data (shown below) are required for ordering Blue Line cam-operated switches. 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 table on page 3 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 34-36. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 6-23 indicate the switch function, escutcheon plate, handle and any optional extras.

Additional coding to modify type and color of handle and escutcheon plate is explained below.

3. Type of Mounting

Types of mounting are shown on pages 24-29. Catalog **101** describes enclosures and optional extras.

Specify the mounting code to indicate required mounting.

CH10

A202-600

VE

Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts ¹	CH6, CHR6, CH10, CHR10, CH10B, CHR10B
-4 ²	with quick connects (nickel-plated)	CH6, CH10, CH16, CH10B, CH16B
-6 ²	with angled quick connects (nickel-plated)	CH6, CH10, CH16, CH10B, CH16B
B	S0 switches with latching mechanism size S1	CG8, CH10, CH16, CHR10, CHR16 for four hole panel mounting
L	with lockout-relay w/o manual release	CG8, CH10, CH16, CHR10, CHR16
M	with lockout-relay with manual release	CG8, CH10, CH16, CHR10, CHR16
X	with power failure release	CG8, CH10, CH16, CHR10, CHR16
R	with spring return latching mechanism	CG8, CH10, CH16
S	with snap action	CG8, CH10, CH16, CHR10, CHR16 with 60° or 90° switching

Example: Coding for switch type **CH10** with latching mechanism size S1 is **CH10B**.

Modification of Switches

The part number for 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.

Switch Size	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash Number
S0, S1	electro-gray	electro-gray	brushed alu	black	-100
S0, S1	electro-gray	electro-gray	black	mat silver	-500
S00, S0, S1	black	black	brushed alu	black	-600
S00, S0, S1	black	black	black	mat silver	-700

How to order

Modification of Switches

The standard switch consists of a transparent escutcheon plate with brushed aluminum backing and black inscription. The escutcheon plate frame is black as well as the handle. Page 4 shows further color combinations of escutcheon plate and handle which are available. The appropriate dash number must be substituted in the switch function coding to specify other color combinations as required.

Example: The complete coding for switch type CG8 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: **CH10 A202-100 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 following two (2) digit dash numbers as a part of the overall dash number. It is still necessary to prefix these two digit numbers with the first digit which represents the color combination desired.

Special programs for escutcheon plate and handle combinations

- **000** = without escutcheon plate, without handle
- **.01** = without escutcheon plate
- **.02** = without handle
- **.03** = with square escutcheon plate without lettering
- **.04** = with rectangular escutcheon plate without lettering
- **.05** = with square escutcheon plate without lettering and without handle
- **.06** = with rectangular escutcheon plate without lettering and without handle
- **.07** = standard escutcheon plate, without lettering on rectangular section
- **.08** = with F-handle
- **.09** = with P-handle
- **.10** = escutcheon plate with frame and fixation ring only (if using switches with single hole mounting: - **.16**)
- **.11** = without escutcheon plate, but with handle bearing plate
- **.12** = with yellow escutcheon plate backing and red handle
- **.14** = with B-handle
- **.16** = escutcheon plate with frame and fixation ring only if using switches with single hole mounting
- **.17** = standard escutcheon plate and rectangular add-on escutcheon plate if using switches with single hole mounting FT2

Example: The complete coding for switch type CG8 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: **CH10 A202-103 E**.

Handles, Escutcheon Plates and Optional Extras

The handles for standard switches shown on pages 6-23 are suitable for mounting units with four hole mounting. Alternative types of handles available are illustrated on pages 24-29.

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 comprehensive range of available standard escutcheon plates is illustrated on pages 30-32. Non-standard or special escutcheon plate engravings are available at extra cost. The large number of optional extras and enclosures is covered in Catalog **101**.

Switch Size

CG, CH and CHR switches are available in sizes S00, S0 and S1. These size codes indicate the dimension of the mounting, the escutcheon plate and the handle, as well as the size of optional devices and enclosures. Page 3 lists these sizes and the various switch types they include.

Ordering of Special Switches and Escutcheon Plates

When ordering special switches and escutcheon plates it is advisable to use our order form, as illustrated. The customer's requirements are shown in blue as an example.

For technical reasons, it may not be possible to follow the sequence of contacts requested by the customer. The final contact development which is sent with every switch will show the customer's original terminal markings.

ESCUTCHEON PLATE		MOTOR 1		POSITIONS		O		H		A		DATE		SIGNED	
1		2		3		4		5		6		7		8	
9		10		11		12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	
65		66		67		68		69		70		71		72	
73		74		75		76		77		78		79		80	
81		82		83		84		85		86		87		88	
89		90		91		92		93		94		95		96	
97		98		99		100		101		102		103		104	
105		106		107		108		109		110		111		112	
113		114		115		116		117		118		119		120	
121		122		123		124		125		126		127		128	
129		130		131		132		133		134		135		136	
137		138		139		140		141		142		143		144	
145		146		147		148		149		150		151		152	
153		154		155		156		157		158		159		160	
161		162		163		164		165		166		167		168	
169		170		171		172		173		174		175		176	
177		178		179		180		181		182		183		184	
185		186		187		188		189		190		191		192	
193		194		195		196		197		198		199		200	
201		202		203		204		205		206		207		208	
209		210		211		212		213		214		215		216	
217		218		219		220		221		222		223		224	
225		226		227		228		229		230		231		232	
233		234		235		236		237		238		239		240	
241		242		243		244		245		246		247		248	
249		250		251		252		253		254		255		256	
257		258		259		260		261		262		263		264	
265		266		267		268		269		270		271		272	
273		274		275		276		277		278		279		280	
281		282		283		284		285		286		287		288	
289		290		291		292		293		294		295		296	
297		298		299		300		301		302		303		304	
305		306		307		308		309		310		311		312	
313		314		315		316		317		318		319		320	
321		322		323		324		325		326		327		328	
329		330		331		332		333		334		335		336	
337		338		339		340		341		342		343		344	
345		346		347		348		349		350		351		352	
353		354		355		356		357		358		359		360	
361		362		363		364		365		366		367		368	
369		370		371		372		373		374		375		376	
377		378		379		380		381		382		383		384	
385		386		387		388		389		390		391		392	
393		394		395		396		397		398		399		400	
401		402		403		404		405		406		407		408	
409		410		411		412		413		414		415		416	
417		418		419		420		421		422		423		424	
425		426		427		428		429		430		431		432	
433		434		435		436		437		438		439		440	
441		442		443		444		445		446		447		448	
449		450		451		452		453		454		455		456	
457		458		459		460		461		462		463		464	
465		466		467		468		469		470		471		472	
473		474		475		476		477		478		479		480	
481		482		483		484		485		486		487		488	
489		490		491		492		493		494		495		496	
497		498		499		500		501		502		503		504	
505		506		507		508		509		510		511		512	
513		514		515		516		517		518		519		520	
521		522		523		524		525		526		527		528	
529		530		531		532		533		534		535		536	
537		538		539		540		541		542		543		544	
545		546		547		548		549		550		551		552	
553		554		555		556		557		558		559		560	
561		562		563		564		565		566		567		568	
569		570		571		572		573		574		575		576	
577		578		579		580		581		582		583		584	
585		586		587		588		589		590		591		592	
593		594		595		596		597		598		599		600	
601		602		603		604		605		606		607		608	
609		610		611		612		613		614		615		616	
617		618		619		620		621		622		623		624	
625		626		627		628		629		630		631		632	
633		634		635		636		637		638		639		640	
641		642		643		644		645		646		647		648	
649		650		651		652		653		654		655		656	
657		658		659		660		661		662		663		664	
665		666		667		668		669		670		671		672	
673		674		675		676		677		678		679		680	
681		682		683		684		685		686		687		688	
689		690		691		692		693		694		695		696	
697		698		699		700		701		702		703		704	
705		706		707		708		709		710		711		712	
713		714		715		716		717		718		719		720	
721		722		723		724		725		726		727		728	
729		730		731		732		733		734		735		736	
737		738		739		740		741		742		743		744	
745		746		747		748		749		750		751		752	
753		754		755		756		757		758		759		760	
761		762		763		764		765		766		767		768	
769		770		771		772		773		774		775		776	
777		778		779		780		781		782		783		784	
785		786		787		788		789		790		791		792	
793		794		795		796		797		798		799		800	
801		802		803		804		805		806		807		808	
809		810		811		812		813		814		815		816	
817		818		819		820		821		822		823		824	
825		826		827		828		829		830		831		832	
833		834		835		836		837		838		839		840	
841		842		843		844		845		846		847		848	
849		850		851		852		853		854		855		856	
857		858		859		860		861		862		863		864	
865		866		867		868		869		870		871		872	
873		874		875		876		877		878		879		880	
881		882		883		884		885		886		887		888	
889		890		891		892		893		894		895		896	
897		898		899		900		901		902		903		904	
905		906		907		908		909		910		911		912	
913		914		915		916		917		918		919		920	
921		922		923		924		925		926		927		928	
929		930		931		932		933		934		935		936	
937		938		939		940		941		942		943		944	
945		946</													

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

ON/OFF Switches with 60° Switching

1 pole 2 pole 3 pole 3 pole with red handle 3 pole with V850 padlock attachment						A200-600 A201-600 A202-600 A202-626 A202-627	1 1 2 2 2	
4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole 7 pole 8 pole 8 pole 2 pole preclose 6° ¹ 9 pole 10 pole 11 pole 12 pole						A203-600 A653-600 A341-600 A342-600 A343-600 A344-600 A654-600 A345-600 A346-600 A347-600 A348-600	2 2 3 3 4 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole 7 pole 8 pole 8 pole 2 pole preclose 6° ¹ 9 pole 10 pole 11 pole 12 pole						A200-620 A201-620 A202-620 A203-620 A653-620 A341-620 A342-620 A343-620 A344-620 A654-620 A345-620 A346-620 A347-620 A348-620	1 1 2 2 2 3 3 4 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole						A200-621 A201-621 A202-621 A203-621 A653-621 A341-621 A342-621	1 1 2 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole						A200-622 A201-622 A202-622 A203-622 A653-622 A341-622 A342-622	1 1 2 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole						A200-623 A201-623 A202-623 A203-623 A653-623 A341-623 A342-623	1 1 2 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole						A200-624 A201-624 A202-624 A203-624 A653-624 A341-624 A342-624	1 1 2 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole						A200-625 A201-625 A202-625 A203-625 A653-625 A341-625 A342-625	1 1 2 2 2 3 3	

¹For use in a three phase four-wire system with switched neutral.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

ON/OFF Switches with 90° Switching

1 pole contacts						A290-600	1	1, 2, 3, 4, 5 and 6 pole
2 pole preclose 30°						A291-600	1	
3 pole						A292-600	2	
4 pole						A324-600	2	
4 pole 1 pole preclose 60° ¹						A293-600	2	
4 pole 3 pole preclose 30°						A327-600	2	
5 pole contacts						A325-600	3	4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°
6 pole preclose 30°						A326-600	3	
1 pole contacts						A290-620	1	
2 pole preclose 30°						A291-620	1	
3 pole						A292-620	2	
4 pole						A324-620	2	
4 pole 1 pole preclose 60° ¹						A293-620	2	
4 pole 3 pole preclose 30°						A327-620	2	
5 pole contacts						A325-620	3	3 pole 360° rotation 3 pole for foot operation
6 pole preclose 30°						A326-620	3	
3 pole 360° rotation						A208-600	2	
						A208-620	2	
3 pole for foot operation						A386-600	2	

ON/OFF Switches with 30° Switching

1 pole						A100-600	1	1-4 pole
2 pole						A101-600	1	
3 pole						A102-600	2	
4 pole						A103-600	2	
1 pole with spring return						A204-600	1	1-4 pole
2 pole with spring return						A205-600	1	
3 pole with spring return						A206-600	2	
4 pole with spring return						A207-600	2	
1 pole with spring return						A204-620	1	
2 pole with spring return						A205-620	1	
3 pole with spring return						A206-620	2	
4 pole with spring return						A207-620	2	

¹For use in a three phase four-wire system with switched neutral. ²available as switch types CH16B and CHR16B

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ²
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Double-throw Switches without „OFF“ 60° Switching

1 pole						A220-600	1	
2 pole						A221-600	2	
3 pole						A222-600	3	
4 pole						A223-600	4	
4 pole 1 pole preclose 6° ¹						A673-600	4	
5 pole						A369-600	5	
6 pole						A370-600	6	
7 pole						A371-600	7	
8 pole						A372-600	8	
8 pole 2 pole preclose 6° ¹						A972-600	8	
9 pole						A373-600	9	
10 pole						A374-600	10	
11 pole						A375-600	11	
12 pole						A376-600	12	

Double-throw Switches without „OFF“ with electrically isolated contacts

1 pole						A720-600	1	
2 pole						A721-600	2	
3 pole						A722-600	3	
4 pole						A723-600	4	
4 pole 1 pole preclose 6° ¹						A973-600	4	
1 pole with spring return						A795-600	1	

Double-throw Switches without „OFF“ 30° Switching

1 pole						A120-600	1	
2 pole						A121-600	2	
3 pole						A122-600	3	
4 pole						A123-600	4	
1 pole with spring return						A295-600	1	
2 pole with spring return						A296-600	2	
3 pole with spring return						A297-600	3	
1 pole with spring return						A295-620	1	
2 pole with spring return						A296-620	2	
3 pole with spring return						A297-620	3	

¹For use in a three phase four-wire system with switched neutral. ²Connection diagrams for CHR switches on request.

Switch Function and Configuration

CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ²
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Double-throw Switches with Center „OFF“ 60° Switching

1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole 7 pole 8 pole 8 pole 2 pole preclose 6° ¹						A210-600 A211-600 A212-600 A213-600 A913-600 A361-600 A362-600 A363-600 A364-600 A664-600	1 2 3 4 4 5 6 7 8 8	 1-4 pole 4 pole 1 pole preclose 6° 5 pole 6 and 7 pole 8 pole 8 pole 2 pole preclose 6°
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹ 5 pole 6 pole 7 pole 8 pole 8 pole 2 pole preclose 6° ¹						A210-620 A211-620 A212-620 A213-620 A913-620 A361-620 A362-620 A363-620 A364-620 A664-620	1 2 3 4 4 5 6 7 8 8	
1 pole 2 pole 3 pole						A210-621 A211-621 A212-621	1 2 3	
1 pole 2 pole 3 pole						A210-622 A211-622 A212-622	1 2 3	
1 pole 2 pole 3 pole						A210-623 A211-623 A212-623	1 2 3	
1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹						A210-624 A211-624 A212-624 A213-624 A913-624	1 2 3 4 4	

Double-throw Switches with Center „OFF“ 90° Switching

1 pole 2 pole 3 pole 4 pole 1 pole preclose 6° ¹						A218-600 A219-600 A299-600 A294-600	1 2 3 4	 1-4 pole
1 pole 2 pole 3 pole 4 pole 1 pole preclose 6° ¹						A218-620 A219-620 A299-620 A294-620	1 2 3 4	

Double-throw Switches with Center „OFF“ and electrically isolated contacts

1 pole 2 pole 3 pole 4 pole 4 pole 1 pole preclose 6° ¹						A710-600 A711-600 A712-600 A713-600 A963-600	1 2 3 4 4	 1-4 pole 4 pole 1 pole preclose 6°
1 pole with spring return 2 pole to center						A714-600 A715-600	1 2	

¹For use in a three phase four-wire system with switched neutral. ²Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Double-throw Switches with Spring Return to Center

1 pole with spring return to center						A214-600 A215-600 A216-600	1 2 3	
2 pole								
3 pole								
1 pole						A214-620 A215-620 A216-620	1 2 3	1-3 pole
2 pole								
3 pole								
1 pole with spring return from left to center						A320-600 A321-600 A322-600	1 2 3	
2 pole								
3 pole								
1 pole						A320-621 A321-621 A322-621	1 2 3	1-3 pole
2 pole								
3 pole								

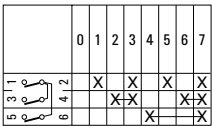
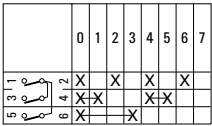
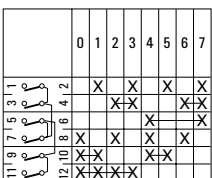
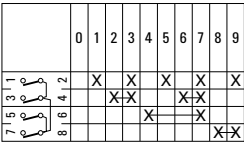
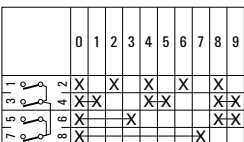
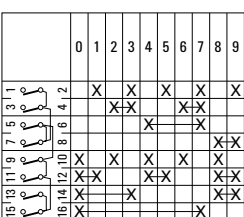
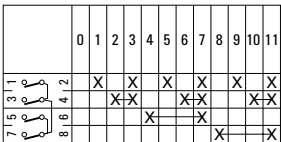
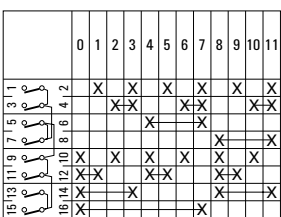
General Application Switches

1 pole 2 Gang Switching sequence: 0, A, A+B						A310-600 A312-600 A314-600	1 2 3	
2 pole								
3 pole								
1 pole						A310-620 A312-620 A314-620	1 2 3	
2 pole								
3 pole								
1 pole 3 Gang Switching sequence: 0, A, A+B, A+B+C						A311-600 A313-600 A315-600	2 3 5	
2 pole								
3 pole								
1 pole						A311-620 A313-620 A315-620	2 3 5	
2 pole								
3 pole								
1 pole 2 Gang Series switching Switching sequence: 0, A, B, A+B						A330-600 A331-600 A332-600	1 2 3	
2 pole								
3 pole								
1 pole						A330-620 A331-620 A332-620	1 2 3	
2 pole								
3 pole								
2 pole 2 Gang Series-parallel Switching Switching sequence: 0, A+B series, A, A+B parallel						A339-600	2	
						A339-620	2	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6- CHR6	CH11 CH12	CH10B- CHR16B			

Coding Switches/Binary Code

0 - 7 360° rotation						A540-600	2	
0 - 7 complement 360° rotation						A541-600	2	
0 - 7 + complement 360° rotation						A542-600	3	
0 - 9						A550-600	2	
0 - 9 complement						A551-600	2	
0 - 9 + complement						A552-600	4	
0 - 11 360° rotation						A543-600	2	
0 - 11 + complement 360° rotation						A545-600	4	

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Multi-step Switches without „OFF“

1 pole 3 Step 2 pole 3 pole 4 pole 5 pole 6 pole						A230-600 A250-600 A270-600 A476-600 A484-600 A489-600	2 3 5 6 8 9	
1 pole 4 Step 2 pole 3 pole 4 pole 5 pole 6 pole						A231-600 A251-600 A271-600 A477-600 A485-600 A490-600	2 4 6 8 10 12	
1 pole 5 Step 2 pole 3 pole 4 pole						A232-600 A252-600 A272-600 A478-600	3 5 8 10	
1 pole 6 Step 2 pole 3 pole						A233-600 A253-600 A273-600	3 6 9	
1 pole 7 Step 2 pole 3 pole						A234-600 A254-600 A274-600	4 7 11	
1 pole 8 Step 2 pole 3 pole						A235-600 A255-600 A275-600	4 8 12	
1 pole 9 Step						A236-600	5	
1 pole 10 Step						A237-600	5	
1 pole 11 Step						A238-600	6	
1 pole 12 Step 1 pole 360° rotation						A239-600 A639-600	6 6	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Multi-step Switches without „OFF“ with electrically isolated contacts

1 pole 3 Step						A730-600	2	1 pole
2 pole						A750-600	3	2 pole
1 pole 4 Step						A731-600	2	1 pole
2 pole						A751-600	4	2 pole

Multi-step Switches with „OFF“

1 pole 2 Step						A240-600	1	1-6 pole
2 pole						A260-600	2	
3 pole						A280-600	3	
4 pole						A480-600	4	
5 pole						A486-600	5	
6 pole						A491-600	6	
1 pole						A240-620	1	1-6 pole
2 pole						A260-620	2	
3 pole						A280-620	3	
4 pole						A480-620	4	
5 pole						A486-620	5	
6 pole						A491-620	6	
1 pole 3 Step						A241-600	2	1 and 2 pole
2 pole						A261-600	3	
3 pole						A281-600	5	
4 pole						A481-600	6	
5 pole						A487-600	8	
1 pole						A241-620	2	3 pole
2 pole						A261-620	3	
3 pole						A281-620	5	
4 pole						A481-620	6	
5 pole						A487-620	8	
1 pole						A241-621	2	4 pole
2 pole						A261-621	3	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Multi-step Switches with „OFF“

1 pole 4 Step						A242-600 A262-600 A282-600 A482-600	2 4 6 8	
1 pole 4 Step						A242-620 A262-620 A282-620 A482-620	2 4 6 8	
1 pole 5 Step						A243-600 A263-600 A283-600	3 5 8	
1 pole 5 Step						A243-620 A263-620 A283-620	3 5 8	
1 pole 6 Step						A244-600 A264-600 A284-600	3 6 9	
1 pole 6 Step						A244-620 A264-620 A284-620	3 6 9	
1 pole 7 Step						A245-600 A265-600	4 7	
1 pole 7 Step						A245-620 A265-620	4 7	
1 pole 8 Step						A246-600	4	
1 pole 8 Step						A246-620	4	
1 pole 9 Step						A247-600	5	
1 pole 9 Step						A247-620	5	
1 pole 10 Step						A248-600	5	
1 pole 10 Step						A248-620	5	
1 pole 11 Step						A249-600 A649-600	6 6	
1 pole 360° rotation						A249-620 A649-620	6 6	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Voltmeter Switches without „OFF“

3 phase 3 wire						A023-600	2	
						A023-620	2	
3 phase 3 wire 3 phase to phase and phase to neutral						A025-600	3	
						A025-620	3	

Voltmeter Switches with „OFF“

2 pole 360° rotation						A002-600	1	
3 phase 3 wire						A004-600	2	
						A004-620	2	
						A004-621	2	
						A004-622	2	
						A004-623	2	
						A004-624	2	
						A011-600	2	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Voltmeter Switches with „OFF“

3 phase to neutral						A005-600	2	
						A005-620	2	
						A005-621	2	
						A005-622	2	
						A005-623	2	
3 phase to phase and 3 phase to neutral						A007-600	3	
						A007-620	3	
						A007-621	3	
						A007-622	3	
						A007-623	3	
						A007-624	3	
2 separate 3 phase with center „OFF“						A008-600	4	
						A008-620	4	
						A008-621	4	
						A008-622	4	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Voltmeter Switches with „OFF“

3 phase and 1 phase to neutral						A010-600	3	
						A010-620	3	
						A010-621	3	
						A010-622	3	

Ammeter Switches

Single pole with one current transformer						A046-600	1	
						A046-620	1	
						A046-621	1	
Single pole with 3 current transformers without „OFF“						A017-600	3	
						A017-620	3	
Single pole with 3 current transformers with „OFF“ 360° rotation						A048-600	3	
						A048-620	3	
						A048-621	3	
						A048-622	3	
						A048-623	3	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Ammeter Switches

Single pole with 2 current transformers (3 readings)						A021-600	2	
						A021-620	2	
Single pole with 4 current transformers						A036-600	4	
						A036-620	4	
2 pole 2 current transformers						A037-600	3	
						A037-620	3	
						A037-621	3	
2 pole 3 current transformers						A019-600	5	
						A019-620	5	
						A038-600	5	
						A038-620	5	
						A038-621	5	
						A039-600	6	
						A039-620	6	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Volt-ammeter Switches

3 phase - phase to phase 3 current						A027-600	6	
						A028-600	7	
3 phase voltage 3 phase current 4 wire						A033-600	5	
3 phase voltage 3 phase current 3 wire						A035-600	5	

Control Switches

Stop switch						A174-600	1	
Start switch						A175-600	1	
Stop start switch single pole						A176-600	1	
Stop start switch 2 pole						A183-600	2	
Stop start switch with spring return from start to run						A178-600	1	
						A178-620	1	
Stop start switch with spring return to run for 2 units						A177-600	2	
						A177-620	2	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Control Switches

Stop start switch with spring return to run with contactor interlock contactors for 2 units						A182-600	2	
						A182-620	2	
Motor voltage control switch						A150-600	2	

Control Switches with electrically isolated contacts

Stop start switch 1 pole						A789-600	1	
Stop start switch with spring return to 1						A791-600	1	
Stop start switch with spring return to run for 2 units						A790-600	2	
Contactor control with spring return to „OFF“						A179-600	2	
						A179-620	2	
Circuit breaker control						A537-600	2	

Control and Alarm Switches¹

With slip clutch and without indicator device						A190-600	5 ²	
Without indicator device						A192-600	2	

¹Advise the indicator device, described in Catalog 101, page 7. ²incl. slip clutch

Switch Function and Configuration

CG, CH, CHR Switches

[illegible]

Motor Reversing Switches

2 pole						A400-600	2	
						A400-620	2	
						A400-621	2	
3 pole						A401-600	3	
						A401-620	3	
						A401-621	3	
3 pole with spring return to „OFF“						A228-600	3	
						A228-620	3	
3 pole for use with reversing contactors						A402-600	4	

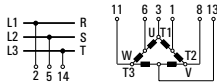
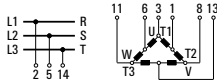
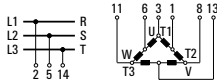
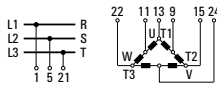
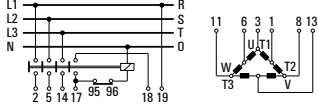
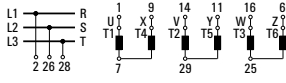
Motor Control Switches

2 speed 2 winding 0-A-BY or Δ						A451-600	3	
						A451-620	3	
3 speed 2 winding 0-AΔ-BY-AY						A457-600	6	
						A457-620	6	

¹Connection diagrams for CHR switches on request.

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Motor Control Switches

2 speed single winding						A440-600	4	
						A440-620	4	
2 speed single winding without „OFF“						A466-600	4	
2 speed single winding with center „OFF“						A441-600	4	
						A441-620	4	
2 speed single winding reversing						A442-600	6	
						A442-620	6	
2 speed single winding for use with contactors						A444-600	5	
						A444-620	5	
2 speed reversing for 2 way operation with slip clutch for „OFF“ load use						A468-600	10 ²	
						A468-620	10 ²	

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram ¹
		CG4- CGD4-1	CG6- CHR6	CH10- CHR16	CH10B- CHR16B			

Star-delta Switches

OFF-star-delta						A410-600	4	
						A410-620	4	
Reversing						A413-600	5	
With auxiliary contact closed in „OFF“ position						A416-600	5	
For use with reversing contactors						A419-600	4	

Start and Run Switches

Split-phase start						A425-600	2	
						A425-620	2	
Split-phase start reversing						A426-600	3	
						A426-620	3	
Split-phase reversing auto cutout of start field winding						A622-600	3	

¹Connection diagrams for CHR switches on request.

Two or Four Hole Panel Mounting	Terminals rotated 90°	Code	CG4- CHR6	CG8- CHR16	CH10B- CHR16B
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Panel mounting					
	Two hole panel mounting	●	E E-V	● ●	
	Two hole panel mounting, protection IP 66	●	EF EF-V	● ●	
	Four hole panel mounting	●	E E-V	● ●	● ●
	Four hole panel mounting, protection IP 66	●	EF EF-V	● ●	● ●
	Two hole panel mounting, protection IP 65	●	E22 E22-V	● ●	
Panel mounting using larger escutcheon plate and handle and with heavy duty latching					
	Four hole panel mounting		EG	●	
	Four hole panel mounting, protection IP 66		EGF	●	

Two Hole Panel Mounting or Mosaic Mounting	Code	CG4-CHR6
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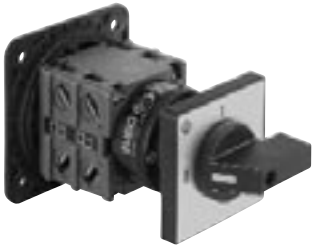
	Panel mounting with round shaft for combining with commercial radio knobs Two hole panel mounting Shaft diam. 6 mm/.24 inch Two hole panel mounting Shaft diam. 6,35 mm/.25 inch Mosaic mounting For Siemens-Mosaic 30 mm grid depth For Subklew-, Kreutzenbeck-, Symo-Mosaic 28 mm 25 mm 25 mm grid depth For Mauell-Mosaic 30 mm grid depth	E9 E91 E92 E93 E94	● ● ● ● ●

Two or Four Hole Panel Mounting		Code	CG8- CHR16	CH10B- CHR16B
 Panel mounting with heavy duty latching and metal shaft Four hole panel mounting Mounting plate, escutcheon plate and handle of size S0		KN2	●	
	 Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1	KN1	●	●
	 Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1 and 6 mm square metal shaft	KD1	●	●
 Panel mounting with protective cover Four hole panel mounting Protection front IP 40 rear IP 30 Four hole panel mounting with additional shaft seal Protection front IP 65 rear IP 30		EC	CH CHR	●
		ED	CH CHR	●
 Four hole panel mounting Protection front IP 40 rear IP 42 Four hole panel mounting with additional shaft seal Protection front IP 65 rear IP 42 Two hole panel mounting Protection front IP 65 rear IP 42		EC1		●
		ED1		●
		ED22	●	

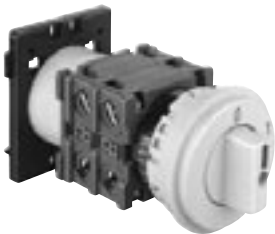
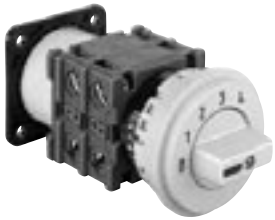
Single Hole Mounting	Terminals rotated 90°	Code	CG4- CHR6	CG8- CHR16
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	With locking nut and shaft seal, protection IP 66			mm	mm
	Without escutcheon plate	●	FS1 FS1-V FT1	16/22 16/22	22
		●	FT1-V FT3		22 22/30
		●	FT3-V		22/30
	With square escutcheon plate	●	FS2 FS2-V FT2	16/22 16/22	22
		●	FT2-V FT4		22 22/30
		●	FT4-V		22/30
	With size S1 square escutcheon plate and heavy duty latching	●	FH3 FH3-V		22 22
	With rectangular escutcheon plate	●	FS4 FS4-V FT6	16/22 16/22	22 22
		●	FT6-V		22
	With size S1 rectangular escutcheon plate and heavy duty latching	●	FH4 FH4-V		22 22
	Mounting key for locking nut		S00 T170 09		

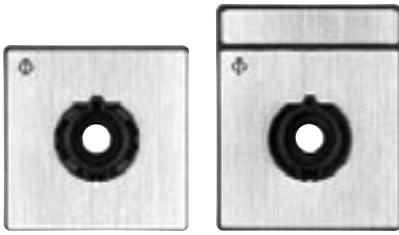
Base Mounting	Terminals rotated 90°	Code	CG4- CGD4-1	CG8- CHR16
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	Base mounting			
	Base mounting - four hole	●	VE VE-V	● ●
	For four hole base mounting and with integrated simplified door clutch, protection IP 65	●	VF VF-V	● ●
	For two hole base mounting	●	VE22 VE22V	● ●
	For two hole base mounting and with integrated simplified door clutch, protection IP 65	●	VF22 VF22V	● ●
	Snap-on base mounting for track EN 50022.		VE1	●
	Snap-on base mounting for track EN 50022. Escutcheon plate can be fastened by screws at the switch.		VE1E	● ●
	Snap-on base mounting for track EN 50022. Escutcheon plate fastened by single hole mounting at the switch e.g. for combining with key-lock device.		VE1F	● ●

Base Mounting	Code	CG4- CGD4-1	CG8- CHR16
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Base mounting			
	Snap-on base mounting for track EN 50022 with rectangular escutcheon plate for 45 mm standard knock-out.	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.	VE21	● ●
	Snap-on base mounting for track EN 50022 with circular escutcheon plate for 46 mm standard knock-out.	VE3	●
	Base mounting - four hole - for circular escutcheon plate with 46 mm knock-out.	VE4	●

Escutcheon Plates

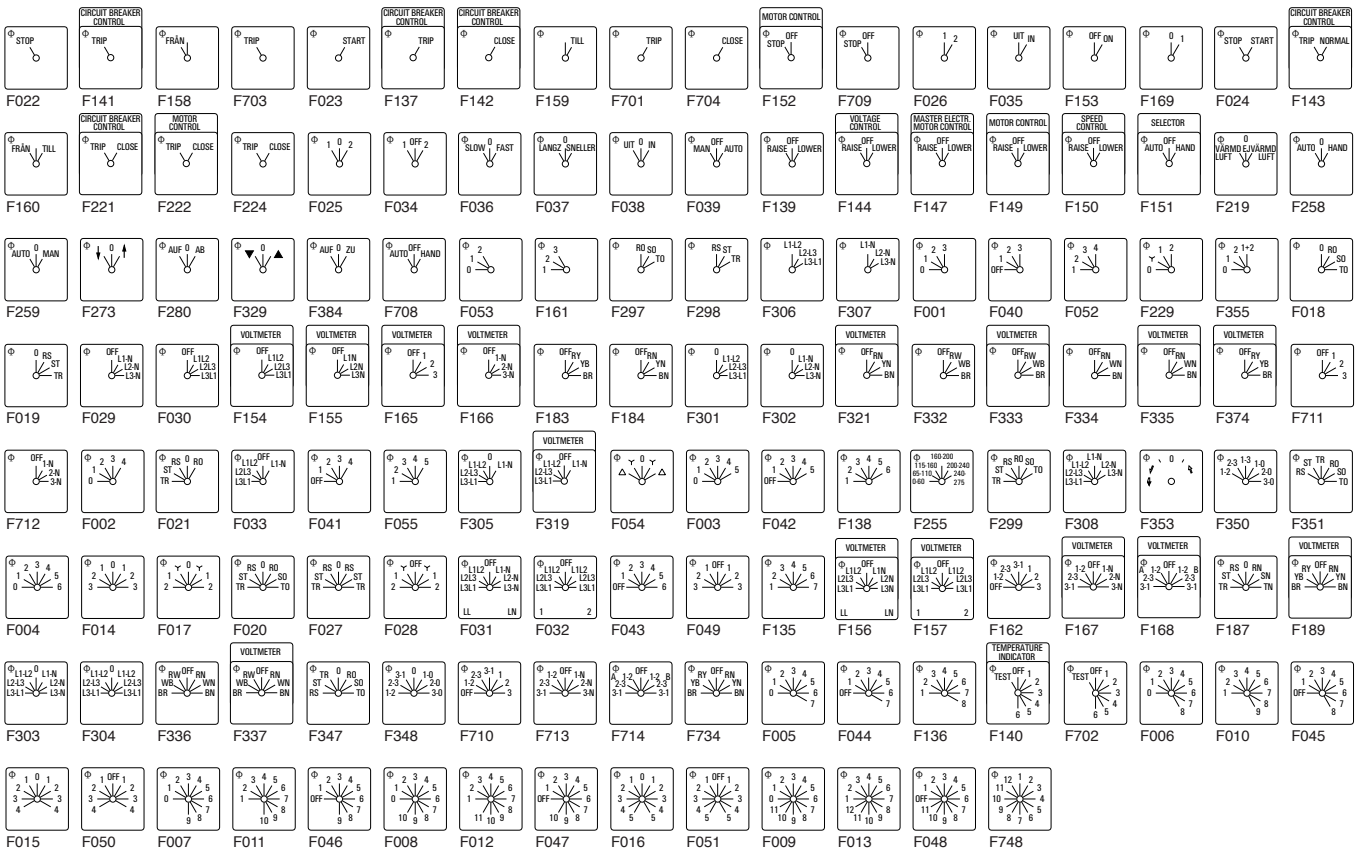


Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch positions which is then embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface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

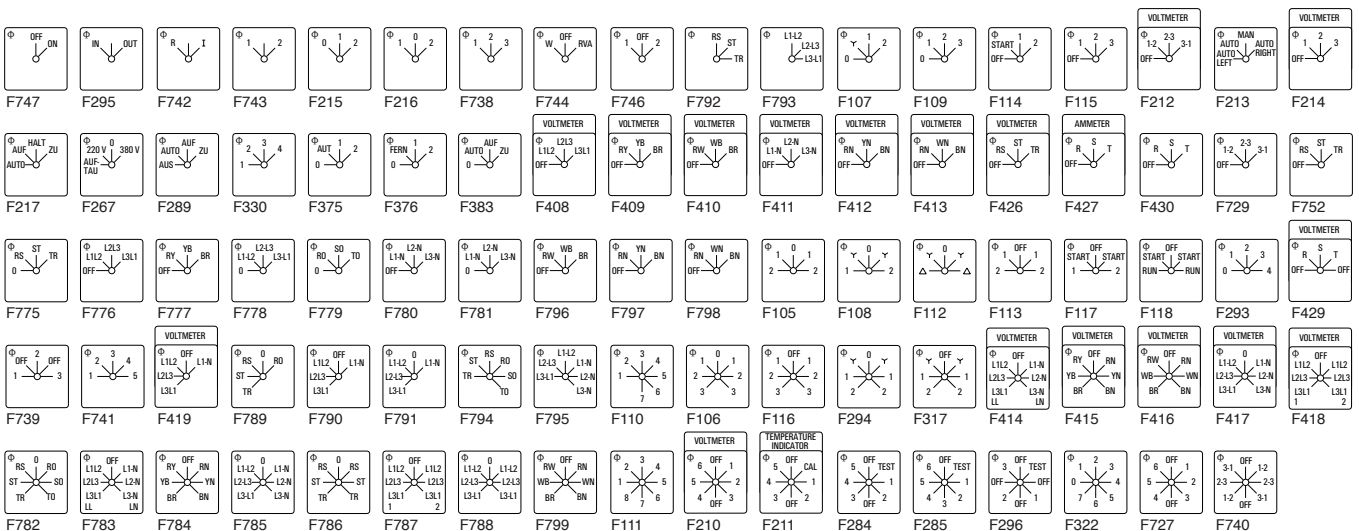
Standard Letterings Available

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

30° switching



45° switching



Escutcheon Plates

60° switching

F070	F087	F088	F089	F133	F197	F198	F232	F243	F247	F263	F268	F310	F311	F323	F328	F352	F367
F379	F380	F470	F754	F072	F163	F164	F192	F193	F196	F230	F231	F234	F244	F257	F262	F264	F282
F288	F291	F313	F382	F441	F705	F721	F722	F750	F757	F758	F075	F076	F098	F220	F223	F356	F357
F377	F723	F071	F073	F080	F081	F085	F086	F090	F091	F092	F093	F094	F104	F194	F235	F237	F239
F240	F241	F249	F260	F269	F274	F281	F290	F292	F312	F314	F315	F316	F324	F331	F344	F354	F358
F359	F364	F370	F371	F373	F381	F385	F442	F444	F469	F732	F735	F759	F077	F100	F101	F102	F309
F342	F343	F361	F362	F363	F365	F366	F078	F191	F325	F326	F720	F074	F082	F096	F097	F195	F724
F256	F079	F083	F084	F095	F099	F185	F190	F199	F233	F236	F238	F242	F283	F725	F730	F731	F736
F737																	

90° switching

F056	F063	F068	F134	F201	F251	F252	F346	F456	F058	F065	F069	F177	F178	F182	F208	F253	F254
F340	F360	F378	F458	F443	F700	F743	F057	F061	F064	F067	F171	F181	F205	F207	F209	F320	F349
F437	F445	F715	F719	F059	F060	F062	F066	F170	F172	F173	F174	F175	F176	F179	F180	F186	F188
F202	F204	F206	F250	F265	F266	F286	F318	F327	F338	F339	F425	F716	F717	F718	F726	F733	F751
F755	F756																

Miscellaneous

F119	F130	F122	F126	F125	F129	F225	F248	F246	F261	F341	F345	F287	F123	F127	F145	F146	F148
F706	F707	F245	F120	F124	F128	F131	F121	F132	F749								
F805	F806	F807	F808	F809	F810	F811	F812	F813	F814	F815	F816	F817	F818	F819	F820	F821	F822
F823	F824	F825	F826	F827	F828	F829	F830	F831	F832	F833	F834	F835	F837	F838	F839 ¹	F840 ²	F841 ³

¹INTERRUPTEUR PRINCIPAL, OUVERTURE EN POSITION 0 ²INTERRUTTORE GENERALE, APRIRE SOLO CON MANIGLIA SU 0
³INTERRUPTOR PRINCIPAL, ABRIR ARMARIO SOLO EN POS. "0"

Handles

Type	Color	Code	Size		
			S00	S0	S1

Type	Color	Code	Size		
			S00	S0	S1

R-Handle 	black red white electro-gray	G001 G002 G003 G007	— — — —	● ● ● ●	● ● ● ●
F-Handle 	black red white electro-gray	G221 G222 G223 G227	● ● ● ●	● ● ● ●	● ● ● ●
S-Handle  S0 S1	black red white electro-gray	G301 G302 G303 G307	— — — —	● ● ● ●	● ● ● ●
P-Handle  S0 S1	black red white electro-gray	G211 G212 G213 G217	— — — —	● ● ● ●	● ● ● ●
O-Handle 	black red white electro-gray	G321 G322 G323 G327	— — — —	— — — —	● ● ● ●

I-Handle  S00 S0, S1	black red white electro-gray	G251 G252 G253 G257	● ● ● ●	● ● ● ●	● ● ● ●
B-Handle 	black red white electro-gray	G521 G522 G523 G527	— — — —	● ● ● ●	● ● ● ●
L-Handle 	black red white electro-gray	G501 G502 G503 G507	— — — —	— — — —	● ● ● ●
K-Handle 	black red white electro-gray	G411 G412 G413 G417	— — — —	— — — —	● ● ● ●

International Standards and Approvals

Country	Authority	Mark or Standard	CG4	CG4-1 CGD4-1	CG6	CG8	CH6 CH10 CH11 CH12 CH10B	CH16 CH16B	CHR6 CHR10 CHR11 CHR12 CHR10B	CHR16 CHR16B
USA	Underwriters Laboratories	 ¹							●	●
		 ² ₃	●	●	●	●	●	●		
Canada	Canadian Standards Association	 ⁶	●	CG4-1	●	●	●	●	●	●
		 ¹							●	●
		 ² ₃	●	●			●	●		
Switzerland	Schweizerischer Elektrotechnischer Verein	 ³	●	+	+	+	+	+	+	+
Denmark	Danmarks Elektriske Materielkontrol	 ⁴	+	+	+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol	 ⁵	+	+	+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontrollanstalten	 ⁶	+	+	+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus	 ⁷	+	+	+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik	 ⁸	+	+	+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ⁴	+	+	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ⁴	+	+	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60947 ⁵	+	+	+	+	+	+	+	+
China	China Quality Certification Centre	 ⁷ GB14048.3	●	CG4-1			CH10 CH10B		CHR10 CHR10B	
Russian Federation	GOST	 ⁷ CHB1	●	● +	●	●	●	●	+	+
Germanischer Lloyd		 ⁷	+	+	+	+	+	+	+	+
Lloyds Register of Shipping		 ⁷	+	+	+	+	+	+	+	+

● Switch approved + Switch conforms to requirements

¹Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Category Control No. NLRV2 (U.S.) resp. NLRV8 (Canada).

²Approved under the "Listing Program". File No. E35541, Category Control No. NLRV (U.S.) resp. NLRV7 (Canada).

³Switch types CGD4-1, CH11, CH12, CHR11, CHR12 approved under the "Listing Program". File No. E60262, Category Control No. NRNT (U.S.) resp. NRNT7 (Canada).

⁴It is not required for Industrial Switchgear to bear a symbol but must conform to requirements. By stating the specific standard no. on the product the manufacturer declares that all requirements of the product standard are met.

⁵IEC does not operate an approval scheme.

⁶File No. 13002, Class No. 3211-05 resp. 4652-04.

⁷If this approval is required, please request when ordering.

Selection Data

CG4 CG4-1	CG6 CG8	CH6 CH10 CH10B	CHR6 CHR10 CHR10B	CH16 CH16B	CHR16 CHR16B
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Rated Insulation Voltage U_e		IEC 60947-3, EN 60947-3 ¹ VDE 0660 part 107 ¹ SEV max. UL/Canada ² CEE 24 min. voltage	V	440	690	690	690	690	690
Rated Impulse Withstand Voltage U_{imp}¹			kV	4	6	6	6	6	6
Rated Thermal Current I_u/I_{th}		IEC 60947-3, EN 60947-3 VDE 0660 part 107 SEV max. UL/Canada	A	10	20	20	20	25	25
Rated Operational Current I_e									
AC-21A	Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	10	20	20	20	25	25
AC-1	Resistive or low inductive loads	SEV 400 V 500 V 600 V	A	10	—	—	—	—	—
			A	—	—	—	—	—	—
			A	—	—	—	—	—	—
AC-22A	Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3 VDE 0660, part 107 220 V-440 V 500 V 660 V-690 V	A	10	20	20	20	25	25
			A	—	20	20	20	25	25
			A	—	16	16	16	25	25
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-3 VDE 0660, part 107 110 V 220 V-240 V 380 V-440 V	A	2,5	6	5	5	8	8
			A	2,5	5	5	5	8	8
			A	1,5	4	4	4	5	5
Pilot Duty		UL/Canada ² Heavy		A300	A300	A600	A600	A600	A600
Ampere Rating	Resistive or low inductive loads	UL/Canada ²	A	10	16 (150 V) 10 (300 V)	20	20	25	25
Resistive load/Motor load		CEE 24 ² NEMKO/FI ²	A	4/2	10/6	—	—	—	—
			A	6/4 ⁴	10/6	—	—	—	—
Breaking capacity		220 V-240 V 380 V-440 V 660 V-690 V	A	50	150	150	150	200	200
			A	50	150	150	150	200	200
			A	—	80	80	80	125	125
Power loss per contact at I_u Resistance to vibration Resistance to shock			W	0,4/0,7	0,8	1,4 on request min. 5 g, 30 ms	1,4	2,3	2,3
Short Circuit Protection									
Max. fuse size (gL-characteristic)			A	10	25	25	25	35	35
Rated short-time withstand current (1s-current)			A	90	140	200	200	250	250
DC Switching Capacity⁶				Rated Operational Current I_e					
No. of series contacts	1 2 3 4 5 6 8			CG4 CG4-1	CG6 CG8	CH6 CH10 CH10B	CHR6 CHR10 CHR10B	CH16 CH16B	CHR16 CHR16B
Resistive loads	24 48 70 95 120 145 190		A	10	20	20	20	25	25
T ≤ 1 ms	48 95 140 190 240 290 350			6	12	16	12	20	20
	60 120 180 240 300 360 450			2,5	4,5	8	4,5	7,5	7,5
	110 220 330 440 550 660 —			0,7	1	2	1	1,5	1,5
	220 440 660 — — — —			0,3	0,4	0,6	0,4	0,5	0,5
	440 660 — — — — —			0,2	0,27	0,35	0,27	0,3	0,3
Inductive loads	24 48 70 95 120 145 190		A	6	12	20	12	20	20
T = 50 ms	30 60 90 120 150 180 240			3	5	13	5	9	9
	48 95 140 190 240 290 350			1	2	6	2	3	3
	60 120 180 240 300 360 450			0,7	1	3	1	1,5	1,5
	110 220 330 440 550 660 —			0,3	0,4	1	0,4	0,5	0,5
Ambient Temperature of Stages^{5,7}		open at 100 % I_u/I_{th} enclosed at 100 % I_{the}		55 °C during 24 hours with peaks up to 60 °C 35 °C during 24 hours with peaks up to 40 °C					

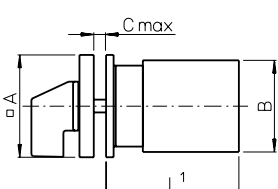
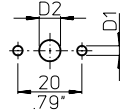
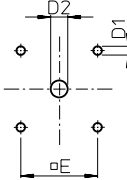
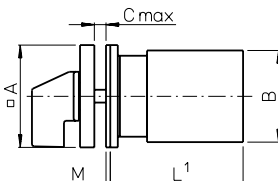
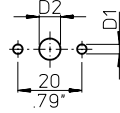
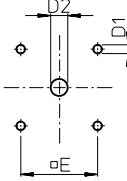
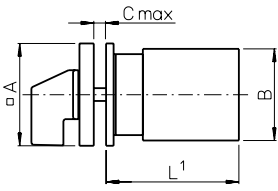
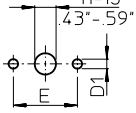
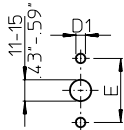
Selection Data						
	CG4 CG4-1	CG6 CG8	CH6 CH10 CH10B	CHR6 CHR10 CHR10B	CH16 CH16B	CHR16 CHR16B

Rated Utilization Category				IEC 60947-3, EN 60947-3 VDE 0660 part 107							
AC-2	Slip ring motor starting, reversing and plugging, star-delta starting (CG4-CHR10B)	3 phase	220 V-240 V	kW	2,5	4	4	4	5,5	5,5	
		3 pole	380 V-440 V		4,5	7,5	7,5	7,5	11	11	
			500 V		–	10	10	10	15	15	
			660 V-690 V		–	10	10	10	13	13	
AC-3	Direct-on-line starting, star-delta starting (CH16-CHR16B)	3 phase	220 V-240 V	kW	1,5	3	3	3	4	4	
		3 pole	380 V-440 V		2,2	5,5	5,5	5,5	7,5	7,5	
			500 V		–	5,5	5,5	5,5	7,5	7,5	
			660 V-690 V		–	5,5	5,5	5,5	7,5	7,5	
		1 phase	110 V-120 V	kW	0,3	0,6	0,6	0,6	1,5	1,5	
		2 pole	220 V-240 V		0,55	2,2	2,2	2,2	3	3	
			380 V-440 V		0,75	3	3	3	3,7	3,7	
			500 V		–	–	3	3	4	4	
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase	220 V-240 V	kW	0,37	0,55	0,55	0,55	1,5	1,5	
		3 pole	380 V-440 V		0,55	1,5	1,5	1,5	3	3	
			500 V		–	1,5	1,5	1,5	3	3	
			660 V-690 V		–	1,5	1,5	1,5	3	3	
		1 phase	110 V	kW	0,15	0,3	0,3	0,3	0,45	0,45	
		2 pole	220 V-240 V		0,25	0,75	0,75	0,75	1,1	1,1	
			380 V-440 V		0,5	1,5	1,5	1,5	2,2	2,2	
			500 V		–	–	3	3	4	4	
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	1,8	3,7	3,7	3,7	5,5	5,5	
		3 pole	380 V-440 V		3	7,5	7,5	7,5	11	11	
			500 V		–	7,5	7,5	7,5	11	11	
			660 V-690 V		–	7,5	7,5	7,5	11	11	
		1 phase	110 V-120 V	kW	0,37	0,75	0,75	0,75	1,5	1,5	
		2 pole	220 V-240 V		0,75	2,5	2,5	2,5	3	3	
			380 V-440 V		1,1	3,7	3,7	3,7	5,5	5,5	
			500 V		–	–	4	4	5,5	5,5	
		660 V-690 V	–	–	4	4	5,5	5,5			
Ratings				UL/Canada							
Standard motor load DOL-Rating (similar AC-3)	3 phase	110 V-120 V	HP	0,75	1,5	1,5	1,5	2	2		
	3 pole	220 V-240 V		1	1	3	3	5	5		
		440 V-600 V		–	–	5	5	10	10		
		1 phase	110 V-120 V	HP	0,33	0,5	0,5	0,5	1	1	
2 pole		220 V-240 V	0,75		1	1	1	2	2		
		277 V	0,75		1	2	2	3	3		
		440 V-600 V	–		–	2	2	5	5		
Heavy motor load Reversing-Rating (similar AC-4)	3 phase	110 V-120 V	HP	–	0,5	0,5	0,5	1	1		
	3 pole	220 V-240 V		–	1	1	1	2	2		
		440 V-600 V		–	–	3	3	5	5		
		1 phase	110 V-120 V	HP	–	0,17	0,17	0,17	0,33	0,33	
2 pole		220 V-240 V	–		0,5	0,5	0,5	0,75	0,75		
		277 V	–		0,5	0,6	0,6	1	1		
		440 V-600 V	–		–	1,5	1,5	2	2		
Max. Permissible Wire Gage - Use copper wire only Single-core or stranded wire				mm ² AWG	2x1,5 2x14	2x2,5 2x12	2x4 2x10		2x4 2x10		
Flexible wire (sleeving in accordance with DIN 46228) Flexible AWG wires (without sleeve)				mm ² AWG	2x1,5(–) 2x16	2x2,5(2,5) 2x14	2x2,5(2,5) 2x12		2x2,5(2,5) 2x12		
Connection with insulated ring and fork type terminals				mm							
Internal diameter				mm				≥3,6		≥3,6	
External diameter				mm				≤8,6		≤8,6	
Connection with quick connect terminations				mm				6,3		6,3	

Selection Data	CGD4-1	CH11	CHR11	CH12	CHR12
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Rated Insulation Voltage U _e			IEC 60947-3, EN 60947-3 ¹ VDE 0660 part 107 ¹	V	440	600	600	600	600
			North America	V	300	300	300	300	300
			min. voltage	V	1 ⁴	1 ⁴	1 ⁴	6	6
Rated Impulse Withstand Voltage U _{imp}					on request				
Rated Thermal Current I _u /I _{th}			IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	5	6	6	6	6
			North America	A	5	6	6	6	6
AC-21A	Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107	1 V/6 V	A	5/2	6/3	6/3	–/6	–/6
			12 V/24 V	A	1,2/0,7	2/1	2/1	6/5	6/5
			48 V/60 V	A	0,45/–	0,8/0,7	0,8/0,7	4/3,5	4/3,5
			110 V	A	0,25	0,4	0,4	3	3
			240 V	A	0,15	0,2	0,2	1,8	1,8
			300 V	A	0,13	0,13	0,13	1,3	1,3
			440 V	A	0,1	0,1	0,1	1	1
			500 V	A	–	0,08	0,08	0,8	0,8
			600 V	A	–	0,05	0,05	0,5	0,5
			Power loss per contact at I _u				W	0,4	0,4
Short Circuit Protection									
Max. fuse size			(glass-tube, quick)	A	5	6	6	6	6
Rated short-time withstand current			(1s-current)	A	30	35	35	50	50
DC Switching Capacity ⁵			IEC 60947-3, EN 60947-3 VDE 0660 part 107						
DC-21B	Resistive load T ≤ 1 ms	IEC 60947-3, EN 60947-3 VDE 0660 part 107	1 V/6 V	A	3/1,2	4/2,5	4/2,5	–/4	–/4
			12 V/24 V	A	0,7/0,4	1,5/0,8	1,5/0,8	3/2,2	3/2,2
			48 V/60 V	A	0,25/0,2	0,3/0,27	0,3/0,27	1,2/1	1,2/1
			110 V/240 V	A	0,13/0,08	0,2/0,1	0,2/0,1	0,6/0,3	0,6/0,3
			300 V/440 V	A	0,07/0,05	0,07/0,05	0,07/0,05	0,2/0,15	0,2/0,15
			500 V/600 V	A	–	0,03/0,02	0,03/0,02	0,1/0,1	0,1/0,1
Max. Permissible Wire Gage - Use copper wire only									
Single-core or stranded wire			mm ² AWG	2x1,5 2x14	2x4 2x10	2x4 2x10			
Flexible wire (sleeving in accordance with DIN 46228) Flexible AWG wires (without sleeve)			mm ² AWG	2x1,5(–) 2x16	2x2,5(2,5) 2x12	2x2,5(2,5) 2x12			
Connection with insulated ring and fork type terminals			mm	≥3,6					
Internal diameter			mm	≤8,6					
External diameter			mm	6,3					
Connection with quick connect terminations			mm	6,3					
Ambient Temperature of Stages ^{3, 6}			open at 100 % I _u /I _{th} enclosed at 100 % I _{the}	55 °C during 24 hours with peaks up to 60 °C 35 °C during 24 hours with peaks up to 40 °C					

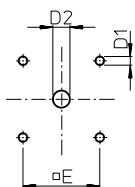
Two or Four Hole Panel Mounting

	E for CG4-CGD4-1 CH6/CHR6 E-V for CG6		E E-V 	<table><tr><th></th><th>CG4 CG4-1 CGD4-1</th><th>CG6</th><th>CG8</th><th>CH6 CHR6</th><th>CH10- CHR16</th><th>CH10B- CHR16B</th></tr><tr><td>A</td><td>30 1.18</td><td>30 1.18</td><td>48 1.89</td><td>30 1.18</td><td>48 1.89</td><td>64 2.52</td></tr><tr><td>B</td><td>28 1.10</td><td>38 1.50</td><td>38 1.50</td><td>46 1.81</td><td>46 1.81</td><td>56 2.20</td></tr><tr><td>C</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td></tr><tr><td>D1</td><td>3,2 .13</td><td>3,2 .13</td><td>5 .20</td><td>3,2 .13</td><td>5 .20</td><td>5 .20</td></tr><tr><td>D2</td><td>8-11 .31-.43</td><td>8-11 .31-.43</td><td>8-15 .31-.59</td><td>8-11 .31-.43</td><td>8-15 .31-.59</td><td>10-15 .39-.59</td></tr><tr><td>E</td><td>-</td><td>-</td><td>36 1.42</td><td>-</td><td>36 1.42</td><td>48 1.89</td></tr></table>							CG4 CG4-1 CGD4-1	CG6	CG8	CH6 CHR6	CH10- CHR16	CH10B- CHR16B	A	30 1.18	30 1.18	48 1.89	30 1.18	48 1.89	64 2.52	B	28 1.10	38 1.50	38 1.50	46 1.81	46 1.81	56 2.20	C	4 .16	4 .16	4 .16	4 .16	4 .16	4 .16	D1	3,2 .13	3,2 .13	5 .20	3,2 .13	5 .20	5 .20	D2	8-11 .31-.43	8-11 .31-.43	8-15 .31-.59	8-11 .31-.43	8-15 .31-.59	10-15 .39-.59	E	-	-	36 1.42	-	36 1.42	48 1.89							
	CG4 CG4-1 CGD4-1	CG6	CG8	CH6 CHR6	CH10- CHR16	CH10B- CHR16B																																																											
A	30 1.18	30 1.18	48 1.89	30 1.18	48 1.89	64 2.52																																																											
B	28 1.10	38 1.50	38 1.50	46 1.81	46 1.81	56 2.20																																																											
C	4 .16	4 .16	4 .16	4 .16	4 .16	4 .16																																																											
D1	3,2 .13	3,2 .13	5 .20	3,2 .13	5 .20	5 .20																																																											
D2	8-11 .31-.43	8-11 .31-.43	8-15 .31-.59	8-11 .31-.43	8-15 .31-.59	10-15 .39-.59																																																											
E	-	-	36 1.42	-	36 1.42	48 1.89																																																											
	EF for CG4-CGD4-1 CH6/CHR6 EF-V for CG6		EF EF-V 	<table><tr><th></th><th>CG4 CG4-1 CGD4-1</th><th>CG6</th><th>CG8</th><th>CH6 CHR6</th><th>CH10- CHR16</th><th>CH10B- CHR16B</th></tr><tr><td>A</td><td>30 1.18</td><td>30 1.18</td><td>48 1.89</td><td>30 1.18</td><td>48 1.89</td><td>64 2.52</td></tr><tr><td>B</td><td>28 1.10</td><td>38 1.50</td><td>38 1.50</td><td>46 1.81</td><td>46 1.81</td><td>56 2.20</td></tr><tr><td>C</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td><td>4 .16</td></tr><tr><td>D1</td><td>3,2 .13</td><td>3,2 .13</td><td>5 .20</td><td>3,2 .13</td><td>5 .20</td><td>5 .20</td></tr><tr><td>D2</td><td>8-11 .31-.43</td><td>8-11 .31-.43</td><td>15-19 .59-.75</td><td>8-11 .31-.43</td><td>15-19 .59-.75</td><td>19-22 .75-.87</td></tr><tr><td>E</td><td>-</td><td>-</td><td>36 1.42</td><td>-</td><td>36 1.42</td><td>48 1.89</td></tr><tr><td>M</td><td>1 .04</td><td>1 .04</td><td>-</td><td>1 .04</td><td>-</td><td>-</td></tr></table>							CG4 CG4-1 CGD4-1	CG6	CG8	CH6 CHR6	CH10- CHR16	CH10B- CHR16B	A	30 1.18	30 1.18	48 1.89	30 1.18	48 1.89	64 2.52	B	28 1.10	38 1.50	38 1.50	46 1.81	46 1.81	56 2.20	C	4 .16	4 .16	4 .16	4 .16	4 .16	4 .16	D1	3,2 .13	3,2 .13	5 .20	3,2 .13	5 .20	5 .20	D2	8-11 .31-.43	8-11 .31-.43	15-19 .59-.75	8-11 .31-.43	15-19 .59-.75	19-22 .75-.87	E	-	-	36 1.42	-	36 1.42	48 1.89	M	1 .04	1 .04	-	1 .04	-	-
	CG4 CG4-1 CGD4-1	CG6	CG8	CH6 CHR6	CH10- CHR16	CH10B- CHR16B																																																											
A	30 1.18	30 1.18	48 1.89	30 1.18	48 1.89	64 2.52																																																											
B	28 1.10	38 1.50	38 1.50	46 1.81	46 1.81	56 2.20																																																											
C	4 .16	4 .16	4 .16	4 .16	4 .16	4 .16																																																											
D1	3,2 .13	3,2 .13	5 .20	3,2 .13	5 .20	5 .20																																																											
D2	8-11 .31-.43	8-11 .31-.43	15-19 .59-.75	8-11 .31-.43	15-19 .59-.75	19-22 .75-.87																																																											
E	-	-	36 1.42	-	36 1.42	48 1.89																																																											
M	1 .04	1 .04	-	1 .04	-	-																																																											
	E22 for CG E22-V for CH/CHR			<table><tr><th></th><th>CG8</th><th>CH10- CHR16</th></tr><tr><td>A</td><td>48 1.89</td><td>48 1.89</td></tr><tr><td>B</td><td>38 1.50</td><td>46 1.81</td></tr><tr><td>C</td><td>4 .16</td><td>4 .16</td></tr><tr><td>D1</td><td>5 .20</td><td>5 .20</td></tr><tr><td>E</td><td>30 1.17</td><td>30 1.17</td></tr></table>				CG8	CH10- CHR16	A	48 1.89	48 1.89	B	38 1.50	46 1.81	C	4 .16	4 .16	D1	5 .20	5 .20	E	30 1.17	30 1.17																																									
	CG8	CH10- CHR16																																																															
A	48 1.89	48 1.89																																																															
B	38 1.50	46 1.81																																																															
C	4 .16	4 .16																																																															
D1	5 .20	5 .20																																																															
E	30 1.17	30 1.17																																																															
	E22-V for CG E22 for CH/CHR																																																																

¹see page 43

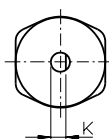
Four Hole Panel Mounting or Mosaic Mounting

EG
EGF

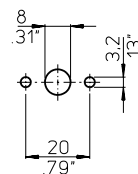


		CG8	CH10- CHR16
EG	A	64 2.52	64 2.52
	B	38 1.50	46 1.81
	C	4 .16	4 .16
	D1	5 .20	5 .20
	D2	10-15 .39-.59	10-15 .39-.59
EGF	D2	19-22 .75-.87	19-22 .75-.87
	E	48 1.89	48 1.89
	M	6,7 .26	6,7 .26

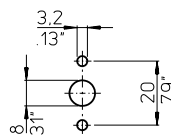
E9
E91



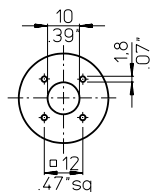
for
CG4-CGD4-1
CH6/CHR6



for
CG6

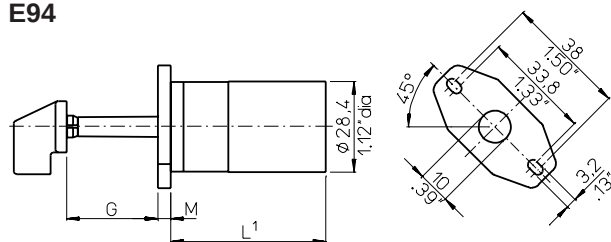


E92



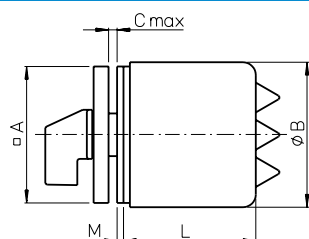
	CG4		
	CG4-1		CH6
	CGD4-1	CG6	CHR6
B	28	38	46
	1.10	1.50	1.81

E93
E94

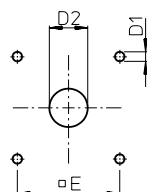


CHR6	E9	E91	E92	E93	E94
D	6 .24	6,35 .25	- -	- -	- -
F	12 .47	12,8 .50	- -	- -	- -
G	15,4 .61	17,4 .69	32,5 1.28	28,5 1.12	32,5 1.28
K	4,7 .19	5,5 .22	- -	- -	- -
M	-	-	-	4 .16	-

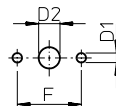
Two or Four Hole Panel Mounting



**EC
ED
EC1
ED1**



ED22



EC/EC1

ED/ED1/ED22

EC/EC1

ED/ED1/ED22

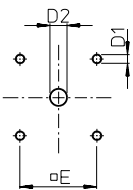
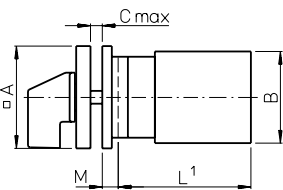
ED/ED1/ED22

Stages L

	CG8	CH10- CHR16	CH10B- CHR16B		
	ED22	EC ED	ED22	EC ED	EC1 ED1
A	48 1.89	64 2.52	48 1.89	64 2.52	64 2.52
B	74 2.91	68 2.68	74 2.91	68 2.68	74 2.91
C	-	4 .16	-	4 .16	4 .16
C	4 .16	2 .08	4 .16	4 .16	4 .16
D1	5 .20	5 .20	5 .20	5 .20	5 .20
D2	-	8-15 .31-.59	-	10-15 .39-.59	10-15 .39-.59
D2	11-15 .43-.59	18-22 .71-.87	11-15 .43-.59	22-25 .87-.98	19-22 .75-.87
E	-	48 1.89	-	48 1.89	48 1.89
F	30 1.17	-	30 1.17	-	-
M	1,5 .06	2 .08	1,5 .06	2 .08	-
1	74,3 2.93	-	74,3 2.93	-	72,7 2.86
2	74,3 2.93	-	74,3 2.93	-	72,7 2.86
3	94,3 3.71	-	94,3 3.71	-	92,7 3.65
4	94,3 3.71	103 4.06	94,3 3.71	114,5 4.51	-
5	94,3 3.71	-	-	127 5.00	-
6	-	-	-	139,5 5.49	-
7	-	-	-	164,5 6.48	-
8	-	-	-	177 6.97	-
9	-	-	-	-	-
10	-	-	-	-	-

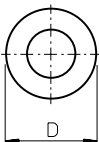
Four Hole Panel Mounting or Single Hole Mounting

KN1
KD1
KN2

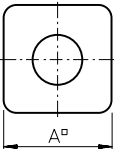


KN2	CG8	CH10- CHR16	KN1 KD1	CG8	CH10- CHR16	CH10B- CHR16B
A	48 1.89	48 1.89	A	64 2.52	64 2.52	64 2.52
B	38 1.50	46 1.81	B	38 1.50	46 1.81	56 2.20
C	4 .16	4 .16	C	4 .16	4 .16	4 .16
D1	5 .20	5 .20	D1	5 .20	5 .20	5 .20
D2	8-15 .31-.59	8-15 .31-.59	D2	10-15 .39-.59	10-15 .39-.59	10-15 .39-.59
E	36 1.42	36 1.42	E	48 1.89	48 1.89	48 1.89
M	5,2 .20	5,2 .20	M	4,7 .19	4,7 .19	7 .28

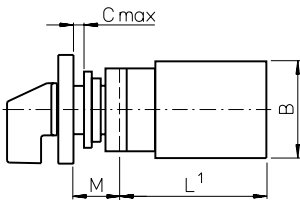
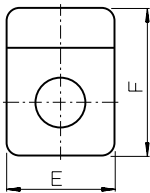
FS1...
FT1...
FT3...



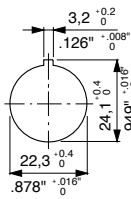
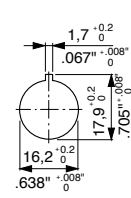
FH3...
FS2...
FT2...
FT4...



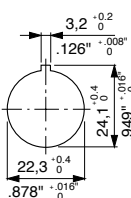
FH4...
FS4...
FT6...



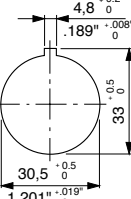
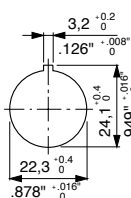
FS1...
FS2...
FS4...



FH3...
FH4...
FT1...
FT2...
FT6...



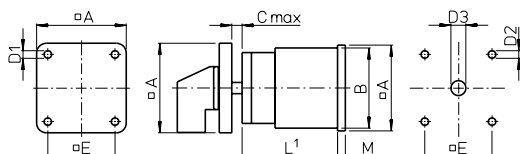
FT3...
FT4...



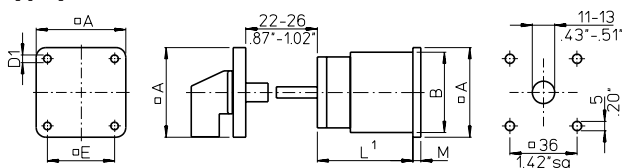
	CG4		CG6	CG8	CH6 CHR6	CH10- CHR16
	CG4-1	CGD4-1				
A/E	30 1.18	30 1.18	48 1.89	30 1.18	48 1.89	
FH3...	-	-	64 2.52	-	64 2.52	
FH4...	-	-	64 2.52	-	64 2.52	
B	28 1.10	38 1.50	38 1.50	46 1.81	46 1.81	
C	5 .20	5 .20	6 .24	5 .20	6 .24	
D	29,5 1.16	29,5 1.16	39 1.54	29,5 1.16	39 1.54	
F	39 1.54	39 1.54	59 2.32	39 1.54	59 2.32	
FH4...	-	-	78,5 3.09	-	78,5 3.09	
M	12,5 .49	12,5 .49	18,2 .72	12,5 .49	18,2 .72	
FH3...	-	-	25,2 .99	-	25,2 .99	
FH4...	-	-	25,2 .99	-	25,2 .99	

Base Mounting

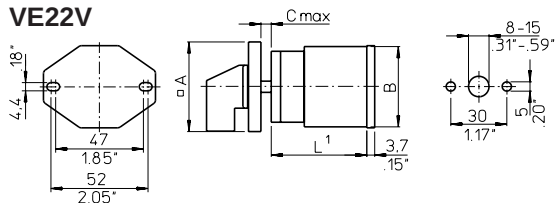
VE VE-V



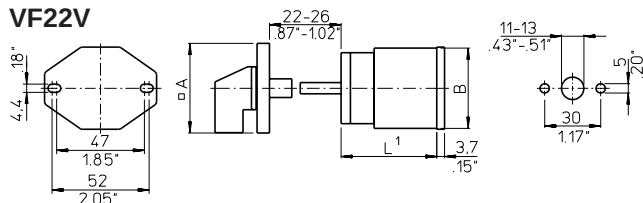
VF VF-V



VE22 VE22V



VF22 VF22V

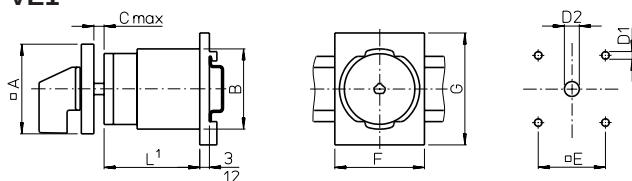


CG8 CH10-
CHR16

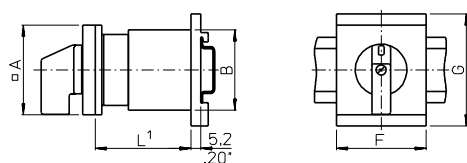
A²	48 1.89	48 (64) 1.89 (2.52)
B	38 1.50	46 1.81
C	10,5 .41	10,5 .41
D1	4,1 .16	4,1 .16
D2	5 .20	5 .20
D3	8-15 .31-.59	8-15 .31-.59
E²	36 1.42	36 (48) 1.42 (1.89)
M	2,2 .09	5,2 .20

²Dimensions in () for reverte mounting plate

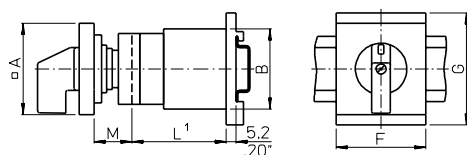
VE1



VE1E



VE1F



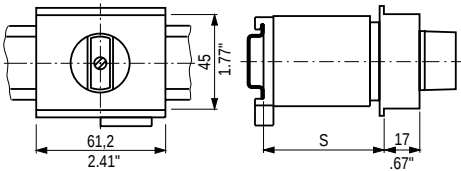
CG4
CG4-1 CH10-
CGD4-1 CG8 CHR16

A	30 1.18	48 1.89	48 1.89
B	28 1.10	38 1.50	46 1.81
C	-	10,5 .41	10,5 .41
D1	-	5 .20	5 .20
D2	-	8-15 .31-.59	8-15 .31-.59
E	-	36 1.42	36 1.42
F	35,5 1.40	48 1.89	48 1.89
G	60 2.36	60 2.36	60 2.36
M	12,5 .49	20 .79	20 .79

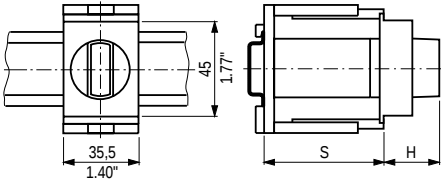
¹see page 43

Base Mounting and Escutcheon Plates

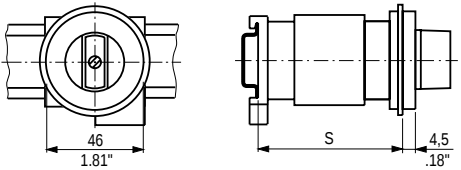
VE2



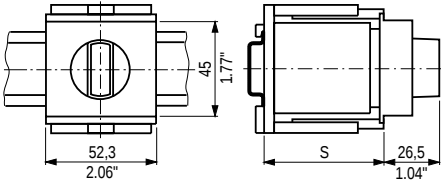
VE21
for CG4-CGD4-1



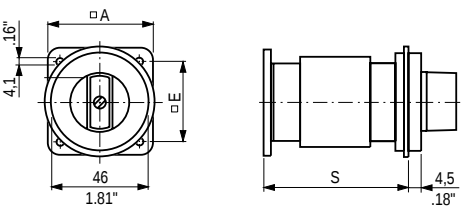
VE3



VE21
for CG8-CHR16



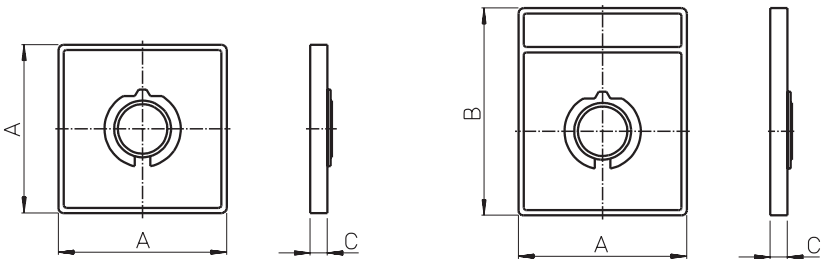
VE4



	VE2		VE3		VE4	
	CG8	CH10-CHR16	CG8	CH10-CHR16	CG8	CH10-CHR16
	Max. no. of stages		Max. no. of stages		Max. no. of stages	
S = 46 1.81	1	1	-	-	1	-
S = 50 1.97	2	2	1	1	1	-
S = 61 2.40	3	2	2	1	2	1
S = 67 2.64	3	3	2	2	2	2
S = 69 2.70	3	3	2	2	2	2
A					48 1.89	64 2.52
E					36 1.42	48 1.89

VE21		CG4-CGD4-1 CG8 CH10-CHR16		
		No. of stages		
S _{min.}	H			
44 1.73	21 .83	1	1	1
46 1.81	26.5 1.04	2	2	-
50 1.97	-	-	-	2
54 2.13	-	-	-	-
60 2.36	-	-	3	-
62 2.44	26.5 1.04	3	-	-
64 2.52	-	-	-	3
72 2.83	-	-	4	-

Escutcheon plates for mounting E, EF, EG, EGF, KN1, KD1, KN2, EC, EC1, ED, ED1, VE, VE1, VF



Size	A	B	C
S00	30 1.18	39 1.54	5.5 .22
	48 1.89	59 2.32	6.7 .26
S0	64 2.52	78 3.07	7.4 .29

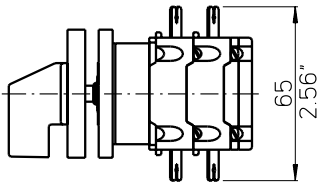
Dimensions mm inch

Additional Lengths

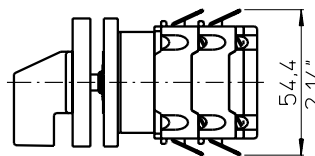
Additional lengths for amendment (page 4)

	CG8	CH10 CH16	CHR10 CHR16
B	6,2 .24	6,2 .24	6,2 .24
S	14,3 .56	14,3 .56	14,3 .56
L, M	24,8 .98	24,8 .98	24,8 .98
X	23,3 .92	23,3 .92	23,3 .92

Quick connect terminations (plug 2,8 mm or 6,35 mm) for CH switches (page 4)



with quick connects



with angled quick connects

Length L

Stages	CG4 CG4-1 CGD4-1	CG6	CG8	CH6 CHR6	CH10 CH11 CH12 CH16	CHR10 CHR11 CHR12 CHR16	CH10B CH16B	CHR10B CHR16B
1	38,5 1.52	43,2 1.70	40,7 1.60	46 1.81	43,5 1.71	43,5 1.71	48,9 1.93	48,9 1.93
2	50,5 1.99	55,9 2.20	53,4 2.10	60 2.36	57,5 2.26	57,5 2.26	62,9 2.48	62,9 2.48
3	62,5 2.46	68,6 2.70	66,1 2.60	74 2.91	71,5 2.81	71,5 2.81	76,9 3.03	76,9 3.03
4	74,5 2.93	81,3 3.20	78,8 3.10	88 3.46	85,5 3.37	85,5 3.37	90,9 3.58	90,9 3.58
5	86,5 3.41	-	91,5 3.60	-	99,5 3.92	99,5 3.92	104,9 4.13	104,9 4.13
6	98,5 3.88	-	104,2 4.10	-	113,5 4.47	113,5 4.47	118,9 4.68	118,9 4.68
7	110,5 4.35	-	116,9 4.60	-	127,5 5.02	127,5 5.02	132,9 5.23	132,9 5.23
8	122,5 4.82	-	129,6 5.10	-	141,5 5.57	141,5 5.57	146,9 5.78	146,9 5.78
9	-	-	142,3 5.60	-	155,5 6.12	155,5 6.12	160,9 6.34	160,9 6.34
10	-	-	155 6.10	-	169,5 6.67	169,5 6.67	174,9 6.89	174,9 6.89
11	-	-	167,7 6.60	-	183,5 7.22	183,5 7.22	188,9 7.44	188,9 7.44
12	-	-	180,4 7.10	-	197,5 7.77	197,5 7.77	202,9 7.99	202,9 7.99

The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

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

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