



Kraus & Naimer

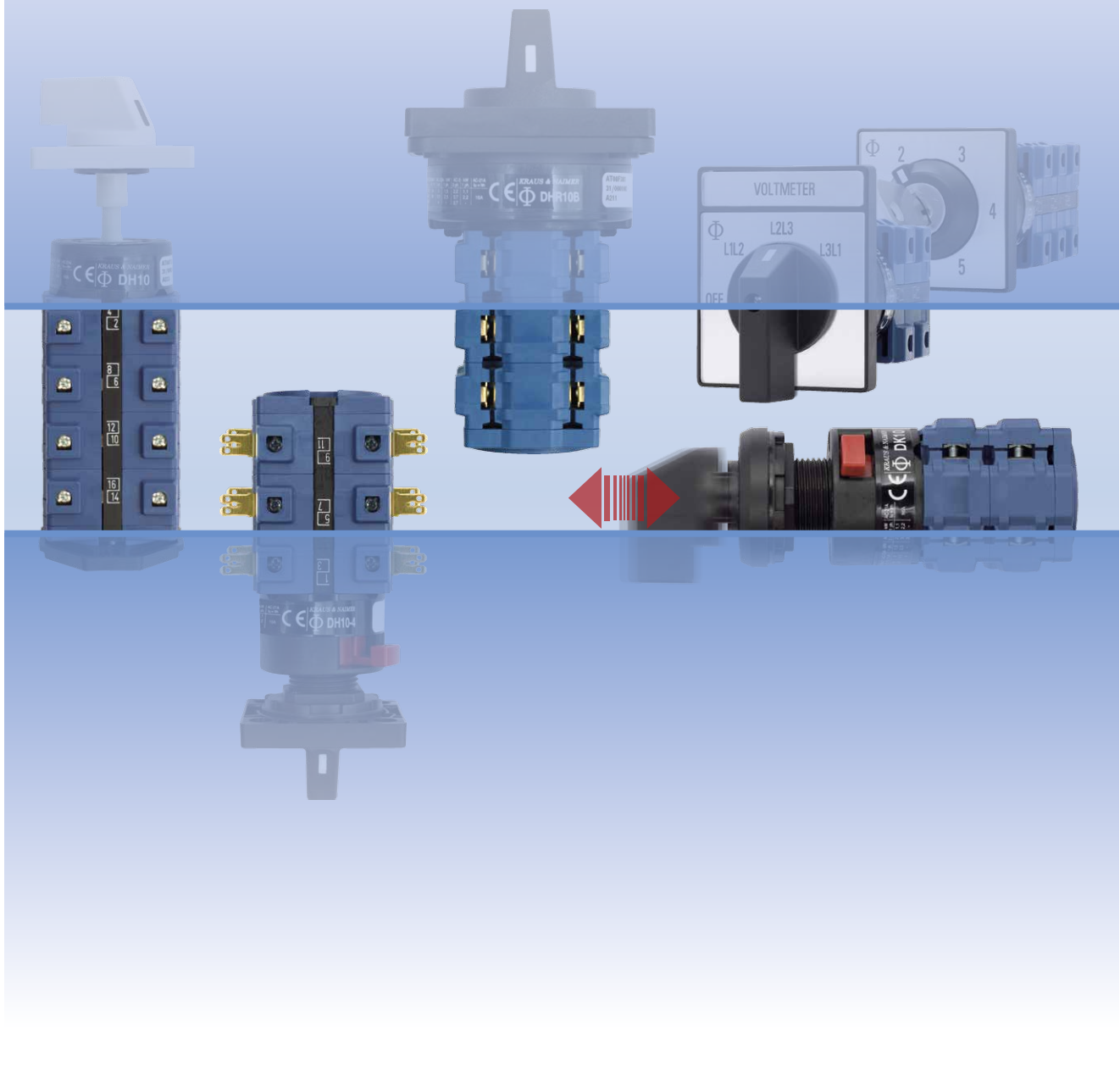
BLUE LINE switchgear

since 1907

Catalog 130 Control Switches for Special Application

08/2016

DH, DHR, DK and DKR type up to 16 A



Kraus & Naimer

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

BLUE LINE

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

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

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

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

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Construction Data

Cam switches of the DH, DHR, DK and DKR series are designed for universal applications and may ideally be used for control switches, instrumentation switches and circuit interrupters. Different contact designs, contact materials and terminals allow their use in electronic circuitry as well as in aggressive environments in accordance with IEC 60947-3, EN 60947-3 and VDE 0660 part 107.

Fully enclosed contact chambers provide optimum protection from dust and other contaminants.

The stage is the basis for all switches and can be supplied with a maximum of 2 contacts. The terminals are accessible from the side. All switches in this series are supplied with open terminals and are finger-proof according to VDE 0106,

part 100 (VBG 4). Captive plus-minus terminal screws and integrated screwdriver guides facilitate wiring. Alternatively, the switches of the DH and DK series can be supplied with integrated quick connect terminals. Each quick connect terminal may accept either one 6.3 mm or two 2.8 mm quick connect lugs.

For connection with ring type terminals the DHR and DKR series of switches are available. These switches are supplied with large open terminals, which allow for connection without the need of removing the screws.

2 Contact Systems

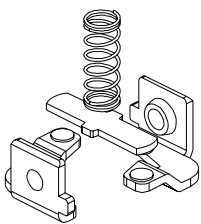


Fig. 1

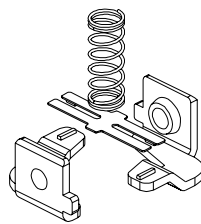
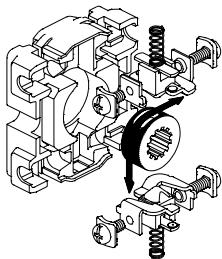


Fig. 2

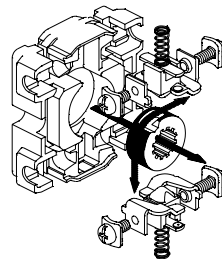
A rigid double-break bridge with silver alloy contacts (DH10, DHR10, DK10, DKR10, DH10B) provides high making and breaking capabilities for regular control applications. (Fig. 1)

Self-cleaning H-bridges with a cross-wire contact system are used for electronic and low voltage range applications. They are available with either silver contacts (DH12, DHR12, DK12, DKR12, DH12B, DHR12B) or gold-plated contacts (DH11, DHR11, DK11, DH11B, DHR11B). This contact system offers maximum contact security, low resistance and virtually chatter free switching. (Fig. 2)

2 Methods of Contact Operation



Turning

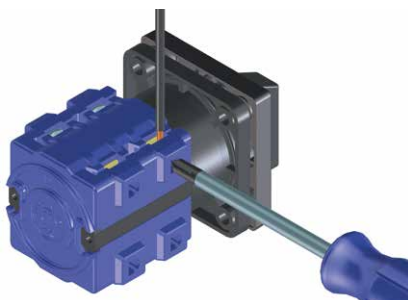


Turning and Pushing

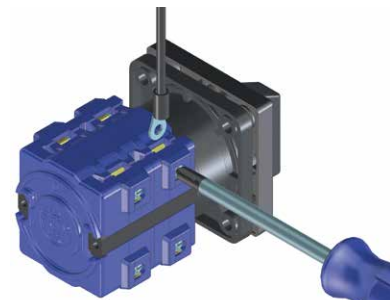
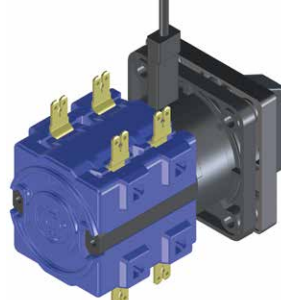
The contacts of the switches of the DH and DHR series can be manually operated by turning and the DK and DKR series by turning and/or pushing. This versatility of handle movement permits a countless variety of contact arrangements. Special pre-select programs enable the operator to rotate the handle to any one of up to 12 positions, while bypassing contact operation in all intermediate positions. Momentary contact operation for a pre-selected position occurs only when the handle is depressed. Releasing the handle returns switch operation to the normal plane.

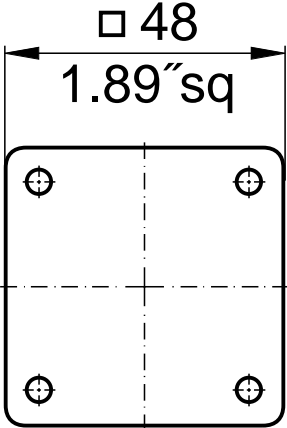
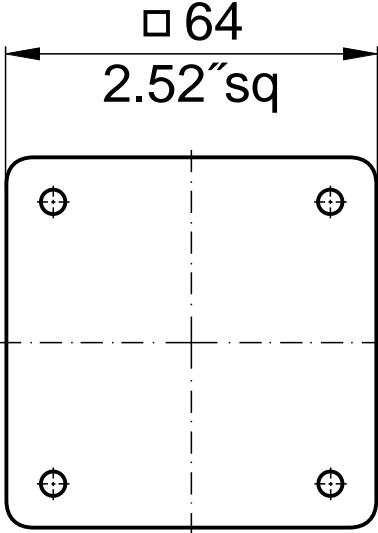
Type	Size	Possible Switching Angles	Max. No. of Stages
DH10-DHR12	S0	30°, 45°, 60°, 90°	12
DK10-DKR12	S0	30°, 60°, 90°	9
DH10B-DHR12B	S1	30°, 45°, 60°, 90°	12

DH and DK-series



DHR and DKR-series



Switch Size	Type	According to IEC/EN 60947-3 and VDE 0660 part 107			
		Operational Voltage ¹ min.-max. U_e	Thermal Current I_u/I_{th}	Operational Current I_e 220 V-240 V AC-15	
		V	A	A	
S0 	DH10 DH11 DH12 DHR10 DHR11 DHR12	20-690 1 ² -600 6-600 20-690 1 ² -600 6-600	16 6 6 16 6 6	5 - - - 5 -	
	Operation by turning				
	Operation by turning/pushing				
	DK10 DK11 DK12 DKR12	20-690 1 ² -600 6-600 6-600	16 6 6 6	5 - - -	
	S1 	DH10B DH11B DH12B DHR11B DHR12B	20-690 1 ² -600 6-600 1 ² -600 6-600	16 6 6 6 6	5 - - - -
		Operation by turning			
		For further technical details, refer to pages 40 and 41. To furnish with gold contacts and quick connects, refer to page 6.			

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²Values for lower voltages 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 5 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 40 and 41. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 8-30 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 31-35. Catalog **101** describes enclosures and optional extras.

Specify the mounting code to indicate required mounting.

DH10

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	DH10-1, DK10-1
-4	with integrated quick connects	DH10-4, DH11-4, DH12-4, DK10-4, DK12-4, DH11B-4, DH12B-4

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	black	black	brushed alu	black	-600
S0, S1	black	black	black	mat silver	-700

¹Technical data on request.

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 5pole ON/OFF switch function, black handle and black escutcheon plate frame with brushed aluminum backing and black inscription which reads 0-1 is as follows: **DH10 A202-600 E**.

Special programs for escutcheon plate and handle combinations

- **.00** = 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 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 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 DH10 with a 3 pole ON/OFF switch function with black escutcheon plate frame, square escutcheon plate without lettering, brushed aluminum plate backing and black handle reads as follows: **DH10 A202-603 E**.

Handles, Escutcheon Plates and Optional Extras

The handles for standard switches shown on pages 8-30 are suitable for mounting units with four hole panel mounting. Alternative types of handles available are illustrated on pages 31-35.

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 36-38. 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

DH, DHR, DK and DKR switches are available in sizes 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 5 lists these sizes and the various switch types they include.

Ordering of Special Switches and Escutcheon Plates

When ordering special switches and special escutcheon plates, we recommend the use of our ordering form as shown in this example. Contacts may be operated in 2 plains. Consequently, each contact has two columns in which the required contact function is to be indicated. The shaded column indicates function of the contact with depressed handle. This means that the switch handle may be depressed in each switching position. Rotation of the handle is possible only in the depressed position. Contacts 1-2, 3-4, 11-12 and 5-6, 7-8, 9-10 close in position 1 or 3. Depressing the handle will not change the contact function. In position 1 or 3 contact 13-14 is closed. This contact opens if the handle is depressed.
























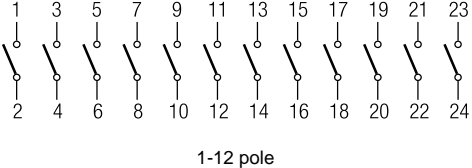


























































































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Order forms are available on request.

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10-DHR12	DH10B-DHR12B			

ON/OFF Switches with 60° Switching

[Dimensions p. 46](#)

1 pole 2 pole 3 pole 3 pole with red handle 4 pole 5 pole 6 pole 7 pole 8 pole 9 pole 10 pole 11 pole 12 pole	 F070	          	          	A200-600 A201-600 A202-600 A202-626 A203-600 WAA341 A342-600 A343-600 A344-600 WAA345 A346-600 WAA347 A348-600	1 1 2 2 2 3 3 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 7 pole 8 pole 9 pole 10 pole 11 pole 12 pole	 F088	           	           	A200-620 A201-620 A202-620 A203-620 WAA341 A342-620 A343-620 A344-620 WAA345 A346-620 WAA347 A348-620	1 1 2 2 3 3 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole	 F088-PRL	     	     	A200-621 A201-621 A202-621 A203-621 WAA341 A342-621	1 1 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole	 F198	     	     	A200-622 A201-622 A202-622 A203-622 WAA341 A342-622	1 1 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole	 F198-PRL	     	     	A200-623 A201-623 A202-623 A203-623 WAA341 A342-623	1 1 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole	 F328-PRL	     	     	A200-624 A201-624 A202-624 A203-624 WAA341 A342-624	1 1 2 2 3 3	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole	 F323-PRL	     	     	A200-625 A201-625 A202-625 A203-625 WAA341 A342-625	1 1 2 2 3 3	

Switch Function and Configuration

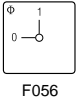














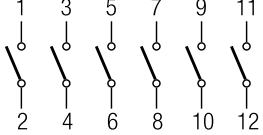
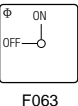














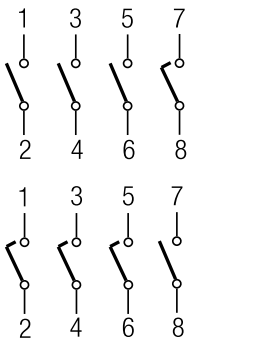

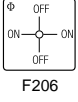




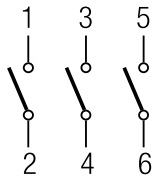

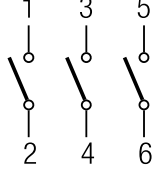
DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			










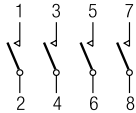
ON/OFF Switches with 90° Switching

[Dimensions p. 46](#)

1 pole contacts 2 pole preclose 30° 3 pole 4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30° 5 pole contacts 6 pole preclose 30°		      	      	A290-600 A291-600 A292-600 A324-600 A293-600 WAA327 WAA325 A326-600	1 1 2 2 2 2 3 3		1, 2, 3, 4, 5 and 6 pole
1 pole contacts 2 pole preclose 30° 3 pole 4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30° 5 pole contacts 6 pole preclose 30°		      	      	A290-620 A291-620 A292-620 A324-620 A293-620 WAA327 WAA325 A326-620	1 1 2 2 2 2 3 3		4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°
3 pole 360° rotation	 	 	 	WAA208 WAA208	2 2		
3 pole for foot operation				WAA386	2		

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ON/OFF Switches with Spring Return to „OFF“ 30° Switching

1 pole 2 pole 3 pole 4 pole		   	   	A204-600 A205-600 WAA206 WAA207	1 1 2 2		1-4 pole
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Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Double-throw Switches without „OFF“ 60° Switching

[Dimensions p. 46](#)

1 pole	<p>F072</p>			A220-600	1	
2 pole				A221-600	2	
3 pole				A222-600	3	
4 pole				A223-600	4	
5 pole				A369-600	5	
6 pole				A370-600	6	
7 pole				A371-600	7	
8 pole				A372-600	8	
9 pole				WAA373	9	
10 pole				WAA374	10	
11 pole				WAA375	11	
12 pole				WAA376	12	

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

1 pole	<p>F072</p>			A720-600	1	
2 pole				A721-600	2	
3 pole				A722-600	3	
4 pole				A723-600	4	
1 pole with spring return	<p>F026</p>			A795-600	1	1 pole with spring return

Double-throw Switches with Spring Return to Center

1 pole	<p>F026</p>			A295-600	1	
2 pole				A296-600	2	
3 pole				WAA297	3	
1 pole	<p>F153</p>			A295-620	1	
2 pole				A296-620	2	
3 pole				WAA297	3	

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

1 polig	<p>F071</p>			A210-600	1	
2 polig				A211-600	2	
3 polig				A212-600	3	
4 polig				A213-600	4	
5 polig				A361-600	5	
6 polig				A362-600	6	
7 polig				WAA363	7	
8 polig				WAA364	8	

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B			

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

[Dimensions p. 46](#)

1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 7 pole 8 pole				A210-620 A211-620 A212-620 A213-620 A361-620 A362-620 WAA363 WAA364	1 2 3 4 5 6 7 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				A210-624 A211-624 A212-624 A213-624	1 2 3 4	

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

1 pole contacts 2 pole preclose 30° 3 pole 4 pole 1 pole preclose 60°				A218-600 A219-600 WAA299 WAA294	1 2 3 4	
1 pole 2 pole 3 pole 4 pole 1 pole preclose 60°				A218-620 A219-620 WAA299 WAA294	1 2 3 4	

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

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


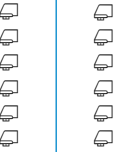
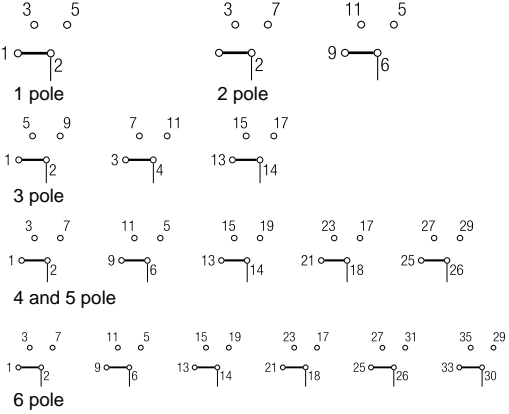


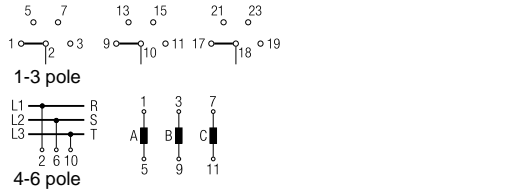


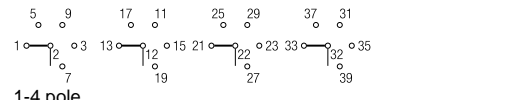


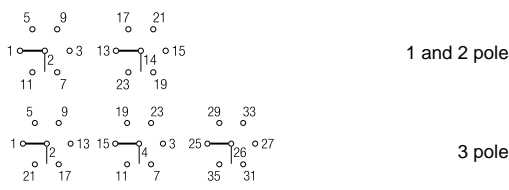


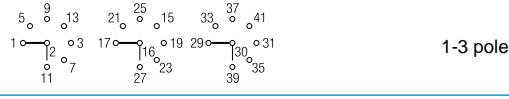


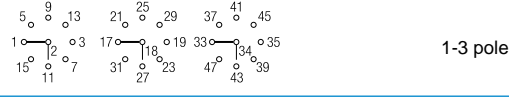


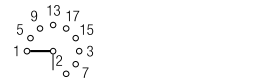








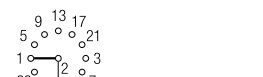
Double-throw Switches with Spring Return to Center

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

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Multi-step Switches without „OFF“

[Dimensions p. 46](#)

1 pole 3 Step 2 pole 3 pole 4 pole 5 pole 6 pole	 <p>F076</p>		A230-600 A250-600 A270-600 A476-600 WAA484 WAA489	2 3 5 6 8 9	
1 pole 4 Step 2 pole 3 pole 4 pole 5 pole 6 pole	 <p>F077</p>		A231-600 A251-600 A271-600 A477-600 WAA485 WAA490	2 4 6 8 10 12	
1 pole 5 Step 2 pole 3 pole 4 pole	 <p>F078</p>		A232-600 A252-600 WAA272 WAA478	3 5 8 10	
1 pole 6 Step 2 pole 3 pole	 <p>F079</p>		A233-600 WAA253 WAA273	3 6 9	
1 pole 7 Step 2 pole 3 pole	 <p>F110</p>		WAA234 WAA254 WAA274	4 7 11	
1 pole 8 Step 2 pole 3 pole	 <p>F111</p>		WAA235 WAA255 WAA275	4 8 12	
1 pole 9 Step	 <p>F010</p>		WAA236	5	
1 pole 10 Step	 <p>F011</p>		WAA237	5	
1 pole 11 Step	 <p>F012</p>		WAA238	6	
1 pole 12 Step	 <p>F013</p>		WAA239	6	

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Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B			

Multi-step Switches without „OFF“ with electrically isolated contacts Dimensions p. 46

1 pole 3 Step				A730-600	2	<p>1 pole</p>
2 pole				A750-600	3	<p>2 pole</p>
1 pole 4 Step				A731-600	2	<p>1 pole</p>
2 pole				A751-600	4	<p>2 pole</p>










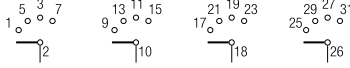









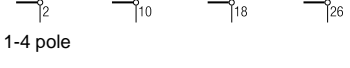







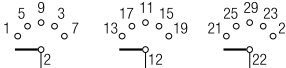







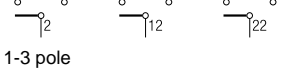







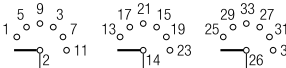







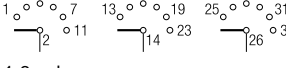





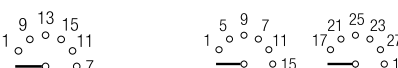





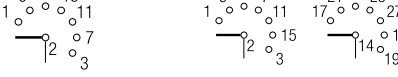





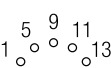





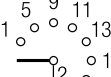





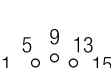





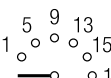





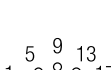





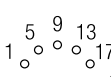





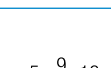





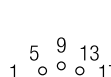
Multi-step Switches with „OFF“

1 pole 2 Step				A240-600	1	
2 pole				A260-600	2	
3 pole				A280-600	3	
4 pole				WAA480	4	
5 pole				WAA486	5	
6 pole				WAA491	6	
1 pole				A240-620	1	1-6 pole
2 pole				A260-620	2	
3 pole				A280-620	3	
4 pole				WAA480	4	
5 pole				WAA486	5	
6 pole				WAA491	6	
1 pole 3 Step				A241-600	2	
2 pole				A261-600	3	
3 pole				A281-600	5	
4 pole				A481-600	6	
5 pole				WAA487	8	
1 pole				A241-620	2	
2 pole				A261-620	3	
3 pole				A281-620	5	
4 pole				A481-620	6	
5 pole				WAA487	8	
1 pole				A241-621	2	
2 pole				A261-621	3	

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B			

Multi-step Switches with „OFF“

[Dimensions p. 46](#)








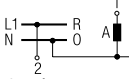
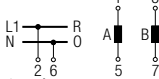







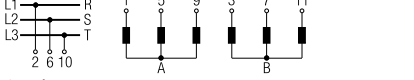







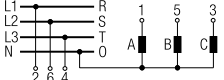
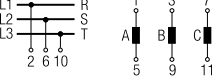







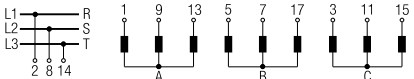







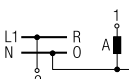
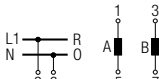







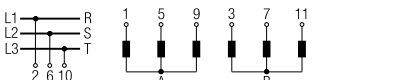



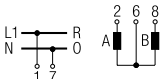



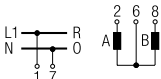
1 pole 4 Step 2 pole 3 pole 4 pole	 F002	   	   	A242-600 WAA262 WAA282 WAA482	2 4 6 8	
1 pole 2 pole 3 pole 4 pole	 F041	   	   	A242-620 WAA262 WAA282 WAA482	2 4 6 8	1-4 pole 
1 pole 5 Step 2 pole 3 pole	 F003	  	  	A243-600 WAA263 WAA283	3 5 8	
1 pole 2 pole 3 pole	 F042	  	  	A243-620 WAA263 WAA283	3 5 8	1-3 pole 
1 pole 6 Step 2 pole 3 pole	 F004	  	  	A244-600 WAA264 WAA284	3 6 9	
1 pole 2 pole 3 pole	 F043	  	  	A244-620 WAA264 WAA284	3 6 9	1-3 pole 
1 pole 7 Step 2 pole	 F005	 	 	WAA245 WAA265	4 7	
1 pole 2 pole	 F044	 	 	WAA245 WAA265	4 7	1 pole 2 pole 
1 pole 8 Step	 F006	 	 	WAA246	4	
1 pole	 F045	 	 	WAA246	4	
1 pole 9 Step	 F007	 	 	WAA247	5	
1 pole	 F046	 	 	WAA247	5	
1 pole 10 Step	 F008	 	 	WAA248	5	
1 pole	 F047	 	 	WAA248	5	
1 pole 11 Step	 F009	 	 	WAA249	6	
1 pole	 F048	 	 	WAA249	6	

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Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

General Application Switches











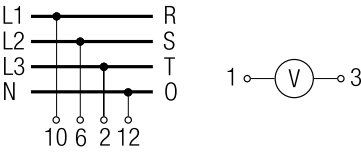



[Dimensions p. 46](#)

1 pole 2 Gang 2 pole Switching sequence: 3 pole 0, A, A+B	 <p>F075</p>	  	  	A310-600 A312-600 WAA314	1 2 3	 <p>1 pole</p>  <p>2 pole</p>
1 pole 2 pole 3 pole	 <p>F098</p>	  	  	A310-620 A312-620 WAA314	1 2 3	 <p>3 pole</p>
1 pole 3 Gang 2 pole Switching sequence: 3 pole 0, A, A+B, A+B+C	 <p>F001</p>	  	  	A311-600 WAA313 WAA315	2 3 5	 <p>1 pole</p>  <p>2 pole</p>
1 pole 2 pole 3 pole	 <p>F040</p>	  	  	A311-620 WAA313 WAA315	2 3 5	 <p>3 pole</p>
1 pole 2 Gang 2 pole Series switching 3 pole Switching sequence: 0, A, B, A+B	 <p>F001</p>	  	  	WAA330 WAA331 WAA332	1 2 3	 <p>1 pole</p>  <p>2 pole</p>
1 pole 2 pole 3 pole	 <p>F040</p>	  	  	WAA330 WAA331 WAA332	1 2 3	 <p>3 pole</p>
2 pole 2 Gang Series-parallel Switching	 <p>F001</p>			WAA339	2	
Switching sequence: 0, A+B series, A, A+B parallel	 <p>F040</p>			WAA339	2	

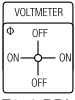


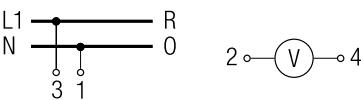



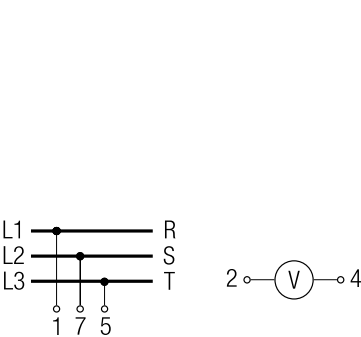


















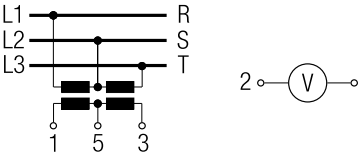
Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Voltmeter Switches without „OFF“

[Dimensions p. 46](#)

3 phase 3 wire	 F792			A023-600	2	
	 F793			A023-620	2	
3 phase 3 wire 3 phase to phase and phase to neutral	 F794			A025-600	3	
	 F795			A025-620	3	




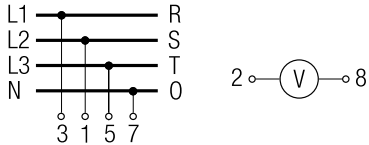















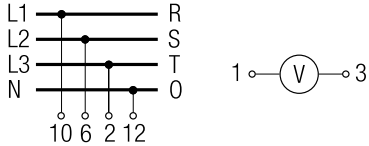


















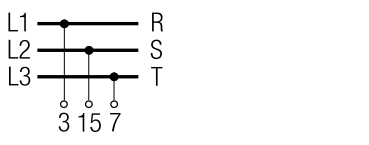









Voltmeter Switches with „OFF“

2 pole 360° rotation	 F170-PRL			WAA002	1	
3 phase 3 wire	 F775			A004-600	2	
	 F776			A004-620	2	
	 F408-PRL			A004-621	2	
	 F777			A004-622	2	
	 F409-PRL			A004-623	2	
	 F778			A004-624	2	
	 F212-PRL			WAA011	2	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B		

Voltmeter Switches with „OFF“

[Dimensions p. 46](#)

3 phase to neutral				WAA005	2	
	F779					
				WAA005	2	
	F780					
				WAA005	2	
F411-PRL						
			WAA005	2		
F412-PRL						
			WAA005	2		
F781						
3 phase to phase and 3 phase to neutral				A007-600	3	
	F782					
				A007-620	3	
	F783					
				A007-621	3	
	F414-PRL					
				A007-622	3	
F784						
			A007-623	3		
F415-PRL						
			A007-624	3		
F785						
2 separate 3 phase with center „OFF“				WAA008	4	
	F786					
				WAA008	4	
	F787					
			WAA008	4		
F418-PRL						
			WAA008	4		
F788						

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Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Voltmeter Switches with „OFF“

[Dimensions p. 46](#)

3 phase and 1 phase to neutral				WAA010	3	
	F789			WAA010	3	
				WAA010	3	
	F790			WAA010	3	
				WAA010	3	
	F419-PRL			WAA010	3	
				WAA010	3	
	F791			WAA010	3	

Ammeter Switches

Single pole with one current transformer				WAA046	1	
	F058			WAA046	1	
				WAA046	1	
	F208			WAA046	1	
				WAA046	1	
	F340-PRL			WAA046	1	
Single pole with 3 current transformers without „OFF“				A017-600	3	
	F181-PRL			A017-620	3	
				A017-620	3	
	F719			A017-620	3	
Single pole with 3 current transformers with „OFF“ 360° rotation				A048-600	3	
	F059			A048-620	3	
				A048-621	3	
	F066			A048-621	3	
				A048-622	3	
	F186			A048-622	3	
				A048-622	3	
F318-PRL			A048-622	3		
			A048-623	3		
F172-PRL			A048-623	3		

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Ammeter Switches

[Dimensions p. 46](#)

Single pole with 2 current transformers (3 readings)	 F172-PRL			A021-600	2	
	 F066			A021-620	2	
Single pole with 4 current transformers	 F060			WAA036	4	
	 F327-PRL			WAA036	4	
2 pole 2 current transformers	 F057			WAA037	3	
	 F064			WAA037	3	
	 F320-PRL			WAA037	3	
2 pole 3 current transformers	 F181-PRL			WAA019	5	
	 F719			WAA019	5	
	 F059			A038-600	5	
	 F172-PRL			A038-620	5	
	 F318-PRL			A038-621	5	
2 pole 4 current transformers	 F060			WAA039	6	
	 F327-PRL			WAA039	6	

Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Volt-ammeter Switches

Dimensions p. 46

3 phase - phase to phase 3 current				WAA027	6	
				WAA028	7	
3 phase voltage 3 phase current 4 wire				WAA033	5	
3 phase voltage 3 phase current 3 wire				WAA035	5	

Control Switches

Stop switch				WAA174	1	
Start switch				A175-600	1	
Stop start switch single pole				A176-600	1	
Stop start switch 2 pole				WAA183	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				WAA177	2	
				WAA177	2	
Stop start switch with spring return to run with contactor interlock contactors for 2 units				WAA182	2	
				WAA182	2	
Motor voltage control switch				WAA150	2	

Switch Function and Configuration




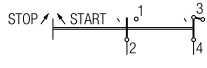



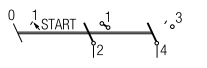



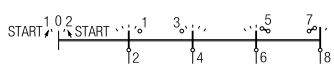



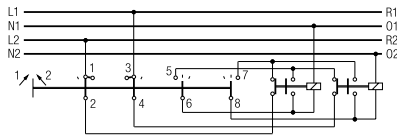






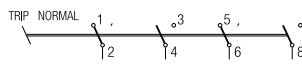
DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			




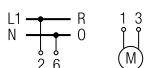









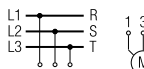









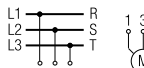






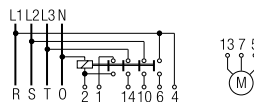
Control Switches with electrically isolated contacts

[Dimensions p. 46](#)

Stop start switch single pole	 F024			A789-600	1	
Stop start switch with spring return to 1	 F119			A791-600	1	
Stop start switch with spring return to run for 2 units	 F121			WAA790	2	
Contactor control with spring return to „OFF“	 F025			WAA179	2	
	 F034			WAA179	2	
Circuit breaker control	 F143-PRL			WAA537	2	

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Motor Reversing Switches

2 pole	 F071			A400-600	2	
	 F093			A400-620	2	
	 F090			A400-621	2	
3 pole	 F071			A401-600	3	
	 F093			A401-620	3	
	 F090			A401-621	3	
3 pole with spring return to „OFF“	 F025			A228-600	3	
	 F034			A228-620	3	
3 pole for use with reversing contactors	 F121			WAA402	4	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Star-delta Switches

[Dimensions p. 46](#)

OFF-star-delta				A410-600	4	
	F080			A410-620	4	
	F315					
Reversing				WAA413	5	
With auxiliary contact closed in „OFF“ position				WAA416	5	
For use with reversing contactors				A419-600	4	




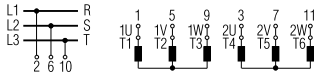






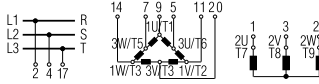



Motor Control Switches

2 speed single winding				A440-600	4	
	F073			A440-620	4	
	F094					
2 speed single winding without „OFF“				A466-600	4	
2 speed single winding with center „OFF“				A441-600	4	
	F071			A441-620	4	
	F090					
2 speed single winding reversing				A442-600	6	
	F105			A442-620	6	
	F113					
2 speed single winding for use with contactors				WAA444	5	
	F073			WAA444	5	
	F094					




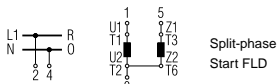






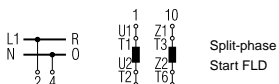






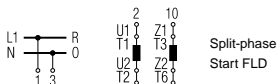
Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Motor Control Switches

[Dimensions p. 46](#)

2 speed 2 winding 0-A-B Υ or Δ				WAA451	3	
				WAA451	3	
3 speed 2 winding 0-A Δ -B Υ -A $\Upsilon\Upsilon$				WAA457	6	
				WAA457	6	



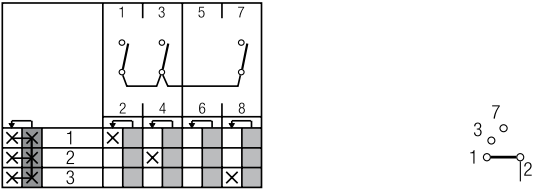


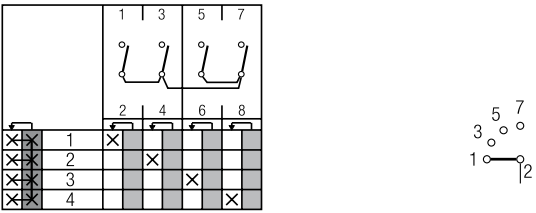


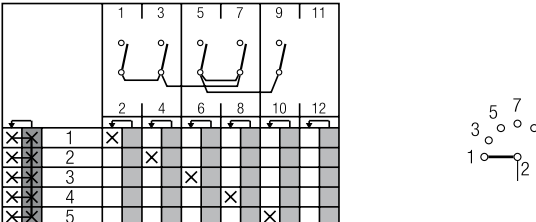


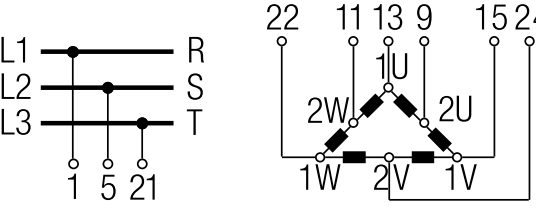


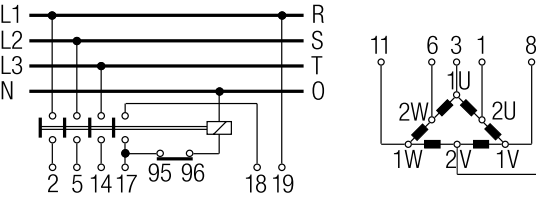


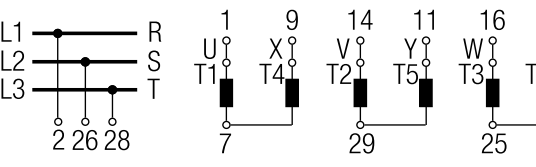
Start and Run Switches

Split-phase start				A425-600	2	
				A425-620	2	
Split-phase start reversing				WAA426	3	
				WAA426	3	
Split-phase reversing, auto cut-out of start field winding				WAA622	3	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“

[Dimensions p. 46](#)



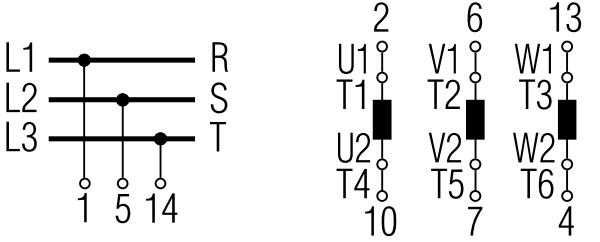


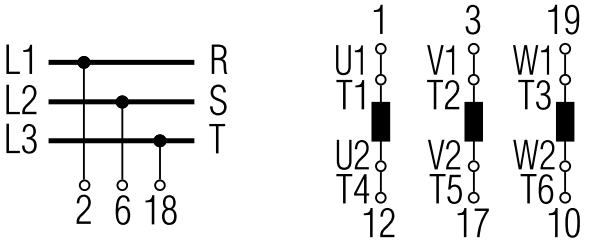


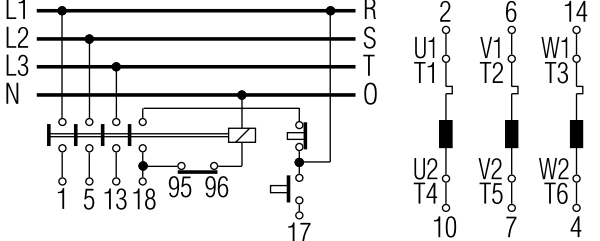


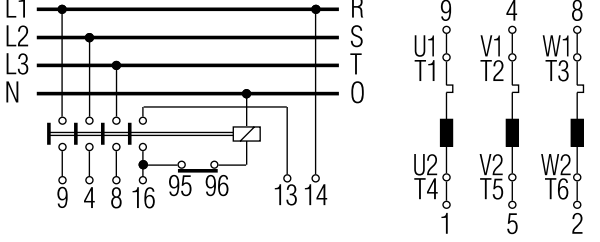
1 pole 3 Step	 F161		WAA830	2	
1 pole 4 Step	 F052		WAA831	2	
1 pole 5 Step	 F055		WAA832	3	
1 pole 6 Step	 F138		WAA833	3	
1 pole 7 Step	 F135		WAA834	4	
1 pole 8 Step	 F136		WAA835	4	

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“

Dimensions p. 46



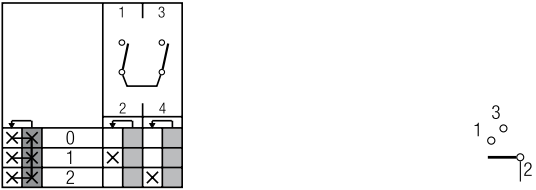




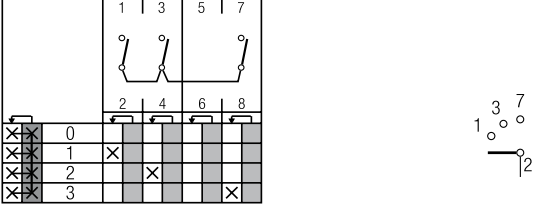




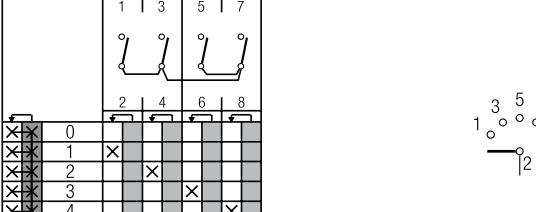




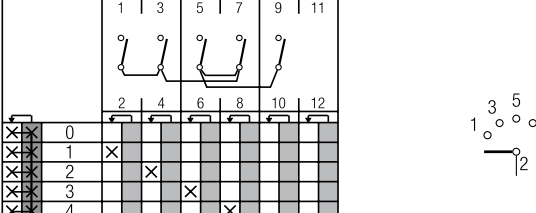




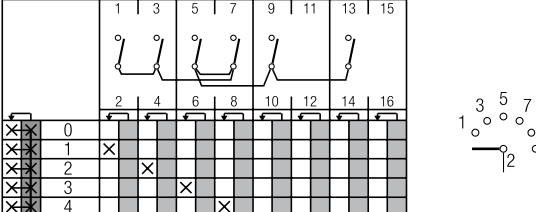




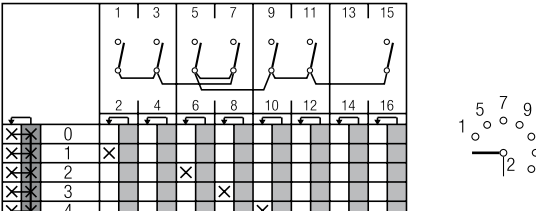


1 pole 9 Step	 F010		WAA836	5	 <p>Diagram showing three main lines L1, L2, L3 connected to terminals R, S, T. Terminal 1 is connected to L1, 5 to L2, and 14 to L3. On the right, three switch assemblies are shown: U1/T1, V1/T2, and W1/T3. Each assembly has a top terminal (U1, V1, W1) and a bottom terminal (T1, T2, T3). Below each assembly are two more terminals: U2/T4, V2/T5, and W2/T6.</p>
1 pole 10 Step	 F011		WAA837	5	 <p>Diagram showing three main lines L1, L2, L3 connected to terminals R, S, T. Terminal 2 is connected to L1, 6 to L2, and 18 to L3. On the right, three switch assemblies are shown: U1/T1, V1/T2, and W1/T3. Each assembly has a top terminal (U1, V1, W1) and a bottom terminal (T1, T2, T3). Below each assembly are two more terminals: U2/T4, V2/T5, and W2/T6.</p>
1 pole 11 Step	 F012		WAA838	6	 <p>Diagram showing three main lines L1, L2, L3 and a neutral line N. Terminals 1, 5, 13, and 18 are connected to L1, L2, L3, and N respectively. Terminals 95 and 96 are also shown. On the right, three switch assemblies are shown: U1/T1, V1/T2, and W1/T3. Each assembly has a top terminal (U1, V1, W1) and a bottom terminal (T1, T2, T3). Below each assembly are two more terminals: U2/T4, V2/T5, and W2/T6.</p>
1 pole 12 Step	 F013		WAA839	6	 <p>Diagram showing three main lines L1, L2, L3 and a neutral line N. Terminals 9, 4, 8, and 16 are connected to L1, L2, L3, and N respectively. Terminals 95 and 96 are also shown. On the right, three switch assemblies are shown: U1/T1, V1/T2, and W1/T3. Each assembly has a top terminal (U1, V1, W1) and a bottom terminal (T1, T2, T3). Below each assembly are two more terminals: U2/T4, V2/T5, and W2/T6.</p>

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

[Dimensions p. 46](#)



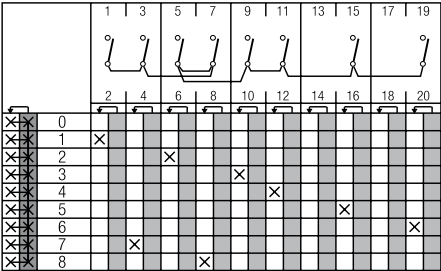
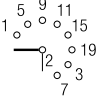




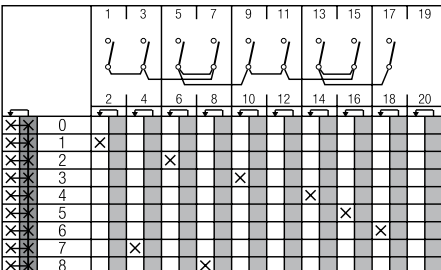





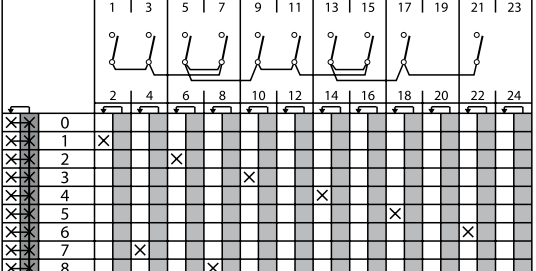





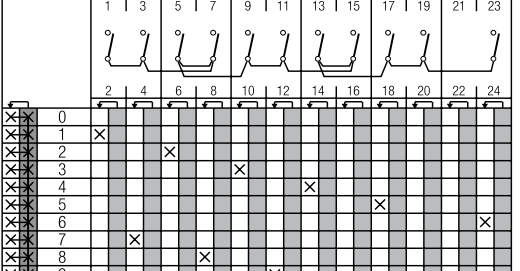
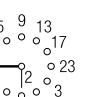


1 pole 2 Step			WAA840	1	
			WAA840	1	
1 pole 3 Step			WAA841	2	
			WAA841	2	
1 pole 4 Step			WAA842	2	
			WAA842	2	
1 pole 5 Step			WAA843	3	
			WAA843	3	
1 pole 6 Step			WAA844	4	
			WAA844	4	
1 pole 7 Step			WAA845	4	
			WAA845	4	

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

Dimensions p. 46

1 pole 8 Step			WAA846	4	 
			WAA846	4	
1 pole 9 Step			WAA847	5	 
			WAA847	5	
1 pole 10 Step			WAA848	5	 
			WAA848	5	
1 pole 11 Step			WAA849	6	 
			WAA849	6	

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Voltmeter Switches with „OFF“

[Dimensions p. 46](#)

For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			WAA804	3	
			WAA804	3	
			WAA804	3	
			WAA804	3	
			WAA804	3	
			WAA804	3	
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			WAA805	3	
			WAA805	3	
			WAA805	3	
			WAA805	3	
			WAA805	3	
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			WAA807	5	
			WAA807	5	
			WAA807	5	
			WAA807	5	
			WAA807	5	
			WAA807	5	
			WAA807	5	
			WAA807	5	

Switch Function and Configuration

DK, DKR Switches

Push to turn

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Voltmeter Switches with „OFF“



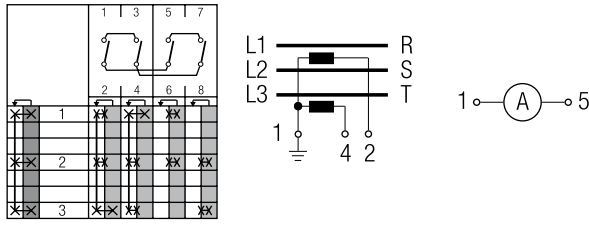
[Dimensions p. 46](#)

(as A804) for 2 measuring ranges by additional NO contact operated by pushing handle			WAA814	3	
			WAA814	3	
			WAA814	3	
			WAA814	3	
			WAA814	3	
			WAA814	3	
(as A805) for 2 measuring ranges by additional NO contact operated by pushing handle			WAA815	3	
			WAA815	3	
			WAA815	3	
			WAA815	3	
			WAA815	3	
			WAA817	4	
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

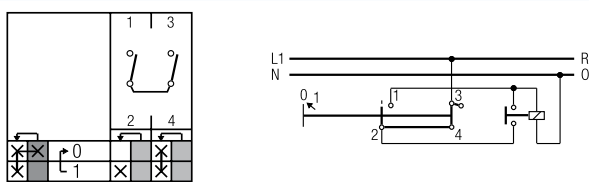


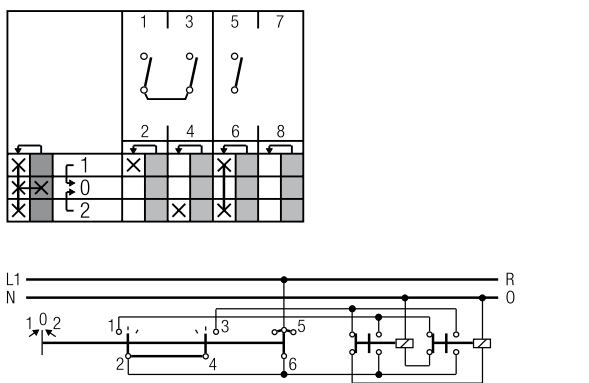


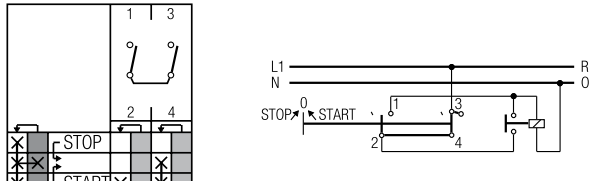


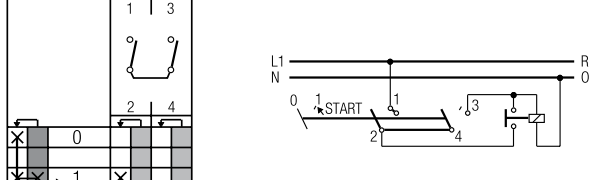
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Ammeter Switches




Dimensions p. 46

<p>Single pole with 2 current transformers (3 readings)</p>	 <p>F719</p>		<p>A021-600</p>	<p>2</p>	
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Control Switches





<p>Control switch for contactor control, closing by rotating, tripping by pushing in „OFF“ position</p>	 <p>F169</p>		<p>WAA874</p>	<p>1</p>	
<p>Control switch for 2 NO and 1 NC contacts</p>	 <p>F025</p>		<p>WAA875</p>	<p>2</p>	
<p>Control switch 1pole with additional emergency cut-out by pushing in „OFF“ position</p>	 <p>F024</p>		<p>WAA876</p>	<p>1</p>	
<p>Control switch stop start switch with spring return from start to position 1, with additional emergency cut-out by pushing in position 1</p>	 <p>F119</p>		<p>WAA878</p>	<p>1</p>	

Two or Four Hole Panel Mounting	Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B	DK.. DKR..
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 <p>Panel mounting</p> <p>Four hole panel mounting, Protection IP 40</p> <p>Four hole panel mounting, Protection IP 66/67/69k</p> <p>Two hole panel mounting, Protection IP 66/67/69k</p>	<p>●</p> <p>●</p> <p>●</p>	<p>E E-V</p> <p>EF EF-V</p> <p>E22 E22-V</p>	<p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>	<p>●</p>
 <p>Panel mounting using larger escutcheon plate and handle and with heavy duty latching</p> <p>Four hole panel mounting, Protection IP 40</p> <p>Four hole panel mounting, Protection IP 66/67/69k</p>		<p>EG</p> <p>EGF</p>	<p>●</p> <p>●</p>		
 <p>Panel and base mounting</p> <p>Four hole mounting, Protection IP 40</p> <p>Four hole mounting, Protection IP 66/67/69k</p>		<p>ER</p> <p>ERF</p>	<p>●</p> <p>●</p>	<p>●</p> <p>●</p>	

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Four Hole Panel Mounting	Code	DH.. DHR..	DH..B DHR..B
--------------------------	------	---------------	-----------------

 <p>Panel mounting with heavy duty latching and metal shaft</p> <p>Four hole panel mounting, Protection IP 40 Mounting plate, escutcheon plate and handle of size 0</p>	KN2	●	
 <p>Four hole panel mounting, Protection IP 40 Mounting plate, escutcheon plate and handle of size 1</p>	KN1	●	●
 <p>Four hole panel mounting, Protection IP 40 Mounting plate, escutcheon plate and handle of size 1 and 6 mm square metal shaft</p>	KD1	●	●
 <p>Panel mounting with protective cover</p> <p>Four hole panel mounting Protection front IP 40 rear IP 30</p>	EC	●	●
<p>Four hole panel mounting with additional shaft seal Protection front IP 40 rear IP 30</p>	ED	●	●

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Single Hole Mounting	Terminals rotated 90°	Code	DH.. DHR..	DK.. DKR..
----------------------	-----------------------	------	---------------	---------------

With locking nut and shaft seal



Without escutcheon plate,
Protection IP 66/67/69k



FT1
FT1-V

mm
22
22

mm
22
22



With square escutcheon plate,
Protection IP 66/67/69k



FT2
FT2-V

22
22

22
22

With size S1 square escutcheon plate and
heavy duty latching, Protection IP 66/67/69k



FH3
FH3-V

22
22

22
22



With rectangular escutcheon plate,
Protection IP 66/67/69k



FT6
FT6-V

22
22

22
22

With size S1 rectangular escutcheon plate and
heavy duty latching, Protection IP 66/67/69k



FH4
FH4-V

22
22






22
22



Mounting key for locking nut


S00 T170 09

Base Mounting	Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B
---------------	-----------------------	------	---------------	-----------------

	<p>Base mounting</p> <p>Base mounting - four hole, Protection IP 40</p> <p>For four hole base mounting and with integrated simplified door clutch, Protection IP 65</p> <p>For two hole base mounting, Protection IP 40</p>	<p>●</p> <p>●</p> <p>●</p>	<p>VE VE-V</p> <p>VF VF-V</p> <p>VE22 VE22V</p>	<p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>
	<p>For two hole base mounting and with integrated simplified door clutch, Protection IP 65</p>	<p>●</p>	<p>VF22 VF22V</p>	<p>●</p> <p>●</p>	<p>●</p> <p>●</p>
	<p>Snap-on base mounting for track EN 60715 ¹Protection IP 40 ²Protection IP 60/69k</p>		<p>VE1</p>	<p>●¹</p>	<p>●²</p>
	<p>Snap-on base mounting for track EN 60715 with rectangular escutcheon plate for 45 mm standard knock-out, Protection IP 40</p>		<p>VE2</p>	<p>●</p>	
	<p>Snap-on base mounting for track EN 60715. Both the escutcheon plate for 45 mm standard knock-out and the handle are adjustable in height. Protection IP 40</p>		<p>VE21</p>	<p>●</p>	

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Mounting Plates for Plaster Depth Boxes acc. to DIN 49073 and ÖNORM E8608	Code	DH.. DHR..
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	<p>Plaster depth trim, Protection IP40</p>	<p>UE1</p>	<p>●</p>
	<p>With light, Protection IP40</p> <p>With facility for light addition, Protection IP40</p>	<p>UE2</p> <p>UE3</p>	<p>●</p> <p>●</p>

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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

F022	F141	F158	F703	F023	F137	F142	F159	F701	F704	F152	F709	F026	F035	F153	F169	F024	F143
F160	F221	F222	F224	F025	F034	F036	F037	F038	F039	F139	F144	F147	F149	F150	F151	F219	F258
F259	F273	F280	F329	F384	F708	F053	F161	F297	F298	F306	F307	F001	F040	F052	F229	F355	F018
F019	F029	F030	F154	F155	F165	F166	F183	F184	F301	F302	F321	F332	F333	F334	F335	F334	F335
F712	F002	F021	F033	F041	F055	F305	F319	F054	F003	F042	F138	F255	F299	F308	F353	F350	F351
F004	F014	F017	F020	F027	F028	F031	F032	F043	F049	F135	F156	F157	F162	F167	F168	F187	F189
F303	F304	F336	F337	F347	F348	F710	F713	F714	F734	F005	F044	F136	F140	F702	F006	F010	F045
F015	F050	F007	F011	F046	F008	F012	F047	F016	F051	F009	F013	F048	F748				

45° switching

F747	F295	F742	F743	F215	F216	F738	F744	F746	F792	F793	F107	F109	F114	F115	F212	F213	F214
F217	F267	F289	F330	F375	F376	F383	F408	F409	F410	F411	F412	F413	F426	F427	F430	F729	F752
F775	F776	F777	F778	F779	F780	F781	F796	F797	F798	F105	F108	F112	F113	F117	F118	F293	F429
F739	F741	F419	F789	F790	F791	F794	F795	F110	F106	F116	F294	F317	F414	F415	F416	F417	F418
F782	F783	F784	F785	F786	F787	F788	F799	F111	F210	F211	F284	F285	F296	F322	F727	F740	

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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									F990	F991	F801	F802	F803	F804
F823	F824	F825	F826	F827	F828	F829	F830	F831	F832	F833	F834	F835	F837	F838	F839	F840	F841						






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





Handles

Type	Color	Code	Size	
			S0	S1

Type	Color	Code	Size	
			S0	S1












Black and Red are standard colours. White and Electro-Grey available on request.

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 	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	— ● — ● — ● — ●

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Country	Authority	Mark or Standard	DH10 DK10 DH10B	DHR10	DH11 DK11 DH11B	DHR11 DHR11B	DH12 DK12 DH12B	DHR12 DKR12 DHR12B
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USA	Underwriters Laboratories		●	●	●	●	●	●
		or 	●	●	●	●	●	●
Canada	Canadian Standards Association		●	●	●	●	●	●
		or 	●	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+
Denmark	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	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ¹	+	+	+	+	+	+
International Electrical Commission (IEC)	Recommendation	IEC 60947 ²	+	+	+	+	+	+
Russia Belarus Kazakhstan	Eurasian Conformity		●	+	●	+	●	+

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- 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 scheme.

Selection Data	DH10	DHR10
	DK10	
	DH10B	

Rated Insulation Voltage U_e	IEC 60947-3 ¹ , EN 60947-3 ¹ VDE 0660 part 107 ¹ North America Min. operational voltage	V V V	690 600 20	690 600 20		
Rated Impulse Withstand Voltage U_{imp}¹		kV	6	6		
Rated Thermal Current I_u/I_{th}	IEC 60947-3, EN 60947-3 VDE 0660 part 107 North America	A A	16 15	16 15		
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	16	16	
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-5-1, EN 60947-5-1 VDE 0660 part 200	110 V-240 V 380 V-440 V	A	5 3	5 3
Pilot Duty	North America	Heavy	VAC	600	600	
Ampere Rating	Resistive or low inductive loads	North America	A	15	15	
Short Circuit Protection						
Max. fuse size	(gG-characteristic)	A	16	16		
Rated short-time withstand current	(1s-current)	A	120	120		
Rated Utilization Category	IEC 60947-3, EN 60947-3 VDE 0660 part 107					
AC-3	Direct-on-line starting, star-delta starting	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW	2,2 3,7 3,7 3,7	2,2 3,7 3,7 3,7
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW	0,37 1,1 2,2	0,37 1,1 2,2
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 660 V-690 V	kW	3 5,5 5,5 4	3 5,5 5,5 4
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW	0,55 1,5 2,5	0,55 1,5 2,5
Ratings	North America					
	Standard motor load DOL-Rating (similar AC-3)	3 phase 3 pole	110 V-120 V 220 V-240 V 440 V-600 V	HP	0,75 1,5 3	0,75 1,5 3
		1 phase 2 pole	110 V-120 V 220 V-277 V 440 V-600 V	HP	0,25 0,5 1	0,25 0,5 1
Max. Permissible Wire Gage - Use copper wire only						
	Single-core or stranded wire		mm ² AWG	2x2,5 2x12	- -	
	Flexible wire (sleeving in accordance with DIN 46228) Flexible AWG wires (without sleeve)		mm ² AWG	2x2,5(1,5) 2x14	- -	
	Connection with insulated ring and fork type terminals		mm	-	≥3,2	
	Internal diameter		mm	-	≤7,4	
	External diameter		mm	6,3	-	
	Connection with quick connect terminations					
Min. Ambient Temperature of Stages					-25 °C (valid only without optional extra)	
Max. Ambient Temperature of Stages ^{2, 3}		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	

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¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
²For electromagnetic optional extras see additional data in Catalog 101. ³Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible).

Selection Data	DH11	DHR11	DH12	DHR12
	DK11	DHR11B	DK12	DKR12
	DH11B		DH12B	DHR12B

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Rated Insulation Voltage U_e	IEC 60947-3 ¹ , EN 60947-3 ¹ VDE 0660 part 107 ¹	V	600	600	600	600
	North America	V	600	600	600	600
	min. voltage	V	1 ²	1 ²	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	6	6	6	6
	North America	A	6	6	6	6
Rated Operational Current I_e AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107					
	North America					
	1 V/6 V	A	6/3	6/3	-/6	-/6
	12 V/24 V	A	2/1	2/1	6/5	6/5
	48 V/60 V	A	0,8/0,7	0,8/0,7	4/3,7	4/3,7
	110 V	A	0,4	0,4	3	3
	220 V-240 V	A	0,2	0,2	2	2
	380 V-400 V	A	0,13	0,13	1,3	1,3
	440 V/500 V	A	0,1/0,09	0,1/0,09	1/0,9	1/0,9
550 V/600 V	A	0,08/0,05	0,08/0,05	0,8/0,5	0,8/0,5	
Short Circuit Protection						
Max. fuse size	(glass-tube, quick)	A	6	6	6	6
Rated short-time withstand current(1s-current)		A	40	40	65	65
DC Switching Capacity⁴ DC-21B Resistive load T ≤ 1 ms	IEC 60947-3, EN 60947-3 VDE 0660 part 107					
	North America					
	1 V/6 V	A	4/2,5	4/2,5	-/4	-/4
	12 V/24 V	A	1,5/0,8	1,5/0,8	3/2,2	3/2,2
	48 V/60 V	A	0,3/0,27	0,3/0,27	1,2/1	1,2/1
	110 V	A	0,2	0,2	0,6	0,6
	220 V-240 V	A	0,1	0,1	0,3	0,3
	380 V-400 V	A	0,06	0,06	0,2	0,2
	440 V/500 V	A	0,05/0,04	0,05/0,04	0,15/0,12	0,15/0,12
550 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	2x2,5	-	2x2,5	-	
	AWG	2x12	-	2x12	-	
Flexible wire (sleeving in accordance to DIN 46228) Flexible AWG wires (without sleeve)	mm ²	2x2,5(1,5)	-	2x2,5(1,5)	-	
	AWG	2x14	-	2x14	-	
Connection with insulated ring and fork type terminals	Internal diameter	mm	-	≥3,2	-	≥3,2
	External diameter	mm	-	≤7,4	-	≤7,4
	Connection with quick connect terminations	mm	6,3	-	6,3	-
Min. Ambient Temperature of Stages³ Max. Ambient Temperature of Stages^{3, 5}	open at 100 % I_U/I_{th} enclosed at 100 % I_{the}		-25 °C (valid only without optional extra) 55 °C during 24 hours with peaks up to 60 °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.

²Values for lower voltages on request. ³For electromagnetic optional extras see additional data in Catalog 101.

⁴Values for switches with spring return on request. ⁵Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible).

Tightening torque of screws

Type	Tightening torque	
DH10	0,8 Nm	7 lb-in
DH10-1	0,8 Nm	7 lb-in
DH10-4	0,8 Nm	7 lb-in
DH10B	0,8 Nm	7 lb-in
DH11	0,8 Nm	7 lb-in
DH11-4	0,8 Nm	7 lb-in
DH11B	0,8 Nm	7 lb-in
DH11B-4	0,8 Nm	7 lb-in
DH12	0,8 Nm	7 lb-in
DH12-4	0,8 Nm	7 lb-in
DH12B	0,8 Nm	7 lb-in
DHR10	0,8 Nm	7 lb-in
DHR11	0,8 Nm	7 lb-in
DHR11B	0,8 Nm	7 lb-in
DHR12	0,8 Nm	7 lb-in
DHR12B	0,8 Nm	7 lb-in
DK10	0,8 Nm	7 lb-in
DK10-1	0,8 Nm	7 lb-in
DK10-4	0,8 Nm	7 lb-in
DK11	0,8 Nm	7 lb-in
DK12	0,8 Nm	7 lb-in
DK12-4	0,8 Nm	7 lb-in
DKR12	0,8 Nm	7 lb-in

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Two or Four Hole Panel Mounting

	DH10-DHR12 ³	DK10-DKR12	DH10B-DHR12B
A	48 1.89	48 1.89	64 2.52
B	42 1.65	42 1.65	56 2.20
C	4 .16	4 .16	4 .16
D1	5 .20	5 .20	5 .20
E	8-19 .31-.75	15-19 .59-.75	10-22 .39-.87
E22	11-15 .43-.59	-	-
EF	15-19 .59-.75	-	19-22 .75-.87
E	30 1.17	-	-
F	36(48) 1.42(1.89)	-	48 1.89
M²	5,5 .22	-	5,5 .22

²M, additional length for mounting ER, ERF only
³Dimensions in () for ER, ERF mounting plate only

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EG
EGF

	DH10-DHR12
A	64 2.52
B	42 1.65
C	4 .16
D1	5 .20
EG	10-22 .31-.87
EGF	19-22 .75-.87
E	48 1.89
M	6,7 .26

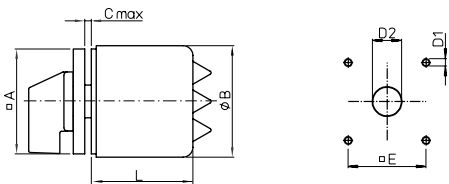
KN1
KD1
KN2

	KN2	DH10-DHR12	KN1	DH10-DHR12	DH10B-DHR12B
A	48 1.89	48 1.89	64 2.52	64 2.52	64 2.52
B	42 1.65	42 1.65	42 1.65	56 2.20	56 2.20
C	4 .16	4 .16	4 .16	4 .16	4 .16
D1	5 .20	5 .20	5 .20	5 .20	5 .20
D2	8-19 .31-.75	8-19 .31-.75	10-22 .31-.87	10-22 .31-.87	10-22 .31-.87
E	36 1.42	36 1.42	48 1.89	48 1.89	48 1.89
M	5,2 .20	5,2 .20	4,7 .19	12 .47	12 .47

¹see page 46

Four Hole Panel Mounting or Single Hole Mounting and Base Mounting

EC ED

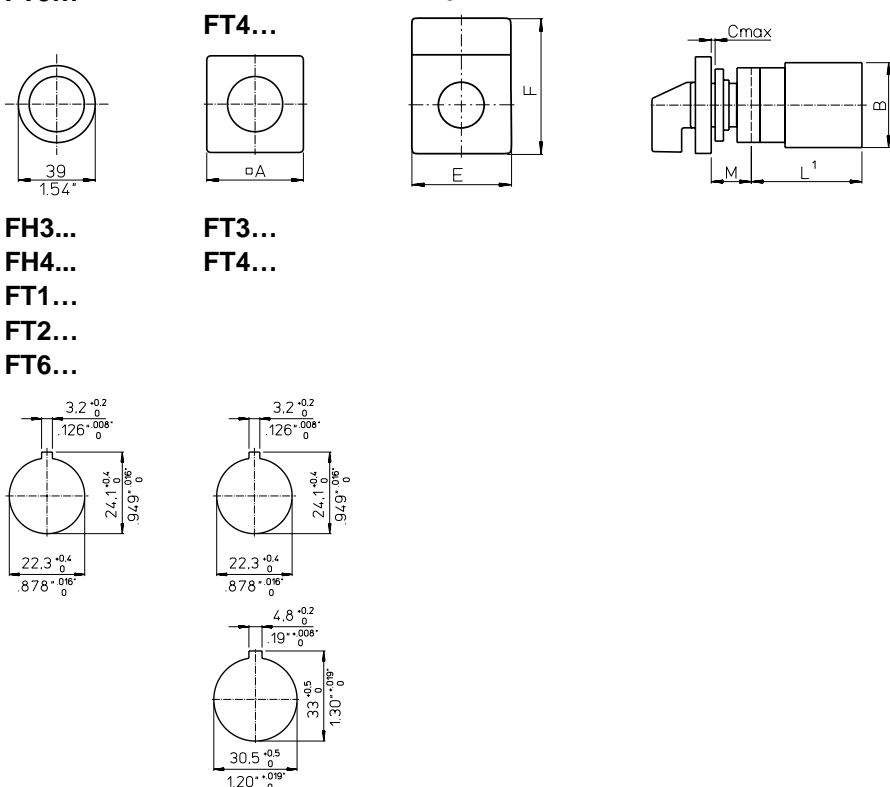


Stages L	DH10-DHR12	DH10B-DHR12B
1	104 4.10	64 2.52
2	104 4.10	84 3.31
3	104 4.10	104 4.10
4	-	127 5.00
5	-	139,5 5.49
6	-	164,5 6.48
7	-	177 6.97

	DH10-DHR12	DH10B-DHR12B
A	64 2.52	64 2.52
B	68 2.68	68/88 ¹ 2.68/3.46
C	4 .16	4 .16
D1	4 .16	4 .16
D2	5 .20	5 .20
D2	10-22 .39-.87	10-22 .39-.87
D2	19-22 .75-.87	19-22 .75-.87
E	48 1.89	48 1.89

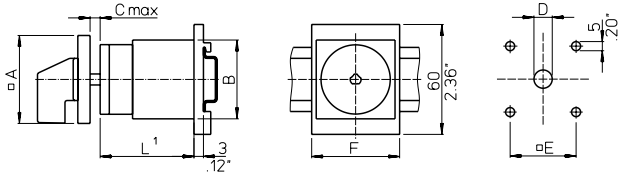
¹ 1-3 ST B = 68 / 4-7 ST B = 88

FT1... FT3... FH3... FT2... FT4... FH4... FT6... FH4... FT3... FT4... FT1... FT2... FT6...



	DH10-DHR12	DK10-DKR12
A/E	48 1.89	48 1.89
FH3...	64 2.52	64 2.52
FH4...	64 2.52	64 2.52
B	42 1.65	42 1.65
C	6 .24	6 .24
F	59 2.32	59 2.32
FH4...	78,5 3.09	78,5 3.09
M	18,2 .72	3,7 .15
FH3...	25,2 .99	3,7 .15
FH4...	25,2 .99	25,2 .99

VE1

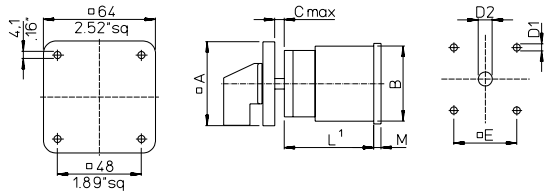


	DH10-DHR12	DH10B-DHR12B
A	48 1.89	64 2.52
B	42 1.65	56 2.20
C	10,5 .41	13,5 .53
D	8-15 .31-.59	10-15 .39-.59
E	36 1.42	48 1.89
F	48 1.89	70 2.76

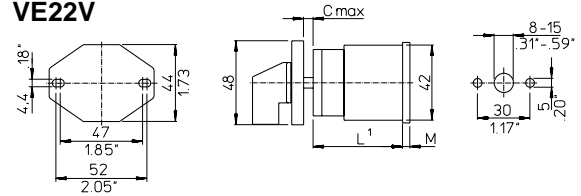
¹ see page 46

Base Mounting

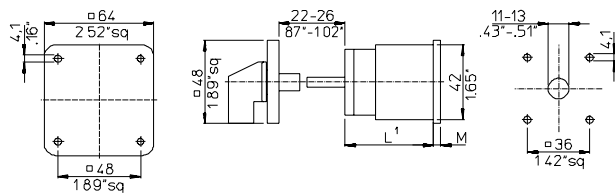
**VE
VE-V**



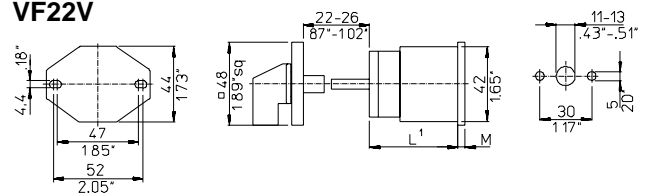
**VE22
VE22V**



**VF
VF-V**



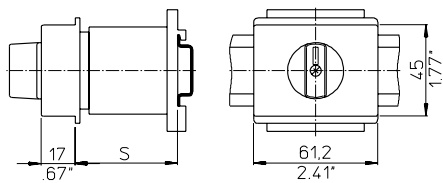
**VF22
VF22V**



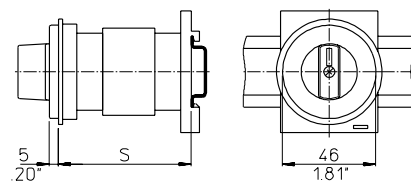
	DH10- DHR12	DH10B- DHR12B		DH10- DHR12	DH10B- DHR12B
A	48 1.89	64 2.52		36 1.42	48 1.89
B	42 1.65	56 2.20	VE M	3.2 .13	2.5 .10
C	10.5 .41	13.5 .53	VE22 M	1.9 .07	-
D1	5 .20	5 .20	VF M	3.2 .13	-
D2	8-19 .31-.75	10-22 .39-.87	VF22 M	1.9 .07	-

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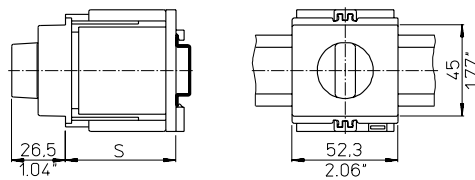
VE2



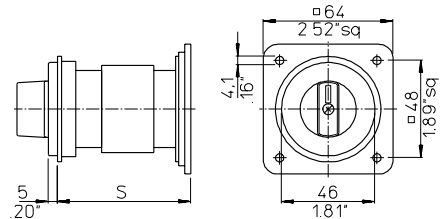
VE3



VE21



VE4



	VE2 DH10- DHR12 Max. no. of stages	VE3 DH10- DHR12 Max. no. of stages	VE4 DH10- DHR12 Max. no. of stages	S_{min.}	VE21 DH10- DHR12 No. of stages
S = 46 1.80	1	-	-	44 1.73	1
S = 50 1.97	1	1	1	54 2.13	2
S = 61 2.40	2	1	1	72 2.83	3
S = 67 2.64	2	2	2		
S = 69 2.70	2	2	2		

¹see page 46

Wall Mounting, Escutcheon Plates and Additional Length

**UE1
UE2
UE3**

Lamp

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

Size	A	B	C
S0	48 1.89	59 2.32	6,7 .26
S1	64 2.52	78 3.07	7,4 .29

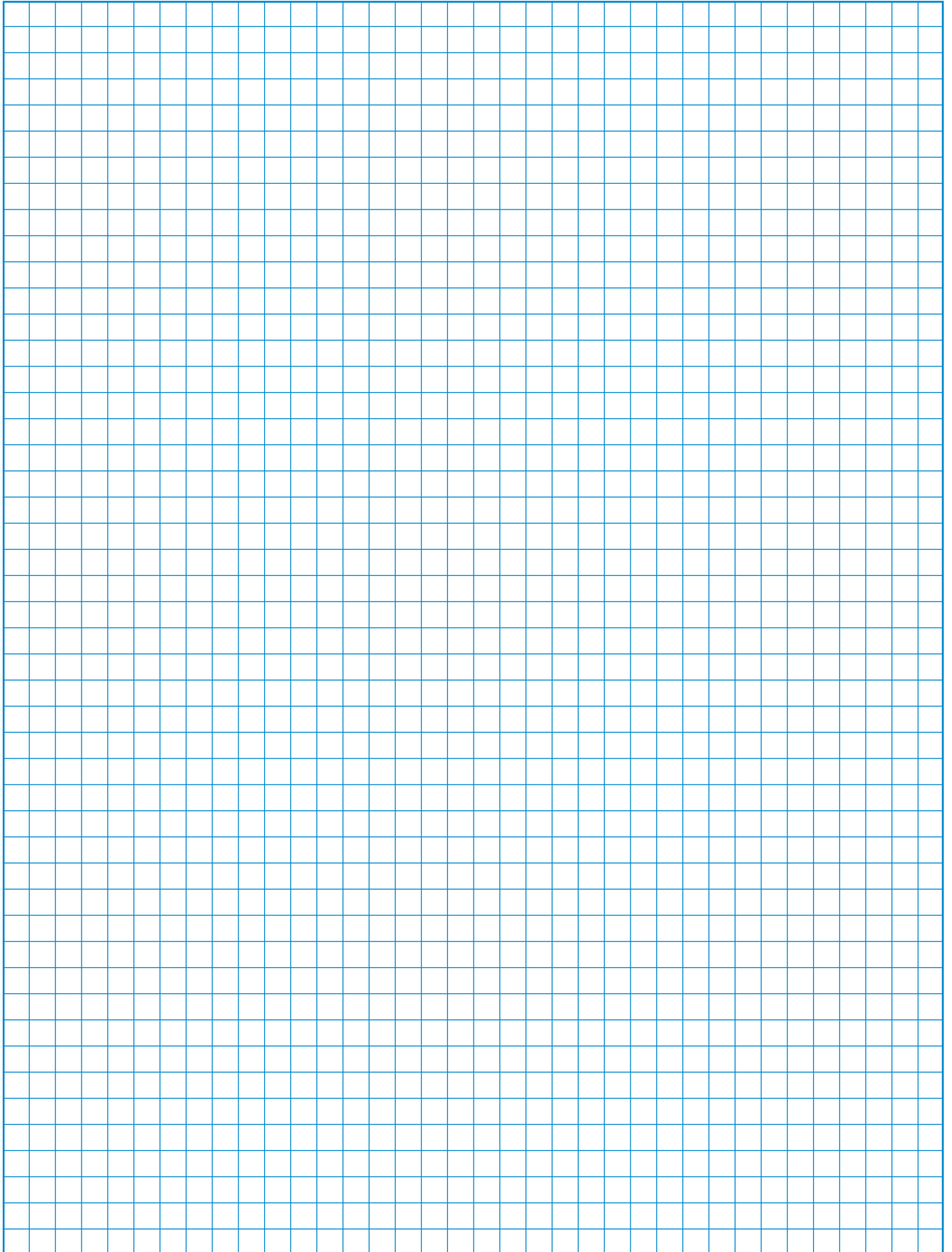
Quick connects for switches DH and DK (page 6)

Length L

Stages	DH10 DH11 DH12	DHR10 DHR11 DHR12	DK10 DK11 DK12	DKR12	DH10B DH11B DH12B	DHR11B DHR12B
1	43,5 1,71	43,5 1,71	61 2,4	61 2,4	48,9 1,93	48,9 1,93
2	61 2,4	61 2,4	78,5 3,09	78,5 3,09	66,4 2,61	66,4 2,61
3	78,5 3,09	78,5 3,09	96 3,78	96 3,78	83,9 3,30	83,9 3,30
4	96 3,78	96 3,78	113,5 4,47	113,5 4,47	101,4 3,99	101,4 3,99
5	113,5 4,47	113,5 4,47	131 5,16	131 5,16	118,9 4,68	118,9 4,68
6	131 5,16	131 5,16	148,5 5,85	148,5 5,85	136,4 5,37	136,4 5,37
7	148,5 5,85	148,5 5,85	166 6,54	166 6,54	153,9 6,06	153,9 6,06
8	166 6,54	166 6,54	183,5 7,22	183,5 7,22	171,4 6,75	171,4 6,75
9	183,5 7,22	183,5 7,22	201 7,91	201 7,91	188,9 7,44	188,9 7,44
10	201 7,91	201 7,91	218,5 8,60	218,5 8,60	206,4 8,13	206,4 8,13
11	218,5 8,6	218,5 8,6	236 9,29	236 9,29	223,9 8,81	223,9 8,81
12	236 9,29	236 9,29	253,5 9,98	253,5 9,98	241,4 9,50	241,4 9,50

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Notes:



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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
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 24 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
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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