KRAUS & NAIMER

BLUE LINE SWITCHGEAR

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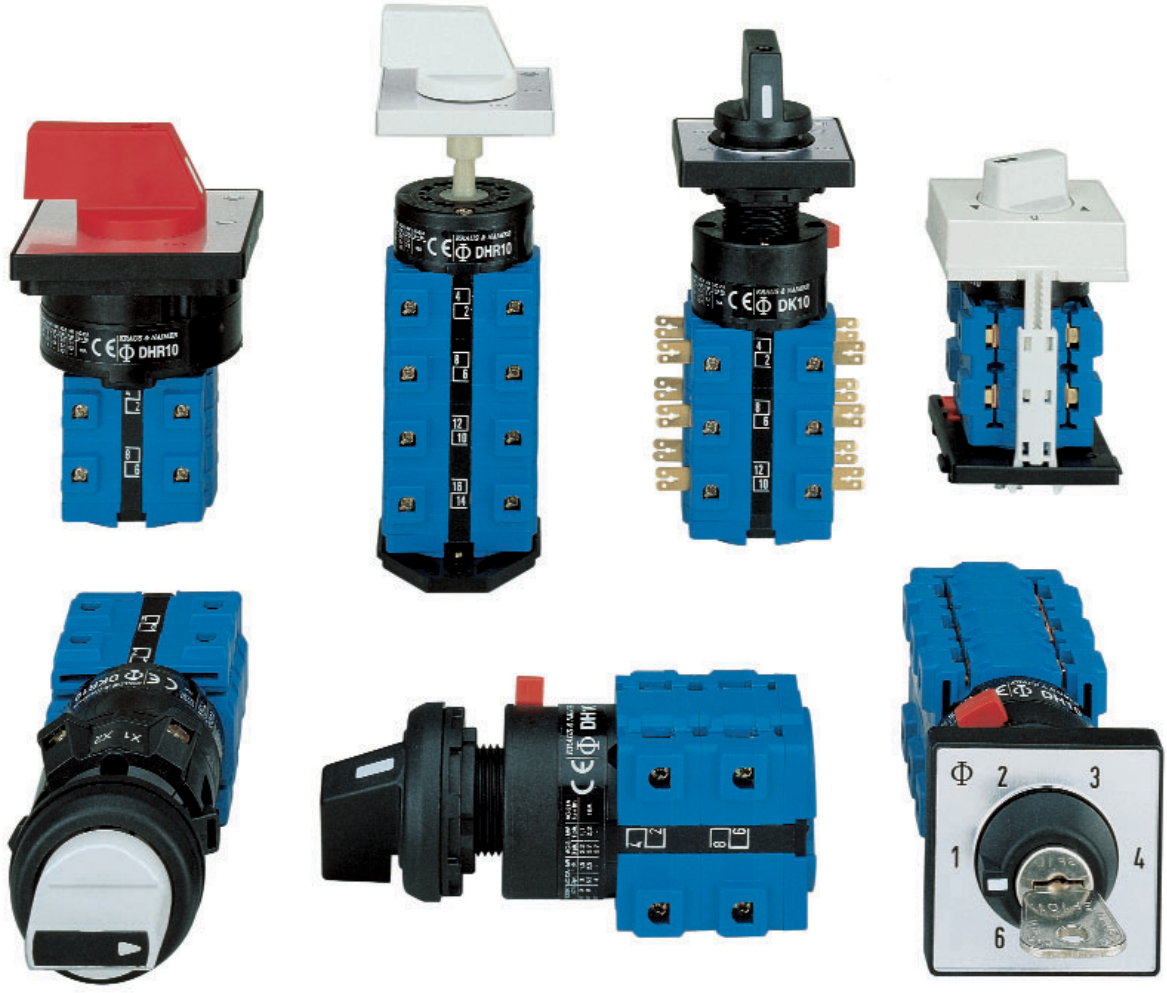
Catalog 130

DH, DHR, DK, DKR Switches
6 A-16 A



KRAUS & NAIMER

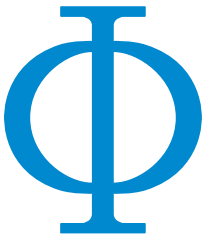
The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues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

Contents

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

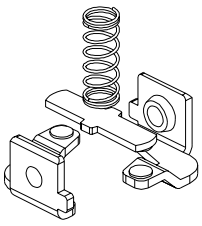


Fig. 1

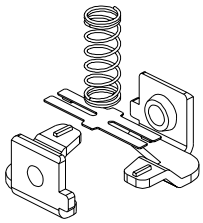
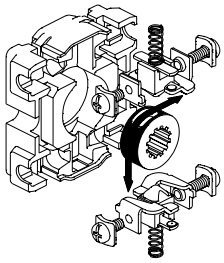


Fig. 2

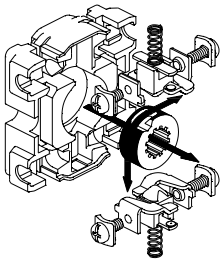
A rigid double-break bridge with silver alloy contacts (DH10, DHR10, DK10, DKR10, DH10B, DHR10B) provides high making and breaking capabilities for regular control applications. (Fig. 1)

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, DKR11, DH11B, DHR11B). This contact system offers maximum contact security, low resistance and virtually chatter free switching. (Fig. 2)

2 Methods of Contact Operation



Turning

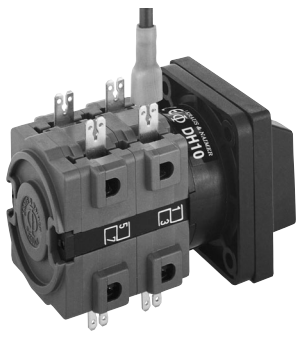


Turning and Pushing

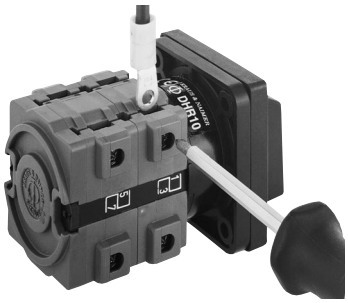
The contacts of the switches of the DH and DHR series can be manually operated by turning and the DK and DKR series by turning and/or pushing. This versatility of handle movement permits a countless variety of contact arrangements. Special pre-select programs enable the operator to rotate the handle 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.

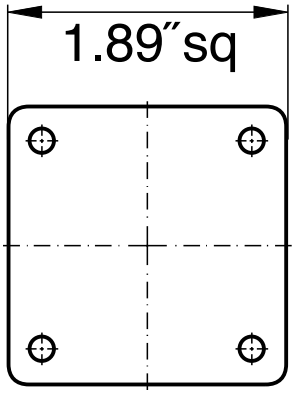
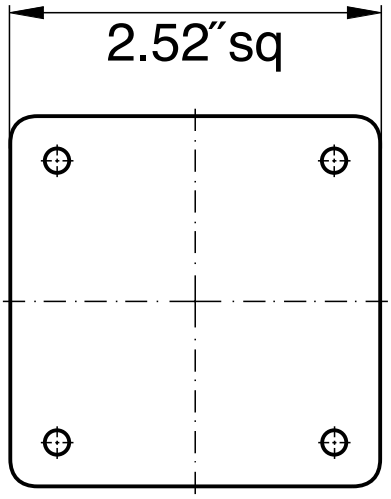
Type	Size	Possible Switching Angles	Max. No. of Stages
DH10-DHR12	S0	30°, 45°, 60°, 90°	12
DK10-DKR12	S0	30°, 60°, 90°	9
DH10B-DHR12B	S1	30°, 45°, 60°, 90°	12

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 □ 48 1.89″sq 		Operation by turning		
	DH10	20-690	16	5
	DH11	1^2-600	6	-
	DH12	6-600	6	-
	DHR10	20-690	16	5
	DHR11	1^2-600	6	-
	DHR12	6-600	6	-
		Operation by turning/pushing		
	DK10	20-690	16	5
	DK11	1^2-600	6	-
	DK12	6-600	6	-
	DKR10	20-690	16	5
	DKR11	1^2-600	6	-
	DKR12	6-600	6	-
S1 □ 64 2.52″sq 		Operation by turning		
	DH10B	20-690	16	5
	DH11B	1^2-600	6	-
	DH12B	6-600	6	-
	DHR10B	20-690	16	5
	DHR11B	1^2-600	6	-
	DHR12B	6-600	6	-

For further technical details, refer to pages 38 and 39.
To furnish with gold contacts and quick connects, refer to page 4.

[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. [2]Values 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 3 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 38 and 39. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 6-28 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 29-33. 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, DHR10, DK10, DKR10, DH10B, DHR10B
-4	with integrated quick connects	DH10, DH11, DH12, DK10, DK11, DK12, DH10B, DH11B, DH12B
-5	with integrated quick connects and gold contacts	DH10, DK10, DH10B

Example: Coding for switch type **DH10** with gold contacts is **DH10-1**.

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

[1]Technical data on request.

How to order

Modification of Switches

The standard switch consists of a plexi glass 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: **DH10 A202-100 E**.

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 DH10 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: **DH10 A202-103 E**.

Handles, Escutcheon Plates and Optional Extras

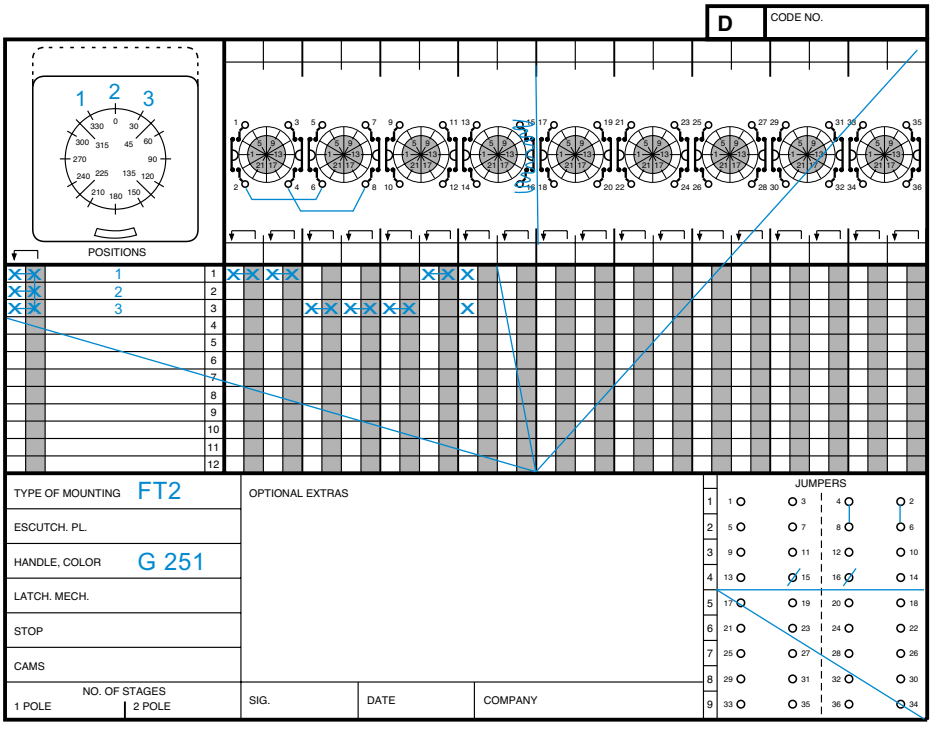
The handles for standard switches shown on pages 6-28 are suitable for mounting units with four hole panel mounting. Alternative types of handles available are illustrated on pages 29-33.
When a handle, escutcheon plate or optional extra is required but not covered by the dash number, the code number for the selected component should be entered separately. A comprehensive range of available standard escutcheon plates is illustrated on pages 34-36. 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

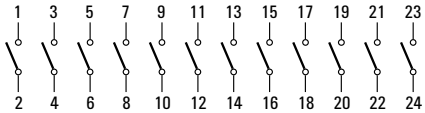
DH, DHR, DK and DKR switches are available in sizes S0 and S1. These size codes indicate the dimension of the mounting, the escutcheon plate and the handle, as well as the size of optional devices and enclosures.
Page 3 lists these sizes and the various switch types they include.

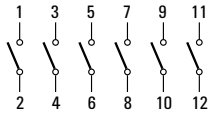
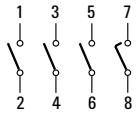
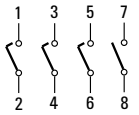
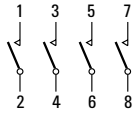
Ordering of Special Switches and Escutcheon Plates

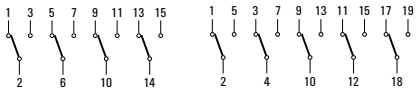
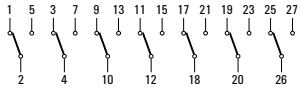
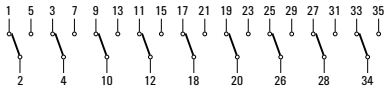
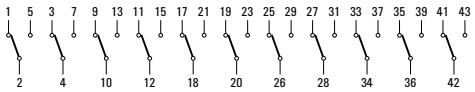
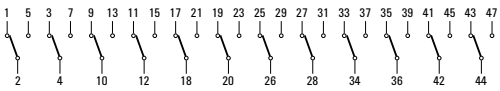
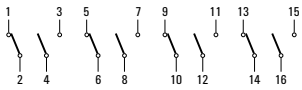
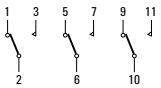
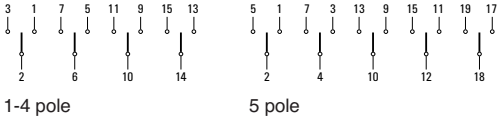
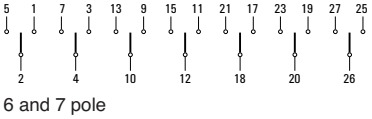
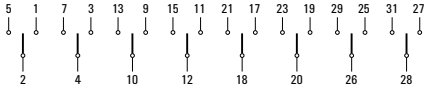
When ordering special switches and special escutcheon plates, we recommend the use of our ordering form as shown in this example.
Contacts may be operated in 2 plains. Consequently, each contact has two columns in which the required contact function is to be indicated. The shaded column indicates function 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.



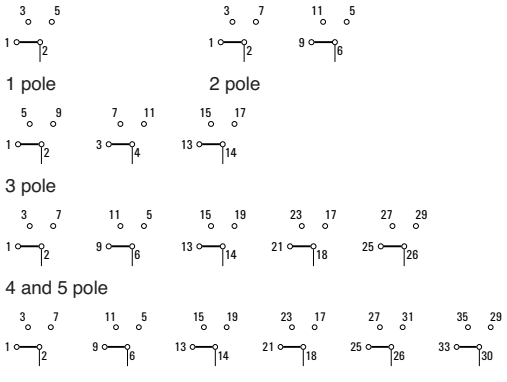
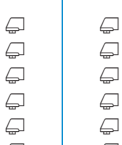
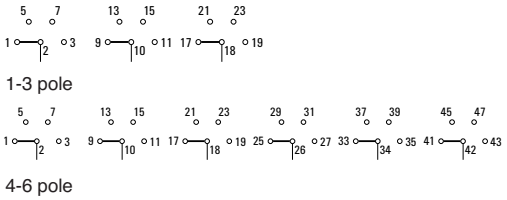
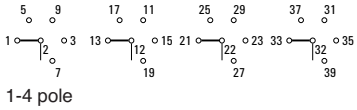
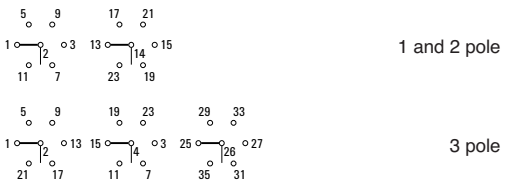
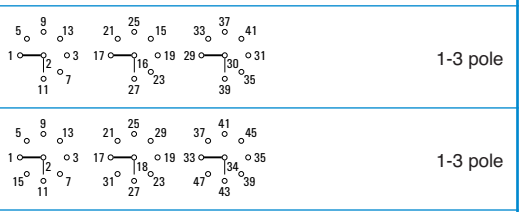
Order forms are available on request.

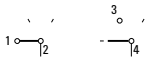
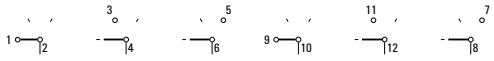
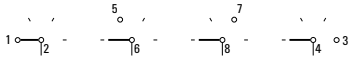
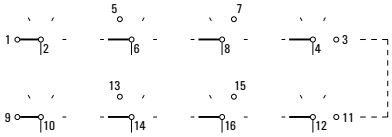
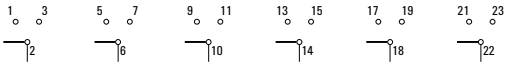
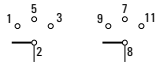
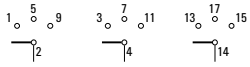
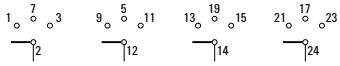
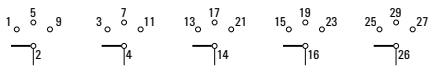
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
ON/OFF Switches with 60° Switching						
1 pole	0 1			A200-600	1	 1-12 pole
2 pole				A201-600	1	
3 pole				A202-600	2	
3 pole with red handle				A202-626	2	
3 pole with V850 padlock attachment				A202-627	2	
4 pole				A203-600	2	
5 pole				A341-600	3	
6 pole				A342-600	3	
7 pole				A343-600	4	
8 pole				A344-600	4	
9 pole				A345-600	5	
10 pole				A346-600	5	
11 pole				A347-600	6	
12 pole				A348-600	6	
1 pole	OFF ON			A200-620	1	
2 pole				A201-620	1	
3 pole				A202-620	2	
4 pole				A203-620	2	
5 pole				A341-620	3	
6 pole				A342-620	3	
7 pole				A343-620	4	
8 pole				A344-620	4	
9 pole				A345-620	5	
10 pole				A346-620	5	
11 pole				A347-620	6	
12 pole				A348-620	6	
1 pole	OFF ON			A200-621	1	
2 pole				A201-621	1	
3 pole				A202-621	2	
4 pole				A203-621	2	
5 pole				A341-621	3	
6 pole				A342-621	3	
1 pole	FRÅN TILL			A200-622	1	
2 pole				A201-622	1	
3 pole				A202-622	2	
4 pole				A203-622	2	
5 pole				A341-622	3	
6 pole				A342-622	3	
1 pole	FRÅN TILL			A200-623	1	
2 pole				A201-623	1	
3 pole				A202-623	2	
4 pole				A203-623	2	
5 pole				A341-623	3	
6 pole				A342-623	3	
1 pole	HUVUDBRYTARE FRÅN TILL			A200-624	1	
2 pole				A201-624	1	
3 pole				A202-624	2	
4 pole				A203-624	2	
5 pole				A341-624	3	
6 pole				A342-624	3	
1 pole	HUVUDBRYTARE 0 1			A200-625	1	
2 pole				A201-625	1	
3 pole				A202-625	2	
4 pole				A203-625	2	
5 pole				A341-625	3	
6 pole				A342-625	3	

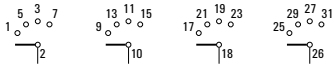
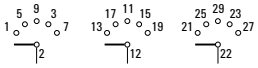
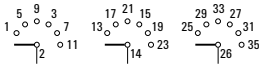
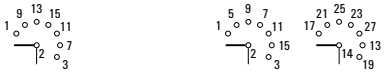
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
ON/OFF Switches with 90° Switching						
1 pole contacts 2 pole preclose 30° 3 pole				A290-600 A291-600 A292-600	1 1 2	
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°				A324-600 A293-600 A327-600	2 2 2	 1, 2, 3, 4, 5 and 6 pole
5 pole contacts 6 pole preclose 30°				A325-600 A326-600	3 3	
1 pole contacts 2 pole preclose 30° 3 pole				A290-620 A291-620 A292-620	1 1 2	 4 pole 1 pole preclose 60°
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°				A324-620 A293-620 A327-620	2 2 2	
5 pole contacts 6 pole preclose 30°				A325-620 A326-620	3 3	 4 pole 3 pole preclose 30°
3 pole 360° rotation	 			A208-600 A208-620	2 2	
3 pole for foot operation				A386-600	2	
ON/OFF Switches with Spring Return to „OFF“ 30° Switching						
1 pole 2 pole 3 pole 4 pole				A204-600 A205-600 A206-600 A207-600	1 1 2 2	 1-4 pole

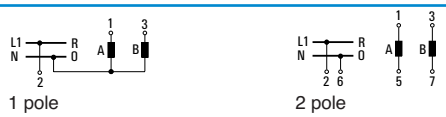
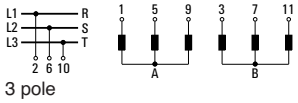
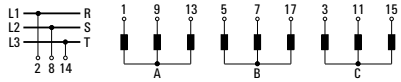
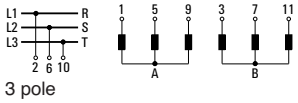
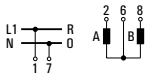
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Double-throw Switches without „OFF“ 60° Switching						
1 pole				A220-600	1	 1-4 pole 5 pole
2 pole				A221-600	2	
3 pole				A222-600	3	
4 pole				A223-600	4	
5 pole				A369-600	5	
6 pole				A370-600	6	
7 pole				A371-600	7	 6 and 7 pole
8 pole				A372-600	8	
9 pole				A373-600	9	
10 pole				A374-600	10	 8 and 9 pole
11 pole				A375-600	11	
12 pole				A376-600	12	 10 and 11 pole  12 pole
Double-throw Switches without „OFF“ with electrically isolated contacts						
1 pole				A720-600	1	 1-4 pole
2 pole				A721-600	2	
3 pole				A722-600	3	
4 pole				A723-600	4	
1 pole with spring return				A795-600	1	 1 pole with spring return
Double-throw Switches with Spring Return to Center						
1 pole				A295-600	1	 1-3 pole
2 pole				A296-600	2	
3 pole				A297-600	3	
1 pole				A295-620	1	
2 pole				A296-620	2	
3 pole				A297-620	3	
Double-throw Switches with Center „OFF“ 60° Switching						
1 polig				A210-600	1	 1-4 pole 5 pole
2 polig				A211-600	2	
3 polig				A212-600	3	
4 polig				A213-600	4	
5 polig				A361-600	5	 6 and 7 pole
6 polig				A362-600	6	
7 polig				A363-600	7	
8 polig				A364-600	8	 8 pole

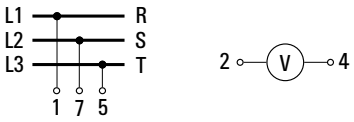
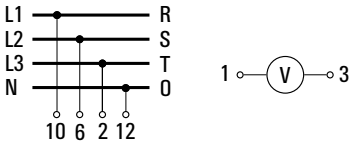
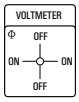
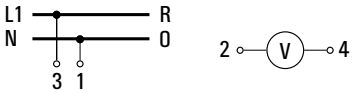
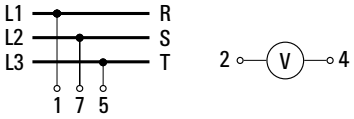
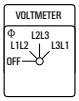
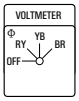
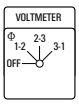
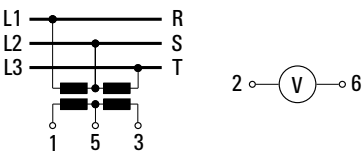
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Double-throw Switches with Center „OFF“ 60° Switching						
1 pole	OFF 1 2			A210-620	1	1-4 pole
2 pole				A211-620	2	
3 pole				A212-620	3	
4 pole				A213-620	4	
5 pole				A361-620	5	
6 pole				A362-620	6	
7 pole				A363-620	7	
8 pole				A364-620	8	
1 pole	0 HAND AUTO			A210-621	1	5 pole
2 pole				A211-621	2	
3 pole				A212-621	3	
1 pole	0 HAND AUTO			A210-622	1	6 and 7 pole
2 pole				A211-622	2	
3 pole				A212-622	3	
1 pole	OFF MAN AUTO			A210-623	1	
2 pole				A211-623	2	
3 pole				A212-623	3	
1 pole	OFF AUTO HAND			A210-624	1	8 pole
2 pole				A211-624	2	
3 pole				A212-624	3	
4 pole				A213-624	4	
Double-throw Switches with Center „OFF“ 90° Switching						
1 pole contacts	0 1 2			A218-600	1	1-4 pole
2 pole preclose 30°				A219-600	2	
3 pole				A299-600	3	
4 pole 1 pole preclose 60°				A294-600	4	
1 pole	OFF 1 2			A218-620	1	
2 pole				A219-620	2	
3 pole				A299-620	3	
4 pole 1 pole preclose 60°				A294-620	4	
Double-throw Switches with Center „OFF“ and electrically isolated contacts						
1 pole	0 1 2			A710-600	1	1-4 pole
2 pole				A711-600	2	
3 pole				A712-600	3	
4 pole				A713-600	4	
1 pole with spring return	1 0 2			A714-600	1	1 and 2 pole
2 pole to center				A715-600	2	
Double-throw Switches with Spring Return to Center						
1 pole with spring return	1 0 2			A214-600	1	1-3 pole
2 pole to center				A215-600	2	
3 pole				A216-600	3	
1 pole	1 OFF 2			A214-620	1	
2 pole				A215-620	2	
3 pole				A216-620	3	
1 pole with spring return	PROV 0 DRIFT			A320-600	1	1-3 pole
2 pole from left to center				A321-600	2	
3 pole				A322-600	3	

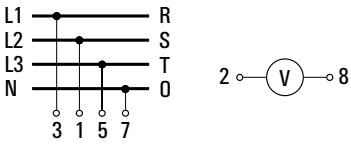
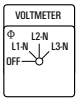
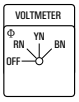
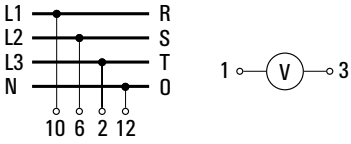
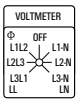
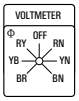
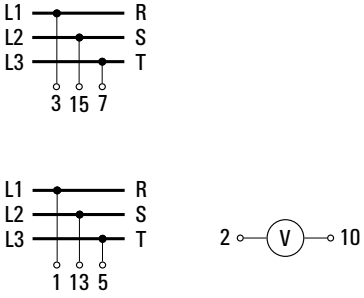
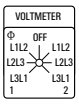
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Multi-step Switches without „OFF“						
1 pole 3 Step 2 pole 3 pole 4 pole 5 pole 6 pole				A230-600 A250-600 A270-600 A476-600 A484-600 A489-600	2 3 5 6 8 9	
1 pole 4 Step 2 pole 3 pole 4 pole 5 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				A239-600	6	

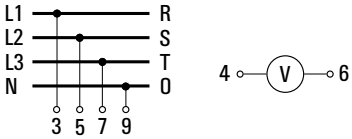
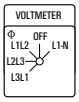
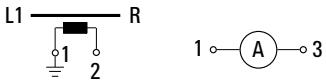
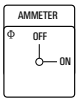
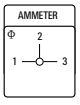
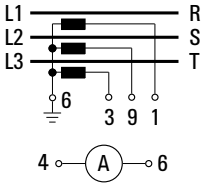
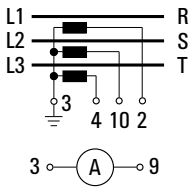
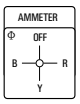
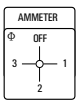
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Multi-step Switches without „OFF“ with electrically isolated contacts						
1 pole 3 Step				A730-600	2	 1 pole
2 pole				A750-600	3	 2 pole
1 pole 4 Step				A731-600	2	 1 pole
2 pole				A751-600	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	
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	 5 pole

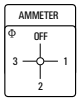
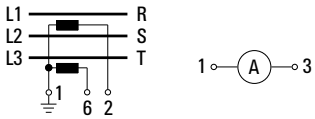
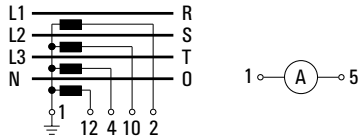
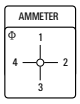
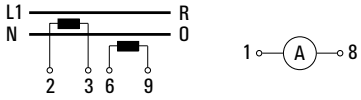
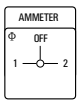
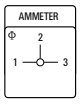
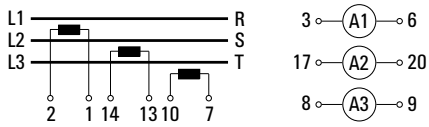
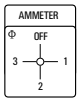
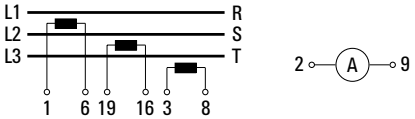
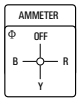
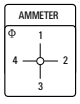
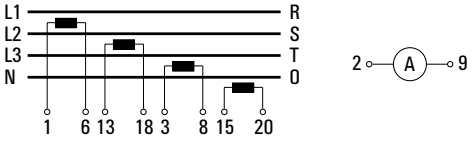
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Multi-step Switches with „OFF“						
1 pole 4 Step				A242-600	2	
2 pole				A262-600	4	
3 pole				A282-600	6	
4 pole				A482-600	8	
1 pole				A242-620	2	1-4 pole
2 pole				A262-620	4	
3 pole				A282-620	6	
4 pole				A482-620	8	
1 pole 5 Step				A243-600	3	
2 pole				A263-600	5	
3 pole				A283-600	8	
1 pole				A243-620	3	1-3 pole
2 pole				A263-620	5	
3 pole				A283-620	8	
1 pole 6 Step				A244-600	3	
2 pole				A264-600	6	
3 pole				A284-600	9	
1 pole				A244-620	3	1-3 pole
2 pole				A264-620	6	
3 pole				A284-620	9	
1 pole 7 Step				A245-600	4	
2 pole				A265-600	7	
1 pole				A245-620	4	1 pole 2 pole
2 pole				A265-620	7	
1 pole 8 Step				A246-600	4	
1 pole				A246-620	4	
1 pole 9 Step				A247-600	5	
1 pole				A247-620	5	
1 pole 10 Step				A248-600	5	
1 pole				A248-620	5	
1 pole 11 Step				A249-600	6	
1 pole				A249-620	6	

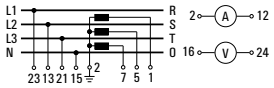
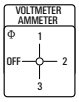
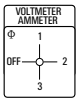
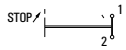
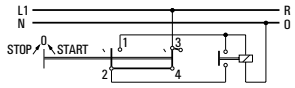
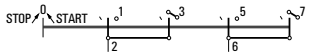
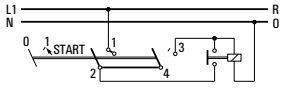
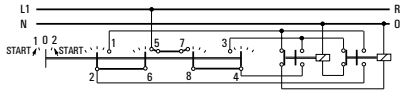
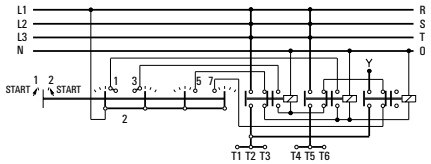
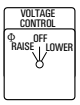
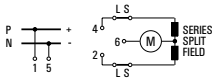
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
General Application Switches						
1 pole 2 Gang 2 pole Switching sequence: 3 pole 0, A, A+B				A310-600 A312-600 A314-600	1 2 3	 1 pole 2 pole
1 pole 2 pole 3 pole				A310-620 A312-620 A314-620	1 2 3	 3 pole
1 pole 3 Gang 2 pole Switching sequence: 3 pole 0, A, A+B, A+B+C				A311-600 A313-600 A315-600	2 3 5	 1 pole 2 pole
1 pole 2 pole 3 pole				A311-620 A313-620 A315-620	2 3 5	 3 pole
1 pole 2 Gang 2 pole Series switching 3 pole Switching sequence: 0, A, B, A+B				A330-600 A331-600 A332-600	1 2 3	 1 pole 2 pole
1 pole 2 pole 3 pole				A330-620 A331-620 A332-620	1 2 3	 3 pole
2 pole 2 Gang Series-parallel Switching Switching sequence: 0, A+B series, A, A+B parallel	 			A339-600 A339-620	2 2	

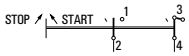
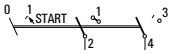
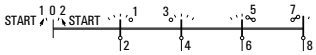
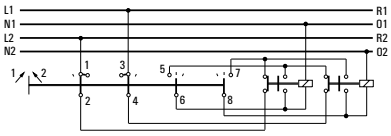
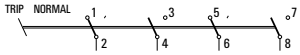
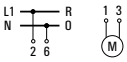
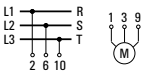
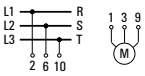
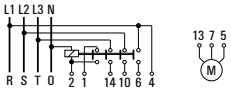
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Voltmeter Switches without „OFF“						
3 phase 3 wire				A023-600	2	
				A023-620	2	
3 phase 3 wire 3 phase to phase and phase to neutral				A025-600	3	
				A025-620	3	
Voltmeter Switches with „OFF“						
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	

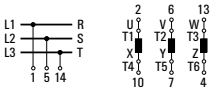
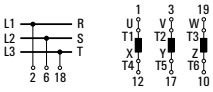
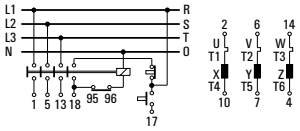
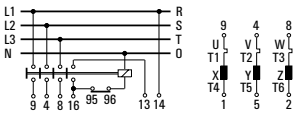
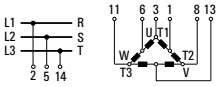
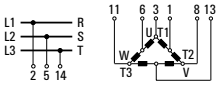
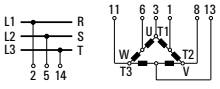
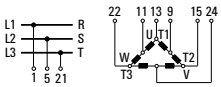
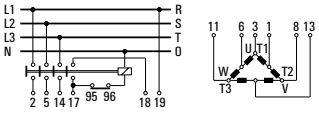
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Voltmeter Switches with „OFF“						
3 phase to neutral				A005-600	2	
				A005-620	2	
				A005-621	2	
				A005-622	2	
				A005-623	2	
3 phase to phase and 3 phase to neutral				A007-600	3	
				A007-620	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	

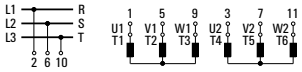
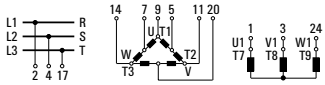
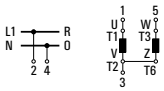
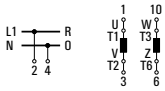
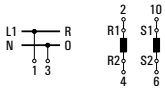
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Voltmeter Switches with „OFF“						
3 phase and 1 phase to neutral				A010-600	3	
				A010-620	3	
				A010-621	3	
				A010-622	3	
Ammeter Switches						
Single pole with one current transformer				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	

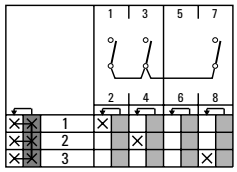
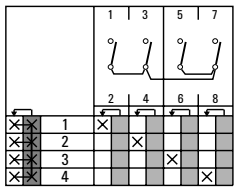
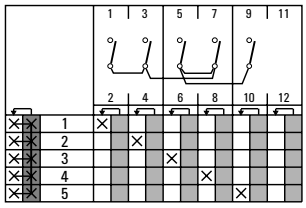
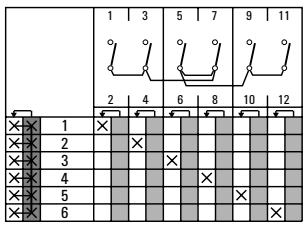
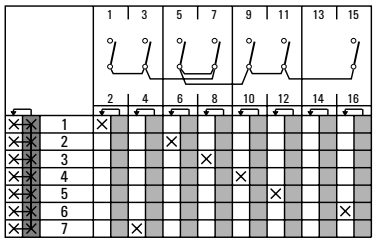
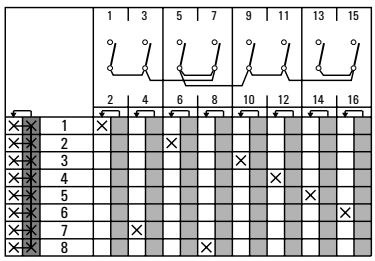
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Ammeter Switches						
Single pole with 2 current transformers (3 readings)				A021-600	2	
				A021-620	2	
Single pole with 4 current transformers				A036-600	4	
				A036-620	4	
2 pole 2 current transformers				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	
2 pole 4 current transformers				A039-600	6	
				A039-620	6	

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

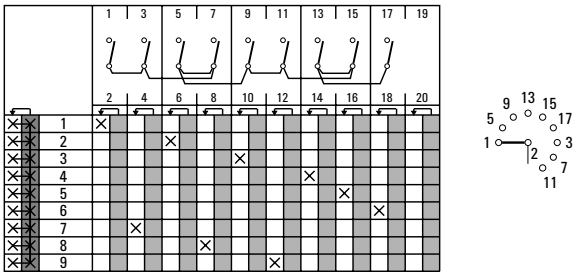
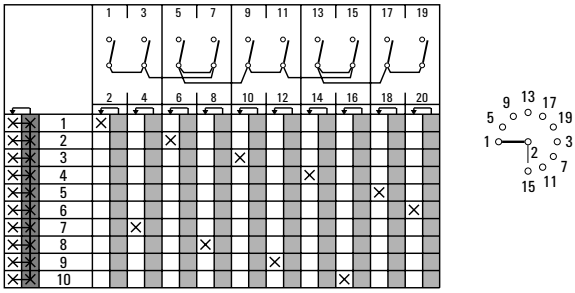
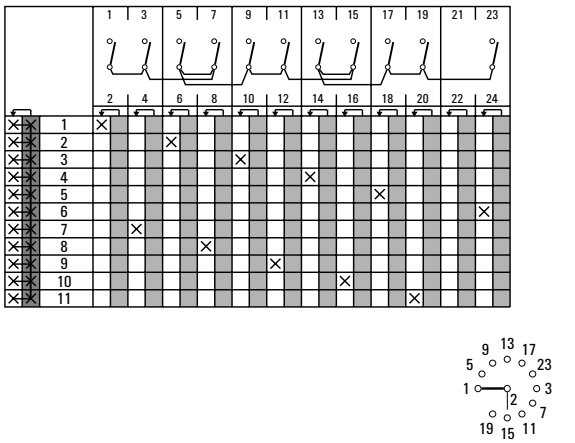
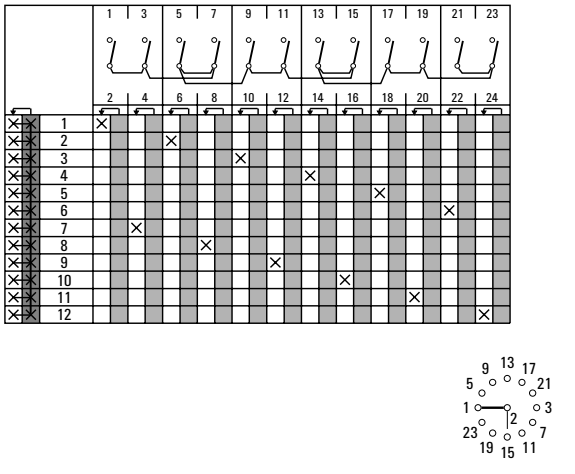
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Control Switches with electrically isolated contacts						
Stop start switch single pole				A789-600	1	
Stop start switch with spring return to 1				A791-600	1	
Stop start switch with spring return 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	
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	

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

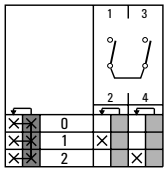
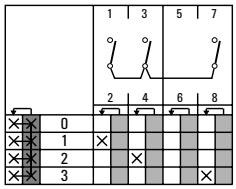
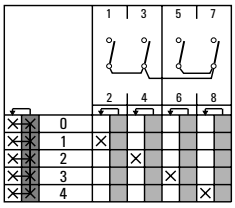
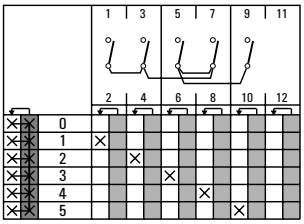
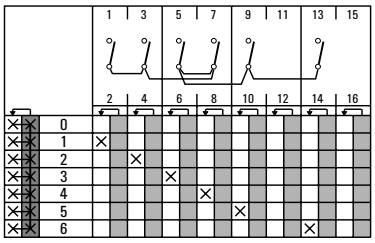
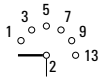
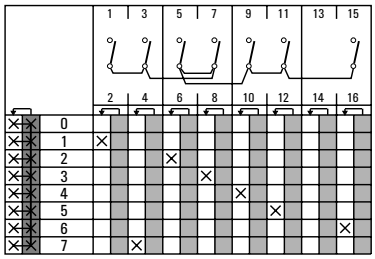
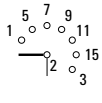
Function	Escutch. Plate	Type/Handle DH10- DHR12	Type/Handle DH10B- DHR12B	Code	Stages	Connection Diagram
Motor Control Switches						
2 speed 2 winding 0-A-B⅄or Δ				A451-600	3	
				A451-620	3	
3 speed 2 winding 0-AΔ-B⅄-A⅄⅄				A457-600	6	
				A457-620	6	
Start and Run Switches						
Split-phase start				A425-600	2	 Split-phase Start FLD
				A425-620	2	
Split-phase start reversing				A426-600	3	 Split-phase Start FLD
				A426-620	3	
Split-phase reversing, auto cut-out of start field winding				A622-600	3	 Split-phase Start FLD

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Multi-step Switches without „OFF“					
1 pole 3 Step			A830-600	2	 
1 pole 4 Step			A831-600	2	 
1 pole 5 Step			A832-600	3	 
1 pole 6 Step			A833-600	3	 
1 pole 7 Step			A834-600	4	 
1 pole 8 Step			A835-600	4	 

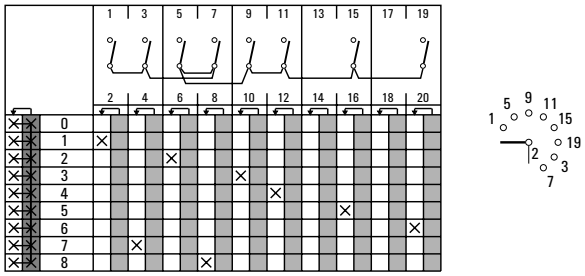
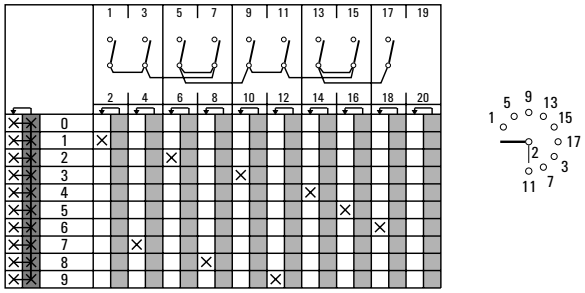
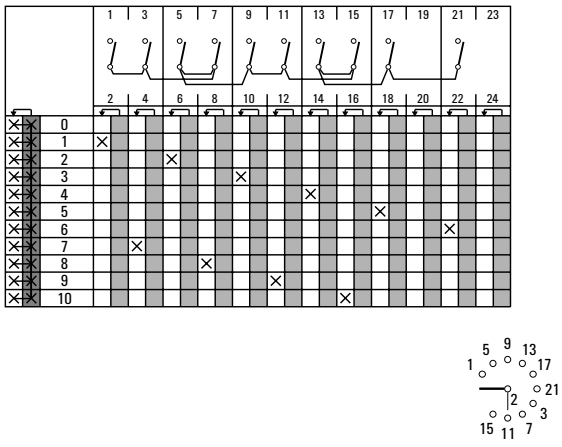
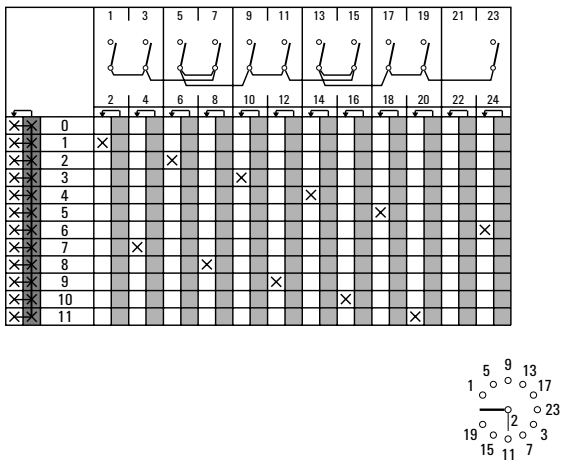
Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Multi-step Switches without „OFF“					
1 pole 9 Step			A836-600	5	
1 pole 10 Step			A837-600	5	
1 pole 11 Step			A838-600	6	
1 pole 12 Step			A839-600	6	

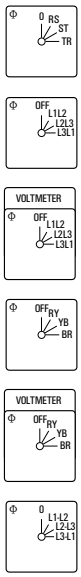
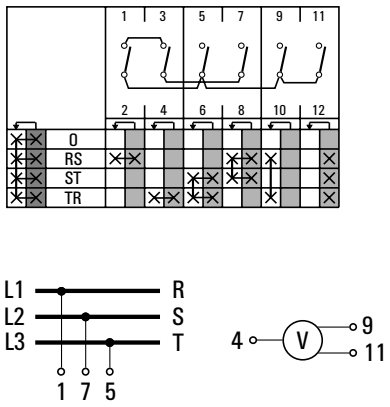
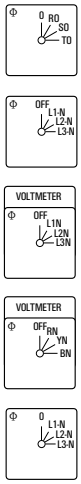
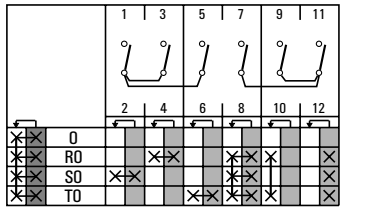
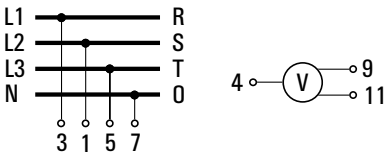
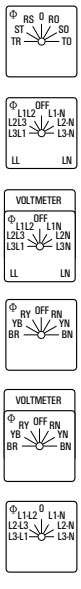
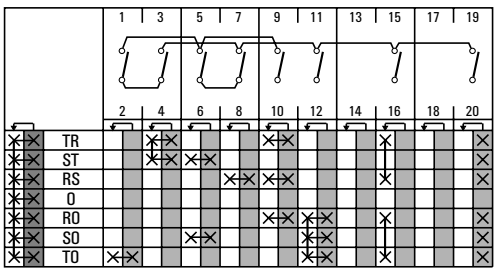
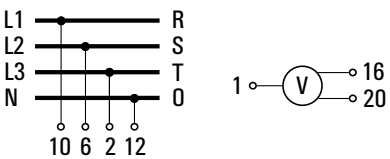
Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

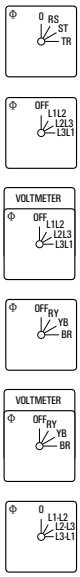
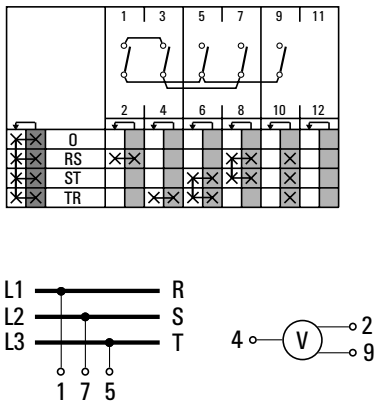
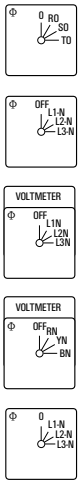
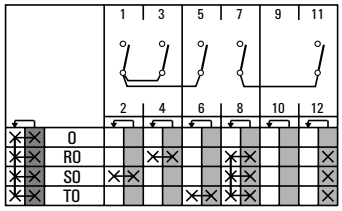
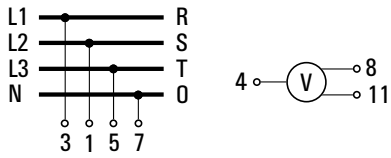
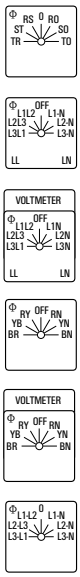
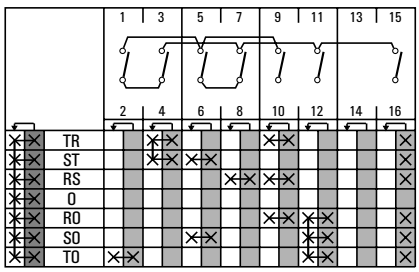
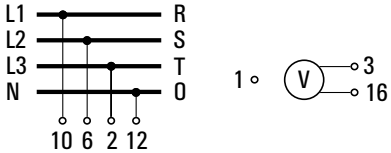
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Multi-step Switches with „OFF“					
1 pole 2 Step			A840-600	1	 
			A840-620	1	
1 pole 3 Step			A841-600	2	 
			A841-620	2	
1 pole 4 Step			A842-600	2	 
			A842-620	2	
1 pole 5 Step			A843-600	3	 
			A843-620	3	
1 pole 6 Step			A844-600	4	 
			A844-620	4	
1 pole 7 Step			A845-600	4	 
			A845-620	4	

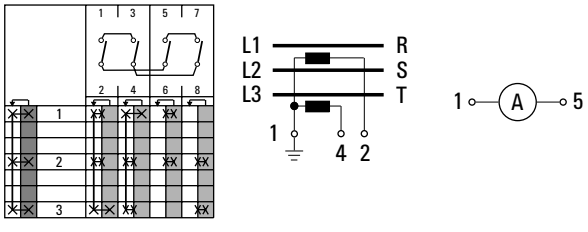
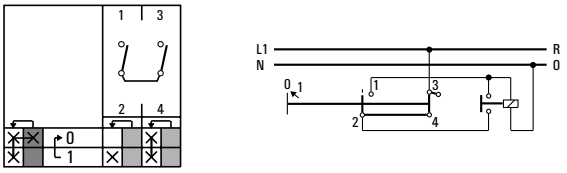
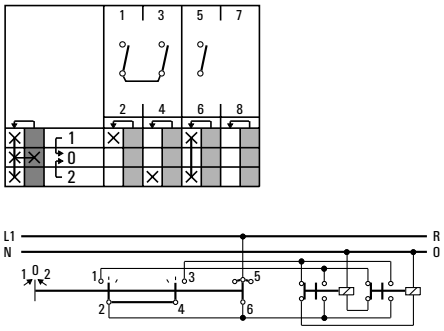
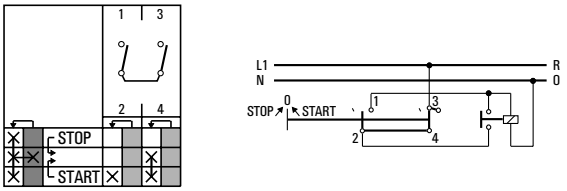
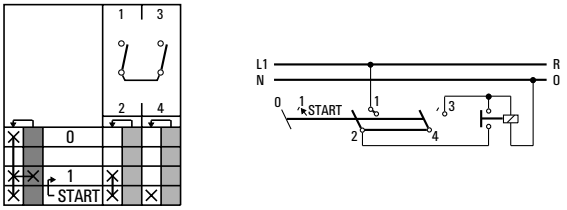
Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

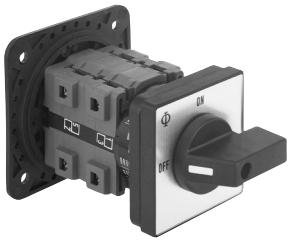
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Multi-step Switches with „OFF“					
1 pole 8 Step			A846-600	4	
			A846-620	4	
1 pole 9 Step			A847-600	5	
			A847-620	5	
1 pole 10 Step			A848-600	5	
			A848-620	5	
1 pole 11 Step			A849-600	6	
			A849-620	6	

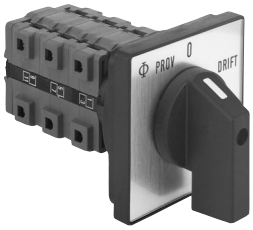
Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

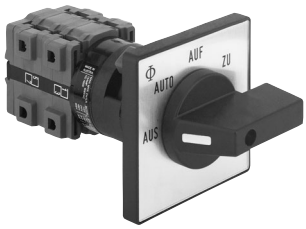
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Voltmeter Switches with „OFF“					
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A804-600 A804-620 A804-621 A804-622 A804-623 A804-624	3 3 3 3 3 3	
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A805-600 A805-620 A805-621 A805-622 A805-623	3 3 3 3 3	 
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A807-600 A807-620 A807-621 A807-622 A807-623 A807-624	5 5 5 5 5 5	 

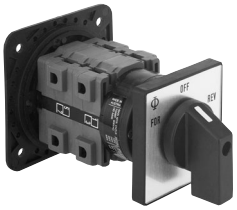
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Voltmeter Switches with „OFF“					
(as A804) for 2 measuring ranges by additional NO contact operated by pushing handle			A814-600 A814-620 A814-621 A814-622 A814-623 A814-624	3 3 3 3 3 3	
(as A805) for 2 measuring ranges by additional NO contact operated by pushing handle			A815-600 A815-620 A815-621 A815-622 A815-623	3 3 3 3 3	 
(as A807) for 2 measuring ranges by additional NO contact operated by pushing handle			A817-600 A817-620 A817-621 A817-622 A817-623 A817-624	4 4 4 4 4 4	 

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
Ammeter Switches					
Single pole with 2 current transformers (3 readings)			A021-600	2	
Control Switches					
Control switch for contactor control, closing by rotating, tripping by pushing in „OFF“ position			A874-600	1	
Control switch for 2 NO and 1 NC contacts			A875-600	2	
Control switch 1pole with additional emergency cut-out by pushing in „OFF“ position			A876-600	1	
Control switch stop start switch with spring return from start to position 1, with additional emergency cut-out by pushing in position 1			A878-600	1	

Two or Four Hole Panel Mounting	Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B	DK.. DKR..
Panel mounting					
 Four hole panel mounting		E	●	●	●
	●	E-V	●	●	
Four hole panel mounting, protection IP 65		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 65		EGF	●		
Panel and base mounting					
 Four hole panel mounting		ER	●	●	
Four hole panel mounting, protection IP 65		ERF	●	●	

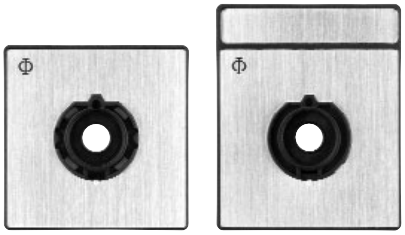
Four Hole Panel Mounting	Code	DH.. DHR..	DH..B DHR..B
Panel mounting with heavy duty latching and metal shaft			
 Four hole panel mounting Mounting plate, escutcheon plate and handle of size 0	KN2	●	
 Four hole panel mounting Mounting plate, escutcheon plate and handle of size 1	KN1	●	●
Four hole panel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

Single Hole Mounting	Terminals rotated 90°	Code	DH.. DHR..	DK.. DKR..
			mm	mm
With locking nut and shaft seal, protection IP 65				
 Without escutcheon plate		FT1	22	22
	●	FT1-V	22	22
		FT3	22/30	22/30
	●	FT3-V	22/30	22/30
 With square escutcheon plate		FT2	22	22
	●	FT2-V	22	22
		FT4	22/30	22/30
	●	FT4-V	22/30	22/30
 With size S1 escutcheon plate and heavy duty latching		FH3	22	22
	●	FH3-V	22	22
 Mounting key for locking nut		S00 T170 09		

Base Mounting	Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B
Base mounting				
 For four hole panel mounting		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 with rectangular escutcheon plate for 45 mm standard knock-out		VE2	●	
 Snap-on base mounting for track EN 50022. Both the escucheon 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 knock-out		VE3	●	
 Base mounting - four hole - with circular escutcheon plate for 46 mm knock-out		VE4	●	

Mounting Plates for Plaster Depth Boxes acc. to DIN 49070 and ÖNORM E6508	Code	DH.. DHR..
	Plaster depth trim	UE1	●
	With light	UE2	●
	With facility for light addition	UE3	●
	Plaster depth trim	UE4	●
	With light	UE5	●
	With facility for light addition	UE6	●
	For multiple boxes	UE7	●

Escutcheon Plates

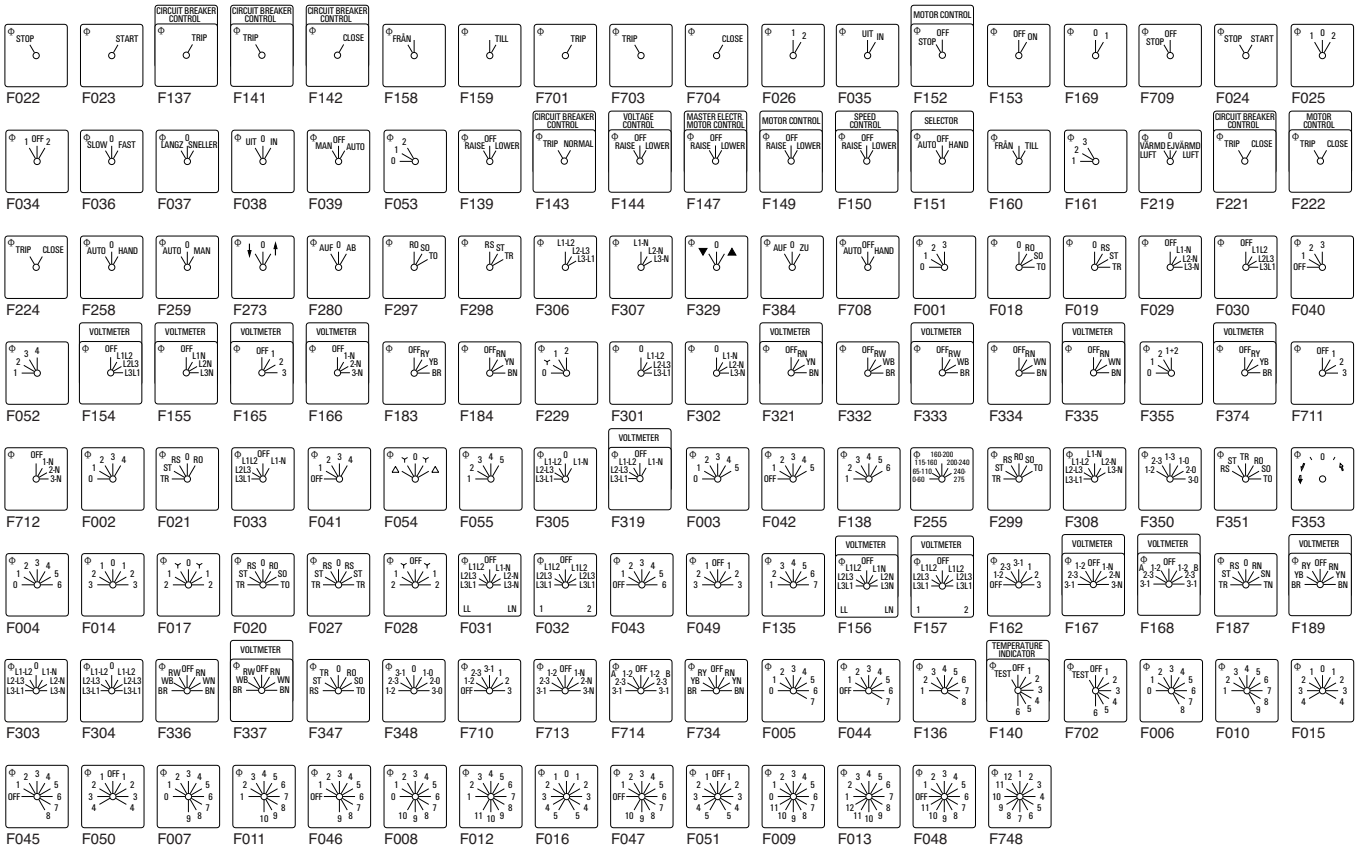


Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch positions which is than embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface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

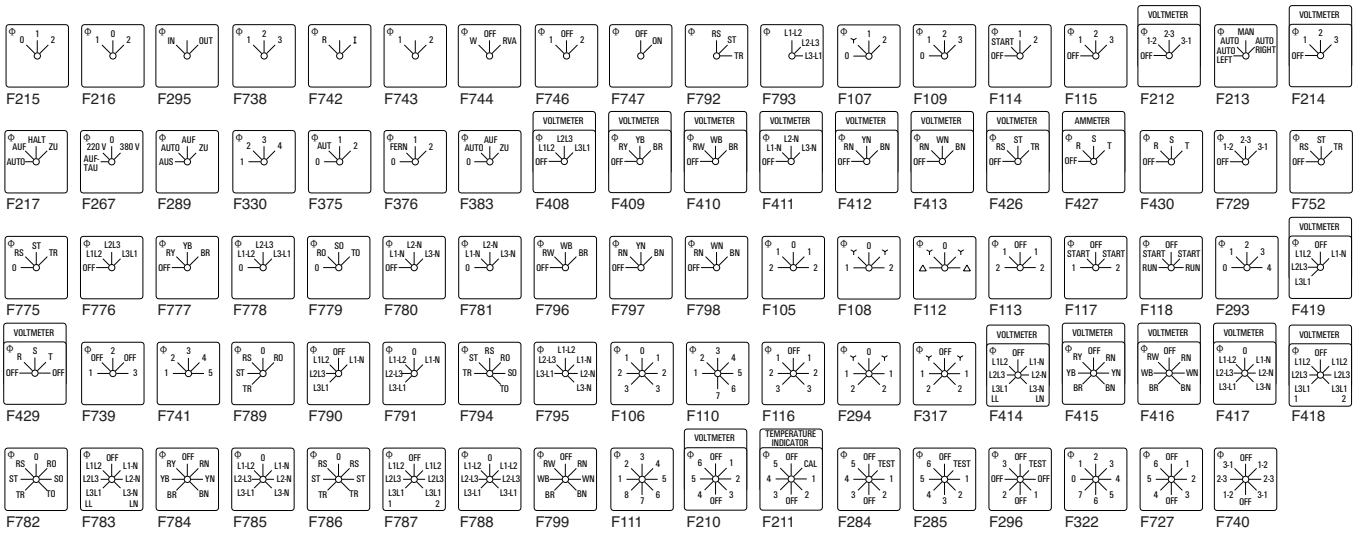
Standard Letterings Available

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

30° switching

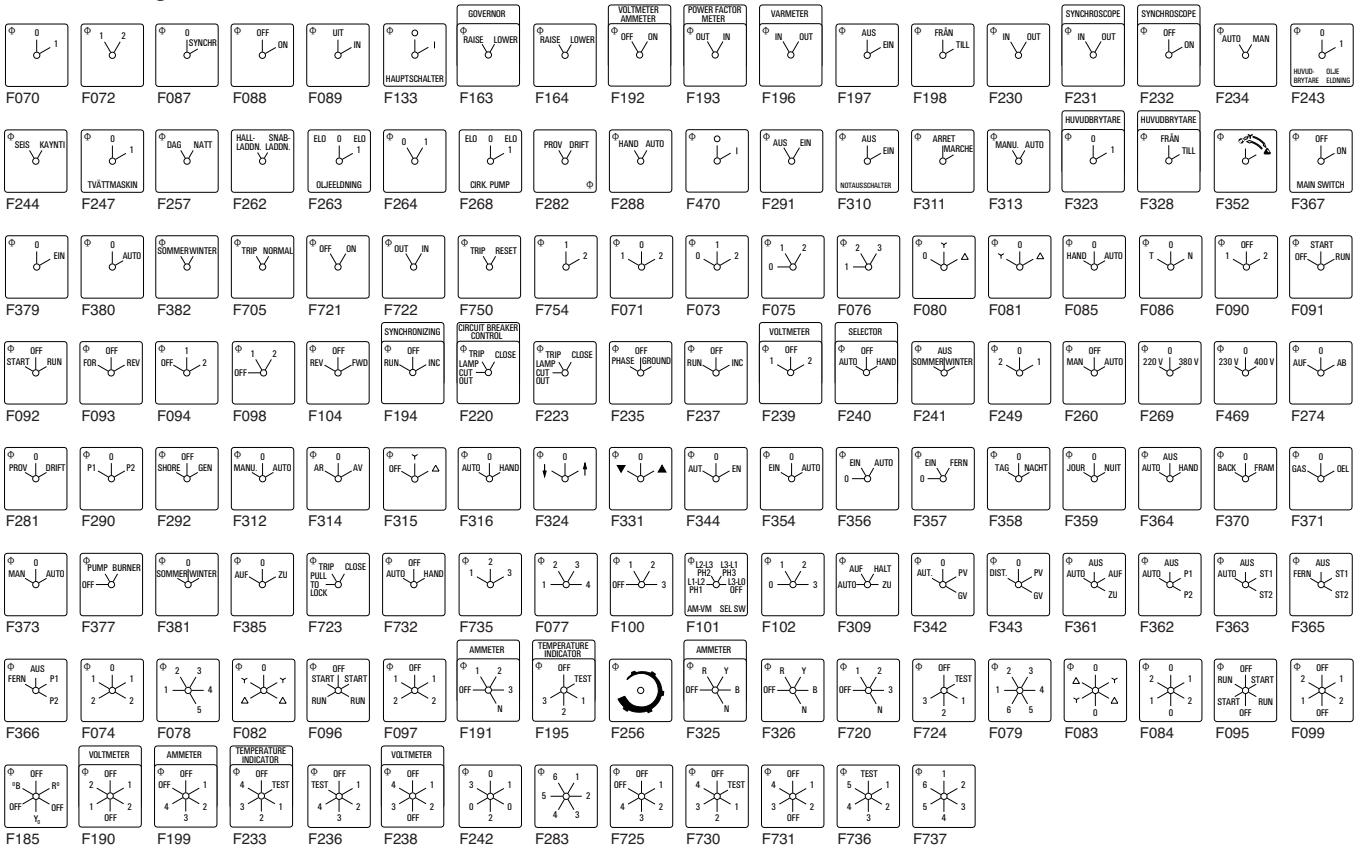


45° switching

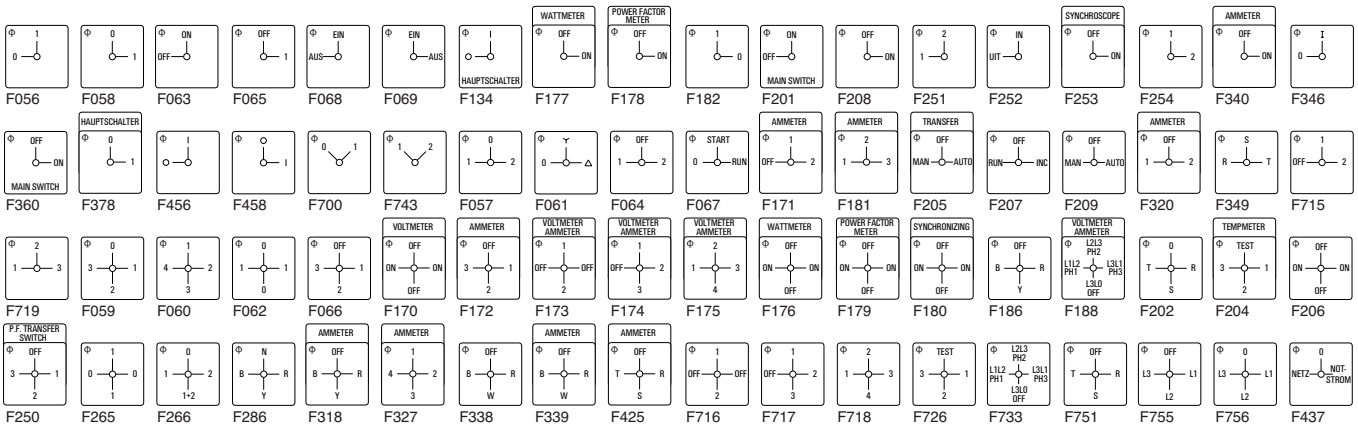


Escutcheon Plates

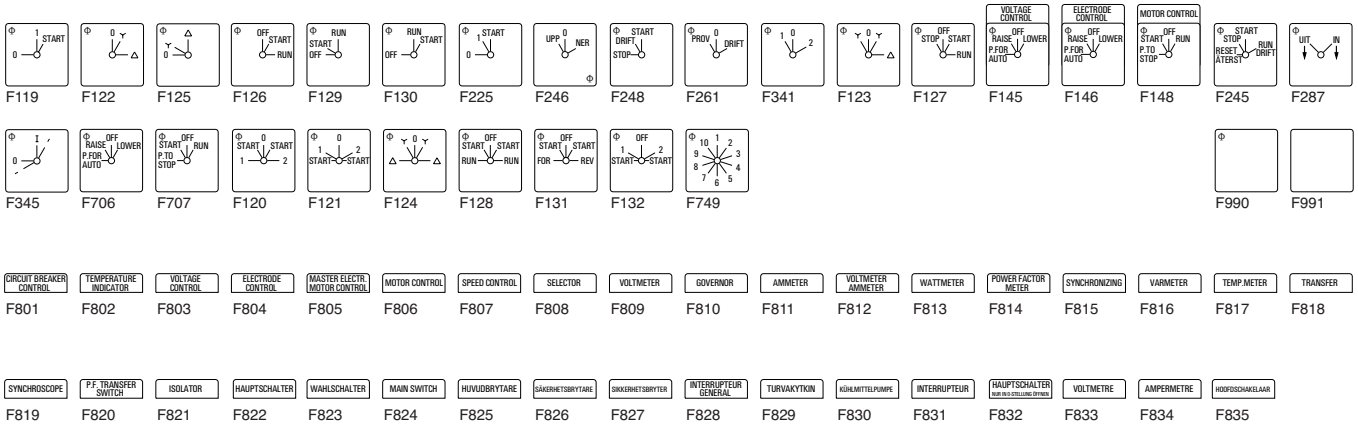
60° switching



90° switching



Miscellaneous



Handles

Type	Color	Code	Size S0	Size 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	— — — —	● ● ● ●

Type	Color	Code	Size S0	Size S1
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	— — — —	● ● ● ●

Country	Authority	Mark or Standard	DH10 DK10 DH10B	DHR10 DKR10 DHR10B	DH11 DK11 DH11B	DHR11 DKR11 DHR11B	DH12 DK12 DH12B	DHR12 DKR12 DHR12B
USA	Underwriters Laboratories	or	●	●	●	●	●	●
Canada	Canadian Standards Association	or	●	●	●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+
Denmark	Danmarks Elektriske Materiellkontrol		+	+	+	+	+	+
Norway	Norges Elektriske Materiellkontroll		+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontroll-anstalten		+	+	+	+	+	+
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]	+	+	+	+	+	+
Russian Federation	GOST	CH01	●	+	●	+	●	+

● Switch approved
+ Switch conforms to requirements

[1]Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.

[2]IEC does not operate an approval scheme.

Selection Data				DH10 DK10 DH10B	DHR10 DKR10 DHR10B
Rated Insulation Voltage U_e	IEC 60947-3[1], EN 60947-3[1]				
	VDE 0660 part 107[1]		V	690	690
	North America		V	600	600
	Min. operational voltage		V	20	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		A	16	16
	North America		A	15	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 60947-3, EN 60947-3	110 V-240 V	A	5	5
	VDE 0660 part 107	380 V-440 V		3	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		(gL-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		2,2	2,2
		380 V-440 V	kW	3,7	3,7
		500 V		3,7	3,7
		660 V-690 V		3,7	3,7
	1 phase 2 pole	110 V-120 V		0,37	0,37
		220 V-240 V	kW	1,1	1,1
		380 V-440 V		2,2	2,2
AC-23A Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V		3	3
		380 V-440 V	kW	5,5	5,5
		500 V		5,5	5,5
		660 V-690 V		4	4
	1 phase 2 pole	110 V-120 V		0,55	0,55
		220 V-240 V	kW	1,5	1,5
		380 V-440 V		2,5	2,5
Ratings	North America				
Standard motor load DOL-Rating (similar AC-3)	3 phase 3 pole	110 V-120 V		0,75	0,75
		220 V-240 V	HP	1,5	1,5
		440 V-600 V		3	3
	1 phase 2 pole	110 V-120 V		0,25	0,25
		220 V-277 V	HP	0,5	0,5
		440 V-600 V		1	1
Max. Permissible Wire Gage - Use copper wire only					
Single-core or stranded wire			mm^2	2x2,5	–
			AWG	2x12	–
Flexible wire (sleeving in accordance with DIN 46228)			mm^2	2x2,5(1,5)	–
Flexible AWG wires (without sleeve)			AWG	2x14	–
Connection with insulated ring and fork type terminals					
Internal diameter			mm	–	≥3,2
External diameter			mm	–	≤7,4
Connection with quick connect terminations			mm	6,3	–
Ambient Temperature of Stages[2]		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	

[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
[2]For electromagnetic optional extras see additional data in Catalog 101.

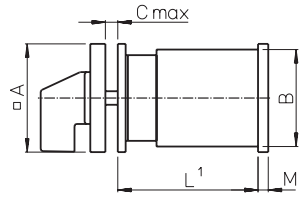
Selection Data				DH11 DK11 DH11B	DHR11 DKR11 DHR11B	DH12 DK12 DH12B	DHR12 DKR12 DHR12B
Rated Insulation Voltage U_e	IEC 60947-3[1], EN 60947-3[1]						
	VDE 0660 part 107[1]		V	600	600	600	600
	North America		V	600	600	600	600
	min. voltage		V	1[2]	1[2]	6	6
Rated Impulse Withstand Voltage U_{imp}				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	IEC 60947-3, EN 60947-3						
	VDE 0660 part 107						
AC-21A Switching of resistive loads,		1 V/6 V	A	6/3	6/3	–/6	–/6
including moderate overloads	North America	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/220 V	A	0,4/0,2	0,4/0,2	3/2	3/2
		230 V/240 V	A	0,2/0,18	0,2/0,18	2/1,8	2/1,8
		380 V/400 V	A	0,13/0,13	0,13/0,13	1,3/1,3	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 Capacity	IEC 60947-3, EN 60947-3						
	VDE 0660 part 107						
DC-21B Resistive load		1 V/6 V	A	4/2,5	4/2,5	–/4	–/4
T ≤ 1 ms	North America	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/220 V	A	0,2/0,1	0,2/0,1	0,6/0,3	0,6/0,3
		230 V/240 V	A	0,1/0,08	0,1/0,08	0,3/0,27	0,3/0,27
		380 V/400 V	A	0,06/0,06	0,06/0,06	0,2/0,2	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)			mm^2	2x2,5(1,5)	–	2x2,5(1,5)	–
Flexible AWG wires (without sleeve)			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	–
Ambient Temperature of Stages[3]		open at 100 % I_u/I_{th}		55 °C during 24 hours with peaks up to 60 °C			
		enclosed at 100 % I_{the}		35 °C during 24 hours with peaks up to 40 °C			

[1]Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. [2]Values for lower voltages on request. [3]For electromagnetic optional extras see additional data in Catalog 101.

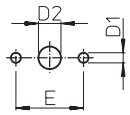
Dimensions

mm
inch

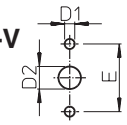
Two or Four Hole Panel Mounting



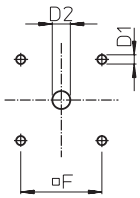
E22



E22-V



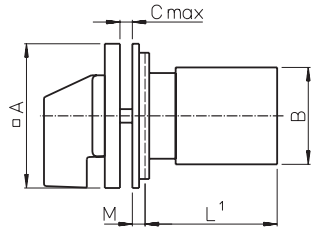
E
E-V
EF
EF-V
ER
ERF

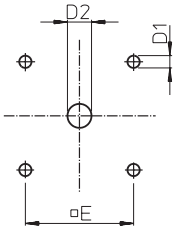


		DH10-DHR12[3]	DK10-DKR12	DH10B-DHR12B
	A	48 1.89	48 1.89	64 2.52
	B	42 1.65	42 1.65	56 2.20
	C	4 .16	4 .16	4 .16
	D1	5 .20	5 .20	5 .20
E	**D2**	8-15 .31-.59	15-19 .59-.75	10-15 .39-.59
E22	**D2**	11-15 .43-.59	- -	- -
EF	**D2**	15-19 .59-75	- -	19-22 .75-.87
	E	30 1.17	- -	- -
	F	36(48) 1.42(1.89)	- -	48 1.89
	M[2]	5,5 .22	- -	5,5 .22

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

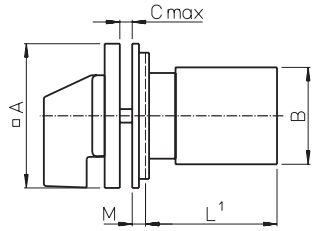
EG
EGF

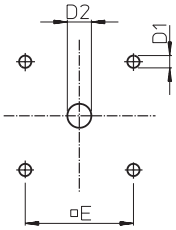




		DH10-DHR12
	A	64 2.52
	B	42 1.65
	C	4 .16
	D1	5 .20
EG	**D2**	10-15 .31-.59
EGF	**D2**	19-22 .75-.87
	E	48 1.89
	M	6,7 .26

KN1
KD1
KN2





KN2	DH10-DHR12
A	48 1.89
B	42 1.65
C	4 .16
D1	5 .20
D2	8-15 .31-.59
E	36 1.42
M	5,2 .20

KN1 **KD1**	DH10-DHR12	DH10B-DHR12B
A	64 2.52	64 2.52
B	42 1.65	56 2.20
C	4 .16	4 .16
D1	5 .20	5 .20
D2	10-15 .31-.59	10-15 .31-.59
E	48 1.89	48 1.89
M	4,7 .19	12 .47

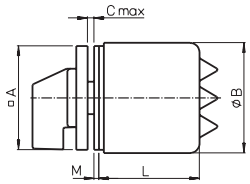
[1]see page 43

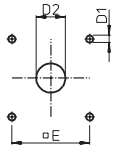
Dimensions

mm
inch

Four Hole Panel Mounting or Single Hole Mounting and Base Mounting

EC
ED

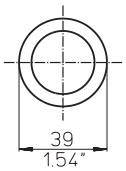




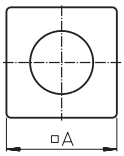
Stages L		DH10-DHR12	DH10B-DHR12B
	1	103 4.06	127 5.00
	2	103 4.06	127 5.00
	3	103 4.06	127 5.00
	4	- -	127 5.00
	5	- -	139,5 5.49
	6	- -	164,5 6.48
	7	- -	177 6.97

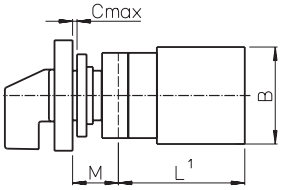
		DH10-DHR12	DH10B-DHR12B
	A	64 2.52	64 2.52
	B	68 2.68	88 3.46
EC	C	4 .16	4 .16
ED	C	2 .08	4 .16
	D1	5 .20	5 .20
EC	D2	8-15 .31-.59	10-15 .39-.59
ED	D2	18-22 .71-.87	22-25 .87-.98
	E	48 1.89	48 1.89
ED	M	2 .08	2 .08

FT1…
FT3…

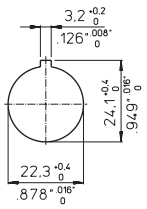


FH3…
FT2…
FT4…

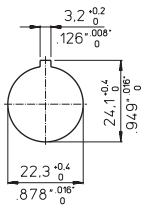


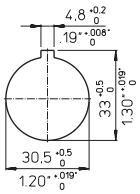


FH3…
FT1…
FT2…



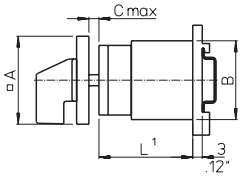
FT3…
FT4…

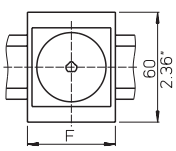


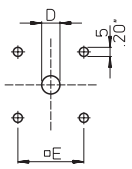


		DH10-DHR12	DK10-DKR12
	A	48 1.89	48 1.89
FH3...	A	64 2.52	64 2.52
	B	42 1.65	42 1.65
	C	6 .24	6 .24
	M	18,2 .72	3,7 .15
FH3...	M	25,2 .99	3,7 .15

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

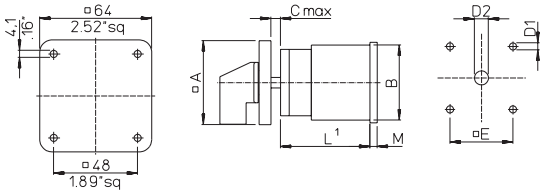
[1]see page 43

Dimensions

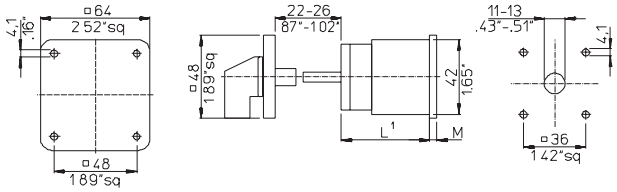
mm
inch

Base Mounting

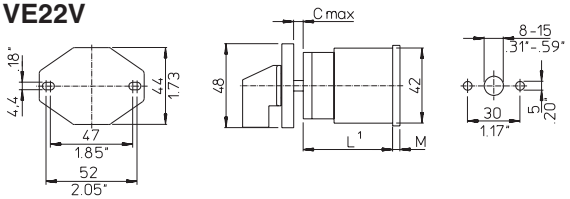
VE
VE-V



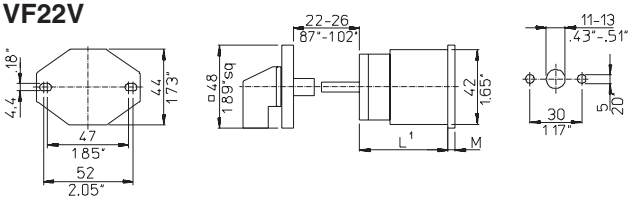
VF
VF-V



VE22
VE22V



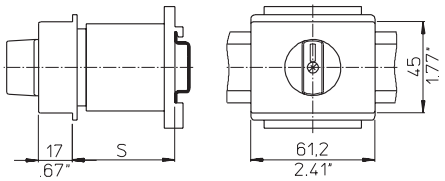
VF22
VF22V



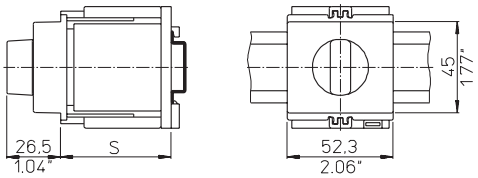
	DH10-DHR12	DH10B-DHR12B
A	48 1.89	64 2.52
B	42 1.65	56 2.20
C	10,5 .41	13,5 .53
D1	5 .20	5 .20
D2	8-15 .31-.59	10-15 .39-.59

		DH10-DHR12	DH10B-DHR12B
	E	36 1.42	48 1.89
VE	**M**	3,2 .13	2,5 .10
VE22	**M**	1,9 .07	- -
VF	**M**	3,2 .13	- -
VF22	**M**	1,9 .07	- -

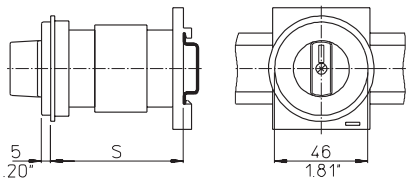
VE2



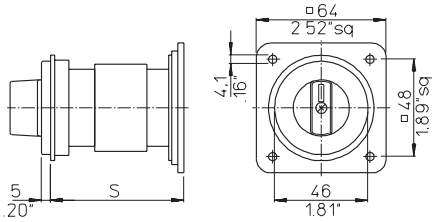
VE21



VE3



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		

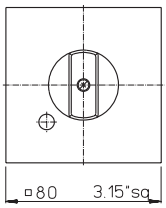
[1]see page 43

Dimensions

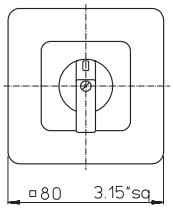
mm
inch

Wall Mounting, Escutcheon Plates and Additional Length

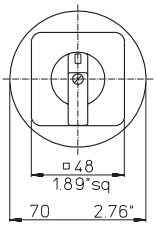
UE1
UE2
UE3



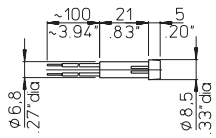
UE4
UE5
UE6



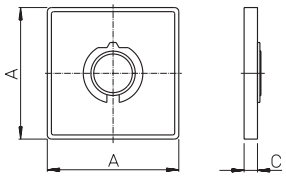
UE7

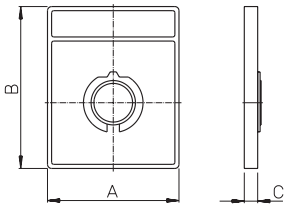


Lamp



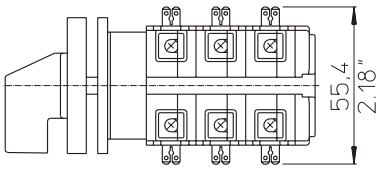
Escutcheon plates for mounting E, EF, ER, ERF, EG, EGF, KN1, KD1, KN2, EC, ED, VE, VE1, VF





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 4)



Length L

Stages	DH10 DH11 DH12	DHR10 DHR11 DHR12	DK10 DK11 DK12	DKR10 DKR11 DKR12	DH10B DH11B DH12B	DHR10B 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