



Kraus & Naimer

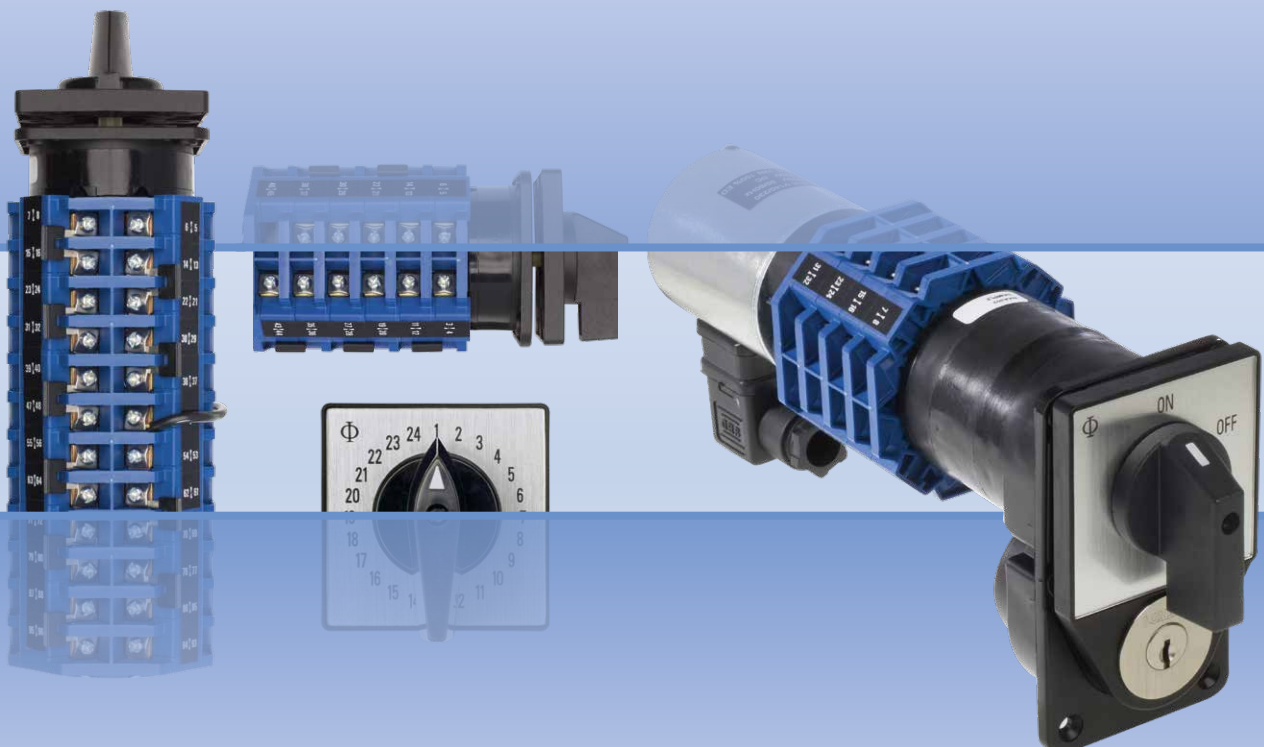
BLUE LINE switchgear

since 1907

Catalog 110 Control Switches for Special Applications

02/2018

A type up to 25 A
AD type up to 6 A



Kraus & Naimer

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

BLUE LINE

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

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

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

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

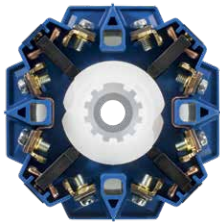
Contents	Page
Construction Data	4
Dimensions and Nominal Ratings	4
How to order	5, 6
Switch Function and Configuration	
ON/OFF Switches	8
Double-throw Switches	9, 10
Multi-step Switches	11-13
General Application Switches	14
Voltmeter Switches	15
Ammeter Switches	16
Control Switches	17
Motor Switches	18
Types of Mounting	
Panel Mounting	19
Base Mounting	20
Handles	21
Escutcheon Plates	22, 23
Technical Data	24, 25
Tightening torque of screws	26
International Standards and Approvals	26
Dimensions	
Handles and Escutcheon Plates	27
Panel Mounting	28
Base Mounting	29
Overall Switch Lengths	29
Blue Line Switchgear: Summary	30

Construction Data

A Switches

A switches are used in applications where available depths behind the mounting plates are limited and the switching programs require a large number of contacts. They are used when more than 12 switching positions are required. Typical applications for A switches are multi-step switches, multi-pole step switches, instrumentation switches and control switches where depth problems exist. The A switch has 4 double-break contacts which are controlled by two independent cams.

The switch column can contain up to 12 stages representing a total of 48 contacts. Additional contacts can be added by using a tandem drive to operate more than one switch column with a single handle.

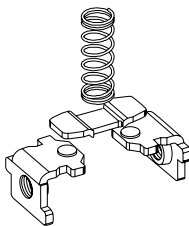


Switch type	Switching angle	Max. number of switch positions
A11, AD11, AD12	15°, 20°, 30°, 45°, 60°, 90°	24
A25	15°, 20°, 30°, 45°, 60°, 90°	24

A wide range of optional extras, escutcheon plates, handles, mountings and enclosures is available.

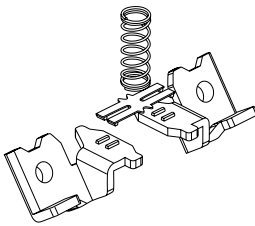
2 different Contact Systems are available

A11 and A25



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

AD11 and AD12

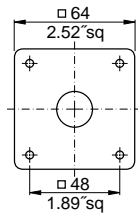
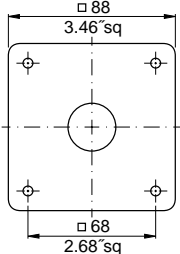


High contact reliability by H-bridge design with self-cleaning "cross-wire" contacts. The contact system with gold-plated contacts (AD12 with silver contact) allows for low voltages, electronic compatible.

Switch Size

Type

Rated Values

Switch Size	Type	According to IEC 60947-3/VDE 0660 part 107			
		Thermal Current I_u/I_{th} A	Motor Rating 3 x 380 V/440 V AC-23A kW	Operational Current I_e	
S1 	AD11	6	-	1 V/ 6 A 24 V/ 1 A 110 V/ 0,4 A 220 V/ 0,2 A 380 V/ 0,13 A	-
	AD12	6	-	6 V/ 6 A 24 V/ 5 A 110 V/ 3 A 220 V/ 2 A 380 V/ 1,3 A	-
	A11	20	7,5	20 A	6
	A25	25	11	25 A	8
S2 	A11C	20	7,5	20 A	6
	A25C	25	11	25 A	8

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 4 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 24 and 25. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 7-18 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 19 and 20. Catalog **101** describes enclosures and optional extras. Specify the mounting code to indicate required mounting.

A11

A202

VE

Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts ¹	A11-1
-4	with quick connects	A11-4, A25-4, A25C-4
-5	with quick connects and gold contacts	A11-5
C	S1 switches with latching mechanism size S2	A11C, AD11C, A25C
L	with lockout-relay w/o manual release for std. switches	A11L, A25L
M	with lockout-relay with manual release for std. switches	A11M, A25M
X	with power failure release	A25X

Example: Coding for switch type **A11** with gold contacts is **A11-1**.

¹Technical data on request.

Handles, Escutcheon Plates and Optional Extras

The handles for standard switches shown on pages 7-18 are suitable for mounting units with four hole panel mounting. Alternative types of handles available are illustrated on pages 19-21.

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 23-25. 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

Blue Line A switches are available in sizes S1 and S2. These size codes indicate the dimensions of the mounting, the escutcheon plate and the handle as well as the size of the optional devices and enclosures. Page 4 lists these sizes and the various switch types they include.

How to order

Ordering of Special Switches and Escutcheon Plates

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

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

ESCUTCHEON PLATE

POSITIONS	1	2	3	4	5	6	7
1	X	X					
2			X				
3	X		X				
4				X			
5		X		X	X		
6				X		X	
7		X		X			

SWITCH-
TYPE : A25

ESCUTCHEON
PLATE : G251

MOUNTING : E

OPTIONAL
EXTRAS :

FIRM :

DATE :

SIGNED :

Order forms are available on request.



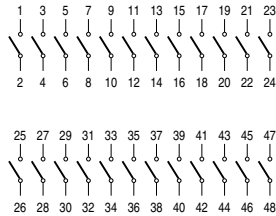
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[< back to table of contents >](#)




Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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ON/OFF Switches with 60° Switching

[Dimensions p.29](#)

1 pole	 F070		A200	1	 1-24 pole
2 pole			A201	1	
3 pole			A202	1	
4 pole			A203	1	
5 pole			WAA341	2	
6 pole			A342	2	
8 pole			A344	2	
10 pole			A346	3	
12 pole			A348	3	
14 pole			WAA350	4	
16 pole			WAA352	4	
18 pole			WAA354	5	
20 pole			WAA356	5	
22 pole			WAA358	6	
24 pole			WAA360	6	



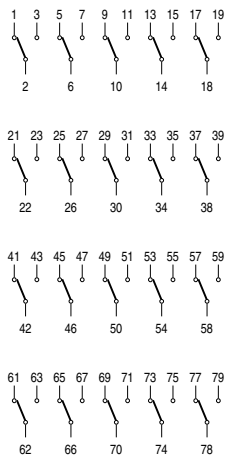



ON/OFF Switches with 90° Switching

1 pole contacts preclose 30°	 F056		A290	1	 1-3 pole
2 pole contacts preclose 30°			A291	1	
3 pole contacts preclose 30°			A292	1	
4 pole 1 contact precloses 60° 3 contacts preclose 30°			A293	1	



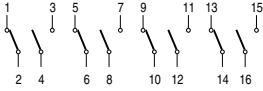
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Double-throw Switches without „OFF“ 60° Switching



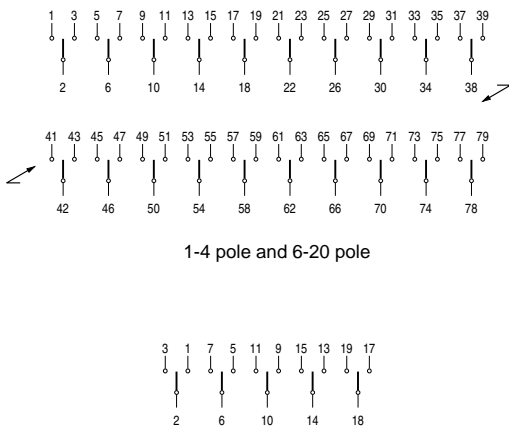



[Dimensions p.29](#)

1 pole	 F072		A220	1	 1-20 pole
2 pole			A221	1	
3 pole			A222	2	
4 pole			A223	2	
6 pole			A370	3	
8 pole			A372	4	
10 pole			WAA 374	5	
12 pole			WAA 376	6	
14 pole			WAA 660	7	
16 pole			WAA 661	8	
18 pole			WAA 662	9	
20 pole			WAA 663	10	

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

1 pole	 F072		A720	1	 1-4 pole
2 pole			A721	1	
3 pole			A722	2	
4 pole			A723	2	





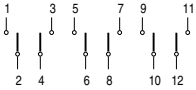
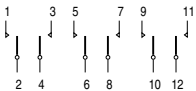




Double-throw Switches with Center „OFF“ 60° Switching

1 pole	 F071		A210	1	 1-4 pole and 6-20 pole 5 pole
2 pole			A211	1	
3 pole			A212	2	
4 pole			A213	2	
5 pole			A361	3	
6 pole			A362	3	
8 pole			WAA 364	4	
10 pole			WAA 366	5	
12 pole			WAA 368	6	
14 pole			WAA 655	7	
16 pole			WAA 656	8	
18 pole			WAA 657	9	
20 pole			WAA 658	10	





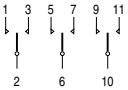
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Double-throw Switches with Center „OFF“ and electrically isolated contacts

[Dimensions p.29](#)

1 pole 2 pole 3 pole	 F071	  	A710 A711 A712	1 1 2	 1-3 pole  1-3 pole
1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center	 F025	  	A714 A715 WAA 716	1 1 2	









































Double-throw Switches with Spring Return to Center

1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center	 F025	  	A214 A215 A216	1 1 2	 1-3 pole
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Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“













Dimensions p.29

1 pole 2 pole 3 pole	 F076		A230 A250 A270	1 2 3	 1 pole  2 and 3 pole
4 pole 5 pole 6 pole			A476 WAA 484 WAA 489	3 4 5	 4 and 5 pole
7 pole 8 pole			WAA 494 WAA 497	6 6	 6-8 pole
1 pole 2 pole 3 pole	 F077		A231 A251 A271	1 2 3	 1 pole  2 and 3 pole
4 pole 5 pole 6 pole			A477 WAA 485 WAA 490	4 5 6	 4 and 5 pole  6 pole
1 pole 2 pole 3 pole 4 pole 5 pole	 F078		A232 A252 WAA 272 WAA 478 WAA 676	2 3 4 5 7	 1 pole  2 and 3 pole  4 and 5 pole
1 pole 2 pole 3 pole 4 pole	 F079		A233 WAA 253 WAA 273 WAA 479	2 3 5 6	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole	 F110		WAA 234 WAA 254 WAA 274 WAA 670	2 4 6 7	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole	 F111		WAA 235 WAA 255 WAA 275 WAA 671	2 4 6 8	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole	 F010		WAA 236 WAA 256 WAA 276 WAA 672	3 5 7 9	 1 pole  2 and 3 pole  4 pole



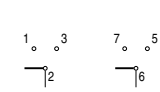
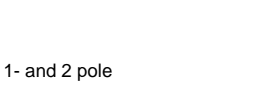


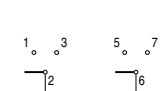
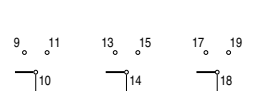





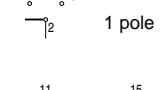


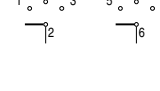
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“

Dimensions p.29

1 pole 2 pole 3 pole			WAA 237 WAA 257 WAA 277	3 5 8	 1 pole  2 and 3 pole
1 pole 2 pole 3 pole			WAA 238 WAA 258 WAA 278	3 6 9	 1 pole  2 and 3 pole
1 pole 2 pole 3 pole			WAA 239 WAA 259 WAA 279	3 6 9	 1 pole  2 and 3 pole











































Multi-step Switches with „OFF“

1 pole 2 pole 3 pole 5 pole			A240-600 A260-600 A280-600 WAA 486	1 1 2 3	 1- and 2 pole  3 and 5 pole
1 pole 2 pole 3 pole 5 pole			A241-600 A261-600 A281-600 WAA 487	1 2 3 4	 2 and 3 pole  5 pole
1 pole 2 pole 3 pole			A242-600 WAA 262 WAA 282	1 2 3	 2 and 3 pole
1 pole 2 pole 3 pole			A243-600 WAA 263 WAA 283	2 3 5	 2 and 3 pole
1 pole 2 pole 3 pole			A244-600 WAA 264 WAA 284	2 3 5	 2 and 3 pole

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





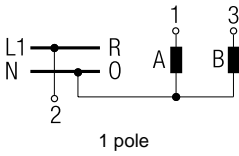
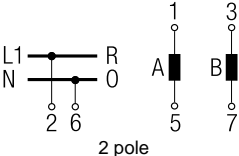
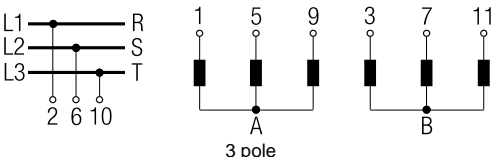




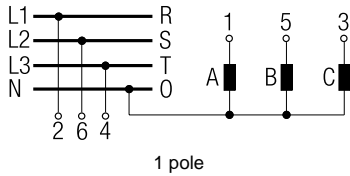
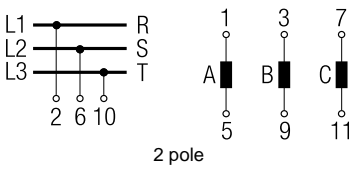
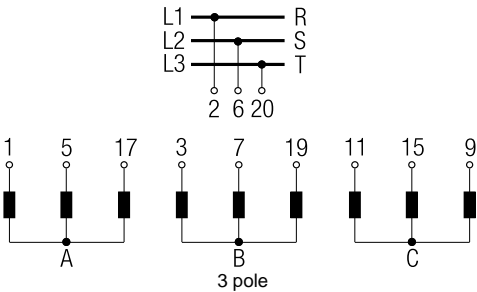
[Dimensions p.29](#)

1 pole 7 Step 2 pole 3 pole	 F005  F044		WAA 245 WAA 265 WAA 285	2 4 6	 1 pole  2 pole  3 pole
1 pole 8 Step 2 pole 3 pole	 F006  F045		WAA 246 WAA 266 WAA 286	2 4 6	 1 pole  2 pole  3 pole
1 pole 9 Step 2 pole 3 pole	 F007  F046		WAA 247 WAA 267 WAA 287	3 5 8	 1 pole  2 pole  3 pole
1 pole 10 Step 2 pole 3 pole	 F008  F047		WAA 248 WAA 268 WAA 288	3 5 9	 1 pole  2 pole  3 pole
1 pole 11 Step 2 pole 3 pole	 F009  F048		WAA 249 WAA 269 WAA 289	3 6 9	 1 pole  2 pole  3 pole
1 pole 12 Step 2 pole 3 pole	 F270  F275		WAA 630 WAA 635 WAA 644	3 7 11	 1 pole  2 pole  2 and 3 pole
1 pole 16 Step	 F271		WAA 631	4	 1 pole
1 pole 20 Step	 F272		WAA 632	5	 1 pole

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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General Application Switches

Dimensions p.29



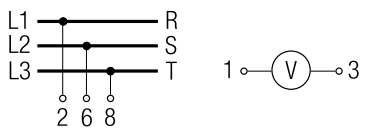


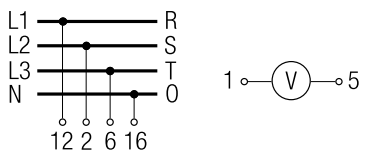


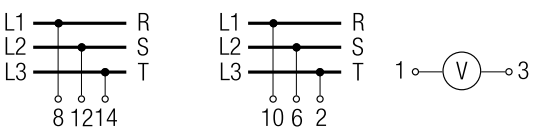
<div>1 pole 2 Gang</div> <div>2 pole</div> <div>3 pole</div> <div>Switching sequence: 0, A, A+B</div>		  	A310-600 A312-600 WAA 314	1 1 2	<div> 1 pole</div> <div> 2 pole</div> <div> 3 pole</div>
<div>1 pole 3 Gang</div> <div>2 pole</div> <div>3 pole</div> <div>Switching sequence: 0, A, A+B, A+B+C</div>		  	A311-600 WAA 313 WAA 315	1 2 3	<div> 1 pole</div> <div> 2 pole</div> <div> 3 pole</div>

< back to table of contents >

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



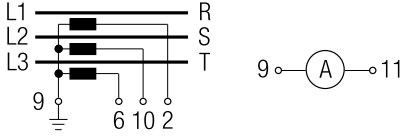


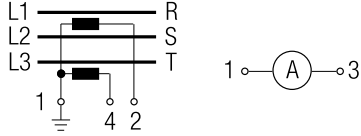


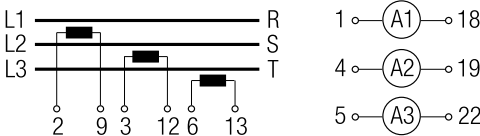


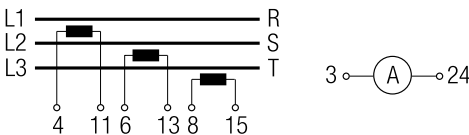
[Dimensions p.29](#)

3 phase to phase	 F019		A004	1	
3 phase to phase and 3 phase to neutra	 F027		A007	2	
2 separate 3 phase with center „OFF“	 F020		WAA008	2	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Ammeter Switches



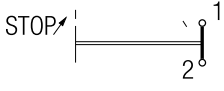





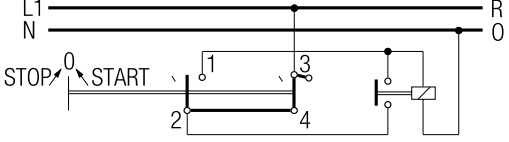


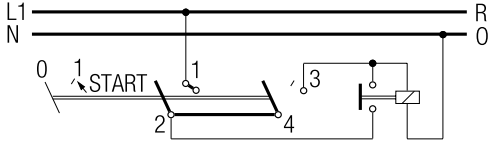


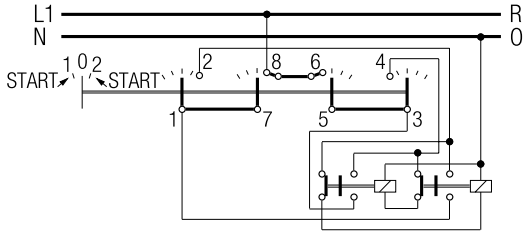
[Dimensions p.29](#)

Single pole with 3 current transformers with „OFF“ 360° rotation	 F059		A048	2	
Single pole with 2 current transformers (3 readings)	 F172-PRL		WAA021	1	
2 pole, 3 current transformers	 F181-PRL		WAA019	3	
	 F059		A038	3	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Control Switches



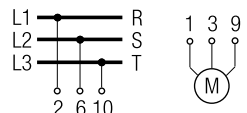
[Dimensions p.29](#)

Stop switch	 F022		WAA174	1	
Start switch	 F023		A175	1	
Stop start switch single pole	 F024		A176	1	
Stop start switch with spring return from start to run	 F119		A178	1	
Stop start switch with spring return to run for 2 units	 F121		WAA177	1	



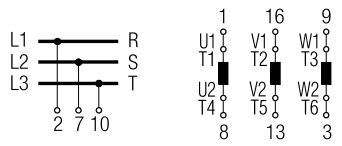


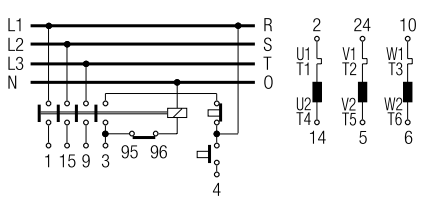
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Motor Reversing Switches



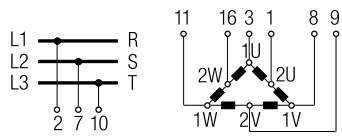


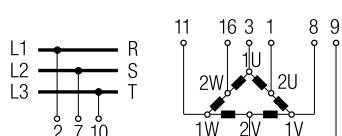


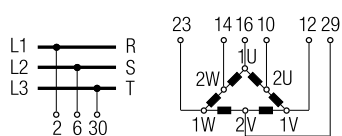
Dimensions p. 29

3-polig			A401	2	
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

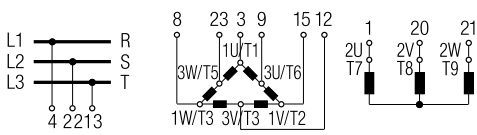
Star-delta Switches

Off-star-delta			A410	2	
With auxiliary contact closed in „OFF“ position			WAA416	3	

Motor Control Switches

2 speed single winding			A440	2	
2 speed single winding with center „OFF“			A441	2	
2 speed single winding reversing			A442	4	

Polumschalter

3 speed 2 winding 0 - AΔ - BY - AY			WAA457	3	
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Four Hole Panel Mounting

Code

A11
AD11
AD12

A25

A11C
A25C



Panel Mounting

Four hole panel mounting, Protection IP 40

Four hole panel mounting, Protection IP 65/67/69k



Panel and base mounting

Four hole panel mounting, Protection IP 40

Four hole panel mounting, Protection IP 65/67/69k



Panel mounting using larger escutcheon plate and handle

Four hole panel mounting, Protection IP 40

Four hole panel mounting, Protection IP 65/67/69k



Panel mounting with heavy duty stop and metal shaft

Four hole panel mounting, Protection IP 40
Mounting plate, escutcheon plate and handle of size S1

Four hole panel mounting, Protection IP 40
Mounting plate, escutcheon plate and handle of size S1
and 6 mm square metal shaft

E

●

●

●

EF

●

●

●

ER

●

●

●

ERF

●

●

●

EG

●

●

EGF

●

●

KN1

●



●

KD1

●

●

Base Mounting	Code	A11 AD11 AD12	A25	A11C A25C
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	Base mounting Base mounting - four hole, Protection IP 40	VE	●	●	●
	Snap-on base mounting for track EN 50022, Protection IP 40	VE1	●	●	

Handles

Type	Color	Code	Size	
			S1	S2

Type	Color	Code	Size	
			S1	S2

R-Handle	black red	G001 G002	● ●	● ●
F-Handle	black red	G221 G222	● ●	● ●
S-Handle	black red	G301 G302	● ●	— —
P-Handle	black red	G211 G212	● ●	● ●
O-Handle	black red	G321 G322	● ●	— —

I-Handle	black red	G251 G252	● ●	● ●
B-Handle	black red	G521 G522	● ●	— —
L-Handle	black red	G501 G502	● ●	— —
K-Handle	black red	G411 G412	● ●	● ●

< back to table of contents >

Escutcheon Plates

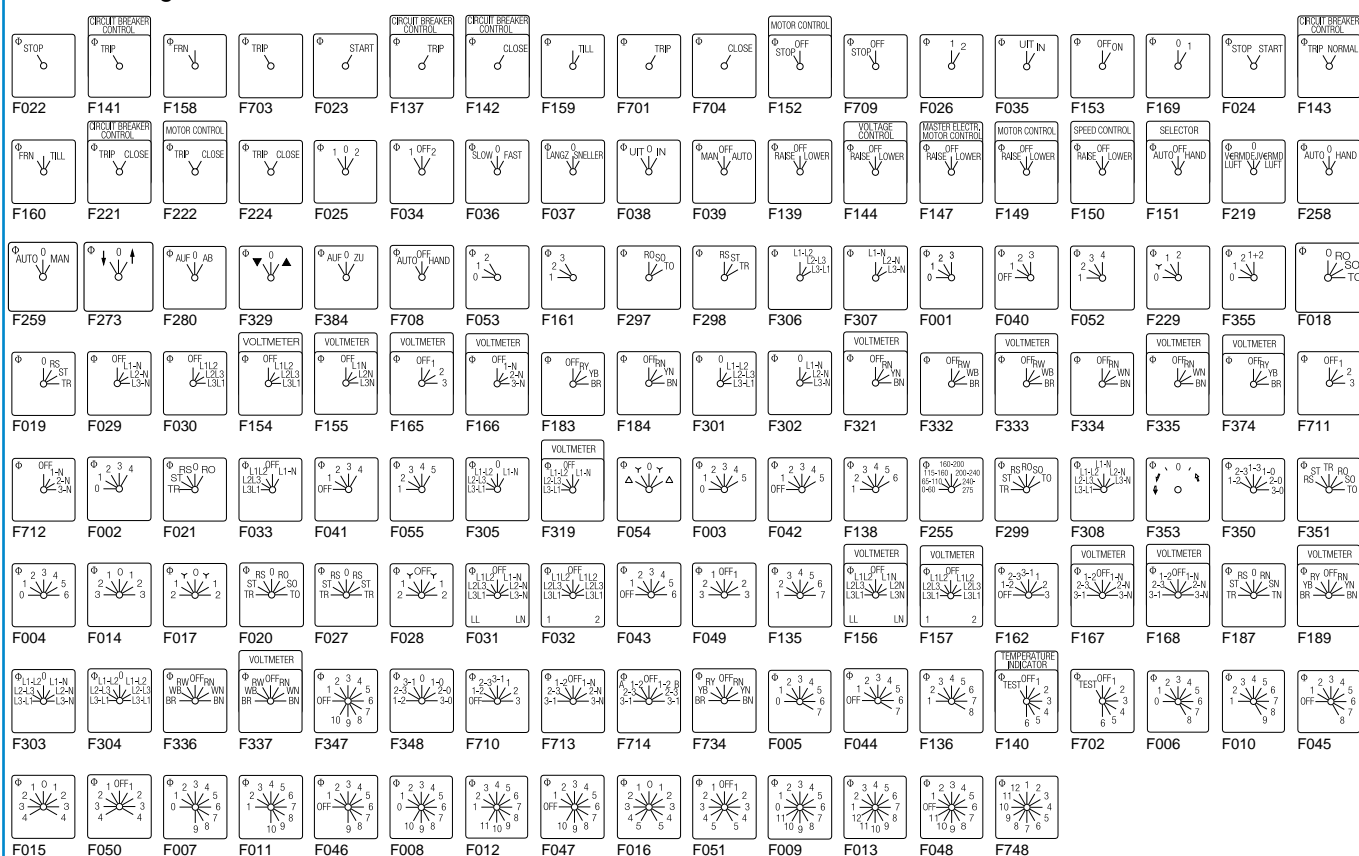


Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch positions which is then embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface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

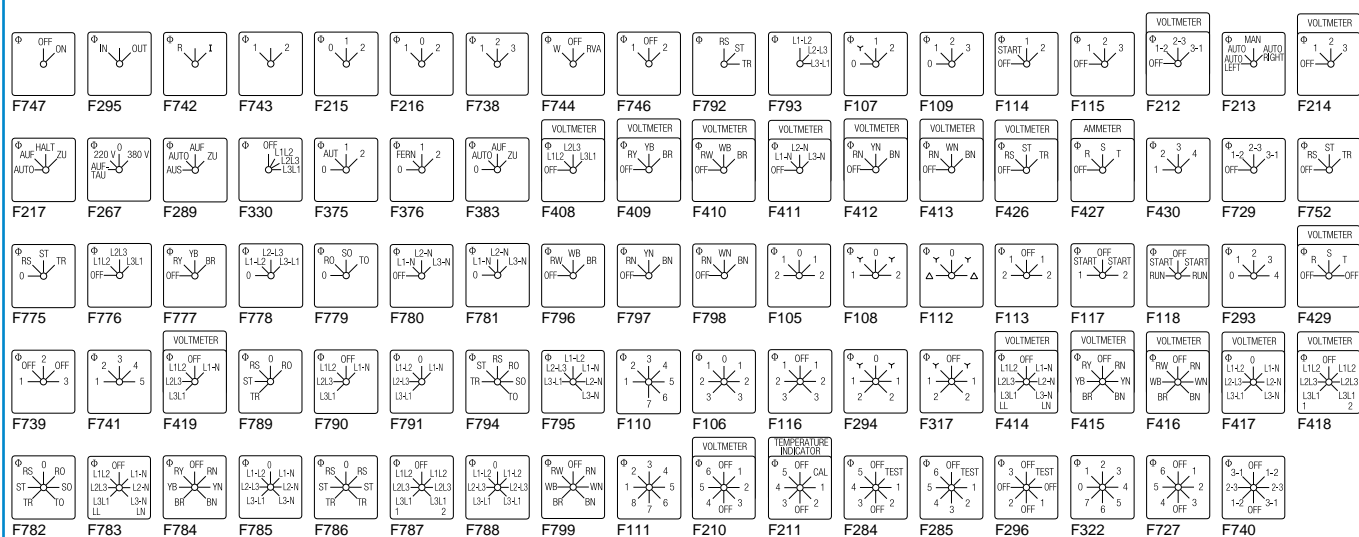
Standard Letterings Available

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

30° switching

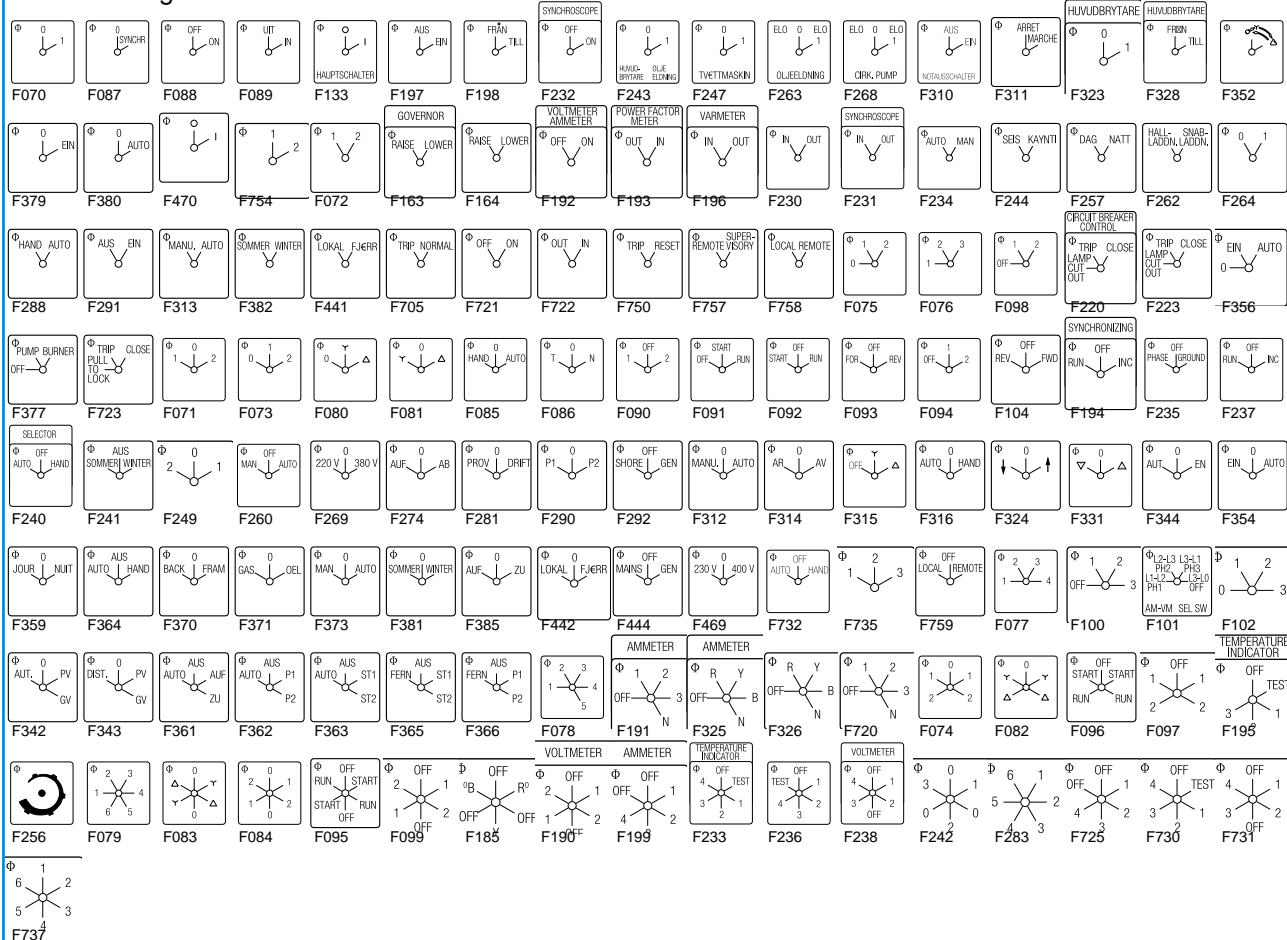


45° switching

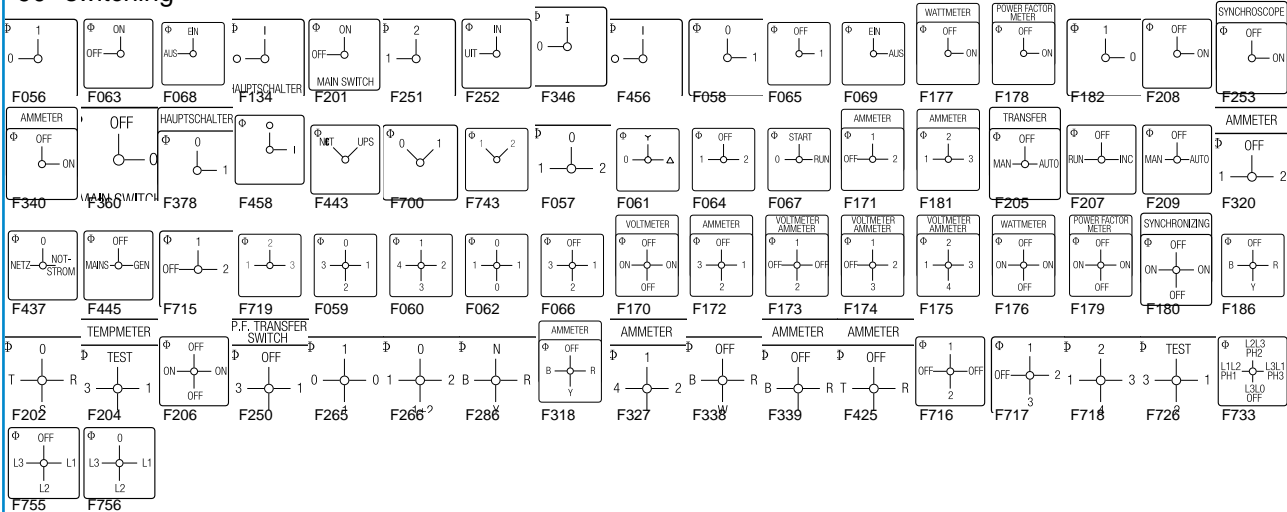


Escutcheon Plates

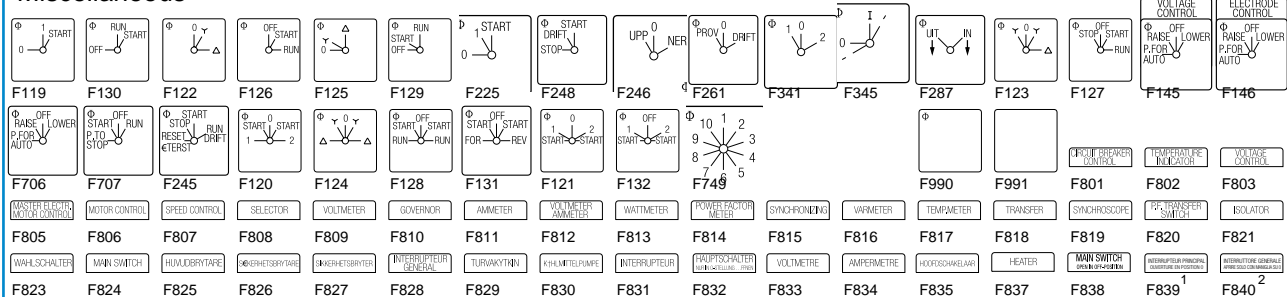
60° switching



90° switching



Miscellaneous



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

Selection Data

A11
A11C

AD11
AD11C

AD12
AD12C

A25
A25C

Rated Insulation Voltage U _i		IEC 60947-3 ¹	V	690	600	600	690					
		VDE 0660 part 107 ¹	V	600	600	600	600					
		UL/Canada	V	20	1	6	20					
		min. operational voltage	V	20	1	6	20					
Rated Impulse Withstand Voltage U _{imp}			kV	6	on request	on request	6					
Rated Thermal Current I _u /I _{th}		IEC 60947-3	A	20	6	6	25					
		VDE 0660 part 107	A	20	6	6	25					
		UL/Canada	A	10	6	6	25 ⁵					
Rated Operational Current I _e												
AC-21A	Switching of resistive loads, including moderate overloads	IEC 60947-3	1 V	A	–	6	–	–				
		VDE 0660 part 107	6 V	A	–	3	6	–				
			12 V	A	–	2	6	–				
			24/48 V	A	20	1/0,8	5/4	25				
			110/220 V	A	20	0,4/0,2	3/2	25				
			380/440 V	A	20	0,13/0,1	1,3/1	25				
			500/600 V	A	20	0,08/0,05	0,8/0,5	25				
			660/690 V	A	20	–	–	25				
AC-22A	Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3	220 V-500 V	A	20	–	–	25				
		VDE 0660 part 107	660 V-690 V	A	16	–	–	25				
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-5-1	220 V-240 V	A	6	–	–	8				
		VDE 0660 part 200	380 V-440 V	A	4	–	–	5				
Pilot Duty		UL/Canada	Heavy	VAC	600	–	–	600				
Ampere Rating Resistive or low inductive loads		UL/Canada		A	10	see AC-21A	see AC-21A	25				
Power loss per contact at I _u Resistance to vibration Resistance to shock			W	0,9	0,5 on request on request	0,2	0,7					
Short Circuit Protection Max. fuse size Rated short-time withstand current			(gG-characteristic) (1s-current)	A A	20 120	6 45	6 75	35 220				
DC Switching Capacity ²					Rated Operational Current I _e							
No. of series contacts	1	2	3	4	5	6	8	A11	AD11	AD12	A25	
	Voltage V											
Resistive loads T ≤ 1 ms, DC-1	1	2	3	4	5	6	8	–	4	–	–	
	6	12	18	24	30	36	48	–	2,5	4	–	
	12	24	36	48	60	72	96	A	1,5	3	–	
	24	48	72	96	120	144	190	–	0,8	2,2	16	
	48	96	140	190	240	290	360	10	0,3	1,2	15	
	60	120	180	240	300	360	450	3,5	0,27	1	5	
	110	220	330	440	550	660	–	0,8	0,2	0,6	1,2	
	220	440	660	–	–	–	–	0,35	0,1	0,3	0,38	
	240	480	–	–	–	–	–	0,3	0,08	0,25	0,35	
	440	660	–	–	–	–	–	0,25	0,05	0,15	0,25	
	550	–	–	–	–	–	–	0,15	0,03	0,1	0,2	
	600	–	–	–	–	–	–	0,1	0,02	0,1	–	
	Inductive loads T = 50 ms	24	48	72	96	120	144	190	10	–	–	16
		30	60	90	120	150	180	240	5	–	–	7
		48	95	140	190	240	290	350	A	1,8	–	2,5
60		120	180	240	300	360	450	0,7	–	–	1	
110		220	330	440	550	660	–	0,3	–	–	0,4	
Min. Ambient Temperature of Stage Max. Ambient Temperature of Stages ^{3, 4}			open at 100 % I _u /I _{th} enclosed at 100 % I _{the}	-25 °C (valid only without optional extra) 55 °C during 24 hours with peaks up to 60 °C 35 °C during 24 hours with peaks up to 40 °C								

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²DC switching capacity applies to ON/OFF switches. Switching capacity for other configurations on request. ³For electromagnetic optional extras see additional data in Catalog 101. ⁴Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible). ⁵A25-4 and A25C-4: 22A

Selection Data	A11 A11C	AD11 AD11C	AD12 AD12C	A25 A25C
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< back to table of contents >

Rated Utilization Category				IEC 60947-3 VDE 0660 part 107					
AC-2	Slip ring motor starting, reversing and plugging, star-delta starting	3 phase	220 V-240 V	kW	4	—	—	5,5	
		3 pole	380 V-440 V		7,5	—	—	11	
			500 V		10	—	—	15	
			660 V-690 V		10	—	—	13	
AC-3	Direct-on-line starting, star-delta starting A11, A25	3 phase	220 V-240 V	kW	3	—	—	4	
		3 pole	380 V-440 V		5,5	—	—	7,5	
			500 V		5,5	—	—	7,5	
			660 V-690 V		5,5	—	—	7,5	
		1 phase	110 V	kW	0,6	—	—	1,5	
		2 pole	220 V-240 V		2,2	—	—	3	
			380 V-440 V		3	—	—	3,7	
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase	220 V-240 V	kW	0,55	—	—	1	
		3 pole	380 V-440 V		1,5	—	—	2,2	
			500 V		1,5	—	—	2,5	
			660 V-690 V		1,5	—	—	2,5	
		1 phase	110 V	kW	0,15	—	—	0,2	
		2 pole	220 V-240 V		0,25	—	—	0,5	
			380 V-440 V		0,55	—	—	0,8	
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	3,7	—	—	5,5	
		3 pole	380 V-440 V		7,5	—	—	11	
			500 V		7,5	—	—	11	
			660 V-690 V		7,5	—	—	11	
		1 phase	110 V	kW	0,75	—	—	1,5	
		2 pole	220 V-240 V		2,2	—	—	3	
			380 V-440 V		3,7	—	—	5,5	
Ratings				UL/Canada					
	Standard motor load DOL-Rating (similar AC-3)		120 V	HP	1	—	—	1,5	
		3 phase	240 V		1	—	—	3	
		3 pole	480 V		1	—	—	7,5	
			600 V		1	—	—	10	
			120 V	HP	0,5	—	—	0,75	
			240 V		1	—	—	1,5	
			277 V		1	—	—	2	
			480 V		1	—	—	3	
			600 V		1	—	—	5	
Max. Permissible Wire Gage - Use copper wire only									
Single-core or stranded wire			mm ²	2,5	2,5	2,5	4		
			AWG	12	12	12	10		
Flexible wire (sleeving in accordance with DIN 46228) Flexible AWG wires (without sleeve)			mm ²	2,5	2,5	2,5	2,5		
				(2,5)	(2,5)	(2,5)	(2,5)		
			AWG	14	14	14	12		

Tightening torque of screws

Type	Tightening torque		Type	Tightening torque		Type	Tightening torque	
A11	0,8 Nm	7 lb-in	A25	1,3 Nm	12 lb-in	A25M	1,3 Nm	12 lb-in
A11-1	0,8 Nm	7 lb-in	A25-4	1,3 Nm	12 lb-in	A25X	1,3 Nm	12 lb-in
A11C	0,8 Nm	7 lb-in	A25C	1,3 Nm	12 lb-in	AD11	0,8 Nm	7 lb-in
A11L	0,8 Nm	7 lb-in	A25C-4	1,3 Nm	12 lb-in	AD11C	0,8 Nm	7 lb-in
A11M	0,8 Nm	7 lb-in	A25L	1,3 Nm	12 lb-in	AD12	0,8 Nm	7 lb-in

International Standards and Approvals

Country	Authority	Mark or Standard	A11	AD11	AD12	A25
USA/Canada	Underwriters Laboratories			●	●	
			●			●
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+
Denmark	Danmarks Elektriske Materielkontrol		+	+	+	+
Norway	Norges Elektriske Materielkontroll		+	+	+	+
Sweden	Svenska Elektriska Materielkontroll-anstalten		+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ²	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ²	+	+	+	+
Europe		EN 60947 ²	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60947 ²	+	+	+	+

● Switch approved

+ Switch conforms to requirements

¹Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Category Control Number NLRV2 and NLRV8 resp. File No. E60262, Category Control Number NRNT2 and NRNT8.

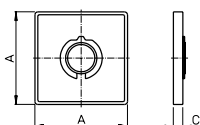
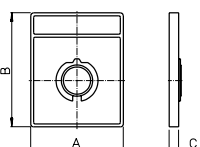
²Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.

³Approved under the "Listing-Program". File No. E35541, Guide No. NLRV and NLRV7 resp. File No. E60262, Category Control Number NRNT and NRNT7.

< back to table of contents >

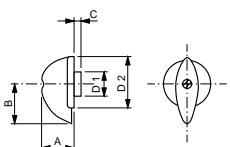
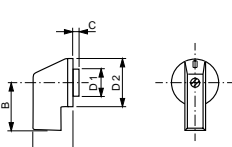
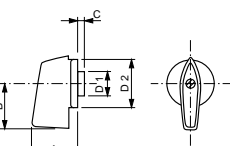
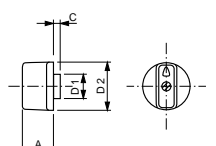
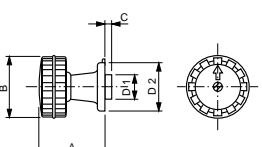
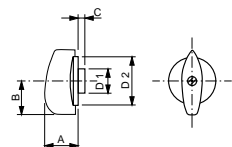
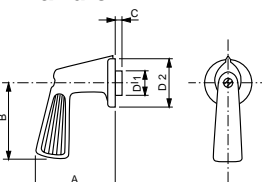
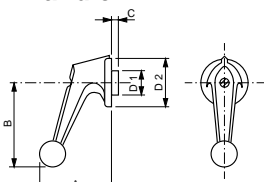
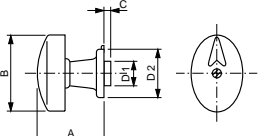
Dimensions mm inch

Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø	Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø
-------------------------------	------	---	---	---	-----	-----	-------------------------------	------	---	---	---	-----	-----

PE-Escutcheon Plate 	S1 S2	64 2.52 <hr/> 88 3.46	7,4 .29 <hr/> 8,5 .34	PR-Escutcheon Plate 	S1	64 2.52 78,8 3.10 7,4 .29
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Dimensions for the E, EF, ER, ERF, EG, EGF, KN1, KD1, VE and VE1 escutcheon plates.
Dimensions of the escutcheon plates used for other mounting, refer to page 29.

< back to table of contents >

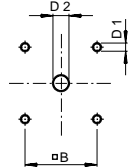
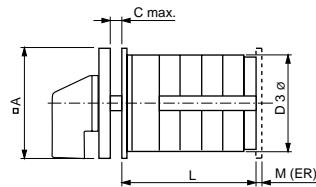
R-Handle 	S1 S2	23 0.91 31,5 1.24 5 .20 <hr/> 18,2 .72 36 1.42	I-Handle 	S1	27 1.06 31,8 1.25 2,5 .10 18,2 .72 36 1.42
F-Handle 	S1 S2	34 1.34 34 1.34 5 .20 <hr/> 18,2 .72 36 1.42	B-Handle 	S1	23 .91 5 .20 18,2 .72 36 1.42
S-Handle 	S1	50 1.97 45 1.77 5 .20 <hr/> 18,2 .72 36 1.42	L-Handle 	S1	24 .95 24,1 .95 5 .20 <hr/> 18,2 .72 36 1.42
P-Handle 	S1 S2	58 2.28 57,5 2.26 5 .20 <hr/> 18,2 .72 36 1.42	K-Handle 	S1 S2	54 2.13 64 2.52 5 .20 <hr/> 18,2 .72 36 1.42
O-Handle 	S1	50 1.97 56 2.2 5 .20 <hr/> 18,2 .72 36 1.42			

Four Hole Panel Mounting

A11		
AD11		A11C
AD12	A25	A25C

Dimensions in brackets for rear mounting plate with ER

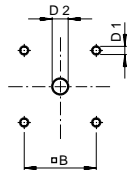
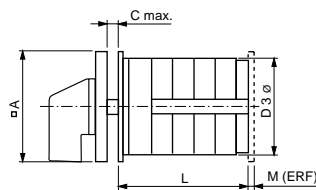
E, ER



A	64 2.52	64 (88) 2.52	88 3.46
B	48 1.89	48 (68) 1.89	68 2.68
C	4 .16	4 .16	5.5 .22
D1	5 (4.1) .20	5 (5.4) .20	6 (5.4) .24
D2	10-22 .39-.87	10-22 .39-.87	13-17 .51-.67
D3	60 2.36	70 2.76	84 3.31

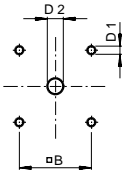
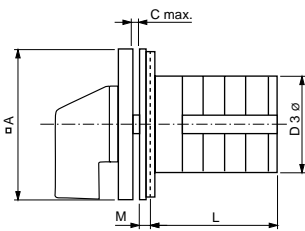
Dimensions in brackets for rear mounting plate with ERF

EF, ERF



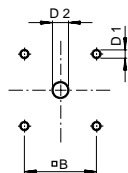
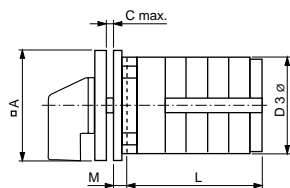
A	4 2.52	64 (88) 2.52	88 3.46
B	48 1.89	48 (68) 1.89	68 2.68
C	4 .16	4 .16	5.5 .22
D1	5 (4.1) .20	5 (5.4) .20	6 (5.4) .24
D2	19-22 .75-.87	19-22 .75-.87	26-30 1.02-1.18
D3	60 2.36	70 2.76	84 3.31

EG, EGF



A	88 3.46	88 3.46	-
B	68 2.68	68 2.68	-
C	5.5 .22	5.5 .22	-
D1	6 .24	6 .24	-
D2	13-30 .51-1.18	13-30 .51-1.18	-
D2	EG		
D2	EGF		
D3	60 2.36	70 2.76	-

KN1, KD1



A	60 2.36	60 2.36
B	48 1.89	48 1.89
C	4 .16	4 .16
D1	5 .20	5 .20
D2	10-22 .39-.87	10-22 .39-.87
D3	60 2.36	70 2.76

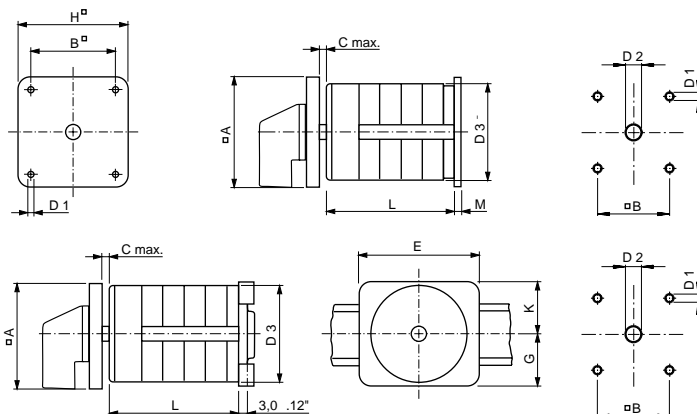
Dimensions mm inch

Base Mounting

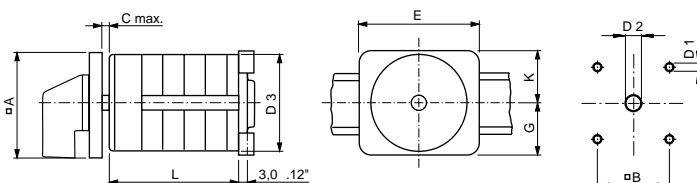
A11
AD11
AD12 A25 A11C
A25C

Dimensions in brackets for rear mounting plate with VE

VE



VE1



A	64 2.52	64 (88) 2.52	88 3.46
B	48 1.89	48 (68) 1.89	68 2.68
C	13,5 .53	13,5 .53	16 .63
D1	5 (4.1) .20	5 (5.4) .20	6 (5.4) .24
D2	10-22 .39-.87	10-22 .39-.87	13-30 .51-1.18
D3	60 2.36	70 2.76	84 3.31
D4	4,1 .16	4,1 .16	5,4 .21
E	70 2.76	70 2.76	-
G	30 1.18	30 1.18	-
K	30 1.18	30 1.18	-
H	64 2.52	88 3.46	88 3.46

Length L	A11 AD11 AD12 A25		Additional Length M ¹	A11 AD11 AD12 A25
Mounting E			Mounting + switch with latching mechanism size S2	
No. of stages				
1	42,5 1.67	43,5 1.71		6,5 .26 8,7 .34
2	55,2 2.17	56,2 2.21		0,5 .02 0,5 .02
3	67,9 2.67	68,9 2.71		7 .28 7 .28
4	80,6 3.17	81,6 3.21		5 .20 5 .20
5	93,3 3.67	94,3 3.71		11 .43 11 .43
6	106 4.17	107 4.21		11 .43 11 .43
7	118,7 4.67	119,7 4.71		11 .43 11 .43
8	131,4 5.17	132,4 5.21		8,2 .32 8,2 .32
9	144,1 5.67	145,1 5.71		
10	156,8 6.17	157,8 6.21		
11	169,5 6.67	170,5 6.71		
12	182,2 7.17	183,2 7.21		

¹Additional length plus length shown in the E mounting table = overall length

The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

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

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