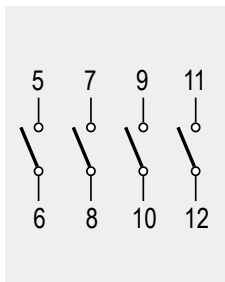




Kraus & Naimer



Switch Wiring Diagrams

POCKETBOOK



Kraus & Naimer

Switch Wiring Diagrams

POCKETBOOK

This pocketbook has been compiled to assist our customers in the selection of our most commonly used cam switches. It contains Kraus & Naimer standard contact arrangements for C-, CA-, CG- and CH-series cam switches.

For details on special or non-standard switches, please contact our local sales office.

Contents

ON/OFF Switches 0-1

		Code- no.	Stages C/CG/CH	Page
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	2 pole	A201	1	32
	3 pole	A202	2	32
	4 pole	A203	2	32
	5 pole	WAA341	3	56
	6 pole	A342	3	56
	7 pole	A343	4	56
	8 pole	A344	4	56
	9 pole	WAA345	5	56
	10 pole	A346	5	56
	11 pole	WAA347	6	56
	12 pole	A348	6	56
90° Switching	1 pole	A290	1	45
	2 pole	A291	1	45
	3 pole	A292	2	45
	4 pole	A324	2	54
4. Pole preclose 30°	4 pole	A293	2	45
	5 pole	A325	3	54
	6 pole	A326	3	54
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	3 pole	WAA206	2	32
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60° Switching	6 pole	A370	6	58
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Double-throw Switches		Code- no.	Stages C/CG/CH	Page
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isolated contacts	3 pole	A722	3	83
	4 pole	A723	4	83
without „OFF“	1 pole	A295	1	47
with spring return	2 pole	A296	2	47
30° Switching	3 pole	WAA297	3	47
with electrically	1 pole	A795	1	86
isolated contacts				
with „OFF“	1 pole	A210	1	33
Positions (1-0-2)	2 pole	A211	2	33
60° Switching	3 pole	A212	3	33
	4 pole	A213	4	33
	5 pole	A361	5	57
	6 pole	A362	6	57
	7 pole	WAA363	7	57
	8 pole	WAA364	8	57
with electrically	1 pole	A710	1	81
isolated contacts	2 pole	A711	2	81
	3 pole	A712	3	81
	4 pole	A713	4	81
Positions (1-0-2)	1 pole	A218	1	35
90° Switching	2 pole	A219	2	35
	3 pole	WAA299	3	48
KG-, KH-, KF-Serie	3 pole	K900		88
1 Pol preclose 30°	4 pole	WAA294	4	44
KG-, KH-, KF-Serie,	4 pole	K950		88
4. pole preclose 30°				
Positions (1-0-2)	1 pole	A214	1	34
30° with spring return	2 pole	A215	2	34
to center	3 pole	A216	3	34

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			Code- no.	Stages C/CG/CH	Page
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Positions (1-0-2)	1 pole		A320	1	53
with spring return from	2 pole		A321	3	52
left to center					
from 1 to 0	3 pole		A322	2	53
Multi-step Switches without „OFF“ position					
1 pole	3 Step	60°	A230	2	38
	4 Step	60°	A231	2	38
	5 Step	60°	A232	3	38
	6 Step	60°	A233	3	38
	7 Step	45°	WAA234	4	38
	8 Step	45°	WAA236	4	38
	9 Step	30°	WAA236	5	38
	10 Step	30°	WAA237	5	38
	11 Step	30°	WAA239	6	38
	12 Step	30°	WAA239	6	38
2 pole	3 Step	60°	A250	3	41
	4 Step	50°	A251	4	41
	5 Step	60°	A252	5	41
	6 Step	60°	WAA253	6	41
	7 Step	45°	WAA254	7	41
	8 Step	45°	WAA255	8	41
3 pole	3 Step	60°	A270	5	43
	4 Step	60°	A271	6	43
	5 Step	60°	WAA272	8	43
	6 Step	60°	WAA273	9	43
	7 Step	45°	WAA274	11	43
	8 Step	45°	WAA275	12	43
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			Code- no.	Stages C/CG/CH	Page
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	4 Step	60°	WAA485	10	73
6 pole	3 Step	60°	WAA489	9	75
	4 Step	60°	WAA490	12	75
and electrically isolated contacts					
1 pole	3 Step	60°	A730	2	82
	4 Step	60°	A731	2	85
2 pole	3 Step	60°	A750	3	84
	4 Step	60°	A751	4	85
Multi-step Switches with „OFF“ position					
1 pole	2 Step	60°	A240	1	38
	3 Step	45°	A242	2	39
	4 Step	30°	A242	2	39
	5 Step	30°	A243	3	39
	6 Step	30°	A244	3	39
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	10 Step	30°	WAA248	5	39
	11 Step	30°	WAA249	6	39
2 pole	2 Step	50°	A260	2	42
	3 Step	45°	A261	3	42
	4 Step	30°	WAA262	4	42
	5 Step	30°	WAA263	5	42
	6 Step	30°	WAA264	6	42
	7 Step	30°	WAA265	7	42
3 pole	2 Step	60°	A280	3	44
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			Code- no.	Stages C/CG/CH	Page
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	3 Step	45°	WAA481	6	72
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5 pole	2 Step	60°	WAA486	5	74
	3 Step	45°	WAA487	8	74
6 pole	2 Step	60°	WAA491	6	75
General Application Switches					
2 Gang	1 pole	60°	A310	1	49
Switching sequence:	2 pole	60°	A312	2	50
0, A, A+B	3 pole	60°	WAA314	3	51
3 Gang	1 pole	30°	A311	2	49
Switching sequence:	2 pole	30°	WAA313	3	50
0, A, A+B, A+B+C	3 pole	30°	WAA315	5	52
General Application Series - Switching					
2 Gang	1 pole	30°	WAA330	1	55
Switching sequence:	2 pole	30°	WAA331	2	55
0, A, B, A+B	3 pole	30°	WAA332	3	55
Coding Switches/Binary Code					
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0 up to 7 complement		45°	WAA541	2	76
0 up to 7+complement		45°	WAA542	3	77
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Coding Switches/BCD-Code					
0 up to 9		30°	A550	2	78
0 up to 9 complement		30°	WAA551	2	79
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Contents

		Code- no.	Stages C/CG/CH	Page
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without „OFF“				
3 phase 3 wire	45°	A023	2	19
3 phase 3 wire and phase to neutral	45°	A025	3	19
with „OFF“				
3 phase 3 wire	45°	A004	2	14
3 phase to neutral	45°	WAA005	2	15
3 phase 3 wire and phase to neutral	45°	A007	3	16
2 separate 3 phase with „OFF“	45°	WAA008	4	17
Ammeter-Double-throw Switches				
with „OFF“				
1 pole 3 Current transformers	90°	A048	3	24
2 pole 2 Current transformers	90°	WAA037	3	21
2 pole 3 Current transformers	90°	A038	5	22
without „OFF“				
1 pole 3 Current transformers	90°	WAA017	3	18
1 pole 4 Current transformers	90°	WAA036	4	20
2 pole 4 Current transformers	90°	WAA039	6	23

Contents

			Code- no.	Stages C/CG/CH	Page
Control Switches					
Stop switch	1 pole	30°	WAA174	1	25
Start switch	1 pole	30°	A175	1	25
Stop start switch	1 pole	30°	A176	1	26
	2 pole	30°	WAA183	2	30
Stop start switch with spring return from start to run		90°+30°	A178	1	28
Double-Stop start switch with spring return from start to run		60°+30°	WAA177	2	27
for contactor interlock with spring return from start to run		60°+30°	WAA182	2	30
and electrically isolated contacts					
Stop start switch	1 pole	30°	A789	1	86
Stop start switch with spring return from start to run		90°+30°	A791	1	86
for 2 contactors, Contactor control with spring return to „OFF“		30°	WAA179	3	29
Main Switches 3, 4, 6, 8 pole, with and without auxiliary contacts					87

Contents

		Code- no.	Stages C/CG/CH	Page
Motor Switches				
Motor Reversing Switches				
Position (1-0-2)	2 pole 60°	A400	2	59
	3 pole 60°	A401	3	59
with spring return to „OFF“	3 pole 30°	A228	3	37
Star-delta Switches				
Normal version	60°	A410	4	60
Reversing	45°	WAA413	5	61
with auxiliary contact, closed in „OFF“-Position	60°	WAA416	5	62
For use with contactors	90°	A419	4	62
Motor Control Switches				
Position (0-1-2)	60°	A440	4	64
without „OFF“	60°	A466	4	69
Position (1-0-2)	60°	A441	4	64
Reversing	45°	A442	6	65
for reversing for				
for use with contactors and	60°	WAA444	5	66
with slip clutch for „OFF“ load use	45°	WAA468	10*	70
Motor Control Switches				
2 speed, 2 winding				
0 - A - B, Y or Δ	60°	WAA451	3	67
3 speed, 2 winding				
0 - AΔ - BY - AY	45°	WAA457	6	68
Start and Run Switches				
Split-phase start	90°+30°	A425	2	63
Reversing				
Split-phase start	60°+30°	WAA426	3	63
Split-phase reversing				
auto cutout of start field	60°	A622	3	80
winding				

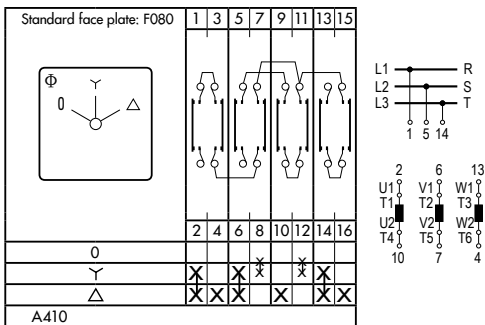
* with slip clutch

Caption

Contactor or Relay	
Thermal Relay	
Motor	
Coil / Inductance	
Ammeter	
Voltmeter	
Earth / Ground	
NO-contact	
NC-contact	
Motor - star circuit	
Motor - delta circuit	
Motor - double star circuit	

Connection Details

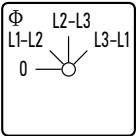
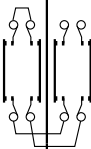
The information is presented with either a switch chart only or a switch chart and connection diagrams when appropriate.

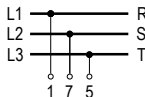


A410 Star-Delta Switch

The large image shows the switch chart. A cross in a column indicates that the contact above it is closed, when the switch is in the position as indicated to the left of the cross. For example, contact 3/4 closes in the delta position. A vertical line between 2 or more crosses indicate that the contact remains closed while the switch moves from one position to the next. The images on the right show the wiring connections for both the supply and load. For example, L1 connects to switch terminal 1 while U1 or T1 connects to terminal 2.

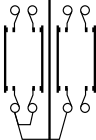
Voltmeter switches

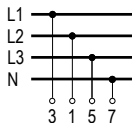
Standard face plate: F778		1	3	5	7
					
		2	4	6	8
0					
L1-L2		X			X
L2-L3				X	X
L3-L1			X	X	
A004					



A004 Voltmeter Switch
3 phase 3 wire

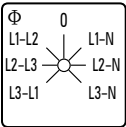
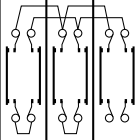
Voltmeter switches

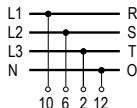
Standard face plate: F781		1	3	5	7
Φ L1-N 0 L2-N L3-N					
		2	4	6	8
0					
L1-N			X		X
L2-N		X			
L3-N				X	X
WAA005					



WAA005 Voltmeter Switch
(formerly A005) 3 phase to neutral

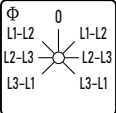
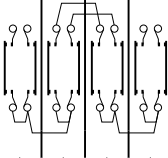
Voltmeter switches

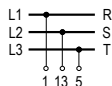
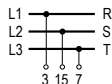
Standard face plate: F785		1	3	5	7	9	11
							
		2	4	6	8	10	12
L3-L1		X				X	
L2-L3		X	X				
L1-L2					X	X	
0							
L1-N						X	X
L2-N				X			
L3-N	X						X
A007							



A007 Voltmeter Switch
3 phase to neutral

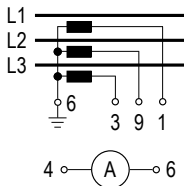
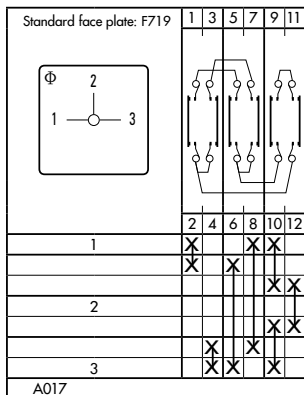
Voltmeter switches

Standard face plate: F788		1	3	5	7	9	11	13	15
									
		2	4	6	8	10	12	14	16
L3-L1			X				X		
L2-L3					X				X
L1-L2			X						X
0									
L1-L2		X						X	
L2-L3				X				X	
L3-L1		X				X			
WAA008									



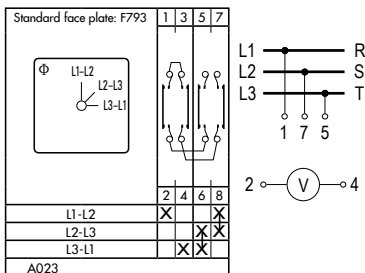
WAA008 Voltmeter Switch
(formerly A008) 2 separate 3 phase

Ammeter switches

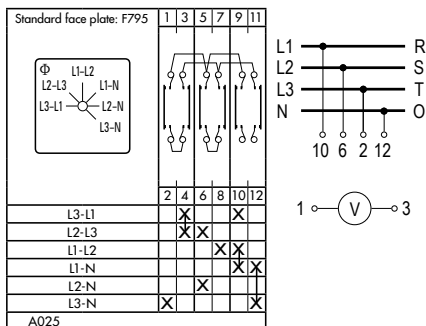


WAA017 Ammeter Switch
1 pole, 3 Current transformers

Voltmeter switches

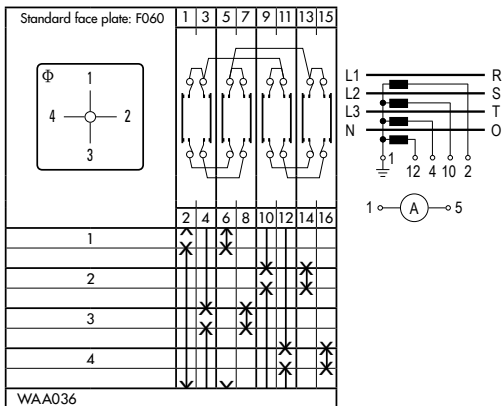


A023 Voltmeter Switch, 3 phase 3 wire



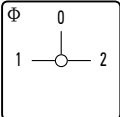
A025 Voltmeter Switch, 3 phase 3 wire,
3 phase to neutral

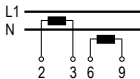
Ammeter switches



WAA036 Ammeter Switch
(formerly A036) 1 pole, 4 Current transformers

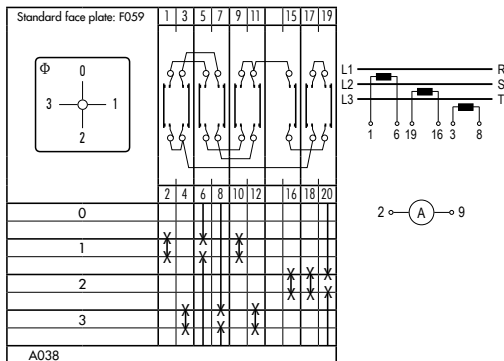
Ammeter switches

Standard face plate: F057 	1	3	5	7	9	11
	2	4	6	8	10	12
1	X			X	X	
	X	X		X		
0						
			X		X	X
2		X	X			X
WAA037						



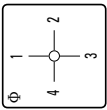
WAA037 Ammeter Switch
(formerly A037) 2 pole, 2 Current transformers

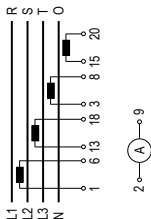
Ammeter switches



A038 Ammeter Switch
2 pole, 3 Current transformers

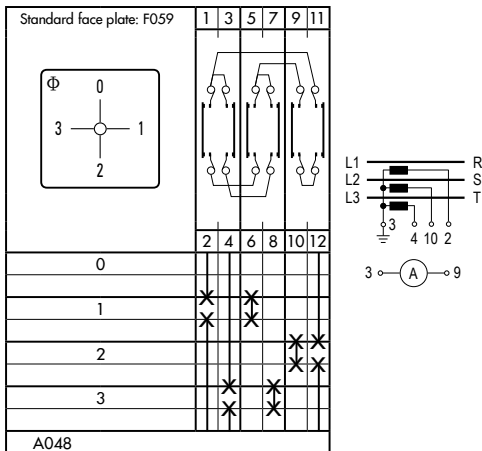
Ammeter switches

Standard face plate: F060											
											
1	3	5	7	9	11	13	15	17	19	21	23
2	4	6	8	10	12	14	16	18	20	22	24
1	*	*	*	*	*	*	*	*	*	*	*
2						*	*	*	*	*	*
3		*	*	*	*	*	*	*	*	*	*
4						*	*	*	*	*	*
WAA039											



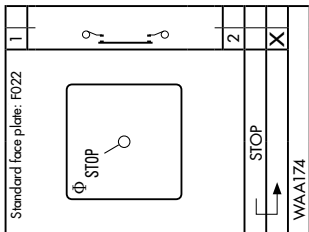
WAA039 Ammeter Switch
(formerly A039) 2 pole, 4 Current transformers

Ammeter switches

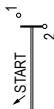
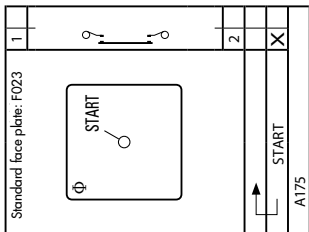


A048 Ammeter Switch
1 pole, 3 Current transformers

Control Switches

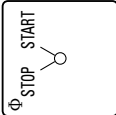
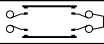


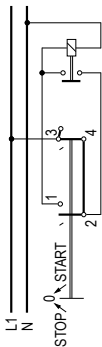
WAA174 Stop switch
(formerly A174) 1 pole



A175 Start switch
1 pole

Control Switches

Standard face plate: F024		1	3
			
		2	4
STOP			X
START			X
A176			

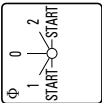
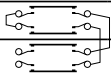


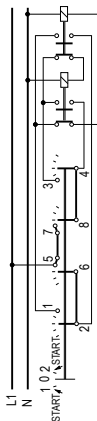
A176 Stop start switch

2 pole see page 31

Electrically isolated contacts see page 86

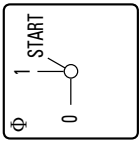
Control Switches

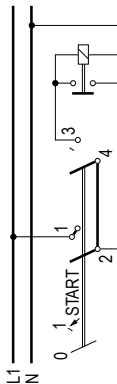
Standard face plate: F121							
		1	3	5	7		
							
		2	4	6	8		
START			X		X		
1					X		
0							
2				X			
START		X			X		
WAA177							



WAA177 Stop Start Switch for two units
(formerly A177) 2 pole, with spring return from start to run

Control Switches

Standard face plate: F119	1	3
		
	2	4
	0	
	1	X
	START	X
A178		

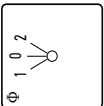
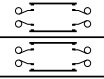


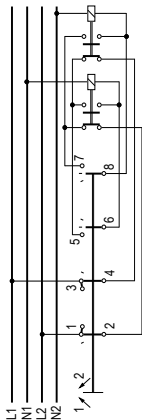
A178 Stop start switch

1 pole, with spring return from start to run

Electrically isolated contacts see page 86

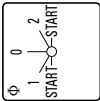
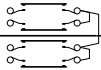
Control Switches

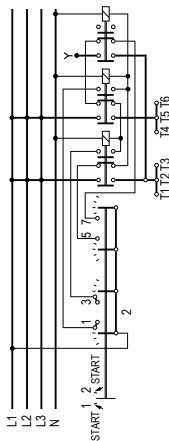
Standard face plate: F025							
				1	3	5	7
				2	4	6	8
1					X	X	
0					X	X	
2					X		X
WAA179							



WAA179 Contactor control with spring return to "OFF"
(formerly A179)

Control Switches

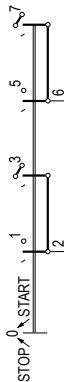
Standard face plate: F121							
							
START				2	4	6	8
1					X		X
0					X		
2				X			
START							
WAA182				X		X	



WAA182 Stop Start Switch
(formerly A182) with spring return to run with
contactor interlock

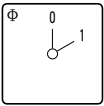
Control Switches

Standard face plate: F024					
Φ STOP START					
1	3	5	7		
2	4	6	8		
STOP					
START					
WAA183					



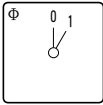
WAA183 Stop start switch
(formerly A183) 2 pole

ON/OFF Switches

Standard face plate: F070		1	3	5	7
					
		2	4	6	8
0					
1		X	X	X	X
A200	1 pole				
A201	2 pole				
A202	3 pole				
A203	4 pole				

A200 up to A203
ON/OFF Switches,
60° Switching

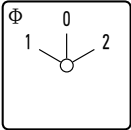
ON/OFF Switches 5- up to 12 pole
see page 56

Standard face plate: F169		1	3	5	7
					
		2	4	6	8
0					
1		X	X	X	X
A204	1 pole				
A205	2 pole				
WAA206	3 pole				
WAA207	4 pole				

A204 up to WAA207
(formerly A207)

ON/OFF Switches
with spring return,
30° Switching

Double-throw Switches

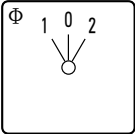
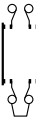
Standard face plate: F071 		1	3	5	7	9	11	13	15
									
		2	4	6	8	10	12	14	16
1			X		X		X		X
0									
2		X		X		X		X	
A210	1 pole								
A211	2 pole								
A212	3 pole								
A213	4 pole								

A210 up to A213 Double-throw Switches,
with „OFF“, 60° Switching

Electrically isolated contacts see page 81

Double-throw Switches with „OFF“, 5-8 pole see page 57

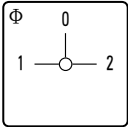
Double-throw Switches

Standard face plate: F025		1	3	5	7	9	11
							
		2	4	6	8	10	12
	1	X		X		X	
	0						
	2		X		X		X
A214	1 pole						
A215	2 pole						
A216	3 pole						

A214 up to A216 Double-throw Switches with „OFF“ and with spring return to „OFF“, 30° Switching

Electrically isolated contacts see page 82

Double-throw Switches

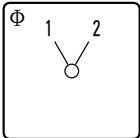
Standard face plate: F057 	1	3	5	7
				
	2	4	6	8
1	X		X	
	X		X	
0				
2		X		X
		X		X
A218	1 pole			
A219	2 pole			

A218, A219

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

For 3 & 4 pole options see pages 48 & 46 respectively

Double-throw Switches

Standard face plate: F072 		1	3	5	7	9	11	13	15
									
		2	4	6	8	10	12	14	16
1		X		X		X		X	
2			X		X		X		X
A220	1 pole								
A221	2 pole								
A222	3 pole								
A223	4 pole								

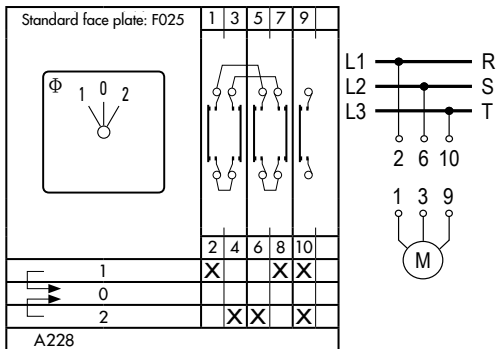
A220 up to A223

Double-throw Switches without „OFF“,
60° Switching

Electrically isolated contacts see page 83

Double-throw Switches without „OFF“ 5-12 pole see page 58

Motor Switches



A228 Motor Reversing Switches
3 pole, with spring return to 0

3 Step A230 *



8 Step WAA235 (formerly A235)



4 Step A231 **



9 Step WAA236 (formerly A236)



5 Step A232



10 Step WAA237 (formerly A237)



6 Step A233



11 Step WAA238 (formerly A238)



7 Step WAA234 (formerly A234)



12 Step WAA239 (formerly A239)



Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

and electrically isolated contacts see *Page 84 resp. **Page 85

Multi-step Switches 1 pole without „OFF“

Multi-step Switches 1 pole with „OFF“

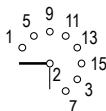
2 Step	A240	
3 Step	A241	
4 Step	A242	
5 Step	A243	
6 Step	A244	
7 Step	WAA245 (formerly A245)	

Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 1 pole with „OFF“

8 Step

WAA246
(formerly A246)



9 Step

WAA247
(formerly A247)



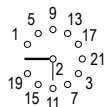
10 Step

WAA248
(formerly A248)



11 Step

WAA249
(formerly A249)



Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 2 pole without „OFF“

3 Step	A250*	
4 Step	A251**	
5 Step	A252	
6 Step	WAA253 (formerly A253)	
7 Step	WAA254 (formerly A254)	
8 Step	WAA255 (formerly A255)	

Electrically isolated contacts see *Page 84 resp. **Page 85

Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

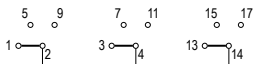
Multi-step Switches 2 pole with „OFF“

2 Step	A260	
3 Step	A261	
4 Step	WAA262 (formerly A262)	
5 Step	WAA263 (formerly A263)	
6 Step	WAA264 (formerly A264)	
7 Step	WAA265 (formerly A265)	

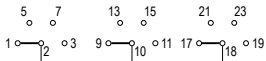
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 3 pole without „OFF“

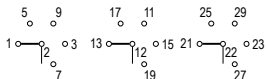
3 Step
A270



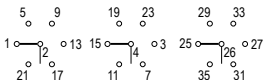
4 Step
A271



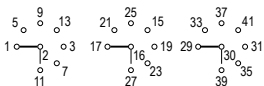
5 Step
WAA272
(formerly A272)



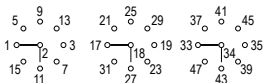
6 Step
WAA273
(formerly A273)



7 Step
WAA274
(formerly A274)



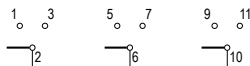
8 Step
WAA275
(formerly A275)



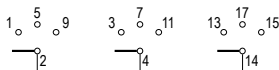
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 3 pole with „OFF“

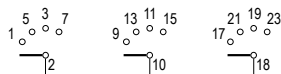
2 Step
A280



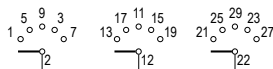
3 Step
A281



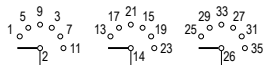
4 Step
WAA282
(formerly A282)



5 Step
WAA283
(formerly A283)

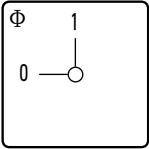


6 Step
WAA284
(formerly A284)



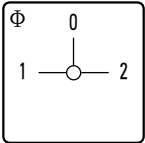
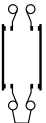
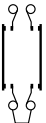
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

ON/OFF Switches

Standard face plate: F056		1	3	5	7
					
		2	4	6	8
0					
					X
		X	X	X	
1		X	X	X	X
A290	1 pole				
A291	2 pole				
A292	3 pole				
A293	4 pole, 1 Pole preclose				

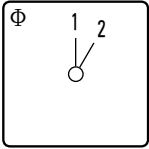
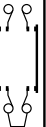
A290 up to A293
ON/OFF Switches 90° Switching

Double-throw Switches

Standard face plate: F057		1	3	5	7	9	11	13	15
									
									
		2	4	6	8	10	12	14	16
1		X		X		X		X	
		X		X		X			
								X	
0									
									X
			X		X		X		
2			X		X		X		X
WAA294		4 pole, 1 Pole preclose							

WAA294 Double-throw Switch with „OFF“,
(formerly A294) 90° Switching

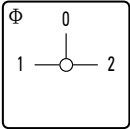
Double-throw Switches

Standard face plate: F026		1	3	5	7	9	11
							
		2	4	6	8	10	12
 1		X		X		X	
 2			X		X		X
A295	1 pole						
A296	2 pole						
WAA297	3 pole						

A295* up to WAA297 (formerly A297)
 Double-throw Switches without „OFF“,
 with spring return, 30° Switching

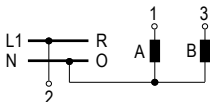
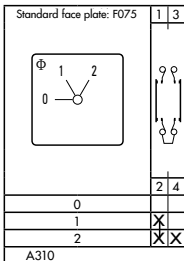
*Electrically isolated contacts see page 86

Double-throw Switches

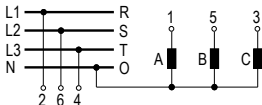
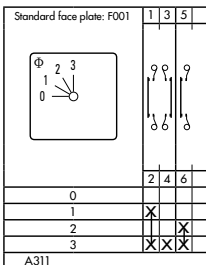
Standard face plate: F057 	1	3	5	7	9	11
						
	2	4	6	8	10	12
1	X		X		X	
	X		X		X	
0						
		X		X		X
2		X		X		X
WAA299						

WAA299 Double-throw Switch with „OFF“
 (formerly A299) 90° Switching, 3 pole

General Application Switches

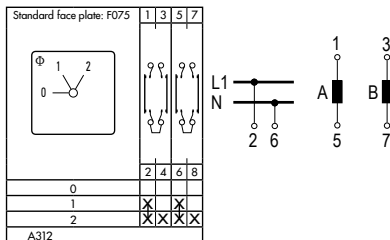


A310 General Application Switch
2 Gang, 1 pole
0, A, A+B

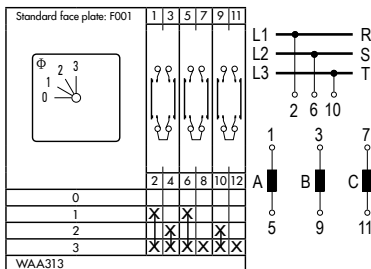


A311 General Application Switch
3 Gang, 1 pole
0, A, A+B, A+B+C

General Application Switches

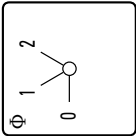
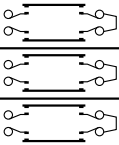


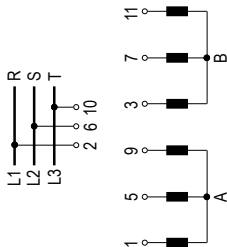
A312 General Application Switch
2 Gang, 2 pole
0, A, A+B



WAA313 General Application Switch
(formerly A313) 3 Gang, 2 pole
0, A, A+B, A+B+C

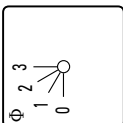
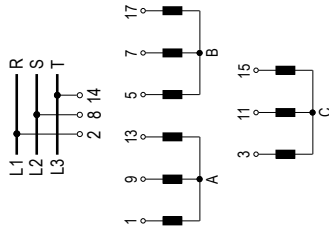
General Application Switches

Standard face plate: F075									
1	3	5	7	9	11				
									
0						2	4	6	8
1									
2									
WAA314									



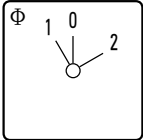
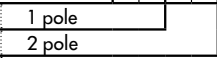
WAA314 General Application Switch
(formerly A314) 2 Gang, 3 pole
0, A, A+B

General Application Switches

Standard face plate: F001									
1	3	5	7	9	11	13	15	17	
									
									
2	4	6	8	10	12	14	16	18	
0									
1	X				X				
2									X
3	X	X	X	X	X	X	X	X	X
WAA315									

WAA315 General Application Switch
 (formerly A315) 3 Gang, 3 pole
 0, A, A+B, A+B+C

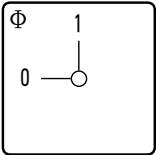
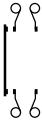
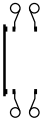
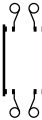
Double-throw Switches

Standard face plate: F341 		1	3	5	7	9	11
							
		2	4	6	8	10	12
	1		X		X		X
	0						
	2	X		X		X	
A320	1 pole						
A321	2 pole						
A322	3 pole						

A320 up to A322

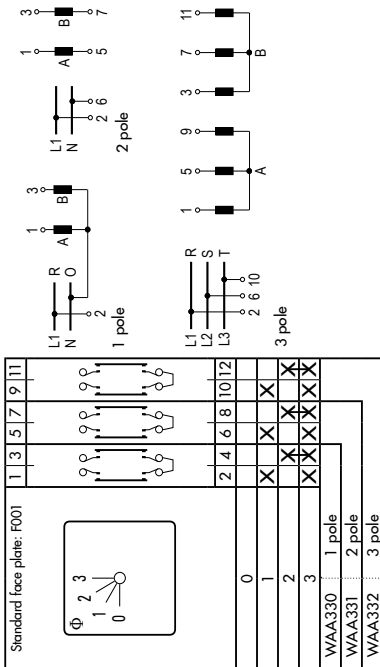
Double-throw Switches with „OFF“ with spring return from left to center

ON/OFF Switches

Standard face plate: F056 		1	3	5	7	9	11
							
		2	4	6	8	10	12
0							
		X	X	X	X	X	X
1		X	X	X	X	X	X
A324	4 pole						
WAA325	5 pole						
A326	6 pole						

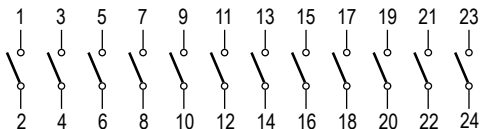
A324 up to A326
ON/OFF Switches, 90° Switching

2 Gang Series Switching



WAA330 up to WAA332 2 Gang Series Switching
(formerly A330 up to A332) 0,A,B,A+B

ON/OFF Switches



WAA341 (formerly A341) 5 pole

A342 6 pole

A343 7 pole

A344 8 pole

WAA345 (formerly A345) 9 pole

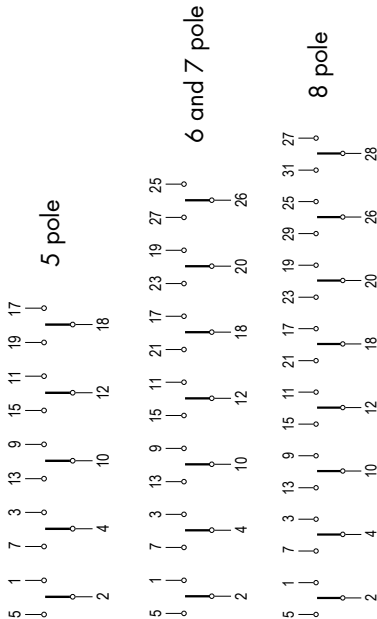
A346 10 pole

WAA347 (formerly A347) 11 pole

A348 12 pole

ON/OFF Switches, 60° Switching

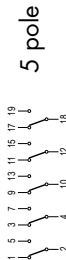
Double-throw Switches



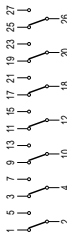
Double-throw Switches with „OFF“ 60° Switching

A361 5 pole	WAA363 (formerly A363) 7 pole
A362 6 pole	WAA364 (formerly A364) 8 pole

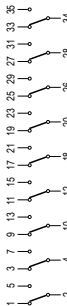
Double-throw Switches



5 pole



6- and 7 pole



8- and 9 pole



10- and 11 pole



12 pole

Double-throw Switches without „OFF“, 60° Switching

A369 5 pole A371 7 pole

WAA373 9 pole
(formerly A373)

WAA375 11 pole
(formerly A375)

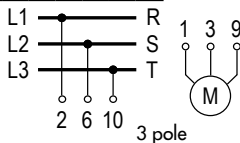
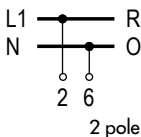
A370 6 pole A372 8 pole

WAA374 10 pole
(formerly A374)

WAA376 12 pole
(formerly A376)

Motor Switches

Standard face plate: F071		1	3	5	7	9	
		2	4	6	8	10	
1			X	X		X	
0							
2		X			X	X	
A400	2 pole						
A401	3 pole						

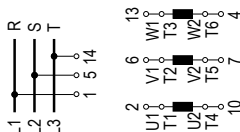


A400, A401 Motor Reversing Switches

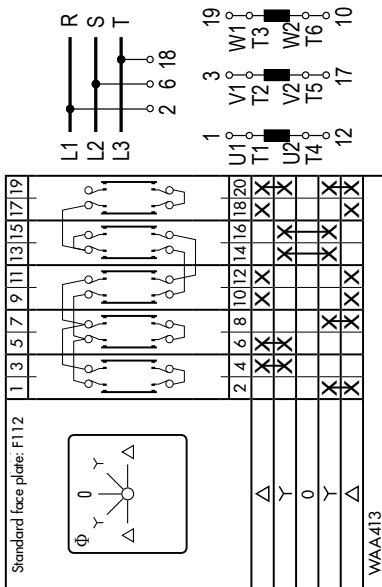
With spring return to „OFF“ see page 37

Motor Switches

Standard face plate: F080															
Φ Δ															
1	3	5	7	9	11	13	15								
2	4	6	8	10	12	14	16								
					*					*					
A410															

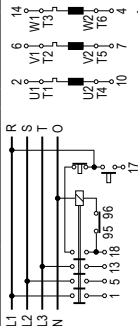
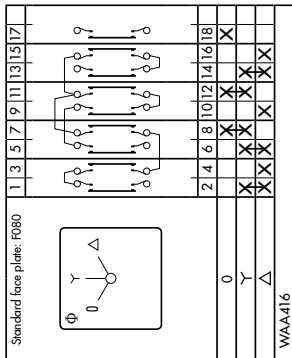


Motor Switches



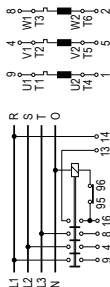
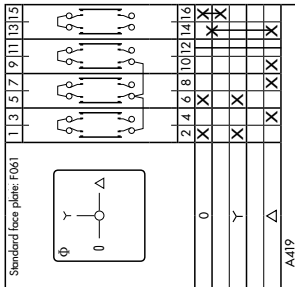
WAA413 Star-delta Switch
(formerly A413) Reversing

Motor Switches



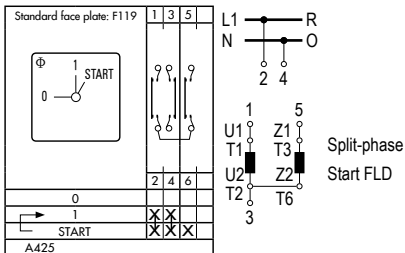
Star-delta Switches

WAA416 With auxiliary contact,
(formerly A416) closed in „OFF“ position

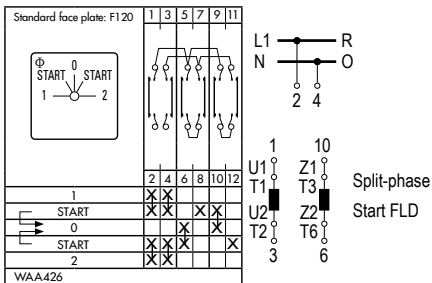


A419 For use with
reversing contactors

Motor Switches

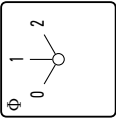
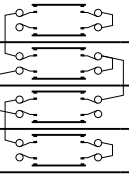


A425 Start and Run Switch
Split-phase start



WAA426 Start and Run Switch
(formerly A426) Split-phase start reversing

Motor Switches

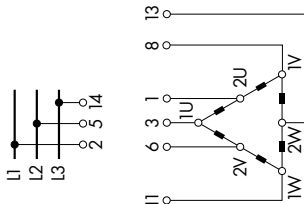
Standard face plate: F073															
															
1	3	5	7	9	11	13	15								
2	4	6	8	10	12	14	16								
0															
1															
2															
A440															

A440 2 speed, single winding

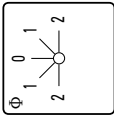
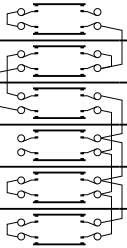
0 - AΔ - AΥ

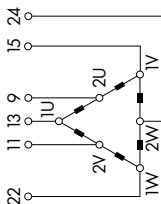
A441 AΔ - 0 - AΥ

without „OFF“ see page 69



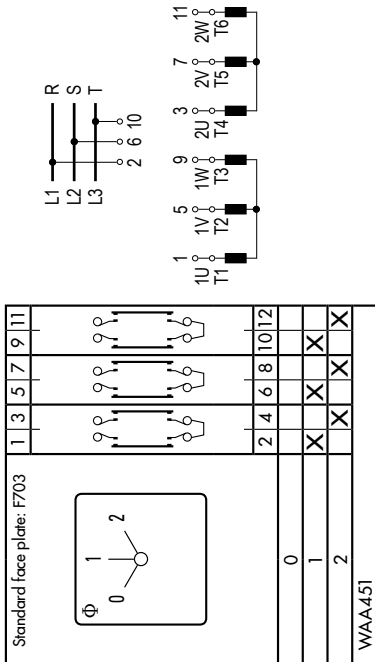
Motor Switches

Standard face plate: F105										1	3	5	7	9	11	13	15	17	19	21	23
																					
										2	4	6	8	10	12	14	16	18	20	22	24
											X	X		X	X			X	X		X
											X	X				X	X			X	
										1						X	X			X	
										0											
										1	X										
										2	X										
A442																					



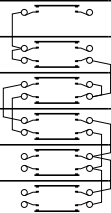
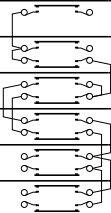
A442 2 speed, single winding with reverse
 $\Delta\Upsilon - \Delta\Delta - 0 - \Delta\Delta - \Delta\Upsilon$

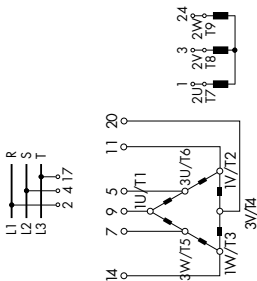
Motor Switches



WAA451 Motor Control Switch
(formerly A451) 2 speed, 2 winding
0 - A - B, Y or Δ

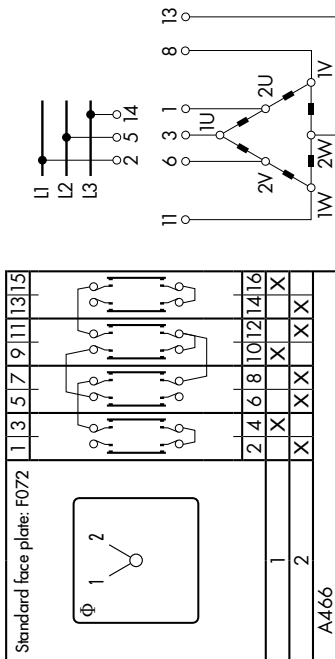
Motor Switches

Standard face plate: F109												23
												
1	3	5	7	9	11	13	15	17	19		23	
												
2	4	6	8	10	12	14	16	18	20		24	
												
0												
1												
2												X
3												X
WAA457												



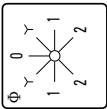
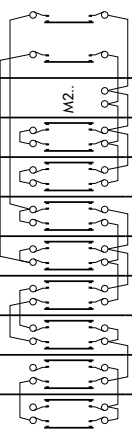
WAA457 Motor Control Switch
(formerly A457) 3 speed, 2 winding
0 - AΔ - BΥ - AΥ

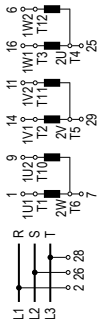
Motor Switches



A466 2 speed, single winding without „OFF“
AΔ - AΥ

Motor Switches

Standard face plate: F294																														37	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</



WAA468
(formerly A468)

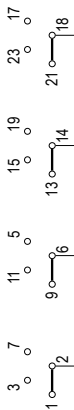
Motor Control Switch

2 speed reversing for 2 way operation
with slip clutch for „OFF“ load use

Multi-step Switches 4 pole without „OFF“

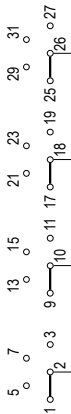
3 Step

A476



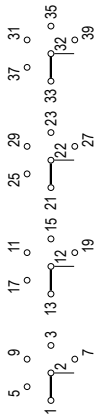
4 Step

A477



5 Step WAA478

(formerly A478)

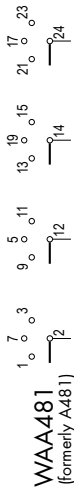


Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

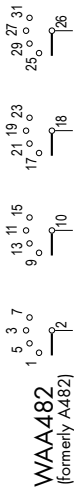
2 Step



3 Step



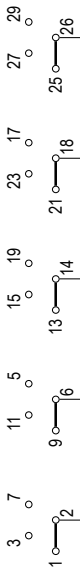
4 Step



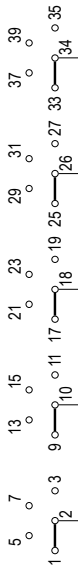
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 4 pole with „OFF“

Multi-step Switches 5 pole without „OFF“



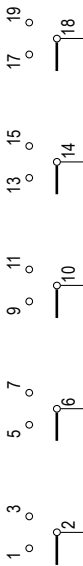
3 Step WAA484
(formerly A484)



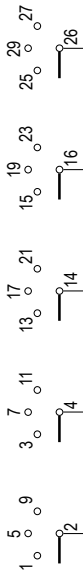
4 Step WAA485
(formerly A485)

Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 5 pole with „OFF“



2 Step
WAA486
(formerly A486)

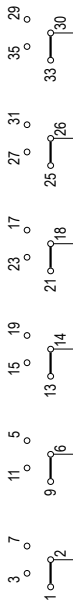


3 Step
WAA487
(formerly A487)

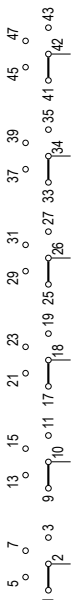
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate

Multi-step Switches 6 pole

without „OFF“

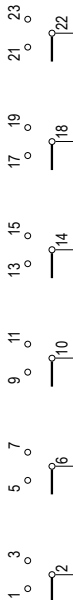


3 Step
WAA489
(formerly A489)



4 Step
WAA490
(formerly A490)

with „OFF“



2 Step
WAA491
(formerly A491)

Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate

Coding Switches/Binary Code

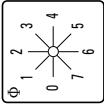
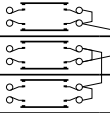
Standard face plate: F322			
1	3	5	
0	X	X	X
1		X	X
2	X		
3			X
4	X	X	
5		X	
6	X		
7			
WAA541			

WAA541 0-7 + complement
(formerly A541)

Standard face plate: F322			
1	3	5	
0			
1	X		
2		X	
3	X	X	
4			X
5	X		
6		X	
7	X	X	X
A540			

A540 0-7

Coding Switches/Binary Code

Standard face plate: F322							
1	3	5	7	9	11		
							
2	4	6	8	10	12		
0				X	X	X	X
1	X				X		
2							
3	X	X					X
4			X	X			
5	X				X		
6		X			X		
7	X	X	X				
WAA542							

WAA542 0-7 + complement
(formerly A542)

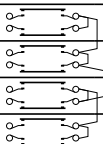
Standard face plate: F009							
1	3	5	7				
							
2	4	6	8				
0							
1	X						
2		X					
3	X	X					
4			X				
5	X			X			
6		X	X				
7	X	X	X				
8				X			
9	X				X		
10						X	
11	X	X					X
A543							

A543 0-11

Coding Switches/Binary Code

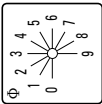
Standard face plate: F007				1	3	5	7
							
A550				2	4	6	8
0							
1				X			
2					X		
3				X	X		
4						X	
5				X			
6					X	X	
7				X	X	X	
8							X
9				X			X

A550 0-9

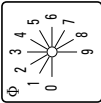
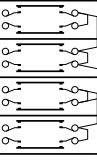
Standard face plate: F009																
Φ 1 2 3 4 5 6 7 8 9 10 11 0																
1	3	5	7	9	11	13	15									
								2	4	6	8	10	12	14	16	
								X						X	X	X
									X						X	
										X						
											X					
												X				
													X			
														X	X	X
															X	
												</				

WAA545 0-11+complement
(formerly A545)

Coding Switches/BCD-Code

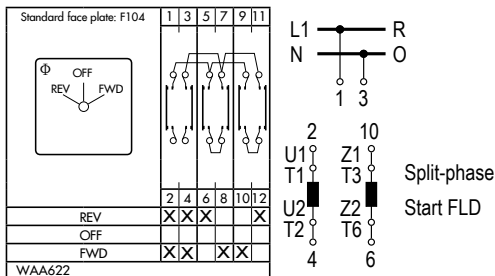
Standard face plate: F007				1	3	5	7
							
0	X	X	X	X	X	X	X
1				X			
2				X			
3					X		
4	X	X		X	X		
5				X			
6	X			X			
7						X	
8	X	X		X	X		
9	X	X		X	X		
WAA551							

WAA551 0-9
(formerly A551)

Standard face plate: F007												1	3	5	7	9	11	13	15
																			
0												2	4	6	8	10	12	14	16
1													X				X	X	X
2																X			
3												X	X						
4															X		X		
5												X					X		
6													X	X					
7												X	X	X					X
8																X	X	X	
9												X				X	X	X	X
WAA552																			

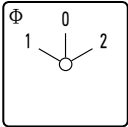
WAA552 0-9+complement
(formerly A552)

Motor Switches



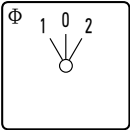
WAA622 Start and Run Switch
(formerly A622) Split-phase reversing
auto cutout of start
field winding

Double-throw Switches with electrically isolated contacts

Standard face plate: F071		1	3	5	7	9	11	13	15
									
		2	4	6	8	10	12	14	16
1			X		X		X		X
0									
2		X		X		X		X	
A710	1 pole								
A711	2 pole								
A712	3 pole								
A713	4 pole								

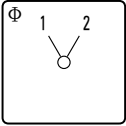
A710 up to A713 Double-throw Switch
with „OFF“, 60° Switching

Double-throw Switches with electrically isolated contacts

Standard face plate: F025		1	3	5	7
					
		2	4	6	8
		X		X	
	0				
	2		X		X
A714	1 pole				
A715	2 pole				

A714 up to A715 Double-throw Switch
with „OFF“ with spring return
to center, 30° Switching

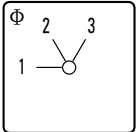
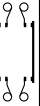
Double-throw Switches with electrically isolated contacts

Standard face plate: F072		1	3	5	7	9	11	13	15
									
		2	4	6	8	10	12	14	16
1		X		X		X		X	
2			X		X		X		X
A720	1 pole								
A721	2 pole								
A722	3 pole								
A723	4 pole								

A720 up to A723

Double-throw Switch without „OFF“,
60° Switching

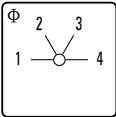
Multi-step Switch with electrically isolated contacts

Standard face plate: F076 		1	3	5	7	9	11
							
		2	4	6	8	10	12
1		X				X	
2			X				X
3				X	X		
A730	1 pole						
A750	2 pole						

A730, A750

Multi-step Switch without „OFF“, 3 Positions

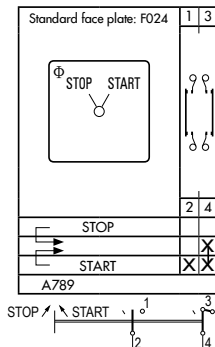
Multi-step Switch with electrically isolated contacts

Standard face plate: F077		1	3	5	7	9	11	13	15
		2		4		6		8	
		10		12		14		16	
1		X				X			
2				X				X	
3					X				X
4			X				X		
A731	1 pole								
A751	2 pole								

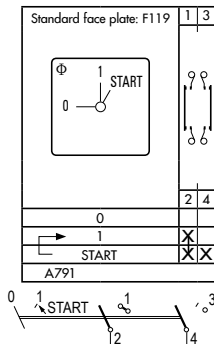
A731, A751

Multi-step Switch without „OFF“, 4 Positions

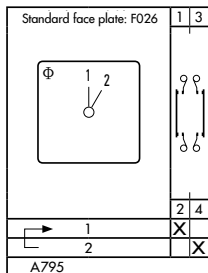
Control Switch with electrically isolated contacts



A789 Stop start switch



A791 Stop start switch with spring return from start to run

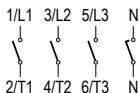


A795 Double-throw Switch without „OFF“, 1 pole with spring return

Main Switches of KG-, KH- and KF-series



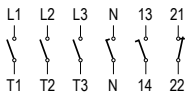
3 pole



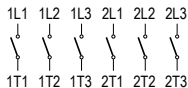
4 pole (3+N)



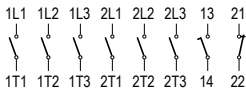
3 pole, 1NO+1NC



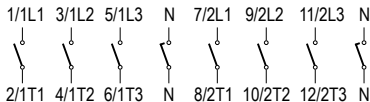
4 pole, 1NO+1NC



6 pole

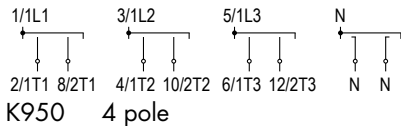
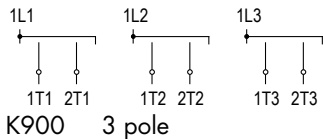


6 pole, 1NO+1NC



8 pole

Double-throw Switches with „OFF“ of KG-, KH- and KF-series



Notes

Notes

Notes

Switch Wiring Diagrams as App:



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