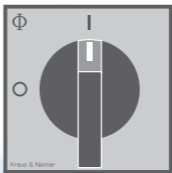


Switch Wiring Diagrams

POCKETBOOK



Switch wiring diagrams

THE BLUE LINE

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.

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| ON/OFF Switches 0-1 | | | | |
| 60° Switching | 1 pole | A200 | 1 | 32 |
| | 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 |
| 30° Switching with spring return | 1 pole | A204 | 1 | 32 |
| | 2 pole | A205 | 1 | 32 |
| | 3 pole | WAA206 | 2 | 32 |
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| without „OFF“ Positions (1-2) 60° Switching | 1 pole | A220 | 1 | 36 |
| | 2 pole | A221 | 2 | 36 |
| | 3 pole | A222 | 3 | 36 |
| | 4 pole | A223 | 4 | 36 |
| | 5 pole | A369 | 5 | 58 |
| | 6 pole | A370 | 6 | 58 |
| | 7 pole | A371 | 7 | 58 |
| | 8 pole | A372 | 8 | 58 |
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| | 3 pole | A722 | 3 | 83 |
| | 4 pole | A723 | 4 | 83 |
| without „OFF“ with spring return 30° Switching | 1 pole | A295 | 1 | 47 |
| | 2 pole | A296 | 2 | 47 |
| | 3 pole | WAA297 | 3 | 47 |
| with electrically isolated contacts | 1 pole | A795 | 1 | 86 |
| with „OFF“ Positions (1-0-2) 60° Switching | 1 pole | A210 | 1 | 33 |
| | 2 pole | A211 | 2 | 33 |
| | 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 isolated contacts | 1 pole | A710 | 1 | 81 |
| | 2 pole | A711 | 2 | 81 |
| | 3 pole | A712 | 3 | 81 |
| | 4 pole | A713 | 4 | 81 |
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| | 2 pole | A219 | 2 | 35 |
| | 3 pole | WAA299 | 3 | 48 |
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| | 4 pole | WAA294 | 4 | 44 |
| | 4 pole | K950 | | 88 |
| KG-, KH-, KF-Serie, 4. pole preclose 30° Positions (1-0-2) 30° with spring return to center | 1 pole | A214 | 1 | 34 |
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| | 4 Step | 60° | A231 | 2 | 38 | |
| | 5 Step | 60° | A232 | 3 | 38 | |
| | 6 Step | 60° | A233 | 3 | 38 | |
| | 7 Step | 45° | WAA234 | 4 | 38 | |
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| | 9 Step | 30° | WAA236 | 5 | 38 | |
| | 10 Step | 30° | WAA237 | 5 | 38 | |
| | 11 Step | 30° | WAA239 | 6 | 38 | |
| | 12 Step | 30° | WAA239 | 6 | 38 | |
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| | | 4 Step | 50° | A251 | 4 | 41 |
| 5 Step | | 60° | A252 | 5 | 41 | |
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| 7 Step | | 45° | WAA254 | 7 | 41 | |
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| | 2 pole | 2 Step | 50° | A260 | 2 |
| 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 |
| | 3 Step | 45° | A281 | 5 | 44 |
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| | 3 Step | 45° | WAA487 | 8 | 74 |
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| 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 |
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| Switching sequence: | 2 pole | 30° | WAA313 | 3 | 50 |
| 0, A, A+B, A+B+C | 3 pole | 30° | WAA315 | 5 | 52 |
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| 0 up to 7 complement | | 45° | WAA541 | 2 | 76 |
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| 0 up to 11+complement | | 30° | WAA545 | 4 | 78 |
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| 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 | | | | |
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| 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 |

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



| | | | Code- no. | Stages C/CG/CH | Page |
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| Control Switches | | | | | |
| Stop switch | 1 pole | 30° | WAA174 | 1 | 25 |
| Start switch | 1 pole | 30° | A175 | 1 | 25 |
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| for contactor interlock with spring return from start to run | | 60°+30° | WAA182 | 2 | 30 |
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| Stop start switch with spring return from start to run | | 90°+30° | A791 | 1 | 86 |
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| 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 |
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| Reversing | 45° | A442 | 6 | 65 |
| for reversing for for use with contactors and with slip clutch for „OFF“ load use | 60° | WAA444 | 5 | 66 |
| | 45° | WAA468 | 10* | 70 |
| Motor Control Switches | | | | |
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| Split-phase start | 60°+30° | WAA426 | 3 | 63 |
| Split-phase reversing auto cutout of start field winding | 60° | A622 | 3 | 80 |

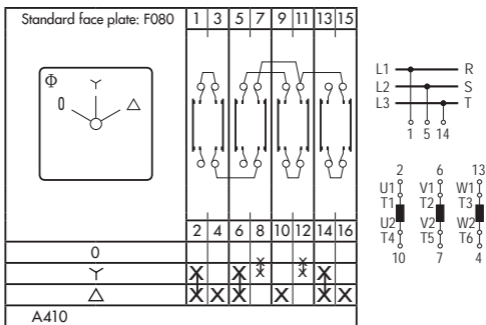
* with slip clutch

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.

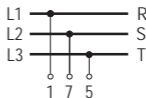


A410 Star-Delta Switch

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.

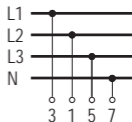
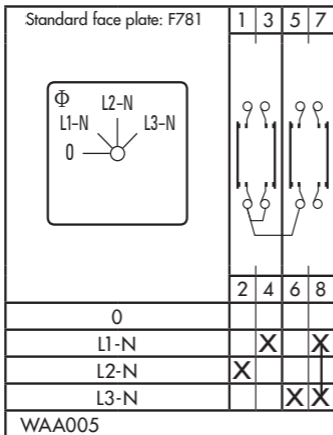
Voltmeter switches

| | | | | |
|---------------------------|---|---|---|---|
| Standard face plate: F778 | 1 | 3 | 5 | 7 |
| | | | | |
| 0 | | | | |
| L1-L2 | X | | | X |
| L2-L3 | | | X | X |
| L3-L1 | | X | X | |
| A004 | | | | |



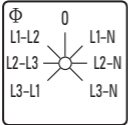
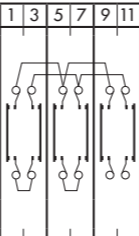
A004 Voltmeter Switch
3 phase 3 wire

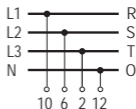
Voltmeter switches



WAA005 Voltmeter Switch
(formerly A005) 3 phase to neutral

Voltmeter switches

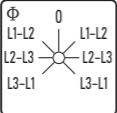
| Standard face plate: F785 | 1 | 3 | 5 | 7 | 9 | 11 |
|---|---|---|---|---|----|----|
|  |  | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 |
| L3-L1 | | X | | | X | |
| L2-L3 | | X | X | | | |
| L1-L2 | | | | X | X | |
| 0 | | | | | | |
| L1-N | | | | | X | X |
| L2-N | | | X | | | |
| L3-N | X | | | | | X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

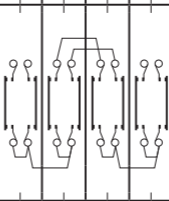


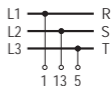
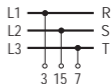
A007 Voltmeter Switch
3 phase to neutral

Voltmeter switches

Standard face plate: F788

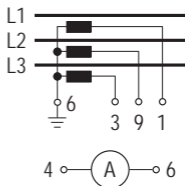
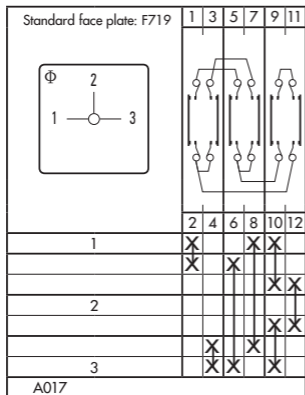


| | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 |
|--------|---|---|---|---|----|----|----|----|
| |  | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| L3-L1 | | X | | | | X | | |
| L2-L3 | | | | X | | | | X |
| L1-L2 | | X | | | | | | X |
| 0 | | | | | | | | |
| L1-L2 | X | | | | | | X | |
| L2-L3 | | | X | | | | X | |
| L3-L1 | X | | | | X | | | |
| WAA008 | | | | | | | | |



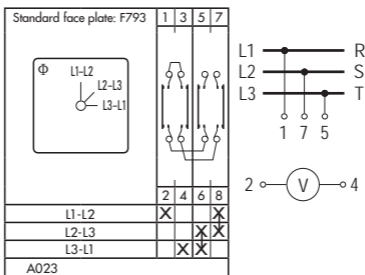
WAA008 Voltmeter Switch
(formerly A008) 2 separate 3 phase

Ammeter switches

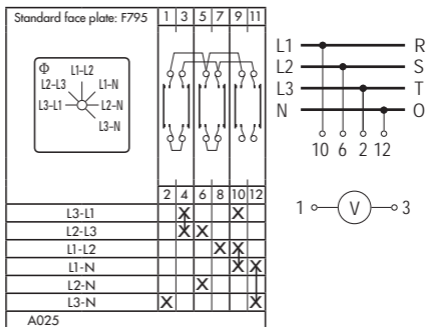


WAA017 Ammeter Switch
1 pole, 3 Current transformers

Voltmeter switches

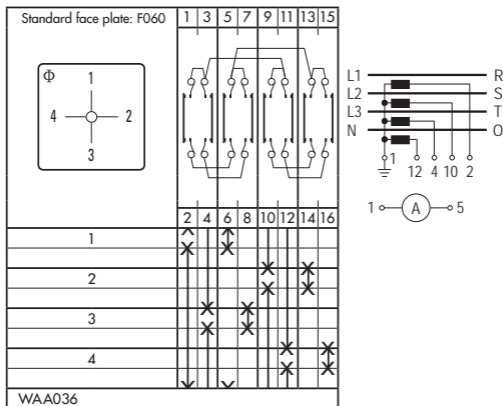


A023 Voltmeter Switch, 3 phase 3 wire



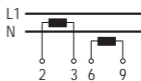
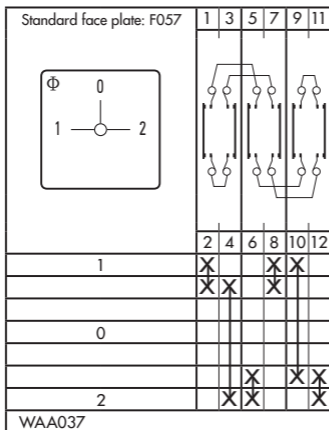
A025 Voltmeter Switch, 3 phase 3 wire,
3 phase to neutral

Ammeter switches



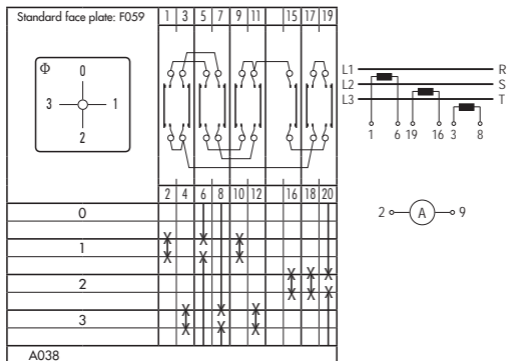
WAA036 Ammeter Switch
 (formerly A036) 1 pole, 4 Current transformers

Ammeter switches



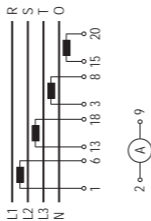
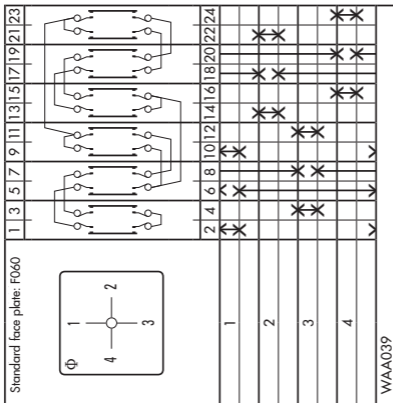
WAA037 Ammeter Switch
 (formerly A037) 2 pole, 2 Current transformers

Ammeter switches



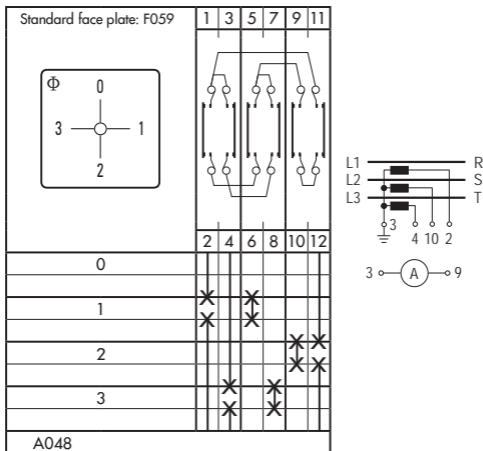
A038 Ammeter Switch
2 pole, 3 Current transformers

Ammeter switches



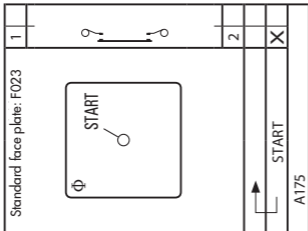
WAA039 Ammeter Switch
(formerly A039) 2 pole, 4 Current transformers

Ammeter switches

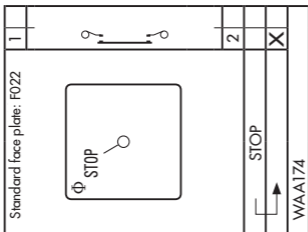


A048 Ammeter Switch
1 pole, 3 Current transformers

Control Switches

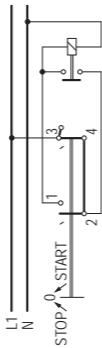


A175 Start switch
1 pole



WAA174 Stop switch
(formerly A174) 1 pole

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



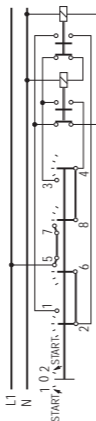
A176 Stop start switch

2 pole see page 31

Electrically isolated contacts see page 86

Control Switches

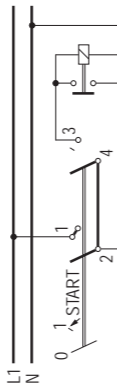
| | | | | | |
|---------------------------|---|---|---|---|---|
| Standard face plate: F121 | | 1 | 3 | 5 | 7 |
| | | | | | |
| START | ↑ | X | X | | X |
| 1 | | | | | X |
| 0 | | | | X | |
| 2 | ↑ | | | | |
| START | | X | | | |
| WAA177 | | | | | |



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

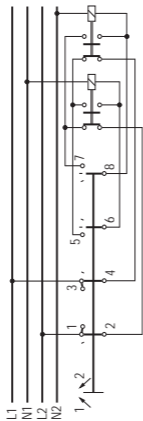
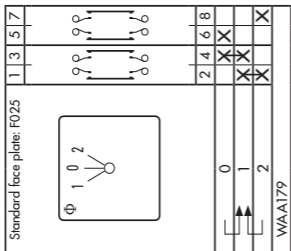
Control Switches

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



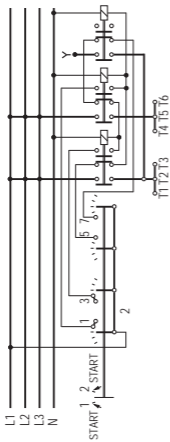
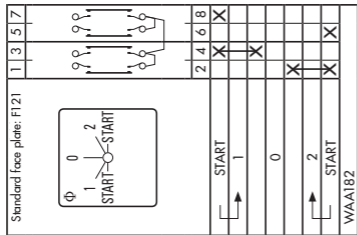
A178 Stop start switch
 1 pole, with spring return from start to run
 Electrically isolated contacts see page 86

Control Switches



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

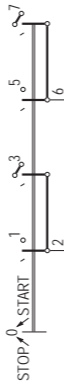
Control Switches



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

Control Switches

| | | | | |
|---------------------------|---|---|---|---|
| Standard face plate: F024 | 1 | 3 | 5 | 7 |
| | | | | |
| | 2 | 4 | 6 | 8 |
| STOP | | | | |
| | | X | X | X |
| START | | | | |
| | X | X | X | X |
| 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

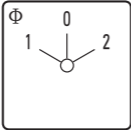




ON/OFF Switches 5- up to 12 pole
see page 56

| 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

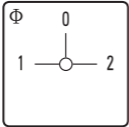


Double-throw Switches

| | | | | | | | |
|---------------------------|--------|---|---|---|---|----|----|
| 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

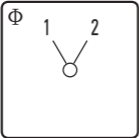




| Standard face plate: F057 | | 1 | 3 | 5 | 7 |
|---|--------|---|---|---|---|
|  | |  | |  | |
| | | 2 | 4 | 6 | 8 |
| 1 | | X | | X | |
| | | X | | X | |
| 0 | | | | | |
| | | | | | |
| 2 | | | X | | X |
| | | | X | | X |
| A218 | 1 pole | | | | |
| A219 | 2 pole | | | | |

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 | | | | | | | | |

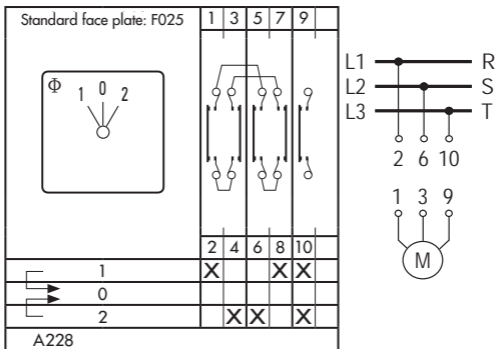
A220 up to A223

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

Multi-step Switches 1 pole without „OFF“

| | | | |
|----------------------------------|---|-----------------------------------|---|
| 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 with „OFF“

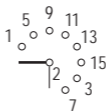
| | | |
|--------|---------------------------|--|
| 2 Step | A240 | |
| 3 Step | A241 | |
| 4 Step | A242 | |
| 5 Step | A243 | |
| 6 Step | A244 | |
| 7 Step | WAA245 (formerly A245) | |

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“

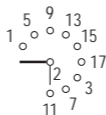
8 Step

WAA246
(formerly A246)



9 Step

WAA247
(formerly A247)



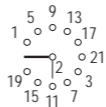
10 Step

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.

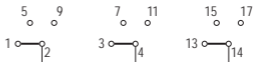
Multi-step Switches 2 pole with „OFF“

| | | |
|--------|---------------------------|--|
| 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) | |

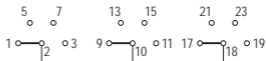
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 3 pole without „OFF“

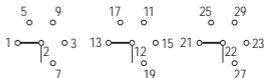
3 Step
A270



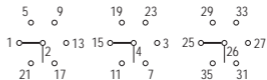
4 Step
A271



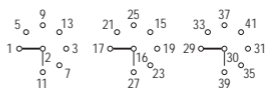
5 Step
WAA272
(formerly A272)



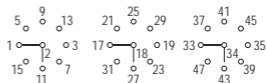
6 Step
WAA273
(formerly A273)



7 Step
WAA274
(formerly A274)



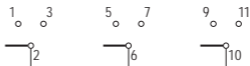
8 Step
WAA275
(formerly A275)



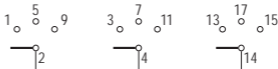
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 3 pole with „OFF“

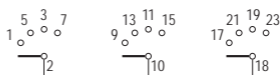
2 Step
A280



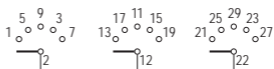
3 Step
A281



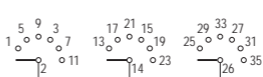
4 Step
WAA282
(formerly A282)



5 Step
WAA283
(formerly A283)

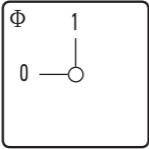
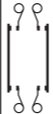



6 Step
WAA284
(formerly A284)



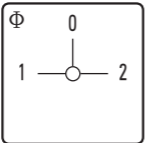
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

ON/OFF Switches

| Standard face plate: F056 | | 1 | 3 | 5 | 7 |
|---|-------------------------|---|---|---|---|
|  | |  | |  | |
| | | 2 | 4 | 6 | 8 |
| 0 | | | | | |
| | | | | | X |
| | | X | X | X | 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 |
| 2 | | | X | | X | | X | | X |
| | | | X | | X | | X | | X |
| WAA294 | | 4 pole, 1 Pole preclose | | | | | | | |

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

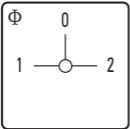



Double-throw Switches

| Standard face plate: F026 | | 1 | 3 | 5 | 7 | 9 | 11 |
|---------------------------|--------|---|---|---|---|---|----|
| | | | | | | | |
| | | | | | | | |
| | 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

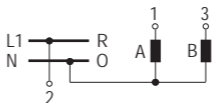
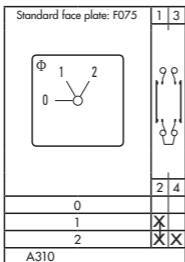
*Electrically isolated contacts see page 86

Double-throw Switches

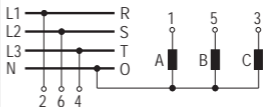
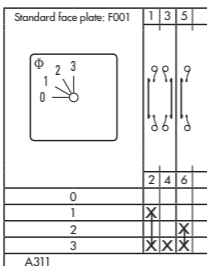
| Standard face plate: F057 | 1 | 3 | 5 | 7 | 9 | 11 |
|---------------------------|---|---|---|---|----|---|
| |  |  | |  | |  |
| 2 | | 4 | 6 | 8 | 10 | 12 |
| 1 | X | | X | | X | |
| | X | | X | | X | |
| 0 | | | | | | |
| | | | | | | |
| 2 | | X | | X | | X |
| | | X | | X | | X |
| WAA299 | | |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

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

General Application Switches

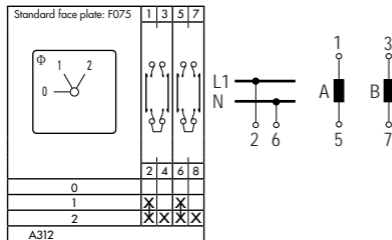


A310 General Application Switch
2 Gang, 1 pole
0, A, A+B

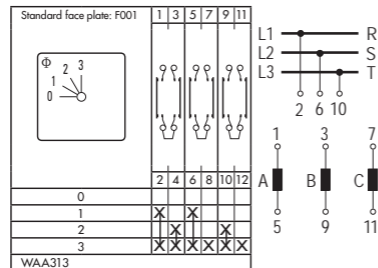


A311 General Application Switch
3 Gang, 1 pole
0, A, A+B, A+B+C

General Application Switches

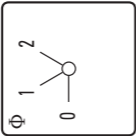




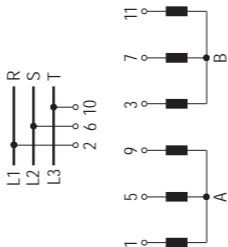
A312 General Application Switch
2 Gang, 2 pole
0, A, A+B



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

General Application Switches

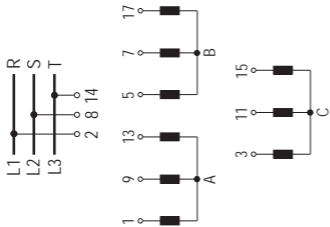
| | | | | | | |
|---|---|---|---|---|----|----|
| Standard face plate: F075  | 1 | 3 | 5 | 7 | 9 | 11 |
| |  | | |  | | |
| | 2 | 4 | 6 | 8 | 10 | 12 |
| | | X | X | X | X | X |
| 0 | | | | | | |
| 1 | X | X | X | X | X | X |
| 2 | X | X | X | X | X | X |
| WAA314 | | | | | | |



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

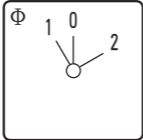





General Application Switches

| 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 | X | X | X | | | | | X | |
| 3 | X | 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

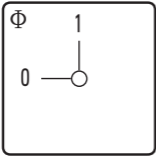



Double-throw Switches

| 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 | | | | | | | |

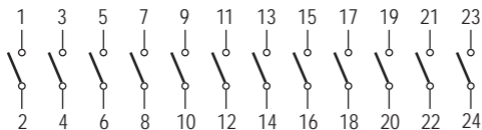
A324 up to A326
ON/OFF Switches, 90° Switching

2 Gang Series Switching

| Standard face plate: F001 | | 1 | 3 | 5 | 7 | 9 | 11 |
|---------------------------|--------|---------------|---|---------------|---|---------------|----|
| | | <p>1 pole</p> | | <p>2 pole</p> | | <p>3 pole</p> | |
| | | | | | | | |
| | | 2 | 4 | 6 | 8 | 10 | 12 |
| | | 0 | 1 | 2 | 3 | | |
| WAA330 | 1 pole | | | | | | |
| WAA331 | 2 pole | | X | X | X | X | X |
| WAA332 | 3 pole | | X | X | X | X | X |

WAA330 up to WAA332 2 Gang Series Switching
 (formerly A330 up to A332) O,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

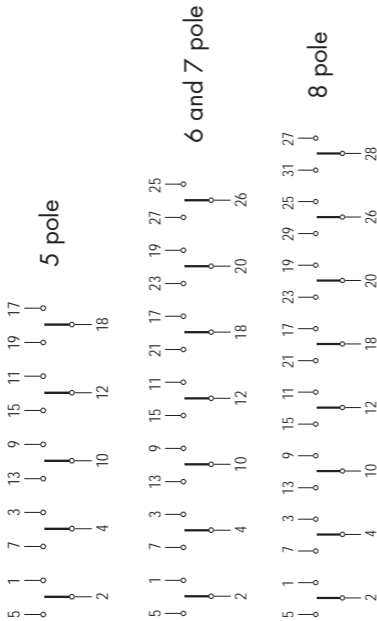
A346 10 pole

WAA347 (formerly A347) 11 pole

A348 12 pole

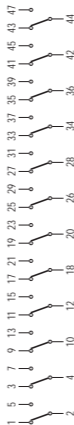
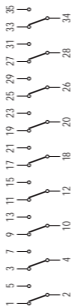
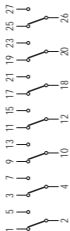
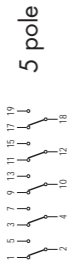
ON/OFF Switches, 60° Switching

Double-throw Switches



Double-throw Switches with „OFF“ 60° Switching
 A361 5 pole
 A362 6 pole
 WAA363 (formerly A363) 7 pole
 WAA364 (formerly A364) 8 pole

Double-throw Switches



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

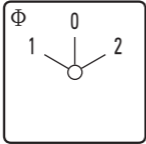
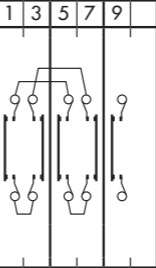
A369 5 pole A371 7 pole

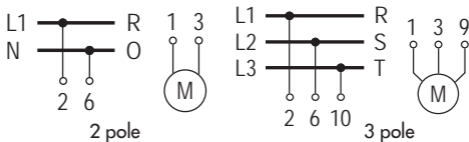
WAA373 9 pole WAA375 11 pole
(formerly A373) (formerly A375)

A370 6 pole A372 8 pole

WAA374 10 pole WAA376 12 pole
(formerly A374) (formerly A376)

Motor Switches

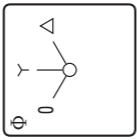

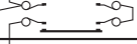
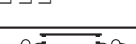
| | | | | | | | | |
|---|--|---|---|---|---|----|--|--|
| Standard face plate: F071 | | 1 | 3 | 5 | 7 | 9 | | |
|  | |  | | | | | | |
| | | 2 | 4 | 6 | 8 | 10 | | |
| 1 | | | X | X | | X | | |
| 0 | | | | | | | | |
| 2 | | X | | | X | X | | |
| A400 | | 2 pole | | | | | | |
| A401 | | 3 pole | | | |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

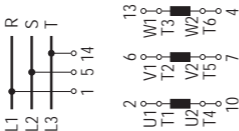


A400, A401 Motor Reversing Switches

With spring return to „OFF“ see page 37

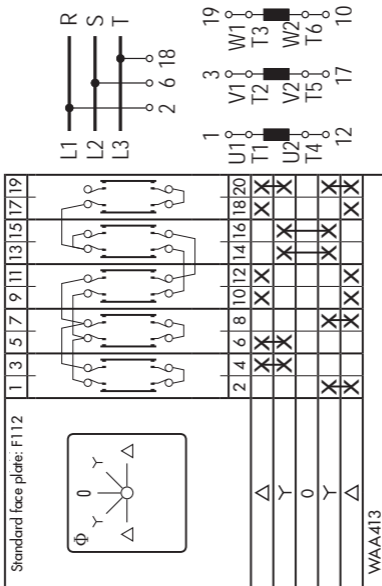
Motor Switches

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



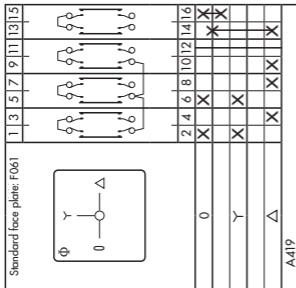
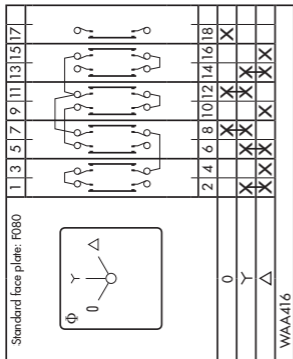
A410 Star-delta Switch

Motor Switches



WAA413 Star-delta Switch
(formerly A413) Reversing

Motor Switches

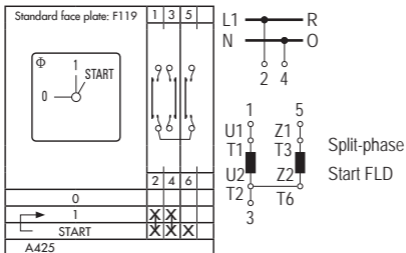


Star-delta Switches

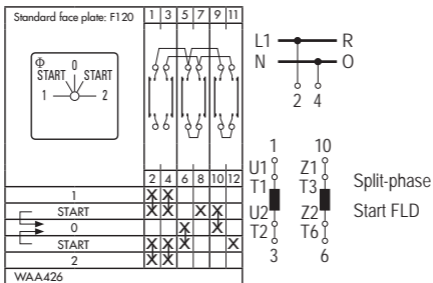
WAA416 With auxiliary contact, (formerly A416) closed in „OFF“ position

A419 For use with reversing contactors

Motor Switches

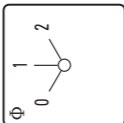
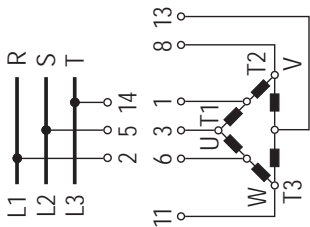


A425 Start and Run Switch
Split-phase start



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 | X | | | | X | | | X |
| 2 | X | X | X | X | X | X | X | X |
| A440 | | | | | | | | |

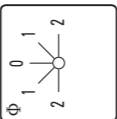
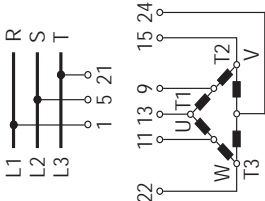
A440 2 speed, single winding

0 - AΔ - AΥ

A441 AΔ - 0 - AΥ

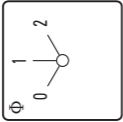
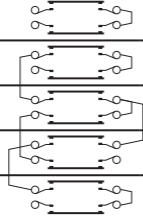

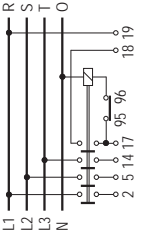
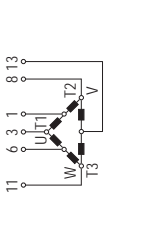
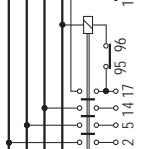
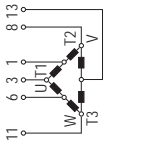
without „OFF“ see page 69

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 |
| 0 | | | | | | | | | | | | | | | |
| 1 | | | | X | X | | | X | X | | | X | X | | |
| 2 | X | X | | | | | | | | | | | X | | |
| A442 | | | | | | | | | | | | | | | |

A442 2 speed, single winding with reverse
 $A\ddot{Y}\ddot{Y} - A\Delta - 0 - A\Delta - A\ddot{Y}\ddot{Y}$

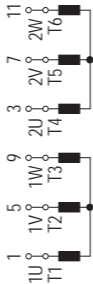
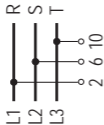
Motor Switches

| Standard face plate: F703 | | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | | |
|--|--|---|---|---|---|---|----|---|----|---|----|---|---|
|  | |  | |  | |  | |  | |  | |  | |
| | | 0 | | | | | | | | | | | |
| | | 1 | | | X | | | | | | | X | |
| | | 2 | | X | | X | X | | | | | | X |
| WAA444 | | | | | | | | | | | | | |

WAA444 Motor Control Switch
(formerly A444) For use with reversing contactors

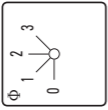
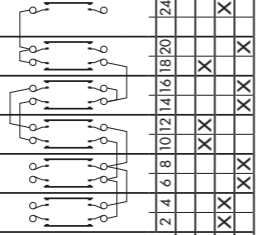
Motor Switches

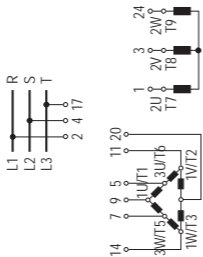
| | | | | | | | | | | |
|---------------------------|---|---|---|----|----|---|---|---|---|---|
| Standard face plate: F703 | | | | | | | | | | |
| | | | | | | | | | | |
| 1 | 3 | 5 | 7 | 9 | 11 | | | | | |
| 2 | 4 | 6 | 8 | 10 | 12 | | | | | |
| | | | | | | 0 | | | | |
| | | | | | | 1 | X | | X | |
| | | | | | | 2 | | X | X | X |
| WAA451 | | | | | | | | | | |



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

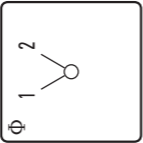
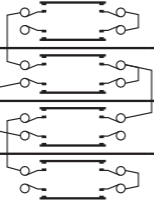
Motor Switches

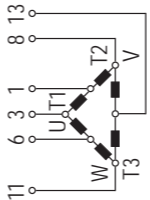
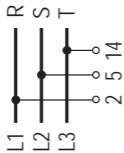
| | | | | | | | | | | | | |
|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Standard face plate: F109 | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 23 | |
|  |  | | | | | | | | | | | |
| | 0 | | | | | | | | | | | 24 |
| | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| WAA457 | | | | | | | | | | | | |



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

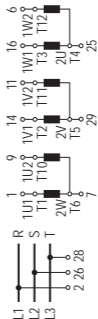
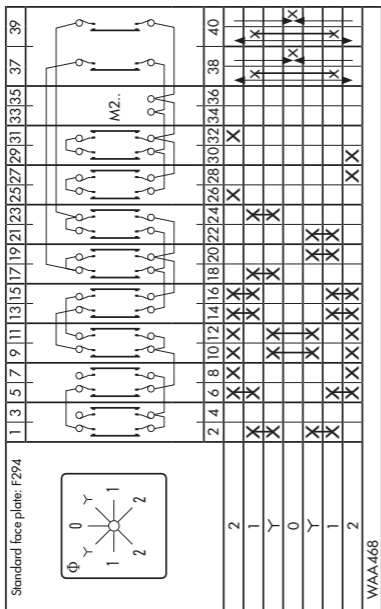
Motor Switches

| | | | | | | | | |
|---|---|---|---|---|----|----|----|----|
| Standard face plate: F072  | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 |
| |  | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| 1 | | X | | | X | | | X |
| 2 | X | | X | X | | X | X | |
| A466 | | | | | | | | |



A466 2 speed, single winding without „OFF“
 $A\Delta - A\Upsilon$

Motor Switches



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“

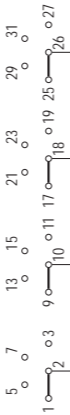
3 Step

A476



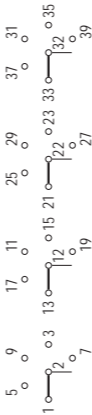
4 Step

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



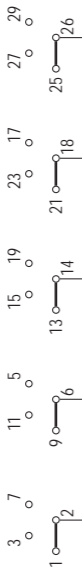
4 Step



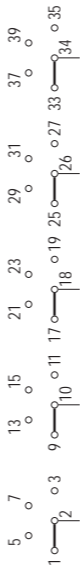
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate.

Multi-step Switches 4 pole with „OFF“

Multi-step Switches 5 pole without „OFF“



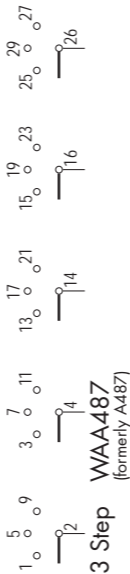
3 Step WAA484
(formerly A484)



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.

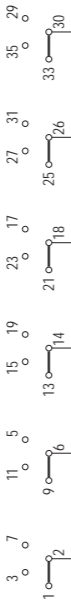
Multi-step Switches 5 pole with „OFF“



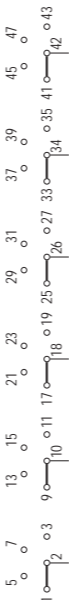
Numbers shown at the connection points on the above diagrams, correspond to the terminal numbers on the switch. The position of connection points correspond to the positions indicated on the face plate

Multi-step Switches 6 pole

without „OFF“

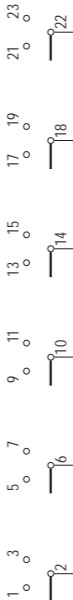


3 Step
WAA489
 (formerly A489)



4 Step
WAA490
 (formerly A490)

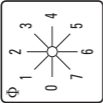

with „OFF“



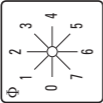

2 Step
WAA491
 (formerly A491)

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 | |
| 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: F009 | | 1 | 3 | 5 | 7 | | | | |
|---------------------------|--|---|---|---|---|---|--|---|--|
| | | 2 | | 4 | | 6 | | 8 | |
| | | | | X | | X | | X | |
| 0 | | | | | | | | | |
| 1 | | X | | X | | X | | X | |
| 2 | | X | | X | | X | | X | |
| 3 | | X | | X | | X | | X | |
| 4 | | X | | X | | X | | X | |
| 5 | | X | | X | | X | | X | |
| 6 | | X | | X | | X | | X | |
| 7 | | X | | X | | X | | X | |
| 8 | | X | | X | | X | | X | |
| 9 | | X | | X | | X | | X | |
| 10 | | X | | X | | X | | X | |
| 11 | | X | | X | | X | | X | |
| A543 | | | | | | | | | |

A543 0-11

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

WAA542 0-7 + complement
(formerly A542)

Coding Switches/Binary Code

Standard face plate: F009

| | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|--|--|--|--|---|---|---|---|---|
| 0 | | | | | | | | | | | | | | |
| 1 | X | | | | | | | | | X | X | X | X | |
| 2 | | | X | X | | | | | | | | | | |
| 3 | | | X | X | | | | | | | | | | |
| 4 | | | | | X | | | | | | | | | |
| 5 | | | | | | | | | | X | X | X | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | X | X | | | | | | | | | | X |
| 8 | | | | | | | | | | X | X | X | X | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | X | | | | |
| 11 | X | X | | | | | | | | | | | | |
| WAA545 | | | | | | | | | | | | | | |

WAA545 0-11 + complement
(formerly A545)

Standard face plate: F007

| | | | | | | | |
|------|--|--|---|---|---|---|---|
| 0 | | | | | | | |
| 1 | | | | | | | |
| 2 | | | X | X | | | |
| 3 | | | X | X | | | |
| 4 | | | | | X | | |
| 5 | | | | | | | |
| 6 | | | X | X | | | |
| 7 | | | X | X | | | |
| 8 | | | | | | X | X |
| 9 | | | | | | | |
| A550 | | | | | | | |

A550 0-9

Coding Switches/BCD-Code

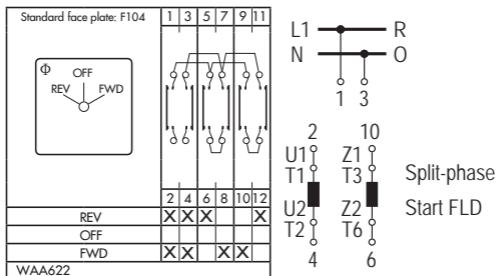
| Standard face plate: F007 | | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | |
|---------------------------|--|---|---|---|---|----|----|----|----|---|
| | | | | | | | | | | |
| | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | |
| | | | | | | X | X | X | X | X |
| | | | X | | | | X | | | |
| | | | X | X | | | | X | | |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

WAA552 0-9+complement
(formerly A552)

| Standard face plate: F007 | | 1 | 3 | 5 | 7 |
|---------------------------|--|---|---|---|---|
| | | | | | |
| | | 2 | 4 | 6 | 8 |
| | | X | X | X | X |
| | | | X | | |
| | | | X | X | |
| | | | | X | |
| | | | X | | |
| | | | X | X | |
| | | | X | | X |
| | | | X | X | X |
| WAA551 | | | | | |

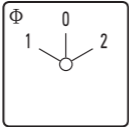




WAA551 0-9
(formerly A551)

Motor Switches



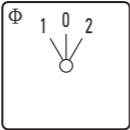





WAA622 Start and Run Switch
 (formerly A622) Split-phase reversing
 auto cutout of start
 field winding

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 | | | | | | | | |

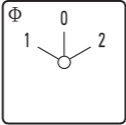
A710 up to A713 Double-throw Switch with „OFF“, 60° Switching

Double-throw Switches with electrically isolated contacts

| Standard face plate: F025 | | 1 | 3 | 5 | 7 |
|---|--------|---|---|---|---|
|  | |  | |  | |
| | | 2 | 4 | 6 | 8 |
|  | 1 | 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: 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 | ————— | | | | | | | | |

A720 up to A723
 Double-throw Switch without „OFF“,
 60° Switching

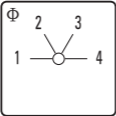




Multi-step Switch with electrically isolated contacts

| | | | | | | | |
|---------------------------|--------|---|---|---|---|----|----|
| 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

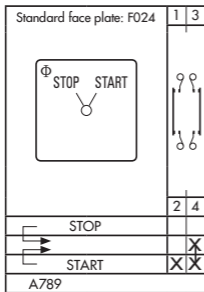
Multi-step Switch with electrically isolated contacts

| 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 | | | | | | | | |

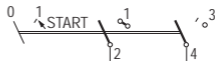
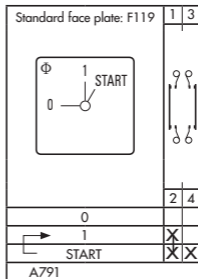
A731, A751

Multi-step Switch without „OFF“, 4 Positions

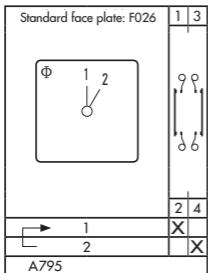
Control Switch with electrically isolated contacts



A789 Stop start switch



A791 Stop start switch with spring return from start to run

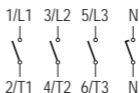


A795 Double-throw Switch without „OFF“, 1 pole with spring return

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



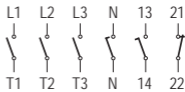
3 pole



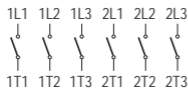
4 pole (3+N)



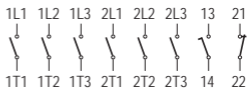
3 pole, 1NO+1NC



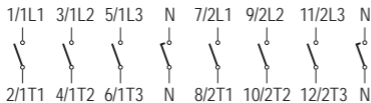
4 pole, 1NO+1NC



6 pole

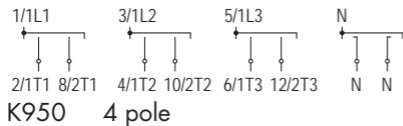
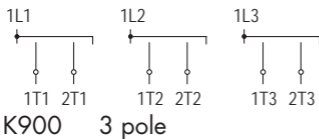


6 pole, 1NO+1NC



8 pole

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



Notes

Notes

Notes

www.krausnaimer.com

Switch Wiring Diagrams as App:

