



# 3AH4 Vacuum Circuit-Breakers

Medium-Voltage Equipment  
Selection and Ordering Data

Catalog HG 11.04 · August 2010

Answers for energy.

**SIEMENS**



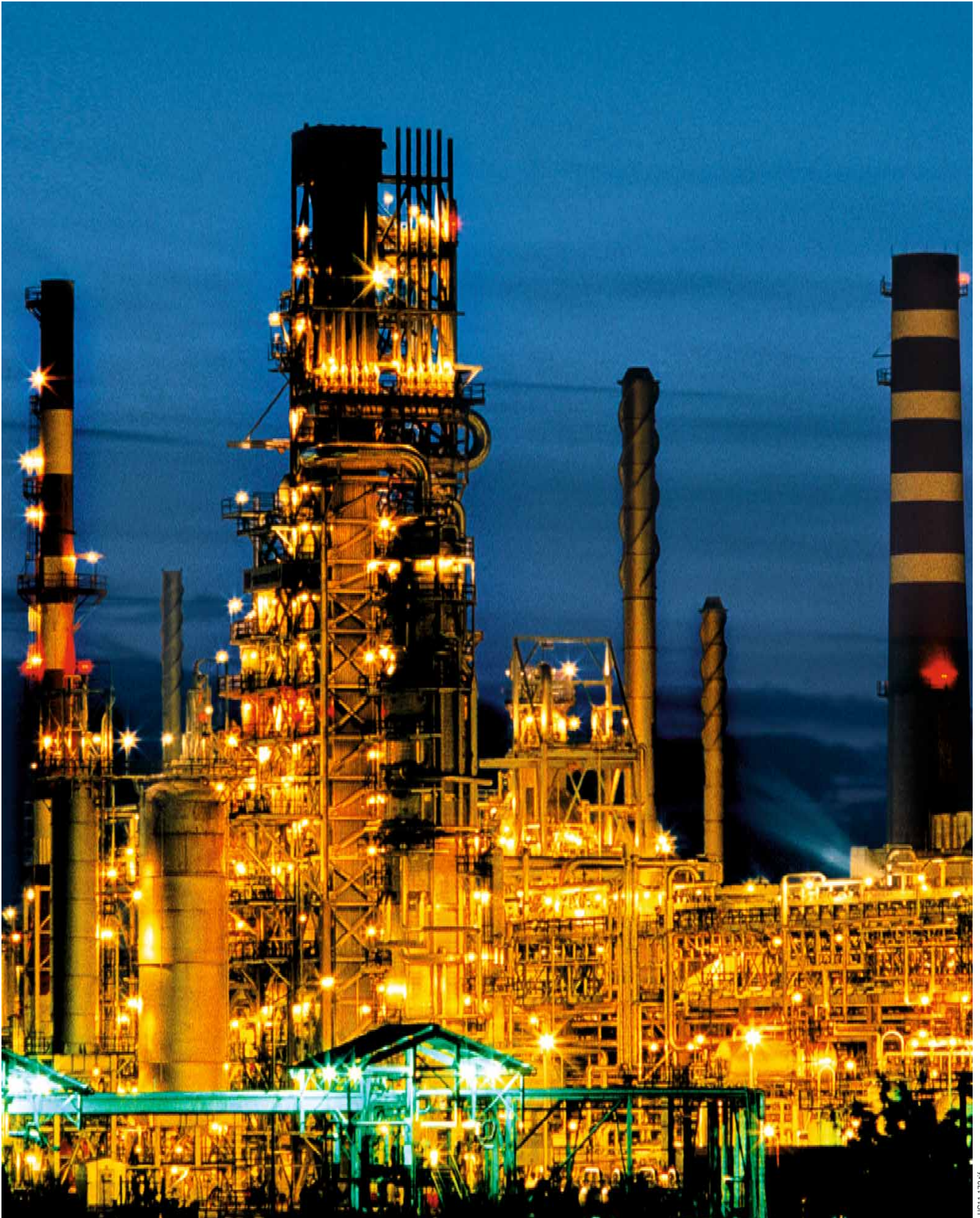
RH611-172Rf

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RHG11-173HF



Industrial application: Refinery

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## 3AH4 frequent-operation circuit-breaker from 7.2 to 36 kV – The Persistent

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Certain applications, especially in the industry, need high and up to very high numbers of operating cycles.

For example, operation of arc furnaces requires more than 100 operating cycles a day.

**3AH4 – the circuit-breaker for a maximum number of operating cycles**



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The vacuum circuit-breaker type 3AH4 up to 36 kV is designed for extremely high numbers of operating cycles: It controls 60,000 / 120,000 operating cycles.

Minimum maintenance work, such as greasing of operating mechanisms after 10,000 operating cycles and replacement of vacuum interrupters after 30,000 operating cycles, preserves the reliability of these circuit-breakers throughout their entire service life – despite high mechanical stress.

The vacuum circuit-breaker consists of the pole assemblies (1) and the operating mechanism box (2). The pole assemblies are fixed to the operating mechanism box via post insulators (3). The switching movement is transferred by means of operating rods (4) and levers.

### Switching medium

The vacuum switching technology, proven and fully developed for more than 30 years, serves as arc-quenching principle by using vacuum interrupters.

### Pole assemblies

The pole assemblies consist of the vacuum interrupters (6) and the interrupter supports. The vacuum interrupters are air-insulated and freely accessible. This makes it possible to clean the insulating parts easily in adverse ambient conditions. The vacuum interrupter is mounted rigidly to the upper interrupter support (5). The lower part of the interrupter is guided in the lower interrupter support (7), allowing axial movement. The braces absorb the external forces resulting from switching operations and the contact pressure.

### Operating mechanism box

The whole operating mechanism with releases, auxiliary switches, indicators and actuating devices is accommodated in the operating mechanism box. The extent of the secondary equipment depends on the case of application and offers a multiple variety of options in order to meet almost every requirement.

### Operating mechanism

The operating mechanism is a stored-energy mechanism. The closing spring is charged either electrically or manually. It latches tight at the end of the charging process and serves as an energy store. The force is transmitted from the operating mechanism to the pole assemblies via operating rods.

To close the breaker, the closing spring can be unlatched either mechanically by means of the local "ON" pushbutton or electrically by remote control. The closing spring charges the opening or contact pressure springs as the breaker closes. The now discharged closing spring will be charged again automatically by the mechanism motor or manually. Then the operating sequence OPEN-CLOSE-OPEN is stored in the springs. The charging state of the closing spring can be checked electrically by means of a position switch.

### Trip-free mechanism

3AH4 vacuum circuit-breakers have a trip-free mechanism according to IEC 62271-100. In the event of an opening command being given after a closing operation has been initiated, the moving contacts return to the open position and remain there even if the closing command is sustained. This means that the contacts of the vacuum circuit-breakers are momentarily in the closed position, which is permissible according to IEC 62271-100.



## Description

Construction and mode of operation, standards

1

### Releases

A release is a device which transfers electrical commands from an external source, such as a control room, to the latching mechanism of the vacuum circuit-breaker so that it can be opened or closed. Apart from the closing solenoid, the maximum possible equipment is one shunt release and two other releases. For release combinations, refer to page 15.

- The closing solenoid unlatches the charged closing spring of the vacuum circuit-breaker, closing it by electrical means. It is suitable for DC or AC voltage.
- Shunt releases are used for automatic tripping of vacuum circuit-breakers by suitable protection relays and for deliberate tripping by electrical means. They are intended for connection to an external power supply (DC or AC voltage) but, in special cases, may also be connected to a voltage transformer for manual operation.
- Current-transformer operated releases comprise a stored-energy mechanism, an unlatching mechanism and an electromagnetic system. They are used when there is no external source of auxiliary power (e.g. a battery). Tripping is effected by means of a protection relay (e.g. overcurrent-time protection) acting on the current-transformer operated release. When the tripping current is exceeded (= 90 % of the rated normal current of the c.t.-operated release), the latch of the energy store, and thus opening of the circuit-breaker, is released.
- Undervoltage releases comprise a stored-energy mechanism, an unlatching mechanism and an electromagnetic system which is permanently connected to the secondary or auxiliary voltage while the vacuum circuit-breaker is closed. If the voltage falls below a predetermined value, unlatching of the release is enabled and the circuit-breaker is opened via the stored-energy mechanism. The deliberate tripping of the undervoltage release generally takes place via an NC contact in the tripping circuit or via an NO contact by short-circuiting the magnet coil. With this type of tripping, the short-circuit current is limited by the built-in resistors. Undervoltage releases can also be connected to voltage transformers. When the operating voltage drops to impermissibly low levels, the circuit-breaker is tripped automatically.

For delayed tripping, the undervoltage release can be combined with energy stores.

### Closing

In the standard version, 3AH4 vacuum circuit-breakers can be remote-closed electrically. They can also be closed locally by mechanical unlatching of the closing spring via push-button. Instead of this "manual mechanical closing", "manual electrical closing" is also available. In this version, the closing circuit of the circuit-breaker is controlled electrically by a pushbutton instead of the mechanical button.

In this way, switchgear-related interlocks can also be considered for local operation in order to prevent involuntary closing.

If constant CLOSE and OPEN commands are present at the vacuum circuit-breaker at the same time, the vacuum circuit-breaker will return to the open position after closing. It remains in this position until a new CLOSE command is given. In this manner, continuous closing and opening (= "pumping") is prevented.

### Circuit-breaker tripping signal

The NO contact makes brief contact while the vacuum circuit-breaker is opening, and this is often used to operate a hazard-warning system which, however, is only allowed to respond to automatic tripping of the circuit-breaker. Therefore, the signal from the NO contact must be interrupted when the circuit-breaker is being opened intentionally. This is accomplished under local control with the cut-out switch that is connected in series with the NO contact.

### Interlocking

#### Electrical interlocking

The vacuum circuit-breakers can be integrated in electromagnetic feeder or switchgear interlocks. In case of electrical interlocking, the disconnecter or its operating mechanism is equipped with a magnetic lock-out mechanism. This mechanism is controlled by an auxiliary contact of the circuit-breaker, so that the disconnecter can only be operated when the circuit-breaker is open. On the other hand, the circuit-breaker is also controlled by the disconnecter or its operating mechanism, so that it can only be closed when the disconnecter is in an end position. For this purpose, manual electrical closing must be provided in the circuit-breaker operating mechanism (see "Closing").

#### Mechanical interlocking

To interlock circuit-breaker trucks, withdrawable parts or disconnectors according to the switch position, the circuit-breakers can be equipped with a mechanical interlocking. A sensor at the switchgear checks the position of the circuit-breaker and prevents the open circuit-breaker in a reliable way from being closed mechanically and electrically.

### Standards

3AH4 vacuum circuit-breakers conform to the following standards:

- IEC 62271-100 (former IEC 60056)
- IEC 62271-1 (former IEC 60694)
- VDE 0671 (former VDE 0670)

All 3AH4 vacuum circuit-breakers fulfil the endurance classes E2 and C2 according to IEC 62271-100 and surpass the endurance class M2 six / twelve times (60,000 / 120,000 operating cycles).



**Maintenance**

The 3AH4 vacuum circuit-breakers are maintenance-free up to 10,000 operating cycles under normal ambient conditions according to IEC 62271-1 (former IEC 60694):

- Relubrication after 10,000 operating cycles
- Replacement of vacuum interruptors after 30,000 operating cycles.

**Ambient conditions**

The vacuum circuit-breakers are designed for the normal operating conditions defined in IEC 62271-100. Condensation can occasionally occur under the ambient conditions shown opposite. 3AH4 vacuum circuit-breakers are suitable for use in the following climatic classes according to IEC 60721, Part 3-3:

|                                 |                         |
|---------------------------------|-------------------------|
| Climatic ambient conditions:    | Class 3K4 <sup>1)</sup> |
| Biological ambient conditions:  | Class 3B1               |
| Mechanical ambient conditions:  | Class 3M2               |
| Chemically-active substances:   | Class 3C2 <sup>2)</sup> |
| Mechanically-active substances: | Class 3S2 <sup>3)</sup> |

- 1) Low temperature limit: - 5 °C
- 2) Without icing and wind-driven precipitation
- 3) Restriction: Clean insulation parts

**Current carrying capacity** (see diagram)

The rated normal currents specified in the opposite diagram have been defined according to IEC 62271-100 for an ambient air temperature of + 40 °C and apply to open switchgear. For enclosed switchgear the data of the switchgear manufacturer applies. At ambient air temperatures below + 40 °C, higher normal currents can be carried:

- Characteristics curve 1 = Rated normal current 1250 A
- Characteristics curve 2 = Rated normal current 2000 A
- Characteristics curve 3 = Rated normal current 2500 A
- Characteristics curve 4 = Rated normal current 3150 A
- Characteristics curve 5 = Rated normal current 4000 A

**Dielectric strength**

The dielectric strength of air insulation decreases with increasing altitude due to low air density. According to IEC 62271-1, the values of the rated lightning impulse withstand voltage and the rated short-duration power-frequency withstand voltage specified in the chapter "Technical Data" apply to a site altitude of 1000 m above sea level. For an altitude above 1000 m, the insulation level must be corrected according to the opposite diagram. The characteristic shown applies to both rated withstand voltages.

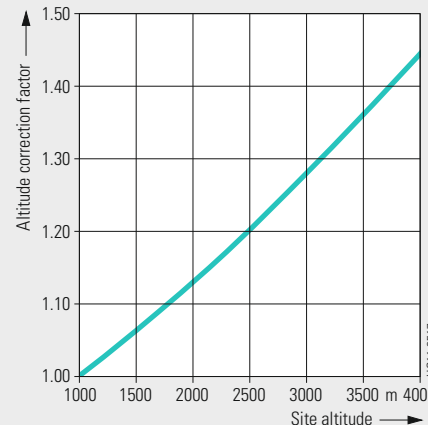
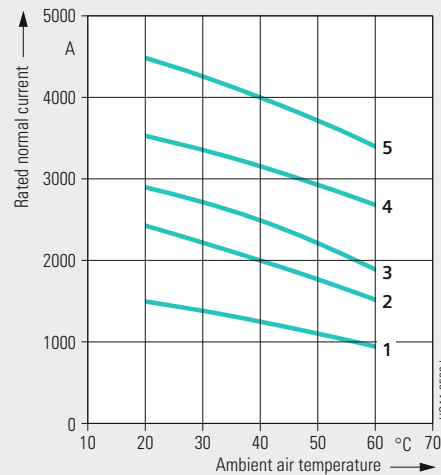
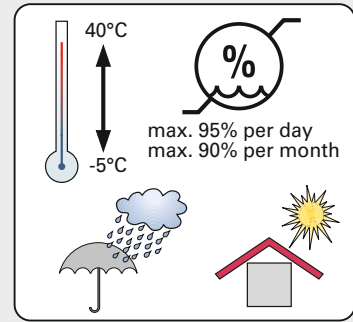
To select the devices, the following applies:  $U \geq U_0 \times K_a$

- $U$  Rated withstand voltage under reference atmosphere
- $U_0$  Rated withstand voltage requested for the place of installation
- $K_a$  Altitude correction factor according to the opposite diagram

**Example**

For a requested rated lightning impulse withstand voltage of 75 kV at an altitude of 2500 m, an insulation level of 90 kV under reference atmosphere is required as a minimum:

$90 \text{ kV} \geq 75 \text{ kV} \times 1.2$



1

Product range overview

| Rated voltage | Rated short-circuit breaking current | Rated normal current (A)  |     |     |      |     |     |      |     |     |      |     |      |
|---------------|--------------------------------------|---------------------------|-----|-----|------|-----|-----|------|-----|-----|------|-----|------|
|               |                                      | 1250                      |     |     | 2000 |     |     | 2500 |     |     | 3150 |     | 4000 |
|               |                                      | Pole-centre distance (mm) |     |     |      |     |     |      |     |     |      |     |      |
| kV            | kA                                   | 210                       | 275 | 350 | 210  | 275 | 350 | 210  | 275 | 350 | 210  | 350 | 350  |
| 12            | 31.5                                 | □                         |     |     | □    |     |     |      |     |     |      |     |      |
|               | 40                                   | □                         |     |     | □    |     |     | □    |     |     |      | □   |      |
| 15            | 31.5                                 | □                         |     |     | □    |     |     |      |     |     |      |     |      |
|               | 40                                   | □ *                       |     |     | □    |     |     |      |     |     |      | □   |      |
| 24            | 25                                   | □                         | □   |     | □    | □   |     |      |     |     |      |     |      |
|               | 40                                   |                           |     |     |      |     |     |      |     | ■   |      |     |      |
| 36            | 31.5                                 |                           |     | ■   |      |     | ■   |      |     |     |      | ■   | ■    |
|               | 40                                   |                           |     |     |      |     |     |      |     |     | ■    |     | ■    |
|               |                                      | * 1600 A                  |     |     |      |     |     |      |     |     |      |     |      |

■ Available design 120,000 operating cycles

□ Available design 30,000 / 60,000 operating cycles

Basic equipment

| Features                               | Minimum equipment                              | Alternative equipment                                      | Remarks   |
|--|--|--|---|
| Operating mechanism                    | Electrical operating mechanism                 | None   | Also for manual operation; hand crank available as accessory                  |
| Closing                                | Closing solenoid and manual mechanical closing | Manual electrical closing                                  | –   |
| 1 <sup>st</sup> release                | Shunt release                                  | None   | –   |
| 2 <sup>nd</sup> release                | Without  | Shunt release, undervoltage release, c.t.-operated release | Max. 3 releases can be combined (for possible combinations, refer to page 15) |
| 3 <sup>rd</sup> release                | Without  | Undervoltage release, c.t.-operated release                | Max. 3 releases can be combined (for possible combinations, refer to page 15) |
| Varistor circuit                       | Installed for ≥ 60 V DC                        | None   | For limiting switching overvoltages due to inductive loads                    |
| Auxiliary switch                       | 6 NO + 6 NC                                    | 12 NO + 12 NC  | –   |
| Plug connector                         | 24-pole terminal strip                         | 24-pole plug, 64-pole plug                                 | –   |
| Anti-pumping                           | Available                                      | None   | –   |
| Circuit-breaker tripping signal        | Available                                      | None   | –   |
| Operating cycle counter                | Available                                      | None   | –   |
| "Spring charged" signal and indication | Available                                      | None   | –   |
| Interlocking                           | Without  | Mechanical interlocking                                    | –   |



3AH4 vacuum circuit-breaker

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| Operating voltage, 2 <sup>nd</sup> release           | 18        |
| Operating voltage, 3 <sup>rd</sup> release           | 19        |
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**Order number structure**

The 3AH4 vacuum circuit-breakers consist of a primary and a secondary part. The relevant data make up the 16-digit order number. The primary part covers the main electrical data of the circuit-breaker poles. The secondary part covers the auxiliary devices which are necessary for operating and controlling the vacuum circuit-breaker.

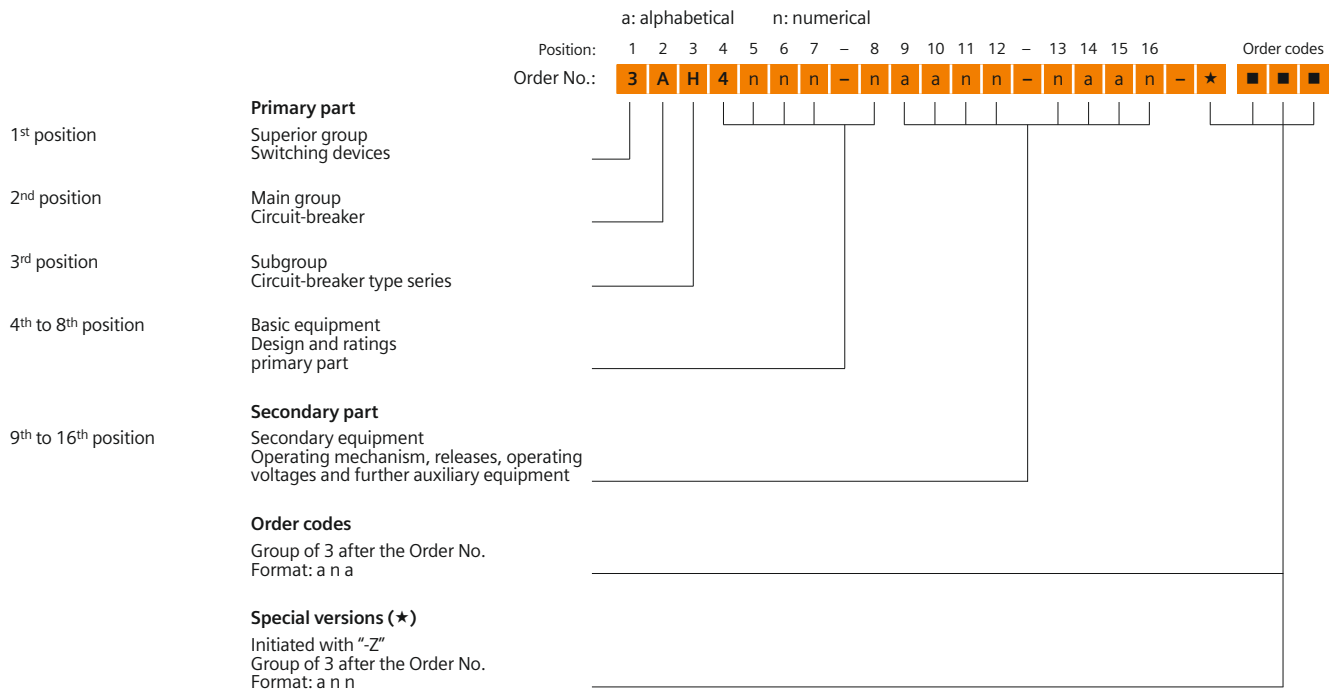
Order codes

Individual equipment versions, marked with **9** or **Z** in the 9<sup>th</sup> to 16<sup>th</sup> position, are explained more in detail by a 3-digit order code. Several order codes can be added to the order number in succession and in any sequence.

Special versions (★)

In case of special versions, “-Z” is added to the order number and a descriptive order code follows. If several special versions are required, the suffix “-Z” is listed only once. If a requested special version is not in the catalog and can therefore not be ordered via order code, it has to be identified with **Y 9 9** after consultation. The agreement hereto is made directly between your responsible sales partner and the order processing department in the Switchgear Factory Berlin.

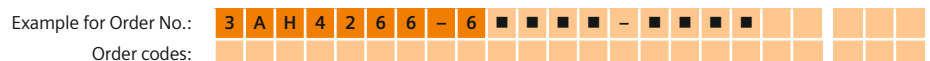
2



**Configuration example**

In order to simplify the selection of the correct order number for the requested circuit-breaker type, you will find a configuration example on each page of the chapter “Equipment Selection”. For the selection of the secondary part, always the last example of the primary part was taken over and continued, so that at the end of the equipment selection (page 22) a completely configured circuit-breaker results as an example.

*On the foldout page we offer a configuring aid. Here you can fill in the order number you have determined for your circuit-breaker.*









9th position

Release combinatioid

|                  |                               |                               |                      |                             |                             |  |  | Position:  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | 8 | 9 | 10          | 11          | 12          | - | 13          | 14          | 15          | 16          | Order codes |       |       |   |   |   |   |
|------------------|-------------------------------|-------------------------------|----------------------|-----------------------------|-----------------------------|--|--|------------|---|---|---|---|---|---|---|---|---|---|-------------|-------------|-------------|---|-------------|-------------|-------------|-------------|-------------|-------|-------|---|---|---|---|
|                  |                               |                               |                      |                             |                             |  |  | Order No.: | 3 | A | H | 4 | ■ | ■ | ■ | ■ | - | ■ | ■           | ■           | ■           | ■ | ■           | ■           | ■           | ■           | ■           | ■     | ■     | ■ | ■ | ■ | ■ |
| Closing solenoid | 1 <sup>st</sup> shunt release | 2 <sup>nd</sup> shunt release | Undervoltage release | C.t.-operated release 0.5 A | C.t.-operated release 1.0 A | C.t.-operated release with tripping pulse $\geq 0.1$ Ws (10 $\Omega$ ) | C.t.-operated release with tripping pulse $\geq 0.1$ Ws (20 $\Omega$ ) |            |   |   |   |   |   |   |   |   |   |   | See page 16 | See page 17 | See page 18 |   | See page 19 | See page 20 | See page 21 | See page 22 | See page 22 |       |       |   |   |   |   |
| ■                | ■                             |                               |                      |                             |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | M           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             | ■                             |                      |                             |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | N           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             | ■                             | ■                    |                             |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | T           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             | ■                             |                      | ■                           |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | P           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             | ■                             |                      |                             |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | P           |             |             |   |             |             |             |             |             | - Z   | A 4 6 |   |   |   |   |
| ■                | ■                             |                               | ■                    |                             |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | R           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             |                               | ■                    | ■                           |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | S           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             |                               | ■                    |                             | ■                           |  |  |            |   |   |   |   |   |   |   |   |   |   | S           |             |             |   |             |             |             |             | - Z         | A 4 6 |       |   |   |   |   |
| ■                | ■                             |                               |                      | ■                           |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | U           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             |                               |                      | ■                           |                             |  |  |            |   |   |   |   |   |   |   |   |   |   | U           |             |             |   |             |             |             |             |             | - Z   | A 4 6 |   |   |   |   |
| ■                | ■                             |                               |                      |                             |                             | ■  |  |            |   |   |   |   |   |   |   |   |   |   | V           |             |             |   |             |             |             |             |             |       |       |   |   |   |   |
| ■                | ■                             |                               |                      |                             |                             |  | ■  |            |   |   |   |   |   |   |   |   |   |   | V           |             |             |   |             |             |             |             | - Z         | A 4 5 |       |   |   |   |   |



Configuration example

3AH4 vacuum circuit-breaker

( $U_r = 36$  kV, 50/60 Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_r = 2500$  A, pole-centre distance = 350 mm)

Closing solenoid, 1<sup>st</sup> shunt release, 2<sup>nd</sup> shunt release and c.t.-operated release with a rated normal current of 0.5 A

3 A H 4

3 0 6 - 6

P

Example for Order No.:

3 A H 4 3 0 6 - 6 P ■ ■ ■ - ■ ■ ■ ■ - Z

Order codes:

E 2 4 + E 2 5

## Selection of secondary equipment



### 10<sup>th</sup> position

#### Operating voltage of the closing solenoid

|  |                                 | Position:  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11          | 12              | 13          | 14          | 15          | 16          | Order codes |   |   |   |   |
|--|---------------------------------|------------|---|---|---|---|---|---|---|---|---|----|-------------|-----------------|-------------|-------------|-------------|-------------|-------------|---|---|---|---|
|  |                                 | Order No.: | 3 | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■           | ■               | -           | ■           | ■           | ■           | -           | * | ■ | ■ | ■ |
| Standard voltages                                | Special voltages                |            |   |   |   |   |   |   |   |   |   |    | See page 17 | See page 18     | See page 19 | See page 20 | See page 21 | See page 22 | See page 22 |   |   |   |   |
| Mechanical closing at the circuit-breaker        |                                 |            |   |   |   |   |   |   |   |   |   |    |             |                 |             |             |             |             |             |   |   |   |   |
| 24 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | B  |             |                 |             |             |             |             |             |   |   |   |   |
| 48 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | C  |             |                 |             |             |             |             |             |   |   |   |   |
| 60 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | D  |             |                 |             |             |             |             |             |   |   |   |   |
| 110 V DC   |                                 |            |   |   |   |   |   |   |   |   |   | E  |             |                 |             |             |             |             |             |   |   |   |   |
| 220 V DC   |                                 |            |   |   |   |   |   |   |   |   |   | F  |             |                 |             |             |             |             |             |   |   |   |   |
| 100 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | H  |             |                 |             |             |             |             |             |   |   |   |   |
| 110 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | J  |             |                 |             |             |             |             |             |   |   |   |   |
| 230 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | K  |             |                 |             |             |             |             |             |   |   |   |   |
|  | 30 V DC                         |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | A |   |
|  | 32 V DC                         |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | B |   |
|  | 120 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | C |   |
|  | 125 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | D |   |
|  | 127 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | E |   |
|  | 240 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | F |   |
|  | 120 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | K |   |
|  | 125 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | L |   |
|  | 240 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 1 | M |   |
| Manual electrical closing at the circuit-breaker |                                 |            |   |   |   |   |   |   |   |   |   |    |             |                 |             |             |             |             |             |   |   |   |   |
| 24 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | M  |             |                 |             |             |             |             |             |   |   |   |   |
| 48 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | N  |             |                 |             |             |             |             |             |   |   |   |   |
| 60 V DC  |                                 |            |   |   |   |   |   |   |   |   |   | P  |             |                 |             |             |             |             |             |   |   |   |   |
| 110 V DC   |                                 |            |   |   |   |   |   |   |   |   |   | Q  |             |                 |             |             |             |             |             |   |   |   |   |
| 220 V DC   |                                 |            |   |   |   |   |   |   |   |   |   | R  |             |                 |             |             |             |             |             |   |   |   |   |
| 100 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | T  |             |                 |             |             |             |             |             |   |   |   |   |
| 110 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | U  |             |                 |             |             |             |             |             |   |   |   |   |
| 230 V AC 50/60 Hz <sup>1)</sup>                  |                                 |            |   |   |   |   |   |   |   |   |   | V  |             |                 |             |             |             |             |             |   |   |   |   |
|  | 30 V DC                         |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | A |   |
|  | 32 V DC                         |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | B |   |
|  | 120 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | C |   |
|  | 125 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | D |   |
|  | 127 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | E |   |
|  | 240 V DC                        |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | F |   |
|  | 120 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | K |   |
|  | 125 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | L |   |
|  | 240 V AC 50/60 Hz <sup>1)</sup> |            |   |   |   |   |   |   |   |   |   | Z  |             | With order code |             |             |             |             |             | K | 2 | M |   |

1) The AC frequency 50 or 60 Hz is selected at the 16<sup>th</sup> position of the order number together with the language (see page 22)

### Configuration example

3AH4 vacuum circuit-breaker

( $U_r = 36$  kV, 50/60 Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_r = 2500$  A, pole-centre distance = 350 mm)

Manual electrical closing at the circuit-breaker, operating voltage of the closing solenoid 30 V DC

3 A H 4

3 0 6 - 6 P

Z

K 2 A

Example for Order No.:

Order codes:

3 A H 4 3 0 6 - 6 P Z ■ ■ - ■ ■ ■ ■ - Z  
E 2 4 + E 2 5 + K 2 A





**11<sup>th</sup> position**

**Operating voltage of the 1<sup>st</sup> shunt release**

|                   |          | Position:              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12          | 13 | 14 | 15 | 16 | Order codes |       |
|-------------------|----------|------------------------|---|---|---|---|---|---|---|---|---|----|----|-------------|----|----|----|----|-------------|-------|
|                   |          | Order No.:             | 3 | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■  | ■           | -  | ■  | ■  | ■  | ■           | ■     |
| Standard voltages | 24 V DC  |                        |   |   |   |   |   |   |   |   |   |    |    | See page 18 |    |    |    |    |             |       |
|                   | 48 V DC  |                        |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 60 V DC  |                        |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 110 V DC |                        |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 220 V DC |                        |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 100 V AC | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 110 V AC | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   | 230 V AC | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             |       |
|                   |          | 30 V DC                |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 A |
|                   |          | 32 V DC                |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 B |
|                   |          | 120 V DC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 C |
|                   |          | 125 V DC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 D |
|                   |          | 127 V DC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 E |
|                   |          | 240 V DC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 F |
|                   |          | 120 V AC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 K |
|                   |          | 125 V AC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 L |
|                   |          | 240 V AC               |   |   |   |   |   |   |   |   |   |    |    |             |    |    |    |    |             | L 1 M |

1) The AC frequency 50 or 60 Hz is selected at the 16<sup>th</sup> position of the order number together with the language (see page 22)



**Configuration example**

3AH4 vacuum circuit-breaker  
 ( $U_f = 36$  kV, 50/60 Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_r = 2500$  A,  
 pole-centre distance = 350 mm)  
 Operating voltage of the 1<sup>st</sup> shunt release 48 V DC

3 A H 4

3 0 6 - 6 P Z

2

Example for Order No.:

3 A H 4 3 0 6 - 6 P Z 2 ■ - ■ ■ ■ - Z

Order codes:

E 2 4 + E 2 5 + K 2 A



**12<sup>th</sup> position**

**Operating voltage of the 2<sup>nd</sup> release**

**Shunt release, undervoltage release or c.t.-operated release**

|  |  |  | Position:                       | 1                      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13              | 14          | 15          | 16          | Order codes |       |   |   |   |
|--|--|--|---------------------------------|------------------------|---|---|---|---|---|---|---|---|----|----|----|-----------------|-------------|-------------|-------------|-------------|-------|---|---|---|
|  |  |  | Order No.:                      | 3                      | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■  | ■  | ■               | -           | ■           | ■           | ■           | ■     | ■ | ■ | ■ |
|  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
|  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 | See page 19 | See page 20 | See page 21 | See page 22 |       |   |   |   |
|  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
|  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
|  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
| Standard voltages  |  |  | Special voltages                |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
| Without or c.t.-operated release   |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 0  |                 |             |             |             |             |       |   |   |   |
| 24 V DC  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 1  |                 |             |             |             |             |       |   |   |   |
| 48 V DC  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 2  |                 |             |             |             |             |       |   |   |   |
| 60 V DC  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 3  |                 |             |             |             |             |       |   |   |   |
| 110 V DC   |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 4  |                 |             |             |             |             |       |   |   |   |
| 220 V DC   |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 5  |                 |             |             |             |             |       |   |   |   |
| 100 V AC 50/60 Hz <sup>1)</sup>  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 6  |                 |             |             |             |             |       |   |   |   |
| 110 V AC 50/60 Hz <sup>1)</sup>  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 7  |                 |             |             |             |             |       |   |   |   |
| 230 V AC 50/60 Hz <sup>1)</sup>  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    | 8  |                 |             |             |             |             |       |   |   |   |
|  |  |  | 30 V DC                         |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 A |   |   |   |
|  |  |  | 32 V DC                         |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 B |   |   |   |
|  |  |  | 120 V DC                        |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 C |   |   |   |
|  |  |  | 125 V DC                        |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 D |   |   |   |
|  |  |  | 127 V DC                        |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 E |   |   |   |
|  |  |  | 240 V DC                        |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 F |   |   |   |
|  |  |  | 120 V AC 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 K |   |   |   |
|  |  |  | 125 V AC 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 L |   |   |   |
|  |  |  | 240 V AC 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 1 M |   |   |   |
| <b>Special versions</b>  |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
| To operate the 2 <sup>nd</sup> release as an undervoltage release on an energy store type AN 1902- (for DC) or AN 1901-2 (for AC), both make Bender, the operating voltage must be defined – and whether the energy store will be provided by the customer or included in the scope of supply. |  |  |                                 |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
|  |  |  | Energy store                    |                        |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
|  |  |  | Type                            | In the scope of supply |   |   |   |   |   |   |   |   |    |    |    |                 |             |             |             |             |       |   |   |   |
| 60 V DC  |  |  | AN 1902-                        | no                     |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 2 D |   |   |   |
| 110 V DC   |  |  | AN 1902-                        | no                     |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 2 E |   |   |   |
| 220 V DC   |  |  | AN 1902-                        | no                     |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 2 F |   |   |   |
| 100/110/230 V AC   |  |  | AN 1901-2                       | no                     |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 2 G |   |   |   |
| 60 V DC  |  |  | AN 1902-                        | yes                    |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 3 D |   |   |   |
| 110 V DC   |  |  | AN 1902-                        | yes                    |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 3 E |   |   |   |
| 220 V DC   |  |  | AN 1902-                        | yes                    |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 3 F |   |   |   |
| 100/110/230 V AC   |  |  | AN 1901-2                       | yes                    |   |   |   |   |   |   |   |   |    |    | 9  | With order code |             |             |             |             | M 3 G |   |   |   |

1) The AC frequency 50 or 60 Hz is selected at the 16<sup>th</sup> position of the order number together with the language (see page 22)

**Configuration example**

3AH4 vacuum circuit-breaker

( $U_r = 36$  kV,  $50/60$  Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_r = 2500$  A, pole-centre distance = 350 mm)

2<sup>nd</sup> release as undervoltage release with operating voltage 32 V DC

3 A H 4

3 0 6 - 6 P Z 2

9

M 1 B

Example for Order No.:

3 A H 4 3 0 6 - 6 P Z 2 9 - ■ ■ ■ ■ - Z

Order codes:

E 2 4 + E 2 5 + K 2 A + M 1 B



**13<sup>th</sup> position**

**Operating voltage of the 3<sup>rd</sup> release**

**Undervoltage release or c.t.-operated release**

|  |                        | Position:              | 1                      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Order codes |   |   |   |   |   |  |
|--|------------------------|------------------------|------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|---|---|---|---|---|--|
|  |                        | Order No.:             | 3                      | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■  | ■  | -  | ■  | ■  | ■  | ■           | - | ★ | ■ | ■ | ■ |  |
| Standard voltages  | Special voltages       |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| Without or c.t.-operated release   |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 24 V DC  |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 48 V DC  |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 60 V DC  |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 110 V DC   |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 220 V DC   |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 100 V AC   | 50/60 Hz <sup>1)</sup> |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 110 V AC   | 50/60 Hz <sup>1)</sup> |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 230 V AC   | 50/60 Hz <sup>1)</sup> |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 30 V DC                |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 32 V DC                |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 120 V DC               |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 125 V DC               |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 127 V DC               |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 240 V DC               |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 120 V AC               | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 125 V AC               | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  | 240 V AC               | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| <b>Special versions</b>  |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| To operate the 3 <sup>rd</sup> release as an undervoltage release on an energy store type AN 1902- (for DC) or AN 1901-2 (for AC), both make Bender, the operating voltage must be defined – and whether the energy store will be provided by the customer or included in the scope of supply. |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  |                        |                        |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  |                        | Energy store           |                        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
|  |                        | Type                   | In the scope of supply |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 60 V DC  |                        | AN 1902-               | no                     |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 110 V DC   |                        | AN 1902-               | no                     |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 220 V DC   |                        | AN 1902-               | no                     |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 100/110/230 V AC   |                        | AN 1901-2              | no                     |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 60 V DC  |                        | AN 1902-               | yes                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 110 V DC   |                        | AN 1902-               | yes                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 220 V DC   |                        | AN 1902-               | yes                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |
| 100/110/230 V AC   |                        | AN 1901-2              | yes                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |  |

1) The AC frequency 50 or 60 Hz is selected at the 16<sup>th</sup> position of the order number together with the language (see page 22)

**Configuration example**

3AH4 vacuum circuit-breaker

( $U_i = 36 \text{ kV}$ ,  $50/60 \text{ Hz}$ ,  $U_p = 195 \text{ kV}$ ,  $I_{sc} = 40 \text{ kA}$ ,  $I_r = 2500 \text{ A}$ ,

pole-centre distance =  $350 \text{ mm}$ )

3<sup>rd</sup> release as c.t.-operated release

3 A H 4

3 0 6 - 6 P Z 2 9 - 0

Example for Order No.:

3 A H 4 3 0 6 - 6 P Z 2 9 - 0 ■ ■ ■ - Z

Order codes:

E 2 4 + E 2 5 + K 2 A + M 1 B





2

### 14<sup>th</sup> position

#### Operating voltage of the operating mechanism

|                   |                        | Position:              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Order codes |   |   |  |  |  |
|-------------------|------------------------|------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|---|---|--|--|--|
|                   |                        | Order No.:             | 3 | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■           | ■ | ■ |  |  |  |
| Standard voltages | Special voltages       |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 24 V DC           |                        |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 48 V DC           |                        |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 60 V DC           |                        |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 110 V DC          |                        |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 220 V DC          |                        |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 100 V AC          | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 110 V AC          | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
| 230 V AC          | 50/60 Hz <sup>1)</sup> |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 30 V DC                |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 32 V DC                |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 120 V DC               |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 125 V DC               |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 127 V DC               |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 240 V DC               |                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 120 V AC               | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 125 V AC               | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |
|                   | 240 V AC               | 50/60 Hz <sup>1)</sup> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |  |  |  |

1) The AC frequency 50 or 60 Hz is selected at the 16<sup>th</sup> position of the order number together with the language (see page 22)

#### Configuration example

3AH4 vacuum circuit-breaker

( $U_t = 36$  kV, 50/60 Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_t = 2500$  A, pole-centre distance = 350 mm)

Operating voltage of the operating mechanism 230 V AC, 50 Hz

3 A H 4

3 0 6 - 6 P Z 2 9 - 0

K

Example for Order No.:

3 A H 4 3 0 6 - 6 P Z 2 9 - 0 K ■ ■ - Z  
 Order codes: E 2 4 + E 2 5 + K 2 A + M 1 B



**15<sup>th</sup> position**

|  |                              |                                |                            |                            |                                      | Position:  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Order codes |   |   |   |   |   |
|--|------------------------------|--------------------------------|----------------------------|----------------------------|--------------------------------------|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|---|---|---|---|---|
| <b>Auxiliary switch, secondary connection, interlocking</b>        |                              |                                |                            |                            |                                      | Order No.: | 3 | A | H | 4 | ■ | ■ | ■ | - | ■ | ■  | ■  | ■  | -  | ■  | ■  | ■  | ■           | - | ★ | ■ | ■ | ■ |
| Mechanical interlocking  | Auxiliary switch 6 NO + 6 NC | Auxiliary switch 12 NO + 12 NC | 64-pole plug <sup>1)</sup> | 24-pole plug <sup>2)</sup> | 24-pole terminal strip <sup>2)</sup> |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
|  | ■                            |                                | ■                          |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
|  | ■                            |                                |                            | ■                          |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
|  | ■                            |                                | ■                          |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| ■  | ■                            |                                | ■                          |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| ■  | ■                            |                                |                            | ■                          |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| ■  | ■                            |                                | ■                          |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| ■  |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| <b>Special version</b>   |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| Auxiliary switch 12 NO + 12 NC and 24-pole plug (E or F)           |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| <b>Special versions</b> gold-plated contacts and pins              |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| Auxiliary switch 6 NO + 6 NC and 24-pole terminal strip (G or H)   |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| Auxiliary switch 12 NO + 12 NC and 24-pole terminal strip (M or N) |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| Auxiliary switch 6 NO + 6 NC and 64-pole plug (A or B)             |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |
| Auxiliary switch 12 NO + 12 NC and 64-pole plug (C or D)           |                              |                                |                            |                            |                                      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |   |   |   |   |   |

- 1) Depending on the equipment, some connections of the 64-pole plug connector remain free. These can be connected to free auxiliary switch contacts by the customer. Prefabricated wires are available as accessories.
- 2) Auxiliary switch contacts are not wired to the plug/terminal strip and must therefore be connected directly.



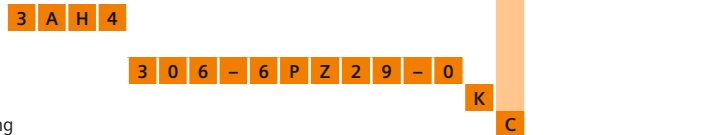
**Configuration example**

3AH4 vacuum circuit-breaker

( $U_r = 36$  kV, 50/60 Hz,  $U_p = 195$  kV,  $I_{sc} = 40$  kA,  $I_r = 2500$  A, pole-centre distance = 350 mm)

Operating voltage of the operating mechanism 230 V AC, 50 Hz

Auxiliary switch 12 NO + 12 NC, 64-pole plug, without mechanical interlocking



Example for Order No.: 3 A H 4 3 0 6 - 6 P Z 2 9 - 0 K C ■ - Z  
 Order codes: E 2 4 + E 2 5 + K 2 A + M 1 B

Equipment Selection

Selection of secondary equipment/Additional equipment



2

16th position

AC frequency of operating voltages

Languages of operating instructions and rating plate

| Language selection   |                                     |                                     |                                     | Frequency selection                 |                                     |                                     |                                     |                                     | Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Order codes |  |  |  |  |  |  |  |  |  |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|--|--|--|--|--|--|--|--|--|
| German   | English                             | French                              | Spanish                             | DC                                  | 50 Hz                               | 50 Hz and DC                        | 60 Hz                               | 60 Hz and DC                        |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
| <input checked="" type="checkbox"/>  |                                     |                                     |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     | <input checked="" type="checkbox"/> |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
| <input checked="" type="checkbox"/>  |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  | <input checked="" type="checkbox"/> |                                     |                                     |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     | <input checked="" type="checkbox"/> |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
| Other languages on request   |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
| Special versions   |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
| Additional information on the rating plate (only after consultation with the order processing department of the Switchgear Factory Berlin). Information in clear text. |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |
|  |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |

Additional equipment

| Options   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Order codes |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Wiring cables, halogen-free and flame-retardant   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Condensation protection, heating for 230 V AC, 50 W   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Silicone-free design  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Additional rating plate, loose delivery   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Primary conductor bars silver-plated for external connections and internal interconnection on both sides  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Routine test certificate enclosed   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hand crank (also for motor operating mechanism) for manual charging of the closing spring   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Further, non-listed special versions (only after consultation with the order processing department of the Switchgear Factory Berlin). Information additionally in clear text. |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Configuration example

3AH4 vacuum circuit-breaker  
 Rated voltage  $U_r = 36 \text{ kV (50/60 Hz)}$   
 Rated lightning impulse withstand voltage  $U_p = 170 \text{ kV}$   
 Rated short-circuit breaking current  $I_{sc} = 40 \text{ kA}$   
 Pole-centre distance = 350 mm  
 Rated normal current  $I_n = 2500 \text{ A}$   
 Increase of rated lightning impulse withstand voltage  $U_p = 195 \text{ kV}$   
 and rated short-duration power-frequency withstand voltage  $U_d = 95 \text{ kV}$   
 Closing solenoid, 1st shunt release, 2nd shunt release and c.t.-operated release with a rated normal current of 0.5 A  
 Manual electrical closing at the circuit-breaker, operating voltage of the closing solenoid 30 V DC  
 Operating voltage of the 1st release 48 V DC  
 2nd release as undervoltage release with operating voltage 32 V DC  
 3rd release as c.t.-operated release  
 Operating voltage of the operating mechanism 230 V AC, 50 Hz  
 Auxiliary switch 12 NO + 12 NC, 64-pole plug, without mechanical interlocking  
 Frequency 50 Hz or DC, operating instructions and rating plate in English  
 Condensation protection, heating for 230 V AC, 50 W  
 Routine test certificate enclosed

3 A H 4

3 0 6 - 6

P

Z

2

9 -

0

K

C

2

- Z

- Z

- Z

E 2 4

+ E 2 5

K 2 A

M 1 B

A 3 0

F 2 0

Example for Order No.: **3 A H 4 3 0 6 - 6 P Z 2 9 - 0 K C 2 - Z**  
 Order codes: **E 2 4 + E 2 5 + K 2 A + M 1 B + A 3 0 + F 2 0**



On request, we will be pleased to send you an overview of accessories and spare parts, as well as the spare pole assemblies available. Please consider the following information for your purchase order.

#### Remark for orders

The order numbers in the spare part overview are applicable to vacuum circuit-breakers of current manufacture. When mounting parts or spare parts are being ordered for an existing vacuum circuit-breaker, always quote the type designation, serial number and the year of manufacture of the circuit-breaker to be sure to get the correct delivery.

#### Retrofitting

When releases/solenoids are retrofitted, the order numbers of the mounting parts must also be specified. For other additional equipment, the required mounting parts are included in the delivery.

#### Spare pole assemblies

As spare parts, the vacuum interrupters are always supplied as a complete pole including post insulator.

To select the correct pole assemblies, please specify the type designation, serial number and year of manufacture of the circuit-breaker. All data is given on the rating plate.

**Vacuum pole assemblies and other spare parts must only be replaced by instructed personnel.**

#### Accessories for the plug connector

Included in the scope of supply of the basic equipment for 3AH4 vacuum circuit-breakers:

##### For 24-pole plug connector

- Lower part of plug
- Crimp sockets according to number of contacts
- Upper part of plug with screwed contacts (no crimp sockets required)

##### For 64-pole plug connector

- Lower part of plug
- Upper part of plug
- Crimp sockets according to number of contacts

#### Data on the rating plate

| SIEMENS   |                     |
|---|---------------------|
| Type 3AH4306-6  |                     |
| No. S 3AH4/00002325                                   | Year of manuf. 2010 |
| $U_r$ 36.0 kV 50/60 Hz                                | $I_r$ 2500 A        |
| $I_{sc}$ 40.0 kA                                      | $t_k$ 3 s           |
| $U_d/U_n$ 70/170 kV                                   | $m$ 180 kg          |
| Rated operating sequence: 0 - 3 min - CO - 3 min - CO |                     |
| Category to IEC 62271-100: E2, M2, C2                 |                     |
| <b>MADE IN GERMANY</b>                                |                     |

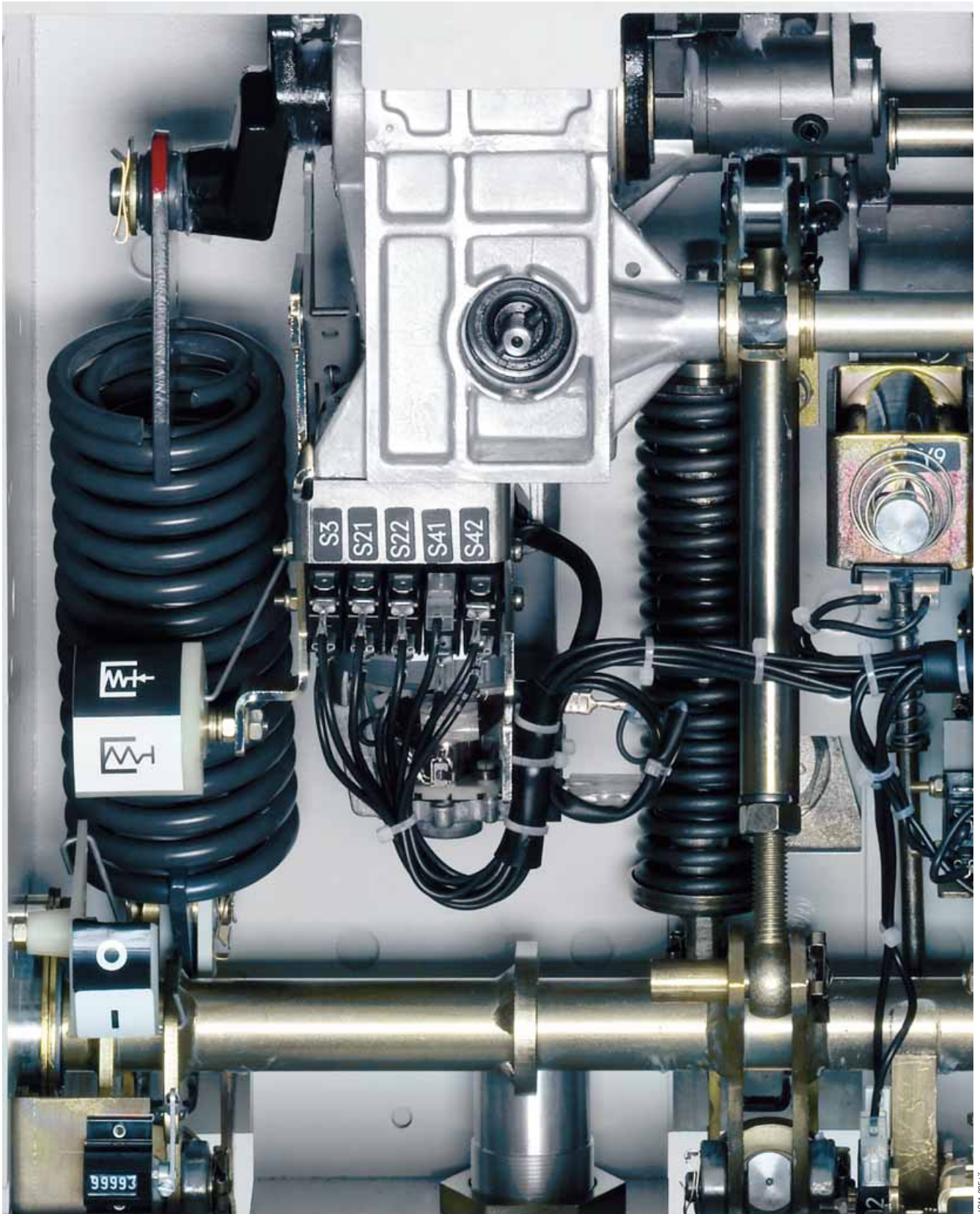
HG11-2594L\_en apps

#### Note:

For any query regarding spare parts, subsequent deliveries, etc. the following three details are necessary:

- Type designation
- Serial No.
- Year of manufacture

| Designation                    | Remarks   | Order No.   |
|--------------------------------|---|-------------|
| Hand crank                     |   | 3AX15 30-2B |
| Lubricant                      | (for special application conditions)<br>180 g Klüber-Isoflex Topas L32N | 3AX11 33-3H |
|                                | 1 kg Klüber-Isoflex Topas L32N  | 3AX11 33-3E |
|                                | 1 kg Shell Tellus oil 32 (special oil)                                  | 3AX11 33-2D |
| Wire bundle                    | With 10 wires for connection of auxiliary switch to                     |             |
|                                | – 64-pole plug connector  | 3AX11 34-2D |
|                                | – 24-pole plug connector  | 3AX11 34-2B |
|                                | – 24-pole terminal strip  | 3AX11 34-2C |
| Accessories for plug connector | (for wire cross-section 1.5 mm <sup>2</sup> )                           |             |
|                                | Crimp pins for lower part of plug 24-pole                               | 3AX11 34-3A |
|                                | 64-pole   | 3AX11 34-4B |
|                                | Crimp sockets for upper part of plug 64-pole                            | 3AX11 34-4C |
|                                | Crimping pliers   | 3AX11 34-4D |
|                                | Disassembly tool  | 3AX11 34-4G |



RH011-2051f





R-HG11-199.eps

Power connection 3AH4



R-HG11-198.tif

Vacuum interrupter with ribs

## Contents

Page

**Technical Data**
**25**

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Voltage level 12 and 15 kV 26

Voltage level 24 and 36 kV 28

Circuit diagrams 30

Operating times 32

Short-circuit protection of motors 32

Consumption data of releases 32

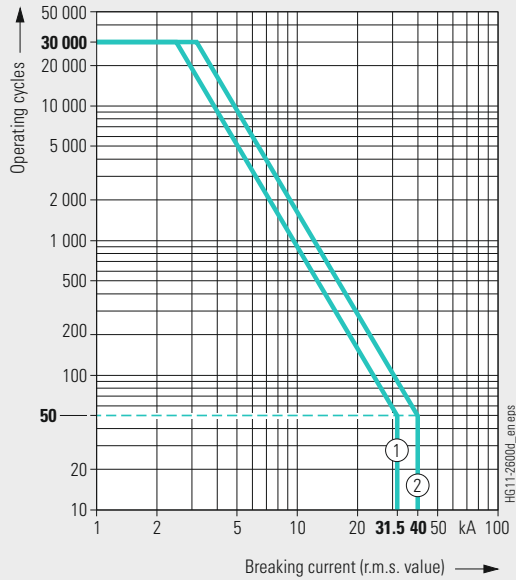
| Order No.      | 12 kV<br>50/60 Hz |             | Rated normal current |               |                | Pole-centre distance |                |               | Rated operating sequence:<br>O - 3 min - CO - 3 min - CO<br>O - 0.3 s - CO - 3 min - CO<br>O - 0.3 s - CO - 15 s - CO |                |             | Rated duration of short-circuit |                  |                 | Rated short-circuit breaking current |                |                | DC component in %<br>of the rated short-circuit breaking current |             |  | Asymmetrical breaking current |   |  | Rated short-circuit making current<br>(at 50/60 Hz) |   |  | Rated lightning impulse withstand voltage |  |  | Rated short-duration power-frequency<br>withstand voltage |  |  | Voltage drop $\Delta U$ between connections<br>(according to IEC 62271-1 at DC 100 A) |  |  | Minimum creepage distance,<br>interrupter |  |  | Minimum creepage distance,<br>phase-to-earth |  |  | Minimum clearance,<br>phase-to-phase |  |  | Minimum clearance,<br>phase-to-earth |  |  | Weights |  |  | Detailed dimension drawing<br>(can be ordered) |  |  | Operating cycle diagram no.<br>(see page 27) |  |  | Catalog dimension drawing no.<br>(see page 27) |  |  |
|----------------|-------------------|-------------|----------------------|---------------|----------------|----------------------|----------------|---------------|---|----------------|-------------|---------------------------------|------------------|-----------------|--------------------------------------|----------------|----------------|--|-------------|--|-------------------------------|---|--|---|---|--|---|--|--|---|--|--|---|--|--|---|--|--|--|--|--|--------------------------------------|--|--|--------------------------------------|--|--|---------|--|--|--|--|--|--|--|--|--|--|--|
|                | $I_r$<br>A        | $I_n$<br>mm | $I_{sc}$<br>kA       | $I_{sc}$<br>% | $I_{sc}$<br>kA | $t_k$<br>s           | $I_{sc}$<br>kA | $I_{sc}$<br>% | $I_{sc}$<br>kA  | $I_{ma}$<br>kA | $U_b$<br>kV | $U_d$<br>kV                     | $\Delta U$<br>mV | $d_{int}$<br>mm | $d_{pe}$<br>mm                       | $d_{pp}$<br>mm | $d_{pe}$<br>mm | $W$<br>kg  |             |  |                               |   |  |   |   |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 115-2 ... | 1250              | 210         | □                    | ■             | ○              | 3                    | 31.5           | 36            | 35.4  | 80/82          | 75          | 28                              | 2.5              | 130             | 160                                  | 130            | 130            | 113  | S_325 00900 |  |                               | 1 |  |   | 3 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 115-4 ... | 2000              | 210         | □                    | ■             | ○              | 3                    | 31.5           | 36            | 35.4  | 80/82          | 75          | 28                              | 2.5              | 130             | 165                                  | 90             | 130            | 129  | S_325 00901 |  |                               | 1 |  |   | 1 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 116-2 ... | 1250              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 75          | 28                              | 2.5              | 140             | 195                                  | 90             | 120            | 135  | S_325 00902 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 116-3 ... | 1600              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 75          | 28                              | 2.5              | 140             | 195                                  | 90             | 120            | 135  | S_325 00902 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 116-4 ... | 2000              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 75          | 28                              | 2.5              | 140             | 195                                  | 90             | 120            | 135  | S_325 00903 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 116-6 ... | 2500              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 75          | 28                              | 2.0              | 140             | 195                                  | 90             | 120            | 135  | S_325 00904 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 116-7 ... | 3150              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 75          | 28                              | 2.0              | 140             | 195                                  | 90             | 120            | 135  | S_325 00904 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |

3

| Order No.      | 15 kV<br>50/60 Hz |             | Rated normal current |               |                | Pole-centre distance |                |               | Rated operating sequence:<br>O - 3 min - CO - 3 min - CO<br>O - 0.3 s - CO - 3 min - CO<br>O - 0.3 s - CO - 15 s - CO |                |             | Rated duration of short-circuit |                  |                 | Rated short-circuit breaking current |                |                | DC component in %<br>of the rated short-circuit breaking current |             |  | Asymmetrical breaking current |   |  | Rated short-circuit making current<br>(at 50/60 Hz) |   |  | Rated lightning impulse withstand voltage |  |  | Rated short-duration power-frequency<br>withstand voltage |  |  | Voltage drop $\Delta U$ between connections<br>(according to IEC 62271-1 at DC 100 A) |  |  | Minimum creepage distance,<br>interrupter |  |  | Minimum creepage distance,<br>phase-to-earth |  |  | Minimum clearance,<br>phase-to-phase |  |  | Minimum clearance,<br>phase-to-earth |  |  | Weights |  |  | Detailed dimension drawing<br>(can be ordered) |  |  | Operating cycle diagram no.<br>(see page 27) |  |  | Catalog dimension drawing no.<br>(see page 27) |  |  |
|----------------|-------------------|-------------|----------------------|---------------|----------------|----------------------|----------------|---------------|---|----------------|-------------|---------------------------------|------------------|-----------------|--------------------------------------|----------------|----------------|--|-------------|--|-------------------------------|---|--|---|---|--|---|--|--|---|--|--|---|--|--|---|--|--|--|--|--|--------------------------------------|--|--|--------------------------------------|--|--|---------|--|--|--|--|--|--|--|--|--|--|--|
|                | $I_r$<br>A        | $I_n$<br>mm | $I_{sc}$<br>kA       | $I_{sc}$<br>% | $I_{sc}$<br>kA | $t_k$<br>s           | $I_{sc}$<br>kA | $I_{sc}$<br>% | $I_{sc}$<br>kA  | $I_{ma}$<br>kA | $U_b$<br>kV | $U_d$<br>kV                     | $\Delta U$<br>mV | $d_{int}$<br>mm | $d_{pe}$<br>mm                       | $d_{pp}$<br>mm | $d_{pe}$<br>mm | $W$<br>kg  |             |  |                               |   |  |   |   |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 165-2 ... | 1250              | 210         | □                    | ■             | ○              | 3                    | 31.5           | 36            | 35.4  | 80/82          | 95          | 36                              | 2.5              | 130             | 160                                  | 243            | 130            | 117  | S_325 00900 |  |                               | 1 |  |   | 3 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 165-4 ... | 2000              | 210         | □                    | ■             | ○              | 3                    | 31.5           | 36            | 35.4  | 80/82          | 95          | 36                              | 2.5              | 130             | 165                                  | 150            | 130            | 130  | S_325 00901 |  |                               | 1 |  |   | 1 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 166-2 ... | 1250              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 95          | 36                              | 2.5              | 146             | 195                                  | 150            | 120            | 142  | S_325 00902 |  |                               | 2 |  |   | 3 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 166-3 ... | 1600              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 95          | 36                              | 2.5              | 146             | 195                                  | 150            | 120            | 142  | S_325 00902 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 166-4 ... | 2000              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 95          | 36                              | 2.5              | 146             | 195                                  | 195            | 120            | 142  | S_325 00903 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 166-6 ... | 2500              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 95          | 36                              | 2.0              | 146             | 195                                  | 195            | 120            | 142  | S_325 00904 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |
| 3AH4 166-7 ... | 3150              | 210         | ■                    | △             | △              | 3                    | 40             | 36            | 44.9  | 100/104        | 95          | 36                              | 2.0              | 146             | 195                                  | 195            | 120            | 142  | S_325 00904 |  |                               | 2 |  |   | 2 |  |   |  |  |   |  |  |   |  |  |   |  |  |  |  |  |                                      |  |  |                                      |  |  |         |  |  |  |  |  |  |  |  |  |  |  |

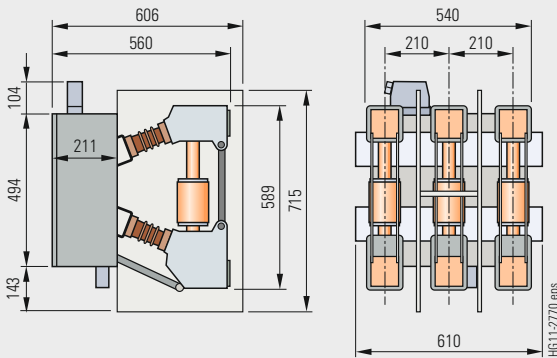
- Standard information on the rating plate
- Possible with order number suffix Z and order code F27
- Possible with order number suffix Z and order code F28
- △ Rated operating sequence possible up to  $I_{sc} = 31.5$  kA

Operating cycle diagram for 12/15 kV

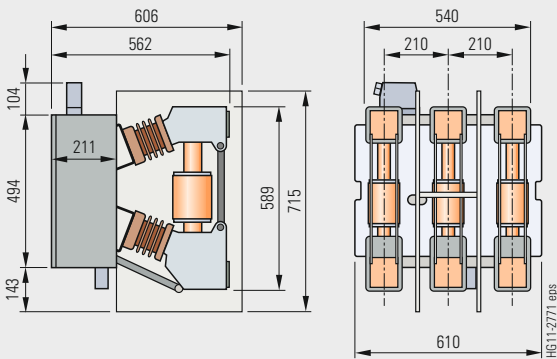


The permissible number of electrical operating cycles is shown as a function of the breaking current (r.m.s. value). All vacuum circuit-breakers fulfil the endurance classes E2, M2 and C2 according to IEC 62271-100. The curve shape beyond the parameters defined in IEC 62271-100 is based on average experience data. The number of operating cycles that can actually be reached can be different depending on the respective application.

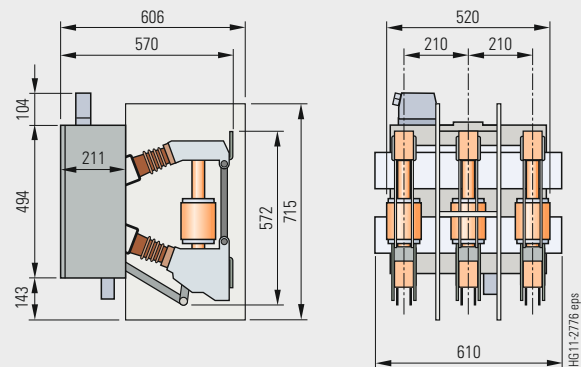
Dimension drawings for 12/15 kV



Dimension drawing 1



Dimension drawing 2



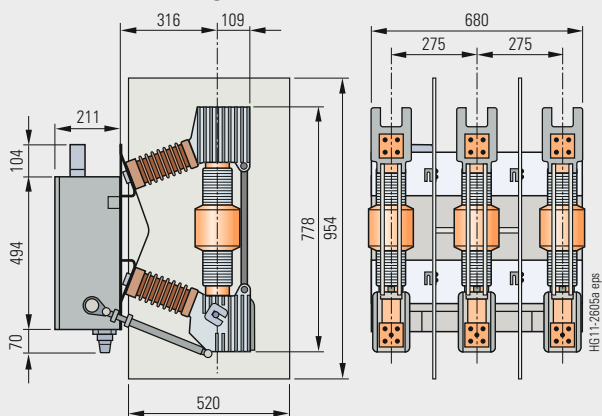
Dimension drawing 3

| Order No.      | 24 kV<br>50/60 Hz    |                      |   |                                     |                          |                                 |                                      |  |                               |   |   |   |   |   |  |                                      |                                      |         |  |  |   |
|----------------|----------------------|----------------------|---|-------------------------------------|--------------------------|---------------------------------|--------------------------------------|--|-------------------------------|---|---|---|---|---|--|--------------------------------------|--------------------------------------|---------|--|--|---|
|                | Rated normal current | Pole-centre distance | Rated operating sequence:<br>O - 3 min - CO - 3 min - CO<br>O - 0.3 s - CO - 3 min - CO<br>O - 0.3 s - CO - 15 s - CO |                                     |                          | Rated duration of short-circuit | Rated short-circuit breaking current | DC component in %<br>of the rated short-circuit breaking current | Asymmetrical breaking current | Rated short-circuit making current<br>(at 50/60 Hz) | Rated lightning impulse withstand voltage | Rated short-duration power-frequency<br>withstand voltage | Voltage drop $\Delta U$ between connections<br>(according to IEC 62271-1 at DC 100 A) | Minimum creepage distance,<br>interrupter | Minimum creepage distance,<br>phase-to-earth | Minimum clearance,<br>phase-to-phase | Minimum clearance,<br>phase-to-earth | Weights | Detailed dimension drawing<br>(can be ordered) | Operating cycle diagram no.<br>(see page 29) | Catalog dimension drawing no.<br>(see page 28 and 29) |
|                | $I_r$                | mm                   | $t_k$   | $I_{sc}$                            | %                        | kA                              | $I_{ma}$                             | $U_b$  | $U_d$                         | mV  | mm  | mm  | mm  | mm  | kg   |                                      |                                      |         |  |  |   |
| 3AH4 254-2 ... | 1250                 | 210                  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3                               | 25                                   | 36   | 28                            | 63/65   | 125                                       | 50  | 2.5   | 200                                       | 230  | 310                                  | 175                                  | 112     | S_325 00905                                    | 3  | 8   |
| 3AH4 254-4 ... | 2500                 | 210                  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3                               | 25                                   | 36   | 28                            | 63/65   | 125                                       | 50  | 2.5   | 200                                       | 230  | 320                                  | 150                                  | 131     | S_325 00906                                    | 3  | 6   |
| 3AH4 264-2 ... | 1250                 | 275                  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3                               | 25                                   | 36   | 28                            | 63/65   | 125                                       | 50  | 2.5   | 200                                       | 230  | 348                                  | 170                                  | 112     | S_325 00907                                    | 3  | 9   |
| 3AH4 264-4 ... | 2000                 | 275                  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3                               | 25                                   | 36   | 28                            | 63/65   | 125                                       | 50  | 2.5   | 200                                       | 230  | 265                                  | 150                                  | 133     | S_325 00908                                    | 3  | 7   |
| 3AH4 266-6 ... | 2500                 | 275                  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3                               | 40                                   | 36   | 44.9                          | 100/104   | 125                                       | 50  | 2.0   | 360                                       | 226  | 188                                  | 210                                  | 135     | S_325 00007                                    | 5  | 4   |

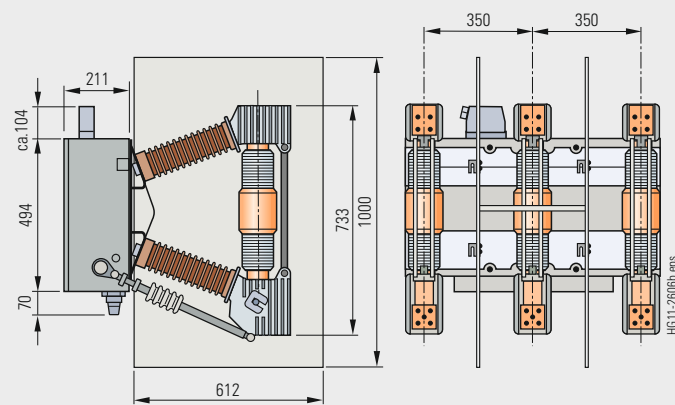
| Order No.      | 36 kV<br>50/60 Hz |     |                          |                                     |                          |    |          |       |       |         |     |    |     |     |     |     |     |     |             |   |    |
|----------------|-------------------|-----|--------------------------|-------------------------------------|--------------------------|----|----------|-------|-------|---------|-----|----|-----|-----|-----|-----|-----|-----|-------------|---|----|
|                | $I_r$             | mm  | $t_k$                    | $I_{sc}$                            | %                        | kA | $I_{ma}$ | $U_b$ | $U_d$ | mV      | mm  | mm | mm  | mm  | kg  |     |     |     |             |   |    |
|                | A                 | mm  | s                        | kA                                  | %                        | kA | kA       | kV    | kV    | mV      | mm  | mm | mm  | mm  | kg  |     |     |     |             |   |    |
| 3AH4 305-2 ... | 1250              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 31.5     | 36    | 35.4  | 80/82   | 170 | 70 | 2.3 | 360 | 330 | 314 | 260 | 170 | S_325 00008 | 4 | 5  |
| 3AH4 305-4 ... | 2000              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 31.5     | 36    | 35.4  | 80/82   | 170 | 70 | 2.3 | 360 | 330 | 314 | 260 | 175 | S_325 00008 | 4 | 5  |
| 3AH4 305-6 ... | 2500              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 31.5     | 36    | 35.4  | 80/82   | 170 | 70 | 2.3 | 360 | 330 | 314 | 260 | 175 | S_325 00009 | 4 | 5  |
| 3AH4 305-7 ... | 3150              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 31.5     | 36    | 35.4  | 80/82   | 170 | 70 | 1.9 | 366 | 430 | 309 | 270 | 350 | S_325 00011 | 4 | 10 |
| 3AH4 305-8 ... | 4000              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 31.5     | 36    | 35.4  | 80/82   | 170 | 70 | 1.9 | 366 | 430 | 309 | 270 | 350 | S_325 00011 | 4 | 10 |
| 3AH4 306-6 ... | 2500              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 40       | 36    | 44.9  | 100/104 | 170 | 70 | 2.3 | 360 | 330 | 314 | 260 | 175 | S_325 00009 | 5 | 5  |
| 3AH4 306-7 ... | 3150              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 40       | 36    | 44.9  | 100/104 | 170 | 70 | 1.9 | 366 | 430 | 309 | 270 | 350 | S_325 00059 | 5 | 10 |
| 3AH4 306-8 ... | 4000              | 350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3  | 40       | 36    | 44.9  | 100/104 | 170 | 70 | 1.9 | 366 | 430 | 309 | 270 | 350 | S_325 00059 | 5 | 10 |

- Standard information on the rating plate
- Possible with order number suffix Z and order code F27
- Possible with order number suffix Z and order code F28

**Dimension drawings for 24/36 kV**

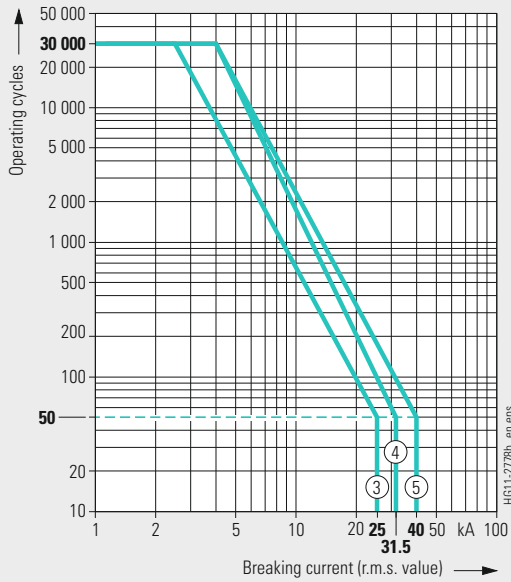


Dimension drawing 4



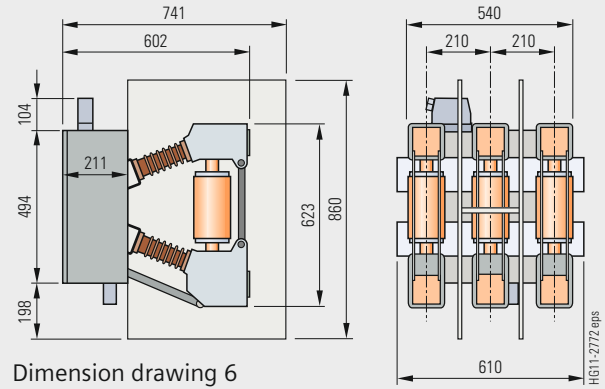
Dimension drawing 5

Operating cycle diagram for 24/36 kV

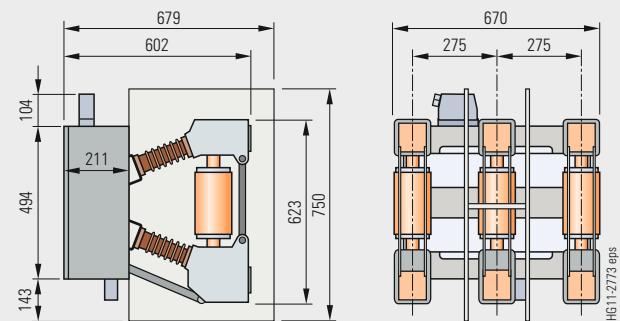


The permissible number of electrical operating cycles is shown as a function of the breaking current (r.m.s. value). All vacuum circuit-breakers fulfil the endurance classes E2, M2 and C2 according to IEC 62271-100. The curve shape beyond the parameters defined in IEC 62271-100 is based on average experience data. The number of operating cycles that can actually be reached can be different depending on the respective application.

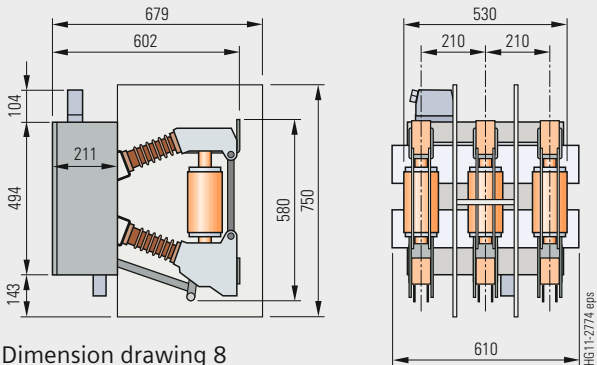
Dimension drawings for 24/36 kV



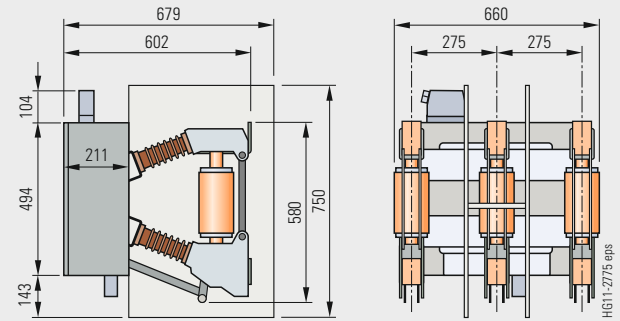
Dimension drawing 6



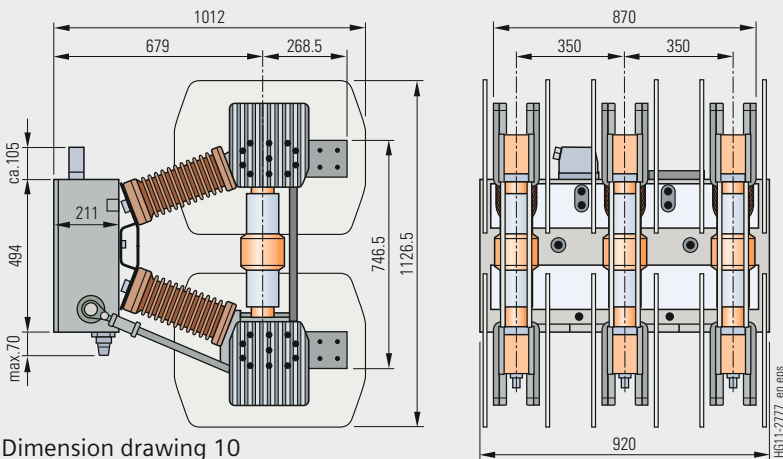
Dimension drawing 7



Dimension drawing 8



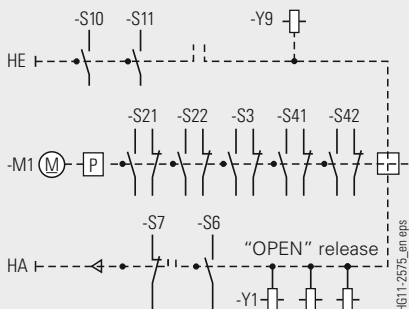
Dimension drawing 9



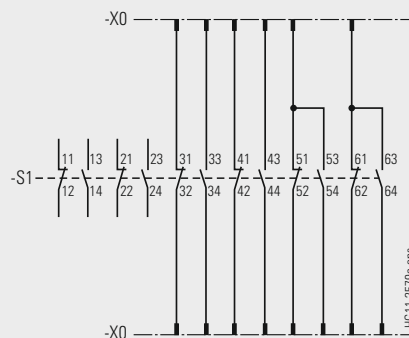
Dimension drawing 10

### Circuit diagrams

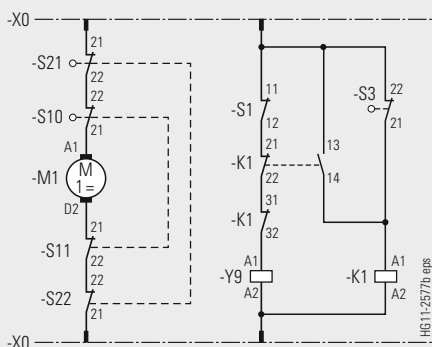
The circuit diagrams shown here are examples from the manifold possibilities of circuit-breaker wiring.



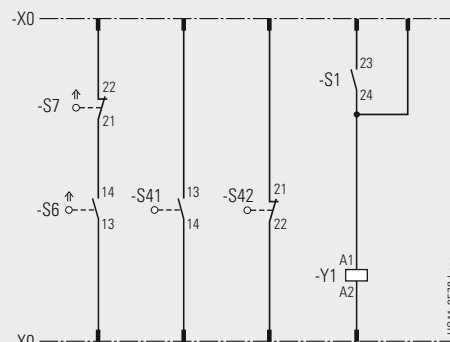
Manual closing – manual opening with auxiliary switch 6 NO + 6 NC



Contacts available for customer with basic circuit-breaker equipment and auxiliary switch 6 NO + 6 NC



Motor operating mechanism with manual mechanical closing



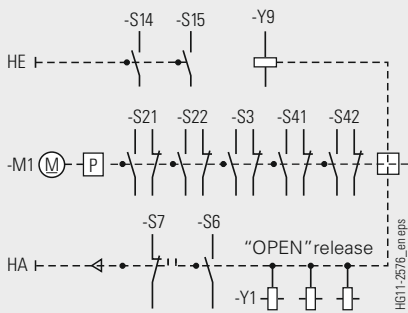
Circuit-breaker tripping signal      Signal "closing spring charged"      1st shunt release

3

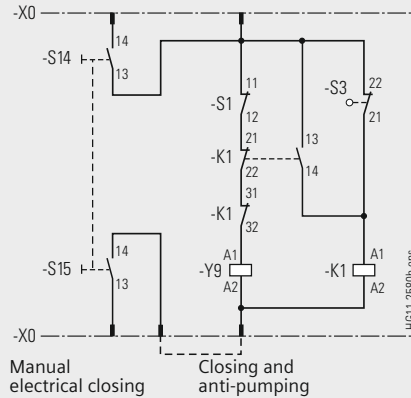
### Legend (also for page 31)

|    |                           |      |  |      |   |    |   |
|----|---------------------------|------|--|------|---|----|---|
| HA | Manual opening            | S1   | Auxiliary switch   | S14, | Anti-pumping  | X0 | Lower part of plug/<br>terminal strip               |
| HE | Manual closing            | S3   | Position switch  | S15  |   | Y1 | 1st shunt release                                   |
| K1 | Contact (anti-pumping)    | S15  | Position switch<br>(opens when closing<br>spring is charged) | S21, | Position switches   | Y2 | 2nd shunt release                                   |
| M1 | Motor operating mechanism | S22  | Circuit-breaker tripping signal                              | S22  | (to de-energize the motor<br>operating mechanism<br>after charging) | Y4 | Current-transformer<br>operated release             |
| P  | Energy store              | S6   | Circuit-breaker tripping signal                              | S41, | Position switches   | Y6 | Low-energy current-<br>transformer operated release |
| R1 | Resistance                | S7   | Cutout switch for circuit-<br>breaker tripping signal        | S42  | (to indicate the charging state)                                    | Y7 | Undervoltage release                                |
|    |                           | S10, | Anti-pumping for   |      |   | Y9 | Closing solenoid                                    |
|    |                           | S11  | manual closing   |      |   |    |   |

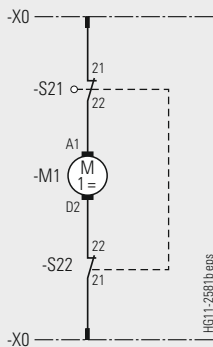
**Additional equipment: Motor operating mechanism and auxiliary switch**



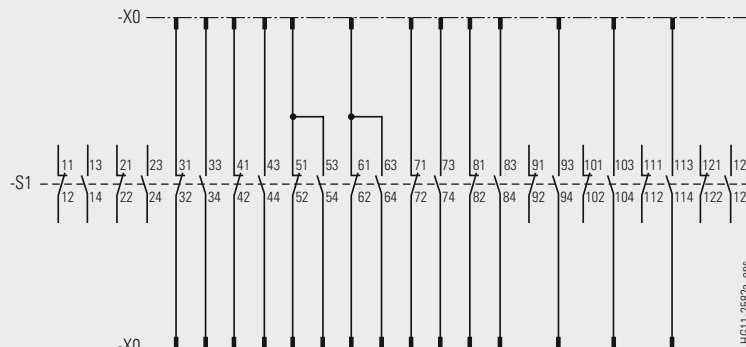
Motor operating mechanism with manual electrical closing



Manual electrical closing  
Closing and anti-pumping

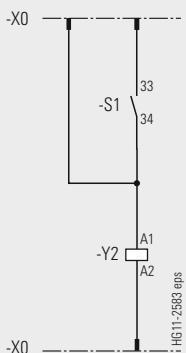


Motor operating mechanism

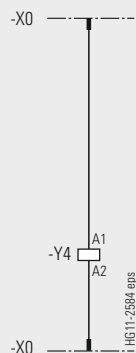


Contacts available for customer with basic circuit-breaker equipment  
Auxiliary switch -S1 (12 NO + 12 NC) instead of auxiliary switch 6 NO + 6 NC

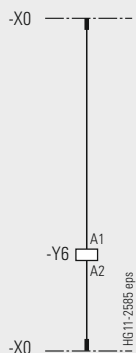
The available possible combinations are described in the chapter "Selection of secondary equipment".



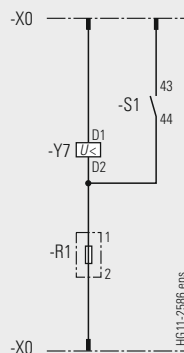
2<sup>nd</sup> shunt release



C.t.-operated release 0.5 A or 1 A



Low-energy c.t.-operated release 0.1 Ws



Undervoltage release

Legend see page 30

Operating times

| Operating times at rated voltage of the secondary circuit | Equipment of circuit-breaker                | Operating time of circuit-breaker |
|---|---|-----------------------------------|
| Closing time  | –   | < 75 ms <sup>1)</sup>             |
| Opening time  | 1 <sup>st</sup> shunt release               | < 60 ms <sup>1)</sup>             |
|   | 2 <sup>nd</sup> and 3 <sup>rd</sup> release | < 55 ms                           |
| Arcing time   | –   | < 15 ms                           |
| Break time  | 1 <sup>st</sup> shunt release               | < 80 ms                           |
|   | 2 <sup>nd</sup> and 3 <sup>rd</sup> release | < 60 ms                           |
| Dead time   | –   | 300 ms                            |
| CLOSE/OPEN contact time                                   | 1 <sup>st</sup> shunt release               | < 90 ms                           |
|   | 2 <sup>nd</sup> and 3 <sup>rd</sup> release | < 70 ms                           |
| Minimum command duration                                  | Closing solenoid                            | 45 ms                             |
|   | 1 <sup>st</sup> shunt release               | 40 ms                             |
|   | 2 <sup>nd</sup> and 3 <sup>rd</sup> release | 20 ms                             |
| Pulse time for circuit-breaker tripping signal            | 1 <sup>st</sup> shunt release               | > 15 ms                           |
|   | 2 <sup>nd</sup> and 3 <sup>rd</sup> release | > 10 ms                           |
| Charging time for electrical operation                    | –   | < 15 s                            |
| Synchronism error between the poles                       | –   | ≤ 2 ms                            |

1) Shorter operating times on request.

Short-circuit protection of motors (fuse protection of drive motors)

| Rated voltage of the motor | Operating voltage |        | Power consumption of the motor |            | Smallest possible rated current <sup>2)</sup> of the m.c.b. (miniature circuit-breaker) with C-characteristic |
|----------------------------|-------------------|--------|--------------------------------|------------|---|
|                            | max. V            | min. V | W (at DC)                      | VA (at AC) |   |
| V                          |                   |        |                                |            | A   |
| 24 DC                      | 26                | 20     | 500                            | –          | 16  |
| 48 DC                      | 53                | 41     | 500                            | –          | 8   |
| 60 DC                      | 66                | 51     | 500                            | –          | 6   |
| 110 DC                     | 121               | 93     | 500                            | –          | 4   |
| 220 DC                     | 242               | 187    | 500                            | –          | 2   |
| 110 AC                     | 121               | 93     | –                              | 650        | 4   |
| 230 AC                     | 244               | 187    | –                              | 650        | 2   |

2) The current inrush in the drive motor can be neglected due to its very short presence.

Consumption data of releases

| Release   | Power consumption |                        | Tripping ranges        |   |
|---|-------------------|------------------------|------------------------|---|
|   | Operation at      |                        | Tripping voltage at DC | Tripping voltage or tripping current at AC 50/60 Hz |
|   | DC approx. W      | AC 50/60 Hz approx. VA |                        |   |
| Closing solenoid 3AY15 10   | 140               | 140                    | 85 to 110 % U          | 85 to 110 % U                                       |
| 1 <sup>st</sup> shunt release (without energy store) 3AY15 10                     | 140               | 140                    | 70 to 110 % U          | 85 to 110 % U                                       |
| 2 <sup>nd</sup> shunt release (with energy store) 3AY11 01                        | 70                | 50                     | 70 to 110 % U          | 85 to 110 % U                                       |
| Undervoltage release 3AY11 03   | 20                | 20                     | 35 to 0 % U            | 35 to 0 % U   |
| Current-transformer operated release 3AX11 02 (rated normal current 0.5 A or 1 A) | –                 | 10 <sup>3)</sup>       | –                      | 90 to 110 % I <sub>a</sub>                          |
| Current-transformer operated release 3AX11 04 (tripping pulse ≥ 0.1 Ws)           | –                 | –                      | –                      | –   |

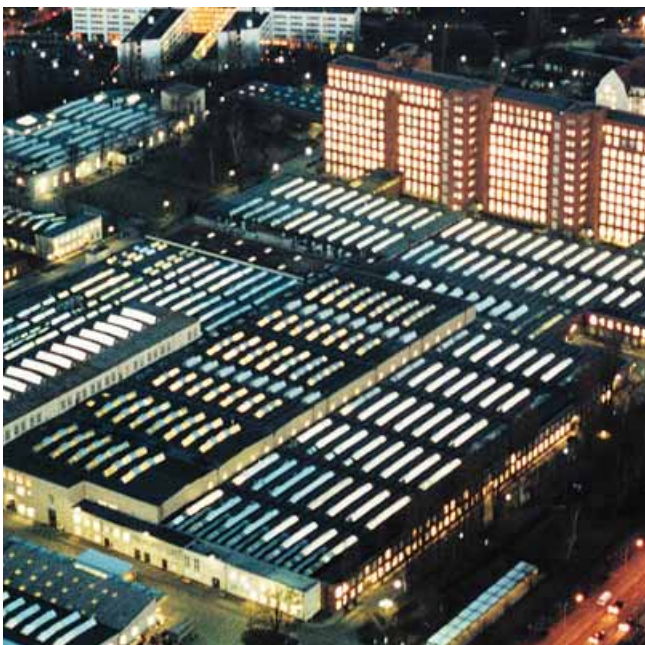
3) Consumption at pickup current (90 % of the rated normal current) and open armature.





R-HG11-181.tif

Brandenburg Gate, Berlin, Germany



R-HG11-180.eps

Switchgear Factory in Berlin, Germany

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Configuration aid

Foldout page

Please copy, fill in and return to your Siemens partner or you can use our prompted online configurator under [www.siemens.com/energy](http://www.siemens.com/energy)

**Inquiry concerning**

3AH4 circuit-breaker

**Please**

- Submit an offer
- Call us
- Visit us

**Your address**

Company

Dept.

Name

Street

Postal code/city

Phone

Fax

E-mail

**4**

**Siemens AG**

Dept.

Name

Street

Postal code/city

Fax

**Technical Data**

|  | Other values   |  |                                 |                                 |
|--|--|--|---------------------------------|---------------------------------|
| Rated voltage  | <input type="checkbox"/> 12 kV<br><input type="checkbox"/> 24 kV   | <input type="checkbox"/> 15 kV<br><input type="checkbox"/> 36 kV   | <input type="checkbox"/> ___ kV |                                 |
| Rated lightning impulse withstand voltage              | <input type="checkbox"/> 125 kV<br><input type="checkbox"/> 195 kV | <input type="checkbox"/> 170 kV<br><input type="checkbox"/> 185 kV | <input type="checkbox"/> ___ kV |                                 |
| Rated short-duration power-frequency withstand voltage | <input type="checkbox"/> 50 kV<br><input type="checkbox"/> 95 kV   | <input type="checkbox"/> 70 kV                                     | <input type="checkbox"/> 85 kV  | <input type="checkbox"/> ___ kV |
| Rated short-circuit breaking current                   | <input type="checkbox"/> 25 kA                                     | <input type="checkbox"/> 31.5 kA                                   | <input type="checkbox"/> 40 kA  | <input type="checkbox"/> ___ kA |
| Rated normal current                                   | <input type="checkbox"/> 1250 A<br><input type="checkbox"/> 3150 A | <input type="checkbox"/> 2000 A<br><input type="checkbox"/> 4000 A | <input type="checkbox"/> 2500 A | <input type="checkbox"/> ___ A  |
| Pole-centre distance                                   | <input type="checkbox"/> 210 mm                                    | <input type="checkbox"/> 275 mm                                    | <input type="checkbox"/> 350 mm |                                 |

**Secondary equipment**

For possible combinations see pages 15 to 22

|  |  |   |  |  |
|--|--|---|--|--|
| Circuit-breaker equipment                        | <input type="checkbox"/> Manual mechanical closing<br><input type="checkbox"/> Manual electrical closing |   |  |  |
| Motor operating mechanism                        | <input type="checkbox"/> ___ V DC  | <input type="checkbox"/> ___ V AC, ___ Hz |  |  |
| Closing solenoid                                 | <input type="checkbox"/> ___ V DC  | <input type="checkbox"/> ___ V AC, ___ Hz |  |  |
| 1 <sup>st</sup> shunt release                    | <input type="checkbox"/> ___ V DC  | <input type="checkbox"/> ___ V AC, ___ Hz |  |  |
| 2 <sup>nd</sup> shunt release                    | <input type="checkbox"/> ___ V DC  | <input type="checkbox"/> ___ V AC, ___ Hz |  |  |
| Current-transformer operated release             | <input type="checkbox"/> 0.5 A   | <input type="checkbox"/> 1 A              | <input type="checkbox"/> ≥ 0.1 Ws (10 Ω)   | <input type="checkbox"/> ≥ 0.1 Ws (20 Ω) |
| Undervoltage release                             | <input type="checkbox"/> ___ V DC  |   | <input type="checkbox"/> ___ V AC, ___ Hz  |  |
|  | <input type="checkbox"/> Without energy store  |   | <input type="checkbox"/> With energy store |  |
| Auxiliary switch                                 | <input type="checkbox"/> 6 NO + 6 NC   | <input type="checkbox"/> 12 NO + 12 NC    |  |  |
| Low-voltage connection                           | <input type="checkbox"/> 24-pole terminal strip  | <input type="checkbox"/> 24-pole plug     | <input type="checkbox"/> 64-pole plug      |  |
| <input type="checkbox"/> Mechanical interlocking |  |   |  |  |
| Operating instructions                           | <input type="checkbox"/> English   | <input type="checkbox"/> German           | <input type="checkbox"/> French            | <input type="checkbox"/> Spanish         |

**Application and other requirements**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please check off      \_\_\_ Please fill in

## You prefer to configure your 3AH4 vacuum circuit-breaker on your own?

Please follow the steps for configuration and enter the order number in the configuration aid.  
Alternatively you can also use our prompted online configurator under [www.siemens.com/energy](http://www.siemens.com/energy)

For configuration of your  
3AH4 vacuum circuit-breaker

### Instruction for configuration of the 3AH4 vacuum circuit-breaker

#### 1<sup>st</sup> step: Definition of the primary part (see page 13 and 14)

| Please specify the following ratings:                            | Possible options:           |
|--|-----------------------------|
| Rated voltage ( $U_r$ )  | $U_r$ : 24 kV to 36 kV      |
| Rated lightning impulse withstand voltage ( $U_p$ )              | $U_p$ : 125 kV to 195 kV    |
| Rated short-duration power-frequency withstand voltage ( $U_d$ ) | $U_d$ : 50 kV to 95 kV      |
| Rated short-circuit breaking current ( $I_{sc}$ )                | $I_{sc}$ : 31.5 kA to 40 kA |
| Rated normal current ( $I_r$ )                                   | $I_r$ : 1250 A to 3150 A    |
| Pole-centre distance   | 275 mm to 350 mm            |

These ratings define the positions 4 to 8 of the order number.

#### 2<sup>nd</sup> step: Definition of the secondary equipment (see pages 15 to 22)

| Please specify the following equipment features:                                  | Possible options:  |
|---|--|
| Release combination (position 9)  | Shunt release, current-transformer operated release and undervoltage release             |
| Closing solenoid (position 10)  | Operating voltages from 24 V DC to 240 V AC  |
| Operating voltage of the releases (positions 11/12)                               | Operating voltages from 24 V DC to 240 V AC  |
| Type of local closing (position 10)   | Mechanical closing, manual electrical closing  |
| Operating voltage of the motor (position 14)                                      | Motor operating stored-energy mechanism with operating voltages from 24 V DC to 240 V AC |
| Number of auxiliary contacts (position 15)  | 6 NO + 6 NC, 12 NO + 12 NC   |
| Design of the secondary connection (position 15)                                  | 24-pole terminal strip, 24-pole plug connector, 64-pole plug connector                   |
| Language of the documentation (position 16)                                       | English, German, French, Spanish, other languages on request                             |
| Frequency of the operating voltage of the secondary equipment at AC (position 16) | 50 Hz/60 Hz  |

These equipment features define the positions 9 to 16 of the order number.

#### 3<sup>rd</sup> step: Do you have any further requirements concerning the equipment? (Please refer to page 22)

Should you still need more options than the possible special equipment like halogen-free and flame-retardant or silicone-free version, condensation protection or an additional rating plate, etc., please contact your responsible sales partner.

| 1 | 2 | 3 | 4 | 5                       | 6 | 7 | 8 | 9 | 10          | 11          | 12          | 13          | 14          | 15          | 16          |             |
|---|---|---|---|-------------------------|---|---|---|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 3 | A | H | 4 | ■                       | ■ | ■ | ■ | ■ | ■           | ■           | ■           | ■           | ■           | ■           | Z           |             |
|   |   |   |   | See page 13 and page 14 |   |   |   |   | See page 15 | See page 16 | See page 17 | See page 18 | See page 19 | See page 20 | See page 21 | See page 22 |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |
| 3 | A | H | 4 |                         |   |   | - |   |             |             |             | -           |             |             |             |             |
|   |   |   |   |                         | + |   |   | + |             |             | +           |             |             | +           |             |             |
|   |   |   |   |                         |   | + |   |   | +           |             |             | +           |             |             | +           |             |



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(Charges depending on provider)  
E-mail: support.energy@siemens.com

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