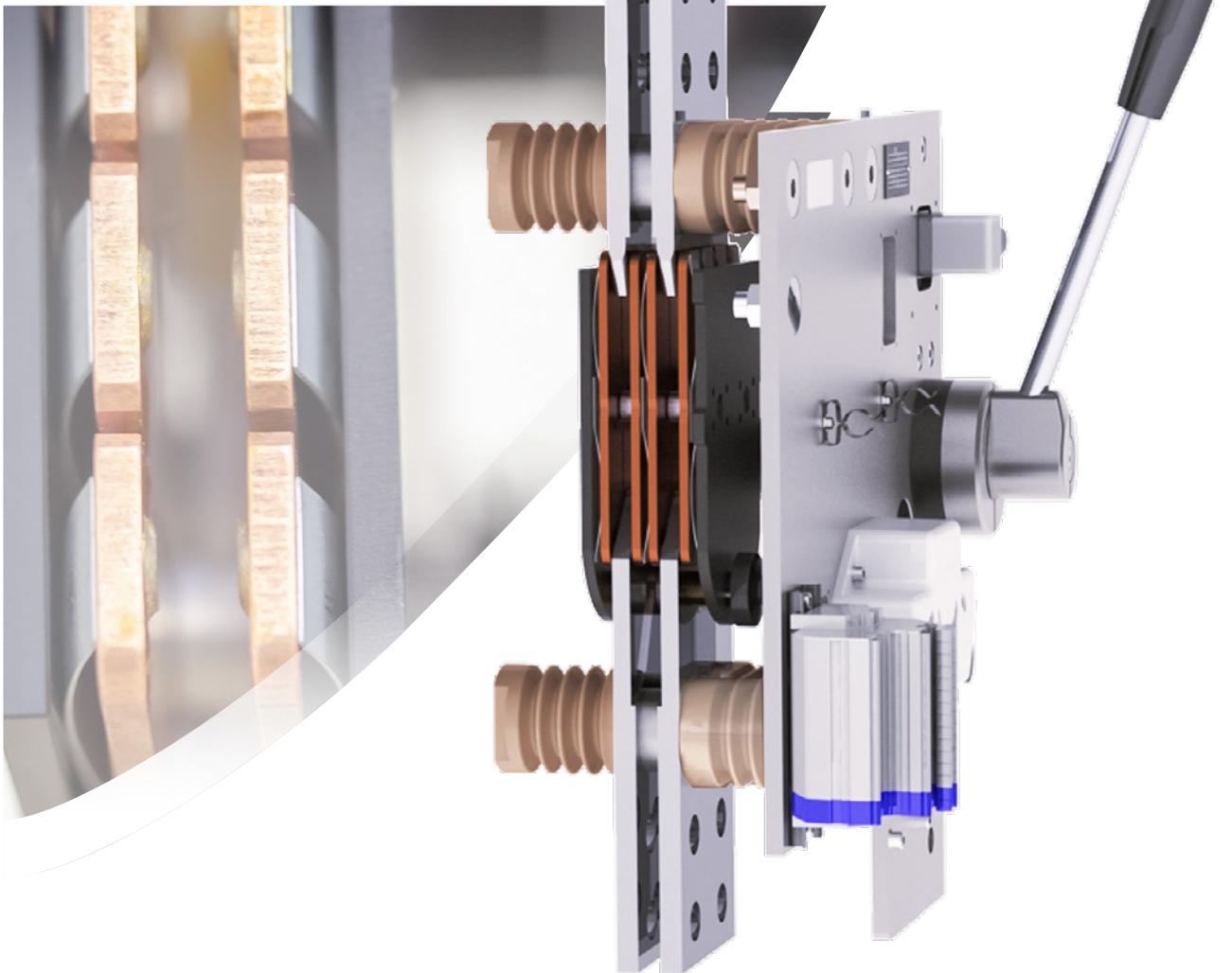


DISCONNECTOR

Type **SWx18... R23**

FIXED INSTALLATION

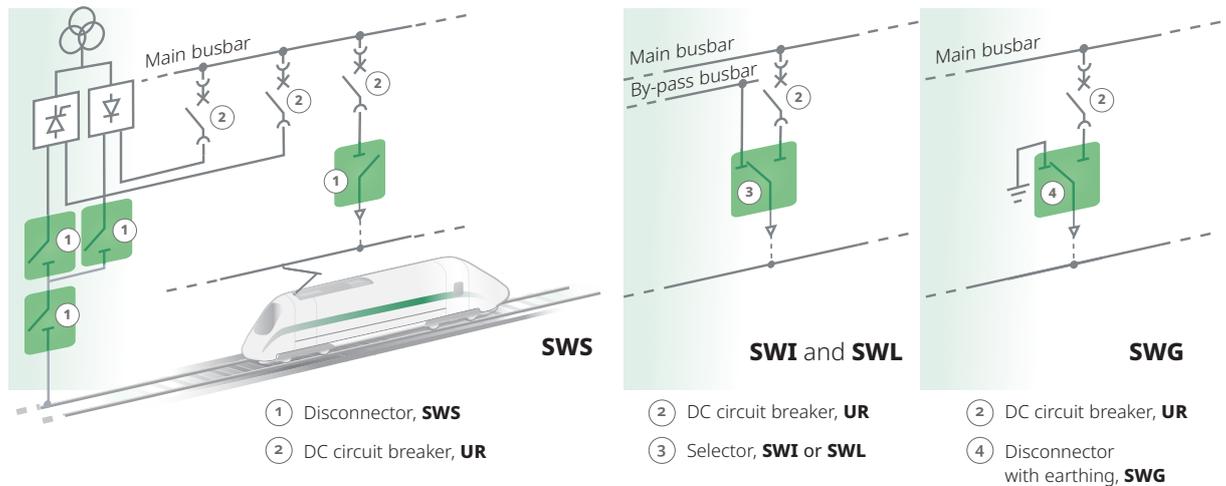


GENERAL INFORMATION

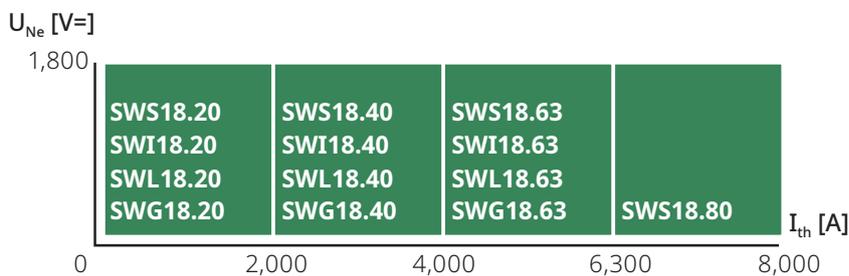
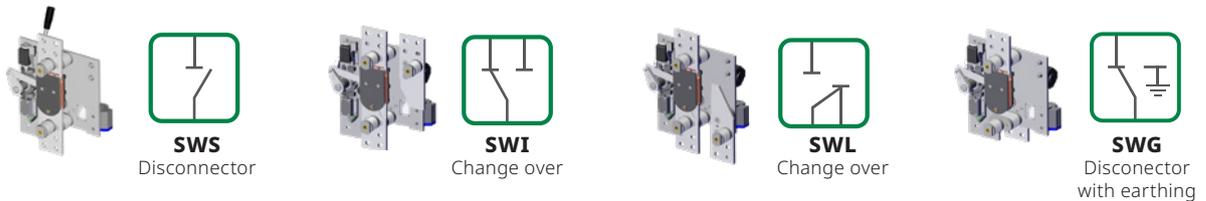
The **SW** off-load disconnector is a complete range designed to cover all the applications to be met in DC traction power substations and other industrial applications. Its modular concept enables to build single pole or double pole **SWS** disconnectors, **SWI**, **SWL** selectors or **SWG** disconnectors with earthing, for rated operational voltage 1,800 V and rated currents from 2,000 to 8,000 A.

Installed inside cubicles, the **SW** disconnector can be operated either manually or electrically, and the customer can select among standard options safety interlockings made via key locks and/or electromagnets. The severe testing procedures applied for the type testing as well as for the serial testing make the **SW** disconnector a safe component with a unique design and a high level of reliability.

APPLICATIONS, TYPICAL EXAMPLES



PRODUCT RANGE



The selection of the appropriate current rating is function of the load cycle. Please refer to Overload capacity table page 5.

All products are available in 1 pole or 2 poles, except the following one which are only available in one pole: **SWS18.80**.

MAIN FEATURES

- Rated operational voltage 1,800 V_{DC}
- Conventional free-air thermal current from 2,000 A to 8,000 A
- Safe with a high rated insulation voltage 3,000 V_{DC}
- 1 or 2 pole versions
- Reference standards: EN 50123-1/-3 except SWS18.80

MAIN BENEFITS

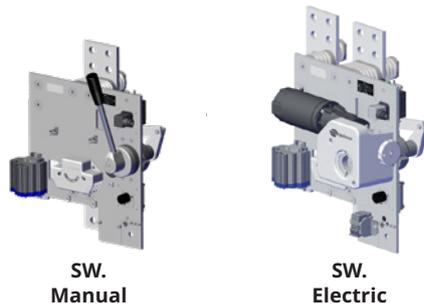
- ✓ Compact size.
- ✓ High rated short-time withstand current value.
- ✓ Safe with the high voltage circuit separated from the low voltage circuit.
- ✓ Silver-plated high voltage connections.
- ✓ Optional locking of the main contacts available with either key and/or electromagnet.
- ✓ High mechanical durability: 20,000 cycles minimum.
- ✓ Self cleaning contacts.
- ✓ High modularity to cover all necessary variants and options.
- ✓ Simple design with reduced number of parts.

HIGH MODULARITY

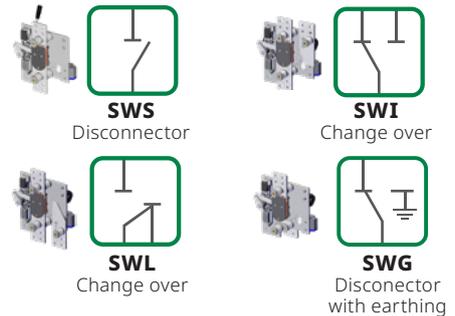
The below figures show the basic configuration of each SWS, SWI, SWL and SWG device (for a current of 2,000 A and a voltage of 1,800 V_{DC}).

All these devices are also delivered in other configurations of current, voltage, operation and number of pole, thanks to a high industrialized modularity as shown below.

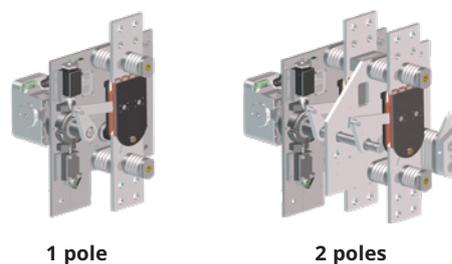
SELECTION OF OPERATION



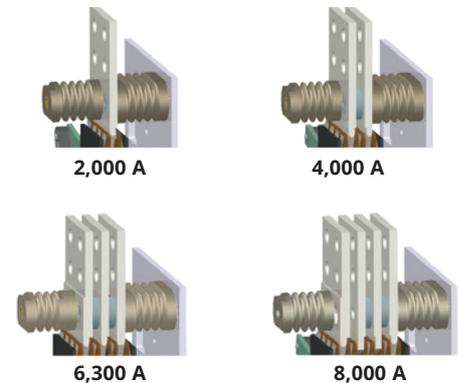
SELECTION OF APPLICATION



SELECTION OF POLE NUMBER



SELECTION OF RATED THERMAL CURRENT



DATA FOR PRODUCT SELECTION

| | Symbol | Unit | SW...20 | SW...40 | SW...63 | SW...80 |
|--|----------------------------|--|---|---------|---------|---------|
| MAIN HIGH VOLTAGE CIRCUIT | | | | | | |
| Rated operational voltage | U_{Ne} | [V _{DC}] | 1,800 | | | |
| Rated insulation voltage | U_{Nm} | [V] | 3,000 | | | |
| Rated service current | I_{Ne} | [A] | 2,000 | 4,000 | 6,300 | 8,000 |
| Conventional free air thermal current ⁽¹⁾ | I_{th} | [A] | 2,000 | 4,000 | 6,300 | 8,000 |
| Peak and rated short-time withstand current ⁽²⁾ | | | 178/125/0.25 | | | |
| SWS and SWI, SWG and SWL main contacts only | $\hat{I}_{NcW}/I_{NcW}/t'$ | [kA]/[kA]/[s] | Values in page 05 | | | |
| SWG grounding contact | | | 60/40/0.25 | | | |
| SWL lower contact | $\hat{I}_{NcW}/I_{NcW}/t'$ | [kA]/[kA]/[s] | 60/40/0.25 | | | |
| Overvoltage category | | | OV4 | | | |
| Rated power-frequency withstand voltage ⁽³⁾ | | | 11.0 | | | |
| - Pole - Pole | U_a | [kV] | 11.0 | | | |
| - Pole - Earth | U_a | [kV] | 9.2 | | | |
| Rated impulse withstand voltage (1.2/50 μs) | | | 24.0 | | | |
| - Pole - Pole | U_{Ni} | [kV] | 24.0 | | | |
| - Pole - Earth | U_{Ni} | [kV] | 20.0 | | | |
| ⁽¹⁾ At Tamb = +40°C and tested with high voltage connections according to standard IEC/EN 60943. • ⁽²⁾ For specific values of the SWG earthing pole, refer to the figure and table of the page 5 • ⁽³⁾ At 50 Hz and during 1 minute | | | | | | |
| LOW VOLTAGE AUXILIARY CIRCUIT | | | | | | |
| Control circuit (motor and optional electromagnet lock) | | | | | | |
| Nominal voltage | U_n | [V _{DC}] [V _{AC}] | 24, 48, 60, 110, 125, 220 127 (50/60 Hz), 230 (50/60 Hz) | | | |
| Range of voltage | | | [0.8-1.1] U_n | | | |
| Motor nominal closing/opening power: | | | 125 | | | |
| - DC only | | [W] | 125 | | | |
| - AC only | | [W] | 90 | | | |
| Mechanical switching time ⁽⁵⁾ | t_c | [S] | < 3 (SW... with DC motor) < 5 (SW... with AC motor) | | | |
| Electromagnet nominal power (DC and AC) | | [W] | ~14 | | | |
| ⁽⁵⁾ For motorized version, at nominal control voltage = U_n and Tamb = +20°C. | | | | | | |
| Auxiliary contacts for main circuit and optional locks | | | | | | |
| Type of contacts (refer to definition page 10) | | | Changeover (CO) | | | |
| Rated voltage | | [V _{DC}] [V _{AC}] | 24 to 220 230 | | | |
| Conventional thermal current | I_{th} | [A] | 10 | | | |
| Maximum breaking capacity at 110 V _{DC} and t=5 ms | | [A] | 0.75 | | | |
| Minimum let-through current at 24 V _{DC} ⁽⁶⁾ | | [mA] | 10 (silver contacts) | | | |
| ⁽⁶⁾ For a dry and clean environment. | | | | | | |
| Low voltage interface | | | | | | |
| Type of connection | | | Terminal block | | | |
| Insulation | | | | | | |
| Rated power-frequency withstand voltage ⁽⁷⁾ | U_a | [kV _{rms}] | 2 | | | |
| ⁽⁷⁾ At 50 Hz and during 1 minute. | | | | | | |
| OPERATING CONDITIONS | | | | | | |
| Installation | | | Indoors | | | |
| Altitude | | [m] | ≤ 2,000 | | | |
| Working ambient temperature | T_{amb} | [°C] | - 25 to +40 | | | |
| Humidity | | | Class 5k2 | | | |
| Pollution degree | | | PD4 | | | |
| Minimum mechanical durability | N | Cycles | 20,000 | | | |

OVERLOAD CAPACITY

| | | SWG...20 | SWG...40 | SWG...63 | SWG...80 |
|---|-------------------------|----------|----------|----------|----------|
| Application Duty Class - I_{Bd} [A] EN 50328 / IEC 62590 | Class I | 2,000 | 4,000 | 6,300 | 8,000 |
| | Class V, VI, VII | 2,000 | 3,000 | 4,200 | — |
| | Class VIII | 1,600 | 3,000 | 4,200 | — |

I_{Bd} : basic direct current

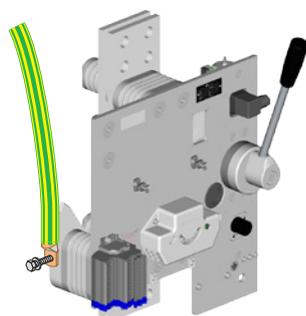
| | | |
|-------------------|-------------------|--------------------|
| Class I | 1 x I_{Bd} | continuously |
| Class V | a) 1 x I_{Bd} | continuously |
| | b) 1.5 x I_{Bd} | 2 hours - after a) |
| | c) 2.0 x I_{Bd} | 1 min - after a) |
| Class VI | a) 1 x I_{Bd} | continuously |
| | b) 1.5 x I_{Bd} | 2 hours - after a) |
| | c) 3.0 x I_{Bd} | 1 min - after a) |
| Class VII | a) 1 x I_{Bd} | continuously |
| | b) 1.5 x I_{Bd} | 2 hours - after a) |
| | c) 4.5 x I_{Bd} | 15 s - after a) |
| Class VIII | a) 1 x I_{Bd} | continuously |
| | b) 1.5 x I_{Bd} | 2 hours - after a) |
| | c) 2.0 x I_{Bd} | 1 min - after b) |

PEAK AND RATED SHORT-TIME WITHSTAND CURRENTS OF THE SWG EARTHING POLE

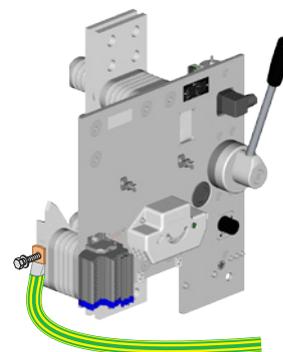
The earth connection can be a cable or a flexible braid according to the current value.

The values of the peak and rated short-time withstand currents are depending on the position/orientation of the earth connection.

CONNECTION OF EARTH CABLE (UPWARDS)



CONNECTION OF EARTH CABLE (DOWNWARDS)



VALUES OF THE PEAK AND RATED SHORT-TIME WITHSTAND CURRENTS

| | Symbol | Unit | SWG..20 | SWG..40 | SWG..63 |
|-------------------------------------|------------------|------|---------|---------|---------|
| Earth connection (Upwards) | I_{Ncwe} | [kA] | 14 | 28 | 28 |
| | \hat{I}_{Ncwe} | [kA] | 20 | 40 | 40 |
| | t | [s] | 0.25 | 0.25 | 0.25 |
| Earth connection (Downwards) | I_{Ncwe} | [kA] | 14 | 14 | 28 |
| | \hat{I}_{Ncwe} | [kA] | 20 | 20 | 40 |
| | t | [s] | 0.25 | 0.25 | 0.25 |

I_{Ncwe} : rated short-time withstand current
 \hat{I}_{Ncwe} : peak short-time withstand current
 t: short-time current duration

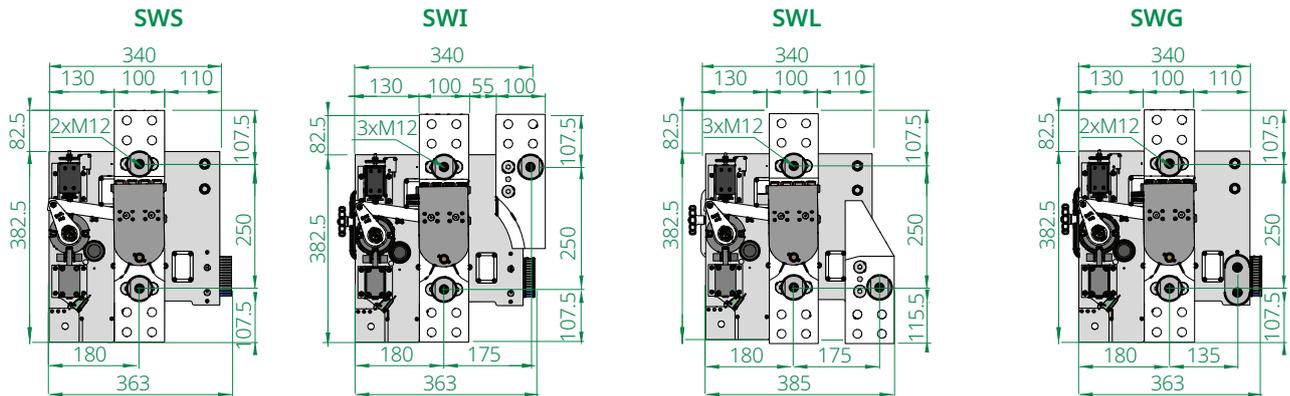
INFORMATION FOR PRODUCT INTEGRATION

MAIN DIMENSION

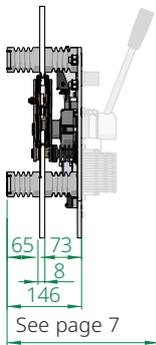
The DIN-ISO 2768-1 coarse tolerances are applied to these dimensions. All dimensions are in mm.

Note: Each SW can be equipped with manual or motorized (DC or AC) operation.

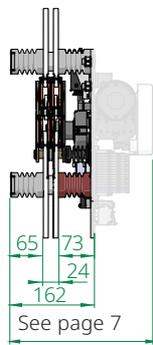
SW.18...



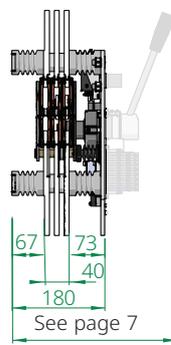
SW.18.20



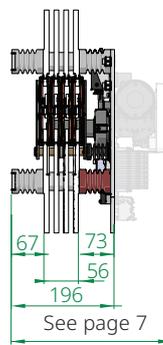
SW.18.40



SW.18.63

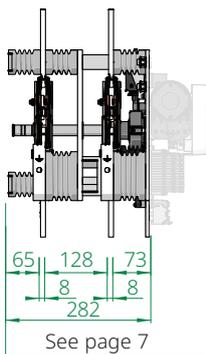


SW.18.80

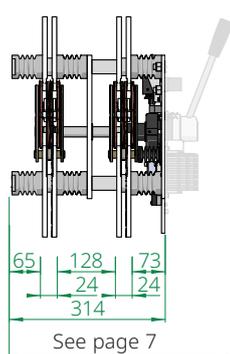


SW.18...
1-POLE
configurations

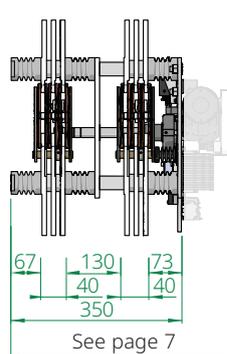
SW.18.20



SW.18.40



SW.18.63



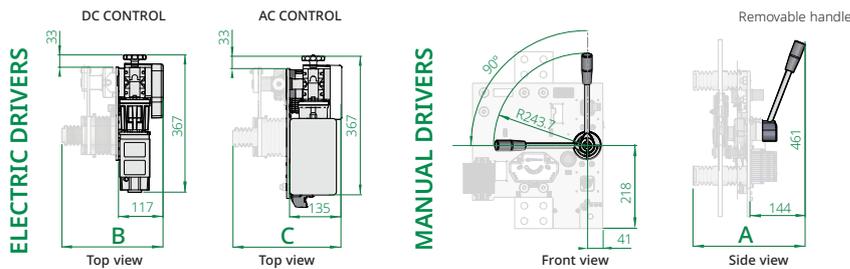
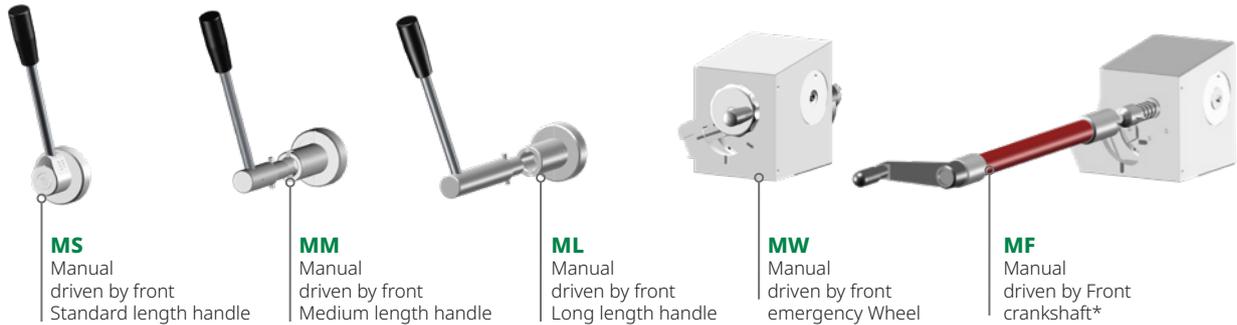
SW.18...
2-POLES
configurations

OPERATION DEVICES

ELECTRIC DRIVERS



MANUAL DRIVERS



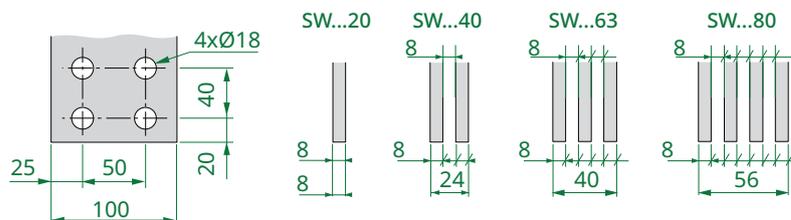
*Front crankshaft to be ordered separately

These schemes are valid for EW, EC and EN.

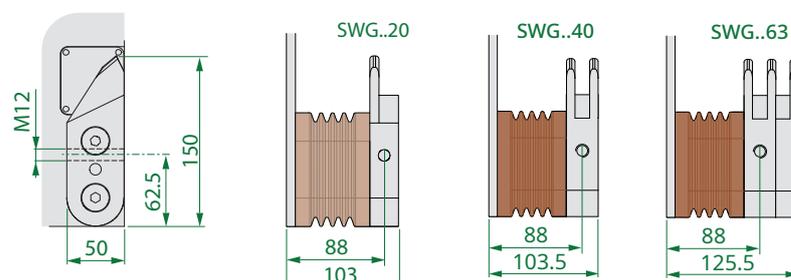
For other configuration contact Sécheron.

| DIMENSIONS | | A | B | C |
|-----------------|--------------------|-----------|-----------|-----------|
| SW.18.20 | - 1 pole / 2 poles | 290 / 426 | 263 / 399 | 281 / 417 |
| SW.18.40 | - 1 pole / 2 poles | 306 / 458 | 279 / 431 | 297 / 449 |
| SW.18.63 | - 1 pole / 2 poles | 324 / 494 | 297 / 467 | 315 / 485 |
| SW.18.80 | - 1 pole | 340 | 313 | 331 |

The busbars or cables must be mechanically fixed outside the SW disconnector, and their contact surface must be parallel to the HV connections:

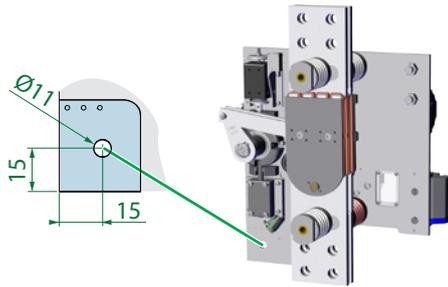


FOR ALL DEVICES



SWG EARTHING POLE

DETAILS OF THE EARTH CONNECTION ON THE BASE PLATE



* On request

WEIGHTS

| SWS | 1 pole | | | | 2 poles | | |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 18.20 | 18.40 | 18.63 | 18.80 | 18.20 | 18.40 | 18.63 |
| MA [kg]: ± 1 kg | 12 | 16 | 20 | 24 | 20 | 28 | 36 |
| MO [kg]: ± 1 kg | 18 | 22 | 26 | 30 | 26 | 34 | 42 |

| SWG | 1 pole | | | 2 poles | | |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 18.20 | 18.40 | 18.63 | 18.20 | 18.40 | 18.63 |
| MA [kg]: ± 1 kg | 13 | 19 | 28 | 24 | 36 | 48 |
| MO [kg]: ± 1 kg | 19 | 25 | 31 | 30 | 42 | 54 |

| SWI / SWL | 1 pole | | | 2 poles | | |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 18.20 | 18.40 | 18.63 | 18.20 | 18.40 | 18.63 |
| MA [kg]: ± 1 kg | 16 | 22 | 28 | 26 | 38 | 50 |
| MO [kg]: ± 1 kg | 22 | 28 | 34 | 32 | 44 | 56 |

Additional info.

MA : manual operation
MO: electric operation

The given weight corresponds to the heaviest AC motor configuration.

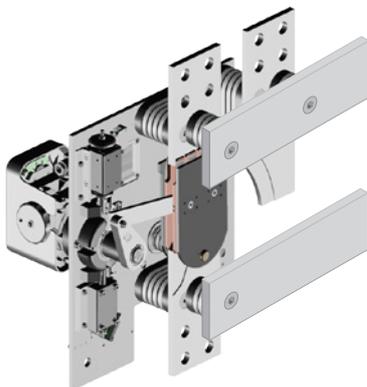
For DC motor, weights are slightly lower.

Weight may be different depending on product configuration with options.

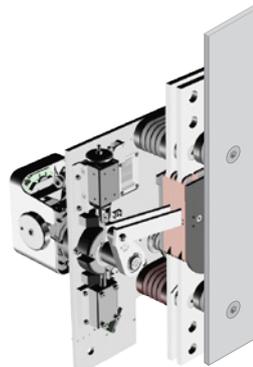
SW FIXATION

EXAMPLE OF EXECUTIONS

SWI

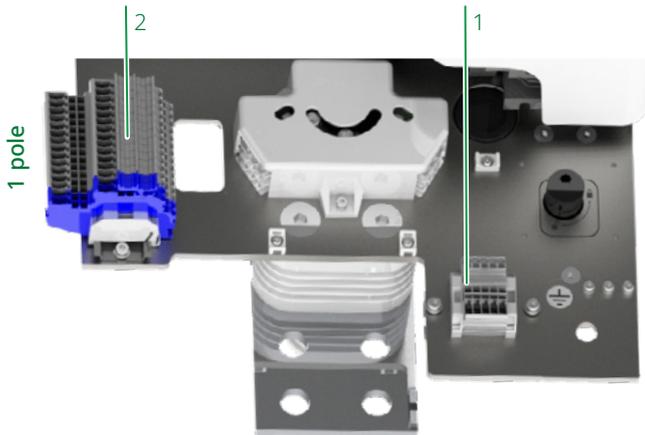


SWS-SWG



The SW series switches are fixed vertically as shown here by means of M12 screws.

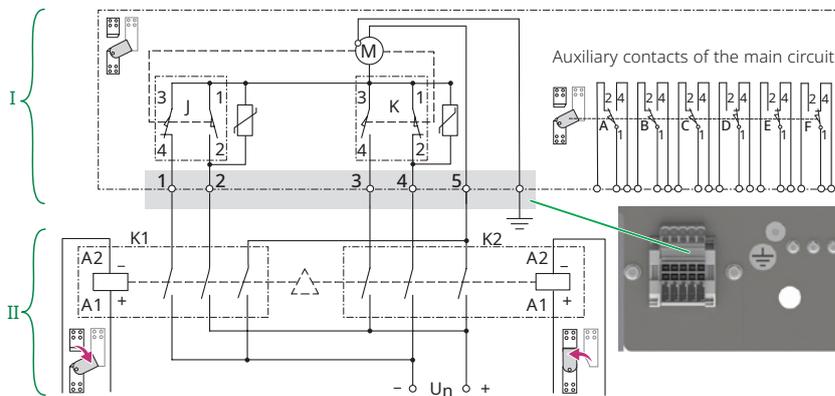
LOW VOLTAGE CONTROL AND INTERFACES



Legend of the schemes:

1. Terminal block for motor control only.
2. Terminal block to connect the auxiliary switches of each pole for SW open/close status (two poles version).

CONTROL DIAGRAM FOR DC VOLTAGE MOTOR



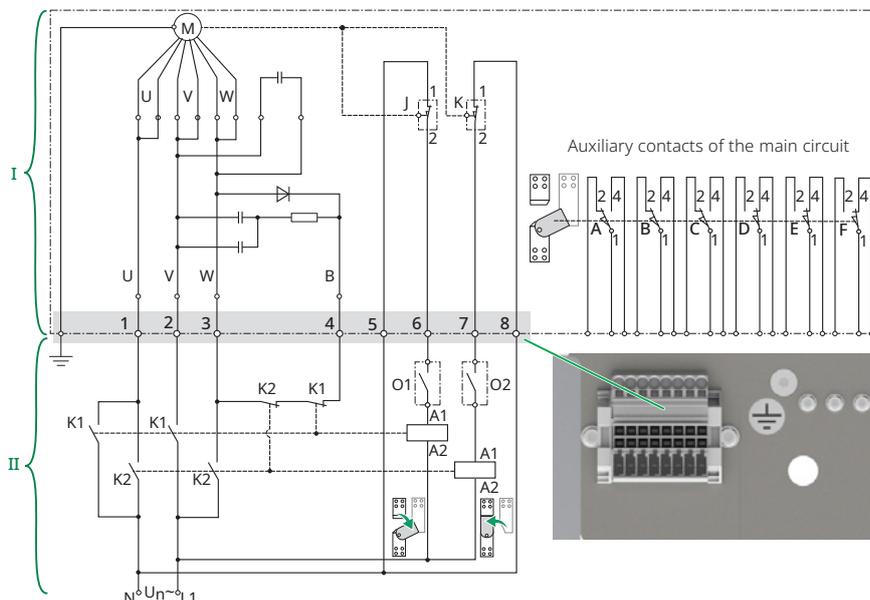
Control scheme valid for all SW...

As the motor needs to be dynamically braked, make the external circuit (II) as shown on this diagram:

Legend of the schemes:

- I. SW scope.
- II. Customer scope. Both contactors K1 and K2 must be mechanically interlocked to avoid them to be triggered at the same time; and each of them must have three NO contacts.

CONTROL DIAGRAM FOR AC VOLTAGE MOTOR



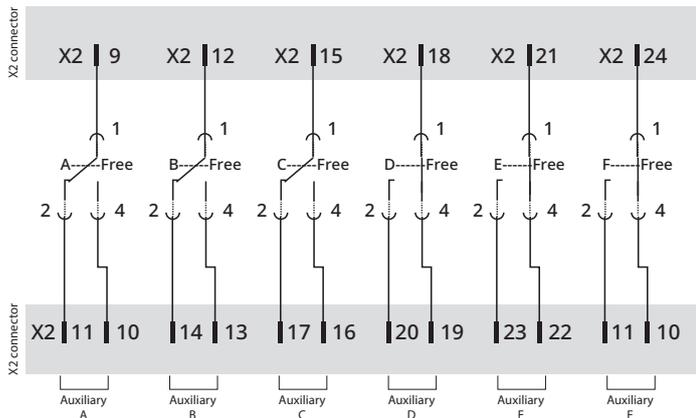
As the motor needs to be dynamically braked, make the external circuit (II) as shown on this diagram:

Legend of the schemes:

- I. SW scope.
- II. Customer scope. Each of the K1 and K2 contactors must have two NO and one NC contacts.

This interface is for SWX only - it is a typical example. For other configuration please contact Sécheron.

WAGO - AUXILIARY CONNECTION



LOW VOLTAGE MOBILE CONNECTOR (DESIGNATION CODE FOR SEPARATELY ORDERED ITEMS)

Please contact Sécheron to define item number

LOCKING SYSTEMS

STANDARD

Manually operated units having no lock (key or electromagnet) to lock **SW** in close position are equipped with manual locking lever. A change-over auxiliary switch indicates the locking status of the lock system.

OPTIONAL (SUBJECT OF ADDITIONAL COSTS)

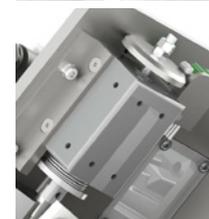
- ✓ Key lock system
- ✓ Keys can only be removed in locked positions. Key lock the moving contact in a defined position (open and/or closed).
- ✓ Key lock system is of Ronis type. For other type, please contact Sécheron.
- ✓ The electromagnet locks the moving contact in a defined position (open and/or closed).
- ✓ When the electromagnet is energized, the main contact is unlocked and can then be operated.
- ✓ A change-over auxiliary switch indicates the locking status of the lock system.
- ✓ **SW** with manual operation, can also be delivered with a simple padlock system enabling to lock the **SW** in OPEN position with up to 6 padlocks.
- ✓ A change-over auxiliary switch must be implemented in a control circuit for motor **SW**.



**MANUAL LOCKING LEVER
(FOR MANUAL OPERATED DEVICE)**



KEY LOCK SYSTEM



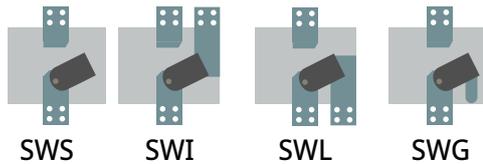
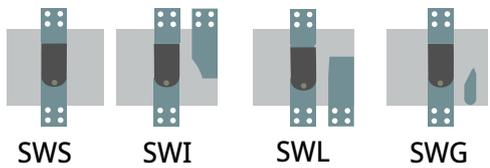
ELECTROMAGNET LOCK SYSTEM



PADLOCK SYSTEM

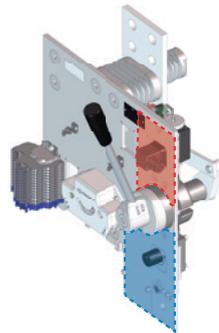
LOCKING SYSTEM CONFIGURATIONS

LOCKED POSITION OF MOVIG CONTACT



LOCKING SYSTEMS POSITIONS

The key and electromagnet locks systems are located in upper position or lower position on the main plate.



Upper position
second key location

Lower position
If only one key selected.

CONFIGURATION TABLE

| Position Z Close | Position Y Open | Standard | option |
|---|----------------------------|-------------------|-------------------|
| — | — | 00 ⁽¹⁾ | |
| Manual lock (bottom) | | MM ⁽²⁾ | |
| — | Lock w/o cylinder (bottom) | | 0C ⁽¹⁾ |
| — | EMAG (bottom) | | 0E ⁽¹⁾ |
| — | Random keylock (bottom) | | 0K ⁽¹⁾ |
| Lock w/o cylinder (bottom) | | | CC |
| Lock w/o cylinder (bottom) | — | | C0 ⁽¹⁾ |
| Lock w/o cylinder (bottom) | Lock w/o cylinder (bottom) | | CD ⁽²⁾ |
| EMAG (bottom) | | | EE |
| EMAG (bottom) | — | | E0 ⁽¹⁾ |
| EMAG (upper) | Lock w/o cylinder (bottom) | | FC |
| EMAG (upper) & Lock w/o cylinder (bottom) | | | GG |
| Random keylock (bottom) | | | KK |
| Random keylock (bottom) | — | | K0 ⁽¹⁾ |
| Random keylock (bottom) | Manual Lock (upper) | | KN ⁽²⁾ |
| Manual Lock (upper) | Lock w/o cylinder (bottom) | | NC ⁽²⁾ |
| Manual lock (upper) | EMAG (bottom) | | NE |
| Manual lock (upper) | Random keylock (bottom) | | NK ⁽²⁾ |
| Random keylock (upper) | Random keylock (bottom) | | LK ⁽²⁾ |

⁽¹⁾ Electric version

⁽²⁾ Manual version

DESIGNATION CODE FOR ORDERING

- Be sure to establish the designation code from the latest version of our brochure by downloading it from the website: www.secheron.com
- Be careful to write down the complete alphanumeric designation code with 13 characters when placing your order.
- For technical reasons some variants and options indicated in the designation code might not be combined.
- For other configurations not described in the brochure, please contact Secheron.
- The bold characters of the designation code define the device type.

| | | | | | | | | | |
|--------------------------------------|-----------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| Example of customer's choice: | SW | I | 18 | 40 | EW | 1 | 24 | 00 | ZZ |
| Line: | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

DESIGNATION CODE*

(*) Options are subject to additional costs

| Line | Description | Designation | standard | Options | Customer's choice |
|------|--|--|--|--|-------------------|
| 10 | Product type | Indoor disconnecter | SW | | SW |
| 11 | Application | Disconnecter Grounding Disconnecter Change Over (2 terminals on top) Change Over (2 terminals on bottom) | S | G I L | |
| 12 | Rated operational voltage | 1,800 V | 18 | | |
| 13 | Conventional free-air thermal current ⁽¹⁾ | 2,000 A 4,000 A 6,300 A 8,000 A | 20 40 63 80 | | |
| 14 | Operation | Electric, with side emergency Wheel Manual, driven by front Standard length handle, 150 mm Manual, driven by front Medium length handle, 180 mm Manual, driven by front Long length handle, 350 mm Manual, driven by front emergency Wheel Manual, driven by Front crankshaft Electric, with side emergency Crankshaft Electric, with side hexagonal Nut Electric, with Front emergency crankshaft | EW MS | MM ML MW MF EC EN EF | |
| 15 | Number of pole | 1 pole 2 poles ⁽²⁾ | 1 2 | | |
| 16 | Nominal supply voltage | None 24 V _{DC} 48 V _{DC} 60 V _{DC} 110 V _{DC} 125 V _{DC} 220 V _{DC} 230 V _{AC} - 50/60 Hz 127 V _{AC} - 50/60 Hz | ZZ 11 23 | 24 48 60 12 22 17 | |
| 17 | Locking of moving contacts (for other configuration please see on page 11) ⁽³⁾ | Position Z (SWS close) Position Y (SWS open) No lock Manual lock on bottom Random keylock (bottom) EMAG (bottom) EMAG (upper) & Random keylock (bottom) --- ⁽⁶⁾ | 00 ⁽⁴⁾ MM ⁽⁵⁾ | KK EE GG | |
| 18 | Customization | No customization | ZZ | | |

⁽¹⁾ The selection of the appropriate current rating is function of the load cycle. Check with Sécheron that your selection is consistent with the application load cycle. Please refer to overload capacity table page 5. ⁽²⁾ Prohibited for 8,000 A. ⁽³⁾ For manual devices, all positions not locked with lock or EMAG will be locked by manual locking lever. ⁽⁴⁾ Electrical version. ⁽⁵⁾ Manual version. ⁽⁶⁾ For other locking configuration, Please refer to page 11.



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Place and date: