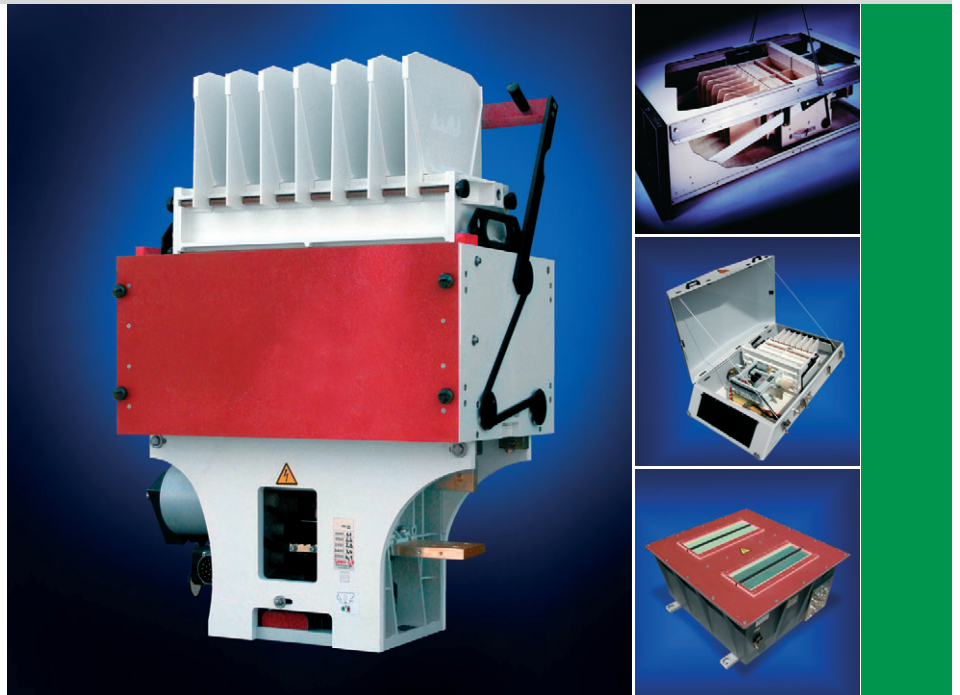


High-Speed DC Circuit-Breaker
for Rolling Stock
Type **UR26**



The **UR26** is a DC high-speed current limiting air Circuit-Breaker, trip free, single pole, bi-directional, with electromagnetic blow-out, electric control circuits and direct over-current instantaneous release.

Its simple design and high insulation level combined with its compliance to both standards EN50123/IEC61992 for Fixed Installations and EN/IEC60077 for Rolling Stock, guarantee to the **UR26** circuit-breaker a very high reliability and an exceptionally long life time.

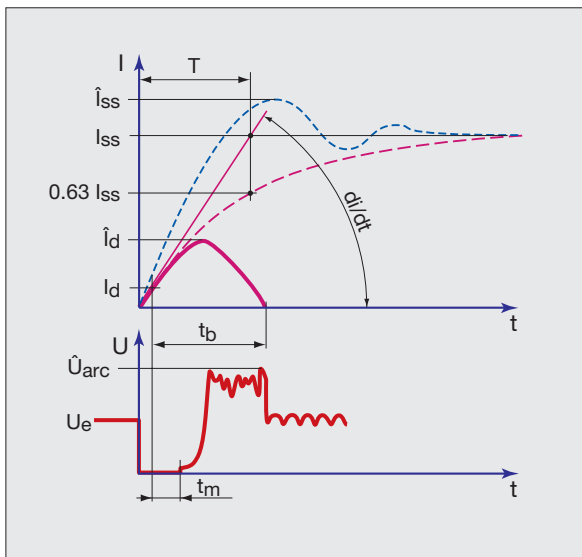
To solve the installation problems of the circuit-breaker in the vehicle, Sécheron has developed an original concept of protective box that enable the **UR26** to be installed horizontally under the floor, or on the roof, or vertically inside the vehicle.

With its proven worldwide experience and acceptance, Sécheron's circuit-breaker offers you the key product for such a strategic and critical application that is to guarantee the highest safety to your equipment as well as to the people operating it and using it.

Main features

- Conventional thermal current 2600 A
- Rated operational voltage 900 Vdc, 1800 Vdc and 3600 Vdc
- Rated insulation voltage up to 4800 Vdc for rated voltage 3600 Vdc
- Safe with a high insulation level: over-voltage category OV4
- Pollution degree PD3
- Limited maximum arc voltage
- High rated short-circuit making and breaking capacity
- Electro-magnetic closing with electric holding
- Five double contacts auxiliary switches
- Low voltage 22-poles connector interface for auxiliary contacts and control coil
- Operational frequency C3
- Very low maintenance requirements
- Proven design with worldwide experience and acceptance
- Insulation material according to relevant BS, NF, ASTM, IEC and DIN standards
- Designed and tested according to EN/IEC 60077-1/3, IEC 61373
- A large number of different options to match the various applications requirements

Breaking current parameters



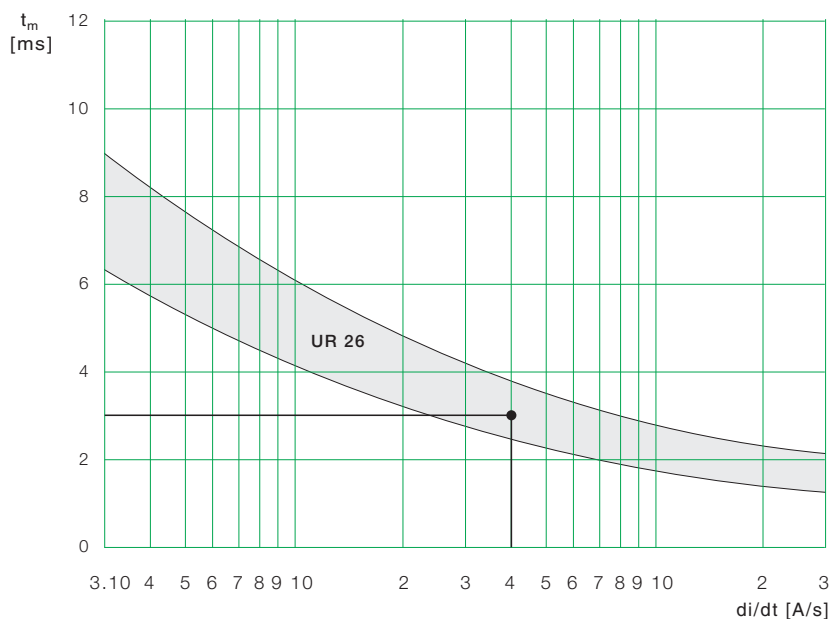
- I_{ss} = Short-circuit current
- \hat{I}_{ss} = Peak of I_{ss}
- I_d = Setting of maximum current release
- \hat{I}_d = Cut off current
- di/dt = Initial current rate of rise
- T = Circuit time constant
- U_e = Rated operational voltage
- \hat{U}_{arc} = Peak of the arc voltage
- t_m = Opening time
- t_b = Total break time

Opening time

Relationship between opening time t_m and the initial rate of rise of current di/dt for direct instantaneous over-current release.

Example for an initial rate of rise of current of $4 \cdot 10^6$ A/s: the opening time is about 3 ms.

Remark: for a shorter opening time the option “indirect release” can be used (refer to “option” paragraph).



Designation code (standard version)

Type designation

Description

| | |
|---|--|
| Breaker type | UR |
| Conventional free air thermal current | 2600 A |
| Rated operational voltage | 900 Vdc 1800 Vdc 3600 Vdc |
| Application | Traction |
| Mounting position | Vertical |
| Protective enclosure | No |
| Arc chute installation | For arc chutes 81/82 Type SI-CC for arc chute 64 ⁽¹⁾ |
| Nominal control voltage | 24 Vdc 36 Vdc 48 Vdc 72 Vdc 110 Vdc |
| Varistor on coil | No |
| Direct over-current instantaneous release | 1.4 - 2.7 kA 2.0 - 5.0 kA |
| Pre-set over-current setting x 10 (A) Example: 210 x 10 = 2100 A | 210 |
| Indirect release | No |

UR 26 81 T D - 1 024 0 DV1 210 0

| Designation | Code |
|--|-------|
| UR | UR |
| 2600 A | 26 |
| 900 Vdc | 8 1 |
| 1800 Vdc | 8 2 |
| 3600 Vdc | 64 |
| Traction | T |
| Vertical | D |
| No | - |
| For arc chutes 81/82 | 1 |
| Type SI-CC for arc chute 64 ⁽¹⁾ | 3 |
| 24 Vdc | 0 2 4 |
| 36 Vdc | 0 3 6 |
| 48 Vdc | 0 4 8 |
| 72 Vdc | 0 7 2 |
| 110 Vdc | 1 1 0 |
| No | 0 |
| 1.4 - 2.7 kA | DV 1 |
| 2.0 - 5.0 kA | DV 2 |
| 210 | 2 1 0 |
| No | 0 |

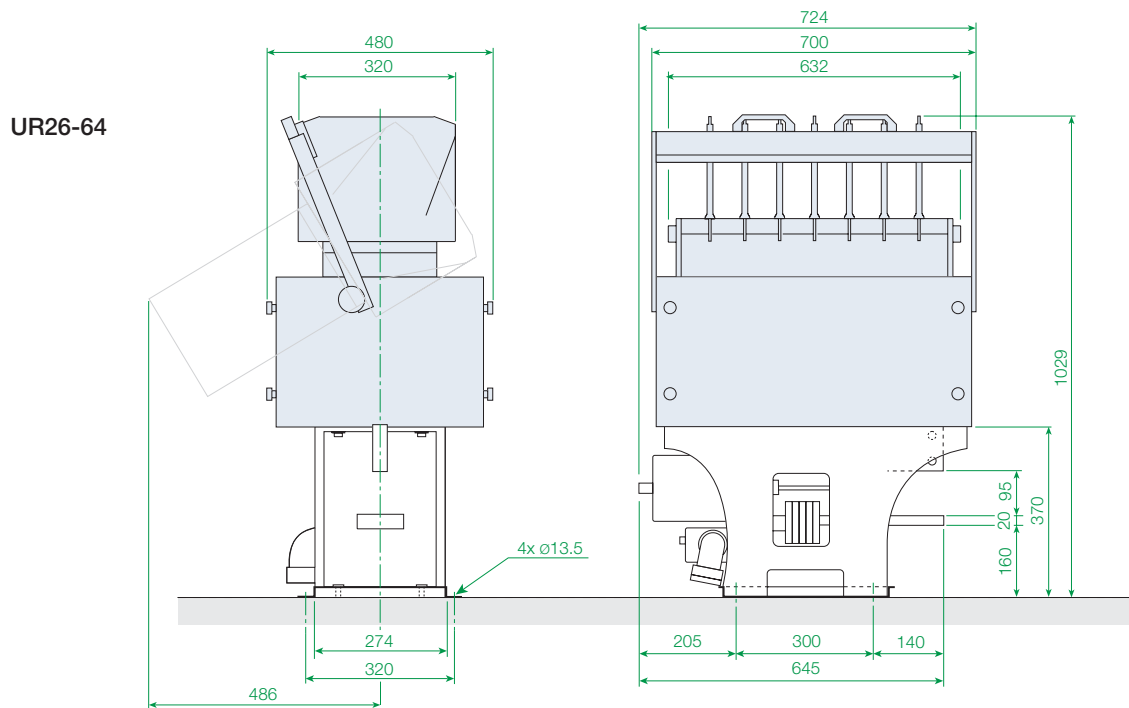
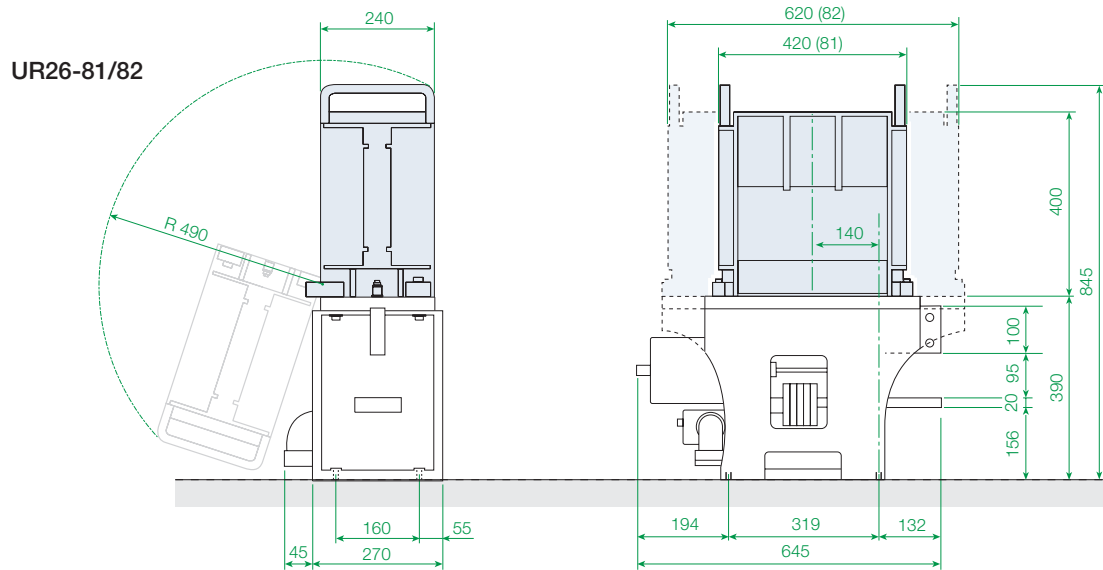
(1) Includes an arc chute lifting lever located on connector's side and an additional isolation around the arc chute (not suitable for execution with the optional type TCP or TCS protective enclosure)

Technical data

| | Symbol | Unit | UR26-81 | UR26-82 | UR26-64 |
|---|-----------|-----------------|----------------------------------|-----------|-----------|
| MAIN CIRCUIT | | | | | |
| Rated operational voltage | U_e | [Vdc] | 900 | 1800 | 3600 |
| Maximal operational voltage | | [Vdc] | 1000 | 2000 | 4000 |
| Rated insulation voltage | U_i | [Vdc] | 3000 | 3000 | 4800 |
| Rated operational current | I_e | [A] | 2600 | 2600 | 2600 |
| Conventional free air thermal current ($T_{amb}=+40^{\circ}C$) | I_{th} | [A] | 2600 | 2600 | 2600 |
| Operational frequency | | | C3 | C3 | C3 |
| Overvoltage category | | | OV4 | OV4 | OV4 |
| Rated impulse withstand voltage | U_{imp} | [kVdc] | 40 | 40 | 40 |
| Rated short-circuit making & breaking capacity /Time constant | | | | | |
| ISS / T1 | | [kA]/[ms] | 100 / 0 | 80 / 0 | 40 / 0 |
| ISS / T2 | | [kA]/[ms] | 100 / 15 | 80 / 15 | 35 / 15 |
| ISS / T3 | | [kA]/[ms] | 50 / 50 | 75 / 40 | 35 / 30 |
| ISS / T4 | | [kA]/[ms] | 17 / 150 | 18 / 100 | 35 / 50 |
| Direct over-current instantaneous release | | [kA] | 1.4 - 2.7 | 1.4 - 2.7 | 1.4 - 2.7 |
| | | [kA] | 2.0 - 5.0 | 2.0 - 5.0 | 2.0 - 5.0 |
| Rated power frequency withstand voltage (50 Hz, 1 min) | U_{50} | | | | |
| - Between opened main contact | | [kV] | 15 | 15 | 15 |
| - Between closed main contact and earth & control circuit | | [kV] | 15 | 15 | 15 |
| - Between low voltage circuits and earth | | [kV] | 2 | 2 | 2 |
| CONTROL CIRCUIT | | | | | |
| Nominal voltage | U_n | [Vdc] | 24, 36, 48, 64, 72, 96, 110, 125 | | |
| Nominal closing power ($T_{amb}=+20^{\circ}C$) | P_c | [W]/[s] | 1300/1 | | |
| Nominal holding power for electric holding ($T_{amb}=+20^{\circ}C$) | | [W] | 2.3 | | |
| Mechanical opening time* at U_n and $T_{amb}=+20^{\circ}C$ | t_o | [ms] | 15 to 30 | | |
| Mechanical closing time* at U_n and $T_{amb}=+20^{\circ}C$ | t_c | [ms] | ~ 150 | | |
| * when signal received by the coil | | | | | |
| AUXILIARY CONTACTS CIRCUIT | | | | | |
| Number of contacts | | | 5a (NO)+5b (NC) | | |
| Rated voltage (potential free contacts) | | [Vdc] | 24 to 110 | | |
| Rated current | | [A] | 10 | | |
| Maximum breaking current | | | | | |
| - Ohmic load at 110 Vdc | | [A] | 1 | | |
| - Inductive load $\tau = 15$ ms at 110 Vdc | | [A] | 0.3 | | |
| Minimum let through current at 24 Vdc (1) | | [mA] | 10 | | |
| (1) For a dry and clean environment | | | | | |
| OPERATING CONDITIONS | | | | | |
| Ambient temperature | T_{amb} | [$^{\circ}C$] | -25 to +40 | | |
| Minimum mechanical durability | N | Operations | 8x25000 | | |
| Altitude | | [m] | <1400 | | |
| Humidity | | | Class 5K2 | | |
| Pollution degree | | | PD3 | | |

Main dimensions

| Circuit breakers weights | | | |
|--------------------------|------|------|------|
| UR26 | ..81 | ..82 | ..64 |
| [kg] | 85 | 95 | 159 |



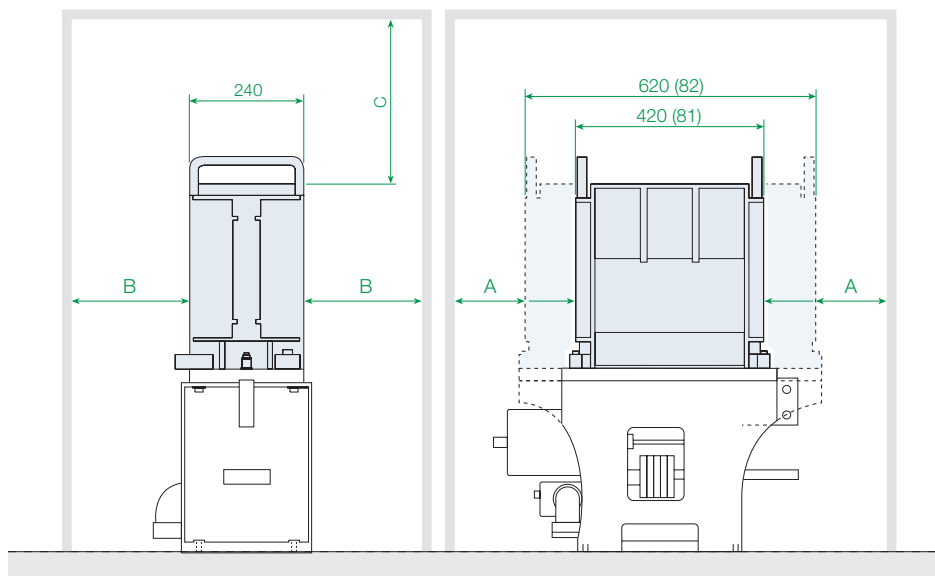
Insulating distances

| Minimum insulating distances [mm] ⁽¹⁾ | | | |
|--|--------------------|-----|-----|
| | To insulating wall | | |
| UR26.. | 81 | 82 | 64 |
| A | 25 | 25 | 25 |
| B | 95 | 95 | 200 |
| C | 750 | 750 | 875 |
| C ⁽²⁾ | 350 | 350 | - |

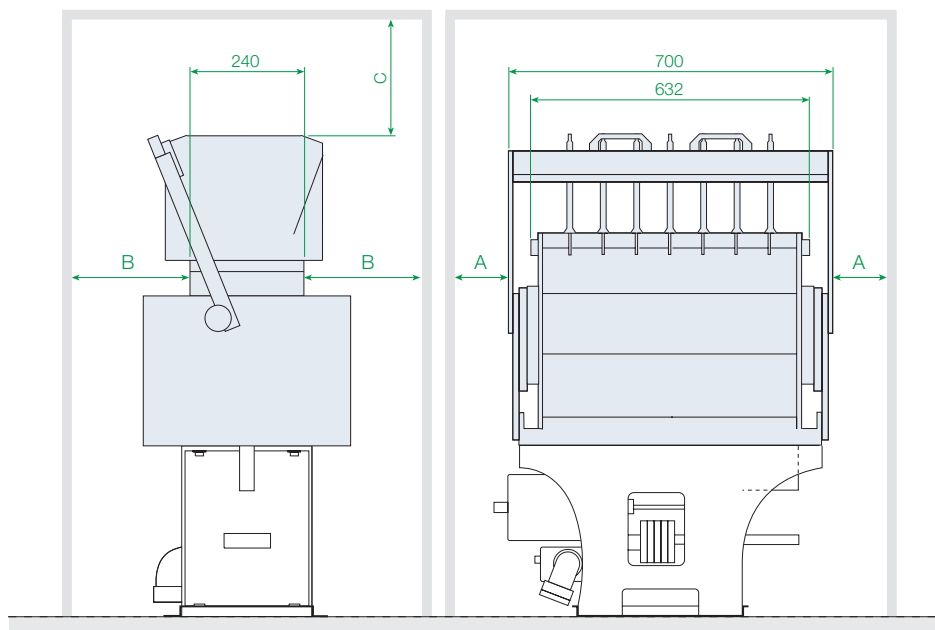
⁽¹⁾ At maximum short-circuit breaking capacity. For smaller short-circuit values, smaller distances can be used.

⁽²⁾ Insulated grid with 50% of surface opening.

UR26 81/82



UR26 64



Options (subject to additional costs)

Type designation

| Description | Designation | Code | UR | 26 | 81 | T | C | P | 4 | 064 | 1 | DV1 | 210 |
|-------------------------|--|-------|----|----|----|---|---|---|---|-----|---|-----|-----|
| Mounting position | Horizontal | C | | | | | | | | | | | |
| Protective enclosure | For indoor mounting | P | | | | | | | | | | | |
| | For roof mounting ⁽¹⁾ | P | | | | | | | | | | | |
| | For underframe mounting ⁽¹⁾ | S | | | | | | | | | | | |
| Arc chute installation | Type SI-OC for arc chute 64 | 4 | | | | | | | | | | | |
| | Type S-CC for arc chute 64 | 5 | | | | | | | | | | | |
| | Type S-OC for arc chute 64 | 6 | | | | | | | | | | | |
| | Without specific types | - | | | | | | | | | | | |
| Nominal control voltage | 64 Vdc | 0 6 4 | | | | | | | | | | | |
| | 96 Vdc | 0 9 6 | | | | | | | | | | | |
| | 125 Vdc | 125 | | | | | | | | | | | |
| Varistor on coil | Yes | 1 | | | | | | | | | | | |
| Indirect release | BI 24 | 1 | | | | | | | | | | | |

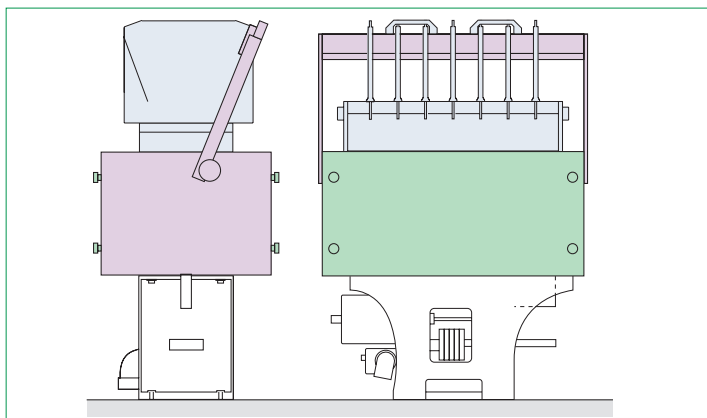
(1) Available only in horizontal mounting position

Compatibility of the type of installation and protective enclosure for each arc chute

The non-bulleted combinations are not possible.

| Mounting position | Rated operational voltage 81/82 | | | | | | Rated operational voltage 64 | | | | | |
|------------------------|---------------------------------|---|---|--------------|---|---|------------------------------|---|---|--------------|---|---|
| | C (horizontal) | | | D (vertical) | | | C (horizontal) | | | D (vertical) | | |
| Protective enclosure | - | P | S | - | P | S | - | P | S | - | P | S |
| Arc chute installation | 1 (81-82) | ● | ● | ● | | | | | | | | |
| | 3 (64 SI-CC) | | | | | | | | | ● | | |
| | 4 (64 SI-OC) | | | | | | | | | ● | | |
| | 5 (64 S-CC) | | | | | | | | | | | ● |
| | 6 (64 S-OC) | | | | | | | | | ● | | ● |

Arc chute 64 installation

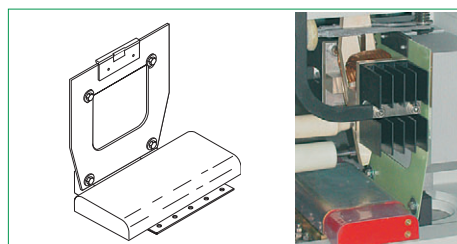


Type SI-OC includes an arc chute **lifting lever** located on connector opposite side and an **additional insulation** around the arc chute.

Type S-CC includes an arc chute **lifting lever** located on connector side.

Type S-OC includes an arc chute **lifting lever** located on connector opposite side.

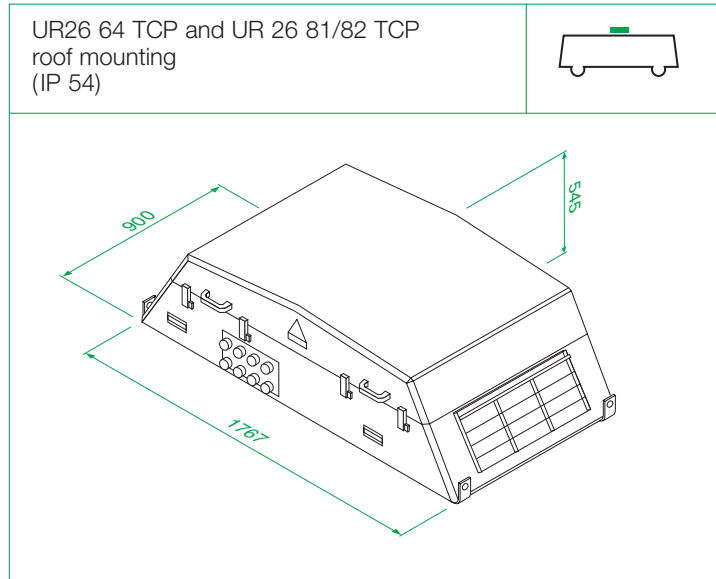
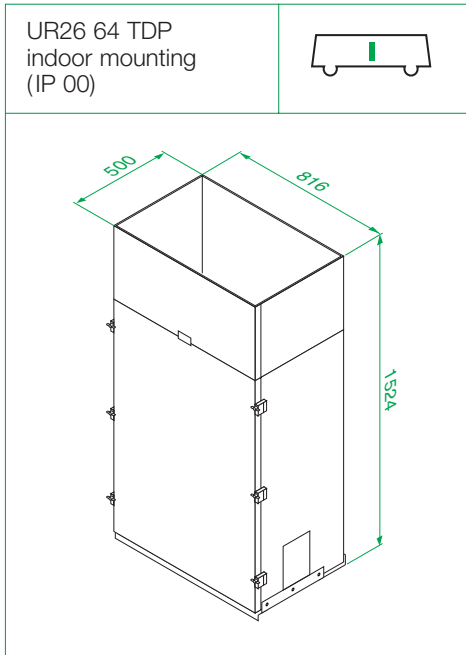
Indirect release - BI 24



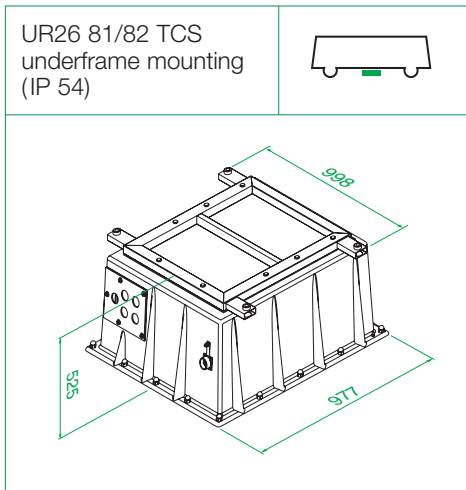
The indirect release enables to shorten the opening time between 3.6-4.6 ms when required by specific application.

The indirect release has to be controlled by a control unit type CID-3 (not included in the circuit-breaker - to be ordered separately).

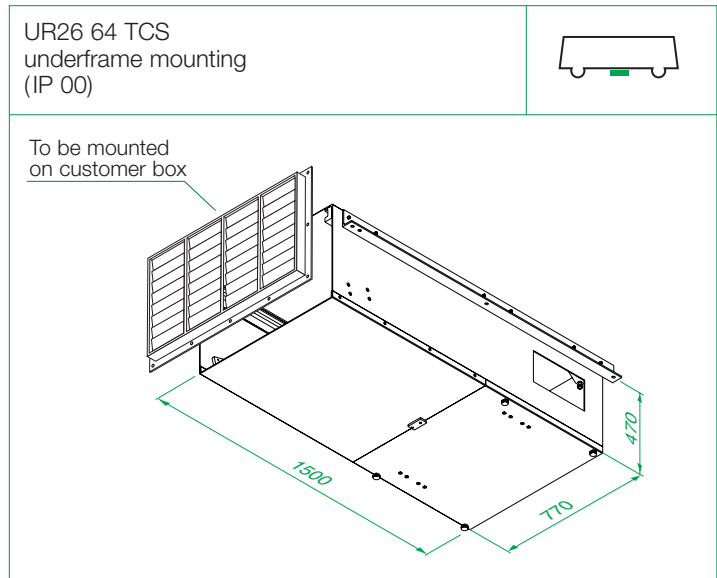
Protective enclosure



The TCP enclosure can be directly mounted on the vehicle's roof.



The TCS enclosure for UR26-81 or UR26-82 can be directly mounted under the vehicle's frame.



The TCS enclosure for UR26-64 is only designed to lower the clearance distance around the breaker and must be mounted in the customer's own breaker box.

Short-circuit making and breaking capacities for versions with protective enclosures are different from those of the page 4 and are available on request.

The low voltage mobile connector need to be ordered separately.

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