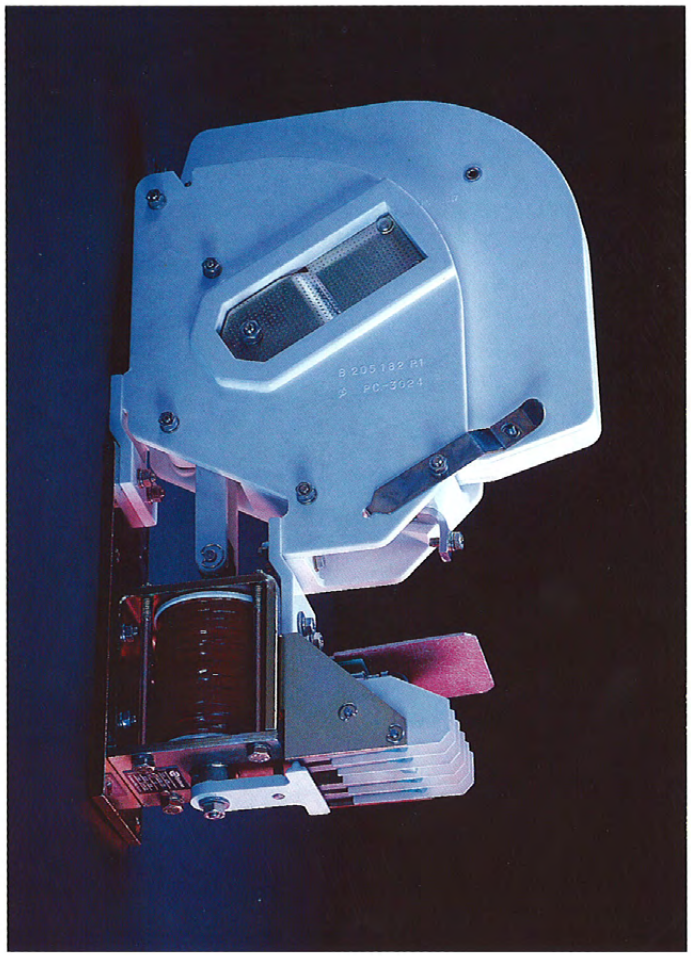
Contactors Type HS for Traction and Industry



Sécheron

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1. General

The Sécheron contactors of the Type HS for both direct (DC) and alternating current (AC) can be used as polarity-independent circuit-breakers in electric traction vehicles. They are used primarily as heating contactors, filter capacitor precharging contactors and as contactor relays in auxiliary circuits.The contactors have been specially designed for use under the extremely harsh operating conditions encountered with electric traction vehicles and for particularly high switching rates. Other main features are their space-saving design, large insulation distances and minimum maintenance requirements. This type of contactor can also be used in industrial equipment.

2. Contactor types

The contactors of the Type HS are for use with rated voltages up to 4500 V and currents up to 50 A.

Actuation of the moving contact is achieved electromagnetically and it is opened by a resetting spring after the holding current has been switched off.

4. Modules

4.1 The *contact unit* consists of a fixed contact holder and a moving contact lever. Both parts are fitted with easily replaceable, hard-silver coated arcing contacts. They are spring mounted to avoid contact bounce. The gliding movement of the contacts when they close ensures that any dirt or oxidation on the surface is scrubbed off.

4.2 *Actuation* of the moving contact is achieved using a solenoid plunger together with an actuating lever. It is opened by the armature resetting spring. The actuator is designed for continuous duty and requires no economy resistor.

4.3 In the *arc chute* the arc cools down and produces the necessary overvoltage.

4.4 The *blow-out coil*, adapted to the effective current, ensures rapid and reliable extinction of the arc.

For the effective current values following blow-out coils are available: 1A - 2A - 5A - 7A - 8.5A - 11A - 15A - 50A.

Additional important data when ordering :

- Voltage for the drive (e.g. 110 V DC)
- Number of auxiliary contacts (e.g. 4)
- Diagram of auxiliary contacts (e.g. NC, NO, NO, NC)
- Effective current to determine the arc blow-out coil (see 4.4)

Further technical data see separate descriptions.

The individual types differ as follows:

Type			
	HSa	HSl	Auxiliary contacts as bridge contacts (for higher current values)
	HSb*	HSm*	Auxiliary contacts as snap switches (for lower current values)
conforms with the IEC standards		conforms with the BS 2618 standards (increased insulation distance)	

An increased insulation distance means that the circuit-breaker is larger and needs a greater height for installation (see the Dimension drawings).

* If required, they can be supplied with a varistor in parallel to the actuation solenoid.

3. Construction

All contactor types are of the same basic construction. They consist of the following modules:

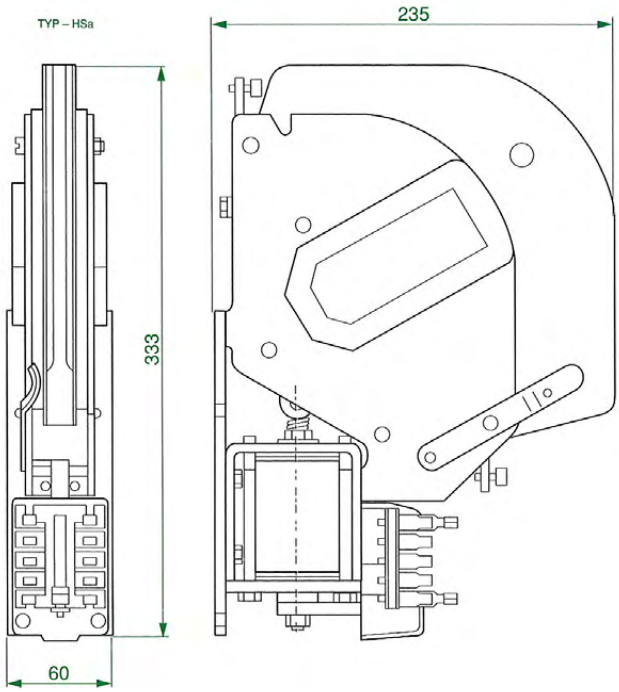
- Contact unit
- Actuating solenoid
- Arc chute
- Electromagnetic arc blow-out coil
- Auxiliary contacts
- Base plate

4.5 The 4 *auxiliary contacts* are designed either as bridge contacts or as a snap switch and can be selected as normally open and/or normally closed.

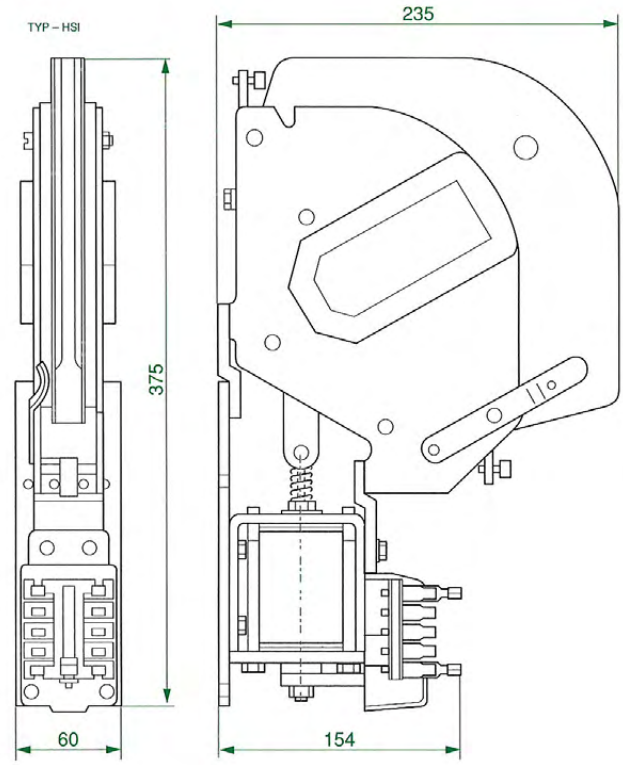
4.6 The *base plate* upon which the individual modules are mounted is made of synthetic resin and is, similar to other parts, continuously upgraded in line with the latest ecological information.

5. Main dimensions

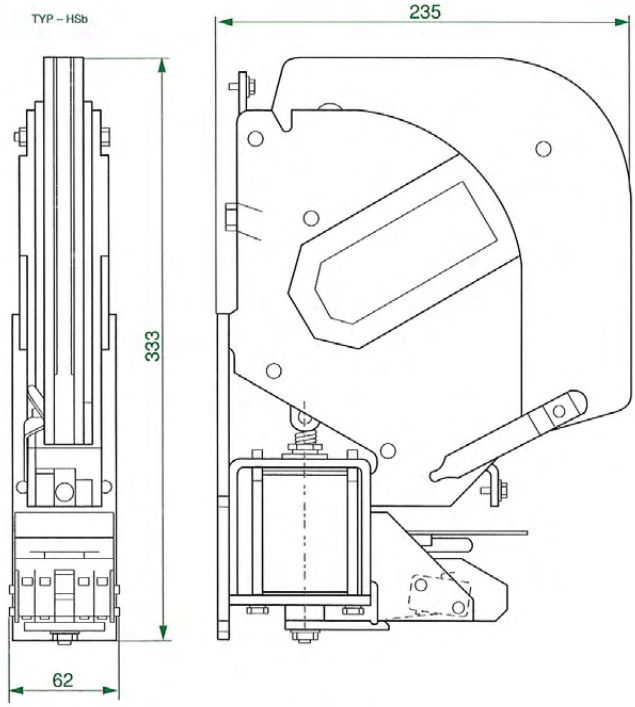
Type HSa



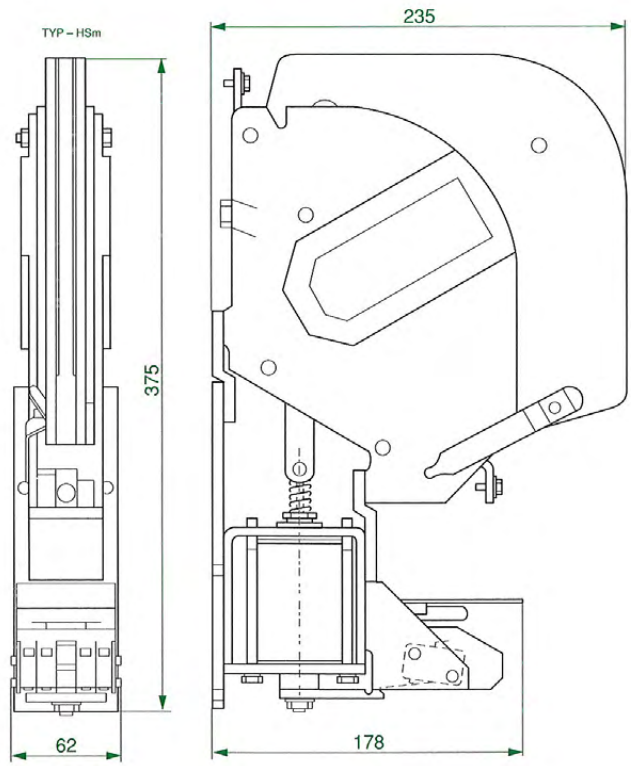
Type HSl



Type HSb



Type HSm



6. Main technical data

6.1 *General*

Weight	Types HSa, HSb: 5.7 kg HSI, HSm: 5.8 kg
Mounting	vertically on wall or scaffold
Ambient temperature	–40°C - +40°C
Switching frequency	max. 2 switchings per second
Mechanical life duration	min. 5 x 10^6 switchings
Standard specifications	IEC publ. 77 (1968) IEC publ. 158.1 (1970) VDE 0660

6.2 *Main circuit*

Number of poles, nature of contact	1 normally open (HSa, HSI) closed (HSb, HSm)
Rated voltage	3000 V
Max. operating voltage	4500 V
Suitable supply	DC or AC from 16⅔ Hz up to 60 Hz
Rated current	50 A
1 hour rated current	55 A
5 minutes rated current	75 A
Closing current limit	250 A
Interrupting current limit (ohmic)	
DC	4500 V 80 A 3600 V 100 A 1800 V 150 A
AC	3600 V 200 A
Closing time (U_n)	approx. 100 ms
Interrupting time (mech.)	8 ms - 12 ms without protective device 14 ms - 20 ms with parallel connected varistor to the coil 15 ms - 20 ms without diod 100 ms - 200 ms with parallel connected diod to the coil

6.3 *Control circuit*

Actuation

Construction	electromagnet with resetting spring
Rated voltage U_n	12 V DC - 220 V DC
Operating voltage	0.7 - 1.25 U_n
Power consumption at U_n	approx. 20 W

Auxiliary contacts

Number of poles, nature of contacts: 4; N/O and/or N/C

		HSa, HSI	*HSb, HSm*
Rated voltage		220 V DC	220 V DC
Rated current		5 A	6 A
Closing current max.		25 A	25 A
Interrupting current max.			
DC	48 V	8 A	1 A
	110 V	3 A	0.3 A
AC	220 V	8 A	3 A
Minimum transit current		20 mA	

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