

2018 Catalog



# CBX - CVX

Vacuum contactors up to 12 kV  
Fixed and withdrawable range of contactors

Medium Voltage Distribution

[CBX/CVX/schneider-electric.com](http://CBX/CVX/schneider-electric.com)

Life Is On

**Schneider**  
Electric

# CBX series, up to 12 kV fixed version

# Description of the device

## The vacuum contactors CBX/CBX-C include:

For electromagnetic mechanism and mechanical latch mechanism:

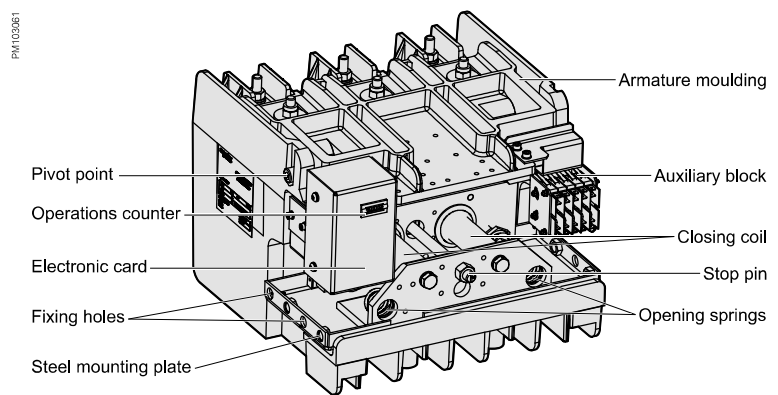
- Main and armature moulding with two pivot points
- A steel mounting plate
- Three vacuum switches (one vacuum switch in CBXS-C)
- Two closing coils
- One auxiliary contact block
- One electronic card and operations counter

And for the mechanical latch mechanism:

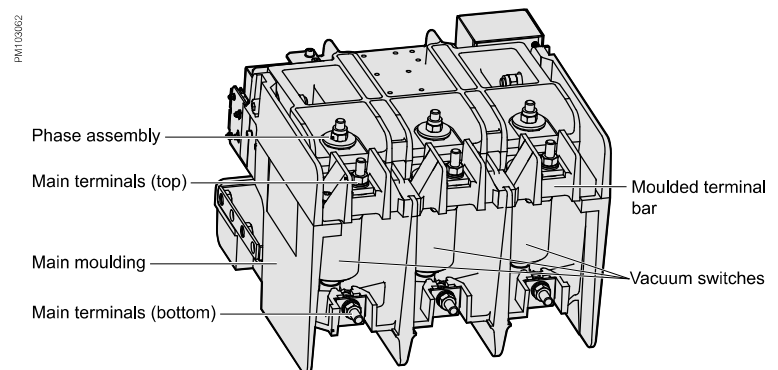
- One mechanical latch
- One tripping coil



Front view



Rear view



## Applications

CBX/CBX-C vacuum contactors are three phase switching devices, and each phase has a separate vacuum switch that switches at the first available current zero point.

- CBX: Up to 7.2 kV, for motor starting/reversing applications
- CBX-C: Up to 12 kV, for capacitor bank switching applications
- CBXS-C: Up to 12 kV, for single phase applications

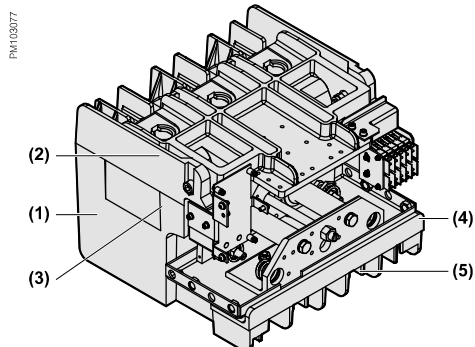
# Description of the device

## Main characteristics

Electrical characteristics according to IEC 62271-106			CBX	CBX-C	CBXS-C	
Phase to phase distance		mm	108	108	/	
Rated voltage	Ur	kV 50/60 Hz	7.2	12	12	
Insulation level	power frequency withstand	Ud	kV 50/60 Hz, 1 min <sup>(1)</sup>	20	28	28
	lightning impulse withstand	Up	kV peak	60	75	75
Rated operational current	Ie	A	400	315	315	
Utilization category			AC3-AC4			
Rated thermal current	Ith	A	400	400	400	
Rated short-circuit breaking current	Isc	kA	6	4	4	
Rated short-time withstand current	I <sub>k</sub> /t <sub>k</sub>	kA/1 s	6	5	5	
Rated peak withstand current	I <sub>p</sub>	kA	15	12.5	12.5	
Rated back to back capacitor bank breaking current		A	N/A	400	400	

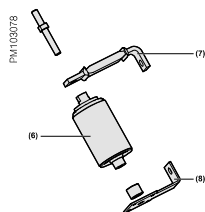
<sup>(1)</sup> Ud 32 kV, 50 Hz, 1 min available in standard

Common characteristics according to IEC 62271-106			CBX	CBX-C	CBXS-C
Mechanical endurance	for electromagnetic mechanism	op.	1 000 000		1 000 000
	for mechanical latch mechanism	op.	300 000		300 000
Electrical endurance at rated current		op.	250 000		250 000
Consumption closing power		W	500		80
Consumption holding power (magnet type)		W	80		80
Closing time		ms	120-200		70-110
Consumption opening power (mechanical type)		W	240		240
Opening time	for DC supply	ms	50-100		25-50
	for AC supply	ms	50-100		25-50
Operating rated ambient temperature		°C	-5/40		-5/40
Average relative humidity		over 24 h	< 95%		< 95%
		over 1 month	< 95%		< 95%



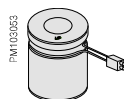
## Basic frame

1. Main moulding
2. Armature moulding
3. Two pivot points
4. A steel mounting plate
5. Stop pin



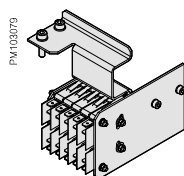
## Power part

6. Vacuum switch
7. Main terminals (top)
8. Main terminals (bottom)



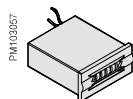
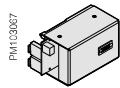
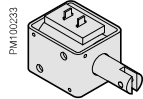
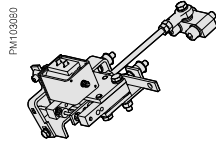
## Closing coil

- DC 24-60 V
- DC 110-250 V/AC 110-240 V.



## Auxiliary contact

- 5NO + 5NC, right hand side assembly



## Mechanical latch with Tripping coil

The mechanical latch mechanism with the tripping coil can be selected instead of the electromagnetic hold mechanism. It is comprised by 1 piece mechanical latch and 1 piece tripping coil:

- A mechanical latch part

A corresponding tripping coil with various options for supply voltage:

- DC 24-30 V
- DC 48 V
- DC 110-250 V/AC 110-240 V

## Electronic card

A set of electronic card is equipped, and has various options for supply voltage:

- DC 24-60 V
- DC 110-250 V/AC 110-240 V

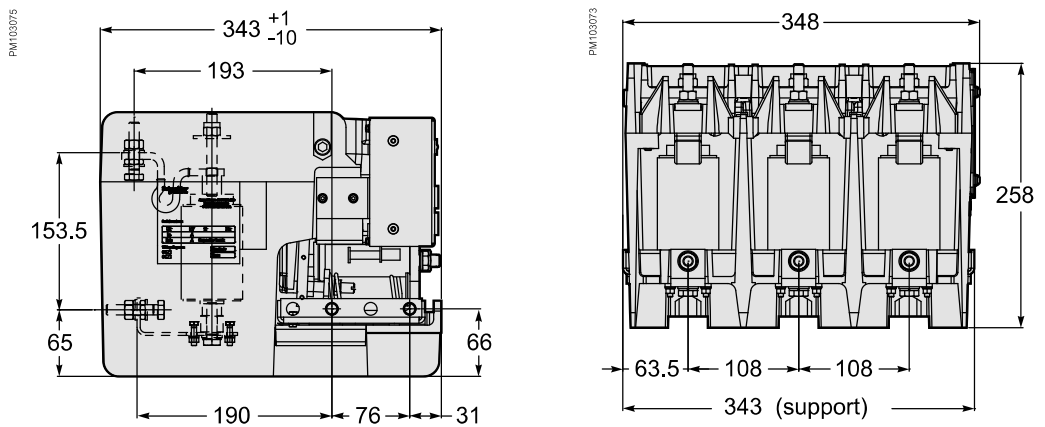
## Operations counter

For vacuum contactors CBX/CBX-C, an operations counter is equipped.

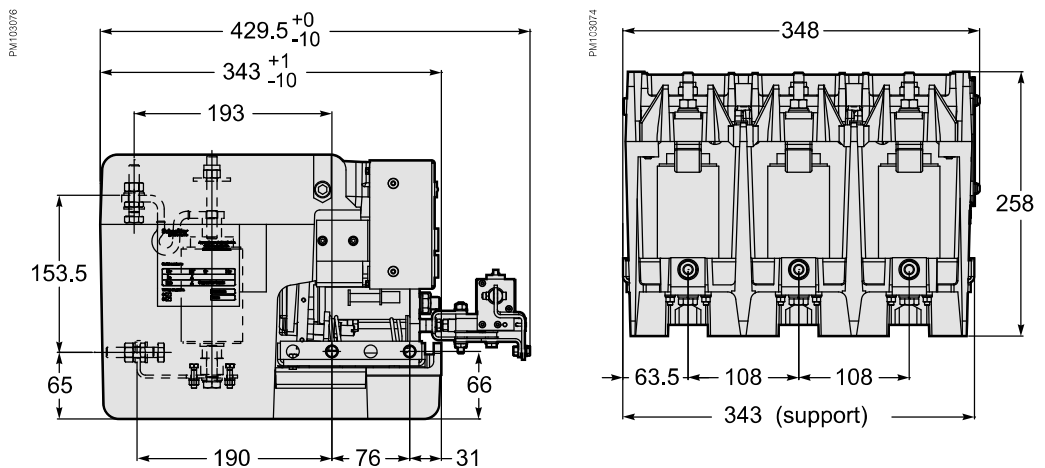
# Dimensions

For CBX/CBX-C		Electromagnetic hold	Mechanical latch
Phase to phase distance	mm	108	108
Size (W x D x H)	mm	348 x 343 x 258	348 x 429 x 258
Weight	kg	28	28

## For electromagnetic hold mechanism

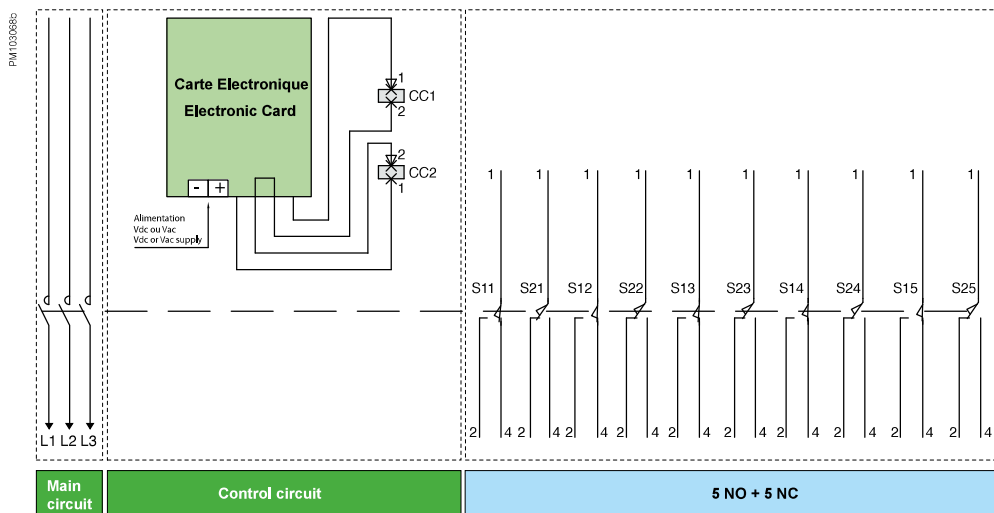


## For mechanical latch mechanism

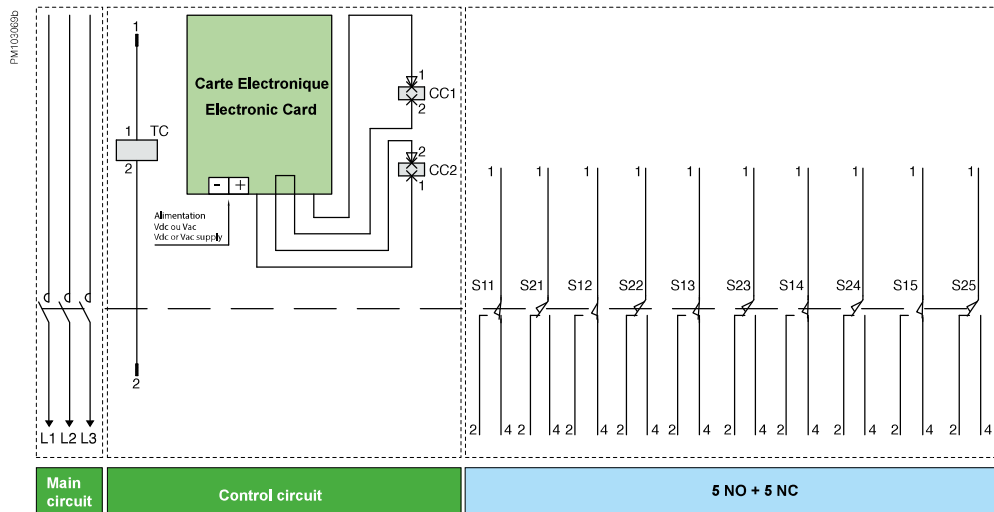


# Electric circuit diagram

For CBX electromagnetic hold mechanism and DC & AC supply voltage:



For CBX mechanical latch mechanism and DC & AC supply voltage:



Note: Tripping coil (TC) must not be supplied more than 2 seconds



# CVX series, up to 12 kV withdrawable version

# Description of the device

## CBX/CBX-C contactor body

The vacuum contactors CVX series include:

- CBX/CBX-C contactor body
- Enclosure for CVX7/CVX7-C
- Enclosure for CVX12-C
- Fuse holder for CVX series
- Drawer for CVX Series
- Option: Cradle

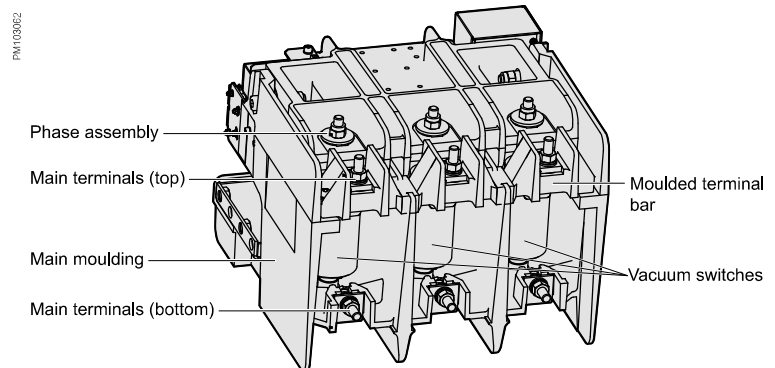
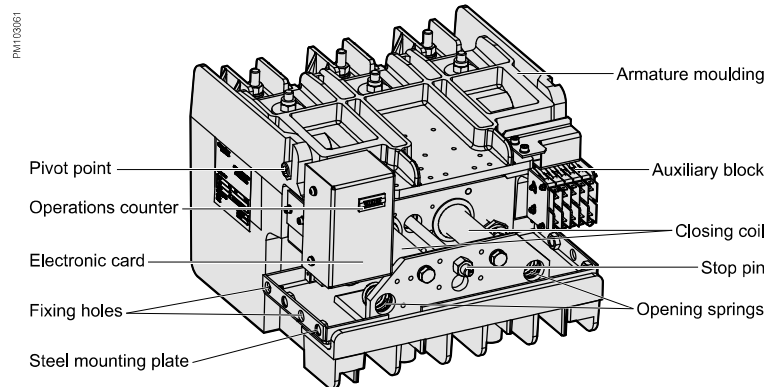
## CBX/CBX-C contactor body

For the electromagnetic mechanism and mechanical latch mechanism:

- Main and armature moulding with two pivot points
- A steel mounting plate
- Three vacuum switches
- Two closing coils
- One auxiliary contact block
- One electronic card and operations counter

And for the mechanical latch mechanism:

- One mechanical latch
- One tripping coil

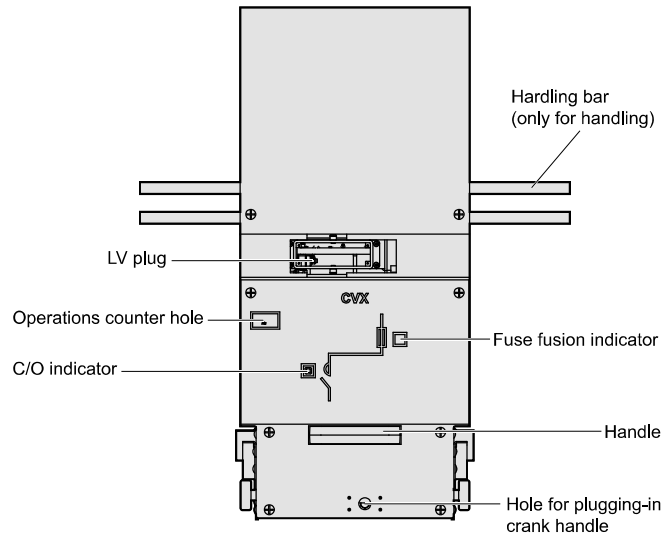


# Description of the device

## Enclosures

### Enclosure for CVX7/CVX7-C

PM103081

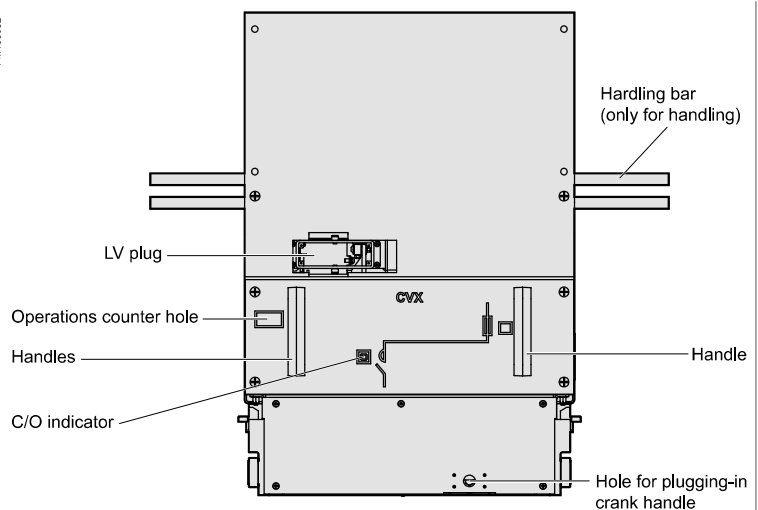


**Mainly contains:**

- LV plugging-in plug
- Indicators (C/O, fuse fusion, operations counter)
- Handling bar
- Handles
- Operation holes for crank

### Enclosure for CVX12-C

PM103082



**Mainly contains:**

- LV plug
- Indicators (C/O, fuse fusion, operations counter)
- Handling bar
- Handles
- Operation holes for crank

## Description of the device

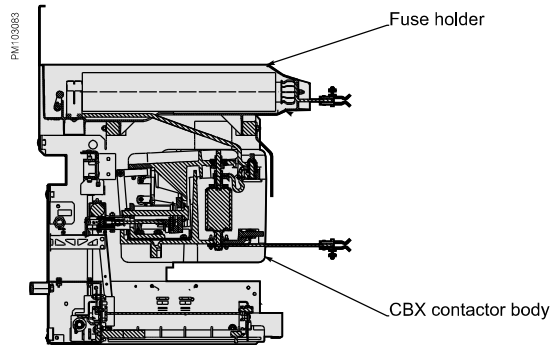
Fuse holder for CVX series /  
Cradle (option)

### Fuse holder for CVX series

**Mainly contains:**

- Fuse holder
- DIN fuse: 442 mm / 292 mm with extension.  
Or BS fuse: 454 mm / 410 mm / 305 mm

*Fuses to be ordered separately*



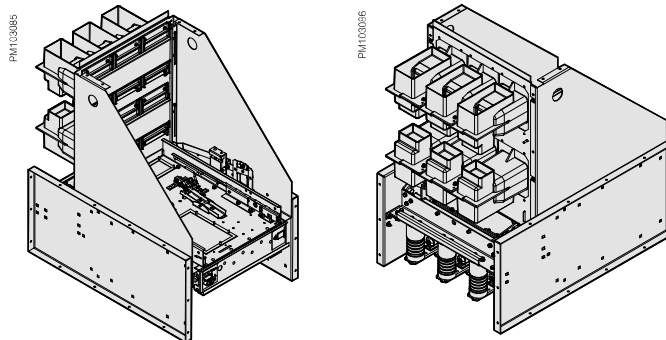
### Option: Cradle

The cradle is used to enable the rack in and rack out functions of contactor through rising shuttle mechanism interlocking and earthing switch mechanism. This allows easy integration of CVX for the panel builders.

**Adaptation for:**

- CVX7/CVX7-C (Width = 400 mm)
- CVX12-C (Width = 650 mm)

*Remark: the cradle could be ordered through the logistics of the manufacturing plant. Please consult us for requirement details.*



# Description of the device

## Main characteristics

Electrical characteristics according to IEC 62271-106			CVX7	CVX7-C	CVX12	CVX12-C		
Phase to phase distance		mm	106	106	185	185		
Rated voltage	Ur	kV 50/60 Hz	7.2	7.2	7.2	7,2	12	
Insulation level	power frequency withstand	Ud	kV 50/60 Hz 1 min <sup>(1)</sup>	20	20	20	20	28
	lightning impulse withstand	Up	kV peak	60	60	60	60	75
Rated operational current	Ie	A	400 <sup>(2)</sup>	315 <sup>(2)</sup>	400 <sup>(2)</sup>	315 <sup>(3)</sup>		
Utilization category			AC3-AC4					
Rated thermal current	Ith	A	400 <sup>(2)</sup>	400 <sup>(2)</sup>	400 <sup>(3)</sup>	400 <sup>(3)</sup>		
Rated short-circuit breaking current	Isc	kA	6 <sup>(4)</sup>	4 <sup>(4)</sup>	6 <sup>(4)</sup>	4 <sup>(4)</sup>		
Rated short-time withstand current	I <sub>k</sub> /t <sub>k</sub>	kA/1 s	6	5	6	5		
Rated peak withstand current	I <sub>p</sub>	kA	15	15	15	12.5		
Rated back to back capacitor bank breaking current		A	N/A	400	N/A	400		

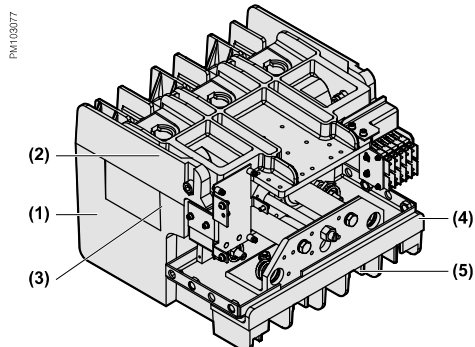
*(1) Ud 32 kV, 50 Hz, 1 min available in standard*

*(2) The rated current linked to the capacity of the fuse: 270 A with a maximum fuse size of 315 A*

*(3) The rated current linked to the capacity of the fuse: 195 A with a maximum fuse size of 250 A*

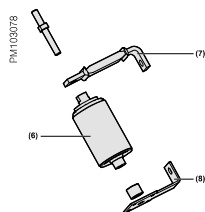
*(4) The rated current linked to the capacity of the fuse: 50 kA for the standard DIN fuse*

Common characteristics according to IEC 62271-106			
Switch frequency		op./h	300
Mechanical endurance	for electromagnetic mechanism	op.	1 000 000
	for mechanical latch mechanism	op.	300 000
Electrical endurance at rated current		op.	250 000
Consumption closing power		W	500
Consumption holding power (magnet type)		W	80
Closing time		ms	120-200
Consumption opening power (mechanical type)		W	240
Opening time		ms	50-100
Operating rated ambient temperature		°C	-5/40
Average relative humidity		over 24 h	< 95%
		over 1 month	< 90%



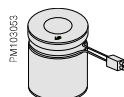
## Basic frame

1. Main moulding
2. Armature moulding
3. Two pivot points
4. A steel mounting plate
5. Stop pin



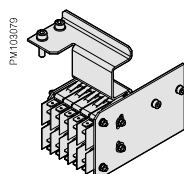
## Power part

6. Vacuum switch
7. Main terminals (top)
8. Main terminals (bottom)



## Closing coil

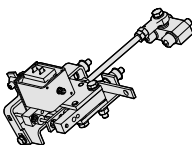
- DC 24-60 V
- DC 110-250 V/AC 110-240 V.



## Auxiliary contact

- 5NO + 5NC, right hand side assembly

PM103950

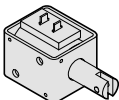


## Mechanical latch with Tripping coil

The mechanical latch mechanism with the tripping coil can be selected instead of the electromagnetic hold mechanism. It is comprised by 1 piece mechanical latch and 1 piece tripping coil:

- A mechanical latch part

PM100233



A corresponding tripping coil with various options for supply voltage:

- DC 24-30 V
- DC 48 V
- DC 110-250 V/AC 110-240 V

PM103867

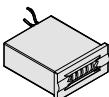


## Electronic card

A set of electronic card is equipped, and has various options for supply voltage:

- DC 24-60 V
- DC 110-250 V/AC 110-240 V

PM103857



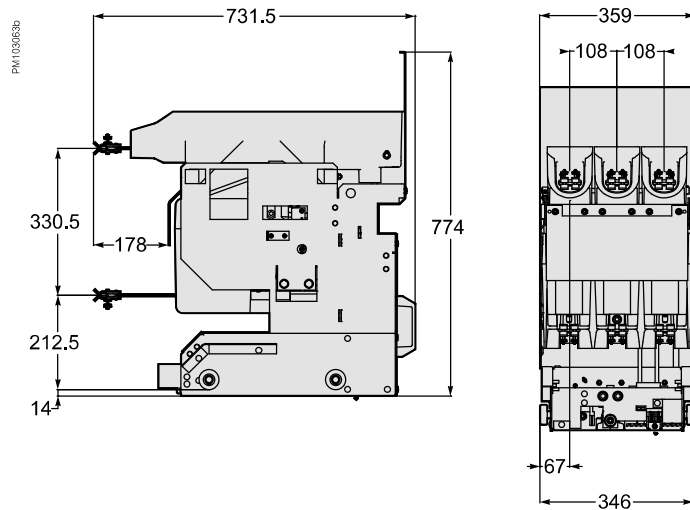
## Operations counter

For vacuum contactors CVX/CVX-C, an operations counter is equipped.

# Dimensions

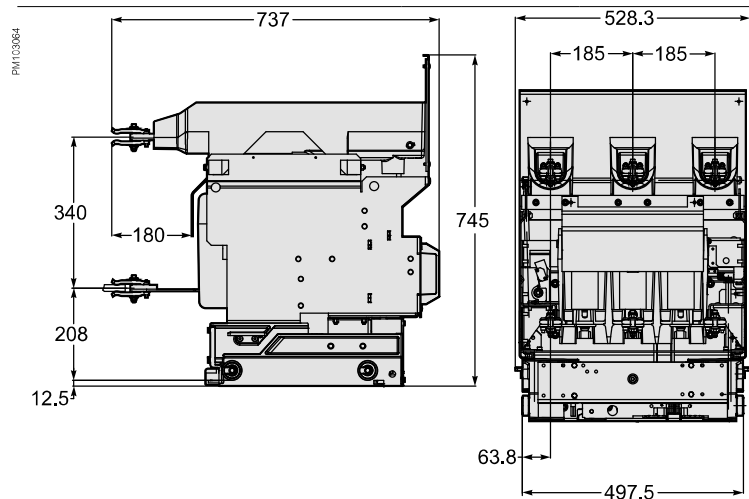
## CVX7/CVX7-C

Phase to phase distance	mm	106
Size (W x D x H)	mm	359 x 731.5 x 774
Weight	kg	60



## CVX12 / CVX12-C

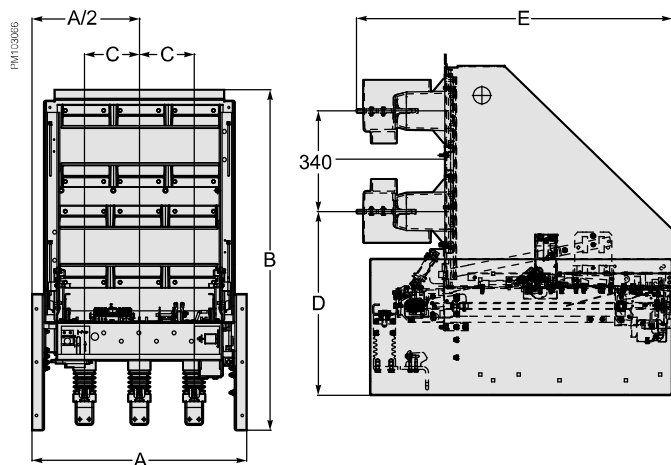
Phase to phase distance	mm	185
Size (W x D x H)	mm	528.3 x 737 x 745
Weight	kg	74





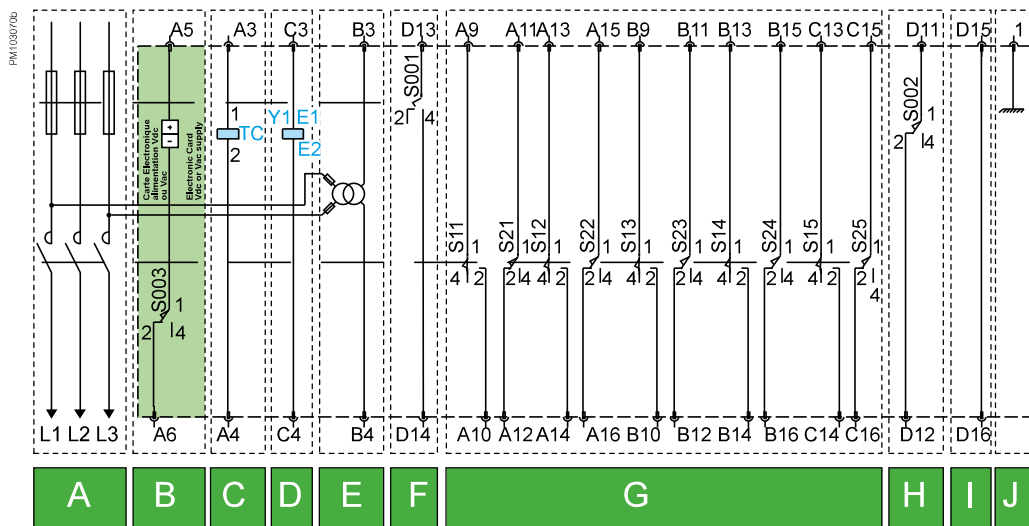
# Dimensions

Cradle's for		CVX7 / CVX7-C & CVX12 / CVX12-C				
Adapted CVX ranges		A	B	C	D	E
CVX7 / CVX7-C	mm	474	1 120	108	621	1 021.2
CVX12 / CVX12-C	mm	724	1 149.5	185	619.5	1 065.2



# Electric circuit diagram

For CVX7 / CVX7-C / CVX12 / CVX12-C  
DC & AC supply voltage



Note:

Tripping coil (TC) must not be supplied more than 2 seconds

## Components:

- A. Fuse contactor
- B. Closing
- C. Tripping coil (for the mechanical latch mechanism)
- D. (Options) Blocking magnet (handle)
- E. (Options) Control power transformer (only for CVX7/CVX7-C)
- F. Fuse blowing
- G. Auxiliary contact: 5NO + 5NC
- H. Mandatory electrical interlock
- I. Plug-in socket
- J. Earthing

# Fuse selection

The table in below contains a summary of the requirements of the different types of fuse according to the type of load:

Type of load	Transformer	Motor	Capacitors	
			Single bank	Multiple step banks
Ordre of magnitude of fuse rating (A)	4 to 100	100 to 250	100 to 250	
Selection rules	$I_A < I_N \text{ transf.} < I_B$	Fixed by IP and tD $I_N \text{ motor} \times 1.2$	$I_N \text{ bank} \times 1.7 < I_N \text{ fuse}$ $I_{nsc}$ fixed by $\hat{i}$ , t	
$I_p$	No specification	Low	High $\tau \approx 1 \text{ ms}$	
I fusing 0.1 s	High	No specification	High ( $\tau \approx 0.1 \text{ s}$ )	No specification
I fusing 10 s	Low for close-up protection	High	Low for close-up protection	
$I_3$		No specification		
UN (kV)	0 to 36	0 to 12	0 to 36	

These specifications can be used to plot the ideal time/current characteristic for a fuse according to its use (refer to the diagram in below). This diagram clearly shows the requirement parameters for each type of protected load. It also clearly illustrates the relative insignificance of the  $I_N$  value of a fuse when it is taken alone as a selection criterion (as is unfortunately too often the case).

## Ideal time/current characteristics for protecting

