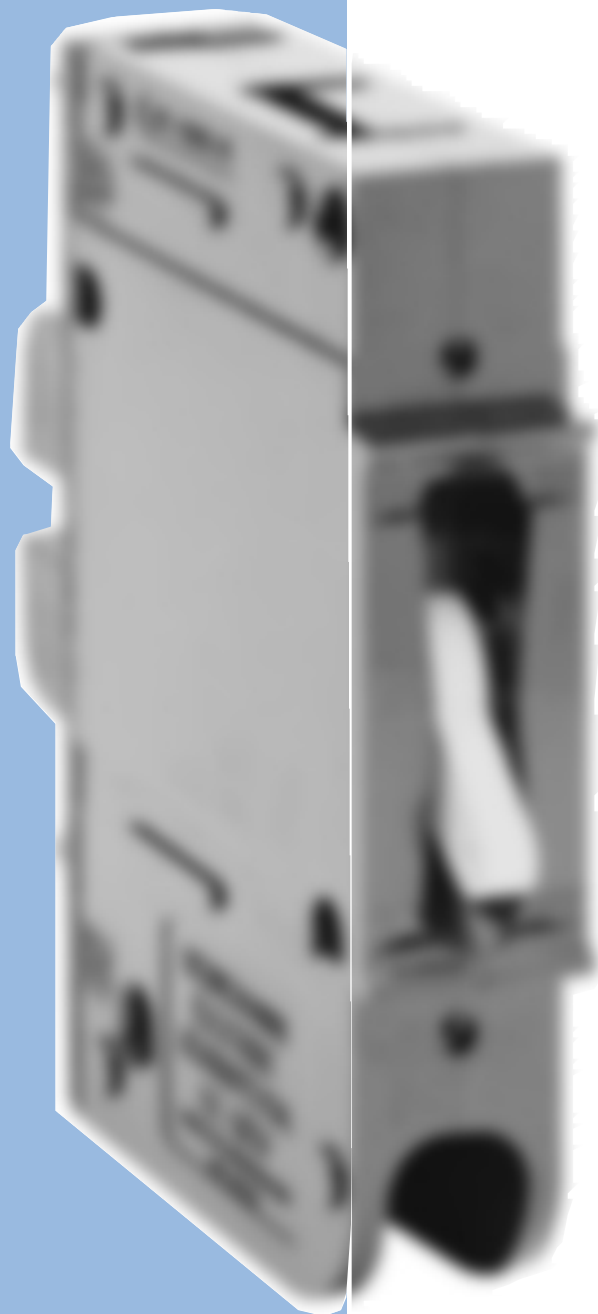


Series C Hydraulic-Magnetic Circuit Breakers

- Compact E-Frame circuit breaker
- Single and multipole
- VDE/UL/CSA recognized
- UL 489 listed to 10000 A
- International Approvals
- Ratings: 0.1 A to 100 A



Heinemann[®] Circuit Breakers

EATON

Type

Contents

CF



CD

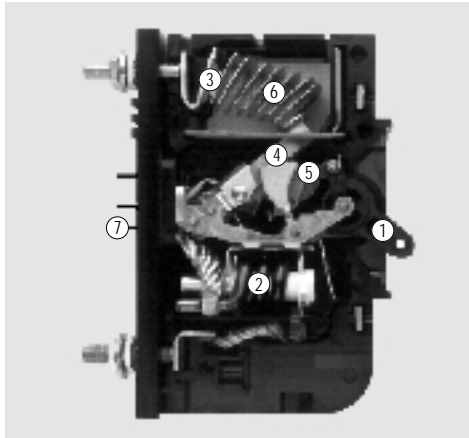


DESCRIPTION HYDRAULIC -MAGNETIC PRINCIPLE	2
TECHNICAL SPECIFICATIONS	3
APPROVALS	4
INTERNAL CIRCUITS	5
TIME DELAY CURVE	7
ACCESSORIES	11
TYPES OF THE C SERIES	12
DIMENSIONS OF CF TYPE FRONT TERMINALS	13
DIMENSIONS OF CD TYPE FRONT TERMINALS	15
DIMENSIONS OF CD TYPE BACK TERMINALS	17
DIMENSIONS AND LOCATION OF CD TYPE BACK TERMINALS	19
CD/CF AUXILIARY CONTACT TORQUE ALLOWED	20
HOW TO ORDER	22

The technical information published in this handbook is subject to change without prior notice. Modifications may occur as part of continual improvement of our products.

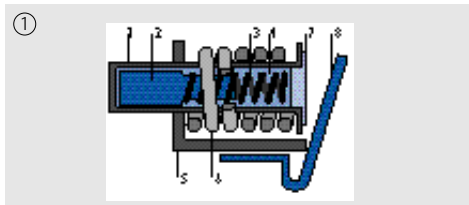
Heinemann is a registered trademark.

Description



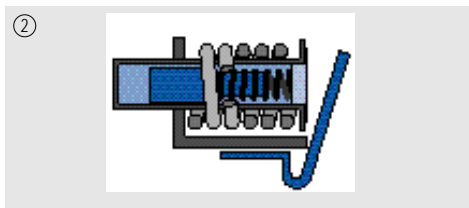
- 1 The handle has two positions only «ON» and «OFF», giving an unmistakable visual indication of the switch position. However, the MID-TRIP versions have three. (See working principle page 12).
- 2 Tripping of all C hydraulic-magnetic MCB's is caused by excess current through the solenoid. This is designed for the rated currents and is not influenced by the prevailing ambient temperature with regard to its operating point.
- 3 For each make and break operation the moving contact arm slides across the lower contact area, thus creating a wiping action which guarantees low contact resistance and, therefore, long life.
- 4 The armature is completely balanced, thus preventing switching off under severe shock and vibration conditions.
- 5 The switch mechanism is simple and robust. Designed «trip free» so that it is impossible to hold on the switch against an existing short-circuit.
- 6 The arc produced by the switch operation is broken down into a number of smaller arcs by the special shape of the contacts and the extinguishing grids, and is blown out by the magnetic field generated. The arc is formed on special contact surfaces.
- 7 C MCB's can also be supplied with auxiliary contacts.

Principle

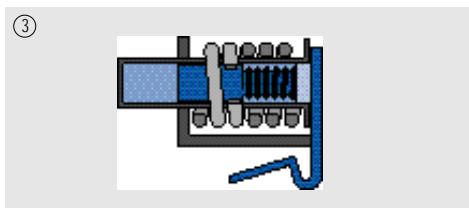


The load current is either at or below the nominal rating of the breaker - The core remains at the end of the tube opposite to the armature.

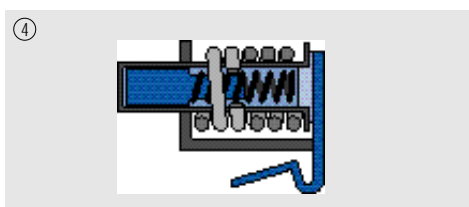
1. tube / 2. core / 3. spring / 4. fluid / 5. frame / 6. coil (sensor) / 7. pole piece / 8. armature



Moderate overload - The core is moving.



Overload - The core has fully moved to the opposite end of the tube (pole piece) attracting the armature - the breaker has tripped.



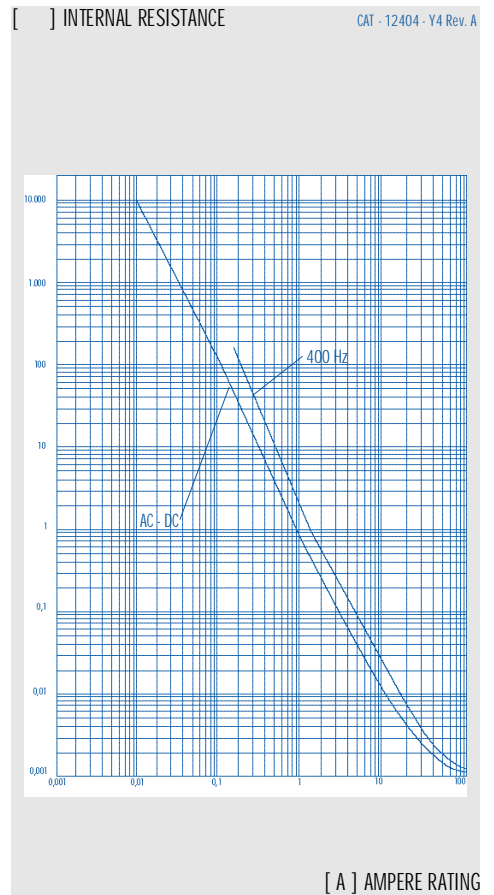
On heavy overloads or short circuits, the flux produced by the coil alone, regardless of core position, is sufficient to pull in the armature - The breaker trips. This circuit interruption occurs with no intentional delay.

Technical characteristics

Temperature	- 40°C + 85°C
Humidity	IEC 68-2-3 and MIL - STD - 202 Method 103 Test A
Protection	IEC 529 IP 00 CD Back terminals sealing IP 00 CD-CF Front terminals sealing IP 40 CD Front sealing
Shock	IEC 68-2-27 MIL - STD - 202, method 213 cond 1 100 G, 6 ms or 50 G, 11 ms
Vibration	IEC 68-2-6 MIL - STD - 202, method 204 10 to 500 Hz 10 G amplitude 1,52 mm
Life	10 000 switching operations with 6000 at rated current 50/60 Hz
Approx. weights	1 pole 262 g 2 poles 564 g 3 poles 936 g 4 poles 1148 g 5 poles 1410 g 6 poles 1772 g
Approvals	UL - CSA and VDE In conformity with IEC 950
Dielectric strength	3750 V AC 50/60 Hz
Insulation resistance	100 M under 500 V DC
Auxiliary switches Rated current	220 V AC : 10 A 24 V DC : 8 A (resistive) 220 V AC : 0,1 A (contact AgAuPt)

Resistance and impedance values

Tolerance limits of internal resistance



Current (A)	Tolerances (%)
0,01 to 29,9	±25
30 to 100	±35

**Approvals
VDE-UL-CSA**

	Type	Nb. poles	Rating operating voltage Ue		Rating current In	Interrupting capacity Icu = Ics
DINEN 60947-2* certified CENELEC	CD - CF	1	230 V	50/60/400 Hz	0.1 - 100 A	4000 A
	CD - CF	2 - 4	400 V	50/60/400 Hz	0.1 - 100 A	4000 A
	CD - CF	1 - 2	125 V	DC	0.1 - 100 A	5000 A
UL 1077 CSA C 22.2	CD - CF	1 - 6	240 V	50/60 Hz	1 - 100 A	7500 A
	CD - CF	1 - 6	240 V	400 Hz	1 - 100 A	5000 A
	CD - CF	1 - 6	125 V	DC	1 - 100 A	5000 A
UL 508 CSA C 22.2	CD - CF	2, 3, 4, 6	600 V	50/60 Hz	1 - 77 A	5000 (10000) A
	CD - CF	2, 3, 4, 6	480 V	50/60 Hz	1 - 100 A	5000 (10000) A
	CD - CF	1, 2, 3, 4, 6	277 V	50/60 Hz	1 - 100 A	5000 A
	CD - CF	1, 2, 3, 4, 6	240 V	50/60 Hz	1 - 100 A	5000 A
	CD - CF	1, 2, 3, 4, 6	240 V	400 Hz	1 - 100 A	2000 A
	CD - CF	1, 2, 3, 4, 6	125 V	DC	1 - 100 A	5000 A
Application générale UL 489 (LISTED) CSA C 22.2	CD - CF	1 - 3	240 V	50/60 Hz	1 - 100 A	7500 A
	CD - CF	1 - 3	125 V	DC	1 - 100 A	5000 A
Application spéciale UL 489 (LISTED) CSA C 22.2	CD - CF	1 - 3	240 V	50/60 Hz	1 - 100 A	7500 A
	CD - CF	1 - 3	125 V	DC	1 - 100 A	5000 A

* Rating insulation voltage (Ui): 400 V AC
Working shock strength voltage (Uimp): 8 kV, T1/T2 = 1,2/50 µs
Working category: A

**Safety standards
IEC 950**

C circuit breakers comply with the international safety standards relating to information processing equipment IEC 950. In particular, the minimum creep distances (8 mm) between two metal parts of different potential or between the different electrical circuits are respected and the insulation voltage is 3750 V.

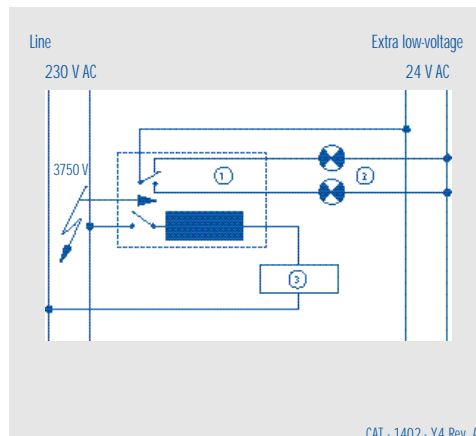
The circuit breakers equipped with one auxiliary contact (microswitch) enable low-voltage safety circuits to be simultaneously switched with the protection of an apparatus connected to the mains. (See figures 1 and 2).

Figure 1

One-pole circuit breaker with auxiliary contacts. The insulation voltage between the main circuits and the safety voltage circuit is 3750 V.

Description

1. Circuit breaker with auxiliary contact
2. Signaling
3. Circuit to be protected



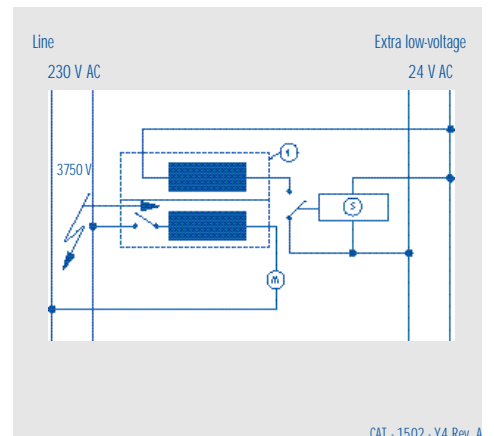
CAT - 1402 - Y4 Rev. A

Figure 2

Two-pole circuit breaker for the protection of a motor with electronic remote control.

Description

4. Two-pole circuit breaker; protection + low-voltage control
5. Electronic control



CAT - 1502 - Y4 Rev. A

Diagrams

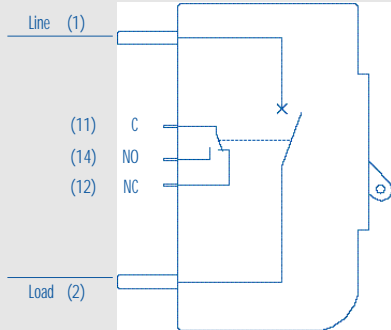
Descriptions

How to order: 4

Codes

Switch

Construction represented: 12



CAT - 1604 - Y4 Rev. A

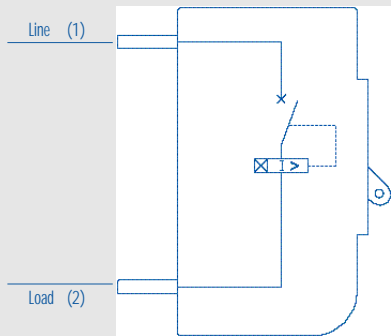
Switch only (without coil) with or without auxiliary contact.

Auxiliary contact	Code
without	0
1	12

O
12

Series Trip

Construction represented: 3, 8



CAT - 1704 - Y4 Rev. A

The contacts and the coil are in series. This is the current execution of the C circuit breaker.

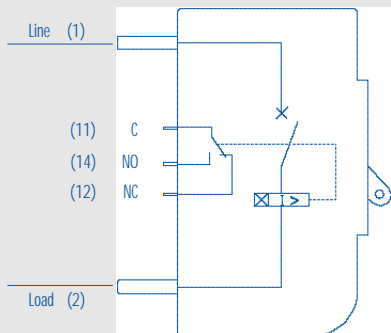
It is often used as main switch at the same time.

Start overcurrent	8x	15x	22x
Code	3	8	

3
8

Series Trip with auxiliary contact

Construction represented: 2, 9



CAT - 1804 - Y4 Rev. A

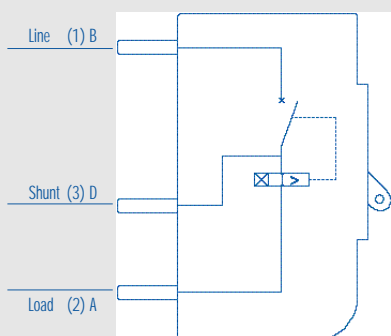
The contacts and the coil are in series. Auxiliary contacts are placed behind the circuit breaker and mechanically connected to the releasing system.

Start overcurrent	8x	15x	22x
Aux. contact	Code		
1	2	9	

2
9

Shunt Trip

Construction represented: 5, 22



CAT - 1904 - Y4 Rev. A

Enables two loads to be checked by means of a single circuit breaker. However it only releases if there is an overload in the main circuit. The sum of the two nominal currents must not exceed the peak current of the contacts. With this execution it is also possible to adjust the tripping through a potentiometer between the load terminals.

Start overcurrent	8x	15x	22x
Code	5	22	

5
22

	Diagrams	Descriptions	How to order: 4	Codes																
Relay trip		<p>Relay tripping can be used for releasing the circuit breaker by the intermediary of a monitor or a safety device installed at a distance. The contacts are electrically separated from the coil. Consequently, all the currents and voltages within the permissible limits can be used. Coils are either current or voltage sensitive.</p> <p>The circuit breaker can be supplied on request with a dielectric strength ranging up to 2500 V on alternating current 50/60 Hz between the coil and the contacts.</p>	<table border="0"> <tr> <td>Start overcurrent</td> <td>8x</td> <td>15x 22x</td> <td></td> </tr> <tr> <td>Aux. contact</td> <td>Code</td> <td></td> <td></td> </tr> <tr> <td>without</td> <td>6</td> <td>23</td> <td></td> </tr> <tr> <td>1</td> <td>62*</td> <td></td> <td></td> </tr> </table> <p>* Code 62: with flying leads DUCON terminals, further information on request.</p>	Start overcurrent	8x	15x 22x		Aux. contact	Code			without	6	23		1	62*			<p>6</p> <p>23</p> <p>62</p>
Start overcurrent	8x	15x 22x																		
Aux. contact	Code																			
without	6	23																		
1	62*																			
Dual rating		<p>Dual rating circuit breakers are suitable for apparatus operating under two different currents or voltages. As far as possible, the currents must be in the ratio of one to two with a maximum of 25 to 50 A.</p>	<table border="0"> <tr> <td>Start overcurrent</td> <td>8x</td> <td>15x 22x</td> <td></td> </tr> <tr> <td>Code</td> <td>7</td> <td>27</td> <td></td> </tr> </table>	Start overcurrent	8x	15x 22x		Code	7	27		<p>7</p> <p>27</p>								
Start overcurrent	8x	15x 22x																		
Code	7	27																		
Dual Control (Ducon)		<p>This version is used both for the protection of the load finding itself in series with the circuit breaker and for the release via a voltage. The main coil is in series with the contact and the DUCON coil is shunt trip.</p>	<table border="0"> <tr> <td>Start overcurrent</td> <td>8x</td> <td>15x 22x</td> <td></td> </tr> <tr> <td>Code</td> <td>15</td> <td>25</td> <td></td> </tr> </table>	Start overcurrent	8x	15x 22x		Code	15	25		<p>15</p> <p>25</p>								
Start overcurrent	8x	15x 22x																		
Code	15	25																		
Dual Control (Ducon) (Series + Relay)		<p>Same function as codes 15 and 25, but both coils are electrically separated.</p>	<table border="0"> <tr> <td>Start overcurrent</td> <td>8x</td> <td>15x 22x</td> <td></td> </tr> <tr> <td>Aux. contact</td> <td>Code</td> <td></td> <td></td> </tr> <tr> <td>without</td> <td>16</td> <td>26</td> <td></td> </tr> <tr> <td>1</td> <td>63*</td> <td></td> <td></td> </tr> </table> <p>* Code 63: with flying leads DUCON terminals, further information on request.</p>	Start overcurrent	8x	15x 22x		Aux. contact	Code			without	16	26		1	63*			<p>16</p> <p>26</p> <p>63</p>
Start overcurrent	8x	15x 22x																		
Aux. contact	Code																			
without	16	26																		
1	63*																			

Tripping specifications

How to order: **12**

All curves describe breaker response with no preloading. Curves are plotted at an ambient temperature of 25° C, with breakers in the standard wall-mount position.

All circuit breakers shall hold 100% rated load continuously.

Breakers for 50/60 Hz or DC service may trip between 101% and 125% rated load, must trip at 125% and above, as shown on the time-delay curve selected. (150% for 400 Hz).

Non-time-delay circuit breakers (P curve) may trip instantaneously between 101 % and 125 % of rated load, must trip instantaneously at 125 % for 50/60 Hz or DC (150 % for 400 Hz).

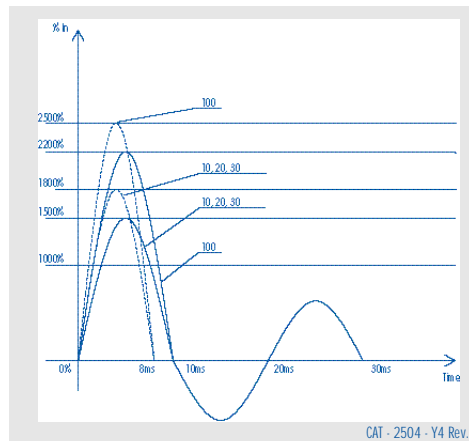
The voltage trip breakers may trip below 100% rated voltage, must trip at 100% and above.

They are only available in no-time-delay construction (P curve).

Time delay curve codes are based on selection of high-inrush values

at 8 x In curves 1 - 2 - 3
 at 15 x In curves 10 - 20 - 30
 at 22 x In curves 100

High-inrush rates valid for different curves



C circuit breakers are available with various levels of high-inrush currents avoiding nuisance trip during short starting periods at turn on.

In case of motor protections for example, causing a steep wave front transient of very high current amplitude and short duration of overload, the breaker does not trip.

By using C high-inrush types, unnecessary and dangerous overcalibrations involving use of thicker cables or wires can be avoided, thus saving energy and money.

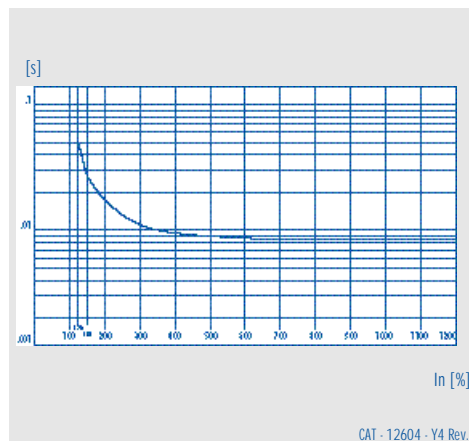
The magnetic shunt used offers maximum possibilities on half wave which is 10 ms when frequency is 50 Hz. At 60 Hz half wave periode is 8 ms based on value of 1800% instead of 1500% and 2500% instead of 2200% at 50 Hz.

For high-inrush rates see pages 5 and 6. For curves P, high-inrush is not possible.

———— 50 Hz
 - - - - - 60 Hz

CAT - 2504 - Y4 Rev. A

**Curve P
 50/60 Hz,
 400 Hz, DC**



CAT - 12604 - Y4 Rev. A

In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------

50/60 Hz/DC MAX	.050	.028	.017	.012	.0098	.009	.0087	.0085	.0085	.0085	.0085	.0085	.0085
-----------------	------	------	------	------	-------	------	-------	-------	-------	-------	-------	-------	-------

400 Hz MAX	.050	.028	.017	.012	.0098	.009	.0087	.0085	.0085	.0085	.0085	.0085	.0085
------------	------	------	------	------	-------	------	-------	-------	-------	-------	-------	-------	-------

Internal circuit concerned

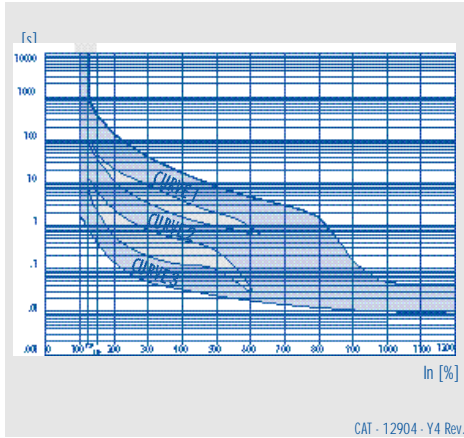
2, 3, 5, 6, 7, 15, 16, 62, 63

TIME DELAY CURVES

START OVERLOAD 8 x I_n

INTERNAL CIRCUITS CONCERNED :
2, 3, 5, 6, 7, 15, 16, 62, 63

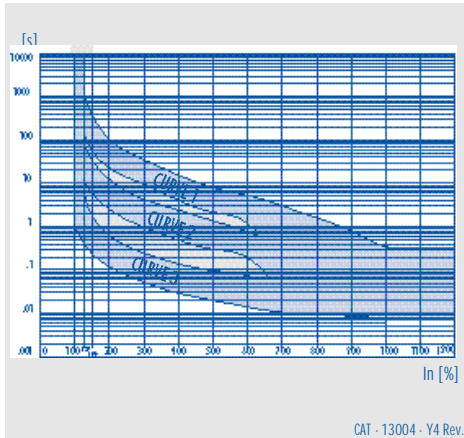
**Curve 1.2.3
50/60 Hz**



Curve	In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
1	MAX	880	325	110	40	18	8	4.0	3.000	1.60	.130	.045	-	-
	MIN	100	48	20	9	4	2	.9	.016	.013	.012	.010	-	-
2	MAX	90	37	10.5	3.40	1.84	1.00	.64	.380	.190	.080	.045	-	-
	MIN	13	6	2.1	.83	.46	.25	.03	.016	.013	.011	.010	-	-
3	MAX	6.40	2.20	.60	.20	.130	.096	.075	.064	.052	.046	.040	-	-
	MIN	.80	.40	.15	.05	.032	.024	.019	.016	.013	.012	.010	-	-

CURVE 1: LONG DELAY
CURVE 2: MEDIUM DELAY
CURVE 3: SHORT DELAY

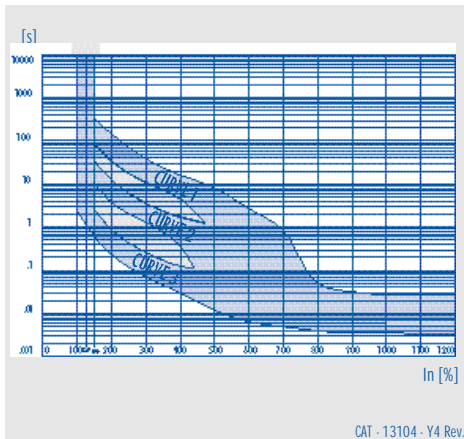
**Curve 1.2.3
DC**



Curve	In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
1	MAX	1000	360	100	36	16	8	5.20	3.00	1.70	.800	.350	-	-
	MIN	120	60	22	9	4	2	.11	.02	.01	.009	.008	-	-
2	MAX	90	36.0	13.0	4.20	2.40	1.50	.80	.500	.29	.095	.055	-	-
	MIN	12	5.9	2.5	.95	.50	.30	.19	.013	.01	.009	.008	-	-
3	MAX	8.00	1.90	.65	.260	.150	.100	.75	.065	.047	.045	.038	-	-
	MIN	.44	.25	.13	.052	.030	.020	.015	.012	.010	.009	.008	-	-

CURVE 1: LONG DELAY
CURVE 2: MEDIUM DELAY
CURVE 3: SHORT DELAY

**Curve 1.2.3
400 Hz**



Curve	In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
1	MAX	-	300	150	37	17.0	9.00	2.70	.180	.050	.033	.0280	-	-
	MIN	-	80	35	11	4.3	.08	.03	.008	.008	.004	.0038	-	-
2	MAX	-	33.0	13.0	3.9	1.80	1.00	.40	.180	.045	.033	.028	-	-
	MIN	-	9.5	3.8	1.3	.35	.03	.02	.015	.008	.004	.0038	-	-
3	MAX	-	2.8	.90	.280	.13	.085	.0400	.038	.030	.0300	.0280	-	-
	MIN	-	.6	.23	.072	.03	.012	.0065	.005	.004	.0038	.0038	-	-

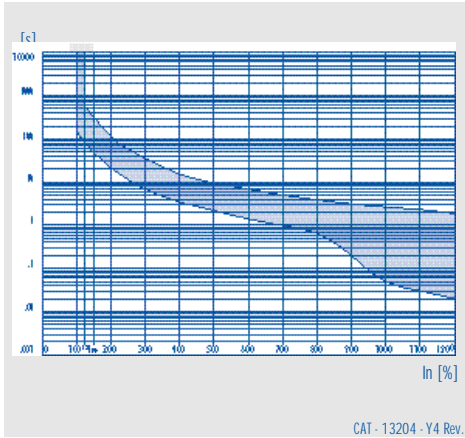
CURVE 1: LONG DELAY
CURVE 2: MEDIUM DELAY
CURVE 3: SHORT DELAY

TIME DELAY CURVES

START OVERLOAD 15 x In

INTERNAL CIRCUITS CONCERNED :
8, 9, 22, 23, 25, 26, 27

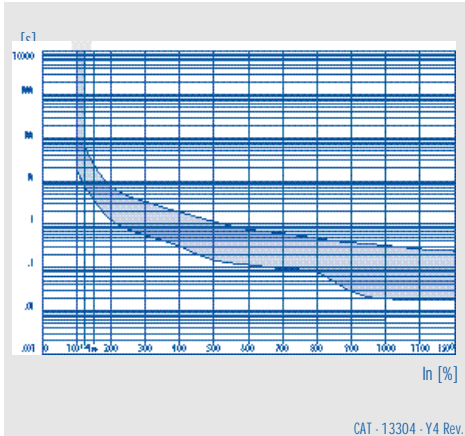
Curve 10 50/60 Hz, DC



In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	500	300	110	35	16.0	10.0	7.0	5.0	4.00	3.00	2.75	2.30	1.90
MIN	80	50	22	7	3.6	2.2	1.5	1.0	.65	.20	.05	.03	.02

LONG DELAY

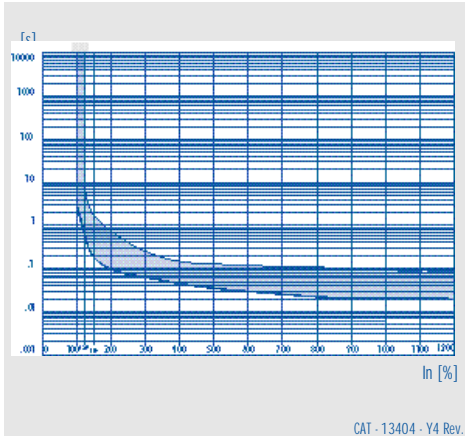
Curve 20 50/60 Hz



In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	60	24	8.0	3.5	2.00	1.20	.80	.65	.50	.40	.35	.29	.26
MIN	8	4	1.5	.6	.32	.17	.14	.10	.08	.03	.02	.02	.02

MEDIUM DELAY

Curve 30 50/60 Hz

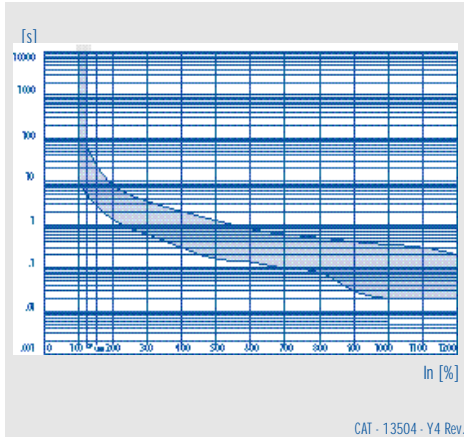


In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	6.40	1.90	.74	.27	.160	.150	.130	.120	.110	.100	.097	.080	.080
MIN	.70	.20	.10	.07	.045	.038	.030	.027	.022	.021	.021	.021	.020

SHORT DELAY

TIME DELAY CURVES
START OVERLOAD 15 x In (Continued)

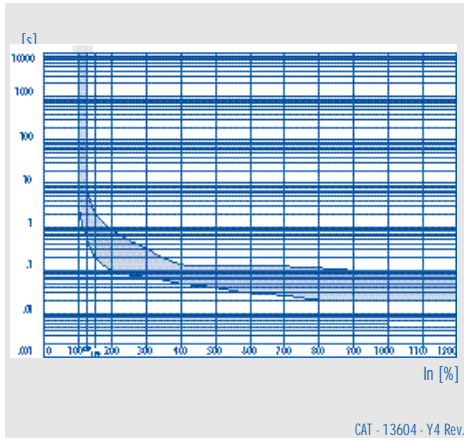
Curve 20
DC



In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	60	23	8.0	3.50	2.00	1.20	.80	.65	.50	.40	.35	.29	.26
MIN	5	3	1.5	.60	.32	.17	.14	.10	.08	.03	.02	.02	.02

MEDIUM DELAY

Curve 30
DC

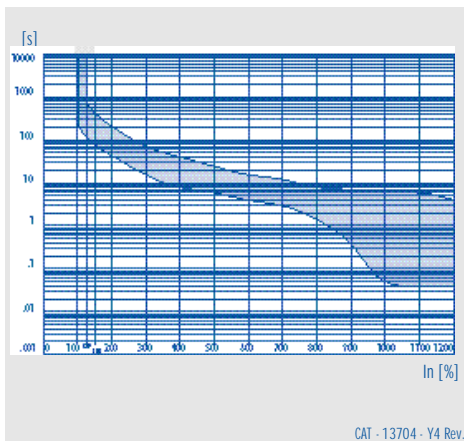


In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	6.40	1.90	.74	.27	.160	.150	.130	.120	.110	.100	.097	.080	.080
MIN	.50	.20	.10	.07	.045	.038	.030	.027	.022	.021	.021	.021	.021

SHORT DELAY

TIME DELAY CURVES
START OVERLOAD 22 x In

Curve 100
50/60 Hz, DC



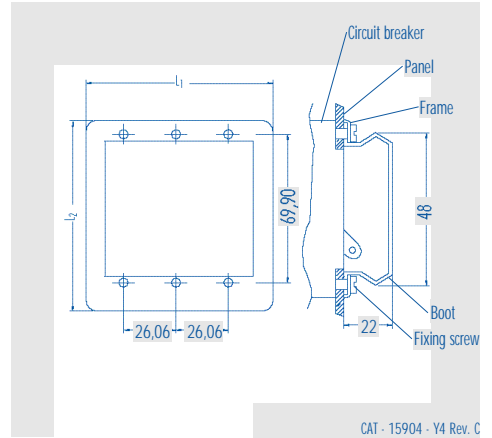
In.%	125	150	200	300	400	500	600	700	800	900	1000	1100	1200
MAX	742	400	200	70	38	25	17	12.0	8.5	7.00	6.00	-	-
MIN	130	85	45	18	9	6	4	2.9	1.5	.40	.05	-	-

LONG DELAY

Boot (IP 54)

This silicone rubber boot insure a perfect water-tight frontal face. Boots are delivered with 6-32 UNC screw.

Type	L1	L2	Ordering ref.
CD 1	40,5	100	25101
CD 2	67,5	95	25107
CD 3	92,9	95	25105

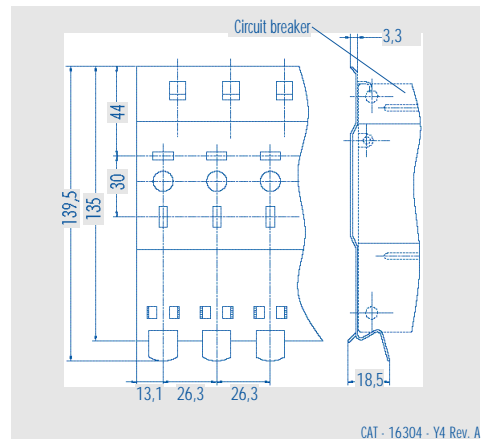


CAT - 15904 - Y4 Rev. C

Fitting rail CT

CT-fitting rail allows to snap-in one or more circuit breaker. The rail can be screwed on the wall. It is available for all the C types, without auxiliary contacts and frontal terminals. Available from 1 to 15 poles.

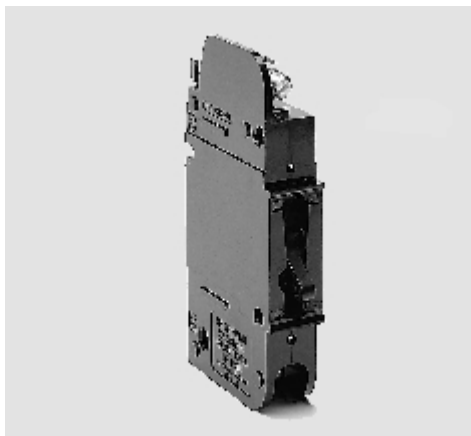
Poles	Ordering ref.
1 to 15	20976 (specify number of poles)



CAT - 16304 - Y4 Rev. A

How to order: **1**

**Type CF
(rear or front mounting
circuit-breaker)**



CF circuit breakers are designed for rear or front mounting with front-connected terminals.

They can be rear mounted with M4 or 8-32 screws or front mounted with M4 or 6-32.

CF circuit breakers are available in 1, 2, 3, 4, 5 or 6 pole execution.

**Type CD
(rear or front mounting
circuit breaker)**



CD circuit breakers are designed for rear or front mounting with front-connected terminals.

They can be rear mounted with M4 or 8-32 screws or front mounted with M4 or 6-32.

CD circuit breakers are available in 1, 2, 3, 4, 5 or 6 pole execution.

**Type CD
(front-mounting circuit
breaker)**



CD circuit breakers are designed for front-mounting with back-connected terminals (studs).

They can be mounted with M4 or 6-32 screws.

Cutouts are rectangular (for any thickness of panels between 1-3 mm.).

CD circuit breakers are available in 1, 2, 3, 4, 5 or 6 pole execution.

Mid-Trip circuit breaker



Types CDM and CFM

Conventional circuit breakers have two handle positions : ON and OFF.

The new MID-TRIP version has three :

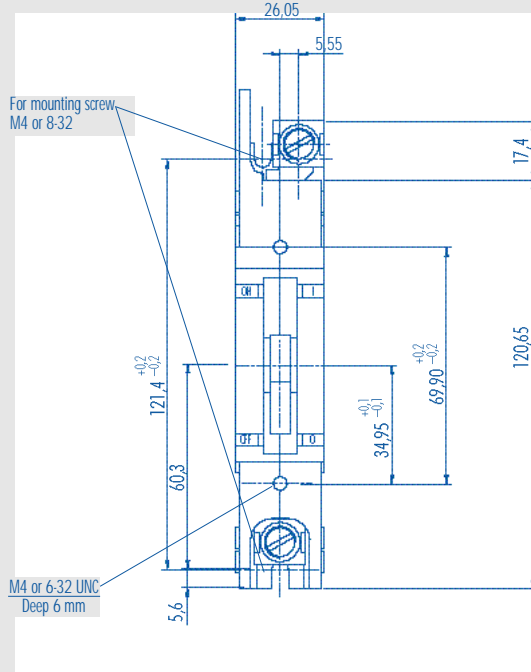
- ON
- ELECTRICAL OFF (MID-TRIP)
- MANUAL OFF,

which allows immediate visual identification of an electrically tripped circuit breaker (handle jumps to the MID-position) among other installed disconnected units.

DIMENSIONS OF CF TYPE

FRONT TERMINALS
PRESSURE CONNECTORS, CODE G, H, J

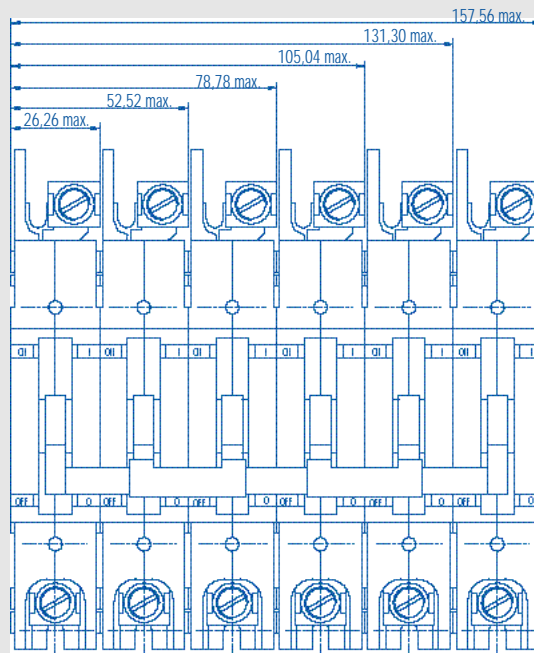
**1 pole
(Pressure connectors)**



Tolerance : $\pm 0,8$

CAT - 13804 - Y4 Rev. C

6 poles

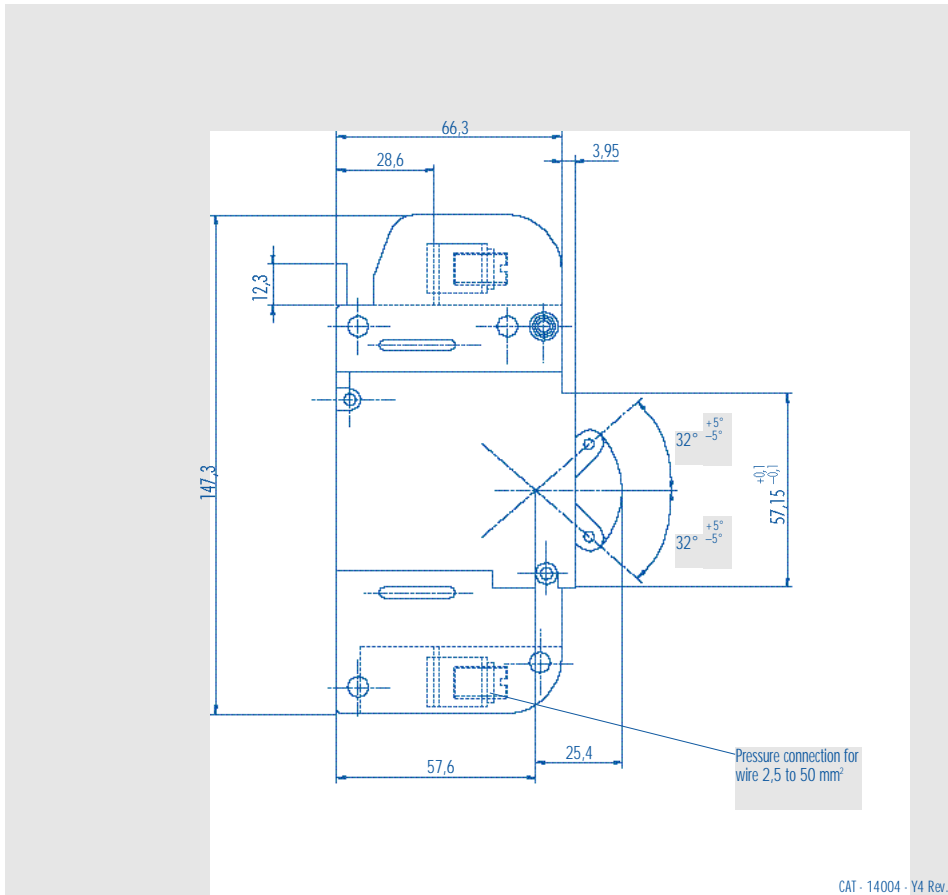


Tolerance : $\pm 0,8$

CAT - 13904 - Y4 Rev. A

DIMENSIONS OF CF TYPE
FRONT TERMINALS
PRESSURE CONNECTORS, CODE G, H, J (Continued)

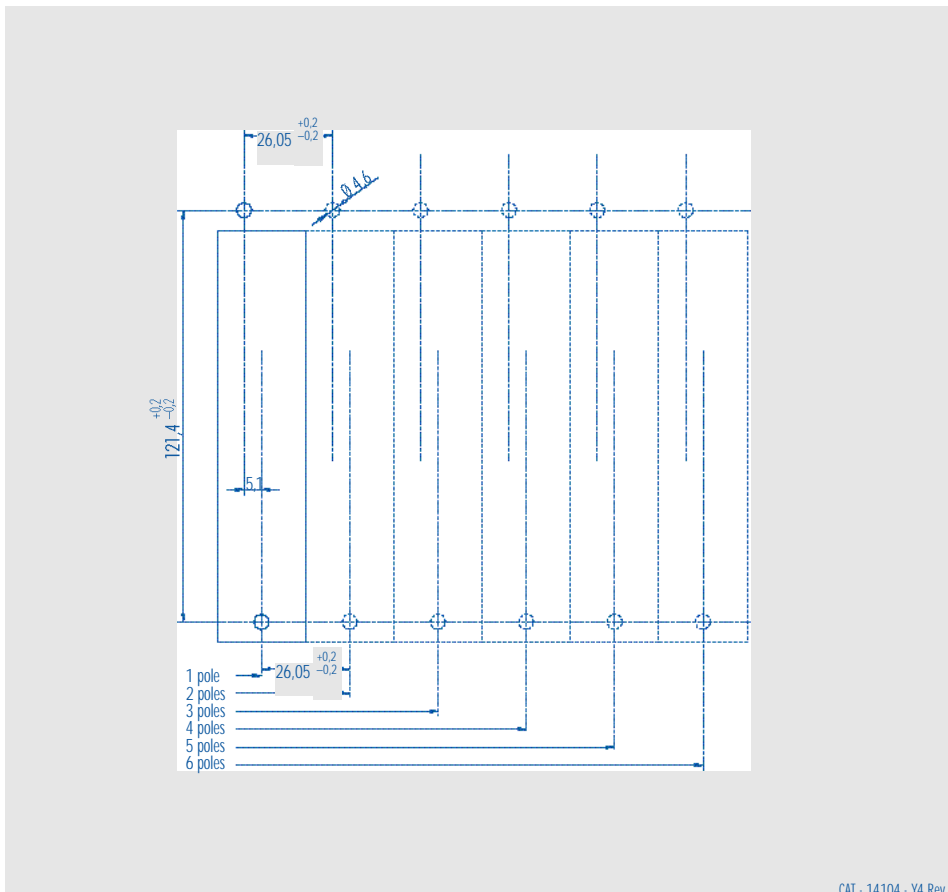
CF codes G, H, J



Tolerance : ± 0,8

CAT - 14004 - Y4 Rev. A

Panel cutout
(for rear mounting)



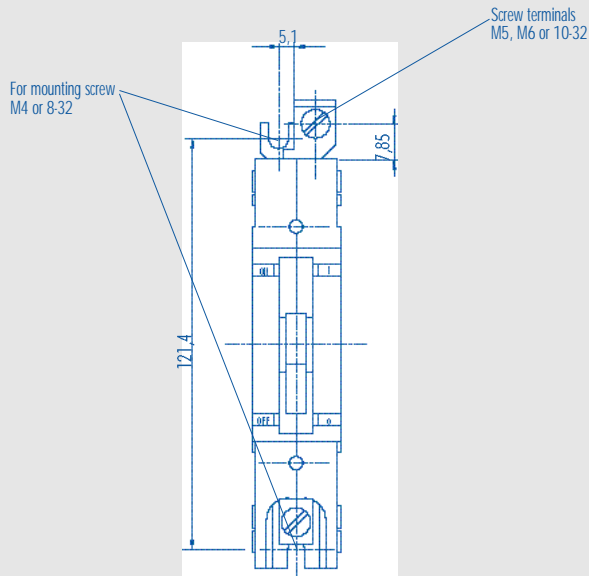
Tolerance : ± 0,1

CAT - 14104 - Y4 Rev. A

DIMENSIONS OF CD TYPE

FRONT TERMINALS
WASHERED SCREWS, CODE G, H, J

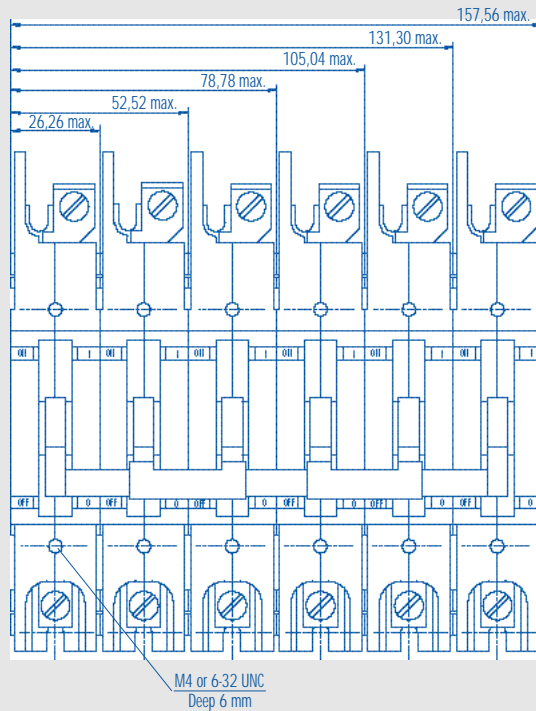
**1 pole
(Pressure connectors)**



Tolerance : ± 0,8

CAT - 14204 - Y4 Rev. A

6 poles



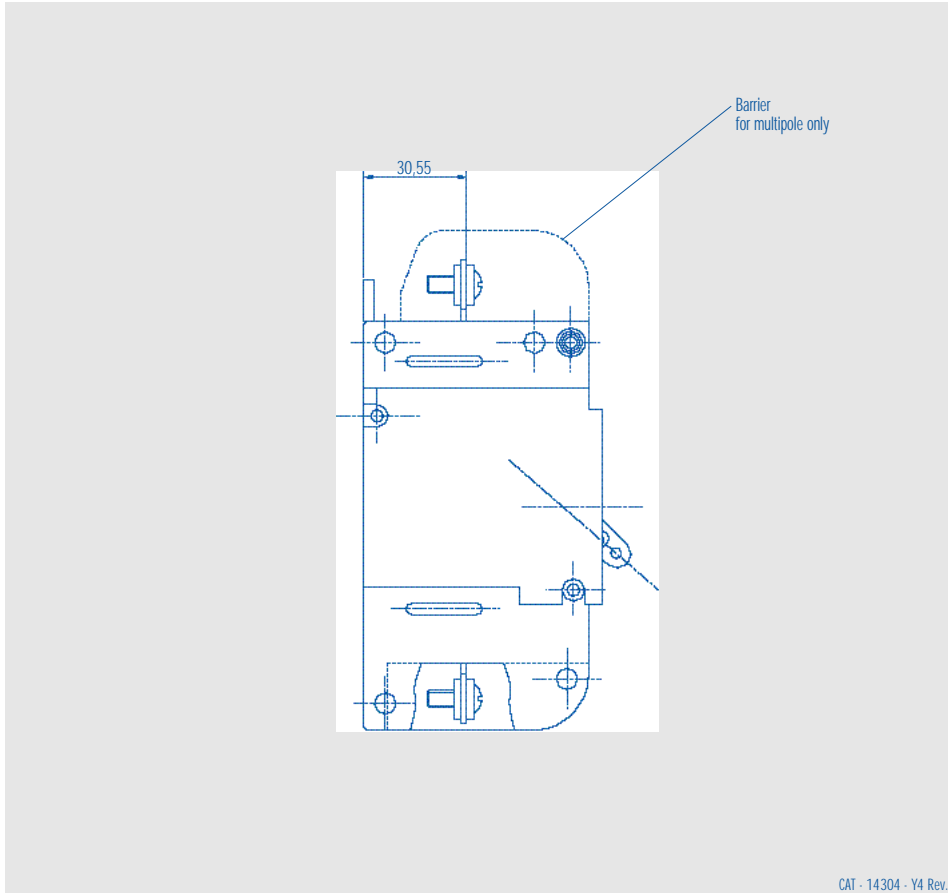
Tolerance : ± 0,8

CAT - 14404 - Y4 Rev. A

DIMENSIONS OF CD TYPE

FRONT TERMINALS
WASHERED SCREWS, CODE G, H, J (Continued)

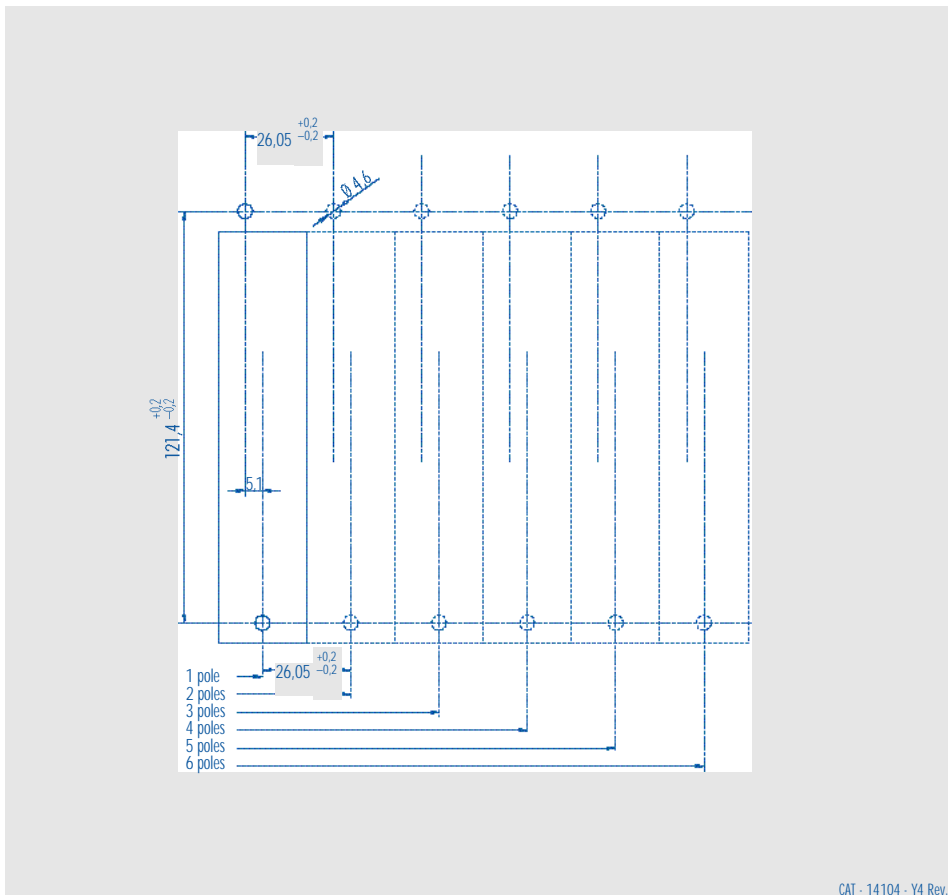
CD codes G, H, J



Tolerance : ± 0,8

CAT - 14304 - Y4 Rev. A

**Panel cutout
(for rear mounting)**



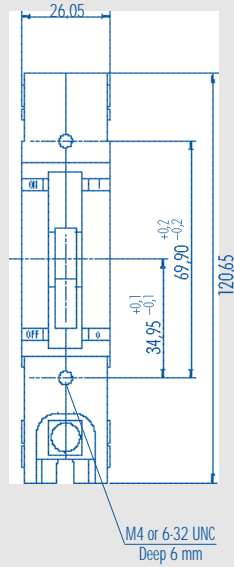
Tolerance : ± 0,1

CAT - 14104 - Y4 Rev. A

DIMENSIONS OF CD TYPE

BACK TERMINALS
(STUD TERMINALS, CODE A, B, C)

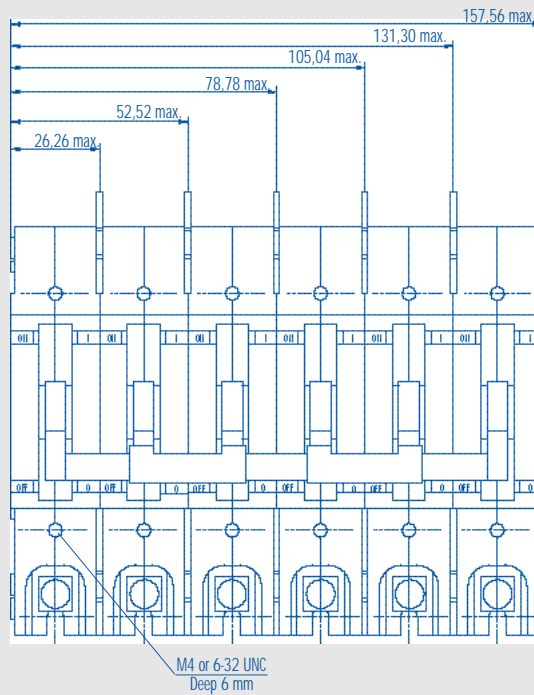
**1 pole
(Back terminals)**



Tolerance : ± 0,8

CAT - 14504 - Y4 Rev. B

6 poles



Tolerance : ± 0,8

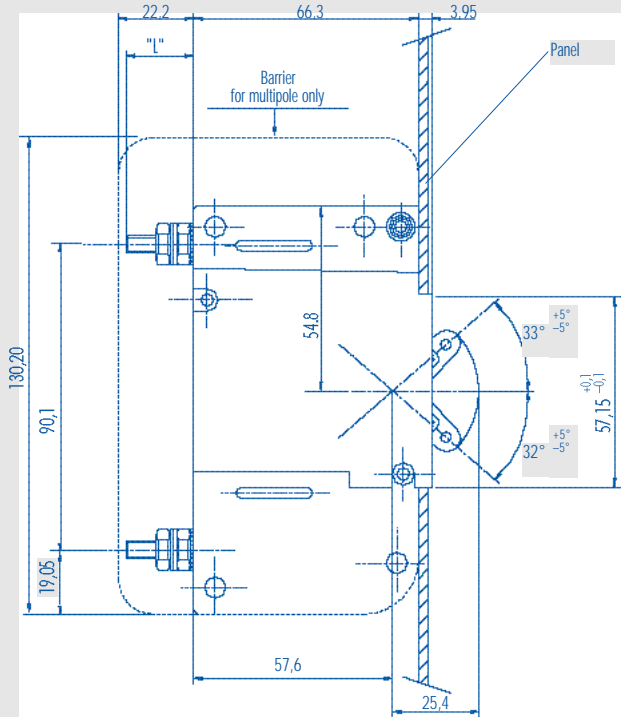
CAT - 14704 - Y4 Rev. B

DIMENSIONS OF CD TYPE

BACK TERMINALS
STUD TERMINALS, CODE A, B, C (Continued)

CD codes A, B, C

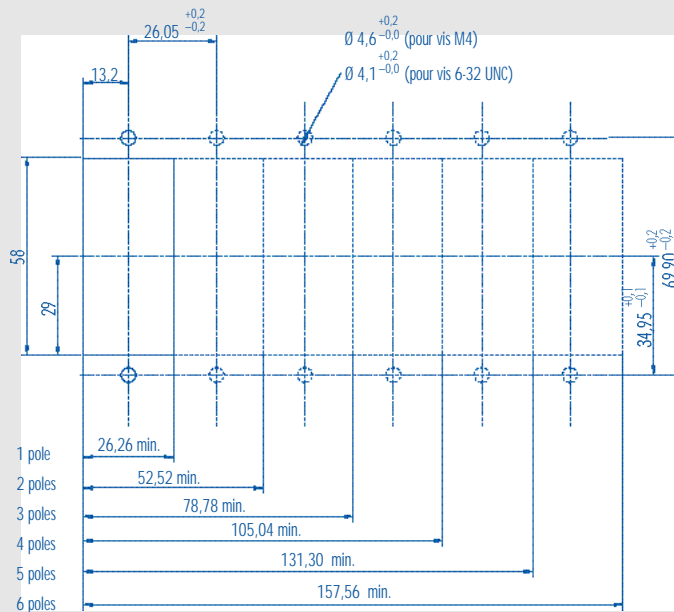
Internal circuit codes: 0, 3, 8



Tolerance : ± 0,8

CAT - 14604 - Y4 Rev. A

**Panel cutout
(front mounting)**



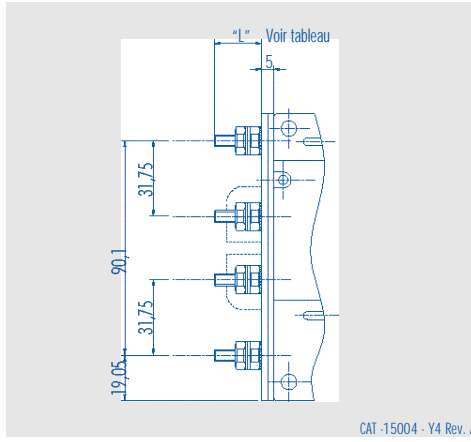
Tolerance : ± 0,1

CAT - 14804 - Y4 Rev. A

DIMENSIONS AND LOCATION OF TERMINALS
TYPE CD - BACK TERMINALS

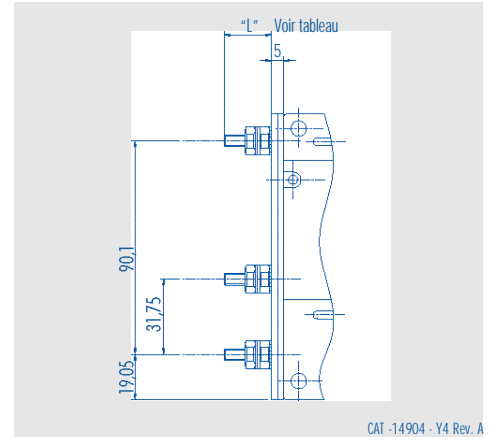
Codes

6
16
23
26

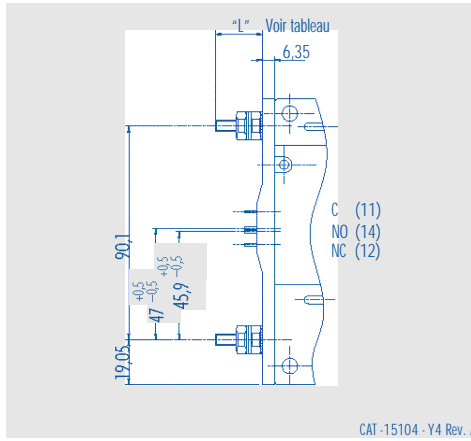


Codes

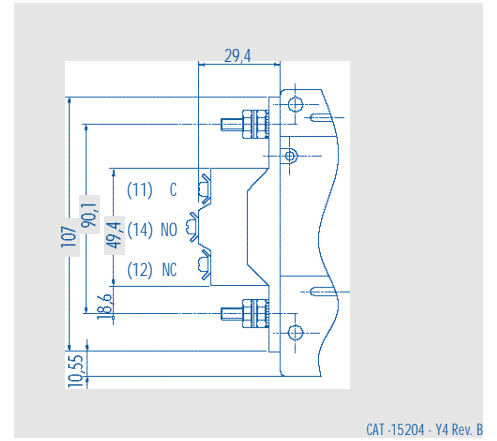
5
7
15
22
25
27



2
9
12
(auxiliary contact
codes 07, 52, 54)



2
9
12
(auxiliary contact
code TS)



Length and diameter
of terminals (studs)

Current	0 - 50 A		51 - 100 A	
	"L" ± 1,6 (mm)	∅	"L" ± 1,6 (mm)	∅
Construction Serie trip and aux. contact	16	M5	19	M6
Construction Shunt trip and relay trip	17,2	or 10-32	20,5	or 1/4-20

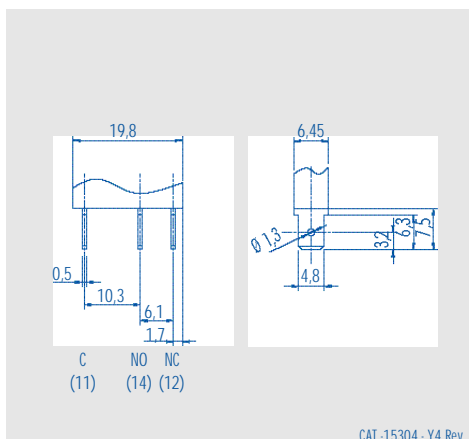
CD/CF AUXILIARY CONTACTS
REFERENCE TERMINALS

How to order: **10**

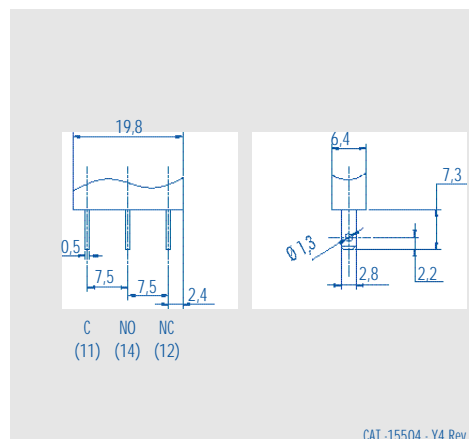
Codes

Codes

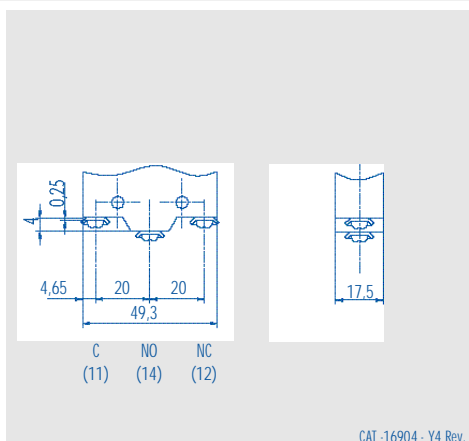
07
(Fast-on terminals
4,8 mm)



52
54
(Fast-on terminals
2,8 mm)



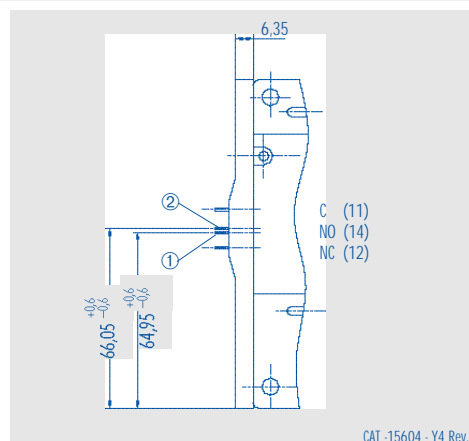
TS (Screw and cup
washer terminals)



Terminals location

07
52
54

Terminal ①: Code 07
Terminal ②: Codes 52 - 54



TORQUE ALLOWED

**Torque allowed
for inserts and terminals**

	Dimensions	Torque
Inserts	M4; 6-32	0,6 - 0,8 Nm
Terminals	M5; 10-32	1,7 - 2,3 Nm
Terminals	M6; 1/4-20	3,4 - 4,0 Nm



1 Types

OBLIGATORY	CODE
Back-connected terminals (studs), front mounting or front connected terminals (washer-head screw), rear or front mounting	D
Front connected terminals (pressure connector), rear or front mounting	F

1.1 Additional code

MID-TRIP ONLY
M
M

2 Number of poles

1	(Front view from left to right)
2	
3	
4	
5 or 6	poles

3 Frequency and terminal location

Code	Frequency	Terminals	Type
A	50/60 Hz	back	CD
B	DC	back	CD
C	400 Hz	back	CD
G	50/60 Hz	front	CD/CF
H	DC	front	CD/CF
J	400 Hz	front	CD/CF
D	50/60 Hz	front*	CD
E	DC	front*	CD
F	400 Hz	front*	CD
P**	50 /60 Hz	back	CD
Q**	DC	back	CD
S**	400 Hz	back	CD

* Line: screw terminal; load: pressure connector.

** Special traction codes are including break nuts and ampere rating engraved on handle.

4 Internal circuits

Start over-current	8 x		15 x or *22 x		Description	Type
	without	with	without	with		
Codes	0	12			Switch only (without coil)	CD/CF
	3	2	8	9	Series trip	CD/CF
	5		22		Shunt trip	CD
	6	62**	23		Relay trip	CD
	7		27		Dual trip	CD
	15		25		DUCON	CD
	16	63**	26		DUCON (separate coil) serie + relay	CD

* 22 x only with curve 100.

** With flying leads DUCON terminals (without approval)

5 Handle number and position (front view from left to right)

A	Single pole
L	Handle on every pole, handle spacers mounted

6 Colour and inprint of handle

Colour	ON/OFF	I/O	I/ON	O/OFF	Without
Black	A	I*	C		R
White	B	J	K		S
Red	D	L	T		U
Grey	G	O	P		Z

* Standard black



The proposed example is a 2 poles circuit breaker, MID-TRIP, front mounting version to be fitted with 4 screws M4 and back terminals M5. The pole left-hand side front view has an auxiliary contact with 4,8 mm quick connect terminals.

7 Fixing inserts + other mount and terminals

	Code	Inserts	Terminals	*L (mm)		Code	Inserts	Terminals
Back-connected terminals (CD)	15	M4	Up to 50 A : M5	16	Front-connected terminals (CD)	01	6-32	Up to 100 A : M10 x 1 (CF)
	16	M4	Up to 100 A : M6	19		04	M4	Up to 100 A : M10 x 1 (CF)
	07	6-32	Up to 50 A : 10-32	16		01	6-32	Up to 100 A : **10-32 (CD)
	09	6-32	Up to 100 A : 1/4-20	19		04	M4	Up to 100 A : **M5 (CD)
	27	M4	Up to 100 A : M6	30		06	M4	Up to 100 A : M6 (CD)
	28	M4	Up to 100 A : M6	45				
	29	M4	Up to 100 A : M6	55				
	37	M4	Up to 50 A : 10-32	16				
	38	M4	Up to 100 A : 1/4-20	19				
	39	6-32	Up to 50 A : M5	16				
	40	6-32	Up to 100 A : M6	19				

* L : See page 14

** for VDE approval : up to 50 A

8 Code VDE

D Standard without VDE approval
H* Approval DIN EN 60947-2 in conformity with IEC 950
W In conformity with IEC 950

* Available only with internal circuits codes 0, 2, 3, 5, 8, 9, 12, 16, 22, 25 and 26

9 Code UL-CSA

U Up to 240 V 50/60 Hz - 125 V DC : Listed UL 489 (General purpose)
DU Up to 240 V 50/60 Hz - 125 V : Listed UL 489 (Special purpose)
A Up to 240 V 50/60 Hz / 400 Hz : Recognized UL 508
L Up to 277 V 50/60 Hz : Recognized UL 508
NL Up to 277 V 50/60 Hz : Without UL-CSA approval
AB Up to 480 V 50/60 Hz : Recognized UL 508 (Only with 2 poles minimum)
NB Up to 480 V 50/60 Hz : Without UL-CSA approval
AE Up to 600 V 50/60 Hz : Recognized UL 508 (Only with 2 poles minimum)
NE Up to 600 V 50/60 Hz : Without UL-CSA approval
DC Up to 125 V DC : Recognized UL 508
D Up to 240 V 50/60 Hz / 400 Hz - 125 V DC : Recognized UL 1077
NU Up to 240 V 50/60 Hz / 400 Hz - 125 V DC : Without UL-CSA approval

10 Auxiliary contacts

Code	Function	Contact	Terminals	I max. (A) at 220 V AC	
				UL / CSA	VDE
07	NO - NC	Ag	4,8 fast-on	10.1	-
52*	NO - NC	Ag	2,8 fast-on	10.1	1
54	NO - NC	AgAuPt	2,8 fast-on	0.1	0.1
TS	NO - NC	Ag	6-32 screws and cup washers	**	1.5

* 52 : standard

**UL/CSA 15 A/480 V AC 2 A/600 V AC

Dimensions: See pages 19 and 20

11 Voltage or current rating V or A

A) To repeat only if poles are different. For breakers with coil in series with contacts, indicate:

$\overline{x \ x \ x \ x \ x} / \overline{x \ x \ x \ x \ x}$
 Un or In coil | U = contact voltage

B) For breakers with coil circuit separated of contact circuit, indicate: (internal circuits: 6, 23 and 62)
 Un possible: (24-250 V AC) (4-125 V DC)

$\overline{x \ x \ x \ x \ x} / \overline{x \ x \ x \ x \ x} / \overline{x \ x \ x \ x \ x}$
 Un or In coil | In contact | U = contact voltage

C) For breakers with two coils, indicate: (internal circuits: 7, 15, 16, 25, 26, 27 and 63)
 Un only possible for 2nd coil: (4-240V AC) (4-125 V DC)

$\overline{x \ x \ x \ x \ x} / \overline{x \ x \ x \ x \ x} / \overline{x \ x \ x \ x \ x}$
 In main coil | U = contact voltage | Un 2nd coil

12 Time delay curves

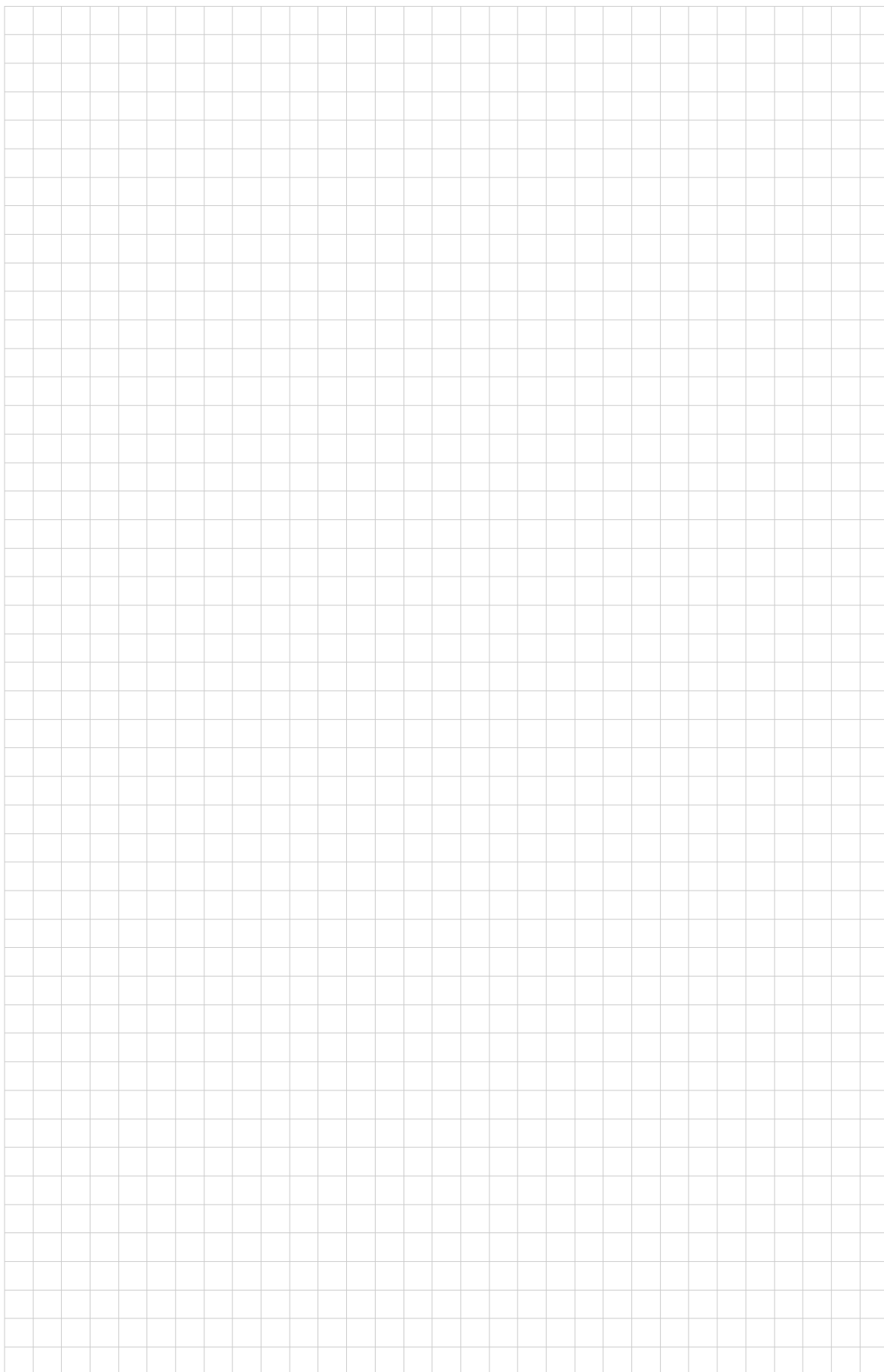
See pages 7 to 11

Additional note

The internal circuits 6, 16, 23, 26, 62 and 63 have a standard dielectric strength of $2 \times U_n + 1000$ V. For 2500 V indicate code HV.
 For 2500 V with protected terminals indicate code HF.
 For only protected terminals indicate code F.

7 - 15 - 8 - D - 9 - L - 10 - 07 - 11 - 5 - 12 - 10

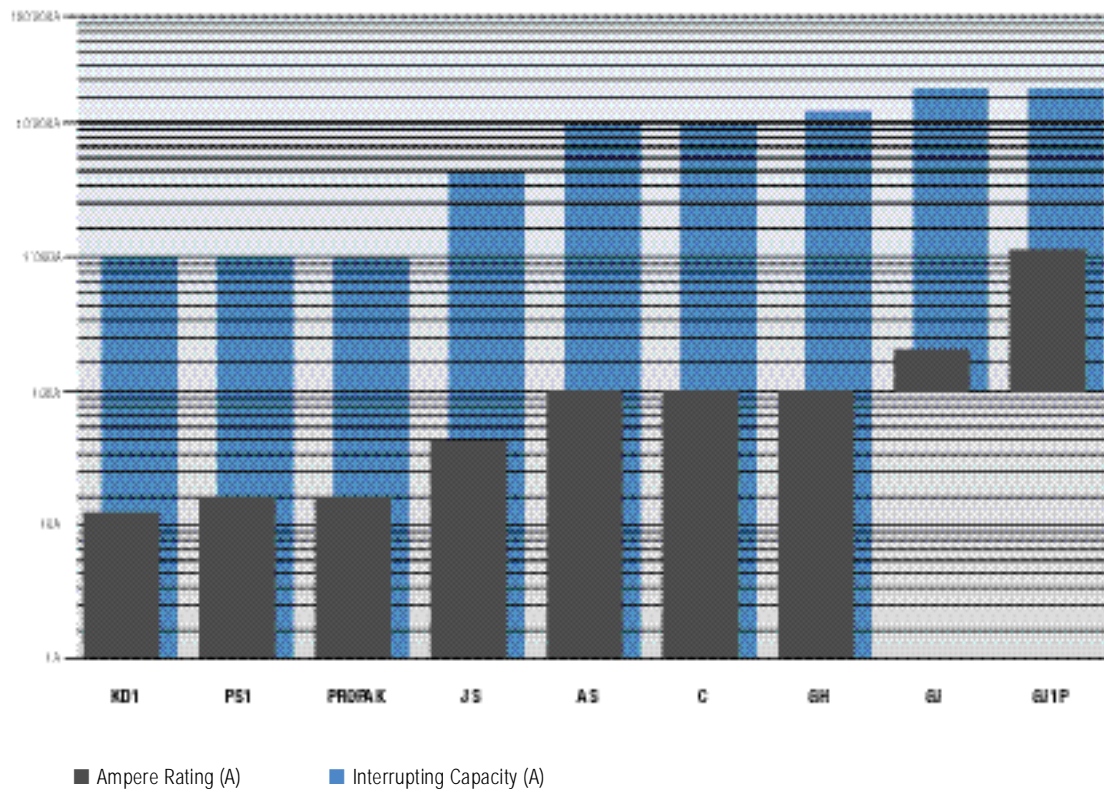
Each pole 5 Amps In with motor start delay curve, 15 x In high-inrush = 75 Amps during 10 ms.
 This selected type of circuit breaker is UL-CSA approved at 277 V AC.



Highly Reliable Miniature Circuit Protectors and Hydraulic-Magnetic Circuit Breakers

For the Widest Selection of Circuit Protection, from 0.01 to 1200 Amperes,
look to Heinemann.

Circuit Breaker Selection Guide



Eaton SA
Commercial Controls Division
 Heinemann Products
 CH - 1345 Le Lieu, Switzerland
 Tel ++41 21 841 18 41
 Fax ++41 21 841 15 43



CCD-Switzerland@Eaton.com
 www.commercialcontrols.Eaton.com